

Alex Reizman, PE  
501 Herondo Street  
Hermosa Beach, CA 90254

June 14, 2018

City Council Members  
City of Hermosa Beach  
1315 Valley Drive  
Hermosa Beach, California 90254

Subject: Greenbelt Infiltration Project between Herondo and 2nd Street – Groundwater Issue

References:

- 1) Geosyntec Letter, Subject: Infiltration Testing and Preliminary Geotechnical Investigation Hermosa Greenbelt Project, Hermosa Beach California, April 7, 2017
- 2) County of Los Angeles Department of Public Works Low Impact Development Standards Manual, February 2014.
- 3) County of Los Angeles Department of Public Works, Geotechnical and Materials Engineering Division, Guidelines for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration, Document GS200.2, 6/30/2017.
- 4) DEPARTMENT OF CONSERVATION Division of Mines and Geology, SEISMIC HAZARD ZONE REPORT FOR THE REDONDO BEACH 7.5-MINUTE QUADRANGLE, LOS ANGELES COUNTY, CALIFORNIA, 1998.
- 5) Water Replenishment District of Southern California (WRD),  
<http://www.wrd.org/content/regional-groundwater-monitoring-reports>
- 6) Los Angeles Department of Public Works  
<http://dpw.lacounty.gov/general/wells/#>
- 7) Los Angeles County Flood Control District, EWMP, Draft EIR, page 2-40

Dear City Council Members:

After carefully reviewing publicly available groundwater data for the Greenbelt area and applying controlling standards and law, the planned infiltration project does not appear to be legally or physically viable. Simply put, the water table is too high to build the proposed infiltration treatment plant.

Low Impact Development projects, such as the Greenbelt Infiltration Project, are governed by LA County Department of Public Works Low Impact Development Standards

Manual (Reference 2). The County of Los Angeles (County) has prepared the 2014 Low Impact Development Standards Manual (LID Standards Manual) to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit for stormwater and non-stormwater discharges from the MS4 within the coastal watersheds of Los Angeles County (CAS004001, Order No. R4-2012-0175). According to the LID Manual (see Section 4.1), the depth to groundwater must be determined according to the most recent Geotechnical and Materials Engineering Division (GMED) Policy. The most recent policy is documented in Reference 3. For groundwater investigations the following specific guidelines are stated (underlines are mine):

*The invert of stormwater infiltration shall be at least 10 feet above the groundwater elevation. Procedures for determining the groundwater elevation are described later in these guidelines.*

*Historic high groundwater maps may be used to verify the seasonal high groundwater elevation is greater than 10 feet below the proposed invert of infiltration. Historic high groundwater elevations may be available in the Seismic Hazard Evaluation Open-File Reports prepared by the California Geological Survey at the following link: <https://goo.gl/VIESFZ>.*

*Existing groundwater data may also be used to verify the seasonal high groundwater elevation is greater than 10 feet below the proposed invert of infiltration. Recent data from Geotracker, Envirostar, local water companies, and other resources may be used to establish a seasonal high groundwater elevation. Current groundwater data and historical publications are available online through the State's Department of Water Resources Website (<https://goo.gl/qu8JsG>), the Water Replenishment District of Southern California (<https://goo.gl/enVgJG>), and others. Groundwater data for a given project may be used from sites that are within 1,000 feet of the proposed project and have been collected within the last 5 years. Existing groundwater data must be clearly presented in the report and will be subject to review and approval by GMED.*

*If historic high groundwater maps and existing data are not available, site-specific exploration can be performed to establish the seasonal high groundwater elevation. At least two borings must be drilled a minimum of 10 feet below the proposed invert. The borings must be monitored for a period of at least 24 hours to verify the seasonal high groundwater elevation is greater than 10 feet below the proposed invert of infiltration.*

The historic high groundwater level for the proposed Greenbelt infiltration project location is only 10 feet below ground surface level. This is documented in reference #4, report plate 1.2 (see Figure 1 of this letter). The use of historic groundwater level would not allow for an infiltration project. The regulations go on to say that "existing groundwater data may also be used to verify the seasonal high groundwater elevation is greater than 10 feet...". The definition of seasonal high groundwater level is: The elevation to which the ground or surface water can be expected to rise due to a normal wet season.

