

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

1.0	Letter to Paula Rasmussen from Gibson, Dunn & Crutcher LLP “Comment Letter – Former Kast Property Tank Farm – Revised CAO” (January 21, 2014) (Gibson Dunn Jan. 21, 2014 Comment Letter)
1.1	Attachment to Gibson Dunn Jan. 21, 2014 Comment Letter: Technical Response to the RWQCB Draft Cleanup and Abatement Order dated January 21, 2014 prepared by Waterstone Environmental, Inc. (Waterstone Report)
1.2	Declaration of Donald E. Shepardson and Report dated January 20, 2014
1.3	Declaration of Marcia E. Williams and Report dated January 16, 2014
1.4	Declaration of Patrick W. Dennis dated January 21, 2014
2.0	Letter to Paula Rasmussen from Morgan Lewis and Bockius LLP on behalf of Shell Oil Products US (Shell) dated June 16, 2014
2.1	Declaration of George Bach dated May 13, 2011;
2.2	Thomas Johnson Associates Report
2.3	Douglas J. Weimer Letter with attached Field Data On behalf of Shell Oil Products US and Shell Oil Company (collectively, “Shell”),
3.0	Gibson, Dunn & Crutcher LLP, on behalf of Dole Food Company, Inc., dated June 20, 2014
3.1	Declaration of Charles F. Faust, dated June 20, 2014
3.2	Declaration of George Bach, dated June 20, 2014
3.3	Declaration of Jeffrey V. Dagdigian, dated June 20, 2014
3.4	Declaration of Robert W. Loewen, dated June 20, 2014

No.	Author	Date	Comment	Response
1.0	Gibson, Dunn & Crutcher LLP, on behalf of Dole Food Company, Inc.,	1/21/2014	Introduction. The Draft Order is contrary to precedent; the Draft Order’s findings are not supported by evidence and do not support liability under Porter-Cologne; Barclay is protected by the safe harbor of	The comment is a summary of detailed comments responded to below. Note that throughout this Response to Comments, the term “Site” is used to mean the Former Kast Property Tank Farm, now the Carousel Tract,

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
	Barclay Hollander Corporation, and Oceanic Properties, Inc. (Gibson Dunn)		Water Code section 13304(j); By allowing the Regional Boards to issue orders holding owners responsible for contamination discharged by someone else, the State Board decisions cited in the Draft Order confer jurisdictions on the Regional Boards that exceeds the legislative purpose of section 13304(a). [Part I. A-D.]	in the City of Carson.
1.0.1	Gibson Dunn	1/21/2104	Historical Facts. [Part II.A]	Comment noted.
1.0.2	Gibson Dunn	1/21/2014	The 2008 Investigation and 2011 Cleanup and Abatement Order: The residual petroleum hydrocarbons that are the subject of the Board’s cleanup and abatement order were first discovered in 2008, and in 2011, Barclay and Dole refuted Shell’s accusations that they were responsible for discharging some of those contaminants by bringing contaminated fill soil onto the site. [Part II.B.]	The comment asserts that the residual petroleum hydrocarbons discovered in 2008 and 2011 were not known to Barclay at the time it worked on and owned the Site. The Regional Board staff disagrees that Barclay was required to know about all residual petroleum hydrocarbons at the time it owned and developed the Site to be considered liable. Barclay had knowledge prior to acquiring the property that it was a crude oil storage facility and that petroleum hydrocarbons were present on the Site. The historical facts section of the comment letter includes information that Barclay acquired the property with full knowledge of the nature of the site. Barclay agreed to decommission the reservoirs and in the process of decommissioning and preparing the site for development removed residual materials in the reservoirs, including “tarry substance” [p.

