

**Attachment 6: Earthwork Memo 2**

# TARTAGLIA ENGINEERING

7360 El Camino Real, Suite E • P.O. Box 1930 • Atascadero, CA 93423  
Phone: 805-466-5660 • [civilengineers@tartaglia-engineering.com](mailto:civilengineers@tartaglia-engineering.com)

Erick Sebastian Gomez, Planner  
Santa Barbara County, Planning and Development  
624 W. Foster Road  
Santa Maria, CA 93455

October 16, 2020

Project: Plantel Nurseries Development  
19RVP-00000-00115  
Subjects: 1. Earthwork  
2. Geotechnical Engineering Report  
3. Hillside and Watershed Protection Policies  
4. Preliminary Grading Review of Plans

Dear Mr. Sebastian Gomez:

This communication addresses several key points of discussion regarding proposed earthwork and grading. In addition, it provides insight into design decisions that were made that have resulted in the preliminary grading / site plans prepared for planning review.

## **1. EARTHWORK:**

The project proposes approximately 780,000 cubic yards of earth cut and 600,000 cubic yards of earth fill. As presented, it is in an earth balance condition, with consideration of earth shrinkage of approximately 30%. There is no anticipated earth borrow and import, and no anticipated earth excess earth export. By designing the site in an earth balance condition, the need for significant truck traffic moving earth into or out of the property has been eliminated.

The grading plan presents greenhouse areas and travel ways that are near or slightly lower than the main driveway, facilitating safe, unencumbered forklift movement from the east side growing areas to the west side shipping and receiving areas. The grading plan drops slightly as one progress to the north and east. When approaching the east property line, the growing area drops in a 2:1 slope down to existing grade, joining the existing grade at about 40 feet from the property line. To the north, the growing area drops in a 2:1 slope down to the storm water retention and detention facility, and the recycled water plant, before rising back up to existing grade before reaching the north property line.

The proposed grading plan includes cut slopes in excess of 15 feet in vertical height. Revised plans to be submitted with the next planning submission reflect means and methods for addressing cut slope sloughing through over-excavation of the cut slope, followed with re-construction of the slope in an engineered fill configuration. This approach and method is supported by Earth Systems Pacific, the projects geotechnical engineering firm.

The presented grading plan for this development is a result of numerous concepts and layouts satisfying several slope requirements and facility objectives while keeping the earthwork to the absolute minimum.

Several of the grading constraints and objectives are described below:

1. Greenhouse structures. To remain efficient and allow for an operable roof system, the greenhouses structures need to be constructed on nearly flat ground (0% cross slope in one direction, and -0.5% cross slope in the other direction).
2. Forklift operation. With safety in mind, the maximum allowable slope on the proposed travel ways is 8%. Site grades facilitate safe forklift operation between this development and the existing development on the west side that has all the support facilities including shipping and receiving.
3. Earth balance – The grading plan is intended to use earth material on site. The project proposes approximately 780,000 cubic yards of earth cut and 600,000 cubic yards of earth fill. As presented, it is in an earth balance condition, with consideration of earth shrinkage of approximately 30%. No earth import or export is anticipated.
4. Water recycling – This proposed project includes a unique facility component intended to preserve water for irrigation. The proposed expansion facility intends to capture and recycle both stormwater and excess irrigation. To re-cycle and reuse water, the site grading was designed to capture runoff by directing flow via gravity to the lined retention basin.

## **2. GEOTECHNICAL ENGINEERING REPORT:**

An on-site geotechnical investigation was performed in 2007 by Earth Systems Pacific for the west side development, and updated in 2010 to reflect final design. The report found the site and site soils suitable for construction of proposed improvements, with no presence of substantial geologic constraints. The Earth Systems team has recently provided a preliminary review of the proposed easterly expansion plans, and a review of their geotechnical investigation for the Westside Development. Their comments are included in an October 6, 2020, letter correspondence, included as an attachment to this letter.

