Draft Initial Study and Mitigated Negative Declaration for Thomas Bros. Composting Facility (Conditional Use Permit No. 22-06)

September 2024

Prepared By:

4Creeks, Inc.
324 S Santa Fe, Suite A
Visalia, CA 93292

Prepared For:

Kings County
1400 W. Lacey Blvd
Hanford, CA 93230

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Kings County
1400 W Lacey Blvd, Bldg #6
Hanford, CA 93230

SECTION 1
CEQA Review Process

Project Title: Conditional Use Permit No. 22-06 (Thomas Bros. Composting Facility)

1.1 California Environmental Quality Act Guidelines

Section 15063 of the California Environmental Quality Act (CEQA) Guidelines requires that the Lead Agency prepare an Initial Study to determine whether a discretionary project will have a significant effect on the environment. All phases of the project planning, implementation, and operation must be considered in the Initial Study. The purposes of an Initial Study, as listed under Section 15063(c) of the CEQA Guidelines, include:

(1) Provide the lead agency with information to use as the basis for deciding whether to prepare an EIR or negative declaration;
(2) Enable an applicant or lead agency to modify a project, mitigating adverse impacts before an EIR is prepared, thereby enabling the project to qualify for a negative declaration;
(3) Assist the preparation of an EIR, if one is required, by:
  (a) Focusing the EIR on the effects determined to be significant,
  (b) Identifying the effects determined not to be significant,
  (c) Explaining the reasons for determining that potentially significant effects would not be significant, and
  (d) Identifying whether a program EIR, tiering, or another appropriate process can be used for analysis of the project's environmental effects.
(4) Facilitate environmental assessment early in the design of a project;
(5) Provide documentation of the factual basis for the finding in a negative declaration that a project will not have a significant effect on the environment;
(6) Eliminate unnecessary EIRs;
(7) Determine whether a previously prepared EIR could be used with the project.

1.2 Initial Study

The Initial Study provided herein covers the potential environmental effects of the construction and operation of the composting facility project in Kings County. Kings County will act as the Lead Agency for processing the Initial Study/Mitigated Negative Declaration pursuant to the CEQA Guidelines.

1.3 Environmental Checklist

The Lead Agency may use the CEQA Environmental Checklist Form [CEQA Guidelines, Section 15063(d)(3) and (f)] in preparation of an Initial Study to provide information for determination if there are significant effects of the project on the environment. A copy of the completed Environmental Checklist is set forth in **Section Three**.

1.4 Notice of Intent to Adopt a Negative Declaration

The Lead Agency shall provide a Notice of Intent to Adopt a Negative Declaration (CEQA Guidelines, Section 15072) to the public, responsible agencies, trustee agencies and the County Clerk within which the project is located, sufficiently prior to adoption by the Lead Agency of the Negative Declaration to allow the public and agencies the review period. The public review period (CEQA Guidelines, Section 15105) shall not be less than 30 days when the Initial Study/Negative Declaration is submitted to the State Clearinghouse unless a shorter period, not less than 20 days, is approved by the State Clearinghouse.

Prior to approving the project, the Lead Agency shall consider the proposed Negative Declaration together with any comments received during the public review process, and shall adopt the proposed Negative Declaration only if it finds on the basis of the whole record before it, that there is no substantial evidence that the project will have a significant effect on the environment and that the Negative Declaration reflects the Lead Agency's independent judgment and analysis.

The written and oral comments received during the public review period will be considered by Kings County prior to adopting the Negative Declaration. Regardless of the type of CEQA document that must be prepared, the overall purpose of the CEQA process is to:

1) Assure that the environment and public health and safety are protected in the face of discretionary projects initiated by public agencies or private concerns;
2) Provide for full disclosure of the project's environmental effects to the public, the agency decision-makers who will approve or deny the project, and the responsible trustee agencies charged with managing resources (e.g. wildlife, air quality) that may be affected by the project; and
3) Provide a forum for public participation in the decision-making process pertaining to potential environmental effects.

According to Section 15070(a) a public agency shall prepare or have prepared a proposed negative declaration for a project subject to CEQA when:

> *The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment. Less than significant impacts with mitigation measures have been identified.*

The Environmental Checklist Discussion contained in Section Three of this document has determined that the environmental impacts of the project are less than significant with mitigation measures and that a Mitigated Negative Declaration is adequate for adoption by the Lead Agency.

1.5 Negative Declaration or Mitigated Negative Declaration

The Lead Agency shall prepare or have prepared a proposed Negative Declaration or Mitigated Negative Declaration (CEQA Guidelines Section 15070) for a project subject to CEQA when the Initial Study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment. The proposed Negative Declaration or Mitigated Negative Declaration circulated for public review shall include the following:

(a) A brief description of the project, including a commonly used name for the project.
(b) The location of the project, preferably shown on a map.
(c) A proposed finding that the project will not have a significant effect on the environment.
(d) An attached copy of the Initial Study documenting reasons to support the finding.
(e) Mitigation measures, if any.

1.6 Intended Uses of Initial Study/Negative Declaration documents

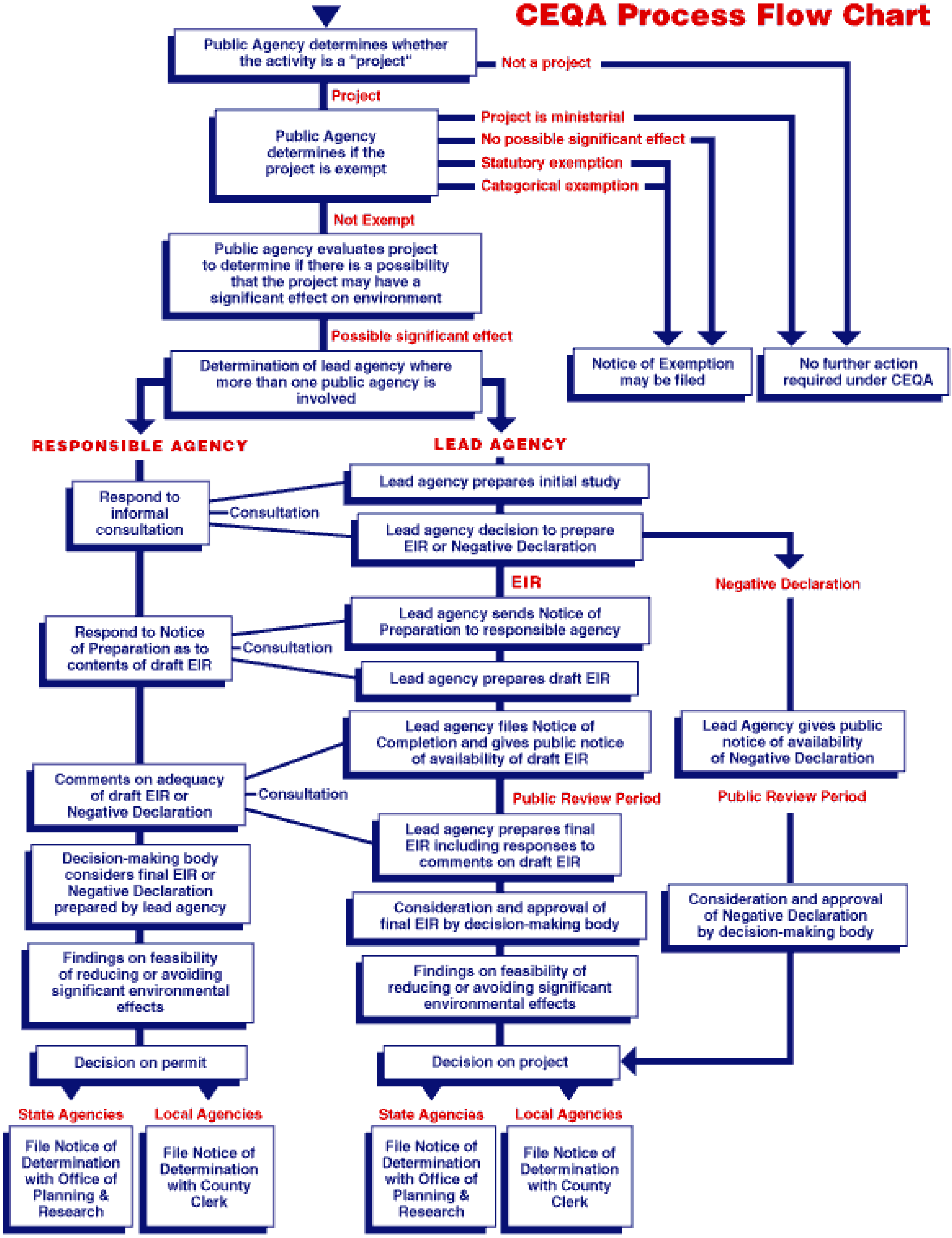
The Initial Study/Negative Declaration document is an informational document that is intended to inform decision-makers, other responsible or interested agencies, and the general public of potential environmental effects of the proposed project. The environmental review process has been established to enable the public agencies to evaluate environmental consequences and to examine and implement methods of eliminating or reducing any adverse impacts. While CEQA requires that consideration be given to avoiding environmental damage, the Lead Agency must balance any potential environmental effects against other public objectives, including economic and social goals. Kings County, as the Lead Agency, will make a determination, based on the environmental review for the Environmental Study, Initial Study and comments from the general public, if there are less than significant impacts from the proposed project and the requirements of CEQA can be met by adoption of a Mitigated Negative Declaration.

1.7 Notice of Determination (NOD)

The Lead Agency shall file a Notice of Determination within five working days after deciding to approve the project. The Notice of Determination (CEQA Guidelines, Section 15075) shall include the following:

(1) An identification of the project including the project title as identified on the proposed negative declaration, its location, and the State Clearinghouse identification number for the proposed negative declaration if the notice of determination is filed with the State Clearinghouse.
(2) A brief description of the project.
(3) The agency's name and the date on which the agency approved the project.
(4) The determination of the agency that the project will not have a significant effect on the environment.
(5) A statement that a negative declaration or a mitigated negative declaration was adopted pursuant to the provisions of CEQA.
(6) A statement indicating whether mitigation measures were made a condition of the approval of the project, and whether a mitigation monitoring plan/program was adopted.
(7) The address where a copy of the negative declaration or mitigated negative declaration may be examined.
(8) The identity of the person undertaking a project which is supported, in whole or in part, through contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies or the identity of the person receiving a lease, permit, license, certificate, or other entitlement for use from one or more public agencies.

1.8 CEQA Process Flow Chart



1.9 Mitigation Measures Included in the Project to Avoid Potentially Significant Effect

The full description of each mitigation measure can be found in Chapter XXI, Mandatory Findings of Significance.

- **AQ-1: Fugitive Particulate Matter.** Consistent with San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII (Fugitive particulate matter less than 10 microns in size [PM10] Prohibitions), the following controls are required to be included as specifications for the proposed Project and implemented at the construction Site:
  - All disturbed areas, including storage piles not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, and covered with a tarp or other suitable cover or vegetative ground cover.
  - All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/ suppressant.
  - All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing the application of water or by presoaking.
  - When materials are transported off-site, all material shall be covered or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
  - All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)
  - Following the addition of materials to, or the removal of materials from, the surface of out-door storage piles, said piles should be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.
- **AQ-2: Odor Management.** The Project applicant shall incorporate the following operational practices into the composting operations:
  - Coarse, dry bulking agents shall be added to any incoming materials that are anaerobic and odorous to increase porosity and reduce moisture in the materials;
  - Windrows and piles shall be turned to redistribute the moisture and provide aeration to maintain even temperatures; and
  - Windrows shall be sized uniformly to facilitate oxygen diffusion and natural air convection.
- **AQ-3: Odor Management Plan Implementation.** To mitigate potential odor impacts from the Thomas Bros. Composting Facility, an Odor Management Plan (OMP) shall be implemented. The OMP outlines procedures to manage and reduce odors generated by composting operations, storage, and transportation activities. This plan is designed to minimize the impact of odors on surrounding communities and receptors. The OMP is provided in Appendix K and is summarized below:
  - Facility Operations and Maintenance:
    - Implement and adhere to the standard operating procedures for compost management, treatment, storage, and transportation as detailed in the OMP.
    - Ensure the private truck wash facility is maintained with a concrete surface and proper drainage systems to channel and redirect runoff wastewater, preventing standing water and associated odors.

  - Odor Control Measures:
    - Minimize moisture levels in stored compost to prevent anaerobic conditions that can produce odors.
    - Use coarse, dry bulking agents for anaerobic and odorous incoming materials to increase porosity and reduce moisture.
    - Maintain uniformly sized and regularly turned windrows to redistribute moisture, provide aeration, and maintain even temperature for natural air convection.
    - Clean up compost spills immediately to prevent odor generation.
    - Maintain the wastewater retention pond to prevent solids buildup and associated odors.
  - Dust and Odor Suppression:
    - Implement dust suppression measures to prevent the release of odorous compounds in fugitive dust.
    - Avoid the export/import of dry manure or the application of water during windy conditions to minimize odor dispersion.
  - Odor Complaint Response:
    - Maintain an odor complaint register (Attachment A of Appendix K) to document and respond to odor complaints from neighbors. This register shall include details of each complaint, actions taken to determine the cause, actions taken to resolve the odor problem, results of these actions, and any additional measures required to prevent recurrence.
    - Provide the odor complaint register to code compliance personnel upon request.

  The Odor Management Plan shall be implemented prior to the commencement of composting operations and shall be maintained throughout the life of the facility.

- **BIO-1: Construction Timing.** Live Oak Associates recommends performing construction activities outside the bird nesting season (February 1 to August 31). Suppose Project activities are proposed during the nesting season. In that case, Live Oak Associates recommends that a qualified biologist survey the Project Site or environmental footprint of the Project for nesting birds to avoid any adverse impacts leading to nest failure or abandonment. If construction activities are proposed to occur during the non-breeding season (September-January), a survey is not required, and no further studies are necessary.
- **BIO-2: Pre-Construction Survey.** Active raptor nests are protected by the California Fish and Game code Section 3503.5 and the Migratory Bird Treaty Act (MBTA). For this reason, if construction is expected to occur during the nesting season (February – August), a pre-construction raptor survey is recommended to determine if active nests are present on the Site. The survey should be conducted by a qualified biologist no more than 30 days before the onset of construction activities but preferably within ten days prior to the start of construction. The survey area will encompass the Site and accessible surrounding lands suitable for nesting birds.
- **BIO-3: Avoidance of Active Nests.** If the nests are found and considered to be active, construction activities should not occur within 500 feet of the nests until the young have fledged, or a qualified biologist has determined that the nest is no longer active. The biologist will identify a suitable construction-free buffer around the nest, which will be identified with flagging or fencing and maintained until the biologist has confirmed that the young have fledged and can forage independently. All nests should be monitored during Project activities for signs of distress. If signs of distress are observed, Project activities should be adjusted to prevent further disturbance to the birds.

- **CUL-1: Procedures for Handling Encountered Historical Resources.** Construction shall stop near the find if previously unknown resources are encountered before or during grading activities. A qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavating the finds and evaluating the discoveries following Section 15064.5 of the CEQA Guidelines and the County's General Plan.

  If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoiding or capping, incorporating the Site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the discovery area until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a County-approved institution or person capable of providing long-term preservation to allow future scientific study.
- **CUL-2: Procedures for Handling Human Remains Discovery.** In the event that human remains are unearthed during the excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings regarding origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and consult with the descendants all reasonable options regarding the descendants' preferences for treatment.
- **CUL-3: Native American Monitoring.** Prior to any ground disturbance, the applicant shall offer the Santa Rosa Rancheria Tachi Yokut Tribe and any other interested Tribes the opportunity to provide a Native American Monitor during ground disturbing activities during construction. The monitor will only be present on-site during the construction phases that involve ground disturbing activities. Ground disturbing activities are defined as activities that may include, but are not limited to, pavement removal, auguring, boring, excavation, drilling, and trenching, within the project area. The on-site monitoring shall end when the project site excavation activities are completed, or when the Tribal Representatives and monitor/consultant have indicated that the site has a low potential for impacting Tribal Cultural Resources. Tribal participation would be dependent upon the availability and interest of the Tribe.
- **CUL-4: Pre-Construction Briefing.** The project proponent shall retain the Santa Rosa Rancheria Tachi Yokut Tribe and any other interested tribes to provide a pre-construction Cultural Sensitivity Training to construction staff regarding the discovery of cultural resources and the potential for discovery during ground disturbing activities, which will include information on potential cultural material finds and on the procedures to be enacted if resources are found.
- **CUL-5: Disposition of Cultural Resources.** Upon coordination with the Kings County Community Development Agency, any pre-historic archaeological artifacts recovered shall be donated to an

appropriate Tribal custodian or a qualified scientific institution where they would be afforded applicable cultural resources laws and guidelines.

- **CUL-6: Curation Agreement/Burial Treatment Plan.** The applicant/property owner shall enter into a Curation Agreement and Burial Treatment Plan with the Santa Rosa Rancheria Tachi Yokut Trube, which shall be in a form acceptable to the Tribe, prior to any earth disturbing activities. (This condition applies as a mitigation measure to all projects that require an initial study).
- **GEO-1: Clay Liner Requirements.** Due to the upper 1.5 feet of the composting area being predominately silty sand, it is required to use a soil-clay mix with a clay content of at least 3 percent across the compost working surface. This approach is based on laboratory testing and preliminary mix design results, aiming to ensure optimal performance of the liner in terms of water retention and stability.
- **GEO-2: Basin Recommendations.** Due to a slow percolation rate found at the bottom of the existing basins, it is required that the basin be cleaned out or deepened. This is based on the results of double ring tests indicating that the percolation rate at the basin's bottom was slower than desired. Cleaning out or deepening the basin will enhance its function and efficiency in handling percolation.
- **GEO-3: Site Preparation and Earthwork Construction.** The following procedures must be implemented during site preparation for the proposed improvements:
    - Prior to any site grading, all miscellaneous surface obstructions must be removed from the improvement area. Near surface soils containing vegetation, roots, organics, compost, or other objectionable material must be stripped to a depth of at least 3-inches to expose a clean soil surface. Surface strippings and compost must not be incorporated into engineered fill unless the organic content is less than 3 percent by weight.
    - Existing utilities or irrigation pipes must be removed to a point at least 5-feet horizontally outside the proposed improvement area. Resultant cavities must be backfilled with engineered fill.
    - Soil disturbed as a result of undocumented fill, debris, and abandoned underground structures must be excavated to expose undisturbed native soil.
    - Following the required stripping, and/or removal of underground structures, the exposed soil surface in proposed at-grade improvement areas including foundations or lightly loaded concrete structures must be over-excavated uniformly to a depth of 24 inches below existing site grade or 12 inches below the bottom of the proposed foundation, whichever is deeper. The overexcavation must extend at least 5 feet laterally beyond the outside edge of the proposed foundation or areas to receive fill, whichever distance is greater. The exposed subgrade must be proof-rolled under the observation of a BSK field representative to detect soft or pliant areas. Soft or pliant areas must be over-excavated to firm native soil. The exposed surface must be scarified at minimum of 8 inches, uniformly moisture conditioned to 2 percent above optimum moisture, and compacted to 90 percent relative compaction. Scarification and recompaction at the wastewater storage lagoon excavation is not necessary, however, the exposed subgrade must not be disturbed during excavation.
    - For the compost liners, following the required stripping, and/or removal of underground structures, the exposed soil surface must be thoroughly mixed to incorporate 3 percent clay (by dry weight) to a minimum of 12 inches below surface or over-excavated uniformly to a depth of 12 inches below existing site grade. The mixing or over-excavation must extend at least 5 feet laterally beyond the outside edge of the proposed compost areas. The exposed subgrade must be proof-rolled under the observation of a BSK field representative to detect soft or pliant areas. Soft or pliant areas must be over-excavated

    to firm native soil. The exposed surface must be scarified at minimum of 8 inches, uniformly moisture conditioned to at or above optimum moisture, and compacted to 92 percent relative compaction. On-site material may be used as engineered compost liner fill, if sufficiently blended with 3 percent clay (by dry weight), uniformly moisture conditioned to 2 percent above moisture content, and compacted to 92 percent relative compaction.
  - Engineered fill in areas of at-grade structures must consist of non-expansive soil (EI < 20), moisture conditioned to at or above optimum moisture, and compacted to 90 percent relative compaction. Excavated soils, free of deleterious substances (organic matter, demolition debris, tree roots, etc.), meeting requirements for engineering fill below, and with less than 3 percent organic content by weight, may be reused as engineered fill for the backfill.
  - Engineered fill must be placed in uniform layers not exceeding 8-inches in loose thickness, moisture-conditioned and compacted as recommended above. Acceptance of engineered fill placement must be based on both moisture content at time of compaction and relative compaction.
  - Imported fill materials must be free of deleterious substances and have less than 3 percent organic content by weight. The project specifications must require the contractor to contact BSK for review of the proposed import fill materials for conformance with these recommendations at least two weeks prior to importing to the site, whether from on-site or off-site borrow areas. Imported fill soils must be non-hazardous and be derived from a single, consistent soil type source conforming to the following criteria:
    - Maximum Particle Size: 3-inches
    - Percent Passing #4 Sieve: 65 – 100
    - Percent Passing #200 Sieve: 20 – 45
    - Plasticity Index: less than 12
    - Expansion Index: < 20
    - Low Corrosion Potential:
    - Soluble Sulfates: < 1,500 mg/kg
    - Soluble Chlorides: < 300 mg/kg
    - Soil Resistivity: > 2,000 ohm-cm
  - Grading operations must be scheduled as to avoid working during periods of inclement weather. Should these operations be performed during or shortly following periods of inclement weather, unstable soil conditions may result in the soils exhibiting a "pumping" condition. This condition is caused by excess moisture, in combination with compaction, resulting in saturation and near zero air voids in the soils. If this condition occurs, the affected soils must be over-excavated to the depth at which stable soils are encountered and replaced with suitable soils compacted as engineered fill. Alternatively, the Contractor may proceed with grading operations after utilizing a method to stabilize the soil subgrade, which must be subject to review by BSK prior to implementation.
- **HYD-1: Notice of Intent:** Before the issuance of any construction/grading permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project Site to the California SWRCB Storm Water Permit Unit.
  - Before issuance of grading permits for Phase 1, the Applicant shall submit a copy of the NOI to the County.
  - The County shall review noticing documentation before the approval of the grading permit. County monitoring staff will inspect the Site during construction for compliance.

- **HYD-2: Stormwater Pollution Prevention Plan.** The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the County 45 days before the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. An SWPPP for Site construction shall be developed before the initiation of grading and implemented for all construction activity on the Project Site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to stormwater and shall include specific BMPs to control material discharge from the Site. The following BMP methods shall include, but would not be limited to:
    - Dust control measures will be implemented to ensure the success of all onsite activities to control fugitive dust;
    - A routine monitoring plan will be implemented to ensure the success of all onsite erosion and sedimentation control measures;
    - Provisional retention basins, straw bales, erosion control blankets, mulching, silt fencing, sandbagging, and soil stabilizers will be used;
    - Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours before and during extreme weather conditions; and,
    - BMPs will be strictly followed to prevent spills and discharges of pollutants on Site, such as material storage, trash disposal, construction entrances, etc.
- **HYD-3: Development Maintenance Manual:** A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual shall require that stormwater BMP devices be inspected, cleaned, and maintained following the manufacturer's maintenance conditions. The manual shall require that devices be cleaned before the onset of the rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual shall also require that all devices be checked after major storm events. The Development Maintenance Manual shall include the following:
    - Runoff shall be directed away from the trash and loading dock areas;
    - Bins shall be lined or otherwise constructed to reduce the leaking of liquid wastes;
    - Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and,

      Impervious berms, trench catch basins, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills, or washdown water to enter the drainage system.

Section 2

Project Description

Kings County
1400 W Lacey Blvd., Bldg. #6
Hanford, CA 93230

SECTION 2
Project Description

Project Title: Conditional Use Permit No. 22-06 (Thomas Bros. Composting Facility)

2.1 Project Description and Purpose

The Project proposes to establish a composting facility, including the permitting and compliance of the facility with environmental standards on approximately 63.22 acres in unincorporated Kings County, CA. Adjacent to the composting facility, on the subject property, is a bovine feedlot facility, previously operated as a dairy facility, permitted through Kings County. The applicant is seeking permits to establish a composting facility and install a proposed modular office on the same site. In addition to permits and compliance, the Project proposes the construction of a private truck washout (not open to the public) and one retention pond. The composting operation would process a maximum of 70,000 wet-tons of manure per year, with solid manure being produced and/or received, stored, composted on-site, then sold to local farms as soil amendments. Liquid wastewater and on-site stormwater will be stored in the proposed retention pond.

The proposed Components of the composting facility and truck wash will be completed in two phases. The first phase would include the permitting and compliance of a manufactured building office and the composting yard. Additionally, the first phase will include the construction of a new wastewater retention pond and a truck scale. The second phase would include the construction and permitting of a private truck wash, not open to the public.

The Facility receives up to 154 cubic yards (or 192 wet-tons) of compostable material per day consisting of animal manure from nearby dairy facilities. The Facility currently has the capacity to store up to 2,000 tons at any given time. The Facility receives up to a maximum of 56,000 cubic yards (or 70,000 wet-tons) per year. As necessary, feedstock is processed with a tub grinder and/or screen to achieve the characteristics required to promote composting. Prepared feedstock is composted in windrows for 90 to 120 days. Composting is cured for an additional period until it is stabilized. Water is added as needed to maintain active composting for the desired period. Residual materials are recovered and stored in disposal containers onsite. When filled, the materials stored in the containers are removed from the site by Waste Management. In addition to the composting operations, the owner is proposing the construction of a private truck wash, not open to the public. The truck wash will have the capacity to wash 2 vehicles/day totaling to 12 vehicles/week, used for washing the composting equipment on an as-needed basis.

The Project will import approximately 3,000 tons of gypsum additives per year. This will be held on site and applied to the compost material as a soil amendment. This will be delivered by an estimated 100 truck deliveries per year.

2.2 Project Location

The proposed Project is in a rural, unincorporated area of Kings County, just south of the Fresno County/Kings County border. The nearest community is Riverdale, approximately 2 miles northwest. The Site is on the southwest corner of W Excelsior Avenue and 20th Avenue. The Project Site is approximately 63.22 acres on APN 004-062-003. The Site is topographically flat and surrounded by agricultural uses and some residences. The agricultural uses to the south, east, and west are a part of Kings County, zoned as General Agriculture – 20 Acre Minimum (AG-20). The agricultural uses to the north are a part of Fresno County, designated as Exclusive Agriculture – 20 Acre minimum (AE-20). Kings County designates the Site as General Agriculture – 20 Acre Minimum and under agricultural use. The existing structures on the Site include shade structures, a hay barn, a pole barn, a milk barn, loafing barn, and one residence.

2.3 Other Permits and Approvals

The following discretionary approvals are required from Kings County for the proposed project. It should be noted that this list is not exhaustive and additional permits and approvals may also be required.

- Kings County Conditional Use Permit
- Kings County Building and Encroachment Permits
- San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, and 9510.
- Central Valley Regional Water Quality Control Board, SWPPP. The proposed project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB).
- Central Valley Regional Water Quality Control Board, Notice of Intent for Coverage under General Order WQ 2015-0121-DWQ, General Waste Discharge Requirements for Composting Operations.
- The Kings County Department of Public Health, Environmental Health Division is the Local Enforcement Agency (LEA) for Kings County and responsible for providing regulatory oversight of solid waste handling activities, including inspections. The composting facility, operating under the Notification Tier as per Title 14 CCR Section 17856, must meet specific regulatory requirements to ensure compliance. The operator must notify the LEA at least 30 days before commencing operations, providing details about the facility, including the types and volumes of feedstocks, the composting process, and an operational plan. The facility is required to manage feedstocks to prevent nuisances such as odors and vectors, maintain proper composting conditions, and meet pathogen reduction standards. Detailed recordkeeping of feedstock volumes, temperature monitoring, and daily operations is essential. Environmental protection measures, such as preventing runoff and managing stormwater, must be implemented, and the facility must comply with local zoning, land use regulations, and fire safety requirements. The facility is also obligated to submit an annual update to the LEA and report any significant incidents. If operations cease, a closure plan must be followed to restore the site. Regular communication with the LEA is crucial to ensure ongoing compliance with both state and local requirements.
- Due to the Site’s potential of holding hazardous materials, a Hazardous Materials Business Plan will be filed in the California Environmental Reporting System.
- The facility will be subject to the California Aboveground Petroleum Storage Act (APSA), as 1,320 gallons of petroleum products, such as fuel, are anticipated to be stored on site.

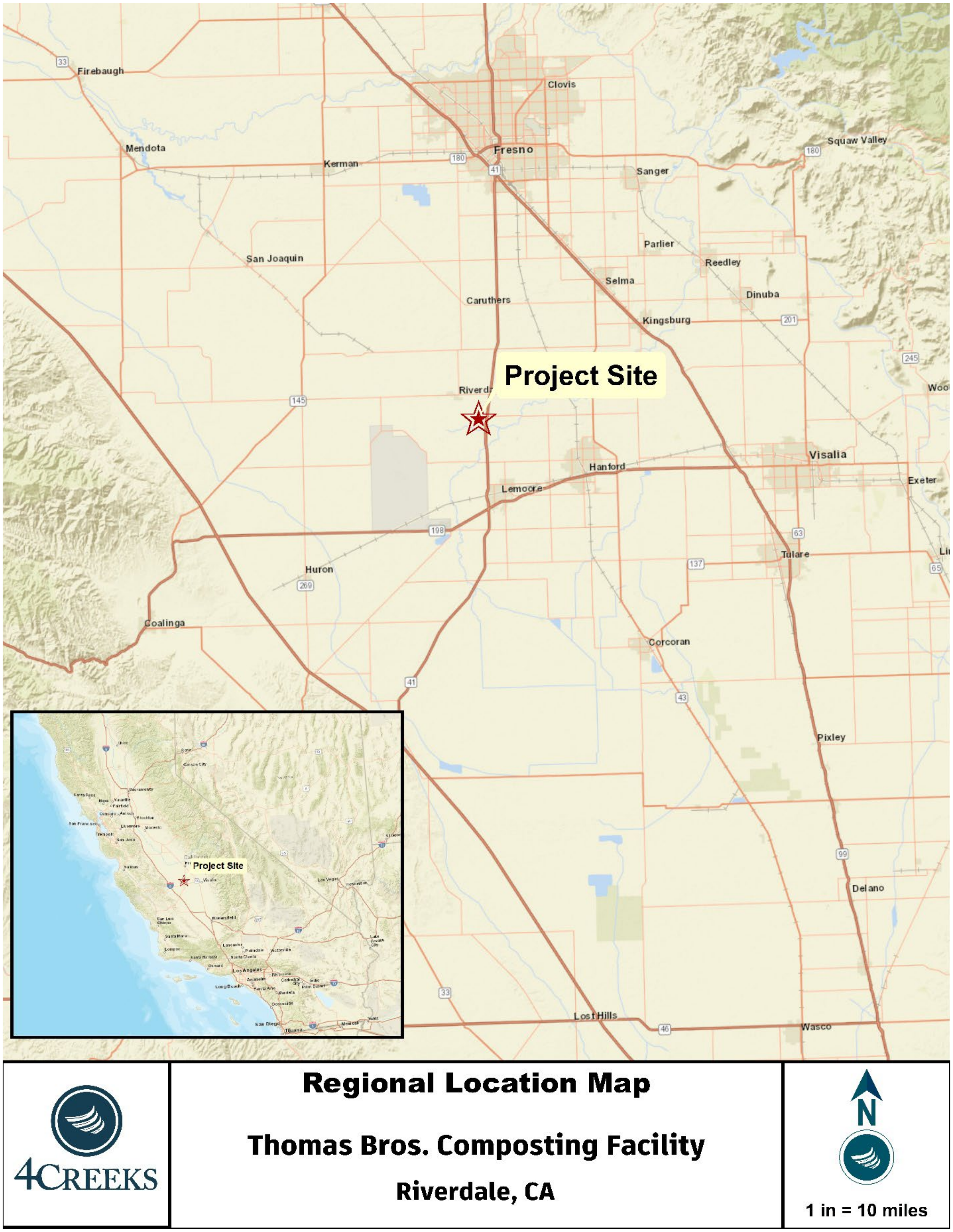


Figure 2-1. Regional Location Map

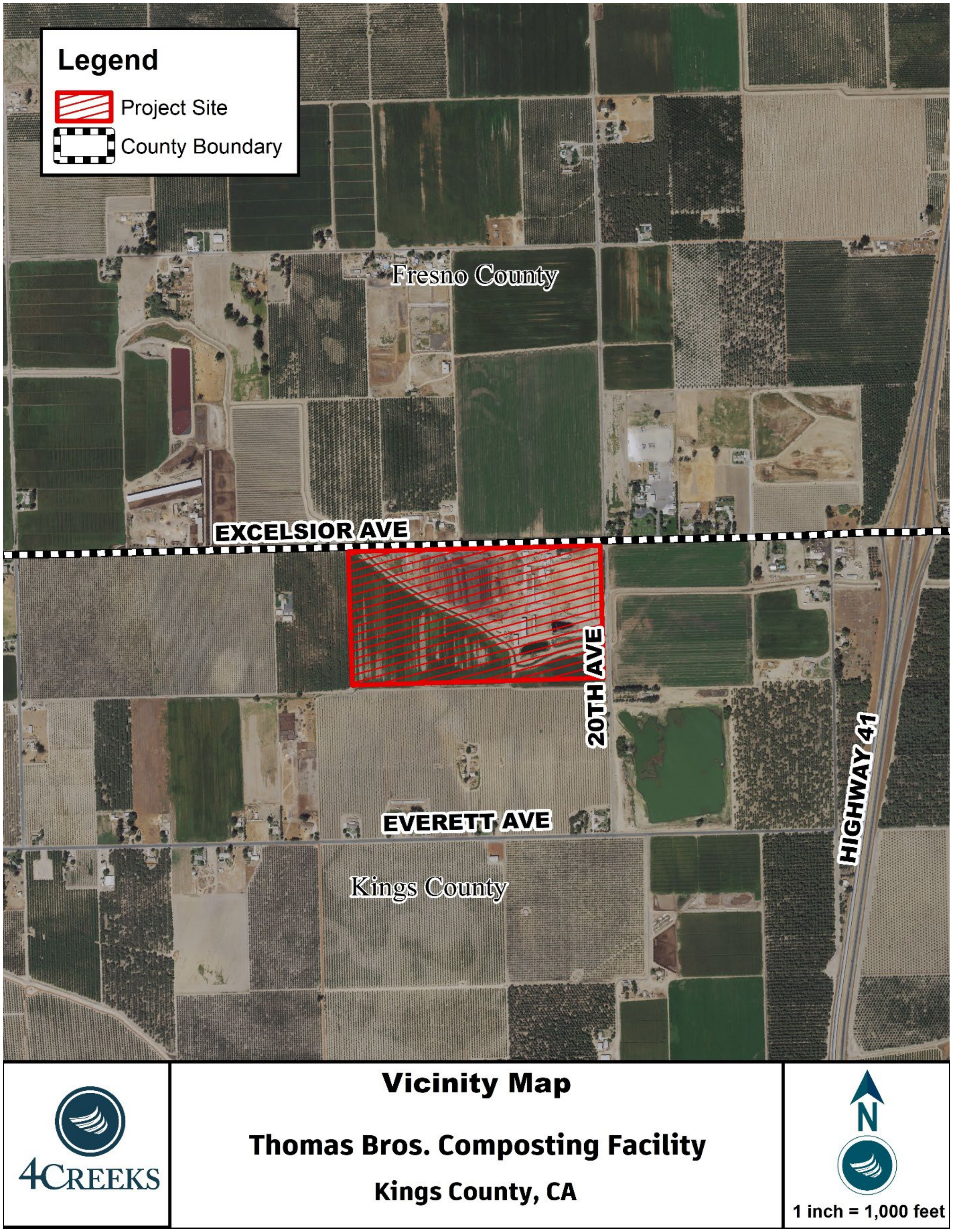


Figure 2-2. Vicinity Map

Section 3

Evaluation of Environmental Impacts

Kings County
1400 W Lacey Blvd., Bldg. #6
Hanford, CA 93230

SECTION 3
Evaluation of Environmental Impacts

Project Title: Conditional Use Permit No. 22-06 (Thomas Bros. Composting Facility)

This document is the Initial Study/Mitigated Negative Declaration for the proposed operation of a composting facility. The Project consists of two (2) phases. Phase 1 proposes to establish a commercial composting facility, truck scale, manufactured building to be used as an office, and a new wastewater retention pond. Phase 2 proposes to establish an incidental truck wash not open to the public. Kings County will act as the Lead Agency for this Project under the California Environmental Quality Act (CEQA) and the CEQA Guidelines.

3.1 PURPOSE

This environmental document aims to implement the California Environmental Quality Act (CEQA). Section 15002(a) of the CEQA Guidelines describes the basic purposes of CEQA:

1. *Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.*
2. *Identify the ways that environmental damage can be avoided or significantly reduced.*
3. *Prevent significant, avoidable damage to the environment by requiring changes in Projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.*
4. *Disclose to the public the reasons why a governmental agency approved the Project in the manner the agency chose if significant environmental effects are involved.*

This Initial Study of environmental impacts has been prepared to conform to the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). According to Section 15070, a public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a Project subject to CEQA when:

1. *The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the Project may have a significant effect on the environment, or*
2. *The initial study identifies potentially significant effects, but:*
   - a) *Revisions in the Project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and*
   - b) *There is no substantial evidence, in light of the whole record before the agency, that the Project as revised may have a significant effect on the environment.*

3.2 INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

1. Project Title: Thomas Bros. Composting Facility

2. Lead Agency:
Kings County Community Development Agency
Contact Person: Alex Hernandez, Deputy Director - Planning
1400 W Lacey Blvd., Bldg. #6
Hanford, CA 93230
Phone Number: (559) 852-2679

3. Applicant:
Sentry Ag Services, LLC
Contact Person: Monique Baldiviez
P.O. Box 7750
Visalia, CA 93290
Phone Number: (559) 303-2819

4. Project Location: The proposed Project is in a rural unincorporated area of Kings County, just south of the Fresno County/Kings County border. The nearest community is Riverdale, approximately 2 miles northwest. The Site is on the southwest corner of W Excelsior Avenue and 20th Avenue. The Project Site is approximately 63.22 acres on APN 004-062-003. The Site is topographically flat and surrounded by agricultural uses and some residences. The agricultural uses to the south, east, and west are a part of Kings County, zoned as General Agriculture – 20 Acre Minimum (AG-20). The agricultural uses to the north are a part of Fresno County, designated as Exclusive Agriculture – 20 Acre minimum (AE-20). Kings County designates the Site as General Agriculture – 20 Acre Minimum and under agricultural use. The existing structures on the Site include shade structures, a hay barn, a pole barn, a milk barn, loafing barn, and one residence.

5. General Plan Designation: The 2035 Kings County General Plan has designated the proposed Project Site as General Agriculture – 20 Acre Minimum.

6. Zoning Designation: Kings County zoned the Site as General Agriculture – 20 Acre Minimum (AG-20) and is an unincorporated county area.

7. Project Description: The Project proposes to establish a composting facility, including the permitting and compliance of the facility with environmental standards on approximately 63.22 acres in unincorporated Kings County, CA. Adjacent to the composting facility, on the subject property, is a bovine feedlot facility, previously operated as a dairy facility, permitted through Kings County. The applicant is seeking permits to establish composting facility and install a proposed modular office on the same site. In addition to permits and compliance, the Project proposes the construction of a private truck washout (not open to the public) and one retention pond. The composting operation would process a maximum of 70,000 wet-tons of manure per year, with solid manure being produced and/or received, stored, composted on-site, then sold to local farms as soil amendments. Liquid wastewater and on-site stormwater will be stored in the proposed retention pond.

The proposed Components of the composting facility and truck wash will be completed in two phases. The first phase would include the permitting and compliance of a manufactured building office and the composting yard. Additionally, the first phase will include the construction of a new wastewater retention pond and a truck scale. The second phase would include the construction and permitting of a private truck wash, not open to the public.

The Facility receives up to 154 cubic yards (or 192 wet-tons) of compostable material per day consisting of animal manure from nearby dairy facilities. The Facility currently has the capacity to store up to 2,000 tons at any given time. The Facility receives up to a maximum of 56,000 cubic yards (or 70,000 wet-tons) per year. As necessary, feedstock is processed with a tub grinder and/or screen to achieve the characteristics required to promote composting. Prepared feedstock is composted in windrows for 90 to 120 days. Composting is cured for an additional period until it is stabilized. Water is added as needed to maintain active composting for the desired period. Residual materials are recovered and stored in disposal containers onsite. When filled, the materials stored in the containers are removed from the site by Waste Management. In addition to the composting operations, the owner is proposing the construction of a private truck wash, not open to the public. The truck wash will have the capacity to wash 2 vehicles/day totaling to 12 vehicles/week, used for washing the composting equipment on an as-needed basis.

The Project will import approximately 3,000 tons of gypsum additives per year. This will be held on site and applied to the compost material as a soil amendment. This will be delivered by an estimated 100 truck deliveries per year.

8. Surrounding Land Uses and Settings:

North:	Exclusive Agriculture – 20 Acre Minimum (Fresno County General Plan)
South:	General Agriculture – 20 Acre Minimum (2035 Kings County General Plan), residences
East:	General Agriculture – 20 Acre Minimum (2035 Kings County General Plan), residences
West:	General Agriculture – 20 Acre Minimum (2035 Kings County General Plan), residences

9. Required Approvals: The following discretionary approvals are required from Kings County for the proposed Project. It should be noted that this list is not exhaustive and additional permits and approvals may also be required:

- Kings County Conditional Use Permit
- Kings County Building and Encroachment Permits
- San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, and 9510.
- Central Valley Regional Water Quality Control Board, SWPPP. The proposed project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB).
- Central Valley Regional Water Quality Control Board, Notice of Intent for Coverage under General Order WQ 2015-0121-DWQ, General Waste Discharge Requirements for Composting Operations.
- The Kings County Department of Public Health, Environmental Health Division is the Local Enforcement Agency (LEA) for Kings County and responsible for providing regulatory oversight of solid waste handling activities, including inspections. The composting facility, operating under the Notification Tier as per Title 14 CCR Section 17856, must meet specific regulatory requirements to ensure compliance. The operator must notify the LEA at least 30 days before commencing operations, providing details about the facility, including the types and volumes of feedstocks, the

composting process, and an operational plan. The facility is required to manage feedstocks to prevent nuisances such as odors and vectors, maintain proper composting conditions, and meet pathogen reduction standards. Detailed recordkeeping of feedstock volumes, temperature monitoring, and daily operations is essential. Environmental protection measures, such as preventing runoff and managing stormwater, must be implemented, and the facility must comply with local zoning, land use regulations, and fire safety requirements. The facility is also obligated to submit an annual update to the LEA and report any significant incidents. If operations cease, a closure plan must be followed to restore the site. Regular communication with the LEA is crucial to ensure ongoing compliance with both state and local requirements.

- Due to the Site's potential of holding hazardous materials, a Hazardous Materials Business Plan will be filed in the California Environmental Reporting System.
- The facility will be subject to the California Aboveground Petroleum Storage Act (APSA), as 1,320 gallons of petroleum products, such as fuel, are anticipated to be stored on site.

10. Native American Consultation: The State requires lead agencies to consider the potential effects of proposed Projects and consult with California Native American tribes during the local planning process to protect Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed Project. Such significant cultural resources are either Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe that is either on or eligible for inclusion in the California Historic Register or local historic register, or the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a) (1-2)). According to the most recent census data, California is home to 109 currently recognized Native American Tribes. Tribes in California currently have nearly 100 separate reservations or Rancherias.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and Project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3I contains provisions specific to confidentiality.

11. Parking and access: The facility's primary access point is on the northern end of the facility between the feedlot and composting facility. A second access point from 20th Avenue is at the southeast corner of the feedlot property. The Project proposes 4 parking spaces, with one being accessible parking, next to the proposed modular office. This includes an ADA accessible ramp.

12. Landscaping and Design: No landscaping or fencing is proposed for this Project.

13. Utilities and Electrical Services: The Project includes the construction of a retention pond that will retain all wastewater and stormwater on-site. The Project will not require new water, electricity, or natural gas connections.

Acronyms

AADT	Annual Average Daily Traffic Volumes
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
BAU	Business as Usual
BGS	Below Ground Surface
BMP	Best Management Practices
BPS	Best Performance Standards
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CBSC	California Building Standards Commission
CCAP	Climate Change Action Plan
CCR	California Code of Regulation
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CRHR	California Register of Historical Resources
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	California Water Act
DHS	Department of Health Services
DOC	California Department of Conservation
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
FCSSE	Five County Seismic Safety Element
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
EIA	Energy Information Administration
HSC	Health and Safety Code
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
ISMND	Initial Study Mitigated Negative Declaration
LOS	Level of Service
MCL	Maximum Contaminant Level
MEIR	Master Environmental Impact Report
NAAQS	National Ambient Air Quality Standards
NOI	Notice of Intent
ND	Negative Declaration
NAC	Noise Abatement Criteria
NAHC	Native American Heritage Commission
NHTSA	National Highway Traffic Administration
NRHP	National Register of Historic Places
NPDES	National Pollution Discharge System
OPR	Office of Planning and Research
PRC	Public Resources Code
RCRA	Resource Conservation and Recovery Act of 1976

ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SHPO	State Historic Preservation Office
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SSJVIC	Southern San Joaquin Valley Information Center
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resource Control Board
TAC	Toxic Air Contaminant
TCR	Tribal Cultural Resource
USEPA	United States Environmental Protection Agency
USGS	U.S. Geological Survey
USDOT	United States Department of Transportation
WJVA	WJV Acoustics

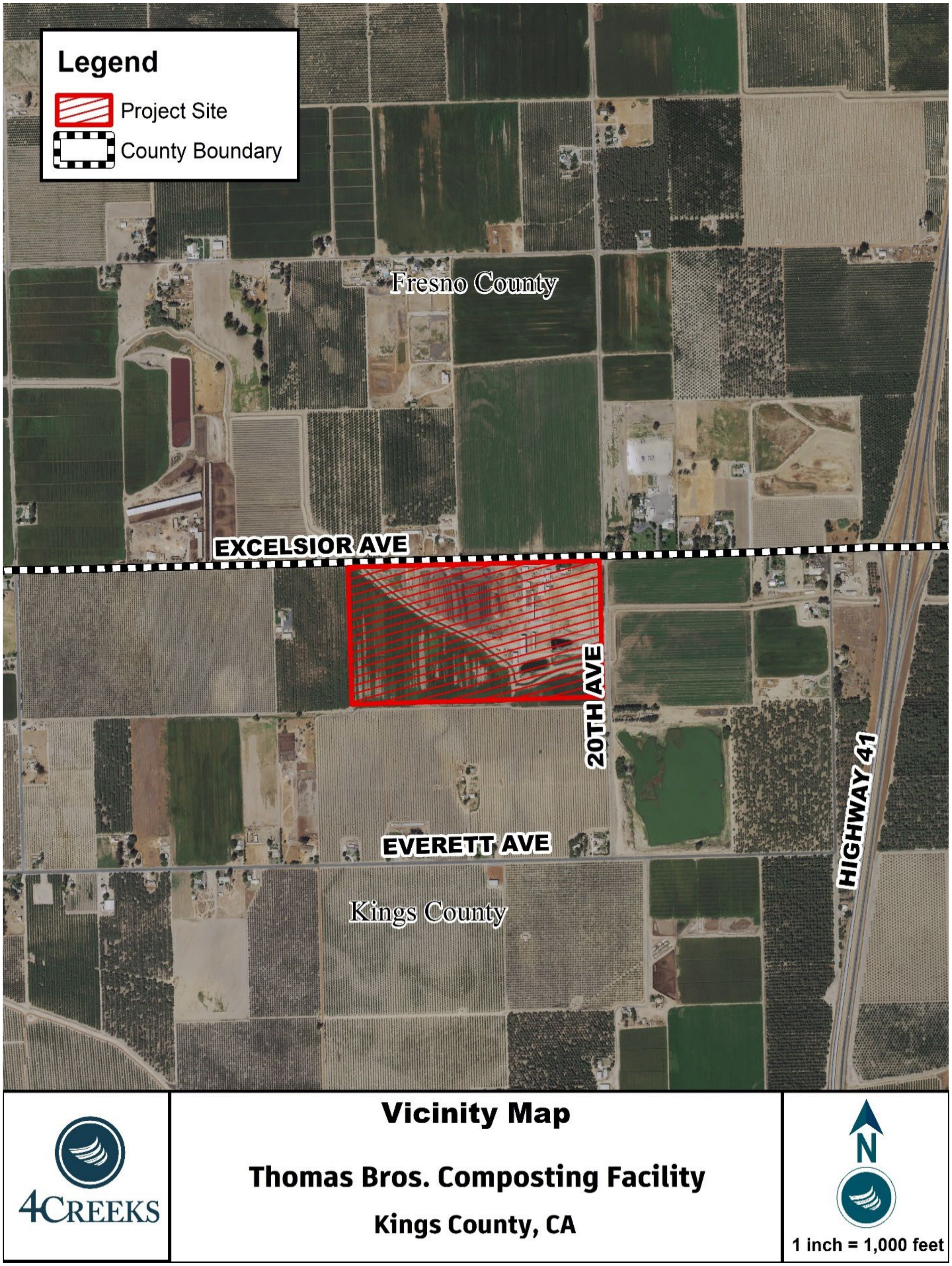


Figure 3-1. Vicinity Map

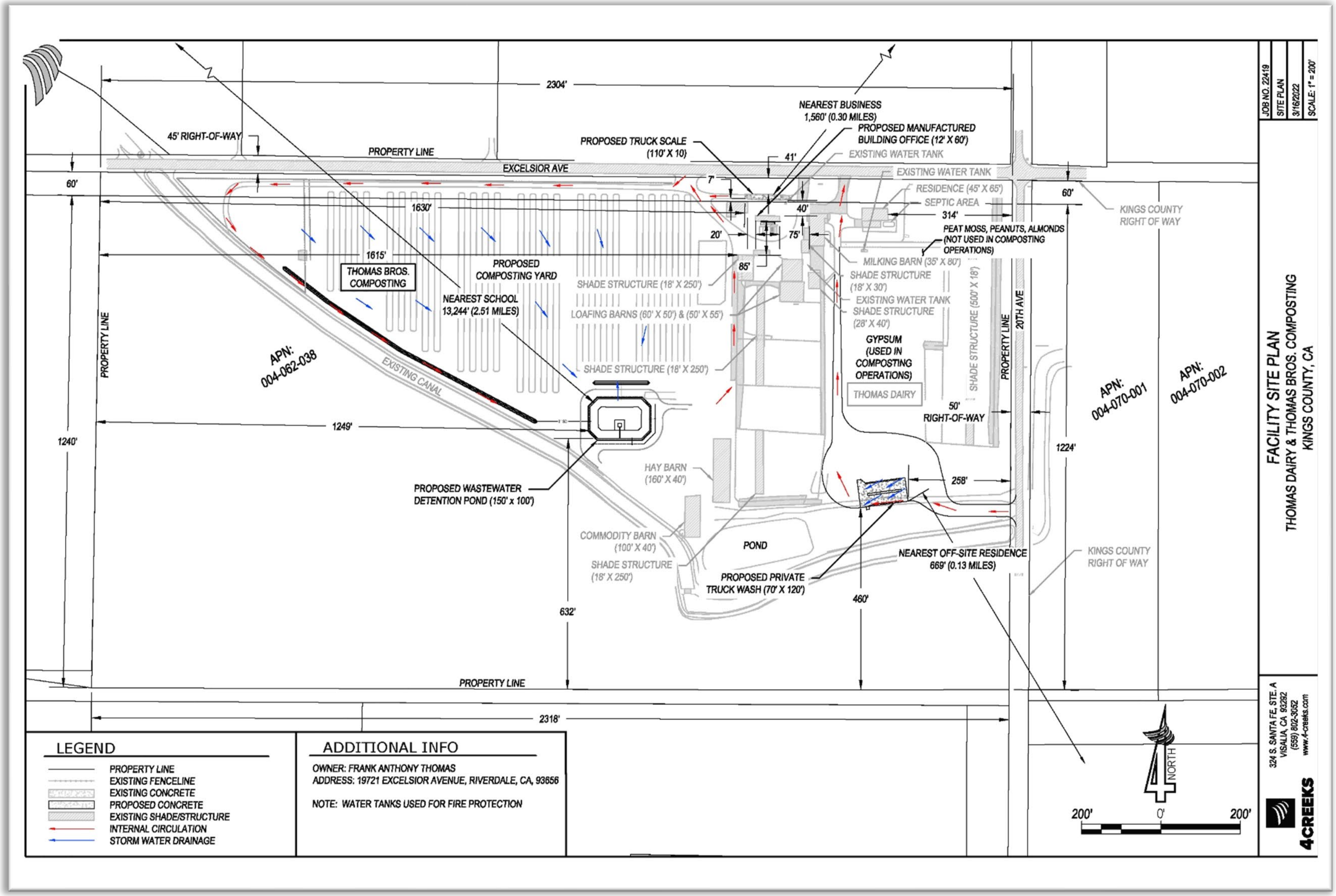


Figure 3-2: Site Plan

3.3 EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites, in the parentheses following each question. A "No Impact" answer is adequately supported if the reference information sources show that the impact simply does not apply to Projects like the one involved (e.g., the Project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on Project-specific factors as well as general standards (e.g., the Project will not expose sensitive receptors to pollutants, based on a Project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as Project-level, indirect as well as direct, and construction as well as operational impact.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR if required.

4. "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c) (3)(D). In this case, a brief discussion should identify the following:

    - Earlier Analysis Used. Identify and state where they are available for review.
    - Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    - Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated." Describe and mitigation measures which were incorporated or refined from the earlier document and the extent to which they address Site-specific conditions for the Project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

3.4 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics
☐ Agriculture and Forest Resources
☒ Air Quality
☒ Biological Resources
☒ Cultural Resources
☐ Energy
☒ Geology/Soils
☐ Greenhouse Gas Emissions
☐ Hazards & Hazardous Materials
☒ Hydrology and Water Quality
☐ Land Use and Planning
☐ Mineral Resources
☐ Noise
☐ Population
☐ Public Services
☐ Recreation
☐ Transportation
☒ Tribal Cultural Resources
☐ Utilities and Service System
☐ Wildfire
☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency) Where potential impacts are anticipated to be significant, mitigation measures will be required, so that impacts may be avoided or reduced to insignificant levels.

On the basis of this initial evaluation:

☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION WILL BE PREPARED.

☑ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. A Negative Declaration is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed Project could have a significant effect on the environment because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is requested.

Alex Hernandez
SIGNATURE

09/05/2024
DATE

Alex Hernandez
PRINTED NAME

Kings County Community Development Agency
AGENCY

3.5 ENVIRONMENTAL ANALYSIS

The following section evaluates the impact categories and questions in the checklist and identifies mitigation measures, if applicable.

I. AESTHETICS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☑	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within state scenic highway?	☐	☐	☐	☑
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the Site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☑
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☑

Environmental Setting

Scenic Resources: Scenic resources include landscapes and features that are visually or aesthetically pleasing. They contribute positively to a distinct community or region, and these resources produce a visual benefit to communities. The Kings River is located one mile south of the Project Site and is a known aesthetic resource, but there are no other available scenic resources within the Project vicinity. The surrounding areas contain agricultural fields, which Kings County may consider scenic resources. Another scenic resource is small clusters of Valley Oak Woodlands along the Kings River channel, which are a component of the visual character of northern Kings County.

Scenic Vistas: A scenic vista is a viewpoint that provides a distant view of highly valued natural or artificial landscape features for the benefit of the public. Located in the central portion of the San Joaquin Valley floor, the Site may have distant views of the Sierra Nevada Foothills, but these views are often impeded due to distance and poor air quality in the region. The Kings River is considered a scenic vista, and the proposed Site is within one mile of this resource.

Existing Visual Character: The following photos demonstrate the aesthetic character of the Project area. As shown, the proposed Project Site area is a relatively flat area characterized by agricultural uses.

Photo 1: Eastern Site Boundary (View West)

Photo 2: Northeastern Site Boundary (View Southwest)

Photo 3: Northwestern Site Boundary (View West)

Photo 4: Northern Site Boundary (View South)

Photo 5: Eastern Portion of the Site (View North)

Photo 6: Central Portion of the Site (View East)

Regulatory Setting

Scenic Roadways: The California Scenic Highway Program was established in 1963 by the State Legislature to protect and enhance the natural beauty of California highways and adjacent corridors through conservation strategies. The State Scenic Highway System includes a list of highways that have either been officially designated or are eligible for designation. State laws governing the scenic highway program are found in Sections 260-263 in The Street and Highways Code.

State Scenic Highways: According to the California Department of Transportation mapping of State Scenic Highways, Kings County has no officially designated State Scenic Highways. However, the County has one segment of eligible State Scenic Highways, the closest being SR 41 west of Kettleman City and towards the northeast boundary of San Luis Obispo County. This portion of the highway is approximately 40.5 miles from the proposed Site.

Historic Sites: Kings County has many designated key historical Site locations that shall be preserved; however, none are located near the proposed Project Site.

2035 Kings County General Plan: The 2035 General Plan *Open Space Element* includes the following goals, objectives, and policies, which would address potential impacts associated with aesthetic resources that relate to the proposed Project:

- **OS GOAL B1: Maintain and protect the scenic beauty of Kings County.**
  - OS OBJECTIVE B1.1: Protect and enhance views from roadways which cross scenic areas or serve as scenic entranceways to cities and communities.
    - *OS Policy B1.1.1:* Coordinate with the Kings County Association of Governments to explore designation of State Route 41, between State Route 33 and the Kern County line, as an Official State Scenic Highway through the Caltrans Transportation Enhancement program.
  - OS OBJECTIVE B1.2: Preserve roadside landscapes which have high visual quality and contribute to the local environment.
    - *OS Policy B1.2.1:* Review new development and utility Projects for compatibility and potential for impacting scenic view sheds along highly traveled scenic routes.
  - OS OBJECTIVE B1.3: Protect the scenic qualities of human-made and natural landscapes and prominent view sheds.
    - *OS Policy B1.3.1:* Require new development to be designed so that it does not significantly impact or block views of Kings County's natural landscape or other important scenic features. Discretionary permit applications will be evaluated against this requirement as part of the development review process. New developments may be required, as appropriate to:
      - Minimize obstruction of views from public lands and rights-of-way.
      - Reduce visual prominence by keeping development and structures below ridgelines.
      - Limit the impact of new roadways and grading on natural settings. Such limits shall be within design safety guidelines.
    - *OS Policy B1.3.2:* Protect the visual access to Kings River and other prominent watercourses by locating and designing new development to minimize visual impacts and obstruction of views of scenic watercourses from public lands and rights-of-way.

- **OS GOAL C1 Preserve the visual identities of Community Districts by maintaining open space separations between urban areas.**
  - OS OBJECTIVE C1.1: Preserve open space, maintain rural character, and limit development in community separator areas.
    - *OS Policy C1.1.1:* Preserve the agricultural open space buffer between the Community of Armona and City of Hanford to maintain community separation between Lacey Boulevard and Front Street along the west side of 13th Avenue.
    - *OS Policy C1.1.2:* Preserve the Open Space land use buffer around the Armona Community Services District wastewater treatment facility to include territory between 13th and 14th Avenues, and north of Houston Avenue.

- *OS Policy C1.1.3:* Preserve the agricultural open space buffer between the Community of Armona and City of Lemoore to maintain community separation between State Route 198 and Hanford Armona Road along the east side of 15th Avenue.

Discussion

a) Would the Project have a substantial adverse effect on a scenic vista?

Less than significant impact: A scenic vista is defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the public. The Kings River is the primary scenic vista within this area. The Kings River is approximately one mile south of the proposed Project Site and slightly visible from the Project Site. Another scenic vista in this region is the Sierra Nevada Mountain range. Still, the proposed Site is over sixty miles from the Sierra Nevada foothills. It will be largely unaffected because they are not visible from the proposed Project Site due to far distances and the poor air quality between the Site and the Sierra Nevadas. There is a *less than significant impact.*

b) Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within state scenic highway?

No Impact: No officially designated State Scenic Highways are located in Kings County. The proposed Project would not damage any scenic resources within a state scenic highway, and there is *no impact.*

c) In non-urbanized areas, would the Project substantially degrade the existing visual character or quality of the Site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?

No Impact: The proposed Project Site is in a non-urbanized agricultural area within an unincorporated portion of Kings County. Because the Project Site is located in a previously disturbed agricultural area, its development is not anticipated to create a visually degraded character or quality to the Site or the properties near and around it. Additionally, it will be required to comply with the design review and design limitations required by the General Plan and the County's Development Code which require setbacks, landscaping, and designs to limit the impact on neighboring properties. The proposed Project would not substantially degrade the existing visual character or quality of public views of the Site and its surroundings. The proposed land use is consistent with the dominant land use in the area, General Agriculture – 20 Acre minimum. There is *no impact.*

d) Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No impact: The proposed Project would not result in new lighting sources on the Project Site and would not result in any structures that would produce glare. There is *no impact.*

II. AGRICULTURE AND FOREST RESOURCES:

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☑	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?	☐	☐	☑	☐
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned timberland Production (as defined by Government Code section 51104(g)?	☐	☐	☐	☑
d) Result in the loss of forestland or conversion of forest land to non-forest use?	☐	☐	☐	☑
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?	☐	☐	☑	☐

Environmental Setting

Central California is one of the world’s premier growing regions. Agriculture is a vital economic resource for Kings County, as it is the land use for 91 percent of unincorporated land in the county. Approximately 670,000 acres of farmland within the 2035 Kings County General Plan area are held in the agricultural preserve. The primary crops produced in Kings County include stone fruits (peaches, nectarines, plums), wheat, cotton lint, cottonseed, and garlic.

The Project is an unincorporated area of Kings County, outside the Sphere of Influence of any nearby communities. The proposed Project Site is not under Williamson Act Contract or a Farmland Security Zone contract but is surrounded by land contracted under the Williamson Act. The proposed Site contains land designated as Farmland of Statewide Importance, confined animal agriculture, and semi-agricultural and rural commercial land under the Important Farmland Mapping and Monitoring Program (FMMP). Nearby to the north is Prime Farmland, Farmland of Statewide Importance, and confined animal agriculture; to the east is Prime Farmland and some residences; and to the west and south is a mixture of Prime Farmland, Farmland of Statewide Importance, and grazing land.

Regulatory Setting

California Land Conservation Act of 1965: The California Land Conservation Act of 1965, commonly called the Williamson Act, allows local governments to enter into contracts with private landowners to restrict the activities on specific parcels of land to agricultural or open space uses. The landowners benefit from the contract by receiving significantly reduced property tax assessments. The California Department of Conservation oversees the California Land Conservation Act; however, local governments are responsible for determining specific allowed uses and enforcing the contract.

California Farmland Mapping and Monitoring Program (FMMP): The FMMP is implemented by the California Department of Conservation (DOC) to conserve and protect agricultural lands within the State. The land is included in this program based on soil type, annual crop yields, and other factors that influence the quality of farmland. The FMMP mapping categories for the most important statewide farmland are as follows:

- ***Prime Farmland*** has the ideal physical and chemical composition for crop production. It has been used for irrigated production four years before classification and can produce sustained yields. 23% of Kings County agricultural land is classified as Prime Farmland.

- ***Farmland of Statewide Importance*** has also been used for irrigated production four years before classification and is only slightly poorer quality than Prime Farmland. 70% of Kings County agricultural land is classified as Farmland of Statewide Importance.

- ***Unique Farmland*** has been cropped four years before classification and does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has produced specific crops with high economic value. 4.4% of the Kings County agricultural area is classified as Unique Farmland.

- ***Farmland of Local Importance*** encompasses farmland that does not meet the criteria for the previous three categories. These may lack irrigation, produce major crops, be zoned as agricultural, and/or support dairy. 1.4% of the agricultural area in Kings County is classified as Farmland of Local Importance.

- ***Grazing Land*** has vegetation that is suitable for grazing livestock.

2035 Kings County General Plan: The 2035 General Plan *Land Use Element* includes the following goals, objectives, and policies, which reduce impacts associated with agricultural land conversion and protect existing agricultural resources that relate to the proposed Project:

- ❖ **LU Goal B1: Protect agricultural lands throughout the County, and in particular along the edges of Community Districts and Urban Fringe by maintaining large parcel sizes and preventing the premature development of incompatible urban uses.**
  - ➢ LU Objective B1.1: Preserve the integrity of the County's agricultural land resources through agricultural land use designations and other long term preservation policies.
    - ▪ *LU Policy B1.1.1:* Designate all agricultural and grazing land outside of planned urban areas as Limited Agriculture, General Agriculture, Exclusive Agriculture, or Natural Resource Conservation.

- <u>LU Objective B1.2</u>: Maintain large parcel sizes of agricultural designated land within Urban Fringe areas and around Community Districts to retain viable agricultural production until such time as land is planned and ready for conversion to other uses.

The **2035 Kings County General Plan** *Open Space Element* contains the following objective to limit impacts to agricultural resources:

- <u>OS Objective A1.1:</u> Protect agricultural land as an important, sustainable component of the Kings County economy.

The **2035 Kings County General Plan** *Resource Conservation Element* contains the following objectives and policies to limit impacts to agricultural resources:

- <u>RC Objective B1.1:</u> Identify the County's highest priority agricultural lands that are critical to the County's agricultural economy, prime soils, and water availability, and emphasize higher preservation efforts for these areas.
  - *RC Policy B1.1.1:* Maintain the County's Priority Agricultural Land Model to serve as an information resource in evaluating urban growth and impacts related to the County's agricultural economy and redirect that growth where possible to the lowest priority agricultural land. This model is referenced in Kings County's 2008 Agricultural Land Conversion Study.
  - *RC Policy B1.1.2:* Use the Priority Agricultural Model as a reference for determining potential economic and resource impacts related to the loss of agricultural land resulting from conversion to urban uses.
- <u>RC Objective B1.2:</u> Establish feasible mitigation for the loss of agricultural land conversion that is not over burdensome to landowner and development interests yet enhances long term preservation efforts of the County's highest priority agricultural lands.
  - *RC Policy B1.2.1:* Require new development that results in the loss of agricultural lands to provide mitigation to offset the loss. The County's Farmland Preservation Mitigation Strategy shall require comparable acreage enrollment in the County's Farmland Security Zone.
- <u>RC Objective C1.1:</u> Conserve prime agricultural soils and avoid their conversion to non-agricultural uses.

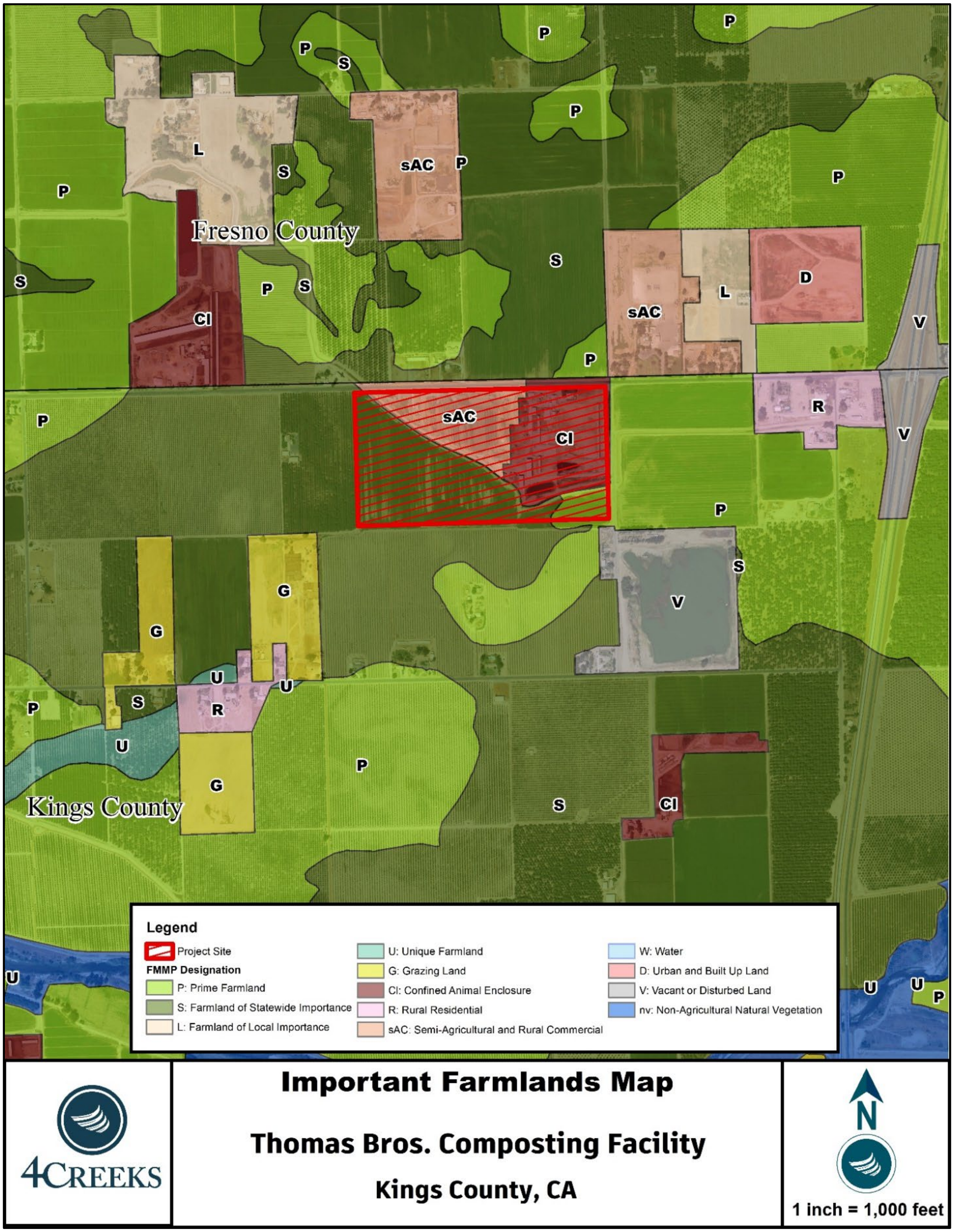


Figure 3-3: Important Farmlands Map

Discussion

a) Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Less Than Significant Impact: The Project Site is currently a bovine feeding facility surrounded by properties under agricultural uses, fallow fields, and some residences. According to the Important Farmland Map, the Site contains Farmland of Statewide Importance, Prime Farmland, Semi-agricultural and Rural Commercial, and Confined Animal Agriculture designations. Implementation of the proposed Project would not result in the conversion of Farmland of Statewide Importance and Prime Farmland because the proposed construction will occur on the land designated as Semi-agricultural and Rural Commercial and Confined Animal Agriculture.

Kings County has an Important Farmland inventory of 670,000 acres. The County categorized 139,212 acres of the Important Farmland inventory as Prime Farmland and 420,422 as Farmland of Statewide Importance. If any aspects of development interfere with the preserved farmland on the Site, the impact will not significantly alter the amount of land held for agriculture and may, at most, temporarily impair the farmland present on the Site. Any impairment to the farmland preserved on this Site would be a small fraction of the available agricultural land in the county. Additionally, implementing existing and proposed 2035 General Plan policies would reduce potential impacts to less than significant.

Although the proposed Site is located on Prime Farmland and Farmland of Statewide Importance, the development follows the 2035 General Plan. Construction will not occur on the portions designated as Prime Farmland and Farmland of Statewide Importance. The Project will follow all existing and proposed 2035 General Plan policies to reduce potential impacts. There is a *less than significant impact.*

b) Would the Project conflict with existing zoning for agricultural use, or a Williamson Act Contract?

Less than significant: The region surrounding the Project Site is dominated by County-Zoned agricultural land, General Agriculture – 20 Acre minimum, including on the Project Site. It will not conflict with this land use, and is not under a Williamson Act Contract. There is *a less than significant impact.*

c) Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned timberland Production (as defined by Government Code section 51104(g)?

No Impact: The Project Site is not zoned for forest or timberland production. Therefore, *no impacts* would occur.

d) Would the Project result in the loss of forestland or conversion of forest land to non-forest use?

No Impact: No conversion of forestland, as defined under the Public Resource Code or General Code, will occur as a result of the Project, and there will be *no impacts*.

e) Would the Project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?

Less than Significant Impact: As discussed above, , the proposed project does not convert Prime Farmland, Unique Farmland, or Farmland of Statewide importance (Farmland) to non-agricultural use.. The Project does not include any features that could result in forestland conversion to non-forest use. There is a *less than significant impact.*

III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable Federal or state ambient air quality standard?	☐	☐	☑	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☑	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☑	☐	☐

Environmental Setting

An Air Quality Analysis was prepared for this Project. It can be found in Appendix A. Air quality is primarily a function of local climate, local sources of air pollution, and regional pollution transport. The amount of a given pollutant in the atmosphere is determined by the amount of the pollutant released and the atmosphere's ability to transport and dilute the pollutant. The significant determinants of transport and dilution are wind, atmospheric stability, terrain, and, for photochemical pollutants, sunshine.

A region's topographic features directly correlate with air pollution flow and therefore are used to determine the boundary of air basins. The proposed Project is in Kings County, within the jurisdiction of the SJVAPCD, which regulates air quality in the San Joaquin Valley Air Basin (SJVAB). The SJVAB comprises approximately 25,000 square miles and covers seven counties: Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. It also covers the western portion of an eighth county, Kern. The SJVAB is defined by the Sierra Nevada mountains in the east (8,000 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The SJVAB is topographically flat with a slight downward gradient to the northwest. The SJVAB opens to the sea at the Carquinez Straits, where the San Joaquin-Sacramento Delta empties into San Francisco Bay. An aerial view of the SJVAB would simulate a "bowl" opening only to the north. These topographic features restrict air movement through and out of the SJVAB.

The State of California (State) and the Federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants. As detailed in Table 3-1, these pollutants include ozone (O3), carbon monoxide (CO), nitrogen dioxide (NO2), sulfur dioxide (SO2), particulate matter less than 10 microns in size (PM10), particulate matter less than 2.5 microns in size (PM2.5), and lead. In addition, the State has set standards for sulfates, hydrogen sulfide (H2S), vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 3-1. Ambient Air Quality Standards; Source: California Air Resources Board (CARB). 2016.

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (03)[8]	1 Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 $\mu g/m^3$)		0.075 ppm (147 $\mu g/m^3$)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	20 $\mu g/m^3$		--		
Fine Particulate Matter ($PM_{2.5}$)[9]	24 Hour	--	Gravimetric or Beta Attenuation	35 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$		15 $\mu g/m^3$		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	--	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	--	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		--	--	
Nitrogen Dioxide (NO2)[10]	1 Hour	0.18 ppm (339 $\mu g/m^3$)	Gas Phase Chemiluminescence	100 ppb (188 $\mu g/m^3$)	--	Gas Phase Annual Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)		53 ppb (100 $\mu g/m^3$)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 $\mu g/m^3$)	Ultraviolet Fluorescence	75 ppb (196 $\mu g/m^3$)	--	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	--		--	0.5 ppm (1300 $\mu g/m^3$)	
	24 Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (for certain areas)[11]	--	
	Annual Arithmetic Mean	--		0.030 ppm (for certain areas)[11]	--	
Lead[12,13]	30 Day Average	1.5 $\mu g/m^3$	Atomic Absorption	--	--	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m3 (for certain areas)[13]	Same as Primary Standard	
	Rolling 3-Month Average	--		0.15 $\mu g/m^3$		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standard		
Sulfates	24 Hour	25 $\mu g/m^3$	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 $\mu g/m^3$)	Gas Chromatography			

1. California standards for O3, CO (except 8-hour Lake Tahoe), SO2 (1- and 24-hour), NO2, and PM (PM10, PM2.5, and visibility-reducing particles) are values that are not to be exceeded. All others are not to be equaled or exceeded. California AAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than for O3 and PM and those based on the annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth-highest 8-hour concentration measured at each Site in a year, averaged over 3 years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than 1. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the USEPA for further clarification and current national policies.
3. Concentration is expressed first in the units in which it was promulgated. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torrs; ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torrs.
4. Any equivalent measurement method that can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. The reference method as described by the USEPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the USEPA.
8. On October 1, 2015, the national 8-hour O3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each Site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each Site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated as Nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated as Nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.
14. In 1989, CARB converted both the general statewide 10 mi visibility standard and the Lake Tahoe 30 mi visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

°C = degrees Celsius
mg/m3 = micrograms per cubic meter
AAQS = ambient air quality standards
CARB = California Air Resources Board
CO = carbon monoxide
mg/m3 = milligrams per cubic meter
SO2 = sulfur dioxide
USEPA = United States Environmental Protection Agency
mi = mile/miles
NO2 = nitrogen dioxide
O3 = ozone
PM10 = particulate matter less than 10 microns in size
ppb = parts per billion
ppm = parts per million
PM = particulate matter
PM2.5 = particulate matter less than 2.5 microns in size

Because the United States Environmental Protection Agency (USEPA) sets the concentration standards at a level that protects public health with an adequate margin of safety, these health effects would not occur unless the standards are exceeded by a large margin or prolonged period. Table 3-2 summarizes the most common health and environmental effects for each of the air pollutants for which there is a National AAQS (NAAQS) or California AAQS (CAAQS), as well as for toxic air contaminants (TACs). CAAQS are typically more stringent than NAAQS. Among the pollutants, O_3 and particulate matter ($PM_{2.5}$ and PM_{10}) are considered pollutants with regional effects, while the others have more localized effects (CARB 2022a).

Table 3-2. Summary of Health and Environmental Effects of the Criteria Air Pollutants; Source: California Air Resources Board (CARB). n.d.-a. Common Air Pollutants.

Pollutant	Effects on Health and the Environment
Ozone (O3)	• Respiratory symptoms • Worsening of lung disease leading to premature death • Damage to lung tissue • Crop, forest, and ecosystem damage • Damage to a variety of materials, including rubber, plastics, fabrics, paint, and metals.
Particulate matter less than 2.5 microns in size ($PM_{2.5}$)	• Premature death • Hospitalization for worsening of cardiovascular disease • Hospitalization for respiratory disease • Asthma-related emergency room visits • Increased symptoms, increased inhaler usage
Particulate matter less than 10 microns size (PM_{10})	• Premature death and hospitalization, primarily for worsening of respiratory disease • Reduced visibility and material soiling
Nitrogen oxides (NO_x)	• Lung irritation • Enhanced allergic responses
Carbon monoxide (CO)	• Chest pain in patients with heart disease • Headache • Light-headedness • Reduced mental alertness
Sulfur oxides (SO_x)	• Worsening of asthma: increased symptoms, increased medication usage, and emergency room visits
Lead	• Impaired mental functioning in children • Learning disabilities in children • Brain and kidney damage
Hydrogen sulfide (H_2S)	• Nuisance odor (rotten egg smell) • At high concentrations: headache & breathing difficulties
Sulfate	• Same as $PM_{2.5}$, particularly worsening of asthma and other lung diseases. • Reduces visibility
Vinyl chloride	• Central nervous system effects (e.g., dizziness, drowsiness, and headaches) • Long-term exposure (i.e., liver damage and liver cancer)
Visibility reducing particles	• Reduced airport safety, scenic enjoyment, road safety, and discourages tourism
Toxic air contaminants (TACs). About 200 chemicals have been listed as TACs.	• Cancer • Reproductive and developmental effects • Neurological effects

The California Clean Air Act (CCAA) allows SJVAPCD and other air districts to manage transportation activities at indirect sources. Indirect sources of pollution include any facility, building, structure, installation, or combination thereof that attracts or generates mobile-source emissions of any pollutant. In addition, area-source emissions that are generated when minor sources collectively emit a substantial amount of pollution are also managed by the local air districts. Examples would be the motor vehicles at an intersection, at a mall, and on highways. SJVAPCD also regulates stationary sources of pollution throughout its jurisdictional area. The California Air Resources Board (CARB) regulates direct emissions from motor vehicles.

Air Pollution Constituents and Attainment Status

The CARB coordinates and oversees both State and Federal air pollution control programs in the State. The CARB oversees the activities of local air quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the USEPA and local air districts. The CARB has divided the State into 15 air basins based on meteorological and topographical air pollution factors. The CARB and USEPA use data collected at these stations to classify air basins as Attainment, Nonattainment, Nonattainment-Transitional, or Unclassified, based on air quality data for the most recent three calendar years compared with the AAQS.

Attainment areas may be the following:

- **Attainment/Unclassified (“Unclassifiable” in Some Lists):** These basins have never violated the air quality standard of interest or do not have enough monitoring data to establish Attainment or Nonattainment status.

- **Attainment-Maintenance (National Ambient Air Quality Standards [NAAQS] Only):** These basins violated a NAAQS that is currently in use (were Nonattainment) in or after 1990 but now attain the standard and are officially redesignated as Attainment by the USEPA with a Maintenance State Implementation Plan (SIP).

- **Attainment (Usually Only for CAAQS, But Sometimes for NAAQS):** These basins have adequate monitoring data to show attainment, have never been Nonattainment, or, for NAAQS, have completed the official Maintenance period.

- **Nonattainment** areas are imposed with additional restrictions as required by the USEPA. The air quality data are also used to monitor progress in attaining air quality standards. Table 3-3 lists the attainment status for the criteria pollutants in the SJVAB.

Toxic Air Contaminants

The public’s exposure to TACs is a significant environmental health issue in the State of California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The Health and Safety Code defines a TAC as “an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health.” In addition, substances which have been listed as federal hazardous air pollutants (HAPs) pursuant to Title 42 United States Code (USC) Section 7412 are TACs under the State's air toxics program pursuant to Section 39657(b) of the California Health and Safety Code. The CARB formally made this identification on April 8, 1993 (Title 17, California Code of Regulations [CCR], Section 93001). Under State law, the California Environmental Protection Agency (CalEPA), acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health.

California regulates TACs primarily through AB 1807 (Tanner Air Toxics Act), AB 2588 (Air Toxics “Hot Spot” Information and Assessment Act of 1987), and Senate Bill (SB) 25 (Children's Environmental Health Protection Act). The Tanner Air Toxics Act sets forth a formal procedure for the CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an “airborne toxics control measure” for sources that emit designated TACs. If there is a safe threshold for a substance for which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions.

Air toxics from stationary sources are also regulated in California under AB 2588. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the designated Air Quality Management District (AQMD) or Air Pollution Control District (APCD). High-priority facilities are required to perform an HRA and, if specific thresholds are exceeded, are also required to communicate the results to the public in the form of notices and public meetings.

To date, the CARB has designated over 200 compounds as TACs. Additionally, the CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel fueled engines (diesel particulate matter [DPM]).

Local Air Quality

The SJVAPCD and the CARB maintain ambient air quality monitoring stations. The air quality monitoring station that monitors air pollutant data closest to the Site is the Hanford-S Irwin Street Monitoring Station, approximately 9 miles southeast of the Project Site. The air quality trends from this station are used to represent the ambient air quality in the Project area. The ambient air quality data in Table 3-4 show that NO_2 levels are below the applicable State and Federal standards. However, annual average concentrations of PM_{10}, $PM_{2.5}$, and O_3 concentrations frequently exceed their respective standards. As CO ambient concentrations have become so low throughout the region, no station near the Project Site monitors CO.

Table 3-3. Air Quality Attainment Status for SJVAB; Source: SJVAPCD Ambient Air Quality Standards & Valley Attainment Status

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone – One hour	Standard Revoked	Nonattainment/Severe
Ozone – Eight hour	Extreme Nonattainment	Nonattainment
PM 10	Attainment (Maintenance)	Nonattainment
PM 2.5	Nonattainment	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Lead	No Designation/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Sulfates	No Federal Regulation	Attainment
Hydrogen Sulfide	No Federal Regulation	Unclassified
Ozone (1-Hour)	Standard Revoked	Severe/Nonattainment

$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

Table 3-4. Air Quality Concentrations in the Project Vicinity; Source: California Air Resource Board (CARB).

Pollutant	Standard	2019	2020	2021
O_3				
Maximum 1-Hour Concentration (ppm)	State: 0.09 ppm	0.093	0.103	0.102
	No. of days exceeded	*0*	*6*	*2*
Max 8-hour concentration (ppm)	State: 0.07 ppm Federal: 0.07 ppm	0.076	0.088	0.095
No. of days exceeded	State:	*13*	*26*	*16*
	Federal:	*13*	*26*	*16*
PM_{10}				
Maximum 24-hour concentration (µg/m^3)	State: 50 µg/m^3 Federal: 150 µg/m^3	211.7	180.4	175.0
No. of days exceeded	State:	*17*	*22*	*146*
	Federal:	*1*	*3*	*2*
	Annual avg. concentration (µg/m^3)	45.2	ND	52.8
Exceeds Standard?	State: 20 µg/m^3	*Yes*	*ND*	*Yes*
$PM_{2.5}$				
Maximum 24-Hour concentration (µg/m^3)	Federal: 35 µg/m^3	48.2	147.2	81.0
	No. of days exceeded	*20*	*52*	*31*
Annual avg. concentration (µg/m^3)	State: 12 µg/m^3 Federal: 12 µg/m^3	12.1	19.8	15.6
NO_2				
Maximum 1-hour concentration (ppb):	State: 180 ppb Federal: 100 ppb	62.9	51.9	51.5
No. of days exceeded	State:	*0*	*0*	*0*
	Federal:	*0*	*0*	*0*
Annual avg. concentration (ppb):	State: 30 ppb Federal: 53 ppb	8	8	8
Exceeds Standard?	State:	*No*	*No*	*No*
	Federal:	*No*	*No*	*No*

Note: Pollutant concentration data from the Hanford-S Irwin Street Monitoring Station in Hanford, California.

µg/m3 = micrograms per cubic meter
ND = No data available
NO2 = nitrogen dioxide
O3 = ozone
PM2.5 = particulate matter smaller than 2.5 microns in size
PM10 = particulate matter smaller than 10 microns in size
ppb = parts per billion
ppm = parts per million

Sensitive Receptors and Land Uses in the Project Vicinity: Sensitive receptors include residences such as private homes, condominiums, apartments, living quarters, schools, preschools, daycare centers, in-home daycares, health facilities (e.g., hospitals, long-term care facilities, retirement, and nursing homes), community centers, places of worship, parks (excluding trails), prisons, and dormitories. Farming uses surround the Site. The nearest sensitive receptor to the Project Site is a single-family residence located across Excelsior Avenue, approximately 170 feet to the north (measured from the Project Site boundary to the identified residential building).

Regulatory Setting

Federal Regulations

The 1970 Federal Clean Air Act (CAA) authorized the establishment of national health-based air quality standards and set deadlines for their attainment. The CAA Amendments of 1990 changed deadlines for attaining national standards and the remedial actions required for areas of the nation that exceed the standards. Under the CAA, State and local agencies in areas that exceed the national standards must develop SIPs to demonstrate how they will achieve the national standards by specified dates.

State Regulations

In 1988, the California Clean Air Act (CCAA) required that all air districts in the State endeavor to achieve and maintain CAAQS for CO, O_3, SO_2, and NO_2 by the earliest practical date. The CCAA allows districts to regulate indirect sources and mandates that air quality districts focus on reducing emissions from transportation and area-wide emission sources. Each nonattainment district must adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan shows how a district would reduce emissions to achieve air quality standards. Generally, the State standards for these pollutants are more stringent than the national standards.

The CARB is the State's "clean air agency." The CARB's goals are to attain and maintain healthy air quality, protect the public from exposure to toxic air contaminants, and oversee compliance with air pollution rules and regulations.

Regional Regulations

San Joaquin Valley Air Pollution Control District. The SJVAPCD has specific air quality-related planning documents, rules, and regulations. This section summarizes the local planning documents and regulations that may apply to the proposed Project as administered by the SJVAPCD with California Air Resources Board (CARB) oversight.

- ***Rule 2280—Portable Equipment Registration.*** Portable equipment used at Project Sites for less than six consecutive months must be registered with the SJVAPCD. The SJVAPCD will issue the registrations 30 days after receipt of the application.
- ***Rule 4201 and Rule 4204—Particulate Matter Concentration and Emission Rates.*** Rule 4201 and Rule 4202 apply to operations that emit or may emit dust, fumes, or total suspended particulate matter.
- ***Rule 4622—Gasoline Transfer Into Motor Vehicle Fuel Tanks.*** Rule 4622 applies to any gasoline storage and dispensing operation or mobile fueler from which gasoline is transferred into motor vehicle fuel tanks. The purpose of this rule is to limit emissions of gasoline vapors from the transfer of gasoline escaping into the atmosphere; vapor recovery systems would be implemented to reduce the release of volatile organic compounds.
- ***Rule 4566— Organic Material Composting Operations.*** Rule 4566 limits emissions of volatile organic compounds (VOCs) from composting operations.
- ***Rule 8011—General Requirements: Fugitive Dust Emission Sources.*** Fugitive dust regulations are applicable to outdoor fugitive dust sources. Operations, including construction operations, must control fugitive dust emissions in accordance with SJVAPCD Regulation VIII. According to Rule 8011, the SJVAPCD requires the implementation of control measures for fugitive dust emission sources. For Projects in which construction-related activities would disturb equal to or greater than 1 acre of surface area, the SJVAPCD recommends that demonstration of receipt of an SJVAPCD-approved Dust

Control Plan or Construction Notification Form before issuance of the first grading permit be made a condition of approval.

Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI). The SJVAPCD prepared the GAMAQI to assist lead agencies and Project applicants in evaluating the potential air quality impacts of Projects in the SJVAB. The GAMAQI provides SJVAPCD-recommended procedures for evaluating potential air quality impacts during the CEQA environmental review process. The GAMAQI guides evaluating short-term (construction) and long-term (operational) air emissions. The most recent version of the GAMAQI, adopted on March 19, 2015, was used in this evaluation. It contains guidance on the following:

- Criteria and thresholds for determining whether a Project may have a significant adverse air quality impact;
- Specific procedures and modeling protocols for quantifying and analyzing air quality impacts;
- Methods to mitigate air quality impacts; and
- Information for air quality assessments and environmental documents, including air quality, regulatory setting, climate, and topography data.

2035 Kings County General Plan: The 2035 General Plan *Air Quality Element* includes the following goals, objectives, and policies, which reduce impacts associated with air quality that relate to the proposed Project:

- ❖ **AQ Goal C1: Use Air Quality Assessment and Mitigation programs and resources of the SJVAPCD and other agencies to minimize air pollution, related public health effects, and potential climate change impacts within the County.**
  - ➢ <u>AQ Objective C1.1:</u> Accurately assess and mitigate potentially significant local and regional air quality and climate change impacts from proposed Projects within the County.
    - ▪ *AQ Policy C1.1.1:* Assess and mitigate Project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD.
    - ▪ *AQ Policy C1.1.3:* Ensure that air quality and climate change impacts identified during CEQA review are minimized, consistently, and reasonably mitigated at a minimum, to levels as required by CEQA.
    - ▪ *AQ Policy C1.1.6:* Encourage and support the development of innovative and effective mitigation measures and programs to reduce air quality and climate change impacts through proactive coordination with the SJVAPCD, Project applicants, and other knowledgeable and interested parties.

- ❖ **AQ Goal F1: Minimize exposure of the public to hazardous air pollutant emissions, particulates and noxious odors from freeways, major arterial roadways, industrial, manufacturing, and processing facilities.**
  - ➢ <u>AQ Objective F1.1:</u> Locate adequate Sites for industrial development and roadway Projects away from existing and planned sensitive land uses which minimize or avoid potential health risks to people that might result from hazardous air pollutant emissions.
    - ▪ *AQ Policy F2.1.1:* Coordinate with the SJVAPCD to ensure that construction, grading, excavation, and demolition activities within County's jurisdiction are regulated and controlled to reduce particulate emissions to the maximum extent feasible.
    - ▪ *AQ Policy F2.1.2:* Require all access roads, driveways, and parking areas serving new commercial and industrial development are constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.

Discussion

Thresholds of Significance

Certain air districts (e.g., SJVAPCD) have created guidelines and requirements for air quality analyses. SJVAPCD's current guidelines, the *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (SJVAPCD 2015) was, followed in this assessment of air quality and climate impacts for the proposed Project.

Based on the *State CEQA Guidelines*, Appendix G (Public Resources Code Sections 15000–15387), a Project would normally be considered to have a significant effect on air quality if the Project would violate any CAAQS, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutants concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

The SJVAPCD defines a threshold of significance in its *GAMAQI as* an identifiable quantitative, qualitative, or performance level of a particular environmental effect. Compliance with a threshold of significance means the effect normally will be determined to be less than significant. Non-compliance with a threshold of significance means the effect will normally be determined to be significant. The SJVAPCD has established thresholds of significance for criteria pollutant emissions generated during the construction and operation of the Project, as shown in Table 3-5 below.

Table 3-5. Regional Thresholds for Construction and Operational Emissions; Source: SJVAPCD 2015. Guidance for Assessing and Mitigating Air Quality Impacts.

Emissions Source	Pollutant Emissions Thresholds (tons/year)					
	VOCs	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Construction	10	10	100	27	15	15
Operations	10	10	100	27	15	15

CO = carbon monoxide
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SJVAPCD = San Joaquin Valley Air Pollution Control District
SO_X = sulfur oxides
VOCs = volatile organic compounds

The emissions thresholds in the SJVAPCD GAMAQI were established based on the attainment status of the air basin regarding air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety, these emission thresholds are considered conservative. They would overstate an individual Project's contribution to health risks.

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

No Impact: Air pollutant emissions associated with the Project would occur over the short term from construction activities and over the long term from Project-related vehicular trips and due to energy consumption (e.g., electricity and natural gas usage) by the proposed land uses.

Consistency with Applicable Air Quality Plans: Consistency determination plays an essential role in local agency Project review by linking local planning and unique individual Projects to the air quality plans. A consistency determination fulfills the CEQA goal of fully informing local agency decision-makers of the environmental costs of the Project under consideration at a stage early enough to ensure that air quality concerns are addressed. Only new or amended General Plan elements, Specific Plans, and significantly unique Projects need to undergo a consistency review due to the air quality plan strategy being based on Projections from local General Plans.

An air quality plan describes air pollution control strategies implemented by a city, county, or region classified as a non-attainment area. The primary purpose of the air quality plan is to bring the area into compliance with the requirements of Federal and State air quality standards. To bring the SJVAB into attainment, the SJVAPCD has developed the 2013 Plan for the Revoked 1-Hour Ozone Standard (Ozone Plan), adopted on September 19, 2013 (SJVAPCD 2013a). The SJVAPCD also adopted the 2016 Plan for the 2008 8-Hour Ozone Standard in June 2016 to satisfy Clean Air Act requirements and ensure the attainment of the 75 parts per billion (ppb) 8-hour ozone standard (SJVAPCD 2016). The SJVAPCD adopted the 2020 RACT Demonstration for the 2015 8-Hour Ozone Standard (SJVAPCD 2020) on June 18, 2020.

SJVAPCD Regulation VIII (Fugitive PM10 Prohibitions) is designed to reduce PM10 emissions from human activity. To assure the SJVAB's continued attainment of the USEPA PM10 standard, the SJVAPCD adopted the 2007 PM10 Maintenance Plan in September 2007 (SJVAPCD 2007). The SJVAPCD adopted the 2018 Plan for 1997, 2006, and 2012 $PM_{2.5}$ standards in November 2018 to address the USEPA 1997 annual $PM_{2.5}$ standard of 15 micrograms per cubic meter ($\mu g/m_3$) and 24-hour $PM_{2.5}$ standard of 65 $\mu g/m_3$, the 2006 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$, and the 2012 annual $PM_{2.5}$ standard of 12 $\mu g/m^3$ (SJVAPCD 2018).

CEQA requires that certain proposed Projects be analyzed for consistency with the applicable air quality plan. For a Project to be consistent with SJVAPCD air quality plans, the pollutants emitted from a Project should not exceed the SJVAPCD emission thresholds or cause a significant impact on air quality. In addition, emission reductions achieved through the implementation of offset requirements constitute a significant component of the SJVAPCD air quality plans. As discussed below, the construction of the proposed Project would not generate criteria air pollutants that would exceed SJVAPCD thresholds of significance. Implementation of Regulatory Compliance Measure AQ-1 would further reduce construction dust impacts. Operational emissions associated with the proposed Project would also not exceed SJVAPCD-established significance thresholds. Therefore, the proposed Project would not conflict with or obstruct the implementation of SJVAPCD air quality plans, and there is *No Impact.*

b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable Federal or state ambient air quality standard?

Less Than Significant Impact: The SJVAB is designated as nonattainment for O_3 and $PM_{2.5}$ for Federal standards and nonattainment for O_3, PM_{10}, and $PM_{2.5}$ for State standards. The SJVAB's nonattainment status is attributed to the region's development history. Past, present, and future development Projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is essentially a cumulative impact. No single Project is sufficient in size to, by itself, result in nonattainment of AAQS. Instead, a Project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a Project's contribution to the cumulative impact is considerable, then the Project's impact on air quality would be considered significant.

In developing significance thresholds for air pollutants, SJVAPCD considered the emission levels for which a Project's individual emissions would be cumulatively considerable. If a Project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts on the region's existing air quality conditions.

Construction Emissions. Construction activities produce combustion emissions from various sources (e.g., utility engines, tenant improvements, and motor vehicles transporting the construction crew). Exhaust emissions from construction activities envisioned on Site would vary daily as construction activity levels change.

The construction analysis includes estimating the construction equipment that would be used during each construction activity, the hours of use for that construction equipment, the quantities of earth and debris to be moved, and the on-road vehicle trips (e.g., worker, soil-hauling, and vendor trips). California Emissions Estimator Model (CalEEMod) defaults are assumed for the construction activities, off-road equipment, and on-road construction fleet mix and trip lengths. Table 3-6 lists the tentative Project construction schedule. It is expected that the construction of the Project will start in July 2025.

Table 3-6. Tentative Project Construction Schedule; Source: Estimated by LSA from the Project information provided.

Phase Name	Phase Start Date	Phase End Date	Number of Days
Site Preparation	7/15/2025	8/9/2025	20
Grading	8/12/2025	10/18/2025	45
Building Construction	10/21/2025	3/7/2026	100
Architectural Coating	3/10/2026	4/4/2026	20

The most recent version of CalEEMod (Version 2022.1) was used to develop the construction equipment inventory and calculate the construction emissions. Table 3-7 lists the estimated construction equipment used during Project construction as estimated by CalEEMod default values. The CalEEMod output is included in Appendix A.

Table 3-7. Diesel Construction Equipment Used by Construction Phase; Source: Compiled by LSA, using CalEEMod defaults.

Construction Phase	Off-Road Equipment Type	Off-Road Equipment Unit Amount	Hours Used per Day	Horsepower	Load Factor
Site Preparation	Rubber-Tired Dozers	3	8	367	0.40
	Tractors/Loaders/Backhoes	4	8	84	0.37
Grading	Graders	1	8	148	0.41
	Scrapers	2	8	423	0.48
	Excavators	2	8	36	0.38
	Tractors/Loaders/Backhoes	2	8	84	0.37
	Rubber-Tired Dozers	1	8	367	0.40
Building Construction	Forklifts	3	8	82	0.20
	Generator Sets	1	8	14	0.74
	Cranes	1	7	367	0.29
	Welders	1	8	46	0.45
	Tractors/Loaders/Backhoes	3	7	84	0.37
Architectural Coating	Air Compressors	1	6	37	0.48

The emissions rates shown in Table 3-8 are from the CalEEMod output tables and combine the on- and off-site emissions and the greater summer and winter emissions. No exceedances of any criteria pollutants are expected.

Table 3-8. Short-Term Regional Construction Emissions; Source: Compiled by LSA, Appendix A

Construction Phase	**Total Regional Pollutant Emissions (tons/year)**							
	VOCs	**NOx**	**CO**	**SOx**	**PM_{10}**		**$PM_{2.5}$**	
					Fugitive	**Exhaust**	**Fugitive**	**Exhaust**
Site Preparation	0.04	0.40	0.35	<0.005	0.20	0.02	0.10	0.02
Grading	0.08	0.84	0.71	<0.005	0.25	0.04	0.08	0.03
Building Construction	0.06	0.59	0.65	<0.005	<0.005	0.03	<0.005	0.03
Architectural Coating	0.05	0.01	0.01	<0.005	<0.005	<0.005	<0.005	<0.005
Peak Annual	**0.19**	**1.83**	**1.77**	**<0.005**	**0.49**		**0.26**	
SJVAPCD Threshold	**10**	**10**	**100**	**27**	**15**		**15**	
Exceeds Thresholds?	**No**	**No**	**No**	**No**	**No**		**No**	

Note: It was assumed that the architectural coatings were applied during the construction and paving phases.

CO = carbon monoxide
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

SJVAPCD = San Joaquin Valley Air Pollution Control District
SO_x = sulfur oxides
VOCs = volatile organic compounds

Water or other soil stabilizers can be used to control dust, reducing emissions by 50 percent or more. The SJVAPCD has implemented Regulation VIII measures for reducing fugitive dust emissions (PM_{10}). With the implementation of Regulation VIII measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

Regulatory Compliance Measure AQ-1 would ensure that the proposed Project complies with Regulation VIII and ensures the short-term construction period of air quality impacts.

Table 3-8 shows that construction emissions associated with the Project would not exceed the significance criteria for annual VOCs, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions. Therefore, the proposed Project's construction would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable Federal or State AAQS.

Long-Term Operational Emissions. Long-term air pollutant emission impacts are those associated with mobile sources (e.g., vehicle trips), energy sources (e.g., electricity and natural gas), and area sources (e.g., architectural coatings and the use of maintenance equipment) related to the composting facility and truck wash.

PM_{10} emissions result from running exhaust, tire, and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. Entrainment of PM_{10} occurs when vehicle tires pulverize small rocks and pavement, and the vehicle wakes to generate airborne dust. The contribution of tire and brake wear is small compared to the other PM emission processes. Gasoline-powered engines have low rates of particulate matter emissions compared with diesel-powered vehicles.

Energy source emissions result from activities in buildings for which electricity and natural gas are used. The quantity of emissions is the product of usage intensity (i.e., the amount of electricity or natural gas) and the emission factor of the fuel source. Major sources of energy demand for the proposed Project could include building mechanical systems, such as heating, air conditioning, and lighting. Area source emissions associated with the Project would include emissions from composting equipment.

Emission estimates for the Project's operation were calculated using CalEEMod and are shown in Table 3-9 below. For evaluating the composting facility and truck wash, the air district in CalEEMod was specified as the SJVAPCD, the locational context set to rural, and the operational year set to 2024. Based on the Project location, CalEEMod assumed a wind speed of 3.5 meters per second and a precipitation frequency of 22.2 days per year. The utility company for the region was selected as Pacific Gas & Electric Company (PG&E).

Table 3-9. Project Operation Emissions; Source: Compiled by LSA, Appendix A

Source Category	VOCs	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Area Source Emissions	0.1	<0.005	0.08	<0.005	<0.005	<0.005
Energy Source Emissions	<0.005	0.04	0.03	<0.005	<0.005	<0.005
Mobile Source Emissions	0.06	0.12	0.67	<0.005	0.06	0.01
On-Site Equipment	0.06	0.68	1.09	<0.005	0.03	0.03
Total Project Emissions	**0.22**	**2.84**	**1.87**	**<0.005**	**0.09**	**0.04**
SJVAPCD Significance Threshold	**10**	**10**	**100**	**27**	**15**	**15**
Exceeds Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

CO = carbon monoxide
NOX = nitrogen oxides
PM2.5 = particulate matter less than 2.5 microns in size
PM10 = particulate matter less than 10 microns in size

SJVAPCD = San Joaquin Valley Air Pollution Control District
SO_x = sulfur oxides
VOCs = volatile organic compounds

It was assumed that the equipment used for the composting operations would be represented by two each of the CalEEMod categories of “tractor/loader/backhoe” and “other material handling equipment.” To be conservative, CalEEMod assumed that all four would be diesel-powered.

As described in the Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum (LSA 2023), the composting facility would have approximately 20 service/delivery trucks daily from September through December and an average of 10 trucks per day for the remaining year. In addition, the facility is estimated to have approximately five visitors on a typical weekday. The truck wash facility is for internal use only. As such, this service will be provided only to the trucks owned and operated by the composting facility and not to outside customers. Also, based on the operational statement, the Project is estimated to have a maximum number of 10 employees in total for both facilities. This would make a maximum of 70 trips per day.

The CalEEMod analysis assumed the Site would operate as General Light Industrial. Where Project-specific data were unavailable, default assumptions (i.e., energy usage, water usage, and solid waste generation) from CalEEMod were used to estimate Project emissions.

The primary emissions associated with the Project are regional, meaning that air pollutants are rapidly dispersed on the release or, in the case of vehicle emissions associated with the Project, emissions are released in other areas of the SJVAB. The annual emissions associated with Project operational trip generation, energy, and area sources are identified in Table 3-9 for VOCs, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$.

The results shown in Table 3-9 indicate the Project would not exceed the significance criteria for daily VOCs, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ emissions; therefore, the operation of the proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in nonattainment under an applicable Federal or State AAQS. CalEEMod results listing the details of the emissions results are provided (Appendix A).

Neither the construction nor operation of the Project will have a long-term impact on any criteria pollutant. The impact is *less than significant.*

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact: The nearest sensitive receptor to the Project Site is a single-family residence across Excelsior Avenue, approximately 170 feet north (measured from the Project Site boundary to the identified residential building). LSA prepared a Health Risk Assessment (Appendix I) for this Project.

Thresholds

Both the State and federal governments have established health-based ambient air quality standards (AAQS) for seven air pollutants. For other air pollutants without defined significance standards, the definition of substantial pollutant concentrations varies. For TACs, "substantial" is taken to mean that the individual health risk exceeds a threshold considered to be a prudent risk management level.

The following limits for maximum individual cancer risk (MICR) and non-cancer acute and chronic Hazard Index (HI) from project emissions of TACs are considered appropriate for use in determining the health risk for projects in the Basin:

- **MICR**: MICR is the estimated probability of a maximally exposed individual (MEI) contracting cancer as a result of exposure to TACs over a period of 70 years for adults and 9 years for children in residential locations, 350 days per year. The MICR calculations include multipathway consideration, when applicable. The SJVAPCD's *Update to the District's Risk Management Policy to Address the OEHHA Revised Risk Assessment Guidance Document* states that emissions of TACs are considered significant if an HRA shows an increased risk of greater than 20 in 1 million (SJVAPCD 2015b). Thus, the cumulative increase in MICR that is the sum of the calculated MICR values for all TACs would be considered significant if it would result in an increased MICR greater than 20 in 1 million (2.0 x 10-5) at any receptor location.
- **Chronic HI:** Chronic HI is the ratio of the estimated long-term level of exposure to a TAC for a potential MEI to its chronic reference exposure level. The chronic HI calculations include multipathway consideration, when applicable. The project would be considered significant if the cumulative increase in total chronic HI for any target organ system would exceed 1.0 at any receptor location.
- **Acute HI:** Acute HI is the ratio of the estimated maximum 1-hour concentration of a TAC for a potential MEI to its acute reference exposure level. The project would be considered significant if the cumulative increase in total acute HI for any target organ system would exceed 1.0 at any receptor location.

The SJVAPCD Governing Board first adopted thresholds for land use projects in 1995 in the *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (2015a). The GAMAQI was revised in 2002 and 2015 but retained the original health risk thresholds. The previous TAC threshold of 10 in 1 million was revised to 20 in 1 million with the update to the SJVAPCD Risk Management Policy effective July 1, 2015.

Emission Sources

It is estimated that the facility would have approximately 20 service/delivery trucks per day during the months of September through December, and an average of 10 trucks per day for the remainder of the year. In addition, the facility would have approximately five visitors on a typical weekday. Based on the operational statement, the proposed project would have a maximum number of 10 employees in total for project operations. Thus, the proposed project would generate a total of 70 daily trips, with up to 50 truck trips per day (LSA 2023). The trucks would access the site via Excelsior Avenue. The operational hours for the truck wash facility would be 8:00 a.m. to 8:00 p.m., Monday through Saturday. The truck wash facility would be for internal use only, and service would only be provided to vehicles that are owned and operated by the composting facility. While the TAC emissions from gasoline-powered vehicles have a small health effect compared to DPM, this HRA includes both gasoline- and diesel-powered vehicle emissions. For the diesel exhaust emissions, it is sufficient to only consider the DPM (particulate matter less than 10 microns in diameter [PM10] and particulate matter less than 2.5 microns in diameter [PM2.5]) portions of the exhaust. All the TACs for the gasoline exhaust emissions are contained in the reactive organic gas.

Acute Project-Related Emission Impacts

Exposure to TACs from vehicle exhaust can result in immediate health effects. According to the EPA's *Learn About Impacts of Diesel Exhaust and the Diesel Emissions Reduction Act (DERA)* website exposure to diesel exhaust can lead to serious health conditions like asthma and respiratory illnesses and can worsen existing heart and lung disease, especially in children and the elderly. According to the CARB's *Overview: Diesel Exhaust & Health* website in 2012, additional studies on the cancer-causing potential of diesel exhaust published since CARB's determination led the International Agency for Research on Cancer (IARC, a division of the World Health Organization) to list diesel engine exhaust as "carcinogenic to humans". Emissions from gasoline-powered vehicles do contain TACs with short-term acute health effects.

The Acute HI is the ratio of the average short-term (generally 1-hour) ambient concentration of an acutely toxic substance(s) divided by the acute reference exposure level set by the OEHHA. This ratio is repeated for every acutely toxic substance, and all are summed to derive the overall Acute HI. If this Acute HI is above 1, then adverse health effects may occur. Using the modeling methods described above for the project, Table 3-10 shows the maximum acute health risks to residents and workers near the proposed project.

Table 3-10. Health Risk Levels for Nearby Residents and Workers; Source: Compiled by LSA, Appendix I

Location	Maximum Cancer Risk	Maximum Non-Cancer Risk	
		Chronic HI	Acute HI
MEI Resident	3.7 in 1 million	0.0007	0.00002
MEI Worker	0.30 in 1 million	0.0010	0.00005
SJVAPCD Significance Threshold	*20 in 1 million*	*1.0*	*1.0*
Significant?	**No**	**No**	**No**

HI = Hazard Index
MEI = Maximally Exposed Individual
SJVAPCD = San Joaquin Valley Air Pollution Control District

As shown in Table 3-10, the Acute HI would be 0.00002 or less for the residential MEI and 0.00005 or less for the worker MEI. Both are less than the threshold of 1.0. Acute impacts are a result of exposure to contaminant concentrations at extremely high levels. As demonstrated by the results of the analysis (Appendix I), air dispersion between the emission sources and the receptor locations would substantially limit contaminant concentrations to the extent that a significant acute risk would not occur.

Carcinogenic and Chronic Project-Related Emission Impacts

The carcinogenic and chronic health risks from the proposed project are also shown in Table 3-10. The resident risk levels shown apply to a child living in a residence for 9 years and to an adult living in a residence for 70 years. For the residential MEI, which is the residence just across Excelsior Avenue from the project site, the carcinogenic health risk level would be 3.7 in 1 million or less, which is less than the threshold of 20 in 1 million. Figure 5 shows the risk level isopleth for this residential assessment. For the MEI worker receptor, which is a worker in the project's office, the maximum cancer risk would be 0.30 in 1 million, also less than the threshold of 20 in 1 million. Figure 6 shows the risk level isopleth for this worker assessment. The Chronic HI for both would be 0.0007 and 0.0010 or less for the MEI resident and MEI worker, respectively. Both are less than the threshold of 1.0.

Neither child nor adult residents living near the proposed project nor workers at workplaces near the proposed project would be exposed to carcinogenic, Chronic HI, or Acute HI risks that exceed applicable significance thresholds. The impact is *less than significant.*

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact With Mitigation: The SJVAPCD addresses odor criteria within the GAMAQI. The district has not established a rule or standard regarding odor emissions. Instead, the district has a nuisance rule: “Any Project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact.”

During Project construction, some odors may be present due to diesel exhaust. However, these odors would be temporary and limited to the construction period. Once operational, there would be odors associated with the composting operations. The nearest sensitive receptor is located approximately 170 feet from the proposed windrows, which could result in the exposure of odor emissions that could adversely affect people in the Project vicinity. To minimize odor impacts on off-site receptors, Mitigation Measure AQ-2 and AQ-3 shall be implemented.

Implementation of these measures will manage odors from Project operations. Therefore, with the implementation of Mitigation Measures AQ-2 and AQ-3, the proposed Project would not result in other emissions (such as those leading to odors) adversely affecting many people.

Mitigation Measures:

Mitigation Measure AQ-1: Consistent with San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII (Fugitive particulate matter less than 10 microns in size [PM10] Prohibitions), the following controls are required to be included as specifications for the proposed Project and implemented at the construction Site:

- All disturbed areas, including storage piles not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, and covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/ suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing the application of water or by presoaking.
- When materials are transported off-site, all material shall be covered or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)

- Following the addition of materials to, or the removal of materials from, the surface of out-door storage piles, said piles should be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.

Mitigation Measure AQ-2: The Project applicant shall incorporate the following operational practices into the composting operations:

- Coarse, dry bulking agents shall be added to any incoming materials that are anaerobic and odorous to increase porosity and reduce moisture in the materials;
- Windrows and piles shall be turned to redistribute the moisture and provide aeration to maintain even temperatures; and
- Windrows shall be sized uniformly to facilitate oxygen diffusion and natural air convection.

Mitigation Measure AQ-3: To mitigate potential odor impacts from the Thomas Bros. Composting Facility, an Odor Management Plan (OMP) shall be implemented. The OMP outlines procedures to manage and reduce odors generated by composting operations, storage, and transportation activities. This plan is designed to minimize the impact of odors on surrounding communities and receptors. The OMP is provided in Appendix K and is summarized below:

Facility Operations and Maintenance:

- Implement and adhere to the standard operating procedures for compost management, treatment, storage, and transportation as detailed in the OMP.
- Ensure the private truck wash facility is maintained with a concrete surface and proper drainage systems to channel and redirect runoff wastewater, preventing standing water and associated odors.

Odor Control Measures:

- Minimize moisture levels in stored compost to prevent anaerobic conditions that can produce odors.
- Use coarse, dry bulking agents for anaerobic and odorous incoming materials to increase porosity and reduce moisture.
- Maintain uniformly sized and regularly turned windrows to redistribute moisture, provide aeration, and maintain even temperature for natural air convection.
- Clean up compost spills immediately to prevent odor generation.
- Maintain the wastewater retention pond to prevent solids buildup and associated odors.

Dust and Odor Suppression:

- Implement dust suppression measures to prevent the release of odorous compounds in fugitive dust.
- Avoid the export/import of dry manure or the application of water during windy conditions to minimize odor dispersion.

Odor Complaint Response:

- Maintain an odor complaint register (Attachment A of Appendix K) to document and respond to odor complaints from neighbors. This register shall include details of each complaint, actions taken to determine the cause, actions taken to resolve the odor problem, results of these actions, and any additional measures required to prevent recurrence.
- Provide the odor complaint register to code compliance personnel upon request.

The Odor Management Plan shall be implemented prior to the commencement of composting operations and shall be maintained throughout the life of the facility.

IV. BIOLOGICAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish & Game or U.S. fish and Wildlife Service?	☐	☑	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☑
c) Have a substantial adverse effect on state or Federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through director removal, filling, hydrological interruption, or other means?	☐	☐	☐	☑
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery Sites?	☐	☐	☑	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation Action Plan or ordinance?	☐	☐	☐	☑
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

Discussion for this section originates from Live Oak Associates, Inc.'s Biological Evaluation prepared for this Project to identify sensitive biological resources, provide Project impact analysis, and recommend mitigation measures. The Biological Evaluation provides information about the biological resources within the Project area. Appendix B contains the entire Biological Report.

Environmental Setting

The Project Site is in the San Joaquin Valley in Kings County, southeast of the Community of Riverdale. It is on the south side of W. Excelsior Avenue, west of 20th Avenue, on the border of Kings County and Fresno County. The Project Site is approximately 0.7 miles west of State Route (SR) 41 and 9 miles north of State Route (SR) 198. The Site is in the Riverdale U.S. Geological Survey (USGS) 7.5-minute quadrangle in Section 35, Township 18 South, Range 20 East, at an elevation of approximately 230 feet above mean sea level.

Land use in the area is agricultural. The Project Site contains an operational bovine feedlot facility, associated equipment, , and one residence. The Project Site has experienced decades of agricultural development, including row crop production for roughly 20 years, and has transitioned to primarily dairy operations. Surrounding the Site are almond orchards and farm housing to the west; almond orchards, farm housing, and irrigation ponds to the south; row crops, almond orchards and commercial uses to the east; and row crops, almond orchards, and farm housing to the north. The area's topography is flat, approximately 230 feet above mean sea level, with one aquatic feature, the East Canal, on the southern boundary of the Project Site. The region is generally dominated by agricultural land uses, with most areas indicating decades of intensive agricultural disturbance.

The Site's ruderal habitat is generally unsuitable for special-status animals and entirely unsuitable for special-status plants but still has the potential to support various native wildlife species. Due to the disturbed and compacted nature of the ground from agricultural activities, there is little herbaceous vegetation or observable seed bank for native plant species. There were active small mammal burrows on the Site, likely inhabited by the California ground squirrel (Otospermophilus beecheyi), Botta's pocket gopher (Thomomys bottae), the Deer mouse (Peromyscus maniculatus), Western harvest mouse (Reithrodontomys megalotis), or the Norway rat (Rattus norvegicus). The two soil types on the Project Site have no hydric rating, meaning they do not tend to pond water and form vernal pools. Therefore, there is no potential for special-status aquatic species inhabiting vernal pools to occur directly on the Project Site.

Additionally, the soils on the Project Site have been substantially altered due to a long history of agricultural activities. This results in the Site not exhibiting native soil characteristics and having any significance to biological resources on and near the Project Site.

Before performing a Site reconnaissance, Live Oak Associates conducted a records search for threatened or endangered species that could potentially occur in the vicinity of the Project Area. The records search included a review of the California Natural Diversity Database (CNDDB), the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Vascular Plants of California, and manuals, reports, and references of plants and animals of the San Joaquin Valley. In addition, Live Oak Associates utilized historical aerial photography to analyze the Project Site conditions before construction. A complete list of special-status species with the potential to occur on the Project Site is in Table 3-11.

No special-status plant or wildlife species were observed during the Site survey. However, three special-status bird species could potentially occur on the Project Site to forage, but the Project Site and vicinity are largely unsuitable breeding habitats for these species. While no special-status species were observed during the reconnaissance survey, the Project Site contains potentially suitable habitats or conditions for the following species:

Species with Moderate Potential for Occurrence:

- Tricolored blackbird (*Agelaius tricolor*)
- Loggerhead shrike (*Lanius ludovicianus*)

Species with High Potential for Occurrence:

- Swainson's hawk (Buteo swainsoni)

Species Name	Species Observed on Project Site	Suitable Habitat on Project Site
Amphibians		
California Tiger Salamander (*Ambystoma californiense*)	No	No
Western spadefoot *(Spea hammondii)*	No	No
Birds		
Burrowing owl *(Athene cunicularia)*	No	No
Loggerhead shrike *(Lanius ludovicianus)*	No	No (May Forage on Site)
Swainson's hawk (*Buteo swainsoni*)	No	No (May Forage on Site, present 0.25 miles away)
Tricolored blackbird (Agelaius tricolor)	No	No (May Forage on Site)
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	No	No
Invertebrates		
Crotch bumble bee (*Bombus crotchii*)	No	No
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	No	No
Mammals		
Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)	No	No
San Joaquin kit fox (*Vulpes macrotis mutica*)	No	No
Tipton kangaroo rat (Dipodomys nitratoides nitratoides)	No	No
Reptiles		
California glossy snake *(Arizona elegans occidentalis)*	No	No
Giant Garter Snake (*Thamnophis gigas)*	No	No
Plants		
Brittlescale *(Atriplex depressa)*	No	No
Lesser saltscale *(Atriplex minuscula)*	No	No
Alkali-sink goldfields *(Lasthenia chrysantha)*	No	No
Panoche peppergrass *(Lepidium jaredii* ssp. *album)*	No	No
California alkali-grass *(Puccinellia simplex)*	No	No

Table 3-11: Special Status Species Records Search Findings

Regulatory Setting

Federal Endangered Species Act (FESA): The Federal ESA protects plants and animals listed as endangered or threatened by USFWS and the National Marine Fisheries Service (NMFS). Section 9 of the ESA prohibits the taking of listed wildlife, where take is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs “removing, possessing, maliciously damaging, or destroying any listed plant on Federal land and removing, cutting, digging up, damaging, or destroying any listed plant on non-Federal land in knowing violation of state law” (16 U.S. Code [USC] 1538). Under Section 7 of ESA, Federal agencies are required to consult with USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its Critical Habitat (see definition of Critical Habitat below). Through consultation and the issuance of a biological opinion (BO), the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity, provided the activity will not jeopardize the continued existence of the species. Section 10 of ESA provides for issuance of incidental take permits where no other Federal actions are necessary provided a habitat conservation plan (HCP) is developed.

The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712): The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in §§ 3800, 3513, and 3503.5 of the California Fish and Game Code.

Birds of Prey (CA Fish and Game Code Section 3503.5): Sections 3800, 3513, and 3503 of the California Fish and Game Code specifically protect birds of prey. Section 3800 states that it is unlawful to take nongame birds, such as those occurring naturally in California, that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the commission or a mitigation plan approved by CDFW for mining operations. Section 3513 prohibits explicitly the take or possession of any migratory nongame bird as designated in the MBTA. Section 3503 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Additionally, Subsection 3503.5 prohibits the take, possession, or destruction of any birds and their nests in the orders Strigiformes (owls) or Falconiformes (hawks and eagles). These provisions, along with the Federal MBTA, serve to protect nesting raptors.

Clean Water Act: Section 404 of the Clean Water Act of (1972) is to maintain, restore, and enhance the physical, chemical, and biological integrity of the nation’s waters. Under Section 404 of the Clean Water Act, the US Army Corps of Engineers (USACE) regulates discharges of dredged and filled materials into “waters of the United States” (jurisdictional waters). Waters of the US, including navigable waters of the United States, interstate waters, tidally influenced waters, and all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries.

California Endangered Species Act (CESA): The California ESA (California Fish and Game Code §§ 2050-2116) generally parallels the main provisions of ESA, but unlike its Federal counterpart, the California ESA applies the take prohibitions to species proposed for listing (called "candidates" by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." the California ESA allows for take incidental to otherwise lawful development Projects. State lead agencies are required to consult with CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered, threatened, or candidate species or result in the destruction or adverse modification of essential habitat.

2035 Kings County General Plan: The 2035 General Plan *Resource Conservation Element* contains the following goals, objectives, and action plans relating to biological resources.

- **RC Goal D1:** ***Preserve land that contains important natural plant and animal habitats.***
  - RC OBJECTIVE D1.1: Require that development in or adjacent to important natural plant and animal habitats minimize the disruption of such habitats.
    - *RC Policy D1.1.1:* Require development to locate on Sites adjacent to previously developed areas.
    - *RC Policy D1.1.2:* Evaluate all discretionary land use applications in accordance with the screening procedures contained in the Biological Resources Survey located in Appendix C. If the results of the Project screening indicate the potential for important biological resources to exist on the Site a biological evaluation (consistent with Appendix C) shall be performed by a qualified biologist. If the evaluation indicates that the Project could have a significant adverse impact, mitigation shall be required or the Project will be redesigned to avoid such impacts. Mitigation shall be provided consistent with the California Environmental Quality Act (CEQA), and applicable state and Federal guidelines as appropriate. Mitigation may include habitat improvement or protection, acquisition of other habitat, or payment to an appropriate agency to purchase, improve, or protect such habitat.
- **RC GOAL E1:** ***Balance the protection of the County's diverse plant and animal communities with the County's economic needs.***
  - RC OBJECTIVE E1.1: Require mitigation measures to protect important plant and wildlife habitats.
    - *RC Policy E1.1.1:* Complete the inquiry process outlined in Appendix C in the initial Project review for development permits to determine whether the Project is likely to have a significant adverse impact on any threatened or endangered species habitat locations, and to assure appropriate consideration of habitat preservation by development. Maintain current copies of California Department of Fish and Game and United States Fish and Wildlife Service maps showing locations of known threatened and endangered species habitat. If shown to be necessary, require the developer to consult with the California Department of Fish and Game, the United States Fish and Wildlife Service, and the United States Army Corps of Engineers as to potential impacts, appropriate mitigation measures, and required permits.
    - *RC Policy E1.1.2:* Require as a primary objective in the review of development Projects the preservation of healthy native oaks and other healthy native trees.
    - *RC Policy E1.1.3:* Maintain to the maximum extent practical the natural plant communities utilized as habitat by threatened and endangered species (see Appendix C for a listing and map of these plant communities).

Discussion

a) **Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish & Game or U.S. fish and Wildlife Service?**

Less Than Significant with Mitigation Incorporation: Three special status animals, the Tricolored blackbird (*Agelaius tricolor*), Loggerhead shrike (*Lanius ludovicianus*), and Swainson's hawk (*Buteo swainsoni*), were found to have the potential to forage on the Project Site, but do not have suitable breeding habitat on Site. Developed land dominated by agricultural and residential development occurs throughout the proposed Project Site and surrounding area, which does not provide unique foraging value for these species and does not appear to be an essential part of the foraging ranges of these avian species. Only one habitat type was identified on the Project Site: ruderal/developed. These areas support limited natural ecological processes, native vegetation, or habitat for wildlife species. The reconnaissance survey results indicated minimal, suitable habitat for any special-status animal and plant species. No special-status species were observed within the Project Site or surrounding area at the time of the survey conducted on November 21, 2022. Project Site during construction, indirect impacts due to short-term construction noise could disrupt species' use of the area. Still, construction-related mortality is unlikely due to these bird species' high mobility level. Since this Site is not of unique or high foraging value to these species, Project impacts on these special-status animal species that may occasionally or regularly forage on this Site are considered less than significant under CEQA. However, the Project Site does have the potential to be used as nesting habitat by several native avian species protected by the Migratory Bird Treaty Act and California state laws protecting avian species.

Additionally, Swainson's hawks have the potential to nest within the vicinity of the Project Site on adjacent properties during the nesting season (generally February 1-August 31). Significant construction-related disturbances may occur and result in mortality, injury, or nest abandonment, which are potentially significant adverse environmental effects of the Project. Mitigation measures involving construction timing, pre-construction surveys, and avoidance of active nests are described in this section.

As for special-status plant species, there are several that are known to occur in the region, including Brittlescale *(Atriplex depressa*), Lesser saltscale (*Atriplex minuscula*), Alkali-sink goldfields (*Lasthenia chrysantha*), Panoche peppergrass (*Lepidium jaredii* ssp. *Album*), and California alkali-grass (*Puccinellia simplex*). The ruderal/developed land use on the Site does not support any of these special-status plant species, and none were found when the survey was conducted. However, due to the possibility of the site being used by several avian species, mitigation measures BIO-1, BIO-2, and BIO-3 will be implemented. This results in the impacts being *less than significant with mitigation incorporation* under CEQA.

b) **Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?**

No Impact: The Project Area is located in an agricultural and developed area. No riparian habitat or other sensitive vegetation communities have been identified within the vicinity of the Project Site; therefore, the proposed Project would not affect any such habitats. No impact would occur. There is *no impact.*

c) Would the Project have a substantial adverse effect on state or Federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through director removal, filling, hydrological interruption, or other means?

No Impact: No jurisdictional wetlands or non-wetland waters occur within the Project Area. Therefore, no direct or indirect impacts on jurisdictional waters or wetlands would exist. No impact would occur. There is *no impact.*

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery Sites?

Less than Significant Impact: The proposed Project Site and action area occur within an agricultural and residential setting. The Project would neither interfere with nor remove access to an established native resident or migratory wildlife corridors nor impede the use of native wildlife nursery Sites. The Project Area is not within designated wildlife corridors or habitat linkages. The proposed Project activities will occur within a previously highly disturbed area that provides limited value as a wildlife corridor or habitat linkage. Additionally, the Project Area lacks habitats that support native migratory fish. The Project Site is within an urbanized environment with minimal water sources. Therefore, does not provide suitable habitat for nesting, feeding, and resting ground for migratory, resident, and wintering bird species or roosting bats. Therefore, the impact would be *Less than Significant*.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation Action Plan or ordinance?

No Impact: The Project would not conflict with any tree preservation policy or ordinance, preservation policy, or local ordinance which protects native trees. Therefore, no impact would occur. There is *no impact.*

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or another approved local, regional, or state habitat conservation plan?

No Impact: Species or habitats covered within any Habitat Conservation Plan, Critical Habitat Designations, or other approved conservation plans have not been identified within the Project Area. As such, the proposed Project would not be located within an area affected by or subject to a local, regional, or state habitat conservation plan. Therefore, no impact would occur. There is *no impact.*

Mitigation Measures:

Mitigation Measure BIO-1: Construction Timing. Live Oak Associates recommends performing construction activities outside the bird nesting season (February 1 to August 31). If construction activities are proposed during the nesting season, Live Oak Associates recommends that a qualified biologist survey the Project Site or environmental footprint of the Project for nesting birds to avoid any adverse impacts leading to nest failure or abandonment. If construction activities are proposed to occur during the non-breeding season (September-January), a survey is not required, and no further studies are necessary.

Mitigation Measure BIO-2: Pre-construction Surveys. Active raptor nests are protected by the California Fish and Game code Section 3503.5 and the Migratory Bird Treaty Act (MBTA). For this reason, if construction is expected to occur during the nesting season (February – August), a pre-construction raptor survey is recommended to determine if active nests are present on the Site. The survey should be conducted by a qualified biologist no more than 30 days before the onset of construction activities but preferably within ten days prior to the start of construction. The survey area will encompass the Site and accessible surrounding lands suitable for nesting birds.

Mitigation Measure BIO-3: Avoidance of Active Nests. If the nests are found and considered to be active, construction activities should not occur within 500 feet of the nests until the young have fledged, or a qualified biologist has determined that the nest is no longer active. The biologist will identify a suitable construction-free buffer around the nest, which will be identified with flagging or fencing and maintained until the biologist has confirmed that the young have fledged and can forage independently. All nests should be monitored during Project activities for signs of distress. If signs of distress are observed, Project activities should be adjusted to prevent further disturbance to the birds.

Implementing Mitigation Measures BIO-1, BIO-2, and BIO-3 will ensure that impacts on species identified as a candidate, sensitive, or special status will be less than significant with mitigation incorporation.

V. CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☑	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☑	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☑	☐	☐

Environmental Setting

The Project area is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley and is located near the Kings River North Fork. The Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts. The Yokuts began occupying the Southern San Joaquin Valley roughly 8,000 years ago. They subsisted off abundant plants and wildlife, a characteristic of the vast lake-slough-marsh environment produced by the lake. They also relied on the many rivers, marshes, and lakes throughout the region for travel, using canoes constructed out of dried tules.

The Project area is within the Wimilche Yokuts territory, who occupied the north bank of the Kings River between modern-day Laton and Kings River Island and appeared to have occupied most of the land that later comprised the Rancho Laguna de Tache. The closest village to this area was *Ugona*, located on the Kings River's northern bank, approximately 7 miles downstream of Laton and about one to two miles southeast of the Project Site. Additionally, the Kings River alluvial fan was a heavily occupied area, with four documented villages and four tribes within a seven-mile radius of the Project Site. Primary Yokuts villages were typically located along lakeshores and major stream courses, with scattered secondary or temporary camps and settlements near gathering areas in the foothills.

Yokuts were organized into groups originally designated as tribelets, with one or more linked villages and smaller settlements within a territory. Designation of these units as 'tribelets' is often viewed as pejorative by many Native Americans, and for the remainder of this report, will be referred to as 'local tribes' instead. Each local tribe was a land-owning group organized around a central village and shared common territory and ancestry. Most local tribe populations ranged from 150 to 500 people. Due to the abundance of natural resources within the greater Tulare Lake area, the Yokuts maintained some of the largest populations in North America west of the continental divide. According to the Native American Heritage Commission, the Native American tribal group currently associated with the Project area is the Santa Rosa Rancheria Tachi Yokut Tribe.

Europeans first encountered the Yokuts in the late 1700s, yet settlement occurred much later than in areas along the California Coast, which were the main Sites of the Spanish mission system. Life at the California missions was hard and brutal for Native Americans, with many dying of disease and poor conditions and fleeing to areas not under direct Spanish control. Combined with the rapid expansion of Americans into California in 1848 during the Gold Rush, Native American populations within the valley never fully recovered.

Europeans' initial settlement within the valley in the 1830s was primarily either by trappers like Jedediah Smith or horse thieves like Pegleg Smith. In fact, horse and other livestock theft were so rampant that ranching operations on the Rancho Laguna de Tache by the Kings River and Rancho del San Joaquin Rancho along the San Joaquin River could not be established appropriately. With the end of the Mexican American War and the beginning of the gold rush in 1848, the San Joaquin Valley became more populated with ranchers and prospectors. Most prospectors traveled by sea to San Francisco and used rivers ranging from the Sacramento River to the San Joaquin River to access the California interior. Most areas south of the San Joaquin River were less settled simply because those rivers did not connect to the San Francisco Bay area except in wet flood years. By 1850, California became a state, Tulare County was established in 1853, and Kings County was formed out of the western half of Tulare County in 1893.

The Project Site is located on the former Rancho Laguna De Tache, an 11 square league grant given to Manuel de Jesus Castro in 1843 by Mexican Governor Pio Pico. By 1904, the Rancho was subdivided into 20-acre lots and sold to individual property owners. The arrival of rail lines in the late 1800s increased agriculture and farms that clashed with existing ranching operations in the local area. One such conflict was the Mussel Slough Tragedy of 1880, in which seven locals died in a fight over land use between ranchers and the Southern Pacific Railroad. Escalating conflicts and livestock disputes between ranchers and farmers led to the “No Fence Law” in 1874, which forced ranchers to pay for crop and property damage caused by their cattle. With the passage of this law and the expansion of irrigation systems, predominant land use in the 1870s switched from grazing to farming. This led to the beginning of the vast change of the San Joaquin Valley from native vegetation and grasslands to irrigated crops. During this time, small farming towns were established throughout the valley floor, including the community of Riverdale in 1874, originally known as Liberty, approximately three miles northwest of the Project Site. The Site is a California Historical Landmark located approximately six miles east of the Project Site.

Because water rights within California originally arose from the first-come-first-serve policy of the Gold Rush era, diverting surface water to farms became big business but a convoluted mess of customs, traditions, and conflicting claims. To solve this mess, the Wright Act of 1887 was passed that allowing residents to petition a local county board of supervisors to create irrigation districts that had the power to issues bonds and tax land within the district boundaries to pay for the creation and maintenance of canals and ditches for irrigation purposes. At the same time, a significant step forward was made in ditch-digging technology that allowed irrigation systems to be built at a faster pace. From the 1840s to 1890s, farm ditches and canals were constructed mainly using buckboards and slip-scoops, which involved the use of a board pulled by horses in an upright position in order to level ground. Between 1883 and 1885, Scottish immigrant James Porteous moved to Fresno and made significant improvements to the buckboard style scraper that allowed the new scraper to be pulled by two horses and scrape and move soil while dumping it at a controlled depth. This new design was patented and sold as the “Fresno Scraper,” which led to an explosion of ditch-digging efforts within the San Joaquin Valley Local waterways, such as the North Fork of the Kings River, were diverted to make room for ever-expanding agriculture. Water districts were formed and created covering the new canals and ditches, including the Fresno Canal and Irrigation Company, which later sold the various canal and ditches surrounding the Project Site, including the “E” Canal, to the Laguna Irrigation District in 1921.

Records Search: The Southern San Joaquin Valley Information Center (SSJVIC) conducted a Cultural Resources Records Search on November 10th, 2022. SSJVIC staff researched historical United States Geological Survey (USGS) topographic maps, reports of previous cultural resource investigations, archaeological Site, and survey base maps, cultural resource records (DPR forms) as well as listings of the Historic Properties Directory of the Office of Historic Preservation, General Land Office Maps, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources. The full report can be found in Appendix C.

The records search results indicate no cultural resources were previously recorded within the Project boundary or the 0.5-mile search radius. Additionally, no prior cultural studies were conducted within the Project boundary. One cultural study (KI-00075) was conducted within the 0.5-mile search radius of the Project boundary. The survey did not overlap the Project boundary or identify any cultural resources within 0.5 miles of the Project boundary. The full findings of the cultural records search can be found in Appendix C.

Archival Research: Archival research was conducted to investigate the historical background for any potential historical natural water sources, potential historic structures, buildings, and historical deposits that may exist, and land use within the Project boundary. Historical maps, historical aerial photographs, historical USGS topographic maps, Google Earth aerial photographs, Google Street View photos, books, scholarly articles, and other records were used better to understand the prehistory and history of the Project area. The results of this research are presented in Appendix C, Chapter 4.

Historical map coverage of the Project Site and surrounding area dates to 1864, when the Rancho Laguna De Tache (Rancho) was resurveyed to uphold the original 1843 land grant of the Rancho. Dewoody's 1864 survey map showed a roughly hand-drawn depiction of the entire Rancho. The first detailed historical map coverage of the Project Site dates to 1876. The Project area is depicted in the central part of the Rancho in a general survey of Tulare County and the surrounding region. An 1877 map of the West Side Irrigation District and Tulare Lake shows the Project area located approximately one mile north of the North Fork of the Kings River. An 1885 irrigation map of the Lemoore and Hanford area depicts the general Project area as owned by a "Poly Heilbron & Co." with multiple unnamed ditches running through Section 5 of Township 18 South, Range 20 East, on which the Project Site is located. The 1904 map depicts the Project Site as surrounded on the south and west by an unnamed ditch or historical slough corresponding with the modern-day "E" Canal.

A search of USGS topographic maps showed the Project Site as primarily agricultural land in 1924. The USGS Riverdale, CA 7.5-minute 1924 and 1927 topographic maps show the Project Site as bordered by present-day E Canal to the south and west, and by the Hanford and Summit Lake Hub Branch line of the Santa Fe Railroad, with the Atchison Topeka and Santa Fe (Laton and Western Branch) Railroad immediately south of the Project Site. An unnamed historical slough is depicted on the 1924 topographic map. The USGS Riverdale 1924 topographic map depicts two structures on the northern boundary of the Project Site along Excelsior Avenue. The 1954 map depicts the Project surrounded to the south and west by the E Canal, to the north by Excelsior Avenue, and the east by 20th Avenue.

Historical aerial photography of the Project Site was only available from 1984 to today. Aerial photography from 1984 shows approximately six structures on the Project Site on the northern boundary near Excelsior Avenue. The western half of the Project Site is used for row crops, and the eastern half for dairy and livestock purposes. Additionally, a pond is shown on the central southern boundary of the Site. The Project Site is depicted as bordered to the south and west by a canal and by paved roads to the north and east.

Aerials from 1994 and 2005 depict the Project Site similar to the 1984 historic aerials. By 2013 the western half of the Project Site no longer appeared to be utilized for row crops, and instead, various soil piles appeared to be placed on the western portion of the Site.

Native American Outreach: On November 10, 2022, Taylored Archaeology sent a request to the Native American Heritage Commission (NAHC) for a Sacred Lands File (SLF) search to identify any known places of the religious, sacred activity or traditional use or gathering areas are present in or near the Project area. The NAHC responded on December 9, 2022, with a letter, including contact information for local Native American tribal representatives who may have knowledge or interest in sharing information about resources in the Project area and surrounding area. Each Native American representative listed was sent a nongovernmental outreach letter and a map notifying them of the Project and asking if they had any knowledge of the Project area or surrounding vicinity. Follow-up communication was performed via email and phone calls, as appropriate. The SLF results are in Appendix C, Chapter 4.

Archaeological Pedestrian Survey: On November 26, 2022, Archaeologist Consuelo Sauls conducted an archaeological pedestrian survey using meandering transects spaced from 15 to 20 meters apart within the Project Site. Ms. Sauls used meandering transects spaced 5 meters apart within the rural residential area that comprised the eastern half of the Project Site. The whole area in the Project boundary was accessible and surveyed to identify any archaeological deposits that may be present on the ground surface. Ms. Sauls used a plan map, visible landmarks, and Gaia GPS application for navigation to locate and survey the Project area. She also photographed the survey area using an iPhone 11 Pro digital camera. Ms. Sauls recorded her observations on a Survey Field Record and compiled a Photographic Record.

Ms. Sauls surveyed all portions of the Project boundary that were not obstructed by buildings and structures, large compost piles, enclosed livestock pens, and heavy equipment. The Project Site consists of flat land with existing residential and commercial buildings and structures. Historical and modern agricultural practices have altered the area's natural topography, and much of the land on the Project Site has been graded and plowed, which has caused additional disturbance to the soil. No visual evidence was found of the unnamed historical slough. Multiple portions of the Project Site were filled with moderate amounts of modern agricultural debris. One hundred percent of the Project ground surface was very disturbed by agricultural activity. However, the ground visibility ranged from 90 to 100 percent in the entire Project Site.

No archaeological Sites, isolated artifacts, or features were identified during the pedestrian survey. However, five historical buildings and structures were identified within the Project boundary. While past agricultural activities may have potentially destroyed or obscured ground surface evidence of archaeological resources within the Project boundary, intact archaeological resources related to the area's prior occupation may exist below the ground surface.

Built Environment Survey: On December 14, 2022, Architectural Historian Karana Hattersley-Drayton conducted a built environment survey of the Project Site to identify and assess any historic resources, such as structures or buildings, the Project may impact. Structures or buildings 50 or older within the Project area were photographed and documented on DPR 523 cultural resource record forms.

Ms. Sauls identified Five buildings on the Project Site during the survey: 1) a former milking barn, 2) a typical rural residence address as 20111 Excelsior Avenue, 3) a loafing barn located south of the milking barn, 4) a hay barn, and 5) a commodity barn. None of these buildings were identified as cultural or historical resources. Metal pole fences were observed connecting the various buildings, fields, and cattle pens.

Regulatory Setting

This report defines “cultural resources” as prehistoric or historical archaeological Sites and historical objects, buildings, or structures. Following 36 Code of Federal Regulations (CFR) §60.4, “historical” in this report applies to cultural resources at least 50 years old. The significance or importance of a cultural resource is dependent upon whether the resource qualifies for inclusion at the local level in a local register of historical resources, at the state level in the California Register of Historical Resources (CRHR), or the Federal level in the National Register of Historic Places (NRHP). Cultural resources that are determined to be eligible for inclusion in the CRHR are called “historical resources” (California Code of Regulations [CCR] 15064.5[a]). Under this statute, the determination of eligibility is partially based on the consideration of the criteria of significance as defined in 14 CCR 15064.5(a)(3). Cultural resources eligible for the NRHP are deemed “historic properties.”

National Historic Preservation Act: The National Historic Preservation Act was adopted in 1966 to preserve historical and archeological Sites in the United States. The Act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation offices.

California Environmental Quality Act: Under CEQA, a historical resource is a resource listed in, or determined to be eligible for listing in, the CRHR. Historical resources may include, but are not limited to, “any object, building, structure, Site, area, place, record, or manuscript which a lead agency determines to be historically or archaeologically significant” (PRC §5020.1[j]). In addition, a resource included in a local register of historical resources or identified as significant in a local survey conducted per the state guidelines is also considered a historic resource under California Public Resources Code (PRC) Section 5020.1.
CEQA details appropriate measures for the evaluation and protection of cultural resources in §15064.5 of the CEQA Guidelines. According to CEQA guidelines §15064.5 (a)(3), the criteria for listing on the CRHR includes the following:

A. *Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.*
B. *Is associated with the lives of persons important in our past.*
C. *Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.*
D. *Has yielded, or may be likely to yield, information important in prehistory or history.*

According to CEQA guidelines §21074 (a)(1), criteria for tribal cultural resources includes the following:

1 Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
1.1 *Included or determined to be eligible for inclusion in the California Register of Historical Resources.*
1.2 *Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.*

Protection of cultural resources within California is additionally regulated by PRC §5097.5, which prohibits the destruction, defacing, or removal of any historic or prehistoric cultural features on land under the jurisdiction of State or local authorities.

Health and Safety Code, Section 7050.5: Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission (NAHC). CEQA Guidelines (Public Resources Code Section 5097) specify the procedures to be followed when discovering human remains on non-Federal land. The disposition of Native American burials falls within the jurisdiction of the NAHC.

2035 Kings County General Plan:
Kings County identified sixteen Historical Sites throughout the county. The nearest Historic Site to the Project is El Adobe De Los Robles Historic Park, approximately five miles to the south. The 2035 General Plan Resource Conservation Element includes the following goals, objectives, and policies that are potentially applicable to the proposed Project:

- **RC GOAL I1:** ***Preserve significant historical and archaeological Sites and structures that represent the ethnic, cultural, and economic groups that have lived and worked in Kings County.***
    - RC OBJECTIVE I1.1: Promote the rehabilitation or adaptation to new uses of historic Sites and structures.
        - *RC Policy I1.1.2:* Direct proposed developments that may affect proposed or designated historic Sites or County landmarks to the Kings County Museum Advisory Committee or other similarly purposed advisory body under the Kings County Parks and Recreation Advisory Commission for review and comment.
        - *RC Policy I1.1.3:* Encourage the protection of cultural and archaeological Sites with potential for placement on the National Register of Historic Places and/or inclusion in the California Inventory of Historic Resources.
        - *RC Policy I1.1.4:* Refer applications that involve the removal, destruction, or alteration of proposed or designated historic Sites or County landmarks to the Kings County Museum Advisory Committee or its successor for recommended mitigation measures.

    - RC OBJECTIVE I1.2: Identify potential archaeological and historical resources and, where appropriate, protect such resources.
        - *RC Policy I1.2.1:* Participate in and support efforts to identify significant cultural and archaeological resources and protect those resources in accordance to Public Resources Code 5097.9 and 5097.993.
        - *RC Policy I1.2.2:* Continue to solicit input from local Native American communities in cases where development may result in disturbance to Sites containing evidence of Native American Activity and/or to Sites of cultural importance.
        - *RC Policy I1.2.3:* Address archaeological and cultural resources in accordance with the California Environmental Quality Act (CEQA) for discretionary land use applications.
        - *RC Policy I1.2.4:* The County will respectfully comply with Government Code §65352.3 (SB18) by conducting formal consultations with tribes as identified by the Native American Heritage Commission on all general plan and specific plan amendments.

- *RC Policy I1.2.5:* The County will respectfully comply with Government Code §6254.(r) and 6254.10 by protecting confidential information concerning Native American cultural resources. For example, adopting internal procedures such as keeping confidential archaeological reports away from public view or discussion in public meetings.
- *RC Policy I1.2.1.6:* The County shall work in good faith with the Santa Rosa Rancheria Tachi Yokut Tribe ("Tribe"), the developer and other parties if the Tribe requests return of certain Native American artifacts from private development Projects (e.g., for interpretive or educational value). The developer is expected to act in good faith when considering the Tribe's request for artifacts. Artifacts not desired by the Tribe shall be placed in a qualified repository as established by the California State Historical Resources Commission (see Guidelines for the Curation of Archaeological Collections, May 1993). If no facility is available, then all artifacts shall be donated to the Tribe.

Discussion

a) Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

Less Than Significant Impact with Mitigation: The Southern San Joaquin Valley Information Center (SSJVIC) conducted a records search on behalf of the Applicant on November 10th, 2022, to determine if historical or archaeological Sites had previously been recorded within the study area. This was to check if archaeologists had systematically surveyed the Project area before the initial study or whether the region of the field Project was known to contain archaeological Sites and to be thereby archaeologically sensitive.

The records search results indicate no cultural resources were previously recorded within the Project boundary or the 0.5-mile search radius. Additionally, no prior cultural studies were conducted within the Project boundary. One cultural study (KI-00075) was completed within the 0.5-mile search radius of the Project boundary. The survey did not overlap with the Project boundary or identify any cultural resources within 0.5 miles of the Project boundary.

An archaeological pedestrian survey was conducted on the Site, resulting in negative findings of archaeological resources on the ground surface. A built environment survey was conducted to assess the structures on the Site. During the survey, one historical resource, a circa 1930s Milking Barn, was identified within the Project boundary. The Milking Barn was evaluated and found not eligible for inclusion within the CRHR.

The Project's construction will include a limited amount of ground disturbance to construct the wastewater retention pond. Although it is unlikely that tribal cultural resources will be affected by this disturbance, Mitigation Measure CUL-3 will be implemented to protect any potential resources. Mitigation Measure CUL-3 will allow any interested tribes to monitor the construction during ground disturbances. Mitigation Measures CUL-4, CUL-5, CUL-6 will also be implemented to further reduce the potential impacts of the Project.

Although no other cultural resources were identified, the presence of remains or unanticipated cultural resources under the ground surface is possible. Implementing Mitigation Measures CUL-1 and CUL-2 will ensure that impacts on this checklist item will be *less than significant with mitigation* incorporation.

b) Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less Than Significant Impact with Mitigation: No known archaeological resources are located within the Project area. Implementing Mitigation Measures CUL-1, CUL-2, and CUL-3 will ensure that the potential impact on unknown archeological resources will be *less than significant with mitigation incorporation.*

c) Would the Project disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact with Mitigation: No known human remains are buried in the Project vicinity. If human remains are unearthed during Project construction, there is a potential for a significant impact. As such, implementation of Mitigation Measure CUL-2 will ensure that impacts remain *less than significant with mitigation incorporation.*

Mitigation Measures for Impacts on Cultural Resources

Mitigation Measure CUL-1: Procedures for Handling Encountered Historical Resources. Construction shall stop near the find if previously unknown resources are encountered before or during grading activities. A qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the County on the measures that shall be implemented to protect the discovered resources, including but not limited to excavating the finds and evaluating the discoveries following Section 15064.5 of the CEQA Guidelines and the County's General Plan.

If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoiding or capping, incorporating the Site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the discovery area until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person capable of providing long-term preservation to allow future scientific study.

Mitigation Measure CUL-2: Procedures for Handling Human Remains Discovery. In the event that human remains are unearthed during the excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings regarding origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and consult with the descendants all reasonable options regarding the descendants' preferences for treatment.

Mitigation Measure CUL-3: Native American Monitoring. Prior to any ground disturbance, the applicant shall offer the Santa Rosa Rancheria Tachi Yokut Tribe and any other interested Tribes the opportunity to provide a Native American Monitor during ground disturbing activities during construction. The monitor will only be present on-site during the construction phases that involve ground disturbing activities. Ground disturbing activities are defined as activities that may include, but are not limited to, pavement removal, auguring, boring, excavation, drilling, and trenching, within the project area. The on-site monitoring shall end when the project site excavation activities are completed, or when the Tribal Representatives and monitor/consultant have indicated that the site has a low potential for impacting Tribal Cultural Resources. Tribal participation would be dependent upon the availability and interest of the Tribe.

Mitigation Measure CUL-4: Pre-Construction Briefing. The project proponent shall retain Santa Rosa Rancheria Cultural Staff and any other interested tribes to provide a pre-construction Cultural Sensitivity Training to construction staff regarding the discovery of cultural resources and the potential for discovery during ground disturbing activities, which will include information on potential cultural material finds and on the procedures to be enacted if resources are found.

Mitigation Measure CUL-5: Disposition of Cultural Resources. Upon coordination with the Kings County Community Development Agency, any pre-historic archaeological artifacts recovered shall be donated to an appropriate Tribal custodian or a qualified scientific institution where they would be afforded applicable cultural resources laws and guidelines.

Mitigation Measure CUL-6: Curation Agreement / Burial Treatment Plan. The applicant/property owner shall enter into a Curation Agreement and Burial Treatment Plan with the Santa Rosa Rancheria Tachi Yokut Trube, which shall be in a form acceptable to the Tribe, prior to any earth disturbing activities. (This condition applies as a mitigation measure to all projects that require an initial study).

VI. ENERGY

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?	☐	☐	☑	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☑

Environmental Setting

Pacific Gas and Electric (PG&E) provides electricity services to the region. PG&E serves approximately 16 million people throughout a 70,000-square-mile service area in northern and central California. SCE supplies electricity to its customers through various renewable and nonrenewable sources. Table 3-12 below shows the proportion of each energy resource sold to California consumers by PG&E in 2021 compared to the statewide average.

Table 3-12. 2021 PG&E and State average power resources; Source: PG&E and California Energy Commission

Fuel Type		**PG&E Power Mix**	**California Power Mix**
Coal		0%	3%
Large Hydroelectric		4%	9.2%
Natural Gas		8.9%	37.9%
Nuclear		39.3%	9.3%
Other (Oil/Petroleum Coke/Waste Heat)		0.0%	0.2%
Unspecified Sources of Power[1]		0.0%	6.8%
Eligible Renewables	*Biomass*	4.2%	2.3%
	Geothermal	5.2%	4.8%
	Small Hydro	1.8%	1.0%
	Solar	25.7%	14.2%
	Wind	10.9%	11.4%
	Total Eligible Renewable	**47.7%**	**33.6%**

1. "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.

PG&E also offers Solar Choice and Renewable Choice programs, which allow consumers to indirectly purchase up to 100% of their energy from renewable sources without installing private rooftop solar panels. To accomplish this, PG&E buys the renewable energy necessary to meet the needs of participants.

Southern California Gas (SoCalGas) provides natural gas services to the Project area. Natural gas is an energy source developed from fossil fuels composed primarily of methane (CH4). According to the U.S. Energy Information Administration (EIA), approximately 30% of the natural gas burned in California is used for electricity generation. In addition, the residential sector consumes 21%, the industrial sector consumes 33%, and the commercial sector consumes 11%. Approximately 318,890,506 therms of natural gas are consumed annually within Fresno County.