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>16 of comments] and oil saturated soils [p. 18 of comments]. In addition, the record provided by the commenter indicates that data was collected at the time Barclay owned the site showing the presence of petroleum hydrocarbons below the concrete. [p. 19 of comments]. The comment letter states that the record demonstrates that Barclay brought no fill to the Site. All the contaminants at the Site had been discharged by Shell. The Regional Board staff agrees that Shell brought the crude oil to the Site and caused the discharge of the waste and that the record demonstrates that Barclay did not bring fill from off site. However, Barclay did cause additional discharges of waste through its decommissioning and development activities. See Response to Comments Section 1.1.1, 1.1.2, and 1.1.3 below.</p>
1.0.3	Gibson Dunn	1/21/2014	<p>The Draft Cleanup and Abatement Order: While Barclay is no longer accused of discharging contaminants, in 2013 the Board raised new questions about its possible liability as a former owner, all of which were satisfactorily answered during information meetings with the Board's staff. [Part II.C.1 and 2.]</p>	<p>The comment letter provides information from witnesses that the fill soil at the Site used by Barclay was clean. The comment letter explains that Dr. Jeffrey Dagdigian of Waterstone Environmental has concluded, after evaluating similar sites and the data from the Site, that the source of the shallow contamination at the Site is caused by contaminants moving upward by capillary action through openings that had been ripped</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>in the former reservoir concrete bottoms. This is demonstrated by the pattern of contamination. The commenter also provided a copy of Dr. Dagdigian's report.</p> <p>The Regional Board staff has evaluated the Report. See Response to Comment Section 1.1. While the Regional Board staff agrees that capillary action could have moved some of the waste upward. However, capillary action or upward migration does not account for the general pattern of varying concentrations of petroleum hydrocarbons including higher concentrations at shallower depths. The Regional Board staff concludes that upward chemical migration cannot account for the larger portion of the petroleum hydrocarbons found in shallow surface soils across the Site.</p> <p>As discussed further below in Response to Comments Section 1.1, the Regional Board staff agrees that Shell discharged waste at the Site and created a condition of pollution, contamination, and nuisance. However, even if Dr. Dagdigian is correct that capillary action caused the current condition, Barclay broke up the concrete to allow for drainage and that action has contributed to the resulting pollution and nuisance.</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
1.0.4	Gibson Dunn	1/21/2014	The Draft Order mischaracterizes Barclay's activities at the Site. [Part II.D.]	The Regional Board staff drafted the history of the Site as summarized the Draft CAO based on information contained in the files. The Regional Board staff has revised the Draft Order to correct factual statements.
1.0.5	Gibson Dunn	1/21/2014	Barclay's conduct was lawful and complied with environmental standards of the time in which it owned or was active at the Site. [Part II.E.1, 2, and 3.]	The Regional Board staff agrees that environmental standards were different than they are today. However, Water Code section 13304 authorizes the Regional Board to order persons who caused or permitted a discharge of waste to clean up the waste or abate the effects of the discharge. At the time of Barclay's actions, the Dickey Act prohibited the discharge of waste that would result in pollution, contamination, or nuisance. See Response to Comments Section 1.1.
1.0.6	Gibson Dunn	1/21/2014	The Draft Order is inconsistent with State Water Board precedent, which has never held responsible a non-polluting, former owner like Barclay. [Part III.A.]	The Regional Board staff disagrees with the commenter's interpretation of State Water Board orders. The State Water Board has held former owner's responsible for discharges of waste. See, e.g., State Water Board Order No. WQ 89-13 (<i>The BOC Group, Inc.</i>)(holding prior owner responsible for discharges associated with an abandoned underground storage tank). Also see State Water Board Order No. WQ 96-2 (<i>County of San Diego, City of National City, and City of National City Community Development Commission</i>) (holding County of San Diego responsible for