It is our intention to retain Earth Systems Pacific in the near future for the purposes of performing a geotechnical investigation, lab testing, and preparation of a report of findings and recommendations specific to the Eastside Expansion, when this project moves into final design. It is anticipated that one of the design recommendations to be included in the geotechnical report will be the detailed discussion regarding methods for addressing earth cut slopes: mainly, the over-excavation of the native soil and the reconstruction of the cut slope through an engineered fill manner, including subsurface slope drainage, if appropriate. Final civil design will take the design recommendations generated through that geotechnical investigation into consideration.

## **3. HILLSIDE AND WATERSHED PROTECTION POLICIES:**

*Policy #1 focuses on minimization of earth cut and fill. Plans requiring excessive cutting and filling may be denied if it is determined that the development could be carried out with less alteration of the natural terrain.*

The west side greenhouse operations and that proposed within this Eastside Expansion are centered around implementation of state-of-the-art growing technologies: greenhouse structures with climate / computer controlled movable walls and roofs, automated irrigation systems that provide high-precision irrigation,

and a stormwater and excess irrigation water collection and return system that supports water reuse and recycling. This, coupled with the need to facilitate safe forklift operation by and between these new greenhouses, and the shipping, receiving, and processing facilities that exist on the west side, all dictate the layout and grades for this Eastside Expansion. To facilitate greenhouse movement and uniform irrigation, the growing areas must be near level. In addition, moving transplant trays via forklift in a safe manner also requires limited slope conditions. Lastly, the higher elevations at the southern end of the site help move collected stormwater and excess irrigation water north via gravity into the water recycling system.

Proposed earthwork as presented, is an earth cut and fill balance. Portions of the east side will be filled to grades that are higher in elevation than existing, and other areas on the east side will be cut to finish grades that are lower than existing. While the grading plan shows final cut or fill slopes in the range of 35 feet, the majority of finished cut or fill slopes will be approximately 15 feet. For comparison, the existing site is currently exhibiting a fill slope in excess of 50 feet. Overall, the final plan will feel and function more normal, natural, and consistent with existing terrain, both to the east and to the west, than the existing site conditions.

Grading, earthwork, greenhouse and irrigation technologies, and stormwater and excess irrigation water collection system design, all come together in a development and grading plan that presents an earth balance that fits the terrain, with no earth import or earth export.

*Policy #2 focuses on designing development to fit the site topography, soils, geology, hydrology, and other existing conditions and be oriented so than grading and other site preparations is kept to an absolute minimum. Natural features, landforms, and native vegetation shall be preserved to the maximum extent feasible. Areas of the site which are not suited to development because of known soil, geologic, flood, erosion, or other hazards shall remain in open space.*

Proposed earthwork and grading will permanently change the existing project footprint, creating a more uniform, functional farm space. Soils and geology support the proposed development, being essentially an extension of the currently permitted facility on the west side. The proposed grading plan includes cut slopes in excess of 15 feet in vertical height. Revised plans to be submitted with the next planning submission reflect means and methods for addressing cut slope sloughing through over-excavation of the cut slope, followed with re-construction of the slope in an engineered fill configuration.

As designed, stormwater and excess irrigation water is collected in two detention basins, meeting flood control attenuation requirements, and returned to the site through the recycling plant as irrigation water. Heavy storm events that exceed recycling water system capacities will ultimately discharge off the property in an easterly direction, at the current point of surface discharge. Through this design approach, site hydrology honors and preserves current points of site discharge, with proposed hydraulic improvements improving the character and nature of site discharge.

The existing 77-acre east side is currently under agricultural production, consisting of disturbed land, row crops and greenhouse hoop structures. The existing topography consists of flat growing areas, sloped travel ways, and tall, steep sloped areas (2:1 slope approaching 50' high). The topography and terrain presented in the proposed development can be described as an enhancement to existing, including more uniform fill slopes, flat growing areas (to support the more efficient greenhouse operations), and forklift travel ways. In addition to terrain characteristics similar to existing, the proposed development will preserve the two existing stormwater discharge locations, both on the easterly side of the site.

During a recent walking tour of the site with County Staff it was reaffirmed that essentially 100% of the footprint of the Eastside Expansion area is disturbed, and is either in farming production (near flat, outdoor

tray growing or hoop berry) or is slope, supporting the flatter grades necessary for outdoor production growing, transplant beds.