Regulatory Setting

California Code of Regulations, Title 20: Title 20 of the California Code of Regulations establishes standards and requirements for appliance energy efficiency. The standards apply to a broad range of appliances sold in California.

California Code of Regulations, Title 24: Title 24 of the California Code of Regulations is a broad set of standards designed to address the energy efficiency of new and altered homes and commercial buildings. These standards regulate energy consumed for heating, cooling, ventilation, water heating, and lighting.

California Green Building Standards Code (CALGreen): The purpose of the CALGreen Code is to "improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) planning and design; (2) energy efficiency; (3) water efficiency and conservation; (4) material conservation and resource efficiency; and (5) environmental air quality." The CALGreen Code is not intended to substitute or be identified as meeting the certification requirements of any green building program not established and adopted by the California Building Standards Commission (CBSC).

SB 100: SB 100, passed in 2018, set a deadline in 2045 for 100% of energy to be renewable. Additionally, by 2030, 60% of all energy must be renewable. California is targeting this goal through solar and other renewable sources.

AB 178: For California to meet its renewable goals, AB 178 was passed in 2018. AB 178 states that starting in 2020, all new low-rise residential buildings must be built with solar power.

Executive Order B-55-18: In 2018, Governor Brown signed EO B-55-18 to achieve carbon neutrality by moving California to 100 percent clean energy by 2045. This Executive Order also includes specific measures to reduce GHG emissions via clean transportation, energy-efficient buildings, directing cap-and-trade funds to disadvantaged communities, and better management of the state's forest land.

2035 Kings County General Plan: The *Resource Conservation Element* of the Kings County General Plan contains the following goals, objectives, and policies related to energy conservation:

- **RC GOAL G1: Encourage the development of oil and gas energy sources provided that they do not degrade environmental quality.**
  - RC OBJECTIVE G1.3: Conserve energy to lower energy costs and improve air quality.
    - *RC Policy G1.3.1:* Encourage developers to be innovative in providing landscaping that modifies microclimates, thus reducing energy consumption.

- *RC Policy G1.3.2:* Require new urban development to provide and maintain shade trees and other landscaping along streets and within parking areas to reduce radiation heating. However, solar access for solar panels shall not be blocked.
- *RC Policy G1.3.3:* Participate, to the extent feasible, in local and State programs that strive to reduce the consumption of energy.
- *RC Policy G1.3.4:* Coordinate with local utility providers to provide public education on energy conservation programs.

The *Air Quality Element* of the Kings County General Plan contains the following goals, objectives, and policies related to energy conservation:

- ❖ **AQ GOAL D1: Invest in more efficient and effective transportation infrastructure, fleet management and support for trip reduction programs to reduce traffic congestion, vehicle trips and the need for costly new or expanded roadways.**

- ❖ **AQ GOAL E1: Minimize air emissions and potential climate change impacts related to energy consumption in the County.**

  - ➢ AQ OBJECTIVE E1.1 Increase the use of energy conservation features, renewable sources of energy and low-emission equipment in new and existing development Projects within the County.
    - *AQ Policy E1.1.1:* Initiate and sustain ongoing efforts with local water and energy utilities and developers to establish and implement voluntary incentive-based programs to encourage the use of energy efficient designs and equipment in new and existing development Projects within the County.
    - *AQ Policy E1.1.2:* Initiate and sustain ongoing efforts with agriculture, the building industry, water, and energy utilities and the SJVAPCD to promote enhanced energy conservation and sustainable building standards for new construction.
    - *AQ Policy E1.1.3:* Work with local water and energy utilities and the building industry to develop or revise County design standards relating to solar orientation of building occupancies, water use, landscaping, reduction in impervious surfaces, parking lot shading and such other measures oriented towards reducing energy demand.
    - *AQ Policy E1.1.4:* Actively promote the more efficient location of industries within the County which are labor intensive, utilize cogeneration or renewable sources of energy, support and enhance agricultural activities, and are consistent with other policies of the General Plan.
    - *AQ Policy E1.1.5:* County staff will proactively work with the Cooperative Agricultural Extension office, California Energy Commission, local water and energy utilities, the agricultural industry, and other potential partners to seek funding sources and implement programs which reduce water and energy use, reduce air emissions, and reduce the creation of greenhouse gases.

The *Circulation Element* of the 2035 Kings County General Plan provides the following policy to reduce energy consumption from vehicle usage:

- C Policy A1.2.1: Coordinate land use planning with planned transportation facilities to make efficient use of the transportation system and reduce total vehicle miles traveled, vehicle emissions, and energy use through improved accessibility to schools, job centers, and commercial services.

Discussion

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?

Less Than Significant Impact: The proposed Project includes two phases. The first phase consists of the permitting and compliance of the proposed manufactured building office and the existing composting yard, as well as the construction of the truck scale and a wastewater retention pond. The second phase includes the construction and permitting of a truck wash. During Project construction, energy consumption would increase related to worker trips and construction equipment operation. This increase in energy use would be temporary and limited to the greatest extent possible through compliance with local, state, and Federal regulations. There will also be increased energy consumption from vehicles trucking raw dairy and decomposed manure on and off-site throughout Project operation.

Construction

During the construction phase of this Project, there would be a temporary increase in energy consumption due to worker trips and the operation of construction equipment. Compliance with local, State, and Federal regulations would minimize short-term energy consumption to the greatest extent feasible. Tractors, excavators, and other similar equipment will be used to construct the retention pond. This activity is not an unnecessary energy consumption because it is needed for the facility's construction.

Operational

By implementing an energy-efficient fleet of service vehicles during both construction and operation in accordance with local, state, and Federal regulations, excessive energy consumption can be limited to the greatest extent possible.

The facility will operate roughly 20 trucks per day from September through December and decrease to 10 trucks per day for the year's remaining months. The facility will operate 12 hours/day, Monday through Saturday, 12 months per year. During Project operation, the proposed Project is not anticipated to result in wasteful fuel consumption. This low fuel consumption is due to the low number of employees and visitors accessing the Site regularly and the Project Site's proximity to city centers. The Project will not require an increase in energy or natural gas.

Because construction-related energy use would be temporary and limited to the greatest extent feasible through consistency with Federal, State, and local policies related to energy conservation, and operation of the Project will comply with all energy efficiency standards required under Title 24, Section 6, it can be presumed that the Project will achieve net zero energy. The Project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. The impact is *less than significant.*

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact: The proposed Project will not conflict with or obstruct any state or local renewable energy or energy efficiency plans. The proposed Project will comply with all state and local policies related to energy efficiency, and there will be *no impact*.

VII. GEOLOGY AND SOILS

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☑
ii) Strong seismic ground shaking?	☐	☐	☐	☑
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☑	☐
iv) Landslides?	☐	☐	☐	☑
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☑
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct and indirect risks to life or property?	☐	☐	☐	☑
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☑	☐
f) Directly or indirectly destroy a unique paleontological resource or Site or unique geologic feature?	☐	☑	☐	☐

Environmental Setting

A Geotechnical Engineering Report was prepared by BSK Engineering (Appendix G). The general conclusion of the study is:

Based upon the data collected during this investigation and from a geotechnical engineering standpoint, it is our opinion that there are no soil conditions that would preclude the construction of the proposed *improvements, provided the recommendations presented in this report are incorporated into the project design and construction. The planned improvements may be supported on shallow isolated/continuous reinforced concrete spread footings, thickened mat foundations, and/or pole footings provided the structural engineer evaluate if the structure can tolerate the estimated settlement shown in Section 4.6.*

Geologic Stability and Seismic Activity

- **Seismicity:** Kings County Area has no known major fault systems within its boundaries. The most significant potential for seismic activity is posed by the San Andreas Fault, four miles west of the Kings County boundary line with Monterey County. The San Andreas fault divides the Pacific and North American tectonic plates, and its closest location relative to the Project area is approximately 70 miles southwest in the Coast Range mountains. Another large fault that may be a potential hazard is the White Wolf fault, which is south of Kings County near Arvin and Bakersfield, approximately 100 miles southeast of the Project area. Additionally, there are faults to the east, mainly on the east side of the Sierra Nevada Mountain Range. According to *1974 Five County Seismic Safety Element (FCSSE),* Kings County is divided into two seismic zone groups based on ground shaking characteristics, Valley Zones (V1-V4) and Coast Ranges Zones (C1 and C2). The Project area is in the "V-1" (Valley-1) zone. The FCSSE identifies the V-1 Zone as having a low risk of seismic activity, as the distance from either fault line is large enough that the effect of seismic activities is minimal. According to the FCSSE, areas in northern Kings County are most likely to be affected by the San Andreas Fault, which lies in the Coast Range mountains about 70 miles southwest of the Project area, the White Wolf Fault, approximately 100 miles southeast of the Project area, and minor faults in the southwestern portion of Kings County along the Kettleman Hills, which is roughly 30 miles southwest of the Project area. The distance from these faults to the Project area is sufficient to protect the area from the most severe forms of damage resulting from ground shaking. The probability of exceeding peak ground acceleration (% g) in the next 50 years has a 20-30% chance in the Project area and its immediate surroundings.

  According to the Geotechnical Report (Appendix G), the Site can be classified as Site Class D (stiff soil profile). Use of the 2019 and 2022 California Building Code (CBC) seismic design criteria is considered appropriate and the following parameters are considered applicable for the structural design of foundations.

- **Liquefaction**: Liquefaction is a phenomenon whereby unconsolidated or near-saturated soils lose cohesion and are converted to a fluid state due to severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in temporary, fluid-like soil behavior, resulting in landslides, lateral spreading, and structural collapse. The Kings County General Plan *Health and Safety Element* states that the San Joaquin Valley soils have liquefaction potential. Still, the risk and danger associated with liquefaction are considered to be minimal. The Project Site is an area where liquefaction has the potential to occur, as does most of Kings County east of Interstate 5 and west of Hanford. Risks and dangers associated with liquefaction are proportional to ground shaking intensity, and seismic activity is low in the Project area, so the potential damages from liquefaction would be minimal.

- **Landslides**: Landslides refer to a wide variety of processes that result in the downward and outward movement of soil, rock, and vegetation under the gravitational influence. Landslides are caused by natural and human-induced slope stability changes and often accompany other natural hazard events, such as floods, wildfires, or earthquakes. Landslide risk is also influenced by precipitation, topography, and geology. The southwestern corner of the County along the Coast Ranges has a high landslide incident probability due to steep slopes but is designated for Agricultural, and Natural Resource Conservation land uses and is mainly uninhabited and remote. Most of the County, including the proposed Project Site, is considered to have low or no potential for landslide incidence, and any moderate areas are located in remote uninhabited sections in the southwestern part of the County.

- **Subsidence**: Land Subsidence refers to the vertical sinking of land due to either manmade or natural underground voids. Subsidence has occurred throughout the San Joaquin Valley due to groundwater, oil, and gas withdrawal. According to the Kings County Seismic Zone Description with data derived from the FCSSE, the proposed Project Site does not have the potential for subsidence, and any areas within the County with the potential for subsidence have minimal risks and dangers associated with this occurrence.

Soils Involved in the Project: The proposed Project Site contains two soil types. The properties of the soil are described briefly below:

- **Excelsior Sandy Loam:** The Excelsior series consists of deep, moderately well-drained soils formed in alluvium derived from igneous and sedimentary rocks. Excelsior soils form on alluvial fans, valley plains, and stream terraces. They are moderately well-drained, have a medium runoff, moderately low to moderately high permeability, and have an available water holding capacity of 15 cm (moderate). These soils have salic properties, ranging from slightly saline to strongly saline.
- **Wasco Sandy Loam, 0 to 5 percent slopes:** The Wasco series consists of deep, well-drained soils formed in coarse-textured alluvium derived from sandstone. Wasco soils form on the foot slopes of alluvial fans and floodplains and have slopes of 0 to 5 percent. They are well-drained, have negligible to very low runoff, high permeability, and have available water storage of 16 cm (moderate).

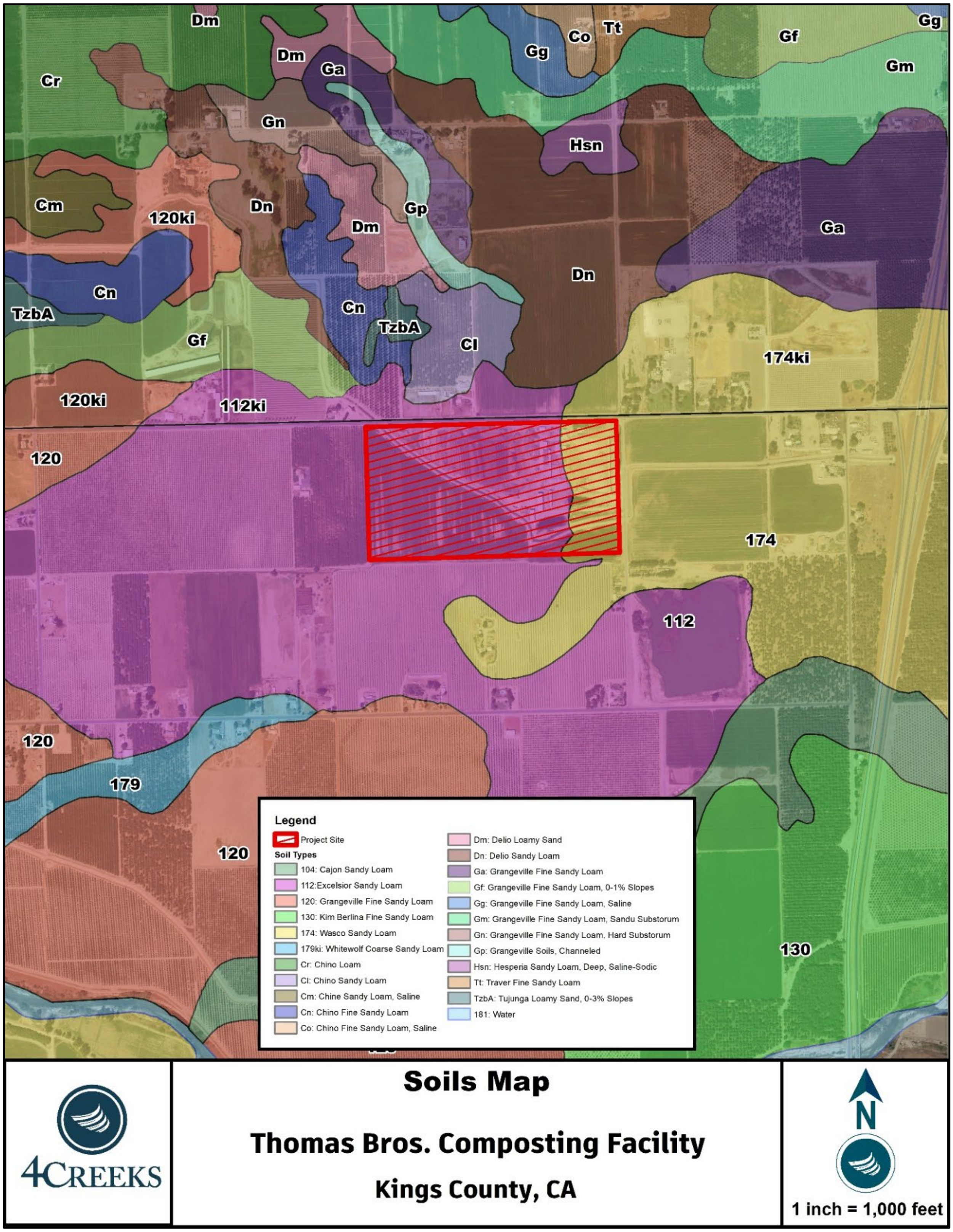


Figure 3-4: Soils Map

Regulatory Setting

California Building Code: The California Building Code (CBC) contains general building design and construction requirements for fire and life safety, structural safety, and access compliance. CBC provisions provide minimum standards to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures and specific equipment.

2035 Kings County General Plan:
The *2035 General Plan Health and Safety Element* includes the following policies regarding soils and geology:

- *HS Policy A1.3.1:* Implement natural hazards review criteria for new development that is based upon information provided in the Natural Hazards Section of the Health and Safety Element to improve long term loss prevention.
- *HS Policy A1.4.1:* Implement the current California Building Codes and any subsequent amendments as contained within California Code of Regulations Title 24 to improve disaster resistance of future buildings.
- *HS Policy A2.1.1:* Maintain and enforce current building codes and standards to reduce the potential for structural failure caused by ground shaking and other geologic hazards.
- *HS Policy A2.1.2:* Use the 1997 Uniform Code for the Abatement of Dangerous Buildings of a non-residential nature, and the 1997 Uniform Housing Code to assess unsafe residential structures and ensure their safe construction and rehabilitation.
- *HS Policy A2.1.3:* Prohibit new construction along known fault zones, and limit uses to nonstructural land uses.
- *HS Policy A2.1.4:* Review all development proposals to determine whether geotechnical soils report is required for new construction.
- *HS Policy A2.1.5:* Consider the environmental review process for land use Projects seismic hazards, including subsidence, liquefaction, flooding, local soils, and geologic conditions.

Discussion

a) Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

No Impact: The Project is in an area with relatively low seismic activity, meaning the Site has a insignificant chance of being affected by ground shaking from distant faults. The potential for solid seismic ground shaking on the Project Site is not a significant environmental concern due to the infrequent seismic activity of the area and the distance to the faults. The Project does not propose any components which could cause substantial adverse effects in the event of an earthquake. Additionally, the Project has no potential to cause the rupture of an earthquake fault indirectly or directly. Therefore, there is *no impact* related to the risk of loss, injury, or death involving a rupture of a known earthquake fault.

ii. Strong seismic ground shaking?

No Impact: According to the Five County Seismic Safety Element, the Project Site is in an area of low seismic activity. The proposed Project does not include any activities or components which could feasibly cause strong seismic ground shaking, either directly or indirectly. There is *no impact.*

iii. Seismic-related ground failure, including liquefaction?

Less than significant impact: The 2035 Kings County General Plan *Health and Safety Element* identifies most of the county as having a potential for liquefaction due to unconsolidated sediments and a high water table. The Project area has been designated as "V1", with some liquefaction potential. Still, the distance of the Project area from fault systems greatly reduces the risks and dangers associated with ground shaking. Additionally, the area's low potential for seismic activity would further decrease the likelihood of liquefaction occurrence. There is the potential for liquefaction due to soil conditions and regional hydrology, but the area has low seismic activity with minimal impacts associated with ground shaking, so the impact is *less than significant.*

iv. Landslides?

No Impact: Kings County is considered to have a low risk of landslides; only a small portion of the County has any amount of risk. These are mostly the remote uninhabited parts of the county. Additionally, the Project Site is generally flat, and there are no hill slopes. No geologic landforms exist on or near the Site that would result in a landslide event. As a result, there is a very low potential for landslides. There would be *no impact.*

b) Would the Project result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact: The Project Site is relatively flat with slopes of approximately 0.09%, so the potential for erosion is low. However, construction-related activities and increased impervious surfaces can increase the probability of erosion. Construction-related impacts related to erosion will be temporary and subject to best management practices (BMPs) required by the Stormwater Pollution Prevention Plan (SWPPP), which are developed to prevent significant impacts related to erosion from construction. Because erosion-related impacts would be temporary and limited to construction and require best management practices would prevent significant impacts related to erosion, the impact will remain *less than significant.*

c) Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less than Significant Impact With Mitigation: The soil types associated with the Project Site are considered stable and have a low capacity for landslides, lateral spreading, subsidence, liquefaction, or collapse. Additionally, the topography in the Project area is relatively flat, and no new buildings will be constructed on the Site. Although the Site is stable, BSK recommends mitigations GEO-1, GEO-2, and GEO-3 when constructing the retention pond to prevent significant landslide, lateral spreading, subsidence, liquefaction, or collapse. The detailed reasoning can be found in Appendix G. There is *less than significant impact with mitigation.*

d) Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

No Impact: The proposed Project Site is not in an area with expansive soils, as expansive soils occur only in the county's western portion. Because the soils associated with the Project do not exhibit shrink-swell behavior, implementation of the Project will pose no risk to life or property caused by expansive soils, and there is *no impact.*

e) Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Less Than Significant Impact: The proposed Project would not include septic tanks but would involve an alternative wastewater disposal system in the form of a wastewater retention pond which will store liquid wastewater. The wastewater retention pond will hold liquid wastewater accumulated from the composting operation area, and the Site will be graded to drain into the belowground pond via overland sheet flow. The wastewater retention pond is double-lined and have the adequate storage capacity to account for precipitation and stormwater runoff. The Site contains a pumping system to ensure sufficient liquid wastewater storage. Since the proposed wastewater retention pond is designed to manage liquid wastewater accumulated from the composting operation adequately, impacts are *less than significant.*

f) Would the Project directly or indirectly destroy a unique paleontological resource or Site or unique geologic feature?

Less Than Significant Impact With Mitigation: No unique geologic features or known paleontological resources are located within the Project area. However, there is always the possibility that paleontological resources may exist below the ground surface. Implementing Mitigation Measures CUL-1 and CUL-2 will ensure that any impacts resulting from Project implementation remain less *significant with mitigation*.

Mitigation Measures

Mitigation Measure GEO-1: Clay Liner Recommendations. Due to the upper 1.5 feet of the composing area being predominately silty sand, BSK recommends using soil-clay mix with a clay content of 3 percent across the compost working surface.

Mitigation Measure GEO-2: Clay Liner Recommendations. Due to a slow percolation rate found at the bottom of the existing basins, BSK recommends that the basin be cleaned out or deepened.

Mitigation Measure GEO-3: Site Preparation and Earthwork Construction. The following procedures must be implemented during site preparation for the proposed improvements:

1. Prior to any site grading, all miscellaneous surface obstructions must be removed from the improvement area. Near surface soils containing vegetation, roots, organics, compost, or other objectionable material must be stripped to a depth of at least 3-inches to expose a clean soil surface. Surface strippings and compost must not be incorporated into engineered fill unless the organic content is less than 3 percent by weight.
2. Existing utilities or irrigation pipes must be removed to a point at least 5-feet horizontally outside the proposed improvement area. Resultant cavities must be backfilled with engineered fill.

3. Soil disturbed as a result of undocumented fill, debris, and abandoned underground structures must be excavated to expose undisturbed native soil.
4. Following the required stripping, and/or removal of underground structures, the exposed soil surface in proposed at-grade improvement areas including foundations or lightly loaded concrete structures must be over-excavated uniformly to a depth of 24 inches below existing site grade or 12 inches below the bottom of the proposed foundation, whichever is deeper. The overexcavation must extend at least 5 feet laterally beyond the outside edge of the proposed foundation or areas to receive fill, whichever distance is greater. The exposed subgrade must be proof-rolled under the observation of a BSK field representative to detect soft or pliant areas. Soft or pliant areas must be over-excavated to firm native soil. The exposed surface must be scarified at minimum of 8 inches, uniformly moisture conditioned to 2 percent above optimum moisture, and compacted to 90 percent relative compaction. Scarification and recompaction at the wastewater storage lagoon excavation is not necessary, however, the exposed subgrade must not be disturbed during excavation.
5. For the compost liners, following the required stripping, and/or removal of underground structures, the exposed soil surface must be thoroughly mixed to incorporate 3 percent clay (by dry weight) to a minimum of 12 inches below surface or over-excavated uniformly to a depth of 12 inches below existing site grade. The mixing or over-excavation must extend at least 5 feet laterally beyond the outside edge of the proposed compost areas. The exposed subgrade must be proof-rolled under the observation of a BSK field representative to detect soft or pliant areas. Soft or pliant areas must be over-excavated to firm native soil. The exposed surface must be scarified at minimum of 8 inches, uniformly moisture conditioned to at or above optimum moisture, and compacted to 92 percent relative compaction. On-site material may be used as engineered compost liner fill, if sufficiently blended with 3 percent clay (by dry weight), uniformly moisture conditioned to 2 percent above moisture content, and compacted to 92 percent relative compaction.
6. Engineered fill in areas of at-grade structures must consist of non-expansive soil (EI < 20), moisture conditioned to at or above optimum moisture, and compacted to 90 percent relative compaction. Excavated soils, free of deleterious substances (organic matter, demolition debris, tree roots, etc.), meeting requirements for engineering fill below, and with less than 3 percent organic content by weight, may be reused as engineered fill for the backfill.
7. Engineered fill must be placed in uniform layers not exceeding 8-inches in loose thickness, moisture-conditioned and compacted as recommended above. Acceptance of engineered fill placement must be based on both moisture content at time of compaction and relative compaction.
8. Imported fill materials must be free of deleterious substances and have less than 3 percent organic content by weight. The project specifications must require the contractor to contact BSK for review of the proposed import fill materials for conformance with these recommendations at least two weeks prior to importing to the site, whether from on-site or off-site borrow areas. Imported fill soils must be non-hazardous and be derived from a single, consistent soil type source conforming to the following criteria:

Maximum Particle Size: 3-inches
Percent Passing #4 Sieve: 65 – 100
Percent Passing #200 Sieve: 20 – 45
Plasticity Index: less than 12
Expansion Index: < 20

Low Corrosion Potential:
Soluble Sulfates: < 1,500 mg/kg
Soluble Chlorides: < 300 mg/kg
Soil Resistivity: > 2,000 ohm-cm

Grading operations must be scheduled as to avoid working during periods of inclement weather. Should these operations be performed during or shortly following periods of inclement weather, unstable soil conditions may result in the soils exhibiting a "pumping" condition. This condition is caused by excess moisture, in combination with compaction, resulting in saturation and near zero air voids in the soils. If this condition occurs, the affected soils must be over-excavated to the depth at which stable soils are encountered and replaced with suitable soils compacted as engineered fill. Alternatively, the Contractor may proceed with grading operations after utilizing a method to stabilize the soil subgrade, which must be subject to review by BSK prior to implementation.

VIII. GREENHOUSE GAS EMISSIONS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	☐	☐	☑	☐
b) Conflict with an applicable plan, Action Plan or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☑

Environmental Setting

GHGs are present in the atmosphere naturally, and are released by natural sources or formed from secondary reactions taking place in the atmosphere. The gases that are seen as the principal contributors to human-induced climate change are the following:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)

A description of several different GHGs is shown below in Table 3-13.

Table 3-13. Greenhouse Gasses; Source: EPA, Intergovernmental Panel on Climate Change

Greenhouse Gas	Description and Physical Properties	Lifetime	GWP	Sources
Methane (CH4)	Is a flammable gas and is the main component of natural gas.	12 years	21	Emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal solid waste landfills.
Carbon dioxide (CO2)	An odorless, colorless, natural greenhouse gas.	30-95 years	1	Enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees, and wood products, and also as a result of certain chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
Chloro-fluorocarbons	Gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are non-toxic nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).	55-140 years	3,800 to 8,100	Were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone.
Hydrofluorocarbons	A man-made greenhouse gasses. It was developed to replace ozone-depleting gases found in a variety of appliances. Composed of a group of greenhouse gases containing carbon, chlorine an at least one hydrogen atom.	14 years	140 to 11,700	Powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases.
Nitrous oxide (N2O)	Commonly known as laughing gas, is a chemical compound with the formula N2O. It is an oxide of nitrogen. At room temperature, it is a colorless, non-flammable gas, with a slightly sweet odor and taste. It is used in surgery and dentistry for its anesthetic and analgesic effects.	120 years	310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
Pre-fluorocarbons	Has a stable molecular structure and only breaks down by ultraviolet rays about 60 kilometers above Earth's surface.	50,000 years	6,500 to 9,200	Two main sources of pre-fluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	An inorganic, odorless, colorless, and nontoxic nonflammable gas.	3,200 years	23,900	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing and as a tracer gas.

Over the last 200 years, human activities have released substantial quantities of GHGs into the atmosphere. These extra emissions increase GHG concentrations in the atmosphere and enhance the natural greenhouse effect, which can cause global warming. Although GHGs produced by human activities include naturally occurring GHGs (e.g., CO_2, CH_4, and N_2O), some gases (e.g., HFCs, PFCs, and SF_6) are entirely new to the atmosphere. Water vapor is a GHG, but it is generally excluded from the list of GHGs because it is short-lived in the atmosphere. Natural processes largely determine their atmospheric concentrations (e.g., oceanic evaporation). For this air quality study, the term “GHGs” will refer collectively to the six gases identified in the bulleted list provided above.

These GHGs vary considerably in terms of global warming potential (GWP), a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. GWP is based on several factors, including the relative effectiveness of gas in absorbing infrared radiation and the length of time that the gas remains in the atmosphere (“atmospheric lifetime”). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified period. For example, N_2O is 265 to 310 times more potent at contributing to global warming than CO_2. GHG emissions are typically measured in metric tons of CO_2 equivalents (MT CO_2e). Table 3-14 identifies the GWP for the three GHGs analyzed in this report. The USEPA and CARB use GWP values from the 2007 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) (IPCC 2007). The IPCC has published the 2021 IPCC Sixth Assessment Report (AR6) with updated GWP values (IPCC 2021).

Table 3-14. Global Warming Potential for Selected Greenhouse Gasses;
Sources: California Air Resources Board (CARB). 2022a. 2022 Scoping Plan for Achieving Carbon Neutrality. Intergovernmental Panel on Climate Change (IPCC). 2021. Climate Change 2021: The Physical Science Basis, Sixth Assessment Report.

Pollutant	2022 Scoping Plan Values from the Fourth Assessment Report (AR4)	Sixth Assessment Report (AR6) Values
Carbon dioxide (CO_2)	1 (by definition)	1 (by definition)
Methane (CH_4)	25	29.8 ± 11
Nitrous oxide (N_2O)	298	273 ± 130

Note: The USEPA and CARB use global warming potential values from the IPCC Fourth Assessment Report (2007).
USEPA = United States Environmental Protection Agency

Regulatory Setting

Federal Regulations

The United States has historically had a voluntary approach to reducing GHG emissions; however, on April 2, 2007, the United States Supreme Court ruled that the USEPA has the authority to regulate CO_2 emissions under the CAA. The Supreme Court ruled that GHGs fit within the CAA’s definition of a pollutant and that the USEPA did not have a valid rationale for not regulating GHGs. In December 2009, the USEPA issued an endangerment finding for GHGs under the CAA.

On December 7, 2009, the USEPA Administrator signed a final action under the CAA, finding that six GHGs (i.e., CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare and that the combined emissions from motor vehicles cause and contribute to global climate change.

On September 15, 2011, the USEPA and the United States Department of Transportation (USDOT) issued the final rule for the first national standards to improve the fuel efficiency of medium- and heavy-duty trucks and buses from 2014 to 2018. For combination tractors, the agencies proposed engine and vehicle standards that would achieve up to a 20 percent reduction in fuel consumption from the model year 2014 by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies proposed separate gasoline and diesel truck standards, which would achieve up to a 10 percent reduction from the model year 2014 for gasoline vehicles and a 15 percent reduction for diesel vehicles (12 and 17 percent, respectively, if accounting for air conditioning leakage). Lastly, the engine and vehicle standards would achieve up to a 10 percent reduction from the model year 2014 fuel consumption for vocational vehicles. On October 25, 2016, the USEPA and USDOT issued Phase 2 of the national standards to improve fuel efficiency standards for medium- and heavy-duty trucks and buses for model years 2021 to 2027 to achieve vehicle fuel savings high as 25 percent, depending on the vehicle category.

The current administration finalized updated Corporate Average Fuel Economy (CAFE) standards for model years 2024 through 2026. The final rule establishes standards that would require an industrywide fleet average of approximately 49 miles per gallon (mpg) for passenger cars and light trucks in 2026 by increasing fuel efficiency by 8 percent annually for model years 2024 and 2025 and 10 percent annually for model years 2026. The agency Projects that the final standards will save consumers nearly $1,400 in total fuel expenses over the lifetimes of vehicles produced in these model years and avoid the consumption of about 234 billion gallons of gas between 2030 to 2050. The National Highway Traffic Safety Administration (NHTSA) also Projects that the standards will cut GHGs from the atmosphere, reduce air pollution, and reduce the country's dependence on oil.

State Agencies

California Air Resources Board (CARB): In 1967, the State Legislature passed the Mulford-Carrell Act, which combined two Department of Health bureaus (i.e., the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board) to establish CARB. Since its formation, CARB has worked with the public, the business sector, and local governments to find solutions to the State's air pollution problems. California adopted the CCAA in 1988. CARB administers the CAAQS for the ten air pollutants designated in the CCAA. These 10 State air pollutants are the six criteria designated by the Federal CAA and four others: visibility-reducing particulates, H_2S, sulfates, and vinyl chloride.

The California Global Warming Solutions Act of 2006, widely known as Assembly Bill (AB) 32, requires CARB to develop and enforce regulations for reporting and verifying statewide GHG emissions. CARB was directed to set a statewide GHG emissions limit and a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

In 2016, the Legislature passed, and Governor Jerry Brown signed, Senate Bill (SB) 32 and AB 197. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in Governor Brown's April 2015 Executive Order (EO) B-30-15. SB 32 builds on AB 32 and keeps California on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels, consistent with an IPCC analysis of the emissions trajectory that would stabilize atmospheric GHG concentrations at 450 parts per million (ppm) CO_2e and reduce the likelihood of catastrophic impacts from climate change. The companion bill to SB 32 (i.e., AB 197) provides additional direction to CARB related to adopting strategies to reduce GHG emissions.

CARB adopted the 2022 Scoping Plan Update on December 15, 2022. The 2022 Scoping Plan Update assesses progress toward the statutory 2030 target while laying out a path to achieving carbon neutrality no later than 2045. The 2022 Scoping Plan Update focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

SB 97 and *State CEQA Guidelines*: In August 2007, the Legislature adopted SB 97, requiring the Governor's Office of Planning and Research (OPR) to prepare and transmit new CEQA guidelines for mitigating GHG emissions or the effects of GHG emissions to the California Natural Resources Agency. The OPR submitted its proposed guidelines to the Secretary for Natural Resources on April 13, 2009, and the *State CEQA Guidelines* amendments became effective on March 18, 2010.

The *State CEQA Guidelines* amendments do not specify a threshold of significance for GHG emissions or prescribe assessment methodologies or specific mitigation measures. Instead, the amendments encourage lead agencies to consider many factors in performing a CEQA analysis but rely on the lead agencies in making their significance determinations based upon substantial evidence. The State CEQA Guidelines amendments also encourage public agencies to use programmatic mitigation plans and programs from which to tier when they perform individual Project analyses.

The State CEQA Guidelines amendments require a lead agency to make a good-faith effort based on the extent possible on scientific and factual data to describe, calculate, or estimate the amount of GHG emissions resulting from a Project. The State CEQA Guidelines amendments give discretion to the lead agency whether to: (1) use a model or methodology to quantify GHG emissions resulting from a Project and which model or methodology to use; and/or (2) rely on a qualitative analysis or performance-based standards. The California Natural Resources Agency is required to periodically update the guidelines to incorporate new information or criteria established by the CARB pursuant to AB 32.

California Green Building Standards: The California Green Building Standards Code, Part 11 of the California Code of Regulations, is commonly called the CALGreen Code. The first edition of the CALGreen Code was released in 2008 and contained only voluntary standards. The 2022 CALGreen Code was updated in 2022, became effective on January 1, 2023, and applies to non-residential and residential developments. The CALGreen Code contains requirements for construction Site selection, stormwater control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, Site irrigation conservation, and more. The CALGreen Code provides design options allowing the designer to determine how best to achieve compliance for a given Site or building condition. The CALGreen Code also requires building commissioning, which is a process for the verification that all building systems (e.g., heating and cooling equipment and lighting systems) function at their maximum efficiency.

San Joaquin Valley Air Pollution Control District (SJVAPCD)

Climate Change Action Plan. In August 2008, the SJVAPCD adopted the Climate Change Action Plan (CCAP) (SJVAPCD 2008). The CCAP directed the SJVAPCD to develop guidance to assist lead agencies, Project proponents, permit applicants, and interested parties in assessing and reducing the impacts of Project-specific GHG emissions on global climate change.

In December 2009, the SJVAPCD adopted the guidance: *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* (SJVAPCD 2009a) and the policy: *District*

Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency (SJVAPCD 2009b). The guidance and policy rely on performance-based standards, otherwise known as Best Performance Standards (BPS) (SJVAPCD 2009c), to assess the the significance of Project-specific GHG emissions on global climate change during the environmental review process, as required by CEQA. Projects implementing BPS in accordance with SJVAPCD's guidance would be determined to have a less than the significant individual and cumulative impact on GHG emissions and would not require Project-specific quantification of GHG emissions.

2035 Kings County General Plan: The Kings County General Plan *Air Quality Element and Land Use Element* includes the following Goals, Objectives, and Action Plans regarding greenhouse gas emissions:

- *LU Policy B1.2.2:* Maintain the Limited Agriculture designation around Community Districts until substantial build out of a Community District has occurred according to an adopted Community Plan, and consideration of new locations for urban uses is necessary to accommodate additional population growth.
- *LU Policy C1.1.1:* Urban type land uses such as Residential, Commercial, and Industrial that are located within Rural Interface areas shall remain limited to the previously defined extent of those land use designation areas. Minor adjustments between land uses may be considered so long as land use changes do not result in the expansion of Rural Residential zoning.
- *LU Policy D1.*2.2: Prioritize infill development of vacant and underutilized parcels within the existing special district boundaries where water and sewer service are available to reduce outward growth pressure and costly expansion of district facilities.

- ***AQ GOAL C1: Use Air Quality Assessment and Mitigation programs and resources of the SJVAPCD and other agencies to minimize air pollution, related public health effects, and potential climate change impacts within the County.***
  - RC OBJECTIVE C1.1: Accurately assess and mitigate potentially significant local and regional air quality and climate change impacts from proposed Projects within the County.
    - *AQ Policy C1.1.1:* Assess and mitigate Project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD.
    - *AQ Policy C1.1.2:* Assess and mitigate Project greenhouse gas/climate change impacts using analysis methods and significance thresholds as defined or recommended by the SJVAPCD, KCAG or California Air Resources Board (ARB) depending on the type of Project involved.
    - *AQ Policy C1.1.3:* Ensure that air quality and climate change impacts identified during CEQA review are minimized and consistently and fairly mitigated at a minimum, to levels as required by CEQA.

- ***AQ GOAL G1: Reduce Kings County's proportionate contribution of greenhouse gas emissions and the potential impact that may result on climate change from internal governmental operations and land use activities within its authority.***
  - AQ OBJECTIVE G1.1: Identify and achieve greenhouse gas emission reduction targets consistent with the County's proportionate fair share as may be allocated by ARB and KCAG.
    - *AQ Policy G1.1.1:* As recommended in ARB's Climate Change Adopted Scoping Plan (December 2008), the County establishes an initial goal of reducing greenhouse gas emissions from its internal governmental operations and land use activities within its authority to be consistent with ARB's adopted reduction targets for the year 2020. The County will also work with KCAG

to ensure that it achieves its proportionate fair share reduction in greenhouse gas emissions as may be identified under the provisions of SB 375 (2008 Chapter 728) for any Projects or activities requiring approval from KCAG.

<u>Discussion</u>

Thresholds of Significance

State CEQA Guidelines Section 15064(b) provides that the "determination of whether a Project may have a significant effect on the environment calls for a careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

Appendix G of the *State CEQA Guidelines* includes significance thresholds for GHG emissions. A Project would normally have a significant effect on the environment if it did either of the following:

- Generate GHG emissions, either directly or indirectly that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy, or regulation adopted to reduce the emissions of GHGs.

Currently, no Statewide GHG emissions threshold has been used to determine a Project's potential GHG emissions impacts. Threshold methodology and thresholds are still being developed and revised by air districts in California.

Neither Kings County nor SJVAPCD has developed or adopted numeric GHG significance thresholds. Therefore, this analysis evaluates the GHG emissions based on the Project's consistency with the SJVAPCD CCAP and other applicable State GHG reduction goals.

a) Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

<u>Less Than Significant Impact:</u> This section discusses the Project's impacts related to the release of GHG emissions for the construction and operational phases of the Project.

Estimating GHG emissions in the future does not account for all changes in technology that may reduce such emissions; therefore, the estimates are based on past performance and represent a scenario worse than that which is likely to be encountered (after energy-efficient technologies have been implemented). While information is presented below to assist the public and decision-makers in understanding the Project's potential contribution to climate change impacts, the information available is not sufficiently detailed to allow a direct comparison between particular Project characteristics and particular climate change impacts or between any particular proposed mitigation measure and any reduction in climate change impacts.

Construction and operation of the proposed Project would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during the Project's operation. Overall, the following activities associated with the proposed Project could directly or indirectly contribute to generating GHG emissions.

Construction

Construction activities associated with the proposed Project would produce combustion emissions from various sources. During construction, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change. The SJVAPCD does not have an adopted threshold of significance for construction-related GHG emissions. However, lead agencies are encouraged to quantify and disclose GHG emissions that would occur during construction. Using CalEEMod, it is estimated that the proposed Project's construction would generate approximately 303 MT CO_2e. When considered over the 30-year life of the Project, the total amortized construction emissions for the proposed Project would be 10 MT CO_2e per year.

Operation

Long-term GHG emissions are typically generated from mobile sources (e.g., cars, trucks, and buses), area sources (e.g., maintenance activities and landscaping), indirect emissions from sources associated with energy consumption, waste sources (land filling and waste disposal), and water sources (water supply and conveyance, treatment, and distribution). Mobile source GHG emissions would include Project-generated car and truck trips to and from the Site. Area-source emissions would be associated with activities like composting operations on the Project Site. In addition, water source emissions associated with the proposed Project are generated by water supply and conveyance, water treatment, water distribution, and wastewater treatment.

GHG emissions were estimated using CalEEMod (Appendix A). Table 3-15 shows the calculated GHG emissions for the proposed Project.

Table 3-15. Long-Term Operational Greenhouse Gas Emissions; Source: Compiled by LSA

Source	Pollutant Emissions per Year (MT)					
	Bio-CO_2	Nbio-CO_2	Total CO_2	CH_4	N_2O	CO_2e
Construction Emissions Amortized Over 30 Years						**10**
Operational Emissions						
Area	0	<1	<1	<1	<1	<1
Energy	0	65	65	<1	<1	66
Mobile	0	181	181	<1	<1	185
Offroad	0	150	150	<1	<1	151
Waste	2	0	2	<1	<1	8
Water	1	2	3	<1	<1	8
Total Project Emissions	4	399	403	<1	<1	428

Note: Totals may not appear correct due to rounding.
Bio-CO2 = biologically generated carbon dioxide
CH4 = methane
CO2 = carbon dioxide
CO2e = carbon dioxide equivalent
MT = metric tons
N2O = nitrous oxide
Nbio-CO2 = non-biologically generated carbon dioxide

Table 3-15 shows that the Project would generate 428 MT CO_2e per year. As discussed above, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds or consistency with a regional GHG reduction plan (such as a Climate Action Plan). Neither Kings County nor SJVAPCD has developed or adopted numeric GHG significance thresholds. Therefore, this analysis evaluates the GHG emissions based on the Project’s consistency with the SJVAPCD CCAP and other applicable State GHG reduction goals. There is a *less than significant impact.*

b) Would the Project conflict with an applicable plan, Action Plan or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

No Impact: As discussed above, the SJVAPCD has adopted a CCAP, which includes suggested BPS for proposed development Projects. Appendix J of the SJVAPCD Final Staff Report for the CCAP contains GHG reduction measures; however, these measures are intended for commercial, residential, and mixed-use Projects and would not apply to the composting and truck wash facility. The only applicable measure is the following:

- To minimize greenhouse gas emissions and optimize equipment efficiency, all equipment shall be operated following manufacturers' specifications and approved design specifications.

Consistency with the Scoping Plan: The following discussion evaluates the proposed Project according to the goals of the 2022 Scoping Plan, EO B-30-15, SB 32, and AB 197.

EO B-30-15 added the immediate target of reducing GHG emissions to 40 percent below 1990 levels by 2030. CARB released a second update to the Scoping Plan (the 2017 Scoping Plan [CARB 2017]), to reflect the 2030 target set by EO B-30-15 and codified by SB 32. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in EO B-30-15. SB 32 builds on AB 32 and keeps us on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels. The companion bill to SB 32 (i.e., AB 197) provides additional direction to the CARB related to adopting strategies to reduce GHG emissions. The additional direction in AB 197 intended to provide easier public access to air emissions data that the CARB collects was posted in December 2016.

In addition, the 2022 Scoping Plan assesses progress toward the statutory 2030 target while laying out a path to achieving carbon neutrality no later than 2045. The 2022 Scoping Plan focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

The 2022 Scoping Plan focuses on building clean energy production and distribution infrastructure for a carbon-neutral future, including transitioning existing energy production and transmission infrastructure to produce zero-carbon electricity and hydrogen and utilizing biogas resulting from wildfire management or landfill and dairy operations, among other substitutes. The 2022 Scoping Plan states that electrification will play an essential role in almost all sectors. The 2022 Scoping Plan evaluates clean energy and technology options and the transition from fossil fuels, including adding four times the solar and wind capacity by 2045 and about 1,700 times the current hydrogen supply. As discussed in the 2022 Scoping Plan, EO N-79-20 requires that all new passenger vehicles sold in California will be zero-emissions by 2035. All other fleets will have transitioned to zero-emissions as entirely possible by 2045, which will reduce the percentage of fossil fuel combustion vehicles.

Water conservation and efficiency measures are intended to continue efficiency programs and use cleaner energy sources to move and treat water. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions. As noted above, the Project would comply with the CALGreen Code, which includes a variety of different measures, including reduction of wastewater and water use.

Therefore, the proposed Project would not conflict with any of the water conservation and efficiency measures.

The goal of transportation and motor vehicle measures is to develop regional GHG emissions reduction targets for passenger vehicles. Specific regional emission targets for transportation emissions would not directly apply to the proposed Project. The second phase of the Pavley standards will reduce GHG emissions from new cars by 34 percent from 2016 levels by 2025, resulting in a 3 percent decrease in average vehicle emissions for all vehicles by 2020. Vehicles traveling to the Project Site would comply with the Pavley II (LEV III) Advanced Clean Cars Program (CARB 2012). Therefore, the proposed Project would not conflict with the identified transportation and motor vehicle measures. AB 107 measures to reduce non-combustion emissions (methane) include measures to divert organic waste from landfills. The proposed Project would accomplish this by diverting organic waste to be composted. There will be *no impact.*

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☑	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☑	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☑
d) Be located on a Site which is included on a list of hazardous materials Sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard or excessive noise to the public or the environment?	☐	☐	☐	☑
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☑
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
g) Expose people or structures, either directly or indirectly, to significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☑

Environmental Setting

The proposed Project Site is approximately 2 miles southeast of the nearest school (Riverdale Continuation High/Fipps Primary School) and approximately 12.4 miles northwest of the nearest public airport (Hanford Municipal Airport).

The Department of Toxic Substances Control's (DTSC's) EnviroStor was used to identify any Sites associated with the releases of hazardous materials or wastes within the Project area. This research confirmed that the Project would be located near a Site that is included on a list of hazardous materials Sites compiled under Government Code Section 65962.5. The Everette Dumpsite is located on 22nd Avenue and Everett Avenue, approximately 2.4 miles from the Project Site, and has been investigated for potential pesticide contamination via groundwater and soil exposure. Based on the most recent analysis, no further remedial action is planned, as Site conditions implied no contamination was found, the contamination was not severe enough to require Federal action, or the contamination was removed quickly. However, the Site remains on EnviroStor due to potential contamination issues associated with the initial investigation by the Department of Health Services in 1982.

Regulatory Setting

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S. Code [U.S.C.] §9601 et seq.). The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or the Superfund Act) authorizes the President to respond to releases or threatened releases of hazardous substances into the environment.

Occupational Safety and Health Administration. The Occupational Safety and Health Administration (OSHA) sets and enforces Occupational Safety and Health Standards to assure safe working conditions. OSHA provides training, outreach, education, and compliance assistance to promote safe workplaces. The proposed Project would be subject to OSHA requirements during construction, operation, and maintenance.

Toxic Substances Control Act of 1976 (15 U.S.C. §2601 et seq.). The Toxic Substance Control Act was enacted by Congress in 1976 and authorized the EPA to regulate any chemical substances determined to cause an unreasonable risk to public health or the environment.

Hazardous Waste Control Law, Title 26. The Hazardous Waste Control Law creates hazardous waste management program requirements. The law is implemented by regulations contained in Title 26 of the California Code of Regulations (CCR), which contains requirements for the following aspects of hazardous waste management:

- Identification and classification;
- Generation and transportation;
- Design and permitting of recycling, treatment, storage, and disposal facilities;
- Treatment standards;
- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

California Code of Regulations, Title 22, Chapter 11. Title 22 of the California Code of Regulations contains regulations for identifying and classifying hazardous wastes. The CCR defines waste as hazardous if it has the following characteristics: ignitability, corrosivity, reactivity, and/or toxicity.

California Emergency Services Act. The California Emergency Services Act created a multi-agency emergency response plan for California. The Act coordinates various agencies, including CalEPA, Caltrans, the California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices.

Kings County Department of Public Health: The Kings County Department of Public Health implements the Hazardous Waste Program and the Hazardous Waste Treatment/Tiered Permit Program throughout Kings County. These programs aim to ensure that all hazardous waste generated in Kings County businesses is appropriately handled, recycled, treated, stored, and disposed. Environmental Health staff inspects facilities that generate hazardous waste, investigates reports of illegal hazardous waste disposal, and responds to emergency spills of hazardous chemicals. Environmental Health staff also participates in public education programs to inform industries and residents about the laws and regulations relating to the safe disposal of hazardous waste.

2035 Kings County General Plan:

The Kings County 2035 General Plan *Safety Element* includes the following goals, objectives, and policies on hazards and hazardous materials and have been relevant to this analysis:

- ***HS GOAL A1: Preventative measures reduce the potential impacts of natural hazards upon people's lives, property, and the environment.***
  - HS OBJECTIVE A1.1: Coordinate County General Plan Health and Safety Element updates with the Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan.
    - *HS Policy A1.1.1:* Collaborate with the Kings County Office of Emergency Services to conduct joint updates of the Kings County Multijurisdictional Multi-Hazard Mitigation Plan and the Health and Safety Element of the County's General Plan.
    - *HS Policy A1.1.2:* Integrate mitigation measures of the Kings County Multijurisdictional Multi-Hazard Mitigation Plan into the Health and Safety Element policies where applicable and relevant to County operational areas of responsibility.
  - HS OBJECTIVE A1.3: Limit growth and development in hazard areas to minimize new areas susceptible to higher risk of natural hazards.
    - *HS Policy A1.3.1:* Implement natural hazards review criteria for new development that is based upon information provided in the Natural Hazards Section of the Health and Safety Element to improve long term loss prevention.
- ***HS GOAL B1: Promote the health and well-being of County residents, and support healthy living environments, physical activity opportunities, medical services, and readily available nutritious food sources.***
  - HS OBJECTIVE B1.5: Ensure adequate protection of County residents from new generations of toxic or hazardous waste substances.
    - *HS Policy B1.5.1:* Evaluate development applications to determine the potential for hazardous waste generation and be required to provide sufficient financial assurance that is available to the County to cover waste cleanup and/or Site restoration in instances where the Site has been abandoned or the business operator is unable to remove hazardous materials from the Site.

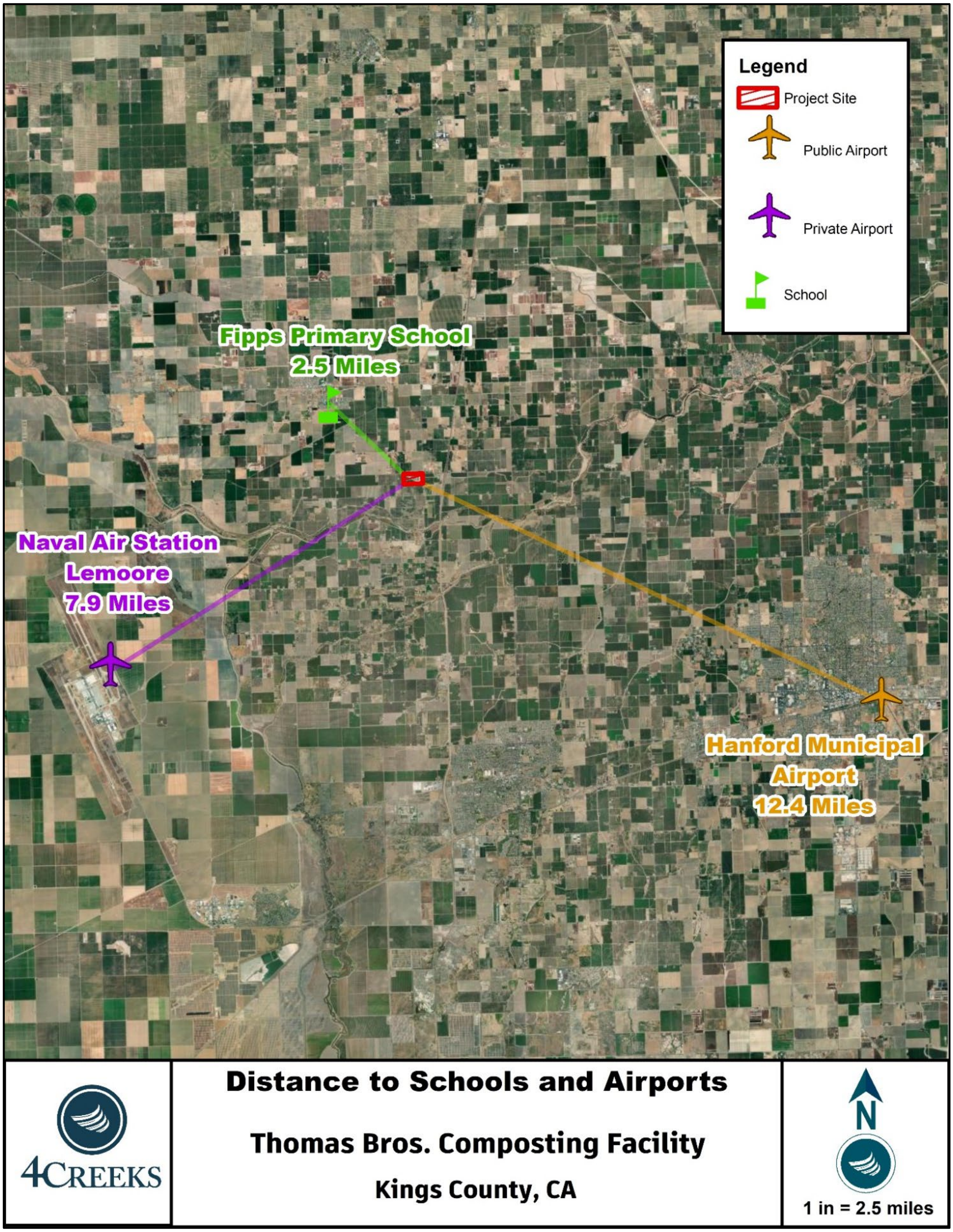


Figure 3-5: Distance to Schools and Airports

Discussion

a) **Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Less than Significant Impact: The California Health and Safety Code defines a hazardous material as "any material that because of its quantity, concentration, or physical or chemical characteristics poses a significant present or potential hazard to human health and safety or the environment if released into the workplace or environment." Hazardous materials include oil, fuels, paints, thinners, cleaning solvents, compressed gases, radioactive materials, and pesticides. Substances that are toxic, flammable, reactive, corrosive, radioactive, carcinogenic, bioaccumulative, persistent in the environment, or water-reactive are considered hazardous. The Kings County Department of Public Health is the Certified Unified Program Agency (CUPA) for Kings County, with the responsibility of regulating hazardous materials handlers, hazardous waste generators, stationary sources of hazardous materials, and the storage of hazardous materials.

Project construction activities may involve using, storing, and transporting hazardous materials. During construction, the contractor will use fuel trucks to refuel onsite equipment and may use paints and solvents to a limited degree. The storage, transport, and use of these materials will comply with Local, State, and Federal regulatory requirements, including the Hazardous Materials Transportation Act, Resource Conservation and Recovery Act, and the California Code of Regulations, Title 8, and Title 22. There is the potential for small leaks due to refueling of construction equipment; however, standard construction Best Management Practices (BMPs) included in the SWPPP will reduce the potential for the release of construction-related fuels and other hazardous materials by controlling runoff from the Site and requiring proper disposal or recycling of hazardous materials.

During Project operation, potentially hazardous materials will be used and stored onsite. The Project estimates that 1,000 gallons of diesel fuel, 60 gallons of hydraulic oil, 50 gallons of motor oil, 20 gallons of lubricating oils, and 1,000 gallons of propane will be used and stored onsite. The storage, transport, and use materials will comply with all Local, State, and Federal regulatory requirements. The facility will be subject to the California Aboveground Petroleum Storage Act (APSA). Potential chemicals and contaminants used on-site is stored and disposed of following the recommendations of the manufacturer. The materials will be used for standard maintenance, but the Project does not include the routine transport or disposal of hazardous materials. Standard construction (BMPs) included in the SWPPP will reduce the potential for releasing construction-related fuels and other hazardous materials by controlling runoff from the Site and requiring proper disposal or recycling of hazardous materials.

Additionally, the Project will be required to file a Hazardous Materials Business Plan. Hazardous materials are broadly defined, and include fuel, lubricants, antifreeze, motor vehicle batteries, welding gases, paints, solvents, glues, agricultural chemicals, etc. Any quantities of hazardous wastes generated by the facility operation must be managed in accordance with Federal, State, and local laws and regulations. Hazardous wastes cannot be disposed of into the municipal waste stream or onsite sewage disposal system. The impact is *less than significant.*

b) **Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

Less than Significant Impact: There is the potential for conditions or incidences involving the Project that could result in the release of hazardous materials into the environment, particularly with construction and operation phases, which could include the release of standard fuels, solvents, or chemicals encountered during typical construction, and biological contaminants associated with liquid and solid animal manure. However, these events are not reasonably foreseeable with the BMPs included in the Project. Should an accidental hazardous release occur, existing regulations for handling hazardous materials require coordination with the California Department of Toxic Substances Control for an appropriate plan of action, which can include studies or testing to determine the nature and extent of contamination, as well as handling and proper disposal. The most significant concern is the release of harmful bacteria and nutrients into surface waters and groundwater, which may threaten human health. The Project will use a Reinforced Composite Polyethylene (RCPE) as a liner to prevent contaminants from impacting the water. The leakage rate through a geomembrane liner due to geomembrane permeability is negligible. Therefore, potential impacts are *less than significant*.

c) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No impact: Project operations will not emit hazardous emissions or handle hazardous materials, substances, or wastes, and the Project is not located within one-quarter mile of an existing or proposed school. Since the Project would not emit hazardous emissions or involve handling acutely hazardous materials or waste and is not within one-quarter mile of an existing or proposed school, there would be *no impact.*

d) Would the Project be located on a Site which is included on a list of hazardous materials Sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact: The Project Site is not listed as a hazardous materials Site under Government Code Section 65962.5 and is not included on a list compiled by the Department of Toxic Substances Control. According to the database of cleanup Sites provided on the EnviroStor database provided through the California Department of Toxic Substance Control (DTSC), there are no Sites in need of remediation within the vicinity of the Project. Therefore, it can be concluded that there would be *no impact.*

e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?

No Impact: The proposed Project is located approximately 12.4 miles northwest of the nearest public airport (Hanford Municipal Airport) and not in an airport land use plan. There is no impact. Implementing the proposed Project would not result in a safety hazard for people residing or working in the Project area.

f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact: The County's design and environmental review procedures shall ensure compliance with emergency response and evacuation plans. In addition, the Site plan will be reviewed by the Fire Department per standard procedure to ensure consistency with emergency response and evacuation needs. Therefore, the proposed Project would have *no impact* on emergency evacuation.

g) Would the Project expose people or structures, either directly or indirectly, to significant risk of loss, injury or death involving wildland fires?

No Impact: The land surrounding the Project Site is developed with some residences and farmlands that are not considered wildlands. Additionally, the 2035 Kings County General Plan finds that fire hazards within the community, including the proposed Project Site, have low frequency, limited extent, magnitude, and significance. The proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires and there is *no impact.*

X.HYDROLOGY AND WATER QUALITY

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise sustainably degrade surface or ground water quality?	☐	☐	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	☐	☐	☐	☐
c) Substantially alter the existing drainage pattern of the Site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would:				
(i) result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☐
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☐	☐	☐
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	☐
(iv) impede or redirect flood flows?	☐	☐	☐	☐
d) In flood hazard, tsunami, or seiche zones risk the release of pollutants due to Project inundation?	☐	☐	☐	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater movement plan?	☐	☐	☐	☐

Environmental Setting

Surface Water: The proposed Project Site is within the Tulare-Buena Vista Lakes Watershed, covering portions of Kern and Kings County. The most prominent rivers and streams within the Watershed are the Kings River and the Kaweah River. The alluvial fans of the Kings River and Kaweah River dominate the Kings County Water District landscape. Other surface waters include the Saint Johns River and Cross Creek. An existing canal, the “E” canal, runs along the Site's southern boundary.

Groundwater: The proposed Project Site is in the Tulare Lake Hydrologic Region, which covers 10.9 million acres south of the San Joaquin River. The Tulare Lake Hydrologic Region is composed of 12 groundwater basins. The proposed Project Site lies within the San Joaquin Valley Groundwater Basin. The San Joaquin Valley Groundwater Basin is divided into seven sub-basins. The proposed Project would be located within the Kings Subbasin. Within the Kings Subbasin, the Site is under the jurisdiction of the North Fork Kings Groundwater Sustainability Agency. The Project is within the Laguna Irrigation District, which supplies water to the Site.

Stormwater Drainage: The Project includes the construction of a water retention pond. These are large enough to handle all the processed water from the Site and water from a 25-year, 24-hour event. A 25-year, 24-hour event is the maximum 24-hour precipitation event with a probable recurrence of one in 25 years.

Regulatory Setting

Clean Water Act: The Clean Water Act (CWA) is enforced by the U.S. EPA and was developed in 1972 to regulate discharges of pollutants into the waters of the United States. The Act made it unlawful to discharge any pollutant from a point source into navigable waters unless a National Pollution Discharge Elimination System (NPDES) Permit is obtained.

National Flood Insurance Act: The Federal Emergency Management Agency (FEMA) is tasked with responding to, planning for, recovering from, and mitigating against disasters. The Federal Insurance and Mitigation Administration within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that aid with mitigating future damages from natural hazards.

California Water Quality Porter-Cologne Act: California's primary statute leading water quality and water pollution concerns with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resource Control Board (SWRCB) and each of the nine Regional Water Quality Boards (RWQCB) power to protect water quality and further develop the Clean Water Act within California. The applicable RWQCB for the proposed Project is the Central Valley RWQCB.

Central Valley RWQCB: The proposed Project Site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB requires a National Pollution Discharge Elimination System (NPDES) Permit and Stormwater Pollution Prevention Plan (SWPPP) for Projects disturbing more than one acre of total land area. Because the Project is greater than one acre, an NPDES Permit and SWPPP will be required.

North Fork Kings Groundwater Sustainability Agency: The NFKGSA is a joint-powers authority agreement between Clark's Fork Reclamation District, Laguna Irrigation District, Liberty Water District, Riverdale Irrigation District, Stinson Water District, Lanare Community Services District, Laton Community Services District, Riverdale Public Utility District, and numerous other Mutual Water Companies. The goal of this agency is to achieve sustainable groundwater balance by 2040. This goal will be met by balancing water demand with available water supply and stabilizing the long-term trend of declining groundwater levels without significantly or unreasonably impacting groundwater storage, water quality, land subsidence, or interconnected surface water.

2035 Kings County General Plan

The Kings County General Plan *Resource Conservation Element and Health and Safety Element* contains the following Goals, Objectives, and Action Plans on flood control and water use that are potentially applicable to the proposed Project:

- ***HS GOAL A4: Prevent unnecessary exposure of people and property to flood damage.***
  - <u>HS OBJECTIVE A4.1:</u> Direct new growth away from designated flood hazard risk areas and regulate new development to reduce the risk of flood damage to an acceptable level.
    - *HS Policy A4.1.1:* Review new development proposals against current Federal Emergency Management Agency (FEMA) digital flood insurance rate maps and California Department of Water Resource special flood hazard maps to determine Project Site susceptibility to flood hazard.
    - *HS Policy A4.1.2:* Reserve FEMA designated flood hazard areas for agricultural and natural resource conservation uses along the floodway channels and Tulare Lake Basin.
    - *HS Policy A4.1.3:* Determine base flood elevations for new development proposals within or adjacent to 100-year flood zone areas as identified in latest FEMA Digital Flood Insurance Rate Map, to definitively assess the extent of property potentially subject to onsite flood hazards and risks.
    - *HS Policy A4.1.4:* Direct new urban growth to existing cities and community districts, or away from New Community Discouragement Areas to avoid flood hazard areas and increased risk to people and property.
    - *HS Policy A4.1.5:* Regulate development, water diversion, vegetation removal, and grading to minimize any increase in flood damage to people and property.
    - *HS Policy A4.1.6:* New development shall provide onsite drainage or contribute towards their fair share cost of off-site drainage facilities to handle surface runoff.
    - *HS Policy A4.1.7:* Consider and identify all areas subject to flooding in the review of all land divisions and development Projects.
    - *HS Policy A4.1.8:* Enforce the "Kings County Flood Damage Prevention Ordinance," Chapter 5A of the Kings County Code of Ordinances.

- ***RC GOAL A1: Beneficially use, efficiently manage, and protect water resources while developing strategies to capture additional water sources that may become available to ensure long term sustainable water supplies for the region.***
  - <u>RC OBJECTIVE A1.4:</u> Protect the quality of surface water and groundwater resources in accordance with applicable Federal, state, and regional requirements and regulations.
    - *RC Policy A1.4.1:* Evaluate proposed land uses and development Projects for their potential to create surface and groundwater contamination from point and non-point sources. Confer with other appropriate agencies, as necessary, to assure adequate water quality review to prevent soil erosion; direct discharge of potentially harmful substances; ground leaching from storage of raw materials, petroleum products or waste; floating debris; and runoff from the Site.
    - *RC Policy A1.4.2:* Monitor and enforce provisions to control water pollution contained in the U.S. EPA National Pollutant Discharge Elimination System (NPDES) program as implemented by the California Water Quality Control Board, Central Valley Region.
    - *RC Policy A1.4.3:* Require the use of feasible and cost-effective Best Management Practices (BMPs) and other measures designed to protect surface water and groundwater from the adverse effects of construction activities and urban and agricultural runoff in coordination with the California Water Quality Control Board, Central Valley Region.
    - *RC Policy A1.4.4:* Encourage and support the identification of degraded surface water and groundwater resources and promote restoration where appropriate.
  - <u>RC OBJECTIVE A1.5:</u> Avoid the placement of potential pollution sources in areas that have the potential to foster groundwater recharge.

  - *RC Policy A1.5.1:* Cooperate with local agencies in the preservation and purchase of natural sloughs for use as water recharge and drainage basins.
- RC OBJECTIVE A1.6: Protect groundwater quality by applying development standards which seek to prevent pollution of surface or groundwater and net loss of natural water features.
  - *RC Policy A1.6.2:* Support measures to ensure that water users do not unreasonably use groundwater resources.
- RC OBJ C2.2: Ensure that land use decisions are compatible with the control of soil erosion and the maintenance of soil quality.
  - *RC Policy C2.2.1:* Require erosion control measures for any development involving construction or grading near waterways, or on land with slopes over ten percent. Require that improvements such as roads and driveways be designed to retain natural vegetation and topography to the extent feasible.
  - *RC Policy C2.2.2:* Continue to require the application of construction related erosion control measures, including Stormwater Pollution Protection Plans (SWPPP) for all new construction.

Discussion

a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than Significant with Mitigation: The Project will have less than significant impacts on water quality due to potentially polluted runoff generated during construction activities. Construction, including excavation, grading, and other earthworks, has the potential to impact water quality. A Water and Wastewater Management Plan has been prepared for the Project (Appendix F). This Plan confirms that the proposed basin will retain all water onsite. No water will run off into existing water sources; it will be retained on-site and recycled for future use. Water from the truck wash will flow into a process pit, where it will eventually be pumped into the wastewater detention pond. The water in the pond will be utilized for reapplication to active composting piles. The proposed pond will be lined to prevent wastewater from impacting the groundwater. The pond will be lined following specific guidelines to ensure stability and impermeability. Initially, after the removal of underground structures or stripping, the soil surface is to be mixed with 3 percent clay by dry weight to a depth of 12 inches below the surface or over-excavated to the same depth, extending 5 feet beyond the proposed compost areas. The subgrade will then undergo proof-rolling to identify and address soft areas by over-excavation to firm soil. Subsequently, the surface will be scarified to 8 inches, moisture conditioned to above optimum levels, and compacted to 92 percent relative compaction. The engineered compost liner fill can utilize on-site material if it is adequately blended with 3 percent clay, moisture conditioned to 2 percent above optimum, and compacted to achieve 92 percent relative compaction. This meticulous process ensures the pond lining is both stable and impermeable, essential for effective composting runoff management and structural integrity.

The pond will be constructed to prevent impacts to the water quality. A pond design work plan has been completed and is detailed in Appendix J of this report. The proposed pond will be constructed within the existing facility footprint and will be constructed with a scrim-Reinforced, flexible Geomembrane consisting of woven high-density polyethylene (HDPE) core, low density polyethylene (LDPE) extruded coatings, and a proprietary laminated surface film made of polyethylene blend for additional protection and optimal welding. A lysimeter pan will be constructed and will be used for any potential leakage. The proposed pond includes pipelines to manage flows between the proposed wastewater detention pond and facility drainage.

During storm events, exposed construction areas across the Project Site may cause runoff to carry pollutants, such as chemicals, oils, sediment, and debris. Implementation of a Stormwater Pollution Prevention Plan (SWPPP) will be required for the Project. An SWPPP identifies all potential sources of pollution that could affect stormwater discharges from the Project Site and identifies best management practices (BMPs) related to stormwater runoff. As such, implementation of Mitigation Measures HYD-1 and HYD-2 will ensure impacts remain *less than significant with mitigation.*

b) Would the Project substantially decrease groundwater supplies or interfere with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

Less than Significant Impact: The proposed Project Site is located within the North Fork Kings Groundwater Sustainability Agency (NFKGSA). The NFKGSA is located within the Kings Subbasin, within the San Joaquin Valley Groundwater Basin. The NFKGSA is approximately 168,366 acres within Fresno and Kings Counties. It primarily consists of agricultural land, with several rural communities and residential properties throughout. Domestic water demands are met solely by groundwater. Agricultural demands are met through both groundwater and surface water, primarily the Kings River. A Sustainable Groundwater Evaluation Report was created for this Project and can be found in Appendix H.

The current facility receives an average of 39.89 acre-feet (AF) of surface water diverted from the Kings River. However, this annual allocation can vary significantly. In 2019, the facility was allocated 129.60 AF of surface water, but did not receive any water in 2014. Most recently, the facility was allocated 4.43 AF of water in 2022. Along with the allocation restrictions, the Facility is also limited to specific dates in the year when water can be pulled from Kings River. When surface water does not meet Facility water needs, the owners of the Facility will utilize onsite wells and groundwater pumping for additional water supplies.

The proposed Project would not significantly impact groundwater resources. Water use is estimated to be approximately 0.12 acre-feet/acre/month during Project construction. This totals approximately .54-acre feet (AF) over the four months of construction. This water will be used primarily for dust control.

During operations, the Project would use water for the composting operations and the truck wash. The composting is expected to require up to 7,747 gallons per day (GPD). The private truck wash is expected to be used up to twelve times per week, or twice daily. Each wash is expected to use 150 gallons of water. On average, the truck wash would use 300 gallons per day or .29 acre-feet per year (AFY). This adds up to a total of approximately 8,047 gpd or 9.01 AFY. This water will be contained on-site and recycled for future use in the composting process. Water from the truck wash will flow into a process pit, where it will eventually be pumped into the wastewater detention pond. The water in the pond will be utilized for reapplication to active composting piles. The proposed pond will be lined to prevent wastewater from impacting the groundwater.

The Project Site is in an area of significant agricultural activity. Therefore, comparing Project-related water use to typical agricultural water use is relevant. The 2020 Kings County Crop Report identifies Pasture Range as having the largest number of harvested acres within the County. Due to this, the amount of water used for Pasture Range production was used to evaluate the significance of the Project's water use.

The 2015 California Agricultural Production and Irrigated Water Use Report states that Pastureland (all types) production requires an average of 2.0 acre-feet of applied water/acre/year, or 0.167 acre-feet/acre/month. Over the Site's 63 acres, this would result in 126 acre-feet of applied water/year or 10.5 acre-feet of applied water/month. Because construction-related water use is anticipated to be approximately 0.12 acre-feet/acre/month, and operational water use is anticipated to be approximately 9.01 AFY, both construction and operation of the proposed Project would require less water than would be required by typical crop cultivation.

4Creeks prepared a Sustainable Groundwater Evaluation Report for this Project (Appendix H). Regarding groundwater supplies, the Report states:

Surface water supplies from the Kings River vary each year with local hydrogeologic conditions. Depending on the mountainous precipitation and winter snowpack, surface water allocation may be increased or decreased. The Facility will continue to utilize only the amount of surface water allocated through the LID and KRWA. Dependent on the yearly supply of surface water, the Facility will acquire the remainder of facility water needs from unrestricted onsite wells while being mindful of basin groundwater levels.

Monitoring protocols may be introduced to private onsite wells, which are designed to detect changes in groundwater levels, groundwater quality, and inelastic surface subsidence for basins in which subsidence has been identified as a potential problem and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater extraction in the basin. On the condition that groundwater levels continue to decline, and monitoring protocols are required onsite, the Facility's owners will comply to meet new groundwater allocations and water quality standards.

Regarding the groundwater recharge, the Report states that groundwater is found twenty feet below the surface. With a proposed depth of 15 feet and 10 feet for the new basins, this will comply with the 5-foot separation from the proposed basin to the first groundwater encountered.

The proposed Project does not meet the definition of a "Project" as defined by Water Code § 10912 and would not be subject to a Water Supply Assessment according to SB 610 or SB 221. Because the Project would use a relatively small amount of water compared to adjacent agricultural uses, the proposed Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. The impact is *less than significant.*

c) Would the Project substantially alter the existing drainage pattern of the Site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would:

i. Result in substantial erosion or siltation on- or off-site?

<u>Less than Significant with Mitigation:</u> The proposed Project would not impact existing drainage patterns or alter the course of a stream or river. The truck wash will create a small impervious surface; however, all runoffs will be contained on-site. As shown in the Water and Wastewater Management Plan (Appendix F), all stormwater and wastewater will be drained into the proposed on-site pond. The disturbance of soils during construction could cause erosion, resulting in temporary construction impacts. However, this impact would be appropriately mitigated by implementing a Stormwater Pollution Prevention Plan (SWPPP), which includes mandated erosion control measures, which are developed to prevent the significant effects related to erosion caused by runoff during construction (Mitigation Measure HYD- 1). The Project proponent will also be required to prepare drainage plans (Mitigation Measure HYD-2) and a Development Maintenance Manual (Mitigation Measure HYD-3) to ensure that existing drainage patterns are maintained during Project operations and that the Project would not result in substantial erosion or siltation on- or off-site. The impact is *less than significant with mitigation incorporated.*

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

Less than Significant with Mitigation: The proposed Project will not alter existing drainage patterns or increase surface runoff in a manner that could result in flooding on or off Site. The Project area is generally flat, and all wastewater and stormwater runoff will be contained on-site (Appendix F). Any potential impacts would be appropriately mitigated by implementing Mitigation Measure HYD-2, which requires the Project to submit drainage plans to the County Public Works Department before issuing grading permits. The drainage plans will include BMPs to ensure runoff from the Project will not result in flooding on- or off-site. Therefore, impacts are *less than significant with mitigation.*

iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less than Significant with Mitigation: The proposed Project will not alter existing drainage patterns or impact existing stormwater drainage systems during Project operations. The Project includes the construction of a water retention pond. These are large enough to handle all the processed water from the Site and water from a 25-year, 24-hour event. A 25-year, 24-hour event is the maximum 24-hour precipitation event with a probable recurrence of one in 25 years (Appendix F). The disturbance of soils during construction could cause erosion, resulting in temporary construction impacts. However, this impact would be appropriately mitigated by implementing a Stormwater Pollution Prevention Plan (SWPPP), which includes mandated erosion control measures, which are developed to prevent the significant effects of erosion caused by runoff during construction (Mitigation Measure HYD-1). The proposed impervious surface on the truck wash may collect automobile-derived pollutants such as oils, greases, rubber, and heavy metals during Project operations. This could contribute to point- and non-point source pollution if these pollutants were transported into waterways during storm events. The Project proponent will be required to prepare drainage plans (Mitigation Measure HYD-2) and a Development Maintenance Manual (Mitigation Measure HYD-3) to ensure that the Project will not result in discharges of polluted runoff into local waterways. The impact is *less than significant with the implementation of these mitigation measures.*

iv. Impede or redirect flood flows?

Less than Significant with Mitigation: The Project will not substantially alter the existing drainage pattern of the Site nor change the course of a stream or river. The Project Site contains a relatively small area of impervious concrete to be installed. According to National Flood Hazard mapping by the Federal Emergency Management Agency, the proposed Project Site is not within a 100-year flood hazard area. Any impacts from wastewater and stormwater will be contained on-site and not impede or redirect any existing flood flows. Any potential impacts would be appropriately mitigated by implementing Mitigation Measure HYD-2, which requires the Project to submit drainage plans to the City Engineer before issuing grading permits. The drainage plans will include BMPs to ensure the Project will not impede or redirect flood flows. Therefore, impacts are *less than significant with mitigation.*

d) Would the Project, in flood hazard, tsunami, or seiche zones, risk the release of pollutants due to Project inundation?

No Impact: The proposed Project is located inland and not near an ocean or large body of water; therefore, a tsunami would not affect it. The proposed Project is in a relatively flat area and would not be impacted by inundation related to mudflow. Since the Project is in an area that is not susceptible to inundation, the Project would not risk the release of pollutants due to Project inundation. As such, there is *no impact.*

e) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact: The Project would not conflict with or obstruct the implementation of a water quality control plan or sustainable groundwater management plan. The proposed Project is consistent with and will follow all policies and regulations in the 2035 Kings County General Plan, the North Fork Kings GSA Groundwater Sustainability Plan or any subsequent GSP , and the Central Valley RWQCB. The Project will comply with all applicable rules and regulations regarding water quality and groundwater management, and there will be no impact.

Mitigation Measures for Hydrology and Water Quality

Mitigation Measure HYD-1: Before the issuance of any construction/grading permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project Site to the California SWRCB Storm Water Permit Unit.

- Before issuance of grading permits for Phase 1, the Applicant shall submit a copy of the NOI to the County.
- The County shall review noticing documentation before the approval of the grading permit. County monitoring staff will inspect the Site during construction for compliance.

Mitigation Measure HYD-2: The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the County 45 days before the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. An SWPPP for Site construction shall be developed before the initiation of grading and implemented for all construction activity on the Project Site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to stormwater and shall include specific BMPs to control material discharge from the Site. The following BMP methods shall include, but would not be limited to:

- Dust control measures will be implemented to ensure the success of all onsite activities to control fugitive dust;
- A routine monitoring plan will be implemented to ensure the success of all onsite erosion and sedimentation control measures;
- Provisional retention basins, straw bales, erosion control blankets, mulching, silt fencing, sandbagging, and soil stabilizers will be used;
- Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours before and during extreme weather conditions; and,
- BMPs will be strictly followed to prevent spills and discharges of pollutants on Site, such as material storage, trash disposal, construction entrances, etc.

Mitigation Measure HYD-3: A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual shall require that stormwater BMP devices be inspected, cleaned, and maintained following the manufacturer's maintenance conditions. The manual shall require that devices be cleaned before the onset of the rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual shall also require that all devices be checked after major storm events. The Development Maintenance Manual shall include the following:

- Runoff shall be directed away from the trash and loading dock areas;
- Bins shall be lined or otherwise constructed to reduce the leaking of liquid wastes;
- Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and,
- Impervious berms, trench catch basins, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills, or washdown water to enter the drainage system.

XI. LAND USE AND PLANNING

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☑
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑

Environmental Setting

The proposed Project is in an unincorporated area of Kings County, approximately two miles southeast of Riverdale (Fresno County) and six miles north of Lemoore (Kings County). The proposed Project Site and surrounding properties are under agricultural land use. There are seven agricultural residences within a half mile of the proposed Project Site, however, all land within this radius is zoned and designated under the general plan for agricultural land use (Figure 3-6).

Regulatory Setting

Fresno County of Development Code: As shown in Figure 3-6, all land to the north is within Fresno County. To the north, all surrounding properties in Fresno County are zoned as AE20, Exclusive Agriculture, 20 acres minimum. The "AE" District is intended to be an exclusive district for agriculture and for those uses which are necessary and an integral part of the agricultural operation. This district is intended to protect the general welfare of the agricultural community from encroachments of non-related agricultural uses, which would be detrimental to the physical and economic well-being of the agricultural district. Allowed in this zone are crops of all kinds, livestock of all kinds, one-family dwelling units, processing of agricultural products, and other similar uses.

Kings County Development Code: As shown in Figure 3-6, Kings County has zoned the Project Site and surrounding properties as General Agriculture, 20 acres minimum. This district is intended primarily for application to rural areas of the county which are generally characterized by extensive or intensive agricultural uses of land north of Kansas Avenue where farm sizes have historically been smaller than in other areas of the county. These areas should be reserved for commercial agricultural uses because of their high-quality soil, existing or potential irrigation works, exclusive agricultural character of the area, or the need to reserve areas for intensive agricultural uses, which by their nature may be incompatible with nonagricultural or quasi-agricultural uses. The minimum parcel size in the AG-20 zoning district is 20 acres in size.

2035 Kings County General Plan: The 2035 Kings County General Plan *Land Use Element* contains the following Goals, Objectives, and Action Plan on flood control and water use that are potentially applicable to the proposed Project:

- ***LU GOAL B1: Protect agricultural lands throughout the County, and in particular along the edges of community districts and Urban Fringe by maintaining large parcel sizes and preventing the premature development of incompatible urban uses.***
  - LU OBJECTIVE B1.1: Preserve the integrity of the County's agricultural land resources through agricultural land use designations and other long term preservation policies.
    - *LU Policy B1.1.1:* Designate all agricultural and grazing land outside of planned urban areas as Limited Agriculture, General Agriculture, Exclusive Agriculture, or Natural Resource Conservation.
    - *LU Policy B1.1.2:* Continue to use Williamson Act and Farmland Security Zone contracts on all priority agricultural lands outside the Primary Sphere of Influence of City and Community District boundaries as defined by LAFCO, so long as State "Open Space Subvention Act" funds remain available.
  - LU OBJECTIVE B1.2: Maintain large parcel sizes of agricultural designated land within Urban Fringe areas and around Community Districts to retain viable agricultural production until such time as land is planned and ready for conversion to other uses.
- ***LU GOAL B2: Agricultural production continues to be supported and enhanced in areas designated for agriculture, while conflicts between agriculture and non-agricultural uses are minimized.***
  - LU OBJECTIVE B2.1: Recognize agriculture as the highest and best use of agricultural designated land and preserve the right of farmers and agricultural operations to continue customary and usual agricultural practices and operate in the most efficient manner possible.
    - *LU Policy B2.1.1: The primary use of land designated Limited Agriculture, General Agriculture, and Exclusive Agriculture shall remain devoted to agricultural uses and related support services.*
    - *LU Policy B2.1.3: Maintain implementation of the County's "Right to Farm Ordinance" adopted in 1996 to continue placing landowners on notice that they live within an agricultural County and may be subject to agriculture related inconveniences or discomforts.*
  - LU OBJECTIVE B2.2: Minimize and reduce the potential for conflicts between agriculture and non-agricultural urban uses.
  - LU OBJECTIVE B2.3: Increase diversified business opportunities within agricultural areas when they are compatible with agricultural operations.
    - *LU Policy B2.3.1: Value added agriculturally related businesses may be allowed when the business operation is primarily associated with the commercial farming operation. Additional employees may be allowed to work at the business.*
    - *LU Policy B2.3.2: Allow establishment of Rural Home Occupations in agricultural zone districts when operated by the occupant(s) of a residence. The use must also remain unobtrusive to adjacent and nearby agricultural uses and services.*
- ***LU GOAL B3: Allow agricultural support services within areas designated General Agriculture.***
  - LU OBJECTIVE B3.1: Direct agricultural support services to General Agriculture land use designated areas, while ensuring that services are not harmful to the long-term agricultural use of the land or potential future urban growth if within the Blueprint Urban Growth Boundary.
    - *LU Policy B3.1.1: Allow permanent agricultural service and processing facilities in areas designated General Agriculture, while restricting these types of services in Limited Agriculture and Exclusive Agriculture designated areas.*

- *LU Policy B3.1.2: Review of agricultural service establishments under Site Plan Review shall consider the compatibility of such establishments with the potential future urban growth accommodation when proposed within the Blueprint Urban Growth Boundary.*

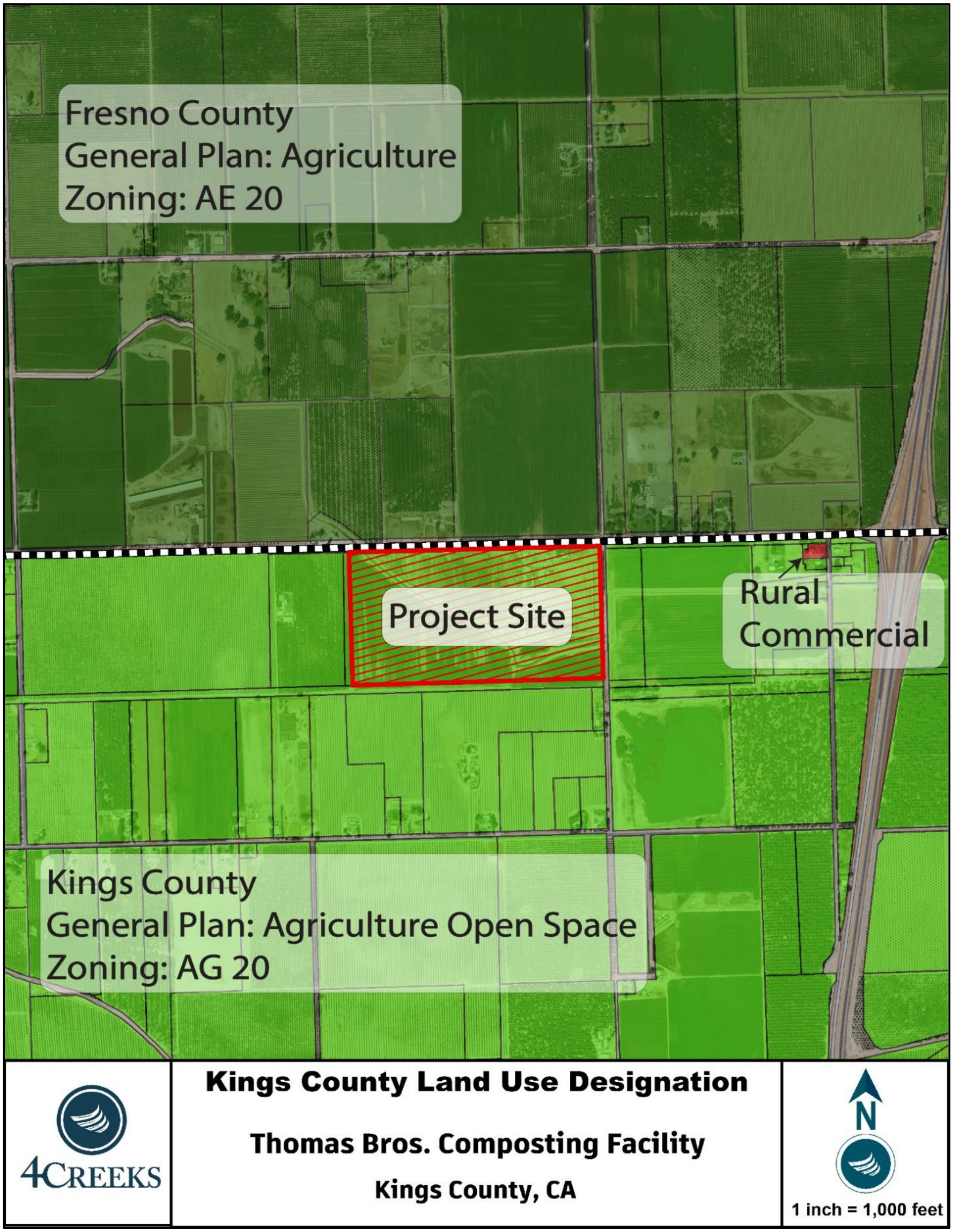


Figure 3-6: Zoning Map

Discussion

a) Would the Project physically divide an established community?

No Impact: The proposed Project will not physically divide an established community. No established communities are nearby, and it does not expand onto any land outside the Site. The proposed Project Site is designated General Agriculture – 20 Acre minimum under the County's General Plan and would operate as agricultural-related uses following Project implementation. There is *no impact.*

b) Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact: The Project Site is located on land designated for agricultural uses. The proposed Project does not conflict with this land use or any other policy or regulation adopted to avoid or mitigate an environmental effect. There is *no impact.*

XII. MINERAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b) Result in the loss of availability of a locally - important mineral resource recovery Site delineated on a local general plan, specific plan or other lands use plan?	☐	☐	☐	☑

<u>Environmental Setting</u>

There are no mineral resource zones in Kings County, and no mineral extraction occurs on or adjacent to the proposed Project Site. Historical mines within the County include an open-pit gypsum mine and a mercury mine; however, these mines are now closed.

<u>Regulatory Setting</u>

California State Surface Mining and Reclamation Act: The California State Surface Mining and Reclamation Act was adopted in 1975 to regulate surface mining, prevent adverse environmental impacts, and preserve the state's mineral resources. The Act is enforced by the California Department of Conservation's Division of Mine Reclamation.

<u>Discussion</u>

a) Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

<u>No Impact</u>: The Project Site has no known mineral resources that would be of value to the region and the state's residents. The Project Site is not designated as an important mineral resource recovery Site under the County's General Plan. Therefore the proposed Project would not result in the loss or impede the mining of regionally or locally important mineral resources. There is *no impact.*

b) Would the Project result in the loss of availability of a locally - important mineral resource recovery Site delineated on a local general plan, specific plan or other lands use plan?

<u>No Impact</u>: No known mineral resources are important to the region, and the Project Site is not designated under the County's General Plan as an important mineral resource recovery Site. Therefore, the proposed Project would not result in the loss of availability of known regionally or locally important mineral resources. There is *no impact.*

XIII. NOISE

Would the Project result in:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permeant increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐
b) Generation of excessive ground-borne vibration or groundborne noise levels?	☐	☐	☑	☐
c) For a Project located within the vicinity of a private airstrip or, an airport land use plan or, where such a plan has not been adopted, within two miles of public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☑

Environmental Setting

An acoustic analysis was prepared for this Project and is (Appendix D). The analysis, prepared by WJV Acoustics, Inc. (WJVA), is based upon a Site plan prepared by 4Creeks (dated January 10, 2023), operations data provided by the applicant, as well as reference and on-site ambient noise measurements obtained by WJV Acoustics, Inc. (WJVA). Revisions to the Site plan, operations data, or other Project-related information available to WJVA after the analysis was prepared may require a reevaluation of the report's findings and/or recommendations.

Appendix D describes the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighting, as it correlates highly with human annoyance and health effects.

Noise is often described as an unwanted sound, while Sound is the variation in air pressure that the human ear can detect. If the pressure variations occur at least 20 times per second, they can be detected by the human ear. The number of pressure variations per second is called the frequency of sound. The frequency is expressed as cycles per second, called Hertz (Hz).

Ambient noise is the “background” noise of an environment. Ambient noise levels on the proposed Project Site are primarily due to agricultural activities and traffic. Construction activities usually result in an increase in sound above ambient noise levels.

Vibration is sound radiated through the ground. Vibration can result from a source (e.g., train operations, motor vehicles, machinery equipment, etc.), causing the adjacent ground to move, creating vibration waves that propagate through the soil to the foundations of nearby buildings. This effect is a ground-borne vibration.

Sensitive Receptors: Noise level allowances for different land types reflect the varying noise sensitivities associated with those uses. Residences, hotels/motels, hospitals, schools, and libraries are some of the most sensitive types of noise intrusion. Therefore, these have more stringent noise level allowances than most commercial or agricultural uses that are not subject to impacts such as sleep disturbance. There are existing residential land uses located approximately 375 feet north of the Site and approximately 600 feet northeast of the Project Site, as well as additional residences located at greater setback distances from the Project Site.

Regulatory Setting

2035 Kings County General Plan

The Kings County Noise Element of the General Plan establishes land use compatibility criteria for transportation and non-transportation (stationary) noise sources. The General Plan provides noise standards for transportation sources in the CNEL noise level metric. In contrast, the standard for non-transportation noise sources is in hourly L_{eq} (energy average) and hourly L_{max} (maximum) noise level metrics. Table 3-16 provides the applicable exterior noise level standards for transportation noise sources, and Table 3-17 provides the applicable exterior noise level standards for non-transportation (stationary) noise sources.

The General Plan Noise Element establishes a standard of 60 dB CNEL for exterior noise levels in outdoor activity areas of residential uses. The exterior noise level requirement intends to provide an acceptable environment for outdoor activities and recreation. Outdoor activity areas generally include backyards of single-family residences, individual patios or decks, and common-use outdoor activity areas of multi-family developments.

The noise element also requires that interior noise levels attributable to exterior noise sources not exceed 45 dB CNEL. The interior noise level standard intends to provide an acceptable noise environment for indoor communication and sleep.

Regarding the stationary noise level standards provided in Table 3-16, the General Plan states, *"If the existing ambient noise level exceeds the standards of Table N-8 (provided below as Table 3-17), then the noise level standards shall be increased at 5 dB increments to encompass the ambient."*

Table 3-16. Noise Standards for New Uses Affected by Transportation Noise Sources; Source: 2035 Kings County General Plan

Transportation Noise Standards			
New Land Use	**Sensitive[1] Outdoor Area**	**Sensitive[2] Indoor Area**	**Notes**
Residential	60	45	5
Residences in Ag Zones	65	45	6
Transient Lodging	65	45	3,5
Hospitals and Nursing Homes	60	45	3,4,5
Theaters & Auditoriums	--	35	3
Churches, Meeting Halls Schools, Libraries, Etc.	60	40	3
Office Buildings	65	45	3
Commercial Buildings	65	50	3
Playgrounds, Parks, etc.	70	--	
Industry	65	50	3

Notes:
1. Sensitive outdoor areas generally include backyards of single-family residences, individual patios, or decks of multi-family developments and common outdoor recreation areas of multi-family developments.
2. Interior noise level standards area applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
3. Where there are no sensitive exterior spaces proposed for these uses, only the interior noise level standard shall apply.
4. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
5. If this use is affected by railroad or aircraft noise, a maximum (L_{max}) noise level standard of 70 dB shall be applied to all sleeping rooms with windows closed to reduce the potential for sleep disturbance during nighttime noise events.
6. Due to the noise-generating nature of agricultural activities, it is understood that residences constructed on agriculturally designated land uses may be exposed to elevated noise levels. As a result, as 65 dB CNEL exterior noise level standard is applied to noise-sensitive outdoor areas of these uses.

Table 3-17. Noise Standards for New Uses Affected by Non-Transportation Noise Sources; Source: 2035 Kings County 2035 General Plan

Non-Transportation Noise Standards				
New Land Use	**Outdoor Area**		**Interior Day and Night**	**Notes**
	Daytime	**Nighttime**		
All Residential	55/75	50/70	55/75	5
Transient Lodging	55/75	--	45	3,5
Hospitals and Nursing Homes	55/75	--	45	3,4,5
Theaters & Auditoriums	--	--	35	3
Churches, Meeting Halls Schools, Libraries, Etc.	55/75	--	40	3
Office Buildings	60/75	--	45	3
Commercial Buildings	55/75	--	50	3
Playgrounds, Parks, etc.	65/75	--	--	
Industry	60/80	--	50	3

Notes:
1. The Table II standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table II, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.
2. Sensitive outdoor areas generally include backyards of single-family residences, individual patios, or decks of multi-family developments and common outdoor recreation areas of multi-family developments.
3. Interior noise level standards area applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
4. Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.
5. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
6. The outdoor activity areas of these uses (if any), are not typically utilized during nighttime hours.

Discussion

a) Would the Project result in generation of a substantial temporary or permeant increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than Significant Impact:

Composting Activities: WJVA conducted a Project Site inspection on January 26, 2023. WJVA observed noise-producing activities associated with the current operations, such as trucks exiting and entering the Site for both raw materials delivery and processed materials pickup, and loading and unloading of those raw materials and products. In addition to the truck movements, additional noise-producing equipment included front-loaders and tractors.

The Project Site is adjacent to Excelsior Avenue, a high-trafficked roadway with a large percentage of overall truck traffic. As such, existing ambient noise levels along the roadway are elevated. WJVA conducted a Project Site visit and noise level measurements on January 26, 2023, at two (2) locations. To assess the portion of the existing noise environment attributable to the Project (composting operations component), WJVA located one noise level meter (Site ST-1) along Excelsior Avenue, directly across from the active composing activities, and a second noise level meter (Site ST-2) at an equal setback distance as the first, in a location approximately 1,000 west of the composting activities. Both noise measurement Sites were exposed to approximately the same traffic noise levels associated with through-traffic on Excelsior Avenue. However, Site ST-1 was also exposed to noise levels associated with the active composting operations. Figure 3-9 provides the locations of both ST-1 and ST-2. A photograph of each noise measurement Site is provided in Figures 3-7 (ST-1) and 3-8 (ST-2).

Noise monitoring equipment consisted of Larson-Davis Laboratories Model LDL-820 sound level analyzers equipped with B&K Type 4176 1/2” microphones. The equipment complies with the American National Standards Institute (ANSI) specifications for Type I (Precision) sound level meters. The meters were calibrated with a B&K Type 4230 acoustic calibrator to ensure the accuracy of the measurements.

WJVA measured noise levels at each of the two noise measurement Sites for a continuous period of six hours between 8:00 a.m. and 3:00 p.m. To quantify noise levels associated with the current operations, WJVA subtracted the noise levels measured at Site ST-2 from those measured at Site ST-1. Table 3-18 summarizes the noise levels measured at each noise measurement Site and provides Project-related noise levels by subtracting the noise levels measured at Site LT-2 from those measured at Site LT-1. These calculated noise levels are also extrapolated (based upon the standard noise attenuation rates with increased distance from the noise source) to the closest residential land uses located north of the Project Site. It should be noted that decibels (dB) are logarithmic in nature and cannot be added or subtracted arithmetically.

Table 3-18. Summary Of 24-Hour Noise Level Measurements Thomas Dairy Composting Facility, Kings County, January 26, 2023; Source: WJV Acoustics

Time	A-Weighted Decibels, dB, L_{eq} (One-Hour Average)			
	ST-1	ST-2	ST-1 minus ST-2	Project-Related Noise Level at Closest Residence (375’)
8:00 a.m.	70.2	68.1	66.0	49.8
9:00 a.m.	70.0	67.4	66.5	50.3
10:00 a.m.	69.7	67.1	66.2	50.0
11:00 a.m.	68.5	65.8	65.2	49.0
12:00 p.m.	69.7	67.0	66.4	50.2
1:00 p.m.	69.2	66.7	65.6	49.4
2:00 p.m.	70.3	67.3	67.3	51.1
Average	*69.7*	*67.1*	*66.2*	***50.0***

Figure 3-7. Noise Measurement Site ST-1; Source: WJV Acoustics

Figure 3-8. Noise Measurement Site ST-2; Source: WJV Acoustics

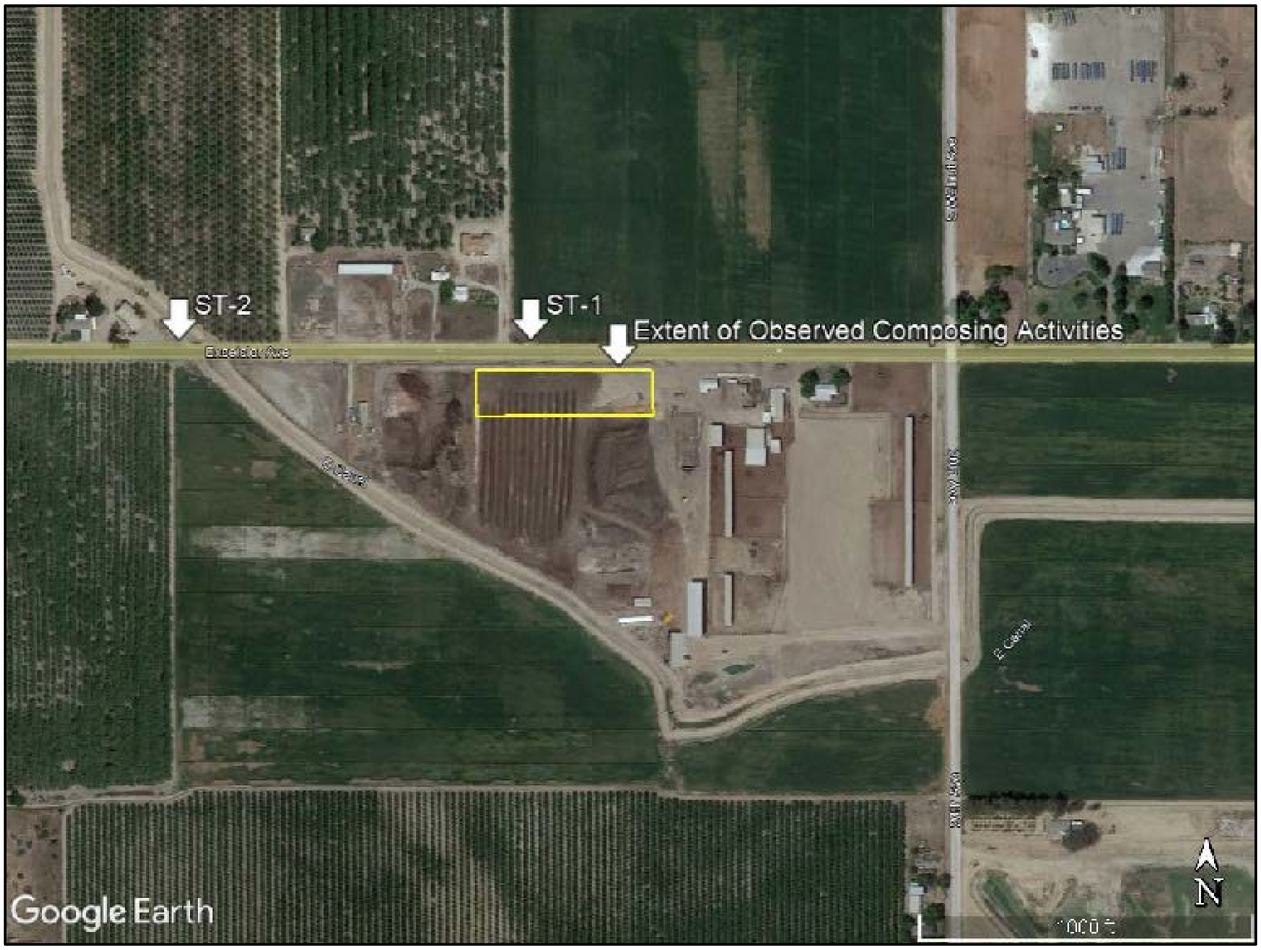


Figure 3-9. Project Site Vicinity and Noise Measurement Locations

The applicable Kings County noise level standards are an hourly daytime (7:00 a.m. to 10:00 p.m.) noise level standard of 55 dB L_{eq} and an hourly nighttime (10:00 p.m. to 7:00 a.m.) of 50 dB L_{eq}. Additionally, the General Plan Noise Element states, *"If the existing ambient noise level exceeds the standards of Table N-8, then the noise level standards shall be increased at 5 dB increments to encompass the ambient."* Based on noise levels measured at ST-1 and ST-2, it can be reasonably determined that existing ambient noise levels already exceed the hourly average noise level standards applicable to the Project. Applying the noise levels measured at Site LT-2 (traffic noise alone), the existing ambient noise levels (without the noise associated with composting activities) at the closest residential land use to the Project Site would be approximately 52 dB Leq.

Noise levels associated with composting activities would not be expected to exceed any Kings County noise level standards at the closest sensitive receptor locations (residential land uses). Additionally, noise levels associated with composting activities do not exceed existing (without composting activities) ambient noise levels at any residential land uses due to elevated traffic noise levels associated with vehicle traffic on Excelsior Avenue. Mitigation measures are therefore not required for Project noise compliance.

Truck Wash Operations: The Project would include an outdoor (open-air) private truck wash facility with two proposed wash bays. The applicant estimated that approximately twelve trucks/vehicles would be processed through the truck wash facility weekly. The proposed truck wash would typically operate between 8:00 a.m. to 8:00 p.m., Monday through Saturday. Each wash cycle would take approximately fifteen minutes.

WJVA reviewed noise levels of various types of equipment (Federal Highway Administration, Roadway Construction Noise Model, January 2006/ Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman, 1987/WJVA). Below is the anticipated equipment list for the truck wash operations and the associated generalized reference noise levels at a distance of fifty feet from the equipment.

- Industrial Pressure Washer: 66 dB
- Air Compressor: 74 dB
- Shop Vacuum: 56 dB
- Generator: 74 dB
- Sump Pump: 77 dB
- Process Pit Pump: 77 dB
- Running Vehicles: 60 dB

As described above, the applicant estimates that approximately twelve vehicles would be washed on average per week, with each cycle lasting approximately fifteen minutes. To analyze a worst-case assessment, WJVA calculated the noise levels associated with truck wash operations based upon the assumption that 1) two trucks per hour would be processed through the truck wash facility, and 2) all associated equipment (described above) would be in constant and simultaneous operation, and 3) no acoustical shielding between any sensitive receptors and truck wash equipment sources would occur.

Based upon the noise levels provided above and the three assumptions described (worst-case assessment of truck wash noise levels), WJVA calculated a noise level of 53 dB Leq at the closest existing residential land uses (Located approximately 950 feet south of the proposed truck wash area, along 20th Avenue). Such levels do not exceed the applicable Kings County daytime noise level standard of 55 dB. Mitigation measures are therefore not required for Project noise compliance.

Based upon noise levels measured by WJVA staff and the setback distances between the composting activities and the closest sensitive receptors, noise levels associated with composting activities are not expected to exceed any Kings County noise level standards at any nearby sensitive receptor locations. Additionally, noise levels associated with composting operations do not exceed elevated ambient noise levels associated with traffic along Excelsior Avenue. There is a *less than significant impact.*

b) Would the Project result in generation of excessive ground-borne vibration or groundborne noise levels?

Less than Significant Impact: Project operations would not include uses or activities that typically generate excessive ground-borne vibration or noise levels, but Project construction could introduce temporary ground-borne vibration to the Project Site and the surrounding area. Sources that may produce perceptible vibrations are provided in Table 3-19.

Table 3-19. Vibration Levels Generated by Construction Equipment. Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, September 2018.

Equipment	Peak Particle Velocity (PPV) (inches/second) at 25 feet	Approximate Vibration Level (VdB) at 25 feet
Large Bulldozer	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

The primary source of vibration during Project construction would likely be from a bulldozer, which would generate 0.089 inches per second PPV at 25 feet with an approximate vibration level of 87 VdB. Vibration from the bulldozer would be intermittent and not a source of continual vibration. There are no adopted County standards or thresholds of significance for vibration. The evaluation of potential impacts related to construction vibration levels is based on the published data in the 2018 FTA Guidelines. At 25 feet, the buildings most susceptible to vibration could be impacted at .12 inches/second. Because vibrations generated by Project construction would not exceed 0.12 inches/second, and there are no buildings within 25 feet of the retention pond or truck wash, the impact is *less than significant.*

c) For a Project located within the vicinity of a private airstrip or, an airport land use plan or, where such a plan has not been adopted, within two miles of public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

No Impact: The proposed Project is not located within an airport land use plan, within the vicinity of a private airstrip, or two miles of a public airport. There is *no impact*.

XIV. POPULATION AND HOUSING

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☑	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

Environmental Setting

The United States Census Bureau estimated the population in Kings County to be 153,443 as of July 2021. This population is a slight increase from the 2010 census, which counted the population in the County to be 152,982. The population in Kings County is Projected to grow by 15% by 2030. Factors that influence population growth include job availability, housing availability, and proposed and existing infrastructure capacity.

Regulatory Setting

The Kings County population size is controlled by the Kings County Development Code and Land Use Element of the General Plan. These documents regulate the number of dwelling units per acre allowed on residential land uses and establish minimum and maximum lot sizes. These factors have a direct impact on the County's population size.

The Land Use Element of the 2035 Kings County General Plan highlights energy conservation opportunities as a factor affecting building and population growth. The Land Use Element also includes goals for preserving agricultural lands from premature urbanization. Other policies and goals of the 2035 General Plan include those that encourage growth in more urbanized areas of the County and the preservation of agricultural uses and industries.

The Housing Element of the 2035 Kings County General Plan includes policies that address housing, employment, growth management, and adequate provision of resources, facilities, and services. The Housing Element contains several goals and policies intended to encourage continuous analysis and evaluation of population trends and housing needs to allow for the development of Sites and facilities that sustain population growth in the county; encourage development in existing communities; and acknowledge the governmental, environmental, infrastructure, and land use constraints.

Discussion

a) Would the Project induce substantial unplanned population growth in an area, either directly (for example, by new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less than Significant Impact: The construction and operation of the Project will not result in any substantial unplanned growth or population displacement in Kings County. The Project will not construct or remove any homes. The existing facility currently has three employees. At full operation, the composting facility will have up to ten employees. The new seven employees are likely to live in Kings County currently and would not directly or indirectly impact population growth. There is *a less than significant impact.*

b) Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact: The construction and operation of the Project would not result in existing residences being removed, and no individuals would be displaced because of the Project. The Project would not result in any existing residences being removed, and no individuals would be displaced because of the Project. There is *no impact*.

XV. PUBLIC SERVICES

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable serve ratios, response times of other performance objectives for any of the public services:				
i. Fire protection?	☐	☐	☑	☐
ii. Police protection?	☐	☐	☑	☐
iii. Schools?	☐	☐	☐	☑
iv. Parks?	☐	☐	☐	☑
v. Other public facilities?	☐	☐	☑	☐

Environmental Setting

Fire: The Kings County Fire Department (KCFD), headquartered in Hanford, provides Fire protection for the Project Site. The KCFD operates ten fire stations within the county's unincorporated areas, the nearest located approximately 5.3 miles east of the Site at 14680 Excelsior Avenue. The KCFD has 88 full-time employees and responds to over 5,100 calls annually. The KCFD responds to various calls, including structure, vehicle, wildland and grass fires, medical aids, traffic accidents, hazardous materials incidents, and various public assistance calls.

Police: The Kings County Sheriff's Department (KCSD), headquartered in Hanford, provides law enforcement for the Project Site. The County is divided into six districts with five Sheriff Substations throughout Kings County, located in Avenal, Corcoran, El Rancho, Kettleman City, and Stratford. The nearest station to the Project Site is the headquarters located in Hanford. Each district has at least one deputy sheriff on duty to serve the unincorporated communities and surrounding County areas. The California Highway Patrol provides traffic enforcement on State Highways and County roads. Kings County is within the California Highway Patrol's Central Division. The nearest CHP office to the Project Site is in Hanford.

Schools: The proposed Project Site is located within the Riverdale Joint Union School District. The nearest elementary school, Fipps Primary School, is located approximately 2.3 miles northwest of the Project Site.

Regulatory Setting

The California Department of Education regulates the Riverdale Joint Union School District, and the California Department of Justice regulates the Sheriff's Department.

2035 Kings County General Plan: Objectives and Policies related to Public Services are included in the *Health and Safety Element* of the 2035 Kings County General Plan. These Objectives and Policies are as follows:

- ***HS GOAL B1: Promote the health and well being of County residents, and support healthy living environments, physical activity opportunities, medical services, and readily available nutritious food sources.***
  - HS OBJECTIVE B1.4: Provide local health services and emergency medical services in the County's Community Districts to meet the needs of a growing population.
    - *HS Policy B1.4.3: Ensure that County Fire Department personnel remain trained and equipped to provide emergency medical services to those in need of such services within the unincorporated areas of the County.*
- ***HS GOAL C2: Support Countywide safety through adequate law enforcement, quality fire protection, emergency preparedness, and accessibility in times of emergency.***
  - HS OBJECTIVE C2.1: Provide sufficient law enforcement presence within each community district and other unincorporated areas of the County to protect residents, businesses, and visitors from personal and property crimes.
  - HS OBJECTIVE C2.2: Provide quality fire protection services throughout the County by the Kings County Fire Department, and Fire safety preventative measures to prevent unnecessary exposure of people and property to fire hazards in both County Local Responsibility Areas and State Responsibility Area.
    - *HS Policy C2.2.1: Community planning efforts should evaluate the Projected need for Fire Department personnel and equipment and necessary funding support to maintain current levels of service as community growth occurs.*
    - *HS Policy C2.2.2: Development proposals and code revisions shall be referred to the County Fire Department for review and comment.*
    - *HS Policy C2.2.3: Use the 1997 Uniform Code for the abatement of Dangerous Buildings. All new structures to be occupied shall be built to current Fire Code Standards.*
    - *HS Policy C2.2.4: Review development proposals according to California Department of Forestry and Fire Protection "Fire Hazard Severity Zone Maps" to determine whether a Site is located within a Very High Fire Hazard Severity Zone and subject to Wildland-Urban Interface Fire Area Building Standards and defensible space requirements as adopted under Senate Bill 1595 and effective January 1, 2009.*
    - *HS Policy C2.2.5: Forward for review and comment all proposed structures within the State Responsibility Area to the California Department of Forestry and Fire Protection within all State Responsibility Areas.*

Discussion

a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable serve ratios, response times of other performance objectives for any of the public services:

i. **Fire protection?**
Less than Significant Impact: The KCFD will provide fire protection services to the Project Site. The Project will not result in the need for new facilities for the KCFD because the Project will not contribute to increased population size within the Kings County Fire Department service area, nor will it extend the boundaries of the Service Area. Additionally, the applicant will be required to pay impact development fees to offset any potential impacts on the existing Fire Department Facilities. The impact is *less than significant.*

ii. **Police protection?**
Less than Significant Impact: Kings County will provide police protection services to the Project Site. The Project will not result in the need for new facilities for the KCSD because the Project will not contribute to increased population size within the service area, nor will it extend to the boundaries of the Kings County Sheriff Department Service Area. Additionally, the applicant will pay an impact development fee to offset any potential impacts to existing Sheriff Department Facilities. The impact is *less than significant.*

iii. **Schools?**
No Impact: The Project will not result in additional residents to Kings County and will not increase the number of students in the school district. There is *no impact*.

iv. **Parks?**
No Impact: Because the Project will not result in additional residents, the Project will not create a need for additional parkland. There is *no impact.*

v. **Other public facilities?**
Less than Significant Impact: Additional development fees may be required to offset the increased demand for public services related to transportation, water, wastewater, groundwater recharge, storm drainage, recreation, and general governmental services. Fees for transportation, water, wastewater, and general government are based on building square footage and will be calculated before the issuance of building permits. Fees for groundwater recharge and storm drainage are based on Site acreage.

While the payment of development fees could result in the construction of new or altered public service facilities, no specific Projects have been identified. As new or expanded public service facilities become necessary, construction or expansion Projects would be subject to their own separate CEQA review to identify and mitigate potential environmental impacts. Therefore, the impact is *less than significant*.

XVI.PARKS AND RECREATION

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☑

Environmental Setting

The nearest recreational area to the Project Site is Riverdale Ballpark, located in Fresno County, approximately 2.3 miles northwest. The nearest recreational area in Kings County is Hickey Park, located approximately 3.4 miles to the southeast. Kings County owns and maintains three parks: Hickey, Burris, and Kingston. All three parks are in the northern portions of the County and are surrounded by agricultural uses.

Regulatory Setting

2035 Kings County General Plan: The *Open Space Elemen*t of the 2035 Kings County General Plan contains the following objectives and policies relating to parks and recreation.

- OS OBJECTIVE D1.1: Maintain and enhance the existing County Park system within available funding constraints.
  - *OS Policy D1.1.1: Apply the "Public/Quasi-Public" land use designation to County parks.*
  - *OS Policy D1.1.2: Community Plans should facilitate the development and maintenance of community park(s) within Community District areas to expand recreational resources available to residents.*
  - *OS Policy D1.1.3: Support community involvement that builds capacity for the long-term maintenance and upkeep of open space and community park space within Community Districts.*
- OS OBJECTIVE D1.2: Encourage the development of private recreational facilities compatible with the rural character of Kings County.
  - *OS Policy D1.2.1: Support the establishment of new commercial recreational development, provided it is compatible with surrounding land uses and the intensity of such development does not exceed the ability of the natural environment of the Site and the surrounding area to accommodate it. Such facilities may include, but are not limited to campgrounds, recreational camps, hotels and destination resorts, ball courts and ball fields, skeet clubs and facilities, hunting and fishing clubs, and equestrian facilities.*

Discussion

a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact:
The Project will not result in additional residents, so the Project will not increase the use of existing parkland or create a need for additional parkland. There is *no impact.*

b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact: No parkland or recreational facilities are associated with the Project. The Project will not result in additional residents and will not create a need for additional parkland. There is *no impact.*

XVII. TRANSPORTATION

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☑	☐
b) Conflict or be inconsistent with the CEQA guidelines Section 15064.3, Subdivision (b)?	☐	☐	☑	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☑
d) Result in inadequate emergency access?	☐	☐	☐	☑

Environmental Setting

Vehicular Access: The primary access point to the composting Site is on the northern end of the facility between the feedlot and composting facility. The primary access point to the truck wash facility is along 20th Avenue at the southeast corner of the feedlot property.

Transportation Facilities: Transportation facilities near the proposed Project area include Highway 41 and West Excelsior Avenue. The Kings County Association of Governments (KCAG) is the County's Regional Transportation Planning Agency and Metropolitan Planning Organization.

Regulatory Setting

CEQA Guidelines Section 15064.3, Subdivision (b): Criteria for Analyzing Transportation Impacts

(1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, Projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the Project area compared to existing conditions should be considered to have a less than significant transportation impact.

(2) Transportation Projects. Transportation Projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity Projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, a lead agency may tier from that analysis as provided in Section 15152.

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular Project being considered, a lead agency may analyze the Project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit,

proximity to other destinations, etc. For many Projects, a qualitative analysis of construction traffic may be appropriate.

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a Project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a Project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the Project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

Kings County Improvement Standards: The Kings County Improvement Standards are developed and enforced by the Kings County Public Works Department to guide the development and maintenance of County Roads. The cross-section drawings in the County Improvement Standards dictate the development of roads within the county.

2035 Kings County General Plan: The 2035 Kings County General Plan *Circulation Element* establishes policies relating to transportation:

- C OBJECTIVE A1.3: Maintain an adequate Level of Service operation for County roadways and ensure proper maintenance occurs along critical routes for emergency response vehicles.
  - *C Policy A1.3.1: Maintain and manage County roadway systems to maintain a minimum Level of Service Standard "D" or better on all major roadways and arterial intersections.*
  - *C Policy A1.3.2: Require proposed developments that have the potential to generate 100 peak hour trips or more to conduct a traffic impact study that follows the most recent methodology outlined in Caltrans Guide to the Preparation of Traffic Impact Studies.*

Discussion

a) Would the Project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Less than Significant Impact: The Project would not conflict with any adopted programs, plans, ordinances, or policies addressing transit, bicycle, or pedestrian facilities. The Project is within a rural land use area and would not require public transit or non-motorized transportation facilities during construction and operation. This impact would not be increased because of the Project. The Project will adhere to all design standards established by the County.

Peak operation is estimated to generate a maximum of 72 trips per day (Appendix E). The composting facility estimates it will have approximately 20 service/delivery trucks per day from September through December and an average of 10 trucks per day for the remainder of the year. Additionally, the Project will receive approximately 100 deliveries of gypsum additives per year. At most, there will be one in and out gypsum delivery per day, though deliveries will not occur daily. Therefore, it is estimated that there will be at most 42 service/delivery trips per day.

In addition, the facility estimates it will have approximately five visitors on a typical weekday. This is ten trips per day from visitors. There will be a maximum of 10 employees, resulting in 20 trips commuting to and from work. The truck wash will be for on-site use only and not generate any trips on the surrounding roads.

The Project is consistent with the County Circulation Element Level of Service thresholds. The County's policy is to maintain a minimum Level of Service (LOS) of "D" or better on all roadways. The thresholds are shown in Table 3-20. Table 3-21 shows that adding 72 trips to the Annual Average Daily Traffic Volumes (AADT) will not lower the LOS on State Route 41 or Excelsior Avenue. Because this increase will not result in traffic volumes exceeding LOS Threshold volumes shown in Table 3-20 of the County, the Project does not conflict with any plans or ordinances regarding the effectiveness of the circulation system. There is *a less than significant impact.*

Table 3-20: Kings County LOS Threshold Volumes, Source: 2035 Kings County General Plan, Table C-3

Roadway Type	Total Daily Vehicles in Both Directions				
	LOS A	LOS B	LOS C	LOS D	LOS E
4-Lane Arterial (Turn Lanes)	*4,800*	*29,300*	*34,700*	*35,700*	*----*
2-Lane Facility	*-----*	*4,200*	*13,800*	*16,400*	*16,900*

Table 3-21: Annual Average Daily Traffic Volumes and Levels of Service. Source: 2035 Kings County General Plan

		2006[1]		Projected 2035[1]		2035 With Project	
Roadway Segment	*Limits*	*AADT*	*LOS*	*AADT*	*LOS*	*AADT*	*LOS*
State Route 41 (4-Lane Arterial)	Grangeville Blvd. – Fresno Co. Line	18,000	B	23,330	B	23,404	B
Excelsior Avenue (2-Lane Facility)	22nd Ave. – SR 41	1,520	B	1,720	B	1,794	B
1. AADT and LOS from Table C-4 in the Kings County 2035 General Plan							

b) Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?

Less than Significant Impact: Section 15064.3(b) establishes criteria for analyzing the transportation impacts of proposed Projects, as required under AB 734. Among the changes to the guidelines was the removal of vehicle delay and level of service as the sole basis of determining CEQA impacts. With the implementation of the adopted guidelines, transportation impacts will be evaluated based on a Project's effect on VMT. This section states that "vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact."

A Technical Advisory was issued by the Governor's Office of Planning and Research (OPR) in 2018 to guide the implementation of AB 734. The OPR TA states that small Projects generating less than 110 daily trips are estimated to have minimal effect on VMT and are eligible to be screened out from a detailed VMT analysis. As shown in (Appendix E), the Project is anticipated to generate 70 total daily trips. This is lower than the 110 daily trip threshold for screening Projects from detailed VMT analysis. Therefore, the Project is anticipated to have a less than significant VMT impact and could be screened out from a detailed VMT analysis.

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact: The Project does not propose incompatible uses or include design features that could increase traffic hazards. The Project does include new roadways to access different sections of the Site but will not impact the public roadway. Any improvements will be subject to review by the City's engineer to ensure there are no safety risks due to Project design. The proposed Project would not substantially increase hazards in or around the Project area; there is *no impact.*

d) Would the Project result in inadequate emergency access?

No Impact: This Project would not result in inadequate emergency access. Emergency access to the Site would be either of the access points(insert access points here). The project is required to comply with all Public Work Standards and California Fire Code Standards regarding access drive widths and access spacing standards The Project would have *no impact* on emergency access.

XVIII. TRIBAL CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a Site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☑	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☑	☐	☐

Environmental Setting

Ethnographically, the Project area is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley and is located near the North Fork of the Kings River. The Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts. The Yokuts are a sub-group of the Penutian language that covers much of coastal and central California and Oregon. The Yokuts language contained multiple dialects spoken throughout the region, though many of them were mutually understandable.

The most detailed ethnographic information gathered regarding Native American group territories in Central California is located within maps prepared by Kroeber (1925). Based upon Kroeber's map of Southern and Central Yokuts, the Project area is within the Wimilche Yokuts territory, who occupied the north bank of the Kings River between modern-day Laton and Kings River Island, and appeared to have occupied most of the land that later comprised the Rancho Laguna de Tache. The closest village for this area was *Ugona*, located on the Kings River's northern bank approximately 7 miles downstream of Laton and approximately one to two miles southeast of the Project Site. Additionally, the Kings River alluvial fan was a heavily occupied area, with four documented villages and four tribes within a seven-mile radius of the Project Site. Primary Yokuts villages were typically located along lakeshores and major stream courses, with scattered secondary or temporary camps and settlements near gathering areas in the foothills.

Yokuts were organized into local tribes, with one or more linked villages and smaller settlements within a territory. Each local tribe was a land-owning group organized around a central village and shared common territory and ancestry. Most local tribe populations ranged from 150 to 500 people.

Due to the abundance of natural resources within the greater Tulare Lake area, the Yokuts maintained some of the largest populations in North America west of the continental divide. According to the Native American Heritage Commission, the Native American tribal group currently associated with the Project area is the Santa Rosa Rancheria Tachi Yokut Tribe.

Cultural Resources Record Search: The Southern San Joaquin Valley Information Center (SSJVIC) conducted a Cultural Resources Records Search on November 10th, 2022. SSJVIC staff researched historical United States Geological Survey (USGS) topographic maps, reports of previous cultural resource investigations, archaeological Site, survey base maps, cultural resource records (DPR forms) as well as listings of the Historic Properties Directory of the Office of Historic Preservation, General Land Office Maps, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources. The full report can be found in Appendix C.

The records search results indicate no cultural resources were previously recorded within the Project boundary or the 0.5-mile search radius. Additionally, no prior cultural studies were conducted within the Project boundary. One cultural study (KI-00075) was conducted within the 0.5-mile search radius of the Project boundary. The survey did not overlap the Project boundary or identify any cultural resources within 0.5 miles of the Project boundary. The full findings of the cultural records search can be found in Appendix C.

Native American Consultation: The State requires lead agencies to consider the potential effects of proposed Projects and consult with California Native American tribes during the local planning process to protect Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Under PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed Project. Such significant cultural resources are either Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe that is either on or eligible for inclusion in the California Historic Register or local historic register, or the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a) (1-2)).

Additional information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

On November 10, 2022, Taylored Archaeology sent a request to the Native American Heritage Commission (NAHC) for a Sacred Lands File (SLF) search to identify any known places of the religious, sacred activity or traditional use or gathering areas that are present in or near the Project area. The NAHC responded on December 9, 2022, with a letter, including contact information for local Native American tribal representatives who may have knowledge or interest in sharing information about resources in the Project area and surrounding area. Each Native American representative listed was sent a nongovernmental outreach letter and a map notifying them of the Project and asking if they had any knowledge of the Project area or surrounding vicinity. Follow-up communication was performed via email and phone calls, as appropriate. The SLF results are in Appendix C, Chapter 4.

Native American Outreach Results: On December 9, 2022, the NAHC responded to Taylored Archaeology's request and stated that its Sacred Lands File results were negative for the presence of cultural resources within the Project area (see Appendix C). The NAHC recommended contacting the Native American tribes and individuals culturally affiliated with the Project area on a list they provided. The following Native American organizations/individuals were contacted from the list provided by NAHC below:

- Stan Alec of Kings River Choinumni Farm Tribe;
- Chairperson Leo Sisco of the Santa Rosa Rancheria Tachi Yokut Tribe;
- Chairperson Brenda Lavell of the Table Mountain Rancheria;
- Cultural Resource Director Bob Pennell of the Table Mountain Rancheria;
- Chairperson Neil Peyron of the Tule River Indian Tribe;
- Environmental Department Kerri Vera of the Tule River Tribe;
- Tribal Archaeologist Joey Garfield of the Tule River Indian Tribe; and
- Chairperson Kenneth Woodrow of the Wuksache Indian Tribe/Eshom Valley Band.

The outreach letters were sent via certified mail on December 15, 2022, to all the Native American representatives on the contact list. The letters included a description of the proposed Project and a location map. Follow-up emails were sent on January 5, 2023. Two Native American organizations responded:

- Robert Pennell, Cultural Resource Director of the Table Mountain Rancheria, responded by email stating that the Project area lies outside of the Tribes area of interest but suggested that we contact the Santa Rosa Rancheria Tachi Yokut Tribe to ask if they are aware of cultural resources in the area.
- Samantha McCarty, Cultural Specialist II of the Santa Rosa Rancheria Tachi-Yokut Tribe, responded by email stating that they have serious concerns regarding this Project and would like to meet with the lead agency involved (Appendix C).

Follow-up communication with the Santa Rosa Rancheria Tachi-Yokut Tribe continued regarding their concerns. The most recent communication was an email sent on February 9th, 2023, by the Thomas Family (Project Owners). The Thomas Family was seeking clarification about the concerns and potential mitigations required by the Tribe (Email can be found in Appendix C). As of March 1st, 2023, the Tribe has yet to respond. This version of the Initial Study will not include any potential mitigations required by the Tribe.

Regulatory Setting

Historical Resources: Historical resources are defined by CEQA as resources that are listed in or eligible for the California Register of Historical Resources, resources that are listed in a local historical resource register, or resources that are otherwise determined to be historical under California Public Resources Code Section 21084.1 or California Code of Regulations Section 15064.5. Under these definitions, Historical Resources can include archaeological resources, Tribal cultural resources, and Paleontological Resources.

Archaeological Resources: As stated above, archaeological resources may be considered historical resources. If they do not meet the qualifications under the California Public Resources Code 21084.1 or California Code of Regulations Section 15064.5, they are instead determined to be "unique" as defined by the CEQA Statute Section 21083.2. A unique archaeological resource is an artifact, object, or Site that: (1) contains information (for which there is a demonstrable public interest) needed to answer important scientific research questions; (2) has a special and particular quality, such as being the oldest of its type or the best available example of its type; or (3) is directly associated with a scientifically recognized important prehistoric or historical event or person.

Tribal Cultural Resource (TCR): Tribal Cultural Resources can include Site features, places, cultural landscapes, sacred places, or objects which are of cultural value to a Tribe. It is either listed on or eligible for the CA Historic Register or a local historic register or determined by the lead agency to be treated as TCR.

Paleontological Resources: For this section, "paleontological resources" refers to the fossilized plant and animal remains of prehistoric species. Fossilized remains, such as bones, teeth, shells, and leaves, are found in geologic deposits (i.e., rock formations). Paleontological resources generally include the geologic formations and localities in which the fossils are collected. Paleontological Resources are a limited scientific and educational resources valued for the information they yield about the history of the earth and its ecology.

Native American Reserve (NAR): This designation recognizes tribal trust and reservation lands managed by a Native American Tribe under the United States Department of the Interior's Bureau of Indian Affairs over which the County has no land use jurisdiction. The County encourages the adoption of tribal management plans for these areas that consider compatibility and impacts upon adjacent area facilities and plans.

National Historic Preservation Act: The National Historic Preservation Act was adopted in 1966 to preserve historical and archeological Sites in the United States. The Act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation offices.

Health and Safety Code, Section 7050.5: Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped near discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission (NAHC). CEQA Guidelines (Public Resources Code Section 5097) specify the procedures to be followed in case of the discovery of human remains on non-Federal land. The disposition of Native American burials falls within the jurisdiction of the NAHC.

2035 Kings County General Plan:

- **RC GOAL I1:** ***Preserve significant historical and archaeological Sites and structures that represent the ethnic, cultural, and economic groups that have lived and worked in Kings County.***
  - RC OBJECTIVE I1.1: Promote the rehabilitation or adaptation to new uses of historic Sites and structures.
    - *RC Policy I1.1.2:* Direct proposed developments that may affect proposed or designated historic Sites or County landmarks to the Kings County Museum Advisory Committee or other similarly purposed advisory body under the Kings County Parks and Recreation Advisory Commission for review and comment.
    - *RC Policy I1.1.3:* Encourage the protection of cultural and archaeological Sites with potential for placement on the National Register of Historic Places and/or inclusion in the California Inventory of Historic Resources.
    - *RC Policy I1.1.4:* Refer applications that involve the removal, destruction, or alteration of proposed or designated historic Sites or County landmarks to the Kings County Museum Advisory Committee or its successor for recommended mitigation measures.

  - RC OBJECTIVE I1.2: Identify potential archaeological and historical resources and, where appropriate, protect such resources.
    - *RC Policy I1.2.1:* Participate in and support efforts to identify significant cultural and archaeological resources and protect those resources in accordance to Public Resources Code 5097.9 and 5097.993.
    - *RC Policy I1.2.2:* Continue to solicit input from local Native American communities in cases where development may result in disturbance to Sites containing evidence of Native American Activity and/or to Sites of cultural importance.
    - *RC Policy I1.2.3:* Address archaeological and cultural resources in accordance with the California Environmental Quality Act (CEQA) for discretionary land use applications.
    - *RC Policy I1.2.4:* The County will respectfully comply with Government Code §65352.3 (SB18) by conducting formal consultations with tribes as identified by the Native American Heritage Commission on all general plan and specific plan amendments.
    - *RC Policy I1.2.5:* The County will respectfully comply with Government Code §6254.(r) and 6254.10 by protecting confidential information concerning Native American cultural resources. For example, adopting internal procedures such as keeping confidential archaeological reports away from public view or discussion in public meetings.
    - *RC Policy I1.2.1.6:* The County shall work in good faith with the Santa Rosa Rancheria Tachi Yokut Tribe ("Tribe"), the developer and other parties if the Tribe requests return of certain Native American artifacts from private development Projects (e.g., for interpretive or educational value). The developer is expected to act in good faith when considering the Tribe's request for artifacts. Artifacts not desired by the Tribe shall be placed in a qualified repository as established by the California State Historical Resources Commission (see Guidelines for the Curation of quaological Collections, May 1993). If no facility is available, then all artifacts shall be donated to the Tribe.

Discussion

a) **Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a Site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:**

i. **Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or**

Less Than Significant Impact with Mitigation: Buildings and structures, large piles of compost, and enclosed livestock pens currently occupy the Site. Heavy equipment has routinely disturbed the Site as part of agricultural operations. Historical and modern agricultural practices have altered the area's natural topography, and much of the land on the Project Site has been graded and plowed, which has caused additional disturbance to the soil. One hundred percent of the Project ground surface was very disturbed by agricultural activity. The ground visibility ranged from 90 to 100 percent in the entire Project Site. If any artifacts are inadvertently discovered during ground-disturbing activities, existing Federal, State, and local laws, regulations, and mitigation measures will require construction activities to cease until such artifacts are appropriately examined and determined not to be of significance by a qualified cultural resource professional.

Based on the records search results, no previously recorded Tribal Cultural Resources listed or eligible for listing in the California Register of Historic Resources are located within the Project Site. However, based on the Native American outreach, there may potentially be Tribal Cultural Resources within the Project Site. Although no Tribal cultural resources were identified, the presence of remains or unanticipated cultural resources under the ground surface is possible. Implementing Mitigation Measures CUL-1 and CUL-2 will ensure that impacts on Tribal Cultural Resources will be *less than significant with mitigation incorporation*.

The Project’s construction will include a limited amount of ground disturbance to construct the wastewater retention pond. Although it is unlikely that tribal cultural resources will be affected by this disturbance, Mitigation Measure CUL-3 will be implemented to protect any potential resources. Mitigation Measure CUL-3 will allow the Santa Rosa Rancheria Tachi Yokut Tribe and any other interested tribes to monitor the construction during ground disturbances. Mitigation Measures CUL-4, CUL-5, CUL-6 will also be implemented to further reduce the potential impacts of the Project. This will ensure that impacts on Tribal Cultural Resources will be *less than significant with mitigation incorporation*.

ii. **A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

Less Than Significant Impact with Mitigation: Based on the records search results, no previously recorded Tribal Cultural Resources listed or eligible for listing in the California Register of Historic Resources are located within the Project Site. However, based on the Native American outreach, there may potentially be Tribal Cultural Resources within the Project Site. Regarding the Project Site, Kings County has not determined resources pursuant to criteria outlined in Subdivision (c) of Public Resources Code Section 5024.1. Although no Tribal cultural resources were identified, the presence of remains or unanticipated cultural resources under the ground surface is possible. Implementing Mitigation Measures CUL-1 through CUL-6 will ensure that impacts will be *less than significant with mitigation incorporation.*

XIX. UTILITIES AND SERVICE SYSTEMS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relation of which could cause significant environmental effects?	☐	☐	☑	☐
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☑	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?	☐	☐	☐	☑
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☑	☐
e) Comply with Federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☑

Environmental Setting

Wastewater: The Project is in an unincorporated area of Kings County. Sewer services are not provided in rural areas outside of the service districts. The Project Site relies on a private septic tank system. All wastewater will be contained and treated on-site. A Water and Wastewater Management Plan was prepared for this Project (Appendix F).

Solid Waste: The Kings Waste and Recycling Authority (KWRA) receives solid waste from 13 service providers who perform solid waste collection and disposal services, including recyclable materials, for all County unincorporated areas, and the cities of Corcoran, Hanford, and Lemoore. Municipal waste generated in these areas is first directed to the KWRA Material Recovery Facility and Transfer Station at 7803 Hanford Armona Road to recycle and reuse materials and divert waste from the landfills. The Materials Recovery and Transfer station facility includes a small but complete Household Hazardous Waste collection station. As of 2006, the KWRA reported that a 48 percent recycling rate above the base year was accomplished countywide (California Integrated Waste Management Board, 2009). The remaining waste is then transferred to the Chemical Waste Management, Inc/Kettleman Hills Facility

(CWMI/KHF), which operates both municipal waste and hazardous waste landfills at their Site located east of Interstate 5 along State Route 41. The CWMI/KHF opened a new municipal solid waste landfill called B-17 in 2009. This landfill has a design capacity of 18.4 million cubic yards and is scheduled to serve Kings County through 2030. Its permitted daily capacity is 2,000 tons/day. In addition to B-17, the Kings County Waste Management Authority has planned to open another landfill in Kettleman City, which is expected to serve the County through 2047.

Water: Kings County utilizes groundwater from the shallow and deep aquifers of the Tulare Lake Basin. The shallow aquifer provides agricultural water supplies for the irrigation of crops. The water in the shallow aquifer in Kings County is generally of a quality that is inappropriate for potable use. Domestic water supply is from wells that pump water from the deeper aquifer, but only where water quality meets drinking water standards for human consumption.

The Project is in an unincorporated area of Kings County and is located outside a water service district. The Project Site receives water from surface water provided by the Laguna Irrigation District and private wells. The depth to first encountered groundwater and the historically highest groundwater level were evaluated for this Site based on data from the State of California Department of Water Resources (DWR). Data was received on seven wells and included in the analysis. The average depth to groundwater is 94.54ft. below ground surface (BGS), with the average highest groundwater level at 59.8 ft. BGS. The highest groundwater level was 17.5 ft. BGS on January 23, 1992.

Stormwater: Stormwater will be contained on-site. The proposed retention pond can contain all wastewater and stormwater (Appendix F).

Electric Power and Natural Gas: The proposed Project will not require new electrical or natural gas services.

Regulatory Setting

CalRecycle: California Code of Regulations, Title 14, Natural Resources – Division 7 contains all current CalRecycle regulations regarding nonhazardous waste management in the state. These regulations include standards for the handling of solid waste, standards for the handling of compostable materials, design standards for disposal facilities, and disposal standards for specific types of waste.

Central Valley RWQCB: The Central Valley RWQCB requires a Stormwater Pollution Prevention Plan (SWPPP) for Projects disturbing more than one acre of the total land area. Because the Project is more than one acre, a SWPPP to manage stormwater generated during construction will be required. The Central Valley RWQCB regulates Wastewater Discharges to Land by establishing thresholds for discharged pollutants and implementing monitoring programs to evaluate program compliance. This program regulates approximately 1500 dischargers in the region.

The Central Valley RWQCB is also responsible for implementing the Federal program, the National Pollutant Discharge Elimination System (NPDES). The NPDES Program is the Federal permitting program that regulates the discharges of pollutants to the surface waters of the U.S. Under this program, an NPDES permit is required to discharge pollutants into the Waters of the U.S. There are 350 permitted facilities within the Central Valley Region.

2035 Kings County General Plan: The 2035 General Plan *Resource Conservation Element* includes the following goals, objectives, and policies which would reduce potential impacts on water supply and utility infrastructure:

- ***RC GOAL A1: Beneficially use, efficiently manage, and protect water resources while developing strategies to capture additional water sources that may become available to ensure long term sustainable water supplies for the region.***
  - RC OBJECTIVE A1.1: Maintain and Protect Existing Water Supplies
    - *RC Policy A1.1.2:* Review new discretionary development proposals, including new or expanded uses within agricultural zone districts, to ensure that there are adequate water supplies to accommodate such uses. Projects should provide evidence of adequate and sustainable water availability prior to approval of a tentative map or other land use approval.
  - RC OBJECTIVE A1.2: Conserve and reuse water to provide for the efficient use of water resources.
    - *RC Policy A1.2.2:* Require the use of low water consuming, drought-tolerant and native landscaping and other water conserving techniques, such as mulching, drip irrigation and moisture sensors, for new development.
    - *RC Policy A1.2.3:* Continue to support efforts and educational programs intended to reduce water consumption on agricultural lands and enhance groundwater recharge.
    - *RC Policy A1.2.4:* Encourage and support the development of recycled water systems in Kings County.
    - *RC Policy A1.2.5:* Encourage and support the safe use of gray water for landscaping, agriculture, recreation and open space areas.
  - RC OBJECTIVE C2.2: Ensure that land use decisions are compatible with the control of soil erosion and the maintenance of soil quality.
    - *RC Policy C2.2.2:* Continue to require the application of construction related erosion control measures, including Stormwater Pollution Protection Plans (SWPPP) for all new construction.
    -
- ***RC GOAL C1: Encourage the conservation of soil resources that are critical to the long-term protection and sustainability of the County's agricultural productivity and economy.***
  - RC OBJECTIVE C2.2: Ensure that land use decisions are compatible with the control of soil erosion and the maintenance of soil quality.
    - *RC Policy C2.2.2:* Continue to require the application of construction related erosion control measures, including Stormwater Pollution Protection Plans (SWPPP) for all new construction.

Discussion

a) **Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relation of which could cause significant environmental effects?**

Less than Significant Impact: The proposed Project would result in a minimal increase in utility usage. The proposed Site is in an unincorporated area of the County. Therefore, the Site is not located within any districts and will not impact existing districts.

Wastewater: The Project Site is not in a wastewater district and will rely on the proposed retention pond and existing private septic tank for wastewater. The proposed additions to the Site include the construction of a new pond to retain stormwater runoff and wastewater runoff from the composting yard and truck wash. All wastewater will be retained on-site. The Project would not produce wastewater that would require disposal or treatment off-site.

The retention pond is planned to be 150 feet wide and 100 feet long. It would have a capacity of 679,441 gallons. The Project is projected to process 7,947 gallons per day into the pond. See Appendix F for the pond design and volume calculations.

A septic tank is planned alongside the modular office. The design includes a minimum 1,000-gallon septic tank, one infiltrator line 67-feet long, and a 100% replacement area adjacent to the leach line. The office is projected to have a total flow rate of 60 gallons per day. See Appendix I for the septic design and calculations.

Stormwater: The terrain of the Project Site is virtually flat, and the Project will result in no substantial modification of existing Site grades. The Project will introduce very few structural elements with impervious surfaces that would impede the direct percolation of rainwater into the soil. The office and truck wash would add a small impervious surface. The proposed additions to the Site include the construction of a new pond to retain all water runoff on-site. This pond will retain all stormwater on-site. See Water and Wastewater Management Plan (Appendix F).

Water: The Project Site is located in the Laguna Irrigation District and will rely on existing private wells to supply water. No new or expanded facilities will be needed to supply water to the Site.

It is not anticipated that implementing the proposed Project would result in increased demand for any utility services. There is *a less than significant impact.*

b) **Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?**

Less than Significant Impact: Additional water entitlements are not proposed for the Site. Water use is estimated to be approximately 0.12 acre-feet/acre/month during Project construction. This would total approximately .54-acre feet (AF) over the four months of construction. This water will be used primarily for dust control and will be provided by water trucks; no additional water entitlements will be required.

The Project would use water for composting operations and the truck wash during operations. The composting is expected to require up to 7,747 gallons per day (gpd). The truck wash is expected to be used up to twelve times per week or twice daily. Each wash is expected to use 150 gallons of water. This is 300 gallons per day or .29 acre-feet per year (AFY). This adds up to a total of approximately 8,047 gpd or 9.01 AFY.

The Project Site is in an area of significant agricultural activity. Therefore, comparing Project-related water use to typical agricultural water use is relevant. Because the Kings County General Plan identifies wheat (grain) as having the largest number of harvested acres within the County, the amount of water used for wheat production was used to evaluate the significance of the Project's water use.

The 2015 California Agricultural Production and Irrigated Water Use Report states that wheat production requires an average of 2.1 acre-feet of applied water/acre/year or 0.18 acre-feet/acre/month. Over the Site's 63 acres, this would result in 132.8 acre-feet of applied water/year or 11.4 acre-feet of applied water/month. Because construction-related water use is anticipated to be approximately 0.12 acre-feet/acre/month, and operational water use is anticipated to be approximately 9.01 AFY, both construction and operation of the proposed Project would require less water than would be required by typical crop cultivation.

Because the Project would use a relatively small amount of water compared to adjacent agricultural uses, the proposed Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. The proposed Project does not meet the definition of a "Project" as defined by Water Code § 10912 and would not be subject to a Water Supply Assessment according to SB 610 or SB 221. Existing water supplies are sufficient to meet this demand during normal, dry, and multiple dry years. Because the Site's existing water supply is sufficient to meet the Project's demand, no new or expanded water supplies are needed for the proposed Project. There is a *less than significant impact.*

c) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?

No Impact: All wastewater will be contained onsite. The Project Site is not in a wastewater district and will rely on the proposed retention pond and existing private septic tanks for wastewater. The proposed additions to the Site include the construction of a water retention pond to retain stormwater runoff and wastewater runoff from the composting yard and truck wash. The Project would not produce wastewater that would require disposal or treatment off-site. There will be *no impact* on any wastewater treatment provider.

d) Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less than Significant Impact: Kings Waste and Recycling Authority will provide waste management. Very little solid waste is anticipated because of Project implementation, and the landfill has the sufficient permitted capacity to accommodate the Project's solid waste disposal needs. Solid manure is brought and produced on-site, stored, composted, and sold to local farms for soil amendment. Liquid wastewater from manure contamination and truck wash contamination is also produced and stored on-site in the proposed wastewater retention pond. With the proposed Project, there will be an increase in solid and liquid manure stored and sold on-site; however, it will not impact the capacity of the local infrastructure. There is a *less than significant impact.*

e) Would the Project comply with Federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact: The proposed Project would comply California Integrated Waste Management Act of 1989 (AB 939), which requires each city and county in California to prepare, adopt, and implement a Source Reduction and Recycling Element. Solid waste, source reduction, and recycling policies are identified in the Source Reduction and Recycling Element (SRRE) and the Household Hazardous Waste Element (HHWE) of the Kings County Integrated Waste Management Plan. The KWRA serves all County unincorporated areas and the Cities of Corcoran, Hanford, and Lemoore. Municipal waste generated in these areas is first directed to the KWRA facility and then transferred to the Chemical Waste Management, Inc. Kettleman Hills Facility, which operates both municipal waste and hazardous waste landfills at their Site located west of Interstate 5 along State Route 41.

As described above, materials would be disposed of at MSW Landfill B-17, in Kettleman City, California, permitted by Kings County and inspected monthly by the Kings County Health Department, Environmental Health Services Division. Some construction waste would be recycled at the KWRA Material Recovery Facility and Transfer Station as possible before the remainder of the waste is disposed of at MSW Landfill B-17. Any hazardous materials and wastes would be recycled, treated, and disposed of following Federal, state, and local laws. Therefore, there would *be no impact* under this criterion.

XX.WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☑
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☑	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☑

<u>Environmental Setting</u>

There are no State Responsibility Areas (SRAs) within the vicinity of the Project Site, and the Project Site is not categorized as a “Moderate,” “High,” or “Very High” Fire Hazard Severity Zone (FHSZ) by CalFire. This CEQA topic only applies to areas within an SRA or a Very High FHSZ.

<u>Regulatory Setting</u>

Fire Hazard Severity Zones: Geographical areas designated under California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated under California Government Code, Sections 51175 through 51189.

Kings County Emergency Operations Plan (2015): The Kings County Emergency Operations Plan establishes goals, priorities, and strategies in the event of an emergency. The goals and priorities are outlined below.

- 2.1 Goals, Priorities, and Strategies: During the response phase, emergency managers set goals, prioritize actions, and outline operational strategies. This plan provides a broad overview of those goals, priorities, and strategies and describes what should occur during each step, when, and at whose direction.
- 2.1.1 Operational Goals: During the response phase, the agencies that are charged with responsibilities in this plan should focus on the following five goals:

  - Mitigate hazards.
  - Meet basic human needs.
  - Address needs of people with disabilities and others with access and functional needs.
  - Restore essential services.
  - Support community and economic recovery.
- 2.1.2 Operational Priorities: Operational priorities govern resource allocation and the response strategies for the Kings County and its political subdivisions during an emergency. Below are operational priorities addressed in this plan.
  - Save Lives – The preservation of life is the top priority of emergency managers and first responders, and takes precedence over all other considerations.
  - Protect Health and Safety – Measures should be taken to mitigate the impact of the emergency on public health and safety.
  - Protect Property – All feasible efforts must be made to protect public and private property and resources, including critical infrastructure, from damage during and after an emergency.
  - Preserve the Environment – All possible efforts must be made to preserve California's environment and protect it from damage during an emergency.

2035 Kings County General Plan: The 2035 General Plan Health and Safety *Element* includes the following policies which would reduce potential impacts from wildfires:

- *HS Policy C2.2.2:* Development proposals and code revisions shall be referred to the County Fire Department for review and comment.

<u>Discussion</u>

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

<u>No Impact:</u> The Project would not substantially impair an adopted emergency response or evacuation plan. The Project will be reviewed by the Kings County Fire Department to ensure that Project does not impair emergency response or emergency evacuation. The proposed Project Site is also not located within an SRA or a Very High FHSZ. There is *no impact.*

b) Due to slope, prevailing winds, and other factors, would the Project exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

<u>No Impact</u>: The Project is located on a flat area of agricultural land at little risk of fire. The proposed Project Site is also not located within an SRA or a Very High FHSZ. There is *no impact.*

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

<u>Less than Significant Impact:</u> The Project's construction involves the construction of a truck wash and a water retention pond. Utilities such as emergency water sources and power for the truck wash would be included as part of the proposed development, however, all improvements would be subject to County standards and Fire Chief approval. The proposed Project would not exacerbate fire risk and the impact would be *less than significant.*

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire instability, or drainage changes?

No Impact: The Project Site is not located in an area designated as a Fire Hazard Severity Zone and the lands associated with the Project Site are relatively flat. Therefore, the Project would not be susceptible to downslope or downstream flooding or landslides because of post-fire instability or drainage changes. There is *no impact.*

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Does the Project have the potential substantially to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☑	☐	☐
b) Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?	☐	☐	☑	☐
c) Does the Project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☑	☐

Discussion

a) Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self- sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less than Significant Impact with Mitigation: This initial study/mitigated negative declaration found the Project could significantly impact Biological resources, Historical/Cultural Resources, Tribal Cultural Resources, water resources, geologic resources, and the air quality. However, implementing the identified mitigation measures for each respective section would ensure that impacts are *less than significant with mitigation incorporation.*

b) **Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?**

Less than Significant Impact: CEQA Guidelines Section 15064(h) states that a Lead Agency shall consider whether the cumulative impact of a Project is significant and whether the effects of the Project are cumulatively considerable. The assessment of the significance of the cumulative effects of a Project must, therefore, be conducted in connection with the effects of past Projects, other current Projects, and probable future Projects. Due to the nature of the Project and consistency with environmental policies, incremental contributions to impacts are considered less than cumulatively considerable. The proposed Project would not contribute substantially to adverse cumulative conditions, or create any substantial indirect impacts (i.e., an increase in population could lead to an increased need for housing, an increase in traffic, air pollutants, etc). Impacts would be *less than significant*.

c) **Does the Project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?**

Less Than Significant Impact: The analyses of environmental issues contained in this Initial Study indicate that the Project is not expected to have a substantial impact on human beings, either directly or indirectly. Mitigation measures have been incorporated in the Project design to reduce all potentially significant impacts to less than significant, which results in a *less than significant* impact on this checklist item.

XXII. MITIGATION MONITORING AND REPORTING PROGRAM

As required by Public Resources Code Section 21081.6, subd. (a)(1), a Mitigation Monitoring and Reporting Program (MMRP) has been prepared for the Project to monitor the implementation of the mitigation measures that have been adopted for the Project. This Mitigation Monitoring and Reporting Program (MMRP) has been created based upon the findings of the Initial Study/Mitigated Negative Declaration (IS/MND) for the Thomas Bros. Compositing Facility in the Kings County.

The first column of the table identifies the mitigation measure. The second column names the party responsible for carrying out the required action. The third column, "Timing of Mitigation Measure" identifies the time the mitigation measure should be initiated. The fourth column, "Responsible Party for Monitoring," names the party ensuring that the mitigation measure is implemented. The last column will be used by the County to ensure that the individual mitigation measures have been monitored.