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p data-bbox="1331 378 1936 626">pollution caused by landfill it operated, holding City of National City responsible for actions that contributed to the pollution, and holding City of National City Community Development Commission responsible even though it owned the property for a relatively short period of time).</p> <p data-bbox="1331 662 1936 1399">The commenter describes Barclay as a “non-polluting former owner” based on the conclusion that it did not bring the waste to the site. The Regional Board staff disagrees that Barclay is a “non-polluting former owner”. Water Code section 13304(a) authorizes the Regional Board to order any person who “has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance . . .”. The State Water Board has issued several water quality orders interpreting and applying section 13304(a). The State Water Board stated in Order No. WQ 92-13 at page 4 (<i>Wenwest, Inc. et al</i>): “In precedent established by this Board (see Order No. WQ 86-15 (Petition of John Stuart,)), we apply a three-part test to former owners: (1) did they have a significant ownership interest in the</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>property at the time of discharge?; (2) did they have knowledge of the activities which resulted in the discharge?; and (3) did they have the legal ability to prevent the discharge?”</p> <p>Applying those questions to Barclay, the answer to all three questions is affirmative. As described in the comment letter, Barclay had a significant ownership interest at the time of the discharge. They owned the entire Site. (Clark, D. E. 1965. RE: Wilmington Field Kast Fee – Kast Tank Farm, Your Reference: Lomita Property. Correspondence from Shell Oil Co. to Barclay.) Barclay clearly had knowledge of the activities which resulted in the discharge – it knew that the property had been used as tank farm and was aware that petroleum was present, including in soil. In fact, Barclay acquired the property and expressly agreed to be responsible for decommissioning the reservoirs and was aware of the presence of oil residue. (Vollmer, L. 2013. Volume II Videotaped Deposition of Leroy H. Vollmer. April 1. p. 265: 5-25, p. 266:1-3.) Barclay also had the legal ability to prevent the discharge because it had full control of the property and took actions, such as breaking up the concrete and distributing</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>berm soil throughout the Site.</p> <p>The comment letter describes that two of the three reservoirs were “completely clean” (page 12) and that Barclay removed the material from reservoir 7, describes in detail how the concrete floors and sides of the reservoirs were broken and buried in fill, and describes that broken concrete from the reservoir walls was mixed with soil from the sides of the reservoirs and compacted to fill in the reservoirs during the process of preparing the site. The soil used to fill the former reservoirs come from the reservoir berms and was spread and compacted until the ground surface was brought to a level grade. (Anderson, L. D. Jr. 2013. Videotaped Deposition of Lowell Dwaine Anderson, Jr. December 18. p. 31: 6-25, p. 32: 1-6. 1-25, p. 33: 1-6). The comment letter also describes that Barclay and its contractors instituted a protocol for segregating and removing from the site any oil-saturated soil that was found and that witnesses noticed no ponding of oil at the site. The comment letter also states that borings were dug beneath the ripped concrete and the logs reference “oil stain[s],” “oily” soil, and, and smells of oil and petroleum, . . . and reported that “the first</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>three feet found directly beneath the slab tend to be silty and clayey sands which are highly oil stained.” See Comment Letter at p. 19. See also, Declaration of George Bach, Civil Engineer (May 13, 2011) attached to comments of Morgan Lewis (June 16, 2014) at pp. 5-7 (oil in reservoir), p. 9 “soil was oil stained and did have an odor”, and p. 10 “where saturation was not considered excessive the material was removed and blended into the fill.”</p> <p>Based on the information provided by Gibson Dunn, prior to purchasing the site, Barclay was aware that it was a crude oil storage facility and that oil residue was present. It also took on the responsibility of decommissioning the reservoirs, which were largely intact and at least one contained oily liquid.</p> <p>The comment letter points to the evidence that Barclay acquired the site containing nearly empty reservoirs, then filled those reservoirs in with concrete and soil from the sides of the reservoirs. Petroleum-containing soil and concrete has been found within a few feet of the surface under and around houses at the site. Similar to the situation in <i>The BOC</i></p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p><i>Group, Inc.</i>, without the actions of Barclay, the petroleum would not be present where it is now located – essentially in the reservoirs. Also see Response to Comment 1.1.</p> <p>The comment letter cites to State Water Board Order No. 92-13 (<i>Wenwest Inc.</i>) to support its assertions that Barclay should not be named as a responsible party. The State Water Board in <i>Wenwest</i> concluded that Wendy’s International was not a responsible party for various reasons, including that Wendy’s “did nothing to make the situation any worse.” In the case of Barclay, they did take actions during their ownership to make the matter worse.</p>
