POSEIDON SURFSIDE
a Poseidon Water company

December 11, 2018

Transmitted via Electronic Mail: hope.smythe@waterboards.ca.gov

Mrs. Hope Smythe
Executive Officer
California Regional Water Quality Control Board, Santa Ana Region
3737 Main Street, Suite 500
Riverside, CA 92501-3348

SUBJECT: Huntington Beach Desalination Project Slant Well Analyses

Dear Hope:

I am writing in response to your December 6, 2018 letter requesting additional information about the feasibility of subsurface slant well intakes offshore of the proposed Huntington Beach Project (Project") and at alternative sites along the coast of Orange County. Poseidon respectfully disagrees with the Regional Board that Poseidon has not submitted certain information regarding the feasibility of slant wells. Poseidon provided this information in Appendix QQQQ, submitted on July 25, 2017 and again in Appendix CCCCC on August 21, 2018, which provided a detailed accounting of the relevant information on this issue in the Regional Board's administrative record. Nonetheless, Poseidon responds to the Regional Board's questions below.

Previous Requests for Information

As a primary matter, I would like to direct staff's attention to the extensive subsurface seawater intake analyses we have submitted at the request of the Regional Board staff since the Project's application was originally submitted in March 2016, including the most recent letter submitted by Latham & Watkins on November 27, 2018. Throughout this process, Poseidon has cooperated with Regional Board staff and has submitted the requested information. The administrative record is replete with information from multiple experts and agencies regarding the infeasibility of slant wells and other subsurface intakes at the Project site.

This information is more than sufficient for the Regional Board to satisfy its obligations under the Ocean Plan and Water Code section 13142.5(b). Indeed, the Regional Board previously determined in 2012 that subsurface intakes were not feasible at the Project site. There is no new information or evidence that hydrogeologic conditions have changed since the Regional Board's 2012 conclusion.

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In particular, Poseidon is concerned by several statements in your letter suggesting that Poseidon has not cooperated with staff, such as: *"Poseidon has not provided the requested information in full and has not performed the requested sensitivity analysis ... Based on the information provided by Poseidon and Coastkeeper's submission, the Water Boards' staff do not have sufficient information to make a recommendation as to whether subsurface intakes are feasible."*

We believe that neither of these statements are accurate. Further, these statements appear to contradict the verbal and written assurances provided by the Regional Board staff to Poseidon over the last several years. Specifically, on two separate occasions – August 28, 2017 and October 2, 2018 – Regional Board staff deemed complete Poseidon's application for a California Water Code section 13142.5(b) compliance determination after determining it had sufficient information to evaluate the proposed Project. In addition, during a March 3, 2018 meeting in your Riverside office between Poseidon and Regional Board staff, you stated that Regional Board staff did not need additional information regarding subsurface intake feasibility based on the information in the administration record.

Moreover, the Regional Board's subsequent October 1, 2018 letter deeming the Project's application complete (for a second time) made no reference to the Coastkeeper-commissioned slant well analysis prepared by HydroFocus, which Coastkeeper submitted four months earlier to the Regional Board in June 2018. Nor did the Regional Board indicate that it needed additional information on the subject.

As we explained in our August 21, 2018 response (Appendix CCCCC), the HydroFocus report is not new information. The HydroFocus report is dated September 2016, two years before Coastkeeper submitted it to the Regional Board, and was previously submitted to, and evaluated by, the California State Lands Commission ("SLC") as part of the SLC's October 19, 2017 certification of the Project's Supplemental Environmental Impact Report ("SEIR"). The HydroFocus report provides no new site-specific geological data or information that suggests that slant wells are feasible at the Project site.

The Administrative Record Is Complete

Your December 6, 2018 letter contains two requests for information. Poseidon has previously addressed these requests, but for the Regional Board's convenience, Poseidon responds to the Regional Board's concerns and identifies the pertinent documents below.

Request 1: *An estimate of the maximum production volume that could be extracted by slant wells offshore of the Talbert, Bolsa and Sunset gaps without negatively impacting inland aquifers and coastal wetlands (i.e., the "safe yield ")*

Response 1: Estimates of maximum production by slant wells were requested by the Regional Board on May 23, 2017 (RCF 23) and provided by Poseidon on July 25, 2017 (see Appendix QQQQ). In fact, submittal of this information led the Regional Board on August 28, 2017 to notify Poseidon that it had sufficient information to conduct a California Water Code section 13142.5(b) compliance determination and Regional Board staff deemed the Project's application complete at the time.