Fortunately, extensive existing groundwater data is available for the Hermosa Beach area. For example, the Water Replenishment District of Southern California (WRD) publishes yearly Regional Groundwater Monitoring Reports which show groundwater trends in the Los Angeles basin (see Reference 5). Table 1 of this letter summarizes the groundwater level at Hermosa Beach, based on these yearly reports. A monitored well 704E, located close to the proposed Greenbelt project, as shown in Figure 2, was operational until 2008. The data is available from Reference 6. The groundwater level data from that well is shown in Figure 3.

Based on the above documented data gathered over the last 35 years, the seasonal high groundwater is estimated to be 15' above Mean Sea Level (MSL). This groundwater level was reached in 2008, 2004, 1991, and 1985. A fairly frequent occurrence by any standard. The Greenbelt ground elevation at the proposed infiltration site is 30' (above MSL). Therefore, the seasonal high groundwater level is  $30' - 15' = 15'$  below ground surface. It is important to note that the site specific Geosyntec groundwater value of 25' below ground surface (Reference 1), is a snapshot in time and should not be considered as representative of seasonal high groundwater values. The regulations specifically recognize this, and therefore only allow the use site specific explorations if historic and existing data is not available. And even then, with certain limitations and required adjustments for seasonal effects.

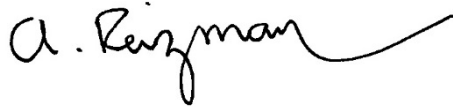
Going back to the County of Los Angeles LID regulations (Reference 3), to maintain at 10' clearance between the groundwater and the invert of the infiltration unit would require that the bottom of the infiltration be located no more than  $15' - 10' = 5$  feet below ground. Furthermore, this does not even consider or calculate for the inevitable future increase in groundwater level due to rising ocean levels and due to increase of water injection at the West Coast Barrier to combat saltwater intrusion.

Infiltration projects of this large size and scope are not viable in high water table areas such as those close to the beach. Perhaps that is why the LA County Flood Control District itself recognizes that recycling and reclaiming projects are preferred. "Because of the high ground water near the shore, capture and reuse regional projects or treatment BMP opportunities will be preferred...for the South Santa Monica Bay." Reference 7, page 2-40.

When I posed this issue to Tetra Tech during the May 10 community meeting, their only response regarding how to address high groundwater levels was not to infiltrate during times when groundwater levels were high. This purported excuse for how a project can proceed where groundwater levels are too high for the project is a circular argument in the extreme, and does an injustice to the taxpayers of Hermosa Beach. First, the response assumes that the watershed group should spend millions of dollars constructing an infiltration project (to Tetra Tech's benefit) where the primary purpose of water contamination resolution will not be undertaken during the largest storm surges when pollution is undoubtedly highest. Second, it assumes that the system can accurately assess fluctuating groundwater levels during storm surge periods adequately to then allow for the safe infiltration of millions of gallons of groundwater into a fluctuating water table. All of these factors spell possible disaster for the project and residents who will have to cope with the after effects of errors. This is precisely the reason why LA

regulations preclude infiltration projects of this nature in areas of groundwater levels of this height. Obviously there is simply no room available for an infiltration project that meets regulatory criteria.

Respectfully,

A handwritten signature in black ink, appearing to read "A. Reizman", followed by a long, sweeping horizontal flourish.