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
Mitigation Measure AQ-1: Fugitive Particulate Matter. Consistent with San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII (Fugitive particulate matter less than 10 microns in size [PM10] Prohibitions), the following controls are required to be included as specifications for the proposed Project and implemented at the construction Site: • All disturbed areas, including storage piles not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, and covered with a tarp or other suitable cover or vegetative ground cover. • All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/ suppressant. • All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing the application of water or by presoaking. • When materials are transported off-site, all material shall be covered or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. • All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.) • Following the addition of materials to, or the removal of materials from, the surface of out-door storage piles, said piles should be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.	Project Applicant	Ongoing During Construction	Kings County	

Mitigation Measure AQ-2: Odor Management. The Project applicant shall incorporate the following operational practices into the composting operations: • Coarse, dry bulking agents shall be added to any incoming materials that are anaerobic and odorous to increase porosity and reduce moisture in the materials; • Windrows and piles shall be turned to redistribute the moisture and provide aeration to maintain even temperatures; and • Windrows shall be sized uniformly to facilitate oxygen diffusion and natural air convection.	Project Applicant	Ongoing During Project Operations	Kings County	
Mitigation Measure AQ-3: Odor Management Plan Implementation. To mitigate potential odor impacts from the Thomas Bros. Composting Facility, an Odor Management Plan (OMP) shall be implemented. The OMP outlines procedures to manage and reduce odors generated by composting operations, storage, and transportation activities. This plan is designed to minimize the impact of odors on surrounding communities and receptors. The OMP is provided in Appendix K and is summarized below: Facility Operations and Maintenance: • Implement and adhere to the standard operating procedures for compost management, treatment, storage, and transportation as detailed in the OMP. • Ensure the private truck wash facility is maintained with a concrete surface and proper drainage systems to channel and redirect runoff wastewater, preventing standing water and associated odors. Odor Control Measures: • Minimize moisture levels in stored compost to prevent anaerobic conditions that can produce odors. • Use coarse, dry bulking agents for anaerobic and odorous incoming materials to increase porosity and reduce moisture. • Maintain uniformly sized and regularly turned windrows to redistribute moisture, provide aeration, and maintain even temperature for natural air convection. • Clean up compost spills immediately to prevent odor generation. • Maintain the wastewater retention pond to prevent solids buildup and associated odors. Dust and Odor Suppression: • Implement dust suppression measures to prevent the release of odorous compounds in fugitive dust. • Avoid the export/import of dry manure or the application of water during windy conditions to minimize odor dispersion. Odor Complaint Response: • Maintain an odor complaint register (Attachment A of Appendix K) to document and respond to odor complaints from neighbors. This register shall include details of each complaint, actions taken to determine the cause, actions taken to resolve the odor problem, results of these actions, and any additional measures required to prevent recurrence. • Provide the odor complaint register to code compliance personnel upon request. The Odor Management Plan shall be implemented prior to the commencement of composting operations and shall be maintained throughout the life of the facility.	Project Applicant	Prior to the Start of Construction and Ongoing During Operations	Kings County	

Mitigation Measure BIO-1: Construction Timing. Live Oak Associates recommends performing construction activities outside the bird nesting season (February 1 to August 31). Suppose Project activities are proposed during the nesting season. In that case, Live Oak Associates recommends that a qualified biologist survey the Project Site or environmental footprint of the Project for nesting birds to avoid any adverse impacts leading to nest failure or abandonment. If construction activities are proposed to occur during the non-breeding season (September-January), a survey is not required, and no further studies are necessary.	Project Applicant	Prior and Ongoing during construction	Kings County	
Mitigation Measure BIO-2: Pre-construction Surveys. Active raptor nests are protected by the California Fish and Game code Section 3503.5 and the Migratory Bird Treaty Act (MBTA). For this reason, if construction is expected to occur during the nesting season (February – August), a pre-construction raptor survey is recommended to determine if active nests are present on the Site. The survey should be conducted by a qualified biologist no more than 30 days before the onset of construction activities but preferably within ten days prior to the start of construction. The survey area will encompass the Site and accessible surrounding lands suitable for nesting birds.	Project Applicant	Prior to the Start of Construction	Kings County	
Mitigation Measure BIO-3: Avoidance of Active Nests. If the nests are found and considered to be active, construction activities should not occur within 500 feet of the nests until the young have fledged, or a qualified biologist has determined that the nest is no longer active. The biologist will identify a suitable construction-free buffer around the nest, which will be identified with flagging or fencing and maintained until the biologist has confirmed that the young have fledged and can forage independently. All nests should be monitored during Project activities for signs of distress. If signs of distress are observed, Project activities should be adjusted to prevent further disturbance to the birds.	Project Applicant	Ongoing During Construction	Kings County	
Mitigation Measure CUL-1: Procedures for Handling Encountered Historical Resources. Construction shall stop near the find if previously unknown resources are encountered before or during grading activities. A qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavating the finds and evaluating the discoveries following Section 15064.5 of the CEQA Guidelines and the County's General Plan. If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoiding or capping, incorporating the Site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the discovery area until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a County-approved institution or person capable of providing long-term preservation to allow future scientific study.	Project Applicant	Ongoing During Construction	Kings County	

Mitigation Measure CUL-2: Procedures for Handling Human Remains Discovery. In the event that human remains are unearthed during the excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings regarding origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and consult with the descendants all reasonable options regarding the descendants' preferences for treatment.	Project Applicant	Ongoing During Construction	Kings County	
Mitigation Measure CUL-3: Native American Monitoring. Prior to any ground disturbance, the applicant shall offer the Santa Rosa Rancheria Tachi Yokut Tribe and any other interested Tribes the opportunity to provide a Native American Monitor during ground disturbing activities during construction. The monitor will only be present on-site during the construction phases that involve ground disturbing activities. Ground disturbing activities are defined as activities that may include, but are not limited to, pavement removal, auguring, boring, excavation, drilling, and trenching, within the project area. The on-site monitoring shall end when the project site excavation activities are completed, or when the Tribal Representatives and monitor/consultant have indicated that the site has a low potential for impacting Tribal Cultural Resources. Tribal participation would be dependent upon the availability and interest of the Tribe.	Project Applicant	During Ground Disturbing Activities	Kings County	
Mitigation Measure CUL-4: Pre-Construction Briefing. The project proponent shall retain the Santa Rosa Rancheria Tachi Yokut Tribe and any other interested tribes to provide a pre-construction Cultural Sensitivity Training to construction staff regarding the discovery of cultural resources and the potential for discovery during ground disturbing activities, which will include information on potential cultural material finds and on the procedures to be enacted if resources are found.	Project Applicant	Prior to the Start of Construction	Kings County	
Mitigation Measure CUL-5: Disposition of Cultural Resources. Upon coordination with the Kings County Community Development Agency, any pre-historic archaeological artifacts recovered shall be donated to an appropriate Tribal custodian or a qualified scientific institution where they would be afforded applicable cultural resources laws and guidelines.	Project Applicant	Ongoing During Construction	Kings County	
Mitigation Measure CUL-6: Curation Agreement / Burial Treatment Plan. The applicant/property owner shall enter into a Curation Agreement and Burial Treatment Plan with the Santa Rosa Rancheria Tachi Yokut Trube, which shall be in a form acceptable to the Tribe, prior to any earth disturbing activities. (This condition applies as a mitigation measure to all projects that require an initial study).	Project Applicant	Prior to the Start of Construction	Kings County	

Mitigation Measure GEO-1: Clay Liner Requirements. Due to the upper 1.5 feet of the composting area being predominately silty sand, it is required to use a soil-clay mix with a clay content of at least 3 percent across the compost working surface. This approach is based on laboratory testing and preliminary mix design results, aiming to ensure optimal performance of the liner in terms of water retention and stability.	Project Applicant	Ongoing During Operations	Kings County	
Mitigation Measure GEO-2: Basin Requirements. Due to a slow percolation rate found at the bottom of the existing basins, it is required that the basin be cleaned out or deepened. This is based on the results of double ring tests indicating that the percolation rate at the basin's bottom was slower than desired. Cleaning out or deepening the basin will enhance its function and efficiency in handling percolation.	Project Applicant	Prior to the Start of Operations	Kings County	
Mitigation Measure GEO-3: Site Preparation and Earthwork Construction. The following procedures must be implemented during site preparation for the proposed improvements: 1. Prior to any site grading, all miscellaneous surface obstructions must be removed from the improvement area. Near surface soils containing vegetation, roots, organics, compost, or other objectionable material must be stripped to a depth of at least 3-inches to expose a clean soil surface. Surface strippings and compost must not be incorporated into engineered fill unless the organic content is less than 3 percent by weight. 2. Existing utilities or irrigation pipes must be removed to a point at least 5-feet horizontally outside the proposed improvement area. Resultant cavities must be backfilled with engineered fill. 3. Soil disturbed as a result of undocumented fill, debris, and abandoned underground structures must be excavated to expose undisturbed native soil. 4. Following the required stripping, and/or removal of underground structures, the exposed soil surface in proposed at-grade improvement areas including foundations or lightly loaded concrete structures must be over-excavated uniformly to a depth of 24 inches below existing site grade or 12 inches below the bottom of the proposed foundation, whichever is deeper. The overexcavation must extend at least 5 feet laterally beyond the outside edge of the proposed foundation or areas to receive fill, whichever distance is greater. The exposed subgrade must be proof-rolled under the observation of a BSK field representative to detect soft or pliant areas. Soft or pliant areas must be over-excavated to firm native soil. The exposed surface must be scarified at minimum of 8 inches, uniformly moisture conditioned to 2 percent above optimum moisture, and compacted to 90 percent relative compaction. Scarification and recompaction at the wastewater storage lagoon excavation is not necessary, however, the exposed subgrade must not be disturbed during excavation. 5. For the compost liners, following the required stripping, and/or removal of underground structures, the exposed soil surface must be thoroughly mixed to incorporate 3 percent clay (by dry weight) to a minimum of 12 inches below surface or over-excavated uniformly to a depth of 12 inches below existing site grade. The mixing or over-excavation must extend at least 5 feet laterally beyond the outside edge of the proposed compost areas. The exposed subgrade must be proof-rolled under the observation of a BSK field representative to detect soft or pliant areas. Soft or pliant areas must be over-excavated to firm native soil. The exposed surface must be scarified at minimum of 8 inches, uniformly moisture conditioned to at or above optimum moisture, and	Project Applicant	Prior to the Start of Construction	Kings County	

compacted to 92 percent relative compaction. On-site material may be used as engineered compost liner fill, if sufficiently blended with 3 percent clay (by dry weight), uniformly moisture conditioned to 2 percent above moisture content, and compacted to 92 percent relative compaction. 6. Engineered fill in areas of at-grade structures must consist of non-expansive soil (EI < 20), moisture conditioned to at or above optimum moisture, and compacted to 90 percent relative compaction. Excavated soils, free of deleterious substances (organic matter, demolition debris, tree roots, etc.), meeting requirements for engineering fill below, and with less than 3 percent organic content by weight, may be reused as engineered fill for the backfill. 7. Engineered fill must be placed in uniform layers not exceeding 8-inches in loose thickness, moisture-conditioned and compacted as recommended above. Acceptance of engineered fill placement must be based on both moisture content at time of compaction and relative compaction. 8. Imported fill materials must be free of deleterious substances and have less than 3 percent organic content by weight. The project specifications must require the contractor to contact BSK for review of the proposed import fill materials for conformance with these recommendations at least two weeks prior to importing to the site, whether from on-site or off-site borrow areas. Imported fill soils must be non-hazardous and be derived from a single, consistent soil type source conforming to the following criteria: Maximum Particle Size: 3-inches Percent Passing #4 Sieve: 65 – 100 Percent Passing #200 Sieve: 20 – 45 Plasticity Index: less than 12 Expansion Index: < 20 Low Corrosion Potential: Soluble Sulfates: < 1,500 mg/kg Soluble Chlorides: < 300 mg/kg Soil Resistivity: > 2,000 ohm-cm Grading operations must be scheduled as to avoid working during periods of inclement weather. Should these operations be performed during or shortly following periods of inclement weather, unstable soil conditions may result in the soils exhibiting a "pumping" condition. This condition is caused by excess moisture, in combination with compaction, resulting in saturation and near zero air voids in the soils. If this condition occurs, the affected soils must be over-excavated to the depth at which stable soils are encountered and replaced with suitable soils compacted as engineered fill. Alternatively, the Contractor may proceed with grading operations after utilizing a method to stabilize the soil subgrade, which must be subject to review by BSK prior to implementation.				

Mitigation Measure HYD-1: Notice of Intent. Before the issuance of any construction/grading permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project Site to the California SWRCB Storm Water Permit Unit. • Before issuance of grading permits for Phase 1, the Applicant shall submit a copy of the NOI to the County. • The County shall review noticing documentation before the approval of the grading permit. County monitoring staff will inspect the Site during construction for compliance.	Project Applicant	Prior to the Start of Construction	Kings County	
Mitigation Measure HYD-2: Stormwater Pollution Prevention Plan. The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the County 45 days before the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. An SWPPP for Site construction shall be developed before the initiation of grading and implemented for all construction activity on the Project Site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to stormwater and shall include specific BMPs to control material discharge from the Site. The following BMP methods shall include, but would not be limited to: • Dust control measures will be implemented to ensure the success of all onsite activities to control fugitive dust; • A routine monitoring plan will be implemented to ensure the success of all onsite erosion and sedimentation control measures; • Provisional retention basins, straw bales, erosion control blankets, mulching, silt fencing, sandbagging, and soil stabilizers will be used; • Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours before and during extreme weather conditions; and, • BMPs will be strictly followed to prevent spills and discharges of pollutants on Site, such as material storage, trash disposal, construction entrances, etc.	Project Applicant	Prior to the Start of Construction	Kings County	
Mitigation Measure HYD-3: Development Maintenance Manual. A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual shall require that stormwater BMP devices be inspected, cleaned, and maintained following the manufacturer's maintenance conditions. The manual shall require that devices be cleaned before the onset of the rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual shall also require that all devices be checked after major storm events. The Development Maintenance Manual shall include the following: • Runoff shall be directed away from the trash and loading dock areas; • Bins shall be lined or otherwise constructed to reduce the leaking of liquid wastes; • Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and,	Project Applicant	Prior to the Start of Construction	Kings County	

• Impervious berms, trench catch basins, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills, or washdown water to enter the drainage system.				

Supporting Information and Sources

1. 2035 Kings County General Plan EIR; https://www.countyofkings.com/home/showpublisheddocument/5897/635342995809030000
2. 2035 Kings County General Plan; https://www.countyofkings.com/departments/community-development-agency/information/2035-general-plan
3. Fresno County General Plan; https://www.fresnocountyca.gov/Departments/Public-Works-and-Planning/divisions-of-public-works-and-planning/development-services-division/planning-and-land-use/general-plan-maps
4. 2022 CEQA Statute & Guidelines.; https://www.califaep.org/docs/2022_CEQA_Statue_and_Guidelines.pdf

Aesthetics

5. Caltrans State Scenic Highways; https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa

Agriculture and Forest Resources

6. Farmland Mapping and Monitoring Program; https://www.conservation.ca.gov/dlrp/fmmp

Air Quality

7. SJVAPCD Rules and Regulations; https://www.valleyair.org/rules/1ruleslist.htm
8. California Air Resources Board (CARB). 2012. California Air Resources Board Approves Advanced Clean Car Rules; https://ww2.arb.ca.gov/news/california-air-resources-board-approves-advanced-clean-car-rules
9. CARB, 2016. Ambient Air Quality Standards.; https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf
10. CARB, 2017. California's 2017 Climate Change Scoping Plan.; https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf
11. CARB 2022 Scoping Plan for Achieving Carbon Neutrality.; https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents
12. CARB 2022 State and Federal Area Designations; https://ww2.arb.ca.gov/our-work/programs/state-and-federal-area-designations
13. CARB Common Air Pollutants.; https://ww2.arb.ca.gov/resources/common-air-pollutants?corr
14. CARB Air Quality Data Statistics.; https://www.arb.ca.gov/adam/topfour/topfour1.php
15. Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis, Fourth Assessment.; https://www.ipcc.ch/site/assets/uploads/2018/05/ar4_wg1_full_report-1.pdf
16. IPCC Climate Change 2021: The Physical Science Basis, Sixth Assessment Report.; https://www.ipcc.ch/report/ar6/wg1/
17. United States Environmental Protection Agency (USEPA). 1992. Guideline for Modeling Carbon Monoxide from Roadway Intersections.; https://www.epa.gov/sites/default/files/2020-10/documents/coguide.pdf

Biological Resources

18. Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, and T. J. Rosatti, Eds. 2012. The Jepson Manual: Vascular Plants of California, 2nd edition. University of California Press, Berkeley, CA.; https://www.degruyter.com/document/doi/10.1525/9780520951372-fm/html
19. California Department of Fish and Game. 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California.; https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83992&inline
20. Estep, J. A. 1989. Biology, movements, and habitat relationships of the Swainson's Hawk in the Central Valley of California, 1986-87. Nongame Bird and Mammal Sec.; https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/JVR/AdminRecord/IncorporatedByReference/Appendices/Appendix-D---Biological-Resources-Report/Estep%201989.pdf
21. Golightly, R. T. and R. D. Ohmart. 1984. Water economy of two desert canids: coyote and kit fox. Journal of Mammalogy 65:51–58.; https://www.jstor.org/stable/1381199
22. Grinnell, J., J.S. Dixon and J.M. Linsdale. 1937. Fur-bearing mammals of California. Vol. 2. Univ. California Press, Berkeley.; https://www.google.com/books/edition/Fur_bearing_Mammals_of_California/yS1BAAAAYAAJ?hl=en&gbpv=0&bsq=fresno&kptab=overview
23. Orloff, Susan G. 2011. Herpetological Conservation and Biology: Movement Patterns and Migration Distances in An Upland Population of California Tiger Salamander (Ambystoma californiense). Volume 6 (2): 266-276. Accepted April 1, 2011.; https://www.loiret-nature-environnement.org/images/Inventaires_et_expertises/P%C3%A9lobate_brun/Orloff_20112.pdf
24. Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento, CA 1300pp.; https://books.google.com/books?newbks=1&newbks_redir=0&id=y40lAQAAMAAJ&dq=A+Manual+of+California+Vegetation&focus=searchwithinvolume&q=A
25. U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers wetlands delineation manual. Department of the Army.; https://www.sac.usace.army.mil/Portals/43/docs/regulatory/1987_wetland_delineation_manual_reg.pdf
26. United States Fish and Wildlife (USFWS). 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, Oregon.; https://ecos.fws.gov/docs/recovery_plan/980930a.pdf
27. USFWS. 2020b. Giant Gartersnake 5-Year Review. Published June 2020.; https://ecos.fws.gov/docs/tess/species_nonpublish/2976.pdf
28. Zeiner, David C., William F. Laudenslayer, Kenneth E. Mayer and Marshal White. Ed. 1988-1990. California's Wildlife. Volume I-III. California Department of Fish and Game, Sacramento, California.; https://archive.org/details/californiaswildl0000will/page/n7/mode/2up
29. Swainson's Hawk, Birds of the World, Cornell Lab of Ornithology; https://birdsoftheworld.org/bow/species/swahaw/1.0/introduction
30. CalFlora Online Database; https://www.calflora.org/
31. California Interagency Wildlife Task Group. CWHR version 9.0 personal computer program.; https://wildlife.ca.gov/Organization/BDB
32. California Natural Diversity Database. *BIOS 6.0* and *Rarefind 5.0*.; https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data
33. California Native Plant Society, Rare Plant Inventory; https://rareplants.cnps.org/

34. eBird, Online Database of Bird Distribution and Abundance; https://ebird.org/home
35. iNaturalist; https://www.inaturalist.org/
36. Jepson Flora Projects; https://ucjeps.berkeley.edu/eflora/
37. California Herps – A Guide to the Amphibians and Reptiles of California; https://californiaherps.com/
38. Tipton Kangaroo Rat 5-Year Review; https://ecos.fws.gov/docs/five_year_review/doc6442.pdf
39. USFWS Environmental Conservation Online System; https://ecos.fws.gov/ecp/report/table/critical-habitat.html

Cultural Resources

40. Adams, Kenneth D., Robert M. Negrini, Edward R. Cook, and Seshadri Rajagopal. 2015 Annually resolved late Holocene paleohydrology of the southern Sierra Nevada and Tulare Lake, California. Water Resources Research 51(12):9708-9724.; https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2015WR017850
41. Bennyhoff, James, and David A. Fredrickson. 1994 Toward a New Taxonomic Framework for Central California Archaeology, edited by Richard E. Hughes. Number 52, Contributions of the University of California Archaeological Research Facility, Berkley, California.; https://escholarship.org/uc/item/26144166
42. Bull, William B. 1964 Geomorphology of Segmented Alluvial Fans in Western Fresno County, California. Geological Survey Professional Paper 352-E. United States Government Printing Office, Washington, D.C.; https://pubs.usgs.gov/pp/0352e/report.pdf
43. Bulls, Diana. 2010 The Fresno Scraper: A Mechanical Engineering Marvel. Kings River Life Magazine. August 14.; https://kingsriverlife.com/08/14/the-fresno-scraper/
44. Callaghan, Catherine A. 1958 California Penutian: History and Bibliography. International Journal of American Linguistics. 24(3):189-194.
45. Clough, Charles W. and William B. Secrest, Jr. 1984 Fresno County The Pioneer Years: From the Beginnings to 1900. Panorama West Publishing, Fresno, California.
46. Cook, Sherburne F. 1955a The Aboriginal Population of the San Joaquin Valley, California. Anthropological Records 16:31–80. University of California, Berkeley.; https://www.gutenberg.org/files/38770/38770-h/38770-h.htm
47. Cook, Sherburne F. 1955b The Epidemic of 1830-1833 In California and Oregon. University of California Publications in American Archaeology and Ethnology 43(3):303-326. University of California, Berkeley.; https://digitalassets.lib.berkeley.edu/anthpubs/ucb/text/ucp043-004.pdf
48. Cook, Sherburne F. 1958 The Project Gutenberg eBook, Colonial Expeditions to the Interior of California Central Valley, 1800-1820 ; https://www.gutenberg.org/files/36387/36387-h/36387-h.htm
49. Cook, Sherburne F. 1962 Expeditions to the Interior of California: Central Valley, 1820-1840. Anthropological Records 20(5):151-212.; https://scvhistory.com/scvhistory/cookexpeditions18201840.pdf
50. Dick-Bissonnette, Linda E. 1998 Gender and Authority among the Yokoch, Mono, and Miwok of Central California. Journal of Anthropological Research 54(1):49-72.
51. Dillon, Brian D. 2002 California Paleo-Indians: Lack of Evidence, or Evidence of a Lack? In Essays in California Archaeology: A Memorial to Franklin Fenenga, edited by William J. Wallace and

Francis A. Riddell, pp. 110–128. Contributions of the University of California Archaeological Research Facility No. 60. Berkeley.

52. Driver, Harold E. 1937 Cultural Elements Distribution: VI, Southern Sierra Nevada. University of California Anthropological Records 1(2):53–154. ; https://digitalassets.lib.berkeley.edu/anthpubs/ucb/text/ucar001-003.pdf
53. Eifler, Mark A. 2017 The California Gold Rush: The Stampede that Changed the World. Routledge Taylor & Francis Group Press, Las Vegas.
54. Engstrand, Iris H.W. 1997 Seekers of the "Northern Mystery": European Exploration of California and the Pacific. California History, 76(2/3):78–110.
55. Fredrickson, David A. 1973 Early Cultures of the North Coast Ranges, California. Ph.D. dissertation. Department of Anthropology, University of California, Davis.
56. Fredrickson, David A. 1974 Cultural Diversity in Early Central California: A View from the North Coast Ranges. Journal of California Anthropology 1(1):41-54.; https://escholarship.org/uc/item/8vg876v9
57. Garone, Philip 2011 *The Fall and Rise of the Wetlands of California's Great Central Valley.* University of the Press, Berkeley.
58. Gayton, Anna H. 1945 Yokuts and Western Mono Social Organization. *American Anthropologist* 47(3):409–426.
59. Gifford, E.W., and W. Egbert Schenck 1926 Archaeology of the Southern San Joaquin Valley, California. *Publications in American Archaeology and Ethnology* 23(1).; https://digitalassets.lib.berkeley.edu/anthpubs/ucb/text/ucp023-002.pdf
60. 1929 Archaeology of the Northern San Joaquin Valley. *Publications in American Archaeology and Ethnology* 25(4).; https://digitalassets.lib.berkeley.edu/anthpubs/ucb/text/ucp025-005.pdf
61. Google Earth. 2023 Google Earth Pro Software. Accessed January 8, 2023.; https://earth.google.com/web/
62. Harrington, Mark R. 1957 *A Pinto Site at Little Lake, California*. No. 17. Southwest Museum.
63. Jackson, Robert H. and Edward Castillo 1995 *Indians, Franciscans, and Spanish Colonization: The Impacts of the Mission System on California Indians*. University of New Mexico Press, Albuquerque, New Mexico. ; https://archive.org/details/indiansfrancisca0000jack
64. Kroeber, Alfred L. 1925 *Handbook of California Indians*. Bureau of American Ethnology Bulletin 78, Washington, D.C.; https://archive.org/details/handbookofindian00kroe_0
65. Latta, Frank F. 1977 *Handbook of Yokuts Indians*. Bear State Books, Santa Cruz, California.
66. Ludeke, John. 1980 The No Fence Law of 1874: Victor for San Joaquin Valley Farmers. *California History* 2(59):98-115. University of California Press, Berkley, California.
67. McGuire, Kelly R. and Alan P. Garfinkel. 1980 Archaeological Investigations in the Southern Sierra Nevada: The Bear Mountain Segment of the Pacific Crest Trail. *Cultural Resources Publications, Archaeology*, unnumbered: xii – 304.; https://archive.org/details/ArchaeologicalIn
68. Merriam, Hart C. 1904 Distribution of Indian Tribes in the Southern Sierra and Adjacent Parts of the San Joaquin Valley, California. *Science* 19(494):912-917.
69. Mitchell, Annie R. 1974 *A Modern History of Tulare County.* Limited Edition of Visalia, Incorporated. Visalia, California.
70. Moratto, Michael J. 1984 California Archaeology. Academic Press, New York, NY.; https://archive.org/details/californiaarchae0000mora/page/n5/mode/2up
71. Powers, Stephen 1877 Tribes of California. Washington Press, Washington, D.C.

72. Preston, William L. 1981 Vanishing Landscapes: Land and Life in the Tulare Lake Basin. Olympic Marketing Corp, Hopkins.
73. Prothero, Donald R. 2017 California's Amazing Geology. Taylor and Francis Group.
74. Riddell, Francis A. 2002 The Status of San Joaquin Valley Archaeological. In Essays in California Archaeology: A Memorial to Franklin Fenenga edited by William J. Wallace and Francis A. Riddell, pp. 55-61. University of California Archaeological Research Facility, Contribution Number 60. Berkeley, California.
75. Rosenthal, Jeffrey S., Gregory G. White, and Mark Q. Sutton 2007 The Central Valley: A View from the Catbirds's Seat. In California Prehistory: Colonization, Cultural, and Complexity, edited by Terry L. Jones and Kathryn A. Klar. AltaMira Press, Lanham, Maryland.
76. Siefken, Nelson. 1999 Archaeology of the Redfeldt Mound (CA-KIN-66), Tulare Basin, California. M.A. Thesis, Department of Anthropology, California State University, Bakersfield; https://scholarworks.calstate.edu/concern/theses/xp68kp51k
77. Smith, Wallace. 2004 Garden of the Sun: A History of the San Joaquin Valley: 1772-1939. 2nd ed., revised by William B. Secrest, Jr. Linden Publishing, Fresno, California.
78. Starr, Kevin. 2007 California: A History. Random House Publishing Group, New York, New York.
79. Stuart, David R. 1974 California's Department of Transportation: Convert Portion of Route 41 to a Full Freeway. California State University, Fresno, California. Prepared for Caltrans District 6.
80. Thomas, Tony 2022 Interview by Karana Hattersley-Drayton, 28 December, Kings County, California.
81. U.S. Geological Survey (USGS) 1924 Riverdale, California, Quadrangle Map. 7.5-minute series. U.S. Geological Survey, Denver, Colorado.
82. U.S. Geological Survey (USGS) 1927 Riverdale, California, Quadrangle Map. 7.5-minute series. U.S. Geological Survey, Denver, Colorado.
83. U.S. Geological Survey (USGS) 1954 Riverdale, California, Quadrangle Map. 7.5-minute series. U.S. Geological Survey, Denver, Colorado.
84. Wagner, David L., Jerome V. De Graff, and Jeremy T. Lancaster. 2013 Debris flows in the southern and eastern Sierra Nevada region, California. In Geologic Excursions from Fresno, California, and the Central Valley: A Tour of California's Iconic Geology. Keith Daniel Putrika, pp. 99-128. Smithsonian Institution, Washington, D.C.; https://www.academia.edu/121056245/Geologic_Excursions_from_Fresno_California_and_the_Central_Valley_A_Tour_of_Californias_Iconic_Geology
85. Wallace, William J. 1978 Southern Valley Yokuts. In Handbook of North American Indians, Vol. 8, California. Ed. Robert F. Heizer, pp. 448-461. The Geological Society of American, Inc., Boulder, Colorado
86. Ward, H.L. and L.S. Laton. 1904 Map of Laguna de Tache Grant: Showing a Portion Subdivided into Lots. Surveyed and Platted by Order of Nares & Saunders, Managers.; https://digitallibrary.californiahistoricalsociety.org/islandora/object/islandora:1507
87. Weissmann, G. S., Jeffery F. Mount, and Graham E. Fogg. 2002 Glacially Driven Cycles in Accumulation Space and Sequence Stratigraphy of a Stream-Dominated Alluvial Fan, San Joaquin Valley, California, U.S.A. Journal of Sedimentary Research 72(2):240-251.; https://pubs.geoscienceworld.org/sepm/jsedres/article-abstract/72/2/240/99196/Glacially-Driven-Cycles-in-Accumulation-Space-and?redirectedFrom=fulltext

88. Zack, Richard. 2017 Quest for Water Tulare Irrigation District its History, People, and Progression. PartnerPress.org, Carlsbad, California.; https://ebook-full.com/get-ebook/read.php?id=6HQ0nQAACAAJ&t=quest-for-water&a=richard zack&h=472&w=clevelandreads.org
89. California Health and Safety Code Section 7050.5; https://california.public.law/codes/ca_health_and_safety_code_section_7050.5#:~:text=California%20Health%20and%20Safety%20Code%20Sec.%207050.5%20%28a%29,in%20Section%205097.99%20of%20the%20Public%20Resources%20Code.
90. Map of Tulare County, David Rumsey Map Collection; https://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~205302~3002357:Map-Of-Tulare-County-California
91. Laguna de Tache, Diseños 600, GLO No. 301, Fresno County, and associated historical documents".; https://digitalcommons.csumb.edu/hornbeck_usa_4_a_fc/1/
92. *West Side Irrigation District and Tulare Lake, San Joaquin Valley, California.* California Department of Engineering. David Rumsey Map Collection.; https://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~207656~3003410:West-Side-Irrigation-District-and-T
93. *Detail Irrigation Map, Lemoore and Hanford Sheet.* California Department of Engineering. David Rumsey Map Collection.; https://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~207669~3003414:Lemoore-and-Hanford-Sheet--Detail-I
94. Garfinkel, Alan P. Archaeological Background and Cultural Sequence for The San Joaquin, Central California.; https://www.academia.edu/14721089/ArchaeologicalBackgroundfor%20theSanJoaquinValleyCentralCalifornia
95. Laguna Irrigation District; https://www.lagunaid.com/about-us
96. Tulare Lake Dried Up: Disappearance of the Largest Body of Fresh Water in California. *The San Francisco Call.;* https://cdnc.ucr.edu/?a=d&d=SFC18980814.2.138.8&e=-------en--20--1--txt-txIN--------
97. Laguna De Tache Land Grant, Mooney Museum; https://sarahamooneymuseum.org/lemoore-area-histories/laguna-de-tache-land-grant/
98. Range 19 East, Range 20 East, Township 18 South, Township 17 South, Official historical atlas map of Fresno County. California Department of Engineering. David Rumsey Map Collection.; https://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~25473~1020083:R-19-20E-T-17-18S
99. NETROnline; https://www.historicaerials.com/viewer

Energy

100. PG&E Power Resources; https://www.pge.com/en_US/about-pge/environment/what-we-are-doing/clean-energy-solutions/clean-energy-solutions.page?WT.mc_id=Vanity_cleanenergy
101. EIA California Natural Gas Consumption; https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm
102. 2022 Building Energy Efficiency Standards; https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency

Geology and Soils

103. Five County Seismic Safety Element; https://tularecounty.ca.gov/rma/planning-building/environmental-planning/environmental-planning-resources/five-county-seismic-safety-element-1974/
104. Fault Activity Map of California; https://maps.conservation.ca.gov/cgs/fam/
105. Natural Resources Conservation Service, Soil Report; https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Hazards and Hazardous Materials

106. Everette Dumpsite Report; https://www.envirostor.dtsc.ca.gov/getfile?filename=/public%2Fdeliverable_documents%2F2177138388%2FEVERETTE_DUMPSITE_Report.pdf
107. California Building Code; https://www.dgs.ca.gov/BSC/Codes

Hydrology and Water Quality

108. FEMA National Flood Hazard Mapping; https://msc.fema.gov/portal/home
109. 2015 California Agricultural Production and Irrigated Water Use Report; https://sgp.fas.org/crs/misc/R44093.pdf
110. North Fork Kings GSA; https://northforkkings.org/download/revised-groundwater-sustainability-plan/
111. Kings County 2020 Crop Report; https://www.countyofkings.com/home/showpublisheddocument/27389/637654154589100000

Noise

112. Federal Highway Administration, Roadway Construction Noise Model 2006; https://www.gsweventcenter.com/Draft_SEIR_References/2006_01_Roadway_Construction_Noise_Model_User_Guide_FHWA.pdf
113. Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman, 1987

Population and Housing

114. Kings County Census Data; https://www.census.gov/quickfacts/kingscountycalifornia

Transportation

115. Technical Advisory on Evaluating Transportation Impacts under CEQA; https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-09-10-1st-edition-tac-fnl-a11y.pdf

Section 4

List of Preparers

Kings County

1400 W Lacey Blvd, Bldg #6
Hanford, CA 93230

SECTION 4

List of Preparers

Project Title: Conditional Use Permit No. 22-06 (Thomas Bros. Composting Facility)

List of Preparers

4-Creeks Inc.

- David Duda, AICP, GISP
- Nate Antepenko, Associate Planner
- Kyle Parreira, PE
- Madison Caesar, EIT

Persons and Agencies Consulted

The following individuals and agencies contributed to this Initial Study/Mitigated Negative Declaration:

Kings County

- Chuck Kinney, Community Development Director
- Alex Hernandez, Deputy Director

Sentry Ag Services

- Monique Baldiviez
- Geremy DeRuiter

LSA Associates

- Ronald Brugger, Senior Air Quality Specialist
- Ambarish Mukherjee, AICP, PE

Live Oak Associates

- Austin Pearson, Vice President
- Colleen Del Vecchio, Project Manager/Staff Ecologist and Arborist

Taylored Archaeology

- Consuelo Sauls, M.A., RPA
- Karana Hattersley-Drayton, M.A.

WJV Acoustics

- Walter J. Van Groningen

Appendix A

Air Quality and Greenhouse Gas Analysis

CARLSBAD
CLOVIS
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

MEMORANDUM

DATE:	February 25, 2023
TO:	Molly Baumeister, Planner/Project Manager, 4Creeks
FROM:	Ronald Brugger, Senior Air Quality Specialist
SUBJECT:	Air Quality and Greenhouse Gas Analysis for Thomas Brothers Composting and Truck Wash Project in Kings County, California

INTRODUCTION

This Air Quality and Greenhouse Gas Analysis for the Thomas Brothers Composting and Truck Wash Project (project), located on the south side of Excelsior Avenue west of 20th Avenue in Kings County, California, has been prepared using methods and assumptions recommended in the San Joaquin Valley Air Pollution Control District's (SJVAPCD) *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (SJVAPCD 2015). This analysis includes a description of existing regulatory framework, an assessment of project construction and operation-period emissions, and an assessment of greenhouse gas (GHG) emissions. Measures to reduce or eliminate significant impacts are identified, where appropriate.

PROJECT DESCRIPTION

Thomas Dairy, previously a dairy facility that had shut down milking operations, is now permitted through Kings County and operating as a bovine feedlot facility. This facility is located southeast of Riverdale, California, at the southwest corner of Excelsior Avenue and 20th Avenue. Figure 1 (all figures are provided in Attachment A) illustrates the regional and project location.

The proposed project would construct a composting facility, office building, and a truck wash facility within the project site, adjacent to the bovine feedlot facility. Figure 2 illustrates the conceptual site plan for the project. The operational hours for the composting facility will be 6:00 a.m. to 6:00 p.m., Monday through Saturday. The proposed project would use imported, raw manure for composting that would be sold to off-site local farms for soil amendment. It is estimated that the facility would have approximately 20 service/delivery trucks per day during the months of September through December, and an average of 10 trucks per day for the remainder of the year. In addition, the facility would have approximately five visitors on a typical weekday. The operational hours for the truck wash facility would be 8:00 a.m. to 8:00 p.m., Monday through Saturday. The truck wash facility would be for internal use only, and service would only be provided to the trucks coming to the composting site and not to outside customers. Based on the operational statement, the proposed project would have a maximum number of 10 employees in total for project operations.

The composting operations would utilize tractors, front-loaders, and tractor-trailers for on-site handling of compost/manure.

Sensitive Receptors and Land Uses in the Project Vicinity

Sensitive receptors include residences such as private homes, condominiums, apartments, and living quarters, schools, preschools, daycare centers, in-home daycares, health facilities (e.g., hospitals, long-term care facilities, retirement and nursing homes), community centers, places of worship, parks (excluding trails*),* prisons, and dormitories. Farming uses surround the site. The nearest sensitive receptor to the project site is a single-family residence located across Excelsior Avenue, approximately 170 feet to the north (measured from the project site boundary to the identified residential building).

ENVIRONMENTAL SETTING

Air Quality Background

Air quality is primarily a function of local climate, local sources of air pollution, and regional pollution transport. The amount of a given pollutant in the atmosphere is determined by the amount of the pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain and, for photochemical pollutants, sunshine.

A region's topographic features have a direct correlation with air pollution flow and therefore are used to determine the boundary of air basins. The proposed project is located in Kings County, within the jurisdiction of the SJVAPCD, which regulates air quality in the San Joaquin Valley Air Basin (SJVAB). The SJVAB is comprised of approximately 25,000 square miles and covers all of seven counties including Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare, and the western portion of an eighth, Kern. The SJVAB is defined by the Sierra Nevada mountains in the east (8,000 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The SJVAB is topographically flat with a slight downward gradient to the northwest. The SJVAB opens to the sea at the Carquinez Straits where the San Joaquin-Sacramento Delta empties into San Francisco Bay. An aerial view of the SJVAB would simulate a "bowl" opening only to the north. These topographic features restrict air movement through and out of the SJVAB.

Both the State of California (State) and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants. As detailed in Table A, these pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in size (PM_{10}), particulate matter less than 2.5 microns in size ($PM_{2.5}$), and lead. In addition, the State has set standards for sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
O_3[8]	1-Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm (137 $\mu g/m^3$)		0.070 ppm (137 $\mu g/m^3$)		
Respirable Particulate Matter (PM_{10})[9]	24-Hour	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 $\mu g/m^3$		—		
Fine Particulate Matter ($PM_{2.5}$)[9]	24-Hour	—	—	35 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	12.0 $\mu g/m^3$	15 $\mu g/m^3$	
CO	1-Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8-Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
NO_2[10]	1-Hour	0.18 ppm (339 $\mu g/m^3$)	Gas Phase Chemiluminescence	100 ppb (188 $\mu g/m^3$)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)		0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard	
SO_2[11]	1-Hour	0.25 ppm (655 $\mu g/m^3$)	Ultraviolet Fluorescence	75 ppb (196 $\mu g/m^3$)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3-Hour	—		—	0.5 ppm (1,300 $\mu g/m^3$)	
	24-Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30-Day Average	1.5 $\mu g/m^3$	Atomic Absorption	—	—	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 $\mu g/m^3$ (for certain areas)[13]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 $\mu g/m^3$		
Visibility-Reducing Particles[14]	8-Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24-Hour	25 $\mu g/m^3$	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24-Hour	0.01 ppm (26 $\mu g/m^3$)	Gas Chromatography			

Source: California Air Resources Board (CARB). 2016. *Ambient Air Quality Standards*. May 4. Website: www.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf (accessed February 2023).
Footnotes are provided on the following page.

[1] California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1- and 24-hour), NO_2, and PM (PM_{10}, $PM_{2.5}$, and visibility-reducing particles) are values that are not to be exceeded. All others are not to be equaled or exceeded. California AAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than for O_3 and PM and those based on the annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth-highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the USEPA for further clarification and current national policies.

[3] Concentration expressed first in the units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent measurement method that can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] The reference method as described by the USEPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the USEPA.

[8] On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[9] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[10] To attain the 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[11] On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated as Nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[12] CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[13] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated as Nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

[14] In 1989, CARB converted both the general statewide 10 mi visibility standard and the Lake Tahoe 30 mi visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

°C = degrees Celsius
□g/m^3 = micrograms per cubic meter
AAQS = ambient air quality standards
CARB = California Air Resources Board
CO = carbon monoxide
mg/m^3 = milligrams per cubic meter
mi = mile/miles
NO_2 = nitrogen dioxide
O_3 = ozone
PM = particulate matter
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ppb = parts per billion
ppm = parts per million
SO_2 = sulfur dioxide
USEPA = United States Environmental Protection Agency

Table B summarizes the most common health and environmental effects for each of the air pollutants for which there is a national AAQS (NAAQS) and/or California AAQS (CAAQS), as well as for toxic air contaminants (TACs). Because the concentration standards were set at a level that protects public health with an adequate margin of safety (by the United States Environmental Protection Agency [USEPA]), these health effects would not occur unless the standards are exceeded by a large margin or for a prolonged period of time. CAAQS are typically more stringent than NAAQS. Among the pollutants, O_3 and particulate matter ($PM_{2.5}$ and PM_{10}) are considered pollutants with regional effects, while the others have more localized effects (CARB 2022a).

Table B: Summary of Health and Environmental Effects of the Criteria Air Pollutants

Pollutant	Effects on Health and the Environment
Ozone (O_3)	• Respiratory symptoms • Worsening of lung disease leading to premature death • Damage to lung tissue • Crop, forest, and ecosystem damage • Damage to a variety of materials, including rubber, plastics, fabrics, paint, and metals
Particulate matter less than 2.5 microns in size ($PM_{2.5}$)	• Premature death • Hospitalization for worsening of cardiovascular disease • Hospitalization for respiratory disease • Asthma-related emergency room visits • Increased symptoms, increased inhaler usage
Particulate matter less than 10 microns size (PM_{10})	• Premature death and hospitalization, primarily for worsening of respiratory disease • Reduced visibility and material soiling
Nitrogen oxides (NO_X)	• Lung irritation • Enhanced allergic responses
Carbon monoxide (CO)	• Chest pain in patients with heart disease • Headache • Light-headedness • Reduced mental alertness
Sulfur oxides (SO_X)	• Worsening of asthma: increased symptoms, increased medication usage, and emergency room visits
Lead	• Impaired mental functioning in children • Learning disabilities in children • Brain and kidney damage
Hydrogen sulfide (H_2S)	• Nuisance odor (rotten egg smell) • At high concentrations: headache & breathing difficulties
Sulfate	• Same as $PM_{2.5}$, particularly worsening of asthma and other lung diseases • Reduces visibility
Vinyl chloride	• Central nervous system effects (e.g., dizziness, drowsiness, and headaches) • Long-term exposure (i.e., liver damage and liver cancer)
Visibility reducing particles	• Reduced airport safety, scenic enjoyment, road safety, and discourages tourism
Toxic air contaminants (TACs). About 200 chemicals have been listed as TACs.	• Cancer • Reproductive and developmental effects • Neurological effects

Source: California Air Resources Board (CARB). n.d.-a. Common Air Pollutants. Website: www.arb.ca.gov/resources/common-air-pollutants (accessed February 2023).

The California Clean Air Act (CCAA) provides SJVAPCD and other air districts with the authority to manage transportation activities at indirect sources. Indirect sources of pollution include any facility, building, structure, or installation, or combination thereof, that attracts or generates mobile-source emissions of any pollutant. In addition, area-source emissions that are generated when minor sources collectively emit a substantial amount of pollution are also managed by the local air districts. Examples of this would be the motor vehicles at an intersection, at a mall, and on highways. SJVAPCD also regulates stationary sources of pollution throughout its jurisdictional area. The California Air Resources Board (CARB) regulates direct emissions from motor vehicles.

Air Pollution Constituents and Attainment Status

The CARB coordinates and oversees both State and federal air pollution control programs in the State. The CARB oversees activities of local air quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the USEPA and local air districts. The CARB has divided the State into 15 air basins based on meteorological and topographical factors of air pollution. Data collected at these stations are used by the CARB and USEPA to classify air basins as Attainment, Nonattainment, Nonattainment-Transitional, or Unclassified, based on air quality data for the most recent 3 calendar years compared with the AAQS.

Attainment areas may be the following:

- **Attainment/Unclassified ("Unclassifiable" in Some Lists):** These basins have never violated the air quality standard of interest or do not have enough monitoring data to establish Attainment or Nonattainment status.

- **Attainment-Maintenance (National Ambient Air Quality Standards [NAAQS] Only):** These basins violated an NAAQS that is currently in use (were Nonattainment) in or after 1990, but now attain the standard and are officially redesignated as Attainment by the USEPA with a Maintenance State Implementation Plan (SIP).

Attainment (Usually Only for CAAQS, But Sometimes for NAAQS): These basins have adequate monitoring data to show attainment, have never been Nonattainment, or, for NAAQS, have completed the official Maintenance period.

Nonattainment areas are imposed with additional restrictions as required by the USEPA. The air quality data are also used to monitor progress in attaining air quality standards. Table C lists the attainment status for the criteria pollutants in the SJVAB.

Local Air Quality

The SJVAPCD, together with the CARB, maintains ambient air quality monitoring stations. The air quality monitoring station that monitors air pollutant data closest to the site is the Hanford-S Irwin Street Monitoring Station, approximately 9 miles southeast of the project site. The air quality trends from this station are used to represent the ambient air quality in the project area. The ambient air quality data in Table D show that NO_2 levels are below the applicable State and federal standards.

Table C: Air Quality Attainment Status for SJVAB

Pollutant	State	Federal
Ozone (1-hour)	Severe/Nonattainment	Standard Revoked
Ozone (8-hour)	Nonattainment	Extreme Nonattainment
PM_{10}	Nonattainment	Attainment (Maintenance)
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment/Unclassified
Nitrogen Dioxide	Attainment	Attainment/Unclassified
Lead	Attainment	No Designation/Classification
Sulfur Dioxide	Attainment	Attainment/Unclassified
Sulfates	Attainment	No Federal Regulation
Hydrogen Sulfide	Unclassified	No Federal Regulation
Ozone (1-hour)	Severe/Nonattainment	Standard Revoked

Source: SJVAPCD Ambient Air Quality Standards & Valley Attainment Status. Website: www.valleyair.org/aqinfo/attainment.htm (accessed February 2023).

$PM_{2.5}$ = particulate matter less than 2.5 microns in size

PM_{10} = particulate matter less than 10 microns in size

SJVAB = San Joaquin Valley Air Basin

SJVAPCD = San Joaquin Valley Air Pollution Control District

Table D: Air Quality Concentrations in the Project Vicinity

Pollutant	Standard	2019	2020	2021
O_3				
Maximum 1-hour concentration (ppm)		0.093	0.103	0.102
No. of days exceeded	State: 0.09 ppm	0	6	2
Max 8-hour concentration (ppm)		0.076	0.088	0.095
No. of days exceeded	State: 0.07 ppm	13	26	16
	Federal: 0.07 ppm	13	26	16
PM_{10}				
Maximum 24-hour concentration (µg/m^3)		211.7	180.4	175.0
No. of days exceeded	State: 50 µg/m^3	17	22	146
	Federal: 150 µg/m^3	1	3	2
Annual avg. concentration (µg/m^3)		45.2	ND	52.8
Exceeds Standard?	State: 20 µg/m^3	Yes	ND	Yes
$PM_{2.5}$				
Maximum 24-hour concentration (µg/m^3)		48.2	147.2	81.0
No. of days exceeded	Federal: 35 µg/m^3	20	52	31
Annual avg. concentration (µg/m^3)		12.1	19.8	15.6
Exceeds Standard?	State: 12 µg/m^3	Yes	Yes	Yes
	Federal: 12 µg/m^3	Yes	Yes	Yes
NO_2				
Maximum 1-hour concentration (ppb):		62.9	51.9	51.5
No. of days exceeded	State: 180 ppb	0	0	0
	Federal: 100 ppb	0	0	0
Annual avg. concentration (ppb):		8	8	8
Exceeds standard?	State: 30 ppb	No	No	No
	Federal: 53 ppb	No	No	No

Source: California Air Resource Board (CARB). n.d.-b. iADAM. Website: www.arb.ca.gov/adam/topfour/topfour1.php (accessed February 2023).

Note: Pollutant concentration data from the Hanford-S Irwin Street Monitoring Station in Hanford, California.

µg/m^3 = micrograms per cubic meter

ND = No data available

NO_2 = nitrogen dioxide

O_3 = ozone

$PM_{2.5}$ = particulate matter smaller than 2.5 microns in size

PM_{10} = particulate matter smaller than 10 microns in size

ppb = parts per billion

ppm = parts per million

However, annual average concentrations of PM_{10}, $PM_{2.5}$, and O_3 concentrations frequently exceed their respective standards. As CO ambient concentrations have become so low throughout the region, there is not a station near the project site that monitors CO.

Greenhouse Gas Background

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced climate change are the following:[1]

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)

Over the last 200 years, human activities have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, which can cause global warming. Although GHGs produced by human activities include naturally occurring GHGs (e.g., CO_2, CH_4, and N_2O), some gases (e.g., HFCs, PFCs, and SF_6) are completely new to the atmosphere. Water vapor is a GHG, but it is generally excluded from the list of GHGs because it is short-lived in the atmosphere, and its atmospheric concentrations are largely determined by natural processes (e.g., oceanic evaporation). For the purposes of this air quality study, the term “GHGs” will refer collectively to the six gases identified in the bulleted list provided above.

These GHGs vary considerably in terms of global warming potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. GWP is based on several factors, including the relative effectiveness of a gas in absorbing infrared radiation and the length of time that the gas remains in the atmosphere (“atmospheric lifetime”). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. For example, N_2O is from 265 to 310 times more potent at contributing to global warming than CO_2. GHG emissions are typically measured in terms of metric tons of CO_2 equivalents (MT CO_2e). Table E identifies the GWP for the three GHGs analyzed in this report. The USEPA and CARB use GWP values from the 2007 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) (IPCC 2007). The IPCC has published the 2021 IPCC Sixth Assessment Report (AR6) with updated GWP values (IPCC 2021).

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[1] The greenhouse gases listed are consistent with the definition in Assembly Bill 32 (Government Code 38505), as discussed later in this document.

Table E: Global Warming Potential for Selected Greenhouse Gases

Pollutant	2022 Scoping Plan Values from the Fourth Assessment Report (AR4)	Sixth Assessment Report (AR6) Values
Carbon dioxide (CO_2)	1 (by definition)	1 (by definition)
Methane (CH_4)	25	29.8 ± 11
Nitrous oxide (N_2O)	298	273 ± 130

Source 1: California Air Resources Board (CARB). 2022a. *2022 Scoping Plan for Achieving Carbon Neutrality*. Website: www.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents (accessed February 2023).

Source 2: Intergovernmental Panel on Climate Change (IPCC). 2021. Climate Change 2021: The Physical Science Basis, Sixth Assessment Report. Website: www.ipcc.ch/report/ar6/wg1/ (accessed February 2023).

Note: The USEPA and CARB use global warming potential values from the IPCC Fourth Assessment Report (2007).

USEPA = United States Environmental Protection Agency

REGULATORY SETTING

This section provides regulatory background information for air quality and GHG emissions.

Air Quality

Federal Regulations

The 1970 federal Clean Air Act (CAA) authorized the establishment of national health-based air quality standards and set deadlines for their attainment. The CAA Amendments of 1990 changed deadlines for attaining national standards as well as the remedial actions required for areas of the nation that exceed the standards. Under the CAA, State and local agencies in areas that exceed the national standards are required to develop SIPs to demonstrate how they will achieve the national standards by specified dates.

State Regulations

In 1988, the California Clean Air Act (CCAA) required that all air districts in the State endeavor to achieve and maintain CAAQS for CO, O_3, SO_2, and NO_2 by the earliest practical date. The CCAA provides districts with authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each nonattainment district is required to adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan shows how a district would reduce emissions to achieve air quality standards. Generally, the State standards for these pollutants are more stringent than the national standards.

The CARB is the State's "clean air agency." The CARB's goals are to attain and maintain healthy air quality, protect the public from exposure to toxic air contaminants, and oversee compliance with air pollution rules and regulations.

Regional Regulations

San Joaquin Valley Air Pollution Control District. The SJVAPCD has specific air quality-related planning documents, rules, and regulations. This section summarizes the local planning documents and regulations that may be applicable to the proposed project as administered by the SJVAPCD with California Air Resources Board (CARB) oversight.

> ***Rule 2280—Portable Equipment Registration.*** Portable equipment used at project sites for less than six consecutive months must be registered with the SJVAPCD. The SJVAPCD will issue the registrations 30 days after receipt of the application.[2]
>
> ***Rule 4201 and Rule 4204—Particulate Matter Concentration and Emission Rates.*** Rule 4201 and Rule 4202 apply to operations that emit or may emit dust, fumes, or total suspended particulate matter.[3]
>
> ***Rule 4622—Gasoline Transfer Into Motor Vehicle Fuel Tanks.*** Rule 4622 applies to any gasoline storage and dispensing operation or mobile fueler from which gasoline is transferred into motor vehicle fuel tanks. The purpose of this rule is to limit emissions of gasoline vapors from the transfer of gasoline escaping into the atmosphere; vapor recovery systems would be implemented to reduce the release of volatile organic compounds.[4]
>
> ***Rule 4566— Organic Material Composting Operations.*** Rule 4566 limits emissions of volatile organic compounds (VOCs) from composting operations.
>
> ***Rule 8011—General Requirements: Fugitive Dust Emission Sources.*** Fugitive dust regulations are applicable to outdoor fugitive dust sources. Operations, including construction operations, must control fugitive dust emissions in accordance with SJVAPCD Regulation VIII. According to Rule 8011, the SJVAPCD requires the implementation of control measures for fugitive dust emission sources. For projects in which construction-related activities would disturb equal to or greater than 1 acre of surface area, the SJVAPCD recommends that demonstration of receipt of an SJVAPCD-approved Dust Control Plan or Construction Notification Form, before issuance of the first grading permit, be made a condition of approval.

Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI). The SJVAPCD prepared the GAMAQI to assist lead agencies and project applicants in evaluating the potential air quality impacts of projects in the SJVAB. The GAMAQI provides SJVAPCD-recommended procedures for evaluating potential air quality impacts during the CEQA environmental review process. The GAMAQI provides guidance on evaluating short-term (construction) and long-term (operational) air emissions. The most recent version of the GAMAQI, adopted March 19, 2015, was used in this evaluation. It contains guidance on the following:

- Criteria and thresholds for determining whether a project may have a significant adverse air quality impact;

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[2] San Joaquin Valley Air Pollution Control District (SJVAPCD). Rule 2280 Portable Equipment Registration. Amended May 16, 1996.

[3] SJVAPCD. 1992. Rule 4202 Particulate Matter – Emission Rate. Amended December 17, 1992.

[4] SJVAPCD. 1992. Rule 4622 Gasoline Transfer Into Motor Vehicle Fuel Tanks. Amended December 19, 2013.

- Specific procedures and modeling protocols for quantifying and analyzing air quality impacts;
- Methods to mitigate air quality impacts; and
- Information for use in air quality assessments and environmental documents, including air quality, regulatory setting, climate, and topography data.

Greenhouse Gas Emissions

This section describes regulations related to global climate change at the federal, State, and local level.

Federal Regulations

The United States has historically had a voluntary approach to reducing GHG emissions; however, on April 2, 2007, the United States Supreme Court ruled that the USEPA has the authority to regulate CO_2 emissions under the CAA. The Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant and that the USEPA did not have a valid rationale for not regulating GHGs. In December 2009, the USEPA issued an endangerment finding for GHGs under the CAA.

On December 7, 2009, the USEPA Administrator signed a final action under the CAA, finding that six GHGs (i.e., CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare and that the combined emissions from motor vehicles cause and contribute to global climate change.

On September 15, 2011, the USEPA and the United States Department of Transportation (USDOT) issued the final rule for the first national standards to improve the fuel efficiency of medium- and heavy-duty trucks and buses, model years 2014 to 2018. For combination tractors, the agencies proposed engine and vehicle standards that would achieve up to a 20 percent reduction from model year 2014 in fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies proposed separate gasoline and diesel truck standards, which would achieve up to a 10 percent reduction from model year 2014 for gasoline vehicles and a 15 percent reduction for diesel vehicles (12 and 17 percent, respectively, if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10 percent reduction from model year 2014 in fuel consumption. On October 25, 2016, the USEPA and USDOT issued Phase 2 of the national standards to improve fuel efficiency standards for medium- and heavy-duty trucks and buses for model years 2021 to 2027 to achieve vehicle fuel savings as high as 25 percent, depending on the vehicle category.

The current administration finalized updated Corporate Average Fuel Economy (CAFE) standards for model years 2024 through 2026. The final rule establishes standards that would require an industry-wide fleet average of approximately 49 miles per gallon (mpg) for passenger cars and light trucks in model year 2026, by increasing fuel efficiency by 8 percent annually for model years 2024 and 2025, and 10 percent annually for model years 2026. The agency projects that the final standards will save consumers nearly $1,400 in total fuel expenses over the lifetimes of vehicles produced in these model years and avoid the consumption of about 234 billion gallons of gas between model years 2030 to 2050. The National Highway Traffic Safety Administration (NHTSA) also projects that the standards will cut GHGs from the atmosphere, reduce air pollution, and reduce the country's dependence on oil.

State Agencies

California Air Resources Board. In 1967, the State Legislature passed the Mulford-Carrell Act, which combined two Department of Health bureaus (i.e., the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board) to establish CARB. Since its formation, CARB has worked with the public, the business sector, and local governments to find solutions to the State's air pollution problems. California adopted the CCAA in 1988. CARB administers the CAAQS for the 10 air pollutants designated in the CCAA. These 10 State air pollutants are the six criteria pollutants designated by the federal CAA as well as four others: visibility-reducing particulates, H_2S, sulfates, and vinyl chloride.

The California Global Warming Solutions Act of 2006, widely known as Assembly Bill (AB) 32, requires CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB was directed to set a statewide GHG emissions limit and set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

In 2016, the Legislature passed, and Governor Jerry Brown signed, Senate Bill (SB) 32 and AB 197. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in Governor Brown's April 2015 Executive Order (EO) B-30-15. SB 32 builds on AB 32 and keeps California on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels, consistent with an IPCC analysis of the emissions trajectory that would stabilize atmospheric GHG concentrations at 450 parts per million (ppm) CO_2e and reduce the likelihood of catastrophic impacts from climate change. The companion bill to SB 32 (i.e., AB 197) provides additional direction to CARB related to the adoption of strategies to reduce GHG emissions.

CARB adopted the 2022 Scoping Plan Update on December 15, 2022. The 2022 Scoping Plan Update assesses progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045. The 2022 Scoping Plan Update focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

SB 97 and *State CEQA Guidelines*. In August 2007, the Legislature adopted SB 97, requiring the Governor's Office of Planning and Research (OPR) to prepare and transmit new CEQA guidelines for the mitigation of GHG emissions or the effects of GHG emissions to the California Natural Resources Agency. The OPR submitted its proposed guidelines to the Secretary for Natural Resources on April 13, 2009, and the *State CEQA Guidelines* amendments became effective on March 18, 2010.

The *State CEQA Guidelines* amendments do not specify a threshold of significance for GHG emissions or prescribe assessment methodologies or specific mitigation measures. Instead, the amendments encourage lead agencies to consider many factors in performing a CEQA analysis but rely on the lead agencies in making their own significance determinations based upon substantial evidence. The *State CEQA Guidelines* amendments also encourage public agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses.

The *State CEQA Guidelines* amendments require a lead agency to make a good-faith effort based on the extent possible on scientific and factual data to describe, calculate, or estimate the amount of GHG emissions resulting from a project. The *State CEQA Guidelines* amendments give discretion to the lead agency whether to: (1) use a model or methodology to quantify GHG emissions resulting from a project and which model or methodology to use; and/or (2) rely on a qualitative analysis or performance-based standards. The California Natural Resources Agency is required to periodically update the guidelines to incorporate new information or criteria established by the CARB pursuant to AB 32.

California Green Building Standards. The California Green Building Standards Code, which is Part 11 of the California Code of Regulations, is commonly referred to as the CALGreen Code. The first edition of the CALGreen Code was released in 2008 and contained only voluntary standards. The 2022 CALGreen Code was updated in 2022, became effective on January 1, 2023, and applies to non-residential and residential developments. The CALGreen Code contains requirements for construction site selection, stormwater control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, site irrigation conservation, and more. The CALGreen Code provides for design options that allow the designer to determine how best to achieve compliance for a given site or building condition. The CALGreen Code also requires building commissioning, which is a process for the verification that all building systems (e.g., heating and cooling equipment and lighting systems) function at their maximum efficiency.

San Joaquin Valley Air Pollution Control District

Climate Change Action Plan. In August 2008, the SJVAPCD adopted the Climate Change Action Plan (CCAP) (SJVAPCD 2008). The CCAP directed the SJVAPCD to develop guidance to assist lead agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project specific GHG emissions on global climate change.

In December 2009, the SJVAPCD adopted the guidance: *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* (SJVAPCD 2009a) and the policy: *District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency* (SJVAPCD 2009b). The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards (BPS) (SJVAPCD 2009c), to assess significance of project-specific GHG emissions on global climate change during the environmental review process, as required by CEQA. Projects implementing BPS in accordance with SJVAPCD's guidance would be determined to have a less than significant individual and cumulative impact on GHG emissions and would not require project-specific quantification of GHG emissions.

THRESHOLDS OF SIGNIFICANCE

Certain air districts (e.g., SJVAPCD) have created guidelines and requirements to conduct air quality analyses. SJVAPCD's current guidelines, the *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (SJVAPCD 2015) was followed in this assessment of air quality and climate impacts for the proposed project.

Based on the *State CEQA Guidelines*, Appendix G (Public Resources Code Sections 15000–15387), a project would normally be considered to have a significant effect on air quality if the project would violate any CAAQS, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutants concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

Air Quality Thresholds

A threshold of significance is defined by the SJVAPCD in its *GAMAQI as* an identifiable quantitative, qualitative, or performance level of a particular environmental effect. Non-compliance with a threshold of significance means the effect will normally be determined to be significant. Compliance with a threshold of significance means the effect normally will be determined to be less than significant. The SJVAPCD has established thresholds of significance for criteria pollutant emissions generated during construction and operation of projects as shown in Table F below.

Regional Emissions Thresholds

Table F lists the CEQA significance thresholds for construction and operational emissions established for the SJVAB.

Table F: Regional Thresholds for Construction and Operational Emissions

Emissions Source	Pollutant Emissions Thresholds (tons/year)					
	VOCs	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Construction	10	10	100	27	15	15
Operations	10	10	100	27	15	15

Source: SJVAPCD 2015. *Guidance for Assessing and Mitigating Air Quality Impacts.* February 19.

CO = carbon monoxide
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SJVAPCD = San Joaquin Valley Air Pollution Control District
SO_X = sulfur oxides
VOCs = volatile organic compounds

The emissions thresholds in the SJVAPCD GAMAQI were established based on the attainment status of the air basin in regard to air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety, these emission thresholds are regarded as conservative and would overstate an individual project's contribution to health risks.

Greenhouse Gas Emissions

State CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

Appendix G of the *State CEQA Guidelines* includes significance thresholds for GHG emissions. A project would normally have a significant effect on the environment if it would do either of the following:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Currently, there is no Statewide GHG emissions threshold that has been used to determine the potential GHG emissions impacts of a project. Threshold methodology and thresholds are still being developed and revised by air districts in California.

Neither Kings County nor SJVAPCD has developed or adopted numeric GHG significance thresholds. Therefore, this analysis evaluates the GHG emissions based on the project's consistency with the SJVAPCD CCAP and other applicable State GHG reduction goals.

IMPACTS AND MITIGATION MEASURES

Emissions would include criteria air pollutants and GHG emissions. The sections below describe the proposed project's consistency with applicable air quality plans, estimated project emissions, and the significance of impacts with respect to SJVAPCD and local thresholds.

Air Quality Impacts

Air pollutant emissions associated with the project would occur over the short term from construction activities and over the long term from project-related vehicular trips and due to energy consumption (e.g., electricity and natural gas usage) by the proposed land uses.

Consistency with Applicable Air Quality Plans

A consistency determination plays an essential role in local agency project review by linking local planning and unique individual projects to the air quality plans. A consistency determination fulfills the CEQA goal of fully informing local agency decision-makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are addressed. Only new or amended General Plan elements, Specific Plans, and significantly unique projects need to undergo a consistency review due to the air quality plan strategy being based on projections from local General Plans.

An air quality plan describes air pollution control strategies to be implemented by a city, county, or region classified as a non-attainment area. The main purpose of the air quality plan is to bring the area into compliance with the requirements of the federal and State air quality standards. To bring the SJVAB into attainment, the SJVAPCD has developed the 2013 Plan for the Revoked 1-Hour Ozone Standard (Ozone Plan), adopted on September 19, 2013 (SJVAPCD 2013a). The SJVAPCD also adopted the 2016 Plan for the 2008 8-Hour Ozone Standard in June 2016 to satisfy Clean Air Act requirements and ensure attainment of the 75 parts per billion (ppb) 8-hour ozone standard (SJVAPCD 2016). The SJVAPCD adopted the 2020 RACT Demonstration for the 2015 8-Hour Ozone Standard (SJVAPCD 2020) on June 18, 2020.

To assure the SJVAB's continued attainment of the USEPA PM_{10} standard, the SJVAPCD adopted the 2007 PM_{10} Maintenance Plan in September 2007 (SJVAPCD 2007). SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibitions) is designed to reduce PM_{10} emissions generated by human activity. The SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ standards in November 2018 to address the USEPA 1997 annual $PM_{2.5}$ standard of 15 micrograms per cubic meter (µg/m^3) and 24-hour $PM_{2.5}$ standard of 65 µg/m^3, the 2006 24-hour $PM_{2.5}$ standard of 35 µg/m^3, and the 2012 annual $PM_{2.5}$ standard of 12 µg/m^3 (SJVAPCD 2018).

CEQA requires that certain proposed projects be analyzed for consistency with the applicable air quality plan. For a project to be consistent with SJVAPCD air quality plans, the pollutants emitted from a project should not exceed the SJVAPCD emission thresholds or cause a significant impact on air quality. In addition, emission reductions achieved through implementation of offset requirements are a major component of the SJVAPCD air quality plans. As discussed below, construction of the proposed project would not result in the generation of criteria air pollutants that would exceed SJVAPCD thresholds of significance. Implementation of Regulatory Compliance Measure AIR-1 would further reduce construction dust impacts. Operational emissions associated with the proposed project would also not exceed SJVAPCD established significance thresholds. Therefore, the proposed project would not conflict with or obstruct implementation of SJVAPCD air quality plans.

Criteria Pollutant Analysis

The SJVAB is designated as nonattainment for O_3 and $PM_{2.5}$ for federal standards and nonattainment for O_3, PM_{10}, and $PM_{2.5}$ for State standards. The SJVAB's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of AAQS. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, SJVAPCD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Construction Emissions. Construction activities produce combustion emissions from various sources (e.g., utility engines, tenant improvements, and motor vehicles transporting the construction crew). Exhaust emissions from construction activities envisioned on site would vary daily as construction activity levels change.

The construction analysis includes estimating the construction equipment that would be used during each construction activity, the hours of use for that construction equipment, the quantities of earth and debris to be moved, and the on-road vehicle trips (e.g., worker, soil-hauling, and vendor trips). California Emissions Estimator Model (CalEEMod) defaults are assumed for the construction activities, off-road equipment, and on-road construction fleet mix and trip lengths. It is expected that construction of the project would start in May 2023. Table G lists the tentative project construction schedule.

Table G: Tentative Project Construction Schedule

Phase Name	Phase Start Date	Phase End Date	Number of Days
Site Preparation	5/14/2023	6/11/2023	20
Grading	6/12/2023	8/14/2023	45
Building Construction	8/15/2023	1/1/2024	100
Architectural Coating	1/2/2024	1/29/2024	20

Source: Estimated by LSA, from the project information provided (February 2023).

The most recent version of CalEEMod (Version 2022.1) was used to develop the construction equipment inventory and calculate the construction emissions. Table H lists the estimated construction equipment that would be used during project construction as estimated by CalEEMod default values. The CalEEMod output is included as Attachment B.

Table H: Diesel Construction Equipment Used by Construction Phase

Construction Phase	Off-Road Equipment Type	Off-Road Equipment Unit Amount	Hours Used per Day	Horsepower	Load Factor
Site Preparation	Rubber-Tired Dozers	3	8	367	0.40
	Tractors/Loaders/Backhoes	4	8	84	0.37
Grading	Graders	1	8	148	0.41
	Scrapers	2	8	423	0.48
	Excavators	2	8	36	0.38
	Tractors/Loaders/Backhoes	2	8	84	0.37
	Rubber-Tired Dozers	1	8	367	0.40
Building Construction	Forklifts	3	8	82	0.20
	Generator Sets	1	8	14	0.74
	Cranes	1	7	367	0.29
	Welders	1	8	46	0.45
	Tractors/Loaders/Backhoes	3	7	84	0.37
Architectural Coating	Air Compressors	1	6	37	0.48

Source: Compiled by LSA, using CalEEMod defaults (February 2023).
CalEEMod = California Emissions Estimator Model

The emissions rates shown in Table I are from the CalEEMod output tables and are the combination of the on- and off-site emissions and the greater of summer and winter emissions. No exceedances of any criteria pollutants are expected.

Table I: Short-Term Regional Construction Emissions

Construction Phase	Total Regional Pollutant Emissions (tons/year)							
	VOCs	NO_X	CO	SO_X	PM_{10}		$PM_{2.5}$	
					Fugitive	Exhaust	Fugitive	Exhaust
Site Preparation	0.04	0.40	0.35	<0.005	0.20	0.02	0.10	0.02
Grading	0.08	0.84	0.71	<0.005	0.25	0.04	0.08	0.03
Building Construction	0.06	0.59	0.65	<0.005	<0.005	0.03	<0.005	0.03
Architectural Coating	0.05	0.01	0.01	<0.005	<0.005	<0.005	<0.005	<0.005
Peak Annual	**0.19**	**1.83**	**1.77**	**<0.005**	**0.49**		**0.26**	
SJVAPCD Threshold	**10**	**10**	**100**	**27**	**15**		**15**	
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**		**No**	

Source: Compiled by LSA (February 2023).

Note: It was assumed that the architectural coatings were applied during the building construction and paving phases.

CO = carbon monoxide

NO_X = nitrogen oxides

$PM_{2.5}$ = particulate matter less than 2.5 microns in size

PM_{10} = particulate matter less than 10 microns in size

SJVAPCD = San Joaquin Valley Air Pollution Control District

SO_X = sulfur oxides

VOCs = volatile organic compounds

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. The SJVAPCD has implemented Regulation VIII measures for reducing fugitive dust emissions (PM_{10}). With the implementation of Regulation VIII measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

Regulatory Compliance Measure AIR-1 would ensure that the proposed project complies with Regulation VIII and ensures the short-term construction period of air quality impacts.

Regulatory Compliance Measure AIR-1 Consistent with San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII (Fugitive particulate matter less than 10 microns in size [PM_{10}] Prohibitions), the following controls are required to be included as specifications for the proposed project and implemented at the construction site:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/ suppressant, covered with a tarp or other suitable cover or vegetative ground cover.

- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/ suppressant.

- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.

- When materials are transported off site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.

- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)

- Following the addition of materials to, or the removal of materials from, the surface of out-door storage piles, said piles shall be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.

As shown in Table I, construction emissions associated with the project would not exceed the significance criteria for annual VOCs, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions. Therefore, construction of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State AAQS.

Long-Term Operational Emissions. Long-term air pollutant emission impacts are those associated with mobile sources (e.g., vehicle trips), energy sources (e.g., electricity and natural gas), and area sources (e.g., architectural coatings and the use of maintenance equipment) related to the composting facility and truck wash.

PM_{10} emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. Entrainment of PM_{10} occurs when vehicle tires pulverize small rocks and pavement and the vehicle wakes generate airborne dust. The contribution of tire and brake wear is small compared to the other PM emission processes. Gasoline-powered engines have small rates of particulate matter emissions compared with diesel-powered vehicles.

Energy source emissions result from activities in buildings for which electricity and natural gas are used. The quantity of emissions is the product of usage intensity (i.e., the amount of electricity or natural gas) and the emission factor of the fuel source. Major sources of energy demand for the proposed project could include building mechanical systems, such as heating and air conditioning and lighting. Area source emissions associated with the project would include emissions from the use of composting equipment.

Emission estimates for operation of the project were calculated using CalEEMod and are shown in Table J, below. For purposes of evaluating the composting facility and truck wash, the air district in CalEEMod was specified as the SJVAPCD, the locational context set to rural, and the operational year set to 2024. Based on project location, CalEEMod assumed a wind speed of 3.5 meters per second and precipitation frequency of 22.2 days per year. The utility company for the region was selected as Pacific Gas & Electric Company (PG&E).

Table J: Project Operation Emissions (tons/year)

Source Category	VOCs	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area Source Emissions	0.10	<0.005	0.08	<0.005	<0.005	<0.005
Energy Source Emissions	<0.005	0.04	0.03	<0.005	<0.005	<0.005
Mobile Source Emissions	0.06	0.12	0.67	<0.005	0.06	0.01
On-Site Equipment	0.06	0.68	1.09	<0.005	0.03	0.03
Total Project Emissions	**0.22**	**2.84**	**1.87**	**<0.005**	**0.09**	**0.04**
SJVAPCD Significance Threshold	10	10	100	27	15	15
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA (February 2023).

CO = carbon monoxide
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SJVAPCD = San Joaquin Valley Air Pollution Control District
SO_X = sulfur oxides
VOCs = reactive organic gases

It was assumed that the equipment used for the composting operations would be represented by two each of the CalEEMod equipment categories of “tractor/loader/backhoe” and “other material handling equipment.” To be conservative, it was assumed that all four would be diesel-powered.

As described in the *Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum* (LSA 2023), the composting facility would have approximately 20 service/delivery trucks per day during the months of September through December, and an average of 10 trucks per day for the remaining year. In addition, the facility estimates to have approximately 5 visitors on a typical weekday. The truck wash facility is for internal use only. As such, this service will be provided only to the trucks coming to the composting site and not to outside customers. Also, based on the operational statement, the project is estimated to have a maximum number of 10 employees in total for both facilities. This would all total to 70 trips per day.

The CalEEMod analysis assumed the site would operate as General Light Industrial. Where project-specific data were not available, default assumptions (i.e., energy usage, water usage, and solid waste generation) from CalEEMod were used to estimate project emissions.

The primary emissions associated with the project are regional in nature, meaning that air pollutants are rapidly dispersed on release or, in the case of vehicle emissions associated with the project, emissions are released in other areas of the SJVAB. The annual emissions associated with project operational trip generation, energy, and area sources are identified in Table J for VOCs, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$.

The results shown in Table J indicate the project would not exceed the significance criteria for daily VOCs, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ emissions; therefore, operation of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State AAQS. CalEEMod results listing the details of the emissions results are provided (Attachment B).

Long-Term Microscale (CO Hot Spot) Analysis. Vehicular trips associated with the proposed project would contribute to congestion at intersections and along roadway segments in the project vicinity. Localized air quality impacts would occur when emissions from vehicular traffic increase as a result of the proposed project. The primary mobile-source pollutant of local concern is CO, a direct function of vehicle idling time and, thus, of traffic flow conditions. CO transport is extremely limited. Under normal meteorological conditions, CO disperses rapidly with distance from the source. However, under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels, affecting local sensitive receptors (e.g., residents, schoolchildren, the elderly, and hospital patients). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service (LOS) or with extremely high traffic volumes. In areas with high ambient background CO concentrations, modeling is recommended to determine a project's effect on local CO levels (USEPA 1992).

An assessment of project-related impacts on localized ambient air quality requires that future ambient air quality levels be projected. As described in the *Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum* (LSA 2023), the proposed project would generate 16 AM peak-hour trips and 16 PM peak-hour trips. Because the proposed project would not generate 100 or more peak-hour trips, the proposed project would not meet the criteria for an evaluation of study area intersection or roadway segment LOS. Therefore, it is concluded that the addition of the proposed project traffic would not create any significant adverse impacts to nearby intersections.

Therefore, given the extremely low level of CO concentrations in the project area and lack of traffic impacts at any intersections, project-related vehicles are not expected to contribute significantly to CO concentrations exceeding the State or federal CO standards.

Objectionable Odors. The SJVAPCD addresses odor criteria within the GAMAQI. The district has not established a rule or standard regarding odor emissions, rather, the district has a nuisance rule: "Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact."

During project construction, some odors may be present due to diesel exhaust. However, these odors would be temporary and limited to the construction period. Once operational, while there would be odors associated with the composting operations. The nearest sensitive receptor is located approximately 170 feet from the proposed windrows, which could result in the exposure of odor emissions that could adversely affect people in the project vicinity. To minimize odor impacts to off-site receptors, the following mitigation measure shall be implemented.

Mitigation Measure AIR-1 The project applicant shall incorporate the following operational practices into the composting operations:

- Coarse, dry bulking agents shall be added to any incoming materials that are anaerobic and odorous in order to increase porosity and reduce moisture in the materials;
- Windrows and piles shall be turned to redistribute the moisture and provide aeration to maintain even temperatures; and
- Windrows shall be sized uniformly to facilitate oxygen diffusion and natural air convection.

Implementation of these measures will manage odors from project operations. Therefore, with implementation of Mitigation Measure AIR-1, the proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Greenhouse Gas Emission Impacts

The following sections describe the proposed project's construction- and operation-related GHG impacts and consistency with applicable GHG reduction plans.

Generation of Greenhouse Gas Emissions. This section discusses the project's impacts related to the release of GHG emissions for the construction and operational phases of the project.

Estimation of GHG emissions in the future does not account for all changes in technology that may reduce such emissions; therefore, the estimates are based on past performance and represent a scenario that is worse than that which is likely to be encountered (after energy-efficient technologies have been implemented). While information is presented below to assist the public and decision-makers in understanding the project's potential contribution to climate change impacts, the information available is not sufficiently detailed to allow a direct comparison between particular project characteristics and particular climate change impacts or between any particular proposed mitigation measure and any reduction in climate change impacts.

Construction and operation of the proposed project would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during the project's operation.

Overall, the following activities associated with the proposed project could directly or indirectly contribute to the generation of GHG emissions.

Construction Greenhouse Gas Emissions. Construction activities associated with the proposed project would produce combustion emissions from various sources. During construction, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change. The SJVAPCD does not have an adopted threshold of significance for construction-related GHG emissions. However, lead agencies are encouraged to quantify and disclose GHG emissions that would occur during construction. Using CalEEMod, it is estimated that construction of the proposed project would generate approximately 303 MT CO_2e. When considered over the 30-year life of the project, the total amortized construction emissions for the proposed project would be 10 MT CO_2e per year.

Operational GHG Emissions. Long-term GHG emissions are typically generated from mobile sources (e.g., cars, trucks, and buses), area sources (e.g., maintenance activities and landscaping), indirect emissions from sources associated with energy consumption, waste sources (land filling and waste disposal), and water sources (water supply and conveyance, treatment, and distribution). Mobile-source GHG emissions would include project-generated car and truck trips to and from the project site. Area-source emissions would be associated with activities such as composting operations on the project site. In addition, water source emissions associated with the proposed project are generated by water supply and conveyance, water treatment, water distribution, and wastewater treatment.

GHG emissions were estimated using CalEEMod. Table K shows the calculated GHG emissions for the proposed project.

Table K: Long-Term Operational Greenhouse Gas Emissions

Source	Pollutant Emissions per Year (MT)					
	Bio-CO_2	**Nbio-CO_2**	**Total CO_2**	**CH_4**	**N_2O**	**CO_2e**
Construction Emissions Amortized over 30 Years						10
Operational Emissions						
Area	0	<1	<1	<1	<1	<1
Energy	0	65	65	<1	<1	66
Mobile	0	181	181	<1	<1	185
Offroad	0	150	150	<1	<1	151
Waste	2	0	2	<1	<1	8
Water	1	2	3	<1	<1	8
Total Project Emissions	**4**	**399**	**403**	<1	<1	**428**

Source: Compiled by LSA (February 2023).

Note: Totals may not appear correct due to rounding.

Bio-CO_2 = biologically generated carbon dioxide
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
MT = metric tons
N_2O = nitrous oxide
Nbio-CO_2 = non-biologically generated carbon dioxide

As shown in Table K, the project would generate 428 MT CO_2e per year. As discussed above, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds or consistency with a regional GHG reduction plan (such as a Climate Action Plan). Neither Kings County nor SJVAPCD has developed or adopted numeric GHG significance thresholds. Therefore, this analysis evaluates the GHG emissions based on the project's consistency with the SJVAPCD CCAP and other applicable State GHG reduction goals.

Consistency with Greenhouse Gas Reduction Plans

As discussed above, the SJVAPCD has adopted a CCAP, which includes suggested BPS for proposed development projects. Appendix J of the SJVAPCD Final Staff Report for the CCAP contains GHG reduction measures; however, these measures are intended for commercial, residential, and mixed-use projects and would not be applicable to the composting and truck wash facility. The only applicable measure is the following:

- In order to minimize greenhouse gas emissions and optimize equipment efficiency, all equipment shall be operated in accordance with manufacturers' specifications and approved design specifications.

Consistency with the Scoping Plan

The following discussion evaluates the proposed project according to the goals of the 2022 Scoping Plan, EO B-30-15, SB 32, and AB 197.

EO B-30-15 added the immediate target of reducing GHG emissions to 40 percent below 1990 levels by 2030. CARB released a second update to the Scoping Plan (the 2017 Scoping Plan [CARB 2017]), to reflect the 2030 target set by EO B-30-15 and codified by SB 32. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in EO B-30-15. SB 32 builds on AB 32 and keeps us on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels. The companion bill to SB 32 (i.e., AB 197) provides additional direction to the CARB related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 intended to provide easier public access to air emissions data that are collected by the CARB was posted in December 2016.

In addition, the 2022 Scoping Plan assesses progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045. The 2022 Scoping Plan focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

The 2022 Scoping Plan focuses on building clean energy production and distribution infrastructure for a carbon-neutral future, including transitioning existing energy production and transmission infrastructure to produce zero-carbon electricity and hydrogen, and utilizing biogas resulting from wildfire management or landfill and dairy operations, among other substitutes. The 2022 Scoping Plan states that in almost all sectors, electrification will play an important role. The 2022 Scoping

Plan evaluates clean energy and technology options and the transition away from fossil fuels, including adding four times the solar and wind capacity by 2045 and about 1,700 times the amount of current hydrogen supply. As discussed in the 2022 Scoping Plan, EO N-79-20 requires that all new passenger vehicles sold in California will be zero-emissions by 2035, and all other fleets will have transitioned to zero-emissions as fully possible by 2045, which will reduce the percentage of fossil fuel combustion vehicles.

Water conservation and efficiency measures are intended to continue efficiency programs and use cleaner energy sources to move and treat water. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions. As noted above, the project would comply with the CALGreen Code, which includes a variety of different measures, including reduction of wastewater and water use. Therefore, the proposed project would not conflict with any of the water conservation and efficiency measures.

The goal of transportation and motor vehicle measures is to develop regional GHG emissions reduction targets for passenger vehicles. Specific regional emission targets for transportation emissions would not directly apply to the proposed project. The second phase of the Pavley standards will reduce GHG emissions from new cars by 34 percent from 2016 levels by 2025, resulting in a 3 percent decrease in average vehicle emissions for all vehicles by 2020. Vehicles traveling to the project site would comply with the Pavley II (LEV III) Advanced Clean Cars Program (CARB 2012). Therefore, the proposed project would not conflict with the identified transportation and motor vehicle measures.

AB 107 measures to reduce non-combustion emissions (methane) include measures to divert organic waste from landfills. The proposed project would accomplish this by diverting organic waste to be composted.

CONCLUSION

Based on the analysis presented above, construction of the proposed project would not result in the generation of criteria air pollutants that would exceed SJVAPCD thresholds of significance. Implementation of Regulatory Compliance Measure AIR-1 would further reduce construction dust impacts. As discussed above, the facility’s construction emissions of criteria pollutants are estimated to be well below the emissions threshold established for the region. Operational emissions associated with the proposed project would also not exceed SJVAPCD established significance thresholds. The proposed project is not expected to produce significant emissions that would affect nearby sensitive receptors. With implementation of Mitigation Measure AIR-1, the proposed project would also not result in objectionable odors affecting a substantial number of people. GHG emissions released during construction and operation would not be cumulatively considerable. Additionally, the project would not conflict with the goals and objectives of the SJVAPCD’s CCAP or any other State or regional plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions.

Attachments: A – Figures
B – CalEEMod Output
C – References

ATTACHMENT A

FIGURES

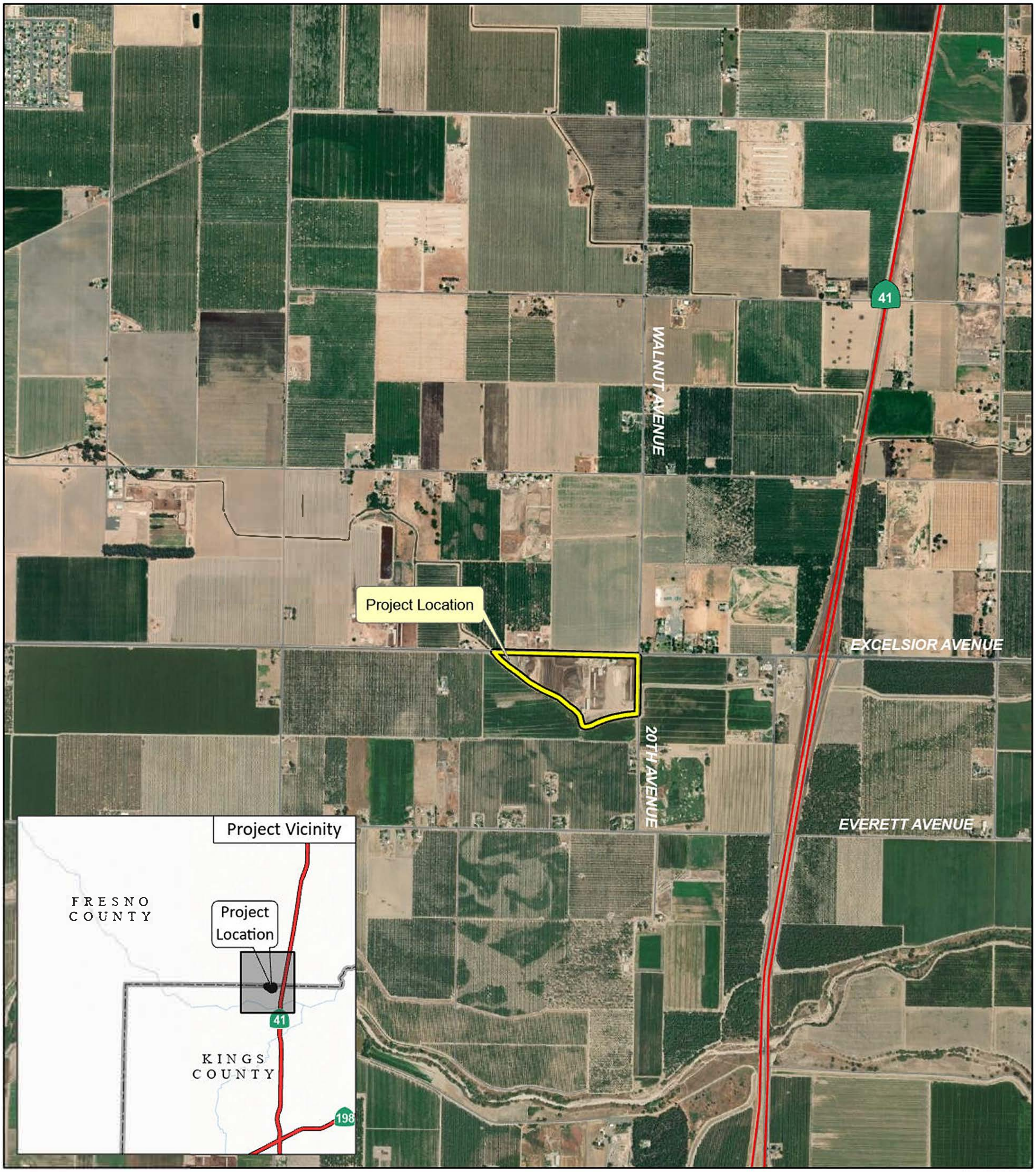

FIGURE 1

Thomas Brothers Composting and Truck Wash

Regional and Project Location

SOURCE: ESRI Streetmap, 2021; Google Earth, 2022.

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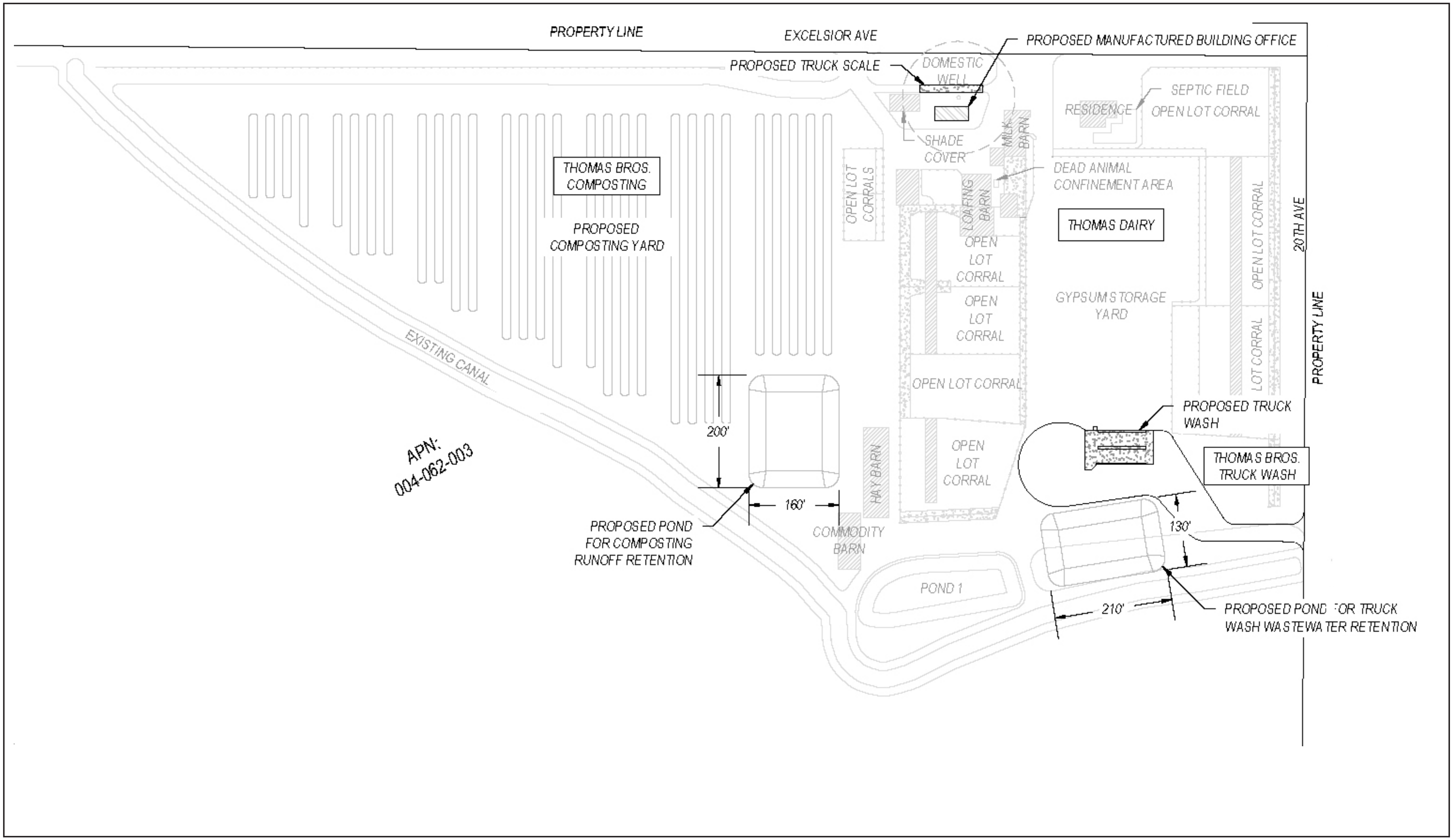

FIGURE 2

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Thomas Brothers Composting and Truck Wash

Conceptual Site Plan

SOURCE: 4Creek, November 2022

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ATTACHMENT B

CALEEMOD OUTPUT

Thomas Dairy Composting Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Thomas Dairy Composting
Lead Agency	Kings County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.50
Precipitation (days)	22.2
Location	36.401087542927904, -119.81892916952877
County	Kings
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2619
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Southern California Gas

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Light Industry	20.0	1000sqft	30.0	20,000	5,000	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.04	39.8	36.5	0.06	1.81	19.8	21.6	1.66	10.1	11.8	—	6,777	6,777	0.28	0.06	0.74	6,803
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.78	11.9	13.6	0.02	0.55	0.07	0.62	0.51	0.02	0.53	—	2,504	2,504	0.10	0.03	0.01	2,515
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.05	10.0	9.68	0.02	0.45	2.26	2.70	0.41	1.01	1.42	—	1,813	1,813	0.07	0.02	0.10	1,821
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.19	1.83	1.77	< 0.005	0.08	0.41	0.49	0.07	0.19	0.26	—	300	300	0.01	< 0.005	0.02	301

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2023	4.04	39.8	36.5	0.06	1.81	19.8	21.6	1.66	10.1	11.8	—	6,777	6,777	0.28	0.06	0.74	6,803
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	1.30	11.9	13.6	0.02	0.55	0.07	0.62	0.51	0.02	0.53	—	2,504	2,504	0.10	0.03	0.01	2,515
2024	4.78	11.3	13.5	0.02	0.50	0.07	0.57	0.46	0.02	0.48	—	2,502	2,502	0.10	0.03	0.01	2,513
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	1.05	10.0	9.68	0.02	0.45	2.26	2.70	0.41	1.01	1.42	—	1,813	1,813	0.07	0.02	0.10	1,821
2024	0.26	0.07	0.09	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.0	13.0	< 0.005	< 0.005	< 0.005	13.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.19	1.83	1.77	< 0.005	0.08	0.41	0.49	0.07	0.19	0.26	—	300	300	0.01	< 0.005	0.02	301
2024	0.05	0.01	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.15	2.15	< 0.005	< 0.005	< 0.005	2.15

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.52	6.16	14.7	0.03	0.26	0.38	0.64	0.24	0.07	0.31	22.2	3,043	3,065	2.38	0.10	10.7	3,166
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.34	6.26	12.7	0.03	0.26	0.38	0.64	0.24	0.07	0.30	22.2	2,926	2,949	2.39	0.10	5.35	3,045
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.22	4.60	10.2	0.02	0.19	0.33	0.52	0.18	0.06	0.23	22.2	2,411	2,433	2.36	0.09	7.25	2,527
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	0.22	0.84	1.87	< 0.005	0.03	0.06	0.09	0.03	0.01	0.04	3.68	399	403	0.39	0.01	1.20	418

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.42	0.71	5.25	0.01	0.01	0.38	0.39	0.01	0.07	0.08	—	1,359	1,359	0.04	0.06	5.53	1,385
Area	0.60	0.01	0.87	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.58	3.58	< 0.005	< 0.005	—	4.23
Energy	0.01	0.22	0.18	< 0.005	0.02	—	0.02	0.02	—	0.02	—	395	395	0.04	< 0.005	—	397
Water	—	—	—	—	—	—	—	—	—	—	8.86	10.3	19.2	0.91	0.02	—	48.4
Waste	—	—	—	—	—	—	—	—	—	—	13.4	0.00	13.4	1.34	0.00	—	46.8
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21	5.21
Off-Road	0.49	5.23	8.35	0.01	0.23	—	0.23	0.21	—	0.21	—	1,274	1,274	0.05	0.01	—	1,279
Total	1.52	6.16	14.7	0.03	0.26	0.38	0.64	0.24	0.07	0.31	22.2	3,043	3,065	2.38	0.10	10.7	3,166
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.38	0.81	4.14	0.01	0.01	0.38	0.39	0.01	0.07	0.08	—	1,246	1,246	0.04	0.07	0.14	1,268
Area	0.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.01	0.22	0.18	< 0.005	0.02	—	0.02	0.02	—	0.02	—	395	395	0.04	< 0.005	—	397
Water	—	—	—	—	—	—	—	—	—	—	8.86	10.3	19.2	0.91	0.02	—	48.4
Waste	—	—	—	—	—	—	—	—	—	—	13.4	0.00	13.4	1.34	0.00	—	46.8
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21	5.21
Off-Road	0.49	5.23	8.35	0.01	0.23	—	0.23	0.21	—	0.21	—	1,274	1,274	0.05	0.01	—	1,279
Total	1.34	6.26	12.7	0.03	0.26	0.38	0.64	0.24	0.07	0.30	22.2	2,926	2,949	2.39	0.10	5.35	3,045
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	0.33	0.66	3.69	0.01	0.01	0.33	0.34	0.01	0.06	0.07	—	1,096	1,096	0.03	0.06	2.05	1,116
Area	0.52	< 0.005	0.43	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.76	1.76	< 0.005	< 0.005	—	2.09
Energy	0.01	0.22	0.18	< 0.005	0.02	—	0.02	0.02	—	0.02	—	395	395	0.04	< 0.005	—	397
Water	—	—	—	—	—	—	—	—	—	—	8.86	10.3	19.2	0.91	0.02	—	48.4
Waste	—	—	—	—	—	—	—	—	—	—	13.4	0.00	13.4	1.34	0.00	—	46.8
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21	5.21
Off-Road	0.35	3.72	5.95	0.01	0.16	—	0.16	0.15	—	0.15	—	908	908	0.04	0.01	—	911
Total	1.22	4.60	10.2	0.02	0.19	0.33	0.52	0.18	0.06	0.23	22.2	2,411	2,433	2.36	0.09	7.25	2,527
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.06	0.12	0.67	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	181	181	0.01	0.01	0.34	185
Area	0.10	< 0.005	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.29	0.29	< 0.005	< 0.005	—	0.35
Energy	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	65.4	65.4	0.01	< 0.005	—	65.8
Water	—	—	—	—	—	—	—	—	—	—	1.47	1.70	3.17	0.15	< 0.005	—	8.01
Waste	—	—	—	—	—	—	—	—	—	—	2.21	0.00	2.21	0.22	0.00	—	7.74
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.86	0.86
Off-Road	0.06	0.68	1.09	< 0.005	0.03	—	0.03	0.03	—	0.03	—	150	150	0.01	< 0.005	—	151
Total	0.22	0.84	1.87	< 0.005	0.03	0.06	0.09	0.03	0.01	0.04	3.68	399	403	0.39	0.01	1.20	418

3. Construction Emissions Details

3.1. Site Preparation (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	3.95	39.7	35.5	0.05	1.81	—	1.81	1.66	—	1.66	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	2.18	1.94	< 0.005	0.10	—	0.10	0.09	—	0.09	—	290	290	0.01	< 0.005	—	291
Dust From Material Movement	—	—	—	—	—	1.08	1.08	—	0.55	0.55	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.40	0.35	< 0.005	0.02	—	0.02	0.02	—	0.02	—	48.0	48.0	< 0.005	< 0.005	—	48.2
Dust From Material Movement	—	—	—	—	—	0.20	0.20	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.07	1.06	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	157	157	0.01	0.01	0.64	159

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.87	7.87	< 0.005	< 0.005	0.02	7.99
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.30	1.30	< 0.005	< 0.005	< 0.005	1.32
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.72	37.3	31.4	0.06	1.59	—	1.59	1.47	—	1.47	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.46	4.60	3.87	0.01	0.20	—	0.20	0.18	—	0.18	—	813	813	0.03	0.01	—	816
Dust From Material Movement	—	—	—	—	—	1.13	1.13	—	0.45	0.45	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.84	0.71	< 0.005	0.04	—	0.04	0.03	—	0.03	—	135	135	0.01	< 0.005	—	135
Dust From Material Movement	—	—	—	—	—	0.21	0.21	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.08	1.21	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	179	179	0.01	0.01	0.74	182
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.01	0.01	0.12	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	20.2	20.2	< 0.005	< 0.005	0.04	20.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.35	3.35	< 0.005	< 0.005	0.01	3.40
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.26	11.8	13.2	0.02	0.55	—	0.55	0.51	—	0.51	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.26	11.8	13.2	0.02	0.55	—	0.55	0.51	—	0.51	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	3.21	3.58	0.01	0.15	—	0.15	0.14	—	0.14	—	652	652	0.03	0.01	—	654

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.59	0.65	< 0.005	0.03	—	0.03	0.03	—	0.03	—	108	108	< 0.005	< 0.005	—	108
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.03	0.51	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	75.2	75.2	< 0.005	< 0.005	0.31	76.4
Vendor	< 0.005	0.07	0.04	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	39.7	39.7	< 0.005	0.01	0.10	41.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.39	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	66.5	66.5	< 0.005	< 0.005	0.01	67.4
Vendor	< 0.005	0.07	0.04	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	39.7	39.7	< 0.005	0.01	< 0.005	41.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.8	18.8	< 0.005	< 0.005	0.04	19.0
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.8	10.8	< 0.005	< 0.005	0.01	11.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.11	3.11	< 0.005	< 0.005	0.01	3.15
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.79	1.79	< 0.005	< 0.005	< 0.005	1.87
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.20	11.2	13.1	0.02	0.50	—	0.50	0.46	—	0.46	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.69	4.69	< 0.005	< 0.005	—	4.71
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.78	0.78	< 0.005	< 0.005	—	0.78
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.04	0.04	0.36	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	65.1	65.1	< 0.005	< 0.005	0.01	66.0
Vendor	< 0.005	0.07	0.04	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	39.2	39.2	< 0.005	0.01	< 0.005	40.9
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.13	0.13	< 0.005	< 0.005	< 0.005	0.13
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.08	0.08	< 0.005	< 0.005	< 0.005	0.08
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.02	0.02	< 0.005	< 0.005	< 0.005	0.02
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.01	0.01	< 0.005	< 0.005	< 0.005	0.01
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Architectural Coating (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.91	1.15	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	4.64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.32	7.32	< 0.005	< 0.005	—	7.34
Architectural Coatings	0.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.21	1.21	< 0.005	< 0.005	—	1.22
Architectural Coatings	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.0	13.0	< 0.005	< 0.005	< 0.005	13.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.74	0.74	< 0.005	< 0.005	< 0.005	0.75
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.12	0.12	< 0.005	< 0.005	< 0.005	0.12
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.42	0.71	5.25	0.01	0.01	0.38	0.39	0.01	0.07	0.08	—	1,359	1,359	0.04	0.06	5.53	1,385
Total	0.42	0.71	5.25	0.01	0.01	0.38	0.39	0.01	0.07	0.08	—	1,359	1,359	0.04	0.06	5.53	1,385
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.38	0.81	4.14	0.01	0.01	0.38	0.39	0.01	0.07	0.08	—	1,246	1,246	0.04	0.07	0.14	1,268
Total	0.38	0.81	4.14	0.01	0.01	0.38	0.39	0.01	0.07	0.08	—	1,246	1,246	0.04	0.07	0.14	1,268
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.06	0.12	0.67	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	181	181	0.01	0.01	0.34	185
Total	0.06	0.12	0.67	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	181	181	0.01	0.01	0.34	185

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	133	133	0.02	< 0.005	—	134
Total	—	—	—	—	—	—	—	—	—	—	—	133	133	0.02	< 0.005	—	134
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	133	133	0.02	< 0.005	—	134
Total	—	—	—	—	—	—	—	—	—	—	—	133	133	0.02	< 0.005	—	134
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	22.0	22.0	< 0.005	< 0.005	—	22.2
Total	—	—	—	—	—	—	—	—	—	—	—	22.0	22.0	< 0.005	< 0.005	—	22.2

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Light Industry	0.01	0.22	0.18	< 0.005	0.02	—	0.02	0.02	—	0.02	—	263	263	0.02	< 0.005	—	263
Total	0.01	0.22	0.18	< 0.005	0.02	—	0.02	0.02	—	0.02	—	263	263	0.02	< 0.005	—	263
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.01	0.22	0.18	< 0.005	0.02	—	0.02	0.02	—	0.02	—	263	263	0.02	< 0.005	—	263
Total	0.01	0.22	0.18	< 0.005	0.02	—	0.02	0.02	—	0.02	—	263	263	0.02	< 0.005	—	263
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	43.5	43.5	< 0.005	< 0.005	—	43.6
Total	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	43.5	43.5	< 0.005	< 0.005	—	43.6

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.43	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscape Equipme	0.14	0.01	0.87	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.58	3.58	< 0.005	< 0.005	—	4.23
Total	0.60	0.01	0.87	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.58	3.58	< 0.005	< 0.005	—	4.23
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.43	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	< 0.005	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.29	0.29	< 0.005	< 0.005	—	0.35
Total	0.10	< 0.005	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.29	0.29	< 0.005	< 0.005	—	0.35

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	8.86	10.3	19.2	0.91	0.02	—	48.4
Total	—	—	—	—	—	—	—	—	—	—	8.86	10.3	19.2	0.91	0.02	—	48.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	8.86	10.3	19.2	0.91	0.02	—	48.4
Total	—	—	—	—	—	—	—	—	—	—	8.86	10.3	19.2	0.91	0.02	—	48.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	1.47	1.70	3.17	0.15	< 0.005	—	8.01
Total	—	—	—	—	—	—	—	—	—	—	1.47	1.70	3.17	0.15	< 0.005	—	8.01

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	13.4	0.00	13.4	1.34	0.00	—	46.8
Total	—	—	—	—	—	—	—	—	—	—	13.4	0.00	13.4	1.34	0.00	—	46.8

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	13.4	0.00	13.4	1.34	0.00	—	46.8
Total	—	—	—	—	—	—	—	—	—	—	13.4	0.00	13.4	1.34	0.00	—	46.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	2.21	0.00	2.21	0.22	0.00	—	7.74
Total	—	—	—	—	—	—	—	—	—	—	2.21	0.00	2.21	0.22	0.00	—	7.74

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21	5.21
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21	5.21
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21	5.21
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21	5.21
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.86	0.86
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.86	0.86

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tractors/Loaders/Backhoes	0.25	2.54	3.82	0.01	0.12	—	0.12	0.11	—	0.11	—	581	581	0.02	< 0.005	—	583
Other Material Handling Equipment	0.25	2.69	4.53	0.01	0.11	—	0.11	0.10	—	0.10	—	694	694	0.03	0.01	—	696
Total	0.49	5.23	8.35	0.01	0.23	—	0.23	0.21	—	0.21	—	1,274	1,274	0.05	0.01	—	1,279
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tractors/Loaders/Backhoes	0.25	2.54	3.82	0.01	0.12	—	0.12	0.11	—	0.11	—	581	581	0.02	< 0.005	—	583
Other Material Handling Equipment	0.25	2.69	4.53	0.01	0.11	—	0.11	0.10	—	0.10	—	694	694	0.03	0.01	—	696
Total	0.49	5.23	8.35	0.01	0.23	—	0.23	0.21	—	0.21	—	1,274	1,274	0.05	0.01	—	1,279

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tractors/Loaders/Backhoes	0.03	0.33	0.50	< 0.005	0.02	—	0.02	0.01	—	0.01	—	68.5	68.5	< 0.005	< 0.005	—	68.7
Other Material Handling Equipment	0.03	0.35	0.59	< 0.005	0.01	—	0.01	0.01	—	0.01	—	81.8	81.8	< 0.005	< 0.005	—	82.1
Total	0.06	0.68	1.09	< 0.005	0.03	—	0.03	0.03	—	0.03	—	150	150	0.01	< 0.005	—	151

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipme Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	5/14/2023	6/11/2023	5.00	20.0	—
Grading	Grading	6/12/2023	8/14/2023	5.00	45.0	—
Building Construction	Building Construction	8/15/2023	1/1/2024	5.00	100	—
Architectural Coating	Architectural Coating	1/2/2024	1/29/2024	5.00	20.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	10.6	LDA,LDT1,LDT2
Site Preparation	Vendor	—	3.50	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT

Grading	—	—	—	—
Grading	Worker	20.0	10.6	LDA,LDT1,LDT2
Grading	Vendor	—	3.50	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	8.40	10.6	LDA,LDT1,LDT2
Building Construction	Vendor	3.28	3.50	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	1.68	10.6	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	3.50	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	30,000	10,000	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	30.0	0.00	—
Grading	—	—	135	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
General Light Industry	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	204	0.03	< 0.005
2024	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
General Light Industry	70.0	70.0	0.00	21,900	1,381	1,381	0.00	432,205

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	30,000	10,000	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
General Light Industry	237,283	204	0.0330	0.0040	819,446

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
General Light Industry	4,625,000	80,162

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
General Light Industry	24.8	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Other Material Handling Equipment	Diesel	Average	2.00	8.00	93.0	0.40

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

8. User Changes to Default Data

Screen	Justification
Land Use	Site acreage estimated from Google Aerial view.
Construction: Construction Phases	Schedule based on project plans, construction of a truck wash and a wastewater retention pond.
Operations: Vehicle Data	The traffic study determined there would be 70 trips per day, Monday thru Saturday.

ATTACHMENT C

REFERENCES

California Air Resources Board (CARB). 2012. California Air Resources Board Approves Advanced Clean Car Rules. January 27. Website: www.arb.ca.gov/news/california-air-resources-board-approves-advanced-clean-car-rules (accessed February 2023).

_____. 2016. Ambient Air Quality Standards. May 4. Website: www.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf (accessed February 2023).

_____. 2017. *California's 2017 Climate Change Scoping Plan*. November.

_____. 2022a. *2022 Scoping Plan for Achieving Carbon Neutrality*. November. Website: www.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents (accessed February 2023).

———. 2022b. State and Federal Area Designations. February. Website: www.arb.ca.gov/desig/desig.htm (accessed February 2023).

———. n.d.-a. Common Air Pollutants. Website: www.arb.ca.gov/resources/common-air-pollutants (accessed February 2023).

———. n.d.-b. iADAM: Air Quality Data Statistics. Website: www.arb.ca.gov/adam/topfour/topfour1.php (accessed February 2023).

Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis, Fourth Assessment. Website: www.ipcc.ch/site/assets/uploads/2018/05/ar4_wg1_full_report-1.pdf (accessed February 2023).

_____. 2021. Climate Change 2021: The Physical Science Basis, Sixth Assessment Report. Website: www.ipcc.ch/report/ar6/wg1/ (accessed February 2023).

LSA Associates, Inc. (LSA). 2023. *Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum*. January.

San Joaquin Valley Air Pollution Control District. 1992. Rule 4202 Particulate Matter – Emission Rate. Amended December 17, 1992.

_____. 1992. Rule 4622 Gasoline Transfer Into Motor Vehicle Fuel Tanks. Amended December 19, 2013.

_____. 1996. Rule 2280 Portable Equipment Registration. Amended May 16, 1996.

______. 2007. 2007 PM10 Maintenance Plan and Request for Redesignation. Website: valleyair.org/Air_Quality_Plans/docs/Maintenance%20Plan10-25-07.pdf (accessed February 2023).

______. 2008. Climate Change Action Plan. November. Website: valleyair.org/Programs/CCAP/12-17-09/1%20CCAP%20-%20FINAL%20CEQA%20GHG%20Staff%20Report%20-%20Dec%2017%202009.pdf (accessed February 2023).

______. 2009a. Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA. December 17.

______. 2009b. Addressing GHG Emission Impacts for Stationary Source Projects under CEQA When Serving as the Lead Agency. December 17.

______. 2009c. Final Staff Report Appendix J: GHG Emission Reduction Measures – Development Projects. December 17.

______. 2011. Rule 4566 Organic Material Composting Operations. Adopted August 18, 2011.

______. 2013a. 2013 Plan for the Revoked 1-Hour Ozone Standard. September 19. Website: www.valleyair.org/Air_Quality_Plans/Ozone-OneHourPlan-2013.htm (accessed February 2023).

______. 2013b. Rule 4622 Gasoline Transfer Into Motor Vehicle Fuel Tanks. Amended December 19, 2013.

______. 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*. February 19. Website: valleyair.org/transportation/GAMAQI-2015/FINAL-DRAFT-GAMAQI.PDF (accessed February 2023).

______. 2016. 2016 Plan for the 2008 8-Hour Ozone Standard. June 16. Website: valleyair.org/Air_Quality_Plans/Ozone-Plan-2016.htm (accessed February 2023).

______. 2018. 2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards. November 15. Website: valleyair.org/pmplans/documents/2018/pm-plan-adopted/2018-Plan-for-the-1997-2006-and-2012-PM2.5-Standards.pdf%20 (accessed February 2023).

______. 2020. 2020 RACT Demonstration for the 2015 8-Hour Ozone Standard. June 18. Website: valleyair.org/Air_Quality_Plans/docs/2020-RACT-Demonstration.pdf (accessed February 2023).

United States Environmental Protection Agency (USEPA). 1992. *Guideline for Modeling Carbon Monoxide from Roadway Intersections.* November. Website: www.epa.gov/sites/default/files/2020-10/documents/coguide.pdf (accessed February 2023).

Appendix B

Biological Evaluation

BIOLOGICAL EVALUATION
THOMAS DAIRY IMPROVEMENT PROJECT
RIVERDALE, KINGS COUNTY, CA

By:

LIVE OAK ASSOCIATES, INC.

Austin Pearson, Vice President
Colleen Del Vecchio, Project Manager/Staff Ecologist and Arborist

For:

Molly Baumeister
4-Creeks, Inc.
324 South Santa Fe Street, Suite A
Visalia, CA 93292

December 22, 2022 Project No. 2750-01

EXECUTIVE SUMMARY

Live Oak Associates, Inc. (LOA) conducted an investigation of the biotic resources of the approximately 17-acre Thomas Dairy Facility and approximately 16-acre Thomas Brothers Composting Facility (collectively the “project site”), and evaluated impacts to those resources associated with facility buildout and operation (“project”). LOA’s analysis was completed in support of California Environmental Quality Act (CEQA) review of certain project elements that have already been implemented, as well as future site improvements. The project site is located southeast of the unincorporated community of Riverdale in Kings County, California.

The site has experienced decades of agricultural disturbance and was used for row crop production from the 1930’s to 1950’s, when the site began to be developed for dairy operations. The site’s ruderal habitat has the potential to support various native wildlife species, but is generally unsuitable for special status animals and entirely unsuitable for special status plants. Three special status animals, the tricolored blackbird, loggerhead shrike, and Swainson’s hawk, may occasionally forage within the site’s open ruderal habitats but would not breed on the site or in the close vicinity.

Past project-related improvements certainly impacted some biotic resources, just as future improvements will. One potential past and future impact, construction-related mortality or disturbance of nesting birds and raptors, would be considered significant as defined by CEQA. For future project components, this impact can be avoided or minimized by: (1) timing site construction to avoid the avian nesting season; (2) conducting surveys for active raptor and migratory bird nests in advance of any construction that must take place during the nesting season; and (3) avoiding such nests during the nesting season with appropriate buffers for each species, as determined by a qualified biologist.

Past project-related improvements are not expected to have significantly impacted any special status plant or animal species, sensitive natural communities or designated critical habitat, wildlife movement corridors, or jurisdictional waters. Future project elements are also not expected to significantly impact these resources, and appear to be consistent with the Kings County General Plan.

TABLE OF CONTENTS

1.0 INTRODUCTION

The following technical report, prepared by Live Oak Associates, Inc. (LOA) in support of California Environmental Quality Act (CEQA) review, describes the biotic resources of an approximately 33-acre project site (or "site"), to evaluate potential impacts to those resources. Within this site exists the approximately 17-acre Thomas Dairy Facility and the approximately 16-acre Thomas Brothers Composting Facility, evaluated collectively for CEQA review.

The Assessor Parcel Number for the project site is 004-062-003, however, the project site lies entirely within that portion of the parcel that is north of the existing canal. The site is located at the intersection of Excelsior Avenue and 20th Avenue, southeast of the unincorporated community of Riverdale, in Kings County, California (Figure 1). The site may be found entirely on the *Riverdale* U.S. Geological Survey (USGS) 7.5-minute quadrangle in Section 35, Township 18 South, Range 20 East (Figure 2).

1.1 PROJECT DESCRIPTION

Thomas Dairy

Thomas Dairy, previously a dairy facility, shut down milking operations and is now permitted through Kings County and operating as a bovine feedlot facility. In 2018, the dairy facility added a truck scale within the existing facility. Then, in 2021, a manufactured building used as an office was also constructed within the existing facility. The property owner is seeking permits and compliance with environmental standards for these past improvements.

Thomas Brothers Composting Facility

The property owner proposes a composting facility to the east and truck wash south of the existing Thomas Dairy (Thomas Brothers Composting Facility). A composting yard associated with the proposed facility has been operating since 2013. The property owner is seeking permits and compliance with environmental standards to cover current operations and three proposed improvements: a truck wash and two wastewater retention ponds. These improvements will be constructed in phases. The first phase will include the more westerly of the two ponds, which will be for composting runoff retention. The second phase will include the truck wash and the more easterly of the two ponds, which will be for truck wash wastewater. Following the construction of the two phases, the composting facility would be processing a total maximum throughput of 70,000 wet-tons of manure per year and washing 600 vehicles per week.

The operation of the facility will remain consistent throughout the year. The composting facility will operate Monday through Saturday, 6:00AM to 6:00PM, 12 months per year and the truck wash facility will operate Monday through Saturday, 8:00AM to 8:00PM, 12 months per year. On average, about 5 visitors will visit the composting facility per week and 420 visitors will visit the truck wash facility. Service and delivery trucks will visit regularly to provide mechanical services and fuel deliveries. The proposed improvements will create an increase in vehicles trucking raw dairy manure, and decomposed manure, on and off the site. The facility plans to operate an average of 20 trucks/day from September through December and then drop to an average of 10 trucks/day for the remainder of the year. Commercial trucking to the truck wash facility will increase to an average of 420 visitors/week and 70 visitors/day. The primary access point to the composting facility will be to the north between the feedlot and composting facility on Excelsior Avenue. The primary access point to the truck wash facility will be located along 20th Avenue at the southeast corner of the feedlot.

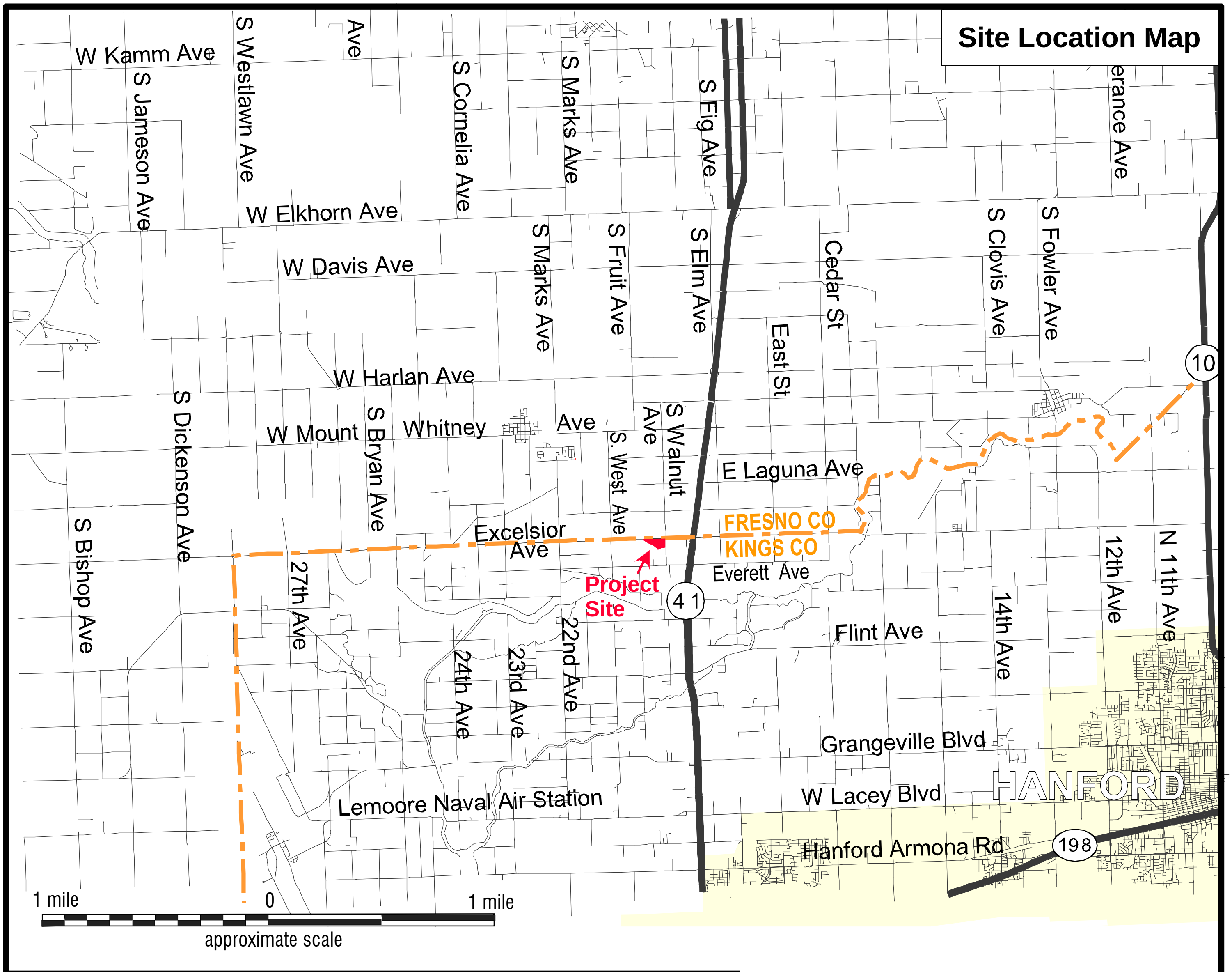
A site plan is included as Appendix A, which shows the existing Thomas Dairy facility, the proposed improvements to the Thomas Dairy, and the proposed Thomas Brothers Composting Facility.

1.2 REPORT OBJECTIVES

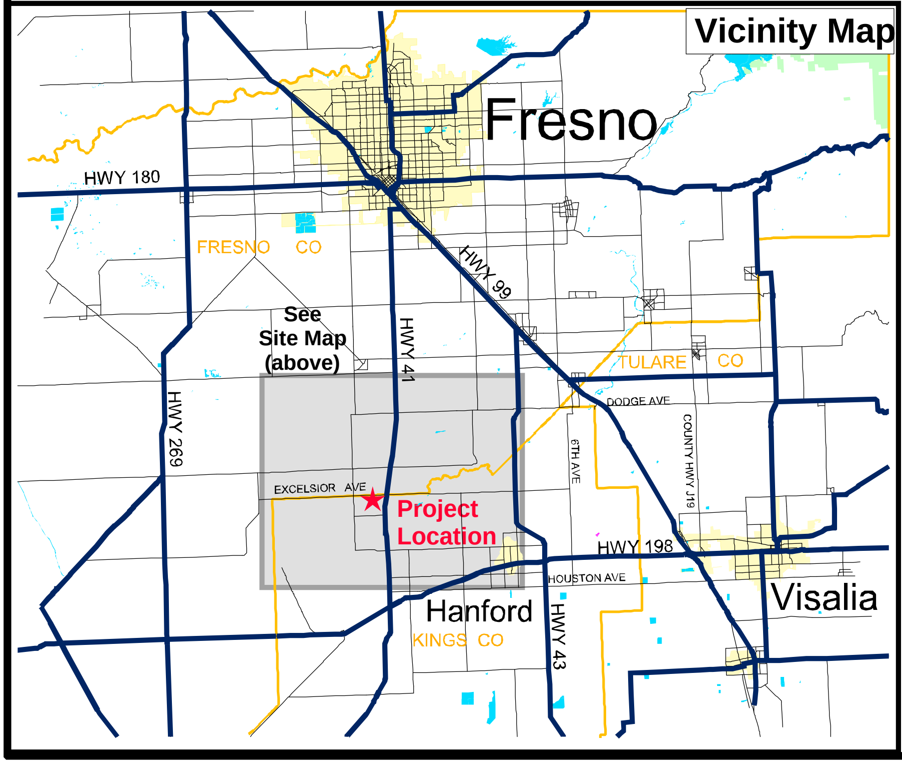
Because construction of past project-related improvements were completed prior to LOA's investigation, one objective of this report is to assess the potential for sensitive or protected biological resources to have occurred within these improvement areas prior to construction and/or to have been impacted by the improvements. A second objective is to evaluate future project-related impacts to biological resources. As such, this report aims to:

- Summarize all site-specific information related to existing biological resources.

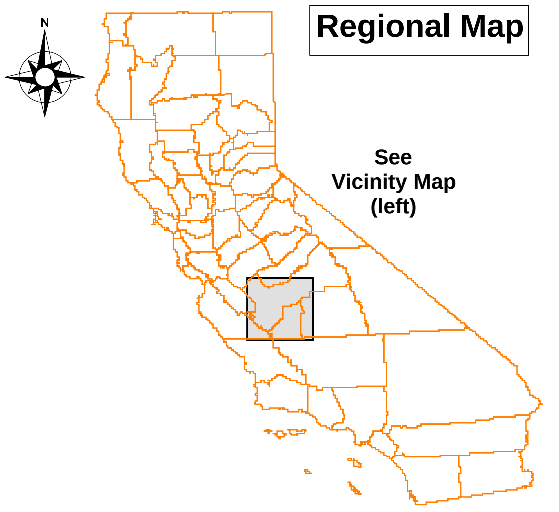
- Make reasonable inferences about the biological resources that could occur onsite based on habitat suitability and the proximity of the site to a species' known range.
- Summarize all state and federal natural resource protection laws that may be relevant to past or future site development.
- Identify and discuss potential past and future project impacts to biological resources within the context of CEQA guidelines and relevant state and federal laws.
- Identify avoidance and mitigation measures that would reduce the magnitude of project impacts in a manner consistent with the requirements of CEQA and that are generally consistent with recommendations of the resource agencies regulating affected biological resources.



Site Location Map



Vicinity Map

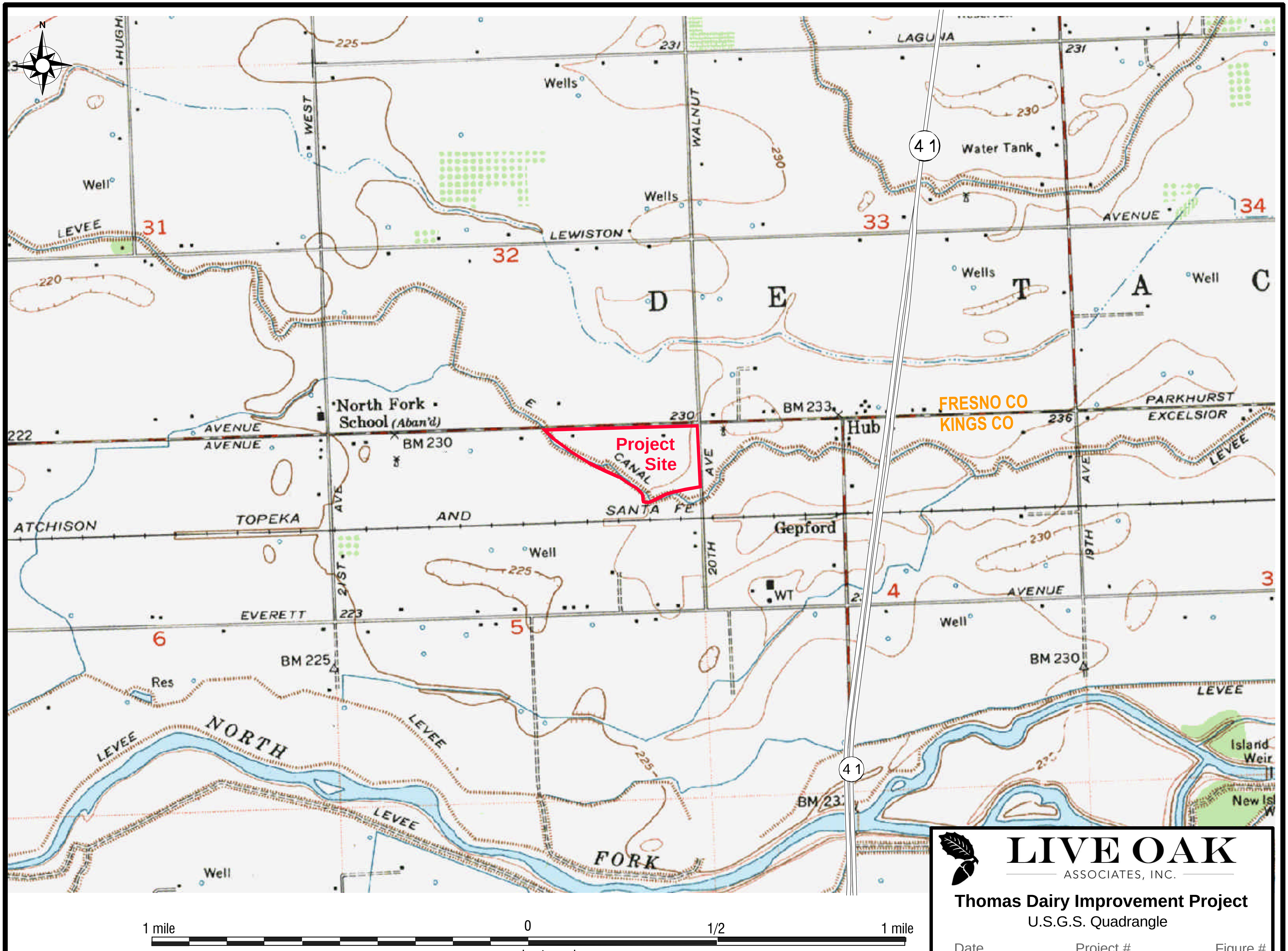


Regional Map

LIVE OAK
ASSOCIATES, INC.

Thomas Dairy Improvement Project
Site / Vicinity Map

Date	Project #	Figure #
12/20/2022	**2750-01**	**1**



From USGS
Riverdale 7.5' Quadrangle 1954

LIVE OAK
ASSOCIATES, INC.

Thomas Dairy Improvement Project

U.S.G.S. Quadrangle

Date	Project #	Figure #
12/20/2022	2750-01	2

1.3 STUDY METHODOLOGY

Prior to any field investigations, a background review of the project site and region was conducted. Sources of information used included: (1) the *California Natural Diversity Database* (CDFW 2022), (2) the *Online Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2022), and (3) manuals, reports, and references related to plants and animals of the San Joaquin Valley region. For the completed improvement area or composting facility, historic aerial photography was also analyzed to assess pre-improvement conditions.

A reconnaissance-level field survey of the project site was conducted on November 21, 2022 by LOA ecologist Colleen Del Vecchio. The survey consisted of walking the project site while identifying its principal land uses and the constituent plants and animals of each land use. The field survey conducted for this study was sufficient to assess the significance of possible biological impacts associated with the development plans for the project site. Additionally, since the field investigation was conducted after the construction of the composting facility improvements, particular attention was paid to areas of the site that resembled land uses observed on aerial photographs prior to that development.

LOA's field investigation did not include an aquatic resources delineation or focused surveys for special status species. The field survey was sufficient to generally describe those features of the project site that could be subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and/or the Regional Water Quality Control Board (RWQCB), and to assess the significance of possible biological impacts associated with development of the project site.

Following the field survey, LOA conducted an analysis of potential project impacts based on the known and potential biotic resources of the project site discussed in Section 2.0.

2.0 EXISTING CONDITIONS

2.1 REGIONAL SETTING

The project site is located in the San Joaquin Valley, which has, for decades, experienced intensive agricultural disturbances and more recently intensive urban development. The project site is situated in Kings County southeast of the City of Riverdale. Land use surrounding the project site is best described as almond orchards and farm housing to the west; almond orchards, farm housing, and irrigation ponds to the south; row crops (corn), almond orchards, and commercial business to the east; and row crops (corn), almond orchards, and farm housing to the north. The predominant land use in this area is dominated by agriculture. One aquatic feature, the East Canal, borders the entire southern boundary of the project site.

Like most of California, the San Joaquin Valley has a Mediterranean climate. Warm dry summers are followed by cool moist winters. Summer temperatures commonly exceed 100 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely rise much above 70 degrees Fahrenheit, with daytime highs often below 60 degrees Fahrenheit. Annual precipitation within the project site is about 11 inches, almost 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain. Stormwater readily infiltrates the soils of and surrounding the project site.

Native plant and animal species once abundant in the region have experienced large reductions in their populations due to conversion of upland, riparian, and aquatic habitats to agricultural and urban uses. Remaining native habitats are particularly valuable to native wildlife species including special status species that still persist in the region.

2.2 PHYSICAL CONDITIONS OF PROJECT SITE

The overall topography of the project site is relatively flat with an approximate elevation of 230 to 233 feet National Geodetic Vertical Datum (NGVD). Two soil-mapping units were identified within the site: Excelsior sandy loam; and Wasco sandy loam, 0 to 5 percent slope (NRCS 2022). These soil types are classified as well drained and moderately well drained with a medium and very low runoff class, and no hydric soil rating. This means that they do not have the propensity to pond water in depressions and form vernal pools.

Prior to past project-related improvements, it is expected that soils of the project site were substantially altered by historic farming practices and regular dairy operations involving excavation, compaction, and grading. As a result, the soils of the site would not have exhibited their native soil characteristics or had any particular significance to biological resources at the time of the improvements.

2.3 BIOTIC HABITAT/LAND USES

One biotic habitat/land use was identified on the project site during the site visit: ruderal/developed (Figure 3). A comprehensive list of the vascular plants observed on the project site is provided in Appendix B. A list of the terrestrial vertebrates observed and those that likely use habitats on and adjacent to the project site is provided in Appendix C. Photos taken during the site visit are presented in Appendix D.

Habitat conditions within the past improvement areas were evaluated by surveying areas of the existing dairy with a similar land use signature as found on aerial photos taken prior to construction. LOA's findings indicate that natural biotic habitats were absent from these areas due to existing dairy operation activities adjacent to or within these areas prior to the improvements. The land use of the improvement areas prior to construction is characterized the same as post-improvement: ruderal/developed. The area now occupied by Thomas Brothers Composting Facility was regularly disced, had stockpiling of materials from the adjacent dairy facility, had some infrastructure (fencing, covered animal housing), and cattle were kept on the eastern portion of the composting facility area. The location where the past Thomas Dairy improvements were constructed (truck scale and manufactured office building) was previously the site of two houses. Vegetation was mostly absent from the improvement areas, some landscaped trees and shrubs were present around houses where the truck scale and manufactured office building now exist, and some ruderal vegetation was observed on road edges and along fence lines.

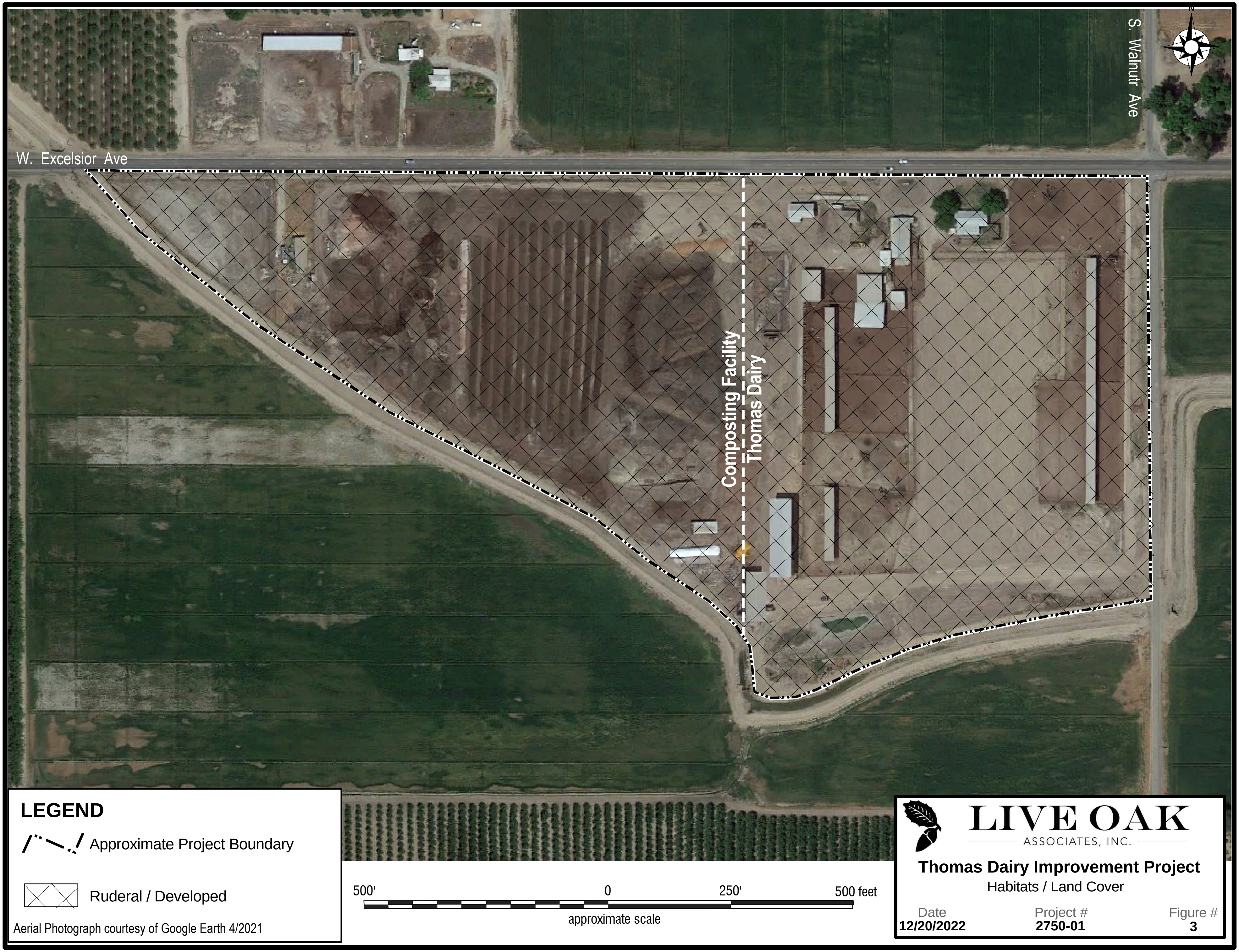
2.3.1 Ruderal/Developed

The project site is best described as ruderal/developed. Historic aerial imagery dating to 1937 shows this parcel was previously used for row crop production. In 1950, the site appears to have the beginning developments of the dairy and farm housing, along with continuing row crop production. This site has historically experienced heavy use and ground disturbance. Currently, the majority of the site is actively used on a daily basis. The Thomas Dairy is now used as a cattle feedlot and part of the Thomas Brothers Composting Facility is in operation.

At the time of the survey, approximately 40% of the ruderal plants growing on the edges of buildings, roads, fences, and within the existing pond were senescent. The dominant grass species were non-native foxtail barley (*Hordeum murinum*) and bearded sprangletop (*Leptochloa fusca*), and the dominant herbs were native prostrate pigweed (*Amaranthus blitoides*) and annual bursage (*Ambrosia acanthicarpa*). Other plant species observed included London rocket (*Sisymbrium irio*), saltgrass (*Distichlis spicata*), and Canada horseweed (*Erigeron canadensis*). Two trees were observed in front of the farm housing, species included Siberian elm (*Ulmus pumila*) and a fruiting mulberry (*Morus* sp.).

No amphibian use is expected in this habitat due to the lack of breeding habitat in the vicinity of the site, as well as the generally anthropogenic nature of the surrounding landscape. Reptile species common to ruderal habitats of the San Joaquin Valley may occur in the site's less active areas. Lizard species may include San Joaquin fence lizards (*Sceloporus occidentalis biseriatus*) and western side-blotched lizards (*Uta stansburiana elegans*). Snake species may include California kingsnake (*Lampropeltis californiae*) and Pacific gophersnake (*Pituophis catenifer catenifer*). None of these species were observed here but would be reasonably attracted to this habitat based on the prey species observed during the field survey.

The ruderal/developed land provides habitat for many avian species because of the insects attracted to the feedlots and open source grain. Eurasian collared doves (*Streptopelia decaocto*), house sparrows (*Passer domesticus*), American pipits (*Anthus rubescens*), California horned larks (*Eremophila alpestris actia*), white-crowned sparrows (*Zonotrichia leucophrys*), Brewer's blackbirds (*Euphagus cyanocephalus*), and American crows (*Corvus brachyrhynchos*) were observed foraging, soaring, or perching in the project site. Other species that may be reasonably expected to utilize the site include mourning dove (*Zenaida macroura*), lesser goldfinch (*Carduelis psaltria*), and northern mockingbird (*Mimus polyglottos*). Birds of prey anticipated to hunt in the open areas of the ruderal/developed areas include American kestrels (*Falco sparverius*), red-tailed hawks (*Buteo jamaicensis*), and Swainson's hawks (*Buteo swainsoni*).



LEGEND

- Approximate Project Boundary
- ▨ Ruderal / Developed

Aerial Photograph courtesy of Google Earth 4/2021

LIVE OAK
ASSOCIATES, INC.

Thomas Dairy Improvement Project

Habitats / Land Cover

Date	Project #	Figure #
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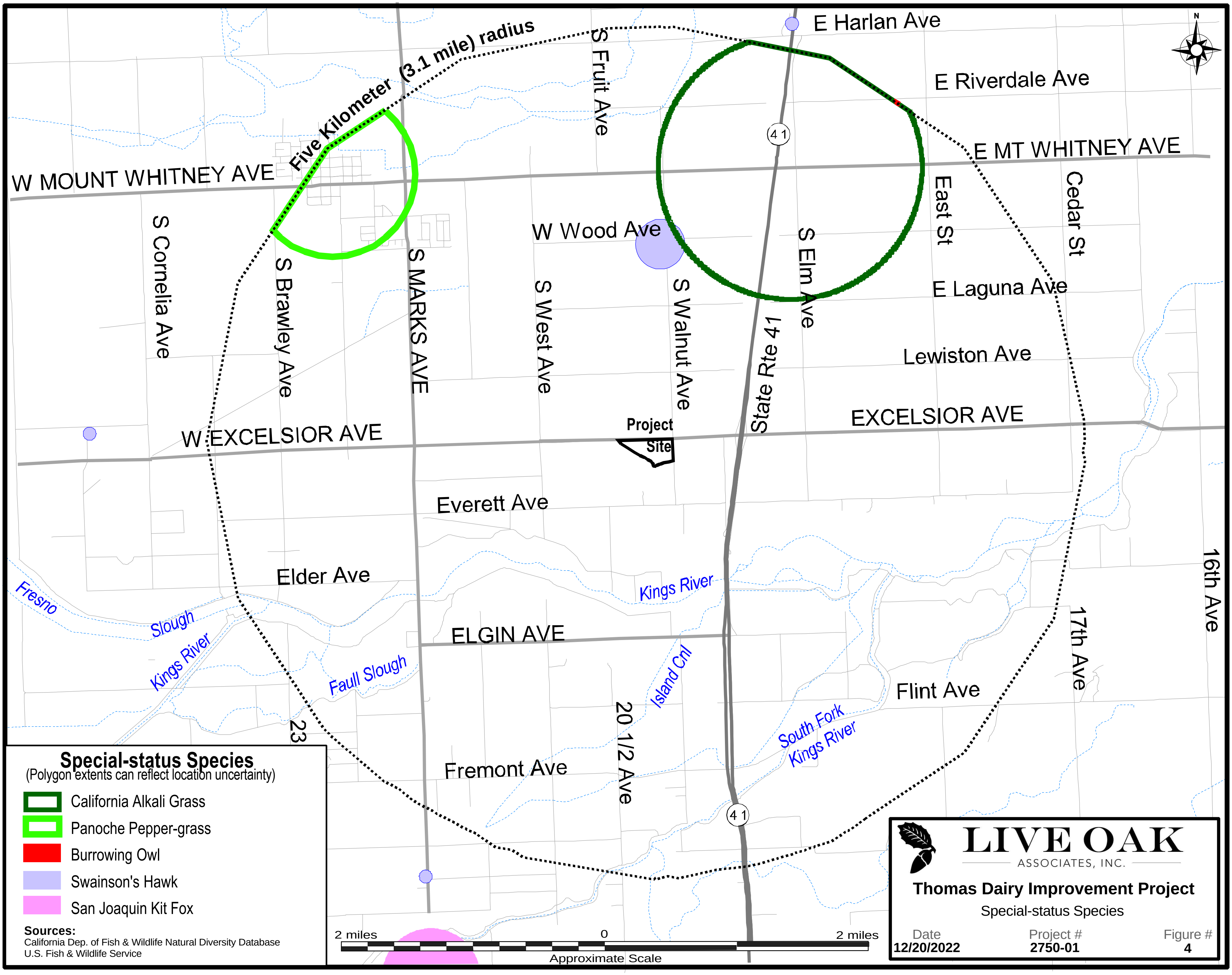
Great horned owls (*Bubo virginianus*) and barn owls (*Tyto alba*) also have a potential to forage on site.

Several mammal species are expected to occur in this ruderal/developed habitat. Those species observed or positively identified by their sign (i.e. burrows, scats, and tracks) included the California ground squirrel (*Otospermophilus beecheyi*), raccoon (*Procyon lotor*), and domestic/feral dog (*Canis lupus*). Small mammals expected to be on site include Botta's pocket gopher (*Thomomys bottae*), deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), and Norway rat (*Rattus norvegicus*). These granivorous and herbivorous small mammal species may provide foraging opportunities for predators such as the introduced red fox (*Vulpes vulpes*) and coyote (*Canis lupinus*). Lastly, common bat species may reasonably be expected to forage on site due to the insect populations present and seasonal water within the nearby canal.

2.4 SPECIAL-STATUS PLANTS AND ANIMALS

Many species of plants and animals within the state of California have low populations, limited distributions, or both. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described more fully in Section 3.0, state and federal laws have provided CDFW and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists (i.e., California Rare Plant Ranks, or CRPR) of native plants considered rare, threatened, or endangered (CNPS 2022). Collectively, these plants and animals are referred to as "special status species."

Special status plants and wildlife of the project vicinity and their potential for occurrence on the project site, both presently and at the time of past project-related improvements, have been identified in Table 1. The potential for those species to occur in the project site, addresses both current conditions as well as the past conditions prior to project-related improvements. The list of species for Table 1 was obtained using the *California Natural Diversity Database* (CDFW 2022) and entailed a records search for the nine 7.5-minute quadrangles containing and surrounding the project site (*Lemoore, Hanford, Laton, Riverdale, Burrel, Vanguard, Raisin, Caruthers,* and *Conejo*). Other sources of information for this table included *The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2022), iNaturalist (iNaturalist 2022), eBird (eBird 2022), and California Herps (Nafis 2022). Note that only federally and state listed plants listed as 1A, 1B, 2A, 2B, or 3 with threat ranks 0.1, 0.2, and 0.3 by the California Rare Plant Ranking (CRPR) are included in this table. Other special status plants with a CRPR 4 may be considered for CEQA evaluation if they meet the criteria for rare or locally significant, addressed in the *2022 CEQA Statute & Guidelines* Section 15380 and Section 15125(c) (AEP 2022). The locations of documented special status species occurrences in the project vicinity are depicted on Figure 4.



Special-status Species
(Polygon extents can reflect location uncertainty)

- ▭ California Alkali Grass
- ▭ Panoche Pepper-grass
- 🟥 Burrowing Owl
- ■ Swainson's Hawk
- ■ San Joaquin Kit Fox

Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service

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Thomas Dairy Improvement Project

Special-status Species

Date	Project #	Figure #
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TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS

Special Status Plant Species (CDFW 2022 and CNPS 2022)

Species	**Status**	**Habitat**	**Occurrence in the Project Site***
Brittlescale (*Atriplex depressa*)	CRPR 1B.2	Occurs in chenopod scrub, valley and foothill grassland, and wetland habitats at elevations below 1,050 feet. Blooms April- October.	**Absent.** Suitable habitat is/was absent due to the high amount of historic ground disturbance at the project site.
Lesser saltscale (*Atriplex minuscula*)	CRPR 1B.1	Occurs in cismontane woodland and valley and foothill grasslands of the Central Valley; alkaline/sandy soils at elevations between 50 and 660 feet. Blooms May- October.	**Absent.** Suitable habitat is/was absent due to the high amount of historic ground disturbance at the project site.
Alkali-sink goldfields (*Lasthenia chrysantha*)	CRPR 1B.1	Occurs in vernal pools or wet saline flats of valley grassland, alkali sink, or wetland-riparian habitats at elevations below 330 feet. Blooms February- April.	**Absent.** Suitable habitat is/was absent since the site is lacking vernal pools or water features that would support this species.
Panoche peppergrass (*Lepidium jaredii* ssp. *album*)	CRPR 1B.2	Occurs in valley and foothill grasslands. In white or grey clay lenses and gypsum-rich soils on steep slopes with incidental in alluvial fans and washes at elevations between 210 and 3,300 feet. Blooms February- June.	**Absent.** Suitable habitat is/was absent due to the high amount of historic ground disturbance at the project site.
California alkali-grass (*Puccinellia simplex*)	CRPR 1B.2	Occurs in saline flats and mineral springs in the Central Valley, and western Mojave Desert at elevations less than 2,955 feet. Blooms March- May.	**Absent.** Suitable habitat is/was absent since the site is lacking water features that would support this species.

ANIMALS

***Special Status Animal Species* (CDFW 2022)**

Species	**Status**	**Habitat**	**Occurrence in the Project Site***
Crotch bumble bee (*Bombus crotchii*)	CCE	This bee is found in Coastal California east to the Sierra-Cascade crest and south into Mexico, where it occupies open grassland and scrub habitats. Its food plant genera include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum*.	**Absent.** Suitable habitat is/was absent and none of this species' food genera were present on site at the time of LOA's survey.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	Lives in mature blue elderberry shrubs (*Sambucus mexicana*) of California's Central Valley and Sierra Foothills. Prefers to lay eggs in elderberries 2-8 inches in diameter.	**Absent.** The USFWS has determined that the range of the valley elderberry longhorn beetle does not include Kings County (USFWS 2014). Moreover, the project site does not contain any elderberry shrubs to support this species.
California tiger salamander (*Ambystoma californiense*)	FT, CT	Found primarily in annual grasslands; requires vernal pools or other seasonal ponds for breeding and rodent burrows for aestivation. Although most California tiger salamanders aestivate within 0.4 mile of their breeding pond, outliers	**Absent.** Potential breeding habitat for this species is/was absent from the site and surrounding lands, and the site consists of an intensive agricultural facility within which this species would not have been able to persist.

		may aestivate up to 1.3 miles away (Orloff 2011).	

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

ANIMALS (cont'd)

Species	**Status**	**Habitat**	**Occurrence in the Project Site***
Western spadefoot (*Spea hammondii*)	CSC	Ranges throughout the Central Valley and adjacent foothills. Occurs primarily in grassland situations. Reproduction occurs in shallow, temporary ponds.	**Absent.** Potential breeding habitat for this species is/was absent from the site and surrounding lands, and the site consists of an intensive agricultural facility within which this species would not have been able to persist.
California glossy snake (*Arizona elegans occidentalis*)	CSC	A generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils. It is patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California.	**Absent.** Suitable habitat is/was absent from the project site. Moreover, the land use of the site and surrounding areas makes this project site unsuitable for this species.
Giant gartersnake (*Thamnophis gigas*)	FT, CT	This is the most aquatic of the gartersnakes in California. Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. Requires fresh-water aquatic habitat with protective emergent vegetative cover and upland habitat for summer shelter and winter refugia.	**Absent.** Suitable habitat is/was absent on site. A canal borders the southern project boundary; however, this canal is kept free of vegetation which is one of three main requirements of suitable habitat for this species, see Appendix D Photo 5 (USFWS 2020b). Moreover, the nearest extant populations are 35 miles north in Mendota and USFWS does not recognize this species range to be south of the Mendota Wildlife Area in Fresno County (CNDDB 2022, USFWS 2020b).
Tricolored blackbird (*Agelaius tricolor*)	CT	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in many open habitats.	**Possible.** Suitable breeding habitat is/was absent from the project site and vicinity. It is common for blackbirds to forage at commercial dairy facilities, and this species could potentially occur on site to forage from time to time.
Burrowing owl (*Athene cunicularia*)	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Unlikely.** Ground squirrel burrow complexes are present in the canal berm and in the dry pond. However, due to the site's high levels of human disturbance near the ground squirrel burrows, it is unlikely a burrowing owl would use the project site except perhaps as a transient. Additionally, surrounding habitat are orchards and row crops which are not a preferred habitat type for foraging. The nearest eBird records are 6 miles west at the Lemoore Naval Air Station or in the town of Lemoore to the east (eBird 2022). The nearest nesting sites are at the Lemoore Naval Air Station, with an active burrow observed in 2006 east of the City of Riverdale 3.25 miles northeast of the site (CNDDB 2022).