The table below, which is from the July 25, 2017 report (Appendix QQQQ), presents a summary of results of additional modeling to evaluate feasibility of slant wells at Alamitos, Sunset and Bolsa Gaps, including estimated maximum production volumes and sensitivity analyses.

Model Results Summary
Alternative Sites Analysis
Huntington Beach Seawater Desalination Project

	Alamitos Gap				Sunset Gap			Bolsa Gap			
Pumping Well Design											
	Base Case	High K	Mergence	Low K	Base Case	High K	Low K	Base Case	High K	Mergence	Low K
Width of Coastline with Wells (ft)	8,000				9,400			8,000			
Number of Wells along Coastline	22				31			18			
Pumping Rate per Well (gpm)	316			221.2	208		143	570			
Estimated Sustainable Production (MGD)	10			7	9		6	15			
Portions of Source Water Pumped by Slant Wells											
	Base Case	Sensitivity Analysis			Base Case	Sensitivity Analysis		Base Case	Sensitivity Analysis		
		High K	Mergence	Low K		High K	Low K		High K	Mergence	Low K
Portion of Pumping from Sea	79%	81%	78%	76%	78%	77%	70%	79%	80%	79%	64%
Portion of Pumping from Wetlands	12%	15%	12%	3%	9%	19%	3%	3%	15%	3%	0%
Portion of Pumping from Inland	9%	4%	10%	21%	13%	5%	27%	18%	5%	18%	36%

Notes:
Pumping rate per well and estimated sustainable production are approximate.

Base Case: Kh of upper aquitard = 1 ft/d; Kv of upper aquitard = 0.1 ft/d
High K: Kh and Kv of upper aquitard = 1 ft/d
Low K: Kh of upper aquitard = 0.1 ft/d; Kv of upper aquitard = 0.01 ft/d

ft = feet
ft/d = feet per day
gpm = gallons per minute
Kh = horizontal hydraulic conductivity
Kv = vertical hydraulic conductivity
MGD = million gallons per day

In response to requests by the Regional Board staff for additional sensitivity analyses on the Talbert Gap slant well model, additional analyses were submitted with an estimated maximum production of approximately 70 mgd using updated base-case hydraulic conductivity for the shallow sediments based on recommendations by the Coastal Commission's Well Investigation Team (WIT) and further validated by the Coastal Commission's neutral third party peer reviewer Professor Detwiler (Cases 1b, 2b, and 3b, Table 1, Geosyntec 18 January 2017) (Appendix III).

The Geosyntec analysis concludes that while it may be hydrologically possible to withdraw 70 mgd from the Talbert Aquifer, such a large withdrawal would result in numerous impacts including to local wetlands, coastal land subsidence, significant withdraw from the fresh water aquifers and interference with the Orange County Water District's Seawater Intrusion Barrier.

Additionally, the estimated maximum production values for the Alamitos, Sunset and Bolsa Gaps were also identified and validated in the May 18, 2018 Orange County Water District ("OCWD") letter attached to your December 6, 2018 letter. Although your letter quotes a single closing statement from OCWD hydrogeologist Roy Herndon's May 18, 2018 in which Mr. Herndon appears to express uncertainty regarding hydrogeologic conditions near the Project site, Mr. Herndon has previously submitted three letters to the Regional Board regarding the feasibility of slant wells (September 28, 2015; February 12, 2016; and May 18, 2018). A full reading of Mr. Herndon's letters confirms that subsurface intakes, including slant wells, could potentially result in significant environmental and economic impacts to the groundwater resources that OCWD manages.