Alex Reizman, PE

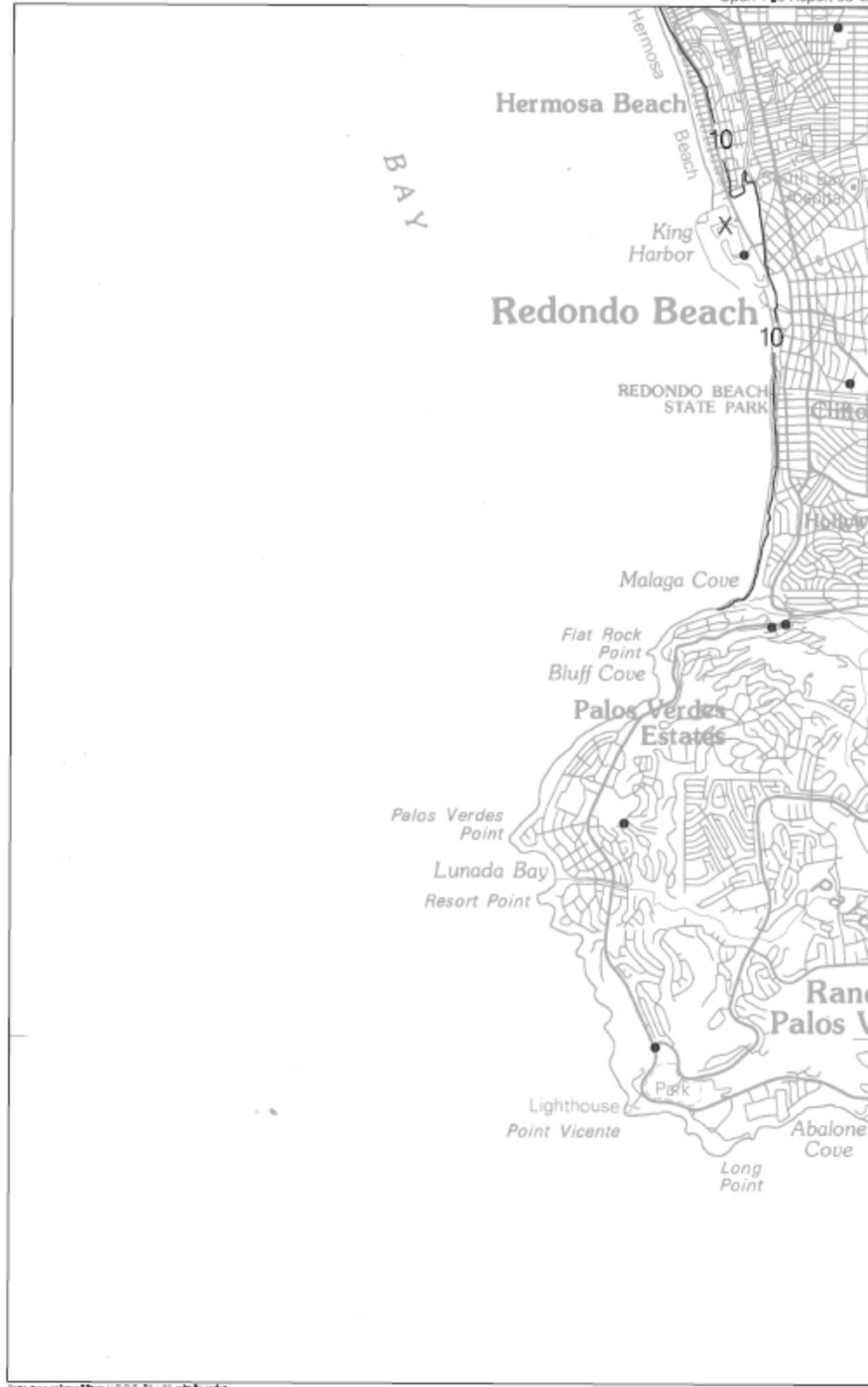


Plate 1.2 Historically Highest Ground Water Contours and Borehole Log Data Locations, Redondo Beach Quadrangle.

● Borehole Site      30      Depth to ground water in feet  
X Site of historical earthquake-generated liquefaction. See "Areas of Past Liquefaction" discussion in text.

ONE MILE  
SCALE

Figure 1 – Historic High Groundwater Level

Year	Groundwater (above Mean Sea Level)	Groundwater (below ground surface at Greenbelt)
2017 - Fall	5'	25'
2016 - Fall	2'	28'
2015 - Fall	2'	28'
2014 – Fall	2'	28'
2013- Fall	10'	20'
2012 – Fall	2'	28'
2011 - Fall	11'	19'
2010 – Fall	7'	23'
2009 – Fall	10'	20'
2008 - Fall	2'	28'
2008- Spring	15'	15'
2007 – Fall	12'	18'
2007- Spring	8'	22'
2006 – Fall	11'	19'
2006- Spring	10'	20'
2005 – Fall	10'	20'
2005- Spring	10'	20'

Note: see Figure 2.1 of Reference 5. Values are interpolated based on provided contours. Greenbelt ground elevation is 30' above sea level.