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

ANIMALS (cont'd)

Species	Status	Habitat	Occurrence in the Project Site*
Swainson's hawk (*Buteo swainsoni*)	CT	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Possible.** Suitable foraging habitat is/was present at the project site. Breeding habitat is absent at the site, but is present within approximately 0.25 mile of the project site. This species is regularly documented 1 mile south of the site (eBird 2022). The nearest nesting records are 1.4 miles north and 4 miles west (CNDDB 2022).
Western yellow-billed cuckcoo (*Coccyzus americanus occidentalis*)	FT, CE	Occurs in valley foothill and desert riparian habitats in scattered locations in California. Requires extensive gallery riparian forests for nesting.	**Absent.** Suitable breeding and foraging habitat are/were absent from the project site.
Loggerhead shrike (*Lanius ludovicianus*)	CSC	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low herbaceous cover. Can often be found in cropland.	**Possible.** This species may occasionally forage on the site, but breeding habitat is/was absent on site.
Fresno kangaroo rat (*Dipodomys nitratoides exilis*)	FE, CE	Found in alkali sink-open grassland habitats in western Fresno County. Needs bare alkaline clay-based soils subject to seasonal inundation, with more friable soil mounds around shrubs and grasses.	**Absent.** Suitable habitat is/was absent from the project site. Moreover, the land use of the site and surrounding areas makes this project site unsuitable for this species.
Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*)	FE, CE	Found in saltbrush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Needs soft friable soils which escape seasonal flooding. Digs burrows in elevated soil mounds at bases of shrubs.	**Absent.** Suitable habitat is/was absent from the project site. Moreover, the land use of the site and surrounding areas makes this project site unsuitable for this species.
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE, CT	Found in desert alkali scrub and annual grasslands; may forage in adjacent agricultural habitats. Use underground dens for thermoregulation, cover, and reproduction. Dens are either self-dug or modified rodent burrows.	**Absent.** Due to the site's high levels of anthropogenic disturbance and commercial agricultural operations, it is highly unlikely to be used by the San Joaquin kit fox. The nearest SJKF record is 4.1 miles south and historic in nature, from 1975 (CNDDB 2022).

OCCURRENCE TERMINOLOGY

Present:	Species observed on the site at time of field surveys or during recent past.
Likely:	Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.
Possible:	Species not observed on the site, but it could occur there from time to time.
Unlikely:	Species not observed on the site, and would not be expected to occur there except, perhaps, as a transient.
Absent:	Species not observed on the site and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE	Federally Endangered	**CE**	California Endangered
FT	Federally Threatened	**CT**	California Threatened
		CCE	California Candidate Endangered
		CSC	California Species of Special Concern
CRPR	California Rare Plant Rank		
1B	Plants Rare, Threatened, or Endangered in California and elsewhere	**0.1**	Seriously Threatened in California
		0.2	Moderately Threatened in California

2.5 JURISDICTIONAL WATERS

Jurisdictional waters are those rivers, creeks, drainages, lakes, ponds, reservoirs, and wetlands that are subject to the authority of the USACE, CDFW, and/or the RWQCB. In general, the USACE regulates navigable waters, tributaries to navigable waters, and wetlands adjacent to these waters, where wetlands are defined by the presence of hydric soils, hydrophytic vegetation, and wetland hydrology. The CDFW asserts jurisdiction over waters in California that have a defined bed and bank, and the RWQCB has jurisdiction over California surface water and groundwater. The regulation of jurisdictional waters is discussed in more detail in Section 3.10.

The project site does not contain jurisdictional waters or wetlands within the project boundary. There is one existing retention pond on site, but it is unlikely to fall under the jurisdiction of the USACE or RWQCB. Additionally, the East Canal is adjacent to the project site along the southern boundary, but is outside of the project area.

2.6 DESIGNATED CRITICAL HABITAT

USFWS often designates areas of “critical habitat” when it lists species as threatened or endangered. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

Designated critical habitat is absent from the project site and surrounding lands (USFWS 2022).

2.7 SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are those that are of limited distribution, distinguished by significant biological diversity, home to special status species, etc. CDFW is responsible for the classification and mapping of all natural communities in California. Natural communities are assigned state and global ranks according to their degree of imperilment. Any natural community with a state rank of 3 (S3) or lower (on a 1 to 5 scale) is considered sensitive. Natural communities with ranks of S1-S3 are considered sensitive natural communities to be addressed in the environmental review processes of CEQA and its equivalents. Examples of sensitive natural communities in the vicinity of the project area include Northern Basalt Flow Vernal Pool and various types of Central Valley Drainage Streams (Sawyer, Keeler-Wolf and Evens 2009).

The project site does not support sensitive natural communities.

2.8 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, ridgelines, and rivers and creeks supporting riparian vegetation.

The project site contains no regular or predictable wildlife movement corridors.

3.0 RELEVANT GOALS, POLICIES, AND LAWS

3.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

In California, any project carried out or approved by a public agency that will result in a direct or reasonably foreseeable indirect physical change in the environment must comply with CEQA. The purpose of CEQA is to ensure that a project's potential impacts on the environment are evaluated, and methods for avoiding or reducing these impacts are considered before the project is allowed to move forward. A secondary aim of CEQA is to provide justification to the public for the approval of any projects involving significant impacts on the environment.

According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest." Although the lead agency may set its own CEQA significance thresholds, project impacts to biological resources are generally considered to be significant if they would meet any of the following criteria established in Appendix G of the CEQA Guidelines:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS.
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery site.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) requires the lead agency to make "mandatory findings of significance" if there is substantial evidence that a project may:

- Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare or threatened species.
- Achieve short-term environmental goals to the detriment of long-term environmental goals.
- Produce environmental effects that are individually limited but cumulatively considerable, meaning that the incremental effects of the project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects.

3.2 KINGS COUNTY GENERAL PLAN

In compliance with CEQA, the lead agency must consider whether the project conforms with applicable goals and policies of the Kings County General Plan.

Relevant biological resources policies in the Kings County General Plan include:

- To provide for the long-term protection of habitats, wildlife, and, in particular, special status species and sensitive habitats in Kings County (and reduce the likelihood of additional special status species being designated), while allowing for the orderly development and continued economic growth in the county.
- To ensure that county land use planning, development review, land use permitting, and public works development comply with the state and federal laws and regulations protecting special status species and sensitive habitats.
- To minimize significant adverse impacts to special status species and sensitive habitats due to new developments, particularly through the use of long-term habitat-based conservation plans.
- To seek cooperative efforts with the private development community, conservation groups, and state and federal land management agencies to protect special status species and sensitive habitats.
- To facilitate more timely and cost-effective methods to evaluate impacts on special status species and sensitive habitats and to develop appropriate, timely, and equitable avoidance measures and mitigation.
- To increase public awareness of the special status species and sensitive habitat issues in the county and the need for non-governmental entities to assist in the long-term conservation of such resources in the county.

- To cooperate with local, state, and federal agencies with land management responsibilities in Kings County in their efforts to protect special status species and sensitive habitats under their jurisdiction.
- To establish a "no net loss" policy for wetland (including, but not limited to riparian, marsh, and vernal pool) habitat in the county. Inherent in this goal is the intent to maintain riparian habitat as continuous corridors since this is consistent with the corridor nature of this habitat and the needs of its resident wildlife.

3.3 HABITAT CONSERVATION PLANS AND NATURAL COMMUNITY CONSERVATION PLANS

Section 10 of the federal Endangered Species Act establishes a process by which non-federal projects can obtain authorization to incidentally take listed species, provided take is minimized and thoroughly mitigated. A Habitat Conservation Plan (HCP) developed by the project applicant in collaboration with the USFWS and/or National Marine Fisheries Service (NMFS) ensures that such minimization and mitigation will occur and is a prerequisite to the issuance of a federal incidental take permit. Similarly, a Natural Community Conservation Plan (NCCP) developed by the project applicant in collaboration with CDFW, provides for the conservation of biodiversity within a project area, and permits limited incidental take of state-listed species.

3.5 THREATENED AND ENDANGERED SPECIES

In California, imperiled plants and animals may be afforded special legal protections under the California Endangered Species Act (CESA) and/or Federal Endangered Species Act (FESA). Species may be listed as "threatened" or "endangered" under one or both Acts, and/or as "rare" under CESA. Under both Acts, "endangered" means a species is in danger of extinction throughout all or a significant portion of its range, and "threatened" means a species is likely to become endangered within the foreseeable future. Under CESA, "rare" means a species may become endangered if their present environment worsens. Both Acts prohibit "take" of listed species, defined under CESA as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86), and more broadly defined under FESA to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3).

When state and federally listed species have the potential to be impacted by a project, the USFWS and CDFW must be included in the CEQA process. These agencies review the environmental document to determine the adequacy of its treatment of endangered species issues and to make project-specific recommendations for the protection of listed species. Projects that may result in the "take" of listed species must generally enter into consultation with the USFWS and/or CDFW pursuant to FESA and CESA, respectively. In some cases, incidental take authorization(s) from these agencies may be required before the project can be implemented.

3.6 CALIFORNIA FULLY PROTECTED SPECIES

The classification of certain animal species as "fully protected" was the State of California's initial effort in the 1960s, prior to the passage of the California Endangered Species Act, to identify and provide additional protection to those species that were rare or faced possible extinction. Following CESA enactment in 1970, many fully protected species were also listed as California threatened or endangered. The list of fully protected species are identified, and their protections stipulated, in California Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and fish (5515). Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except in conjunction with necessary scientific research and protection of livestock.

3.7 MIGRATORY BIRDS

The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs.

Native birds are also protected under California state law. The California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800), even if incidental to lawful activities. Moreover, the California Migratory Bird Protection Act, enacted in September 2019, clarifies native bird protection, and increases protections where California law previously deferred to federal law.

3.8 BIRDS OF PREY

Birds of prey are protected in California under provisions of the Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

Additionally, the Bald and Golden Eagle Protection Act (16 U.S.C., scc. 668-668c) prohibits anyone from taking (pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb) bald or golden eagles, including their parts, nests, or eggs, unless authorized under a federal permit. In addition to immediate acts of take, the act prohibits any disturbance that directly affects an eagle or an active eagle nest as well as any disturbance caused by humans around a previously used nest site during a time when eagles are not present such that it agitates or bothers an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

3.9 NESTING BIRDS

In California, protection is afforded to the nests and eggs of all birds. California Fish and Game Code (Section 3503) states that it is "unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Breeding-season disturbance that causes nest abandonment and/or loss of reproductive effort is considered a form of "take" by the CDFW.

3.10 WETLANDS AND OTHER JURISDICTIONAL WATERS

Section 404 of the federal Clean Water Act (CWA) regulates the discharge of dredged or fill material into "navigable waters" (33 U.S.C. §1344), defined in the CWA as "the waters of the United States, including the territorial seas" (33 U.S.C. §1362(7)). The CWA does not supply a definition for waters of the U.S., and that has been the subject of considerable debate since the CWA's passage in 1972. A variety of regulatory definitions have been promulgated by the two federal agencies responsible for implementing the CWA, the Environmental Protection Agency

(EPA) and USACE. These definitions have been interpreted, and in some cases, invalidated, by federal courts.

Most recently, waters of the U.S. were defined by the Navigable Waters Protection Rule (NWPR). The new rule was published in the Federal Register on April 21, 2020 and took effect on June 22, 2020. However, on August 30, 2021, in the case of Pascua Yaqui Tribe v. U.S. Environmental Protection Agency, the U.S. District Court for the District of Arizona vacated and remanded the NWPR. In light of this order, the EPA and USACE have halted implementation of the NWPR and, until further notice, are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime.

The interpretation of waters of the U.S. prior to 2015 generally included:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
- All interstate waters including interstate wetlands.
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce.
- All impoundments of waters otherwise defined as waters of the United States under the definition.
- Tributaries of waters identified in the bulleted items above.

As determined by the United States Supreme Court in its 2001 Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC) decision, channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds. Similarly, in its 2006 consolidated Carabell/Rapanos decision, the U.S. Supreme Court ruled that a significant nexus between a wetland and other navigable waters must exist for the wetland itself to be considered a jurisdictional water.

All activities that involve the discharge of dredge or fill material into waters of the U.S. are subject to the permit requirements of the USACE. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards.

Under the Porter-Cologne Water Quality Control Act of 1969, the State Water Resources Control Board has regulatory authority to protect the water quality of all surface water and groundwater in the State of California ("waters of the State"). Nine RWQCBs oversee water quality at the local and regional level. The RWQCB for a given region regulates discharges of fill or pollutants into waters of the State through the issuance of various permits and orders. Discharges into waters of the State that are also waters of the U.S. require a Section 401 Water Quality Certification from the RWQCB as a prerequisite to obtaining certain federal permits, such as a Section 404 Clean Water Act permit. Discharges into all waters of the State, even those that are not also waters of the U.S., require Waste Discharge Requirements (WDRs), or waivers of WDRs, from the RWQCB. The RWQCB also administers the Construction Storm Water Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General Permit under the Construction Storm Water Program. A prerequisite for this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, storm water, or other pollutants into a water of the U.S. may require a NPDES permit.

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

4.0 IMPACTS AND MITIGATIONS

The following discussions consider both the construction of the Thomas Brothers Composting Facility and the Thomas Dairy improvements completed prior to LOA's investigation, as well as the proposed improvements to both facilities. It was determined that the pre-improvement conditions were similar to current conditions observed on site. Please see Section 2.3 for more details on biotic habitats/land uses. Potential project impacts to biological resources and recommended mitigation measures are discussed below.

4.1 POTENTIALLY SIGNIFICANT PROJECT IMPACTS/MITIGATION

4.1.1 Disturbance to Active Raptor and Other Migratory Bird Nests from Construction Activities During Future Site Development

Potential Impacts. The project site has the potential to be used for nesting by several native avian species protected by the Migratory Bird Treaty Act and related state laws. Additionally, Swainson's hawks have a potential to nest within the vicinity of the project site in mature trees of adjacent farm residences. If future site development takes place during the nesting season (generally February 1-August 31), birds nesting on the site could be injured or killed by construction activities or disturbed such that they would abandon their nests. Significant construction-related disturbance is also a possibility for birds nesting adjacent to the project site. Construction-related injury, mortality, or disturbance of nesting birds that results in nest abandonment are potentially significant adverse environmental effects of the project.

It is unknown if past-project improvements took place within the nesting season. Past-project improvements had the potential to impact nesting birds and raptors at the time those improvements were constructed.

Mitigation. To avoid and minimize the potential for construction-related mortality/disturbance of nesting raptors and migratory birds, the following measures will be implemented:

> ***Measure 4.1.1a (Construction Timing).*** If feasible, the project will be implemented outside of the avian nesting season, typically defined as February 1 to August 31.

***Measure 4.1.1b (Pre-construction Surveys*).** If construction is to occur between February 1 and August 31, a qualified biologist will conduct pre-construction surveys for active bird nests within 10 days prior to the start of construction. The survey area will encompass the site and accessible surrounding lands within 250 feet for nesting migratory birds and 500 feet for raptors (i.e., birds of prey, specifically Swainson's hawks).

***Measure 4.1.1c (Avoidance of Active Nests*).** Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing and will be maintained until the biologist has determined that the young have fledged and are capable of foraging independently.

Implementation of the above measures will reduce potential effects of future project development on nesting raptors and migratory birds to a less than significant level under CEQA and will ensure compliance with state and federal laws protecting nesting birds.

4.2 LESS THAN SIGNIFICANT PROJECT IMPACTS

4.2.1 Special Status Animal Species that May Occur on the Project Site as Occasional or Regular Foragers but Breed Elsewhere

Potential Impacts. Three special status animals, the tricolored blackbird (*Agelaius tricolor*), loggerhead shrike (*Lanius ludovicianus*) and Swainson's hawk, have the potential to forage on the site from time to time but do not have suitable breeding habitat on site. Analysis of historic aerial imagery indicates that breeding habitat for these species was also not present on site at the time of past project-related improvements (see Table 1). Although past project activities appear to have eliminated an approximately 5-acre ruderal/fallow field that was likely of higher foraging value than the composting yard that took its place, this field would not have been uniquely important for these species, and similar or higher quality foraging habitat was at that time, and is still, relatively abundant in the region. Other project elements, past and future, are sited in highly disturbed areas that do not offer unique foraging value for these species and are unlikely to represent an important part of individual foraging ranges.

The tricolored blackbird, loggerhead shrike, and Swainson's hawk would not be vulnerable to construction related mortality while foraging, as they would simply move away from any construction activity on site. Even if one or more individuals were to occur on the site during past or future construction, their high level of mobility would allow them to easily evade any construction activity. For these reasons, project impacts to the special status species that may occur on the site as occasional or regular foragers are considered less than significant under CEQA.

Mitigation. Mitigation is not warranted.

4.2.2 Project Impacts to Special Status Plant Species

Potential Impacts. Five special status plant species are known to occur in the region (see Table 1). These species include brittlescale (*Atriplex depressa*), lesser saltscale (*Atriplex minuscula*), alkali-sink goldfields (*Lasthenia chrysantha*), Panoche peppergrass (*Lepidium jaredii* ssp. *album*), and California alkali-grass (*Puccinellia simplex*). The project site consists of a ruderal/developed land use with a high level of historic and current human disturbance. It would not presently support any of these special status plants, and would not have supported these species at the time of past project-related improvements. Past and future project elements are not expected to affect these species or their habitats, and impacts would be less than significant under CEQA.

Mitigation. Mitigation measures are not warranted.

4.2.3 Project Impacts to Special Status Animal Species Absent from or Unlikely to Occur on Site

Potential Impacts. Of the fourteen special status animal species known from the regional vicinity, eleven are considered absent or unlikely to occur on the project site due to the absence of suitable habitat, the site's ongoing commercial agricultural operations, and/or the site being situated outside of the species' distributional range. These species include the Crotch bumble bee (*Bombus crotchii*), Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), California tiger salamander (*Ambystoma californiense*), western spadefoot (*Spea hammondii*), California glossy snake (*Arizona elegans occidentalis*), giant garter snake (*Thamnophis gigas*), burrowing owl (*Athene cunicularia*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), Fresno kangaroo rat (*Dipodomys nitratoides exilis*), Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), and San Joaquin kit fox (*Vulpes macrotis mutica*) (see Table 1). These species would have also been considered absent or unlikely to occur on the project site at the time of past project-related improvements because the site's habitats and wildlife value at that time were functionally similar to present conditions.

Since there is little to no likelihood that these species occur on site or occurred on site at the time of past project-related improvements, they have no appreciable potential to be affected through construction-related injury or mortality or loss of habitat. Project impacts to these species are considered less than significant.

Mitigation. Mitigation measures are not warranted.

4.2.4 Project Impact to Sensitive Natural Communities and Designated Critical Habitat

No Impacts. Designated critical habitat and sensitive natural communities are absent from the project site presently, and were absent at the time of past project-related improvements. The project is expected to have no impact on sensitive natural communities or designated critical habitat.

Mitigation. No mitigation is warranted.

4.2.5 Project Impact to Wildlife Movement Corridors

No Impacts. The site does not, and did not previously, contain or adjoin features likely to support regular and predictable wildlife movement. The project would not affect wildlife movement corridors, and impacts are considered less than significant under CEQA.

Mitigation. No mitigation is warranted.

4.2.6 Project Impacts to Jurisdictional Waters

No Impacts. The project site does not, and did not previously, contain wetlands or any other type of jurisdictional waters. The project would not affect these resources, and impacts are considered less than significant under CEQA.

Mitigation. No mitigation is warranted.

4.2.7 Local Policies or Habitat Conservation Plans

No Impacts. The project appears to be consistent with those goals and policies of the Kings County General Plan that pertain to biological resources. There are no known HCPs or NCCPs in effect for the project vicinity.

Mitigation. No mitigation is required.

5.0 LITERATURE REFERENCED

Association of Environmental Professionals (AEP). 2022. 2022 CEQA Statute & Guidelines.

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, and T. J. Rosatti, Eds. 2012. The Jepson Manual: Vascular Plants of California, 2nd edition. University of California Press, Berkeley, CA.

Bechard, M. J., C. S. Houston, J. H. Sarasola, and A. S. England (2020). Swainson's Hawk (Buteo swainsoni), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. Available: https://doi.org/10.2173/bow.swahaw.01.

Calflora. 2022. Calflora: An online database of plant identification and distribution [web application]. Calflora, Berkeley, California. Available: http://www.calflora.org. (Accessed December 2022).

California Department of Fish and Game. 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California.

California Department of Fish and Wildlife (CDFW). 2014. California Interagency Wildlife Task Group. CWHR version 9.0 personal computer program. Sacramento, CA. Available: https://wildlife.ca.gov/Data/ CWHR/ Life-History-and-Range. (Accessed December 2022).

CDFW. 2022. California Natural Diversity Database. *BIOS 6.0* and *Rarefind 5.0*. The Resources Agency, Sacramento, CA. (Accessed December 2022).

California Native Plant Society (CNPS), Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Available: https://www.rareplants.cnps.org. (Accessed December 2022).

eBird. 2022. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: http://www.ebird.org. (Accessed December 2022).

Estep, J. A. 1989. Biology, movements, and habitat relationships of the Swainson's Hawk in the Central Valley of California, 1986-87. Nongame Bird and Mammal Sec. Rep: Calif. Dep. Fish Game.

Golightly, R. T. and R. D. Ohmart. 1984. Water economy of two desert canids: coyote and kit fox. Journal of Mammalogy 65:51–58.

Grinnell, J., J.S. Dixon and J.M. Linsdale. 1937. Fur-bearing mammals of California. Vol. 2. Univ. California Press, Berkeley.

iNaturalist. 2022. Available: https://www.inaturalist.org. (Accessed December 2022).

Jepson Flora Project (eds.) 2022. Jepson eFlora. Available: https://ucjeps.berkeley.edu/eflora/. (Accessed December 2022).

Nafis, G. (2022) California Herps - A Guide to the Amphibians and Reptiles of California. Available: http://www.californiaherps.com/. (Accessed December 2022).

Natural Resources Conservation Service (NRCS). August 31, 2022. Custom Soil Resources Report for Kings County Area, California. U.S. Department of Agriculture. Available: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. (Accessed November 11, 2022).

Orloff, Susan G. 2011. Herpetological Conservation and Biology: Movement Patterns and Migration Distances in An Upland Population of California Tiger Salamander (Ambystoma californiense). Volume 6 (2): 266-276. Accepted April 1, 2011.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento, CA 1300pp.

U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers wetlands delineation manual. Department of the Army.

United States Fish and Wildlife (USFWS). 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, Oregon.

USFWS. 2020a. Tipton Kangaroo Rat 5-Year Review. Published July 8, 2020. Available: https://ecos.fws.gov/docs/five_year_review/doc6442.pdf.

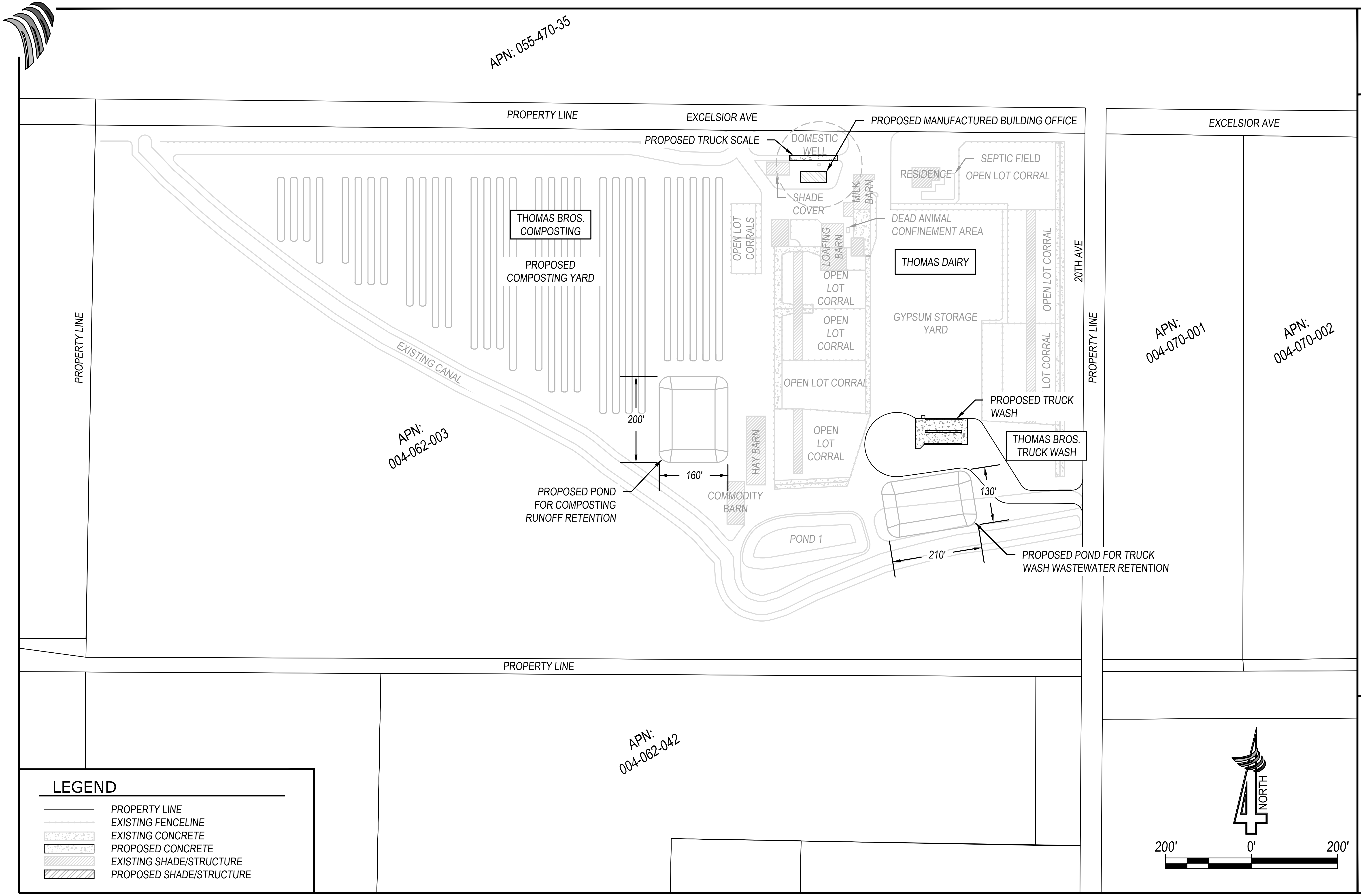
USFWS. 2020b. Giant Gartersnake 5-Year Review. Published June

USFWS. 2022. Environmental Conservation Online System (ECOS): Threatened and Endangered Species Critical Habitat Report. Updated July 12, 2022. Available: https://ecos.fws.gov/ecp/report/table/critical-habitat.html. (Accessed November 2022).

United States Geological Survey (USGS). 2021. The National Map: US Topo. Riverdale Quadrangle, California- Kings County. 7.5-Minute Series.

Zeiner, David C., William F. Laudenslayer, Kenneth E. Mayer and Marshal White. Ed. 1988-1990. California's Wildlife. Volume I-III. California Department of Fish and Game, Sacramento, California.

APPENDIX A: SITE PLAN



JOB NO. 22419
SITE PLAN
11/03/2022
SCALE: 1" = 200'

FACILITY SITE PLAN
THOMAS DAIRY & THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

324 S. Santa Fe, Ste. A
Visalia, CA 93292
(559) 802-3052
www.4-creeks.com

4CREEKS

APPENDIX B: VASCULAR PLANTS OF THE PROJECT SITE

VASCULAR PLANTS OF THE PROJECT SITE

The plant species listed below were observed on the project site during a survey conducted by Live Oak Associates, Inc. on November 21, 2022. The U.S. Fish and Wildlife Service wetland indicator status of each plant has been shown following its common name.

OBL - Obligate
FACW - Facultative Wetland
FAC - Facultative
FACU - Facultative Upland
UPL - Upland
+/- - Higher/lower end of category
NR - No review
NA - No agreement
NI - No investigation

AMARANTHACEAE – Amaranth Family		
Amaranthus blitoides	Prostrate pigweed	FACU
ASTERACEAE – Daisy Family		
Ambrosia acanthicarpa	Annual bursage	UPL
Erigeron canadensis	Canada horseweed	FACU
BRASSICACEAE – Mustard Family		
Sisymbrium irio	London rocket	UPL
FABACEAE – Pea Family		
Medicago sp.	Clover	
MORACEAE – Mulberry Family		
Morus sp.	Fruiting mulberry	
POACEAE – Grass Family		
Digitaria sp.	Crabgrass	
Distichlis spicata	Saltgrass	FAC
Hordeum murinum	Foxtail barley	FACU
Leptochloa fusca	Bearded sprangletop	FACW
ULMACEAE – Elm Family		
Ulmus pumila	Siberian elm	

APPENDIX C: TERRESTRIAL VERTEBRATES OF THE PROJECT SITE

TERRESTRIAL VERTEBRATES OF THE PROJECT SITE

The species listed below are those that may reasonably be expected to use the habitats of the project site routinely or from time to time. The list was not intended to include birds that are vagrants or occasional transients. Terrestrial vertebrate species observed in or adjacent to the project site during the November 21, 2022 survey has been noted with an asterisk.

CLASS: REPTILIA
ORDER: SQUAMATA (Lizards and Snakes)
SUBORDER: SAURIA (Lizards)
FAMILY: PHRYNOSOMATIDAE (Spiny, Side-blotched, Horned, and relatives)
San Joaquin Fence Lizard (*Sceloporus occidentalis biseriatus*)
Western Side-blotched Lizard (*Uta stansburiana elegans*)
SUBORDER: SERPENTES (Snakes)
FAMILY: COLUBRIDAE (Colubrids)
California Kingsnake (*Lampropeltis californiae*)
Pacific Gopher Snake (*Pituophis catenifer catenifer*)

CLASS: AVES
ORDER: APODIFORMES (Swifts and Hummingbirds)
FAMILY: TROCHILIDAE (Hummingbirds)
*Anna's Hummingbird (*Calypte anna*)
Rufous Hummingbird (*Selasphorus rufus*)
Allen’s Hummingbird (*Selasphorus sasin*)
ORDER: CHARADRIIFORMES (Shorebirds and Allies)
FAMILY: CHARADRIIDAE (Plovers and relatives)
*Killdeer (*Charadrius vociferus*)
ORDER: COLUMBIFORMES (Pigeons and Doves)
FAMILY: COLUMBIDAE (Pigeons and Doves)
*Rock Pigeon (*Columba livia*)
*Eurasian Collared-dove (*Streptopelia decaocto*)
Mourning Dove (*Zenaida macroura*)
ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)
FAMILY: CATHARTIDAE (American Vultures)
Turkey Vulture (*Cathartes aura*)
FAMILY: ACCIPITRIDAE (Hawks, Eagles, and Kites)
Red-tailed Hawk (*Buteo jamaicensis*)
Swainson’s Hawk (*Buteo swainsonii*)
FAMILY: FALCONIDAE (Caracaras and Falcons)
Merlin (*Falco columbarius*)
American Kestrel (*Falco sparverius*)
ORDER: PICIFORMES (Woodpeckers and Relatives)
FAMILY: PICIDAE (Woodpeckers and Wrynecks)

Acorn Woodpecker (*Melanerpes formicivorous*)
ORDER: STRIGIFORMES (Owls)
FAMILY: TYTONIDAE (Barn Owls)
Barn Owl (*Tyto alba*)
FAMILY: STRIGIDAE (Typical Owls)
Great Horned Owl (*Bubo virginianus*)
ORDER: PASSERIFORMES (Perching Birds)
FAMILY: ALAUDIDAE
California Horned Lark (*Eremophila alpestris actia*)
FAMILY: CORVIDAE (Jays, Magpies, and Crows)
*American Crow (*Corvus brachyrhynchos*)
Common Raven (*Corvus corax*)
FAMILY: FRINGILLIDAE (Finches)
*House Finch (*Carpodacus mexicanus*)
Lesser Goldfinch (*Carduelis psaltria*)
American Goldfinch (*Spinus tristis*)
FAMILY: ICTERIDAE (Blackbirds, Orioles and Allies)
*Brewer's Blackbird (*Euphagus cyanocephalus*)
Brown-headed Cowbird (*Molothrus ater*)
FAMILY: MIMIDAE (Mockingbirds and Thrashers)
Northern Mockingbird (*Mimus polyglottos*)
FAMILY: MOTACILLIDAE (Wagtails, Longclaws and Pipits)
*American Pipit (*Anthus rubescens*)
FAMILY: PARULIDAE (New World Warblers)
*Yellow-rumped Warbler (*Setophaga coronata*)
FAMILY: PASSERELLIDAE (New World Sparrows)
Lincoln’s Sparrow (*Melospiza lincolnii*)
Dark-eyed Junco (*Junco hyemalis*)
*House Sparrow (*Passer domesticus*)
Savannah Sparrow (*Passerculus sandwichensis*)
*White-crowned Sparrow (*Zonotrichia leucophrys*)
FAMILY: STURNIDAE (Starlings)
*European Starling (*Sturnus vulgaris*)
FAMILY: TYRANNIDAE (Tyrant Flycatchers)
*Black Phoebe (*Sayornis nigricans*)
Say's Phoebe (*Sayornis saya*)
Western Kingbird (*Tyrannus verticalis*)

CLASS: MAMMALIA
ORDER: ARTIODACTYLA (Even-toed Ungulate)
FAMILY: BOVIDAE (Cattle, Buffalo and Allies)
*Domesticated Cow (*Bos taurus*)
ORDER: CARNIVORA (Carnivores)
FAMILY: CANIDAE (Foxes, Wolves, and Relatives)
Coyote (*Canis latrans*)
*Domestic/Feral Dog (*Canis lupus*)

Red Fox (*Vulpes vulpes*)

FAMILY: PROCYONIDAE (Raccoons and Relatives)

*Raccoon (*Procyon lotor*)

FAMILY: MUSTELIDAE (Weasels, Badgers, and Relatives)

Striped Skunk (*Mephitis mephitis*)

FAMILY: FELIDAE (Cats)

Domestic/Feral Cat (*Felis catus*)

ORDER: CHIROPTERA (Bats)

FAMILY: MOLOSSIDAE (Free-tailed Bat)

Brazilian Free-tailed Bat (*Tadarida brasiliensis*)

FAMILY: VESPERTILIONIDAE (Vespertilionid Bats)

Big Brown Bat (*Eptesicus fuscus*)
Yuma Myotis (*Myotis yumanensis*)
Long-eared Myotis (*Myotis evotis*)
Fringed Myotis (*Myotis thysanodes*)
Long-legged Myotis (*Myotis volans*)
California Myotis (*Myotis californicus*)
Small-footed Myotis (*Myotis leibii*)
Western Pipistrelle (*Pipistrellus hesperus*)

ORDER: INSECTIVORA (Shrews and Moles)

FAMILY: SORCIDAE (Shrews)

Ornate shrew (*Sorex ornatus*)

FAMILY: TALPIDAE (Moles)

Broad-footed Mole (*Scapanus latimanus*)

ORDER: MARSUPIALIA (Opossums, Kangaroos, and Relatives)

FAMILY: DIDELPHIDAE (Opossums)

Virginia Opossum (*Didelphis virginiana*)

ORDER: RODENTIA (Squirrels, Rats, Mice, and Relatives)

FAMILY: CRICETIDAE (Deer Mice, Voles, and Relatives)

California Vole (*Microtus californicus*)
Deer Mouse (*Peromyscus maniculatus*)
Western Harvest Mouse (*Reithrodontomys megalotis*)

FAMILY: GEOMYIDAE (Pocket Gophers)

Botta's Pocket Gopher (*Thomomys bottae*)

FAMILY: MURIDAE (Old World Rats and Mice)

Norway Rat (*Rattus norvegicus*)
House Mouse (*Mus musculus*)

FAMILY: SCIURIDAE (Squirrels, Chipmunks, and Marmots)

*California Ground Squirrel (*Otospermophilus beecheyi*)

APPENDIX D: SELECTED PHOTOGRAPHS OF THE PROJECT SITE

Photo 1. Overview of truck scale and manufactured office building improvements along Excelsior Avenue within the existing Thomas Dairy.

Photo 2. Existing farm housing and feedlot along Excelsior Avenue and 20th Avenue within existing Thomas Dairy facility.

Photo 3. Approximate location of proposed truck wash and additional pond site for truck wash wastewater retention for Thomas Brothers Composting Facility. This area is located in the southern portion of the Thomas Dairy adjacent to existing feedlots.

Photo 4. Overview of existing retention pond within the existing Thomas Dairy facility, just west of proposed truck wash and pond site.

Photo 5. Overview of East Canal, dry at time of survey, just south of project boundary.

Photo 6. Proposed location of pond for composting wastewater runoff, west of Thomas Dairy.

Photo 7. Overview of eastern side of Thomas Brothers Composting Facility that has been in operation since 2013.

Photo 8. Overview of western side of Thomas Brothers Composting Facility that has been in operation since 2013.

Photo 9. Westernmost area of proposed Thomas Brothers Composting Facility where cattle were previously kept. This area had the highest volume of ruderal vegetation.

Appendix C

Cultural Resources Assessment

Appendix D

Acoustical Analysis

ACOUSTICAL ANALYSIS

THOMAS DAIRY COMPOSTING FACILITY
KINGS COUNTY, CALIFORNIA

WJVA Project No. 22-65

PREPARED FOR

4CREEKS
324 S. SANTA FE, SUITE A
VISALIA, CALIFORNIA 93292

PREPARED BY

WJV ACOUSTICS, INC.
VISALIA, CALIFORNIA

FEBRUARY 23, 2023

INTRODUCTION

Thomas Dairy, previously a dairy facility, shut down milking operations and is now permitted through Kings County and operating as a bovine feedlot facility. This facility is located southeast of Riverdale, California, at the southwest corner of Excelsior Avenue and 20th Avenue.

Adjacent to the bovine feedlot facility, the property owner would like to propose a commercial composting facility and private truck wash. A section of the proposed composting facility has been operating since 2013 and is seeking permits and compliance with environmental standards. Proposed components of the composting facility and truck wash will be completed in two-phases. The first phase would include the permitting and compliance of the proposed manufactured building office, existing composting yard and existing truck scale in addition, the construction of a wastewater retention pond. The second phase would include the construction of a truck wash, and wastewater retention pond. Following the construction of the two phases, the composting facility would be processing a total maximum throughput of 70,000 wet-tons of manure per year and have the capacity to wash 96 vehicles per week.

This report is based upon the project site plan prepared by 4Creeks (dated 1-10-23) operations data provided by the applicant, as well as reference and on-site ambient noise measurements obtained by WJV Acoustics, Inc. (WJVA). Revisions to the site plan, operations data or other project-related information available to WJVA at the time the analysis was prepared may require a reevaluation of the findings and/or recommendations of the report. The Project Site Plan is provided as Figure 1.

Appendix A provides a description of the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and health effects. Appendix B provides typical A-weighted sound levels for common noise sources.

CRITERIA FOR ACCEPTABLE NOISE EXPOSURE

Kings County

The Kings County Noise Element of General Plan (2010) establishes land use compatibility criteria for transportation and non-transportation (stationary) noise sources. Noise standards for transportation noise sources are provided in terms of the CNEL noise level metric while standards for non-transportation noise sources are provided in terms of the hourly L_{eq} (energy average) and hourly L_{max} (maximum) noise level metrics. Table I provides the applicable exterior noise level standards for transportation noise sources and Table II provides the applicable exterior noise level standards for non-transportation (stationary) noise sources.

The General Plan Noise Element establishes a standard of 60 dB CNEL for exterior noise levels in outdoor activity areas of residential uses. Outdoor activity areas generally include backyards of single-family residences and individual patios or decks and common use outdoor activity areas of multi-family developments. The intent of the exterior noise level requirement is to provide an acceptable noise environment for outdoor activities and recreation.

The noise element also requires that interior noise levels attributable to exterior noise sources not exceed 45 dB CNEL. The intent of the interior noise level standard is to provide an acceptable noise environment for indoor communication and sleep.

In regards to the stationary noise level standards provided in Table II, the General Plan states *"If the existing ambient noise level exceeds the standards of Table N-8 (provided below as Table II), then the noise level standards shall be increased at 5 dB increments to encompass the ambient."*

TABLE I

NOISE STANDARDS FOR NEW USES AFFECTED BY TRANSPORTATION NOISE SOURCES

KINGS COUNTY GENERAL PLAN NOISE ELEMENT

Land Use Categories			
New Land Use	Sensitive[1] Outdoor Area - CNEL	Sensitive[2] Interior Area – CNEL	Notes
Residential	60	45	5
Residences in Ag. Zones	65	45	6
Transient Lodging	65	45	3,5
Hospitals & Nursing Homes	60	45	3,4,5
Theaters & Auditoriums	---	35	3
Churches, Meeting Halls, Schools, Libraries, Etc.	60	40	3
Office Buildings	65	45	3
Commercial Buildings	65	50	3
Playgrounds, Parks, etc.	70	---	
Industry	65	50	3

Source: County of Kings 2035 General Plan

Notes:
1. Sensitive outdoor areas generally include backyards of single-family residences, individual patios or decks of multi-family developments and common outdoor recreation areas of multi-family developments.
2. Interior noise level standards area applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
3. Where there are no sensitive exterior spaces proposed for these uses, only the interior noise level standard shall apply.
4. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
5. If this use is affected by railroad or aircraft noise, a maximum (L_{max}) noise level standard of 70 dB shall be applied to all sleeping rooms with windows closed to reduce the potential for sleep disturbance during nighttime noise events.
6. Due to the noise-generating nature of agricultural activities, it is understood that residences constructed on agriculturally-designated land uses may be exposed to elevated noise levels. As a result, as 65 dB CNEL exterior noise level standard is applied to noise-sensitive outdoor areas of these uses.

TABLE II

NON-TRANSPORTATION NOISE STANDARDS
AVERAGE (LEQ) / MAXIMUM (LMAX)[1]

KINGS COUNTY GENERAL PLAN NOISE ELEMENT

New Land Use	Outdoor Area[2]		Interior[3] Day & Night	Notes
	Daytime	Nighttime		
All Residential	55 / 75	50 / 70	35 / 55	
Transient Lodging	55 / 75	---	35 / 55	4
Hospitals & Nursing Homes	55 / 75	---	35 / 55	5,6
Theaters & Auditoriums	---	---	30 / 50	6
Churches, Meeting Halls, Schools, Libraries, Etc.	55 / 75	---	35 / 60	6
Office Buildings	60 / 75	---	45 / 65	6
Commercial Buildings	55 / 75	---	45 / 65	6
Playgrounds, Parks, etc.	65 / 75	---	---	6
Industry	60 / 80	---	50 / 70	6

Source: County of Kings 2035 General Plan

Notes:
1. The Table II standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table II, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.
2. Sensitive outdoor areas generally include backyards of single-family residences, individual patios or decks of multi-family developments and common outdoor recreation areas of multi-family developments.
3. Interior noise level standards area applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
4. Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.
5. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
6. The outdoor activity areas of these uses (if any), are not typically utilized during nighttime hours.

EXISTING NOISE ENVIRONMENT & PROJECT-RELATED NOISE LEVELS

Thomas Dairy, previously a dairy facility, shut down milking operations and is now permitted through Kings County and operating as a bovine feedlot facility. This facility is located southeast of Riverdale, California, at the southwest corner of Excelsior Avenue and 20th Avenue. There are existing residential land uses located approximately 375 feet north of the site and approximately 600 feet northeast of the project site, as well as additional residences located at greater setback distances from the project site.

COMPOSTING ACTIVITIES-

WJVA conducted a project site inspection on January 26, 2023. The project's composting component is currently operational. Noise-producing activities associated with the composting operations were observed to include trucks exiting and entering the site for both raw materials delivery and processed materials pickup, loading and unloading of raw materials and products, as well as various activities associated with the processing and maintenance of the composting operations. In addition to the truck movements, additional noise-producing equipment included front-loaders and tractors.

The project site is adjacent to Excelsior Avenue, a high-trafficked roadway with a large percentage of overall truck traffic. As such, existing ambient noise levels along the roadway are elevated. WJVA conducted a project site visit and noise level measurements on January 26, 2023, at two (2) locations. In order to assess the portion of the existing noise environment attributable to the project (composting operations component), WJVA located one noise level meter (ST-1) along Excelsior Avenue, directly across from the active composing activities, and a second noise level meter (ST-2) at an equal setback distance as the first (ST-1), in a location approximately 1,000 west of the composting activities. Both noise measurement sites were exposed to approximately the same traffic noise levels associated with through-traffic on Excelsior Avenue. However, site ST-1 was also exposed to noise levels associated with the active composting operations. Figure 2 provides the locations of both ST-1 and ST-2. A photograph of each noise measurement site is provided as Figure 3 (ST-1) and Figure 4 (ST-2).

Noise monitoring equipment consisted of Larson-Davis Laboratories Model LDL-820 sound level analyzers equipped with B&K Type 4176 1/2" microphones. The equipment complies with the specifications of the American National Standards Institute (ANSI) for Type I (Precision) sound level meters. The meters were calibrated with a B&K Type 4230 acoustic calibrator to ensure the accuracy of the measurements.

Noise levels were measured at each of the two noise measurements sites for a continuous period of six (6) hours, between 8:00 a.m. and 3:00 p.m. In order to quantify noise levels associated with the composting operations, WJVA subtracted the noise levels measured at site ST-2 from the noise levels measured at site ST-1.

Table III summarizes the noise levels measured at each of the two noise measurement sites and provides project-related noise levels by subtracting the noise levels measured at Site LT-2 from those measured at site LT-1. Additionally, these calculated noise levels are also extrapolated (based upon the standard rates of attenuation of noise with increased distance from the noise source) to the closest residential land uses, located north of the project site. It should be noted that decibels (dB) are logarithmic in nature, and cannot be added or subtracted arithmetically.

TABLE III

SUMMARY OF 24-HOUR NOISE LEVEL MEASUREMENTS
THOMAS DAIRY COMPOSTING FACILITY, KINGS COUNTY
JANUARY 26, 2023

Time	A-Weighted Decibels, dB, L_{eq} (one-hour average)			
	ST-1	ST-2	ST-1 minus ST-2	PROJECT-RELATED NOISE LEVEL AT CLOSEST RESIDENCE (375')
8:00 a.m.	70.2	68.1	66.0	49.8
9:00 a.m.	70.0	67.4	66.5	50.3
10:00 a.m.	69.7	67.1	66.2	50.0
11:00 a.m.	68.5	65.8	65.2	49.0
12:00 p.m.	69.7	67.0	66.4	50.2
1:00 p.m.	69.2	66.7	65.6	49.4
2:00 p.m.	70.3	67.3	67.3	51.1
Average	69.7	67.1	66.2	**50.0**

Source: WJV Acoustics, Inc.

The applicable Kings County noise level standards are an hourly daytime (7:00 a.m. to 10:00 p.m.) noise level standard of 55 dB L_{eq} and an hourly nighttime (10:00 p.m. to 7:00 a.m.) noise level standard of 50 dB L_{eq}. Additionally, the General Plan Noise Element states *"If the existing ambient noise level exceeds the standards of Table N-8, then the noise level standards shall be increased at 5 dB increments to encompass the ambient."* Based upon noise levels measured at both ST-1 and ST-2, it can be reasonable determined that existing ambient noise levels already exceed the hourly average noise level standards applicable to the project. Applying the noise levels measured at Site LT-2 (traffic noise alone), the existing ambient noise levels (without noise associated with composting activities) at the closest residential land use to the project site would be approximately 52 dB L_{eq}.

Noise levels associated with composting activities would not be expected to exceed any Kings County noise level standards at the closest sensitive receptor locations (residential land uses). Additionally, noise levels associated with composting activities do not exceed existing (without composting activities) ambient noise levels at any residential land uses, as a result of elevated traffic noise levels associated with vehicle traffic on Excelsior Avenue. Mitigation measures are therefore not required for project noise compliance.

TRUCK WASH OPERATIONS-
The project would include an outdoor (open air) private truck wash facility, with two (2) proposed wash bays. The applicant has estimated that approximately sixteen (16) trucks/vehicles would be processed through the truck wash facility per day. The proposed truck wash would typically operate between the hours of 8:00 a.m. to 8:00 p.m., Monday through Saturday. Each wash cycle would take approximately fifteen (15) minutes.

WJVA reviewed noise levels of various types of equipment (*Federal Highway Administration, Roadway Construction Noise Model, January 2006/ Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman, 1987/WJVA*). Provided below is the anticipated equipment list for the truck wash operations, as well as the associated generalized reference noise levels, at a distance of fifty (50) feet from the equipment.

- Industrial Pressure Washer: 66 dB
- Air Compressor: 74 dB
- Shop Vacuum: 56 dB
- Generator: 74 dB
- Sump Pump: 77 dB
- Process Pit Pump: 77 dB
- Running Vehicles: 60 dB

As described above, the applicant estimates that approximately sixteen vehicles would be washed on average per day, with each cycle lasting approximately fifteen minutes in duration. Based upon the anticipated hours of operations (8:00 a.m. to 8:00 p.m.), an average of 1.3 vehicles per hour would be washed. In order to analyze a worst-case assessment, WJVA calculated the noise levels associated with truck wash operations based upon the assumption that 1) two trucks per hour would be processed through the truck wash facility, and 2) all associated equipment (described above) would be in constant and simultaneous operation, and 3) no acoustical shielding between any sensitive receptors and truck wash equipment sources would occur.

Based upon the noise levels provided above, and the three assumptions described (worst-case assessment of truck wash noise levels), WJVA calculated a noise level of 53 dB L_{eq} at the closest existing residential land uses (Located approximately 950 feet south of the proposed truck wash area, along 20th Avenue). Such levels do not exceed the applicable Kings County daytime noise level standard of 55 dB. Mitigation measures are therefore not required for project noise compliance.

CONCLUSIONS AND RECOMMENDATIONS

Based upon noise levels measured by WJVA staff, and the setback distances between the composting activities and the closest sensitive receptors, noise levels associated with composting activities are not expected to exceed any Kings County noise level standards at any nearby sensitive receptor locations. Additionally, noise levels associated with composting operations do not exceed existing elevated ambient noise levels associated with traffic along Excelsior Avenue.

Noise levels associated with the proposed truck wash operations were calculated based upon assumptions that two trucks per hour would be processed, that all associated equipment would be in constant and simultaneous operation, and that no acoustic shielding would occur between any pieces of equipment and nearby sensitive receptors. This is considered a worst-case assessment of truck wash noise levels. Calculations based upon these assumptions indicated that noise levels associated with truck wash operations would not exceed any applicable Kings County noise level standards at any nearby sensitive receptor locations.

The foregoing conclusions and recommendations are based upon the best information known to WJV Acoustics, Inc. (WJVA) at the time the study was prepared concerning the proposed site plan and proposed operational activities. Any significant changes to the information used for this analysis will require a reevaluation of the findings of this report. Additionally, any significant future changes in noise regulations or other factors beyond WJVA's control may result in long-term noise results different from those described by this analysis.

Respectfully submitted,

Walter J. Van Groningen
President

WJV:wjv

FIGURE 1: SITE PLAN

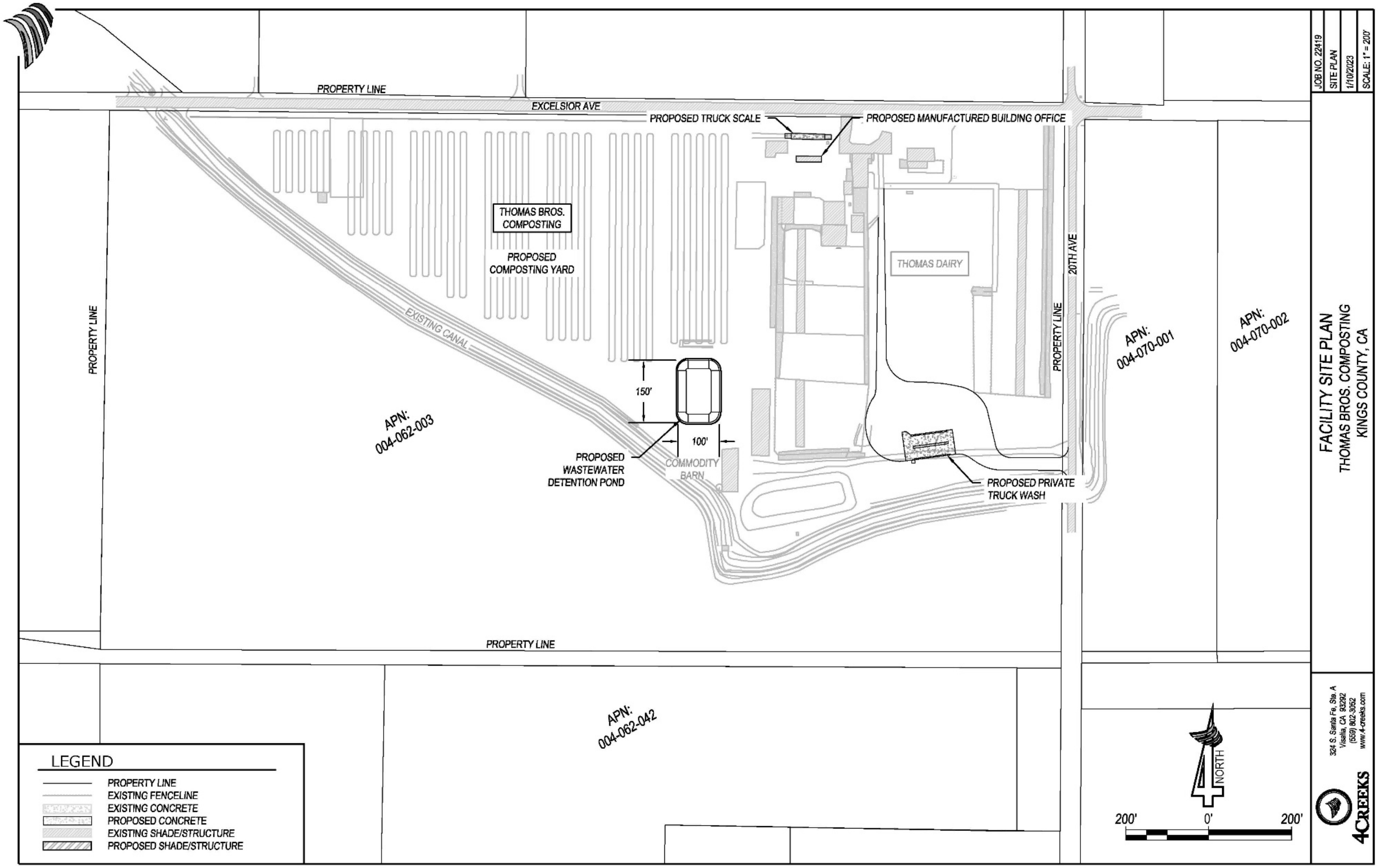


FIGURE 2: PROJECT SITE VICINITY AND NOISE MEASUREMENT LOCATIONS

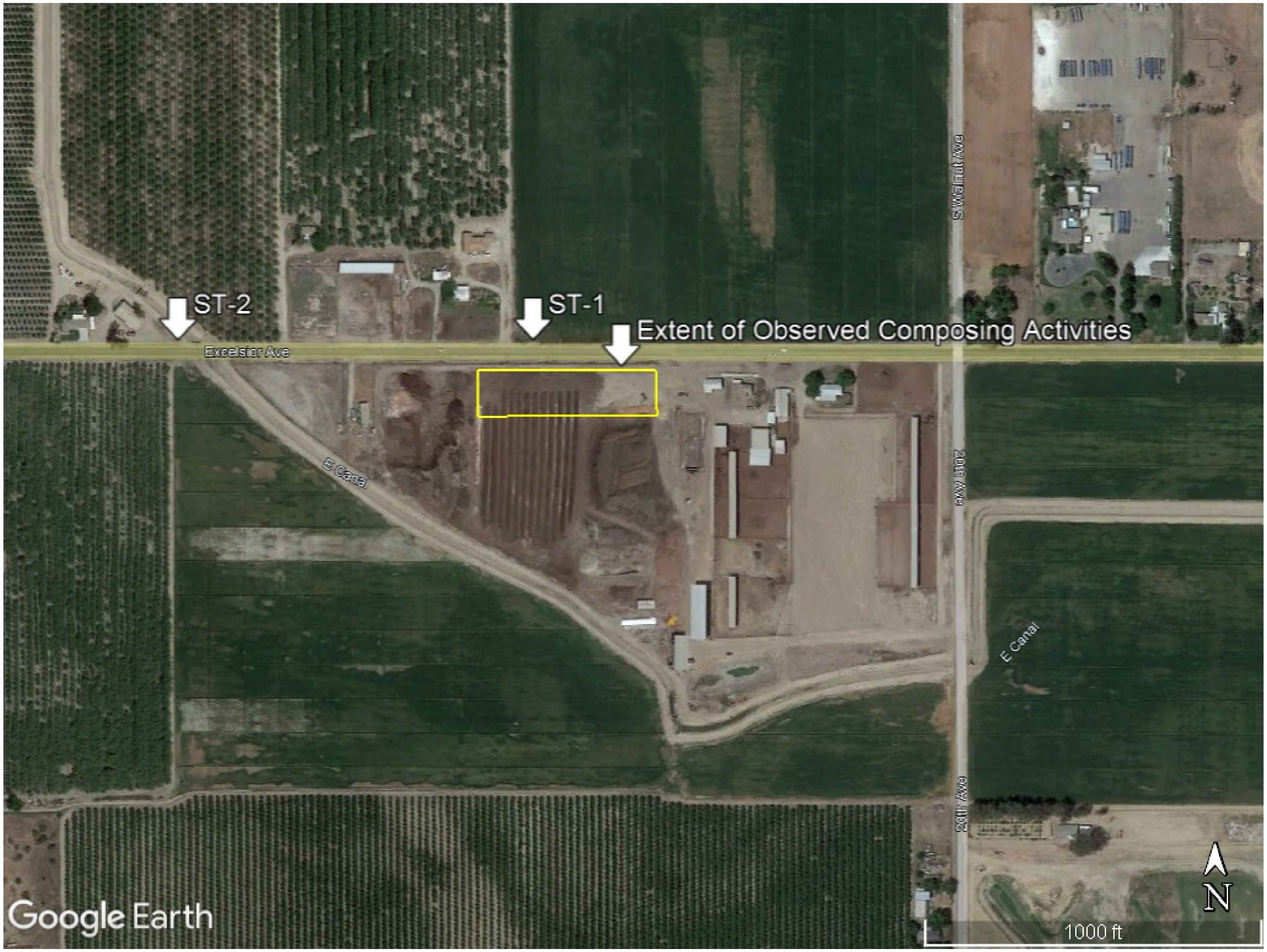


FIGURE 3: NOISE MEASUREMENT SITE ST-1

FIGURE 4: NOISE MEASUREMENT SITE ST-2

APPENDIX A

ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL:	The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.
CNEL:	Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.
DECIBEL, dB:	A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
DNL/L_{dn}:	Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.
L_{eq}:	Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.
NOTE:	The CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the average noise exposure for a shorter time period, typically one hour.
L_{max}:	The maximum noise level recorded during a noise event.
L_n:	The sound level exceeded "n" percent of the time during a sample interval (L_{90}, L_{50}, L_{10}, etc.). For example, L_{10} equals the level exceeded 10 percent of the time.

A-2

ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS:	Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.
NOISE LEVEL REDUCTION (NLR):	The noise reduction between indoor and outdoor environments or between two rooms that is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of "noise level reduction" combines the effect of the transmission loss performance of the structure plus the effect of acoustic absorption present in the receiving room.
SEL or SENEL:	Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.
SOUND LEVEL:	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.
SOUND TRANSMISSION CLASS (STC):	The single-number rating of sound transmission loss for a construction element (window, door, etc.) over a frequency range where speech intelligibility largely occurs.

Appendix E

Trip Generation and Vehicle Miles Traveled Memorandum

LSA

CARLSBAD
CLOVIS
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

January 23, 2023

Molly Baumeister
Planner/Project Manager; 4Creeks
324 S. Santa Fe Street; Suite A
Visalia, California 93292

Subject: Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum (LSA Project No. FOC2204)

Dear Ms. Baumeister:

LSA Associates, Inc. (LSA) has prepared this Trip Generation and Vehicle Miles Traveled (VMT) Memorandum (Memo) for the Thomas Brothers Composting and Truck Wash Project (project) in the unincorporated county of Kings (County). The project will be located on the south side of Excelsior Avenue, in the southwest corner of the intersection of 20th Avenue and Excelsior Avenue. Figure 1 (all figures and tables attached) illustrates the regional and project location. Figure 2 illustrates the conceptual site plan for the project.

Previously, the project site was a dairy facility. However, the milking operation has been shut down, and currently the project site is permitted through the County as a bovine feedlot facility. The project proposes to construct a composting facility, and a truck wash facility within the project site adjacent to the bovine feedlot facility. It should be noted that the composting facility is currently partially operational since 2013.

The objectives of this Memo are as follows:

- To estimate the trip generation for the proposed project at its full buildout and determine whether a detailed levels of service (LOS) study will be required for the project; and,
- To determine whether a detailed VMT analysis will be required for the project.

PROJECT TRIP GENERATION

Trip generation for the project was developed using the information included in the *Thomas Bros. Composting & Truck Wash Operational Statement*, developed by 4Creeks, dated December 2022. The operational statement is included in Appendix A. The operational statement summarizes the approximate number of employees, truck wash customers, facility visitors, and service/deliveries per day for both the composting and truck wash facility. As a conservative estimate, the highest values were considered for the trip generation estimate.

Following is a brief summary for the operational hours and other operational characteristics of the facility:

Composting Facility

The operational hours for the composting facility will be 6:00 a.m. to 6:00 p.m., Monday through Saturday. The facility estimates to have approximately 20 service/delivery trucks per day during the months of September through December, and an average of 10 trucks per day for the remaining year. In addition, the facility estimates to have approximately 5 visitors on a typical weekday.

Truck Wash Facility

The operational hours for the truck wash facility will be 8:00 a.m. to 8:00 p.m., Monday through Saturday. The facility is estimated to have approximately 96 customers per week, and 16 customers per day on a typical weekday.

Also, based on the operational statement, the project is estimated to have a maximum number of 10 employees in total for both facilities.

As such, the project trip generation was prepared that separately accounts for employee trips, composting service/deliveries trips, composting visitors trip, and truck wash customer trips. Following is a brief description of the project trip generation estimation:

Composting Service/Delivery Truck Trip Generation

Based on project operational statement, the composting facility is anticipated to have a maximum of 20 deliveries/services per day during the months of September through December. As such, there will be 20 daily inbound and 20 daily outbound trips for the composting facility during this time. Assuming a uniform rate of arrival throughout the daily operational hours (between 6:00 a.m. and 6:00 p.m.), it was estimated that four service/delivery trips (i.e., two inbound and two outbound trip) will occur within each peak hour. Also, all these delivery trips are estimated to be 2-axle truck trips. Therefore, these truck trips were converted to Passenger Car Equivalents (PCEs) using a PCE factor of 2.0. As such, after converting to PCE trips, the project is estimated to generate 8 PCE delivery trips during the a.m. peak hour, 8 PCE delivery trips during the p.m. peak hour, and total 80 daily PCE trips.

Composting Visitors Trip Generation

Based on project operational statement, the composting facility is anticipated to have five daily visitors. Therefore, it could be estimated that the project will be generating 10 daily visitor trips (inbound and outbound combined). Based on the operational hours, these trips could be estimated to be a combination of peak hour and off-peak hour trips, with two trips (one inbound and one outbound) occurring during both a.m. and p.m. peak hours. In summary, it is estimated that the project will be generating two a.m. peak hour trips, two p.m. peak hour trips and ten daily trips. All these trips are estimated to be passenger vehicle trips.

Truck Wash Customer Trip Generation

The truck wash facility is anticipated to have 16 customers per day. As such, there will be 16 daily inbound and 16 daily outbound trips. Assuming a uniform rate of arrival throughout the daily operational hours (between 8:00 a.m. and 8:00 p.m.), it was estimated that four truck wash trips (i.e., two inbound and two outbound trip) will occur within each peak hour. The remaining trips are estimated to be non-peak hour trips. Also, these trips were estimated to be 4+-axle truck trips. Therefore, these trips were converted to PCEs using a factor of 3.0. As such, the truck wash is estimated to generate 12 PCE customer trips during the a.m. peak hour, 12 PCE delivery trips during the p.m. peak hour, and total 96 daily PCE trips.

Employee Trip Generation

Based on the operational statement, currently, there are three employees at the existing facility. The project proposes to have a maximum of 10 employees once the composting facility and the truck wash facility are operational. Therefore, it could be estimated that the project will be generating 20 daily employee trips (inbound and outbound combined). As a conservative estimate, these trips could be estimated as peak hour trips, with 10 inbound trips occurring during a.m. peak hour, and 10 outbound trips occurring during the p.m. peak hour. All these trips are estimated to be passenger vehicle trips.

Table A summarizes the project trip generation as described above and shows that after considering all these trip purposes, the proposed project is anticipated to generate 32 PCE trips in the a.m. peak hour, 32 PCE trips in the p.m. peak hour, and 206 daily PCE trips.

The *County of Kings 2035 General Plan Circulation Element,* Section VIII “Circulation Policies” outlines the requirements for conducting a detailed LOS study. As such, as included in the Circulation Policies chapter and recommended in *C PolicyA1.3.2,* a detailed LOS study may not be required if the project is estimated to generate less than 100 peak hour trips.

Since the anticipated number of peak hour trips generated by the proposed project is lower than the 100-trip threshold established by the County’s circulation policies, a detailed LOS study may not be required for the project.

VEHICLE MILES TRAVELED ANALYSIS

On December 28, 2018, the California Office of Administrative Law cleared the revised California Environmental Quality Act (CEQA) Guidelines for use. Among the changes to the guidelines was the removal of vehicle delay and level of service as the sole basis of determining CEQA impacts. With the implementation of the adopted guidelines, transportation impacts are to be evaluated based on a project’s effect on VMT.

The County is yet to adopt their own VMT Guidelines. Therefore, the VMT analysis was conducted pursuant to Governor’s Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts under CEQA* (TA), dated December 2018.

The OPR TA states that small projects generating less than 110 daily trips are estimated to have minimal effect on VMT and are eligible to be screened out from a detailed VMT analysis. As shown in Table A, the project is anticipated to generate 102 total daily trips, which is lower than the 110 daily trip threshold for screening projects from detailed VMT analysis. Therefore, the project is anticipated to have a less than significant VMT impact and could be screened out from a detailed VMT analysis.

If you have any questions, please do not hesitate to contact me at (951) 781-9310 or Ambarish.Mukherjee@lsa.net.

Sincerely,

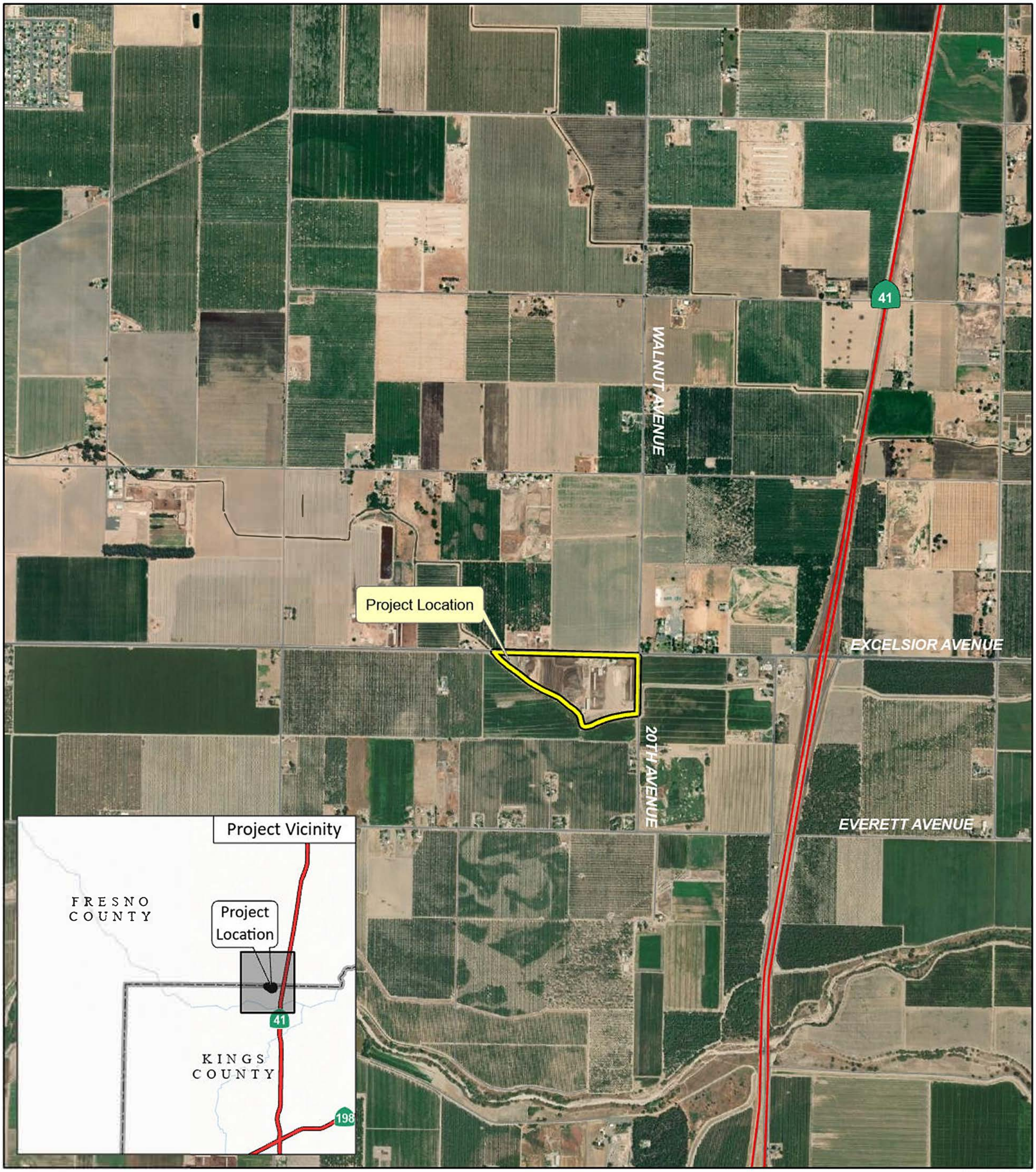
LSA

A. Mukherjee

Ambarish Mukherjee, AICP, PE
Principal

Attachments:
- Figure 1: Regional and Project Location
- Figure 2: Conceptual Site Plan
- Table A: Project Trip Generation
- Appendix A: Project Operational Information

FIGURES



LSA

FIGURE 1

Thomas Brothers Composting and Truck Wash
Trip Generation and VMT Memorandum

Regional and Project Location

SOURCE: ESRI Streetmap, 2021; Google Earth, 2022.

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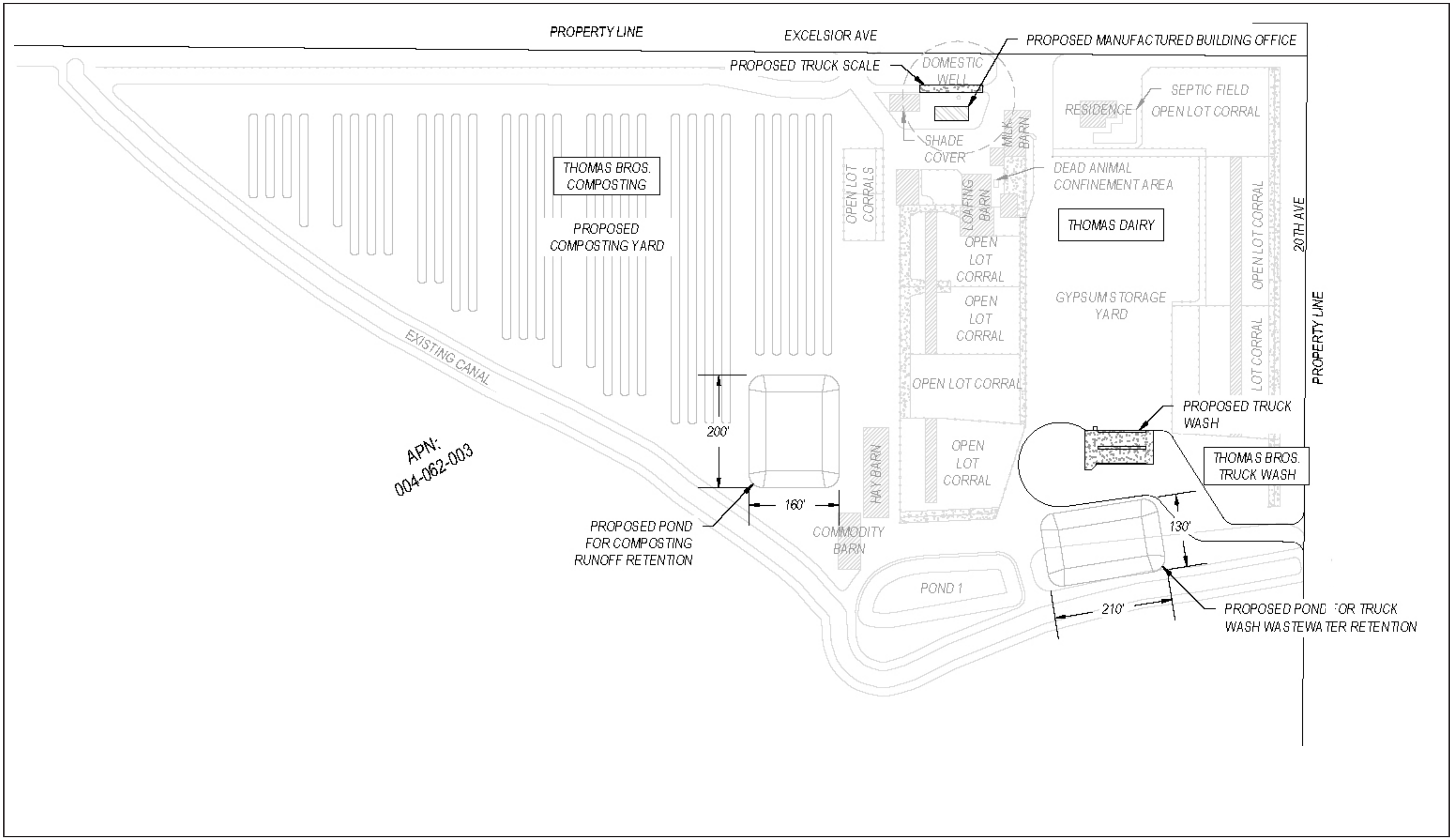

FIGURE 2

Thomas Dairy Composting Project
Trip Generation and VMT Memorandum

Conceptual Site Plan

SOURCE: 4Creek, November 2022

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TABLES

Table A - Project Trip Generation

Land Use	A.M. Peak Hour			P.M. Peak Hour			Daily
	In	Out	Total	In	Out	Total	
Thomas Brothers Composting and Truck Wash[1]							
Employee Trips [2]	10	0	10	0	10	10	20
Composting Service/Delivery Truck Trips							
Trip Generation[3]	2	2	4	2	2	4	40
PCE Trip Generation[4]	4	4	8	4	4	8	80
Composting Visitor Trips[5]	1	1	2	1	1	2	10
Truck Wash Customer Trips							
Trip Generation[6]	2	2	4	2	2	4	32
PCE Trip Generation[7]	6	6	12	6	6	12	96
Total Trip Generation	**15**	**5**	**20**	**5**	**15**	**20**	**102**
Total PCE Trip Generation	**21**	**11**	**32**	**11**	**21**	**32**	**206**

Notes:

[1] The trip generation was developed based on information provided by the statement of operations developed by 4Creeks dated December 2022.

[2] As per information provided by the project operational statement, the project proposes to have a maximum of 10 employees. As a conservative approach, the employee trips have been assumed to arrive during a.m. peak hour and leave during the p.m. peak hour.

[3] As per information provided by the project operational statement, the composting facility anticipates to have a maximum of 20 deliveries/service per day during the months of September through Decemeber. Assuming a uniform rate of arrival throughout the daily operational hours, it was estimated that four service/delivery trips (two inbound and two outbound) will occur during the a.m. and p.m. peak hour.

[4] As conservative approach, all composting service/delivery trucks were considered as 2-axle trucks. Therefore, these truck trips trips were converted to PCEs using a PCE factor of 2.0.

[5] As per information provided by the project operational statement, the composting facility anticipates five visitors per day. Based on the operational hours, the trips could be estimated to be a combination of peak hour and off-peak hour trips. As a conservative approach, the project has been estimated to be generating two trips in each peak hour and ten daily trips.

[6] As per information provided by the project operational statement, the truck wash facility anticipates 16 customers per day. Assuming a uniform rate of arrival throughout the daily operational hours, it was estimated that four truck wash trips (two inbound and two outbound) will occur within each peak hour.

[7] As conservative approach, all truck wash customers were considered as 4+- axle trucks. Therefore, these truck trips trips were converted to PCEs using a PCE factor of 3.0.

Appendix F

Water and Wastewater Management Plan

WATER & WASTEWATER MANAGEMENT PLAN

THOMAS BROS. COMPOSTING

FEBRUARY 21, 2023

PREPARED FOR:

THOMAS BROS. COMPOSTING
20111 EXCELSIOR AVENUE
RIVERDALE, CA 93656

COMPLETED BY:

4CREEKS

324 S. SANTA FE, STE. A
VISALIA, CA 93292
(559) 802-3052

SUBMITTED TO:

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
1685 E. STREET
FRESNO, CA 93706

WATER & WASTEWATER MANAGEMENT PLAN

The purpose of the Water & Wastewater Management Plan is to ensure that the production area of the facility is designed, constructed, operated and maintained so that waste generated at the facility is managed in compliance with Waste Discharge Requirements of the California Water Code Section 13260 and adopted General Order WQ 2015-0121-DWQ, in order to prevent adverse impacts to groundwater and surface water quality.

THOMAS BROS. COMPOSTING

KINGS COUNTY, CA

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

OWNER:

SIGNATURE OF OWNER

PRINT

DATE

OPERATOR:

SIGNATURE OF OPERATOR

PRINT

DATE

ENGINEER:

KYLE PARREIRA, PE #89070

2/21/2023

DATE

REGISTERED PROFESSIONAL ENGINEER
KYLE M. PARREIRA
NO. 89070
Exp. 09/30/2024
CIVIL
STATE OF CALIFORNIA

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Introduction

Thomas Bros. Composting Facility is a proposed composting facility to be constructed and operated in southeast Riverdale adjacent to an existing feedlot facility, Thomas Dairy. This application package constitutes a Report of Waste Discharge (ROWD) pursuant to California Water Code Section 13260. Section 13260 states that persons discharging or proposing to discharge waste that could affect the quality of the waters of the State, other than into a community sewer system, shall file a ROWD containing information which may be required by the appropriate Regional Water Quality Control Board (RWQCB). On August 4, 2015, the State Water Resources Control Board adopted Order WQ 2015-0121-DWQ, *General Waste Discharge Requirements for Composting Operations* (General Order). This Technical Report of Waste Discharge (ROWD) has been prepared on behalf of the facility, in accordance with the respective requirements of the Composting General Order.

I. Proposed Facility Description

A. Name of the Facility & County Location

Facility Name:	Thomas Bros. Composting
County:	Kings County

B. Facility Location

Address:	20111 Excelsior Ave Riverdale, CA 93656
Assessor's Parcel Numbers:	004-062-003
Township, Range, Section:	Township 18 South, Range 20 East, Section 5
Baseline Meridian:	Mount Diablo Base and Meridian

C. Facility Contacts

Facility Owner/Operator/Contact	Frank Anthony Thomas
Address:	19271 Excelsior Avenue Riverdale, CA 93656
Phone:	(559) 922-0279 (559) 906-1404

D. Facility Process Description

The Facility receives up to 154 cubic yards (or 192 wet-tons) of compostable material per day consisting of animal manure from nearby dairy facilities. The Facility currently has the capacity to store up to 2,000 tons at any given time. The Facility receives up to a maximum of 56,000 cubic yards (or 70,000 wet-tons) per year. As necessary, feedstock is processed with a tub grinder and/or screen to achieve the characteristics required to promote composting. Prepared feedstock is composted in windrows for 90 to 120 days. Composting is cured for an additional period until it is stabilized. Water is added as needed to maintain active composting for the desired period. Residual materials are recovered and stored in disposal containers onsite. When filled, the material stored in the containers is removed from the site by Waste Management.

In addition to the composting operations, the owner is proposing the construction of a truck wash for private use. The truck wash will have the capacity to wash 2 vehicles/day totaling to 12 vehicles/week, used for washing the composting equipment on an as-needed basis.

E. Facility Site Maps

1. Vicinity Map (See Attachment A)

The Vicinity Map identifies the location of the composting facility within a five-mile radius.

2. Detailed Site Plan (See Attachment B)

The Detailed Site Map identifies the location and size of working surfaces such as: storage of incoming feedstock (receiving area), active and curing composting, storage of final product and truck wash. The site map also identifies the drainage pattern of the facility, berms and ditches used to convey wastewater, and the location and size the facilities drainage basin

3. Process Flow Diagram (See Attachment C)

The Process Flow Diagram describes the movement of the material from receiving to final product, along with the average time the material remains within each part of the process.

4. Storm Water Tributary Area Map (See Attachment D)

The Storm Water Tributary Map identifies the total impervious areas and the total retention pond areas within the Production Area.

5. APN & Well Identification Map (See Attachment E)

The APN Identification Map identifies each parcel associated with the facility. This map also locates all domestic and municipal wells within a 600 ft radius and any municipal wells within a 1,500 ft radius of the Production Area and Land Application Area.

II. Soil Analysis

A. Soil Survey

The soils at the facility consist of an Excelsior Sandy Loam and a Wasco Sandy Loam. The USDA Soils Map and Classification is summarized in **Appendix A – USDA Soils Map and Classification**.

B. Site Topography

The existing land slopes from the northeast to the southwest with an approximate 0.09% slope, as shown on **Attachment G - USGS Quad Map**.

III. Hydraulic Analysis

A. Groundwater Hydrology

The depth to first encountered groundwater and historical highest groundwater level were evaluated for this site based on data obtained from the State of California, Department of Water Resources (DWR). Data was received on seven wells and included in our analysis (**Appendix B – DWR Hydrographs**). Table 1 below summarizes the data from these wells.

Table 1 – Summary of DWR Well Data

Well Number	Date of First Measurement	Date of Latest Measurement	Most Recent Depth To Groundwater (ft bgs)	Average Depth to Groundwater (ft bgs)	Min. Depth to Groundwater (ft bgs)	Max. Depth to Groundwater (ft bgs)
364008N1196907W001	2/14/1963	11/2/2021	125.9	66.3	32.0	132.3
363983N1198344W001	10/19/2019	3/15/2022	174.0	170.5	164.0	176
364185N1198163W001	10/1/1981	2/24/2014	137.9	96.2	49.0	139.0
363947N1197888W001	9/26/1945	2/18/1993	93.0	70.0	36.5	106.0
363800N1197974W001	10/2/1947	1/23/1992	87.0	69.7	17.5	97.0
Average:			**123.56**	**94.54**	**59.8**	**130.06**

As noted, the average depth to groundwater is 94.54ft. below ground surface (bgs), with the average highest groundwater level at 59.8 ft. bgs. The highest groundwater level was located at Well 363800N1197974W001 with a level of 17.5 ft. bgs on January 23, 1992.

The historical direction of groundwater flow was evaluated based on the DWR "Lines of Equal Elevation of Water in Wells, Unconfined Aquifer" for years 1958, 1969, 1976, 1990, 1995, 2000, 2005, 2010, and 2011 (**Appendix C – DWR Lines of Equal Elevation of Water in Wells**). The data identifies a general direction of flow in the SW direction.

B. Surface Water

A man-made canal borders the south portion of the production area. The production area is proposed to slope away from the canal and is separated by an elevated berm. There are no areas where wastewater is discharged to surface water or areas where storm water run-off can enter the surface water. North Fork Kings River runs approximately 1 mile south of the proposed facility.

C. Flood Analysis

The Federal Emergency Management Agency (FEMA) provides a Flood Insurance Rate Map which identifies different flood zone areas. The Flood Insurance Rate Map, Panel 40 of 875, Community Parcel Number 06031C0040D, September 16, 2015, indicates that the production area is in a Zone X designation (**Attachment G – FEMA Map**). A Zone X designation represents areas that are outside both the 100-year and 500-year flood plains. No additional flood protection is required at this facility.

IV. Wastewater Storage Containment Capacity Analysis

The following analysis defines the processes of the composting facility, the proposed amount of liquid wastewater produced, and how the wastewater is stored and handled.

A. Required Retention Criteria

The General Order requires that "*areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost (active, curing, or final product) must be designed, constructed, and maintained to control and manage all run-on, runoff, and precipitation which falls onto or within the boundaries of these areas, from a 25-year, 24-hour peak storm event at a minimum.*"

B. Proposed Wastewater Storage Containment Capacity

1. Wastewater Accumulated in Production Area from Operations

All wastewater accumulated within the composting operation area is imported with the raw material to be composted. Leachate from the imported material is collected and reapplied as needed to maintain active composting for the desired period.

All wastewater accumulated within the truck wash area drains to a process pit which is pumped to the wastewater retention pond via pipeline.

A summary of the net facility operation wastewater is shown in Table 2 and 3.

Table 2: Composting Facility Process Water Volume

Material	***Total Volume Received (wet-tons/year)***	**Moisture Content**	***Total Volume Received (yd3/year)***	***Total Volume of Wastewater (gal/day)***
Manure Stacking Output	70,000	0.25	56,000	7,747

Table 3: Truck Wash Process Water Volume

	Units	**Livestock Trucks**
Average Vehicles Per Week (6 Operational Days)	vehicles/week	12
Average Vehicle Per Day	vehicles/day	2
Wash Time	min.	15
Water Usage Rate	gal./min.	10
Average Water Usage per Vehicle	gal.	150
Average Solid Manure Deposit per Vehicle	gal.	100
Process Pit Solids Removal	%	60%
Total Daily Process Wastewater Generated	**gal.**	**200**

The total composting process water volume per day is summarized in Table 4.

Table 4: Wastewater Volume from Operations

Wastewater Source	***Volume (gal./day)***
Composting Process Water Volume	7,747
Truck Wash Process Water Volume	200
Total Composting Process Water Volume	**7,947**

2. Wastewater Accumulated in Production Area from Precipitation

The wastewater accumulated from the Production Area due to precipitation was calculated using the rational method (Appendix D). An outline of the steps used to calculate the total wastewater volume from rainfall using this method is summarized in the following sections.

a. Production Area Subdivision by Run-off Coefficient

The Production Area was divided into three run-off coefficient categories: the retention ponds surface areas, pervious areas, and impervious areas of the tributary area. The impervious areas include all concrete and buildings. Pervious area includes all other areas within the Production Area. These areas are outlined on the Storm Water Tributary Map (Attachment D). The size of each area, shown in Table 5, was determined by calculations based on the land use data. The precipitation run-off for each area varies and is defined by published run-off coefficients (See Appendix H). The size of each area, shown in Table 5, was determined by calculations based on the land use data.

Table 5: Production Area Summary

Area Description	*Run-off Area (ft²)*	*Run-off Coefficient*	*Weighted Run-off Area (ft²)*
Wastewater Retention Pond Area	14,463	1.00	14,463
Total Impervious Area	7,410	0.75	5,558
Total Pervious Area	632,965	0.31	206,536
Total Production Area	**688,119**		**226,557**

b. Wastewater Accumulated From 25 Year, 24 Hour Storm Event

The 25 year, 24-hour storm event was assumed to happen one time. The rainfall amount was taken from the Isopluvial Map in NOAA Atlas 2, 1973 (Appendix F). A summary of the rainfall volume is shown in Table 7.

Table 6: Wastewater Accumulated from 25 Year, 24 Hour Storm Event

Area Description	*Rainfall (inches)*	*Run-off Coefficient*	*Weighted Run-off Area (ft²)*	*Total Volume Accumulated (gallons)*
Wastewater Retention Pond Area	2.00	1.00	14,463	**18,032**
Total Impervious Part of Tributary Area	2.00	0.88	6,521	**8,130**
Total Pervious Part of Tributary Area	2.00	0.40	266,498	**332,258**
Total Production Area			**287,482**	**358,419**

c. Evaporation from Wastewater Retention Pond

Wastewater from the pond will evaporate. The evaporation rate average was determined by taking the average daily evaporation rates from Bakersfield and Fresno based on CDWR Evaporation Pan Data (Appendix G). The average evaporation rates and the total volume of water evaporated daily are shown in Table 7.

Table 7: Evaporation from the Wastewater Retention Pond

Month	*Bakersfield Evaporation Rate (in./day)*	*Fresno Evaporation Rate (in./day)*	*Average Evaporation Rate (in./day)*	*Total Volume Evaporated (gal./day)*
Daily Total:	**0.18**	**0.19**	**0.185**	**1,668**

3. Proposed Wastewater Retention Pond Storage Capacity

a. Total Wastewater Retention Pond Storage Volume

A cross section detail of the proposed pond is shown in Attachment F. The proposed pond is a double lined, tier 1, below ground level pond, thus allowing 1 foot of freeboard. The total volume of the proposed wastewater retention pond is calculated based on the proposed measurements (Appendix E). The total available storage volume for the pond is summarized in Table 9.

b. Pond System Organization

The entire composting operation area is graded to drain into the wastewater retention pond via overland sheet flow. The truck wash drains into a process pit which is pumped to the pond via pipeline.

c. Minimum Pond Level

The minimum pond level is determined by pond location and usage. Evaporation Ponds are allowed to dry out completely during the summer months and therefore the minimum pond level for ponds of this type is zero. Irrigation Ponds are pumped down to the level of residual solids[1]. Overflow Ponds have overflow pipes to either an Evaporation Pond or an Irrigation Pond. The minimum level for these ponds is at the overflow pipe level. Table 8 identifies the pond type, minimum pond level, and the resulting volume reduction used for computing the available winter storage volume.

Table 8: Pond Capacity Reduction Criteria

Pond Identification	*Pond Type*	*Depth of Residual Solids[1] (feet)*	*Storage Period Pond Volume Reduction (cubic feet)*
Pond 1	Evaporation	0.00	0

[1] - *Residual Solids in Irrigation Ponds are assumed to be 2 foot deep if the wastewater did not pass through a solids separation system before entering the pond. If there is solids separation before entering the pond, the assumed level of residual solids is reduced by half. If there is secondary separation after the primary separation, the residual solids are reduced again by half.*

d. Pond Management

By November 1st every year, Thomas Bros. Composting Facility pumps down the pond to a minimum level of wastewater to clean out the bottom of the pond to ensure that there is adequate capacity for all wastewater generated from facility operations and precipitation. Table 9 shows the total available volume for the pond on the facility.

Table 9: Maximum Available Wastewater Storage Capacity

Pond Identification	***Total Available Storage Capacity (gallons)***	***Freeboard Capacity Reduction (gallons)***	***Storage Period Pond Capacity Reduction (gallons)***	***Total Available Storage Period Capacity (gallons)***
Pond 1	787,948	108,507	0	679,441
			TOTAL:	**679,441**

4. Summary

The process water volume, storm water volume, and retention pond capacity are summarized below in Table 10.

Table 10: Proposed vs. Required Wastewater Retention Pond Storage Capacity

Volume Description	***Total Volume Per Day (gal/day)***
Total Process Water Volume	7,947
Wastewater Accumulated From 25 Year, 24 Hour Event	348,419
Less: Evaporation from Wastewater Retention Pond	(1,668)
Net Required Wastewater Retention Pond Storage Volume	**364,698**
Less: Net Existing Wastewater Retention Pond Storage Volume	679,441
Excess Wastewater Retention Pond Capacity	**314,742**

C. Proposed Modifications

No modifications are required.

D. Contingency Plan

A contingency plan is not required because the wastewater retention pond will have enough proposed storage capacity for the storm water precipitation and run-off volume.

V. Operation & Maintenance Plan

A. Facility Management

The facility shall be managed and operated to keep the process water system operational as described in this report. The site will be maintained to minimize weeds and ensure proper drainage for storm water run-off. The ponds shall be managed to:

- Prevent the breeding of mosquitoes by applying vegetable oil or other vector control measure to the water surface.
- Manage erosion on the slopes of the bank to prevent small coves, washouts, and irregularities from forming. Prevent weeds from growing around the banks by harvesting or applying herbicides.
- Remove any algae, debris, or dead vegetation that may accumulate on the water surface.

The separation equipment shall be maintained in accordance with the accepted guidelines per the equipment manufacturer. No fuel or other hazardous materials may be stored on site without acquiring a proper permit and revising this report.

B. Chemical & Contaminant Handling

Potential chemicals and contaminants used on-site are stored and disposed of in accordance with the recommendations of the manufacturer.

VI. Changed Conditions & Limitations

The findings of this report are valid as of the date of this report. However, if there are any changes to the proposed facility, including management of wastewater, expansion, new improvements, and/or operations, a Registered Civil Engineer shall be notified to review the change(s) at the facility to determine if calculations for this report are still applicable. If the change alters the waste management for the facility, an updated Waste Management Plan shall be submitted to the California Regional Water Quality Control Board, Central Valley Region (CRWQCB).

The CRWQCB shall be notified via a letter of any change in the facility name, owner, operator, or contact person of the facility. If the owner decides to terminate the operations at this facility, a closure plan will be submitted to the CRWQCB.

4Creeks, Inc. has prepared this report for the exclusive use of the said client. The report has been prepared in accordance with generally accepted practices of engineering. No other warranties, either expressed or implied, are made as to the professional advice provided in this report.

VII. References

California Department of Water Resources, Online Data from Sampling Stations (FRO, HND)
http://cdec.water.ca.gov/selectQuery.html

California Department of Water Resources, Online Data for Evaporation
http://www.sjd.water.ca.gov/landwateruse/evaporation/

NOAA Geodetic to State Plane Coordinates (SPC) http://www.ngs.noaa.gov/cgi-bin/spc_getpc.prl

NOAA Online Weather Data, NOAA Atlas 2, 1973 for 25 yr, 24 hr event
http://www.wrcc.dri.edu/pcpnfreq/sca25y24.gif

Title 27 of the California Code of Regulations (CCR), Division 2, Subdivision 1, Chapter 7, Subchapter 2, Article 1 http://www.ciwmb.ca.gov/Regulations/Title27/ch7s2345.htm#Article1

Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition
http://www.swrcb.ca.gov/centralvalley/water_issues/basin_plans/tlbp.pdf

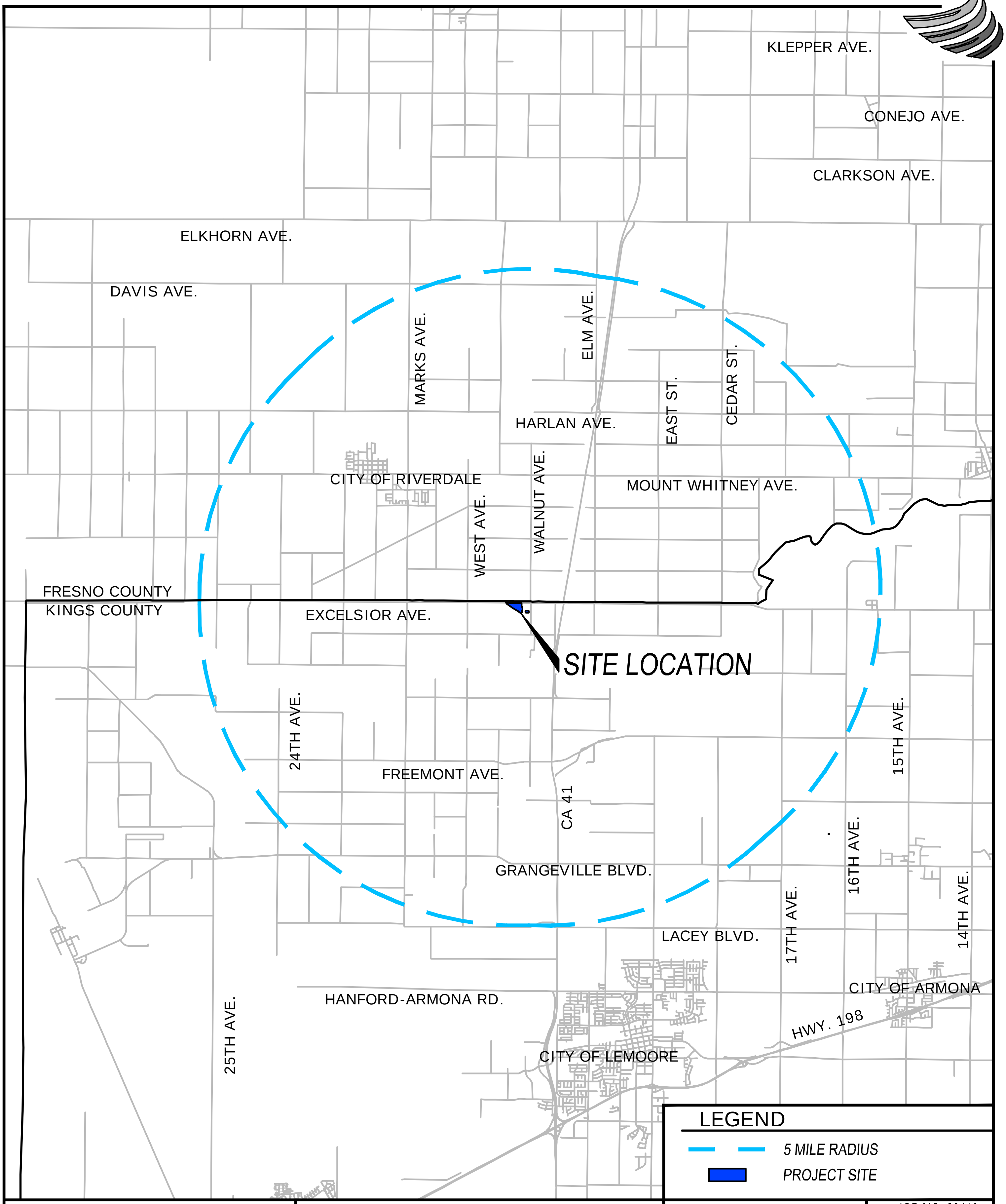
VIII. Regional Water Quality Control Board Correspondence & Revision Record

Correspondence:

Date Received	Description

Revision Record:

Revision #	Date	Section	Description



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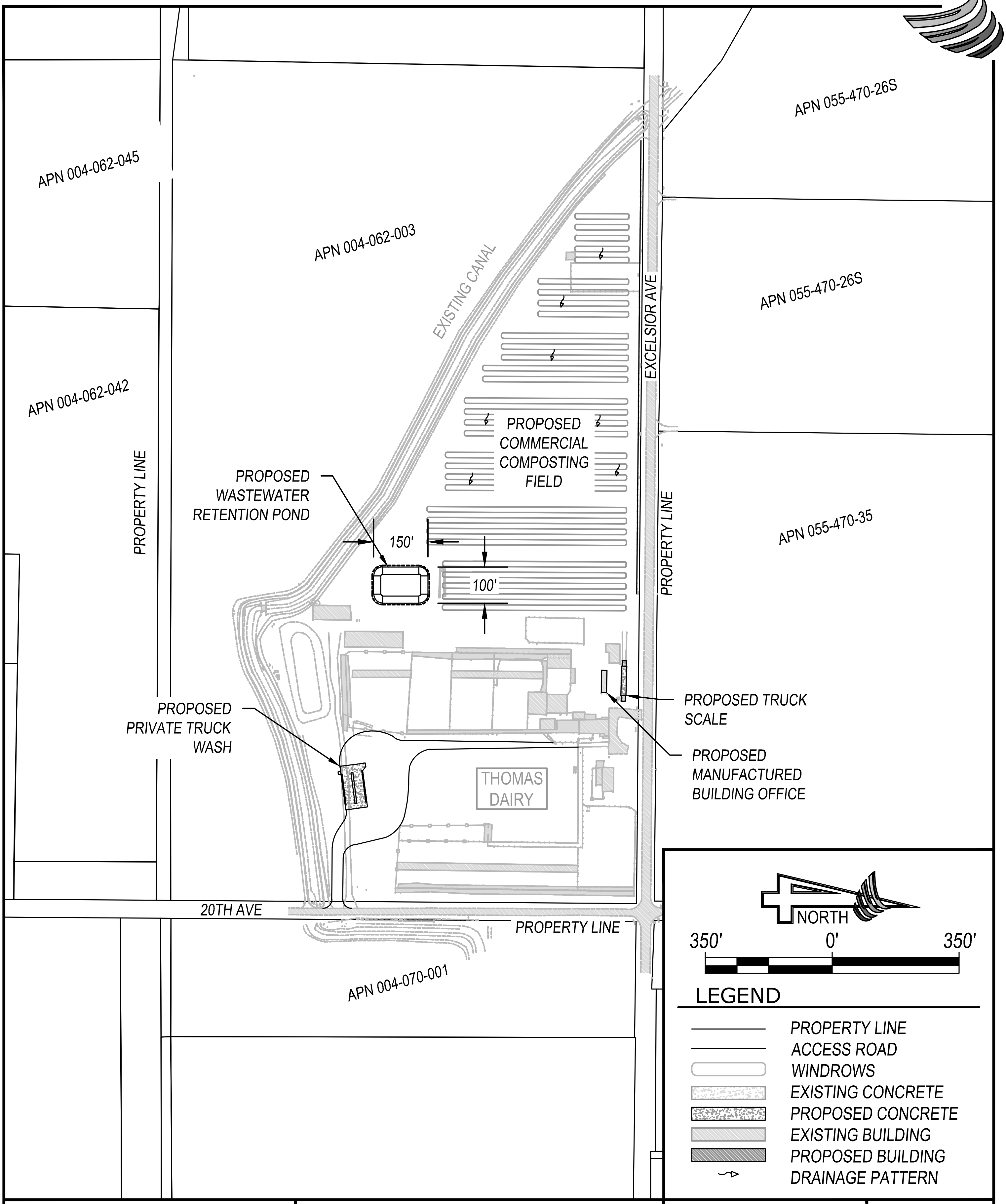
VICINITY MAP

THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

NORTH

JOB NO. 22419
ATTACHMENT A
1/25/2023
1" = 2 MILES



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(559) 802-3052

DETAILED SITE PLAN

THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

JOB NO. 22419
ATTACHMENT B
2/21/2023
1" = 350'

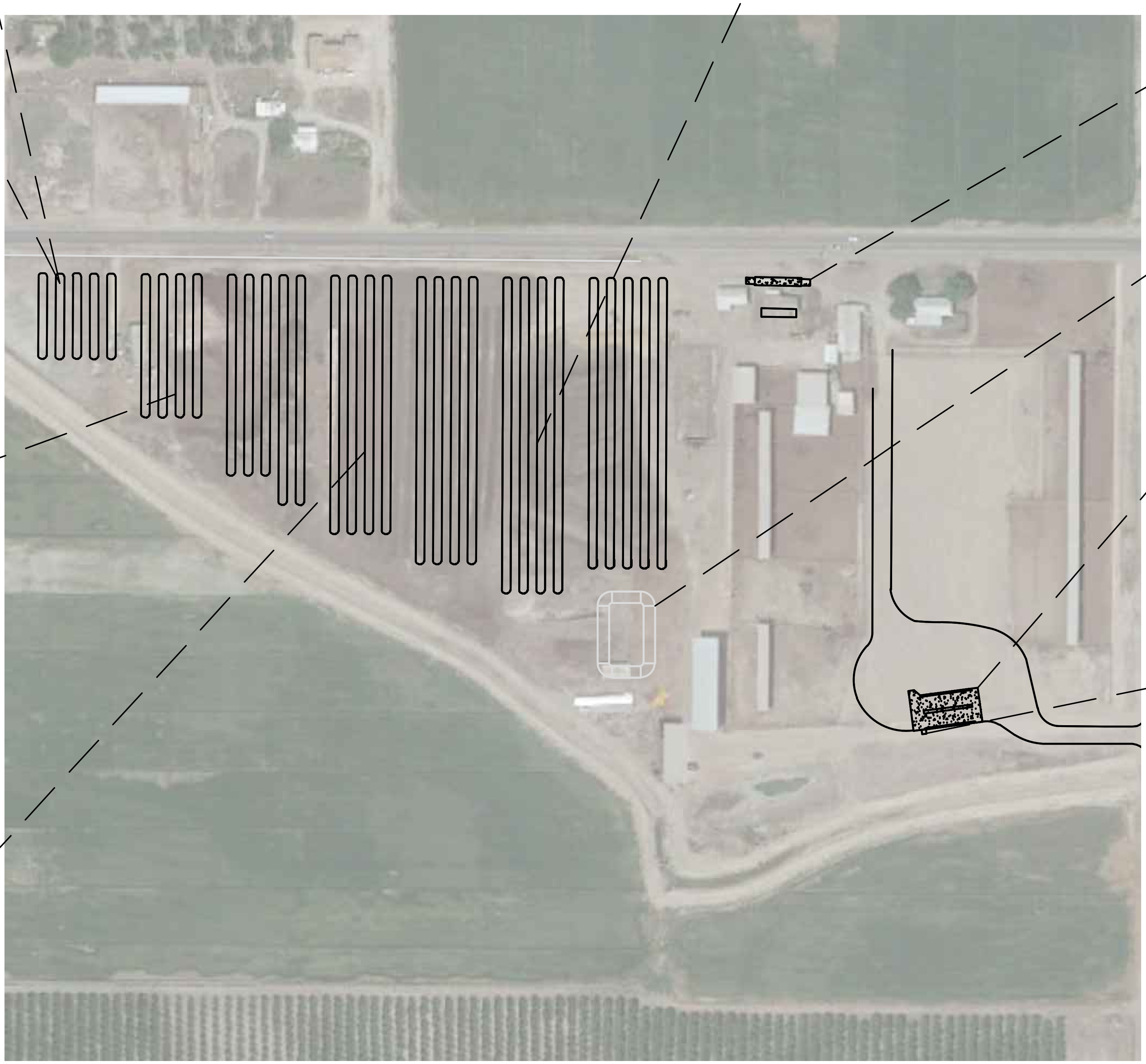
3. ***SCREENING & GRINDING***
SOURCE: RECEIVED MATERIAL
PROCESSED MATERIAL IS SCREENED TO ACHIEVE UNIFORM PARTICLE SIZE TO PROMOTE WINDROW COMPOSTING.
TIME FRAME: LESS THAN 24 HOURS FROM RECIEPT

2. ***RECEIVED MATERIAL***
SOURCE: TRUCK SCALE.
COMPOSTING MATERIAL IS VISUALLY INSPECTED AND SORTED BEFORE BEING SCREENED AND GRINDED.
TIME FRAME: LESS THAN 24 HOURS

4. ***ACTIVE COMPOSTING***
SOURCE: SCREENING & GRINDING.
SCREENED AND GROUND MATERIAL IS PLACED IN WINDROWS APPROXIMATELY 200' IN LENGTH 20' IN WIDTH AND 20' SPACING BETWEEN EACH OTHER.
WINDROWS ARE TURNED REGULARLY AS WELL AS MONITORED FOR FOR TEMPERATURE AND MOISTURE CONTENT.FROM ACTIVE COMPOSTING MATERIAL IS TRANSFERRED TO THE CURING STAGE.
TIME FRAME: 90-120 DAYS

5. ***CURING***
SOURCE: ACTIVE COMPOSTING.
WHEN THE DESIRED LEVEL OF DECOMPOSITION IS REACHED THE MATERIAL IS PLACED INTO CURING PILES BEFORE BEING SCREENED AND/OR MIXED WITH OTHER MATERIALS.
TIME FRAME: 30-120 DAYS

6. ***FINISHED PRODUCT***
SOURCE: CURING
MATERIAL IS SCREENED AND/OR MIXED WITH OTHER MATERIALS TO ACHIEVE THE REQUIRED PRODUCT SPECIFICATIONS BEFORE BEING SOLD.
TIME FRAME: LESS THAN 24 HOURS



1. ***TRUCK SCALE***
SOURCE: COLLECTION VEHICLES AND VEHICLES OPERATED BY THOMAS BROS.
VEHICLES ENTER THE FACILITY THROUGH THE SCALE TO DETERMINE AMOUNT OF MANURE BROUGHT ONSITE.

9. ***WASTEWATER DETENTION POND***
SOURCE: DRAINAGE CHANNEL AND PROCESS PIT
STORES WASTEWATER FROM WORKING SURFACES, WHICH WILL BE UTILIZED FOR REAPPLICATION TO ACTIVE COMPOSTING PILES.

7. ***TRUCK WASH***
SOURCE: COLLECTION VEHICLES AND VEHICLES
KEEPS COLLECTION VEHICLES AND VEHICLES CLEAN AND USABLE. WATER FLOWS FROM TRUCK WASH TO PROCESS PIT.

8. ***PROCESS PIT***
SOURCE: PROCESS PIT
DETAINS WASTEWATER FROM WORKING SURFACES. WATER IS PUMPED TO THE DETENTION POND

NORTH

JOB NO. 22419
ATTACHMENT C
1/25/2023
SCALE: NTS

FACILITY PROCESS FLOW DIAGRAM
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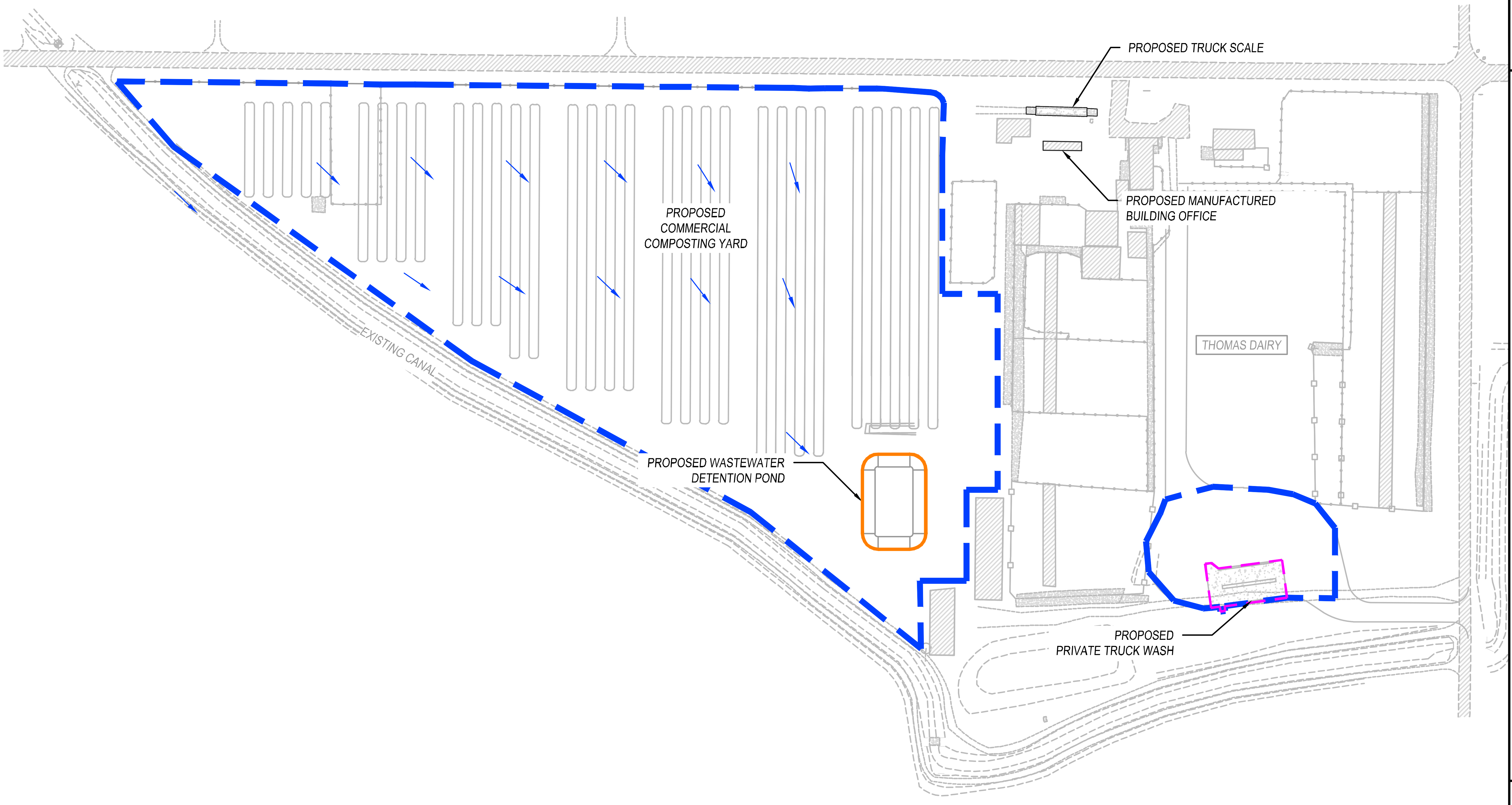
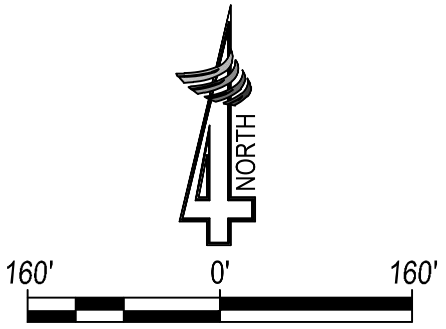
(559) 802-3052
www.4-creeks.com



LEGEND

▬ ▬ (magenta)	IMPERVIOUS AREA BOUNDARY
▬ ▬ (blue)	TRIBUTARY AREA BOUNDARY
▬ (orange)	WASTEWATER POND AREA
←	DIRECTION OF SLOPE



TOTAL AREA WITHIN MANURE HANDLING LIMITS: 688,119 SQ. FT.
TOTAL IMPERVIOUS AREA: 7,410 SQ. FT.
TOTAL POND AREA: 14,463 SQ. FT.

JOB NO. 22419
ATTACHMENT D
11/08/2022
1" = 160'

STORM WATER TRIBUTARY AREA MAP

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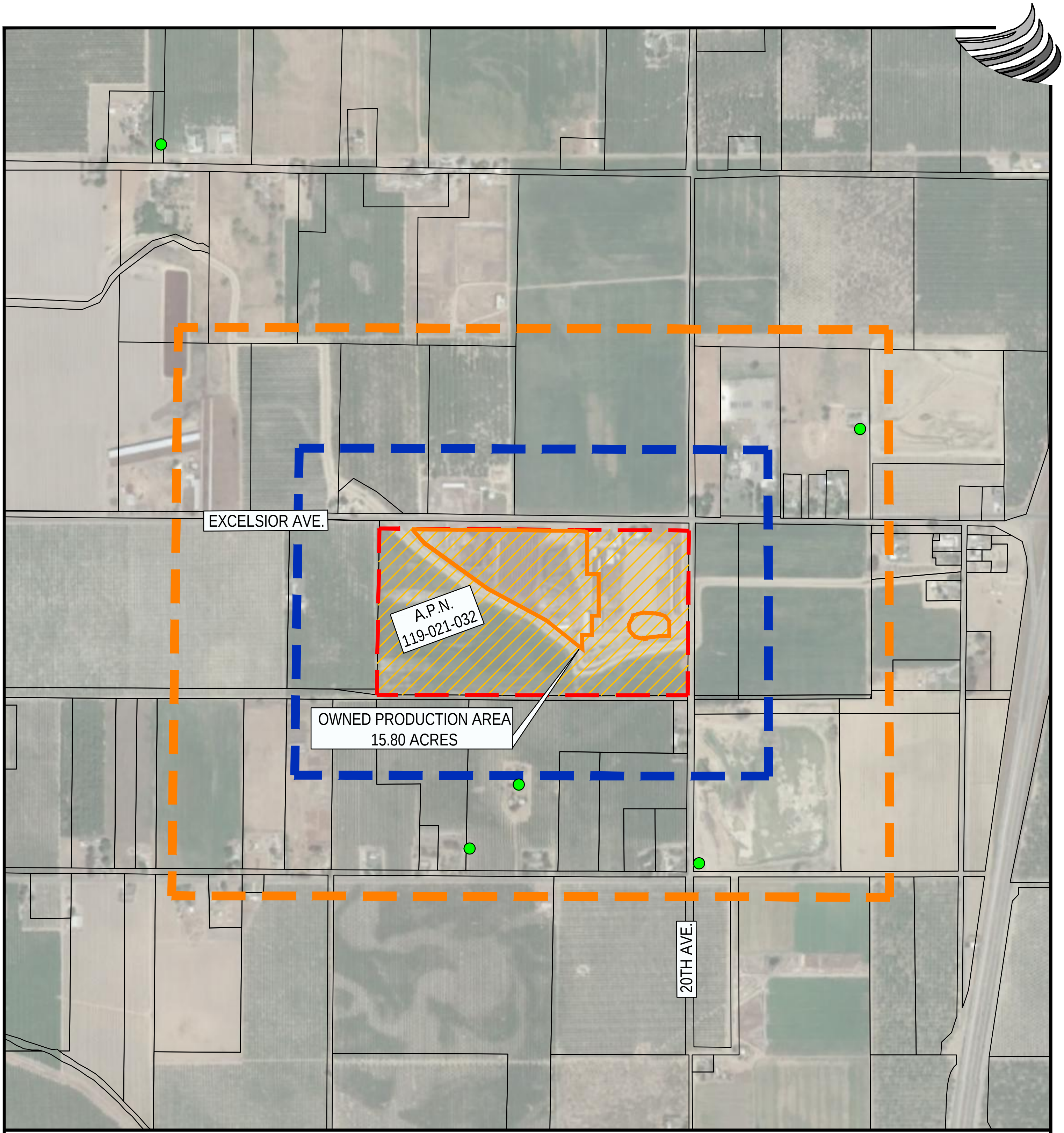
Visalia, CA 93292
(559) 802-3052
www.4-creeks.com



LEGEND

- 🟥 PROPERTY BOUNDARY
- 🟧 PRODUCTION AREA
- — PROPERTY LINE
- 🟦 600' (DOMESTIC AND IRRIGATION WELLS)
- 🟧 1500' RADIUS (MUNICIPAL WELLS)

- ▨ AREA OWNED
- ▨ AREA LEASED
- ▨ AREA NOT USED BY FACILITY

- ● DOMESTIC WELL LOCATION
- ● IRRIGATION WELL LOCATION
- ● MUNICIPAL WELL LOCATION

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APN & WELL IDENTIFICATION MAP

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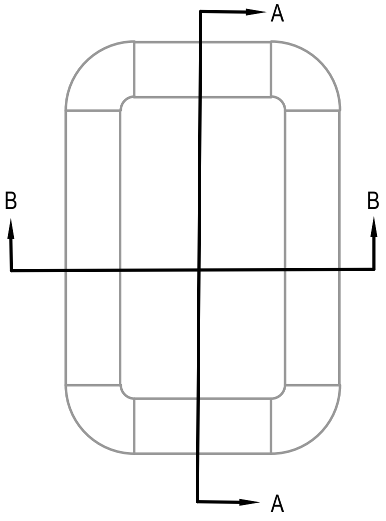
NORTH

JOB NO. 22419
ATTACHMENT E
11/08/2022
1" = 1,000'

WASTEWATER DETENTION POND - EVAPORATION POND

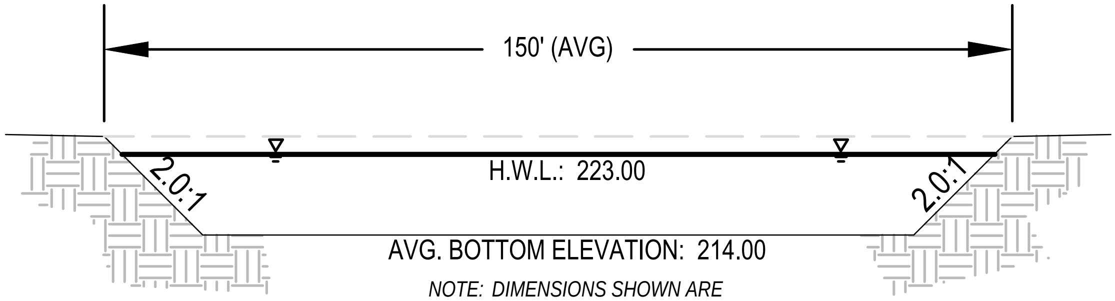
TOTAL VOLUME: 787,948 GALLONS
REDUCTION - 1 FT OF FREEBOARD: 108,507 GALLONS
TOTAL RETENTION VOLUME: 679,441 GALLONS



NORTH

WASTEWATER DETENTION POND - PLAN VIEW

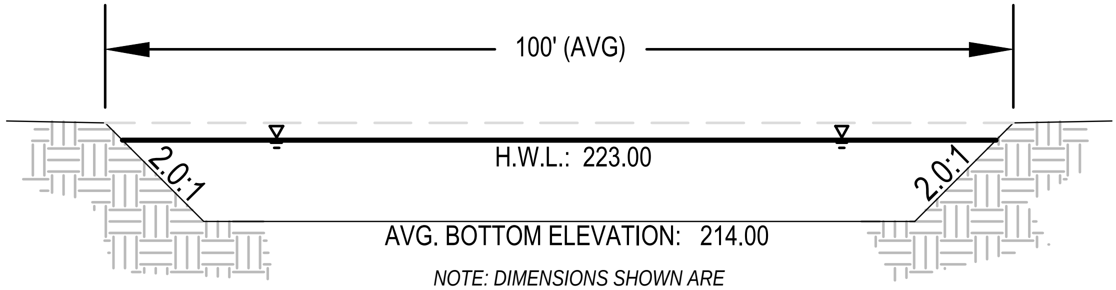
SCALE: 1" = 70'



NOTE: DIMENSIONS SHOWN ARE
BASED UPON POND DESIGN

SECTION A-A

NTS



NOTE: DIMENSIONS SHOWN ARE
BASED UPON POND DESIGN

SECTION B-B

NTS

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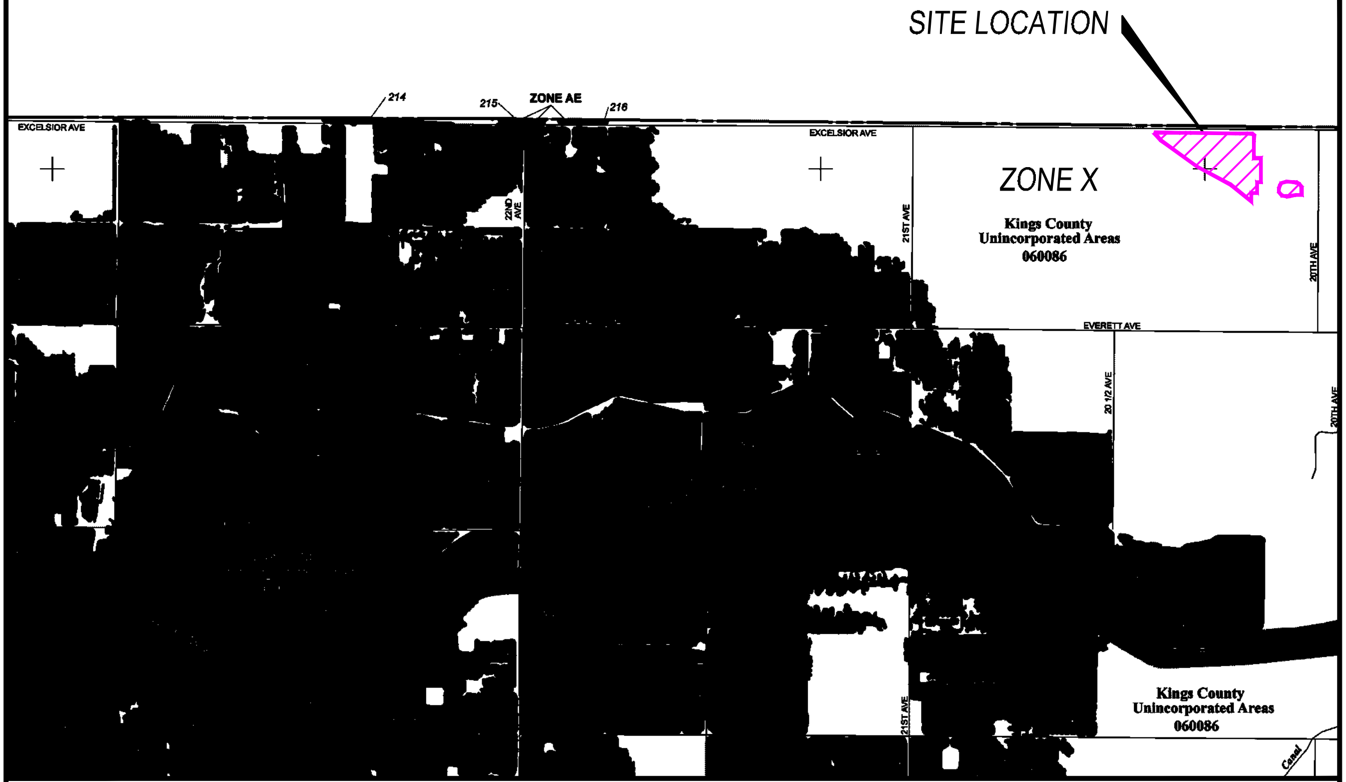
WASTEWATER DETENTION POND DETAIL

THOMAS BROS.COMPOSTING
KINGS COUNTY, CA

JOB NO. 22419
ATTACHMENT F
11/03/2022
SEE DRAWING



LEGEND

■ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

■ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

■ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———————	Floodplain boundary
— — — —	Floodway boundary
—— —— ——	Zone D boundary
••••••••••••••••••••	CBRS and OPA boundary
■	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
~~ 513 ~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{42}75^{000m}$E	1000-meter Universal Transverse Mercator grid ticks, zone 11
6000000 FT	5000-foot grid values: California State Plane coordinate system, Zone IV (FIPSZONE = 404), Lambert projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JUNE 16, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
SEPTEMBER 16, 2015 - to add Base Flood Elevations and Special Flood Hazard Areas, to change zone designations and Special Flood Hazard Areas, and to reflect updated topographic information.

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0040D

FIRM
FLOOD INSURANCE RATE MAP
KINGS COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 40 OF 875
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
KINGS COUNTY	060086	0040	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06031C0040D

MAP REVISED
SEPTEMBER 16, 2015
Federal Emergency Management Agency

LEGEND

▨	LIMITS OF PRODUCTION AREA

4CREEKS
324 S. SANTA FE, STE. A
VISALIA, CA 93292
(559) 802-3052

FEMA MAP
THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

NORTH

JOB NO. 22419
ATTACHMENT G
11/08/2022
1" = 5000'

APPENDIX A

USDA SOILS MAP AND CLASSIFICATION

Soil Map

Soil Map may not be valid at this scale.

Map Scale: 1:3,670 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- ▭ Area of Interest (AOI)

Soils
- ▭ Soil Map Unit Polygons
- 〰 Soil Map Unit Lines
- ■ Soil Map Unit Points

Special Point Features
- ⊙ Blowout
- ☒ Borrow Pit
- ✱ Clay Spot
- ◇ Closed Depression
- ✗ Gravel Pit
- ∴ Gravelly Spot
- ● Landfill
- ⋀ Lava Flow
- ψ Marsh or swamp
- ⚒ Mine or Quarry
- ◎ Miscellaneous Water
- ○ Perennial Water
- ∨ Rock Outcrop
- + Saline Spot
- ⁘ Sandy Spot
- ⊖ Severely Eroded Spot
- ◇ Sinkhole
- ⊳ Slide or Slip
- ∅ Sodic Spot
- ≡ Spoil Area
- ◊ Stony Spot
- ∞ Very Stony Spot
- ψ Wet Spot
- △ Other
- ‐‐ Special Line Features

Water Features
- 〰 Streams and Canals

Transportation
- ┼┼┼ Rails
- 〰 Interstate Highways
- 〰 US Routes
- 〰 Major Roads
- 〰 Local Roads

Background
- ▨ Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kings County, California
Survey Area Data: Version 18, Aug 31, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 16, 2022—May 30, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
112	Excelsior sandy loam	23.0	67.6%
174	Wasco sandy loam, 0 to 5 percent slopes	11.0	32.4%
Totals for Area of Interest		**33.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

APPENDIX B

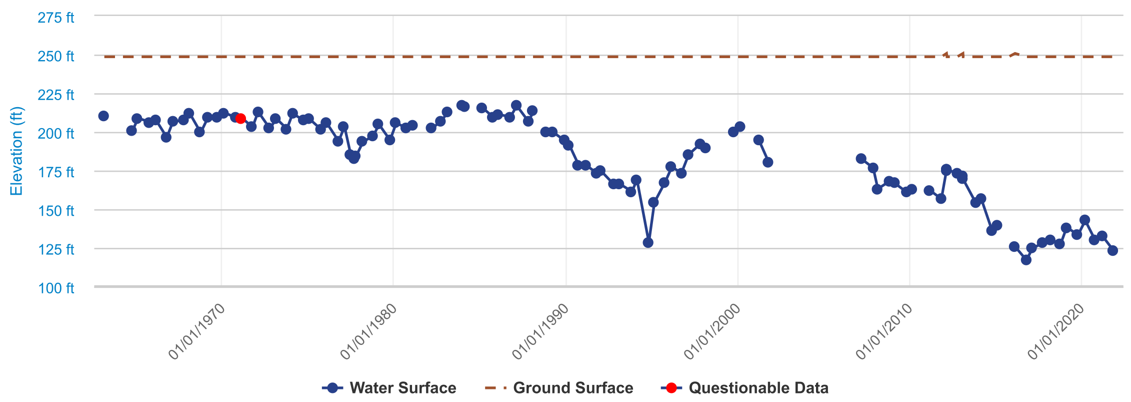
DWR GROUNDWATER HYDROGRAPHS

Groundwater Level Report

Station 364008N1196907W001

Station Data
Groundwater Level Data

Groundwater Levels for Well 364008N1196907W001



Download Data

Measuremen Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwate Elevation	Ground Surface to Water Surface	Measuremen Issue	Submitting Organization	Collecting Organization	Water Level Measuremen Comments
02/14/1963 00:00:00	249.400	248.600	39	210.4	38.2		Department of Water Resou...	Department of Water Resources	
02/12/1964 00:00:00	249.400	248.600				NM:Pumping	Department of Water Resou...	KINGS COUNTY WATER DISTRICT	
10/01/1964 00:00:00	249.400	248.600	48.9	200.5	48.1		Department of Water Resou...	KINGS COUNTY WATER DISTRICT	
02/01/1965 00:00:00	249.400	248.600	40.5	208.9	39.7		Department of Water Resou...	KINGS COUNTY WATER DISTRICT	
10/10/1965 00:00:00	249.400	248.600	43	206.4	42.2		Department of Water Resou...	KINGS COUNTY WATER DISTRICT	
02/22/1966 00:00:00	249.400	248.600	42	207.4	41.2		Department of Water Resou...	KINGS COUNTY WATER DISTRICT	

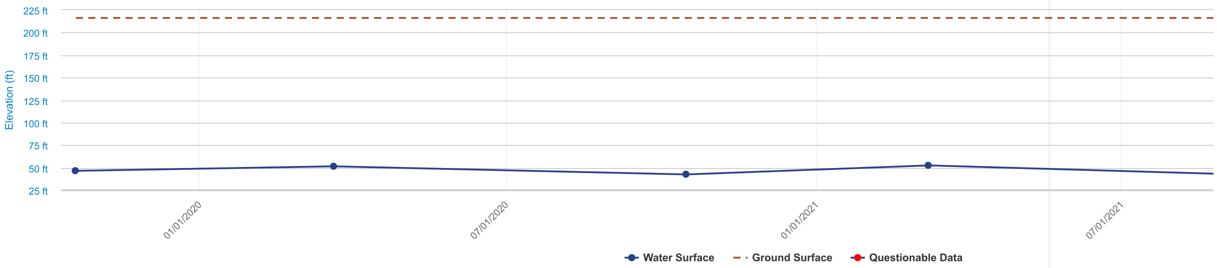
Back to Search

Groundwater Level Report

Station 363983N1198344W001

Station Data Groundwater Level Data

Groundwater Levels for Well 363983N1198344W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Submitting Organization	Collecting Organization	Water Level Measurement Comments
10/19/2019 12:00:00	216.500	216.200	170	46.5	169.7		North Fork Kings GSA...	North Fork Kings GSA	
03/20/2020 12:00:00	216.500	216.200	165	51.5	164.7		North Fork Kings GSA...	North Fork Kings GSA	
10/15/2020 12:00:00	216.500	216.200	174	42.5	173.7		North Fork Kings GSA...	North Fork Kings GSA	
03/08/2021 12:00:00	216.500	216.200	164	52.5	163.7		North Fork Kings GSA...	North Fork Kings GSA	
10/15/2021 12:00:00	216.500	216.200	176	40.5	175.7	QM:Oil or foreign substance in casing	North Fork Kings GSA...	North Fork Kings GSA	Oil or foreign substance in casing
03/15/2022 08:15:00	216.500	216.200	174	42.5	173.7		North Fork Kings GSA...	North Fork Kings GSA	

6 records

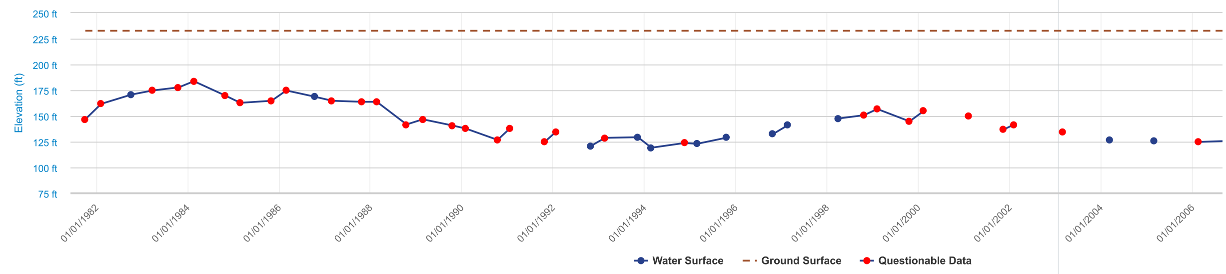
Back to Search

Groundwater Level Report

Station 364185N1198163W001

Station Data
Groundwater Level Data

Groundwater Levels for Well 364185N1198163W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Submitting Organization	Collecting Organization	Water Level Measurement Comments
10/01/1981 00:00:00	232.770	232.770	86	146.77	86	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
02/05/1982 00:00:00	232.770	232.770	71	161.77	71	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
10/05/1982 00:00:00	232.770	232.770	62	170.77	62		Department of Water Resou...	Department of Water Resources	
03/23/1983 00:00:00	232.770	232.770	58	174.77	58	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
10/18/1983 00:00:00	232.770	232.770	55	177.77	55	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
02/17/1984 00:00:00	232.770	232.770	49	183.77	49	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
10/26/1984 00:00:00	232.770	232.770	63	169.77	63	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
02/22/1985 00:00:00	232.770	232.770	70	162.77	70	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
10/30/1985 00:00:00	232.770	232.770	68	164.77	68	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
02/25/1986 00:00:00	232.770	232.770	58	174.77	58	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
10/09/1986 00:00:00	232.770	232.770	64	168.77	64		Department of Water Resou...	Bureau of Reclamation	
02/26/1987 00:00:00	232.770	232.770	68	164.77	68	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
10/22/1987 00:00:00	232.770	232.770	69	163.77	69	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
02/19/1988 00:00:00	232.770	232.770	69	163.77	69	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
10/14/1988 00:00:00	232.770	232.770	91	141.77	91	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
02/21/1989 00:00:00	232.770	232.770	86	146.77	86	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
10/16/1989 00:00:00	232.770	232.770	92	140.77	92	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
01/31/1990 00:00:00	232.770	232.770	95	137.77	95	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
10/12/1990 00:00:00	232.770	232.770	106	126.77	106	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	

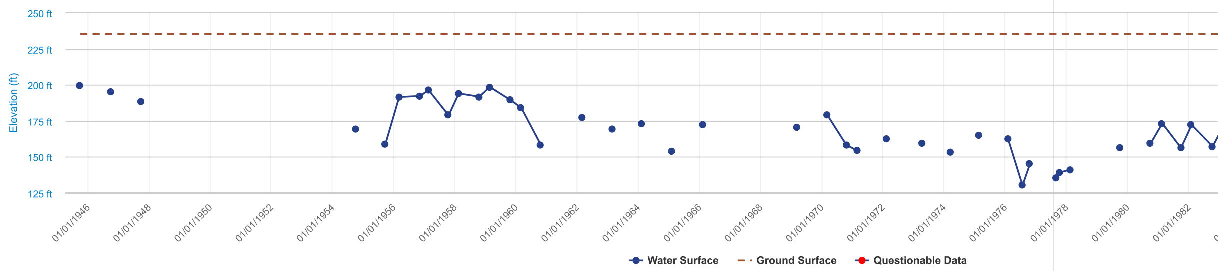
Back to Search

Groundwater Level Report

Station 363947N1197888W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 363947N1197888W001



Download Data

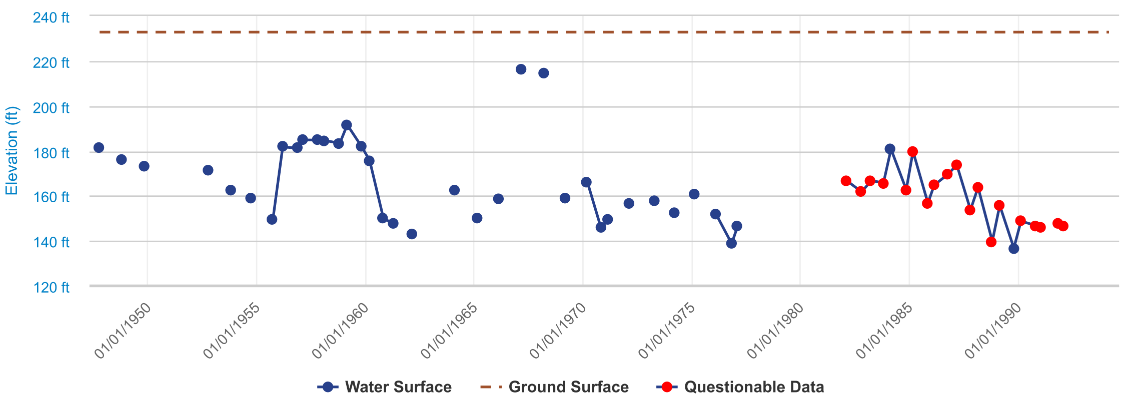
Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Submitting Organization	Collecting Organization	Water Level Measurement Comments
09/26/1945 00:00:00	236.280	235.280	36.5	199.78	35.5		Department of Water Resou...	Department of Water Resources	
10/03/1946 00:00:00	236.280	235.280	41	195.28	40		Department of Water Resou...	Department of Water Resources	
09/30/1947 00:00:00	236.280	235.280	48	188.28	47		Department of Water Resou...	Department of Water Resources	
10/22/1948 00:00:00	236.280	235.280				NM:Pumping	Department of Water Resou...	Department of Water Resources	
09/30/1954 00:00:00	236.280	235.280	67	169.28	66		Department of Water Resou...	Department of Water Resources	
09/20/1955 00:00:00	236.280	235.280	77.5	158.78	76.5		Department of Water Resou...	Department of Water Resources	
03/03/1956 00:00:00	236.280	235.280	44.7	191.58	43.7		Department of Water Resou...	Department of Water Resources	
11/06/1956 00:00:00	236.280	235.280	44	192.28	43		Department of Water Resou...	Department of Water Resources	
02/18/1957 00:00:00	236.280	235.280	39.9	196.38	38.9		Department of Water Resou...	Department of Water Resources	
10/15/1957 00:00:00	236.280	235.280	57.4	178.88	56.4		Department of Water Resou...	Department of Water Resources	
02/13/1958 00:00:00	236.280	235.280	42.2	194.08	41.2		Department of Water Resou...	Department of Water Resources	
10/17/1958 00:00:00	236.280	235.280	44.5	191.78	43.5		Department of Water Resou...	Department of Water Resources	
02/19/1959 00:00:00	236.280	235.280	37.7	198.58	36.7		Department of Water Resou...	Department of Water Resources	
10/21/1959 00:00:00	236.280	235.280	46.7	189.58	45.7		Department of Water Resou...	Department of Water Resources	
03/01/1960 00:00:00	236.280	235.280	52.1	184.18	51.1		Department of Water Resou...	Department of Water Resources	
10/20/1960 00:00:00	236.280	235.280	77.8	158.48	76.8		Department of Water Resou...	Department of Water Resources	
04/04/1961 00:00:00	236.280	235.280				NM:Pumping	Department of Water Resou...	Department of Water Resources	

Groundwater Level Report

Station 363800N1197974W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 363800N1197974W001



Download Data

Measuremen Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measuremen Issue	Submitting Organization	Collecting Organization	Water Level Measurement Comments
10/02/1947 00:00:00	233.790	232.790	52.2	181.59	51.2		Department of Water Resou...	Department of Water Resources	
10/22/1948 00:00:00	233.790	232.790	57.4	176.39	56.4		Department of Water Resou...	Department of Water Resources	
10/19/1949 00:00:00	233.790	232.790	60.7	173.09	59.7		Department of Water Resou...	Department of Water Resources	
09/26/1950 00:00:00	233.790	232.790				NM:Pumping	Department of Water Resou...	Department of Water Resources	
09/26/1952 00:00:00	233.790	232.790	62.3	171.49	61.3		Department of Water Resou...	Department of Water Resources	
10/20/1953 00:00:00	233.790	232.790	71.3	162.49	70.3		Department of Water Resou...	Department of Water Resources	
09/30/1954 00:00:00	233.790	232.790	74.5	159.29	73.5		Department of Water Resou...	Department of Water Resources	
09/21/1955 00:00:00	233.790	232.790	84	149.79	83		Department of Water Resou...	Department of Water Resources	

APPENDIX C

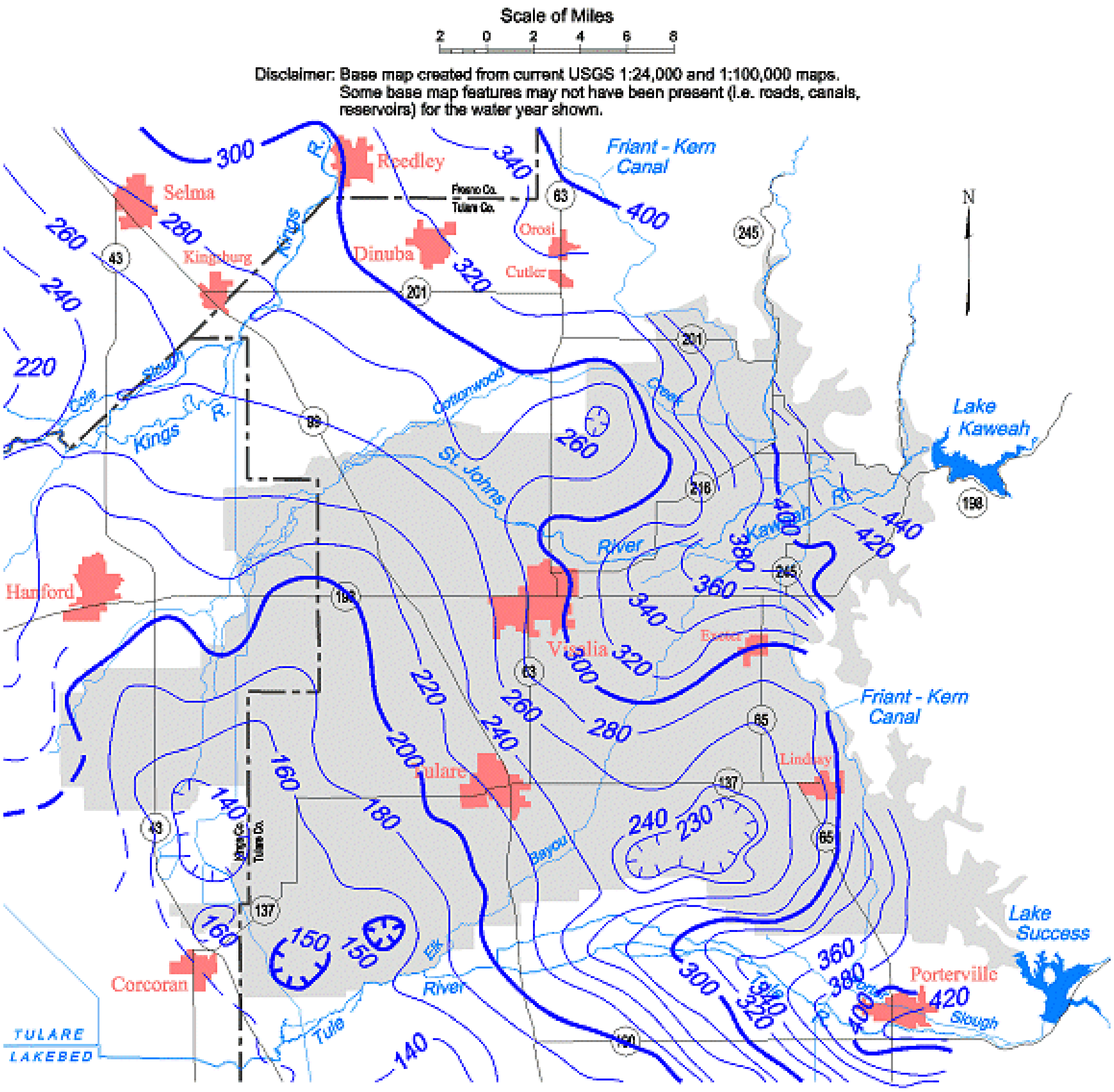
DWR LINES OF EQUAL ELEVATION IN WATER WELLS

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 1958, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer



Disclaimer: Base map created from current USGS 1:24,000 and 1:100,000 maps. Some base map features may not have been present (i.e. roads, canals, reservoirs) for the water year shown.

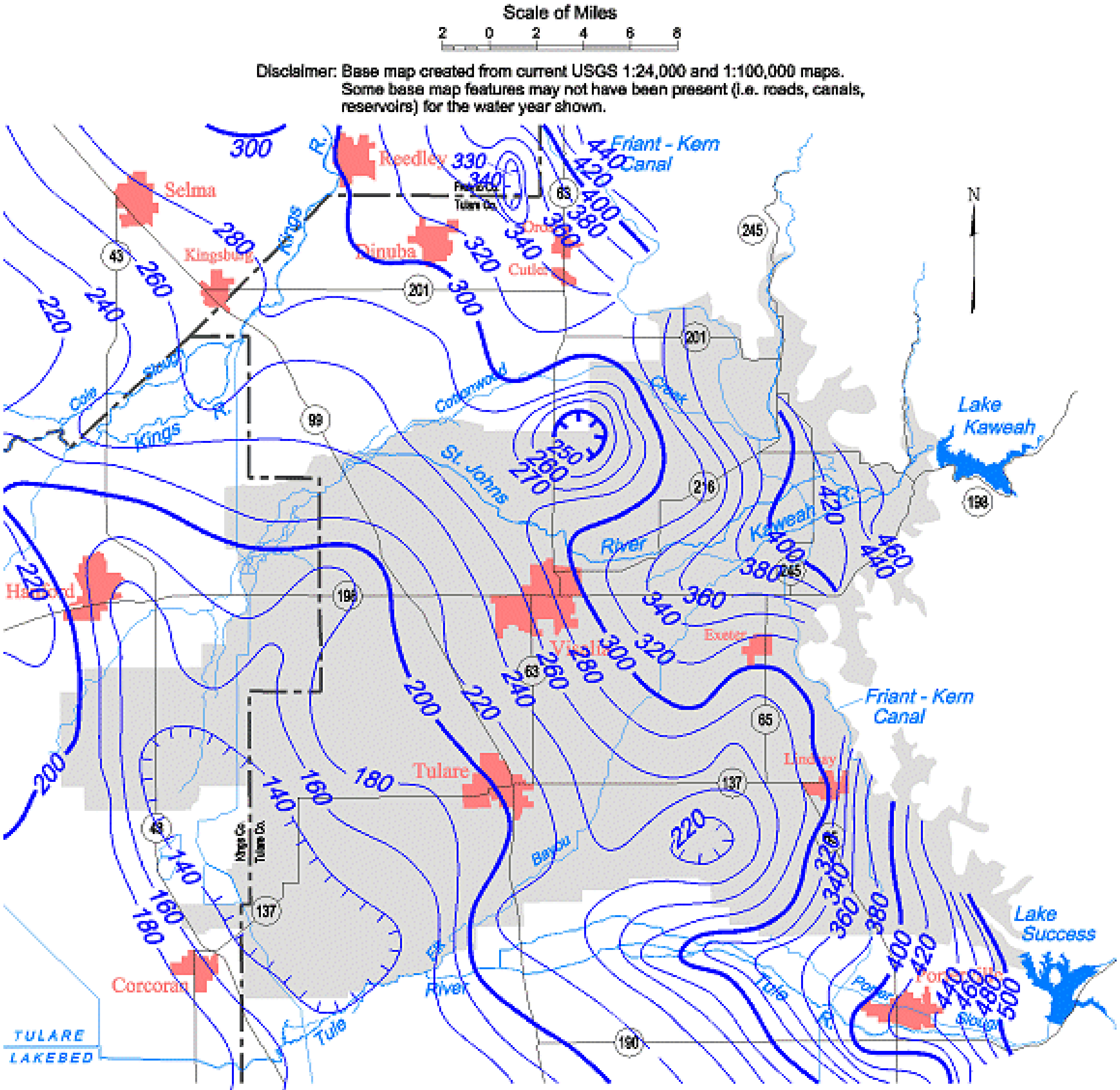
Contours are dashed where inferred. Contour interval is 10, 20 and 60 feet.

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 1969, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer



Disclaimer: Base map created from current USGS 1:24,000 and 1:100,000 maps. Some base map features may not have been present (i.e. roads, canals, reservoirs) for the water year shown.

Contours are dashed where inferred. Contour interval is 10 and 20 feet.

Groundwater Data & Monitoring

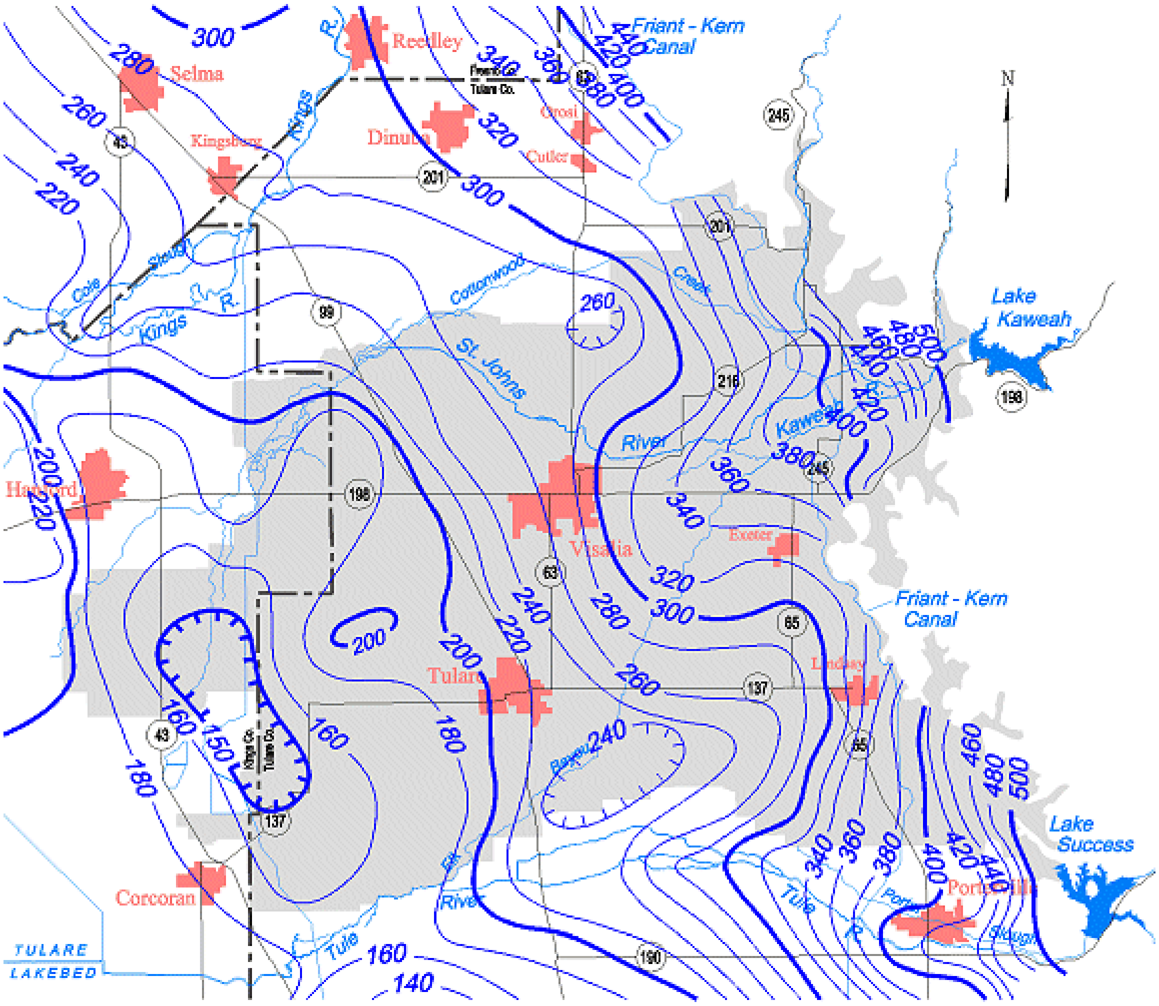
South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 1976, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer

Scale of Miles
2 0 2 4 6 8

Disclaimer: Base map created from current USGS 1:24,000 and 1:100,000 maps. Some base map features may not have been present (i.e. roads, canals, reservoirs) for the water year shown.