Indeed, Mr. Herndon's most recent May 18, 2018 letter specifically responds to the Regional Board's request to evaluate slant well impacts at alternative sites along the coast of Orange County. Consistent with Mr. Herndon's past testimony, his May 18, 2018 letter states, in part:

> *Of the four gaps, the Talbert Gap contains the most transmissive shallow aquifer (Talbert Aquifer), which is well-connected hydraulically to inland aquifers on the north and to the ocean on the south. The Talbert Aquifer is overlain by approximately 50 feet of low-permeability clays and silts that extend miles inland and a significant distance off shore based on sea-floor geotechnical data. These hydrogeologic conditions were accounted for in Geosyntec's Talbert Gap model, which estimated a maximum achievable slant well extraction rate of 70 mgd. Of that amount, the model estimated approximately 15 mgd would come from inland groundwater. 15 mgd of flow equates to a withdrawal of 16,800 acre-feet per year (AFY) from the groundwater basin and would be*

subject to payment of OCWD's replenishment assessment, currently $445 per AF. Not only would this interfere with the operation and benefits of OCWD's Talbert Seawater Barrier, the volume of extracted groundwater would need to be accounted for in OCWD's annual water budget, meaning it would need to be balanced by some combination of increased replenishment water or reduced pumping – which would be a substantial financial impact to OCWD and its ratepayers.

As Poseidon previously discussed with Regional Board staff on October 8, 2018, it is not appropriate for Poseidon as the applicant to determine the "safe yield" from slant wells. Any environmental impacts from ocean intakes to coastal wetlands and freshwater aquifers are to be avoided to the maximum extent feasible per the Ocean Plan Amendment and Coastal Act. The Regional Board's administrative record includes numerous studies and analyses including California Coastal Commission neutral third-party modeling validation (see Appendix L), that support the conclusion that slant wells offshore of Huntington Beach would interfere with OCWD's Talbert Gap sea water intrusion barrier, negatively impact the local coastal wetlands ecosystem, and could cause subsidence of the ground surface due to drawdown of the water table,[1] which could impact the structural integrity of the Pacific Coast Hwy and other structures in the vicinity. Several previous submittals have presented the potential risk of subsidence associated with pumping from wells beneath the coastal margin (e.g. Psomas, 2007; Geosyntec, 2013; Jan 2017; July 2017).[2]

To the extent Regional Board staff seeks information regarding the "safe yield" from slant wells that would be acceptable for Orange County's groundwater manager, OCWD's May 18, 2018 letter clearly states:

In consideration of a potentially manageable volume of extraction, OCWD staff believes if a subsurface intake project were to be developed along the coastline in the Talbert, Bolsa, or Sunset Gaps, and it had a cumulative maximum draw from inland aquifers of 1,000 AFY, then this amount of withdrawal could be accommodated within the basin's water budget and groundwater management programs, although it would still be subject to payment of the OCWD replenishment assessment.

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[1] Groundwater pumping from unconsolidated alluvial aquifer systems has resulted in significant land subsidence at many localities in the world, particularly in settings were an alluvial aquifer is overlain by a fine-grained confining layer (e.g. Freeze and Cherry, 1979).

[2] In 2012, the Regional Board conducted a CWC section 13142.5(b) compliance determination and found that slant wells would cause *"Potential subsidence of public roads and structures from potential drawdown of the groundwater table."*

A hypothetical slant well array with a 1,000-acre foot per year "safe yield" from inland aquifers would produce an inconsequential quantity of drinking water, fail to meet the stated Project objectives and still be subject to feasibility constraints discussed further below.

Request 2: *A sensitivity analysis of the hydrogeologic model, utilizing a range of representative hydraulic conductivity input values for the offshore sediments and the wetland areas.*

Response 2: Over the past five years, Poseidon's consultant, Geosyntec Inc., has conducted numerous groundwater model sensitivity analyses at the request of regulatory agency staff, including the California Coastal Commission and Regional Board. Appendix QQQQ summarizes the results of the Huntington Beach slant well modeling and the sensitivity analyses conducted in response to requests over the years by agency staff. As discussed therein:

- In 2013, at the request of the California Coastal Commission, Geosyntec Inc. developed a site-specific groundwater model for the proposed Project to evaluate the feasibility of slant wells along the Huntington Beach coastline in the Talbert Gap.