1.0.7	Gibson Dunn	1/21/2014	Barclay is not liable for “spreading the waste”. [Part III.B.]	<p>The Regional Board staff disagrees with the comment that Barclay is not responsible for “spreading the waste”. The staff agrees that Shell’s activities initially caused the conditions at the Site that have resulted in pollution and nuisance. However, the discharges of wastes did not cease when Shell vacated the premises, nor when Barclay sold the properties. The State Water Board has interpreted the term “discharge” to include not only an active, initial release, but also a passive migration of waste. The discharge continues as long as the waste remains in the soil and groundwater at the site. See, e.g., State Water Board Order WQ 86-2</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p><i>(Zoecon Corporation)</i> finding that, because there was an actual movement of waste from soil to water on the site. In this case, Barclay acquired the site with waste in soil and groundwater at the site, then moved soil around and broke up the concrete which allows for the continuing migration of waste. For example, the comment letter states that petroleum migrated from beneath the concrete upward. See, e.g., Dagdigian Report at p. 116 (“contamination that had remained immediately beneath the reservoir bottoms at high concentrations was able to move upward through openings that had been ripped in the former reservoir concrete bottoms and around the bottoms in the places where the walls had been removed.”) Comment Letter at p. 26.</p>
1.0.8	Gibson Dunn	1/21/2014	Barclay is exempt from liability under Porter-Cologne because all of the acts for which the draft order would hold it responsible occurred before 1981 and are therefore protected by the safe harbor of section 13304(j). [Part III.C.]	The Regional Board staff disagrees. Barclay’s argument that Water Code Section 13304(j) [formerly section 13304(f)] provides a shield to liability, is unmeritorious. That section provides that acts occurring prior to 1981, if lawful then, do not become unlawful by virtue of Water Code Section 13304. Barclay’s admitted actions of breaking up the concrete and moving soil at the site have contributed to the water pollution and nuisance conditions at the Site. Based on extensive environmental drilling conducted at the site in combination with historical records

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>regarding the former facility layout, the location of the former reservoir slabs has been adequately defined. According to the Pacific Soils Engineering (PSE) (June 11, 1968) and URS (2013), the western part of the central slab of Reservoir No. 5 was completely removed from Tract 24836, which includes properties on the eastern side of Marbella Avenue near 247th Street. There is a network of 17 shallow monitoring wells on the Site that are screened across the water table. Out of the network of 17 wells, light non-aqueous phase liquid (LNAPL) was detected in two wells designated as MW-03 and MW-12 that are located on the western part of the central slab of Reservoir No. 5 where the slabs were completely removed. The Regional Board staff believes that the removal of the slabs resulted in the seeping of crude oil into the vadose zone and presumably a source of the LNAPL that continues to accumulate in the two wells. Such actions result in the discharge of waste into the groundwater and the resulting pollution. Since 1949, California law has prohibited the discharge of waste “in any manner which will result in a pollution, contamination, or nuisance.” See Health and Saf. Code § 5411. In <i>Newhall Land & Farming Co. v. Superior Court</i>, 19 Cal.App.4th 334 (1993), the court interpreted the term “nuisance”</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>quoting <i>Mangini v. Aerojet-General Corp.</i>, 230 Cal.App.3d 1125 (1991)(the court rejected the argument that one cannot be guilty of a nuisance unless one is in the position to abate it. The court held “Nor is it material that defendant allegedly created the nuisance at some time in the past but does not currently have a possessory interest in the property. ‘[N]ot only is the party who maintains the nuisance liable but also the party or parties who create or assist in its creation are responsible for the ensuing damage.’ “ 230 Cal.App.3d at p. 1137. In this case, Shell clearly created the nuisance conditions, but Barclay assisted in the creation of the nuisance by its actions. Both are responsible for the resulting problem. While those two cases addresses nuisance, section 5411 also prohibits the discharge of waste in any manner which will result in pollution. Shell created the pollution, but Barclay assisted in the creation of pollution through its actions. The pollution and nuisance are continuing to this day from the past actions.</p>