Conclusions:

1. The project works and fits within the site, with no impacts to neighbors.
2. The nature of the business dictates a relatively flat working surface, with safe forklift maneuverability across the main entrance driveway to facilities on the west side.
3. As presented, the earthwork is a balance condition, with no earth import and no earth export.
4. Being at or below the elevation of Clark Avenue, the project will not present any unsightly or visibly offensive vertical cut or fill slopes, or general view issues.
5. The development is consistent with the west side of the property and with the agricultural theme and feel of this portion of northern Santa Barbara County.
6. The compacted fill slope is an acceptable solution to address concerns regarding 15-foot vertical cut slopes.
7. The site and site soils collectively do not present any geologic constraint that would preclude this development, as presented.
8. Site design preserves the historic points of surface storm water discharge, however the facility will operate in an enhanced condition through implementation of County Flood Control storm water design guidelines, and through the development of a storm water and excess irrigation water recycling facility.

**4. PRELIMINARY GRADING REVIEW OF PLANS:**

Mr. Vyenielo, Supervising Building Inspector in the Grading and Petroleum Divisions of the County Planning and Development Department Building provided some good questions and comments to the preliminary plans. The following is intended to address his questions and concerns:

1. *Please ensure the grading and drainage plans include all requirements from Flood Control & Project Clean Water.*

The grading plan, preliminary drainage report, and the stormwater control plan submitted at this preliminary level will continue to be updated and modified to ensure compliance with County Flood Control standards, including Project Clean Water, Post-Construction standards and requirements.

2. *Please include contour lines at least 20' beyond the property lines to determine direction of flow off-site, originating from the development.*

Sheet C2 (Existing Topography – Overall) displays the existing contours 20' beyond the property lines. The grading plan and drainage design keeps the two existing site discharge points on the easterly side of the property unchanged.

3. *Will the detention basin have an overflow structure?*

Yes. The detention basin includes a metering outlet structure to restrict flow caused by increased runoff from the post-developed site conditions. An emergency overflow weir will be

implemented to the detention pond for additional protection in the case the metering outlet structure becomes blocked. The overflow weir will direct flow to the intended site discharge location.

4. *Unsure how runoff from earthen swale east of Greenhouses will affect adjacent property? Does that volume of water match historical flows in that directions?*

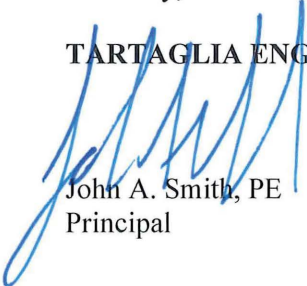
At present, there are two historical points of surface flow discharge along the east side of the Plantel parcel that collectively convey runoff from the eastern portion of the Plantel parcel to the neighboring parcel. The southerly of the two serves a slightly larger portion of the watershed and therefore conveys a bit more runoff, than its northerly partner. The southerly post-developed site discharge location remains unchanged from existing conditions and will discharge stormwater at a lower rate compared to existing conditions. The main factor for this outcome is the reduction in watershed area that presently contributes to this discharge location. The existing watershed for this discharge point comprises of 49.05 acres compared to the post-developed watershed area of 5.61 acres. The proposed drainage system has been designed to collect and convey the majority of the stormwater from the greenhouse / growing areas to the retention / detention basin, with the focused objective of recycling and re-using the water for irrigation, making use of the proposed water recycling facility. The preliminary drainage report presents further detail demonstrating compliance with county stormwater requirements.

When final plans are prepared, the drainage swale along the east side of the development will include elements intended to control erosion and sediment transport.

The Tartaglia team is available to address any questions or to provide any additional data regarding agricultural water demand.