- In 2014, the Independent Scientific & Technical Advisory Panel ("ISTAP") convened by Poseidon and the California Coastal Commission issued a Phase 1 feasibility report that found that seawater wells are technically infeasible for the proposed Project due to: (a) performance risk; (b) local hydrologic conditions that would result in adverse environmental impacts including to fresh water aquifers and local wetlands; (c) sensitivity to sea level rise; (d) poor geochemistry; and (e) lack of precedent in similar geological conditions.

- In 2015, at the request of the California Coastal Commission staff, a Well Investigation Team ("WIT") comprised of independent, professional hydrogeologists that served on the ISTAP Phase 1 panel were appointed to further investigate and analyze the potential impact that seawater intake wells could have on the local freshwater basin managed by OCWD. The WIT reviewed the modeling of the hypothetical slant wells and requested revision of the representation in the model of the coastal wetlands and marshes and sensitivity analyses of the model results to values assigned for hydraulic conductivity, pumping location, and pumping rate. Geosyntec conducted the requested sensitivity analyses and presented a range of model results with respect to the

portion of the sources of the water pumped from the slant wells including the ocean, the coastal wetlands, and the inland aquifers.

- In response to requests by the WIT and the Coastal Commission staff, Geosyntec made revisions to the slant model and conducted sensitivity analyses for the Talbert Gap model. (Appendix A3 Update) [*Revision and Sensitivity Analyses of Slant Well SSI Model Feasibility Assessment of Shoreline Subsurface Collectors Huntington Beach Seawater Desalination Project, Technical Memorandum to Scott McCreary, Concur, 9 November 2015, 34 pp.*].)

- In December 2015, Professor Detwiler (2015), an independent, third-party reviewer chosen by Coastal Commission staff, reviewed the original modeling and sensitivity analyses (Appendix L).

- As is also discussed in our Response 1 to Request 1 above, on January 18, 2017, at the request of the Regional Board Poseidon submitted yet another updated Geosyntec groundwater model entitled *"Additional Sensitivity Analyses of Slant Well SSI Feasibility Modeling: Variation in The Location and Length of The Slant Wells Has Very Little Influence On The Portions of Source Water Pumped by The Slant Wells."* (Appendix III).

The additional sensitivity analyses were done in 2016 and 2017 at the request of the Regional Board in 2016 and evaluate the potential benefit of increasing the length of the hypothetical slant wells to position them further offshore with the objective of reducing influence on local wetlands and the inland Talbert Aquifer *(Attached is Appendix XXX – November 18, 2016 email between Scott Maloni and Milasol Gaslan).* Based on known drilling and well installation limitations on the likely maximum technically feasible length of slant wells, Geosyntec increased the hypothetical slant wells from a length of approximately 425 to approximately 1,000 feet in the updated model.[3]

Additional model runs were conducted with 1,000-foot-long slant wells for two hypothetical slant-well geometries:

[3] 1,000 feet is considered the likely maximum technically feasible length of a slant well at an angle of approximately 25 degrees below horizontal beneath the Huntington Beach coastline based on precedence with slant well technology for seawater intake (Final Environmental Impact Report/Environmental Impact Statement for the Monterey Peninsula Water Supply Project, March 2018, p. 3-17 and Figure 3-3b.

1. Extension of slant wells at the same angle as the previous model (approximately 25 degrees below horizontal) to length of 1000 feet, which results in pumping from both the Talbert and Lower Aquifer.

2. 1000-foot slant wells at approximately 12 degrees below horizontal, which keeps the wells within the Talbert Aquifer. *Note that installation of 1000-ft slant wells of this size at 12 degrees in a similar setting is without precedence and is likely technically infeasible.*[4]

The additional modeling indicated that variation in the location and length of the slant wells by several hundred feet has very little influence on the portions of source water pumped by the slant wells.

Moreover, Poseidon also provided documentation of the additional slant well models requested by the Regional Board for the Alamitos, Sunset and Bolsa Gaps alternative sites analyses (see Appendix QQQQ table 2 above).

Please note that remaining outstanding requests for RCF23, which include additional issues later raised by HydroFocus, are addressed in Appendix A to the 25 July 2017 document (see Appendix QQQQ) that presented evaluation of slant well feasibility at alternative sites. Appendix QQQQ includes discussion and justification of values of hydraulic properties assigned to the generally fine-grained sequence of sediments between the surface and the Talbert Aquifer, which includes numerous fine-grained, low-permeability intervals.

