INFILTRATION
FEASIBILITY CONDITION LETTER

NAKANO
CHULA VISTA, CALIFORNIA

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

TRI POINTE HOMES
SAN DIEGO, CALIFORNIA

APRIL 21, 2023
PROJECT NO. 07516-42-02

Project No. 07516-42-02
April 21, 2023

Tri Pointe Homes
13520 Evening Creek Drive North, Suite 300
San Diego, California 92128

Attention: Mr. Allen Kashani

Subject: INFILTRATION FEASIBILITY CONDITION LETTER
NAKANO
CHULA VISTA, CALIFORNIA

References:
1. *Update Geotechnical Investigation, Nakano Property, Chula Vista, California* prepared by Geocon Incorporated dated September 18, 2020 (Project No. 07516-42-02);
2. *Stormwater Management Recommendations, Nakano, San Diego, California,* prepared by Geocon Incorporated, dated January 9, 2023 (Project No. 07516-42-02);
3. *DMA Exhibit, Proposed Conditions, Exhibit B, Nakano, Chula Vista, California,* prepared by Project Design Consultants, dated March 11, 2020 (Job. No. 4409.02).

Dear Mr. Kashani:

In accordance with the request of Civil Sense Inc., we have prepared this report regarding storm water management for the subject project. We previously prepared the referenced geotechnical report for the project (Reference 1) and the stormwater management recommendations report (Reference 2). Based on a review of the DMA Exhibit (Reference 3), we understand biofiltration basins and an underground detention vault will be utilized for storm water management. Due to the presence of undocumented fill with a thickness of 5 feet or greater, low infiltration characteristics, and existing slopes, we recommend the site be classified as a "No Infiltration" condition.

SITE AND PROJECT DESCRIPTION

The irregularly shaped, approximately 15-acre site is located northwest of the Dennery Road and Regatta Lane intersection, east of I-805 in Chula Vista, California. There are no existing structures on the site; however, several remnant building foundations are present. Existing utilities at the site include 18- and 27-inch diameter sewer mains along the west and northern portions of the property, respectively, high-voltage overhead electrical lines traversing the southern portion of the site, water and storm drain lines in the southeast corner of the property, and a reclaimed water line along the eastern property boundary.

We understand the sewer main on the west property margin and the reclaimed water line on the eastern property margin will remain. The sewer main that crosses the northern portion of the property will be removed.

Site topography is relatively flat, sloping from south to north towards the Otay River channel. A north-facing natural slope, approximately 70 feet high is present along the south property boundary. Elevations across the site range between approximately 95 and 180 feet above Mean Sea Level (MSL; see *Geologic Map*, Figure 1). Undocumented fill and artificial fill associated with previous site grading, alluvium, Terrance Deposits, San Diego Formation and Mission Valley Formation underly the site.

A review of proposed grading plans by Civil Sense indicates proposed improvements will consist of 157 residential lots, a park, an underground stormwater management system, utilities, and street improvements. Entrance to the property will be from a driveway at the southeast corner of the property extending from Dennery Road. The proposed development includes cuts and fills up to 15 feet in sheet graded areas and cut and fill slopes at inclinations of 2:1 (horizontal to vertical) with heights up to 55 feet.

The locations and descriptions of the site and proposed development are based on our recent site reconnaissance, previous and recent field investigations, and our understanding of site development as shown on the grading plan prepared by Civil Sense. If project details vary significantly from those described, Geocon Incorporated should be contacted to review the changes and provide additional analyses and/or revisions to this report, if warranted.

PREVIOUS GRADING

Previous grading on the site resulted in the placement of fill within the property. The fill was found to between approximately 2 to 5 feet across the majority of the property, increasing to greater than 18 feet in the northeast portion of the site.

PREVIOUS GEOTECHNICAL STUDIES

The site was analyzed for infiltration in 2020 in our geotechnical report (Reference 1) and subsequently in 2023 in our storm water management recommendations report (Reference 2) during preliminary design. The site is underlain by undocumented fill associated with previous site grading, alluvium, colluvium, Terrace Deposits, and Mission Valley Formation. As indicated in our geotechnical report (Reference 1) and storm water management recommendations report (Reference 2), we performed infiltration testing on the property which showed very slow infiltration rates, and therefore, do not recommend infiltration on the property. Additionally, infiltration of storm water into the sloping subsurface could cause slope instability to the existing natural and manufactured fill slopes that ascend

to the east, west and south. We recommend storm water-infiltration areas be lined with an impermeable barrier to reduce the potential for water infiltration into the underlying soils.