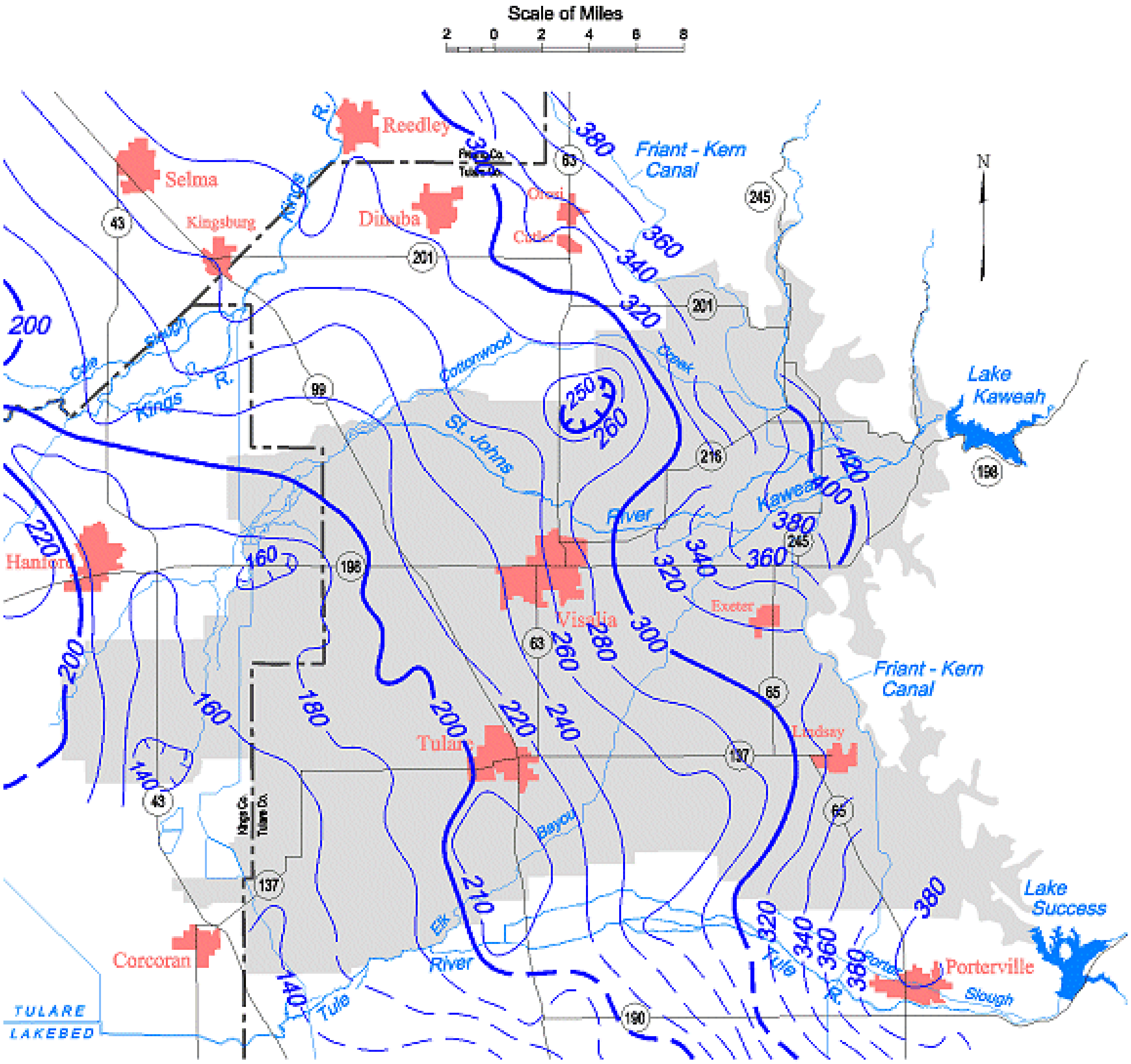
Contours are dashed where inferred. Contour interval is 10 and 20 feet.

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 1990, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer



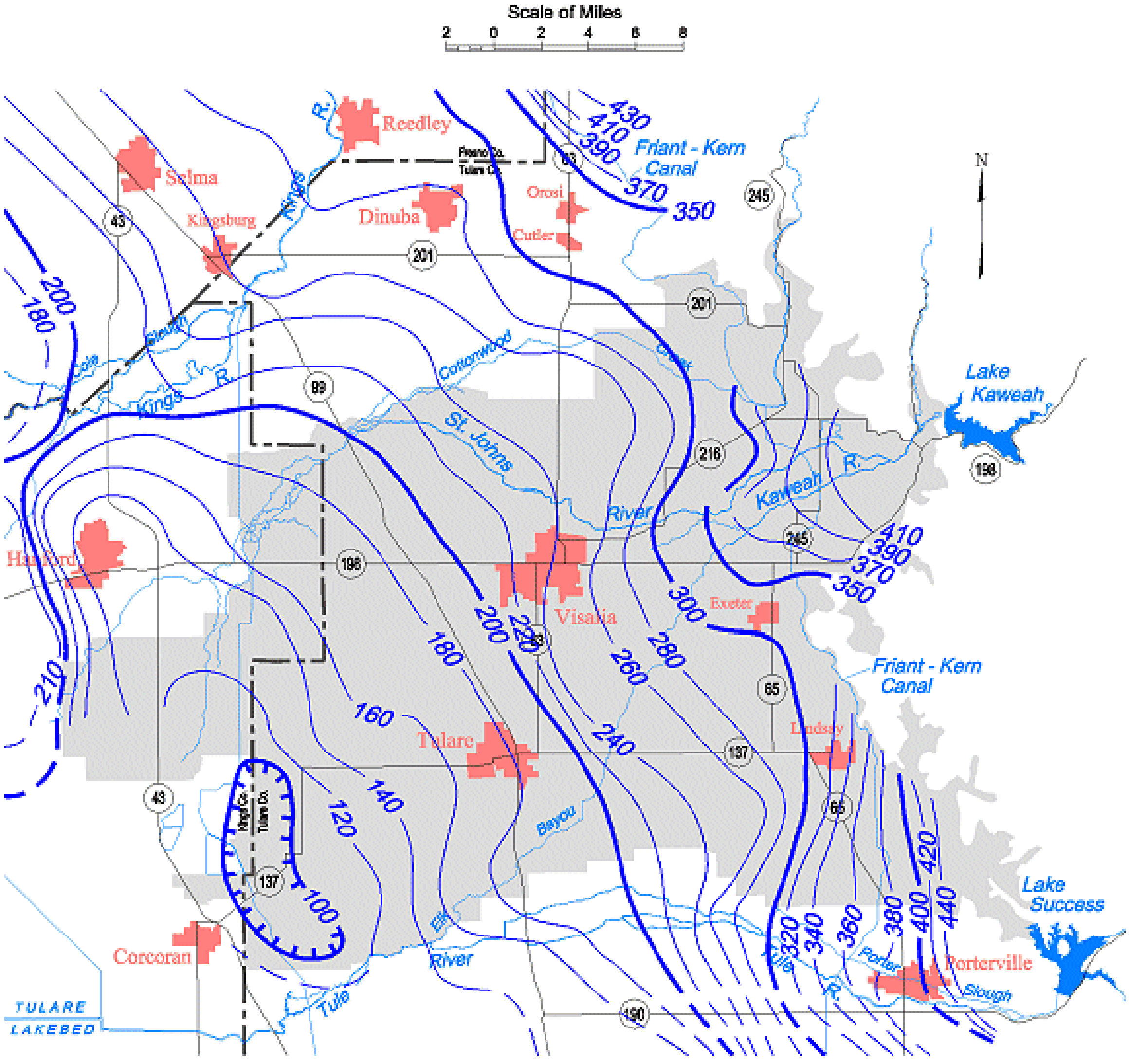
Contours are dashed where inferred. Contour interval is 10 and 20 feet.

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 1995, Lines of Equal Elevation of
Water in Wells, Unconfined Aquifer



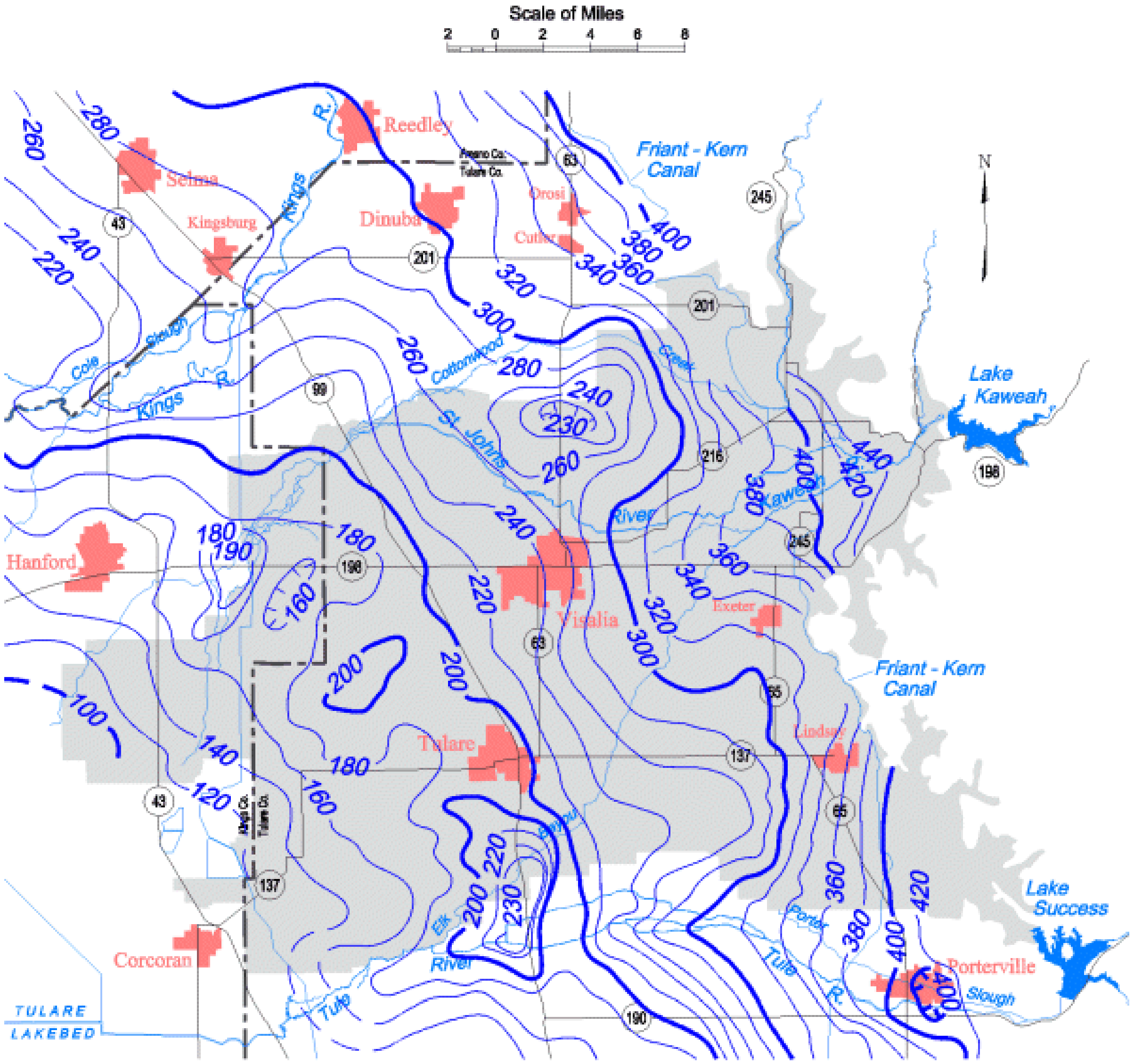
Contours are dashed where inferred. Contour interval is 10, 20 and 50 feet.

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 2000, Lines of Equal Elevation of
Water in Wells, Unconfined Aquifer



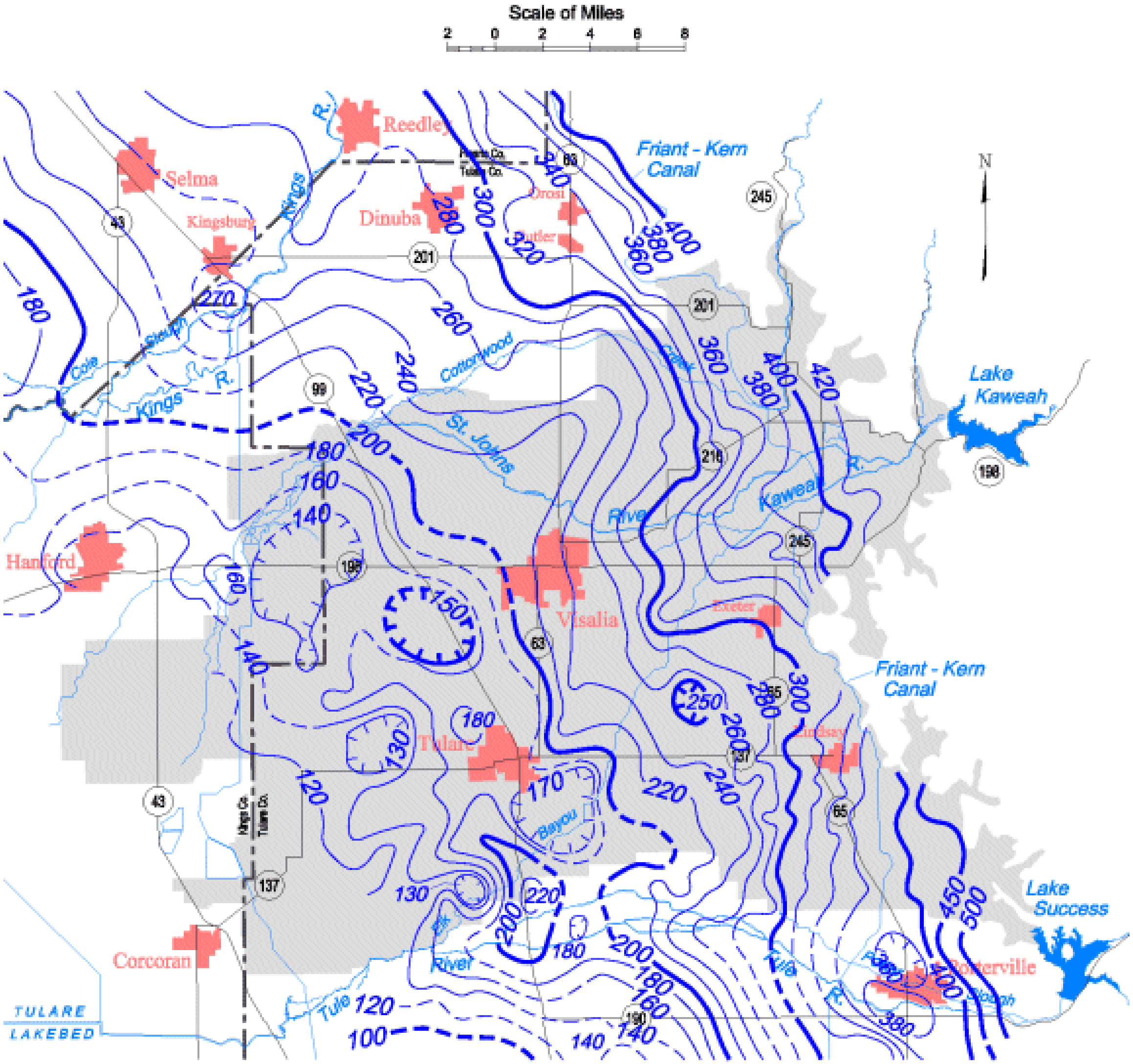
Contours are dashed where inferred. Contour interval is 10 and 20 feet.

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

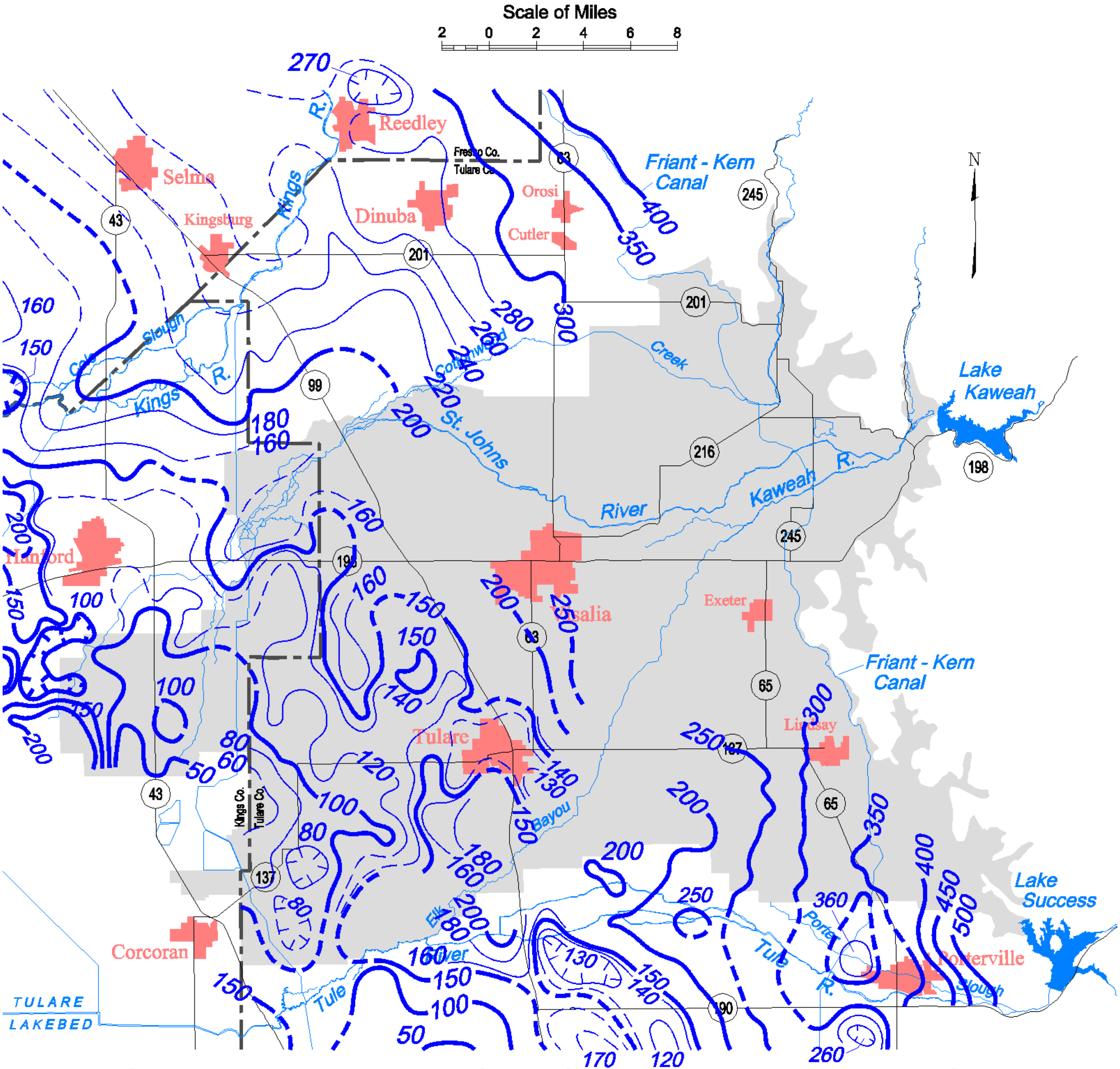
Spring 2005, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer



Contours are dashed where inferred. Contour interval is 10, 20 and 50 feet.

Kaweah Groundwater Basin

Spring 2010, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer

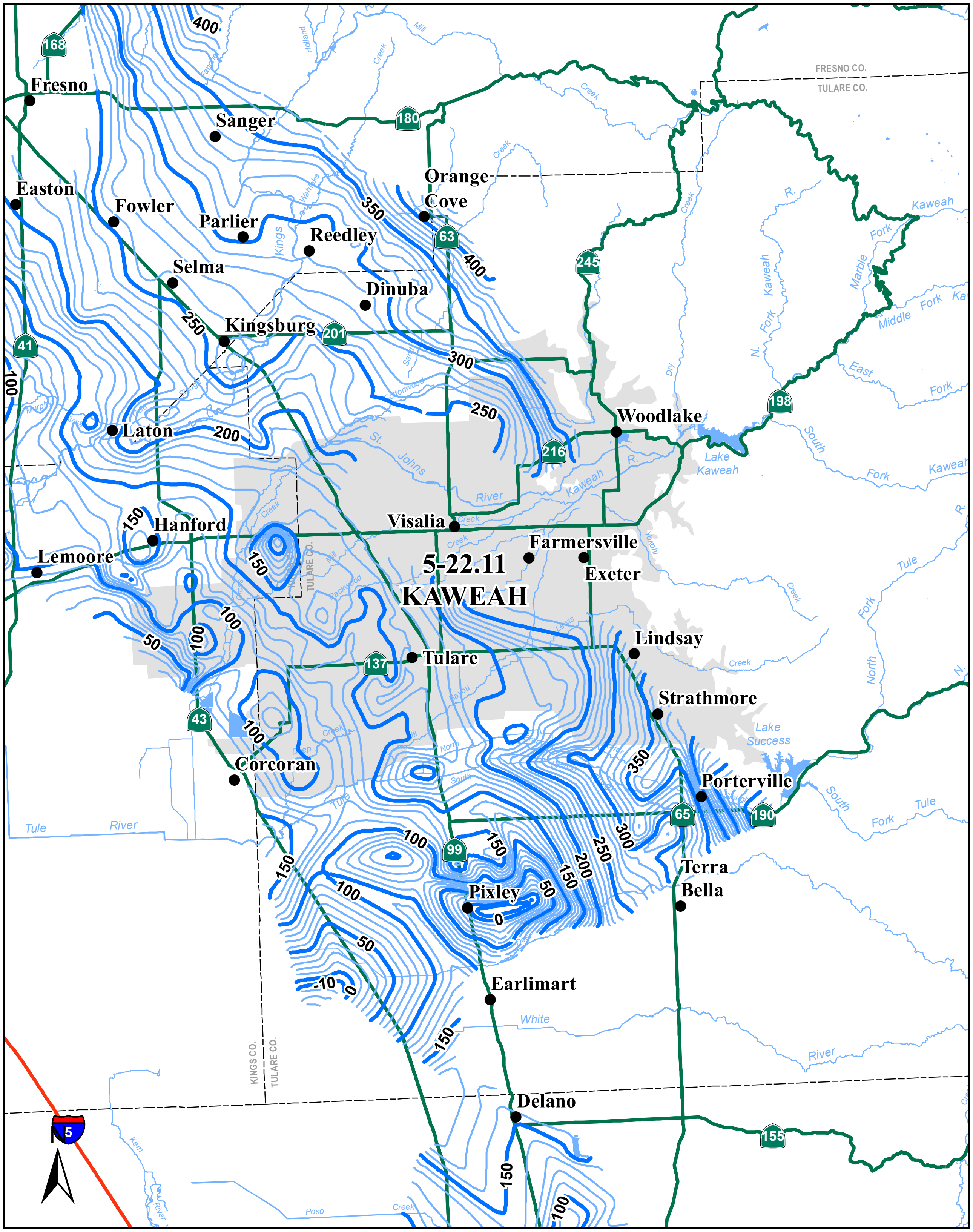


Contours are dashed where inferred. Contour interval is 10, 20 and 50 feet.

Kaweah Groundwater Basin 5-22.11

Groundwater Elevation Contours - Spring 2011

Tulare Lake Hydrologic Region



Lines of equal elevation of groundwater in feet above mean sea level.
Groundwater contours are a generalized representation of static water levels interpreted from wells measured in Spring 2011.
Water levels are interpreted to represent unconfined conditions.

0 5 10 Miles

South Central
Region Office

APPENDIX D

WASTEWATER RETENTION POND VOLUME ANALYSIS

Calculations Completed By: MC
Calculations Checked By: KMP
Date: 1/31/2023

Wastewater Retention Pond Volume Analysis

THOMAS BROS. COMPOSTING

A. PROPOSED POND STORAGE VOLUME

SUMMARY *(See Appendix E for Calculations)*

Pond	Pond Type	Depth of Pond November 1st (ft)	Storage Period Pond Volume Reduction (gal)
Pond 1:	Evaporation	0.00	0

Pond	Total Raw Volume (gal)	Freeboard Reduction (gal)	Storage Period Pond Reduction (gal)	Total Retention Volume (gal)
Pond 1:	787,948	108,507	0	679,441
			TOTAL:	**679,441**

B. PROCESS WATER & PRECIPITATION RUN-OFF VOLUME ANALYSIS

Composting Process Water Volume

Material	*Total Volume Received (wet-tons/year)*	*Moisture Content*	*Total Volume Received (yd^3/year)*	*Total Volume of Wastewater (gal./day)*
Manure Stacking Output	70,000	0.25	56,000	7,747

Truck Wash Process Water Volume

	Units	Facility Trucks
Average Vehicles Per Week (6 Operational Days)	vehicles/week	12
Average Vehicle Per Day	vehicles/day	2
Wash Time	min.	15
Water Usage Rate	gal./min.	10
Average Water Usage per Vehicle	gal.	150
Average Solid Manure Deposit per Vehicle	gal.	100
Process Pit Solids Removal	%	60%
Total Daily Process Wastewater Generated	**gal./day**	**200**

Summary:

Wastewater Source	*Volume (gal./day)*
Composting Process Water Volume	7,747
Truck Wash Process Water Volume	200
Total Process Water Volume	**7,947**

C. PRECIPITATION RUN-OFF VOLUME ANALYSIS

Rainfall Run-off from Production Area (Attachment D)

Total Production Tributary Area	688,119	ft²
	15.80	*acres*

Run-off Coefficients (Appendix I)

Runoff Coefficient for Impervious:	0.75
Runoff Coefficient for Pervious:	0.31
25 Yr. 24 Hr. Storm Runoff Coefficient for Impervious:	0.88
25 Yr. 24 Hr. Storm Runoff Coefficient for Pervious:	0.40

Production Area Subdivision Summary

Area Description	Run-off Area (ft²)	Run-off Coefficient	Weighted Run-off Area (ft²)
Wastewater Retention Pond Area	14,463	1.00	14,463
Total Impervious Area	7,410	0.75	5,558
Total Pervious Area	666,246	0.31	206,536
Total Production Area	**688,119**		**226,557**

Conversion Factor: **0.623377**
(7.48051941 gal/ft³ x 1 ft/12 in)

Conversion Factor: **201.974024**
(7.48051941 gal/ft³ x 27 ft³/yd³)

25 year 24 hour Rainfall Event

Source: NOAA Online Weather Data: NOAA Atlas 2, 1973 for 25 yr / 24 hr (Appendix G)

Area Description	Rainfall (in.)	Run-off Coefficient	Weighted Run-off Area (ft²)	Total Volume Accumulated (gal)
Wastewater Retention Pond Area	2.00	1.00	14,463	**18,032**
Total Impervious Part of Tributary Area	2.00	0.88	6,521	**8,130**
Total Pervious Part of Tributary Area	2.00	0.40	266,498	**332,258**
Total Production Area			**287,482**	**358,419**

Evaporation from Wastewater Basin

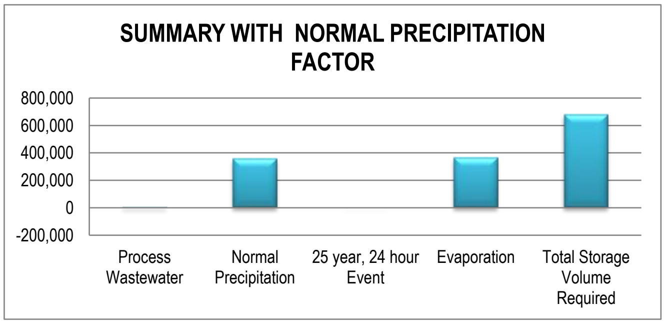
Source DWR-San Joaquin District Plan Evaporation Monthly Averages for Fresno and Bakersfield from 1968-2010 (Appendix H)

Annual Evaporation	*Bakersfield Average Daily Evaporation Rate (in./day)*	*Fresno Average Daily Evaporation Rate (in./day)*	*Average Daily Evaporation Rate (in./day)*	*Total Volume Evaporated (gal./day)*
Daily Total:	0.18	0.19	0.185	1,668

D. SUMMARY OF REQUIRED WATER RETENTION POND STORAGE VOLUME:

Volume Analysis

Volume Description	Total Volume Per Day (gal.)
Total Process Water Volume	7,947
Wastewater Accumulated From 25 Year, 24 Hour Event	358,419
Less: Evaporation from Wastewater Retention Ponds	(1,668)
Net Required Wastewater Retention Pond Storage Volume	**364,698**
Less: Net Existing Wastewater Retention Ponds Storage Volume	679,441
Excess Wastewater Retention Pond Capacity	**314,742**



APPENDIX E

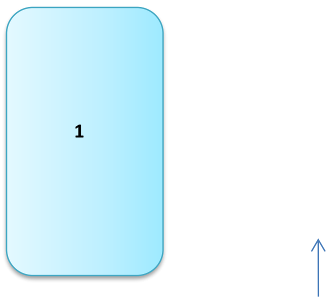
WASTEWATER RETENTION POND CAPACITY ANALYSIS

Calculations Completed By: DR
Calculations Checked By: KMP
Date: 1/31/2023

Wastewater Retention Pond Field Capacity Analysis

THOMAS BROS. COMPOSTING

KEY MAP



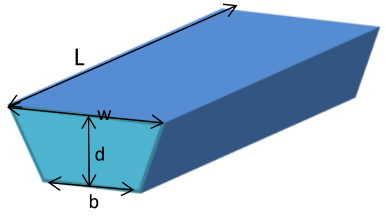
Volume Formula

B_1= (L)(W)

B_2= [L-(2Sd)][W-(2Sd)]

M= [L-(Sd)][W-(Sd)]

Volume= 1/6d(B_1+4M+B_2)



SUMMARY

Pond	Total Raw Volume (ft^3)	1 Foot Freeboard Reduction (ft^3)	Storage Period Pond Volume Reduction (ft^3)	Total Retention Volume (ft^3)
Pond 1:	105,333	14,505	0	**90,828**
			TOTAL:	**90,828**

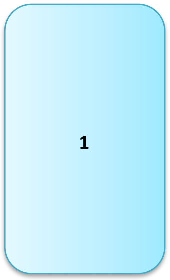
Pond	Total Volume (gal)	1 Foot Freeboard Reduction (gal)	Storage Period Pond Reduction (gal)	Total Retention Volume (gal)
Pond 1:	787,948	108,507	0	**679,441**
			TOTAL:	**679,441**

Definitions:

Overflow Pond:	Capacity is that volume above the overflow pipe, less the freeboard
Irrigation Pond:	Capacity is that volume above the residual solids*, less the freeboard
Evaporation Pond:	Capacity is the entire "raw capacity", less the freeboard

** Residual Solids are assumed to be 2 feet deep if the wastewater did not pass through a solids separation system before entering the pond. If there is solids separation before entering the pond, the assumed level of residual solids is reduced by half. If there is secondary separation after the primary separation, the residual solids are reduced again by half.*

Pond #1 - Evaporation Pond

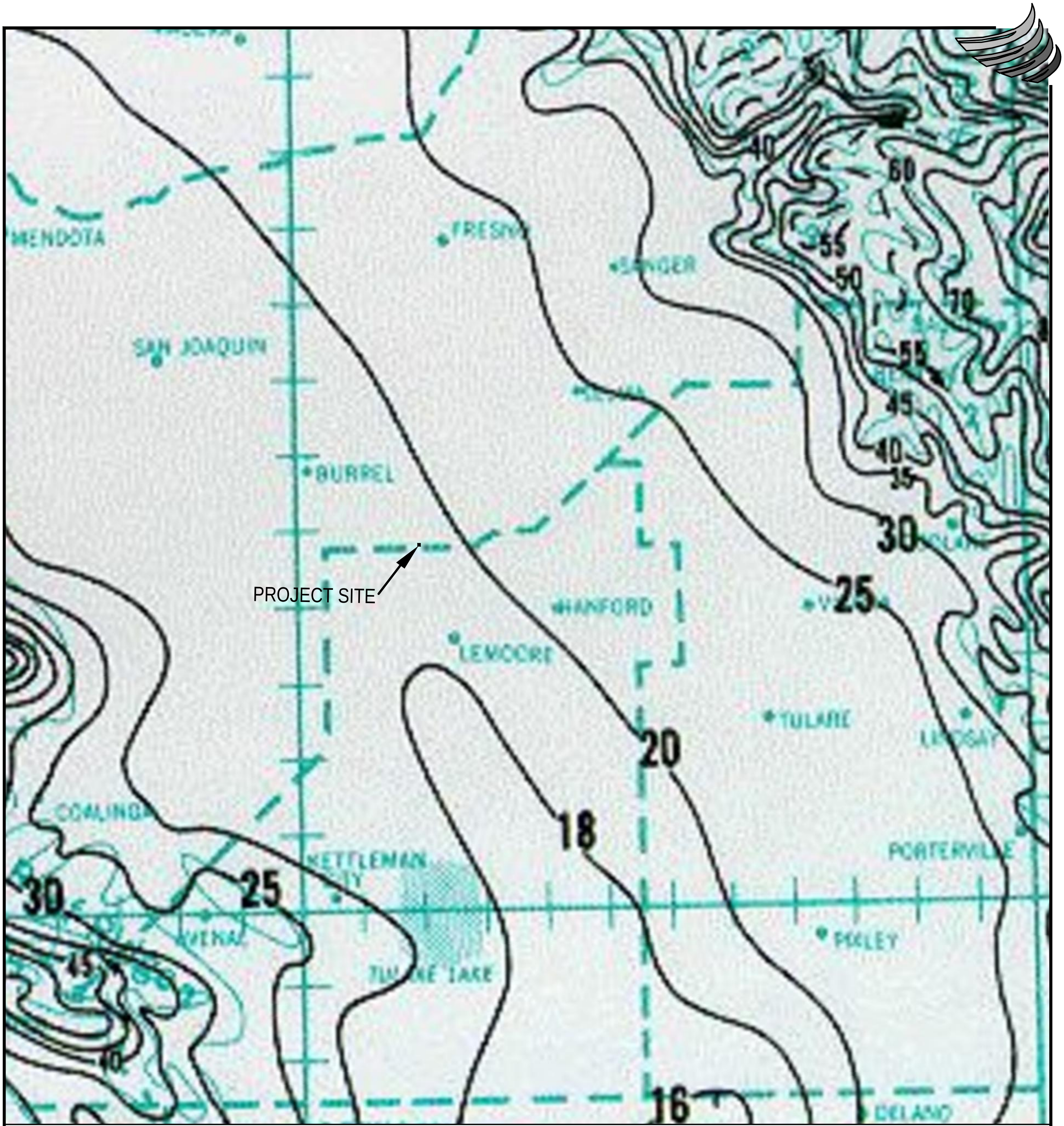


Proposed Pond Dimensions

	Total Volume (ft^3)	1 Foot Freeboard Reduction (ft^3)	Storage Period Pond Reduction (ft^3)
Pond Top Length	150.00	150.00	110.00
Pond Top Width	100.00	100.00	60.00
Average Depth (d)	10.00	1.00	0.00
Side Slope H:V (S)	2.00	2.00	2.00
Wastewater Pond Surface Area	15,000	15,000	6,600
Calculations:			
B_1=	15,000	15,000	6,600
B_2=	6,600	14,016	6,600
M=	10,400	14,504	6,600
Calculated Volume (ft^3):	**105,333**	**14,505**	**0**

APPENDIX F

25 YEAR, 24 HOUR STORM WATER DATA



NOAA ATLAS 2, VOLUME XI

PREPARED BY U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE, OFFICE OF HYDROLOGY

PREPARED FOR U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, ENGINEERING DIVISION

ISOPLUVIALS OF 25-YR 24-HR PRECIPITATION FOR
SOUTHERN HALF OF CALIFORNIA TENTHS OF AN INCH

4CREEKS
324 S. SANTA FE, STE. A
VISALIA, CA 93292
(559) 802-3052

ISOPLUVIAL - 25 YEAR, 24 HOUR

THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

NORTH

JOB NO. 22419
APPENDIX F
10/12/2022
1" = 10 MILES

APPENDIX G

EVAPORATION DATA

AVERAGE MONTHLY EVAPORATION FROM CLASS 'A' PAN IN IRRIGATED PASTURE ENVIRONMENTS NEAR BAKERSFIELD, CALIFORNIA FROM 1958-2010 /1

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MAR - OCT TOTAL	JAN - DEC TOTAL
	****EVAPORATION IN INCHES****													
AVERAGE	1.44	2.25	4.13	5.95	8.35	9.58	9.94	8.85	6.62	4.47	2.24	1.35	57.89	65.17
STD DEV	0.34	0.45	0.71	0.86	0.82	0.79	0.82	0.71	0.64	0.43	0.36	0.36	0.72	0.61
STD ERROR	0.05	0.06	0.10	0.12	0.11	0.11	0.11	0.10	0.09	0.06	0.05	0.05	0.10	0.08

AVERAGE MONTHLY EVAPORATION FROM CLASS 'A' PAN IN IRRIGATED PASTURE ENVIRONMENTS AT CALIFORNIA STATE UNIVERSTIY AT FRESNO FROM 1968-2010 /1

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MAR - OCT TOTAL	JAN - DEC TOTAL
	****EVAPORATION IN INCHES****													
AVERAGE	1.26	2.08	3.94	6.03	8.75	10.43	11.02	9.67	6.99	4.42	2.25	1.21	61.26	68.07
STD DEV	0.28	0.41	0.77	0.86	1.03	0.92	0.73	0.68	0.57	0.49	0.40	0.30	0.76	0.62
STD ERROR	0.04	0.06	0.12	0.13	0.16	0.14	0.11	0.11	0.09	0.07	0.06	0.05	0.12	0.10

1/ Evaporation measurements are taken from evaporation pans located at standardized sites (irrigated pastures) with static water levels maintained in the pans by supply tanks. The sites are visited at least weekly to measure evaporation from a U.S. Weather Bureau Class 'A' Pan. Other agrometeorological equipment, (i.e.raingauge, anemometer, ambient air thermometers) is installed at onsite DWR agroclimatic stations, and this data is collected weekly along with pan evaporation. The evaporation may be adjusted during times of high wind or dry periods, which represent non-standard conditions.

APPENDIX H

STORM DRAIN RUN-OFF COEFFICIENT DATA

15.2.2 Rational Method Design

From an engineering viewpoint the design can be divided into two main aspects: runoff predictions and pipe sizing. The rational method, which can be traced back to the mid-nineteenth century, is still probably the most popular method used for the design of storm sewers (Yen and Akan, 1999). Although criticisms have been raised of its adequacy, and several other more advanced methods have been proposed, the rational method, because of its simplicity, is still in continued use for sewer design when high accuracy of runoff rate is not essential.

Using the rational method, the storm runoff peak is estimated by the rational formula $Q=KCiA$ (15.2.1) where the peak runoff rate Q is in ft^3/s (m^3/s), K is 1.0 in U.S. customary units (0.28 for SI units), C is the runoff coefficient (Table 15.2.3), I is the average rainfall intensity in in/hr (mm/hr) from intensity-duration frequency relationships for a specific return period and duration t_c in min, and A is the area of the tributary drainage area in acres (km^2). The duration is taken as the time of the concentration t_c of the drainage area.

Runoff Coefficients for Use in the Rational Method

	Return Period (years)						
Character of Surface	2	5	10	25	50	100	500
Developed							
Asphaltic	0.73	0.77	0.81	0.86	0.90	0.95	1.00
Concrete/roof	**0.75**	0.80	0.83	**0.88**	0.92	0.97	1.00
Grass Areas (lawns, parks,etc.)							
Poor condition (grass cover less than 50% of the area)							
Flat, 0-2%	0.32	0.34	0.37	0.40	0.44	0.47	0.58
Average, 2-7%	0.37	0.40	0.43	0.46	0.49	0.53	0.61
Steep, over 7%	0.40	0.43	0.45	0.49	0.52	0.55	0.62
Fair condition (grass cover 50% to 75% of the area)							
Flat, 0-2%	0.25	0.28	0.30	0.34	0.37	0.41	0.53
Average, 2-7%	0.33	0.36	0.38	0.42	0.45	0.49	0.58
Steep, over 7%	0.37	0.40	0.42	0.46	0.49	0.53	0.60
Good condition (grass cover larger than 75% of the area)							
Flat, 0-2%	0.20	0.23	0.25	0.29	0.32	0.36	0.49
Average, 2-7%	0.29	0.32	0.35	0.39	0.42	0.46	0.56
Steep, over 7%	0.34	0.37	0.40	0.44	0.47	0.51	0.58
Undeveloped							
Cultivated land							
Flat, 0-2%	**0.31**	0.34	0.36	**0.40**	0.43	0.47	0.57
Average, 2-7%	0.35	0.38	0.41	0.44	0.48	0.51	0.60
Steep, over 7%	0.39	0.42	0.44	0.48	0.51	0.54	0.61
Pasture/range							
Flat, 0-2%	0.25	0.28	0.30	0.34	0.37	0.41	0.53
Average, 2-7%	0.33	0.36	0.38	0.42	0.45	0.49	0.58
Steep, over 7%	0.37	0.40	0.42	0.46	0.49	0.53	0.60
Forest/woodlands							
Flat, 0-2%	0.20	0.25	0.25	0.31	0.35	0.39	0.48
Average, 2-7%	0.31	0.34	0.26	0.40	0.43	0.47	0.56
Steep, over 7%	0.35	0.39	0.41	0.45	0.48	0.52	0.58

Note: The values in the table are the standards used by the City of Austin, Texas.

Source: Chow, Maidment, and Mays (1988).

Appendix G

Geotechnical Engineering Report

GEOTECHNICAL ENGINEERING INVESTIGATION REPORT
THOMAS COMPOSTING FACILITY
20111 EXCELSIOR AVENUE
RIVERDALE, CALIFORNIA 93656

BSK PROJECT G00000713

PREPARED FOR:

4-CREEKS, INC.
324 S. SANTA FE STREET, SUITE A
VISALIA, CALIFORNIA 93292

JANUARY 9, 2023

GEOTECHNICAL ENGINEERING INVESTIGATION REPORT
THOMAS COMPOSTING FACILITY
20111 EXCELSIOR AVENUE
RIVERDALE, CALIFORNIA 93656

Prepared for:

4-Creeks, Inc.
324 S. Santa Fe Street, Suite A
Visalia, California 93292

BSK Project: G00000713

January 9, 2023

Prepared by:

Tolleman Gorham, EIT
Staff Professional II

Neva M. Popenoe, PE, GE
Geotechnical Group Manager

NEVA M. POPENOE
GE 3024
EXP. 6-30-2023

BSK Associates
550 West Locust Avenue
Fresno, California 93650
(559) 497-2880
www.bskassociates.com

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Tables

Figures

Appendices

1 INTRODUCTION

1.1 General

This report presents the results of our geotechnical engineering investigation for the proposed composting facility, basins, truck wash station, and other structures to be constructed at the Thomas Composting facility in Riverdale, California as shown on the Site Vicinity Map, Figure 1. The geotechnical engineering investigation was conducted in general accordance with the scope of services outlined in BSK Proposal G00000713, dated November 11, 2022. The proposed improvements and exploratory borings and tests are shown on Figure 2, Boring Location Map.

In the event that significant changes occur in the design or location of the proposed improvements, the conclusions and recommendations presented in this report will not be considered valid unless the changes are reviewed by BSK, and the conclusions and recommendations are modified or verified in writing as necessary.

1.2 Project Description

BSK understands that the proposed composting working surfaces are anticipated to be 1 to 2 feet thick. In addition, existing ponds are anticipated to be used as wastewater detention ponds. Two new ponds are planned. The new ponds are planned to be 160 feet by 200 feet and 80 feet by 120 feet, respectively. It is anticipated that the inboard and outboard slopes of the proposed detention ponds will be no steeper than 2H:1V (Horizontal:Vertical), and the anticipated depth of the ponds is anticipated to be 15 feet below ground surface (bgs) and 10 feet below ground surface (bgs). New structures and equipment will be supported on concrete shallow footings and/or concrete mats. Other improvements are anticipated to include underground utilities. Cut and fill elevations are anticipated to be on the order of 2 to 15 feet.

1.3 Purpose and Scope of Services

The purpose of the geotechnical investigation is to assess soil conditions at the project site and provide geotechnical engineering recommendations for use by the project designers. The scope of the investigation included a field exploration, laboratory testing, engineering analysis, and preparation of this report.

2 FIELD INVESTIGATION AND LABORATORY TESTING

2.1 General

The field exploration, conducted on November 21, 2022, consisted of a site reconnaissance, drilling twelve (12) exploratory test borings. The borings were drilled to depths of approximately 1.5 feet to 41.5 feet below ground surface (bgs) within the proposed improvement locations. The test borings were drilled with a truck-mounted drill rig, equipped with 8-inch augers. The approximate boring locations are presented on Figure 2. Details of the field exploration and the boring logs are provided in Appendix A.

One (1) percolation test and two (2) double ring hydrometer tests were conducted in the field. The test locations can be found on Figure 2, Boring Location Map. The double ring tests were taken at the bottom of the existing basins which were approximately 15 feet deep. The last three rates from the slowest percolation test are averaged to calculate the percolation rates. The results of the tests are presented in Table 1 below and in Appendix D.

Table 1: Summary of Percolation and Double Ring Test Results

Test Location	Approximate Depth at Bottom of Hole (ft)	Soil Description at Bottom of Hole	Percolation Rate (minutes/inch)
PT-1 (B-3)	19	Poorly Graded Sand (SP)	5.8
DR-1	N/A	Silty Sand (SM)	145
DR-2	N/A	Silty Sand (SM)	278

BSK recommends a factor of safety of at least 3 when applying percolation rates to the design of the system.

2.2 Laboratory Testing

Laboratory testing of selected soil samples were performed to evaluate certain physical, chemical, and engineering characteristics and properties. The testing program included: in-situ moisture and density, expansion index, gradation, direct shear, hydraulic conductivity, and corrosion potential. The in-situ moisture and dry density test results are presented on the boring logs in Appendix A. Descriptions of the laboratory test methods and test results are provided in Appendix B.

3 SITE CONDITIONS

3.1 Site Description

The proposed improvements will be situated within the Thomas Composting facility. The proposed improvements are located within a predominantly agricultural area. The area of improvements was bound by 20th Avenue to the east with agricultural fields beyond. To the south and west was a canal with agricultural fields beyond. To the north was Excelsior Avenue with agricultural fields and facilities beyond. The site contained dairy improvements, including corrals, barns, and residences.

3.2 Subsurface Conditions

The near surface soil consisted of sandy clay with various sand content underlain by layers of sandy silt, silty sand, and poorly graded sand to the maximum depth explored (41.5 feet bgs). The boring logs in Appendix A provide a more detailed description of the soils encountered in each boring, including the applicable Unified Soil Classification System symbols. The approximate locations of the soil borings are shown on the Boring Location Map (Figure 2).

3.3 Groundwater

Groundwater was encountered at the approximate depth of 20 feet in test boring B-1, B-2, B-3, and B-4 at the completion of our field exploration, November 21, 2022. The California Department of Water Resources indicates the depth to regional groundwater at the project site is greater than 50 feet bgs. However, fluctuations in the groundwater level or the presence of perched groundwater may occur due to variations in rainfall, irrigation, seasonal factors, pumping from wells and other factors that were not evident at the time of our investigation.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 General

Based upon the data collected during this investigation and from a geotechnical engineering standpoint, it is our opinion that there are no soil conditions that would preclude the construction of the proposed improvements, provided the recommendations presented in this report are incorporated into the project design and construction. The planned improvements may be supported on shallow isolated/continuous reinforced concrete spread footings, thickened mat foundations, and/or pole footings provided the structural engineer evaluate if the structure can tolerate the estimated settlement shown in Section 4.6.

4.2 Soil Corrosivity

One (1) surface soil sample obtained from the site was tested to provide a preliminary screening of the potential for concrete deterioration or steel corrosion due to attack by soil-borne soluble salts. The test results are presented in Appendix B. The soil was evaluated for minimum resistivity and pH (CT 643), soluble sulfate (CT 417), and chlorides (CT 422).

The water-soluble sulfate and chloride content severity class is considered negligible. (Exposure Category S0 and C0 per Table 19.3.1.1 of ACI 318-14). The site soils minimum resistivity is low and is considered potentially moderately corrosive to buried metal. Buried reinforcing steel protection be provided with the minimum concrete cover required by the American Concrete Institute (ACI) Building Code for Structural Concrete, ACI 318, Chapter 7.7. Buried metal conduits, ferrous metal pipes, and exposed steel must have protective coatings in accordance with the manufacturer's specifications.

Based on the anticipated groundwater, and exposure category, there are no restrictions for cement type and maximum water-cement ratio. If detailed recommendations for corrosion protection are desired, a corrosion specialist should be consulted.

4.3 Seismic Design Criteria

There are no known active fault zones within the vicinity of the project site. In accordance with Section 1613.2.2 of the 2019 and 2022 California Building Code (CBC) and Table 20.3-1 of ASCE 7-16, the site can be classified as Site Class D (stiff soil profile).

Use of the 2019 and 2022 California Building Code (CBC) seismic design criteria is considered appropriate and the following parameters are considered applicable for the structural design of foundations.

Table 2: Seismic Design Parameters

Seismic Design Parameter	2019 or 2022 CBC Value		Reference
MCE Mapped Spectral Acceleration (g)	$S_S = 0.828$	$S_1 = 0.292$	USGS Mapped Value
Amplification Factors (Site Class D)	$F_a = 1.169$	$F_V =$ null[1](2.016)[2]	ASCE Table 11.4
Site Adjusted MCE Spectral Acceleration (g)	$S_{MS} = 0.968$	$S_{M1} =$ null[1](0.589)[2]	ASCE Equations 11.4.1-2
Design Spectral Acceleration (g)	$S_{DS} = 0.645$	$S_{D1} =$ null[1] (0.392)[2]	ASCE Equations 11.4.1-4
Geometric Mean PGA (g)	$PGA_M = 0.444$		Section 11.8.3, ASCE 7-16
Site Short Period – T_s (seconds)	$T_s = 0.608$		$T_s = S_{D1}/ S_{DS}$
Site Long Period – T_L (seconds)	$T_L = 12$		USGS Mapped Value

Notes: [1] Requires site-specific ground motion procedure or exception as per ASCE 7-16 Section 11.4.8.

[2] Values from ASCE 7-16 supplement shall only be used to calculate $T_{s.}$ Values provided based on use of exception, as provided in Section 11.4.8.2 to Site-Specific Ground Motion Procedures and assumes the value of the seismic response coefficient C_s is determined by Eq. 12.8-2 for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. 12.8-3 for $T_L \geq T > 1.5T_s$ or Eq. 12.8-4 for $T > T_L$.

As shown above, the short period design spectral response acceleration coefficient, S_{DS}, is greater than 0.5, therefore the Site lies in Seismic Design Category D as specified in Section 1613.2.5 of the 2019 CBC. The long period design spectral response acceleration coefficient, S_{D1}, is greater than 0.2, therefore the Site lies in Seismic Design Category D as specified in Section 1613.2.5 of the 2019 and 2022 CBC. In accordance with the 2019 and 2022 CBC, each structure shall be assigned to the more severe seismic design category in accordance with Table 1613.2.5(1) or 1613.2.5(2), irrespective of the fundamental period of vibration of the structure.

4.4 Slope Stability Analysis

The maximum depth and gradient of the inboard slopes were assumed to be 15 feet and 2:1 or 2.5:1 (H:V), respectively. The stability of the cut slopes was analyzed for the static and pseudo-static condition using Janbu's and Bishop's Simplified Method of Slices and modeled in the computer program, Slide v7.0. The slope model was analyzed for stability using circular slip surfaces originating and terminating at critical points along the cross sections analyzed. The inputs required for the site include slope geometry, subsurface profile data, groundwater conditions, horizontal ground acceleration, as well as constraints on the upper and lower limits of the search region for the critical slip circle, numbers and locations of initiation and termination points of trial surfaces, and number of trial surfaces for each initiation point.

The values used in our analysis are summarized in the following table:

Table 3: Slope Stability Soil Parameters

Material	Depth (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degrees)
Silty Sand (SM)	0 – 2	110	0	42
Poorly Graded Sand with Silt (SP-SM)	2 – 6	110	50	35
Poorly Graded Sand (SP)	6 – 10	110	0	42
Clayey Sand (SC)	10 - 20	110	200	20

The horizontal ground motion site coefficient of 0.148g (1/3 of PGA_M) was used in the slope stability analysis. Vertical ground motions and groundwater conditions were not considered in the analysis. For each cross section, 4,851 randomly generated slip circles were analyzed for the critical factor of safety.

A summary of the critical factors of safety is provided in the following table:

Table 4: Critical Factors of Safety
Maximum Slope Height – 15'

Maximum Slope (H:V)	STATIC	PSEUDO-STATIC
2:1	1.8	1.3
2.5:1	2.2	1.5

The 2H:1V and 2.5H:1V slopes may be utilized for slopes at 15 feet deep. Based upon the data collected during this investigation and from a geotechnical engineering standpoint, it is our opinion that there are no soil conditions that would preclude the construction of the proposed lagoon provided that the recommendations presented in the references report are incorporated into the project design and construction. The proposed lagoon may be design/constructed with a maximum depth of 15 feet below ground surface with inboard slopes of 2H:1V or 2.5H:1V. It is understood clayey soils will be stockpiled and used as a soil cap where unstable soil is encountered.

4.5 Clay Liner Recommendations

Relatively undisturbed samples were taken from the upper 1.5 feet of the composting area. Material in the upper 1.5 feet in the composting area was found to be predominately silty sand. Samples were tested for hydraulic conductivity, a summary of results are presented in Table 5, and detailed results are provided in Appendix B.

Table 5: Hydraulic Conductivity Test Results

Test Location	Soil Type	Clay Added (Percent)	Hydraulic Conductivity (cm/sec)
B-5 @ 1.5’	Silty Sand (SM)	N/A	$8.7x10^{-5}$
B-6 @ 1.5’	Silty Sand (SM)	N/A	$6.0x10^{-4}$
B-9 @ 1.5’	Silty Sand (SM)	N/A	$6.5x10^{-7}$
B-11/B-12 @ 1.5’	Silty Sand (SM)	3.0	$4.2x10^{-7}$
B-11/B-12 @ 1.5’	Silty Sand (SM)	5.0	$3.3x10^{-7}$
B-11/B-12 @ 1.5’	Silty Sand (SM)	7.0	$1.8x10^{-7}$

Based on laboratory testing, 3 percent clay additive would result in hydraulic conductivities less than $1x10^{-5}$ centimeters per second. Results of the preliminary mix design are provided in Appendix B. BSK recommends using soil-clay mix with a clay content of 3 percent across the compost working surface.

4.6 Basin Recommendations

The double ring tests indicated a slow percolation rate at the bottom of the existing basins. BSK recommends that the basin be cleaned out or deepened.

4.7 Site Preparation and Earthwork Construction

The following procedures must be implemented during site preparation for the proposed improvements. It should be noted that references to maximum dry density, optimum moisture content, and relative compaction are based on ASTM D1557 (latest test revision) laboratory test procedures.

1. Prior to any site grading, all miscellaneous surface obstructions must be removed from the improvement area. Near surface soils containing vegetation, roots, organics, compost, or other objectionable material must be stripped to a depth of at least 3-inches to expose a clean soil surface. Surface strippings and compost must not be incorporated into engineered fill unless the organic content is less than 3 percent by weight (ASTM D2974).
2. Existing utilities or irrigation pipes must be removed to a point at least 5-feet horizontally outside the proposed improvement area. Resultant cavities must be backfilled with engineered fill.

Abandoned pipelines to remain that are less than 2 inches in diameter must be capped at the cutoff point, while pipelines greater than 2 inches in diameter must be filled with a 1-sack sand-cement slurry.

3. Soil disturbed as a result of undocumented fill, debris, and abandoned underground structures must be excavated to expose undisturbed native soil.
4. Following the required stripping, and/or removal of underground structures, the exposed soil surface in proposed at-grade improvement areas including foundations or lightly loaded concrete structures must be over-excavated uniformly to a depth of 24 inches below existing site grade or 12 inches below the bottom of the proposed foundation, whichever is deeper. The over-excavation must extend at least 5 feet laterally beyond the outside edge of the proposed foundation or areas to receive fill, whichever distance is greater. The exposed subgrade must be proof-rolled under the observation of a BSK field representative to detect soft or pliant areas. Soft or pliant areas must be over-excavated to firm native soil. The exposed surface must be scarified at minimum of 8 inches, uniformly moisture conditioned to 2 percent above optimum moisture, and compacted to 90 percent relative compaction. Scarification and recompaction at the wastewater storage lagoon excavation is not necessary, however, the exposed subgrade must not be disturbed during excavation.
5. For the compost liners, following the required stripping, and/or removal of underground structures, the exposed soil surface must be thoroughly mixed to incorporate 3 percent clay (by dry weight) to a minimum of 12 inches below surface or over-excavated uniformly to a depth of 12 inches below existing site grade. The mixing or over-excavation must extend at least 5 feet laterally beyond the outside edge of the proposed compost areas. The exposed subgrade must be proof-rolled under the observation of a BSK field representative to detect soft or pliant areas. Soft or pliant areas must be over-excavated to firm native soil. The exposed surface must be scarified at minimum of 8 inches, uniformly moisture conditioned to at or above optimum moisture, and compacted to 92 percent relative compaction. On-site material may be used as engineered compost liner fill, if sufficiently blended with 3 percent clay (by dry weight), uniformly moisture conditioned to 2 percent above moisture content, and compacted to 92 percent relative compaction.
6. Engineered fill in areas of at-grade structures must consist of non-expansive soil (EI < 20), moisture conditioned to at or above optimum moisture, and compacted to 90 percent relative compaction. Excavated soils, free of deleterious substances (organic matter, demolition debris, tree roots, etc.), meeting requirements for engineering fill below, and with less than 3 percent organic content by weight, may be reused as engineered fill for the backfill.
7. Engineered fill must be placed in uniform layers not exceeding 8-inches in loose thickness, moisture-conditioned and compacted as recommended above. Acceptance of engineered fill placement must be based on both moisture content at time of compaction and relative compaction.

8. Imported fill materials must be free of deleterious substances and have less than 3 percent organic content by weight. The project specifications must require the contractor to contact BSK for review of the proposed import fill materials for conformance with these recommendations at least two weeks prior to importing to the site, whether from on-site or off-site borrow areas. Imported fill soils must be non-hazardous and be derived from a single, consistent soil type source conforming to the following criteria:

   Maximum Particle Size: 3-inches
   Percent Passing #4 Sieve: 65 – 100
   Percent Passing #200 Sieve: 20 – 45
   Plasticity Index: less than 12
   Expansion Index: < 20

   Low Corrosion Potential:
      Soluble Sulfates: < 1,500 mg/kg
      Soluble Chlorides: < 300 mg/kg
      Soil Resistivity: > 2,000 ohm-cm

Grading operations must be scheduled as to avoid working during periods of inclement weather. Should these operations be performed during or shortly following periods of inclement weather, unstable soil conditions may result in the soils exhibiting a "pumping" condition. This condition is caused by excess moisture, in combination with compaction, resulting in saturation and near zero air voids in the soils. If this condition occurs, the affected soils must be over-excavated to the depth at which stable soils are encountered and replaced with suitable soils compacted as engineered fill. Alternatively, the Contractor may proceed with grading operations after utilizing a method to stabilize the soil subgrade, which must be subject to review by BSK prior to implementation.

4.8 Shallow, Mat, and Pole-Type Foundations

Provided the recommendations contained in this report are implemented during design and construction, it is our opinion that the proposed structures can be supported on shallow, mat, or pole-type foundations. A structural engineer must evaluate reinforcement and embedment depth based on the requirements for the structural loadings.

4.8.1 Shallow Foundations

The proposed at-grade structures may be supported on reinforced concrete spread footings bearing on engineered fill. Footing design must follow the criteria listed below:

The allowable bearing pressure applies to the dead load plus live load (DL + LL) condition. Footing design must follow the criteria listed below:

Table 6: Allowable Bearing Pressure				
Footing Embedment(1) (inches)	Minimum Footing Width (inches)		Allowable Bearing Capacity(2) (psf)	
	Continuous Footing	Isolated Spread Footing	Continuous Footing	Isolated Spread Footing
12	12	24	4,000	4,000

Note: (1) – Measure with respect to the lowest adjacent subgrade surface.
(2) – The bearing pressure can be increased one-third for transient loading such as wind or seismic.

The estimated total and differential settlement for the recommended spread footings is shown below:

Table 7: Anticipated Post-Construction Settlement			
Footing Type	Post-Construction Settlement (inches)	Differential Settlement (inches)	Angular Distortion
Continuous	1.0	--	0.005
Isolated	1.0	0.5	--

Isolated footing differential settlement is based on adjacent similarly loaded footings spaced at 30-feet. The settlement values given above are applicable to the maximum loading conditions. For loads, other than the design maximum loads, the settlements can be decreased proportionally.

4.8.2 Mat Foundations

The proposed trucking station and scale may be supported on a thickened mat/slab foundation. The foundation may be designed for a maximum allowable bearing pressure of 2,000 psf (DL + LL). Estimated total settlement for mat/slabs is approximately 1.0 inch. Differential settlement across mat/slab foundations is anticipated to be on the order of about half of the total settlement over the length of the mat foundation. The weight of the concrete should be included in evaluating the contact pressure at the base of mat/slab foundations. The weight of embedded concrete can be reduced by the unit weight of soil times the depth of embedded concrete.

Mat foundations must be a minimum of 8-inches thick and must be supported on a compacted subgrade prepared in accordance with the “Site Preparation and Earthwork Construction” section of this report. In order to regulate cracking of the slabs, construction joints and/or saw-cut control joints must be provided in each direction at a maximum spacing of 10 feet on centers along with steel reinforcement as recommended by the project’s Structural Engineer. Control joints must have a minimum depth of one-quarter of the slab thickness. It is recommended that steel reinforcement used in concrete slabs-on-grade consist of steel rebar. Structural concrete slabs-on-grade may be designed using an unadjusted long-term Modulus of Subgrade Reaction (Ks) of 150 pounds per cubic inch (pci) constructed on a properly compacted subgrade or engineered fill. This value is based on the correlations to soil strength using one foot by one-foot plate-load tests and should therefore be scaled (adjusted) to the actual slab width. The adjusted Ks value can be obtained by multiplying the value provided above by $[(B+B_1)/(2B)]^2$, where B is the slab width in feet and B_1 is 1 foot (width of a one foot by one foot plate-load test apparatus).

4.8.3 Pole Type Foundations

Structures such as stadium lighting, signs, etc. may be supported on pole type foundations. This type of foundation must be designed in accordance with Section 1807.3 of the 2019 or 2022 CBC. However, it is recommended that an allowable lateral soil bearing pressure of 200 psf per foot of embedment be used to develop parameters S_1 and S_3 rather than one of the values given in Table 1806.2. This value includes a factor of safety of 2 and may be increased as indicated by 1806.3 and the footnotes to Table 1806.2. Unless the area surrounding the pole foundation is paved or covered with concrete flatwork, the upper 24 inches of soil should be ignored when calculating the minimum depth of embedment.

The following table provides expressions for the allowable and ultimate axial capacity using friction to resist axial loads. The skin friction within the upper two feet of embedded length must be ignored in unpaved areas. The total settlement of pier foundations designed in accordance with these recommendations should not exceed one-half inch.

Table 8: Friction Resistance for Vertical Loads

Allowable (lbs)	Ultimate (lbs)
48 DL^2	121 DL^2

Note (1) – D is pile diameter (feet), and L is the total embedment length (feet).

Prior to placing concrete, loose or disturbed soils must be removed from the bottom of the drilled pier excavations using a flat bottom clean-out bucket or other pre-approved method. A representative of BSK must observe the drilling and clean-out associated with the construction of pier foundations in order to assess whether the actual bearing conditions are compatible with the conditions anticipated during the preparation of this report.

Pier deflection may govern the design lateral resistance. If provided with pier geometry, lateral load, and loading eccentricity, the estimated pier head deflection can be provided.

4.9 Lateral Earth Pressures and Frictional Resistance

Lateral loads applied against foundations may be resisted by a combination of passive resistance against the vertical faces of the foundations and friction between the foundation bottom and the supporting subgrade. An unfactored coefficient of friction of 0.35 may be used between soil subgrade and precast foundation bottoms, or 0.70 between soil subgrade and cast in-place foundation bottom. The unfactored passive pressure is presented in Table 9. The coefficient of friction and passive earth pressure values given above represent ultimate soil strength values. BSK recommends that a safety factor consistent with the design conditions be included in their usage. For resistance against lateral sliding that is countered solely by the passive earth pressure against footings or friction along the bottom of footings, a minimum safety factor of 1.5 is recommended. For stability against lateral sliding that is resisted by combined passive pressure and frictional resistance, a minimum safety factor of 2.0 is recommended. For lateral resistance against seismic loading conditions, a minimum safety factor of 1.2 is recommended. We based these lateral resistance values on the assumption that the concrete for the foundations is either placed directly against undisturbed soils or that the voids created from the use of forms are backfilled with engineered fill or other approved materials, such as lean concrete. Passive resistance in the upper foot of soil cover below finished grades should be neglected unless the ground surface is confined by concrete slabs, pavements, or other such positive protection.

The following earth pressure parameters may be used for designing earth retaining structures and foundations.

Table 9: Lateral Earth Pressures

Lateral Pressure Conditions	Equivalent Fluid Pressure (pcf)
Active Pressure	35
At-Rest Pressure	55
Passive Pressure	370
Dynamic Increment	17.6H

Notes: 1. H is wall height in feet

Parameters are shown in the above table for drained conditions of select engineered fill or prepared native soil. In addition, the drained condition assumes that positive drainage will be provided away from the structure improvements and that water does not accumulate around the structure and cause a build-up of hydrostatic pressure.

4.10 Excavation Stability

Soils encountered within the upper 30-feet are generally Type C soil in accordance with OSHA (Occupational Safety and Health Administration). The slopes surrounding or along temporary excavations must be no steeper than 1.5H:1V to a maximum depth of 5 feet, and for slopes deeper than 5 feet 2H:1V to a maximum depth of 30-feet. As stated above, relatively cohesionless soils were encountered within the test borings, as such, it may be necessary to lay back slopes flatter than 2H:1V to facilitate construction. Temporary excavations for the project construction must be left open for as short a time as possible and must be protected from water runoff. Slope height, slope inclination, and excavation depths (including utility trench excavations) must in no case exceed those specified in local, state, or federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations 29 CFR Part 1926, or successor regulations). These excavation recommendations are based on soil characteristics derived from the borings. Variations in soil conditions will likely be encountered during excavation. At the time of construction, BSK must be afforded the opportunity to observe and document sloping and shoring conditions, and the opportunity to provide review of actual field conditions to account for condition variations not otherwise anticipated in the preparation of these recommendations.

4.11 Utility Trench Excavation and Backfill

Pipes and conduits must be bedded and shaded in accordance with the requirements of the pipe manufacturer. Where no specific requirements exist, we recommend a minimum of 6-inches of sand bedding material for pipe installations 12 to 24-inches in diameter. For pipe diameters, smaller than 12-inches, the bedding thickness may be reduced to 4-inches. For HDPE pipe installations/construction, sand bedding is not required, and the on-site soil can be used as backfill. The bedding material and envelope (up to 6-inches above the pipe) must consist of sand (Sand Equivalent greater than 30), be placed in loose lifts not exceeding 8-inches in thickness, compacted to at least 90 percent of the maximum dry density, and moisture conditioned to within 2 percent of optimum moisture content. Water jetting to attain compaction must not be allowed.

Adequate excavation width must be provided to permit uniform compaction on both sides of utility lines installed within the trench. The trench backfill material may consist of engineered fill. Trench backfill outside the containment area must be placed in loose lifts not to exceed 8-inches in loose thickness, compacted to 90 percent of the maximum dry density, and moisture conditioned to 2 percent above optimum moisture content. Conduits extending through or below footings must be “sleeved” as determined by the Project Structural Engineer

4.12 Surface Drainage Control

Final grading around site improvements must provide for positive and enduring drainage. Ponding of water must not be allowed on or near the proposed structures. Saturation of the soils immediately adjacent to or below structures must not be allowed. Although landscaping is not anticipated, irrigation water must be applied in amounts not exceeding those required to offset evaporation, sustain plant life, and maintain a relatively uniform moisture profile around and below, site improvements. Fill elevations are anticipated to be less than 3 feet above natural grade to achieve positive site drainage.

5 PLANS AND SPECIFICATIONS REVIEW

BSK recommends that it be retained to review the draft plans and specifications for the project, with regard to foundations and earthwork, prior to there being finalized and issued for construction bidding.

6 CONSTRUCTION TESTING AND OBSERVATIONS

Geotechnical testing and observation during construction is a vital extension of this geotechnical investigation. BSK recommends that it be retained for those services. Field review during site preparation and grading allows for evaluation of the exposed soil conditions and confirmation or revision of the assumptions and extrapolations made in formulating the design parameters and recommendations. BSK's observations must be supplemented with periodic compaction tests to establish substantial conformance with these recommendations. BSK must also be called to the site to observe foundation excavations, prior to placement of reinforcing steel or concrete, in order to assess whether the actual bearing conditions are compatible with the conditions anticipated during the preparation of this report. BSK must also be called to the site to observe placement of foundation and slab concrete.

If a firm other than BSK is retained for these services during construction, that firm must notify the owner, project designers, governmental building officials, and BSK that the firm has assumed the responsibility for all phases (i.e., both design and construction) of the project within the purview of the geotechnical engineer. Notification must indicate that the firm has reviewed this report and any subsequent addenda, and that it either agrees with BSK's conclusions and recommendations, or that it will provide independent recommendations.

7 LIMITATIONS

The analyses and recommendations submitted in this report are based upon the data obtained from the test borings performed at the locations shown on Figure 2. The report does not reflect variations, which may occur between or beyond the borings. The nature and extent of such variations may not become evident until additional exploration and testing is performed, or construction is initiated. If variations then appear, a re-evaluation of the recommendations of this report will be necessary after performing on-site observations during the excavation period and noting the characteristics of the variations.

The validity of the recommendations contained in this report is also dependent upon an adequate testing and observation program during the construction phase. BSK assumes no responsibility for construction compliance with the design concepts or recommendations unless it has been retained to perform the testing and observation services during construction as described above.

The findings of this report are valid as of the present. However, changes in the conditions of the site can occur with the passage of time, whether caused by natural processes or the work of man, on this property or adjacent property. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation, governmental policy or the broadening of knowledge.

BSK has prepared this report for the exclusive use of the Client and members of the project design team. The report has been prepared in accordance with generally accepted geotechnical engineering practices, which existed in Kings County at the time the report was written. No other warranties either express or implied are made as to the professional advice provided under the terms of BSK's agreement with Client and included in this report.

FIGURES

REFERENCE IMAGE: Google Earth

ASSOCIATES
550 West Locust Avenue
Fresno, California 93650
Tel. (559) 497-2880

SITE VICINITY MAP

Thomas Composting Basin
20111 Excelsior Avenue
Riverdale, California

FIGURE 1

JOB NO. G00–000–713
DATE December 14, 2022

DR. BY TG
CH. BY NP
SCALE AS SHOWN

SHEET NO. 1
OF 1 SHEETS

C:\Users\tgonzalez\BSK Associates\BSK Documents - GEO\G00000713-Thomas Composting Basins\Graphics\G00-000-713.dwg User:tgonzalez Plotted:Dec 14, 2022 - 12:40pm Last Save:Dec 14, 2022 - 11:51am

C:\Users\jalvarez\BSK Associates\BSK Documents - FRS Projects Active\GEO\G00000713-Thomas Composting Basins\Graphics\G00-000-713.dwg User:jalvarez Plotted:Dec 20, 2022 - 2:37pm Last Save:Dec 20, 2022

LEGEND:

⊕ B-12	APPROXIMATE BORING LOCATIONS
⊕ B-3	APPROXIMATE PERC TEST LOCATIONS
■ DR-1	APPROXIMATE DOUBLE RING TEST LOCATIONS

REFERENCE IMAGE: Google Earth

BSK ASSOCIATES
550 West Locust Avenue
Fresno, California 93650
Tel. (559) 497-2880

BORING LOCATION MAP

Thomas Composting Basin
20111 Excelsior Avenue
Riverdale, California

FIGURE 2

JOB NO. G00-000-713
DATE December 20, 2022
DR. BY TG
CH. BY NP
SCALE AS SHOWN
SHEET NO. 1
OF 1 SHEETS

APPENDIX A

FIELD EXPLORATION

APPENDIX A
Field Exploration

The field exploration, conducted on November 21, 2022 consisted of a site reconnaissance, drilling twelve (12) exploratory test borings. The borings were drilled to depths of approximately 1.5 feet to 41.5 feet below ground surface (bgs) within the proposed improvement locations. The test borings were drilled with a truck-mounted drill rig, equipped with 8-inch augers. The approximate boring locations are presented on Figure 2.

One (1) percolation test and two (2) double ring hydrometer tests were conducted in the field. The test locations can be found on Figure 2, Boring Location Map. The last three rates from the slowest percolation test are averaged to calculate the percolation ratesThe soil materials encountered in the test borings were visually classified in the field and logs were recorded during the excavation and sampling operations. Visual classification of the materials encountered in the test borings were made in general accordance with the Unified Soil Classification System (ASTM D2487). A soil classification chart is presented herein. Boring logs are presented herein and should be consulted for more details concerning subsurface conditions.

Subsurface samples were obtained at the various depths shown on the boring logs by driving samplers which consisted of a 2.5-inch inside diameter (I.D.) lined with stainless sleeves and 1.4-inch I.D. Standard Penetration Test (SPT) sampler. The samplers were driven 18 inches using a 140-pound, automatic hammer dropping 30 inches. The number of blows required to drive the last 12 inches was recorded as the blow count (blows/foot) on the log of borings. The relatively undisturbed soil core samples were capped at both ends to preserve the samples at their natural moisture content. Disturbed soil samples were obtained using the Split-Spoon Sampler (marked X in logs) and were placed and sealed in polyethylene bags. At the completion of the field exploration, the test borings were backfilled with the soil cuttings, as set forth in BSK's proposal.

It should be noted that the use of terms such as “soft”, “medium stiff”, “very stiff” or “hard” to describe the consistency of a soil is based on sampler blow count and is not necessarily reflective of the in-place density or unit weight of the soils being sampled. The relationship between sampler blow count and consistency is provided in the following Tables A-1 and A-2 for coarse grained (sandy and gravelly) soils and fine grained (silty and clayey) soils, respectively.

Table A-1: Density of Coarse-Grained Soil versus Sampler Blow Count		
Consistency	**SPT Blow Count Blows / Foot)**	**2.5” I.D. Cal. Sampler (Blows / Foot)**
Very Loose	<4	<6
Loose	4 – 10	6 – 15
Medium Dense	10 – 30	15 – 45
Dense	30 – 50	45 – 80
Very Dense	>50	>80

Table A-2: Consistency of Fine-Grained Soil versus Sampler Blow Count		
Consistency	**SPT Blow Count (Blows / Foot)**	**2.5” I.D. Cal. Sampler (Blows / Foot)**
Very Soft	<2	<3
Soft	2 – 4	3 – 6
Medium Stiff	4 – 8	6 – 12
Stiff	8 – 15	12 – 24
Very Stiff	15 – 30	24 – 45
Hard	>30	>45

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS More than Half > #200 sieve	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 15% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 15% FINES	SM	SILTY SANDS, POOORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than Half < #200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

■	Modified California	RV	R-Value
☒	Standard Penetration Test (SPT)	SA	Sieve Analysis
☒	Split Spoon	SW	Swell Test
◪	Pushed Shelby Tube	TC	Cyclic Triaxial
▯	Auger Cuttings	TX	Unconsolidated Undrained Triaxial
✋	Grab Sample	TV	Torvane Shear
◺	Sample Attempt with No Recovery	UC	Unconfined Compression
CA	Chemical Analysis	(1.2)	(Shear Strength, ksf)
CN	Consolidation	WA	Wash Analysis
CP	Compaction	(20)	(with % Passing No. 200 Sieve)
DS	Direct Shear	∇	Water Level at Time of Drilling
PM	Permeability	▼	Water Level after Drilling(with date measured)
PP	Pocket Penetrometer		

SOIL CLASSIFICATION CHART AND LOG KEY

Figure A-1

BSK
ASSOCIATES

BSK Associates
550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B- 1**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
0								SM	**Silty SAND** - brown, moist, fine to medium grained sand	
1										
2	■	✋								
3	■		18	113.8	4.1	22				
4										
5	■								... loose	
5.5								SP	**Poorly Graded Sand** - brown, moist, fine to coarse grained sand	
6	■		12	95.1	4.4					
7										
8										
9										
10	■									
11	■		6						... yellowish brown, loose	
12										
13										
14										
15	⧗								... yellowish brown, loose	
16	⧗		8							
16.5								CL	**Sandy CLAY** - light brownish gray, moist, fine to coarse grained sand	
17										
18										
19										
20	■									▽
21	■		24						... very stiff	Flowing Sands, P.P. > 4.5 tsf
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 40.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Project: Thomas Composting Basins
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Boring: **B- 1**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
26	⧗		20				▨		**Sandy CLAY** - light brownish gray, moist, fine to coarse grained sand *(continued)* ... reddish brown	P.P. = 4.5 tsf
27							░	SP	**Poorly Graded Sand with Silt** - brown, wet, fine to coarse grained sand	
28										
29										
30	■									
31			46						... dense	
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42									Boring terminated at approximately 41.5 feet bgs. Groundwater encountered at 20 feet bgs. Boring backfilled with soil cuttings.	
43										
44										
45										
46										
47										
48										
49										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 40.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

BSK Associates
550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B- 2**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
							▨	CL	**CLAY with Sand** - dark brown, moist, fine grained sand	
1							▨			
2	■						▨			
3	■		17	104.9	11.7		▨		... stiff	P.P. = 3 tsf
4							░	SM	**Silty SAND with Clay** - brown, moist, fine to medium grained sand	
5	■						░		... loose	
6	■		12	96.5	12.8		░	SM	**Silty SAND** - brown, moist, fine to medium grained sand	P.P. = 2.75 tsf
7							░			
8							░			
9							░			
10	■						░			
11	■		14				░		... loose	
12							░	SP	**Poorly Graded Sand** - light brownish gray, moist, fine to medium grained sand	
13							░			
14							░			
15	⧗						░		... loose	
16	⧗		9				░			
17							▨	CL	**Sand CLAY** - light brownish gray, moist, fine to medium grained sand	
18							▨			
19							▨			
20	■						▨			∇
21	■		39				▨		... very stiff	Flowing Sands, P.P. = 4.5 tsf
22							░	SM	**Silty SAND with Clay** - light brownish gray, moist, fine to medium grained sand	
23							░			
24							░			

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 40.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
Telephone: (559) 497-2880

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Location: Riverdale, CA
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Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B- 2**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
	⧗						▨		**Silty SAND with Clay** - light brownish gray, moist, fine to medium grained sand *(continued)*	
26	⧗		9				▨			
27							▨			
28							▨			
29							▨			
30	■						▨			
31	■		49				▨		... dense	P.P. = 4.5 tsf
32									Boring terminated at approximately 31.5 feet bgs. Groundwater encountered 20 feet bgs. Boring backfilled with soil cuttings.	
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 40.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
Telephone: (559) 497-2880

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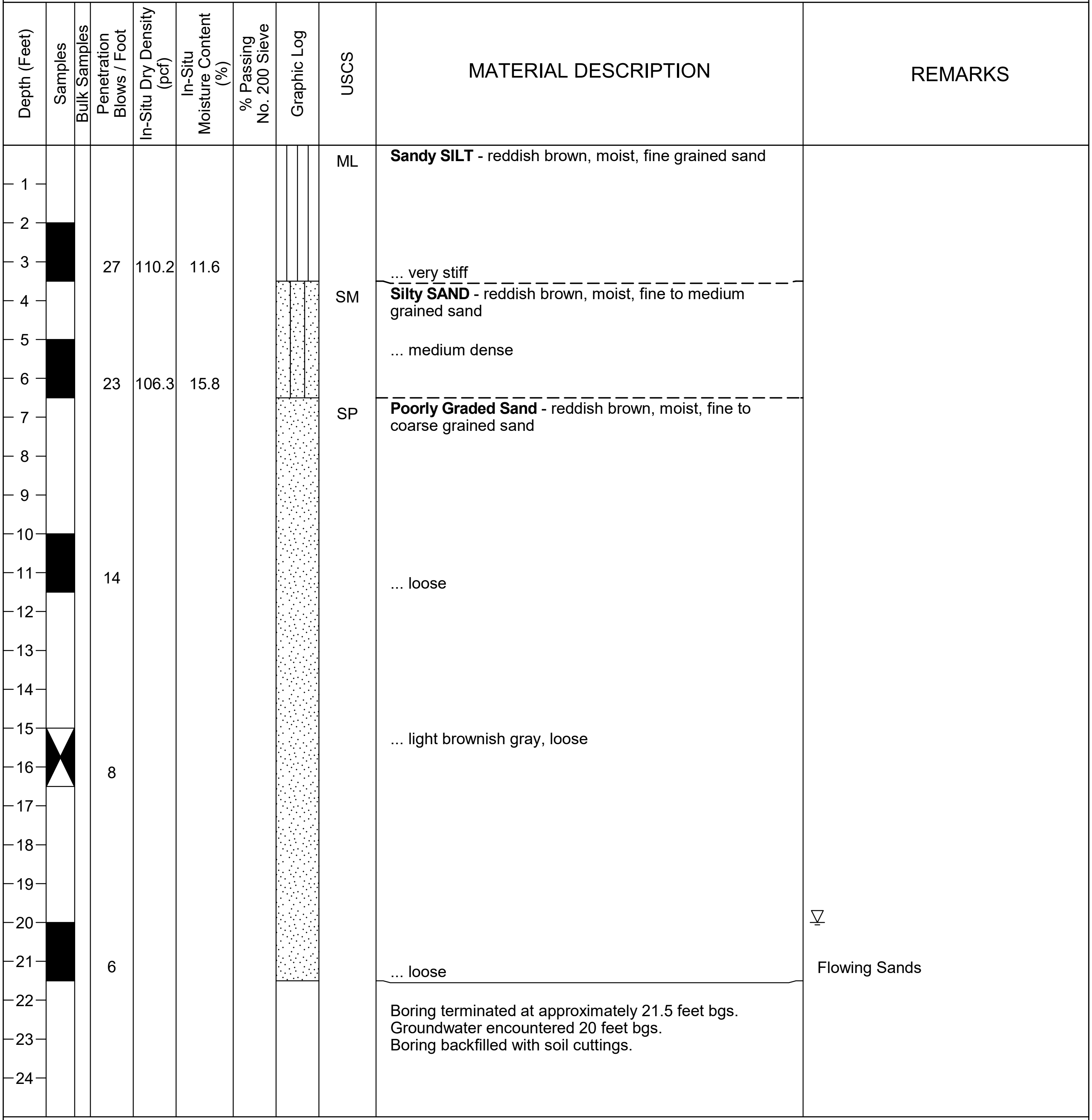
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B- 3**



Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
								ML	**Sandy SILT** - reddish brown, moist, fine grained sand	
1										
2	■									
3	■		27	110.2	11.6				... very stiff	
4								SM	**Silty SAND** - reddish brown, moist, fine to medium grained sand	
5	■								... medium dense	
6	■		23	106.3	15.8					
7								SP	**Poorly Graded Sand** - reddish brown, moist, fine to coarse grained sand	
8										
9										
10	■									
11	■		14						... loose	
12										
13										
14										
15	⧗								... light brownish gray, loose	
16	⧗		8							
17										
18										
19										
20	■									▽
21	■		6						... loose	Flowing Sands
22									Boring terminated at approximately 21.5 feet bgs. Groundwater encountered 20 feet bgs. Boring backfilled with soil cuttings.	
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 21.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

BSK Associates
550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

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Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B- 4**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
							▨	CL	**Sandy CLAY** - brown, moist, fine to medium grained sand	
1							▨			
2	■	✋					▨			
3	■		27	93.7	8	72	▨		... very stiff	P.P. = 2.5
4							▨			
5	■						▨		... medium stiff	
6	■		23				▨			P.P. = 2.5
7							⁘	SP	**Poorly Graded Sand** - reddish brown, moist, fine to medium grained sand	
8							⁘			
9							⁘			
10	■						⁘			
11	■		14				⁘		... light brownish gray, loose	
12							⁘			
13							⁘			
14							⁘			
15	⧗						⁘		... loose	
16	⧗		8				⁘			
17							⁘			
18							⁘			
19							⁘			
20	■						⁘			∇
21	■		6				⁘		... loose	Flowing Sands
22									Boring terminated at approximately 21.5 feet bgs. Groundwater encountered 20 feet bgs. Boring backfilled with soil cuttings.	
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 40.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Page 1 of 1

Boring: **B-10**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1	■		21 15	93.2	7.7		▨	SM	**Silty SAND** - dark brown, moist, medium dense, fine to medium grained sand	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

BSK Associates
550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

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Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B-11**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
							▨	SM	**Silty SAND** - light brownish gray, moist, loose, fine to medium grained sand	
1	■	✋	9 8				▨			
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

BSK Associates
550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B-12**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1	■	✋	5 5				▨	SM	**Silty SAND** - light brownish gray, moist, very loose, fine to medium grained sand	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B-5**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
							▨	SM	**Silty SAND** - dark brown, moist, loose, fine to medium grained sand	
1	■		12 15				▨		... reddish brown, medium dense	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

BSK Associates
550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B-6**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
							▨	SM	**Silty SAND** - dark brown, moist, loose, fine to medium grained sand	
1	■	✋	10 10				▨		... reddish brown	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins

Location: Riverdale, CA

Project No.: G00-000-713

Logged By: J. Alvarez

Checked By: N. Popenoe

Boring: **B-7**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
								ML	**Sandy SILT** - light brownish gray, moist, stiff, fine grained sand	
1	■	✋	23 20	96.7	7.6			SM	**Silty SAND** - light brownish gray, moist, medium dense, fine grained sand	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B-8**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1	■		22 21	98.7	6.1			SM	**Silty SAND** - gray, moist, medium dense, fine to medium grained sand	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Page 1 of 1

Boring: **B-9**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1	■	✋	20 26				▨	SM	**Silty SAND** - dark brown, moist, medium dense, fine to medium grained sand	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

APPENDIX B

LABORATORY TESTING

APPENDIX B
Laboratory Testing

The results of laboratory testing performed in conjunction with this project are contained in this Appendix. The following laboratory tests were performed on soil samples in general conformance with applicable standards.

In-Situ Moisture and Density

The field moisture content and in-place dry density determinations were performed on relatively undisturbed samples obtained from the test borings. The field moisture content, as a percentage of dry weight of the soils, was determined by weighing the samples before and after oven drying in accordance with ASTM D2216 test procedures. Dry densities, in pounds per cubic foot, were also determined for undisturbed core samples in accordance with ASTM D2937 test procedures. Test results are presented on the boring logs in Appendix A.

Gradation

Three (3), Sieve Analysis tests were performed on selected soil samples in the area of planned construction. The test was performed in general accordance with Test Method ASTM D422. The results of the tests are presented on Figures B-1, B-2 and B-3.

Direct Shear Test

One (1) direct shear test was performed on test specimens trimmed from selected soil sample. The three-point shear test was performed in general accordance with ASTM D3080, Direct Shear Test for Soils under Consolidated Drained Conditions. The test specimens, each 2.42 inches in diameter and 1 inch in height, were subjected to shear along a plane at mid-height after allowing for pore pressure dissipation. The results of the tests are presented in Figure B-4.

Collapse Potential Test

One (1) Collapse Potential test was performed on relatively undisturbed soil samples to evaluate collapse potential characteristics. The tests were performed in general accordance with ASTM D5333. The sample was initially loaded under as-received moisture content to a selected stress level, loaded to a maximum load of 2000 psf and then saturated. The test results are presented in Figure B-5.

Maximum Dry Density and Optimum Moisture Content

One (1) Modified proctor test was performed to determine the maximum dry density and optimum moisture content of a selected soil sample. The sample was compacted under a standardized compaction effort at varying moisture contents in general accordance with ASTM D1557. The results are presented on Figure B-6.

Hydraulic Conductivity

Three (3) soil samples were tested for hydraulic conductivity by Geologic Associates using ASTM D5084, Method C. One (1) bulk sample was mixed with 3, 5, and 7 percent clay, and compacted to 92 percent of dry maximum density, then tested for hydraulic conductivity using ASTM D5084. Results are presented in Figures B-7 through B-12.

Soil Corrosivity

The results of chemical analyses performed on one (1) bulk soil sample using California Test Method 643 (for pH and minimum resistivity) and California Test Methods 417 and 422 (for soluble sulfate and chlorides, respectively), are presented below.

SUMMARY OF CHEMICAL TEST RESULTS

Sample Location	pH	Sulfate (mg/kg)	Chloride (mg/kg)	Minimum Resistivity (ohms-cm)
B-1 at 0-5´	7.48	Not Detected	Not Detected	1,840

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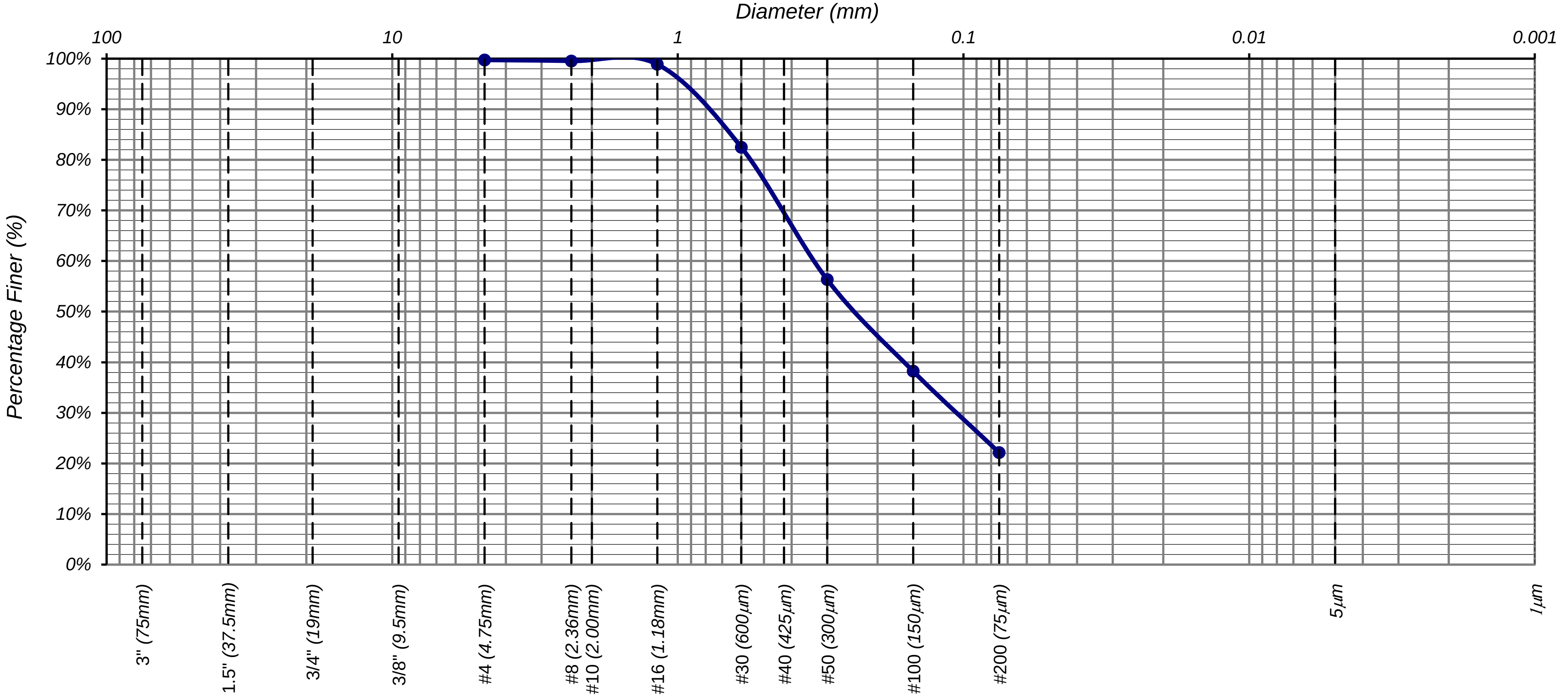
FIGURE B-1
550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

Gradation Analysis Report
ASTM D-422 / ASTM C-136

Project Name: Thomas Compost
Project Number: G00000713
Report Date: 12/12/22
Sample Location: B-1 @ 0 - 5'
Sample Lab ID: N/A
Sample Date: 11/21/22
Sample Description: Silty Sand (SM) - brown, moist, medium dense, fine to medium grained sand
Test Date: 12/2/2022

Particle Size Distribution Diagram



<table>
<tr><td colspan="3">Clear Square Openings (ASTM C-136)</td><td colspan="3">US Standard Series (ASTM D-422)</td><td>Hydrometer Readings (ASTM D-422)</td></tr>
<tr><td rowspan="2">Cobble</td><td colspan="2">Gravel</td><td colspan="3">Sand</td><td rowspan="2">Silt (Non-Plastic) to Clay (Plastic)</td></tr>
<tr><td>Coarse</td><td>Fine</td><td>Coarse</td><td>Medium</td><td>Fine</td></tr>
</table>

% Gravel = 0% **% Sand = 78%** **% Fines = 22%**

BSK ASSOCIATES

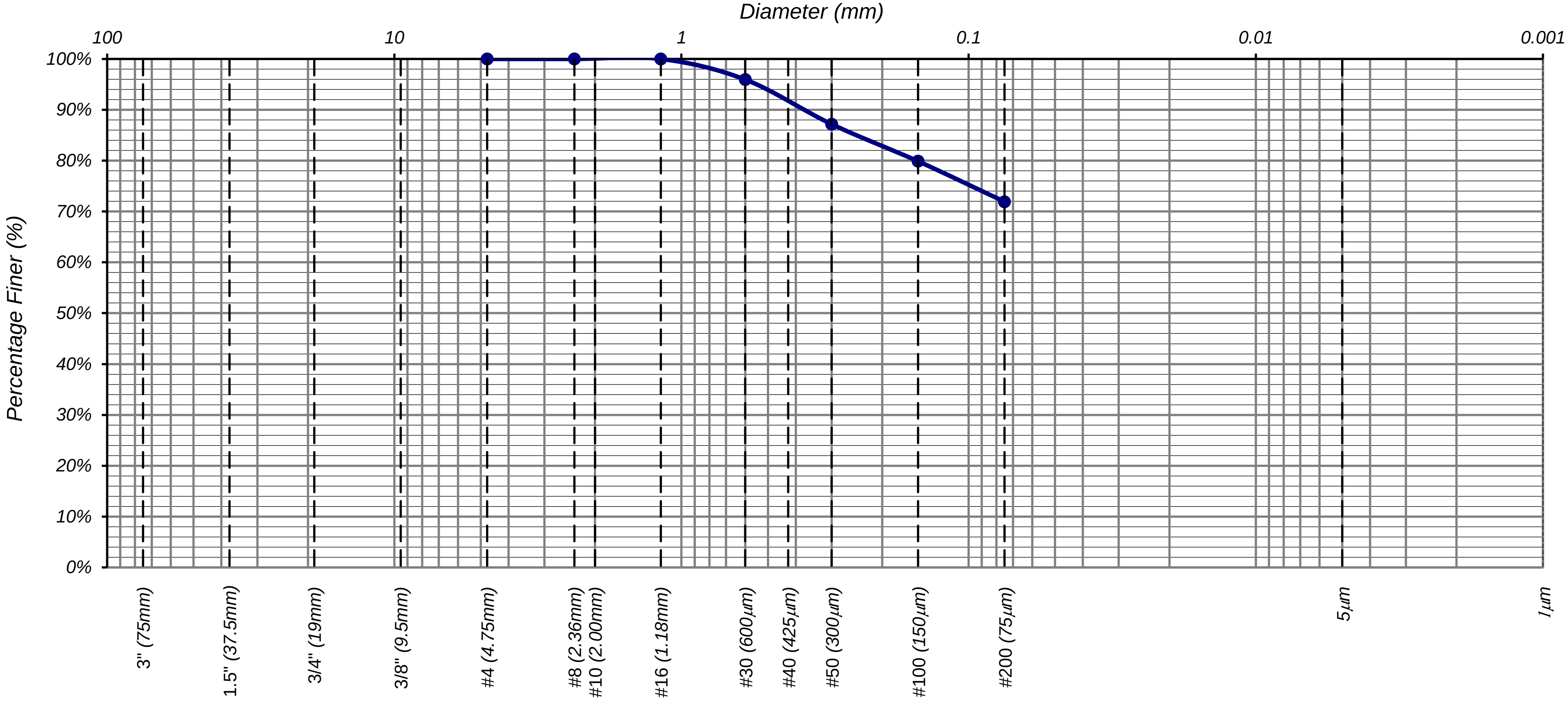
FIGURE B-2

550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

Gradation Analysis Report
ASTM D-422 / ASTM C-136

Project Name: Thomas Composting
Project Number: G00000713
Report Date: 12/12/22
Sample Location: B-4 @ 3'
Sample Lab ID: N/A
Sample Date: 11/21/22
Sample Description: Clay with Sand (CL) - brown, moist, fine to medium grained sand
Test Date: 12/2/22

Particle Size Distribution Diagram



Clear Square Openings (ASTM C-136)			US Standard Series (ASTM D-422)			Hydrometer Readings (ASTM D-422)
Cobble	Gravel		Sand			Silt (Non-Plastic) to Clay (Plastic)
	Coarse	Fine	Coarse	Medium	Fine	

% Gravel = 0% **% Sand = 28%** **% Fines = 72%**

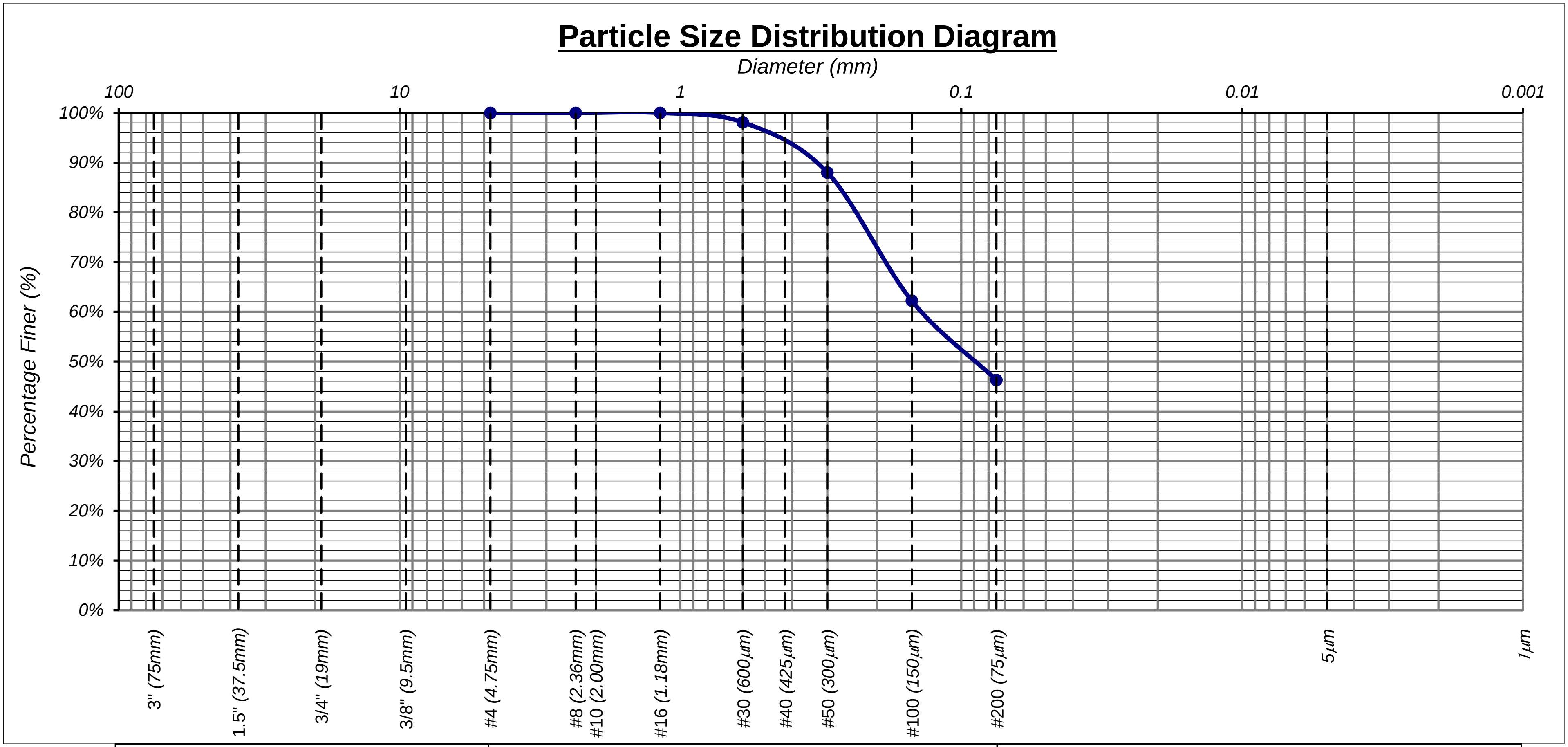
BSK ASSOCIATES

FIGURE B-3

550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

Gradation Analysis Report
ASTM D-422 / ASTM C-136

Project Name: Thomas Composting
Project Number: G00000713
Report Date: 12/12/22
Sample Location: B-11/12 @ 0-1.5'
Sample Lab ID:
Sample Date: 11/21/22
Sample Description: Silty Sand (SM) - light brownish gray, moist, loose, fine to medium grained sand
Test Date: 12/2/22



<table>
<tr><td colspan="3">Clear Square Openings (ASTM C-136)</td><td colspan="3">US Standard Series (ASTM D-422)</td><td>Hydrometer Readings (ASTM D-422)</td></tr>
<tr><td rowspan="2">Cobble</td><td colspan="2">Gravel</td><td colspan="3">Sand</td><td rowspan="2">Silt (Non-Plastic) to Clay (Plastic)</td></tr>
<tr><td>Coarse</td><td>Fine</td><td>Coarse</td><td>Medium</td><td>Fine</td></tr>
</table>

% Gravel = 0% **% Sand = 54%** **% Fines = 46%**

BSK ASSOCIATES

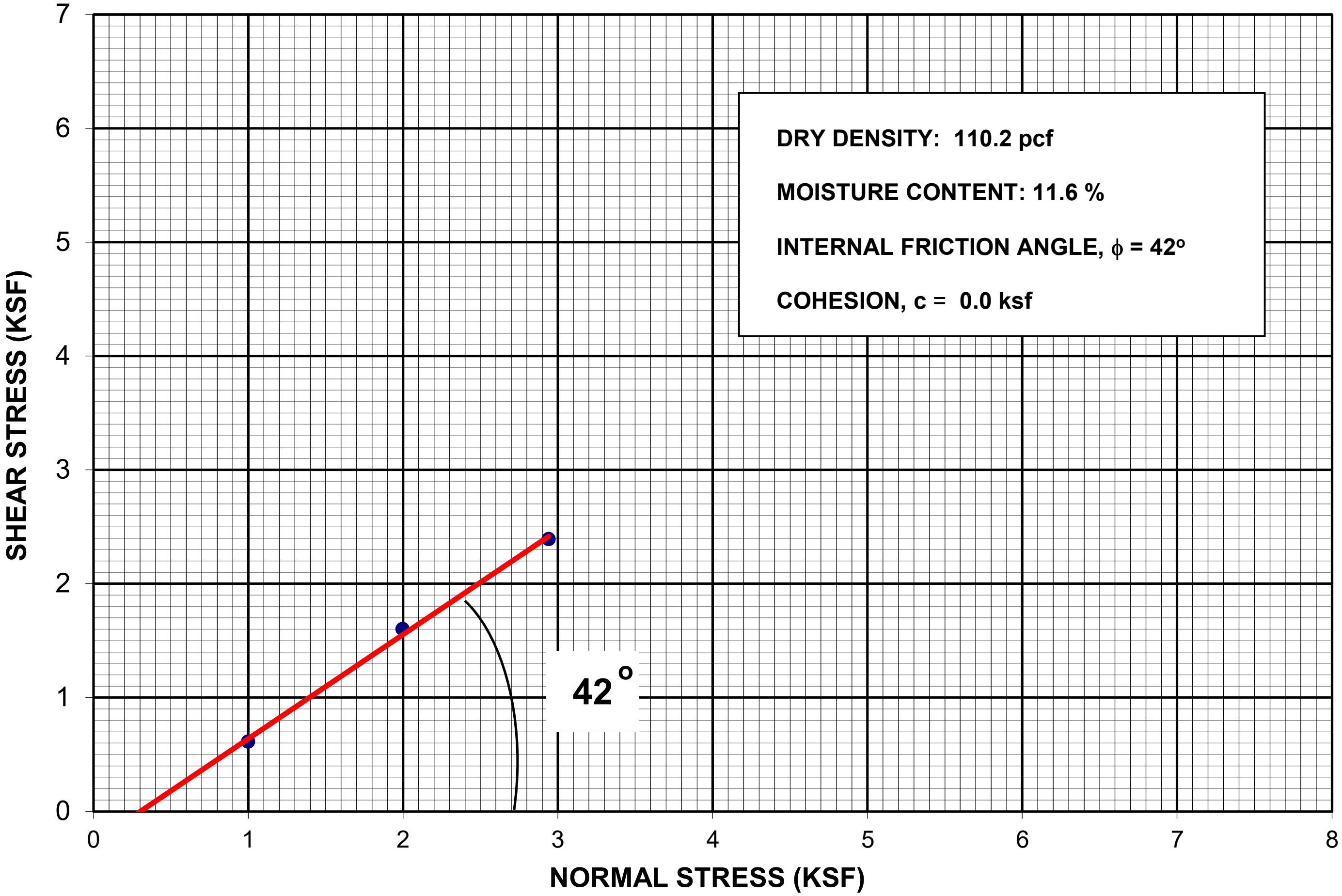
FIGURE B-4
550 W. Locust
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

Direct Shear Test

ASTM D-3080

Project Name: Thomas Composting
Sampled By: J.A
Sample Date: 11/21/22
Tested By: J.L
Test Date: 11/29/22
Project Number: G00000713
Lab Tracking ID: N/A
Report Date: 12/12/22
Sample Location: B-3 @ 3'
Sample Description: Silty Sand (SM) - reddish brown, moist, fine to medium grained sand

SHEAR STRENGTH DIAGRAM



DRY DENSITY: 110.2 pcf

MOISTURE CONTENT: 11.6 %

INTERNAL FRICTION ANGLE, ϕ = 42°

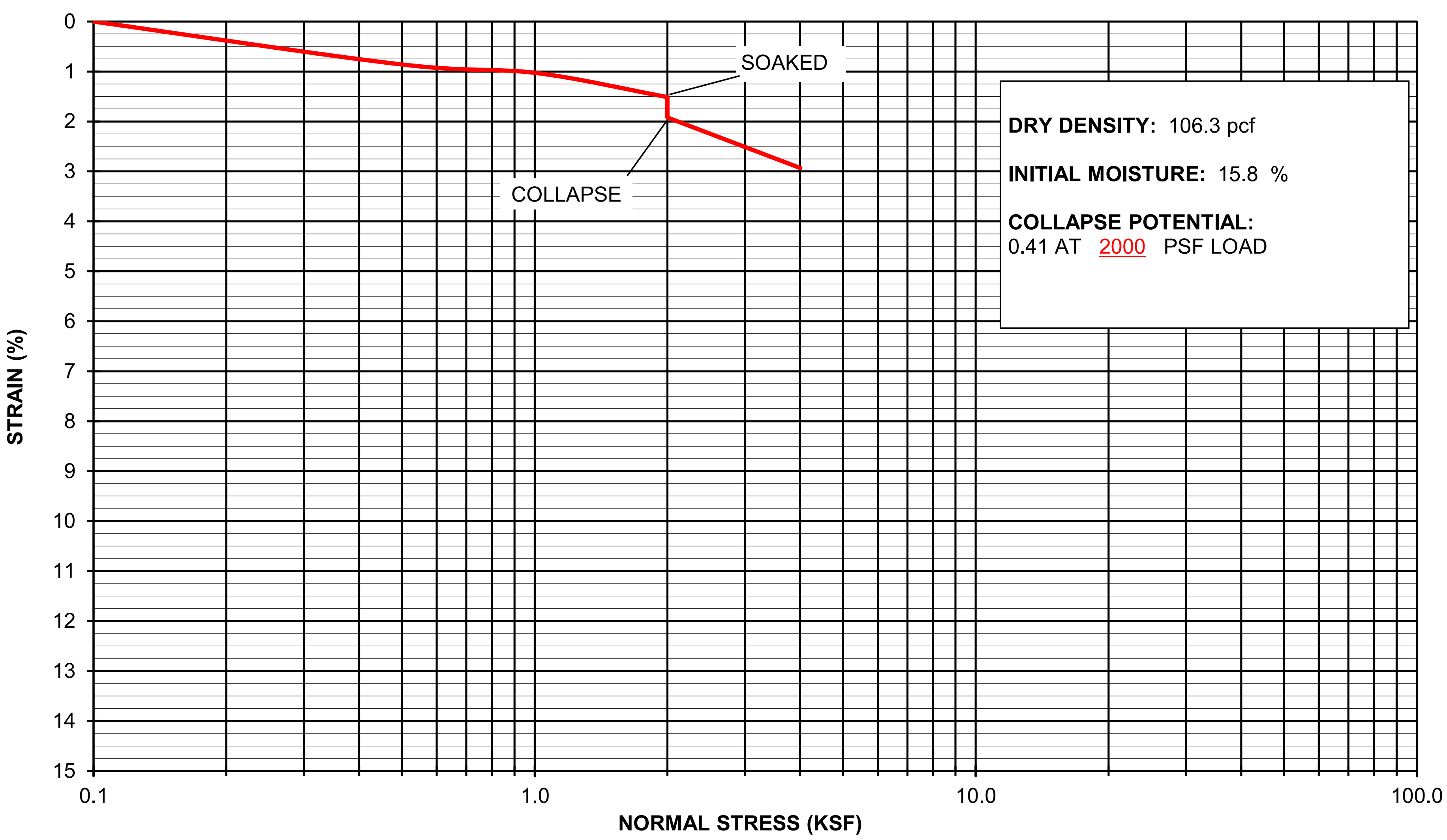
COHESION, c = 0.0 ksf

BSK ASSOCIATES

FIGURE B-5
550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

COLLAPSE POTENTIAL
ASTM D-5333

Project Name: Thomas Composting
Sampled By: J.A
Sample Date: 11-21-22
Tested By: J.L
Test Date: 11-30-22
Project Number: G00000713
Lab Tracking ID: N/A
Report Date: 12-12-22
Sample Location: B-3 @ 6'
Sample Description: Silty Sand (SM) - reddish brown, moist, fine to medium grained sand



DRY DENSITY: 106.3 pcf

INITIAL MOISTURE: 15.8 %

COLLAPSE POTENTIAL:
0.41 AT 2000 PSF LOAD

MOISTURE / DENSITY RELATIONSHIPS

Geo-Logic ASSOCIATES

Test Report
ASTM D - 1557

Figure B-6

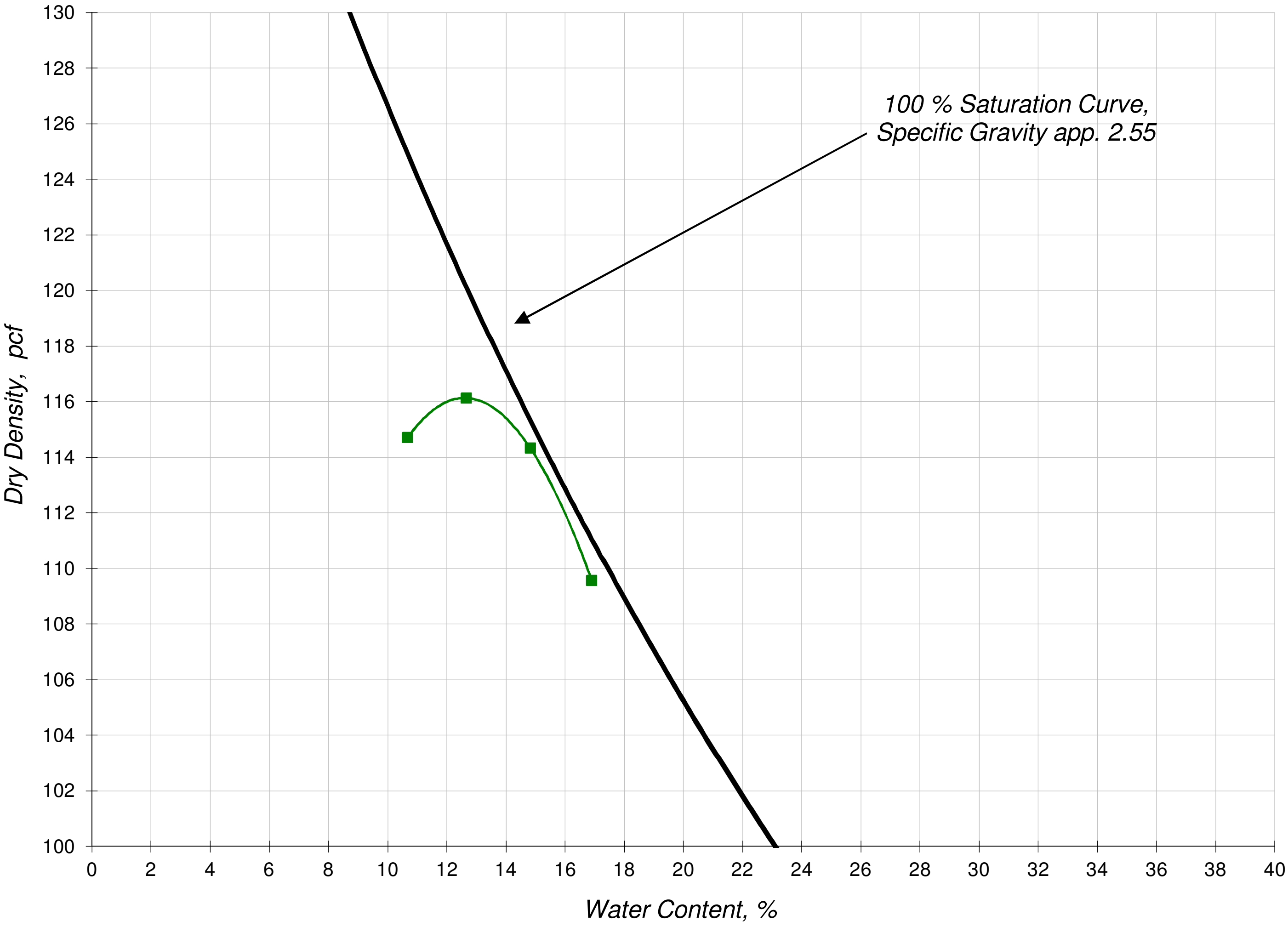
Client: BSK Associates

Project No.: AU22.1246.00

Lab Log No.: **4939D**

Project Name: Thomas Composting

Report Date: December 6, 2022



Symbol	Lab No.	Sample Identification	Description	Maximum Dry Density pcf	Maximum Dry Density kg / m^3	Optimum Water Content (OMC) %
🟩	4939D	B-11/B-12 @ 0-1.5'	brown sandy lean clay	116.1	1860	12.6

Corrected Values For Oversized Particles, per ASTM D-4718

🟩 4939D with 0.0 Percent +#4 Gravel, the maximum Dry Density = 116.1 pcf @12.6 % OMC

Note: The test was conducted as method A with 0 percent retained on the no. 4 sieve (minus #4)
Using an Automatic Hammer

This testing is based upon accepted industry practice as well as the test method listed. These results apply only to the samples supplied and tested for the above referenced job.

L:Labexcel \ FORMS \ GLA Forms \ Reports \ AU22.1246.00 \ 4939D-cmp.xls

DCN: CMP-rp (rev. 5/21/09) Print Date : 12/9/2022

Print Date: 12/9/2022

Entered By: MK

Reviewed By: PP

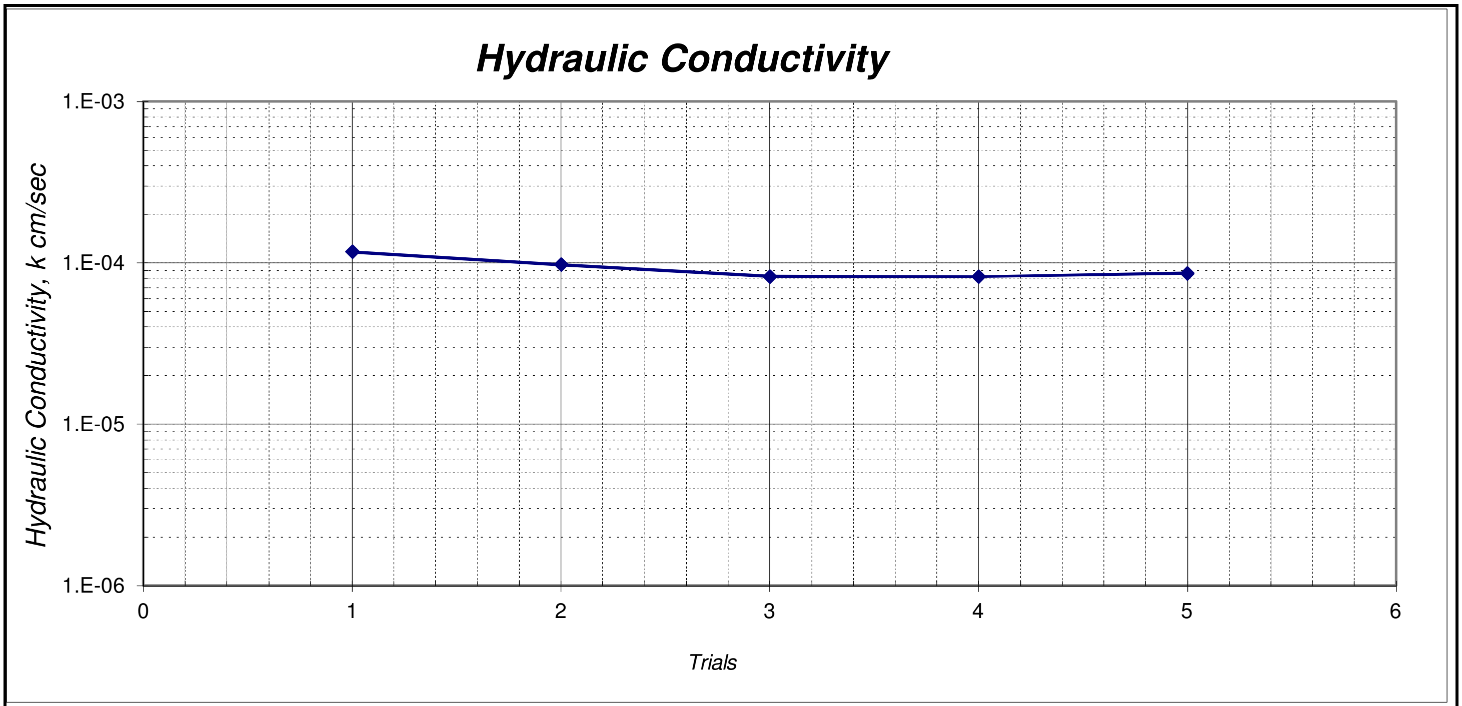
LSN: **4939D**

Geo-Logic ASSOCIATES

HYDRAULIC CONDUCTIVITY
REPORT

Figure B-7

Client / Project Name: **BSK Associates / Thomas Composting**	Project No: **AU22.1246.00**	Lab Sample Number: **4939A**
Sample ID: **B-5 @ 1.5'**	Description: **brown sandy clay**	Report Date: **December 9, 2022**



SPECIMEN DATA

SAMPLE ID:	**B-5 @ 1.5'**	
DESCRIPTION:	brown sandy clay	
	INITIAL	FINAL
HEIGHT, in.	3.1	3.0
DIAMETER, in.	2.4	2.3
WATER CONTENT, %	7.1	21.4
DRY DENSITY, pcf	91	105
SATURATION, %	22	95

(Specific Gravity assumed as 2.7)

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	1 psi
GRADIENT RANGE:	5 - 6
IN / OUT RATIO:	1.04
"B" PARAMETER:	0.95

TRIAL nos.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	1.2E-04
2	9.7E-05
3	8.2E-05
4	8.2E-05
5	8.6E-05

AVERAGE LAST 4 : **8.7E-05**

corrected to 20° C

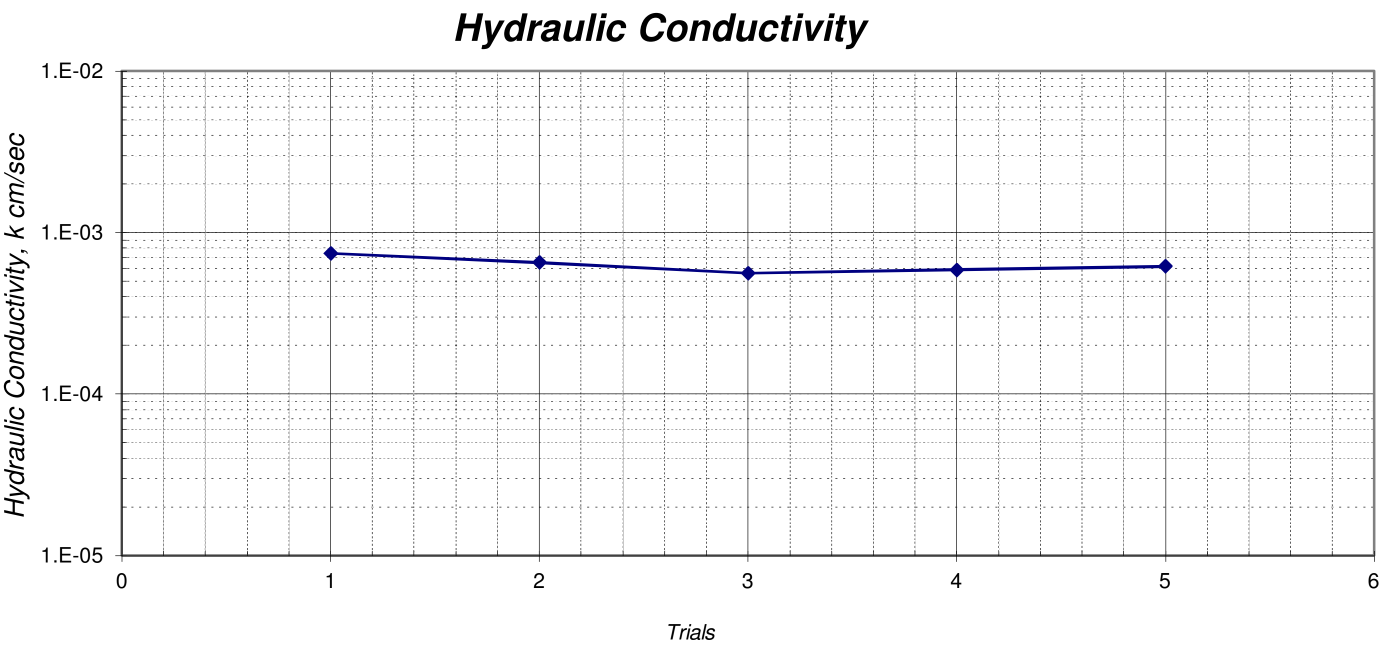
Print Date: 12/09/22 Entered By: PP Reviewed By: MK LSN: **4939A**

Geo-Logic ASSOCIATES

HYDRAULIC CONDUCTIVITY
REPORT

Figure B-8

Client / Project Name: **BSK Associates / Thomas Composting**	Project No: **AU22.1246.00**	Lab Sample Number: **4939B**
Sample ID: **B-6 @ 1.5'**	Description: **brown sandy clay**	Report Date: **December 9, 2022**



SPECIMEN DATA

SAMPLE ID: **B-6 @ 1.5'**

DESCRIPTION: brown sandy clay

	INITIAL	FINAL
HEIGHT, in.	3.9	3.8
DIAMETER, in.	2.4	2.4
WATER CONTENT, %	5.1	20.5
DRY DENSITY, pcf	103	107
SATURATION, %	22	96

(Specific Gravity assumed as 2.7)

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 1 psi

GRADIENT RANGE: 1 - 2

IN / OUT RATIO: 1.05

"B" PARAMETER: 0.95

TRIAL nos.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	7.4E-04
2	6.5E-04
3	5.6E-04
4	5.9E-04
5	6.2E-04

AVERAGE LAST 4 : **6.0E-04**

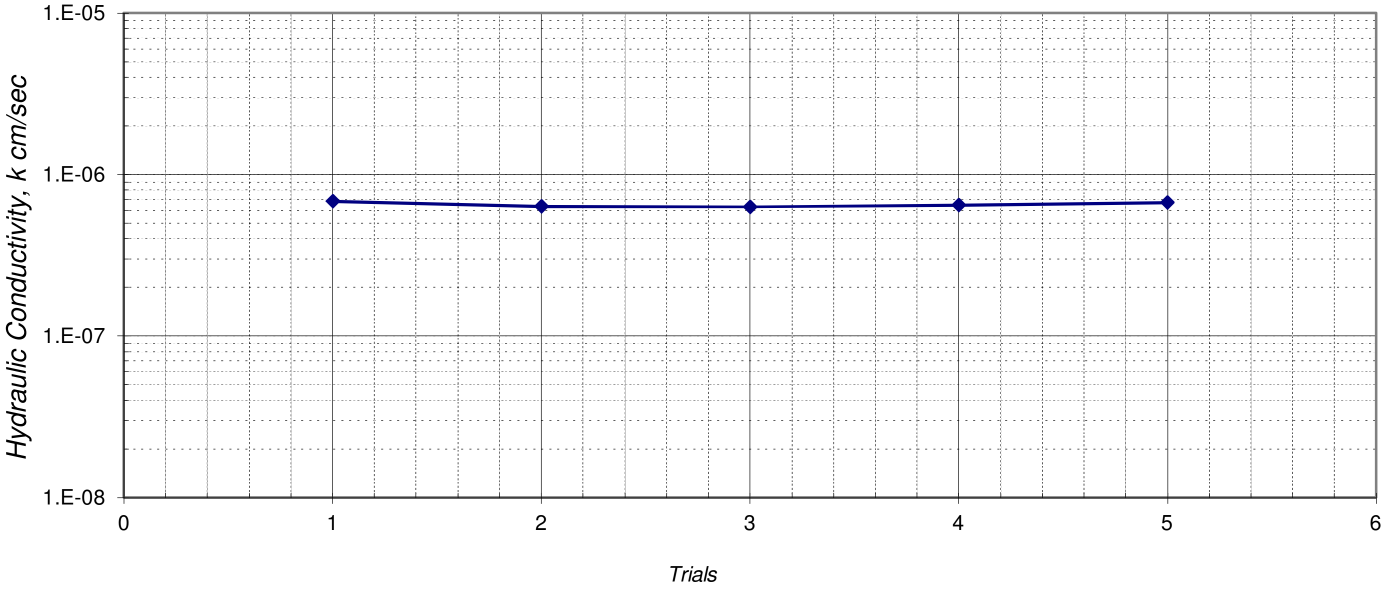
corrected to 20° C

HYDRAULIC CONDUCTIVITY
REPORT

Figure B-9

Client / Project Name: **BSK Associates / Thomas Composting**	Project No: **AU22.1246.00**	Lab Sample Number: **4939C**
Sample ID: **B-9 @ 1.5'**	Description: **brown sandy clay**	Report Date: **December 9, 2022**

Hydraulic Conductivity



SPECIMEN DATA

SAMPLE ID:	**B-9 @ 1.5'**	
DESCRIPTION:	brown sandy clay	
	INITIAL	FINAL
HEIGHT, in.	3.6	3.6
DIAMETER, in.	2.4	2.4
WATER CONTENT, %	15.7	24.3
DRY DENSITY, pcf	102	100
SATURATION, %	64	95

(Specific Gravity assumed as 2.7)

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	1 psi
GRADIENT RANGE:	9 - 11
IN / OUT RATIO:	0.99
"B" PARAMETER:	0.97

TRIAL nos.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	6.8E-07
2	6.4E-07
3	6.3E-07
4	6.5E-07
5	6.7E-07

AVERAGE LAST 4 : **6.5E-07**

corrected to 20° C

This testing is based upon accepted industry practice as well as the test method listed. These results apply only to the samples supplied and tested for the above referenced job.

L : Labexcel \PROJECTS \ BSK Associates / T \ 4939C-txk	Print Date: 12/09/22	Entered By: PP	Reviewed By: MK	LSN: **4939C**

DCN: TXK-QC-GRAPH (rev. 11/20/12)

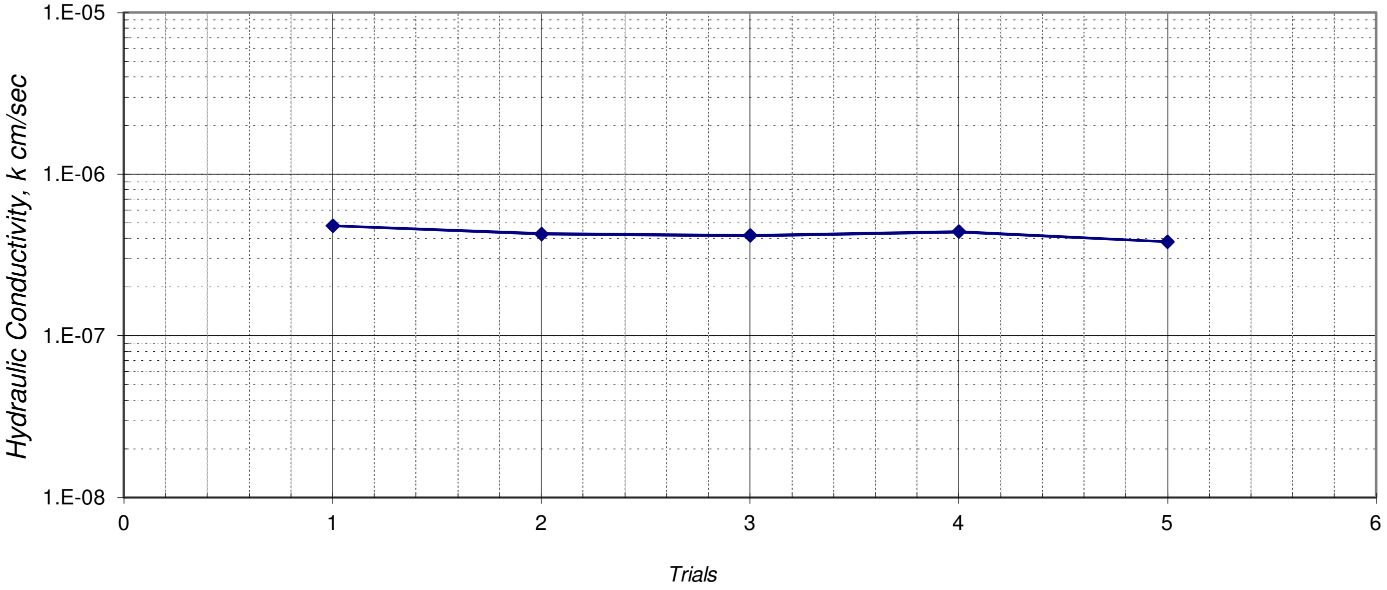
HYDRAULIC CONDUCTIVITY
REPORT

Figure B-10

Client / Project Name: **BSK Associates / Thomas Composting**
Project No: **AU22.1264.00**
Lab Sample Number: **4939E**

Sample ID: **B-11/B-12 @ 0-1.5' (3% Clay)**
Description: **brown sandy lean clay**
Report Date: **December 9, 2022**

Hydraulic Conductivity



SPECIMEN DATA

SAMPLE ID: **B-11/B-12 @ 0-1.5' (3% Clay)**
DESCRIPTION: brown sandy lean clay

	INITIAL	FINAL
HEIGHT, in.	3.0	3.1
DIAMETER, in.	2.4	2.4
WATER CONTENT, %	12.9	22.5
DRY DENSITY, pcf	107	103
SATURATION, %	60	95

(Specific Gravity assumed as 2.7)

COMMENTS:
Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 1 psi
GRADIENT RANGE: 9 - 11
IN / OUT RATIO: 0.78
"B" PARAMETER: 0.99

TRIAL nos.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	4.8E-07
2	4.3E-07
3	4.2E-07
4	4.4E-07
5	3.8E-07

AVERAGE LAST 4 : **4.2E-07**

corrected to 20° C

L : Labexcel \PROJECTS \ BSK Associates / T \ 4939E-txk
Print Date: 12/09/22
Entered By: PP
Reviewed By: MK
LSN: **4939E**

DCN: TXK-QC-GRAPH (rev. 11/20/12)

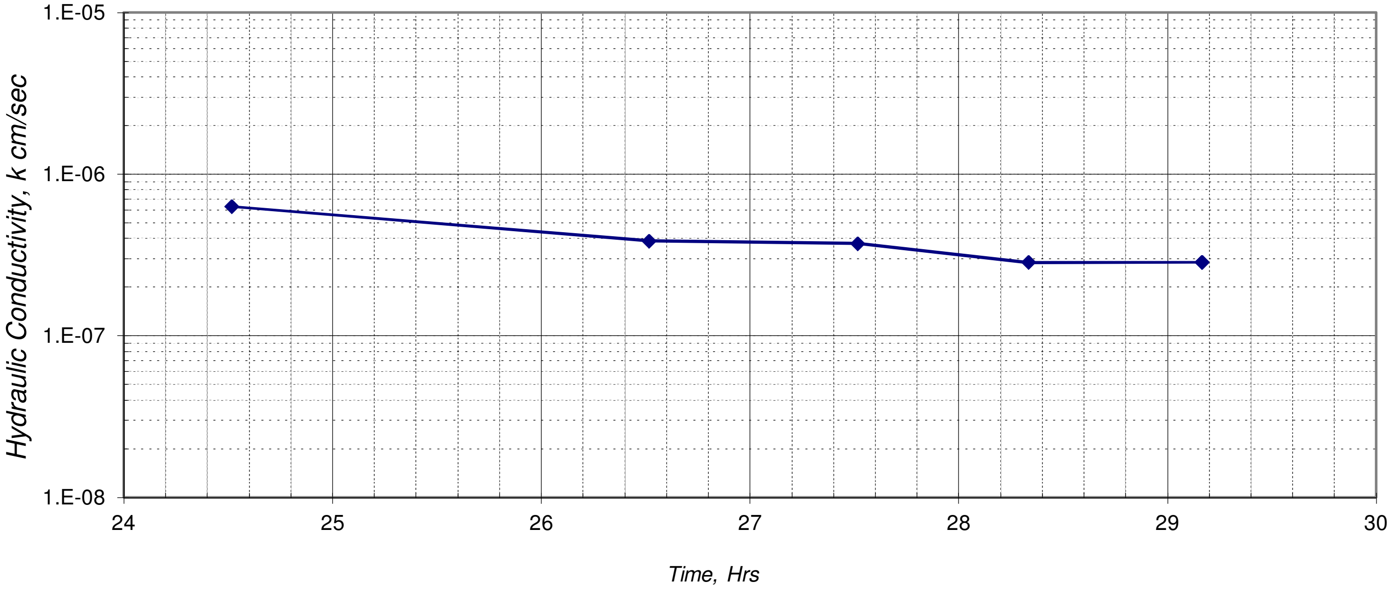
Geo-Logic ASSOCIATES

HYDRAULIC CONDUCTIVITY
REPORT

Figure B-11

Client / Project Name: **BSK Associates / Thomas Composting**	Project No: **AU22.1246.00**	Lab Sample Number: **4939F**
Sample ID: **B-11/B-12 @ 0-1.5' (5% Clay)**	Description: **brown sandy lean clay**	Report Date: **December 9, 2022**

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID: **B-11/B-12 @ 0-1.5' (5% Clay)**

DESCRIPTION: brown sandy lean clay

	INITIAL	FINAL
HEIGHT, in.	3.0	3.1
DIAMETER, in.	2.4	2.4
WATER CONTENT, %	12.9	23.0
DRY DENSITY, pcf	107	102
SATURATION, %	60	95

(Specific Gravity assumed as 2.7)

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	1 psi
GRADIENT RANGE:	9 - 11
IN / OUT RATIO:	0.80
"B" PARAMETER:	0.98

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	24.5	6.3E-07
2	26.5	3.9E-07
3	27.5	3.7E-07
4	28.3	2.8E-07
5	29.2	2.8E-07

AVERAGE LAST 4 : **3.3E-07**

corrected to 20° C

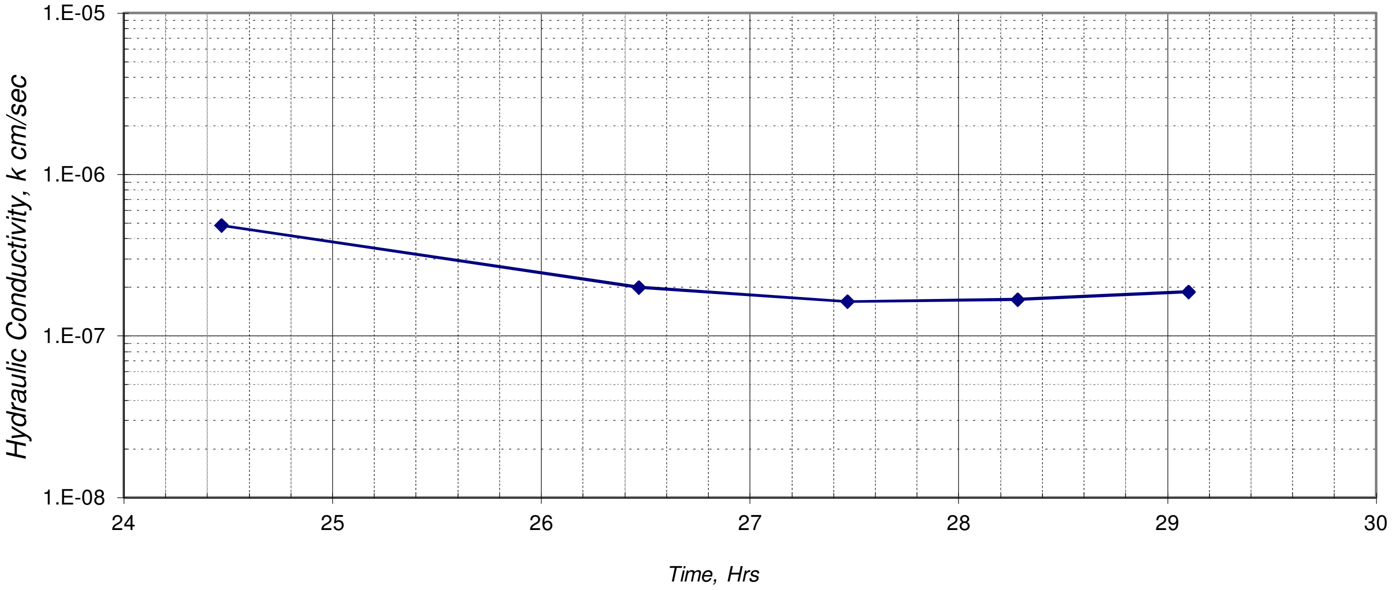
Print Date: 12/09/22 Entered By: PP Reviewed By: MK LSN: **4939F**

HYDRAULIC CONDUCTIVITY
REPORT

Figure B-12

Client / Project Name: **BSK Associates / Thomas Composting**	Project No: **AU22.1246.00**	Lab Sample Number: **4939G**
Sample ID: **B-11/B-12 @ 0-1.5' (7% Clay)**	Description: **brown sandy lean clay**	Report Date: **December 9, 2022**

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	**B-11/B-12 @ 0-1.5' (7% Clay)**	
DESCRIPTION:	brown sandy lean clay	
	INITIAL	FINAL
HEIGHT, in.	3.0	3.1
DIAMETER, in.	2.4	2.4
WATER CONTENT, %	13.0	23.4
DRY DENSITY, pcf	107	102
SATURATION, %	61	96

(Specific Gravity assumed as 2.7)

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	1 psi
GRADIENT RANGE:	11 - 14
IN / OUT RATIO:	1.14
"B" PARAMETER:	0.98

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	24.5	4.8E-07
2	26.5	2.0E-07
3	27.5	1.6E-07
4	28.3	1.7E-07
5	29.1	1.9E-07

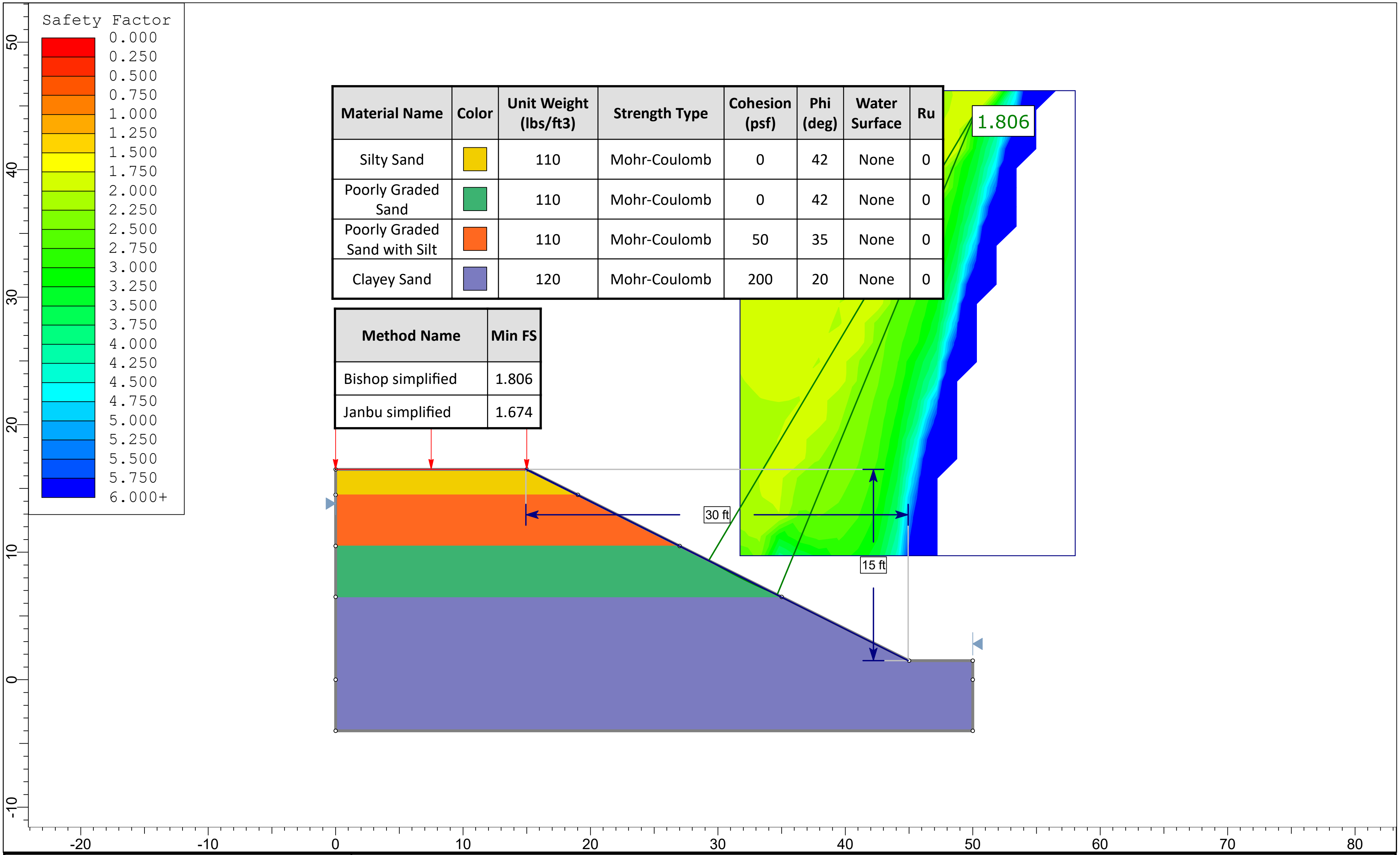
AVERAGE LAST 4 : **1.8E-07**

corrected to 20° C

Print Date:	Entered By:	Reviewed By:	LSN:
12/09/22	PP	MK	**4939G**

APPENDIX C

SLOPE STABILITY

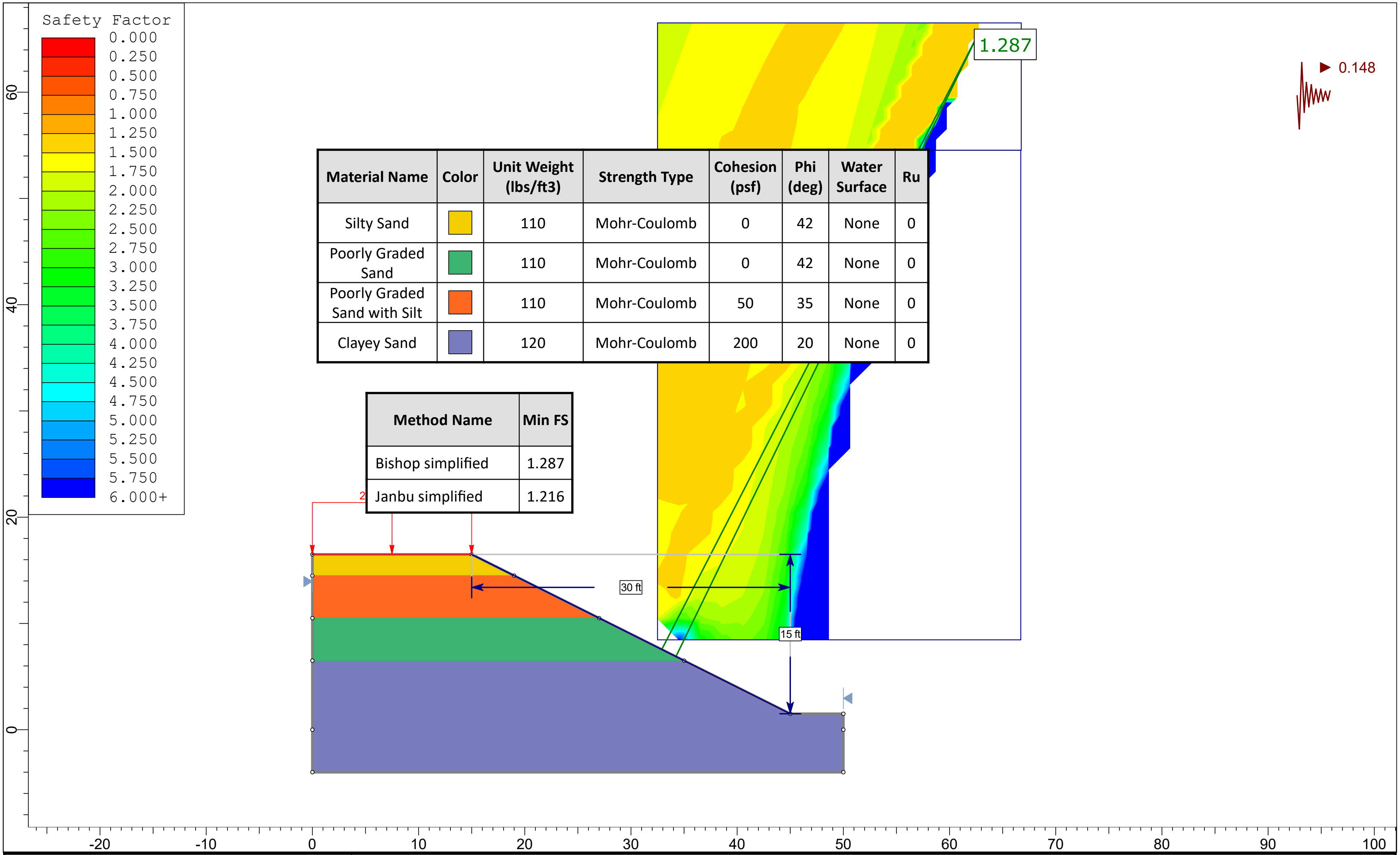


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Silty Sand	🟨	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand	🟩	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand with Silt	🟧	110	Mohr-Coulomb	50	35	None	0
Clayey Sand	🟪	120	Mohr-Coulomb	200	20	None	0

Method Name	Min FS
Bishop simplified	1.806
Janbu simplified	1.674

Project	FID Recharge Basin - Horner		
Analysis Description	G00000947		
Drawn By J. Alvarez	*Scale* 1:125	*Company*	BSK Associates
Date	12/1/2022	*File Name*	G00000713 - Thomas Composting.slmd

SLIDEINTERPRET 7.038



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Silty Sand	🟨	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand	🟩	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand with Silt	🟧	110	Mohr-Coulomb	50	35	None	0
Clayey Sand	🟪	120	Mohr-Coulomb	200	20	None	0

Method Name	Min FS
Bishop simplified	1.287
Janbu simplified	1.216

rocscience

SLIDEINTERPRET 7.038

Project Thomas Composting Basin

Analysis Description G00000713

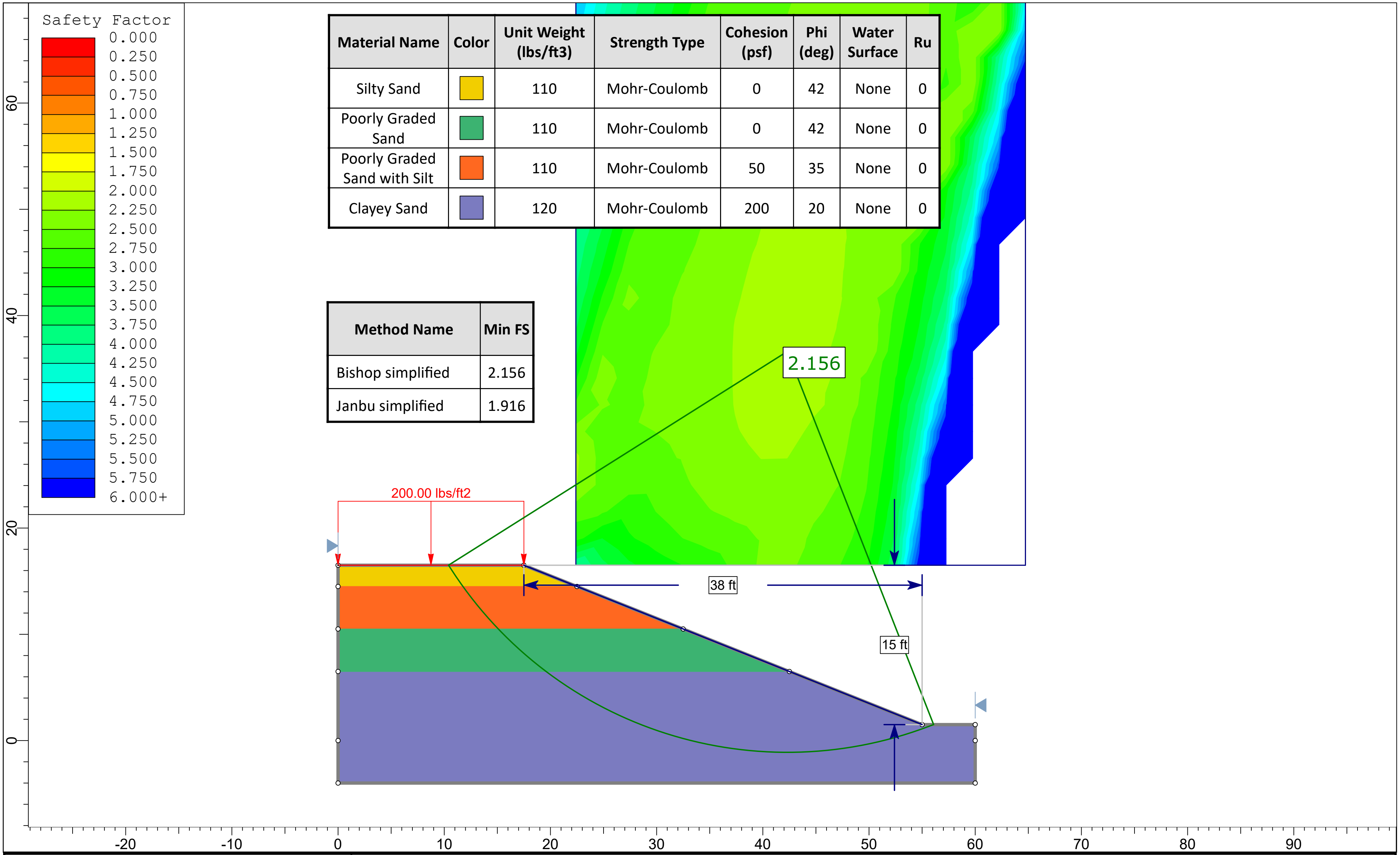
Drawn By T. Gorham

Scale 1:150

Company BSK Associates

Date 12/13/2022

File Name G00000713 - Thomas Composting.slmd



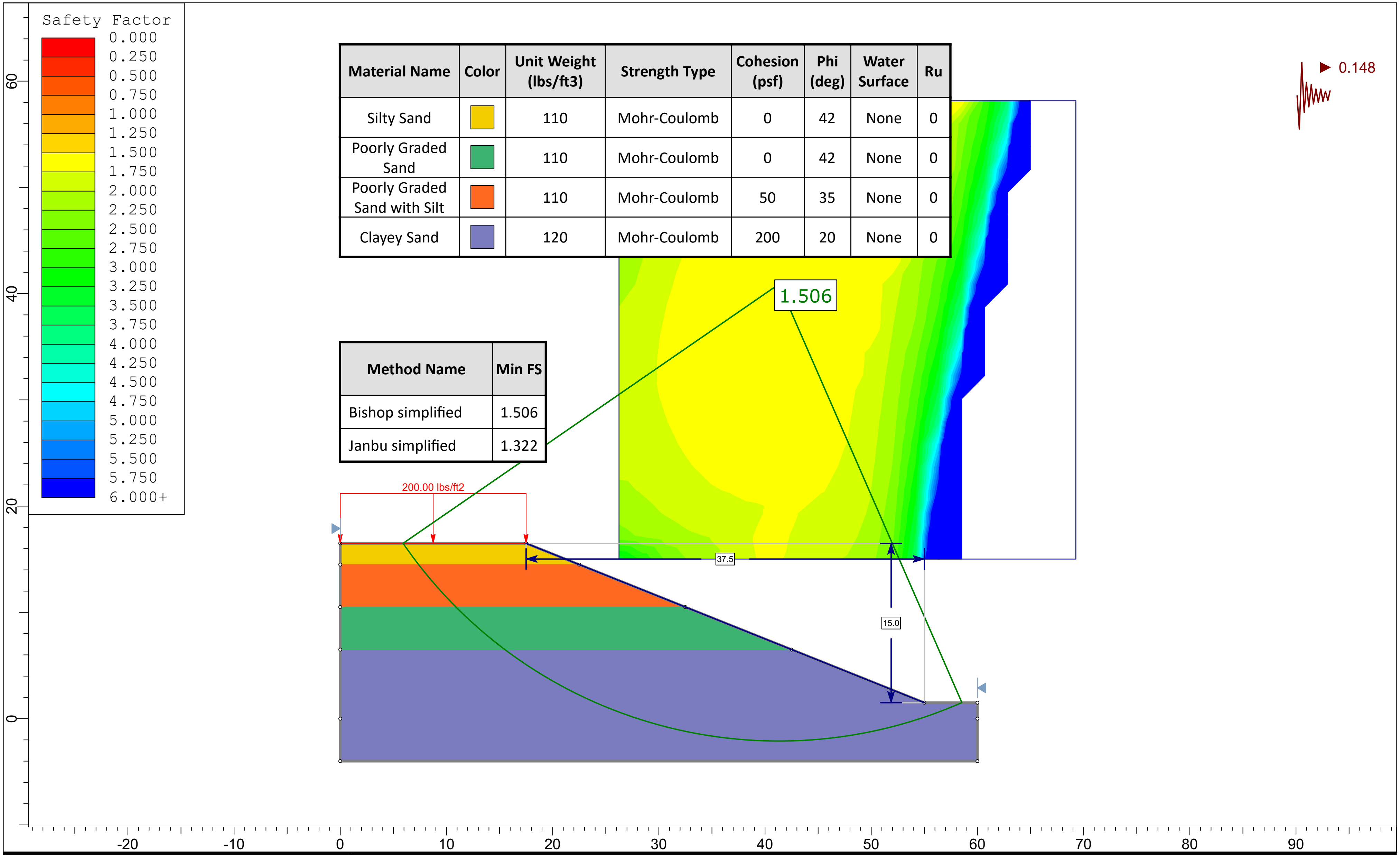
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Silty Sand	🟨	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand	🟩	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand with Silt	🟧	110	Mohr-Coulomb	50	35	None	0
Clayey Sand	🟪	120	Mohr-Coulomb	200	20	None	0

Method Name	Min FS
Bishop simplified	2.156
Janbu simplified	1.916

rocscience

SLIDEINTERPRET 7.038

Project	Thomas Composting Basin		
Analysis Description	G00000713		
Drawn By	T. Gorham	*Scale*	1:150
Company	BSK Associates		
Date	12/13/2022	*File Name*	G00000713 - Thomas Composting.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Silty Sand	🟨	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand	🟩	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand with Silt	🟧	110	Mohr-Coulomb	50	35	None	0
Clayey Sand	🟪	120	Mohr-Coulomb	200	20	None	0

Method Name	Min FS
Bishop simplified	1.506
Janbu simplified	1.322

rocscience

SLIDEINTERPRET 7.038

Project	Thomas Composting Basin
Analysis Description	G00000713
Drawn By	T. Gorham
Scale	1:150
Company	BSK Associates
Date	12/13/2022
File Name	G00000713 - Thomas Composting.slmd

APPENDIX D

PERCOLATION

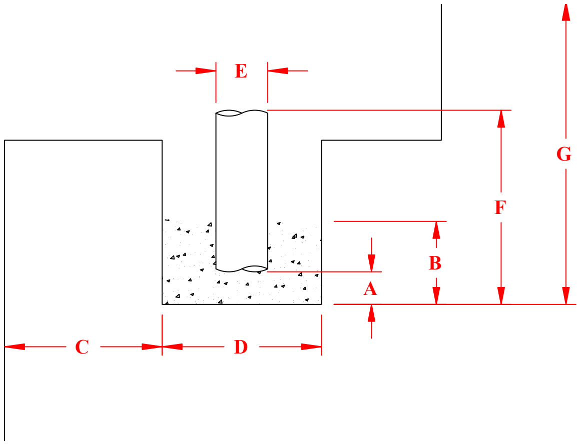
TEST RESULTS

BSK ASSOCIATES

PERCOLATION TEST DATA SHEET

FIGURE C-1
550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2868

Project Name:	Thomas Composting	Project No.:	G00000713
Project Location:	Riverdale	Pit No.:	PT-1 (B-3)



A.	Gravel Layer Depth, in.	12
B.	Total Gravel Thickness, in.	12
C.	Distance from Shelf, ft.	NA
D.	Hole Diameter, in.	8
E.	Case Diameter, in.	2
F.	Reference Depth, in.	9
G	Hole Depth, ft.	19.00
	Depth to Groundwater	25
Soil Type (bottom)		Poorly Graded Sand (SP)

Date & Time Saturated: 11/4/2022, 19:00
Depth of Water after 24-hour Saturation: 0

Begin Test	Initial Depth to Water*, in.	Refilled	End Test	Final Depth to Water*, in.	Test Duration, min.	Water Drop, in.	**Drop Rate min./in.****
8:17	36.0	X	8:18	43.8	1.5	7.8	**0.5**
8:18	43.8		8:20	50.4	1.5	6.6	**0.6**
8:20	50.4		8:21	57.0	1.5	6.6	**0.6**
8:21	57.0		8:23	64.8	1.5	7.8	**0.5**
8:23	64.8		8:24	72.0	1.5	7.2	**0.5**
8:24	72.0		8:26	78.0	1.5	6.0	**0.6**
8:26	78.0		8:27	82.2	1.5	4.2	**0.9**
8:27	82.2		8:29	86.4	1.5	4.2	**0.9**
8:29	86.4		8:30	88.8	1.5	2.4	**1.6**
8:30	88.8		8:32	91.2	1.5	2.4	**1.6**
8:32	91.2		8:33	92.4	1.5	1.2	**3.2**
8:33	92.4		8:35	93.0	1.5	0.6	**6.4**
8:35	93.0		8:36	93.6	1.5	0.6	**6.4**
8:36	93.6		8:38	94.1	1.5	0.5	**8.0**
8:38	94.1		8:39	95.4	1.5	1.3	**2.9**

Average = **5.8**

*Depth below reference datum
**Corrected for full depth gravel in annulus

BSK ASSOCIATES

Double Ring Infiltration Test

ASTM D3385

Figure D-2

550 W. Locust
Fresno, CA 93650
Ph: (559) 497-2880

Project Name: Thomas Composting
Project Number: G00000713
Test Location: Existing Basin SW Corner

Saturation Date: 21-11-22
Test Date: 22-11-22
Tested By: J. Alvarez

	Area (cm^2)	Depth of Liquid (cm)	Containers Vol/ΔH (cm^3/cm)
Inner Ring	729.66	19.05	54
Annular Space	2188.98	20.32	168.33

	Inner Flow Rate (cm/hr)	**Annular Flow Rate (cm/hr)**
Average Last 8	0.87	1.05
cm/sec	2.41E-04	2.92E-04
min/in	1.76E+02	1.45E+02

Trail No		Time (hr:min)	Elapsed Time/Cumulative (min)	Flow reading				Incremental Infiltration Rate	
				Inner Reading		Annular Space			
				Reading (cm)	Flow (cm^3)	Reading (cm)	Flow (cm^3)	Inner (cm/h)	Annular (cm/h)
1	S	12:08	5	49.5	5.4	48	50.50	0.09	0.28
	E	12:13	5	49.4		47.7			
2	S	12:13	5	49.4	16.2	47.7	33.67	0.27	0.18
	E	12:18	10	49.1		47.5			
3	S	12:18	5	49.1	5.4	47.5	50.50	0.09	0.28
	E	12:23	15	49		47.2			
4	S	12:23	5	49	5.4	47.2	33.67	0.09	0.18
	E	12:28	20	48.9		47			
5	S	12:28	5	48.9	5.4	47	0.00	0.09	0.00
	E	12:33	25	48.8		47			
6	S	12:33	5	48.8	5.4	47	101.00	0.09	0.55
	E	12:38	30	48.7		46.4			
7	S	12:47	6	48.5	10.8	45.5	134.66	0.15	0.62
	E	12:53	36	48.3		44.7			
8	S	12:53	5	48.3	21.6	44.7	185.16	0.36	1.02
	E	12:58	41	47.9		43.6			
9	S	12:58	5	47.9	21.6	43.6	134.66	0.36	0.74
	E	13:03	46	47.5		42.8			
10	S	13:03	5	47.5	32.4	42.8	185.16	0.53	1.02
	E	13:08	51	46.9		41.7			
11	S	13:08	5	46.9	37.8	41.7	185.16	0.62	1.02
	E	13:13	56	46.2		40.6			
12	S	13:13	5	46.2	21.6	40.6	151.50	0.36	0.83
	E	13:18	61	45.8		39.7			
13	S	13:18	5	45.8	27	39.7	202.00	0.44	1.11
	E	13:23	66	45.3		38.5			
14	S	13:23	5	45.3	32.4	38.5	151.50	0.53	0.83
	E	13:28	71	44.7		37.6			
15	S	13:28	5	44.7	32.4	37.6	168.33	0.53	0.92
	E	13:33	76	44.1		36.6			
16	S	13:33	5	44.1	32.4	36.6	185.16	0.53	1.02
	E	13:38	81	43.5		35.5			
17	S	13:38	5	43.5	27	35.5	168.33	0.44	0.92
	E	13:43	86	43		34.5			
18	S	13:43	5	43	32.4	34.5	151.50	0.53	0.83
	E	13:48	91	42.4		33.6			
19	S	13:48	5	42.4	37.8	33.6	185.16	0.62	1.02
	E	13:53	96	41.7		32.5			
20	S	13:58	5	41.7	199.8	32.5	319.83	3.29	1.75
	E	14:03	101	38		30.6			
21	S								
	E								

Double Ring Infiltration Test

ASTM D3385

Figure D-3
550 W. Locust
Fresno, CA 93650
Ph: (559) 497-2880

Project Name: Thomas Composting
Project Number: G00000713
Test Location: Existing Pond (SW of Property)
Saturation Date: 21-11-22
Test Date: 22-11-22
Tested By: J. Alvarez

	Area (cm^2)	Depth of Liquid (cm)	Containers Vol/ΔH (cm^3/cm)
Inner Ring	729.66	20.32	54
Annular Space	2188.98	20.96	168.33

	Inner Flow Rate (cm/hr)	**Annular Flow Rate (cm/hr)**
Average Last 8	0.55	0.52
cm/sec	1.52E-04	1.45E-04
min/in	2.78E+02	2.91E+02

Trail No		Time (hr:min)	Elapsed Time/Cumulative (min)	Flow reading				Incremental Infiltration Rate	
				Inner Reading		Annular Space			
				Reading (cm)	Flow (cm^3)	Reading (cm)	Flow (cm^3)	Inner (cm/h)	Annular (cm/h)
1	S	11:19	5	59	27	58.5	168.33	0.44	0.92
	E	11:24	5	58.5		57.5			
2	S	11:25	5	58.5	54	57.5	117.83	0.89	0.65
	E	11:30	10	57.5		56.8			
3	S	11:31	5	57.5	43.2	56.8	67.33	0.71	0.37
	E	11:36	15	56.7		56.4			
4	S	11:37	5	56.7	-5.4	56.4	67.33	-0.09	0.37
	E	11:42	20	56.8		56			
5	S	11:44	5	56.5	32.4	55.5	84.17	0.53	0.46
	E	11:49	25	55.9		55			
6	S	11:49	5	55.9	48.6	55	67.33	0.80	0.37
	E	11:54	30	55		54.6			
7	S								
	E								
8	S								
	E								
9	S								
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10	S								
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	E								

Appendix H

Sustainable Groundwater Evaluation Report

SUSTAINABLE GROUNDWATER EVALUATION REPORT

THOMAS BROS. COMPOSTING FACILITY

FEBRUARY 28, 2023

PREPARED FOR:

THOMAS BROS. COMPOSTING FACILITY
20111 EXCELSIOR AVENUE
RIVERDALE, CALIFORNIA 93656

COMPLETED BY:

4CREEKS

324 S. SANTA FE, STE. A
VISALIA, CA 93292
(559) 802-3052

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ATTACHMENTS

I. Groundwater Evaluation

a. Hydrogeologic Setting

The site is located within the Central Valley, which is a structural trough about 400 miles long, 20 to 70 miles wide. Rocks beneath the Hanford-Visalia area can be generally divided into three groups.