At this time, yet another additional sensitivity analysis is unnecessary because the various analyses done to date have artificially incorporated the most conservative (i.e., favoring slant well ocean production) hydraulic properties even when site-specific information or data demonstrates that the hydraulic properties in this location are less conducive to slant wells.

Sensitivity analyses using a range of hydraulic properties were conducted to provide an assessment of the range of likely impacts and portioning of flow from the ocean and

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[4] A test slant well beneath the coastal margin near Dana Point is approximately 350 feet long and at an angle of 23 degrees below horizontal (Geoscience – Bureau of Reclamation Desalination and Water Purification Research and Development Program Report No. 152, January 2009). A test slant well beneath the coastal margin of Monterey Bay is 700 feet long and 19 degrees below horizontal. A test slant well beneath the coastal margin of Monterey Bay is 685 feet long and 19 degrees below horizontal (see Final Environmental Impact Report/Environmental Impact Statement for the Monterey Peninsula Water Supply Project (March 2018), p. 3-17 and Figure 3-3b.)

inland aquifers. The modeling of reduced pumping rates from slant wells along the coastline of Talbert Gap demonstrates that impacts to inland aquifers and barriers would occur regardless of the slant well pumping rate, and that a proportionally larger portion of source water comes from inland for lower pumping rates due to the relative ease of horizontal flow within the aquifer compared to vertical flow through the low permeability shallow sediments, and because there is limited hydraulic connection between the aquifer and the sea.

Finally, Poseidon addressed the additional sensitivity analysis proposed by HydroFocus in detail on pages 21-23 of Appendix CCCCC. As described therein, the Coastal Commission's independent model reviewer and the WIT that worked with the Coastal Commission agreed with the hydraulic connectivity values used by Geosyntec in sensitivity runs and model revisions, and rejected the values proposed by HydroFocus. Model runs by Hydrofocus erroneously used the original value of 1 ft/d for bulk vertical hydraulic conductivity (Kv) as an intermediate base case for the generally fine-grained sequence of sediments that overly the Talbert Aquifer. However, this unrealistically high bulk Kv value was originally assigned by Geosyntec (2013) to purposely provide an optimistic assessment of the portion of source water from the sea as a base case. As recommended by the Coastal Commission's WIT and its neutral third-party reviewer Professor Detweiler, and as discussed in several documents by Geosyntec that present additional model runs, a bulk Kv at least 10 times lower (i.e. 0.1 ft/d) is more realistic for the sequence of sediments between the top of the Talbert Aquifer and surface (Geosyntec, Nov 2015, Jan 2017, July 2017) due the presence of numerous fine-grained, low permeability deposits with this interval. Accordingly, the simulations and proposed additional analyses by HydroFocus are generally without technical merit and do not change the underlying feasibility conclusions of Appendix QQQQ.

Regional Board's Standard of Review

Under the Ocean Plan and Water Code section 13142.5(b), the Regional Board's standard of review is whether subsurface intakes are feasible (i.e., "capable of being accomplished in a successful manner in a reasonable period of time taking into account economic, technical, social and environmental considerations."), not the limited review in staff's letter as to whether *"slant wells could possibly be operated at an extraction rate that would be protective of both the inland aquifers and the wetlands ecosystem."*

In 2012, the Regional Board amended and renewed the Project's NPDES permit and conducted a California Water Code section 13142.5(b) compliance determination that found slant wells were *"not the environmentally preferred alternative ... Taking into account economic, environmental and technological factors, the Regional Water Board finds that the alternative subsurface intakes are not feasible."* (See Latham & Watkins

November 27, 2018 letter). More recently, the State Lands Commission made a similar finding in its 2017 SEIR after reviewing Coastkeeper's 2016 HydroFocus report.

Environmental and hydrogeologic conditions near the Project site have not changed, and there have been no breakthroughs in subsurface intake technologies. The evidence in the administrative record demonstrates that slant wells, and other subsurface intakes, are infeasible on multiple grounds—geologic, environmental, economic, and social.