Sincerely,

**TARTAGLIA ENGINEERING**



John A. Smith, PE  
Principal

Enclosure:      October 6, 2020 Earth Systems Pacific preliminary review letter



# Earth Systems

2049 Preisker Lane, Suite E | Santa Maria, CA 93454 | Ph: 805.928.2991 | [www.earthsystems.com](http://www.earthsystems.com)

October 6, 2020

FILE NO.: 301376-004

Mr. Scott Nicholson, President  
Plantel Nursery  
2890 Telephone Road  
Santa Maria, California 93454

PROJECT: PLANTEL NURSERY, 2775 EAST CLARK AVENUE  
SANTA MARIA AREA OF SANTA BARBARA COUNTY, CALIFORNIA

SUBJECT: Geotechnical Engineering Comments Concerning the Eastside Expansion

REF.: 1) Development Plans for the Eastside Expansion prepared by Tartaglia Engineering and dated November 11, 2019  
2) Revised Soils Engineering Report, Plantel Nursery, 2775 East Clark Avenue, Santa Maria Area of Santa Barbara County, California, by Earth Systems Pacific, dated April 30, 2010, Doc. No.: 1004-067.SER.

Dear Mr. Nicholson:

In accordance with a request from Tartaglia Engineering, this letter presents our geotechnical engineering comments concerning the Plantel Nursery Eastside Expansion project. The project is located at 2775 East Clark Avenue in the Santa Maria area of Santa Barbara County, California. This letter is based upon a review of References 1 and 2.

Reference 1 shows the planned development of the Plantel Nursery Eastside Expansion project which is referred to herein as "the site." The site will generally be developed to support agricultural use structures/improvements such as greenhouses, a germination building, a water recycle and distribution facility, water storage tanks, surface improvements such as vehicle pavement and pedestrian flatwork, underground utilities, drainage disposal basins, etc.

Topographically, this approximately 77-acre site generally consists of rolling terrain with elevations ranging from approximately 740 feet in the southwest corner down to approximately



670 feet along the easterly property line. Substantial grading operations will be needed to create level building areas for the aforementioned structures and improvements. This grading will also develop some relatively tall slopes, and there are a few slope areas that will extend down from a building area into the drainage disposal basins.

Although there are certainly site development issues and design criteria that needs to be addressed or provided in a future geotechnical engineering report, it is our opinion that that the site is generally suitable for development as shown on the plans (Reference 1). This assessment is based upon a review of the information presented in Reference 2, the geotechnical engineering report prepared for the previously developed approximately 60-acre site to the west. We did not encounter any geotechnical constraints during our document reviews, subsurface explorations, and construction testing and inspection operations that would have precluded site development there, and do not anticipate geotechnical constraints with this site.

Based on the information in References 1 and 2, the main geotechnical issue will be the long-term stability of the planned slope areas. The soil materials are generally sands that are subject to minor surficial instability and erosion damage without proper mitigation measures. Considering the soil type, it has been our experience that gross and surficial stability issues can be dealt with by eliminating cut and fill over cut slopes and replacing them by constructing stabilizing fill slopes to improve soil moisture and density conditions. The surficial stability of these fill slopes can be further enhanced by landscaping with a variety of plants that possess both shallow and deep root structures and that require minimal amounts of irrigation.

We look forward to providing a geotechnical engineering report to address the site development issues and to provide design and construction recommendations for the grading, structures, and improvements associated with this project.



Plantel Nursery Eastside Expansion  
Santa Maria Area of Santa Barbara County, California

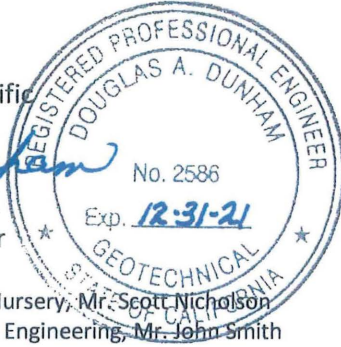
October 6, 2020

If there are any questions concerning this letter, please do not hesitate to contact me.

Sincerely,  
Earth Systems Pacific

*Doug Dunham*

Doug Dunham, GE  
Associate Engineer



E-Copy to: Plantel Nursery, Mr. Scott Nicholson  
Tartaglia Engineering, Mr. John Smith

Doc. No.: 2010-006.LTR/ln