The first group are pre-Tertiary metamorphic and igneous basement complex rocks at considerable depth and are not exposed beneath the site. These rocks form the relatively impermeable surface at the base of the valley and have been encountered at a depth greater than 14,000-feet beneath the Tulare Lake bed.

The second group are consolidated Tertiary marine rocks containing saline water that overlie the basement rocks. Above the marine rocks are freshwater-bearing unconsolidated Tertiary and Quaternary continental deposits, lacustrine and marsh deposits, younger and older alluvium, and flood basin deposits that are a maximum of 3,000-feet thick near the valley axis. Groundwater pumped within the site area is from the freshwater-bearing unconsolidated deposits.

The lacustrine and marsh deposits near the area of the Tulare Lake bed form clay lenses that interfinger with the alluvial deposits. The most significant clay zones include the A-clay, B-clay, C-clay, D-clay, and E-clay. These clay beds form confined groundwater conditions beneath the site.

In particular, a lens of coarse sand, silty sand and clay, described by Croft and Gordon (1968) as older alluvium is located between the C-clay and E-clay, underlies the City of Corcoran, and is approximately 200-feet thick. This tongue, and the older deposits beneath the E-clay, are the major aquifers in the area. Many wells in the area penetrating this deposit are 200 to 400-feet deep and have yields of up to 2,000-gallons per minute.

The aquifer system above the A-clay, which occurs 40 to 50-feet below land surface near the site, is unconfined. The aquifer systems between the A-clay and C-clay is confined and the aquifer system beneath the E-clay is confined. Water levels in the shallowest aquifer above the A-clay are less than 10-feet below ground surface.

b. Depth to First Groundwater

Per the Kings County Dairy Element, “minimum separation from bottom of (lined and unlined) lagoons, manure and feed storage areas, and corrals shall be at least five (5) feet to the highest recorded groundwater level”.

The California Department of Water Resources (DWR) publishes shallow groundwater and electrical conductivity data. These data are used for agricultural planning to assess present and potential drainage problem areas. According to the DWR *Areas of Shallow Groundwater, 2012*, **(Attachment E – Areas of Shallow Groundwater)** shallow groundwater (free water) near the site is estimated to be at a depth of five to 10-feet below ground surface. The shallow groundwater is most likely a result of the A-clay aquitard beneath the area.

BSK Associates conducted a geotechnical investigation at the Site on November 21, 2022. Twelve exploratory test borings were installed 1.5 feet to 41.5 feet below ground surface (bgs) within the proposed improvement locations. Groundwater was encountered in each boring, at depth of 20 feet. With a proposed depth of 15 feet and 10 feet for the new basins this will comply with the 5 foot separation from the proposed basin to the first groundwater encountered.

c. Depth to First Usable Groundwater for Human Consumption

Groundwater data was downloaded from DWR's Groundwater Information Center Map Interface. Depth to groundwater data from spring 2013 were selected and groundwater contours were constructed from the DWR monitoring data. Based on the DWR data, depth to usable freshwater is approximately 166-feet below ground surface (**Attachment D – Depth to Groundwater**). The groundwater contours show groundwater flow beneath the site is south to southwest.

Safeguards to protect the water source include mitigation such as best management practices of farm operations to reduce or minimize introduction of contaminants to the potable water sources. Best management practices include wellhead protection and techniques during farming operations to minimize infiltration of chemicals such as following nutrient management and waste management plans.

Other safeguards include measures to ensure cross-contamination from shallow groundwater to deeper potable groundwater does not occur. This can be performed by ensuring well construction methods do not allow affected groundwater to communicate with deeper potable freshwater zones.

Wellhead protection measures should be implemented to protect potable water sources. These protection measures include public education, proper toxic and hazardous materials handling, ensuring private well and septic system setbacks are adequate, contingency planning in case of a contaminant release, hazardous waste collection, wellhead monitoring, and delineation of groundwater zones (as described above).

Physical geologic barriers act as hydrogeologic boundaries and include confining layers such as the lacustrine and marsh deposits (A through E-clay) encountered beneath the site. These clay layers act as natural barriers from migrating groundwater. Aquifers between these natural barriers should be protected by proper well construction techniques such as properly sealing the well annulus between confining layers.

d. Proximity to Watercourses

An existing Laguna Irrigation District Canal "E Canal" run across the southern and western border of the production area. The largest surface waterway nearest to the is the North Folk Kings River, which runs over one mile south of the production area.

II. Sustainable Groundwater Evaluation

a. Groundwater Sustainability Agency

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package collectively known as the Sustainable Groundwater Management ACT of 2014 (SGMA). SGMA requires governments and water agencies of high and medium priority basins to halt groundwater overdraft and bring groundwater basins into balanced levels of pumping and recharge. SGMA used basin prioritization to classify California's groundwater basins into one of four categories, high, medium, low, or very low priority. SGMA requires medium and high-priority basins to develop groundwater sustainability agencies (GSAs) and groundwater sustainability plans (GSPs) to manage groundwater for long-term sustainability.

The Thomas Bros. Composting Facility is located within the Kings Subbasin. The Kings Subbasin has been divided into seven groundwater sustainability agencies shown on **Attachment A – Kings Subbasin Map**. The North Fork Kings Groundwater Sustainability Agency (NFKGSA) was established as a GSA on September 16, 2016, as a section of the Kings Subbasin. The members of the NFKSGA are comprised of public agencies, private mutual water companies, and non-districted lands, commonly referred to as "white areas". The NFKGSA is in the southwest portion of the Kings Subbasin. Thomas Bros. is located within the NFKGSA which consists primarily of agricultural land but contains several rural communities and residential properties as well as is located within Laguna Water District. The facility's location within the NFKGSA is shown in **Attachment B – North Fork Kings GSA Map.**

The NFKGSA located in the Kings Subbasin is designated under SGMA as a high-priority, critically over-drafted basin and therefore requires a GSP to be completed and implemented. The completed GSP is required to manage the groundwater resources to achieve groundwater sustainability. The goal is to achieve groundwater sustainability by 2040 by balancing water demand with available water supply, called a water budget, and stabilizing the long-term trend of declining groundwater levels without significantly or unreasonably impacting groundwater storage, water quality, land subsidence, or interconnected surface water.

The NFKGSA has completed a water budget that accounts for all the water flowing in and out of the GSA's area and describes the various components of the GSA's hydrologic cycle.

To eliminate the overdraft and achieve sustainability, public agencies have been created to implement water allocation. Public agencies utilize historic groundwater conditions, surface water supplies, groundwater flows, land use, and other information to establish water budgets.

b. Irrigation District

The Thomas Bros. Composting Facility is located within the jurisdiction of a public agency, the Laguna Irrigation District (LID) shown on **Attachment C – Laguna Irrigation District Map**. Laguna Irrigation District is a Public Agency Special District and local government created in February 1920. The district serves an area of approximately 35,000 acres of agricultural land and uses both groundwater and surface water to meet water demands.

Surface water within the LID is supplied by the Kings River. The system consists of approximately 50 miles of canals and pipelines to convey surface water from Kings River water to its users. The LID utilizes surface water supplied by the Kings River and therefore the LID is a member of the Kings River Water Association (KRWA). The KRWA monitors surface water in the Kings River and its watershed including snowpack, reservoir stage, reservoir inflow and outflow, Kings River flows, and Kings River diversions. When surface water supplies are insufficient in meeting the LID water demands, supplemental groundwater pumping occurs.

The Kings River originates in the Sierra Nevada mountains and continues through eastern and southern Fresno Counties, northwestern Tulare County, and northern and central Kings County. The river branches in a North and Southern Fork within the NFKGSA area, with the Tulare

Lakebed the historical terminus of the Kings River. The Kings River is prone to high variable annual runoff that directly relates to mountain precipitation and winter snowpack. The Pine Flat Dam allows for the storage and regulation of the King River Water. Surface water stored in Plan Flat is diverted from the Kings River for distribution throughout the various canals within the NFKGSA and other GSAs.

The Facility accesses Kings River surface water through an existing Laguna Irrigation District Canal, "E Canal," that runs across the southern and western border of the facility's production area which originates from the North Fork of the Kings River. The North Fork Kings River runs one mile south of the production area.

c. Surface Water Allocation

Surface water supplies from the Kings River vary each year with local hydrogeologic conditions. Each year the KRWA allocates an acre-feet/acre value to the receptors within the Kings River recipient boundaries. Each facility within the LID has irrigated land associated with the Facility which the LID uses to find the total Tule River surface water allocation per facility per year.

Table 1 below shows the previous 10-year historical surface water allocation per acre of land within the Laguna Irrigation District. The Thomas Bros. Composting Facility shares 63.22 acres of irrigated land which is used for calculating the Facility's total yearly surface water allocation.

Table 1: Laguna Irrigation District Historical Surface Water Allocation

Year	Allocation per acre of Irrigated Land (acre-feet/acre)	Facility's Parcel Irrigated Land Historical Allocation (acres)	Total Volume Allocated to Facility (acre-feet/year)
2013	0.15	63.22	9.48
2014	0.00	63.22	0.00
2015	0.18	63.22	11.38
2016	0.18	63.22	11.38
2017	1.98	63.22	125.18
2018	0.85	63.22	53.74
2019	2.05	63.22	129.60
2020	0.68	63.22	42.99
2021	0.17	63.22	10.75
2022	0.07	63.22	4.43
Average	**0.63**	**63.22**	**39.89**
Minimum	**0.00**	**63.22**	**0.00**
Maximum	**2.05**	**63.22**	**129.60**

Based on the historical surface water allocation, the Facility has an average of 39.89 acre-feet of surface water allocated to the Facility each year. In 2019 the Facility had the largest allocation of 129.60 acre-feet and in 2014 the Facility had the smallest allocation with no water allocated to the Facility. Along with the allocation restrictions, the Facility is also limited to specific dates in the year when water can be pulled from Kings River. Based on yearly water supplies, the Kings River has "Water Runs" which allows facilities to pull water from the Kings River during certain periods of the year. In 2022 the Kings River had one "Water Run" in June which lasted for 7 days.

d. Water Needs

When surface water does not meet Facility water needs, the owners of the Facility will utilize onsite wells and groundwater pumping for additional water supplies. Most water agency wells for municipal use are metered and the pumping volume is recorded whereas private wells are not metered, and the pumping volume is unknown. Currently, the Laguna Irrigation District does not monitor or restrict well pumping. However, monitoring protocols have been adopted by the NFKGSA for data collection and management. The Facility has a private well on site and is therefore unmonitored or unrestricted.

e. Future Changes in Allocations

Surface water supplies from the Kings River vary each year with local hydrogeologic conditions. Depending on the mountainous precipitation and winter snowpack, surface water allocation may be increased or decreased. The Facility will continue to utilize only the amount of surface water allocated through the LID and KRWA. Dependent on the yearly supply of surface water, the Facility will acquire the remainder of facility water needs from unrestricted onsite wells while being mindful of basin groundwater levels.

Monitoring protocols may be introduced to private onsite wells which are designed to detect changes in groundwater levels, groundwater quality, and inelastic surface subsidence for basins in which subsidence has been identified as a potential problem, and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater extraction in the basin. On the condition that groundwater levels continue to decline, and monitoring protocols are required onsite, the Facility's owners will comply to meet new groundwater allocations and water quality standards.

III. References

Laguna Irrigation District., 2023, Irrigation water district: Laguna irrigation district: Riverdale, 2023. https://www.lagunaid.com/

Conservation Biology Institute., 2021, Data basin: California Water Districts from DWR, 2023. https://databasin.org/

North Fork Kings GSA., 2022, North Fork Kings GSA. Groundwater Sustainability Annual Report, 2023. (pp. 1-164), https://northforkkings.org/webpages/wp-content/uploads/2022/09/5-022.08_Kings_WY_2021.pdf

North Fork Kings GSA., 2023, North Fork Kings GSA. North Fork Kings Groundwater Sustainability Agency, Croft, M.G., and Gordon, G.V., 1968, Geology, Hydrology, and Quality of Water in the Hanford-Visalia Area

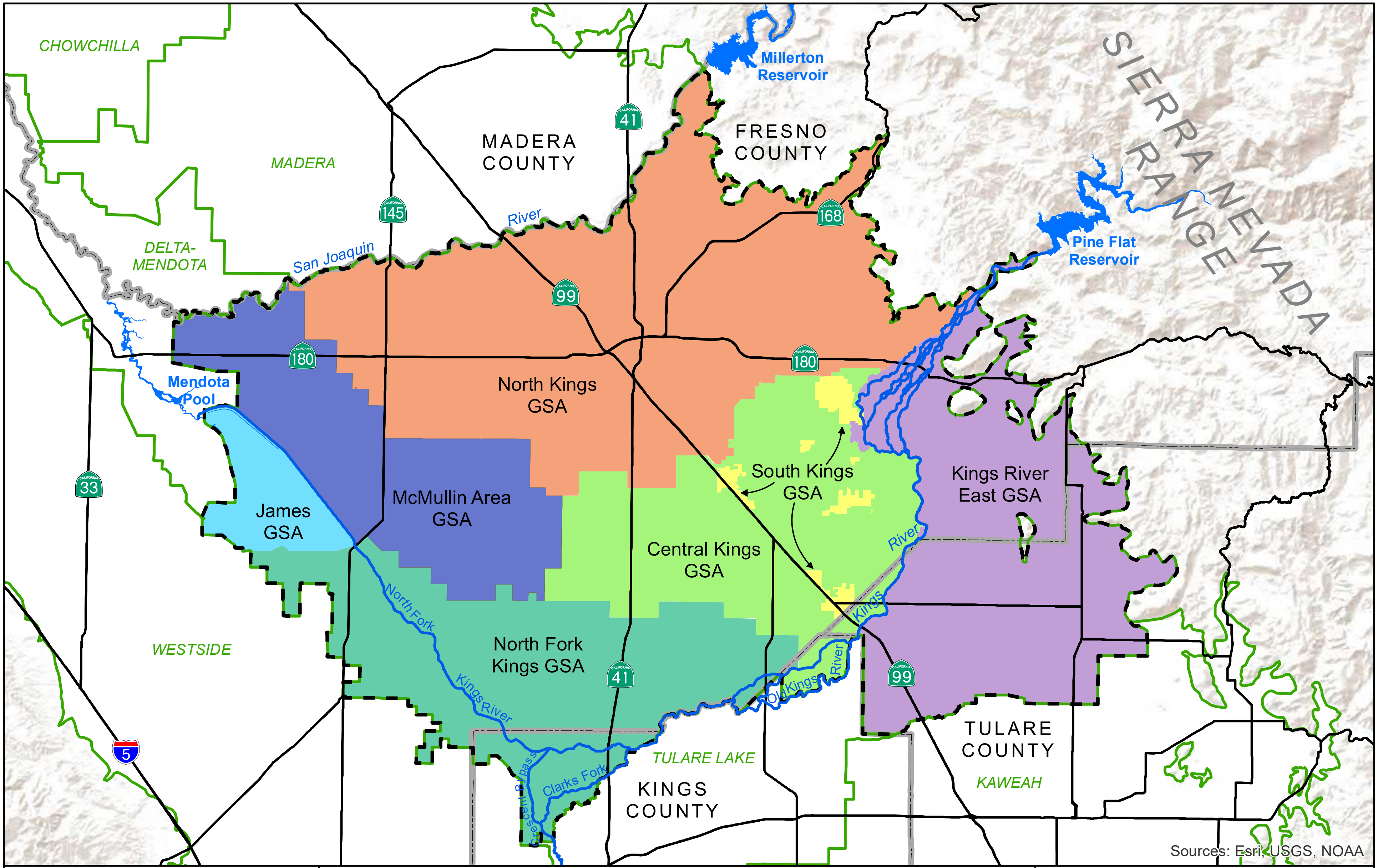
San Joaquin Valley, California, United States Department of the Interior Geological Survey, Water Resources Division, Open-File Report 68-67, 68p.

DWR, 2014, Groundwater Information Center, https://gis.water.ca.gov/app/groundwater/

Popenoe, Neva. Geotechnical Engineering Investigation Report. Rep. no. G19-105-10F. Fresno: BSK Associates, 2022. Print

Page, R.W., 1986, Geology of the Fresh Ground-Water Basin of the Central Valley, California, with Texture

Maps and Sections, Regional Aquifer System Analysis, United States Geological Survey Professional Paper 1401-C, United States Government Printing Office, Washington. 2023. https://northforkkings.org/



PROVOST& PRITCHARD
EST. 1968
CONSULTING GROUP
An Employee Owned Company

Kings Subbasin

Kings Groundwater Subbasin
Groundwater Sustainability Agencies

Figure 1-1

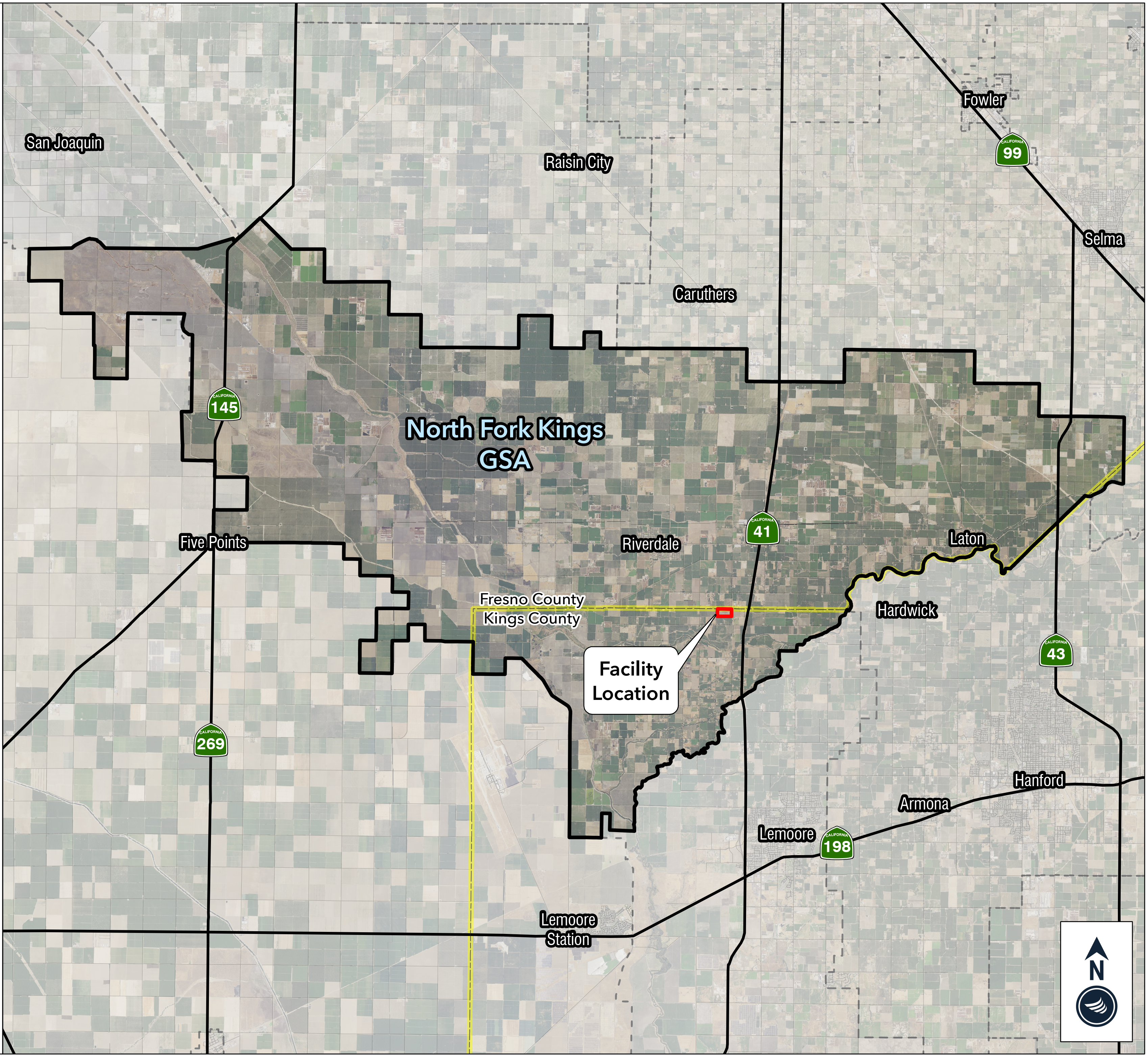
3/11/2020 : G:\Kings River East GSA-2664\266420001-Kings Basin Coordination Tasks\400 GIS\Map\AnnualReport\Monitoring\subbasin_gsa.mxd

Thomas Bros. Facility

20111 Excelsior Avenue
Riverdale, CA 93656
APN 004-062-003

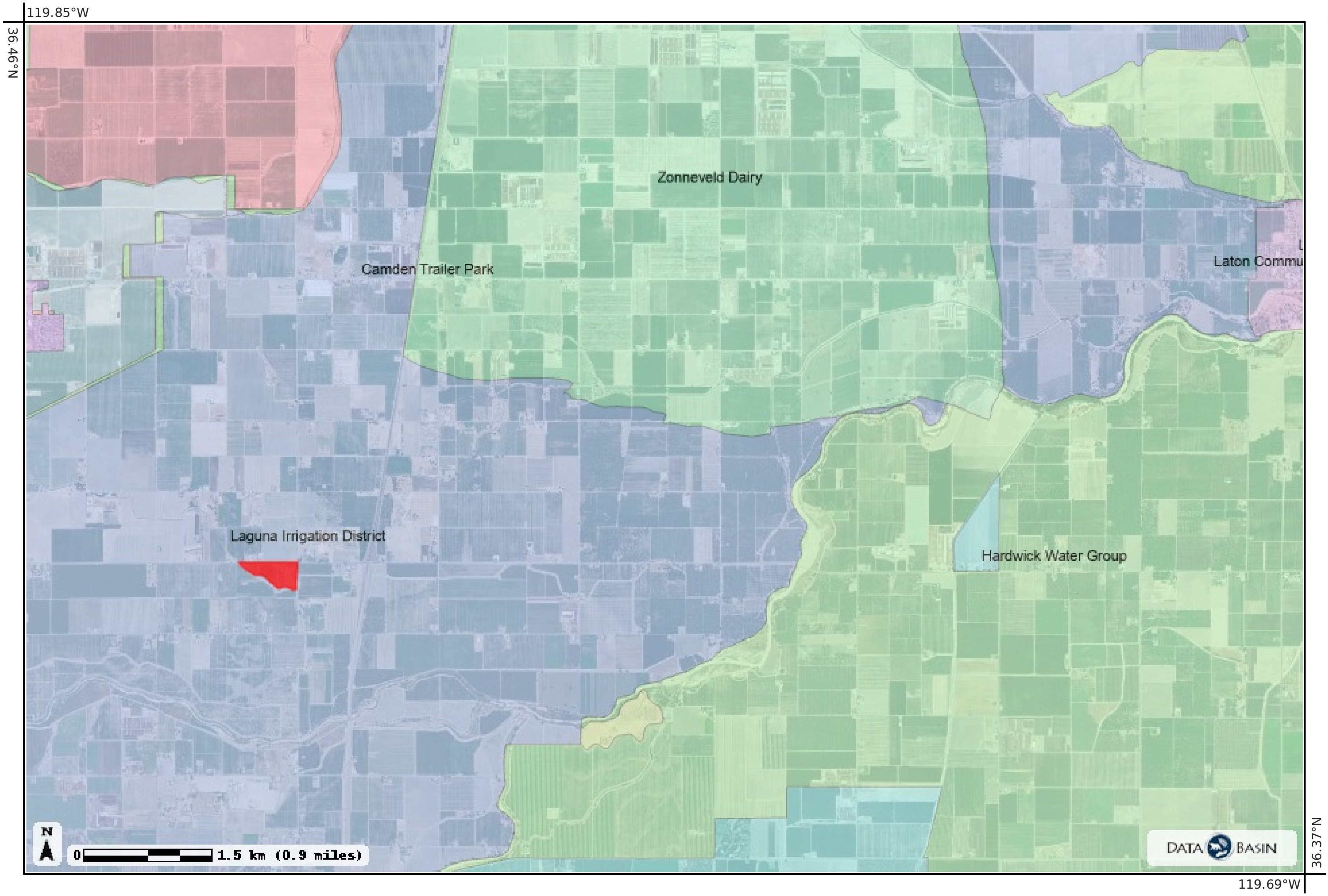
Legend

- 🟥 Thomas Bros. Facility
- ⬛ North Fork Kings GSA
- 🟨 County Boundary
- - - Other GSA Boundaries
- — Major Roads
- — Roads



4CREEKS

324 S Santa Fe St, Suite A
Visalia, CA 93292
(559) 802-3052



Legend

California Water Districts from DWR

Displaying:
AgencyName

- 🟦 4-E Water District
- 🟩 4-M Water District
- 🟩 49er Trailer Ranch
- 🟧 60th Street Association Water System
- 🟧 A & A Lake Tahoe Inn
- 🟩 A & A Mobile Home Park
- 🟦 A V Thomas Produce
- 🟪 A.F.P. Mutual Water Company
- 🟦 A1 Winston Mobile Home Park
- 🟩 ABC Company
- 🟦 Aberdeen Water System
- 🟦 Aborn Heights Water Mutual Association
- 🟩 Acampo Water System
- 🟨 Acorn Mobile Village
- 🟨 Adams Ranch Mutual Water Company
- 🟦 Adams Spring Water District
- 🟪 Adelanto City Of
- 🟥 Adelanto City of - Water
- 🟧 Adin
- 🟩 Ady District Imperial County
- 🟪 Aera Energy
- 🟪 Aerial Acres Water System

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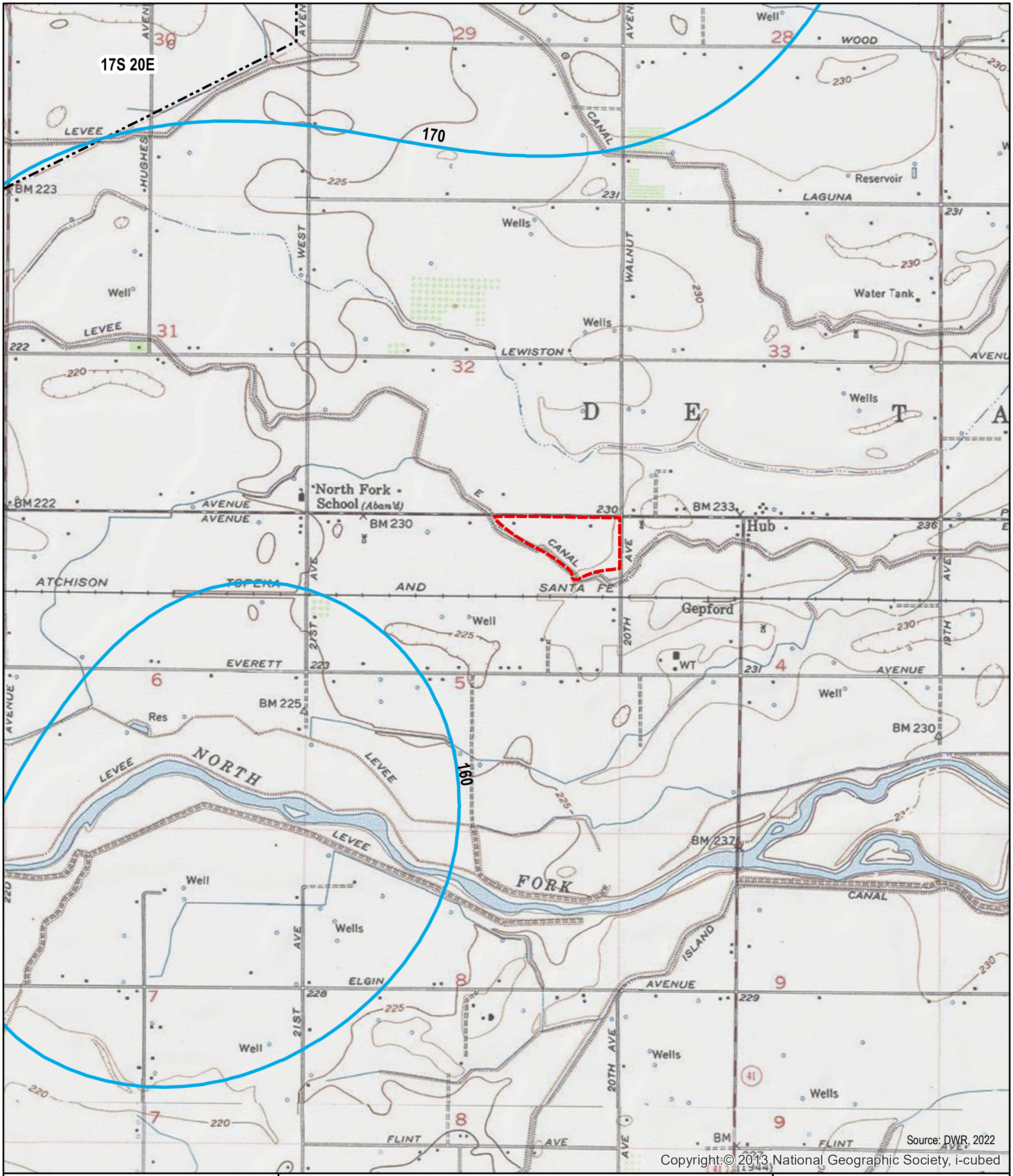


Source: DWR, 2022

324 S. Santa Fe Ave. Ste. A
Visalia, CA 93292
(559) 802-3052

4CREEKS

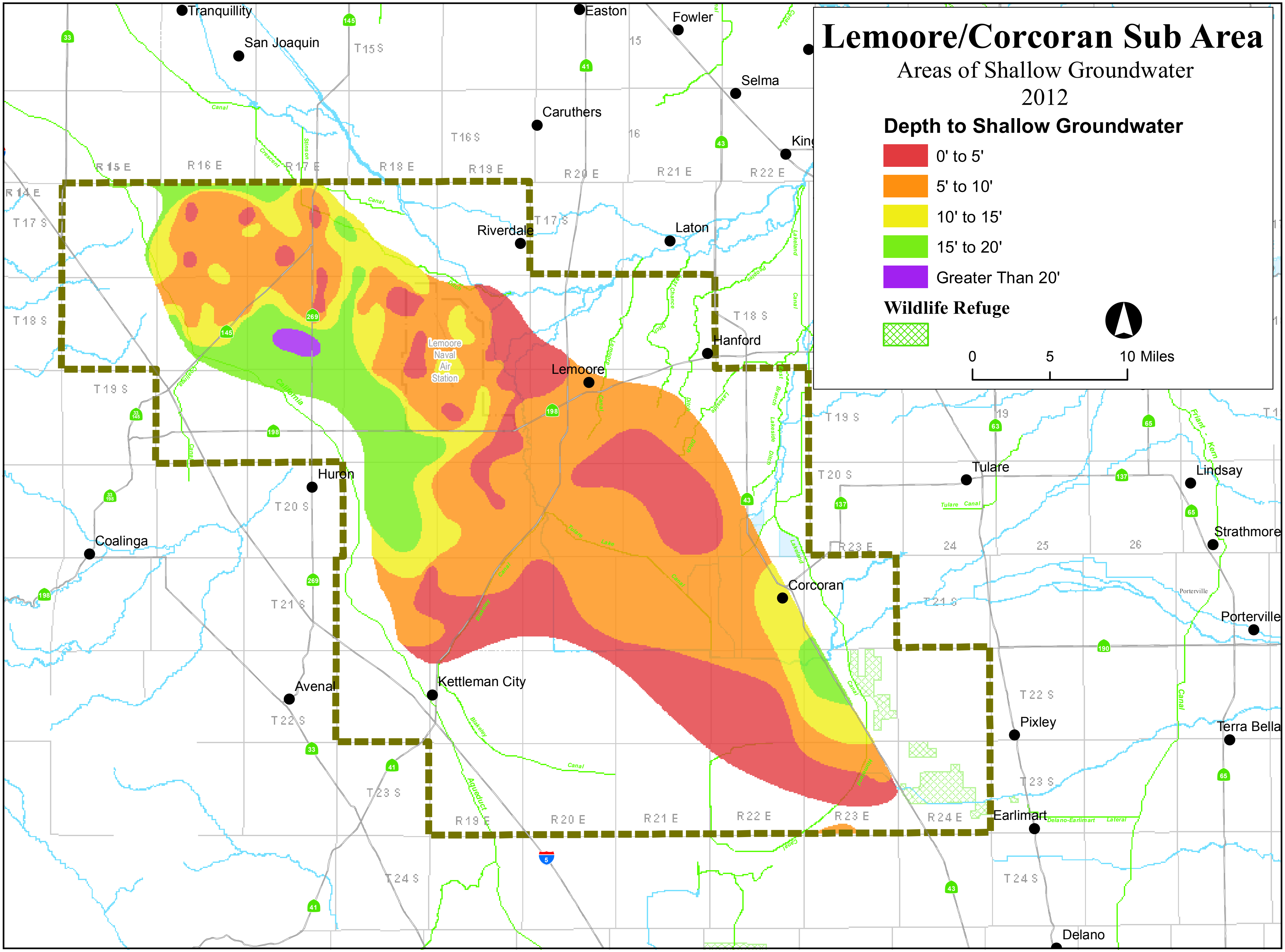
Legend

- 🟥 Thomas Dairy
- DWR Depth To Groundwater - Spring 2022
- Townships

0 0.2 0.4 Mil

Attachment D
Depth to Groundwater

Thomas Bros. Composting
20111 Excelsior Avenue, Riverdale, CA 93656
Kings County, CA



Lemoore/Corcoran Sub Area

Areas of Shallow Groundwater

2012

Central Valley Dairy Representative Monitoring Program

For the benefit of dairy producers, cattle operators and water quality across our valley

January 31, 2023

RE: Thomas Dairy, 20111 Excelsior Avenue, Riverdale, CA

To Whom It May Concern,

This letter confirms that Thomas Dairy, 20111 Excelsior Avenue, Riverdale, California, is currently a member in good standing in the Central Valley Dairy Representative Monitoring Program (CVDRMP).

Please feel free to contact me with any questions at 916-594-9450 or cvdrmp@gmail.com

Thank you for your attention to this matter.

James Garner
CVDRMP Administrator

Appendix I

Health Risk Assessment

HEALTH RISK ASSESSMENT

THOMAS BROTHERS COMPOSTING AND TRUCK WASH PROJECT
KINGS COUNTY, CALIFORNIA

LSA

March 2023

HEALTH RISK ASSESSMENT

THOMAS BROTHERS COMPOSTING AND TRUCK WASH PROJECT

KINGS COUNTY, CALIFORNIA

Submitted to:

4Creeks, Inc.
324 South Santa Fe Street, Suite A
Visalia, California 93292

Prepared by:

LSA
1500 Iowa Avenue, Suite 200
Riverside, California 92507
951.781.9310

Project No. FOC2204

March 2023

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FIGURES

TABLES

APPENDICES

LIST OF ABBREVIATIONS AND ACRONYMS

µg/m^3	micrograms per cubic meter
AAQS	ambient air quality standards
AB	Assembly Bill
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
APCD	Air Pollution Control District
AQMD	Air Quality Management District
Basin	San Joaquin Valley Basin
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CARB Handbook	Air Quality and Land Use Handbook: A Community Health Perspective
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
County	County of Kings
DPM	diesel particulate matter
EMFAC2021	California Emissions Factor Model, Version 2021
EPA	United States Environmental Protection Agency
ft	foot/feet
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
HAP	hazardous air pollutant
HARP2	Hotspots Analysis and Reporting Program Version 2
HI	Hazard Index
HRA	Health Risk Assessment
IARC	International Agency for Research on Cancer
MEI	maximally exposed individual
MICR	maximum individual cancer risk
NED	National Elevation Dataset
OEHHA	Office of Environmental Health Hazard Assessment

PM_{10}	particulate matter less than 10 microns in size
$PM_{2.5}$	particulate matter less than 2.5 microns in size
project	Thomas Brothers Composting and Truck Wash Project
ROG	reactive organic gas
SB	Senate Bill
SJVAPCD	San Joaquin Valley Air Pollution Control District
TACs	toxic air contaminants
URF	unit risk factor
URF	unit risk factor
USC	United States Code

1.0 INTRODUCTION

LSA has prepared a Health Risk Assessment (HRA) for the proposed Thomas Brothers Composting and Truck Wash Project (project) in Kings County, California. The proposed project is located southeast of Riverdale, California, at the southwest corner of Excelsior Avenue and 20th Avenue and would construct a composting facility, office building, and a truck wash facility. The project would be operational in 2024.

An HRA is a process used to estimate the increased health risk levels for people living and/or working near a project that emits toxic air contaminants (TACs). An HRA combines the results of studies on the health effects of various animal and human exposure to TACs with the results of studies that estimate the exposure levels at different distances from the source of pollutants. The purpose of the HRA is to document the increased cancer and non-cancer health risk levels from project-related emissions of TACs on existing nearby sensitive receptors.

The County of Kings (County) recommends the preparation of an HRA in accordance with policies and procedures of the Office of Environmental Health Hazard Assessment (OEHHA) and the San Joaquin Valley Air Pollution Control District (SJVAPCD). This HRA evaluates risk consistent with these documents and in compliance with all applicable requirements.

1.1 BACKGROUND

This section provides a discussion of regulatory guidance from the California Air Resources Board (CARB), OEHHA, California Air Pollution Control Officers Association (CAPCOA), and SJVAPCD.

1.1.1 California Air Resources Board Handbook and Technical Advisory

The CARB has developed an Air Quality and Land Use Handbook: A Community Health Perspective (CARB Handbook) (CARB 2005) and the supplement Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: A Technical Advisory (CARB 2017) that are intended to serve as general reference guides for evaluating and reducing air pollution impacts associated with new projects that are part of the land use decision-making process. According to the CARB Handbook, recent air pollution studies have shown an association between both respiratory and other non-cancer health effects and proximity to high-traffic roadways. Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California. The CARB Handbook recommends that planning agencies recognize that the configuration of warehouse and distribution centers can reduce population exposure and risk. For example, locating the main entry and exit points away from sensitive land uses helps to reduce cancer risks and other health impacts.

1.1.2 Office of Environmental Health and Hazard Assessment Guidelines

The OEHHA developed the Air Toxics Hot Spots Program Guidance Manual (OEHHA 2015) in conjunction with the CARB for use in implementing the Air Toxics Hot Spots Program (Assembly Bill [AB] 2588). The Air Toxics Hot Spots Program Guidance Manual describes health effect values, exposure pathway variates (e.g., breathing rates), and a tiered approach for performing HRAs based on current science and policy assessment. The intent of the Guidance Manual is to incorporate children's health concerns, update risk assessment practices, and provide consistent risk assessment procedures.

1.1.3 California Air Pollution Control Officers Association

In 2009, the CAPCOA published guidance (CAPCOA 2009) on assessing the health risk impacts from and to proposed land use projects (i.e., any development project that would site new receptors or would impact existing receptors) that focuses on the acute, chronic, and cancer impacts of sources affected by the California Environmental Quality Act (CEQA). The document recommends procedures to identify when a project should undergo further risk evaluation, procedures for conducting an HRA, guidelines to engage the public, presentation guidelines for results from the HRA, and mitigation measures that may be appropriate for various land use projects.

1.1.4 San Joaquin Valley Air Pollution Control District

Toxic air emissions are regulated under the SJVAPCD's Integrated Air Toxic Program. This program integrates the State and federal requirements and is aimed at protecting public health. These guidelines incorporate the OEHHA guidance and the options to be selected when using the CARB's Hotspots Analysis and Reporting Program Version 2 (HARP2) for risk assessment calculations.

1.2 PROJECT LOCATION

The project area located on the south side of Excelsior Avenue west of 20th Avenue in Kings County, California. Figure 1 shows the project location and vicinity.

1.3 PROJECT DESCRIPTION

Thomas Dairy, a dairy facility that had previously shut down its milking operations, is now permitted through Kings County and operating as a bovine feedlot facility. This facility is located southeast of Riverdale, California, at the southwest corner of Excelsior Avenue and 20th Avenue. Figure 1 illustrates the regional and project location.

The proposed project would construct a composting facility, office building, and truck wash facility within the project site, adjacent to the bovine feedlot facility. Figure 2 illustrates the conceptual site plan for the project. The operational hours for the composting facility will be from 6:00 a.m. to 6:00 p.m., Monday through Saturday. The proposed project would use imported, raw manure for composting that would be sold to off-site local farms for soil amendment. It is estimated that the facility would have approximately 20 service/delivery trucks per day during the months of September through December, and an average of 10 trucks per day for the remainder of the year. In addition, the facility would have approximately five visitors on a typical weekday. The operational hours for the truck wash facility would be from 8:00 a.m. to 8:00 p.m., Monday through Saturday. The truck wash facility would be for internal use only, and service would only be provided to the trucks coming to the composting site and not to outside customers. Based on the operational statement, the proposed project would have a maximum number of 10 employees in total for project operations.

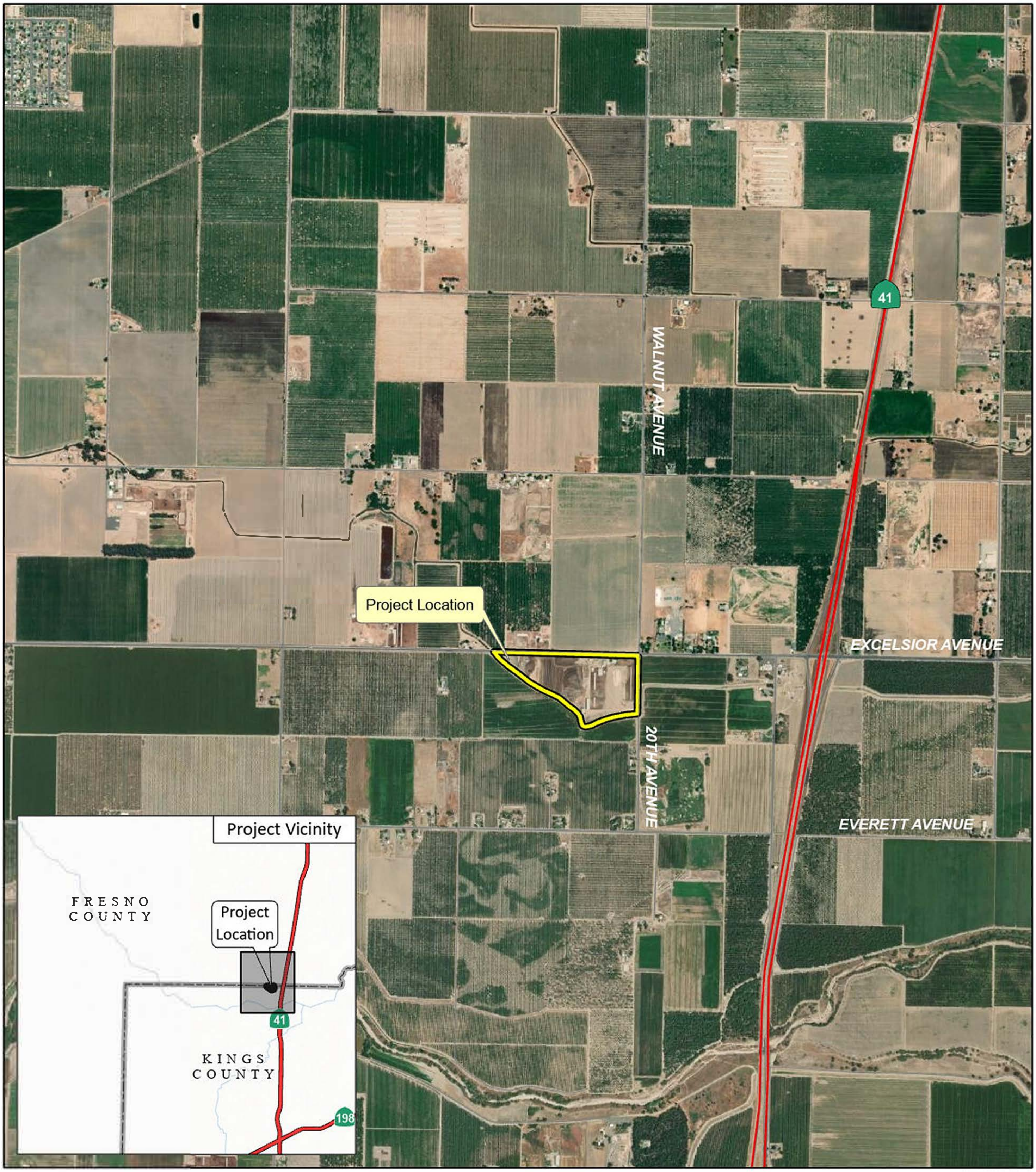

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FIGURE 1

Thomas Brothers Composting and Truck Wash

Regional and Project Location

SOURCE: ESRI Streetmap, 2021; Google Earth, 2022.

P:\FOC2204 Thomas Dairy Composting\Products\Traffic\ArcGis Pro\Reports\fig1_RegProLoc.aprx (1/5/2023)

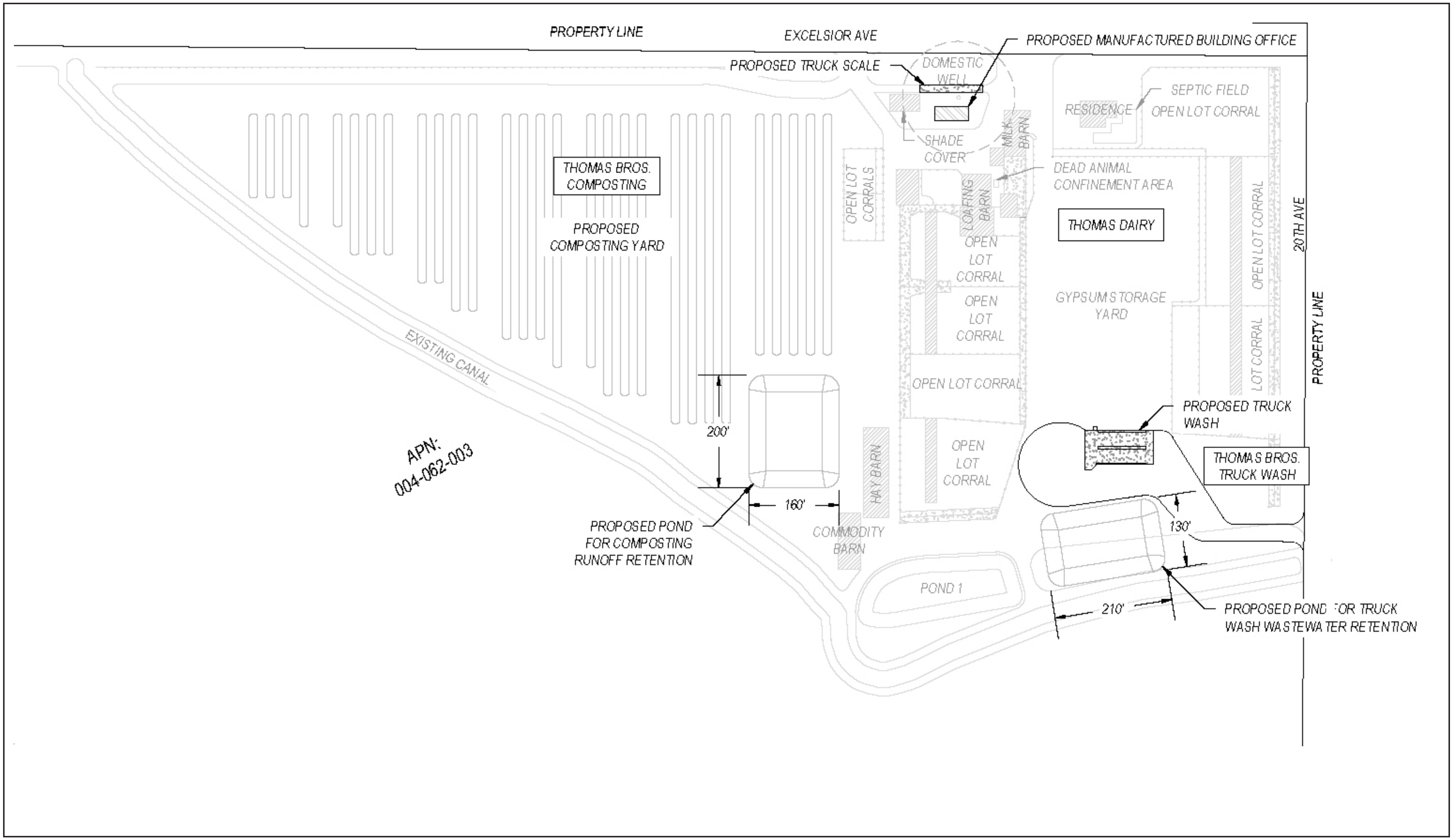

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FIGURE 2

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Thomas Brothers Composting and Truck Wash

Conceptual Site Plan

SOURCE: 4Creek, November 2022

The composting operations would utilize tractors, front-loaders, and tractor-trailers for on-site handling of compost/manure.

Sensitive receptors include residences such as private homes, condominiums, apartments, and living quarters, schools, preschools, daycare centers, in-home daycares, health facilities (e.g., hospitals, long-term care facilities, retirement and nursing homes), community centers, places of worship, parks (excluding trails), prisons, and dormitories. Farming uses surround the site. The nearest sensitive receptor to the project site is a single-family residence located across Excelsior Avenue, approximately 170 feet to the north (measured from the project site boundary to the identified residential building).

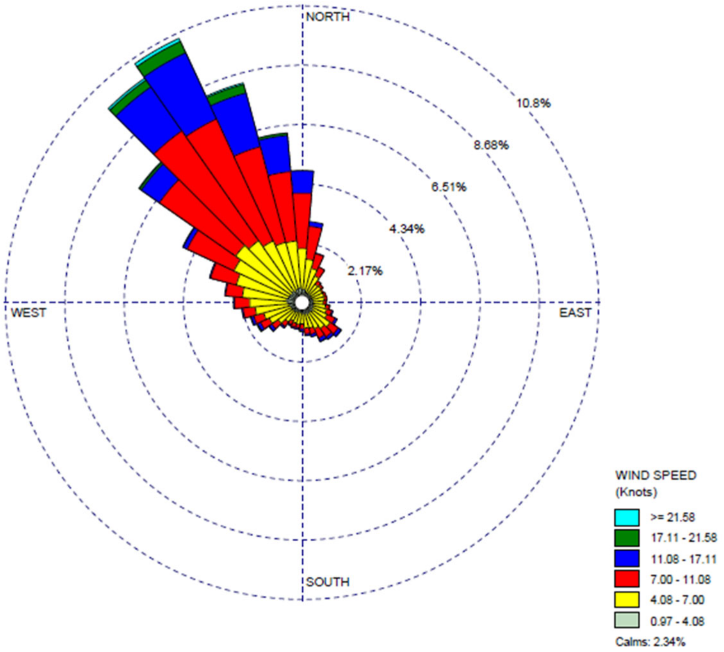
This HRA focuses on the potential health risks to nearby residents and workers of the project following the CARB Handbook and Supplement as well as OEHHA, CAPCOA, and SJVAPCD guidance and recommendations. It examines the short-term and long-term potential health effects from emissions of TACs from the project.

2.0 SETTING

The project site is in Kings County, California, which is part of the San Joaquin Valley Basin (Basin), and is under the jurisdiction of the SJVAPCD.

2.1 CLIMATE/METEOROLOGY

Air quality in the project vicinity is not only affected by various emission sources (e.g., mobile and industry), but also by atmospheric conditions (e.g., wind speed, wind direction, temperature, and rainfall). The nearest representative meteorological station that provides the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) ready meteorological data is the NAS Lemoore Meteorological Station, about 9.5 miles southwest of the project site (SJVAPCD n.d.). Figure 3 shows the windrose[1] from data measured at this station and the wind patterns for the project area.



Source: SJVAPCD Air Quality Modeling: Permitting & CEQA. Website: www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm, accessed February 2023.

Figure 3: Project Area Wind Patterns

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[1] A windrose provides a succinct view of how wind speed and direction are typically distributed at a particular location. Presented in a circular format, the windrose shows the frequency of winds blowing from particular directions.

2.2 TOXIC AIR CONTAMINANTS

The public's exposure to TACs is a significant environmental health issue in the State of California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." (CARB n.d.-a) In addition, substances which have been listed as federal hazardous air pollutants (HAPs) pursuant to Title 42 United States Code (USC) Section 7412 are TACs under the State's air toxics program pursuant to Section 39657(b) of the California Health and Safety Code. The CARB formally made this identification on April 8, 1993 (Title 17, California Code of Regulations [CCR], Section 93001). Under State law, the California Environmental Protection Agency (CalEPA), acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health.

California regulates TACs primarily through AB 1807 (Tanner Air Toxics Act), AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987), and Senate Bill (SB) 25 (Children's Environmental Health Protection Act). The Tanner Air Toxics Act sets forth a formal procedure for the CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance for which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions.

Air toxics from stationary sources are also regulated in California under AB 2588. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the designated Air Quality Management District (AQMD) or Air Pollution Control District (APCD). High-priority facilities are required to perform an HRA and, if specific thresholds are exceeded, are also required to communicate the results to the public in the form of notices and public meetings.

To date, the CARB has designated over 200 compounds as TACs (CARB n.d.-a). Additionally, the CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (diesel particulate matter [DPM]).

3.0 THRESHOLDS

3.1 HEALTH RISK ASSESSMENT THRESHOLDS OF SIGNIFICANCE

Both the State and federal governments have established health-based ambient air quality standards (AAQS) for seven air pollutants. For other air pollutants without defined significance standards, the definition of substantial pollutant concentrations varies. For TACs, "substantial" is taken to mean that the individual health risk exceeds a threshold considered to be a prudent risk management level.

The following limits for maximum individual cancer risk (MICR) and non-cancer acute and chronic Hazard Index (HI) from project emissions of TACs are considered appropriate for use in determining the health risk for projects in the Basin:

- **MICR:** MICR is the estimated probability of a maximally exposed individual (MEI) contracting cancer as a result of exposure to TACs over a period of 70 years for adults and 9 years for children in residential locations, 350 days per year. The MICR calculations include multipathway consideration, when applicable.

  The SJVAPCD's *Update to the District's Risk Management Policy to Address the OEHHA Revised Risk Assessment Guidance Document* states that emissions of TACs are considered significant if an HRA shows an increased risk of greater than 20 in 1 million (SJVAPCD 2015b). Thus, the cumulative increase in MICR that is the sum of the calculated MICR values for all TACs would be considered significant if it would result in an increased MICR greater than 20 in 1 million (2.0×10^{-5}) at any receptor location.

- **Chronic HI:** Chronic HI is the ratio of the estimated long-term level of exposure to a TAC for a potential MEI to its chronic reference exposure level. The chronic HI calculations include multipathway consideration, when applicable. The project would be considered significant if the cumulative increase in total chronic HI for any target organ system would exceed 1.0 at any receptor location.

- **Acute HI:** Acute HI is the ratio of the estimated maximum 1-hour concentration of a TAC for a potential MEI to its acute reference exposure level. The project would be considered significant if the cumulative increase in total acute HI for any target organ system would exceed 1.0 at any receptor location.

The SJVAPCD Governing Board first adopted thresholds for land use projects in 1995 in the *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (2015a). The GAMAQI was revised in 2002 and 2015 but retained the original health risk thresholds. The previous TAC threshold of 10 in 1 million was revised to 20 in 1 million with the update to the SJVAPCD Risk Management Policy effective July 1, 2015.

4.0 HEALTH RISK ASSESSMENT

4.1 GENERAL INFORMATION

For the purposes of an HRA, short-term emissions are of concern for analyzing acute health impacts, and long-term emissions are of concern for analyzing chronic and carcinogenic health impacts. A screening-level multipathway assessment has been conducted. This technique was chosen as recommended in the OEHHA *Air Toxic Hot Spots Program Guidance Manual* (2015). The analysis herein has been conducted in accordance with the guidelines in the SJVAPCD GAMAQI and the SJVAPCD Guidance for Air Dispersion Modeling (SJVAPCD 2006).

This HRA has been conducted using three models:

- **EMFAC2021:** The CARB California Emissions Factor Model, Version 2021 (EMFAC2021) (CARB n.d.-d) for vehicle emissions factors and percentages of fuel type within the overall vehicle fleet.
- **AERMOD:** The United States Environmental Protection Agency (EPA) AERMOD (EPA n.d.-a) to determine how the TACs would move through the atmosphere after release from sources near the project site.
- **HARP:** Model to translate the pollutant concentrations from AERMOD into individual health risks to nearby residents and workers to the project (CARB n.d.-b).

This HRA includes analyzing the inhalation, soil ingestion, dermal, mother's milk, and homegrown produce pathways. This technique was chosen as prescribed in SJVAPCD's APR-1906 Framework for Performing Health Risk Assessments (2018).

The OEHHA has determined that long-term exposure to diesel exhaust particulates poses the highest cancer risk of any TAC it has evaluated. Exposure to diesel exhaust can also have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles (also known as DPM) made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks. For risk assessment procedures, the OEHHA specifies that the surrogate for whole diesel exhaust is DPM.

This HRA is a conservative estimate of potential off-site risk due primarily to the following three factors:

1. The CARB-adopted diesel exhaust unit risk factor (URF) of 300 in 1 million micrograms per cubic meter ($\mu g/m^3$) is based on the upper 95th percentile of estimated risk for each of the epidemiological studies used to develop the URF. Therefore, the risk factor is already representative of the conservative risk posed by DPM.

2. The risk estimates assume sensitive residence receptors would be subject to DPM for 24 hours per day, 350 days per year. As a conservative measure, SJVAPCD does not recognize indoor adjustments for residents. However, typically people spend the majority of their time indoors versus remaining outdoors for 24 hours per day, 350 days per year.[1] Therefore, the actual exposure any person would experience would be less than considered in this analysis. This results in much lower actual health risk levels than are presented in this analysis.

3. The exposure to DPM is assumed to be constant for the given period analyzed (i.e., 70 years). However, emissions from DPM are expected to substantially decrease in the future with the implementation of standard regulatory requirements and technological advancement to reduce DPM. Therefore, the health risk levels from these future vehicles would be less than presented in this analysis.

Improvements over the last 20 years to diesel fuel and diesel engines have resulted in lower emissions of some of these TACs (CARB 2019). These improvements resulted in a 75 percent reduction in particle emissions from diesel-powered trucks and other equipment in 2010 and an 85 percent reduction by 2020 compared to 2000 levels (OEHHA 2001). These improvements are anticipated to continue into the foreseeable future. Electric trucks are also on the horizon and, once in use, would eliminate the emissions of DPM.

4.1.1 Emission Sources

The first step of an HRA is to characterize the project-related emissions of TACs. As identified in the Project Description, it is estimated that the facility would have approximately 20 service/delivery trucks per day during the months of September through December, and an average of 10 trucks per day for the remainder of the year. In addition, the facility would have approximately five visitors on a typical weekday. Based on the operational statement, the proposed project would have a maximum number of 10 employees in total for project operations. Thus, the proposed project would generate a total of 70 daily trips, with up to 50 truck trips per day (LSA 2023). The trucks would access the site by Excelsior Avenue. The operational hours for the truck wash facility would be 8:00 a.m. to 8:00 p.m., Monday through Saturday. The truck wash facility would be for internal use only, and service would only be provided to the trucks coming to the composting site.

While the TAC emissions from gasoline-powered vehicles have a small health effect compared to DPM, this HRA includes both gasoline- and diesel-powered vehicle emissions. For the diesel exhaust emissions, it is sufficient to only consider the DPM (particulate matter less than 10 microns in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]) portions of the exhaust. All the TACs for the gasoline exhaust emissions are contained in the reactive organic gas

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[1] In May 1991, the CARB Research Division, in association with the University of California, Berkeley, published research findings titled *Activity Patterns of California Residents* (CARB 1991). The findings of that study indicate that, on average, adults and adolescents in California spent almost 15 hours per day inside their homes and 6 hours in other indoor locations, for a total of 21 hours (87 percent of the day). About 2 hours per day were spent in transit, and just over 1 hour per day was spent in outdoor locations.

(ROG) emissions. Using speciation data from CARB, the emission rates of the TAC components are derived from the total ROG emissions. This data is attached.

While it is expected that the truck emissions rate will continue to reduce over time, an HRA only allows for a single emission rate to represent the entire 70-year exposure period. To be conservative, the use of emissions factors for the earliest year the proposed project could start operations (2024) was selected for this HRA. For instance, based on operations starting in 2024, using emissions factors for a 2059 vehicle fleet (the midpoint of the 70-year exposure period) could be used; however, as vehicle emissions are expected to be much lower by 2059, this would be less conservative.

4.1.2 Toxic Air Contaminant Air Dispersion Modeling

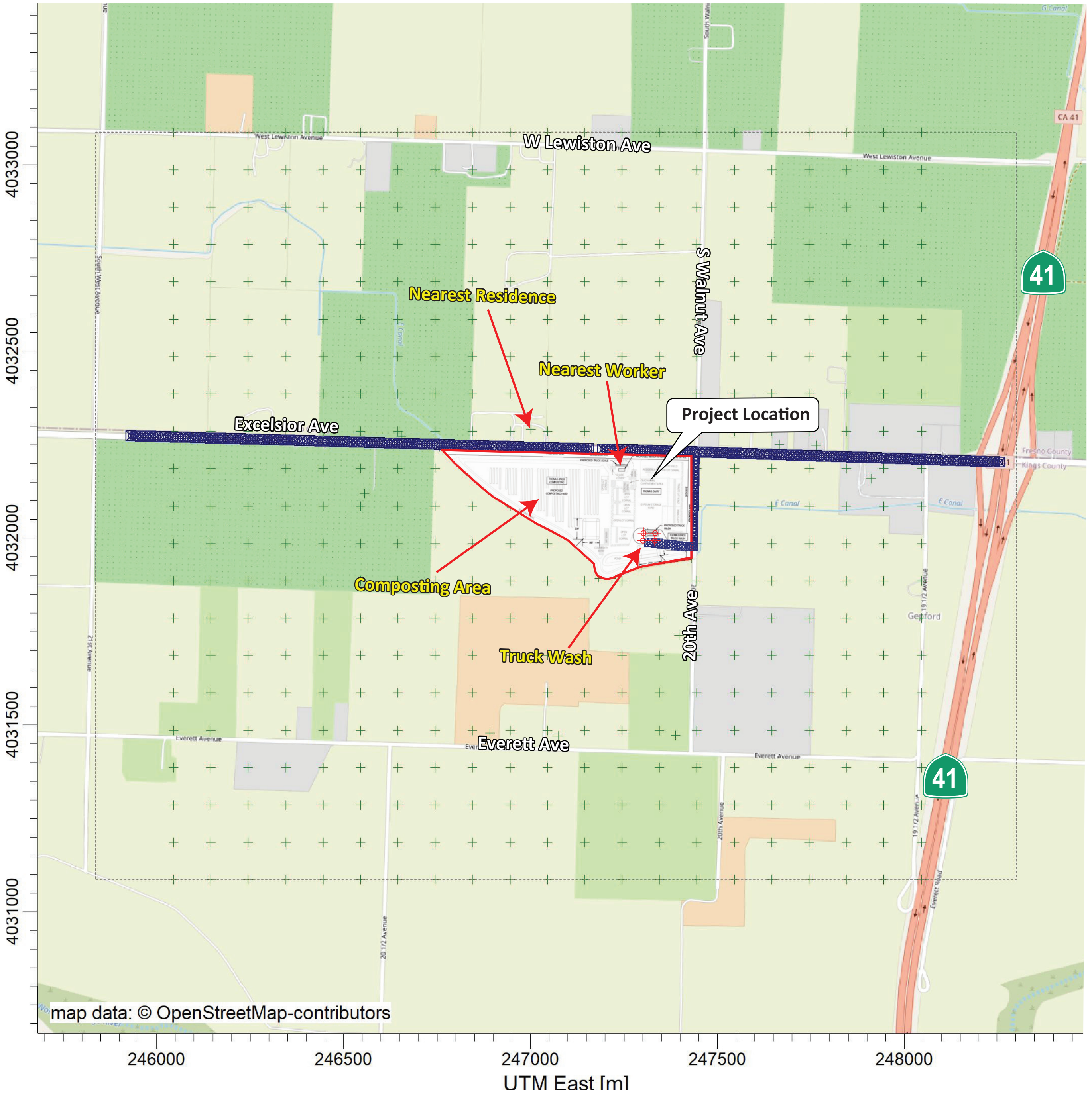
In order to assess the impact of TAC emissions on individuals who live and work near the proposed project, air dispersion modeling was performed using AERMOD. The model is provided by the EPA to estimate the pollutant concentrations associated with emissions sources in simple and complex terrain. The model was used to calculate the annual average and short-duration (e.g., 1-hour) TAC concentrations associated with emissions sources surrounding the project. Details of these inputs are shown in Appendix A.

A series of volume sources were used to represent vehicle activity for each direction on Excelsior Avenue; it was assumed that an equal number of trucks would go each way. An additional series of volume sources were placed along the east side of the project site to represent the trucks driving to and from the truck wash. A large area source was placed covering the entire composting area, including where the trucks will drop off the compost material. Vertical (sigma z) dispersion parameters were developed by approximating mixing zone residence time and quantifying the initial vertical term as described in the EPA guidance.

The idling emissions of trucks queuing up at the truck wash were modeled as point sources. EMFAC2021 was used to determine the emissions factors of idling and operating diesel trucks to determine the total emissions of DPM.

AERMOD requires additional input parameters, including local meteorology. Due to the model’s sensitivity to individual parameters (e.g., wind speed, temperature, and direction), the EPA recommends that meteorological data used as input for dispersion models be selected on the basis of relative spatial and temporal conditions that exist in the area of concern. As such, 5 years of meteorological data from the SJVAPCD’s Naval Air Station Lemoore Meteorological Station (described in Section 2.1) were used to represent local weather conditions and prevailing winds.

The modeling analysis also considered the spatial distribution of each source in relation to the proposed site plan. Per SJVAPCD recommendation, the National Elevation Dataset (NED) data were used to assign actual elevations. Receptors were placed at the locations of all nearby sensitive receptors and in a grid of approximately 100-meter (325-foot) spacing to characterize the risk levels throughout the proposed project area. Figure 4, AERMOD Modeling Setup, shows the locations of all emissions sources and receptors.



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LEGEND

🟥 - Project Site

☒ - AERMOD volume sources

⊕ - Truck Idling Locations

+ - AERMOD receptors

FIGURE 4

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Thomas Dairy Composting & Truck Wash Project

AERMOD Modeling Layout

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4.1.3 Hot Spots Analysis and Reporting Program Modeling

CARB's HARP Version 2 is a tool that assists with the programmatic requirements of the Air Toxics "Hot Spots" Program (AB 2588). HARP was used to translate the AERMOD results into long-term carcinogenic and chronic and short-term acute health risk levels following the guidance in the SJVAPCD risk assessment guidelines. These guidelines specify a minimum set of TAC pathways and HARP modeling options for the carcinogenic assessment. To estimate chronic non-cancer risks at residential receptors, the "OEHHA-Derived Method" risk calculation option was used. Following the OEHHA guidance, an 8-hour chronic non-cancer risk was calculated for residential receptors because the project would operate more than 8 hours per day and 5 days per week.

The dose-response relationship for a specific pollutant describes the association between exposure and the observed response (health effect). In other words, the relationship estimates how different levels of exposure to a pollutant change the likelihood and severity of health effects. The dose-response relationship (the response occurring with increasing doses) varies with each pollutant, individual sensitivity, and type of health effect. Combining the results of the emission characterization and dispersion modeling described above with the dose-response assessment gives an estimate of the increased health risk for an individual exposed to the maximum predicted long-term concentrations of TACs.

Discrete variants for daily breathing rates, exposure frequency, and exposure duration were obtained from relevant distribution profiles presented in the OEHHA guidance document entitled *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015) and guidance from SJVAPCD. The risk calculation outputs are attached in Appendix B.

The long-term exposure periods are 70 years for residents. The residential period is based on the assumption that an adult stays outdoors at his or her residence 24 hours per day for 70 years and a child stays outdoors at his or her residence 24 hours per day from the third trimester for 9 years. Appendix A contains the HRA emissions worksheet and EMFAC data, and Appendix B contains select pages from the AERMOD output and the HARP report files for this HRA. Appendix A contains the HRA emissions worksheet and EMFAC data, and Appendix B contains select pages from the AERMOD output and the HARP report files for this HRA.

4.2 Health Risk Impacts

4.2.1 Acute Project-Related Emission Impacts

Exposure to TACs from vehicle exhaust can result in immediate health effects. According to the EPA's *Learn About Impacts of Diesel Exhaust and the Diesel Emissions Reduction Act (DERA)* website (EPA n.d.-b), exposure to diesel exhaust can lead to serious health conditions like asthma and respiratory illnesses and can worsen existing heart and lung disease, especially in children and the elderly. According to the CARB's Overview: Diesel Exhaust & Health website (CARB n.d.-e), in 2012, additional studies on the cancer-causing potential of diesel exhaust published since CARB's determination led the International Agency for Research on Cancer (IARC, a division of the World Health Organization) to list diesel engine exhaust as "carcinogenic to humans". Emissions from gasoline-powered vehicles do contain TACs with short-term acute health effects.

The Acute HI is the ratio of the average short-term (generally 1-hour) ambient concentration of an acutely toxic substance(s) divided by the acute reference exposure level set by the OEHHA. This ratio is repeated for every acutely toxic substance, and all are summed to derive the overall Acute HI. If this Acute HI is above 1, then adverse health effects may occur. Using the modeling methods described above for the project, Table A shows the maximum acute health risks to residents and workers near the proposed project.

Table A: Health Risk Levels for Nearby Residents and Workers

Location	Maximum Cancer Risk	Maximum Non-Cancer Risk	
		Chronic HI	Acute HI
MEI Resident	3.7 in 1 million	0.0007	0.00002
MEI Worker	0.30 in 1 million	0.0010	0.00005
SJVAPCD Significance Threshold	**20 in 1 million**	**1.0**	**1.0**
Significant?	**No**	**No**	**No**

Source: Compiled by LSA (February 2023).
HI = Hazard Index
MEI = maximally exposed individual
SJVAPCD = San Joaquin Valley Air Pollution Control District

As shown in Table A, the Acute HI would be 0.00002 or less for the residential MEI and 0.00005 or less for the worker MEI. Both are less than the threshold of 1.0. Acute impacts are a result of exposure to contaminant concentrations at extremely high levels. As demonstrated by the results of the analysis, air dispersion between the emission sources and the receptor locations would substantially limit contaminant concentrations to the extent that a significant acute risk would not occur.

4.2.2 Carcinogenic and Chronic Project-Related Emission Impacts

The carcinogenic and chronic health risks from the proposed project are also shown in Table A. The resident risk levels shown apply to a child living in a residence for 9 years and to an adult living in a residence for 70 years. For the residential MEI, which is the residence just across Excelsior Avenue from the project site, the carcinogenic health risk level would be 3.7 in 1 million or less, which is less than the threshold of 20 in 1 million. Figure 5 shows the risk level isopleth for this residential assessment. For the MEI worker receptor, which is a worker in the project's office, the maximum cancer risk would be 0.30 in 1 million, also less than the threshold of 20 in 1 million. Figure 6 shows the risk level isopleth for this worker assessment.

The Chronic HI for both would be 0.0007 and 0.0010 or less for the MEI resident and MEI worker, respectively. Both are less than the threshold of 1.0.

4.3 CONCLUSIONS

Neither child nor adult residents living near the proposed project nor workers at workplaces near the proposed project would be exposed to carcinogenic, Chronic HI, or Acute HI risks that exceed applicable significance thresholds. As described in Section 4.2, these health risk levels are based on conservative assumptions.

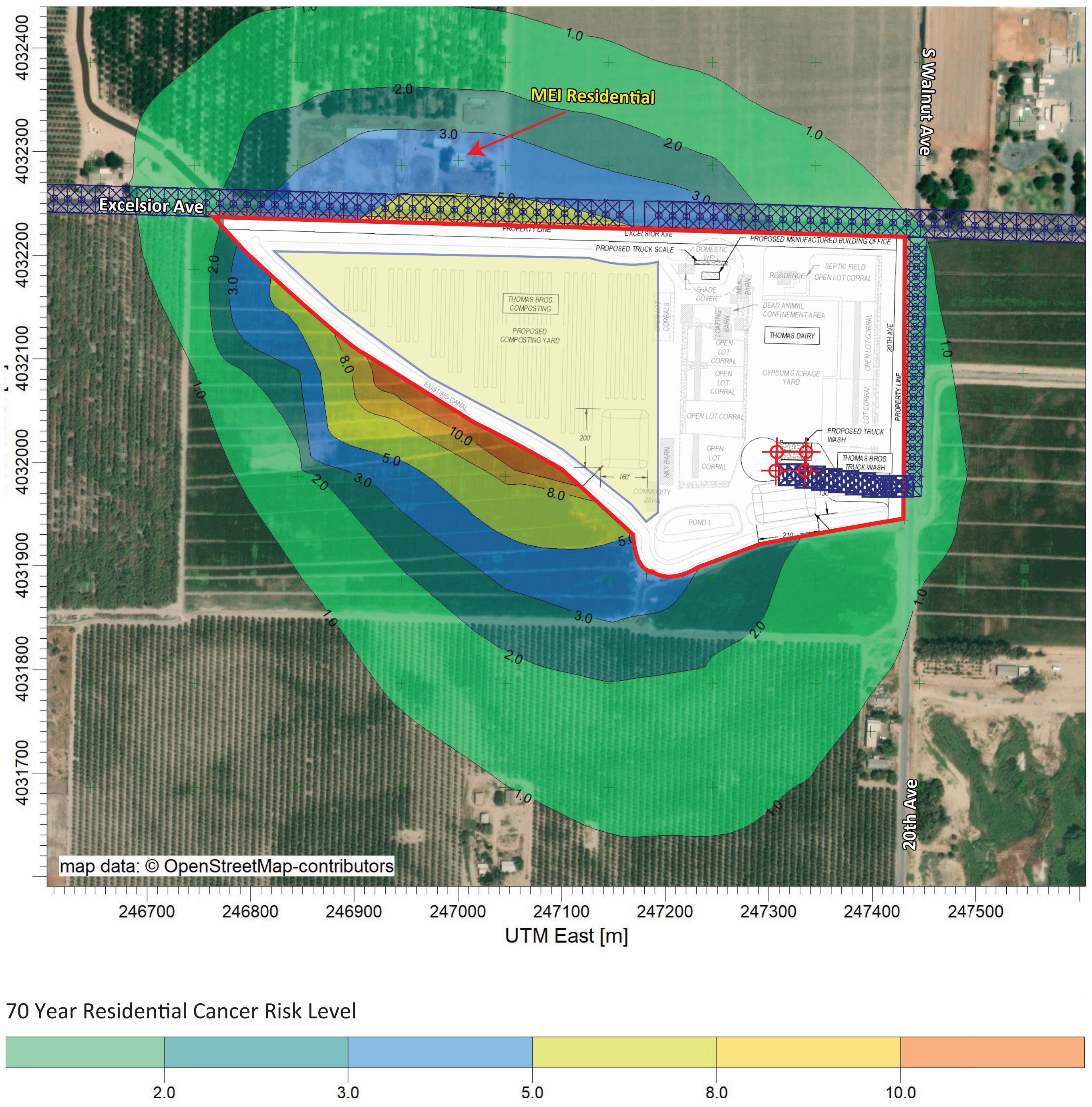

FIGURE 5

LEGEND

▭ - Project Site

⊠ - AERMOD volume sources

⌖ - Truck Idling Locations

+ - AERMOD receptors

◢ - Composting Area

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Thomas Dairy Composting & Truck Wash Project

70-Year Residential Cancer Isopleth

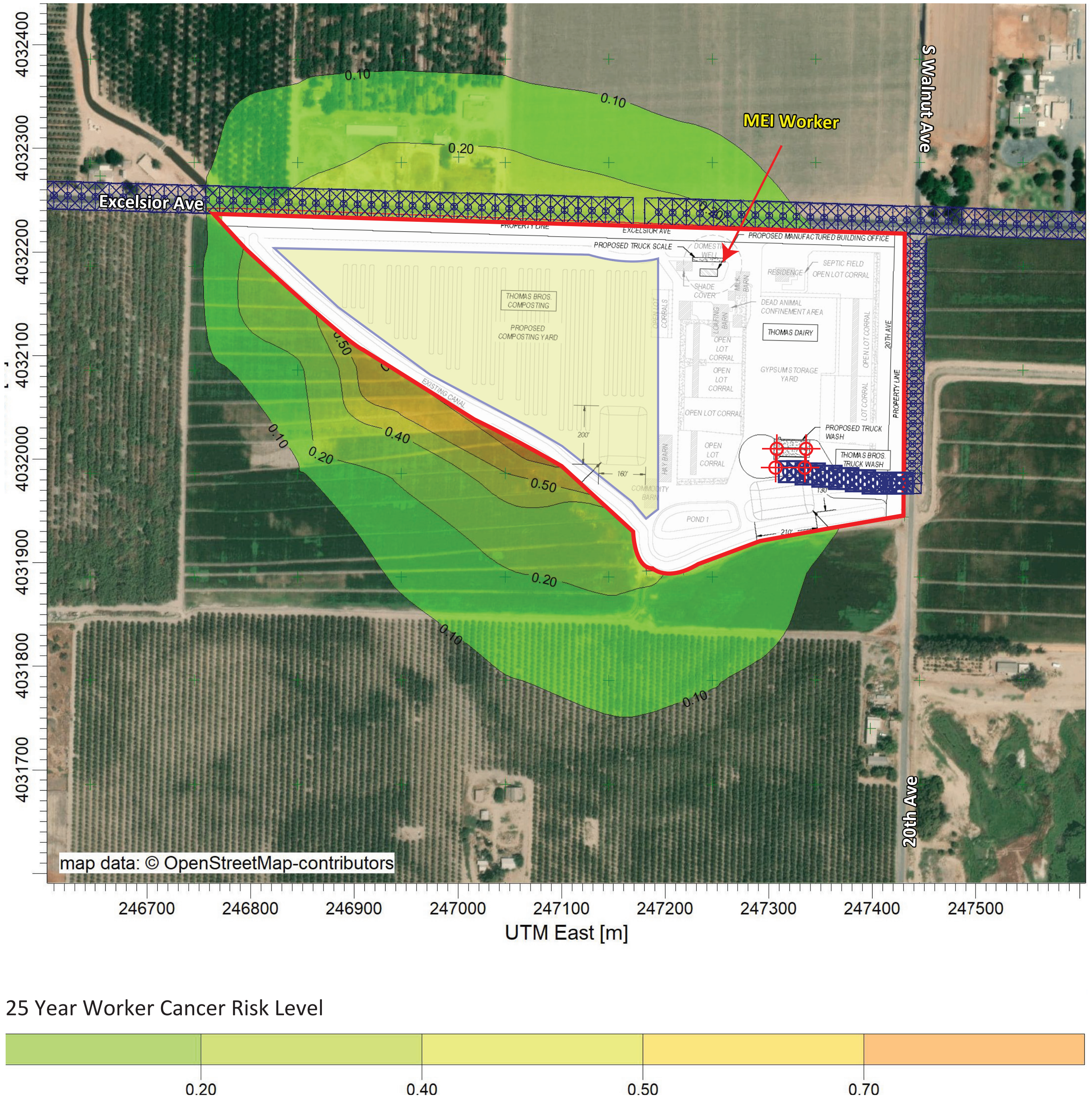

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FIGURE 6

LEGEND

- 🟥 - Project Site
- ⊠ - AERMOD volume sources
- ⌖ - Truck Idling Locations
- \+ - AERMOD receptors
- ◺ - Composting Area

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Thomas Dairy Composting & Truck Wash Project

25-Year Worker Cancer Isopleth

5.0 REFERENCES

California Air Pollution Control Officers Association (CAPCOA). 2009. *Health Risk Assessments for Proposed Land Use Projects*. July. Website: www.valleyair.org/transportation/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf, accessed February 2023.

California Air Resources Board (CARB). 1991. *Activity Patterns of California Residents*. May. Website: www.arb.ca.gov/sites/default/files/classic/research/apr/past/a6-177-33.pdf, accessed February 2023.

______. 1998. *Rulemaking Identification of Particulate Emissions from Diesel-Fueled Engines as a Toxic Air Contaminant*. Webpage last reviewed by CARB on February 25, 2010. Website: www.arb.ca.gov/regact/diesltac/diesltac.htm, accessed February 2023.

______. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April. Website: www.aqmd.gov/docs/default-source/ceqa/handbook/california-air-resources-board-air-quality-and-land-use-handbook-a-community-health-perspective.pdf, accessed February 2023.

______. 2017. *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: A Technical Advisory*. April. Website: www.arb.ca.gov/resources/fact-sheets/strategies-reduce-air-pollution-exposure-near-high-volume-roadways?corr, accessed February 2023.

______. 2019. Truck and Bus Regulation Compliance Requirement Overview. June 18. Website: www.arb.ca.gov/sites/default/files/classic/msprog/onrdiesel/documents/fsregsum.pdf, accessed February 2023.

______. n.d.-a. CARB Identified Toxic Air Contaminants. Website: www.arb.ca.gov/resources/documents/carb-identified-toxic-air-contaminants, accessed February 2023.

______. n.d.-b. HARP – Hotspots Analysis and Reporting Program. Website: www.arb.ca.gov/our-work/programs/hot-spots-analysis-reporting-program, accessed February 2023.

______. n.d.-c. Speciation Profiles Used in CARB Modeling. Website: www.arb.ca.gov/speciation-profiles-used-carb-modeling, accessed February 2023.

______. n.d.-d. MSEI - Modeling Tools, Emissions Factor Model, Version 2021 (EMFAC2021). Website: www.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools, accessed February 2023.

______. n.d.-e. Overview: Diesel Exhaust & Health. Website: www.arb.ca.gov/resources/overview-diesel-exhaust-and-health?corr, accessed February 2023.

LSA Associates, Inc. (LSA). 2023. *Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum*. January.

Office of Environmental Health Hazard Assessment (OEHHA). 2001. *Health Effects of Diesel Exhaust.* May 21. Website: oehha.ca.gov/air/health-effects-diesel-exhaust, accessed February 2023.

_____. 2015. *Air Toxics Hot Spots Program Guidance Manual.* March. Website: oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0, accessed February 2023.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 1992. Rule 4202 Particulate Matter – Emission Rate. Amended December 17, 1992.

_____. 2006. Guidance for Air Dispersion Modeling. Website: www.valleyair.org/Home.htm, accessed July 2021.

_____. 2015a. *Guidance for Assessing and Mitigating Air Quality Impacts*. February 19. Website: valleyair.org/transportation/GAMAQI-2015/FINAL-DRAFT-GAMAQI.PDF, accessed February 2023.

_____. 2015b. *Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document*. Website: www.valleyair.org/busind/pto/staff-report-5-28-15.pdf, accessed February 2023.

_____. 2018. *Framework for Performing Health Risk Assessments*. July. Website: www.valleyair.org/policies_per/Policies/APR-1906-7-1-18.pdf, accessed February 2023.

_____. n.d. Air Quality Modeling: Permitting & CEQA. Website: www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm, accessed February 2023.

United States Environmental Protection Agency (EPA). n.d.-a. Air Quality Dispersion Modeling – Preferred and Recommended Models, AERMOD Modeling System. Website: www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models, accessed February 2023.

_____. n.d.-b. *Learn About Impacts of Diesel Exhaust and the Diesel Emissions Reduction Act (DERA)*. Website: www.epa.gov/dera/learn-about-impacts-diesel-exhaust-and-diesel-emissions-reduction-act-dera, accessed February 2023.

APPENDIX A

EMISSION FACTORS FOR VEHICLES AND HEALTH RISK ASSESSMENT EMISSION RATES

Composting Area Worksheet

Data from the Air Quality CalEEMod Modeling

Offroad Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Tractors/Loaders/Backhoes	Diesel	Average	2	8	84	0.37
Other Material Handling Equipment	Diesel	Average	2	8	93	0.4

	Max Daily (lb/day)			**Annual (tons/year)**		
Emissions Source	**ROG**	**PM10E**	**PM2.5E**	**ROG**	**PM10E**	**PM2.5E**
Mobile	0.42	0.01	0.01	0.06	0.005	0.005
Tractors/Loaders/Backhoes	0.25	0.12	0.11	0.03	0.02	0.01
Other Material Handling Equipment	0.25	0.11	0.10	0.03	0.01	0.01

Compost area size: 38,527.3 m^2

Assumptions	
Percent of Mobile traffic onsite:	10%
Operational hours per day:	12

Speciated Emissions Rates

		lb/yr	lb/hr
diesel part.	--	1.58E-03	6.00E-06
PM2.5	--	1.06E-03	5.48E-06
1,3-butadiene	0.0055	1.88E-05	7.74E-08
benzene	0.02636	9.03E-05	3.71E-07
ethylbenzene	0.01072	3.67E-05	1.51E-07
MEK	0.00019	6.51E-07	2.67E-09
naphthalene	0.00048	1.64E-06	6.75E-09
propylene	0.03127998	1.07E-04	4.40E-07
styrene	0.00126	4.32E-06	1.77E-08
toluene	0.05879998	2.01E-04	8.27E-07
m & p-xylene	0.03639998	1.25E-04	5.12E-07

Truck Idling Worksheet

Thomas Brothers Composting and Truck Wash Project

Truck Type	Hour per day	Trucks per day[1]	Trips per Hour	Diesel Idle Exhaust PM_{10} (gm/vh-hr)[2]	Diesel Idle Exhaust $PM_{2.5}$ (gm/vh-hr)[2]	Idle Time (min/trip)[3]	Idle Exhaust Diesel PM_{10} (gm/hr)	Idle Exhaust Diesel $PM_{2.5}$ (gm/hr)
2 & 3 Axle Trucks	12	7	0.6	0.7962	0.7617	15	0.1203	0.1151
4+-Axle Trucks	12	18	1.5	0.0141	0.0135	15	0.0051	0.0049

Number of Sources	Diesel PM10 lb/hr	Diesel PM10 lb/yr	Diesel PM2.5 lb/hr	Diesel PM2.5 lb/yr
4	6.9E-05	0.3029	6.6E-05	0.2898

[1] AADT from Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum (LSA 2023). This is the total truck deliveries per day (8 2-axle trucks, 8 3-axle trucks, and 35 4+-axle trucks). Note that each truck delivery comprises two trips, one to arrive and one to leave.

[2] Source: EMFAC2021 2024 idling emission factors for 2 axle & 3 axle trucks using the EMFAC2021 "Truck 1" emissions factors and 4+ axle trucks using the EMFAC2021 "Truck 2" emissions factors

[3] It is assumed that each truck idles for 15 minute per trip to account for multiple stops, i.e. at an entry check-in, positioning for wash, and miscellaneous tasks.

Vehicle Emissions Worksheet

Thomas Brothers Composting and Truck Wash Project

Onsite travel including truck wash traffic		**AADT by Vehicle Category[1]**							
		LDV[2]	**2-Axle[3]**	**3-Axle[3]**	**4+-Axle[4]**				
		20	7	8	35				
		% of Vehicles That Are Diesel-Powered[6]							
Average Speed 5 mph		0.2%	15%	15%	99%				
		Diesel Exhaust PM10 & PM2.5 Emissions at 5 mph (g/mi)7							
	PM_{10}	0.0683	0.1053	1.05E-01	1.43E-02				
	$PM_{2.5}$	0.0654	0.1008	1.01E-01	1.37E-02				
		% of Vehicles That Are Gasoline-Powered[6]							
Total distance covered by Onsite travel sources		94%	84%	84%	0.03%				
		Gasoline Exhaust ROG Emissions at 5 mph (g/mi)7				**Number of Sources**			
	ROG	0.380	4.54E-01	4.54E-01	1.33E-01		**Emission Rates per source**		
		PM_{10}, $PM_{2.5}$ & ROG Exhaust Emissions (g/s)					**g/s**	**lb/hr**	**lb/yr**
347 meters	PM_{10}	7.17E-09	2.75E-07	2.94E-07	1.24E-06	37	4.9E-08	3.9E-07	0.0034
	$PM_{2.5}$	6.86E-09	2.63E-07	2.82E-07	1.18E-06	37	4.7E-08	3.7E-07	0.0033
	ROG	1.78E-05	6.64E-06	7.12E-06	3.00E-09	37	8.5E-07	6.8E-06	0.0594

Speciated Emissions Rates

		lb/yr	lb/hr
diesel part.	--	3.41E-03	3.89E-07
PM2.5	--	3.26E-03	3.72E-07
1,3-butadiene	0.0055	3.27E-04	3.73E-08
benzene	0.02636	1.57E-03	1.79E-07
ethylbenzene	0.01072	6.37E-04	7.27E-08
MEK	0.00019	1.13E-05	1.29E-09
naphthalene	0.00048	2.85E-05	3.25E-09
propylene	0.03127998	1.86E-03	2.12E-07
styrene	0.00126	7.49E-05	8.54E-09
toluene	0.05879998	3.49E-03	3.99E-07
m & p-xylene	0.03639998	2.16E-03	2.47E-07

[1] AADT from Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum (LSA 2023)

[2] LDV use the EMFAC2021 "Non-Truck" emissions factors

[3] 2 axle & 3 axle trucks use the EMFAC2021 "Truck 1" emissions factors

[4] 4+ axle trucks use the EMFAC2021 "Truck 2" emissions factors

[6] Source: EMFAC2021 VMT data

[7] Source: EMFAC2021 emission factors for 2024 (model year aggregate).

Vehicle Emissions Worksheet

Thomas Brothers Composting and Truck Wash Project

From Project Drwy west on Excelsior Ave		**AADT by Vehicle Category[1]**							
		LDV[2]	**2-Axle[3]**	**3-Axle[4]**	**4+-Axle[5]**				
		10	4	4	18				
		% of Vehicles That Are Diesel-Powered[6]							
		0.2%	15%	15%	99%				
Average Speed 35 mph		**Diesel Exhaust PM10 & PM2.5 Emissions at Speed mph (g/mi)7**							
	PM_{10}	0.0190	0.0337	3.37E-02	8.03E-03				
	$PM_{2.5}$	0.0181	0.0322	3.22E-02	7.68E-03				
		% of Vehicles That Are Gasoline-Powered[6]							
		94%	84%	84%	0.03%				
Total distance covered by these sources		**Gasoline Exhaust ROG Emissions at 35 mph (g/mi)7**				**Number of Sources**			
	ROG	0.032	1.54E-01	1.54E-01	1.22E-02		**Emission Rates per source**		
		PM_{10}, $PM_{2.5}$ & ROG Exhaust Emissions (g/s)					**g/s**	**lb/hr**	**lb/yr**
1,225 meters	PM_{10}	3.51E-09	1.55E-07	1.66E-07	1.23E-06	93	1.7E-08	1.3E-07	0.0012
	$PM_{2.5}$	3.36E-09	1.48E-07	1.59E-07	1.17E-06	93	1.6E-08	1.3E-07	0.0011
	ROG	2.63E-06	3.99E-06	4.27E-06	4.87E-10	93	1.2E-07	9.3E-07	0.0081

% of Vehicles on this route

50%

Speciated Emissions Rates

		lb/yr	lb/hr
diesel part.	--	1.16E-03	1.32E-07
PM2.5	--	1.11E-03	1.27E-07
1,3-butadiene	0.0055	4.48E-05	5.11E-09
benzene	0.02636	2.15E-04	2.45E-08
ethylbenzene	0.01072	8.73E-05	9.96E-09
MEK	0.00019	1.55E-06	1.77E-10
naphthalene	0.00048	3.91E-06	4.46E-10
propylene	0.03127998	2.55E-04	2.91E-08
styrene	0.00126	1.03E-05	1.17E-09
toluene	0.05879998	4.79E-04	5.46E-08
m & p-xylene	0.03639998	2.97E-04	3.38E-08

[1] AADT from Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum (LSA 2023)

[2] LDV use the EMFAC2021 "Non-Truck" emissions factors

[3] 2 axle & 3 axle trucks use the EMFAC2021 "Truck 1" emissions factors

[4] 4+ axle trucks use the EMFAC2021 "Truck 2" emissions factors

[6] Source: EMFAC2021 VMT data

[7] Source: EMFAC2021 emission factors for 2024 (model year aggregate).

Vehicle Emissions Worksheet

Thomas Brothers Composting and Truck Wash Project

From Project Drwy east on Excelsior Ave		**AADT by Vehicle Category**[1]							
		LDV[2]	**2-Axle**[3]	**3-Axle**[4]	**4+-Axle**[5]				
		10	4	4	18				
		% of Vehicles That Are Diesel-Powered[6]							
		0.2%	15%	15%	99%				
Average Speed 35 mph		**Diesel Exhaust PM10 & PM2.5 Emissions at Speed mph (g/mi)7**							
	PM_{10}	0.0190	0.0337	3.37E-02	8.03E-03				
	$PM_{2.5}$	0.0181	0.0322	3.22E-02	7.68E-03				
		% of Vehicles That Are Gasoline-Powered[6]							
		94%	84%	84%	0.03%				
Total distance covered by these sources		**Gasoline Exhaust ROG Emissions at 35 mph (g/mi)7**				**Number of Sources**	**Emission Rates per source**		
	ROG	0.032	1.54E-01	1.54E-01	1.22E-02				
		PM_{10}, $PM_{2.5}$ & ROG Exhaust Emissions (g/s)					**g/s**	**lb/hr**	**lb/yr**
1,065 meters	PM_{10}	3.05E-09	1.35E-07	1.45E-07	1.07E-06	81	1.7E-08	1.3E-07	0.0012
	$PM_{2.5}$	2.92E-09	1.29E-07	1.38E-07	1.02E-06	81	1.6E-08	1.3E-07	0.0011
	ROG	2.28E-06	3.47E-06	3.72E-06	4.24E-10	81	1.2E-07	9.3E-07	0.0081

% of Vehicles on this route
50%

Speciated Emissions Rates

		lb/yr	lb/hr
diesel part.	--	1.16E-03	1.32E-07
PM2.5	--	1.11E-03	1.27E-07
1,3-butadiene	0.0055	4.47E-05	5.10E-09
benzene	0.02636	2.14E-04	2.45E-08
ethylbenzene	0.01072	8.72E-05	9.95E-09
MEK	0.00019	1.55E-06	1.76E-10
naphthalene	0.00048	3.90E-06	4.45E-10
propylene	0.03127998	2.54E-04	2.90E-08
styrene	0.00126	1.02E-05	1.17E-09
toluene	0.05879998	4.78E-04	5.46E-08
m & p-xylene	0.03639998	2.96E-04	3.38E-08

[1] AADT from Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum (LSA 2023)

[2] LDV use the EMFAC2021 "Non-Truck" emissions factors

[3] 2 axle & 3 axle trucks use the EMFAC2021 "Truck 1" emissions factors

[4] 4+ axle trucks use the EMFAC2021 "Truck 2" emissions factors

[6] Source: EMFAC2021 VMT data

[7] Source: EMFAC2021 emission factors for 2024 (model year aggregate).

Thomas Brothers Composting and Truck Wash Project

Project Trip Generation

Land Uses	Units	Rate	Daily
Composting & Truck Wash			
Trip Generation (Total)			70
Trip Generation (Trucks)			50

From Thomas Brothers Composting and Truck Wash Project Trip Generation and Vehicle Miles Traveled Memorandum (LSA 2023

The trip generation is developed based on information provided in the Thomas Bros. Composting & Truck Wash Operational Statement dated December 2022, developed by 4Creek

Trip Generation (Cars)	20	29% of the total vehicles are cars
Trip Generation (2-Axle Trucks)	7	15% of the total trucks are 2-axle trucks
Trip Generation (3-Axle Trucks)	8	15% of the total trucks are 3-axle trucks
Trip Generation (4+ -Axle Trucks)	35	70% of the total trucks are 4+ -axle trucks
Trip Generation (Total Trucks)	50	
Trip Generation (Total)	70	

It was assumed that 70 percent of the trucks would be the large 4+-axle haul trucks and the rest of the trucks would be evenly split between 2-axle and 3-axle trucks. All daily trip rates were rounded up to the nearest integer.

EMFAC2021 Data

Region	Kings
Calendar Year	2024

Row Labels	**Max of Total VMT**
HHDT	**731,795**
Diesel	731,795
Electricity	1,570
Gasoline	191
Natural Gas	4,712
LDA	**2,583,582**
Diesel	5,157
Electricity	130,329
Gasoline	2,583,582
Plug-in Hybrid	83,512
LDT1	**189,380**
Diesel	77
Electricity	428
Gasoline	189,380
Plug-in Hybrid	343
LDT2	**1,108,926**
Diesel	3,472
Electricity	5,733
Gasoline	1,108,926
Plug-in Hybrid	10,347
LHDT1	**101,656**
Diesel	101,656
Electricity	517
Gasoline	98,918
LHDT2	**33,072**
Diesel	33,072
Electricity	127
Gasoline	12,356
MCY	**19,224**
Gasoline	19,224
MDV	**1,000,404**
Diesel	16,364
Electricity	6,324
Gasoline	1,000,404
Plug-in Hybrid	7,862
MHDT	**48,957**
Diesel	48,957
Electricity	194
Gasoline	10,872
Natural Gas	646

4+ Axle Trucks (HHDT)	
Dsl	99.12%
Electric	0.21%
Gasoline	0.03%
Natural Gas	0.64%

2 Axle & 3 Axle Trucks (LHDT1, LHDT2, MDV, MHDT)	
Dsl	14.95%
Electric	0.54%
Gasoline	83.88%

Non-Trucks (LDA, LDT1, LDT2, MCY)	
Dsl	0.21%
Electric	3.30%
Gasoline	94.22%
Natural Gas	2.28%

EMFAC2021 Data

sub_area	Kings (SJV)
calendar_year	2024
season_month	Annual
process	IDLEX
fuel	Dsl

Max of emission_rate	**Column Labels**	
Row Labels	**2 Axle & 3 Axle Trucks**	**4+ axle trucks**
PM10	**0.796**	**0.0141**
(blank)	0.796	0.0141
PM2_5	**0.762**	**0.0135**
(blank)	0.762	0.0135

EMFAC2021 Data

sub_area	Kings (SJV)
calendar_year	2024
season_month	Annual
process	RUNEX
fuel	Dsl

Max of emission_ra	**Column Labels**		
Row Labels	**NonTruck**	**2 Axle & 3 Axle Trucks**	**4+ axle trucks**
PM10	**0.0683**	**0.1053**	**0.0143**
5	0.0683	0.1053	0.0143
35	0.0190	0.0337	0.0080
PM2_5	**0.0654**	**0.1008**	**0.0137**
5	0.0654	0.1008	0.0137
35	0.0181	0.0322	0.0077
ROG	**0.3797**	**0.4538**	**0.1330**
5	0.3797	0.4538	0.1330
35	0.0316	0.1542	0.0122

APPENDIX B

AERMOD OUTPUT AND HARP RESULTS

```
                                           ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

** Model Options Selected:
     * Model Uses Regulatory DEFAULT Options
     * Model Is Setup For Calculation of Average CONCentration Values.
     * NO GAS DEPOSITION Data Provided.
     * NO PARTICLE DEPOSITION Data Provided.
     * Model Uses NO DRY DEPLETION. DDPLETE  =  F
     * Model Uses NO WET DEPLETION. WETDPLT  =  F
     * Stack-tip Downwash.
     * Model Accounts for ELEVated Terrain Effects.
     * Use Calms Processing Routine.
     * Use Missing Data Processing Routine.
     * No Exponential Decay.
     * Model Uses URBAN Dispersion Algorithm for the SBL for   216 Source(s),
       for Total of    1 Urban Area(s):
  Urban Population =      1000.0 ;  Urban Roughness Length =  1.000 m
     * Urban Roughness Length of 1.0 Meter Used.
     * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
     * CCVR_Sub - Meteorological data includes CCVR substitutions
     * TEMP_Sub - Meteorological data includes TEMP substitutions
     * Model Accepts FLAGPOLE Receptor . Heights.
     * The User Specified a Pollutant Type of: TOXICS

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates PERIOD Averages

**This Run Includes:    216 Source(s);     217 Source Group(s); and     452 Receptor(s)

               with:      4 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:    211 VOLUME source(s)
                and:      1 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                and:      0 SWPOINT source(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
```

```
                                                                     b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    72.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      8.3 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   VAIL DAM CONCRETE BATCH PLANT STAGING AREA.ERR
**File for Summary of Results:   VAIL DAM CONCRETE BATCH PLANT STAGING AREA.SUM
```

```
                                                 *** POINT SOURCE DATA ***

              NUMBER EMISSION RATE                      BASE     STACK   STACK    STACK     STACK    BLDG   URBAN  CAP/  EMIS RATE
  SOURCE       PART.  (GRAMS/SEC)     X         Y       ELEV.    HEIGHT  TEMP.   EXIT VEL. DIAMETER  EXISTS SOURCE HOR   SCALAR
    ID         CATS.              (METERS) (METERS) (METERS) (METERS) (DEG.K)  (M/SEC)  (METERS)                       VARY BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 

IDLE1           0   0.10000E+01  247303.8 4032013.0    70.9     3.80   366.00    50.00     0.10    NO      YES   NO  HRDOW
IDLE2           0   0.10000E+01  247333.6 4032013.0    70.9     3.80   366.00    50.00     0.10    NO      YES   NO  HRDOW
IDLE3           0   0.10000E+01  247303.8 4031993.0    70.9     3.80   366.00    50.00     0.10    NO      YES   NO  HRDOW
IDLE4           0   0.10000E+01  247333.6 4031993.0    71.0     3.80   366.00    50.00     0.10    NO      YES   NO  HRDOW
```

```
                                                 *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
  SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
    ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ONSITE01         0   0.10000E+01  247323.2 4031985.0    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE02         0   0.10000E+01  247332.8 4031984.2    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE03         0   0.10000E+01  247342.4 4031983.3    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE04         0   0.10000E+01  247352.1 4031982.5    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE05         0   0.10000E+01  247361.7 4031981.7    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE06         0   0.10000E+01  247371.3 4031980.9    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE07         0   0.10000E+01  247380.9 4031980.1    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE08         0   0.10000E+01  247390.6 4031979.2    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE09         0   0.10000E+01  247400.2 4031978.4    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE10         0   0.10000E+01  247409.8 4031977.6    71.1     3.11     4.49     2.89     YES   HRDOW
ONSITE11         0   0.10000E+01  247419.4 4031976.8    71.1     3.11     4.49     2.89     YES   HRDOW
ONSITE12         0   0.10000E+01  247429.0 4031976.0    71.1     3.11     4.49     2.89     YES   HRDOW
ONSITE13         0   0.10000E+01  247437.7 4031976.3    71.1     3.11     4.49     2.89     YES   HRDOW
ONSITE14         0   0.10000E+01  247437.9 4031985.9    71.1     3.11     4.49     2.89     YES   HRDOW
ONSITE15         0   0.10000E+01  247438.1 4031995.6    71.1     3.11     4.49     2.89     YES   HRDOW
ONSITE16         0   0.10000E+01  247438.3 4032005.2    71.1     3.11     4.49     2.89     YES   HRDOW
ONSITE17         0   0.10000E+01  247438.5 4032014.9    71.1     3.11     4.49     2.89     YES   HRDOW
ONSITE18         0   0.10000E+01  247438.7 4032024.5    71.1     3.11     4.49     2.89     YES   HRDOW
ONSITE19         0   0.10000E+01  247438.9 4032034.2    71.1     3.11     4.49     2.89     YES   HRDOW
ONSITE20         0   0.10000E+01  247439.1 4032043.8    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE21         0   0.10000E+01  247439.3 4032053.5    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE22         0   0.10000E+01  247439.5 4032063.2    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE23         0   0.10000E+01  247439.7 4032072.8    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE24         0   0.10000E+01  247439.9 4032082.5    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE25         0   0.10000E+01  247440.1 4032092.1    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE26         0   0.10000E+01  247440.3 4032101.8    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE27         0   0.10000E+01  247440.5 4032111.4    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE28         0   0.10000E+01  247440.7 4032121.1    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE29         0   0.10000E+01  247440.9 4032130.8    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE30         0   0.10000E+01  247441.1 4032140.4    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE31         0   0.10000E+01  247441.3 4032150.1    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE32         0   0.10000E+01  247441.5 4032159.7    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE33         0   0.10000E+01  247441.8 4032169.4    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE34         0   0.10000E+01  247442.0 4032179.0    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE35         0   0.10000E+01  247442.2 4032188.7    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE36         0   0.10000E+01  247442.4 4032198.3    71.0     3.11     4.49     2.89     YES   HRDOW
ONSITE37         0   0.10000E+01  247442.6 4032208.0    71.0     3.11     4.49     2.89     YES   HRDOW
EXCELW01         0   0.10000E+01  247156.0 4032239.0    70.5     3.11     6.19     2.89     YES   HRDOW
EXCELW02         0   0.10000E+01  247142.7 4032239.3    70.5     3.11     6.19     2.89     YES   HRDOW
EXCELW03         0   0.10000E+01  247129.4 4032239.7    70.5     3.11     6.19     2.89     YES   HRDOW
```

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*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN  ADJ_U*


                                                    *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
  SOURCE       PART.  (GRAMS/SEC)     X         Y     ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
    ID         CATS.              (METERS)  (METERS) (METERS) (METERS) (METERS) (METERS)              BY
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EXCELW04         0   0.10000E+01  247116.1 4032240.1    70.4     3.11     6.19     2.89     YES   HRDOW
EXCELW05         0   0.10000E+01  247102.8 4032240.5    70.4     3.11     6.19     2.89     YES   HRDOW
EXCELW06         0   0.10000E+01  247089.5 4032240.9    70.4     3.11     6.19     2.89     YES   HRDOW
EXCELW07         0   0.10000E+01  247076.1 4032241.2    70.3     3.11     6.19     2.89     YES   HRDOW
EXCELW08         0   0.10000E+01  247062.8 4032241.6    70.3     3.11     6.19     2.89     YES   HRDOW
EXCELW09         0   0.10000E+01  247049.5 4032242.0    70.3     3.11     6.19     2.89     YES   HRDOW
EXCELW10         0   0.10000E+01  247036.2 4032242.4    70.3     3.11     6.19     2.89     YES   HRDOW
EXCELW11         0   0.10000E+01  247022.9 4032242.8    70.2     3.11     6.19     2.89     YES   HRDOW
EXCELW12         0   0.10000E+01  247009.6 4032243.2    70.2     3.11     6.19     2.89     YES   HRDOW
EXCELW13         0   0.10000E+01  246996.3 4032243.5    70.2     3.11     6.19     2.89     YES   HRDOW
EXCELW14         0   0.10000E+01  246983.0 4032243.9    70.2     3.11     6.19     2.89     YES   HRDOW
EXCELW15         0   0.10000E+01  246969.7 4032244.3    70.2     3.11     6.19     2.89     YES   HRDOW
EXCELW16         0   0.10000E+01  246956.4 4032244.7    70.1     3.11     6.19     2.89     YES   HRDOW
EXCELW17         0   0.10000E+01  246943.0 4032245.1    70.1     3.11     6.19     2.89     YES   HRDOW
EXCELW18         0   0.10000E+01  246929.7 4032245.4    70.1     3.11     6.19     2.89     YES   HRDOW
EXCELW19         0   0.10000E+01  246916.4 4032245.8    70.1     3.11     6.19     2.89     YES   HRDOW
EXCELW20         0   0.10000E+01  246903.1 4032246.2    70.1     3.11     6.19     2.89     YES   HRDOW
EXCELW21         0   0.10000E+01  246889.8 4032246.6    70.1     3.11     6.19     2.89     YES   HRDOW
EXCELW22         0   0.10000E+01  246876.5 4032247.0    70.1     3.11     6.19     2.89     YES   HRDOW
EXCELW23         0   0.10000E+01  246863.2 4032247.3    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW24         0   0.10000E+01  246849.9 4032247.7    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW25         0   0.10000E+01  246836.6 4032248.1    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW26         0   0.10000E+01  246823.3 4032248.5    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW27         0   0.10000E+01  246810.0 4032248.9    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW28         0   0.10000E+01  246796.6 4032249.2    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW29         0   0.10000E+01  246783.3 4032249.6    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW30         0   0.10000E+01  246770.0 4032250.0    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW31         0   0.10000E+01  246756.7 4032250.4    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW32         0   0.10000E+01  246743.4 4032250.8    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW33         0   0.10000E+01  246730.1 4032251.1    70.0     3.11     6.19     2.89     YES   HRDOW
EXCELW34         0   0.10000E+01  246716.8 4032251.5    69.9     3.11     6.19     2.89     YES   HRDOW
EXCELW35         0   0.10000E+01  246703.5 4032251.9    69.9     3.11     6.19     2.89     YES   HRDOW
EXCELW36         0   0.10000E+01  246690.2 4032252.3    69.9     3.11     6.19     2.89     YES   HRDOW
EXCELW37         0   0.10000E+01  246676.9 4032252.7    69.9     3.11     6.19     2.89     YES   HRDOW
EXCELW38         0   0.10000E+01  246663.5 4032253.0    69.9     3.11     6.19     2.89     YES   HRDOW
EXCELW39         0   0.10000E+01  246650.2 4032253.4    69.9     3.11     6.19     2.89     YES   HRDOW
EXCELW40         0   0.10000E+01  246636.9 4032253.8    69.9     3.11     6.19     2.89     YES   HRDOW
EXCELW41         0   0.10000E+01  246623.6 4032254.2    69.9     3.11     6.19     2.89     YES   HRDOW
EXCELW42         0   0.10000E+01  246610.3 4032254.6    69.8     3.11     6.19     2.89     YES   HRDOW
EXCELW43         0   0.10000E+01  246597.0 4032254.9    69.8     3.11     6.19     2.89     YES   HRDOW
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*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN  ADJ_U*

                                                    *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                           BASE     RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
  SOURCE       PART.  (GRAMS/SEC)      X         Y         ELEV.    HEIGHT      SY       SZ     SOURCE  SCALAR VARY
    ID         CATS.                (METERS)  (METERS)  (METERS)  (METERS)  (METERS)  (METERS)             BY
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EXCELW44          0   0.10000E+01  246583.7 4032255.3    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW45          0   0.10000E+01  246570.4 4032255.7    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW46          0   0.10000E+01  246557.1 4032256.1    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW47          0   0.10000E+01  246543.8 4032256.5    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW48          0   0.10000E+01  246530.4 4032256.8    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW49          0   0.10000E+01  246517.1 4032257.2    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW50          0   0.10000E+01  246503.8 4032257.6    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW51          0   0.10000E+01  246490.5 4032258.0    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW52          0   0.10000E+01  246477.2 4032258.4    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW53          0   0.10000E+01  246463.9 4032258.8    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW54          0   0.10000E+01  246450.6 4032259.1    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW55          0   0.10000E+01  246437.3 4032259.5    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW56          0   0.10000E+01  246424.0 4032259.9    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW57          0   0.10000E+01  246410.7 4032260.3    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW58          0   0.10000E+01  246397.3 4032260.6    69.8      3.11      6.19      2.89     YES   HRDOW
EXCELW59          0   0.10000E+01  246384.0 4032261.0    69.7      3.11      6.19      2.89     YES   HRDOW
EXCELW60          0   0.10000E+01  246370.7 4032261.4    69.7      3.11      6.19      2.89     YES   HRDOW
EXCELW61          0   0.10000E+01  246357.4 4032261.8    69.7      3.11      6.19      2.89     YES   HRDOW
EXCELW62          0   0.10000E+01  246344.1 4032262.2    69.7      3.11      6.19      2.89     YES   HRDOW
EXCELW63          0   0.10000E+01  246330.8 4032262.5    69.7      3.11      6.19      2.89     YES   HRDOW
EXCELW64          0   0.10000E+01  246317.5 4032262.9    69.7      3.11      6.19      2.89     YES   HRDOW
EXCELW65          0   0.10000E+01  246304.2 4032263.3    69.7      3.11      6.19      2.89     YES   HRDOW
EXCELW66          0   0.10000E+01  246290.9 4032263.7    69.7      3.11      6.19      2.89     YES   HRDOW
EXCELW67          0   0.10000E+01  246277.6 4032264.1    69.7      3.11      6.19      2.89     YES   HRDOW
EXCELW68          0   0.10000E+01  246264.3 4032264.4    69.6      3.11      6.19      2.89     YES   HRDOW
EXCELW69          0   0.10000E+01  246250.9 4032264.8    69.6      3.11      6.19      2.89     YES   HRDOW
EXCELW70          0   0.10000E+01  246237.6 4032265.2    69.6      3.11      6.19      2.89     YES   HRDOW
EXCELW71          0   0.10000E+01  246224.3 4032265.6    69.6      3.11      6.19      2.89     YES   HRDOW
EXCELW72          0   0.10000E+01  246211.0 4032266.0    69.6      3.11      6.19      2.89     YES   HRDOW
EXCELW73          0   0.10000E+01  246197.7 4032266.3    69.6      3.11      6.19      2.89     YES   HRDOW
EXCELW74          0   0.10000E+01  246184.4 4032266.7    69.6      3.11      6.19      2.89     YES   HRDOW
EXCELW75          0   0.10000E+01  246171.1 4032267.1    69.5      3.11      6.19      2.89     YES   HRDOW
EXCELW76          0   0.10000E+01  246157.8 4032267.5    69.5      3.11      6.19      2.89     YES   HRDOW
EXCELW77          0   0.10000E+01  246144.5 4032267.9    69.5      3.11      6.19      2.89     YES   HRDOW
EXCELW78          0   0.10000E+01  246131.2 4032268.2    69.5      3.11      6.19      2.89     YES   HRDOW
EXCELW79          0   0.10000E+01  246117.8 4032268.6    69.5      3.11      6.19      2.89     YES   HRDOW
EXCELW80          0   0.10000E+01  246104.5 4032269.0    69.5      3.11      6.19      2.89     YES   HRDOW
EXCELW81          0   0.10000E+01  246091.2 4032269.4    69.5      3.11      6.19      2.89     YES   HRDOW
EXCELW82          0   0.10000E+01  246077.9 4032269.8    69.5      3.11      6.19      2.89     YES   HRDOW
EXCELW83          0   0.10000E+01  246064.6 4032270.2    69.5      3.11      6.19      2.89     YES   HRDOW
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                                                      *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
  SOURCE       PART.  (GRAMS/SEC)     X         Y     ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
    ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
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EXCELW84         0   0.10000E+01  246051.3 4032270.5    69.5     3.11     6.19     2.89    YES   HRDOW
EXCELW85         0   0.10000E+01  246038.0 4032270.9    69.5     3.11     6.19     2.89    YES   HRDOW
EXCELW86         0   0.10000E+01  246024.7 4032271.3    69.5     3.11     6.19     2.89    YES   HRDOW
EXCELW87         0   0.10000E+01  246011.4 4032271.7    69.5     3.11     6.19     2.89    YES   HRDOW
EXCELW88         0   0.10000E+01  245998.1 4032272.1    69.5     3.11     6.19     2.89    YES   HRDOW
EXCELW89         0   0.10000E+01  245984.8 4032272.4    69.5     3.11     6.19     2.89    YES   HRDOW
EXCELW90         0   0.10000E+01  245971.4 4032272.8    69.5     3.11     6.19     2.89    YES   HRDOW
EXCELW91         0   0.10000E+01  245958.1 4032273.2    69.5     3.11     6.19     2.89    YES   HRDOW
EXCELW92         0   0.10000E+01  245944.8 4032273.6    69.5     3.11     6.19     2.89    YES   HRDOW
EXCELW93         0   0.10000E+01  245931.5 4032274.0    69.5     3.11     6.19     2.89    YES   HRDOW
EXCELE01         0   0.10000E+01  247193.7 4032238.6    70.6     3.11     6.19     2.89    YES   HRDOW
EXCELE02         0   0.10000E+01  247207.0 4032238.1    70.6     3.11     6.19     2.89    YES   HRDOW
EXCELE03         0   0.10000E+01  247220.4 4032237.7    70.6     3.11     6.19     2.89    YES   HRDOW
EXCELE04         0   0.10000E+01  247233.7 4032237.2    70.6     3.11     6.19     2.89    YES   HRDOW
EXCELE05         0   0.10000E+01  247247.0 4032236.8    70.6     3.11     6.19     2.89    YES   HRDOW
EXCELE06         0   0.10000E+01  247260.3 4032236.4    70.7     3.11     6.19     2.89    YES   HRDOW
EXCELE07         0   0.10000E+01  247273.6 4032235.9    70.7     3.11     6.19     2.89    YES   HRDOW
EXCELE08         0   0.10000E+01  247286.9 4032235.5    70.7     3.11     6.19     2.89    YES   HRDOW
EXCELE09         0   0.10000E+01  247300.2 4032235.1    70.7     3.11     6.19     2.89    YES   HRDOW
EXCELE10         0   0.10000E+01  247313.5 4032234.6    70.8     3.11     6.19     2.89    YES   HRDOW
EXCELE11         0   0.10000E+01  247326.8 4032234.2    70.8     3.11     6.19     2.89    YES   HRDOW
EXCELE12         0   0.10000E+01  247340.1 4032233.8    70.8     3.11     6.19     2.89    YES   HRDOW
EXCELE13         0   0.10000E+01  247353.4 4032233.3    70.8     3.11     6.19     2.89    YES   HRDOW
EXCELE14         0   0.10000E+01  247366.7 4032232.9    70.9     3.11     6.19     2.89    YES   HRDOW
EXCELE15         0   0.10000E+01  247380.0 4032232.4    70.9     3.11     6.19     2.89    YES   HRDOW
EXCELE16         0   0.10000E+01  247393.4 4032232.0    70.9     3.11     6.19     2.89    YES   HRDOW
EXCELE17         0   0.10000E+01  247406.7 4032231.6    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE18         0   0.10000E+01  247420.0 4032231.1    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE19         0   0.10000E+01  247433.3 4032230.7    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE20         0   0.10000E+01  247446.6 4032230.2    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE21         0   0.10000E+01  247459.9 4032229.8    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE22         0   0.10000E+01  247473.2 4032229.4    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE23         0   0.10000E+01  247486.5 4032228.9    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE24         0   0.10000E+01  247499.8 4032228.5    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE25         0   0.10000E+01  247513.1 4032228.0    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE26         0   0.10000E+01  247526.4 4032227.6    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE27         0   0.10000E+01  247539.8 4032227.2    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE28         0   0.10000E+01  247553.1 4032226.7    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE29         0   0.10000E+01  247566.4 4032226.3    71.0     3.11     6.19     2.89    YES   HRDOW
EXCELE30         0   0.10000E+01  247579.7 4032225.9    71.0     3.11     6.19     2.89    YES   HRDOW
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                                              *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                       BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
  SOURCE       PART.  (GRAMS/SEC)     X         Y        ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
    ID         CATS.              (METERS)  (METERS)  (METERS)  (METERS)  (METERS)  (METERS)             BY
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EXCELE31         0   0.10000E+01  247593.0 4032225.4    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE32         0   0.10000E+01  247606.3 4032225.0    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE33         0   0.10000E+01  247619.6 4032224.5    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE34         0   0.10000E+01  247632.9 4032224.1    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE35         0   0.10000E+01  247646.2 4032223.7    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE36         0   0.10000E+01  247659.5 4032223.2    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE37         0   0.10000E+01  247672.8 4032222.8    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE38         0   0.10000E+01  247686.1 4032222.4    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE39         0   0.10000E+01  247699.4 4032221.9    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE40         0   0.10000E+01  247712.8 4032221.5    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE41         0   0.10000E+01  247726.1 4032221.0    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE42         0   0.10000E+01  247739.4 4032220.6    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE43         0   0.10000E+01  247752.7 4032220.2    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE44         0   0.10000E+01  247766.0 4032219.7    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE45         0   0.10000E+01  247779.3 4032219.3    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE46         0   0.10000E+01  247792.6 4032218.8    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE47         0   0.10000E+01  247805.9 4032218.4    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE48         0   0.10000E+01  247819.2 4032218.0    71.0     3.11     6.19     2.89     YES   HRDOW
EXCELE49         0   0.10000E+01  247832.5 4032217.5    71.1     3.11     6.19     2.89     YES   HRDOW
EXCELE50         0   0.10000E+01  247845.8 4032217.1    71.2     3.11     6.19     2.89     YES   HRDOW
EXCELE51         0   0.10000E+01  247859.1 4032216.7    71.2     3.11     6.19     2.89     YES   HRDOW
EXCELE52         0   0.10000E+01  247872.4 4032216.2    71.3     3.11     6.19     2.89     YES   HRDOW
EXCELE53         0   0.10000E+01  247885.8 4032215.8    71.3     3.11     6.19     2.89     YES   HRDOW
EXCELE54         0   0.10000E+01  247899.1 4032215.3    71.3     3.11     6.19     2.89     YES   HRDOW
EXCELE55         0   0.10000E+01  247912.4 4032214.9    71.4     3.11     6.19     2.89     YES   HRDOW
EXCELE56         0   0.10000E+01  247925.7 4032214.5    71.4     3.11     6.19     2.89     YES   HRDOW
EXCELE57         0   0.10000E+01  247939.0 4032214.0    71.4     3.11     6.19     2.89     YES   HRDOW
EXCELE58         0   0.10000E+01  247952.3 4032213.6    71.4     3.11     6.19     2.89     YES   HRDOW
EXCELE59         0   0.10000E+01  247965.6 4032213.2    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE60         0   0.10000E+01  247978.9 4032212.7    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE61         0   0.10000E+01  247992.2 4032212.3    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE62         0   0.10000E+01  248005.5 4032211.8    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE63         0   0.10000E+01  248018.8 4032211.4    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE64         0   0.10000E+01  248032.1 4032211.0    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE65         0   0.10000E+01  248045.4 4032210.5    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE66         0   0.10000E+01  248058.8 4032210.1    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE67         0   0.10000E+01  248072.1 4032209.7    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE68         0   0.10000E+01  248085.4 4032209.2    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE69         0   0.10000E+01  248098.7 4032208.8    71.5     3.11     6.19     2.89     YES   HRDOW
EXCELE70         0   0.10000E+01  248112.0 4032208.3    71.5     3.11     6.19     2.89     YES   HRDOW
```

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                                               *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
  SOURCE        PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
    ID          CATS.              (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

EXCELE71         0   0.10000E+01  248125.3 4032207.9    71.5     3.11     6.19     2.89    YES   HRDOW
EXCELE72         0   0.10000E+01  248138.6 4032207.5    71.5     3.11     6.19     2.89    YES   HRDOW
EXCELE73         0   0.10000E+01  248151.9 4032207.0    71.5     3.11     6.19     2.89    YES   HRDOW
EXCELE74         0   0.10000E+01  248165.2 4032206.6    71.5     3.11     6.19     2.89    YES   HRDOW
EXCELE75         0   0.10000E+01  248178.5 4032206.1    71.5     3.11     6.19     2.89    YES   HRDOW
EXCELE76         0   0.10000E+01  248191.8 4032205.7    71.5     3.11     6.19     2.89    YES   HRDOW
EXCELE77         0   0.10000E+01  248205.1 4032205.3    71.6     3.11     6.19     2.89    YES   HRDOW
EXCELE78         0   0.10000E+01  248218.5 4032204.8    71.6     3.11     6.19     2.89    YES   HRDOW
EXCELE79         0   0.10000E+01  248231.8 4032204.4    71.6     3.11     6.19     2.89    YES   HRDOW
EXCELE80         0   0.10000E+01  248245.1 4032204.0    71.6     3.11     6.19     2.89    YES   HRDOW
EXCELE81         0   0.10000E+01  248258.4 4032203.5    71.6     3.11     6.19     2.89    YES   HRDOW
```

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*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN  ADJ_U*


                                             *** AREAPOLY SOURCE DATA ***

              NUMBER EMISSION RATE   LOCATION OF AREA  BASE     RELEASE  NUMBER      INIT.   URBAN  EMISSION RATE
  SOURCE       PART.  (GRAMS/SEC       X         Y      ELEV.    HEIGHT  OF VERTS.    SZ     SOURCE  SCALAR VARY
    ID         CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS)           (METERS)               BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