1.0.9	Gibson Dunn	1/21/2014	Barclay was “Not in violation of existing laws or regulations at the time” of its acts. [Part III.C.1.] Public agencies in a position to know both the law and the material facts at the time prove Barclay’s compliance with then-existing law. [Part	The commenter relies on approvals by the Los Angeles County Engineer, the California State Real Estate Commissioner, and the Los Angeles County Planning Commission for aspects of the development to support the assertion that Barclay did not violate any laws or regulations at

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>III.C.1.a.] Barclay complied with the Dickey Act, which was the law applicable at the time the Carousel Project was being developed. [Part III.C.1.b.]</p>	<p>the time of its actions. It is not the land use requirements that the Regional Board is considering the violation of laws in existence at the time of Barclay's ownership; rather it is the discharges of waste that have resulted in pollution, contamination, or nuisance which violated the Dickey Act and continue to violate the Porter-Cologne Act.</p>
1.0.10	Gibson Dunn	1/21/2014	<p>Even applying State Board precedent, which applies the safe harbor statute too narrowly, Barclay did not violate any laws or regulations in effect at the time that its acts occurred. [Part III.C.2.] Barclay's acts did not "violate" the "law" of public nuisance. [Part III.2.i.] "Public nuisance" is not a "Law" to be considered in determining the availability of the safe harbor under water code section 13304(j). [Part III.C.2.ii.] Barclay did not create or continue a public nuisance. [Part III.C.2.iii.] Barclay's acts did not violate Health & Safety code section 5411. [Part III.C.2.iii.a]</p>	<p>The Regional Board staff disagrees. The Regional Board's action is based on section 13304(a) which authorizes the Regional Board to issue an order to persons who "caused or permitted" a discharge of waste. Barclay's actions to break up the concrete base of the reservoirs and to move the soil and concrete from and surrounding the walls contributed to the nuisance and pollution. In addition, the actions violated Health and Safety Code section 5411 because the actions "created or assisted in the creation of the nuisance on the Property." See Response to Comment Section 1.1.</p> <p>Contrary to the comment, it has not been established that "Barclay did not discharge any contaminants". The discharge of waste does not just include the original discharge, but the new discharge of waste caused by Barclay's actions and the discharge that is continuing to this day associated with the presence of the</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>petroleum hydrocarbons in soil at the site. Barclay may be distinguished from the Railroads in the <i>Redevelopment Agency of City of Stockton v. BNSF Ry. Co.</i>, 643 F.3d 668 (9th Cir. 2011) because Barclay owned the property and actually moved the waste to where it is currently located. Barclay was not merely a passive actor. “An intentional but not unreasonable act can give rise to nuisance liability if it creates an unreasonable interference. See <i>Id.</i> at 105–06, 253 Cal.Rptr. 470; <i>Shields v. Wondries</i>, 154 Cal.App.2d 249, 255, 316 P.2d 9 (1957) (noting that a private nuisance may result from “skillfully directed efforts,” such as the non-negligent construction of improvements on one’s property, which nonetheless infringe upon a neighbor’s property rights)” <i>City of Stockton</i>, 643 F.3d 668, 673.</p> <p>See also State Water Board Order No. WQ 93-17 (<i>Lindsay Olive</i>): “Second, though Water Code Section 13304(f) [now 13304(j)] limits strict liability for acts before January 1, 1981, it does not limit liability for acts that were in violation of existing laws or regulations at that time. The leakage and pollution which resulted from Petitioner’s discharge before 1981 was a violation of the law in existence at the time. Since 1872, California law has prohibited the</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>creation of a public nuisance. In 1925, water pollution was held by the courts to be a public nuisance. And since 1949, California law has expressly prohibited any discharge of waste in a manner which results in pollution, contamination, or nuisance. Additionally, the Porter–Cologne Water Quality Control Act of 1969 defined nuisance and authorized Regional Water Boards to order cleanup. The definition included anything that: (1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; (2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and (3) occurs during or as a result of the treatment of wastes.” As in <i>Lindsay Olive</i>, Barclay assisted in creating the resulting nuisance through its actions.</p>