Below is the specific information requested from Section C.1.1 of the City of San Diego's Storm Water Standards.

- **The Phase of the Project In which the geotechnical engineer first analyzed the site for infiltration feasibility:**

  The site was originally analyzed for infiltration feasibility in 2020 in our geotechnical report (Reference 1) and in 2023 in our stormwater management recommendations report (Reference 2). These were performed during preliminary design.

- **Results of previous geotechnical analyses conducted in the project area, if any.**

  See discussions above and References 1 and 2.

- **The development status of the site prior to the project application.**

  The property has been previously graded (see discussion above).

- **The history of design discussion for the project footprint, resulting the final design determination.**

  The location of the proposed biofiltration basins and underground detention vault were provided by the Project Civil Engineer and are based on the most practical locations within the project site including being downstream of proposed impervious surfaces and being adjacent to the tie in location to the existing storm drain. Due to the depth of fill in portions of the site, existing natural and manufactured fill slopes, and low infiltration rates in the underlying soils, the planned stormwater management devices are not conducive to infiltration and are proposed as "no infiltration" BMPs.

- **Full/partial infiltration BMP standard setbacks to underground utilities, structures, retaining walls, fill slopes, and natural slopes applicable to the DMA that prevent full/partial infiltration.**

  Manufactured ascending slopes are present to the east and west sides of the property. In addition, a natural, ascending slope is located at the south end of the site and extends beyond the property margin. Infiltration into slopes can cause slope instability, therefore, infiltration is considered infeasible on or near slopes.

- **Physical impairments (i.e., fire road egress, public safety considerations, etc.) that prevent full/partial infiltration.**

  There are proposed structures, proposed paved driveways and parking that will be constructed to provide access to the site. The proposed structures, roadways and parking areas will be underlain by compacted fill. Infiltrating near proposed structures and improvements could result in settlement, and this movement will result in structural distress.

- **Consideration of site design alternative to achieve partial/full infiltration within the DMA.**

  There are no locations on the property where storm water management devices could be located that are outside areas underlain by less than 5 feet of fill, away from existing or proposed slopes, or in areas that have suitable infiltration characteristics. Therefore, storm water infiltration is not feasible on the site, and there are no locations on the property which would support full or partial infiltration.

- **The extent site design BMPs requirements were included in the overall design.**

  The project Civil Engineer and Landscape Architect have designed and implemented a variety of site design BMPs based on the City of San Diego Storm Water Standards Manual and requirements of the MS4 permit including: 1) Minimizing impervious areas via landscape areas, 2) Minimizing soil compaction within the biofiltration basin and trees/landscape areas, 3) Impervious area dispersion, 4) Landscaping with native or drought tolerant plants.

- **Conclusion or recommendation from the geotechnical engineer regarding the DMA's infiltration condition.**

  It is our opinion that the entire site (all DMAs) is not feasible for partial or full infiltration and the property should be considered to possess a "No Infiltration" condition in accordance with Appendix C of the 2021 SWS. Our opinion is based on the presence of fill greater than 5 feet, native soils with very slow infiltration rates, and existing ascending slopes on the site perimeter. Infiltration would create an un-mitigatable risk of settlement, soil heave, and lateral seepage migration that could adversely impact public and private improvements and existing slopes.

  Liners and subdrains are recommended in the design and construction of the planned storm water devices. The liners should be impermeable (e.g. High-density polyethylene, HDPE, with a thickness of about 30 mil or equivalent Polyvinyl Chloride, PVC). The subdrains should be perforated within the liner area, installed at the base and above the liner, be at least 3 inches in diameter and consist of Schedule 40 PVC pipe. The subdrains outside of the liner should consist of solid pipe. The penetration of the liners at the subdrains should be properly waterproofed. The subdrains should be connected to a proper outlet. The devices should also be installed in accordance with the manufacturer's recommendations.

- **An Exhibit for all applicable DMA's that clearly labels:**

  - **Proposed development areas and development type.**

  - **All applicable features and setbacks that prevent partial or full infiltration, including underground utilities, structures, retaining walls, fill slopes, natural slopes, and existing fill materials greater than 5 feet.**

  - **Potential locations for structural BMPs.**

  - **Areas where full/partial infiltration BMPs cannot be proposed.**

  Figure 1 presents the geologic map for the property. Figure 2 is the drainage map that shows the locations of the DMAs and proposed BMPs. The figures include the development area and proposed structures and improvements.