PAREA1           0   0.10000E+01  246815.2 4032222.5    70.1     1.00       4        1.00     YES   HRDOW
```

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                  * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

ALL SOURCES              ; SOURCE TYPE = AREAPOLY :
 HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                                              DAY OF WEEK = WEEKDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .1000E+01    7  .1000E+01    8  .1000E+01
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
  17  .1000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SATURDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .1000E+01    7  .1000E+01    8  .1000E+01
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
  17  .1000E+01   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              DAY OF WEEK = SUNDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16  .0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
```

```
                                              *** DISCRETE CARTESIAN RECEPTORS ***
                                            (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                            (METERS)

    ( 247000.6, 4032291.5,      70.1,      70.1,       1.8);         ( 246654.7, 4032273.2,      69.9,      69.9,       1.8);
    ( 246555.9, 4032119.6,      69.8,      69.8,       1.8);         ( 247398.0, 4031739.8,      71.6,      71.6,       1.8);
    ( 247073.8, 4031471.0,      70.7,      70.7,       1.8);         ( 247387.9, 4031472.4,      70.8,      70.8,       1.8);
    ( 246892.3, 4031478.5,      70.0,      70.0,       1.8);         ( 247542.1, 4032329.5,      71.0,      71.0,       1.8);
    ( 247665.6, 4032250.7,      71.0,      71.0,       1.8);         ( 247764.3, 4032248.3,      71.0,      71.0,       1.8);
    ( 247911.6, 4032159.1,      71.5,      71.5,       1.8);         ( 246045.4, 4031086.1,      69.1,      69.1,       1.8);
    ( 246145.4, 4031086.1,      69.2,      69.2,       1.8);         ( 246245.4, 4031086.1,      69.3,      69.3,       1.8);
    ( 246345.4, 4031086.1,      69.4,      69.4,       1.8);         ( 246445.4, 4031086.1,      69.4,      69.4,       1.8);
    ( 246545.4, 4031086.1,      69.4,      69.4,       1.8);         ( 246645.4, 4031086.1,      69.5,      69.5,       1.8);
    ( 246745.4, 4031086.1,      69.6,      69.6,       1.8);         ( 246845.4, 4031086.1,      69.6,      69.6,       1.8);
    ( 246945.4, 4031086.1,      69.5,      69.5,       1.8);         ( 247045.4, 4031086.1,      69.8,      69.8,       1.8);
    ( 247145.4, 4031086.1,      70.1,      70.1,       1.8);         ( 247245.4, 4031086.1,      70.1,      70.1,       1.8);
    ( 247345.4, 4031086.1,      70.2,      70.2,       1.8);         ( 247445.4, 4031086.1,      70.5,      70.5,       1.8);
    ( 247545.4, 4031086.1,      70.9,      70.9,       1.8);         ( 247645.4, 4031086.1,      71.0,      71.0,       1.8);
    ( 247745.4, 4031086.1,      70.8,      70.8,       1.8);         ( 247845.4, 4031086.1,      70.6,      70.6,       1.8);
    ( 247945.4, 4031086.1,      70.6,      70.6,       1.8);         ( 248045.4, 4031086.1,      70.6,      70.6,       1.8);
    ( 246045.4, 4031186.1,      69.3,      69.3,       1.8);         ( 246145.4, 4031186.1,      69.4,      69.4,       1.8);
    ( 246245.4, 4031186.1,      69.4,      69.4,       1.8);         ( 246345.4, 4031186.1,      69.5,      69.5,       1.8);
    ( 246445.4, 4031186.1,      69.5,      69.5,       1.8);         ( 246545.4, 4031186.1,      69.5,      69.5,       1.8);
    ( 246645.4, 4031186.1,      69.6,      69.6,       1.8);         ( 246745.4, 4031186.1,      69.7,      69.7,       1.8);
    ( 246845.4, 4031186.1,      69.7,      69.7,       1.8);         ( 246945.4, 4031186.1,      69.6,      69.6,       1.8);
    ( 247045.4, 4031186.1,      69.9,      69.9,       1.8);         ( 247145.4, 4031186.1,      70.1,      70.1,       1.8);
    ( 247245.4, 4031186.1,      70.3,      70.3,       1.8);         ( 247345.4, 4031186.1,      70.0,      70.0,       1.8);
    ( 247445.4, 4031186.1,      69.6,      69.6,       1.8);         ( 247545.4, 4031186.1,      70.4,      70.4,       1.8);
    ( 247645.4, 4031186.1,      71.1,      71.1,       1.8);         ( 247745.4, 4031186.1,      71.0,      71.0,       1.8);
    ( 247845.4, 4031186.1,      70.8,      70.8,       1.8);         ( 247945.4, 4031186.1,      70.8,      70.8,       1.8);
    ( 248045.4, 4031186.1,      70.8,      70.8,       1.8);         ( 246045.4, 4031286.1,      69.5,      69.5,       1.8);
    ( 246145.4, 4031286.1,      69.5,      69.5,       1.8);         ( 246245.4, 4031286.1,      69.5,      69.5,       1.8);
    ( 246345.4, 4031286.1,      69.5,      69.5,       1.8);         ( 246445.4, 4031286.1,      69.5,      69.5,       1.8);
    ( 246545.4, 4031286.1,      69.5,      69.5,       1.8);         ( 246645.4, 4031286.1,      69.5,      69.5,       1.8);
    ( 246745.4, 4031286.1,      69.6,      69.6,       1.8);         ( 246845.4, 4031286.1,      69.8,      69.8,       1.8);
    ( 246945.4, 4031286.1,      69.9,      69.9,       1.8);         ( 247045.4, 4031286.1,      70.2,      70.2,       1.8);
    ( 247145.4, 4031286.1,      70.5,      70.5,       1.8);         ( 247245.4, 4031286.1,      70.6,      70.6,       1.8);
    ( 247345.4, 4031286.1,      70.2,      70.2,       1.8);         ( 247445.4, 4031286.1,      69.7,      69.7,       1.8);
    ( 247545.4, 4031286.1,      70.5,      70.5,       1.8);         ( 247645.4, 4031286.1,      70.8,      70.8,       1.8);
    ( 247745.4, 4031286.1,      71.0,      71.0,       1.8);         ( 247845.4, 4031286.1,      71.0,      71.0,       1.8);
    ( 247945.4, 4031286.1,      71.0,      71.0,       1.8);         ( 248045.4, 4031286.1,      71.0,      71.0,       1.8);
    ( 246045.4, 4031386.1,      69.5,      69.5,       1.8);         ( 246145.4, 4031386.1,      69.5,      69.5,       1.8);
    ( 246245.4, 4031386.1,      69.5,      69.5,       1.8);         ( 246345.4, 4031386.1,      69.5,      69.5,       1.8);
    ( 246445.4, 4031386.1,      69.5,      69.5,       1.8);         ( 246545.4, 4031386.1,      69.5,      69.5,       1.8);
    ( 246645.4, 4031386.1,      69.5,      69.5,       1.8);         ( 246745.4, 4031386.1,      69.5,      69.5,       1.8);
    ( 246845.4, 4031386.1,      69.7,      69.7,       1.8);         ( 246945.4, 4031386.1,      70.1,      70.1,       1.8);
    ( 247045.4, 4031386.1,      70.5,      70.5,       1.8);         ( 247145.4, 4031386.1,      70.7,      70.7,       1.8);
    ( 247245.4, 4031386.1,      70.9,      70.9,       1.8);         ( 247345.4, 4031386.1,      70.7,      70.7,       1.8);
    ( 247445.4, 4031386.1,      70.5,      70.5,       1.8);         ( 247545.4, 4031386.1,      70.7,      70.7,       1.8);
```

```
                                         *** DISCRETE CARTESIAN RECEPTORS ***
                                       (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                      (METERS)

    ( 247645.4, 4031386.1,      70.9,      70.9,       1.8);         ( 247745.4, 4031386.1,      71.0,      71.0,       1.8);
    ( 247845.4, 4031386.1,      71.0,      71.0,       1.8);         ( 247945.4, 4031386.1,      71.1,      71.1,       1.8);
    ( 248045.4, 4031386.1,      71.2,      71.2,       1.8);         ( 246045.4, 4031486.1,      69.5,      69.5,       1.8);
    ( 246145.4, 4031486.1,      69.5,      69.5,       1.8);         ( 246245.4, 4031486.1,      69.5,      69.5,       1.8);
    ( 246345.4, 4031486.1,      69.5,      69.5,       1.8);         ( 246445.4, 4031486.1,      69.5,      69.5,       1.8);
    ( 246545.4, 4031486.1,      69.5,      69.5,       1.8);         ( 246645.4, 4031486.1,      69.5,      69.5,       1.8);
    ( 246745.4, 4031486.1,      69.5,      69.5,       1.8);         ( 246845.4, 4031486.1,      69.7,      69.7,       1.8);
    ( 246945.4, 4031486.1,      70.3,      70.3,       1.8);         ( 247045.4, 4031486.1,      70.7,      70.7,       1.8);
    ( 247145.4, 4031486.1,      70.8,      70.8,       1.8);         ( 247245.4, 4031486.1,      71.0,      71.0,       1.8);
    ( 247345.4, 4031486.1,      70.9,      70.9,       1.8);         ( 247445.4, 4031486.1,      70.8,      70.8,       1.8);
    ( 247545.4, 4031486.1,      70.8,      70.8,       1.8);         ( 247645.4, 4031486.1,      70.9,      70.9,       1.8);
    ( 247745.4, 4031486.1,      71.0,      71.0,       1.8);         ( 247845.4, 4031486.1,      71.0,      71.0,       1.8);
    ( 247945.4, 4031486.1,      71.1,      71.1,       1.8);         ( 248045.4, 4031486.1,      71.4,      71.4,       1.8);
    ( 246045.4, 4031586.1,      69.5,      69.5,       1.8);         ( 246145.4, 4031586.1,      69.5,      69.5,       1.8);
    ( 246245.4, 4031586.1,      69.5,      69.5,       1.8);         ( 246345.4, 4031586.1,      69.5,      69.5,       1.8);
    ( 246445.4, 4031586.1,      69.5,      69.5,       1.8);         ( 246545.4, 4031586.1,      69.5,      69.5,       1.8);
    ( 246645.4, 4031586.1,      69.5,      69.5,       1.8);         ( 246745.4, 4031586.1,      69.5,      69.5,       1.8);
    ( 246845.4, 4031586.1,      69.7,      69.7,       1.8);         ( 246945.4, 4031586.1,      70.5,      70.5,       1.8);
    ( 247045.4, 4031586.1,      70.9,      70.9,       1.8);         ( 247145.4, 4031586.1,      71.0,      71.0,       1.8);
    ( 247245.4, 4031586.1,      71.1,      71.1,       1.8);         ( 247345.4, 4031586.1,      71.0,      71.0,       1.8);
    ( 247445.4, 4031586.1,      71.2,      71.2,       1.8);         ( 247545.4, 4031586.1,      71.0,      71.0,       1.8);
    ( 247645.4, 4031586.1,      70.9,      70.9,       1.8);         ( 247745.4, 4031586.1,      70.9,      70.9,       1.8);
    ( 247845.4, 4031586.1,      70.9,      70.9,       1.8);         ( 247945.4, 4031586.1,      70.9,      70.9,       1.8);
    ( 248045.4, 4031586.1,      70.9,      70.9,       1.8);         ( 246045.4, 4031686.1,      69.5,      69.5,       1.8);
    ( 246145.4, 4031686.1,      69.5,      69.5,       1.8);         ( 246245.4, 4031686.1,      69.5,      69.5,       1.8);
    ( 246345.4, 4031686.1,      69.5,      69.5,       1.8);         ( 246445.4, 4031686.1,      69.5,      69.5,       1.8);
    ( 246545.4, 4031686.1,      69.5,      69.5,       1.8);         ( 246645.4, 4031686.1,      69.5,      69.5,       1.8);
    ( 246745.4, 4031686.1,      69.6,      69.6,       1.8);         ( 246845.4, 4031686.1,      69.9,      69.9,       1.8);
    ( 246945.4, 4031686.1,      70.6,      70.6,       1.8);         ( 247045.4, 4031686.1,      70.9,      70.9,       1.8);
    ( 247145.4, 4031686.1,      71.1,      71.1,       1.8);         ( 247245.4, 4031686.1,      71.2,      71.2,       1.8);
    ( 247345.4, 4031686.1,      71.2,      71.2,       1.8);         ( 247445.4, 4031686.1,      71.6,      71.6,       1.8);
    ( 247545.4, 4031686.1,      72.3,      72.3,       1.8);         ( 247645.4, 4031686.1,      72.6,      72.6,       1.8);
    ( 247745.4, 4031686.1,      71.4,      71.4,       1.8);         ( 247845.4, 4031686.1,      70.9,      70.9,       1.8);
    ( 247945.4, 4031686.1,      70.9,      70.9,       1.8);         ( 248045.4, 4031686.1,      71.0,      71.0,       1.8);
    ( 246045.4, 4031786.1,      69.6,      69.6,       1.8);         ( 246145.4, 4031786.1,      69.6,      69.6,       1.8);
    ( 246245.4, 4031786.1,      69.5,      69.5,       1.8);         ( 246345.4, 4031786.1,      69.5,      69.5,       1.8);
    ( 246445.4, 4031786.1,      69.5,      69.5,       1.8);         ( 246545.4, 4031786.1,      69.6,      69.6,       1.8);
    ( 246645.4, 4031786.1,      69.6,      69.6,       1.8);         ( 246745.4, 4031786.1,      69.8,      69.8,       1.8);
    ( 246845.4, 4031786.1,      70.1,      70.1,       1.8);         ( 246945.4, 4031786.1,      70.6,      70.6,       1.8);
    ( 247045.4, 4031786.1,      70.8,      70.8,       1.8);         ( 247145.4, 4031786.1,      71.0,      71.0,       1.8);
    ( 247245.4, 4031786.1,      71.1,      71.1,       1.8);         ( 247345.4, 4031786.1,      71.2,      71.2,       1.8);
    ( 247445.4, 4031786.1,      72.1,      72.1,       1.8);         ( 247545.4, 4031786.1,      72.4,      72.4,       1.8);
    ( 247645.4, 4031786.1,      72.7,      72.7,       1.8);         ( 247745.4, 4031786.1,      72.7,      72.7,       1.8);
    ( 247845.4, 4031786.1,      72.6,      72.6,       1.8);         ( 247945.4, 4031786.1,      72.6,      72.6,       1.8);
    ( 248045.4, 4031786.1,      72.4,      72.4,       1.8);         ( 246045.4, 4031886.1,      69.6,      69.6,       1.8);
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```
                                          *** DISCRETE CARTESIAN RECEPTORS ***
                                        (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                       (METERS)

    ( 246145.4, 4031886.1,      69.6,      69.6,       1.8);         ( 246245.4, 4031886.1,      69.6,      69.6,       1.8);
    ( 246345.4, 4031886.1,      69.6,      69.6,       1.8);         ( 246445.4, 4031886.1,      69.6,      69.6,       1.8);
    ( 246545.4, 4031886.1,      69.6,      69.6,       1.8);         ( 246645.4, 4031886.1,      69.8,      69.8,       1.8);
    ( 246745.4, 4031886.1,      70.0,      70.0,       1.8);         ( 246845.4, 4031886.1,      70.3,      70.3,       1.8);
    ( 246945.4, 4031886.1,      70.7,      70.7,       1.8);         ( 247045.4, 4031886.1,      70.9,      70.9,       1.8);
    ( 247145.4, 4031886.1,      70.9,      70.9,       1.8);         ( 247245.4, 4031886.1,      71.0,      71.0,       1.8);
    ( 247345.4, 4031886.1,      71.1,      71.1,       1.8);         ( 247445.4, 4031886.1,      71.4,      71.4,       1.8);
    ( 247545.4, 4031886.1,      72.1,      72.1,       1.8);         ( 247645.4, 4031886.1,      72.5,      72.5,       1.8);
    ( 247745.4, 4031886.1,      72.6,      72.6,       1.8);         ( 247845.4, 4031886.1,      72.5,      72.5,       1.8);
    ( 247945.4, 4031886.1,      72.3,      72.3,       1.8);         ( 248045.4, 4031886.1,      72.3,      72.3,       1.8);
    ( 246045.4, 4031986.1,      69.6,      69.6,       1.8);         ( 246145.4, 4031986.1,      69.6,      69.6,       1.8);
    ( 246245.4, 4031986.1,      69.7,      69.7,       1.8);         ( 246345.4, 4031986.1,      69.7,      69.7,       1.8);
    ( 246445.4, 4031986.1,      69.7,      69.7,       1.8);         ( 246545.4, 4031986.1,      69.7,      69.7,       1.8);
    ( 246645.4, 4031986.1,      69.8,      69.8,       1.8);         ( 246745.4, 4031986.1,      70.1,      70.1,       1.8);
    ( 246845.4, 4031986.1,      70.3,      70.3,       1.8);         ( 246945.4, 4031986.1,      70.6,      70.6,       1.8);
    ( 247045.4, 4031986.1,      70.7,      70.7,       1.8);         ( 247445.4, 4031986.1,      71.1,      71.1,       1.8);
    ( 247545.4, 4031986.1,      71.5,      71.5,       1.8);         ( 247645.4, 4031986.1,      71.9,      71.9,       1.8);
    ( 247745.4, 4031986.1,      72.1,      72.1,       1.8);         ( 247845.4, 4031986.1,      72.0,      72.0,       1.8);
    ( 247945.4, 4031986.1,      72.0,      72.0,       1.8);         ( 248045.4, 4031986.1,      72.0,      72.0,       1.8);
    ( 246045.4, 4032086.1,      69.5,      69.5,       1.8);         ( 246145.4, 4032086.1,      69.6,      69.6,       1.8);
    ( 246245.4, 4032086.1,      69.7,      69.7,       1.8);         ( 246345.4, 4032086.1,      69.8,      69.8,       1.8);
    ( 246445.4, 4032086.1,      69.8,      69.8,       1.8);         ( 246545.4, 4032086.1,      69.8,      69.8,       1.8);
    ( 246645.4, 4032086.1,      69.9,      69.9,       1.8);         ( 246745.4, 4032086.1,      70.1,      70.1,       1.8);
    ( 246845.4, 4032086.1,      70.3,      70.3,       1.8);         ( 246945.4, 4032086.1,      70.4,      70.4,       1.8);
    ( 247445.4, 4032086.1,      71.0,      71.0,       1.8);         ( 247545.4, 4032086.1,      71.2,      71.2,       1.8);
    ( 247645.4, 4032086.1,      71.5,      71.5,       1.8);         ( 247745.4, 4032086.1,      71.6,      71.6,       1.8);
    ( 247845.4, 4032086.1,      71.6,      71.6,       1.8);         ( 247945.4, 4032086.1,      71.6,      71.6,       1.8);
    ( 248045.4, 4032086.1,      71.8,      71.8,       1.8);         ( 246045.4, 4032186.1,      69.5,      69.5,       1.8);
    ( 246145.4, 4032186.1,      69.6,      69.6,       1.8);         ( 246245.4, 4032186.1,      69.7,      69.7,       1.8);
    ( 246345.4, 4032186.1,      69.7,      69.7,       1.8);         ( 246445.4, 4032186.1,      69.8,      69.8,       1.8);
    ( 246545.4, 4032186.1,      69.8,      69.8,       1.8);         ( 246645.4, 4032186.1,      69.9,      69.9,       1.8);
    ( 246745.4, 4032186.1,      70.0,      70.0,       1.8);         ( 247445.4, 4032186.1,      71.0,      71.0,       1.8);
    ( 247545.4, 4032186.1,      71.0,      71.0,       1.8);         ( 247645.4, 4032186.1,      71.0,      71.0,       1.8);
    ( 247745.4, 4032186.1,      71.0,      71.0,       1.8);         ( 247845.4, 4032186.1,      71.2,      71.2,       1.8);
    ( 247945.4, 4032186.1,      71.5,      71.5,       1.8);         ( 248045.4, 4032186.1,      71.5,      71.5,       1.8);
    ( 246045.4, 4032286.1,      69.5,      69.5,       1.8);         ( 246145.4, 4032286.1,      69.5,      69.5,       1.8);
    ( 246245.4, 4032286.1,      69.6,      69.6,       1.8);         ( 246345.4, 4032286.1,      69.7,      69.7,       1.8);
    ( 246445.4, 4032286.1,      69.8,      69.8,       1.8);         ( 246545.4, 4032286.1,      69.8,      69.8,       1.8);
    ( 246645.4, 4032286.1,      69.8,      69.8,       1.8);         ( 246745.4, 4032286.1,      69.9,      69.9,       1.8);
    ( 246845.4, 4032286.1,      70.0,      70.0,       1.8);         ( 246945.4, 4032286.1,      70.0,      70.0,       1.8);
    ( 247045.4, 4032286.1,      70.2,      70.2,       1.8);         ( 247145.4, 4032286.1,      70.4,      70.4,       1.8);
    ( 247245.4, 4032286.1,      70.6,      70.6,       1.8);         ( 247345.4, 4032286.1,      70.8,      70.8,       1.8);
    ( 247445.4, 4032286.1,      70.9,      70.9,       1.8);         ( 247545.4, 4032286.1,      71.0,      71.0,       1.8);
    ( 247645.4, 4032286.1,      71.0,      71.0,       1.8);         ( 247745.4, 4032286.1,      71.0,      71.0,       1.8);
    ( 247845.4, 4032286.1,      71.2,      71.2,       1.8);         ( 247945.4, 4032286.1,      71.3,      71.3,       1.8);
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                                        *** DISCRETE CARTESIAN RECEPTORS ***
                                      (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                      (METERS)

    ( 248045.4, 4032286.1,      71.4,      71.4,       1.8);         ( 246045.4, 4032386.1,      69.5,      69.5,       1.8);
    ( 246145.4, 4032386.1,      69.6,      69.6,       1.8);         ( 246245.4, 4032386.1,      69.6,      69.6,       1.8);
    ( 246345.4, 4032386.1,      69.7,      69.7,       1.8);         ( 246445.4, 4032386.1,      69.7,      69.7,       1.8);
    ( 246545.4, 4032386.1,      69.7,      69.7,       1.8);         ( 246645.4, 4032386.1,      69.7,      69.7,       1.8);
    ( 246745.4, 4032386.1,      69.8,      69.8,       1.8);         ( 246845.4, 4032386.1,      69.8,      69.8,       1.8);
    ( 246945.4, 4032386.1,      69.9,      69.9,       1.8);         ( 247045.4, 4032386.1,      70.0,      70.0,       1.8);
    ( 247145.4, 4032386.1,      70.1,      70.1,       1.8);         ( 247245.4, 4032386.1,      70.3,      70.3,       1.8);
    ( 247345.4, 4032386.1,      70.6,      70.6,       1.8);         ( 247445.4, 4032386.1,      70.8,      70.8,       1.8);
    ( 247545.4, 4032386.1,      71.0,      71.0,       1.8);         ( 247645.4, 4032386.1,      71.0,      71.0,       1.8);
    ( 247745.4, 4032386.1,      71.1,      71.1,       1.8);         ( 247845.4, 4032386.1,      71.2,      71.2,       1.8);
    ( 247945.4, 4032386.1,      71.2,      71.2,       1.8);         ( 248045.4, 4032386.1,      71.2,      71.2,       1.8);
    ( 246045.4, 4032486.1,      69.6,      69.6,       1.8);         ( 246145.4, 4032486.1,      69.6,      69.6,       1.8);
    ( 246245.4, 4032486.1,      69.6,      69.6,       1.8);         ( 246345.4, 4032486.1,      69.7,      69.7,       1.8);
    ( 246445.4, 4032486.1,      69.7,      69.7,       1.8);         ( 246545.4, 4032486.1,      69.6,      69.6,       1.8);
    ( 246645.4, 4032486.1,      69.6,      69.6,       1.8);         ( 246745.4, 4032486.1,      69.7,      69.7,       1.8);
    ( 246845.4, 4032486.1,      69.7,      69.7,       1.8);         ( 246945.4, 4032486.1,      69.7,      69.7,       1.8);
    ( 247045.4, 4032486.1,      69.8,      69.8,       1.8);         ( 247145.4, 4032486.1,      69.8,      69.8,       1.8);
    ( 247245.4, 4032486.1,      70.0,      70.0,       1.8);         ( 247345.4, 4032486.1,      70.3,      70.3,       1.8);
    ( 247445.4, 4032486.1,      70.8,      70.8,       1.8);         ( 247545.4, 4032486.1,      70.9,      70.9,       1.8);
    ( 247645.4, 4032486.1,      71.1,      71.1,       1.8);         ( 247745.4, 4032486.1,      71.1,      71.1,       1.8);
    ( 247845.4, 4032486.1,      71.1,      71.1,       1.8);         ( 247945.4, 4032486.1,      71.0,      71.0,       1.8);
    ( 248045.4, 4032486.1,      70.7,      70.7,       1.8);         ( 246045.4, 4032586.1,      69.6,      69.6,       1.8);
    ( 246145.4, 4032586.1,      69.6,      69.6,       1.8);         ( 246245.4, 4032586.1,      69.6,      69.6,       1.8);
    ( 246345.4, 4032586.1,      69.6,      69.6,       1.8);         ( 246445.4, 4032586.1,      69.6,      69.6,       1.8);
    ( 246545.4, 4032586.1,      69.6,      69.6,       1.8);         ( 246645.4, 4032586.1,      69.6,      69.6,       1.8);
    ( 246745.4, 4032586.1,      69.6,      69.6,       1.8);         ( 246845.4, 4032586.1,      69.6,      69.6,       1.8);
    ( 246945.4, 4032586.1,      69.7,      69.7,       1.8);         ( 247045.4, 4032586.1,      69.8,      69.8,       1.8);
    ( 247145.4, 4032586.1,      70.1,      70.1,       1.8);         ( 247245.4, 4032586.1,      71.3,      71.3,       1.8);
    ( 247345.4, 4032586.1,      70.8,      70.8,       1.8);         ( 247445.4, 4032586.1,      70.6,      70.6,       1.8);
    ( 247545.4, 4032586.1,      70.4,      70.4,       1.8);         ( 247645.4, 4032586.1,      70.5,      70.5,       1.8);
    ( 247745.4, 4032586.1,      70.5,      70.5,       1.8);         ( 247845.4, 4032586.1,      70.4,      70.4,       1.8);
    ( 247945.4, 4032586.1,      71.0,      71.0,       1.8);         ( 248045.4, 4032586.1,      71.1,      71.1,       1.8);
    ( 246045.4, 4032686.1,      69.6,      69.6,       1.8);         ( 246145.4, 4032686.1,      69.6,      69.6,       1.8);
    ( 246245.4, 4032686.1,      69.6,      69.6,       1.8);         ( 246345.4, 4032686.1,      69.6,      69.6,       1.8);
    ( 246445.4, 4032686.1,      69.6,      69.6,       1.8);         ( 246545.4, 4032686.1,      69.6,      69.6,       1.8);
    ( 246645.4, 4032686.1,      69.5,      69.5,       1.8);         ( 246745.4, 4032686.1,      69.5,      69.5,       1.8);
    ( 246845.4, 4032686.1,      69.6,      69.6,       1.8);         ( 246945.4, 4032686.1,      69.7,      69.7,       1.8);
    ( 247045.4, 4032686.1,      70.8,      70.8,       1.8);         ( 247145.4, 4032686.1,      71.1,      71.1,       1.8);
    ( 247245.4, 4032686.1,      71.2,      71.2,       1.8);         ( 247345.4, 4032686.1,      71.1,      71.1,       1.8);
    ( 247445.4, 4032686.1,      71.0,      71.0,       1.8);         ( 247545.4, 4032686.1,      71.1,      71.1,       1.8);
    ( 247645.4, 4032686.1,      71.1,      71.1,       1.8);         ( 247745.4, 4032686.1,      71.0,      71.0,       1.8);
    ( 247845.4, 4032686.1,      70.9,      70.9,       1.8);         ( 247945.4, 4032686.1,      71.1,      71.1,       1.8);
    ( 248045.4, 4032686.1,      71.2,      71.2,       1.8);         ( 246045.4, 4032786.1,      69.6,      69.6,       1.8);
    ( 246145.4, 4032786.1,      69.6,      69.6,       1.8);         ( 246245.4, 4032786.1,      69.6,      69.6,       1.8);
    ( 246345.4, 4032786.1,      69.7,      69.7,       1.8);         ( 246445.4, 4032786.1,      69.6,      69.6,       1.8);
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                                             *** DISCRETE CARTESIAN RECEPTORS ***
                                           (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                          (METERS)

     ( 246545.4, 4032786.1,      69.6,      69.6,      1.8);        ( 246645.4, 4032786.1,      69.5,      69.5,      1.8);
     ( 246745.4, 4032786.1,      69.5,      69.5,      1.8);        ( 246845.4, 4032786.1,      69.6,      69.6,      1.8);
     ( 246945.4, 4032786.1,      69.7,      69.7,      1.8);        ( 247045.4, 4032786.1,      71.0,      71.0,      1.8);
     ( 247145.4, 4032786.1,      70.9,      70.9,      1.8);        ( 247245.4, 4032786.1,      71.0,      71.0,      1.8);
     ( 247345.4, 4032786.1,      71.0,      71.0,      1.8);        ( 247445.4, 4032786.1,      71.0,      71.0,      1.8);
     ( 247545.4, 4032786.1,      71.0,      71.0,      1.8);        ( 247645.4, 4032786.1,      71.1,      71.1,      1.8);
     ( 247745.4, 4032786.1,      71.1,      71.1,      1.8);        ( 247845.4, 4032786.1,      71.0,      71.0,      1.8);
     ( 247945.4, 4032786.1,      71.1,      71.1,      1.8);        ( 248045.4, 4032786.1,      71.4,      71.4,      1.8);
     ( 246045.4, 4032886.1,      69.5,      69.5,      1.8);        ( 246145.4, 4032886.1,      69.5,      69.5,      1.8);
     ( 246245.4, 4032886.1,      69.6,      69.6,      1.8);        ( 246345.4, 4032886.1,      69.6,      69.6,      1.8);
     ( 246445.4, 4032886.1,      69.6,      69.6,      1.8);        ( 246545.4, 4032886.1,      69.6,      69.6,      1.8);
     ( 246645.4, 4032886.1,      69.5,      69.5,      1.8);        ( 246745.4, 4032886.1,      69.5,      69.5,      1.8);
     ( 246845.4, 4032886.1,      69.5,      69.5,      1.8);        ( 246945.4, 4032886.1,      69.7,      69.7,      1.8);
     ( 247045.4, 4032886.1,      70.5,      70.5,      1.8);        ( 247145.4, 4032886.1,      70.6,      70.6,      1.8);
     ( 247245.4, 4032886.1,      70.8,      70.8,      1.8);        ( 247345.4, 4032886.1,      70.8,      70.8,      1.8);
     ( 247445.4, 4032886.1,      70.8,      70.8,      1.8);        ( 247545.4, 4032886.1,      70.9,      70.9,      1.8);
     ( 247645.4, 4032886.1,      71.0,      71.0,      1.8);        ( 247745.4, 4032886.1,      71.2,      71.2,      1.8);
     ( 247845.4, 4032886.1,      71.3,      71.3,      1.8);        ( 247945.4, 4032886.1,      71.4,      71.4,      1.8);
     ( 248045.4, 4032886.1,      71.6,      71.6,      1.8);        ( 246045.4, 4032986.1,      69.4,      69.4,      1.8);
     ( 246145.4, 4032986.1,      69.5,      69.5,      1.8);        ( 246245.4, 4032986.1,      69.5,      69.5,      1.8);
     ( 246345.4, 4032986.1,      69.6,      69.6,      1.8);        ( 246445.4, 4032986.1,      69.6,      69.6,      1.8);
     ( 246545.4, 4032986.1,      69.6,      69.6,      1.8);        ( 246645.4, 4032986.1,      69.5,      69.5,      1.8);
     ( 246745.4, 4032986.1,      69.5,      69.5,      1.8);        ( 246845.4, 4032986.1,      69.5,      69.5,      1.8);
     ( 246945.4, 4032986.1,      69.8,      69.8,      1.8);        ( 247045.4, 4032986.1,      70.2,      70.2,      1.8);
     ( 247145.4, 4032986.1,      70.6,      70.6,      1.8);        ( 247245.4, 4032986.1,      70.8,      70.8,      1.8);
     ( 247345.4, 4032986.1,      70.8,      70.8,      1.8);        ( 247445.4, 4032986.1,      70.8,      70.8,      1.8);
     ( 247545.4, 4032986.1,      70.9,      70.9,      1.8);        ( 247645.4, 4032986.1,      71.0,      71.0,      1.8);
     ( 247745.4, 4032986.1,      71.1,      71.1,      1.8);        ( 247845.4, 4032986.1,      71.3,      71.3,      1.8);
     ( 247945.4, 4032986.1,      71.5,      71.5,      1.8);        ( 248045.4, 4032986.1,      71.6,      71.6,      1.8);
     ( 246045.4, 4033086.1,      69.3,      69.3,      1.8);        ( 246145.4, 4033086.1,      69.4,      69.4,      1.8);
     ( 246245.4, 4033086.1,      69.5,      69.5,      1.8);        ( 246345.4, 4033086.1,      69.6,      69.6,      1.8);
     ( 246445.4, 4033086.1,      69.6,      69.6,      1.8);        ( 246545.4, 4033086.1,      69.6,      69.6,      1.8);
     ( 246645.4, 4033086.1,      69.5,      69.5,      1.8);        ( 246745.4, 4033086.1,      69.5,      69.5,      1.8);
     ( 246845.4, 4033086.1,      69.5,      69.5,      1.8);        ( 246945.4, 4033086.1,      69.9,      69.9,      1.8);
     ( 247045.4, 4033086.1,      70.2,      70.2,      1.8);        ( 247145.4, 4033086.1,      70.8,      70.8,      1.8);
     ( 247245.4, 4033086.1,      71.0,      71.0,      1.8);        ( 247345.4, 4033086.1,      71.0,      71.0,      1.8);
     ( 247445.4, 4033086.1,      71.0,      71.0,      1.8);        ( 247545.4, 4033086.1,      71.0,      71.0,      1.8);
     ( 247645.4, 4033086.1,      71.0,      71.0,      1.8);        ( 247745.4, 4033086.1,      71.1,      71.1,      1.8);
     ( 247845.4, 4033086.1,      71.2,      71.2,      1.8);        ( 247945.4, 4033086.1,      71.3,      71.3,      1.8);
     ( 248045.4, 4033086.1,      71.4,      71.4,      1.8);        ( 247330.4, 4032195.4,      70.8,      70.8,      1.8);
     ( 247248.0, 4032196.0,      70.7,      70.7,      1.8);        ( 246781.2, 4032242.5,      70.0,      70.0,      1.8);
     ( 247436.5, 4032218.4,      71.0,      71.0,      1.8);        ( 247430.8, 4031944.3,      71.1,      71.1,      1.8);
     ( 247296.6, 4031924.2,      71.0,      71.0,      1.8);        ( 247217.8, 4031892.0,      71.0,      71.0,      1.8);
     ( 247181.6, 4031892.0,      70.9,      70.9,      1.8);        ( 247171.2, 4031937.8,      70.9,      70.9,      1.8);
     ( 247083.5, 4032015.0,      70.7,      70.7,      1.8);        ( 246938.0, 4032092.2,      70.4,      70.4,      1.8);
```

```
                                            *** DISCRETE CARTESIAN RECEPTORS ***
                                          (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                         (METERS)

    ( 246839.1, 4032167.8,      70.2,      70.2,       1.8);         ( 246757.1, 4032241.8,      70.0,      70.0,       1.8);
```

```
                    * SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED *
                      LESS THAN 1.0 METER; WITHIN OPENPIT; OR BEYOND 80KM FOR FASTAREA/FASTALL


                            SOURCE          - - RECEPTOR LOCATION - -         DISTANCE
                              ID           XR (METERS)   YR (METERS)         (METERS)
                          - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

                           ONSITE14           247445.4     4031986.1            -2.14
                           ONSITE24           247445.4     4032086.1            -3.09
                           ONSITE25           247445.4     4032086.1            -1.65
                           ONSITE34           247445.4     4032186.1            -1.79
                           ONSITE35           247445.4     4032186.1            -5.51
                           EXCELW29           246781.2     4032242.5            -5.93
                           EXCELW30           246781.2     4032242.5             0.15
                           EXCELW31           246757.1     4032241.8            -4.67
                           EXCELE19           247436.5     4032218.4            -0.65
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN  ADJ_U*

                                           *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                              (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1

               NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.



                                 *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                           (METERS/SEC)

                                                1.54,   3.09,   5.14,   8.23,  10.80,
```

```
                                        *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   Lemoore_23110\Lemoore_2012-2016.SFC                                                  Met Version:  18081
   Profile file:   Lemoore_23110\Lemoore_2012-2016.PFL
   Surface format: FREE
   Profile format: FREE
   Surface station no.:    23110                  Upper air station no.:    23230
                Name: NAS_LEMOORE,_CA                              Name: OAKLAND/WSO_AP
                Year:   2012                                       Year:   2012

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 12 01 01   1 01  -13.3  0.152 -9.000 -9.000 -999.  142.     25.4  0.04   0.74   1.00    2.25  235.   10.0  272.5    2.0
 12 01 01   1 02  -24.5  0.235 -9.000 -9.000 -999.  273.     60.7  0.04   0.74   1.00    3.39  230.   10.0  272.5    2.0
 12 01 01   1 03   -5.0  0.093 -9.000 -9.000 -999.   86.     14.4  0.05   0.74   1.00    1.37  144.   10.0  273.1    2.0
 12 01 01   1 04   -2.9  0.073 -9.000 -9.000 -999.   47.     12.0  0.04   0.74   1.00    1.03  205.   10.0  272.0    2.0
 12 01 01   1 05 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.04   0.74   1.00    0.00    0.   10.0  272.5    2.0
 12 01 01   1 06   -7.8  0.114 -9.000 -9.000 -999.   93.     17.4  0.04   0.74   1.00    1.76   92.   10.0  270.9    2.0
 12 01 01   1 07   -8.4  0.120 -9.000 -9.000 -999.  100.     18.6  0.05   0.74   1.00    1.76  145.   10.0  269.9    2.0
 12 01 01   1 08  -14.4  0.160 -9.000 -9.000 -999.  154.     28.2  0.04   0.74   0.65    2.36  183.   10.0  270.4    2.0
 12 01 01   1 09    6.0  0.142  0.150  0.012   20.  129.    -43.2  0.04   0.74   0.36    1.76  207.   10.0  272.5    2.0
 12 01 01   1 10   47.0 -9.000 -9.000 -9.000   92. -999. -99999.0  0.04   0.74   0.26    0.00    0.   10.0  277.0    2.0
 12 01 01   1 11   77.2  0.177  0.792  0.011  233.  178.     -6.5  0.05   0.74   0.22    1.76  144.   10.0  281.4    2.0
 12 01 01   1 12   93.5  0.267  0.998  0.016  384.  331.    -18.4  0.06   0.74   0.21    2.86  166.   10.0  284.9    2.0
 12 01 01   1 13   95.1  0.187  1.066  0.020  461.  196.     -6.2  0.06   0.74   0.21    1.76  163.   10.0  287.5    2.0
 12 01 01   1 14   81.6  0.225  1.045  0.021  505.  257.    -12.7  0.04   0.74   0.22    2.57  115.   10.0  289.2    2.0
 12 01 01   1 15   53.7  0.217  0.924  0.021  531.  243.    -17.2  0.04   0.74   0.25    2.61   89.   10.0  289.9    2.0
 12 01 01   1 16   13.8  0.219  0.590  0.021  538.  245.    -68.3  0.04   0.74   0.34    2.89   76.   10.0  289.2    2.0
 12 01 01   1 17   -8.3  0.125 -9.000 -9.000 -999.  110.     21.6  0.04   0.74   0.60    1.94   77.   10.0  285.9    2.0
 12 01 01   1 18   -4.4  0.088 -9.000 -9.000 -999.   63.     13.8  0.04   0.74   1.00    1.33  202.   10.0  284.2    2.0
 12 01 01   1 19  -18.3  0.181 -9.000 -9.000 -999.  184.     35.9  0.04   0.74   1.00    2.64  193.   10.0  280.4    2.0
 12 01 01   1 20  -14.0  0.157 -9.000 -9.000 -999.  150.     27.2  0.04   0.74   1.00    2.32  203.   10.0  278.8    2.0
 12 01 01   1 21  -19.2  0.186 -9.000 -9.000 -999.  193.     38.2  0.04   0.74   1.00    2.72  215.   10.0  275.9    2.0
 12 01 01   1 22  -27.1  0.263 -9.000 -9.000 -999.  324.     76.2  0.04   0.74   1.00    3.78  226.   10.0  275.9    2.0
 12 01 01   1 23  -24.8  0.241 -9.000 -9.000 -999.  284.     63.7  0.04   0.74   1.00    3.47  221.   10.0  275.9    2.0
 12 01 01   1 24  -12.8  0.150 -9.000 -9.000 -999.  142.     24.7  0.04   0.74   1.00    2.22  203.   10.0  276.4    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01   10.0 1  235.    2.25   272.6   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of          368 Warning Message(s)
A Total of         2796 Informational Message(s)

A Total of        43848 Hours Were Processed

A Total of         1025 Calm Hours Identified

A Total of         1771 Missing Hours Identified (  4.04 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
CO W320      22       URBOPT: Input Parameter May Be Out-of-Range for Parameter       URB-POP
ME W186    3955       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used           0.50
ME W187    3955       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
OU W565    4036       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4037       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4038       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4039       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4040       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4041       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4042       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4043       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4044       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4045       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4046       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    4047       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE


OU W565    4393       PERPLT: Possible Conflict With Dynamically
OU W565    4394       PERPLT: Possible Conflict With Dynamically
OU W565    4395       PERPLT: Possible Conflict With Dynamically
OU W565    4396       PERPLT: Possible Conflict With Dynamically
OU W565    4397       PERPLT: Possible Conflict With Dynamically
OU W565    4398       PERPLT: Possible Conflict With Dynamically
OU W565    4399       PERPLT: Possible Conflict With Dynamically
MX W400   43849         MAIN: Output values exceed format limit;

   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

```
HARP Project Summary Report 2/28/2023 4:31:09 PM

***PROJECT INFORMATION***
HARP Version: 22118
Project Name: FOC2204-HARP
HARP Database: NA

***POLLUTANT HEALTH INFORMATION***
Health Database: C:\HARP2\Tables\HEALTH17320.mdb
Health Table Version: HEALTH22013
Official: True


PolID           PolAbbrev       InhCancer       OralCancer      AcuteREL        InhChronicREL   OralChronicREL  InhChronic8HRREL
________________________________________________________________________________________________________________________________
9901            DieselExhPM     1.1                                             5
88101           PM25
106990          1,3-Butadiene   0.6                             660             2                               9
71432           Benzene         0.1                             27              3                               3
100414          Ethyl Benzene   0.0087                                          2000
78933           MEK                                             13000
91203           Naphthalene     0.12                                            9
115071          Propylene                                                       3000
100425          Styrene                                         21000           900
108883          Toluene                                         5000            420                             830
1330207         Xylenes                                         22000           700
```

```
HARP2 - HRACalc (dated 22118) 2/28/2023 3:11:30 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
**********************************
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: All
Calculation Method: Derived

**********************************
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 70

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 0
16 to 70 Years Bin: 54

**********************************
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments.  The remaining
pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: True
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

**********************************
INHALATION

Daily breathing rate: LongTerm24HR

**Worker Adjustment Factors**
Worker adjustment factors enabled: NO

**Fraction at time at home**
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

**********************************
SOIL & DERMAL PATHWAY SETTINGS
```

```
Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Mixed

**********************************
HOMEGROWN CROP PATHWAY SETTINGS

Household type: HouseholdsthatGarden
Fraction leafy: 0.137
Fraction exposed: 0.137
Fraction protected: 0.137
Fraction root: 0.137

**********************************
TIER 2 SETTINGS
Tier2 not used.

**********************************

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\Users\RonaldB\Local
AERMOD\FOC2204-HARP\hra\70-Yr CancerRisk.csv
Cancer risk total by receptor saved to: C:\Users\RonaldB\Local AERMOD\FOC2204-
HARP\hra\70-Yr CancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\Users\RonaldB\Local
AERMOD\FOC2204-HARP\hra\70-Yr NCChronicRisk.csv
Chronic risk total by receptor saved to: C:\Users\RonaldB\Local AERMOD\FOC2204-
HARP\hra\70-Yr NCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\Users\RonaldB\Local
AERMOD\FOC2204-HARP\hra\70-Yr NCAcuteRisk.csv
Acute risk total by receptor saved to: C:\Users\RonaldB\Local AERMOD\FOC2204-
HARP\hra\70-Yr NCAcuteRiskSumByRec.csv
HRA ran successfully
```

```
HARP2 - HRACalc (dated 22118) 2/28/2023 3:13:12 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
**********************************
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCChronic8HR
Calculation Method: Derived

**********************************
EXPOSURE DURATION PARAMETERS FOR CANCER
**Exposure duration are only adjusted for cancer assessments**

**********************************
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments.  The remaining
pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

**********************************
INHALATION

Daily breathing rate: LongTerm24HR

**Worker Adjustment Factors**
Worker adjustment factors enabled: NO

**Fraction at time at home**
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for
cancer assessments.

**********************************
TIER 2 SETTINGS
Tier2 not used.

**********************************

Calculating chronic 8hr risk
Chronic 8-hr risk breakdown by pollutant and receptor saved to:
C:\Users\RonaldB\Local AERMOD\FOC2204-HARP\hra\8-Hr NCChronic8HrRisk.csv
Chronic 8-hr risk total by receptor saved to: C:\Users\RonaldB\Local AERMOD\FOC2204-
HARP\hra\8-Hr NCChronic8HrRiskSumByRec.csv
HRA ran successfully
```

```
HARP2 - HRACalc (dated 22118) 2/28/2023 3:14:05 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
**********************************
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: All
Calculation Method: Derived

**********************************
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 16
Total Exposure Duration: 25

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 25

**********************************
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments.  The remaining
pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