For example, due to the projected future effects of sea level rise along the coast a hypothetical array of slant wells would need to be located on the Huntington Beach Desalination Plant site to avoid potential flooding and inundation. While there is no land available at the facility site, the closest plant site property boundary is approximately 2,000 feet from the shoreline, which is almost three times the distance that is attained by the longest (and shallowest angle) known example of a slant well in a similar setting, which is beneath the Monterey Bay coastline. This fact alone would render an array of slant wells, no matter how small, infeasible at the site.

Since 2001, over 2,500 full-scale reverse osmosis seawater desalination plants have been built around the world, and none utilize slant well technology. This alternative seawater intake technology has been operated on short-term pilot scale basis only with well lengths no greater than approximately 685 feet at 19 degrees. While slant wells may eventually prove to be feasible at certain locations, the weight of the evidence before the Regional Board confirms that slant wells are not a feasible intake alternative at this location.

Poseidon remains committed to helping the Regional Board staff understand the information in its administrative record pertaining to the feasibility of slant wells and is committed to working with you to prepare a scientifically and legally-sound Tentative Order. We concur with the Regional Board's desires to bring closure to this issue by the end of the year and stand ready to meet with you at your first opportunity.

Sincerely,

Scott Maloni
Vice President, Poseidon Water

Attachment: Appendix XXX

cc: Santa Ana Regional Water Quality Control Board of Directors
Kimberly Tenggardjaja, State Water Board
Daniel Ellis, State Water Board
Roy Herndon, Orange County Water District

Tabitha Smith

From: Scott Maloni
Sent: Friday, November 18, 2016 11:44 AM
To: 'Gaslan, Milasol@Waterboards'
Cc: Smythe, Hope@Waterboards; Sturdivant, Ann@Waterboards; Lara, Julio@Waterboards; Ellis, Daniel@Waterboards; Stan Williams; 'Gordon Thrupp'; Andrew Kingman; Josie McKinley
Subject: Slant Well Feasibility Memo
Attachments: Memo - Slant Well Modeling 2016.11.18.pdf

Milasol et al:

The Annotated Matrix attached to the October 31, 2016 letter from the Santa Ana Regional Water Board Executive Director included RCF 19 that states:

> Poseidon evaluated slant wells at Property 1G that would extend 425 feet offshore and found them to be infeasible due to the effects on the Talbert aquifer. Slant wells sited farther offshore may not have an effect on the Talbert aquifer or the effects may be minimal.
> Please submit the following information for Property 1G:
> • An evaluation of the technical and economic feasibility of installing slant wells that are longer than 425 feet, including positioning the well screens far enough offshore to avoid any substantial effects on the Talbert aquifer. The evaluation shall include an assessment of the amount of source water the slant wells can withdraw, up to the proposed 106 MGD.

This request was in the section of the Annotated Matrix that corresponds to the question of considering whether subsurface intakes are feasible for which Poseidon had provided substantial information and studies including:

- High-Resolution Offshore Geophysical Survey Huntington Beach, California Field Operation Report (Ecosystems Management Associates, Inc. [ECO-M], September 2013)
- Feasibility Assessment of Shoreline Subsurface Collectors, Huntington Beach Seawater Desalination Project, Huntington Beach, California (Geosyntec, September 2013)
- Huntington Beach Seawater Desalination Facility Offshore Geophysical Survey and Shallow Subsurface Geology (ECO-M, June 2015)
- Draft Technical Memorandum - Revision and Sensitivity Analyses of Slant Well SSI Model Feasibility Assessment of Shoreline Subsurface Collectors, Huntington Beach Seawater Desalination Project (Geosyntec, June 2015)
- OCWD Staff Comments on Modeling Evaluation of Huntington Beach Ocean Desalination Subsurface Intake Option Using Extraction Wells in the Talbert Aquifer (Herndon, September 2015)
- Revision and Sensitivity Analyses of Slant Well SSI Model Feasibility Assessment of Shoreline Subsurface Collectors Huntington Beach Seawater Desalination Project (Geosyntec, November 2015)
- Review of groundwater flow modeling developed by Geosyntec to simulate pumping from slant wells beneath the beach in Huntington Beach (Detwiler, December 2015)
- Summary of the California Coastal Commission-Poseidon Well Investigation Team Process (CONCUR, January 2016)
- OCWD Staff Comments on the Expert Third-Party Review of WIT Hydrologic Model for the Poseidon Huntington Beach Project (Herndon, February 2016)
- Oceanographic and Sediment Transport Analysis of Optimal Siting of a Seabed Infiltration Gallery (SIG) at the Huntington Beach Desalination Facility (Jenkins, 2014)