If you have any questions regarding this letter, or if we may be of further service, please contact the undersigned at your convenience.

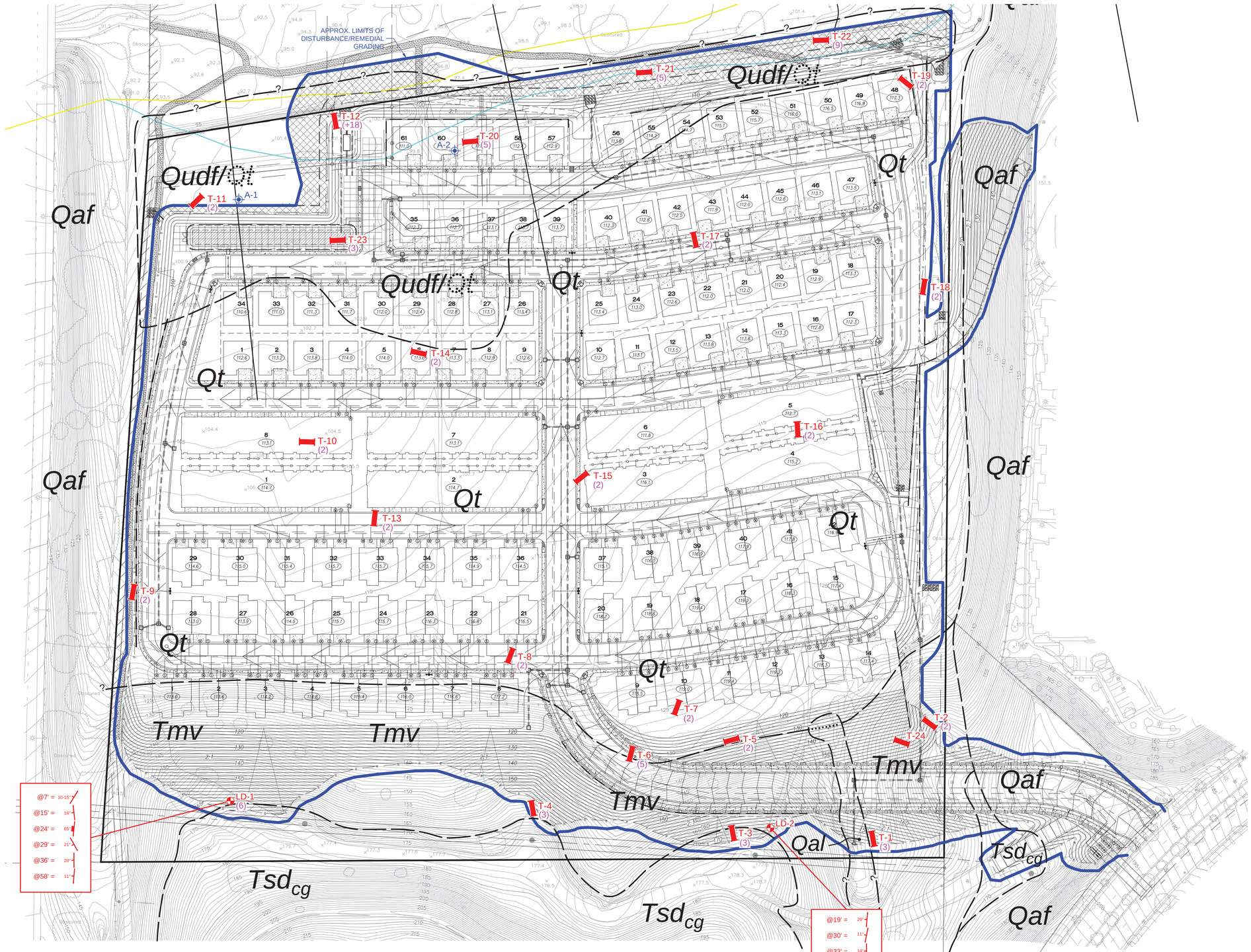
Very truly yours,

GEOCON INCORPORATED

Rodney C. Mikesell
GE 2533

RCM:arm

(e-mail) Addressee



GRAPHIC SCALE
0' 30' 60' 90' 120' 180' 240'
SCALE 1"=60' (on 36x24)