**********************************
INHALATION

Daily breathing rate: Moderate8HR

**Worker Adjustment Factors**
Worker adjustment factors enabled: NO

**Fraction at time at home**
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

**********************************
TIER 2 SETTINGS
Tier2 not used.
```

```
**********************************

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\Users\RonaldB\Local
AERMOD\FOC2204-HARP\hra\25-Yr CancerRisk.csv
Cancer risk total by receptor saved to: C:\Users\RonaldB\Local AERMOD\FOC2204-
HARP\hra\25-Yr CancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\Users\RonaldB\Local
AERMOD\FOC2204-HARP\hra\25-Yr NCChronicRisk.csv
Chronic risk total by receptor saved to: C:\Users\RonaldB\Local AERMOD\FOC2204-
HARP\hra\25-Yr NCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\Users\RonaldB\Local
AERMOD\FOC2204-HARP\hra\25-Yr NCAcuteRisk.csv
Acute risk total by receptor saved to: C:\Users\RonaldB\Local AERMOD\FOC2204-
HARP\hra\25-Yr NCAcuteRiskSumByRec.csv
HRA ran successfully
```

Appendix J

Technical Report for General Waste Discharge Requirements for Composting Operations

THOMAS BROS. COMPOSTING

TECHNICAL REPORT
GENERAL WASTE DISCHARGE REQUIREMENTS FOR COMPOSTING OPERATIONS

Prepared for:

THOMAS BROS. COMPOSTING
20111 EXCELSIOR AVENUE
RIVERDALE, CA 93656

Completed by:

4CREEKS

324 S. SANTA FE ST., SUITE A
VISALIA, CA 93292
(559) 802-3052

FEBURARY 1, 2023

COMPOSTING OPERATION WASTE DISCHARGE REQUIREMENTS TECHNICAL REPORT

The State Water Resources Control Board and Regional Water Quality Control Boards are required to protect the quality and beneficial uses of the waters of the state. The California Water Code requires that anyone who discharges waste that could affect waters of the state must submit a report of waste discharge. Order WQ 2015-0121-DWQ.

CERTIFICATION

THOMAS BROS. COMPOSTING

RIVERDALE , CA

CERTIFICATION

I certify under penalty of law that this document, including all attachments and supplemental information, were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

PERSON IN RESPONSIBLE CHARGE:

____
SIGNATURE

____
PRINT

____
DATE

ENGINEER:

____
KYLE PARREIRA, PE #89070

____
DATE

Table of Contents

List of Tables

ATTACHMENTS

ATTACHMENT A – Detailed Site Plan

APPENDICES

APPENDIX A – Geologic and Hydrogeologic Characterization Report

APPENDIX B – Water and Wastewater Management Plan

APPENDIX C – Pond Design Work Plan

Introduction

This Technical Report has been prepared for the Thomas Bros. Composting Facility (Facility). The following studies, plans and programs were prepared per the requirements outlined within Order WQ 2015-0121-DWQ, General Waste Discharge Requirements for Composting Operations set by the State Water Resources Control Board (SWRCB).

The Facility serves many local agriculturalists of the unincorporated area of Kings County. Thomas Bros. Composting hauls raw animal manure from nearby dairy operations to the Facility for composting activities. Once all composting activities have been completed, Thomas Bros. Composting sells the composted material to local farming operations for soil amendment.

The Facility operates on approximately 63.2 acres of land located within the unincorporated area of Kings County at the intersection of Excelsior Avenue and 20th Avenue, approximately 6 miles north of the City of Lemoore city limit. The Facility resides over a single Kings County parcel. Thomas Bros. Composting is located on APN 004-062-003, west of 20th Avenue.

I. General Information

A. Property Owner's Contact Information

Owner:	Frank Anthony Thomas
Address:	19271 Excelsior Avenue Riverdale, CA 93656
Phone:	(559) 922-0279 (559) 906-1404

B. Operator's Contact Information

Facility Name:	Thomas Bros. Composting
Operator:	Frank Anthony Thomas
Address:	19271 Excelsior Avenue Riverdale, CA 93656
Phone:	(559) 922-0279 (559) 906-1404
County:	Kings County

C. Legal Business Name & Location

Legal Business Name: Thomas Dairy

Address: 20111 Excelsior Avenue
Riverdale, CA 93656

Nearest Town: Lemoore

Cross Streets: West of Excelsior and 20th Avenue

Latitude / Longitude: 36°24'7.02"N/ 119°49'4.38"W

D. Facility Description

Accessor's Parcel Number(s): 004-062-003

Township, Range, Section: Township 18 South, Range 20 East, Section 0

Baseline Meridian: Mount Diablo Base and Meridian

Total Operational Footprint: Existing: 0 acres
Future: 9 acres

Zoning: AG20

Permitted Operational Capacity: 99,999 Wet-Tons/Year (maximum)

Land use within 1 mile: South: Agricultural Farmland
West: Agricultural Farmland
North: Agricultural Farmland
East: Agricultural Farmland

Water Supply Description: One (1) off-site water well

FEMA Flood Designation: Zone X

E. Facility Site Maps

1. Detailed Site Map (See Attachment A)

The Detailed Site Map identifies the location and size of working surfaces such as: storage of incoming feedstock (receiving area), active and curing composting, and the storage of final product. The site map also identifies the drainage pattern of the facility, berms and ditches used to convey wastewater, and the location and size the facilities drainage basin.

F. Operation Background Information

Feedstock: The Facility receives up to 153 cubic yards (or 191 wet-tons) of compostable material per day consisting of animal manure from nearby dairy facilities. The Facility currently has the capacity to store up to 35,000 tons at any given time. The Facility receives up to a maximum of 56,000 cubic yards (or 70,000 wet-tons) per year.

Additives: No additives currently used onsite. N/A.

Material Preparation: As necessary, feedstock is processed with a screen to achieve the characteristics required to promote composting.

Method of Composting: Prepared feedstock is composted in windrows for 90 to 120 days. Water is added as needed to maintain active composting for the desired period.

Curing: Composting is cured for an additional period until it is stabilized.

Process Flow Diagram: A Process Flow Diagram is attached in **Appendix B**.

Residual Material Removal: Residual material are recovered and stored in disposal containers onsite. When filled, the material stored in the containers is removed from the site by Waste Management.

II. Site Condition Information

A. Climatology

1. Annual Precipitation

The 25 year, 24-hour storm event was assumed to happen one time during the detention year. The rainfall amount was taken from the Isopluvial Map in NOAA Atlas 2, 1973 (Appendix G of Appendix B – Water and Wastewater Management Plan). A summary of the rainfall volume at the facility is shown in Table 1.

Table 1: Facility Wastewater Accumulated from 25 Year, 24 Hour Storm Event

Area Description	*Rainfall (inches)*	*Run-off Coefficient*	*Weighted Run-off Area (ft^2)*	*Total Volume Accumulated (gallons)*
Wastewater Detention Pond Area	2.00	1.00	21,903	**27,308**
Total Impervious Part of Tributary Area	2.00	0.88	4,193	**5,228**
Total Pervious Part of Tributary Area	2.00	0.40	253,186	**315,660**
Total Composting Area			**279,282**	**348,196**

2. Mean Evaporation

The mean evaporation rate was determined by taking the average monthly evaporation rates from Fresno and Bakersfield based on CDWR Evaporation Pan Data (**Appendix E of Appendix B – Water and Wastewater Management Plan**).

The period of record for the Fresno and Bakersfield were 1968-2010 and 1958-2010, respectively (**Appendix E of Appendix B – Water and Wastewater Management Plan**). The mean evaporation rate for the Facility was determined to be **1.85 inches/day** and is shown in **Table 2**.

Table 2: Mean Evaporation Rate

Month	**Bakersfield Evaporation Rate** (inches)	**Fresno Evaporation Rate** (inches)	**Mean Evaporation Rate** (inches)
January	1.44	1.26	1.35
February	2.25	2.08	2.17
March	4.13	3.94	4.04
April	5.95	6.03	5.99
May	8.35	8.75	8.55
June	9.58	10.43	10.01
July	9.94	11.02	10.48
August	8.85	9.67	9.26
September	6.62	6.99	6.81
October	4.47	4.42	4.45
November	2.24	2.25	2.25
December	1.35	1.21	1.28
Mean (inches/year)	**5.43**	**5.67**	**5.55**
Mean (inches/day)	**0.18**	**0.19**	**0.185**

B. Geology

The geologic analysis of the Facility / project site was completed by BSK Associates. See **Appendix A** for this analysis.

C. Hydrogeology

The geologic analysis of the Facility / project site was completed by BSK Associates. See **Appendix A** for this analysis.

D. Nearest Water Supply Wells

There are currently no existing agricultural wells on site. The nearest domestic well associated with the property is west of the existing milk barn.

E. Flood Protection Analysis

The Federal Emergency Management Agency (FEMA) provides a Flood Insurance Rate Map which identifies different flood zone areas. The Flood Insurance Rate Map, Panel 40 of Community Panel Number 06031C0040D, September 16, 2009, indicates that the facility operational area is in a Zone X designation (**Attachment G of Appendix B – Water and Wastewater Management Plan**).

Zone X (Other Flood Areas) represents areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% chance flood. No Base Flood Elevations or depths are shown within this zone. Insurance purchase is not required in these zones.

Because the facility is not within the 100-year peak storm event designation (Zone A), flood protection is not required for the facility operational area.

F. Nearby Surface Water Bodies

A canal runs through the south side of the facility operational area. The ground surface at the site is graded such that surface water and overland flow shall be diverted away from the canal and collected in the on-site wastewater detention pond. Wastewater applied to compost will be controlled and applied to windrows contained within access roads that act as berms. Monitoring of water application to windrows is conducted to ensure applied water does not breach berms or erode surface soil and drain into the canal or creek.

III. Design Information

A. Site Design Information

Receiving, processing, composting, and curing working surfaces shall consist of compacted soil surrounded by elevated access road. All working surfaces are to be graded so that run off from a 25-year, 24-hour storm drains to the existing on-site drainage basin.

B. Water and Wastewater Management Plan

A water and wastewater management plan for the facility has been completed and included in appendix B of the report. The facility currently meets wastewater requirements set by the State Water Resources Control Board General Order WQ 2015-0121-DWQ for composting operations

Table 3: Existing vs. Required Wastewater Detention Pond Storage Capacity

Volume Description	*Total Volume in 120 Day Period (gal.)*
Wastewater from Operations	929,634
Wastewater Accumulated From 25 Year, 24 Hour Event	1,036,500
Less: Evaporation from Wastewater Detention Ponds	(96,123)
Net Required Wastewater Detention Pond Storage Volume	**2,218,207**
Less: Net Existing Wastewater Detention Ponds Storage Volume	2,279,424
Excess Wastewater Detention Pond Capacity	**61,217**

C. Pond Design Work Plan

A pond design work plan has been completed and included in Appendix C of this report. The proposed pond will be constructed within the existing facility footprint and will be constructed with a scrim-Reinforced, flexible Geomembrane consisting of woven high-density polyethylene (HDPE) core, low density polyethylene (LDPE) extruded coatings, and a proprietary laminated surface film made of polyethylene blend for additional protection and optimal welding. A lysimeter pan will be constructed and will be used for any potential leakage.

The proposed pond includes pipelines to manage flows between the proposed wastewater detention pond and facility drainage. The proposed dimensions of the pond are identified in Appendices B and C and Attachment A.

IV. Operating & Monitoring Information

A. Annual Survey

Annually, prior to the rainy season (no later than August 31st) inspections must be performed to ensure the site is in compliance with General Order WQ 2015-0121-DWQ to minimize the erosion and ponding, the sites containment structures are prepared for the pending wet season. The following observations shall be included in the Annual Monitoring Report:

- Date and time of inspections, along with the name of the inspector;
- Evidence of areas of deficiency such as cracking or subsidence in the working surfaces;
- Evidence of ponding over the working surfaces and within ditches (show affected area on a map);
- Effectiveness of erosion control BMPs;
- Maintenance activities associated with, but not limited to, the working surfaces, berms, ditches, and erosion control BMPs;
- Evidence of any water or wastewater leaving or entering the facility, estimated size of affected area, and estimated flow rate (show affected area on a map);
- Integrity of drainage systems during the wet season; and photographs of observed and corrected deficiencies

B. Inspection & Maintenance Program

To ensure the composting facility is in compliance with General Order WQ 2015-0121-DWQ, Monitoring and Reporting Program, inspections for the following must be conducted and observations must be included in the Annual Monitoring and Maintenance Report:

- Operational Areas – Perform quarterly working surfaces, berms, ditches, facility perimeter, erosion control best management practices, and any other operation surfaces include in the NOI and/or technical report.
- Wastewater Management System- Perform Quarterly inspections of the wastewater management system.
- Annual Survey – Refer to section IV item A above for annual survey requirements.
- Major Storm Events – Dischargers shall inspect all precipitation, diversion, and drainage facilities for damage within 7 days following major storm events. Necessary repairs shall be completed within 30 days of the inspection. The discharger shall report any damage and subsequent repairs including photographs of the problem and repairs in the Annual Monitoring Maintenance Report.

C. Wet Weather Operations

Normal rainfall at the facility site is minimal. As a result, for most of the year water must be added to the windrows to maintain the composting process. During the event of excess rainfall for extended periods, incoming food waste will be blended with dry bulking agents to minimize the production of leachate that could potentially alter the integrity of containment structures.

Containments structures will require additional monitoring that will be included in The Major Storm Events inspection to evaluate the integrity of structures and ensure they are capable of withstanding future wet weather conditions.

V. Site Closure Information

A site closure plan will be prepared and submitted to the Board 90 days prior to implementing closure activities. Closure activities will include removal of composting material from the site. The onsite drainage pond will be decommissioned by completely draining and removing a majority of the solids. Some residual solids from the receiving and storing areas may be left in place and a majority of the site native surface soils should be exposed. De-minimis residual composting material may be left. The volume of de-minimis residual soils left in place shall be evaluated under the judgement of a qualified California Registered Professional as defined in the California Business and Professions code §§ 6700 – 6799 and §§ 7800-7887.

VI. Compliance Schedule

In order to ensure compliance with the General Order WQ 2015-0121-DWQ, the facility operator is currently in the process of evaluating requirements for additional on-site storm water runoff storage, as initial studies have determined that current storage capabilities are inadequate based on anticipated rainfall. To determine the required pond sizes and requirements, all pending Technical Report documentation must be completed, including but not limited to the hydraulic conductivity testing, the Water and Wastewater Management Plans, and the Design Information. Once existing site studies have been completed, the facility can be evaluated for required site modifications. These modifications may include site grading, concrete placement, flood protection berms, Tier 1 or Tier 2 pond design and construction, groundwater monitoring as applicable, potential water recycling, and any general site amendments that may be implemented to assist in daily operations. The aforementioned modifications can take significant time and effort to design, permit, and construct, which may lead to economic infeasibility if required to complete simultaneously. A complete compliance schedule is pending and will be submitted as an addendum to the Technical Report.

VII. References

California Department of Water Resources (DWR), Groundwater Information Center Interactive Map Application. https://gis.water.ca.gov/app/gicima/

California Department of Water Resources (DWR), Online Data for Evaporation http://www.sjd.water.ca.gov/landwateruse/evaporation/

California Department of Water Resources (DWR), Online Data from Sampling Stations http://cdec.water.ca.gov/selectQuery.html

California Department of Water Resources (DWR), Water Data Library, Well Data Information http://www.water.ca.gov/waterdatalibrary/

California Irrigation Management Information System (CIMIS), Online Data from Sampling Stations http://wwwcimis.water.ca.gov/cimis/data.jsp

Geology, Hydrology, and Quality of Water in the Hanford-Visalia Area, United States Department of the Interior Geology Survey. (Croft, 1968)

Kaweah Delta Water Conservation District, Groundwater Management Plan (KDWCD, 2006)

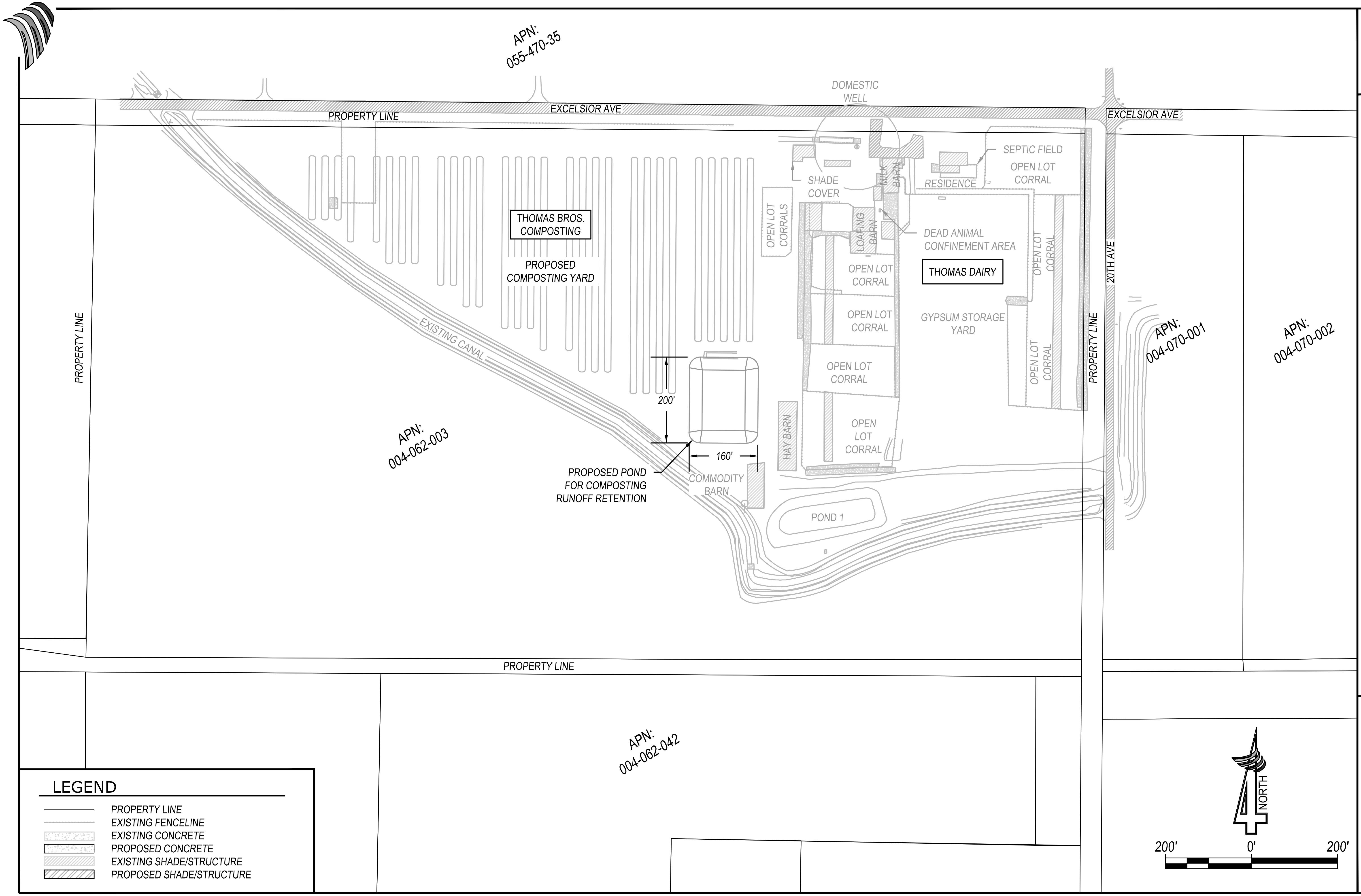
Natural Resources Conservation Service (NCRS), Web Soil Survey https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

NOAA Online Weather Data, NOAA Atlas 14, 2014 for 25 yr, 24 hr event http://www.wrcc.dri.edu/pcpnfreq/sca25y24.gif

State Water Resource Control Board (SWRCB), GeoTracker GAMA Online Database http://geotracker.waterboards.ca.gov/gama/gamamap/public/default.asp?CMD=runreport&myaddress=7715+avenue+296

Title 27 of the California Code of Regulations (CCR), Division 2, Subdivision 1, Chapter 7, Subchapter 2, Article 1
http://www.ciwmb.ca.gov/Regulations/Title27/ch7s2345.htm#Article1

Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition http://www.swrcb.ca.gov/centralvalley/water_issues/basin_plans/tlbp.pdf



FACILITY SITE PLAN
THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

JOB NO. 22419
SITE PLAN
1/11/2023
SCALE: 1" = 200'

324 S. Santa Fe, Ste. A
Visalia, CA 93292
(559) 802-3052
www.4-creeks.com

4CREEKS

APPENDIX A

GEOLOGIC & HYDROGEOLOGIC CHARACTERIZATION REPORT

GEOTECHNICAL ENGINEERING INVESTIGATION REPORT
THOMAS COMPOSTING FACILITY
20111 EXCELSIOR AVENUE
RIVERDALE, CALIFORNIA 93656

BSK PROJECT G00000713

PREPARED FOR:

4-CREEKS, INC.
324 S. SANTA FE STREET, SUITE A
VISALIA, CALIFORNIA 93292

JANUARY 9, 2023

GEOTECHNICAL ENGINEERING INVESTIGATION REPORT
THOMAS COMPOSTING FACILITY
20111 EXCELSIOR AVENUE
RIVERDALE, CALIFORNIA 93656

Prepared for:

4-Creeks, Inc.
324 S. Santa Fe Street, Suite A
Visalia, California 93292

BSK Project: G00000713

January 9, 2023

Prepared by:

Tolleman Gorham, EIT
Staff Professional II

Neva M. Popenoe, PE, GE
Geotechnical Group Manager

NEVA M. POPENOE
GE 3024
EXP. 6-30-2023

BSK Associates
550 West Locust Avenue
Fresno, California 93650
(559) 497-2880
www.bskassociates.com

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1 INTRODUCTION

1.1 General

This report presents the results of our geotechnical engineering investigation for the proposed composting facility, basins, truck wash station, and other structures to be constructed at the Thomas Composting facility in Riverdale, California as shown on the Site Vicinity Map, Figure 1. The geotechnical engineering investigation was conducted in general accordance with the scope of services outlined in BSK Proposal G00000713, dated November 11, 2022. The proposed improvements and exploratory borings and tests are shown on Figure 2, Boring Location Map.

In the event that significant changes occur in the design or location of the proposed improvements, the conclusions and recommendations presented in this report will not be considered valid unless the changes are reviewed by BSK, and the conclusions and recommendations are modified or verified in writing as necessary.

1.2 Project Description

BSK understands that the proposed composting working surfaces are anticipated to be 1 to 2 feet thick. In addition, existing ponds are anticipated to be used as wastewater detention ponds. Two new ponds are planned. The new ponds are planned to be 160 feet by 200 feet and 80 feet by 120 feet, respectively. It is anticipated that the inboard and outboard slopes of the proposed detention ponds will be no steeper than 2H:1V (Horizontal:Vertical), and the anticipated depth of the ponds is anticipated to be 15 feet below ground surface (bgs) and 10 feet below ground surface (bgs). New structures and equipment will be supported on concrete shallow footings and/or concrete mats. Other improvements are anticipated to include underground utilities. Cut and fill elevations are anticipated to be on the order of 2 to 15 feet.

1.3 Purpose and Scope of Services

The purpose of the geotechnical investigation is to assess soil conditions at the project site and provide geotechnical engineering recommendations for use by the project designers. The scope of the investigation included a field exploration, laboratory testing, engineering analysis, and preparation of this report.

2 FIELD INVESTIGATION AND LABORATORY TESTING

2.1 General

The field exploration, conducted on November 21, 2022, consisted of a site reconnaissance, drilling twelve (12) exploratory test borings. The borings were drilled to depths of approximately 1.5 feet to 41.5 feet below ground surface (bgs) within the proposed improvement locations. The test borings were drilled with a truck-mounted drill rig, equipped with 8-inch augers. The approximate boring locations are presented on Figure 2. Details of the field exploration and the boring logs are provided in Appendix A.

One (1) percolation test and two (2) double ring hydrometer tests were conducted in the field. The test locations can be found on Figure 2, Boring Location Map. The double ring tests were taken at the bottom of the existing basins which were approximately 15 feet deep. The last three rates from the slowest percolation test are averaged to calculate the percolation rates. The results of the tests are presented in Table 1 below and in Appendix D.

Table 1: Summary of Percolation and Double Ring Test Results

Test Location	Approximate Depth at Bottom of Hole (ft)	Soil Description at Bottom of Hole	Percolation Rate (minutes/inch)
PT-1 (B-3)	19	Poorly Graded Sand (SP)	5.8
DR-1	N/A	Silty Sand (SM)	145
DR-2	N/A	Silty Sand (SM)	278

BSK recommends a factor of safety of at least 3 when applying percolation rates to the design of the system.

2.2 Laboratory Testing

Laboratory testing of selected soil samples were performed to evaluate certain physical, chemical, and engineering characteristics and properties. The testing program included: in-situ moisture and density, expansion index, gradation, direct shear, hydraulic conductivity, and corrosion potential. The in-situ moisture and dry density test results are presented on the boring logs in Appendix A. Descriptions of the laboratory test methods and test results are provided in Appendix B.

3 SITE CONDITIONS

3.1 Site Description

The proposed improvements will be situated within the Thomas Composting facility. The proposed improvements are located within a predominantly agricultural area. The area of improvements was bound by 20th Avenue to the east with agricultural fields beyond. To the south and west was a canal with agricultural fields beyond. To the north was Excelsior Avenue with agricultural fields and facilities beyond. The site contained dairy improvements, including corrals, barns, and residences.

3.2 Subsurface Conditions

The near surface soil consisted of sandy clay with various sand content underlain by layers of sandy silt, silty sand, and poorly graded sand to the maximum depth explored (41.5 feet bgs). The boring logs in Appendix A provide a more detailed description of the soils encountered in each boring, including the applicable Unified Soil Classification System symbols. The approximate locations of the soil borings are shown on the Boring Location Map (Figure 2).

3.3 Groundwater

Groundwater was encountered at the approximate depth of 20 feet in test boring B-1, B-2, B-3, and B-4 at the completion of our field exploration, November 21, 2022. The California Department of Water Resources indicates the depth to regional groundwater at the project site is greater than 50 feet bgs. However, fluctuations in the groundwater level or the presence of perched groundwater may occur due to variations in rainfall, irrigation, seasonal factors, pumping from wells and other factors that were not evident at the time of our investigation.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 General

Based upon the data collected during this investigation and from a geotechnical engineering standpoint, it is our opinion that there are no soil conditions that would preclude the construction of the proposed improvements, provided the recommendations presented in this report are incorporated into the project design and construction. The planned improvements may be supported on shallow isolated/continuous reinforced concrete spread footings, thickened mat foundations, and/or pole footings provided the structural engineer evaluate if the structure can tolerate the estimated settlement shown in Section 4.6.

4.2 Soil Corrosivity

One (1) surface soil sample obtained from the site was tested to provide a preliminary screening of the potential for concrete deterioration or steel corrosion due to attack by soil-borne soluble salts. The test results are presented in Appendix B. The soil was evaluated for minimum resistivity and pH (CT 643), soluble sulfate (CT 417), and chlorides (CT 422).

The water-soluble sulfate and chloride content severity class is considered negligible. (Exposure Category S0 and C0 per Table 19.3.1.1 of ACI 318-14). The site soils minimum resistivity is low and is considered potentially moderately corrosive to buried metal. Buried reinforcing steel protection be provided with the minimum concrete cover required by the American Concrete Institute (ACI) Building Code for Structural Concrete, ACI 318, Chapter 7.7. Buried metal conduits, ferrous metal pipes, and exposed steel must have protective coatings in accordance with the manufacturer's specifications.

Based on the anticipated groundwater, and exposure category, there are no restrictions for cement type and maximum water-cement ratio. If detailed recommendations for corrosion protection are desired, a corrosion specialist should be consulted.

4.3 Seismic Design Criteria

There are no known active fault zones within the vicinity of the project site. In accordance with Section 1613.2.2 of the 2019 and 2022 California Building Code (CBC) and Table 20.3-1 of ASCE 7-16, the site can be classified as Site Class D (stiff soil profile).

Use of the 2019 and 2022 California Building Code (CBC) seismic design criteria is considered appropriate and the following parameters are considered applicable for the structural design of foundations.

Table 2: Seismic Design Parameters

Seismic Design Parameter	2019 or 2022 CBC Value		Reference
MCE Mapped Spectral Acceleration (g)	$S_S = 0.828$	$S_1 = 0.292$	USGS Mapped Value
Amplification Factors (Site Class D)	$F_a = 1.169$	F_V = null[1](2.016)[2]	ASCE Table 11.4
Site Adjusted MCE Spectral Acceleration (g)	$S_{MS} = 0.968$	S_{M1} = null[1](0.589)[2]	ASCE Equations 11.4.1-2
Design Spectral Acceleration (g)	$S_{DS} = 0.645$	S_{D1} = null[1] (0.392)[2]	ASCE Equations 11.4.1-4
Geometric Mean PGA (g)	$PGA_M = 0.444$		Section 11.8.3, ASCE 7-16
Site Short Period – T_S (seconds)	$T_S = 0.608$		$T_S = S_{D1}/ S_{DS}$
Site Long Period – T_L (seconds)	$T_L = 12$		USGS Mapped Value

Notes:

[1] Requires site-specific ground motion procedure or exception as per ASCE 7-16 Section 11.4.8.

[2] Values from ASCE 7-16 supplement shall only be used to calculate $T_{S.}$ Values provided based on use of exception, as provided in Section 11.4.8.2 to Site-Specific Ground Motion Procedures and assumes the value of the seismic response coefficient C_s is determined by Eq. 12.8-2 for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. 12.8-3 for $T_L \geq T > 1.5T_s$ or Eq. 12.8-4 for $T > T_L$.

As shown above, the short period design spectral response acceleration coefficient, S_{DS}, is greater than 0.5, therefore the Site lies in Seismic Design Category D as specified in Section 1613.2.5 of the 2019 CBC. The long period design spectral response acceleration coefficient, S_{D1}, is greater than 0.2, therefore the Site lies in Seismic Design Category D as specified in Section 1613.2.5 of the 2019 and 2022 CBC. In accordance with the 2019 and 2022 CBC, each structure shall be assigned to the more severe seismic design category in accordance with Table 1613.2.5(1) or 1613.2.5(2), irrespective of the fundamental period of vibration of the structure.

4.4 Slope Stability Analysis

The maximum depth and gradient of the inboard slopes were assumed to be 15 feet and 2:1 or 2.5:1 (H:V), respectively. The stability of the cut slopes was analyzed for the static and pseudo-static condition using Janbu's and Bishop's Simplified Method of Slices and modeled in the computer program, Slide v7.0. The slope model was analyzed for stability using circular slip surfaces originating and terminating at critical points along the cross sections analyzed. The inputs required for the site include slope geometry, subsurface profile data, groundwater conditions, horizontal ground acceleration, as well as constraints on the upper and lower limits of the search region for the critical slip circle, numbers and locations of initiation and termination points of trial surfaces, and number of trial surfaces for each initiation point.

The values used in our analysis are summarized in the following table:

Table 3: Slope Stability Soil Parameters

Material	Depth (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degrees)
Silty Sand (SM)	0 – 2	110	0	42
Poorly Graded Sand with Silt (SP-SM)	2 – 6	110	50	35
Poorly Graded Sand (SP)	6 – 10	110	0	42
Clayey Sand (SC)	10 - 20	110	200	20

The horizontal ground motion site coefficient of 0.148g (1/3 of PGA_M) was used in the slope stability analysis. Vertical ground motions and groundwater conditions were not considered in the analysis. For each cross section, 4,851 randomly generated slip circles were analyzed for the critical factor of safety.

A summary of the critical factors of safety is provided in the following table:

Table 4: Critical Factors of Safety
Maximum Slope Height – 15'

Maximum Slope (H:V)	STATIC	PSEUDO-STATIC
2:1	1.8	1.3
2.5:1	2.2	1.5

The 2H:1V and 2.5H:1V slopes may be utilized for slopes at 15 feet deep. Based upon the data collected during this investigation and from a geotechnical engineering standpoint, it is our opinion that there are no soil conditions that would preclude the construction of the proposed lagoon provided that the recommendations presented in the references report are incorporated into the project design and construction. The proposed lagoon may be design/constructed with a maximum depth of 15 feet below ground surface with inboard slopes of 2H:1V or 2.5H:1V. It is understood clayey soils will be stockpiled and used as a soil cap where unstable soil is encountered.

4.5 Clay Liner Recommendations

Relatively undisturbed samples were taken from the upper 1.5 feet of the composting area. Material in the upper 1.5 feet in the composting area was found to be predominately silty sand. Samples were tested for hydraulic conductivity, a summary of results are presented in Table 5, and detailed results are provided in Appendix B.

Table 5: Hydraulic Conductivity Test Results

Test Location	Soil Type	Clay Added (Percent)	Hydraulic Conductivity (cm/sec)
B-5 @ 1.5’	Silty Sand (SM)	N/A	$8.7x10^{-5}$
B-6 @ 1.5’	Silty Sand (SM)	N/A	$6.0x10^{-4}$
B-9 @ 1.5’	Silty Sand (SM)	N/A	$6.5x10^{-7}$
B-11/B-12 @ 1.5’	Silty Sand (SM)	3.0	$4.2x10^{-7}$
B-11/B-12 @ 1.5’	Silty Sand (SM)	5.0	$3.3x10^{-7}$
B-11/B-12 @ 1.5’	Silty Sand (SM)	7.0	$1.8x10^{-7}$

Based on laboratory testing, 3 percent clay additive would result in hydraulic conductivities less than $1x10^{-5}$ centimeters per second. Results of the preliminary mix design are provided in Appendix B. BSK recommends using soil-clay mix with a clay content of 3 percent across the compost working surface.

4.6 Basin Recommendations

The double ring tests indicated a slow percolation rate at the bottom of the existing basins. BSK recommends that the basin be cleaned out or deepened.

4.7 Site Preparation and Earthwork Construction

The following procedures must be implemented during site preparation for the proposed improvements. It should be noted that references to maximum dry density, optimum moisture content, and relative compaction are based on ASTM D1557 (latest test revision) laboratory test procedures.

1. Prior to any site grading, all miscellaneous surface obstructions must be removed from the improvement area. Near surface soils containing vegetation, roots, organics, compost, or other objectionable material must be stripped to a depth of at least 3-inches to expose a clean soil surface. Surface strippings and compost must not be incorporated into engineered fill unless the organic content is less than 3 percent by weight (ASTM D2974).
2. Existing utilities or irrigation pipes must be removed to a point at least 5-feet horizontally outside the proposed improvement area. Resultant cavities must be backfilled with engineered fill.

Abandoned pipelines to remain that are less than 2 inches in diameter must be capped at the cutoff point, while pipelines greater than 2 inches in diameter must be filled with a 1-sack sand-cement slurry.

3. Soil disturbed as a result of undocumented fill, debris, and abandoned underground structures must be excavated to expose undisturbed native soil.
4. Following the required stripping, and/or removal of underground structures, the exposed soil surface in proposed at-grade improvement areas including foundations or lightly loaded concrete structures must be over-excavated uniformly to a depth of 24 inches below existing site grade or 12 inches below the bottom of the proposed foundation, whichever is deeper. The over-excavation must extend at least 5 feet laterally beyond the outside edge of the proposed foundation or areas to receive fill, whichever distance is greater. The exposed subgrade must be proof-rolled under the observation of a BSK field representative to detect soft or pliant areas. Soft or pliant areas must be over-excavated to firm native soil. The exposed surface must be scarified at minimum of 8 inches, uniformly moisture conditioned to 2 percent above optimum moisture, and compacted to 90 percent relative compaction. Scarification and recompaction at the wastewater storage lagoon excavation is not necessary, however, the exposed subgrade must not be disturbed during excavation.
5. For the compost liners, following the required stripping, and/or removal of underground structures, the exposed soil surface must be thoroughly mixed to incorporate 3 percent clay (by dry weight) to a minimum of 12 inches below surface or over-excavated uniformly to a depth of 12 inches below existing site grade. The mixing or over-excavation must extend at least 5 feet laterally beyond the outside edge of the proposed compost areas. The exposed subgrade must be proof-rolled under the observation of a BSK field representative to detect soft or pliant areas. Soft or pliant areas must be over-excavated to firm native soil. The exposed surface must be scarified at minimum of 8 inches, uniformly moisture conditioned to at or above optimum moisture, and compacted to 92 percent relative compaction. On-site material may be used as engineered compost liner fill, if sufficiently blended with 3 percent clay (by dry weight), uniformly moisture conditioned to 2 percent above moisture content, and compacted to 92 percent relative compaction.
6. Engineered fill in areas of at-grade structures must consist of non-expansive soil (EI < 20), moisture conditioned to at or above optimum moisture, and compacted to 90 percent relative compaction. Excavated soils, free of deleterious substances (organic matter, demolition debris, tree roots, etc.), meeting requirements for engineering fill below, and with less than 3 percent organic content by weight, may be reused as engineered fill for the backfill.
7. Engineered fill must be placed in uniform layers not exceeding 8-inches in loose thickness, moisture-conditioned and compacted as recommended above. Acceptance of engineered fill placement must be based on both moisture content at time of compaction and relative compaction.

8. Imported fill materials must be free of deleterious substances and have less than 3 percent organic content by weight. The project specifications must require the contractor to contact BSK for review of the proposed import fill materials for conformance with these recommendations at least two weeks prior to importing to the site, whether from on-site or off-site borrow areas. Imported fill soils must be non-hazardous and be derived from a single, consistent soil type source conforming to the following criteria:

Maximum Particle Size:	3-inches
Percent Passing #4 Sieve:	65 – 100
Percent Passing #200 Sieve:	20 – 45
Plasticity Index:	less than 12
Expansion Index:	< 20
Low Corrosion Potential:	
Soluble Sulfates:	< 1,500 mg/kg
Soluble Chlorides:	< 300 mg/kg
Soil Resistivity:	> 2,000 ohm-cm

Grading operations must be scheduled as to avoid working during periods of inclement weather. Should these operations be performed during or shortly following periods of inclement weather, unstable soil conditions may result in the soils exhibiting a "pumping" condition. This condition is caused by excess moisture, in combination with compaction, resulting in saturation and near zero air voids in the soils. If this condition occurs, the affected soils must be over-excavated to the depth at which stable soils are encountered and replaced with suitable soils compacted as engineered fill. Alternatively, the Contractor may proceed with grading operations after utilizing a method to stabilize the soil subgrade, which must be subject to review by BSK prior to implementation.

4.8 Shallow, Mat, and Pole-Type Foundations

Provided the recommendations contained in this report are implemented during design and construction, it is our opinion that the proposed structures can be supported on shallow, mat, or pole-type foundations. A structural engineer must evaluate reinforcement and embedment depth based on the requirements for the structural loadings.

4.8.1 Shallow Foundations

The proposed at-grade structures may be supported on reinforced concrete spread footings bearing on engineered fill. Footing design must follow the criteria listed below:

The allowable bearing pressure applies to the dead load plus live load (DL + LL) condition. Footing design must follow the criteria listed below:

Table 6: Allowable Bearing Pressure				
Footing Embedment(1) (inches)	Minimum Footing Width (inches)		Allowable Bearing Capacity(2) (psf)	
	Continuous Footing	Isolated Spread Footing	Continuous Footing	Isolated Spread Footing
12	12	24	4,000	4,000

Note: (1) – Measure with respect to the lowest adjacent subgrade surface.
(2) – The bearing pressure can be increased one-third for transient loading such as wind or seismic.

The estimated total and differential settlement for the recommended spread footings is shown below:

Table 7: Anticipated Post-Construction Settlement			
Footing Type	Post-Construction Settlement (inches)	Differential Settlement (inches)	Angular Distortion
Continuous	1.0	--	0.005
Isolated	1.0	0.5	--

Isolated footing differential settlement is based on adjacent similarly loaded footings spaced at 30-feet. The settlement values given above are applicable to the maximum loading conditions. For loads, other than the design maximum loads, the settlements can be decreased proportionally.

4.8.2 Mat Foundations

The proposed trucking station and scale may be supported on a thickened mat/slab foundation. The foundation may be designed for a maximum allowable bearing pressure of 2,000 psf (DL + LL). Estimated total settlement for mat/slabs is approximately 1.0 inch. Differential settlement across mat/slab foundations is anticipated to be on the order of about half of the total settlement over the length of the mat foundation. The weight of the concrete should be included in evaluating the contact pressure at the base of mat/slab foundations. The weight of embedded concrete can be reduced by the unit weight of soil times the depth of embedded concrete.

Mat foundations must be a minimum of 8-inches thick and must be supported on a compacted subgrade prepared in accordance with the “Site Preparation and Earthwork Construction” section of this report. In order to regulate cracking of the slabs, construction joints and/or saw-cut control joints must be provided in each direction at a maximum spacing of 10 feet on centers along with steel reinforcement as recommended by the project’s Structural Engineer. Control joints must have a minimum depth of one-quarter of the slab thickness. It is recommended that steel reinforcement used in concrete slabs-on-grade consist of steel rebar. Structural concrete slabs-on-grade may be designed using an unadjusted long-term Modulus of Subgrade Reaction (Ks) of 150 pounds per cubic inch (pci) constructed on a properly compacted subgrade or engineered fill. This value is based on the correlations to soil strength using one foot by one-foot plate-load tests and should therefore be scaled (adjusted) to the actual slab width. The adjusted Ks value can be obtained by multiplying the value provided above by $[(B+B_1)/(2B)]^2$, where B is the slab width in feet and B_1 is 1 foot (width of a one foot by one foot plate-load test apparatus).

4.8.3 Pole Type Foundations

Structures such as stadium lighting, signs, etc. may be supported on pole type foundations. This type of foundation must be designed in accordance with Section 1807.3 of the 2019 or 2022 CBC. However, it is recommended that an allowable lateral soil bearing pressure of 200 psf per foot of embedment be used to develop parameters S_1 and S_3 rather than one of the values given in Table 1806.2. This value includes a factor of safety of 2 and may be increased as indicated by 1806.3 and the footnotes to Table 1806.2. Unless the area surrounding the pole foundation is paved or covered with concrete flatwork, the upper 24 inches of soil should be ignored when calculating the minimum depth of embedment.

The following table provides expressions for the allowable and ultimate axial capacity using friction to resist axial loads. The skin friction within the upper two feet of embedded length must be ignored in unpaved areas. The total settlement of pier foundations designed in accordance with these recommendations should not exceed one-half inch.

Table 8: Friction Resistance for Vertical Loads

Allowable (lbs)	Ultimate (lbs)
$48\ DL^2$	$121\ DL^2$

Note (1) – D is pile diameter (feet), and L is the total embedment length (feet).

Prior to placing concrete, loose or disturbed soils must be removed from the bottom of the drilled pier excavations using a flat bottom clean-out bucket or other pre-approved method. A representative of BSK must observe the drilling and clean-out associated with the construction of pier foundations in order to assess whether the actual bearing conditions are compatible with the conditions anticipated during the preparation of this report.

Pier deflection may govern the design lateral resistance. If provided with pier geometry, lateral load, and loading eccentricity, the estimated pier head deflection can be provided.

4.9 Lateral Earth Pressures and Frictional Resistance

Lateral loads applied against foundations may be resisted by a combination of passive resistance against the vertical faces of the foundations and friction between the foundation bottom and the supporting subgrade. An unfactored coefficient of friction of 0.35 may be used between soil subgrade and precast foundation bottoms, or 0.70 between soil subgrade and cast in-place foundation bottom. The unfactored passive pressure is presented in Table 9. The coefficient of friction and passive earth pressure values given above represent ultimate soil strength values. BSK recommends that a safety factor consistent with the design conditions be included in their usage. For resistance against lateral sliding that is countered solely by the passive earth pressure against footings or friction along the bottom of footings, a minimum safety factor of 1.5 is recommended. For stability against lateral sliding that is resisted by combined passive pressure and frictional resistance, a minimum safety factor of 2.0 is recommended. For lateral resistance against seismic loading conditions, a minimum safety factor of 1.2 is recommended. We based these lateral resistance values on the assumption that the concrete for the foundations is either placed directly against undisturbed soils or that the voids created from the use of forms are backfilled with engineered fill or other approved materials, such as lean concrete. Passive resistance in the upper foot of soil cover below finished grades should be neglected unless the ground surface is confined by concrete slabs, pavements, or other such positive protection.

The following earth pressure parameters may be used for designing earth retaining structures and foundations.

Table 9: Lateral Earth Pressures

Lateral Pressure Conditions	Equivalent Fluid Pressure (pcf)
Active Pressure	35
At-Rest Pressure	55
Passive Pressure	370
Dynamic Increment	17.6H

Notes: 1. H is wall height in feet

Parameters are shown in the above table for drained conditions of select engineered fill or prepared native soil. In addition, the drained condition assumes that positive drainage will be provided away from the structure improvements and that water does not accumulate around the structure and cause a build-up of hydrostatic pressure.

4.10 Excavation Stability

Soils encountered within the upper 30-feet are generally Type C soil in accordance with OSHA (Occupational Safety and Health Administration). The slopes surrounding or along temporary excavations must be no steeper than 1.5H:1V to a maximum depth of 5 feet, and for slopes deeper than 5 feet 2H:1V to a maximum depth of 30-feet. As stated above, relatively cohesionless soils were encountered within the test borings, as such, it may be necessary to lay back slopes flatter than 2H:1V to facilitate construction. Temporary excavations for the project construction must be left open for as short a time as possible and must be protected from water runoff. Slope height, slope inclination, and excavation depths (including utility trench excavations) must in no case exceed those specified in local, state, or federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations 29 CFR Part 1926, or successor regulations). These excavation recommendations are based on soil characteristics derived from the borings. Variations in soil conditions will likely be encountered during excavation. At the time of construction, BSK must be afforded the opportunity to observe and document sloping and shoring conditions, and the opportunity to provide review of actual field conditions to account for condition variations not otherwise anticipated in the preparation of these recommendations.

4.11 Utility Trench Excavation and Backfill

Pipes and conduits must be bedded and shaded in accordance with the requirements of the pipe manufacturer. Where no specific requirements exist, we recommend a minimum of 6-inches of sand bedding material for pipe installations 12 to 24-inches in diameter. For pipe diameters, smaller than 12-inches, the bedding thickness may be reduced to 4-inches. For HDPE pipe installations/construction, sand bedding is not required, and the on-site soil can be used as backfill. The bedding material and envelope (up to 6-inches above the pipe) must consist of sand (Sand Equivalent greater than 30), be placed in loose lifts not exceeding 8-inches in thickness, compacted to at least 90 percent of the maximum dry density, and moisture conditioned to within 2 percent of optimum moisture content. Water jetting to attain compaction must not be allowed.

Adequate excavation width must be provided to permit uniform compaction on both sides of utility lines installed within the trench. The trench backfill material may consist of engineered fill. Trench backfill outside the containment area must be placed in loose lifts not to exceed 8-inches in loose thickness, compacted to 90 percent of the maximum dry density, and moisture conditioned to 2 percent above optimum moisture content. Conduits extending through or below footings must be “sleeved” as determined by the Project Structural Engineer

4.12 Surface Drainage Control

Final grading around site improvements must provide for positive and enduring drainage. Ponding of water must not be allowed on or near the proposed structures. Saturation of the soils immediately adjacent to or below structures must not be allowed. Although landscaping is not anticipated, irrigation water must be applied in amounts not exceeding those required to offset evaporation, sustain plant life, and maintain a relatively uniform moisture profile around and below, site improvements. Fill elevations are anticipated to be less than 3 feet above natural grade to achieve positive site drainage.

5 PLANS AND SPECIFICATIONS REVIEW

BSK recommends that it be retained to review the draft plans and specifications for the project, with regard to foundations and earthwork, prior to there being finalized and issued for construction bidding.

6 CONSTRUCTION TESTING AND OBSERVATIONS

Geotechnical testing and observation during construction is a vital extension of this geotechnical investigation. BSK recommends that it be retained for those services. Field review during site preparation and grading allows for evaluation of the exposed soil conditions and confirmation or revision of the assumptions and extrapolations made in formulating the design parameters and recommendations. BSK's observations must be supplemented with periodic compaction tests to establish substantial conformance with these recommendations. BSK must also be called to the site to observe foundation excavations, prior to placement of reinforcing steel or concrete, in order to assess whether the actual bearing conditions are compatible with the conditions anticipated during the preparation of this report. BSK must also be called to the site to observe placement of foundation and slab concrete.

If a firm other than BSK is retained for these services during construction, that firm must notify the owner, project designers, governmental building officials, and BSK that the firm has assumed the responsibility for all phases (i.e., both design and construction) of the project within the purview of the geotechnical engineer. Notification must indicate that the firm has reviewed this report and any subsequent addenda, and that it either agrees with BSK's conclusions and recommendations, or that it will provide independent recommendations.

7 LIMITATIONS

The analyses and recommendations submitted in this report are based upon the data obtained from the test borings performed at the locations shown on Figure 2. The report does not reflect variations, which may occur between or beyond the borings. The nature and extent of such variations may not become evident until additional exploration and testing is performed, or construction is initiated. If variations then appear, a re-evaluation of the recommendations of this report will be necessary after performing on-site observations during the excavation period and noting the characteristics of the variations.

The validity of the recommendations contained in this report is also dependent upon an adequate testing and observation program during the construction phase. BSK assumes no responsibility for construction compliance with the design concepts or recommendations unless it has been retained to perform the testing and observation services during construction as described above.

The findings of this report are valid as of the present. However, changes in the conditions of the site can occur with the passage of time, whether caused by natural processes or the work of man, on this property or adjacent property. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation, governmental policy or the broadening of knowledge.

BSK has prepared this report for the exclusive use of the Client and members of the project design team. The report has been prepared in accordance with generally accepted geotechnical engineering practices, which existed in Kings County at the time the report was written. No other warranties either express or implied are made as to the professional advice provided under the terms of BSK's agreement with Client and included in this report.

FIGURES

C:\Users\tgonzalez\BSK Associates\BSK Documents - GEO\G00000713-Thomas Composting Basins\Graphics\G00-000-713.dwg User:tgonzalez Plotted:Dec 14, 2022 - 12:40pm Last Save:Dec 14, 2022 - 11:51am

REFERENCE IMAGE: Google Earth

BSK ASSOCIATES
550 West Locust Avenue
Fresno, California 93650
Tel. (559) 497-2880

SITE VICINITY MAP

Thomas Composting Basin
20111 Excelsior Avenue
Riverdale, California

FIGURE 1

JOB NO. G00-000-713
DATE December 14, 2022
DR. BY TG
CH. BY NP
SCALE AS SHOWN
SHEET NO. 1
OF 1 SHEETS

LEGEND:

B-12 APPROXIMATE BORING LOCATIONS

B-3 APPROXIMATE PERC TEST LOCATIONS

DR-1 APPROXIMATE DOUBLE RING TEST LOCATIONS

REFERENCE IMAGE: Google Earth

BSK ASSOCIATES
550 West Locust Avenue
Fresno, California 93650
Tel. (559) 497-2880

BORING LOCATION MAP

Thomas Composting Basin
20111 Excelsior Avenue
Riverdale, California

FIGURE 2

JOB NO. G00-000-713
DATE December 20, 2022
DR. BY TG
CH. BY NP
SCALE AS SHOWN
SHEET NO. 1
OF 1 SHEETS

APPENDIX A

FIELD EXPLORATION

APPENDIX A
Field Exploration

The field exploration, conducted on November 21, 2022 consisted of a site reconnaissance, drilling twelve (12) exploratory test borings. The borings were drilled to depths of approximately 1.5 feet to 41.5 feet below ground surface (bgs) within the proposed improvement locations. The test borings were drilled with a truck-mounted drill rig, equipped with 8-inch augers. The approximate boring locations are presented on Figure 2.

One (1) percolation test and two (2) double ring hydrometer tests were conducted in the field. The test locations can be found on Figure 2, Boring Location Map. The last three rates from the slowest percolation test are averaged to calculate the percolation ratesThe soil materials encountered in the test borings were visually classified in the field and logs were recorded during the excavation and sampling operations. Visual classification of the materials encountered in the test borings were made in general accordance with the Unified Soil Classification System (ASTM D2487). A soil classification chart is presented herein. Boring logs are presented herein and should be consulted for more details concerning subsurface conditions.

Subsurface samples were obtained at the various depths shown on the boring logs by driving samplers which consisted of a 2.5-inch inside diameter (I.D.) lined with stainless sleeves and 1.4-inch I.D. Standard Penetration Test (SPT) sampler. The samplers were driven 18 inches using a 140-pound, automatic hammer dropping 30 inches. The number of blows required to drive the last 12 inches was recorded as the blow count (blows/foot) on the log of borings. The relatively undisturbed soil core samples were capped at both ends to preserve the samples at their natural moisture content. Disturbed soil samples were obtained using the Split-Spoon Sampler (marked X in logs) and were placed and sealed in polyethylene bags. At the completion of the field exploration, the test borings were backfilled with the soil cuttings, as set forth in BSK's proposal.

It should be noted that the use of terms such as "soft", "medium stiff", "very stiff" or "hard" to describe the consistency of a soil is based on sampler blow count and is not necessarily reflective of the in-place density or unit weight of the soils being sampled. The relationship between sampler blow count and consistency is provided in the following Tables A-1 and A-2 for coarse grained (sandy and gravelly) soils and fine grained (silty and clayey) soils, respectively.

Table A-1: Density of Coarse-Grained Soil versus Sampler Blow Count

Consistency	SPT Blow Count Blows / Foot)	2.5” I.D. Cal. Sampler (Blows / Foot)
Very Loose	<4	<6
Loose	4 – 10	6 – 15
Medium Dense	10 – 30	15 – 45
Dense	30 – 50	45 – 80
Very Dense	>50	>80

Table A-2: Consistency of Fine-Grained Soil versus Sampler Blow Count

Consistency	SPT Blow Count (Blows / Foot)	2.5” I.D. Cal. Sampler (Blows / Foot)
Very Soft	<2	<3
Soft	2 – 4	3 – 6
Medium Stiff	4 – 8	6 – 12
Stiff	8 – 15	12 – 24
Very Stiff	15 – 30	24 – 45
Hard	>30	>45

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS More than Half > #200 sieve	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 15% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 15% FINES	SM	SILTY SANDS, POOORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than Half < #200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

■	Modified California	RV	R-Value
⧗	Standard Penetration Test (SPT)	SA	Sieve Analysis
☒	Split Spoon	SW	Swell Test
◪	Pushed Shelby Tube	TC	Cyclic Triaxial
▯	Auger Cuttings	TX	Unconsolidated Undrained Triaxial
✋	Grab Sample	TV	Torvane Shear
⧄	Sample Attempt with No Recovery	UC	Unconfined Compression
CA	Chemical Analysis	(1.2)	(Shear Strength, ksf)
CN	Consolidation	WA	Wash Analysis
CP	Compaction	(20)	(with % Passing No. 200 Sieve)
DS	Direct Shear	▽	Water Level at Time of Drilling
PM	Permeability	▼	Water Level after Drilling(with date measured)
PP	Pocket Penetrometer		

SOIL CLASSIFICATION CHART AND LOG KEY

Figure A-1

BSK
ASSOCIATES

BSK Associates
550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B- 1**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
								SM	**Silty SAND** - brown, moist, fine to medium grained sand	
1										
2	■									
3	■		18	113.8	4.1	22				
4										
5	■								... loose	
6	■		12	95.1	4.4			SP	**Poorly Graded Sand** - brown, moist, fine to coarse grained sand	
7										
8										
9										
10	■									
11	■		6						... yellowish brown, loose	
12										
13										
14										
15	⧗								... yellowish brown, loose	
16	⧗		8							
17								CL	**Sandy CLAY** - light brownish gray, moist, fine to coarse grained sand	
18										
19										
20	■									▽
21	■		24						... very stiff	Flowing Sands, P.P. > 4.5 tsf
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 40.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Boring: **B- 1**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
26			20						**Sandy CLAY** - light brownish gray, moist, fine to coarse grained sand *(continued)* ... reddish brown	P.P. = 4.5 tsf
27								SP	**Poorly Graded Sand with Silt** - brown, wet, fine to coarse grained sand	
28										
29										
30										
31			46						... dense	
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42									Boring terminated at approximately 41.5 feet bgs. Groundwater encountered at 20 feet bgs. Boring backfilled with soil cuttings.	
43										
44										
45										
46										
47										
48										
49										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 40.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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550 W. Locust Ave.
Fresno, CA 93650
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Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B- 2**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
								CL	**CLAY with Sand** - dark brown, moist, fine grained sand	
1										
2	■									
3	■		17	104.9	11.7				... stiff	P.P. = 3 tsf
4								SM	**Silty SAND with Clay** - brown, moist, fine to medium grained sand	
5	■								... loose	
6	■		12	96.5	12.8			SM	**Silty SAND** - brown, moist, fine to medium grained sand	P.P. = 2.75 tsf
7										
8										
9										
10	■									
11	■		14						... loose	
12								SP	**Poorly Graded Sand** - light brownish gray, moist, fine to medium grained sand	
13										
14										
15	⧗								... loose	
16	⧗		9							
17								CL	**Sand CLAY** - light brownish gray, moist, fine to medium grained sand	
18										
19										
20	■									∇
21	■		39						... very stiff	Flowing Sands, P.P. = 4.5 tsf
22								SM	**Silty SAND with Clay** - light brownish gray, moist, fine to medium grained sand	
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 40.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B- 2**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
26	⧗		9				▨		**Silty SAND with Clay** - light brownish gray, moist, fine to medium grained sand *(continued)*	
27							▨			
28							▨			
29							▨			
30	■						▨			
31	■		49				▨		... dense	P.P. = 4.5 tsf
32									Boring terminated at approximately 31.5 feet bgs. Groundwater encountered 20 feet bgs. Boring backfilled with soil cuttings.	
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 40.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B- 3**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
								ML	**Sandy SILT** - reddish brown, moist, fine grained sand	
1										
2	■									
3	■		27	110.2	11.6				... very stiff	
4								SM	**Silty SAND** - reddish brown, moist, fine to medium grained sand	
5	■								... medium dense	
6	■		23	106.3	15.8					
7								SP	**Poorly Graded Sand** - reddish brown, moist, fine to coarse grained sand	
8										
9										
10	■									
11	■		14						... loose	
12										
13										
14										
15	⧗								... light brownish gray, loose	
16	⧗		8							
17										
18										
19										
20	■									∇
21	■		6						... loose	Flowing Sands
22									Boring terminated at approximately 21.5 feet bgs. Groundwater encountered 20 feet bgs. Boring backfilled with soil cuttings.	
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 21.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
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Logged By: J. Alvarez
Checked By: N. Popenoe

Page 1 of 1

Boring: **B- 4**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
							▨	CL	**Sandy CLAY** - brown, moist, fine to medium grained sand	
1							▨			
2	■	✋					▨			
3	■		27	93.7	8	72	▨		... very stiff	P.P. = 2.5
4							▨			
5	■						▨		... medium stiff	
6	■		23				▨			P.P. = 2.5
7							░	SP	**Poorly Graded Sand** - reddish brown, moist, fine to medium grained sand	
8							░			
9							░			
10	■						░			
11	■		14				░		... light brownish gray, loose	
12							░			
13							░			
14							░			
15	⧗						░		... loose	
16	⧗		8				░			
17							░			
18							░			
19							░			
20	■						░			∇
21	■		6				░		... loose	Flowing Sands
22									Boring terminated at approximately 21.5 feet bgs. Groundwater encountered 20 feet bgs. Boring backfilled with soil cuttings.	
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: 20 Feet
Completion Depth: 40.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
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Project: Thomas Composting Basins

Location: Riverdale, CA

Project No.: G00-000-713

Logged By: J. Alvarez

Checked By: N. Popenoe

Boring: **B-10**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1	■	✋	21 15	93.2	7.7		░	SM	**Silty SAND** - dark brown, moist, medium dense, fine to medium grained sand	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B-11**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
							░	SM	**Silty SAND** - light brownish gray, moist, loose, fine to medium grained sand	
1	■	✋	9 8				░			
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B-12**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1	■	✋	5 5				▨	SM	**Silty SAND** - light brownish gray, moist, very loose, fine to medium grained sand	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Page 1 of 1

Boring: **B-5**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1	■		12 15				▨	SM	**Silty SAND** - dark brown, moist, loose, fine to medium grained sand ... reddish brown, medium dense	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
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Boring: **B-6**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1	■	✋	10 10				⁙	SM	**Silty SAND** - dark brown, moist, loose, fine to medium grained sand ... reddish brown	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B-7**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
								ML	**Sandy SILT** - light brownish gray, moist, stiff, fine grained sand	
1	■	✋	23 20	96.7	7.6			SM	**Silty SAND** - light brownish gray, moist, medium dense, fine grained sand	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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550 W. Locust Ave.
Fresno, CA 93650
Telephone: (559) 497-2880

Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Boring: **B-8**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
							▨	SM	**Silty SAND** - gray, moist, medium dense, fine to medium grained sand	
1	■		22 21	98.7	6.1		▨			
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Fresno, CA 93650
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Project: Thomas Composting Basins
Location: Riverdale, CA
Project No.: G00-000-713
Logged By: J. Alvarez
Checked By: N. Popenoe

Page 1 of 1

Boring: **B-9**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1	■	✋	20 26				▨	SM	**Silty SAND** - dark brown, moist, medium dense, fine to medium grained sand	
2									Boring terminated at approximately 1.5 feet bgs. No groundwater encounted. Boring backfilled with soil cuttings.	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61
Drilling Equipment: Hollow Stem Auger
Date Started: 11-21-22
Date Completed: 11-21-22

Surface Elevation:
Sample Method: 2.5" Modified Cal & 1.5" I.D. SPT Split Spoon
Groundwater Depth: Not Encountered
Completion Depth: 1.5 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

APPENDIX B

LABORATORY TESTING

APPENDIX B
Laboratory Testing

The results of laboratory testing performed in conjunction with this project are contained in this Appendix. The following laboratory tests were performed on soil samples in general conformance with applicable standards.

In-Situ Moisture and Density

The field moisture content and in-place dry density determinations were performed on relatively undisturbed samples obtained from the test borings. The field moisture content, as a percentage of dry weight of the soils, was determined by weighing the samples before and after oven drying in accordance with ASTM D2216 test procedures. Dry densities, in pounds per cubic foot, were also determined for undisturbed core samples in accordance with ASTM D2937 test procedures. Test results are presented on the boring logs in Appendix A.

Gradation

Three (3), Sieve Analysis tests were performed on selected soil samples in the area of planned construction. The test was performed in general accordance with Test Method ASTM D422. The results of the tests are presented on Figures B-1, B-2 and B-3.

Direct Shear Test

One (1) direct shear test was performed on test specimens trimmed from selected soil sample. The three-point shear test was performed in general accordance with ASTM D3080, Direct Shear Test for Soils under Consolidated Drained Conditions. The test specimens, each 2.42 inches in diameter and 1 inch in height, were subjected to shear along a plane at mid-height after allowing for pore pressure dissipation. The results of the tests are presented in Figure B-4.

Collapse Potential Test

One (1) Collapse Potential test was performed on relatively undisturbed soil samples to evaluate collapse potential characteristics. The tests were performed in general accordance with ASTM D5333. The sample was initially loaded under as-received moisture content to a selected stress level, loaded to a maximum load of 2000 psf and then saturated. The test results are presented in Figure B-5.

Maximum Dry Density and Optimum Moisture Content

One (1) Modified proctor test was performed to determine the maximum dry density and optimum moisture content of a selected soil sample. The sample was compacted under a standardized compaction effort at varying moisture contents in general accordance with ASTM D1557. The results are presented on Figure B-6.

Hydraulic Conductivity

Three (3) soil samples were tested for hydraulic conductivity by Geologic Associates using ASTM D5084, Method C. One (1) bulk sample was mixed with 3, 5, and 7 percent clay, and compacted to 92 percent of dry maximum density, then tested for hydraulic conductivity using ASTM D5084. Results are presented in Figures B-7 through B-12.

Soil Corrosivity

The results of chemical analyses performed on one (1) bulk soil sample using California Test Method 643 (for pH and minimum resistivity) and California Test Methods 417 and 422 (for soluble sulfate and chlorides, respectively), are presented below.

SUMMARY OF CHEMICAL TEST RESULTS

Sample Location	pH	Sulfate (mg/kg)	Chloride (mg/kg)	Minimum Resistivity (ohms-cm)
B-1 at 0-5´	7.48	Not Detected	Not Detected	1,840

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FIGURE B-1

550 W. Locust Ave.
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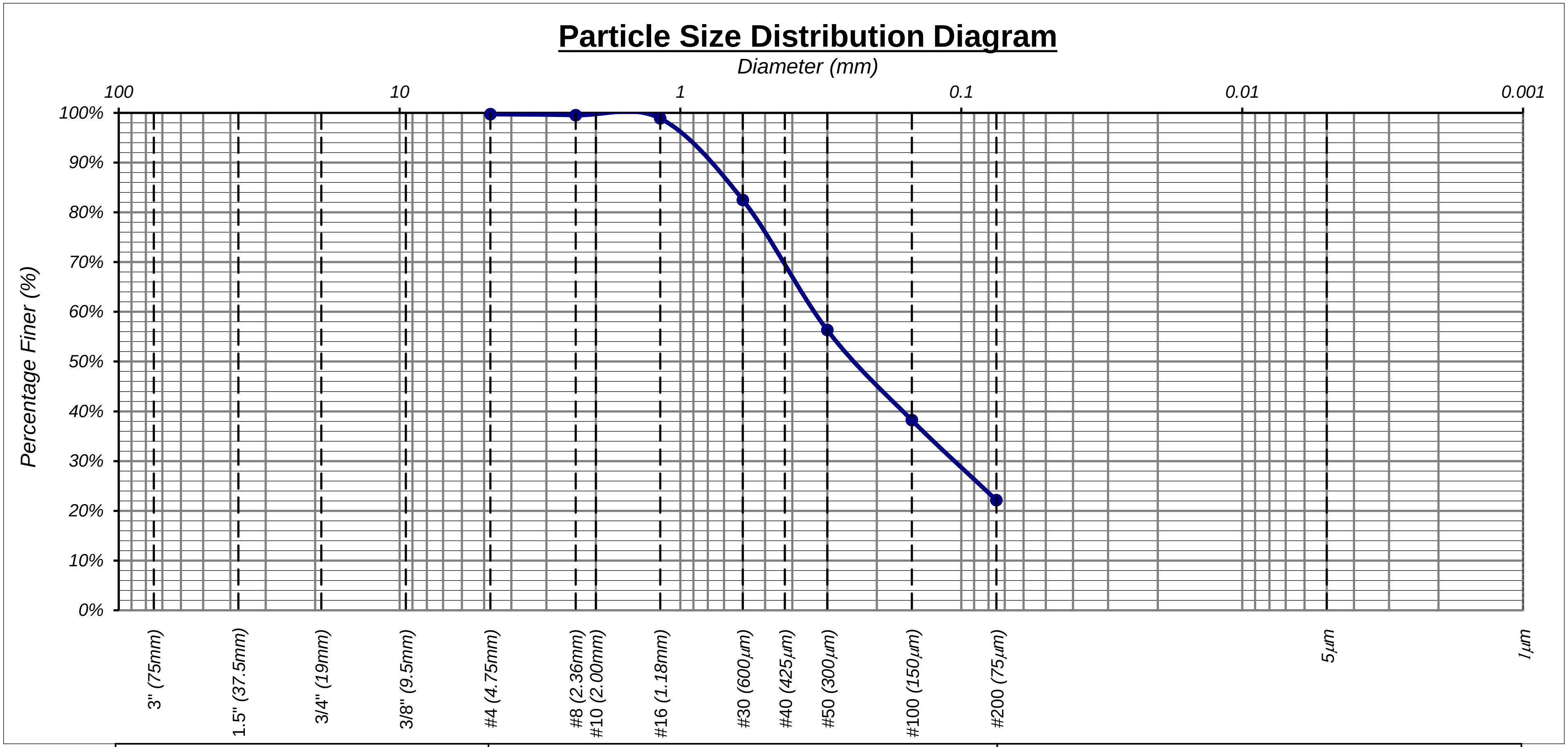
Ph: (559) 497-2880
Fax: (559) 497-2886

Gradation Analysis Report
ASTM D-422 / ASTM C-136

Project Name: Thomas Compost
Project Number: G00000713
Report Date: 12/12/22
Sample Location: B-1 @ 0 - 5'
Sample Lab ID: N/A
Sample Date: 11/21/22
Sample Description: Silty Sand (SM) - brown, moist, medium dense, fine to medium grained sand
Test Date: 12/2/2022



Particle Size Distribution Diagram

<table>
<tr><td colspan="3">Clear Square Openings (ASTM C-136)</td><td colspan="3">US Standard Series (ASTM D-422)</td><td>Hydrometer Readings (ASTM D-422)</td></tr>
<tr><td rowspan="2">Cobble</td><td colspan="2">Gravel</td><td colspan="3">Sand</td><td rowspan="2">Silt (Non-Plastic) to Clay (Plastic)</td></tr>
<tr><td>Coarse</td><td>Fine</td><td>Coarse</td><td>Medium</td><td>Fine</td></tr>
</table>

% Gravel = 0% **% Sand = 78%** **% Fines = 22%**

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FIGURE B-2

550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

Gradation Analysis Report
ASTM D-422 / ASTM C-136

Project Name: Thomas Composting

Project Number: G00000713

Report Date: 12/12/22

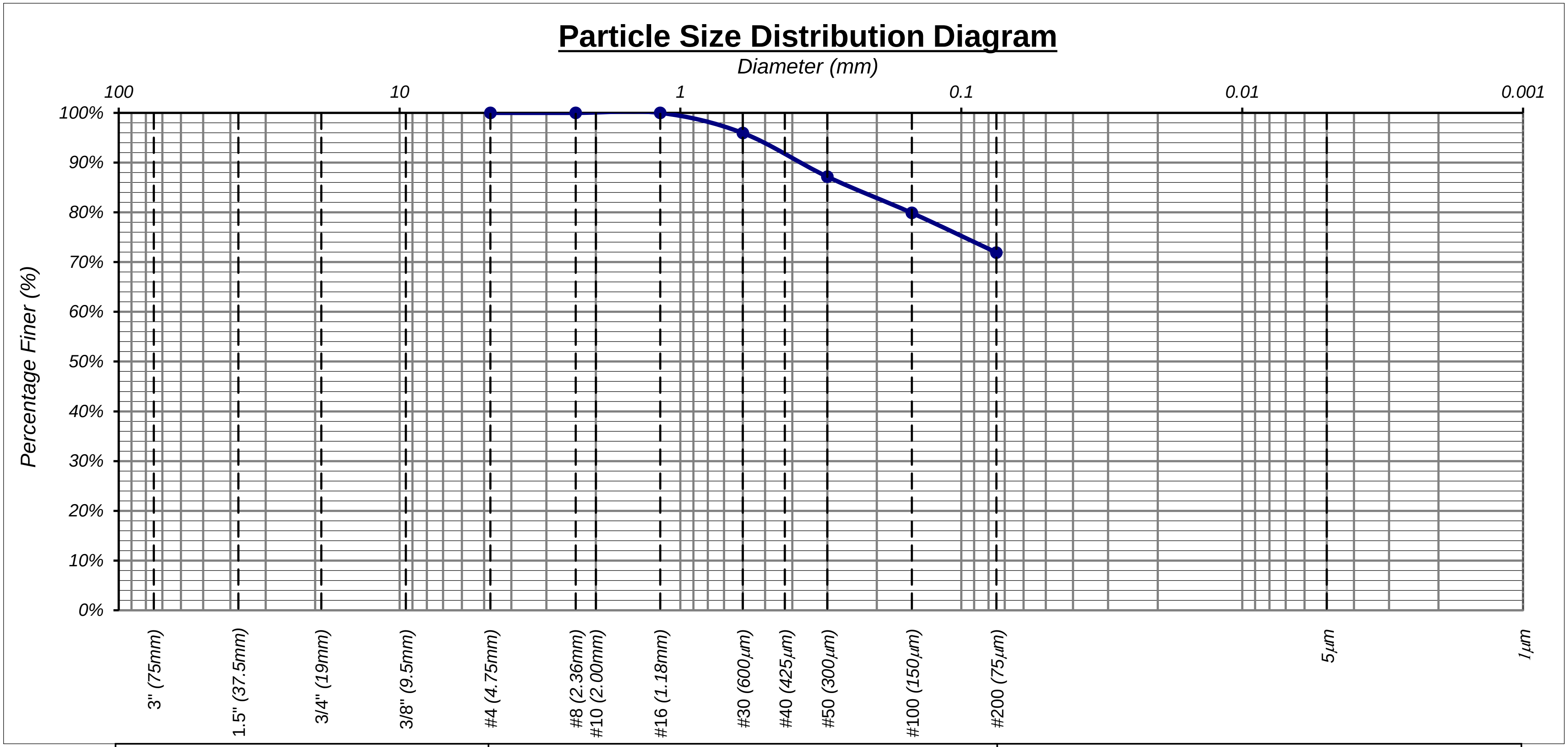
Sample Location: B-4 @ 3'

Sample Lab ID: N/A

Sample Date: 11/21/22

Sample Description: Clay with Sand (CL) - brown, moist, fine to medium grained sand

Test Date: 12/2/22



Clear Square Openings (ASTM C-136)			US Standard Series (ASTM D-422)			Hydrometer Readings (ASTM D-422)
Cobble	Gravel		Sand			Silt (Non-Plastic) to Clay (Plastic)
	Coarse	Fine	Coarse	Medium	Fine	

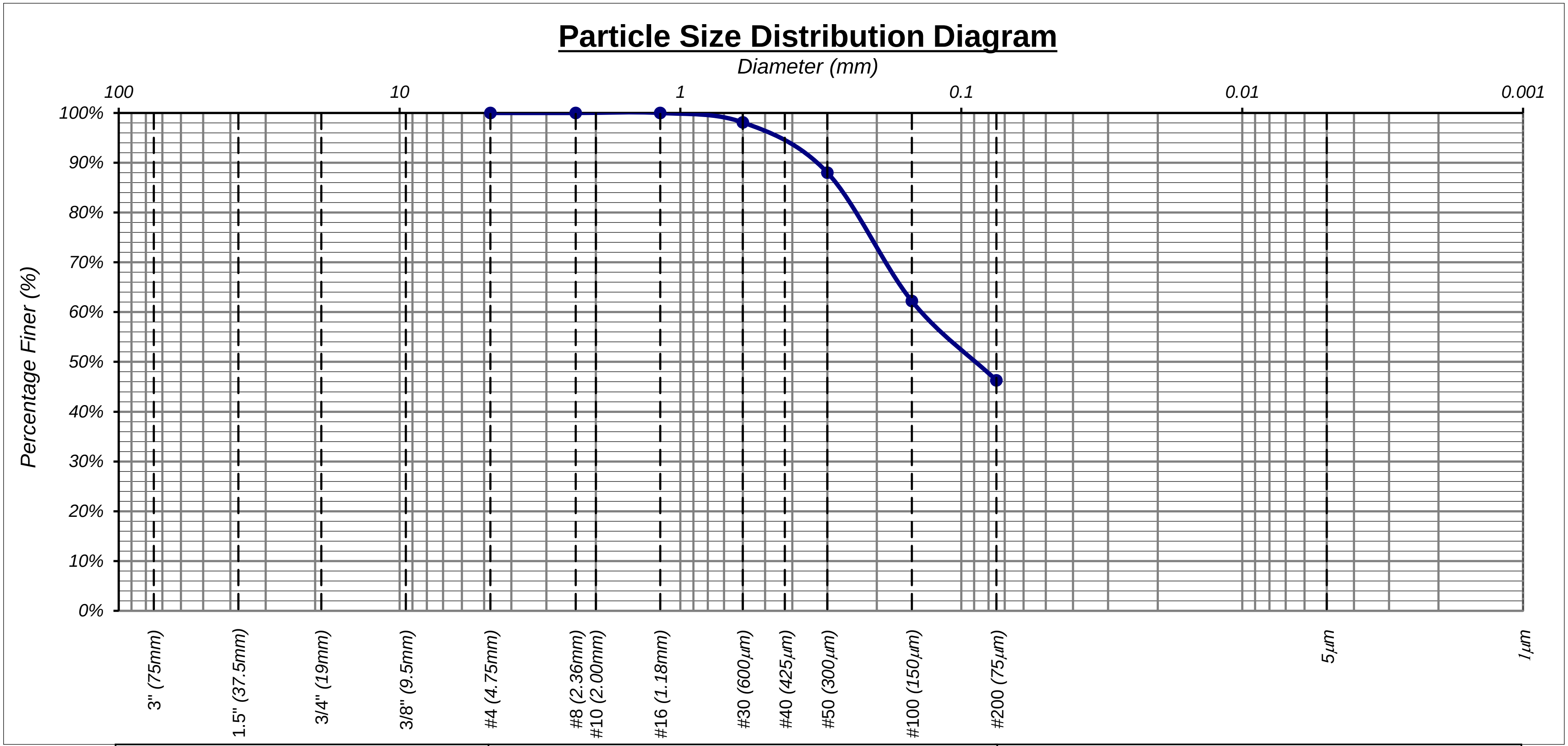
% Gravel = 0% **% Sand = 28%** **% Fines = 72%**

FIGURE B-3
550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

Gradation Analysis Report
ASTM D-422 / ASTM C-136

Project Name: Thomas Composting
Project Number: G00000713
Report Date: 12/12/22
Sample Location: B-11/12 @ 0-1.5'
Sample Lab ID:
Sample Date: 11/21/22
Sample Description: Silty Sand (SM) - light brownish gray, moist, loose, fine to medium grained sand
Test Date: 12/2/22

Particle Size Distribution Diagram



<table>
<tr><td colspan="4">Clear Square Openings (ASTM C-136)</td><td colspan="3">US Standard Series (ASTM D-422)</td><td>Hydrometer Readings (ASTM D-422)</td></tr>
<tr><td rowspan="2">Cobble</td><td colspan="2">Gravel</td><td colspan="4">Sand</td><td rowspan="2">Silt (Non-Plastic) to Clay (Plastic)</td></tr>
<tr><td>Coarse</td><td>Fine</td><td>Coarse</td><td>Medium</td><td colspan="2">Fine</td></tr>
</table>

% Gravel = 0% **% Sand = 54%** **% Fines = 46%**

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FIGURE B-4

550 W. Locust
Fresno, CA 93650
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Fax: (559) 497-2886

Direct Shear Test

ASTM D-3080

Project Name: Thomas Composting

Sampled By: J.A

Sample Date: 11/21/22

Tested By: J.L

Test Date: 11/29/22

Project Number: G00000713

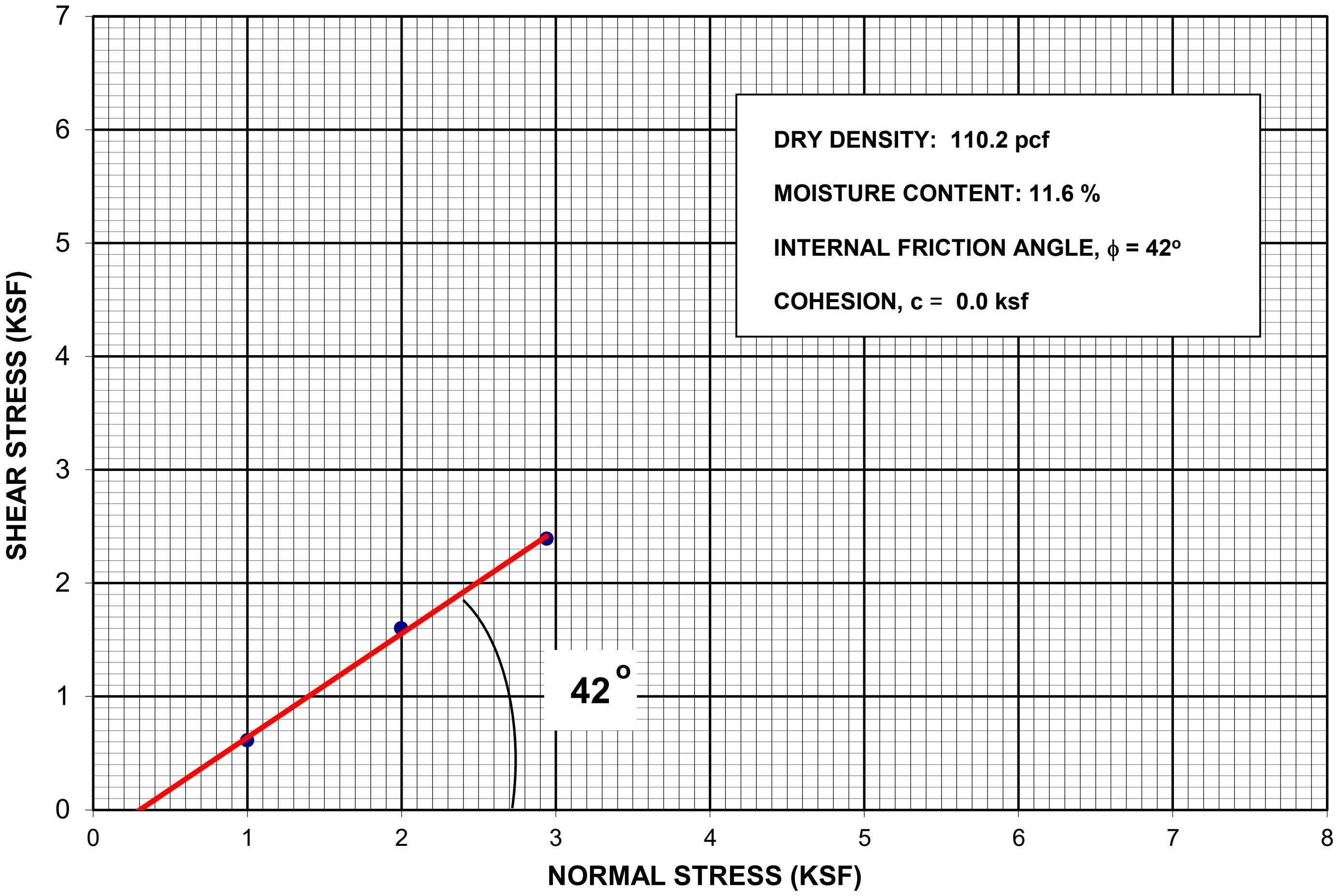
Lab Tracking ID: N/A

Report Date: 12/12/22

Sample Location: B-3 @ 3'

Sample Description: Silty Sand (SM) - reddish brown, moist, fine to medium grained sand

SHEAR STRENGTH DIAGRAM



DRY DENSITY: 110.2 pcf

MOISTURE CONTENT: 11.6 %

INTERNAL FRICTION ANGLE, ϕ = 42°

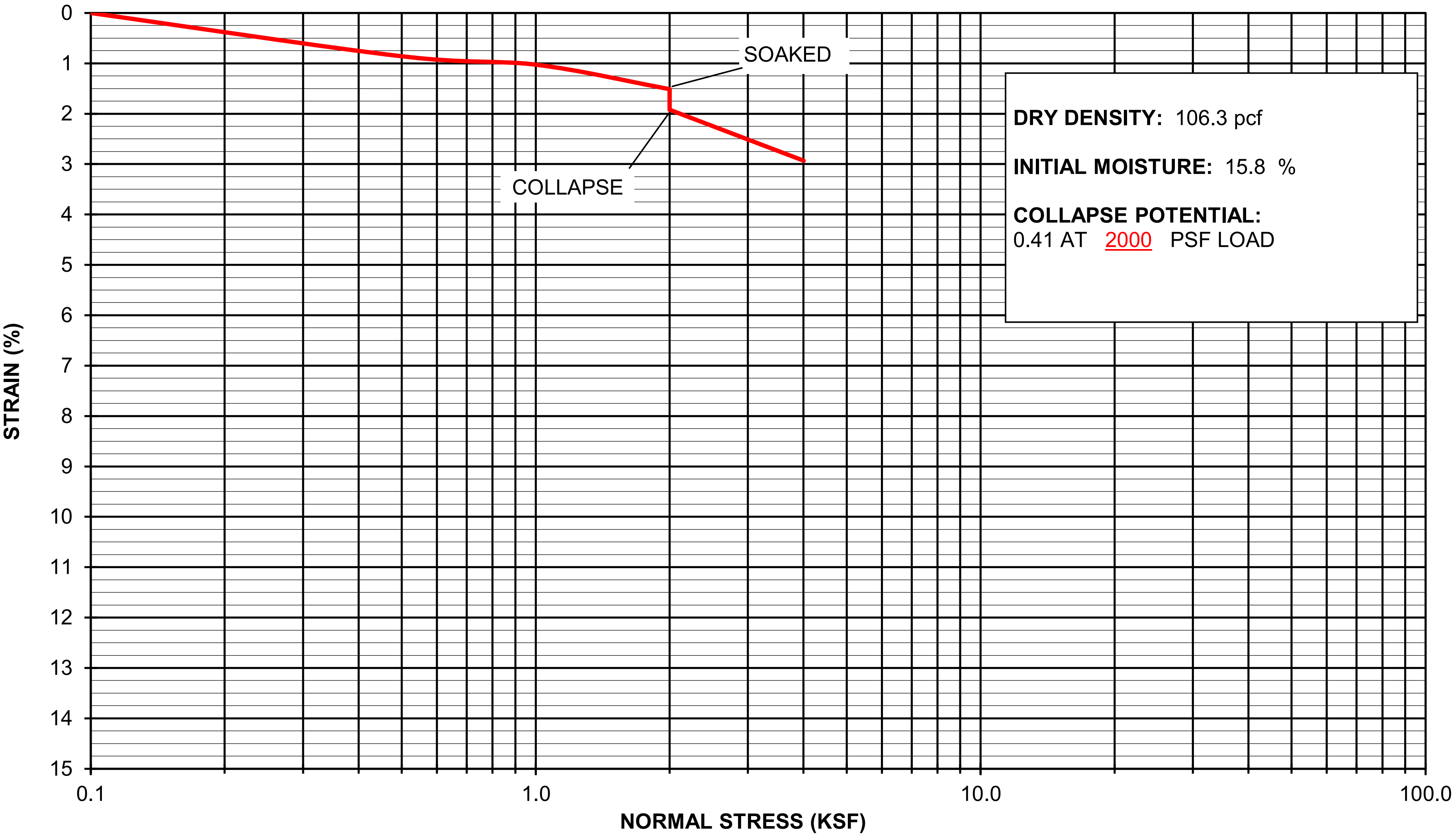
COHESION, c = 0.0 ksf

FIGURE B-5

550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

COLLAPSE POTENTIAL
ASTM D-5333

Project Name: Thomas Composting
Sampled By: J.A
Sample Date: 11-21-22
Tested By: J.L
Test Date: 11-30-22
Project Number: G00000713
Lab Tracking ID: N/A
Report Date: 12-12-22
Sample Location: B-3 @ 6'
Sample Description: Silty Sand (SM) - reddish brown, moist, fine to medium grained sand



DRY DENSITY: 106.3 pcf

INITIAL MOISTURE: 15.8 %

COLLAPSE POTENTIAL:
0.41 AT 2000 PSF LOAD

MOISTURE / DENSITY RELATIONSHIPS

Geo-Logic
ASSOCIATES

Test Report
ASTM D - 1557

Figure B-6

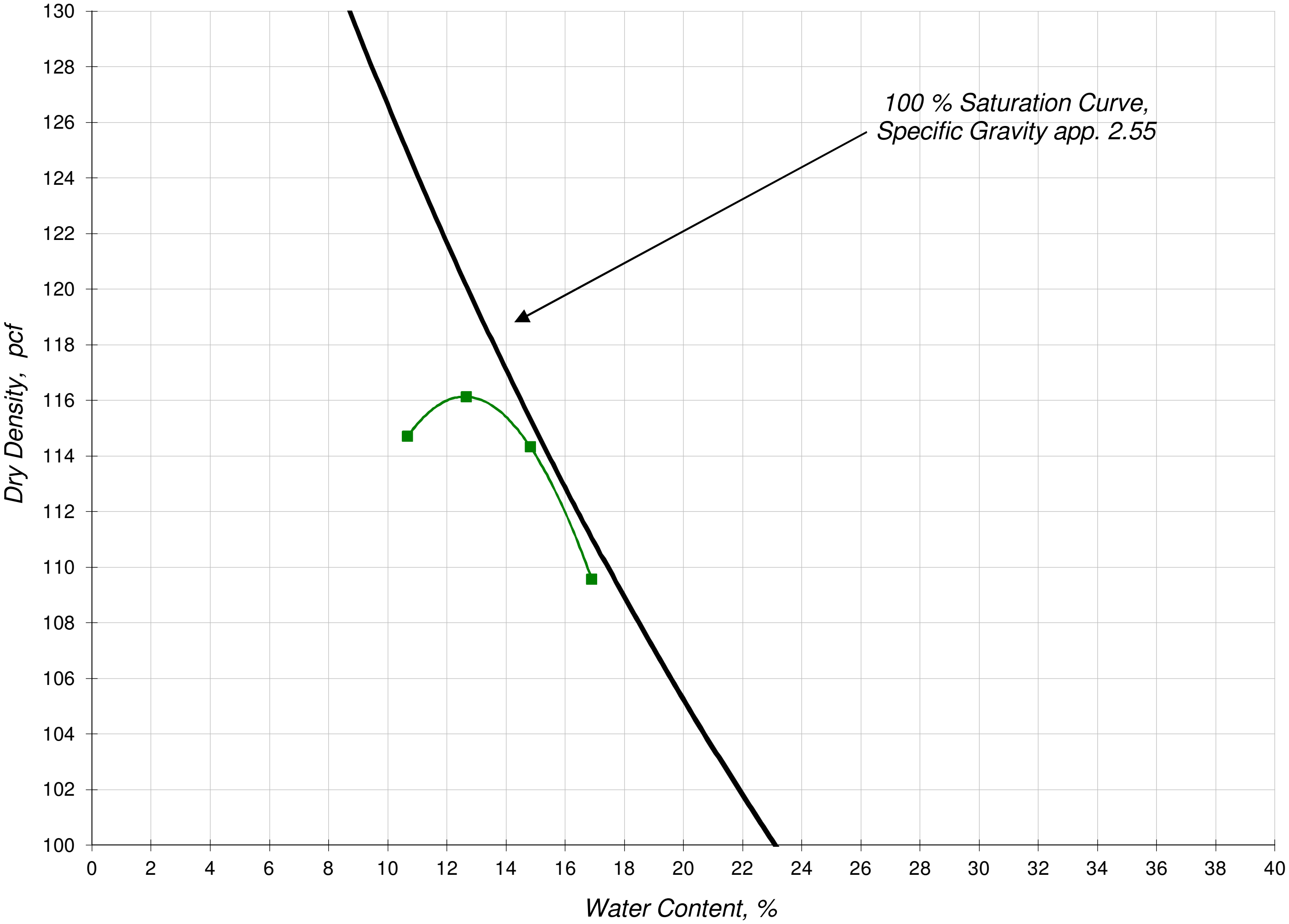
Client: BSK Associates

Project No.: AU22.1246.00

Lab Log No.: **4939D**

Project Name: Thomas Composting

Report Date: December 6, 2022



Symbol	Lab No.	Sample Identification	Description	Maximum Dry Density pcf	Maximum Dry Density kg / m^3	Optimum Water Content (OMC) %
🟩	4939D	B-11/B-12 @ 0-1.5'	brown sandy lean clay	116.1	1860	12.6

Corrected Values For Oversized Particles, per ASTM D-4718

🟩 4939D with 0.0 Percent +#4 Gravel, the maximum Dry Density = 116.1 pcf @12.6 % OMC

Note: The test was conducted as method A with 0 percent retained on the no. 4 sieve (minus #4)
Using an Automatic Hammer

L:Labexcel \ FORMS \ GLA Forms \ Reports \ AU22.1246.00 \ 4939D-cmp.xls

DCN: CMP-rp (rev. 5/21/09) Print Date : 12/9/2022

Print Date: 12/9/2022

Entered By: MK

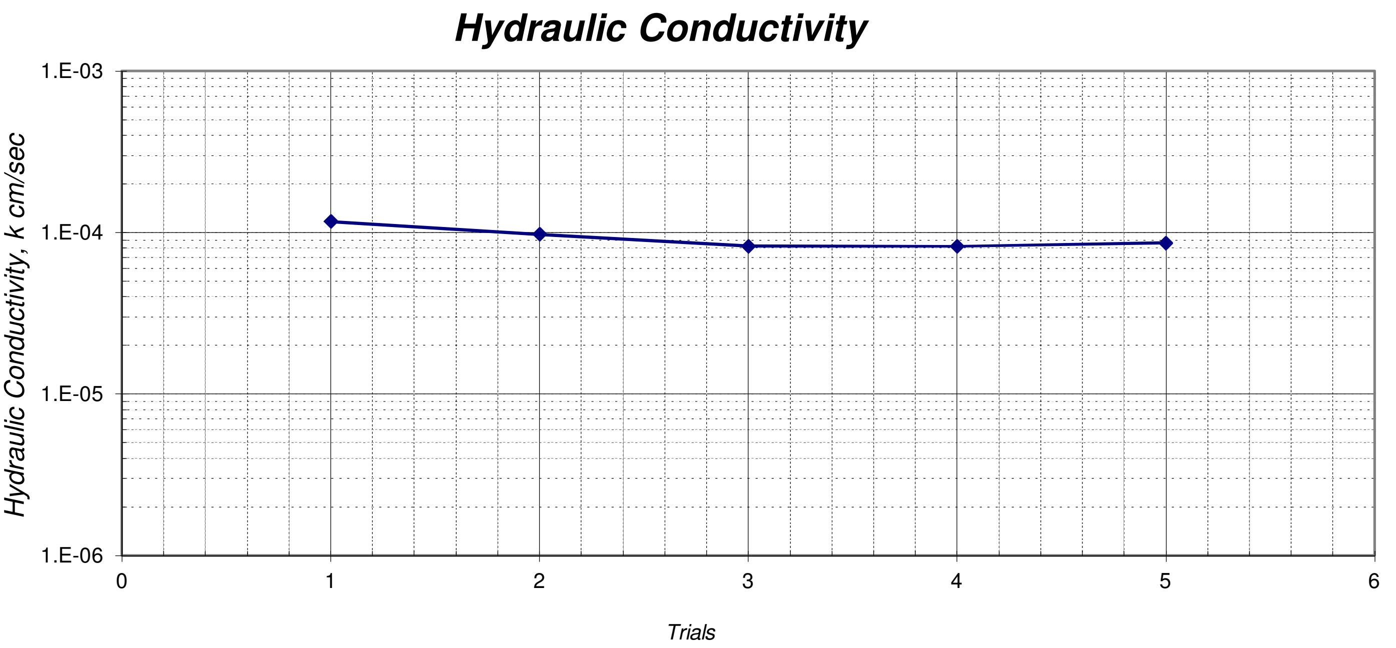
Reviewed By: PP

LSN: **4939D**

HYDRAULIC CONDUCTIVITY
REPORT

Figure B-7

Client / Project Name: **BSK Associates / Thomas Composting**	Project No: **AU22.1246.00**	Lab Sample Number: **4939A**
Sample ID: **B-5 @ 1.5'**	Description: **brown sandy clay**	Report Date: **December 9, 2022**



SPECIMEN DATA

SAMPLE ID: **B-5 @ 1.5'**
DESCRIPTION: brown sandy clay

	INITIAL	FINAL
HEIGHT, in.	3.1	3.0
DIAMETER, in.	2.4	2.3
WATER CONTENT, %	7.1	21.4
DRY DENSITY, pcf	91	105
SATURATION, %	22	95

(Specific Gravity assumed as 2.7)

COMMENTS:
Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 1 psi
GRADIENT RANGE: 5 - 6
IN / OUT RATIO: 1.04
"B" PARAMETER: 0.95

TRIAL nos.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	1.2E-04
2	9.7E-05
3	8.2E-05
4	8.2E-05
5	8.6E-05

AVERAGE LAST 4 : **8.7E-05**

corrected to 20° C

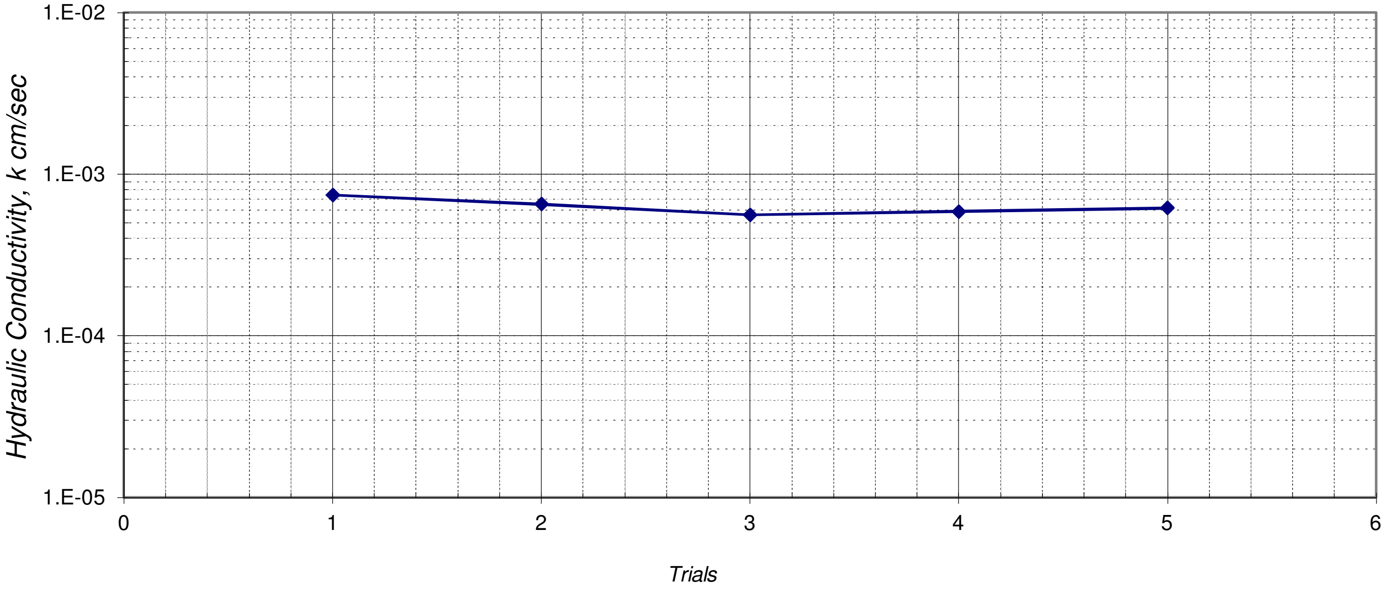
Print Date: 12/09/22 Entered By: PP Reviewed By: MK LSN: **4939A**

HYDRAULIC CONDUCTIVITY
REPORT

Figure B-8

Client / Project Name: **BSK Associates / Thomas Composting**
Project No: **AU22.1246.00**
Lab Sample Number: **4939B**
Sample ID: **B-6 @ 1.5'**
Description: **brown sandy clay**
Report Date: **December 9, 2022**

Hydraulic Conductivity



SPECIMEN DATA

SAMPLE ID:	**B-6 @ 1.5'**	
DESCRIPTION:	brown sandy clay	
	INITIAL	FINAL
HEIGHT, in.	3.9	3.8
DIAMETER, in.	2.4	2.4
WATER CONTENT, %	5.1	20.5
DRY DENSITY, pcf	103	107
SATURATION, %	22	96

(Specific Gravity assumed as 2.7)

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 1 psi
GRADIENT RANGE: 1 - 2
IN / OUT RATIO: 1.05
"B" PARAMETER: 0.95

TRIAL nos.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	7.4E-04
2	6.5E-04
3	5.6E-04
4	5.9E-04
5	6.2E-04

AVERAGE LAST 4 : **6.0E-04**

corrected to 20° C

COMMENTS:
Tap water used as permeant.

L : Labexcel \PROJECTS \ BSK Associates / T \ 4939B-txk
Print Date: 12/09/22
Entered By: PP
Reviewed By: MK
LSN: **4939B**
DCN: TXK-QC-GRAPH (rev. 11/20/12)

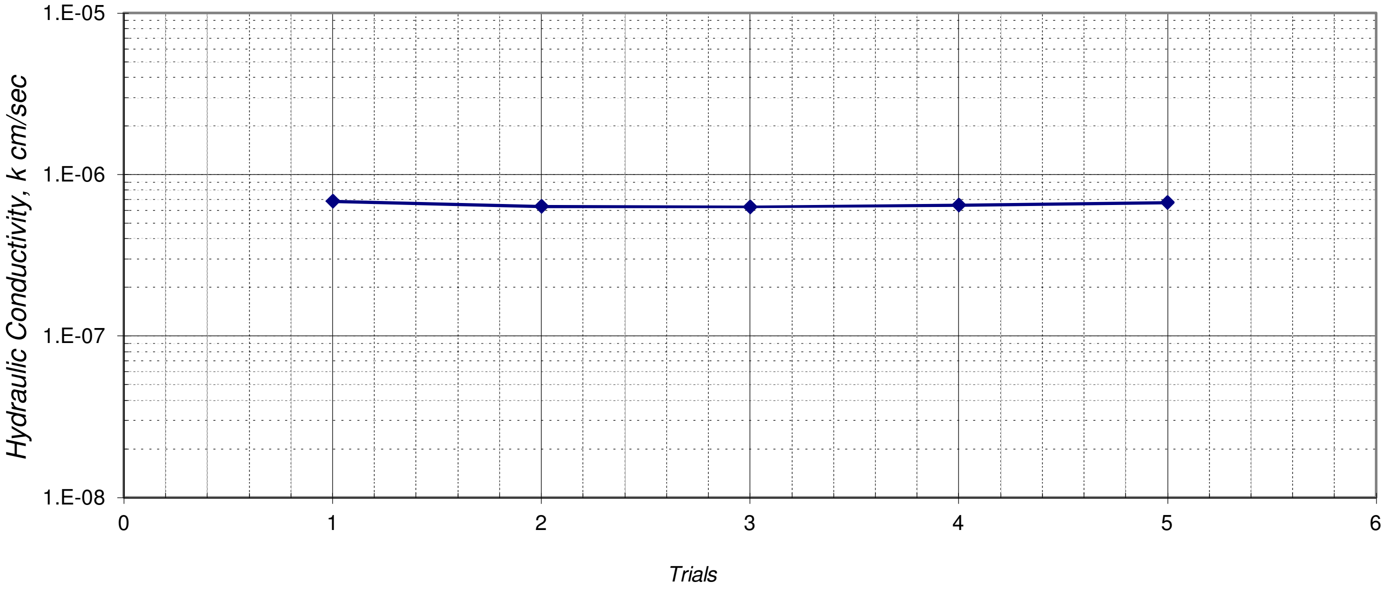
Geo-Logic ASSOCIATES

HYDRAULIC CONDUCTIVITY

REPORT **Figure B-9**

Client / Project Name: **BSK Associates / Thomas Composting**	Project No: **AU22.1246.00**	Lab Sample Number: **4939C**
Sample ID: **B-9 @ 1.5'**	Description: **brown sandy clay**	Report Date: **December 9, 2022**

Hydraulic Conductivity



SPECIMEN DATA

SAMPLE ID:	**B-9 @ 1.5'**	
DESCRIPTION:	brown sandy clay	
	INITIAL	FINAL
HEIGHT, in.	3.6	3.6
DIAMETER, in.	2.4	2.4
WATER CONTENT, %	15.7	24.3
DRY DENSITY, pcf	102	100
SATURATION, %	64	95

(Specific Gravity assumed as 2.7)

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	1 psi
GRADIENT RANGE:	9 - 11
IN / OUT RATIO:	0.99
"B" PARAMETER:	0.97

TRIAL nos.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	6.8E-07
2	6.4E-07
3	6.3E-07
4	6.5E-07
5	6.7E-07

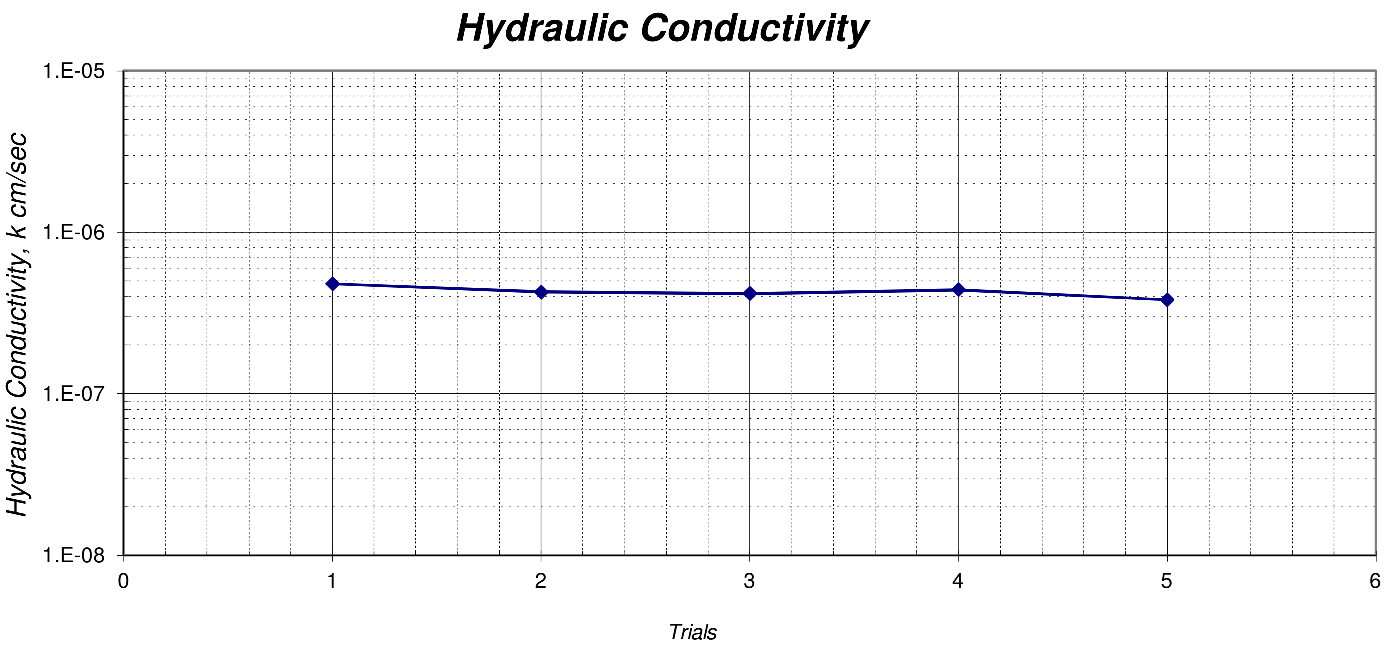
AVERAGE LAST 4 : **6.5E-07**

corrected to 20° C

HYDRAULIC CONDUCTIVITY
REPORT

Figure B-10

Client / Project Name:	BSK Associates / Thomas Composting
Project No:	AU22.1264.00
Lab Sample Number:	4939E
Sample ID:	B-11/B-12 @ 0-1.5' (3% Clay)
Description:	brown sandy lean clay
Report Date:	December 9, 2022



SPECIMEN DATA

SAMPLE ID: **B-11/B-12 @ 0-1.5' (3% Clay)**

DESCRIPTION: brown sandy lean clay

	INITIAL	FINAL
HEIGHT, in.	3.0	3.1
DIAMETER, in.	2.4	2.4
WATER CONTENT, %	12.9	22.5
DRY DENSITY, pcf	107	103
SATURATION, %	60	95

(Specific Gravity assumed as 2.7)

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	1 psi
GRADIENT RANGE:	9 - 11
IN / OUT RATIO:	0.78
"B" PARAMETER:	0.99

TRIAL nos.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	4.8E-07
2	4.3E-07
3	4.2E-07
4	4.4E-07
5	3.8E-07

AVERAGE LAST 4 : **4.2E-07**

corrected to 20° C

This testing is based upon accepted industry practice as well as the test method listed. These results apply only to the samples supplied and tested for the above referenced job.

L : Labexcel \PROJECTS \ BSK Associates / T \ 4939E-txk

DCN: TXK-QC-GRAPH (rev. 11/20/12)

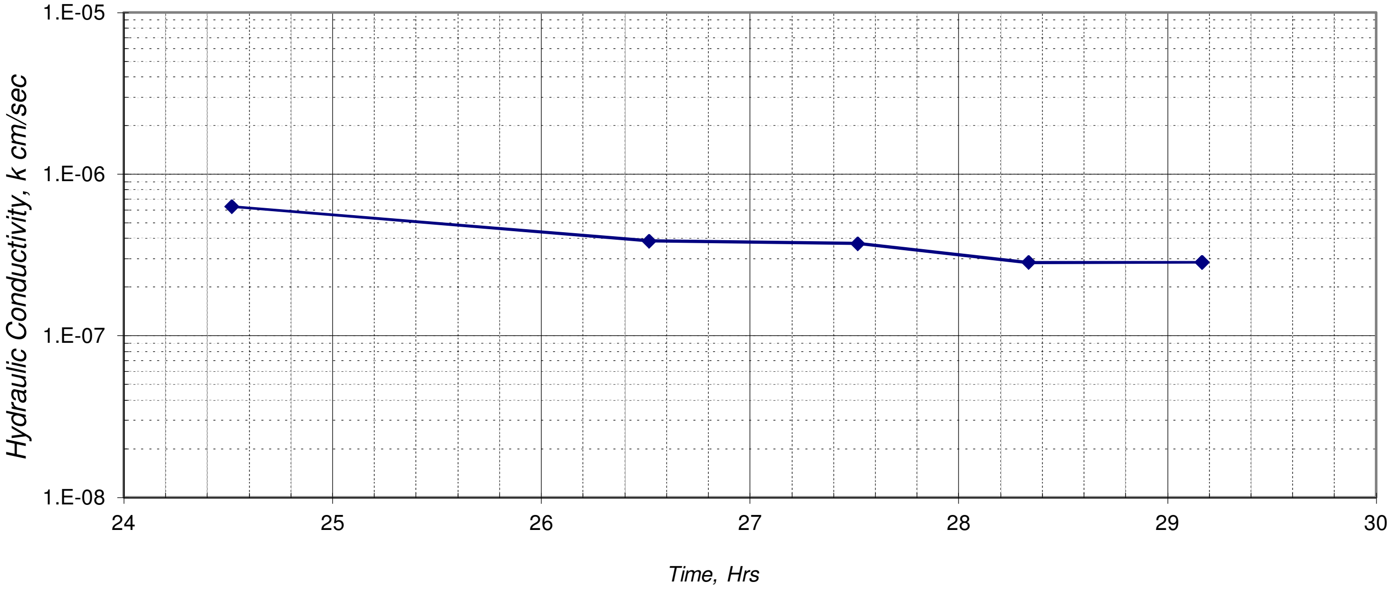
Print Date:	Entered By:	Reviewed By:	LSN:
12/09/22	PP	MK	4939E

HYDRAULIC CONDUCTIVITY
REPORT

Figure B-11

Client / Project Name: **BSK Associates / Thomas Composting**	Project No: **AU22.1246.00**	Lab Sample Number: **4939F**
Sample ID: **B-11/B-12 @ 0-1.5' (5% Clay)**	Description: **brown sandy lean clay**	Report Date: **December 9, 2022**

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	**B-11/B-12 @ 0-1.5' (5% Clay)**	
DESCRIPTION:	brown sandy lean clay	
	INITIAL	FINAL
HEIGHT, in.	3.0	3.1
DIAMETER, in.	2.4	2.4
WATER CONTENT, %	12.9	23.0
DRY DENSITY, pcf	107	102
SATURATION, %	60	95

(Specific Gravity assumed as 2.7)

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	1 psi
GRADIENT RANGE:	9 - 11
IN / OUT RATIO:	0.80
"B" PARAMETER:	0.98

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	24.5	6.3E-07
2	26.5	3.9E-07
3	27.5	3.7E-07
4	28.3	2.8E-07
5	29.2	2.8E-07

AVERAGE LAST 4 : **3.3E-07**

corrected to 20° C

L : Labexcel \PROJECTS \ BSK Associates / T \ 4939F-txk

Print Date: 12/09/22 Entered By: PP Reviewed By: MK LSN: **4939F**

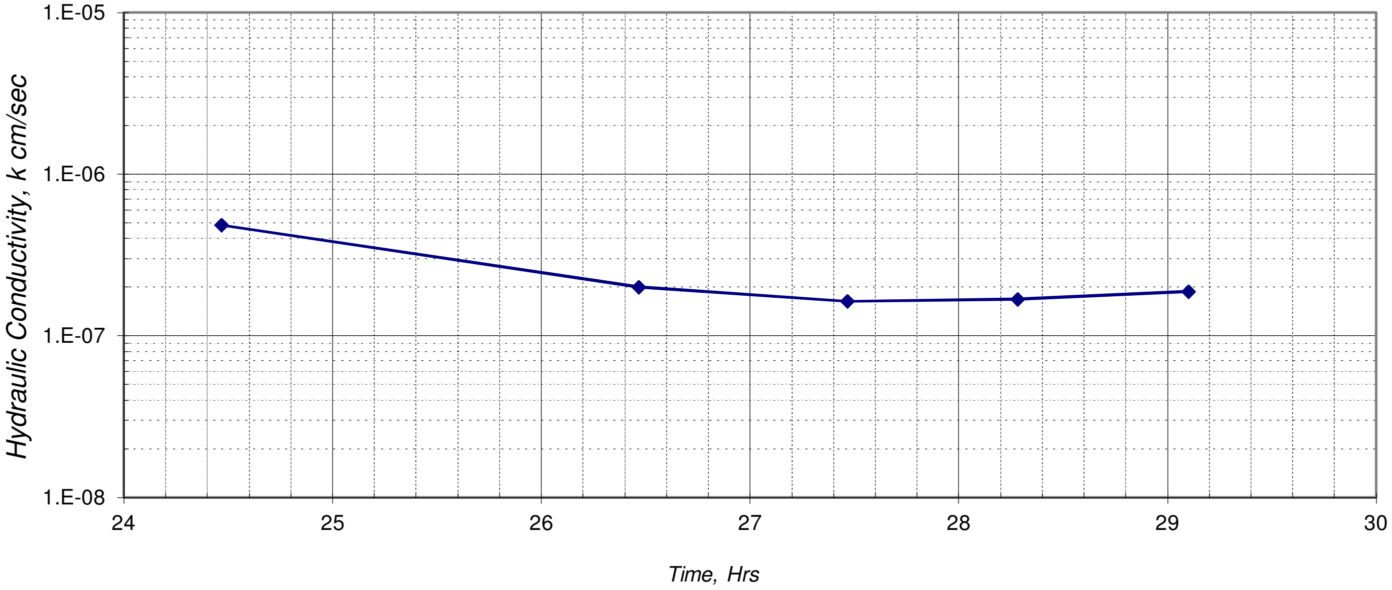
DCN: TXK-QC-GRAPH (rev. 11/20/12)

HYDRAULIC CONDUCTIVITY
REPORT

Figure B-12

Client / Project Name:	**BSK Associates / Thomas Composting**
Project No:	**AU22.1246.00**
Lab Sample Number:	**4939G**
Sample ID:	**B-11/B-12 @ 0-1.5' (7% Clay)**
Description:	**brown sandy lean clay**
Report Date:	**December 9, 2022**

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID: **B-11/B-12 @ 0-1.5' (7% Clay)**

DESCRIPTION: brown sandy lean clay

	INITIAL	FINAL
HEIGHT, in.	3.0	3.1
DIAMETER, in.	2.4	2.4
WATER CONTENT, %	13.0	23.4
DRY DENSITY, pcf	107	102
SATURATION, %	61	96

(Specific Gravity assumed as 2.7)

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	1 psi
GRADIENT RANGE:	11 - 14
IN / OUT RATIO:	1.14
"B" PARAMETER:	0.98

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY, k^{20} cm / s
1	24.5	4.8E-07
2	26.5	2.0E-07
3	27.5	1.6E-07
4	28.3	1.7E-07
5	29.1	1.9E-07

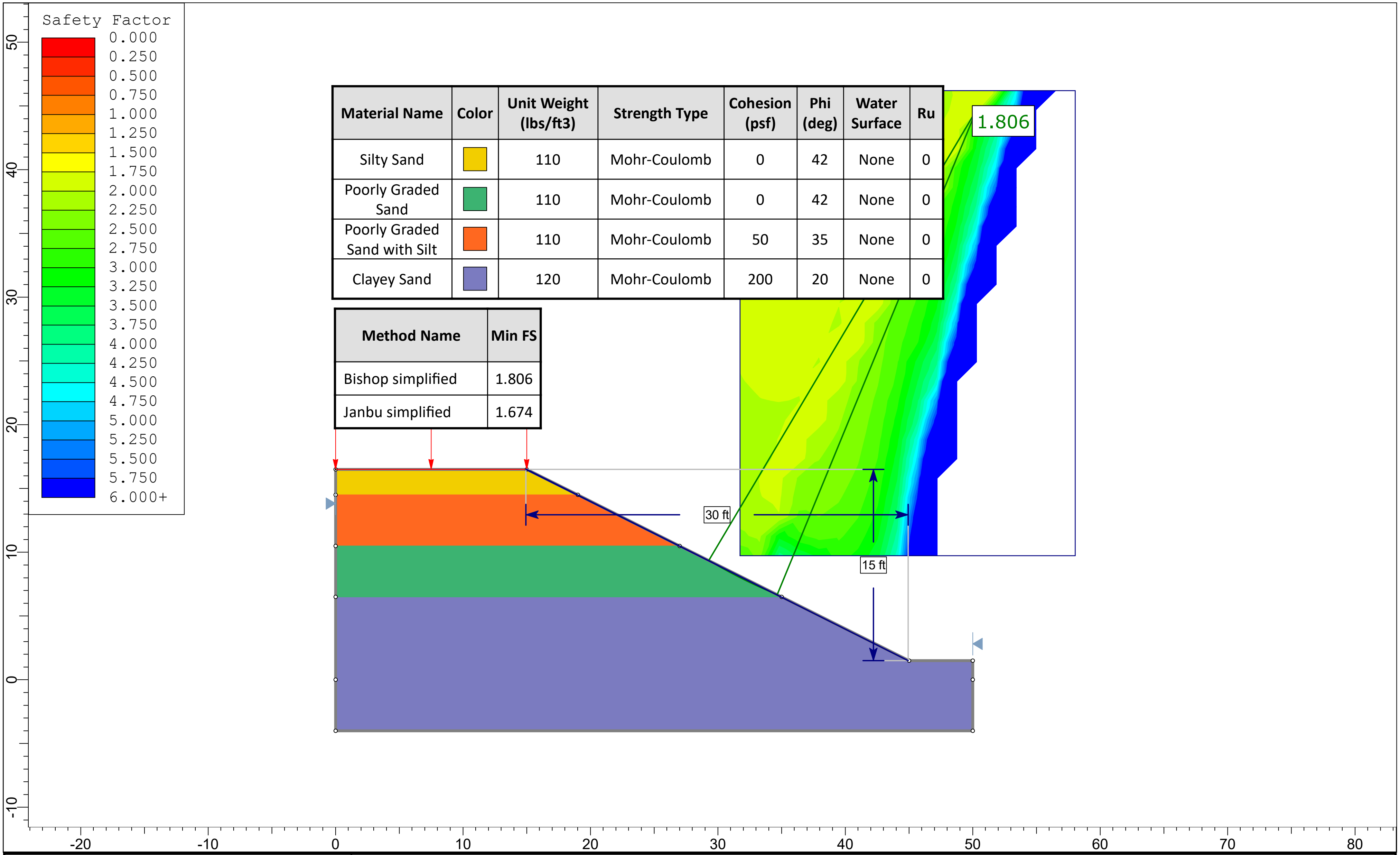
AVERAGE LAST 4 : **1.8E-07**

corrected to 20° C

Print Date: 12/09/22
Entered By: PP
Reviewed By: MK
LSN: **4939G**

APPENDIX C

SLOPE STABILITY



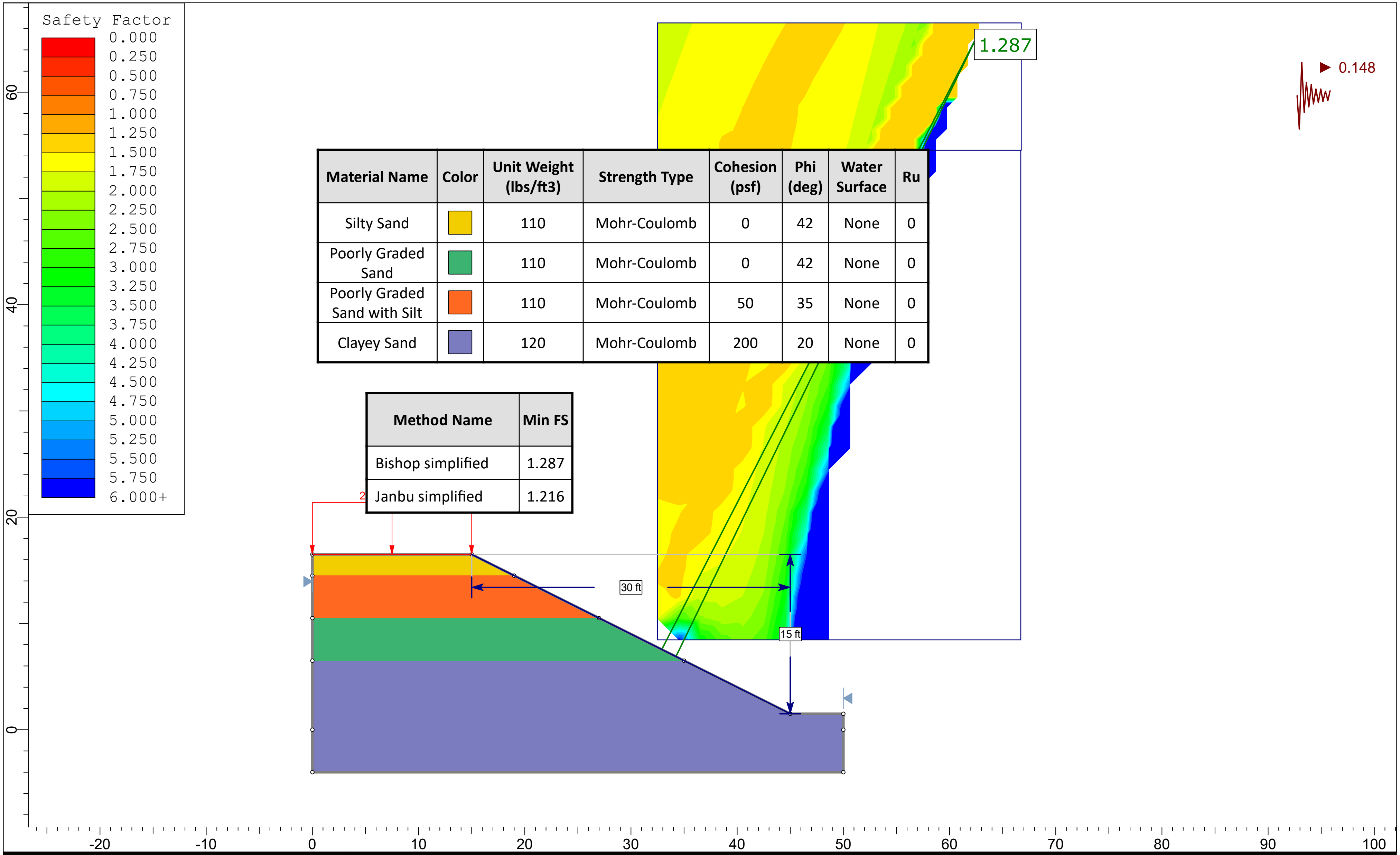
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Silty Sand	🟨	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand	🟩	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand with Silt	🟧	110	Mohr-Coulomb	50	35	None	0
Clayey Sand	🟪	120	Mohr-Coulomb	200	20	None	0

Method Name	Min FS
Bishop simplified	1.806
Janbu simplified	1.674

rocscience

SLIDEINTERPRET 7.038

Project	FID Recharge Basin - Horner
Analysis Description	G00000947
Drawn By	J. Alvarez
Scale	1:125
Company	BSK Associates
Date	12/1/2022
File Name	G00000713 - Thomas Composting.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Silty Sand	🟨	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand	🟩	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand with Silt	🟧	110	Mohr-Coulomb	50	35	None	0
Clayey Sand	🟪	120	Mohr-Coulomb	200	20	None	0

Method Name	Min FS
Bishop simplified	1.287
Janbu simplified	1.216

rocscience

SLIDEINTERPRET 7.038

Project
Thomas Composting Basin

Analysis Description
G00000713

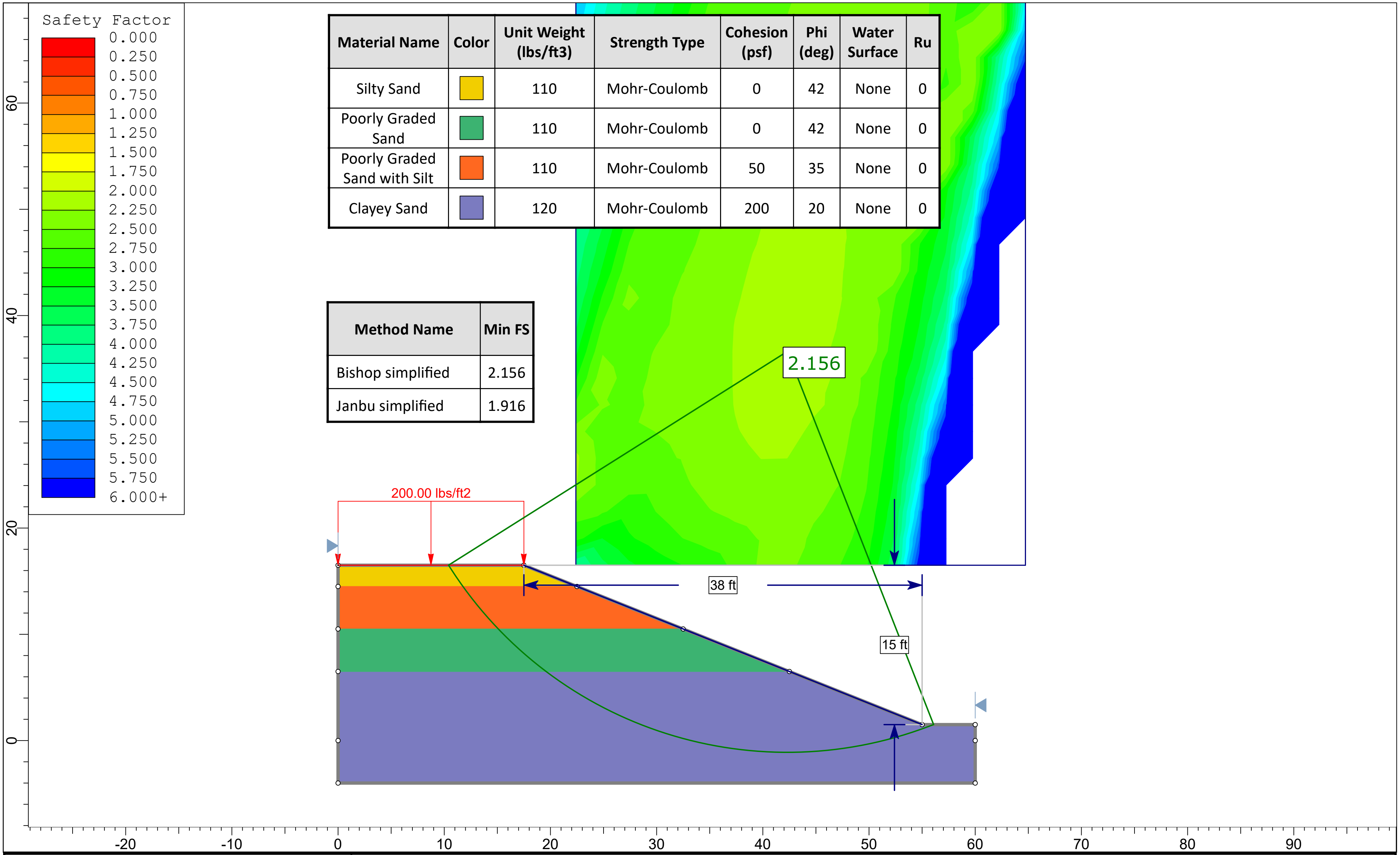
Drawn By T. Gorham

Scale 1:150

Company BSK Associates

Date 12/13/2022

File Name G00000713 - Thomas Composting.slmd



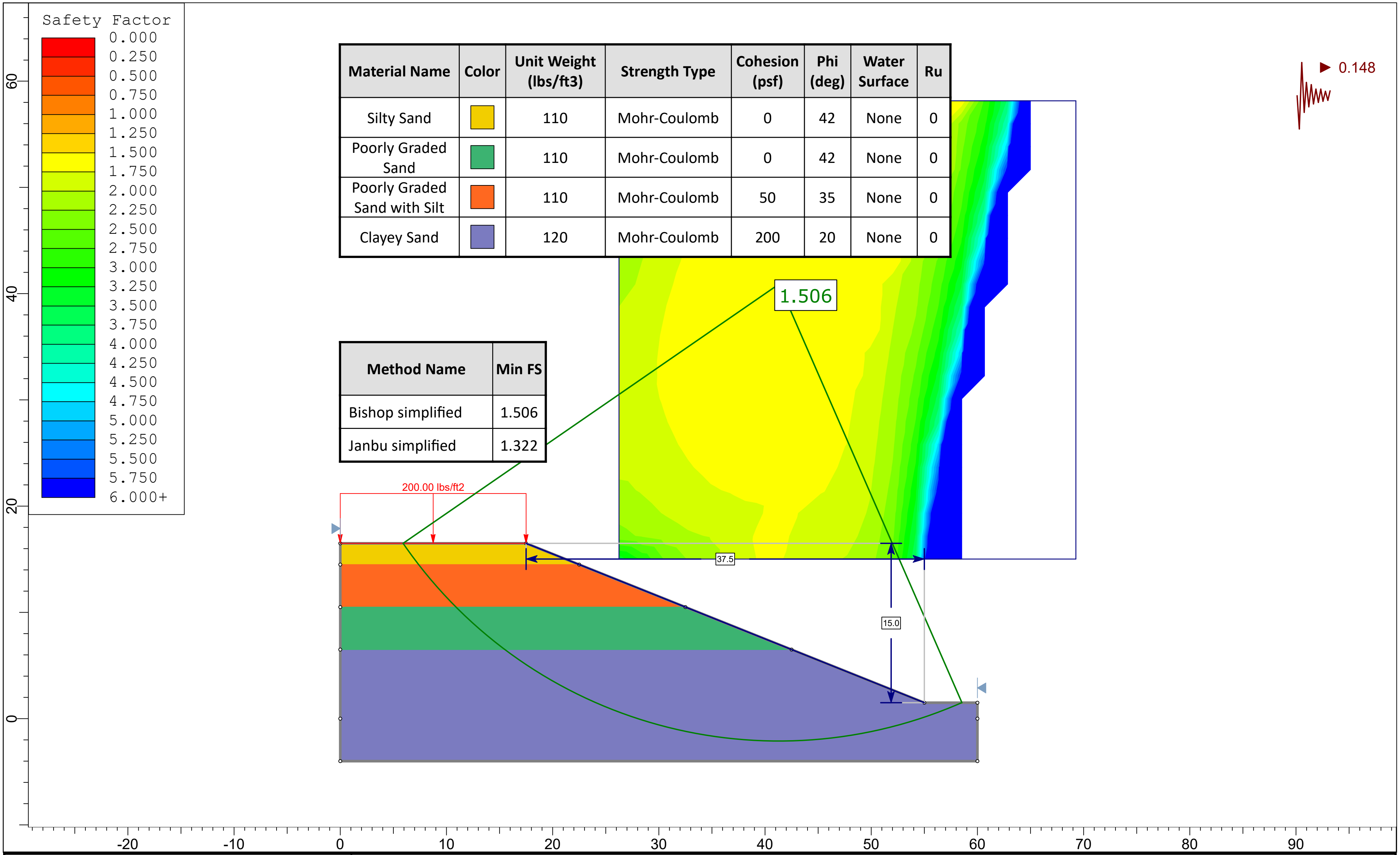
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Silty Sand	🟨	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand	🟩	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand with Silt	🟧	110	Mohr-Coulomb	50	35	None	0
Clayey Sand	🟪	120	Mohr-Coulomb	200	20	None	0

Method Name	Min FS
Bishop simplified	2.156
Janbu simplified	1.916

rocscience

SLIDEINTERPRET 7.038

Project	Thomas Composting Basin		
Analysis Description	G00000713		
Drawn By	T. Gorham	*Scale*	1:150
Company	BSK Associates		
Date	12/13/2022		
File Name	G00000713 - Thomas Composting.slmd		



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Silty Sand	🟨	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand	🟩	110	Mohr-Coulomb	0	42	None	0
Poorly Graded Sand with Silt	🟧	110	Mohr-Coulomb	50	35	None	0
Clayey Sand	🟪	120	Mohr-Coulomb	200	20	None	0

Method Name	Min FS
Bishop simplified	1.506
Janbu simplified	1.322

rocscience

SLIDEINTERPRET 7.038

Project Thomas Composting Basin

Analysis Description G00000713

Drawn By T. Gorham

Scale 1:150

Company BSK Associates

Date 12/13/2022

File Name G00000713 - Thomas Composting.slmd

APPENDIX D

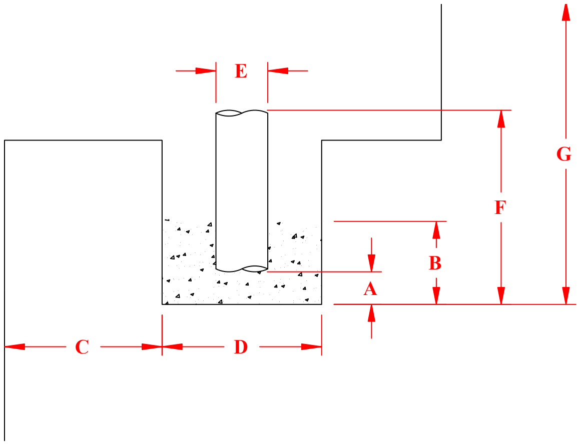
PERCOLATION

TEST RESULTS

FIGURE C-1
550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2868

PERCOLATION TEST DATA SHEET

Project Name:	Thomas Composting	Project No.:	G00000713
Project Location:	Riverdale	Pit No.:	PT-1 (B-3)



A.	Gravel Layer Depth, in.	12
B.	Total Gravel Thickness, in.	12
C.	Distance from Shelf, ft.	NA
D.	Hole Diameter, in.	8
E.	Case Diameter, in.	2
F.	Reference Depth, in.	9
G	Hole Depth, ft.	19.00
	Depth to Groundwater	25
Soil Type (bottom)	Poorly Graded Sand (SP)	

Date & Time Saturated: 11/4/2022, 19:00

Depth of Water after 24-hour Saturation: 0

Begin Test	Initial Depth to Water*, in.	Refilled	End Test	Final Depth to Water*, in.	Test Duration, min.	Water Drop, in.	**Drop Rate min./in.****
8:17	36.0	X	8:18	43.8	1.5	7.8	**0.5**
8:18	43.8		8:20	50.4	1.5	6.6	**0.6**
8:20	50.4		8:21	57.0	1.5	6.6	**0.6**
8:21	57.0		8:23	64.8	1.5	7.8	**0.5**
8:23	64.8		8:24	72.0	1.5	7.2	**0.5**
8:24	72.0		8:26	78.0	1.5	6.0	**0.6**
8:26	78.0		8:27	82.2	1.5	4.2	**0.9**
8:27	82.2		8:29	86.4	1.5	4.2	**0.9**
8:29	86.4		8:30	88.8	1.5	2.4	**1.6**
8:30	88.8		8:32	91.2	1.5	2.4	**1.6**
8:32	91.2		8:33	92.4	1.5	1.2	**3.2**
8:33	92.4		8:35	93.0	1.5	0.6	**6.4**
8:35	93.0		8:36	93.6	1.5	0.6	**6.4**
8:36	93.6		8:38	94.1	1.5	0.5	**8.0**
8:38	94.1		8:39	95.4	1.5	1.3	**2.9**

Average = 5.8

*Depth below reference datum

**Corrected for full depth gravel in annulus

BSK ASSOCIATES

Figure D-2

550 W. Locust
Fresno, CA 93650
Ph: (559) 497-2880

Double Ring Infiltration Test

ASTM D3385

Project Name: Thomas Composting
Project Number: G00000713
Test Location: Existing Basin SW Corner

Saturation Date: 21-11-22
Test Date: 22-11-22
Tested By: J. Alvarez

	Area (cm^2)	Depth of Liquid (cm)	Containers Vol/ΔH (cm^3/cm)
Inner Ring	729.66	19.05	54
Annular Space	2188.98	20.32	168.33

	Inner Flow Rate (cm/hr)	**Annular Flow Rate (cm/hr)**
Average Last 8	0.87	1.05
cm/sec	2.41E-04	2.92E-04
min/in	1.76E+02	1.45E+02

Trail No		Time (hr:min)	Elapsed Time/Cumulative (min)	Flow reading				Incremental Infiltration Rate	
				Inner Reading		Annular Space			
				Reading (cm)	Flow (cm^3)	Reading (cm)	Flow (cm^3)	Inner (cm/h)	Annular (cm/h)
1	S	12:08	5	49.5	5.4	48	50.50	0.09	0.28
	E	12:13	5	49.4		47.7			
2	S	12:13	5	49.4	16.2	47.7	33.67	0.27	0.18
	E	12:18	10	49.1		47.5			
3	S	12:18	5	49.1	5.4	47.5	50.50	0.09	0.28
	E	12:23	15	49		47.2			
4	S	12:23	5	49	5.4	47.2	33.67	0.09	0.18
	E	12:28	20	48.9		47			
5	S	12:28	5	48.9	5.4	47	0.00	0.09	0.00
	E	12:33	25	48.8		47			
6	S	12:33	5	48.8	5.4	47	101.00	0.09	0.55
	E	12:38	30	48.7		46.4			
7	S	12:47	6	48.5	10.8	45.5	134.66	0.15	0.62
	E	12:53	36	48.3		44.7			
8	S	12:53	5	48.3	21.6	44.7	185.16	0.36	1.02
	E	12:58	41	47.9		43.6			
9	S	12:58	5	47.9	21.6	43.6	134.66	0.36	0.74
	E	13:03	46	47.5		42.8			
10	S	13:03	5	47.5	32.4	42.8	185.16	0.53	1.02
	E	13:08	51	46.9		41.7			
11	S	13:08	5	46.9	37.8	41.7	185.16	0.62	1.02
	E	13:13	56	46.2		40.6			
12	S	13:13	5	46.2	21.6	40.6	151.50	0.36	0.83
	E	13:18	61	45.8		39.7			
13	S	13:18	5	45.8	27	39.7	202.00	0.44	1.11
	E	13:23	66	45.3		38.5			
14	S	13:23	5	45.3	32.4	38.5	151.50	0.53	0.83
	E	13:28	71	44.7		37.6			
15	S	13:28	5	44.7	32.4	37.6	168.33	0.53	0.92
	E	13:33	76	44.1		36.6			
16	S	13:33	5	44.1	32.4	36.6	185.16	0.53	1.02
	E	13:38	81	43.5		35.5			
17	S	13:38	5	43.5	27	35.5	168.33	0.44	0.92
	E	13:43	86	43		34.5			
18	S	13:43	5	43	32.4	34.5	151.50	0.53	0.83
	E	13:48	91	42.4		33.6			
19	S	13:48	5	42.4	37.8	33.6	185.16	0.62	1.02
	E	13:53	96	41.7		32.5			
20	S	13:58	5	41.7	199.8	32.5	319.83	3.29	1.75
	E	14:03	101	38		30.6			
21	S								
	E								

BSK ASSOCIATES

Double Ring Infiltration Test

Figure D-3
550 W. Locust
Fresno, CA 93650
Ph: (559) 497-2880

ASTM D3385

Project Name: Thomas Composting

Project Number: G00000713

Test Location: Existing Pond (SW of Property)

Saturation Date: 21-11-22

Test Date: 22-11-22

Tested By: J. Alvarez

	Area (cm^2)	Depth of Liquid (cm)	Containers Vol/ΔH (cm^3/cm)
Inner Ring	729.66	20.32	54
Annular Space	2188.98	20.96	168.33

	Inner Flow Rate (cm/hr)	**Annular Flow Rate (cm/hr)**
Average Last 8	0.55	0.52
cm/sec	1.52E-04	1.45E-04
min/in	2.78E+02	2.91E+02

Trail No		Time (hr:min)	Elapsed Time/Cumulative (min)	Flow reading				Incremental Infiltration Rate	
				Inner Reading		Annular Space			
				Reading (cm)	Flow (cm^3)	Reading (cm)	Flow (cm^3)	Inner (cm/h)	Annular (cm/h)
1	S	11:19	5	59	27	58.5	168.33	0.44	0.92
	E	11:24	5	58.5		57.5			
2	S	11:25	5	58.5	54	57.5	117.83	0.89	0.65
	E	11:30	10	57.5		56.8			
3	S	11:31	5	57.5	43.2	56.8	67.33	0.71	0.37
	E	11:36	15	56.7		56.4			
4	S	11:37	5	56.7	-5.4	56.4	67.33	-0.09	0.37
	E	11:42	20	56.8		56			
5	S	11:44	5	56.5	32.4	55.5	84.17	0.53	0.46
	E	11:49	25	55.9		55			
6	S	11:49	5	55.9	48.6	55	67.33	0.80	0.37
	E	11:54	30	55		54.6			
7	S								
	E								
8	S								
	E								
9	S								
	E								
10	S								
	E								
11	S								
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	E								
17	S								
	E								
18	S								
	E								
19	S								
	E								
20	S								
	E								
21	S								
	E								

APPENDIX B

WATER AND WASTEWATER MANAGEMENT PLAN

WATER & WASTEWATER MANAGEMENT PLAN

THOMAS BROS. COMPOSTING

FEBRUARY 21, 2023

PREPARED FOR:

THOMAS BROS. COMPOSTING
20111 EXCELSIOR AVENUE
RIVERDALE, CA 93656

COMPLETED BY:

4CREEKS

324 S. SANTA FE, STE. A
VISALIA, CA 93292
(559) 802-3052

SUBMITTED TO:

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
1685 E. STREET
FRESNO, CA 93706

WATER & WASTEWATER MANAGEMENT PLAN

The purpose of the Water & Wastewater Management Plan is to ensure that the production area of the facility is designed, constructed, operated and maintained so that waste generated at the facility is managed in compliance with Waste Discharge Requirements of the California Water Code Section 13260 and adopted General Order WQ 2015-0121-DWQ, in order to prevent adverse impacts to groundwater and surface water quality.

THOMAS BROS. COMPOSTING

KINGS COUNTY, CA

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

OWNER:

____
SIGNATURE OF OWNER

____
PRINT

____
DATE

OPERATOR:

____
SIGNATURE OF OPERATOR

____
PRINT

____
DATE

ENGINEER:

____
KYLE PARREIRA, PE #89070

____
DATE

TABLE OF CONTENTS

TABLES

ATTACHMENTS

APPENDIX

Introduction

Thomas Bros. Composting Facility is a proposed composting facility to be constructed and operated in southeast Riverdale adjacent to an existing feedlot facility, Thomas Dairy. This application package constitutes a Report of Waste Discharge (ROWD) pursuant to California Water Code Section 13260. Section 13260 states that persons discharging or proposing to discharge waste that could affect the quality of the waters of the State, other than into a community sewer system, shall file a ROWD containing information which may be required by the appropriate Regional Water Quality Control Board (RWQCB). On August 4, 2015, the State Water Resources Control Board adopted Order WQ 2015-0121-DWQ, *General Waste Discharge Requirements for Composting Operations* (General Order). This Technical Report of Waste Discharge (ROWD) has been prepared on behalf of the facility, in accordance with the respective requirements of the Composting General Order.

I. Proposed Facility Description

A. Name of the Facility & County Location

Facility Name:	Thomas Bros. Composting
County:	Kings County

B. Facility Location

Address:	20111 Excelsior Ave Riverdale, CA 93656
Assessor's Parcel Numbers:	004-062-003
Township, Range, Section:	Township 18 South, Range 20 East, Section 5
Baseline Meridian:	Mount Diablo Base and Meridian

C. Facility Contacts

Facility Owner/Operator/Contact	Frank Anthony Thomas
Address:	19271 Excelsior Avenue Riverdale, CA 93656
Phone:	(559) 922-0279 (559) 906-1404

D. Facility Process Description

The Facility receives up to 154 cubic yards (or 192 wet-tons) of compostable material per day consisting of animal manure from nearby dairy facilities. The Facility currently has the capacity to store up to 2,000 tons at any given time. The Facility receives up to a maximum of 56,000 cubic yards (or 70,000 wet-tons) per year. As necessary, feedstock is processed with a tub grinder and/or screen to achieve the characteristics required to promote composting. Prepared feedstock is composted in windrows for 90 to 120 days. Composting is cured for an additional period until it is stabilized. Water is added as needed to maintain active composting for the desired period. Residual materials are recovered and stored in disposal containers onsite. When filled, the material stored in the containers is removed from the site by Waste Management.

In addition to the composting operations, the owner is proposing the construction of a truck wash for private use. The truck wash will have the capacity to wash 2 vehicles/day totaling to 12 vehicles/week, used for washing the composting equipment on an as-needed basis.

E. Facility Site Maps

1. Vicinity Map (See Attachment A)

The Vicinity Map identifies the location of the composting facility within a five-mile radius.

2. Detailed Site Plan (See Attachment B)

The Detailed Site Map identifies the location and size of working surfaces such as: storage of incoming feedstock (receiving area), active and curing composting, storage of final product and truck wash. The site map also identifies the drainage pattern of the facility, berms and ditches used to convey wastewater, and the location and size the facilities drainage basin

3. Process Flow Diagram (See Attachment C)

The Process Flow Diagram describes the movement of the material from receiving to final product, along with the average time the material remains within each part of the process.

4. Storm Water Tributary Area Map (See Attachment D)

The Storm Water Tributary Map identifies the total impervious areas and the total retention pond areas within the Production Area.

5. APN & Well Identification Map (See Attachment E)

The APN Identification Map identifies each parcel associated with the facility. This map also locates all domestic and municipal wells within a 600 ft radius and any municipal wells within a 1,500 ft radius of the Production Area and Land Application Area.

II. Soil Analysis

A. Soil Survey

The soils at the facility consist of an Excelsior Sandy Loam and a Wasco Sandy Loam. The USDA Soils Map and Classification is summarized in **Appendix A – USDA Soils Map and Classification**.

B. Site Topography

The existing land slopes from the northeast to the southwest with an approximate 0.09% slope, as shown on **Attachment G - USGS Quad Map**.

III. Hydraulic Analysis

A. Groundwater Hydrology

The depth to first encountered groundwater and historical highest groundwater level were evaluated for this site based on data obtained from the State of California, Department of Water Resources (DWR). Data was received on seven wells and included in our analysis (**Appendix B – DWR Hydrographs**). Table 1 below summarizes the data from these wells.

Table 1 – Summary of DWR Well Data

Well Number	**Date of First Measurement**	**Date of Latest Measurement**	**Most Recent Depth To Groundwater (ft bgs)**	**Average Depth to Groundwater (ft bgs)**	**Min. Depth to Groundwater (ft bgs)**	**Max. Depth to Groundwater (ft bgs)**
364008N1196907W001	2/14/1963	11/2/2021	125.9	66.3	32.0	132.3
363983N1198344W001	10/19/2019	3/15/2022	174.0	170.5	164.0	176
364185N1198163W001	10/1/1981	2/24/2014	137.9	96.2	49.0	139.0
363947N1197888W001	9/26/1945	2/18/1993	93.0	70.0	36.5	106.0
363800N1197974W001	10/2/1947	1/23/1992	87.0	69.7	17.5	97.0
Average:			**123.56**	**94.54**	**59.8**	**130.06**

As noted, the average depth to groundwater is 94.54ft. below ground surface (bgs), with the average highest groundwater level at 59.8 ft. bgs. The highest groundwater level was located at Well 363800N1197974W001 with a level of 17.5 ft. bgs on January 23, 1992.

The historical direction of groundwater flow was evaluated based on the DWR "Lines of Equal Elevation of Water in Wells, Unconfined Aquifer" for years 1958, 1969, 1976, 1990, 1995, 2000, 2005, 2010, and 2011 (**Appendix C – DWR Lines of Equal Elevation of Water in Wells**). The data identifies a general direction of flow in the SW direction.

B. Surface Water

A man-made canal borders the south portion of the production area. The production area is proposed to slope away from the canal and is separated by an elevated berm. There are no areas where wastewater is discharged to surface water or areas where storm water run-off can enter the surface water. North Fork Kings River runs approximately 1 mile south of the proposed facility.

C. Flood Analysis

The Federal Emergency Management Agency (FEMA) provides a Flood Insurance Rate Map which identifies different flood zone areas. The Flood Insurance Rate Map, Panel 40 of 875, Community Parcel Number 06031C0040D, September 16, 2015, indicates that the production area is in a Zone X designation (**Attachment G – FEMA Map**). A Zone X designation represents areas that are outside both the 100-year and 500-year flood plains. No additional flood protection is required at this facility.

IV. Wastewater Storage Containment Capacity Analysis

The following analysis defines the processes of the composting facility, the proposed amount of liquid wastewater produced, and how the wastewater is stored and handled.

A. Required Retention Criteria

The General Order requires that "*areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost (active, curing, or final product) must be designed, constructed, and maintained to control and manage all run-on, runoff, and precipitation which falls onto or within the boundaries of these areas, from a 25-year, 24-hour peak storm event at a minimum.*"

B. Proposed Wastewater Storage Containment Capacity

1. Wastewater Accumulated in Production Area from Operations

All wastewater accumulated within the composting operation area is imported with the raw material to be composted. Leachate from the imported material is collected and reapplied as needed to maintain active composting for the desired period.

All wastewater accumulated within the truck wash area drains to a process pit which is pumped to the wastewater retention pond via pipeline.

A summary of the net facility operation wastewater is shown in Table 2 and 3.

Table 2: Composting Facility Process Water Volume

Material	*Total Volume Received (wet-tons/year)*	Moisture Content	*Total Volume Received (yd3/year)*	*Total Volume of Wastewater (gal/day)*
Manure Stacking Output	70,000	0.25	56,000	7,747

Table 3: Truck Wash Process Water Volume

	Units	Livestock Trucks
Average Vehicles Per Week (6 Operational Days)	vehicles/week	12
Average Vehicle Per Day	vehicles/day	2
Wash Time	min.	15
Water Usage Rate	gal./min.	10
Average Water Usage per Vehicle	gal.	150
Average Solid Manure Deposit per Vehicle	gal.	100
Process Pit Solids Removal	%	60%
Total Daily Process Wastewater Generated	**gal.**	**200**

The total composting process water volume per day is summarized in Table 4.

Table 4: Wastewater Volume from Operations

Wastewater Source	*Volume (gal./day)*
Composting Process Water Volume	7,747
Truck Wash Process Water Volume	200
Total Composting Process Water Volume	**7,947**

2. Wastewater Accumulated in Production Area from Precipitation

The wastewater accumulated from the Production Area due to precipitation was calculated using the rational method (Appendix D). An outline of the steps used to calculate the total wastewater volume from rainfall using this method is summarized in the following sections.

a. Production Area Subdivision by Run-off Coefficient

The Production Area was divided into three run-off coefficient categories: the retention ponds surface areas, pervious areas, and impervious areas of the tributary area. The impervious areas include all concrete and buildings. Pervious area includes all other areas within the Production Area. These areas are outlined on the Storm Water Tributary Map (Attachment D). The size of each area, shown in Table 5, was determined by calculations based on the land use data. The precipitation run-off for each area varies and is defined by published run-off coefficients (See Appendix H). The size of each area, shown in Table 5, was determined by calculations based on the land use data.

Table 5: Production Area Summary

Area Description	***Run-off Area (ft²)***	***Run-off Coefficient***	***Weighted Run-off Area (ft²)***
Wastewater Retention Pond Area	14,463	1.00	14,463
Total Impervious Area	7,410	0.75	5,558
Total Pervious Area	632,965	0.31	206,536
Total Production Area	**688,119**		**226,557**

b. Wastewater Accumulated From 25 Year, 24 Hour Storm Event

The 25 year, 24-hour storm event was assumed to happen one time. The rainfall amount was taken from the Isopluvial Map in NOAA Atlas 2, 1973 (Appendix F). A summary of the rainfall volume is shown in Table 7.

Table 6: Wastewater Accumulated from 25 Year, 24 Hour Storm Event

Area Description	***Rainfall (inches)***	***Run-off Coefficient***	***Weighted Run-off Area (ft²)***	***Total Volume Accumulated (gallons)***
Wastewater Retention Pond Area	2.00	1.00	14,463	**18,032**
Total Impervious Part of Tributary Area	2.00	0.88	6,521	**8,130**
Total Pervious Part of Tributary Area	2.00	0.40	266,498	**332,258**
Total Production Area			**287,482**	**358,419**

c. Evaporation from Wastewater Retention Pond

Wastewater from the pond will evaporate. The evaporation rate average was determined by taking the average daily evaporation rates from Bakersfield and Fresno based on CDWR Evaporation Pan Data (Appendix G). The average evaporation rates and the total volume of water evaporated daily are shown in Table 7.

Table 7: Evaporation from the Wastewater Retention Pond

Month	*Bakersfield Evaporation Rate (in./day)*	*Fresno Evaporation Rate (in./day)*	*Average Evaporation Rate (in./day)*	*Total Volume Evaporated (gal./day)*
Daily Total:	**0.18**	**0.19**	**0.185**	**1,668**

3. Proposed Wastewater Retention Pond Storage Capacity

a. Total Wastewater Retention Pond Storage Volume

A cross section detail of the proposed pond is shown in Attachment F. The proposed pond is a double lined, tier 1, below ground level pond, thus allowing 1 foot of freeboard. The total volume of the proposed wastewater retention pond is calculated based on the proposed measurements (Appendix E). The total available storage volume for the pond is summarized in Table 9.

b. Pond System Organization

The entire composting operation area is graded to drain into the wastewater retention pond via overland sheet flow. The truck wash drains into a process pit which is pumped to the pond via pipeline.

c. Minimum Pond Level

The minimum pond level is determined by pond location and usage. Evaporation Ponds are allowed to dry out completely during the summer months and therefore the minimum pond level for ponds of this type is zero. Irrigation Ponds are pumped down to the level of residual solids[1]. Overflow Ponds have overflow pipes to either an Evaporation Pond or an Irrigation Pond. The minimum level for these ponds is at the overflow pipe level. Table 8 identifies the pond type, minimum pond level, and the resulting volume reduction used for computing the available winter storage volume.

Table 8: Pond Capacity Reduction Criteria

Pond Identification	*Pond Type*	*Depth of Residual Solids[1] (feet)*	*Storage Period Pond Volume Reduction (cubic feet)*
Pond 1	Evaporation	0.00	0

[1] - *Residual Solids in Irrigation Ponds are assumed to be 2 foot deep if the wastewater did not pass through a solids separation system before entering the pond. If there is solids separation before entering the pond, the assumed level of residual solids is reduced by half. If there is secondary separation after the primary separation, the residual solids are reduced again by half*.

d. Pond Management

By November 1st every year, Thomas Bros. Composting Facility pumps down the pond to a minimum level of wastewater to clean out the bottom of the pond to ensure that there is adequate capacity for all wastewater generated from facility operations and precipitation. Table 9 shows the total available volume for the pond on the facility.

Table 9: Maximum Available Wastewater Storage Capacity

Pond Identification	***Total Available Storage Capacity (gallons)***	***Freeboard Capacity Reduction (gallons)***	***Storage Period Pond Capacity Reduction (gallons)***	***Total Available Storage Period Capacity (gallons)***
Pond 1	787,948	108,507	0	679,441
			TOTAL:	**679,441**

4. Summary

The process water volume, storm water volume, and retention pond capacity are summarized below in Table 10.

Table 10: Proposed vs. Required Wastewater Retention Pond Storage Capacity

Volume Description	***Total Volume Per Day (gal/day)***
Total Process Water Volume	7,947
Wastewater Accumulated From 25 Year, 24 Hour Event	348,419
Less: Evaporation from Wastewater Retention Pond	(1,668)
Net Required Wastewater Retention Pond Storage Volume	**364,698**
Less: Net Existing Wastewater Retention Pond Storage Volume	679,441
Excess Wastewater Retention Pond Capacity	**314,742**

C. Proposed Modifications

No modifications are required.

D. Contingency Plan

A contingency plan is not required because the wastewater retention pond will have enough proposed storage capacity for the storm water precipitation and run-off volume.

V. Operation & Maintenance Plan

A. Facility Management

The facility shall be managed and operated to keep the process water system operational as described in this report. The site will be maintained to minimize weeds and ensure proper drainage for storm water run-off. The ponds shall be managed to:

- Prevent the breeding of mosquitoes by applying vegetable oil or other vector control measure to the water surface.
- Manage erosion on the slopes of the bank to prevent small coves, washouts, and irregularities from forming. Prevent weeds from growing around the banks by harvesting or applying herbicides.
- Remove any algae, debris, or dead vegetation that may accumulate on the water surface.

The separation equipment shall be maintained in accordance with the accepted guidelines per the equipment manufacturer. No fuel or other hazardous materials may be stored on site without acquiring a proper permit and revising this report.

B. Chemical & Contaminant Handling

Potential chemicals and contaminants used on-site are stored and disposed of in accordance with the recommendations of the manufacturer.

VI. Changed Conditions & Limitations

The findings of this report are valid as of the date of this report. However, if there are any changes to the proposed facility, including management of wastewater, expansion, new improvements, and/or operations, a Registered Civil Engineer shall be notified to review the change(s) at the facility to determine if calculations for this report are still applicable. If the change alters the waste management for the facility, an updated Waste Management Plan shall be submitted to the California Regional Water Quality Control Board, Central Valley Region (CRWQCB).

The CRWQCB shall be notified via a letter of any change in the facility name, owner, operator, or contact person of the facility. If the owner decides to terminate the operations at this facility, a closure plan will be submitted to the CRWQCB.

4Creeks, Inc. has prepared this report for the exclusive use of the said client. The report has been prepared in accordance with generally accepted practices of engineering. No other warranties, either expressed or implied, are made as to the professional advice provided in this report.

VII. References

California Department of Water Resources, Online Data from Sampling Stations (FRO, HND)
http://cdec.water.ca.gov/selectQuery.html

California Department of Water Resources, Online Data for Evaporation
http://www.sjd.water.ca.gov/landwateruse/evaporation/

NOAA Geodetic to State Plane Coordinates (SPC) http://www.ngs.noaa.gov/cgi-bin/spc_getpc.prl

NOAA Online Weather Data, NOAA Atlas 2, 1973 for 25 yr, 24 hr event
http://www.wrcc.dri.edu/pcpnfreq/sca25y24.gif

Title 27 of the California Code of Regulations (CCR), Division 2, Subdivision 1, Chapter 7, Subchapter 2, Article 1 http://www.ciwmb.ca.gov/Regulations/Title27/ch7s2345.htm#Article1

Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition
http://www.swrcb.ca.gov/centralvalley/water_issues/basin_plans/tlbp.pdf

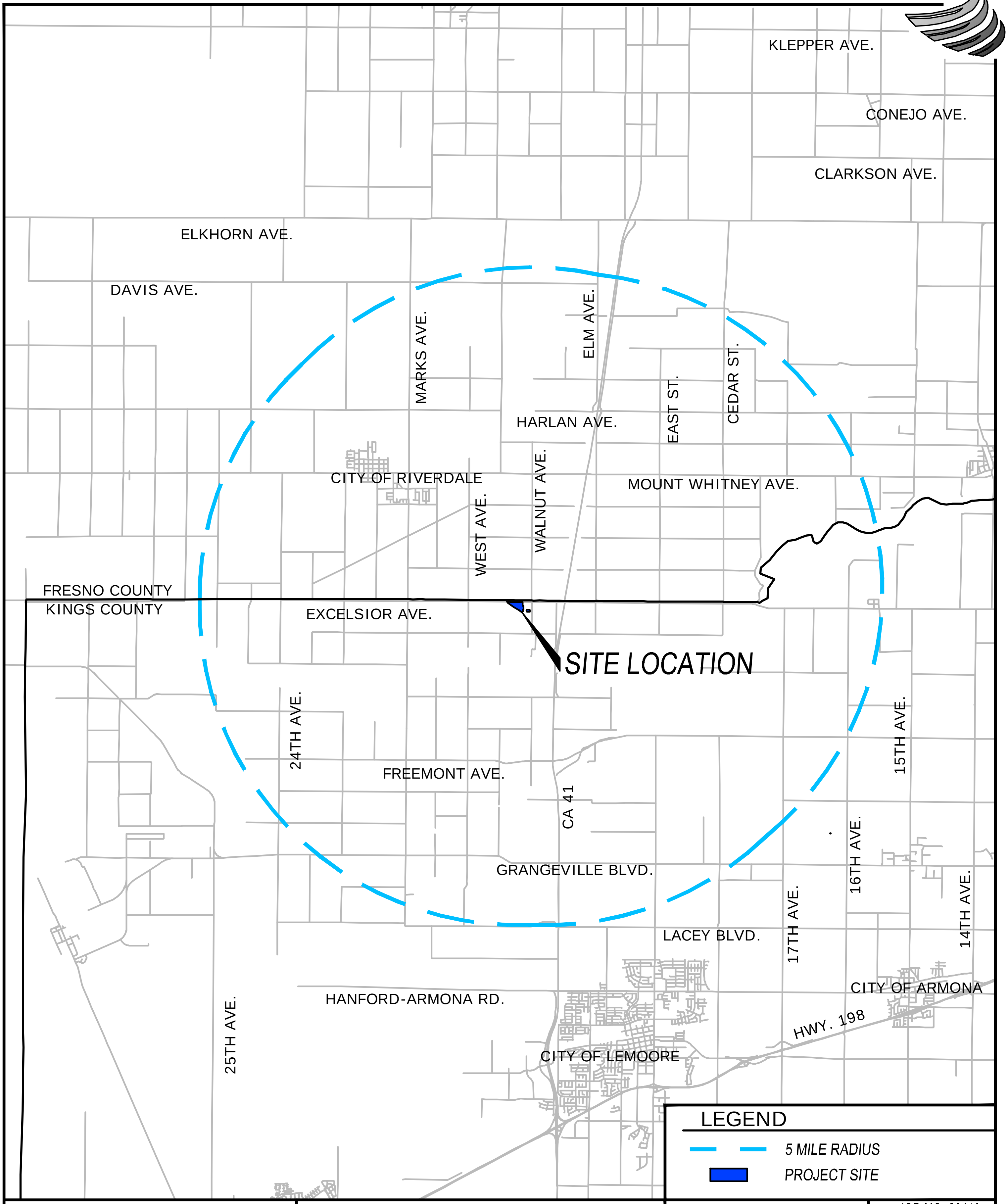
VIII. Regional Water Quality Control Board Correspondence & Revision Record

Correspondence:

Date Received	Description

Revision Record:

Revision #	Date	Section	Description



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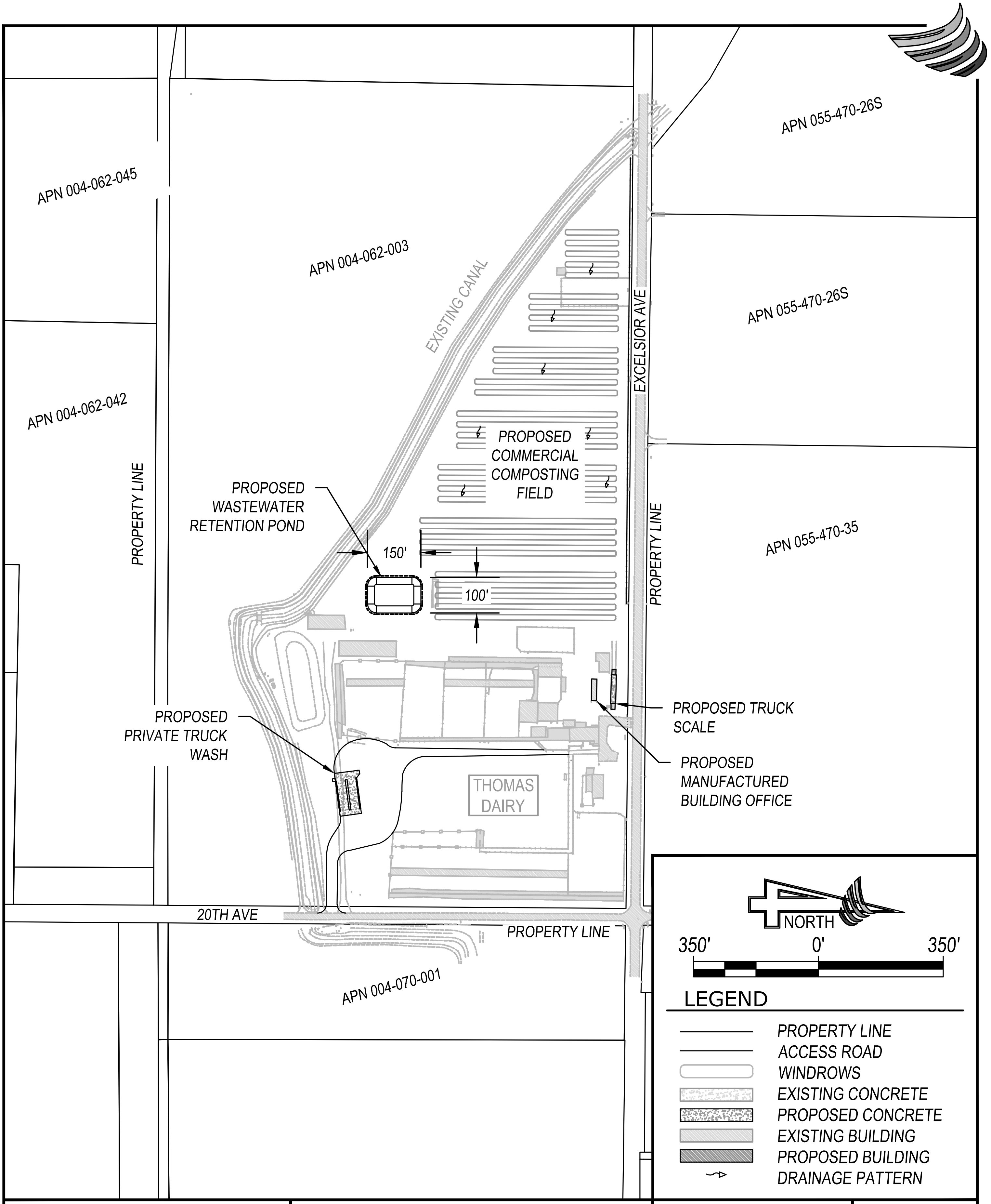
VICINITY MAP

THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

NORTH

JOB NO. 22419
ATTACHMENT A
1/25/2023
1" = 2 MILES



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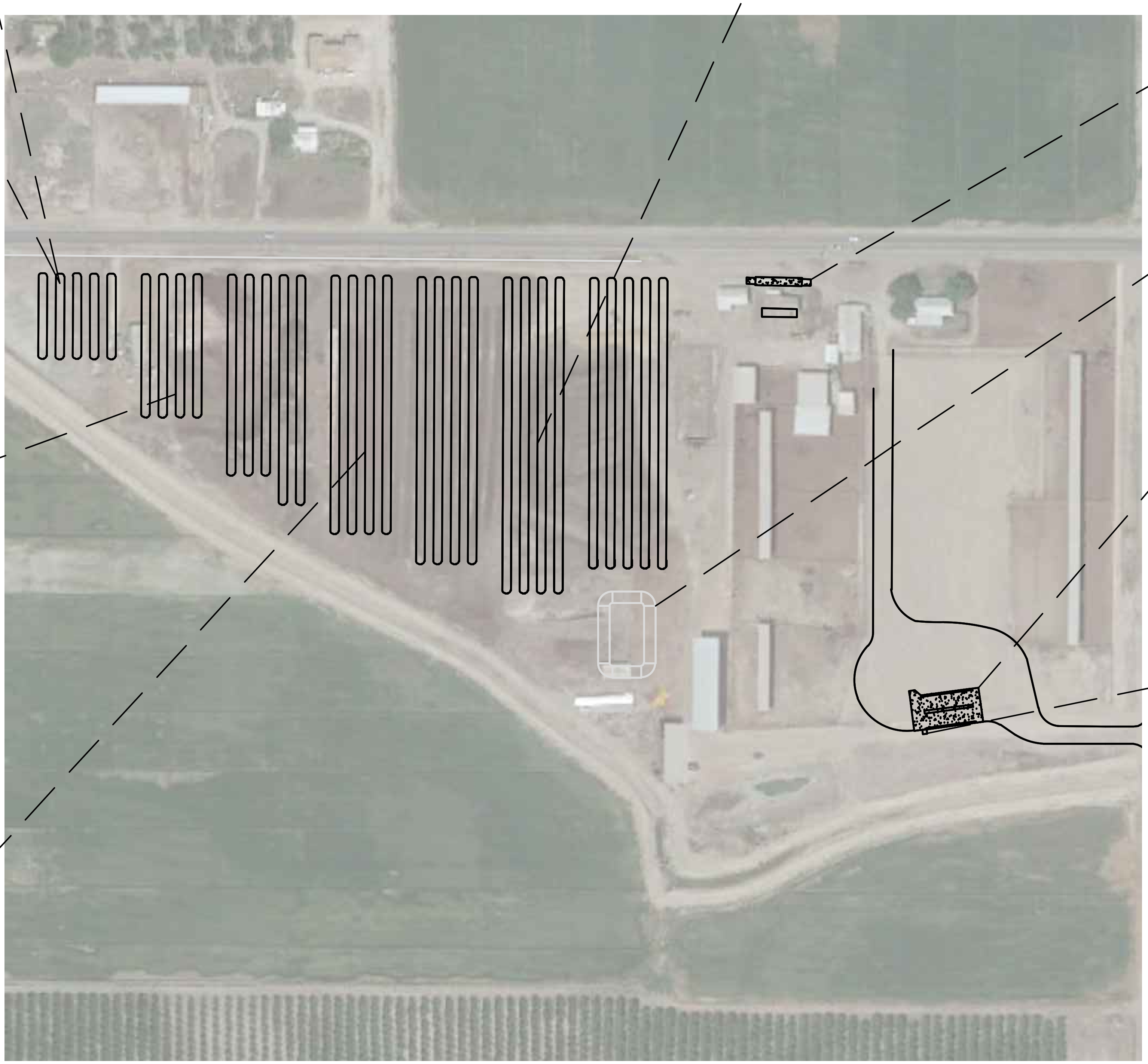
DETAILED SITE PLAN

THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

JOB NO. 22419
ATTACHMENT B
2/21/2023
1" = 350'



3. **SCREENING & GRINDING**
SOURCE: RECEIVED MATERIAL
PROCESSED MATERIAL IS SCREENED TO ACHIEVE UNIFORM PARTICLE SIZE TO PROMOTE WINDROW COMPOSTING.
TIME FRAME: LESS THAN 24 HOURS FROM RECIEPT

2. **RECEIVED MATERIAL**
SOURCE: TRUCK SCALE.
COMPOSTING MATERIAL IS VISUALLY INSPECTED AND SORTED BEFORE BEING SCREENED AND GRINDED.
TIME FRAME: LESS THAN 24 HOURS

4. **ACTIVE COMPOSTING**
SOURCE: SCREENING & GRINDING.
SCREENED AND GROUND MATERIAL IS PLACED IN WINDROWS APPROXIMATELY 200' IN LENGTH 20' IN WIDTH AND 20' SPACING BETWEEN EACH OTHER.
WINDROWS ARE TURNED REGULARLY AS WELL AS MONITORED FOR FOR TEMPERATURE AND MOISTURE CONTENT.FROM ACTIVE COMPOSTING MATERIAL IS TRANSFERRED TO THE CURING STAGE.
TIME FRAME: 90-120 DAYS

5. **CURING**
SOURCE: ACTIVE COMPOSTING.
WHEN THE DESIRED LEVEL OF DECOMPOSITION IS REACHED THE MATERIAL IS PLACED INTO CURING PILES BEFORE BEING SCREENED AND/OR MIXED WITH OTHER MATERIALS.
TIME FRAME: 30-120 DAYS

6. **FINISHED PRODUCT**
SOURCE: CURING
MATERIAL IS SCREENED AND/OR MIXED WITH OTHER MATERIALS TO ACHIEVE THE REQUIRED PRODUCT SPECIFICATIONS BEFORE BEING SOLD.
TIME FRAME: LESS THAN 24 HOURS

1. **TRUCK SCALE**
SOURCE: COLLECTION VEHICLES AND VEHICLES OPERATED BY THOMAS BROS.
VEHICLES ENTER THE FACILITY THROUGH THE SCALE TO DETERMINE AMOUNT OF MANURE BROUGHT ONSITE.

9. **WASTEWATER DETENTION POND**
SOURCE: DRAINAGE CHANNEL AND PROCESS PIT
STORES WASTEWATER FROM WORKING SURFACES, WHICH WILL BE UTILIZED FOR REAPPLICATION TO ACTIVE COMPOSTING PILES.

7. **TRUCK WASH**
SOURCE: COLLECTION VEHICLES AND VEHICLES
KEEPS COLLECTION VEHICLES AND VEHICLES CLEAN AND USABLE. WATER FLOWS FROM TRUCK WASH TO PROCESS PIT.

8. **PROCESS PIT**
SOURCE: PROCESS PIT
DETAINS WASTEWATER FROM WORKING SURFACES.
WATER IS PUMPED TO THE DETENTION POND

FACILITY PROCESS FLOW DIAGRAM
THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

JOB NO. 22419
ATTACHMENT C
1/25/2023
SCALE: NTS

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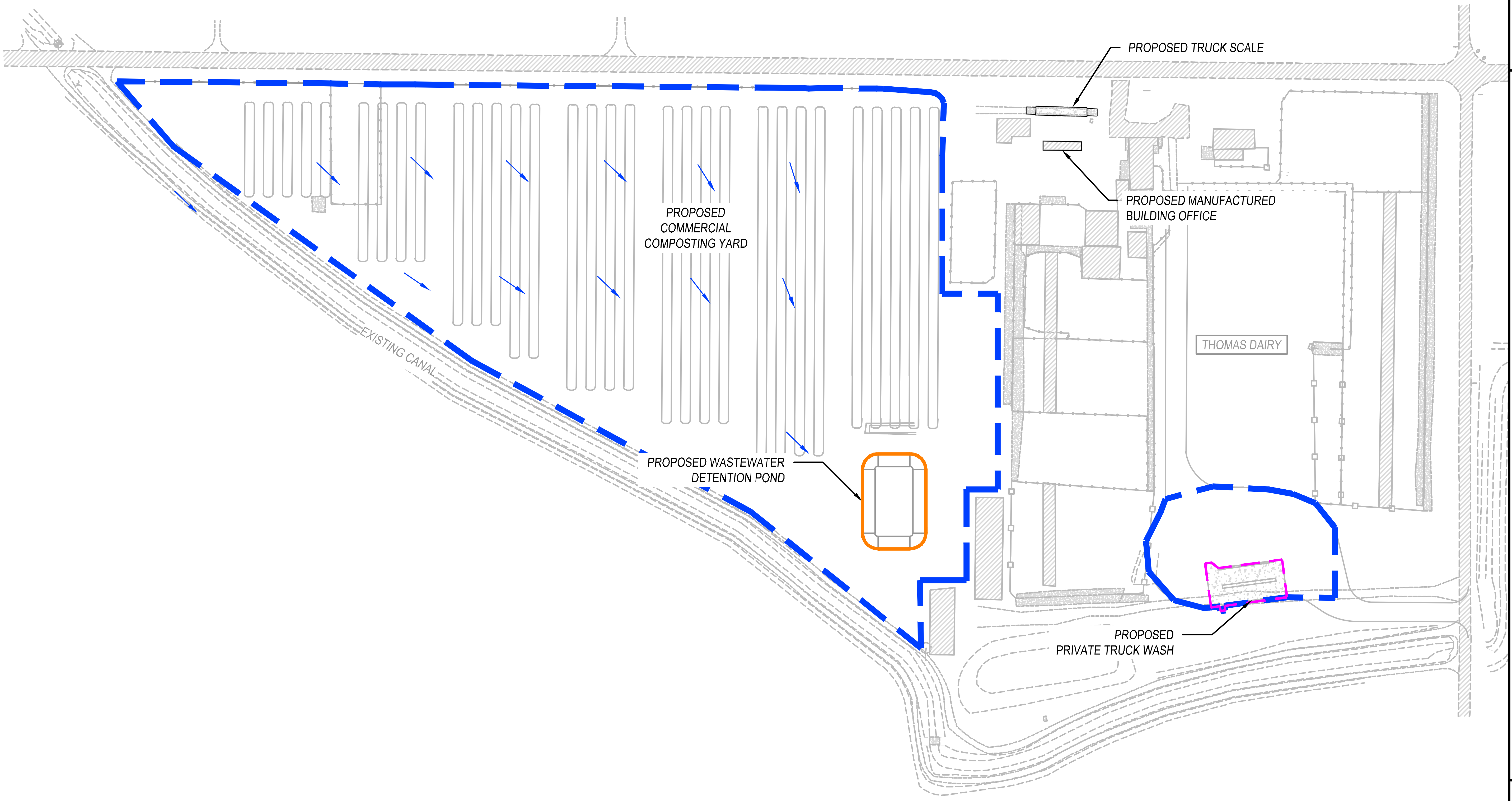
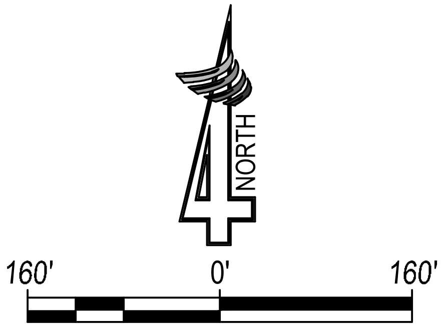
Visalia, CA 93292
(559) 802-3052
www.4-creeks.com





LEGEND

- ▬ ▬ IMPERVIOUS AREA BOUNDARY
- ▬ ▬ TRIBUTARY AREA BOUNDARY
- ▬ WASTEWATER POND AREA
- ← DIRECTION OF SLOPE

TOTAL AREA WITHIN MANURE HANDLING LIMITS: 688,119 SQ. FT.
TOTAL IMPERVIOUS AREA: 7,410 SQ. FT.
TOTAL POND AREA: 14,463 SQ. FT.

JOB NO. 22419
ATTACHMENT D
11/08/2022
1" = 160'

STORM WATER TRIBUTARY AREA MAP

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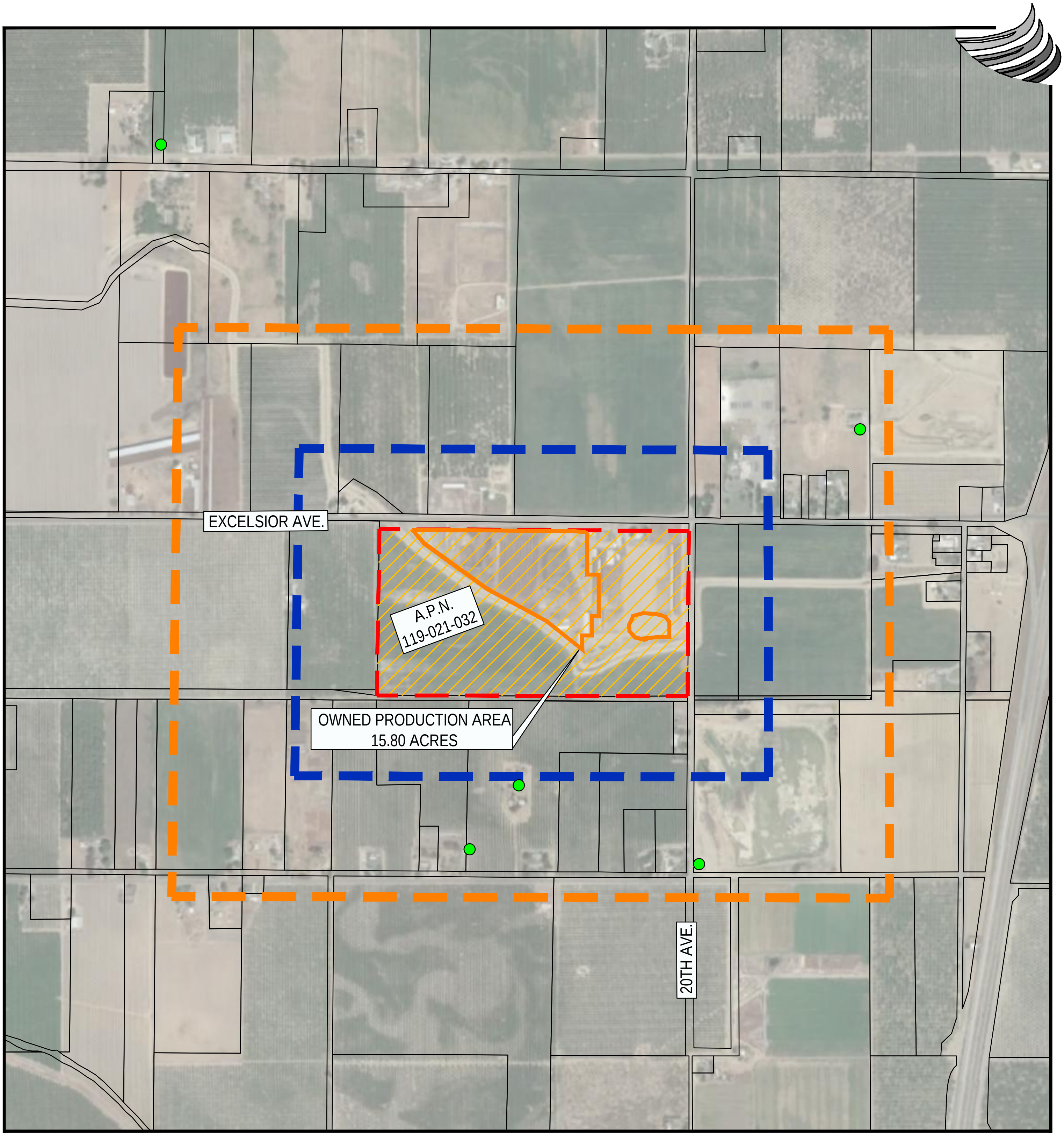

LEGEND

- 🟥 — — PROPERTY BOUNDARY
- ── PRODUCTION AREA
- ── PROPERTY LINE
- ▬ ▬ 600' (DOMESTIC AND IRRIGATION WELLS)
- ▬ ▬ 1500' RADIUS (MUNICIPAL WELLS)
- ▨ AREA OWNED
- ▨ AREA LEASED
- ☒ AREA NOT USED BY FACILITY
- ● DOMESTIC WELL LOCATION
- ● IRRIGATION WELL LOCATION
- ● MUNICIPAL WELL LOCATION

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APN & WELL IDENTIFICATION MAP

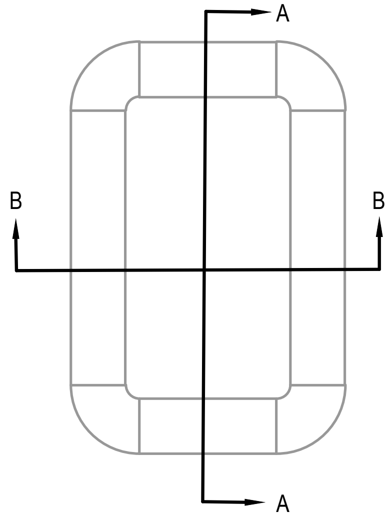
THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

NORTH

JOB NO. 22419
ATTACHMENT E
11/08/2022
1" = 1,000'

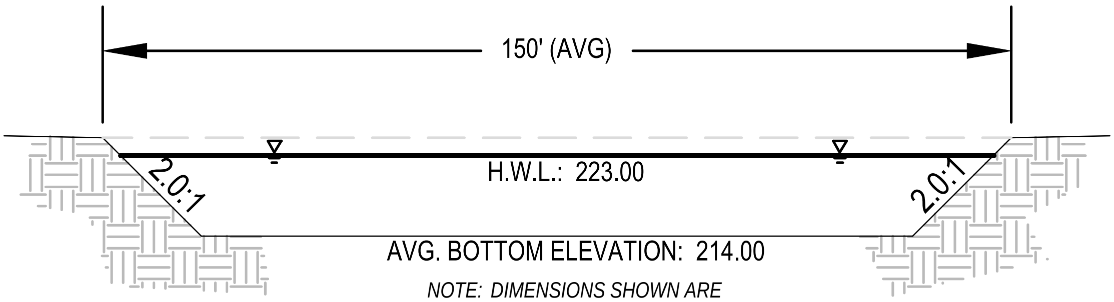
WASTEWATER DETENTION POND - EVAPORATION POND

TOTAL VOLUME: 787,948 GALLONS
REDUCTION - 1 FT OF FREEBOARD: 108,507 GALLONS
TOTAL RETENTION VOLUME: 679,441 GALLONS



WASTEWATER DETENTION POND - PLAN VIEW

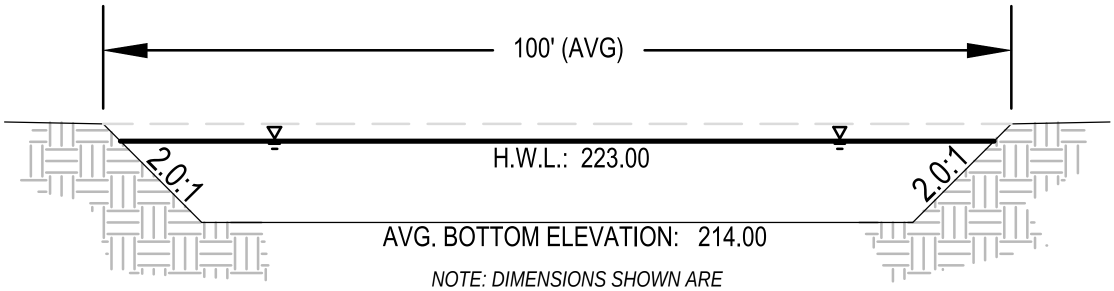
SCALE: 1" = 70'



NOTE: DIMENSIONS SHOWN ARE
BASED UPON POND DESIGN

SECTION A-A

NTS



NOTE: DIMENSIONS SHOWN ARE
BASED UPON POND DESIGN

SECTION B-B

NTS

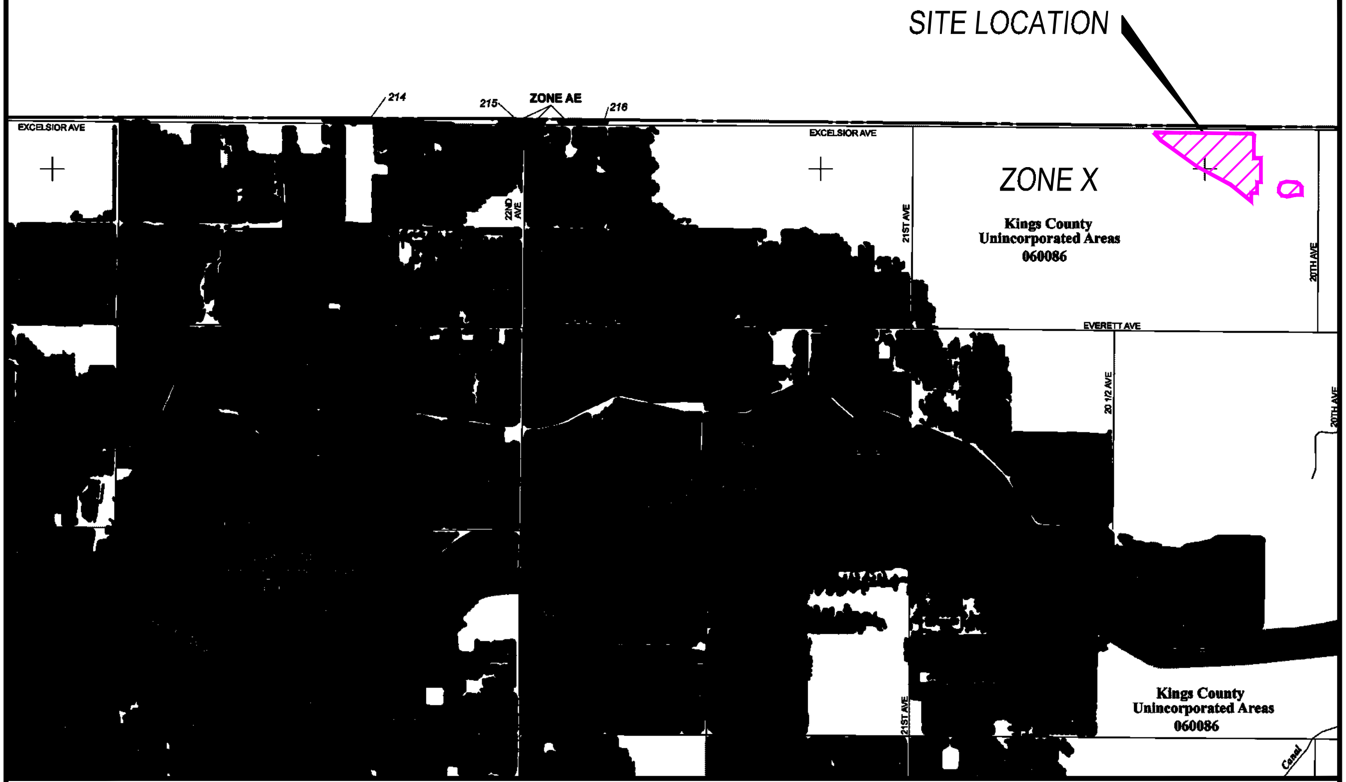
4CREEKS

324 S. SANTA FE, STE. A
VISALIA, CA 93292
(559) 802-3052

WASTEWATER DETENTION POND DETAIL

THOMAS BROS.COMPOSTING
KINGS COUNTY, CA

JOB NO. 22419
ATTACHMENT F
11/03/2022
SEE DRAWING



LEGEND

■ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

■ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

■ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
••••••••••	CBRS and OPA boundary
■ ←	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{42}75^{000m}$E	1000-meter Universal Transverse Mercator grid ticks, zone 11
6000000 FT	5000-foot grid values: California State Plane coordinate system, Zone IV (FIPSZONE = 404), Lambert projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JUNE 16, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
SEPTEMBER 16, 2015 - to add Base Flood Elevations and Special Flood Hazard Areas, to change zone designations and Special Flood Hazard Areas, and to reflect updated topographic information.

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0040D

FIRM
FLOOD INSURANCE RATE MAP
KINGS COUNTY,
CALIFORNIA
AND INCORPORATED AREAS

PANEL 40 OF 875
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
KINGS COUNTY	060086	0040	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06031C0040D

MAP REVISED
SEPTEMBER 16, 2015
Federal Emergency Management Agency

LEGEND

▨ LIMITS OF PRODUCTION AREA

4CREEKS

324 S. SANTA FE, STE. A
VISALIA, CA 93292
(559) 802-3052

FEMA MAP
THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

NORTH

JOB NO. 22419
ATTACHMENT G
11/08/2022
1" = 5000'

APPENDIX A

USDA SOILS MAP AND CLASSIFICATION

Soil Map

Map Scale: 1:3,670 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kings County, California
Survey Area Data: Version 18, Aug 31, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 16, 2022—May 30, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
112	Excelsior sandy loam	23.0	67.6%
174	Wasco sandy loam, 0 to 5 percent slopes	11.0	32.4%
Totals for Area of Interest		**33.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

APPENDIX B

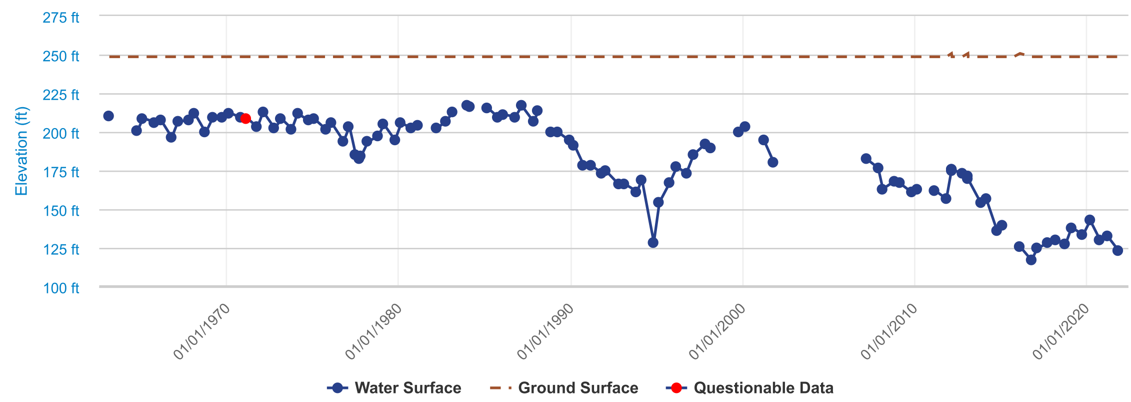
DWR GROUNDWATER HYDROGRAPHS

Groundwater Level Report

Station 364008N1196907W001

Station Data
Groundwater Level Data

Groundwater Levels for Well 364008N1196907W001



Download Data

Measuremer Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwate Elevation	Ground Surface to Water Surface	Measuremen Issue	Submitting Organization	Collecting Organization	Water Level Measuremen Comments
02/14/1963 00:00:00	249.400	248.600	39	210.4	38.2		Department of Water Resou...	Department of Water Resources	
02/12/1964 00:00:00	249.400	248.600				NM:Pumping	Department of Water Resou...	KINGS COUNTY WATER DISTRICT	
10/01/1964 00:00:00	249.400	248.600	48.9	200.5	48.1		Department of Water Resou...	KINGS COUNTY WATER DISTRICT	
02/01/1965 00:00:00	249.400	248.600	40.5	208.9	39.7		Department of Water Resou...	KINGS COUNTY WATER DISTRICT	
10/10/1965 00:00:00	249.400	248.600	43	206.4	42.2		Department of Water Resou...	KINGS COUNTY WATER DISTRICT	
02/22/1966 00:00:00	249.400	248.600	42	207.4	41.2		Department of Water Resou...	KINGS COUNTY WATER DISTRICT	

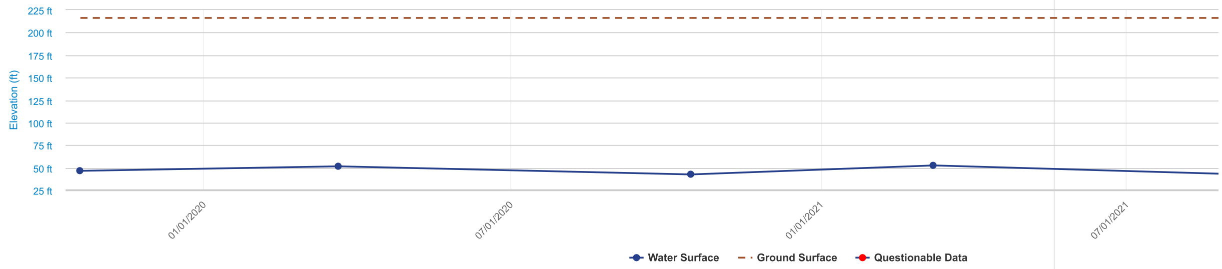
Back to Search

Groundwater Level Report

Station 363983N1198344W001

Station Data Groundwater Level Data

Groundwater Levels for Well 363983N1198344W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Submitting Organization	Collecting Organization	Water Level Measurement Comments
10/19/2019 12:00:00	216.500	216.200	170	46.5	169.7		North Fork Kings GSA...	North Fork Kings GSA	
03/20/2020 12:00:00	216.500	216.200	165	51.5	164.7		North Fork Kings GSA...	North Fork Kings GSA	
10/15/2020 12:00:00	216.500	216.200	174	42.5	173.7		North Fork Kings GSA...	North Fork Kings GSA	
03/08/2021 12:00:00	216.500	216.200	164	52.5	163.7		North Fork Kings GSA...	North Fork Kings GSA	
10/15/2021 12:00:00	216.500	216.200	176	40.5	175.7	QM:Oil or foreign substance in casing	North Fork Kings GSA...	North Fork Kings GSA	Oil or foreign substance in casing
03/15/2022 08:15:00	216.500	216.200	174	42.5	173.7		North Fork Kings GSA...	North Fork Kings GSA	

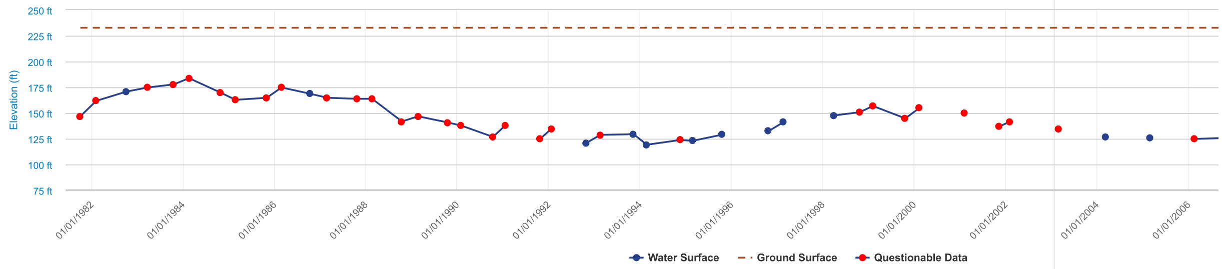
6 records

Groundwater Level Report

Station 364185N1198163W001

Station Data Groundwater Level Data

Groundwater Levels for Well 364185N1198163W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Submitting Organization	Collecting Organization	Water Level Measurement Comments
10/01/1981 00:00:00	232.770	232.770	86	146.77	86	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
02/05/1982 00:00:00	232.770	232.770	71	161.77	71	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
10/05/1982 00:00:00	232.770	232.770	62	170.77	62		Department of Water Resou...	Department of Water Resources	
03/23/1983 00:00:00	232.770	232.770	58	174.77	58	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
10/18/1983 00:00:00	232.770	232.770	55	177.77	55	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
02/17/1984 00:00:00	232.770	232.770	49	183.77	49	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
10/26/1984 00:00:00	232.770	232.770	63	169.77	63	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
02/22/1985 00:00:00	232.770	232.770	70	162.77	70	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
10/30/1985 00:00:00	232.770	232.770	68	164.77	68	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
02/25/1986 00:00:00	232.770	232.770	58	174.77	58	QM:Acoustical sounder	Department of Water Resou...	Bureau of Reclamation	
10/09/1986 00:00:00	232.770	232.770	64	168.77	64		Department of Water Resou...	Bureau of Reclamation	
02/26/1987 00:00:00	232.770	232.770	68	164.77	68	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
10/22/1987 00:00:00	232.770	232.770	69	163.77	69	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
02/19/1988 00:00:00	232.770	232.770	69	163.77	69	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
10/14/1988 00:00:00	232.770	232.770	91	141.77	91	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
02/21/1989 00:00:00	232.770	232.770	86	146.77	86	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
10/16/1989 00:00:00	232.770	232.770	92	140.77	92	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
01/31/1990 00:00:00	232.770	232.770	95	137.77	95	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	
10/12/1990 00:00:00	232.770	232.770	106	126.77	106	QM:Acoustical sounder	Department of Water Resou...	Department of Water Resources	

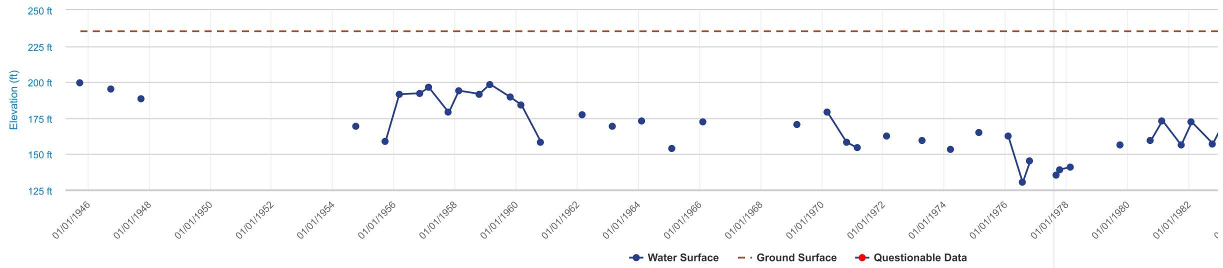
Back to Search

Groundwater Level Report

Station 363947N1197888W001

Station Data **Groundwater Level Data**

Groundwater Levels for Well 363947N1197888W001



Download Data

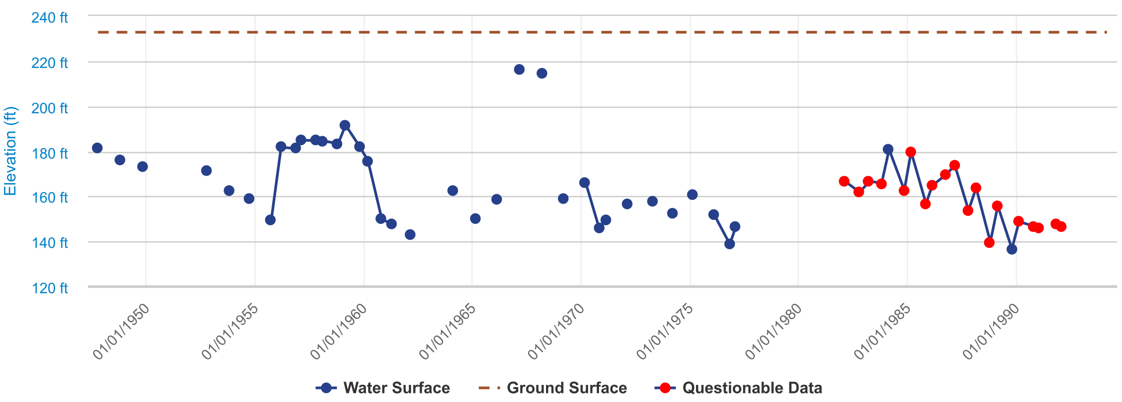
Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Submitting Organization	Collecting Organization	Water Level Measurement Comments
09/26/1945 00:00:00	236.280	235.280	36.5	199.78	35.5		Department of Water Resou...	Department of Water Resources	
10/03/1946 00:00:00	236.280	235.280	41	195.28	40		Department of Water Resou...	Department of Water Resources	
09/30/1947 00:00:00	236.280	235.280	48	188.28	47		Department of Water Resou...	Department of Water Resources	
10/22/1948 00:00:00	236.280	235.280				NM:Pumping	Department of Water Resou...	Department of Water Resources	
09/30/1954 00:00:00	236.280	235.280	67	169.28	66		Department of Water Resou...	Department of Water Resources	
09/20/1955 00:00:00	236.280	235.280	77.5	158.78	76.5		Department of Water Resou...	Department of Water Resources	
03/03/1956 00:00:00	236.280	235.280	44.7	191.58	43.7		Department of Water Resou...	Department of Water Resources	
11/06/1956 00:00:00	236.280	235.280	44	192.28	43		Department of Water Resou...	Department of Water Resources	
02/18/1957 00:00:00	236.280	235.280	39.9	196.38	38.9		Department of Water Resou...	Department of Water Resources	
10/15/1957 00:00:00	236.280	235.280	57.4	178.88	56.4		Department of Water Resou...	Department of Water Resources	
02/13/1958 00:00:00	236.280	235.280	42.2	194.08	41.2		Department of Water Resou...	Department of Water Resources	
10/17/1958 00:00:00	236.280	235.280	44.5	191.78	43.5		Department of Water Resou...	Department of Water Resources	
02/19/1959 00:00:00	236.280	235.280	37.7	198.58	36.7		Department of Water Resou...	Department of Water Resources	
10/21/1959 00:00:00	236.280	235.280	46.7	189.58	45.7		Department of Water Resou...	Department of Water Resources	
03/01/1960 00:00:00	236.280	235.280	52.1	184.18	51.1		Department of Water Resou...	Department of Water Resources	
10/20/1960 00:00:00	236.280	235.280	77.8	158.48	76.8		Department of Water Resou...	Department of Water Resources	
04/04/1961 00:00:00	236.280	235.280				NM:Pumping	Department of Water Resou...	Department of Water Resources	

Groundwater Level Report

Station 363800N1197974W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 363800N1197974W001



Download Data

Measuremen Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measuremen Issue	Submitting Organization	Collecting Organization	Water Level Measurement Comments
10/02/1947 00:00:00	233.790	232.790	52.2	181.59	51.2		Department of Water Resou...	Department of Water Resources	
10/22/1948 00:00:00	233.790	232.790	57.4	176.39	56.4		Department of Water Resou...	Department of Water Resources	
10/19/1949 00:00:00	233.790	232.790	60.7	173.09	59.7		Department of Water Resou...	Department of Water Resources	
09/26/1950 00:00:00	233.790	232.790				NM:Pumping	Department of Water Resou...	Department of Water Resources	
09/26/1952 00:00:00	233.790	232.790	62.3	171.49	61.3		Department of Water Resou...	Department of Water Resources	
10/20/1953 00:00:00	233.790	232.790	71.3	162.49	70.3		Department of Water Resou...	Department of Water Resources	
09/30/1954 00:00:00	233.790	232.790	74.5	159.29	73.5		Department of Water Resou...	Department of Water Resources	
09/21/1955 00:00:00	233.790	232.790	84	149.79	83		Department of Water Resou...	Department of Water Resources	

APPENDIX C

DWR LINES OF EQUAL ELEVATION IN WATER WELLS

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

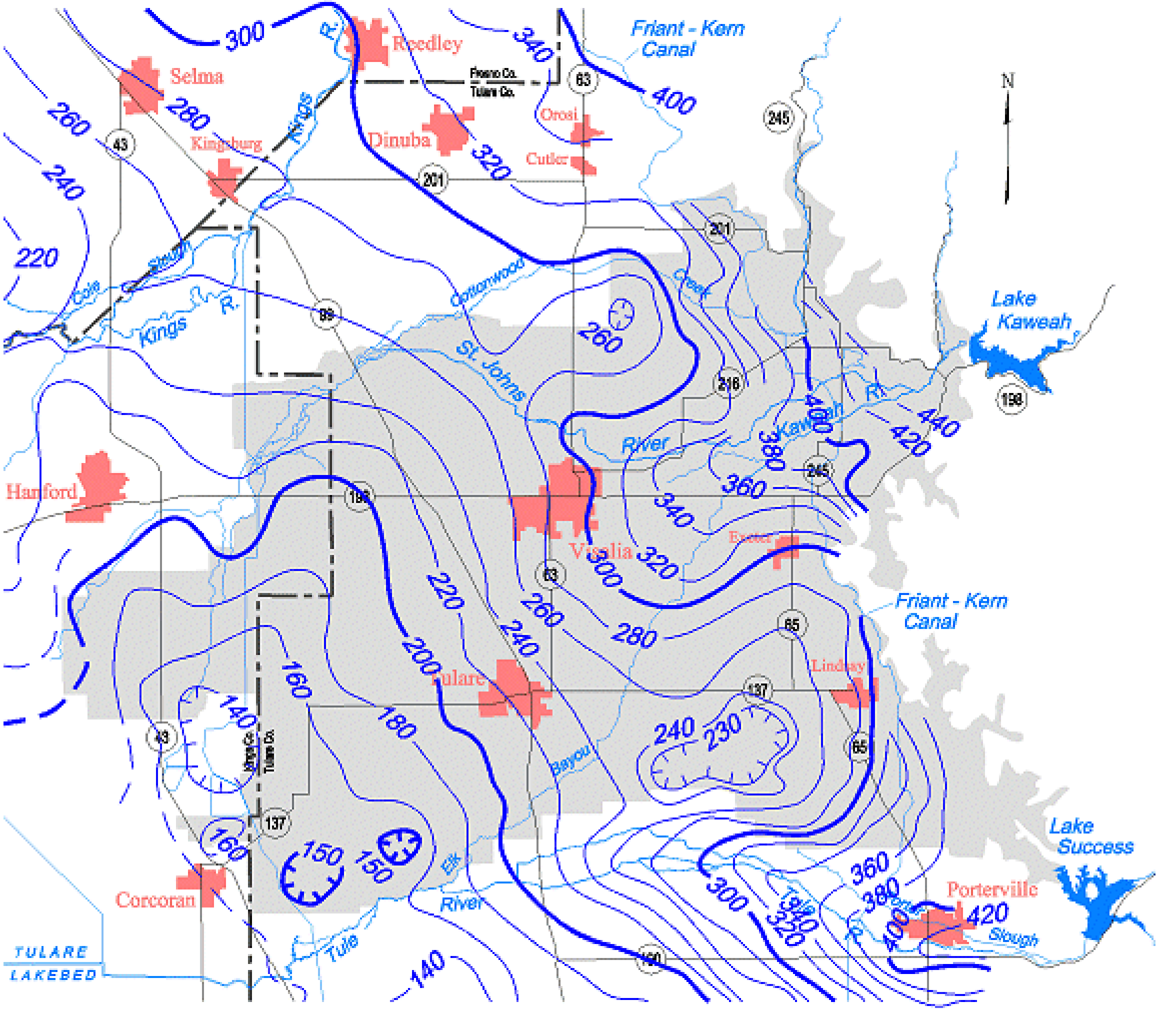
Kaweah Groundwater Basin

Spring 1958, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer

Scale of Miles

2 0 2 4 6 8

Disclaimer: Base map created from current USGS 1:24,000 and 1:100,000 maps. Some base map features may not have been present (i.e. roads, canals, reservoirs) for the water year shown.



Contours are dashed where inferred. Contour interval is 10, 20 and 60 feet.

Groundwater Data & Monitoring

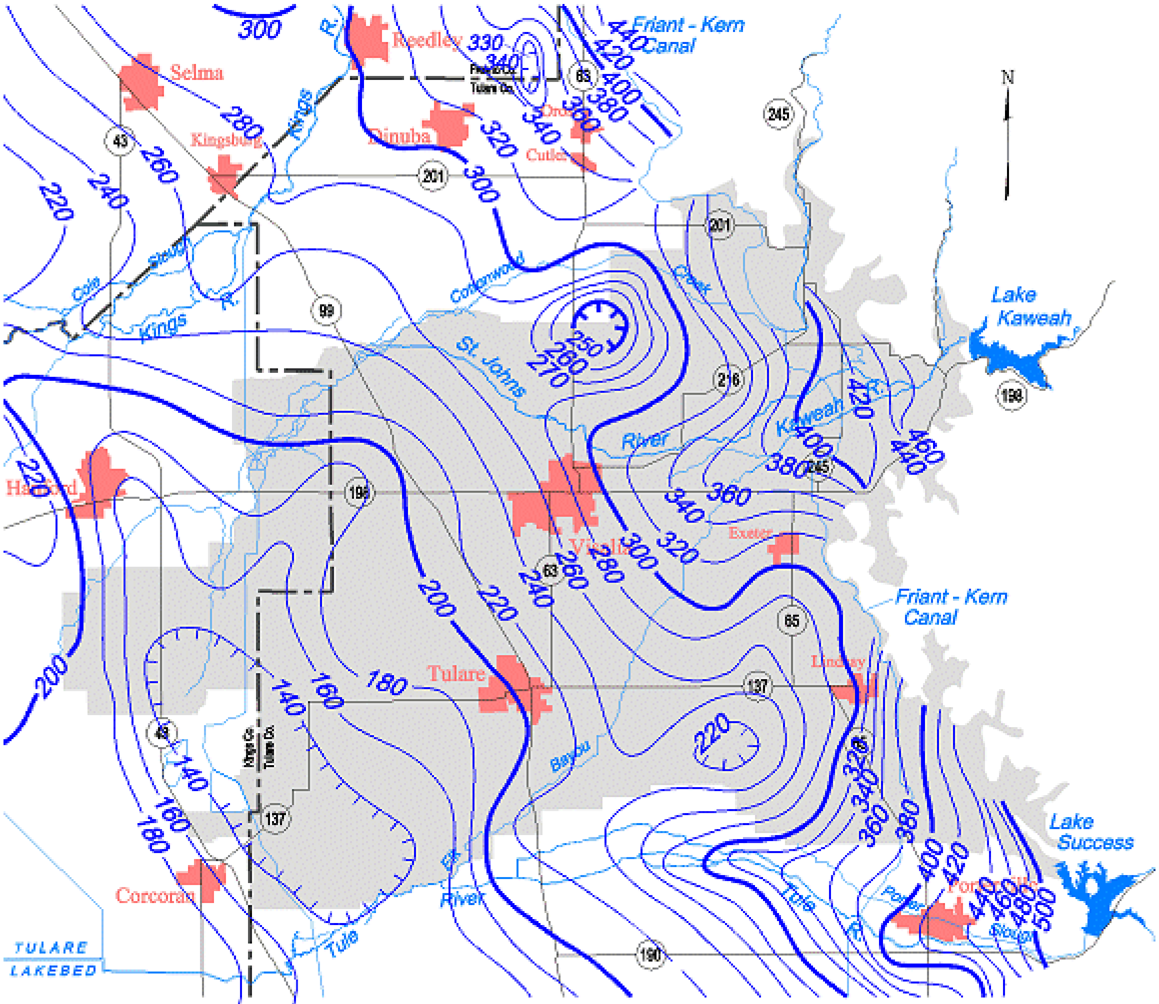
South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 1969, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer

Scale of Miles
2 0 2 4 6 8

Disclaimer: Base map created from current USGS 1:24,000 and 1:100,000 maps.
Some base map features may not have been present (i.e. roads, canals, reservoirs) for the water year shown.



Contours are dashed where inferred. Contour interval is 10 and 20 feet.

Groundwater Data & Monitoring

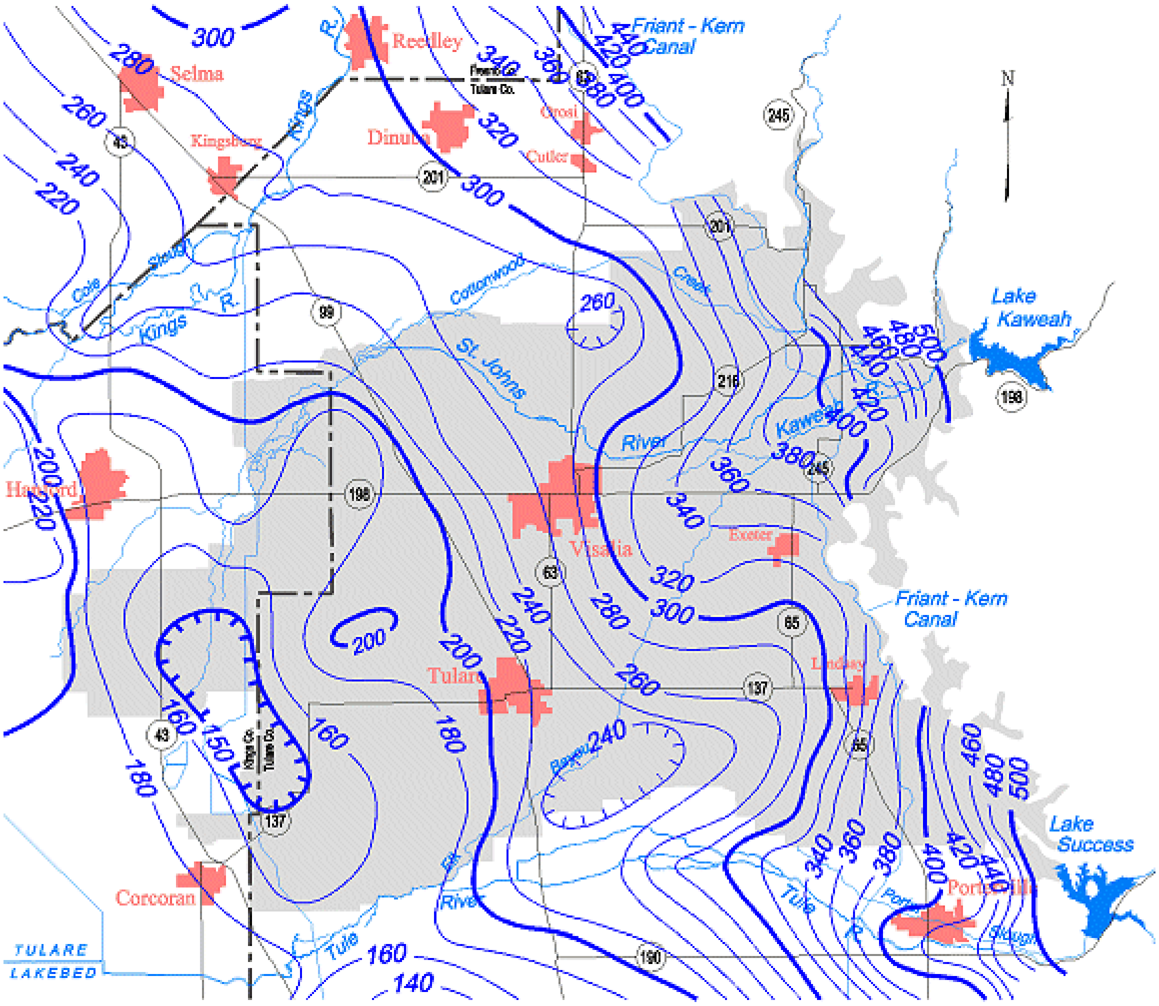
South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 1976, Lines of Equal Elevation of
Water in Wells, Unconfined Aquifer

Scale of Miles
2 0 2 4 6 8

Disclaimer: Base map created from current USGS 1:24,000 and 1:100,000 maps.
Some base map features may not have been present (i.e. roads, canals,
reservoirs) for the water year shown.



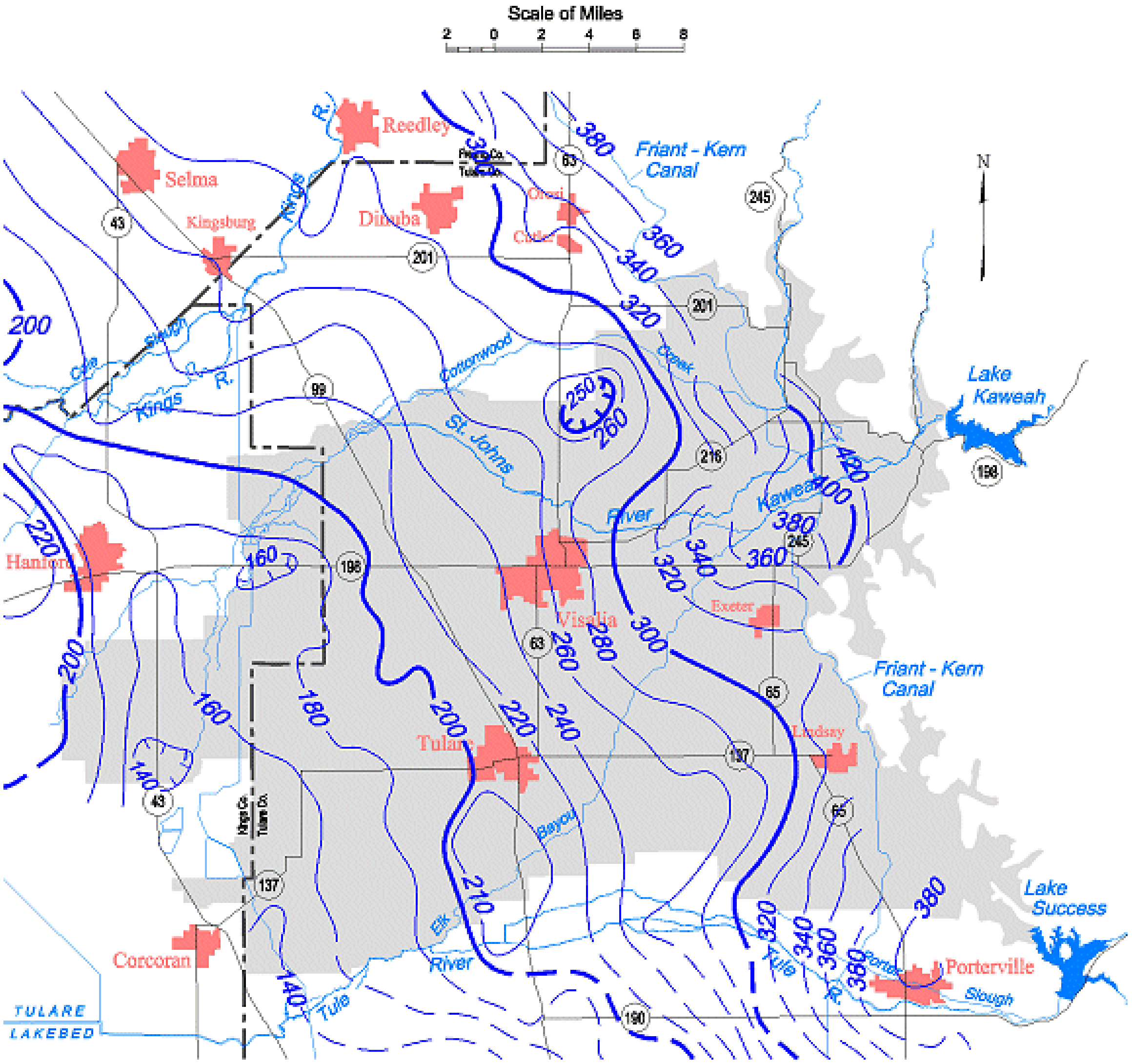
Contours are dashed where inferred. Contour interval is 10 and 20 feet.

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 1990, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer



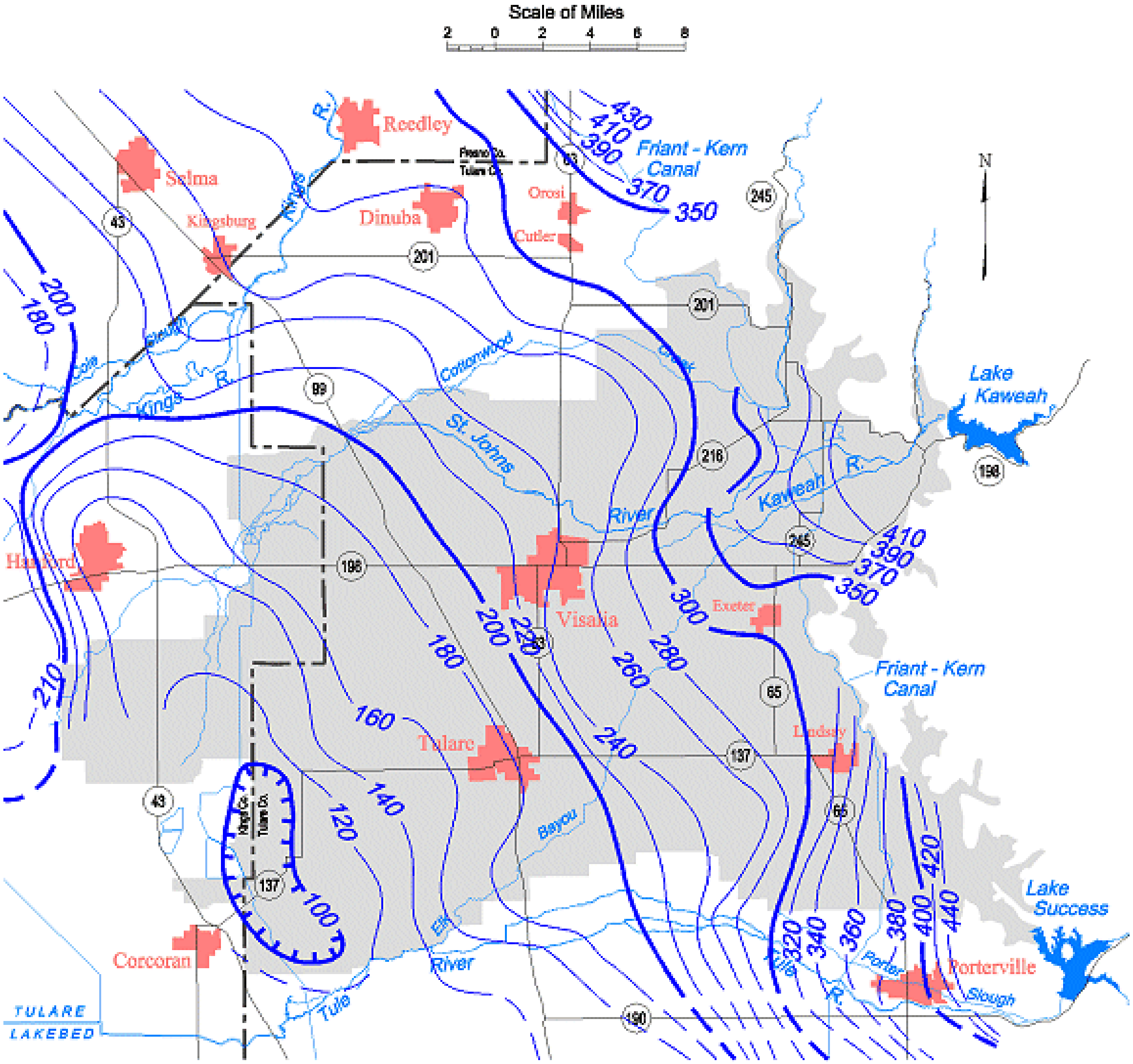
Contours are dashed where inferred. Contour interval is 10 and 20 feet.

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 1995, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer



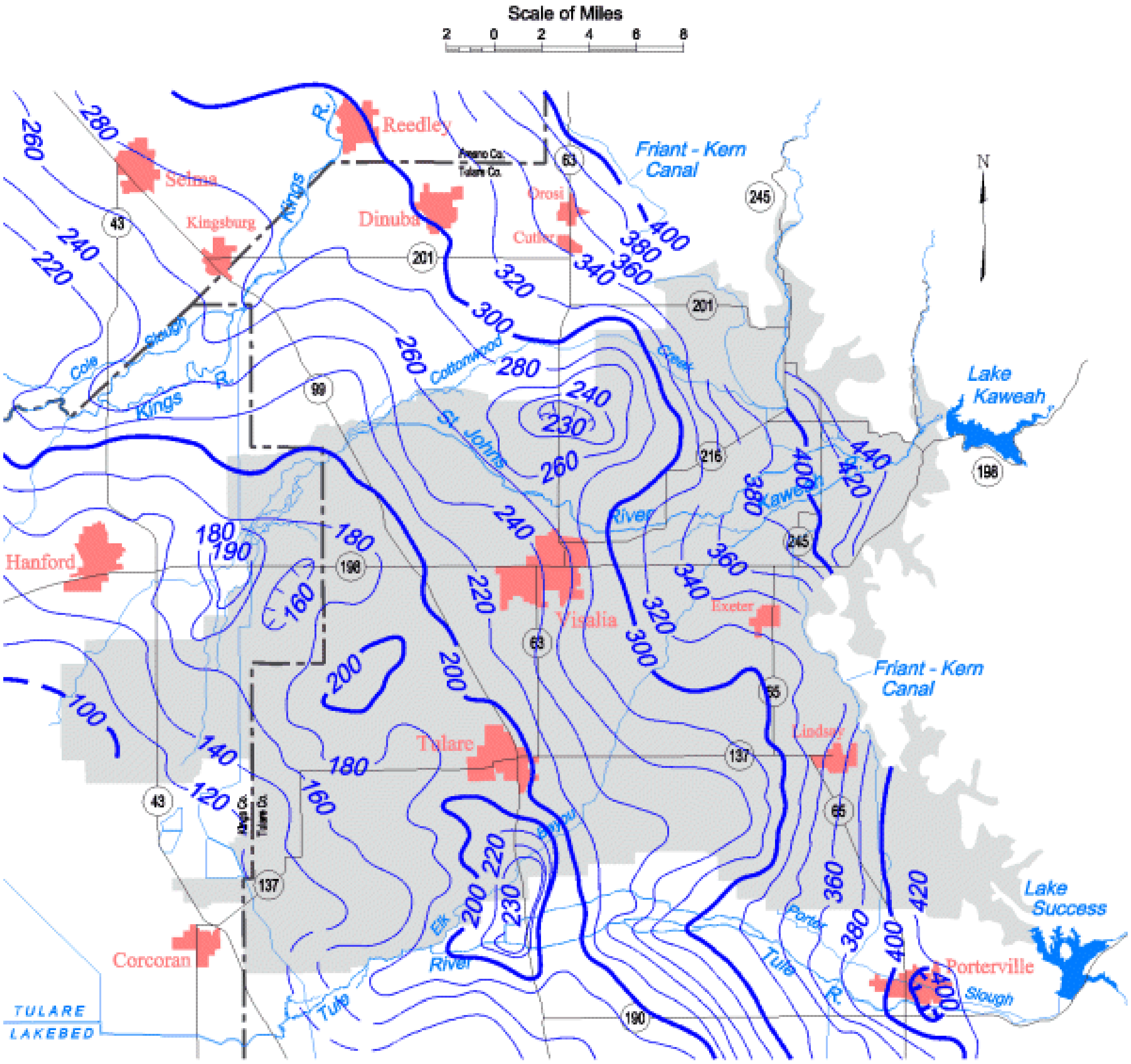
Contours are dashed where inferred. Contour interval is 10, 20 and 50 feet.

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

Spring 2000, Lines of Equal Elevation of
Water in Wells, Unconfined Aquifer



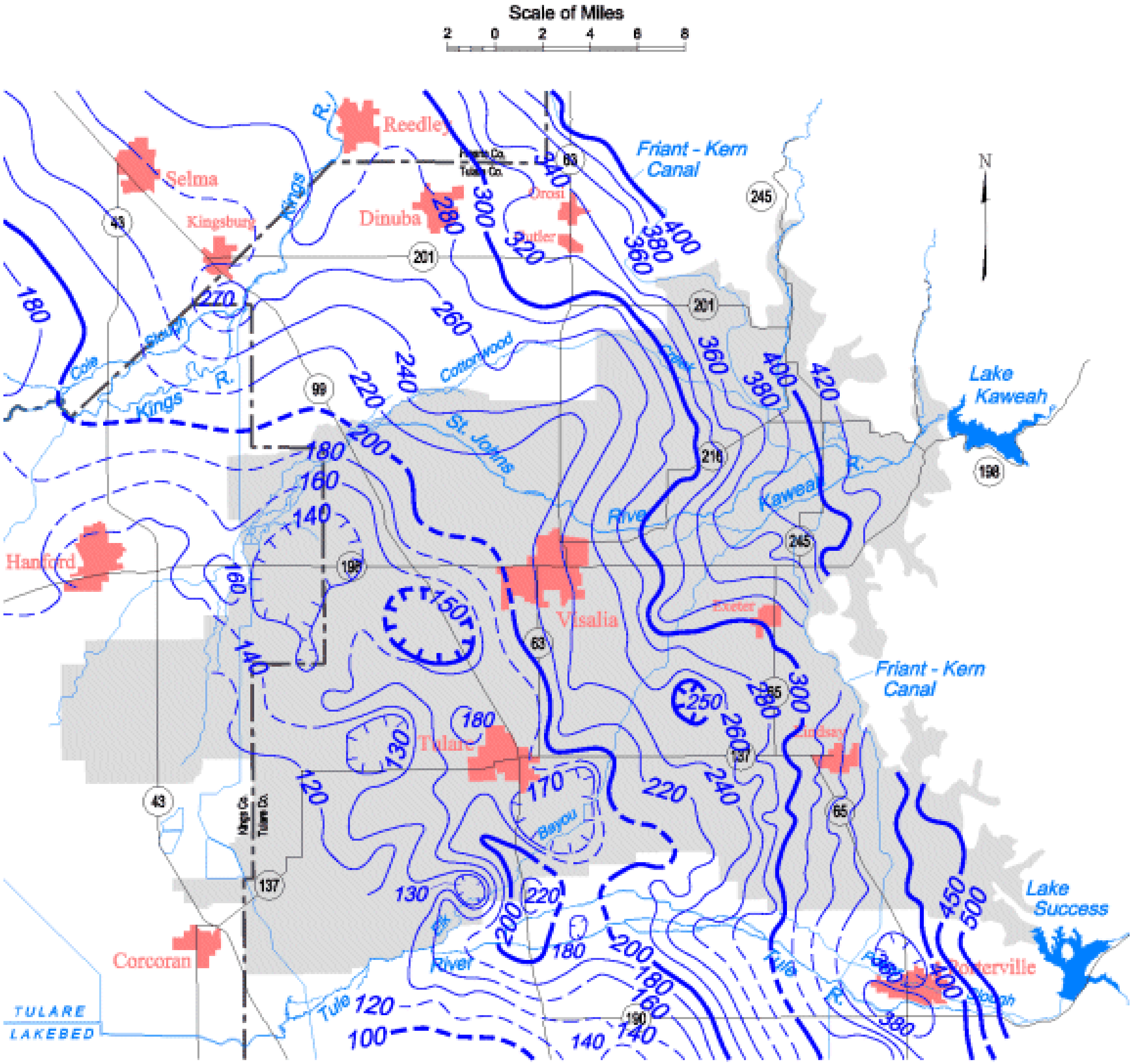
Contours are dashed where inferred. Contour interval is 10 and 20 feet.

Groundwater Data & Monitoring

South Central Region
Groundwater Basin Contour Map

Kaweah Groundwater Basin

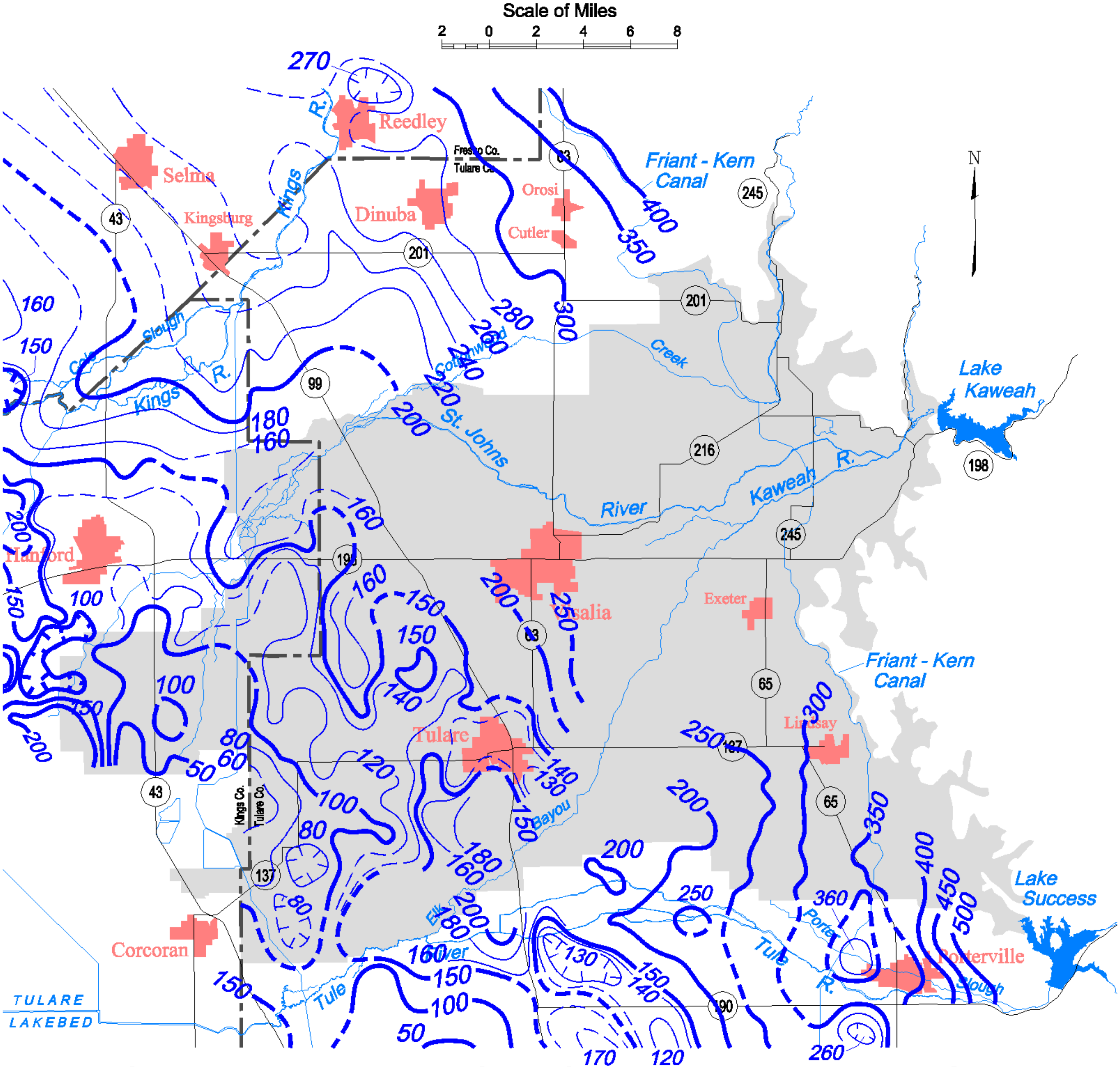
Spring 2005, Lines of Equal Elevation of
Water in Wells, Unconfined Aquifer



Contours are dashed where inferred. Contour interval is 10, 20 and 50 feet.

Kaweah Groundwater Basin

Spring 2010, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer

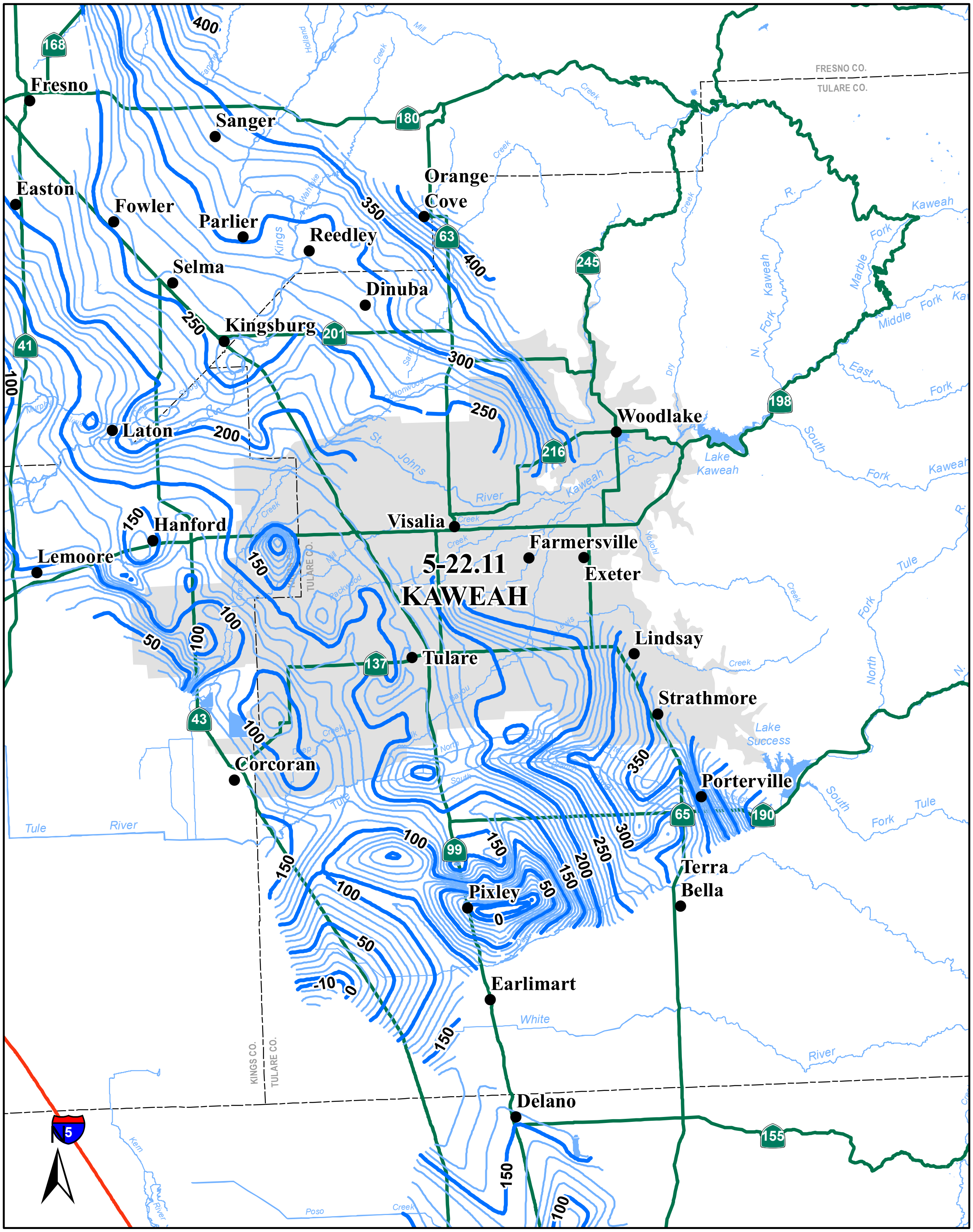


Contours are dashed where inferred. Contour interval is 10, 20 and 50 feet.

Kaweah Groundwater Basin 5-22.11

Groundwater Elevation Contours - Spring 2011

Tulare Lake Hydrologic Region



Lines of equal elevation of groundwater in feet above mean sea level.
Groundwater contours are a generalized representation of static water levels interpreted from wells measured in Spring 2011.
Water levels are interpreted to represent unconfined conditions.

0 5 10 Miles

South Central
Region Office

APPENDIX D

WASTEWATER RETENTION POND VOLUME ANALYSIS

Calculations Completed By: MC
Calculations Checked By: KMP
Date: 1/31/2023

Wastewater Retention Pond Volume Analysis

THOMAS BROS. COMPOSTING

A. PROPOSED POND STORAGE VOLUME

SUMMARY *(See Appendix E for Calculations)*

Pond	Pond Type	Depth of Pond November 1st (ft)	Storage Period Pond Volume Reduction (gal)
Pond 1:	Evaporation	0.00	0

Pond	Total Raw Volume (gal)	Freeboard Reduction (gal)	Storage Period Pond Reduction (gal)	Total Retention Volume (gal)
Pond 1:	787,948	108,507	0	679,441
			TOTAL:	**679,441**

B. PROCESS WATER & PRECIPITATION RUN-OFF VOLUME ANALYSIS

Composting Process Water Volume

Material	*Total Volume Received (wet-tons/year)*	*Moisture Content*	*Total Volume Received (yd^3/year)*	*Total Volume of Wastewater (gal./day)*
Manure Stacking Output	70,000	0.25	56,000	7,747

Truck Wash Process Water Volume

	Units	Facility Trucks
Average Vehicles Per Week (6 Operational Days)	vehicles/week	12
Average Vehicle Per Day	vehicles/day	2
Wash Time	min.	15
Water Usage Rate	gal./min.	10
Average Water Usage per Vehicle	gal.	150
Average Solid Manure Deposit per Vehicle	gal.	100
Process Pit Solids Removal	%	60%
Total Daily Process Wastewater Generated	**gal./day**	**200**

Summary:

Wastewater Source	*Volume (gal./day)*
Composting Process Water Volume	7,747
Truck Wash Process Water Volume	200
Total Process Water Volume	**7,947**

C. PRECIPITATION RUN-OFF VOLUME ANALYSIS

Rainfall Run-off from Production Area (Attachment D)

Total Production Tributary Area	688,119	ft^2
	15.80	***acres***

Run-off Coefficients (Appendix I)

Runoff Coefficient for Impervious:	0.75
Runoff Coefficient for Pervious:	0.31
25 Yr. 24 Hr. Storm Runoff Coefficient for Impervious:	0.88
25 Yr. 24 Hr. Storm Runoff Coefficient for Pervious:	0.40

Production Area Subdivision Summary

Area Description	Run-off Area (ft^2)	Run-off Coefficient	Weighted Run-off Area (ft^2)
Wastewater Retention Pond Area	14,463	1.00	14,463
Total Impervious Area	7,410	0.75	5,558
Total Pervious Area	666,246	0.31	206,536
Total Production Area	**688,119**		**226,557**

Conversion Factor: **0.623377**

(7.48051941 gal/ft^3 x 1 ft/12 in)

Conversion Factor: **201.974024**

(7.48051941 gal/ft^3 x 27 ft^3/yd^3)

25 year 24 hour Rainfall Event

Source: NOAA Online Weather Data: NOAA Atlas 2, 1973 for 25 yr / 24 hr (Appendix G)

Area Description	Rainfall (in.)	Run-off Coefficient	Weighted Run-off Area (ft^2)	Total Volume Accumulated (gal)
Wastewater Retention Pond Area	2.00	1.00	14,463	**18,032**
Total Impervious Part of Tributary Area	2.00	0.88	6,521	**8,130**
Total Pervious Part of Tributary Area	2.00	0.40	266,498	**332,258**
Total Production Area			**287,482**	**358,419**

Evaporation from Wastewater Basin

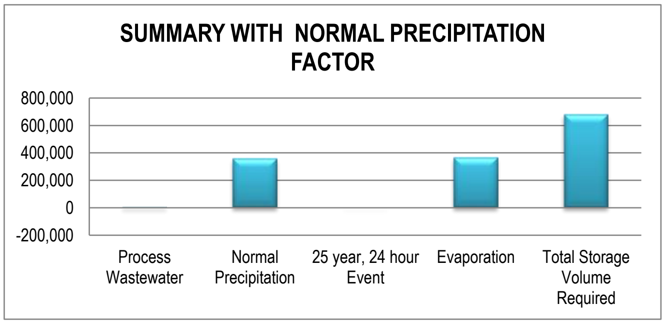
Source DWR-San Joaquin District Plan Evaporation Monthly Averages for Fresno and Bakersfield from 1968-2010 (Appendix H)

Annual Evaporation	*Bakersfield Average Daily Evaporation Rate (in./day)*	*Fresno Average Daily Evaporation Rate (in./day)*	*Average Daily Evaporation Rate (in./day)*	*Total Volume Evaporated (gal./day)*
Daily Total:	0.18	0.19	0.185	1,668

D. SUMMARY OF REQUIRED WATER RETENTION POND STORAGE VOLUME:

Volume Analysis

Volume Description	Total Volume Per Day (gal.)
Total Process Water Volume	7,947
Wastewater Accumulated From 25 Year, 24 Hour Event	358,419
Less: Evaporation from Wastewater Retention Ponds	(1,668)
Net Required Wastewater Retention Pond Storage Volume	**364,698**
Less: Net Existing Wastewater Retention Ponds Storage Volume	679,441
Excess Wastewater Retention Pond Capacity	**314,742**



APPENDIX E

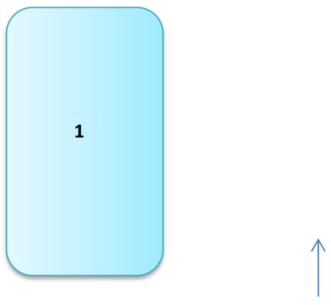
WASTEWATER RETENTION POND CAPACITY ANALYSIS

Calculations Completed By: DR
Calculations Checked By: KMP
Date: 1/31/2023

Wastewater Retention Pond Field Capacity Analysis

THOMAS BROS. COMPOSTING

KEY MAP



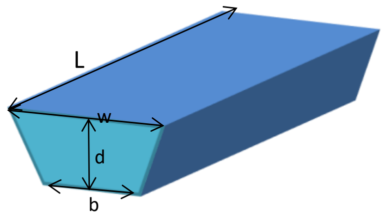
Volume Formula

$B_1 = (L)(W)$

$B_2 = [L-(2Sd)][W-(2Sd)]$

$M = [L-(Sd)][W-(Sd)]$

$\text{Volume} = 1/6d(B_1+4M+B_2)$



SUMMARY

Pond	Total Raw Volume (ft^3)	1 Foot Freeboard Reduction (ft^3)	Storage Period Pond Volume Reduction (ft^3)	Total Retention Volume (ft^3)
Pond 1:	105,333	14,505	0	**90,828**
			TOTAL:	**90,828**

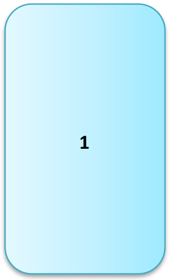
Pond	Total Volume (gal)	1 Foot Freeboard Reduction (gal)	Storage Period Pond Reduction (gal)	Total Retention Volume (gal)
Pond 1:	787,948	108,507	0	**679,441**
			TOTAL:	**679,441**

Definitions:

Overflow Pond:	Capacity is that volume above the overflow pipe, less the freeboard
Irrigation Pond:	Capacity is that volume above the residual solids*, less the freeboard
Evaporation Pond:	Capacity is the entire "raw capacity", less the freeboard

** Residual Solids are assumed to be 2 feet deep if the wastewater did not pass through a solids separation system before entering the pond. If there is solids separation before entering the pond, the assumed level of residual solids is reduced by half. If there is secondary separation after the primary separation, the residual solids are reduced again by half.*

Pond #1 - Evaporation Pond

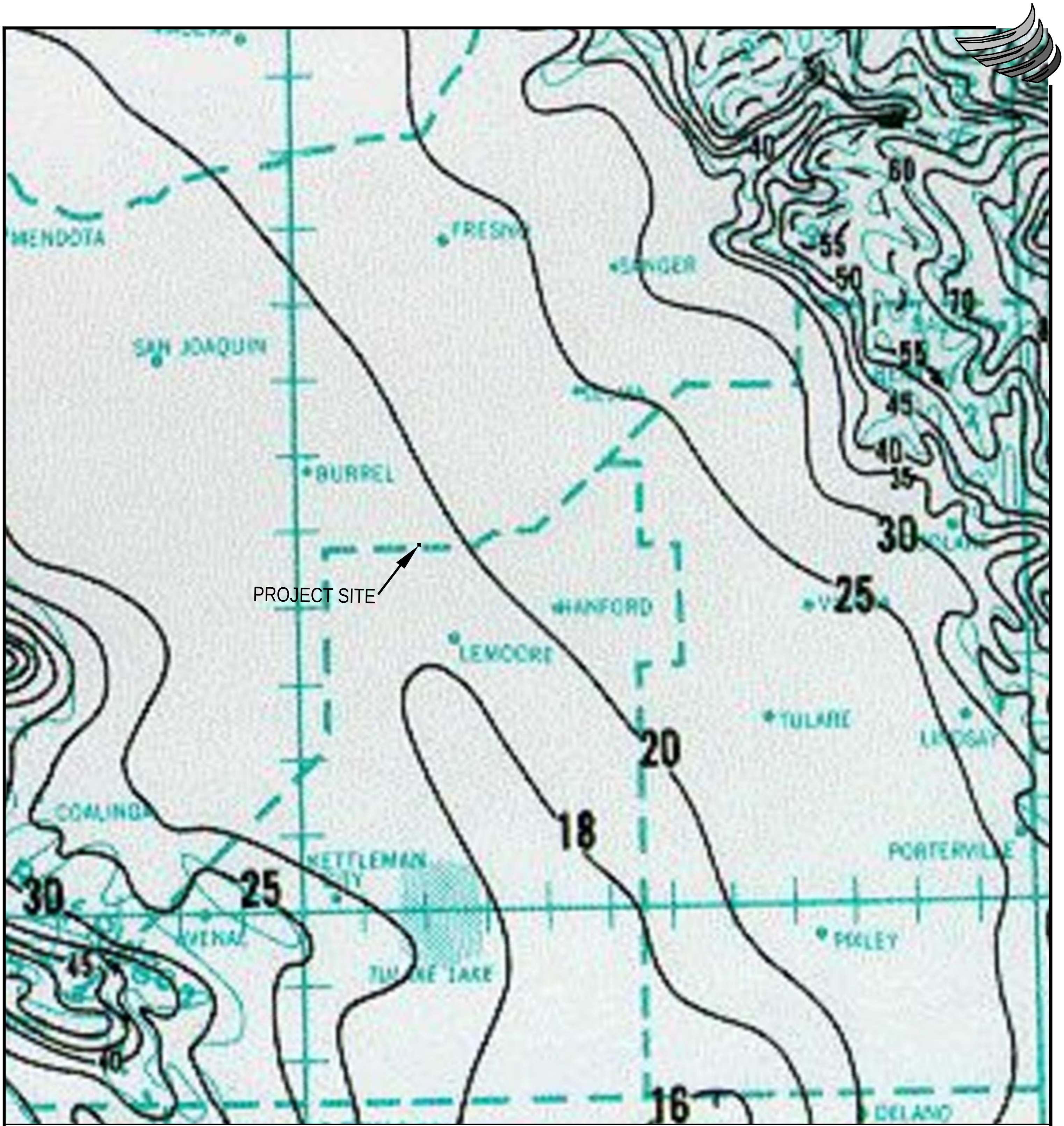


Proposed Pond Dimensions

	Total Volume (ft^3)	1 Foot Freeboard Reduction (ft^3)	Storage Period Pond Reduction (ft^3)
Pond Top Length	150.00	150.00	110.00
Pond Top Width	100.00	100.00	60.00
Average Depth (d)	10.00	1.00	0.00
Side Slope H:V (S)	2.00	2.00	2.00
Wastewater Pond Surface Area	15,000	15,000	6,600
Calculations:			
B_1=	15,000	15,000	6,600
B_2=	6,600	14,016	6,600
M=	10,400	14,504	6,600
Calculated Volume (ft^3):	**105,333**	**14,505**	**0**

APPENDIX F

25 YEAR, 24 HOUR STORM WATER DATA



NOAA ATLAS 2, VOLUME XI

PREPARED BY U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE, OFFICE OF HYDROLOGY

ISOPLUVIALS OF 25-YR 24-HR PRECIPITATION FOR
SOUTHERN HALF OF CALIFORNIA TENTHS OF AN INCH

PREPARED FOR U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, ENGINEERING DIVISION

4CREEKS

324 S. SANTA FE, STE. A
VISALIA, CA 93292
(559) 802-3052

ISOPLUVIAL - 25 YEAR, 24 HOUR

THOMAS BROS. COMPOSTING
KINGS COUNTY, CA

NORTH

JOB NO. 22419
APPENDIX F
10/12/2022
1" = 10 MILES

APPENDIX G

EVAPORATION DATA

AVERAGE MONTHLY EVAPORATION FROM CLASS 'A' PAN IN IRRIGATED PASTURE ENVIRONMENTS NEAR BAKERSFIELD, CALIFORNIA FROM 1958-2010 /1

****EVAPORATION IN INCHES****

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MAR - OCT TOTAL	JAN - DEC TOTAL
AVERAGE	1.44	2.25	4.13	5.95	8.35	9.58	9.94	8.85	6.62	4.47	2.24	1.35	57.89	65.17
STD DEV	0.34	0.45	0.71	0.86	0.82	0.79	0.82	0.71	0.64	0.43	0.36	0.36	0.72	0.61
STD ERROR	0.05	0.06	0.10	0.12	0.11	0.11	0.11	0.10	0.09	0.06	0.05	0.05	0.10	0.08

AVERAGE MONTHLY EVAPORATION FROM CLASS 'A' PAN IN IRRIGATED PASTURE ENVIRONMENTS AT CALIFORNIA STATE UNIVERSTIY AT FRESNO FROM 1968-2010 /1

****EVAPORATION IN INCHES****

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MAR - OCT TOTAL	JAN - DEC TOTAL
AVERAGE	1.26	2.08	3.94	6.03	8.75	10.43	11.02	9.67	6.99	4.42	2.25	1.21	61.26	68.07
STD DEV	0.28	0.41	0.77	0.86	1.03	0.92	0.73	0.68	0.57	0.49	0.40	0.30	0.76	0.62
STD ERROR	0.04	0.06	0.12	0.13	0.16	0.14	0.11	0.11	0.09	0.07	0.06	0.05	0.12	0.10

1/ Evaporation measurements are taken from evaporation pans located at standardized sites (irrigated pastures) with static water levels maintained in the pans by supply tanks. The sites are visited at least weekly to measure evaporation from a U.S. Weather Bureau Class 'A' Pan. Other agrometeorological equipment, (i.e.raingauge, anemometer, ambient air thermometers) is installed at onsite DWR agroclimatic stations, and this data is collected weekly along with pan evaporation. The evaporation may be adjusted during times of high wind or dry periods, which represent non-standard conditions.

APPENDIX H

STORM DRAIN RUN-OFF COEFFICIENT DATA

15.2.2 Rational Method Design

From an engineering viewpoint the design can be divided into two main aspects: runoff predictions and pipe sizing. The rational method, which can be traced back to the mid-nineteenth century, is still probably the most popular method used for the design of storm sewers (Yen and Akan, 1999). Although criticisms have been raised of its adequacy, and several other more advanced methods have been proposed, the rational method, because of its simplicity, is still in continued use for sewer design when high accuracy of runoff rate is not essential.

Using the rational method, the storm runoff peak is estimated by the rational formula $Q=KCiA$ (15.2.1) where the peak runoff rate Q is in ft^3/s (m^3/s), K is 1.0 in U.S. customary units (0.28 for SI units), C is the runoff coefficient (Table 15.2.3), I is the average rainfall intensity in in/hr (mm/hr) from intensity-duration frequency relationships for a specific return period and duration t_c in min, and A is the area of the tributary drainage area in acres (km^2). The duration is taken as the time of the concentration t_c of the drainage area.

Runoff Coefficients for Use in the Rational Method

	Return Period (years)						
Character of Surface	2	5	10	25	50	100	500
Developed							
Asphaltic	0.73	0.77	0.81	0.86	0.90	0.95	1.00
Concrete/roof	**0.75**	0.80	0.83	**0.88**	0.92	0.97	1.00
Grass Areas (lawns, parks,etc.)							
Poor condition (grass cover less than 50% of the area)							
Flat, 0-2%	0.32	0.34	0.37	0.40	0.44	0.47	0.58
Average, 2-7%	0.37	0.40	0.43	0.46	0.49	0.53	0.61
Steep, over 7%	0.40	0.43	0.45	0.49	0.52	0.55	0.62
Fair condition (grass cover 50% to 75% of the area)							
Flat, 0-2%	0.25	0.28	0.30	0.34	0.37	0.41	0.53
Average, 2-7%	0.33	0.36	0.38	0.42	0.45	0.49	0.58
Steep, over 7%	0.37	0.40	0.42	0.46	0.49	0.53	0.60
Good condition (grass cover larger than 75% of the area)							
Flat, 0-2%	0.20	0.23	0.25	0.29	0.32	0.36	0.49
Average, 2-7%	0.29	0.32	0.35	0.39	0.42	0.46	0.56
Steep, over 7%	0.34	0.37	0.40	0.44	0.47	0.51	0.58
Undeveloped							
Cultivated land							
Flat, 0-2%	**0.31**	0.34	0.36	**0.40**	0.43	0.47	0.57
Average, 2-7%	0.35	0.38	0.41	0.44	0.48	0.51	0.60
Steep, over 7%	0.39	0.42	0.44	0.48	0.51	0.54	0.61
Pasture/range							
Flat, 0-2%	0.25	0.28	0.30	0.34	0.37	0.41	0.53
Average, 2-7%	0.33	0.36	0.38	0.42	0.45	0.49	0.58
Steep, over 7%	0.37	0.40	0.42	0.46	0.49	0.53	0.60
Forest/woodlands							
Flat, 0-2%	0.20	0.25	0.25	0.31	0.35	0.39	0.48
Average, 2-7%	0.31	0.34	0.26	0.40	0.43	0.47	0.56
Steep, over 7%	0.35	0.39	0.41	0.45	0.48	0.52	0.58

Note: The values in the table are the standards used by the City of Austin, Texas.

Source: Chow, Maidment, and Mays (1988).

Appendix K

Odor Management Plan

ODOR MANAGEMENT PLAN

THOMAS BROS. COMPOSTING

JUNE 20, 2024

PREPARED FOR:

THOMAS BROS. COMPOSTING
20111 EXCELSIOR AVENUE
RIVERDALE, CA 93656

COMPLETED BY:

4CREEKS

324 S. SANTA FE, STE. A
VISALIA, CA 93292
(559) 802-3052

SUBMITTED TO:

KINGS COUNTY COMMUNITY DEVELOPMENT AGENCY
1400 W. LACEY BLVD., BLDG 6
HANFORD, CA 93230

Introduction

Thomas Bros. Composting Facility is a proposed composting facility to be constructed and operated in southeast Riverdale adjacent to an existing feedlot facility, Thomas Dairy. This Odor Management Plan outlines the facilities efforts to reduce the potential odor impacts to nearby receptors. The plan has been prepared on behalf of the facility, in accordance with the current facility operations.

I. Proposed Facility Description

A. Name of the Facility & County Location

Facility Name:	Thomas Bros. Composting
County:	Kings County

B. Facility Location

Address:	20111 Excelsior Ave Riverdale, CA 93656
Assessor's Parcel Numbers:	004-062-003
Township, Range, Section:	Township 18 South, Range 20 East, Section 5
Baseline Meridian:	Mount Diablo Base and Meridian

C. Facility Contacts

Facility Owner/Operator/Contact	Frank Anthony Thomas
Address:	19271 Excelsior Avenue Riverdale, CA 93656
Phone:	(559) 922-0279 (559) 906-1404

D. Facility Process Description

The Facility receives up to 154 cubic yards (or 192 wet-tons) of compostable material per day consisting of animal manure from nearby dairy facilities. The Facility currently has the capacity to store up to 2,000 tons at any given time. The Facility receives up to a maximum of 56,000 cubic yards (or 70,000 wet-tons) per year. As necessary, feedstock is processed with a tub grinder and/or screen to achieve the characteristics required to promote composting. Prepared feedstock is composted in windrows for 90 to 120 days. Composting is cured for an additional period until it is stabilized. Water is added as needed to maintain active composting for the desired period. Residual materials are recovered and stored in disposal containers onsite. When filled, the material stored in the containers is removed from the site by Waste Management.

In addition to the composting operations, the owner is proposing the construction of a private truck wash not open to the public. The truck wash will have the capacity to wash 2 vehicles/day totaling to 12 vehicles/week, used for washing the composting equipment on an as-needed basis.

II. Odor Management Plan

Thomas Bros. Composting will continue to make reasonable efforts to reduce the potential for odor impacts to nearby receptors. The following are the standard operating procedures for compost management, treatment, storage, and trucking to/from the facility:

A. Private Truck Wash

- The truck wash will be constructed with a concrete surface and effective drainage to channel and redirect any runoff wastewater to a central location. From there, pipelines will transport the wastewater to the proposed retention pond, ensuring that no standing water remains in the truck wash area, which could lead to potential odors.
- The truck wash will be washed down after each use to prevent the accumulation of manure.

B. Manure Treatment

- Minimize the moisture levels in compost during storage. The stockpiled compost will be stored on graded areas that divert the wastewater from the piles away from the compost to the wastewater retention ponds.
- Coarse, dry bulking agents shall be added to any incoming materials that are anaerobic and odorous to increase porosity and reduce moisture in the materials.
- Windrows will be uniformly sized and turned to redistribute the moisture and provide aeration to maintain even temperature and increase natural air convection.
- Clean up compost spills at each time of each occurrence.
- Maintain wastewater retention pond to prevent solids build-up to minimize odor levels.
- Avoid exporting/importing any dry manure or applying water during windy conditions.

C. General

- Implement dust suppression measures to prevent the release of odorous compound-carrying fugitive dust.
- During project operations, the Facility shall respond to neighbors who have odor complaints from odors generated at the facility and take prompt action to address the complaint.

D. Record Keeping

- Thomas Bros. Composting will keep an odor complaint register at the Facility (Attachment A). The register shall include each complaint received, who received the complaint, and the date of the complaint. In addition, the documentation will indicate what action was taken to determine the cause of the odor, action taken to resolve the odor problem, the results of the action, and whether additional action is required to eliminate the problem from reoccurring. The complaint register shall be available to the Code Compliance personnel upon request.

- Thomas Bros. Composting will also keep an odor best management practice feasibility report at the Facility (Attachment B). The report will include representative and correlating odor data for each on-site source, an identification of potential on-site sources and their rank, and a list of potential sources not contributing to odor impacts. There will also be a list of Best Management Pracitices used on site and their respective effectiveness.

III. Changed Conditions & Limitations

The findings of this report are valid as of the date of this report. However, if there are any changes to the odor management on site this report shall be updated accordingly and resubmitted to Kings County Community Development Agency.

Attachment A
Odor Complaint Register

Date of Complaint	Complaint Recipient	Action Taken To Determine Cause of Odor Complaint	Action Taken To Resolve The Odor Problem	Results of the Action	Additional Action, If Any, Required To Eliminate The Odor Problem From Re-Occuring

State of California
CalRecycle 877 (New 8/17)

Department of Resources Recycling and Recovery
(CalRecycle)

ODOR BEST MANAGEMENT PRACTICE FEASIBILITY REPORT (REPORT)

Facility Name	Facility Address	Facility No.	Report Date (month/day/year)

The use of this template is not a specific requirement of 14, California Code of Regulations (CCR), Section 178634.1. or Section 17896.30 but are provided as one possible method for regulated entities to use to provide what is required to comply with those sections.

A. GATHER/PRESENT | 14 CCR, Section 17863.4.1[b][1] and 17896.30[b][1]

Present representative and correlating odor data for each on-site source. All tools and resources used to gather data should be included as an attachment to the Report.

Date	Representative and Correlating Data Associated with Odor Impact(s)						
	(1) Odor Impact	(2) Time (when data collected)	(3) Weather	(4) Odor Characteristics	(5) Odor Severity	(6) Operations Description	(7) Potential Sources

B. IDENTIFY/RANK | 14 CCR, Section 17863.4.1[b][2] and 17896.30[b][2]

1. Identify which potential on-site sources are contributing to the odor impacts and rank those in order of impact.

Rank	Potential Sources Contributing to Odor Impacts		
	Area of On-site Source	Operations Description	Material Type Handled
1			
2			
3			
4			
5			

2. Identify which on-site sources are not contributing to the odor impacts.

No.	Potential Sources Not Contributing to Odor Impacts	Rationale
1		
2		
3		
4		

No.	Potential Sources Not Contributing to Odor Impacts	Rationale
5		

C. LIST/ANALYZE | 14 CCR, Section 17863.4.1[b][3][A] and 17896.30[b][3][A]

List and analyze all of the existing Best Management Practices (BMPs) that the operator has used to minimize odor. All resources, analysis, calculations and assumptions used to complete the table should be attached to the Report.

BMP No.	Existing BMP(s) Used to Minimize Odors						
	Description	(1) Effectiveness in Reducing Odors?*	(2) Potential for More Extensive Use	(3) Operationally Practical?	(4) Approx. Cost to Implement**	(5) New Permit(s) or Permit Changes?	(6) Overall Recommendation
1							
2							
3							
4							
5							

*Supporting data for all BMPs found to be ineffective should be included as an attachment to the Report.

**All calculations and assumptions used to approximate the costs to implement the BMPs should be included in the Report.

List all existing BMP(s) found to be ineffective.

BMP No.	(7) Existing BMP(s) Found to be Ineffective	Rationale
1		
2		
3		

*Supporting data for all BMPs found to be ineffective should be included as an attachment to the Report.

D. LIST/ANALYZE | 14 CCR, Section 17863.4.1[b][3][B] and 17896.30[b][3][B]

List and analyze all of the potential BMP(s) that the operator has NOT used to minimize odor. All resources, analysis, calculations, and assumptions used to complete the table should be attached to the Report.

BMP No.	Potential BMP(s) Not Used to Minimize Odor					
	Description	(1) Potential to Reduce Odor Impacts*	(2) Operationally Practical?	(3) Approx. Cost to Implement**	(4) New Permit(s) or Permit Changes?	(5) Overall Recommendation and Ranking
1						
2						

BMP No.	Potential BMP(s) Not Used to Minimize Odor					
	Description	(1) Potential to Reduce Odor Impacts*	(2) Operationally Practical?	(3) Approx. Cost to Implement**	(4) New Permit(s) or Permit Changes?	(5) Overall Recommendation and Ranking
3						
4						
5						

*Supporting data for all BMPs found to be effective should be included as an attachment to the Report.

**All calculations and assumptions used to approximate the costs to implement the BMPs should be included in the Report.

E. PLAN/IMPLEMENT | 14 CCR, Section 17863.4.1[b][3][C] and 17896.30[b][3][C]

Develop a plan and schedule for implementation of the recommended BMP(s) based on analysis conducted in section C and D above.

Plan and Schedule for Implementing Potential BMPs			
Existing BMP(s) and Potential BMP(s) To Be Implemented	Action	Start Date	End Date

Appendix L

Response to Comment Letters Received

SCH Number: 2024041297
Lead Agency: Kings County Community Development Agency
Document Title: Conditional Use Permit No. 22-06 for the Thomas Bros. Composting Facility
Document Type: Initial Study/Mitigated Negative Declaration (Draft IS/MND)

Responses to comment letters received during the public comment period:

COMMENT LETTER 1

Ray and Donna Roush
20028 Everett Ave
Riverdale, CA 93656

Response 1.1

Your concerns regarding odor and flies from the composting operations are acknowledged. The Thomas Bros. Composting Facility has implemented an Odor Management Plan (OMP) designed to mitigate odor emissions through regular windrow turning, moisture management, and the use of bulking agents to prevent anaerobic conditions. The facility will also employ a pest management program to address issues related to flies and other pests, which includes monitoring and controlling pest populations to minimize their presence.

Response 1.2

Regarding potential contamination of domestic wells, the facility is designed to protect groundwater quality through several measures detailed in the Water & Wastewater Management Plan (WWMP). The composting operations will take place on an impermeable surface to prevent leaching, and the wastewater retention pond is designed with a double-lined system to prevent seepage into the groundwater. The pond's capacity exceeds the required retention volume to handle both operational wastewater and stormwater from a 25-year, 24-hour storm event, ensuring that groundwater remains protected.

Response 1.3

We understand the health concerns related to respiratory issues. The facility will implement dust suppression techniques, such as using water trucks to minimize dust emissions, particularly during windy conditions. These measures, coupled with a buffer zone between the facility and nearby residences, will help reduce potential health impacts.

COMMENT LETTER 2

Mary Roush
20256 Everett Ave
Riverdale, CA 93656

Response 2.1

We acknowledge your opposition to Conditional Use Permit No. 22-06 and your concerns about dust, odor, and pest management. The facility's Odor Management Plan (OMP) includes strategies to manage dust and odor effectively, such as turning windrows regularly and controlling moisture levels to prevent anaerobic decomposition, which can cause odors. The Wastewater Management Plan ensures that all water, including that used in dust suppression, is contained and treated appropriately, preventing any off-site impacts.

Response 2.2
Health and safety regulations will be strictly adhered to, with regular inspections by the Kings County Department of Public Health. The facility’s operations will be monitored for compliance with these regulations, including the proper handling of wastewater to ensure no contamination occurs, thereby protecting public health and the environment.

COMMENT LETTER 3
Jacob Roush
20256 Everett Ave
Riverdale, CA 93656

Response 3.1
Your concerns about raising a family near the composting facility are important. The facility is committed to implementing a range of measures to minimize dust, odor, and other potential health risks. These include the use of dust suppression methods, regular turning of compost windrows to manage odor, and the maintenance of appropriate buffer zones from residential areas. The WWMP details the measures taken to ensure that the facility does not negatively impact the surrounding environment, including the management of wastewater to prevent any contamination.

Response 3.2
Regarding groundwater safety, the facility's wastewater retention pond is designed with advanced engineering controls including a double-lined system to prevent any contamination of local water supplies. The pond has a capacity that exceeds the required storage for both wastewater from operations and stormwater from significant rain events. Regular monitoring and maintenance of the pond will ensure ongoing protection of groundwater resources.

COMMENT LETTER 4
Michael Mendes
5322 20th Ave
Riverdale, CA, 93656

Response 4.1:
Your concerns about the smell generated by the composting facility are acknowledged. The Thomas Bros. Composting Facility has developed and will implement a comprehensive Odor Management Plan (OMP) to mitigate odor emissions. This plan includes regular turning of windrows to promote aerobic conditions, the use of bulking agents to manage moisture content, and immediate addressing of any potential odor sources. Additionally, the facility will monitor and adjust operations as necessary to minimize odor impacts on the surrounding community.

Response 4.2:

Regarding the wastewater retention pond, the facility has been designed with robust safeguards to prevent groundwater contamination. The pond is double-lined and includes sufficient storage capacity to handle both the process wastewater and stormwater runoff from significant storm events, such as a 25-year, 24-hour storm. The Wastewater Management Plan (WWMP) ensures that all wastewater is contained and managed in compliance with the Waste Discharge Requirements, thereby protecting local groundwater quality.

Response 4.3
Concerns about traffic impacts due to the facility's operations have been carefully considered. The facility is committed to managing and minimizing traffic disruptions by scheduling deliveries and other vehicle movements during off-peak hours when possible. Additionally, the facility will work with local authorities to ensure that traffic patterns and road use are monitored and managed to reduce the impact on the local community. The number of truck trips will also be minimized through efficient operational practices.

COMMENT LETTER 5
Kimberly Roush
20438 Everett Ave
Riverdale, CA 93656

Response 5.1
Your concerns regarding the potential increase in odor and pests due to the facility's expansion are acknowledged. The Thomas Bros. Composting Facility is committed to implementing robust measures to control odors and pests. The facility's Odor Management Plan (OMP) includes strategies such as regular windrow turning to promote aerobic conditions, moisture control to prevent anaerobic processes, and the use of covers when necessary. Pest management practices, including regular monitoring and immediate action to control flies and rodents, will also be implemented to ensure that the impact on nearby properties is minimized.

Response 5.2
We understand that the preservation of property values and the quality of life in the surrounding area is a significant concern. The facility has been designed with these considerations in mind, and all operations will adhere to best management practices to minimize any negative impacts on the local community. The implementation of buffer zones, regular monitoring of operations, and adherence to environmental regulations will help ensure that the facility coexists harmoniously with the surrounding area.

Response 5.3
Your concerns about groundwater protection are valid and have been a priority in the design of the Thomas Bros. Composting Facility. The wastewater retention pond is engineered to prevent any contamination of local water supplies, featuring a double-liner system and a capacity that exceeds regulatory requirements. Regular monitoring of groundwater quality will be conducted to ensure that the facility's operations do not impact the local water resources.

COMMENT LETTER 6

Charles Dewey
Dewey and Sons
P.O. Box 938
Riverdale, CA 93656

Response 6.1
Your concerns regarding the types of materials being composted and the potential for odor emissions have been carefully considered. The Thomas Bros. Composting Facility is committed to using best practices for composting to ensure that odor is minimized. The facility's Odor Management Plan (OMP) includes measures such as the regular turning of windrows to promote aerobic decomposition, the addition of bulking agents to manage moisture content, and immediate attention to any sources of odor. These practices are designed to minimize the impact of composting operations on the surrounding area.

Response 6.2
Your concerns about flies, dust, and other potential nuisances are acknowledged. The facility will implement a comprehensive pest management strategy that includes regular monitoring and control measures to prevent the attraction of flies and other pests. Dust management will also be a priority, with water trucks and other suppression methods being used to minimize dust emissions during operations, particularly in dry and windy conditions.

Response 6.3
Regarding the gypsum stockpile and its potential impact on the environment, the facility has taken steps to ensure that all materials are managed in compliance with relevant regulations. The stockpile will be maintained in a manner that prevents dust generation and leaching. Additionally, the wastewater retention pond, designed with a double-liner system, ensures that there is no contamination of groundwater. Regular monitoring of the pond and surrounding areas will be conducted to protect local water resources.

COMMENT LETTER 7
CalRecycle
1001 I Street,
Sacramento, CA 95814

Response 7.1
Thank you for your detailed comments regarding the regulatory oversight of the Thomas Bros. Composting Facility. The facility will fully comply with Title 14 CCR Section 17856 as an agricultural material composting operation. While an Odor Impact Minimization Plan (OIMP) is not mandated unless deemed necessary by the Local Enforcement Agency (LEA), the facility has proactively developed and implemented an Odor Management Plan (OMP). This OMP includes comprehensive measures to monitor and control odors, including regular windrow turning, moisture management, and the use of covers as needed. These measures are designed to ensure compliance with all regulatory requirements and to minimize odor impacts on the surrounding community.