The analysis regarding the feasibility of slant wells that has been provided included the refinement and calibration of the numerical groundwater flow model and those results were subjected to the review of an

independent expert and a separate Well Investigation Team. The SSI slant well option was rejected by Geosyntec, the WIT, and the Orange County Water District (OCWD).
The factors behind that rejection included:

- Limited capacity of the Talbert aquifer within the Talbert Gap zone;
- Effects on the existing seawater intrusion barrier (line of injection wells) operated by the Orange County Water District;
- Decreasing the volume of groundwater available for extraction from the inland portion of the Talbert aquifer that is used by the OCWD as a source of drinking water supply;
- Adverse impact on Orange County's municipal water supply;
- Significant environmental impact of wells, infrastructure construction, and groundwater pumping from the Talbert aquifer along Huntington Beach;
- Even at limited pumping rates, land subsidence along Highway 1;
- Decreasing pumping rates decreases the percentage of water that would come from the ocean; and
- Partial dewatering of wetlands.

Based on the request for additional information, it appears that the Regional Water Board staff agrees that the numerical groundwater flow model used in this evaluation process was run in accordance with the accepted protocols, and the data review was thorough. Further it appears that the review of the modeling found that it was done using correct methods and is the most reliable modeling that can be done in this situation with the data available. Therefore, we have used that same approach in providing the attached additional information that was requested.

Per RCF 19, attached is a draft of the Geosyntec memo on the technical feasibility of extending slant wells farther offshore of Huntington Beach. This is a draft report for discussion purposes only and does not constitute a formal submittal subject to the Permit Streamlining Act (California Government Code sections 65920 et seq.,). Gordon will be in attendance on Tuesday and walk the group through a PowerPoint presentation and answer any questions.

Thanks. Have a great weekend.

Scott Maloni
Vice President
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POSEIDON WATER

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From: Gaslan, Milasol@Waterboards [mailto:Milasol.Gaslan@waterboards.ca.gov]
Sent: Wednesday, November 16, 2016 8:19 AM
To: Scott Maloni <smaloni@poseidonwater.com>
Cc: Smythe, Hope@Waterboards <Hope.Smythe@waterboards.ca.gov>; Sturdivant, Ann@Waterboards <Ann.Sturdivant@waterboards.ca.gov>; Lara, Julio@Waterboards <Julio.Lara@waterboards.ca.gov>; Ellis, Daniel@Waterboards <Daniel.Ellis@Waterboards.ca.gov>
Subject: RE: Nov 22nd meeting

Scott,

I will not be able to access email on Friday. Would you also forward the Geosyntec information to the folks copied in this email so they get the info as early as possible?

Thanks,
Milasol

From: Scott Maloni [mailto:smaloni@poseidonwater.com]
Sent: Wednesday, November 16, 2016 8:03 AM
To: Gaslan, Milasol@Waterboards
Subject: Re: Nov 22nd meeting

Will send by then.

Scott Maloni
858-663-8838-Cell

From: Gaslan, Milasol@Waterboards <Milasol.Gaslan@waterboards.ca.gov>
Sent: Wednesday, November 16, 2016 7:44:38 AM
To: Scott Maloni
Subject: RE: Nov 22nd meeting

Scott,
Please let us know when to expect the Geosyntec report. If the report is not available by Friday, we should reschedule next Tuesday's meeting as we will not have sufficient time to review the materials and be prepared for a good meeting and discussion.

Thanks,
Milasol

-----Original Appointment-----
From: Scott Maloni [mailto:smaloni@poseidonwater.com]
Sent: Tuesday, November 15, 2016 2:58 PM
To: Gaslan, Milasol@Waterboards
Subject: Accepted: Nov 22nd meeting
When: Tuesday, November 22, 2016 10:00 AM-12:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: WB-RB8-5th Floor Conference Room