GEOCON LEGEND

- Qudf ..... UNDOCUMENTED FILL
- Qaf ..... ARTIFICIAL FILL
- Qal ..... ALLUVIUM
- Qt ..... TERRACE DEPOSITS (Dotted Where Buried)
- Tsd$_{cg}$ ..... SAN DIEGO FORMATION (Conglomerate)
- Tmv ..... MISSION VALLEY FORMATION
- ..... APPROX. LOCATION OF GEOLOGIC CONTACT (Queried Where Uncertain)
- LD-2 ..... APPROX. LOCATION OF BORING
- T-24 ..... APPROX. LOCATION OF TRENCH
- A-2 ..... APPROX. LOCATION OF INFILTRATION TEST
- (5) ..... APPROX. DEPTH OF REMEDIAL GRADING (In Feet, MSL)

GEOLOGIC MAP

NAKANO
CHULA VISTA, CALIFORNIA

GEOCON INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

SCALE	1" = 60'	DATE	04 - 21 - 2023
PROJECT NO.	07516 - 42 - 02	FIGURE	1
SHEET	1 OF 1		

Plotted:04/24/2023 12:25PM | By:ALVIN LADRILLONO | File Location:W:\1_GEOTECH\07000\07500\7516-42-02\2023-04-21\7516-42-02 Geo Map 40.dwg

BMP#3 BF-3
COMPACT BIOFILTRATION
BASIN- MWS UNIT &
DETENTION VAULT

BMP#1 BF-1
BIOFILTRATION
BASIN
BOT=3,608 SF

LIMIT OF
DETENTION
VAULT

APPROXIMATE LIMITS
OF DISTURBANCE

APPROXIMATE LIMITS
OF REMEDIAL GRADING

TENTATIVE MAP
BOUNDARY

MINI
PARK

POC 1

POC 2

OVERLOOK
PARK

DMA#4
SELF-MITIGATING
AREA

PVT STREET 'H'

PVT STREET 'C'

PVT STREET 'D'

PVT STREET 'G'

PVT STREET 'F'

PVT STREET 'B'

PVT STREET 'E'

PVT STREET 'A'

REVERSE
CURB
OUTLET

DMA 1
2.49 AC

IMPERVIOUS
DISPERSION
(TYP.)

DMA 1
ONSITE TO BIOFILTRATION
BASIN

DMA 3
CENTER
13.80 AC

DMA 3
ONSITE TO VAULT + MWU

DMA 2
EAST
4.01 AC

BMP#2 BF-1
BIOFILTRATION
BASIN
BOT=4,523 SF

OFFSITE
BYPASS

RIVER EDGE TERRACE
PARCEL MAP NO. 15134

PROPERTY
BOUNDARY

LOW-FLOW SPLITTER
FOR RUNON FLOWS.
HIGH FLOW ARE
ROUTED WEST THRU
SITE UNDERNEATH
BIOFILTRATION BASIN

DENNERY VILLAGES 2/3
(RIVEREDGE TERRACE)

CITY OF CHULA VISTA
CITY OF SAN DIEGO

DENNERY RD.

PARCEL MAP NO. 17794
R.O.S. 11135

7' TRAIL

DMA SUMMARY

DMA #	DMA TYPE	BMP TYPE	DRAINAGE AREA (Ac)	BMP Footprint (SF)
1	Drains to BMP	BF-1 LINED BIOFILTRATION	2.49	3608
2	Drains to BMP	BF-1 LINED BIOFILTRATION	4.01	4523
3	Drains to BMP	BF-3 COMPACT BIOFILTRATION & DETENTION VAULT	13.80	VAULT: 12736
4	SELF-MITIGATING	-	1.59	-

LEGEND

- DRAINAGE MANAGEMENT AREA #1
- DRAINAGE MANAGEMENT AREA #2
- DRAINAGE MANAGEMENT AREA #3
- DRAINAGE MANAGEMENT AREA #4
- BIOFILTRATION BASIN
- DRAINAGE FLOWPATH
- IMPERVIOUS DISPERSION (IMP TO PERV)
- DETENTION/HYDROMODIFICATION VAULT

TABULAR SUMMARY OF IMPERVIOUS DISPERSION

TOTAL IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)
13551	11151

40 20 0 40
SCALE: 1"=40'

N

SCALE: 1"=40'
JOB #: 4409.02
CREATED: 3/11/20

PREPARED BY:
PROJECT DESIGN CONSULTANTS
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619.235.6471 Tel 619.234.0349 Fax

CITY OF CHULA VISTA
NAKANO
DMA EXHIBIT
PROPOSED CONDITIONS
EXHIBIT B

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