Table 1- Recent Groundwater Level Data from WRD

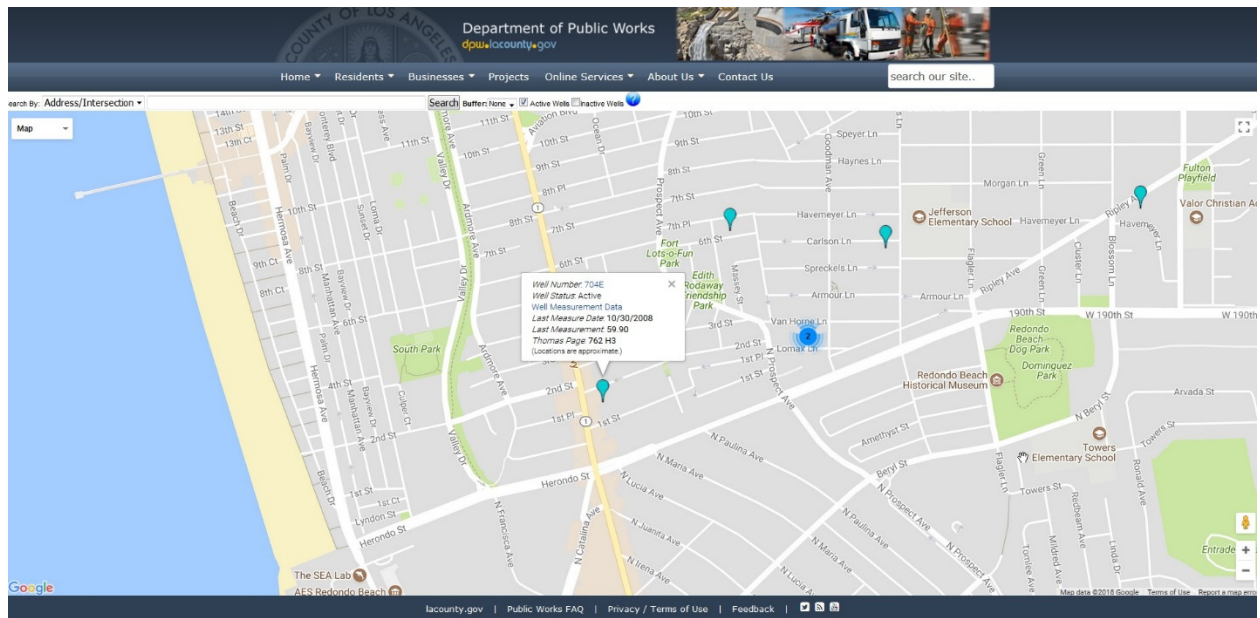


Figure 2 – Groundwater Well Close to Proposed Project (Well 704E is nearest)

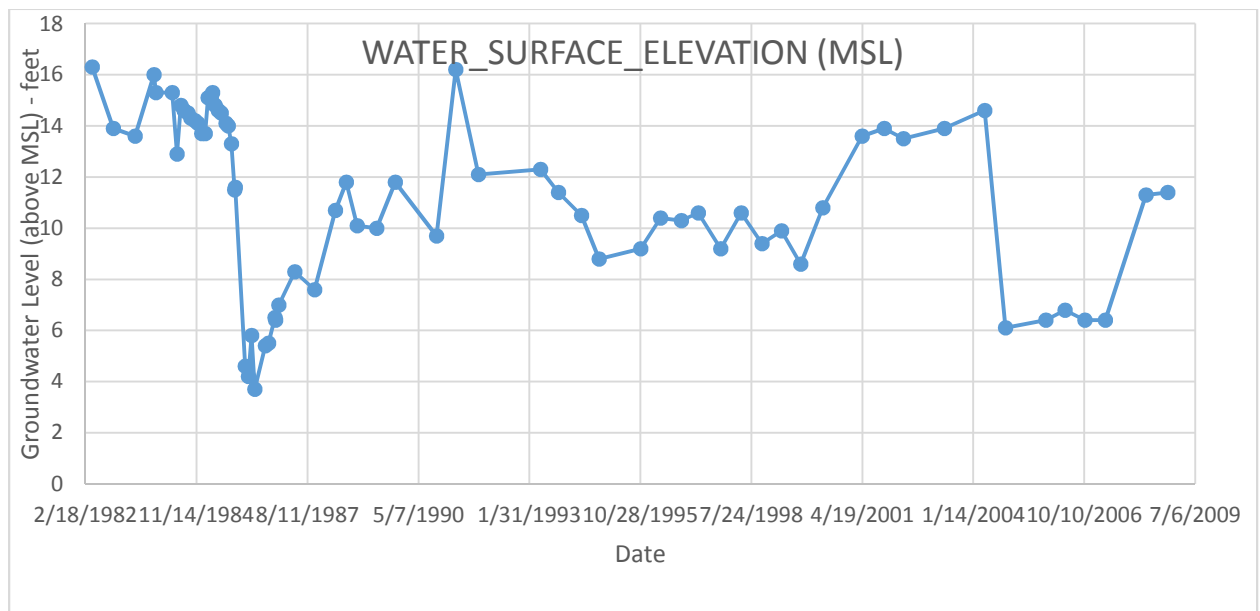


Figure 3 – Groundwater Level from Well 704E