1.0.11	Gibson Dunn	1/21/2014	<p>State Water Board decisions allowing Regional Boards to exercise jurisdiction over non-dischargers fundamentally misinterpret section 13304(a). [Part III.D.] The State Water Board misconstrues the plain meaning of section 13304(a). [Part III.D.1.] The legislative history of the 1980</p>	<p>The comment disagrees with the State Water Board’s interpretation of Water Code section 13304(a) regarding who is a “discharger”. Even if the Regional Board staff agreed with the comment, the Regional Board cannot reverse State Water Board precedent. In this case, Barclay “caused or permitted” a discharge of waste due to the actions it took. Those</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>amendments to Porter-Cologne support the plain meaning interpretation of section 13304(a). [Part III.D.2.]</p>	<p>discharges continue today and have resulted in pollution and nuisance. Similar to the past owners and operators of the Duck Pond landfill, Barclay's acts or failure to act were in violation of at least two laws in effect during its land ownership. As stated in WQ 96-2: "Since 1872, California law has prohibited the creation or continuation of a public nuisance. See Civ. Code Sec. 3490. Water pollution can constitute a public nuisance. See <i>People v. Truckee Lumber Co.</i>, 116 Cal. 397, 48 P. 374 (1897). A successor property owner, such as CDI, who fails to abate a continuing nuisance created by a prior owner is liable in the same manner as the prior owner. See <i>City of Turlock v. Briston</i>, 103 Cal.App. 750, 284 P. 962 (1930). Additionally, since 1949 California law has prohibited the discharge of waste in any manner which will result in a pollution, contamination, or nuisance. Health & Safety Code Sec. 5411." WQ 92-2 at page 10. It is appropriate to name Barclay for these reasons.</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
1.1	Waterstone Environmental Inc. (Waterstone Report)	01/21/2014	The Waterstone Report provides a detailed analysis of technical issues regarding the Site.	<p>Key issues of the Waterstone Report are addressed in the responses below:</p> <ul style="list-style-type: none"> • Barclay's Knowledge of Petroleum Hydrocarbons on Site – Responses 1.1.1, 1.1.3, and 1.1.5 • Barclay's Knowledge and Decommissioning of Reservoir 7 – Responses 1.1.2, 1.1.4, 1.1.15, 1.1.16 • Barclays's Criteria for Off Site Disposal of Petroleum Hydrocarbons – Responses 1.1.3, 1.1.5, 1.1.13 • Barclay's Activities at Pipelines, Pump House, and Swing Pit – 1.1.5 • Waterstone's Upward Chemical

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>Known Shell Releases at the Subject Property; the Waterstone Report states that the contamination on site originated through Shell's operations of the tank farm and there were petroleum hydrocarbon impacts beneath the reservoirs.</p> <p>The Waterstone Report identifies three sources of residual petroleum hydrocarbons on the Site that were "explicitly known" to Barclay: "(i) residual hydrocarbon materials that it removed from Reservoir 7 and transported off Site; (ii) assumed encounters with residual petroleum hydrocarbons in the</p>	<p>Migration Theory – 1.1.6, 1.1.7, 1.1.8, 1.1.11, 1.1.19, 1.1.21, 1.1.23, 1.1.26, 1.1.27, 1.1.28</p> <ul style="list-style-type: none"> • Decommissioning of Reservoirs 1 and 2 – 1.1.6, 1.1.22 • Reservoir Berm Soils – 1.1.7, 1.1.17 • Total Petroleum Hydrocarbons – diesel fraction (TPH-d) – 1.1.11 <p>Regional Board staff partially agrees and partially disagrees with Waterstone's comment regarding contamination at the former Kast Property Tank Farm (Site). Regional Board staff agrees that Shell's operation of the Site resulted in discharges of petroleum hydrocarbon waste that presently remain on Site. Regional Board staff disagree that Barclay's oil reservoir decommissioning and Site development activities removed all petroleum hydrocarbons and petroleum hydrocarbon impacted soil from the Site that were known to Barclay. Regional Board staff disagree that Barclay did not disturb petroleum hydrocarbons or petroleum hydrocarbon impacted soil on the Site. Based on the Waterstone Report, Barclay disturbed petroleum hydrocarbon impacted soil by spreading it throughout the Site during its reservoir decommissioning and Site</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>soil, which were transported off-site according to protocol; and (iii) the residual hydrocarbons that were identified in six borings beneath the floor of Reservoir 6.” The Waterstone Report distinguishes two categories of residual hydrocarbons: (i) those “explicitly-known” to Barclay and (ii) those “still present.” Waterstone opines that these two categories do not overlap and, hence, Barclay should not be named as a responsible party to the CAO.</p>	<p>development activities.</p> <p>Regional Board staff disagrees with Waterstone’s comment that petroleum hydrocarbons on the former Site that were explicitly known to Barclay are separate from (i.e., “do not overlap”) petroleum hydrocarbon impacted soil that presently remains on Site. The Waterstone Report indicates that Barclay explicitly knew of both petroleum hydrocarbons and petroleum hydrocarbon impacted soils on the Site. The Waterstone Report provides information that Barclay’s oil storage reservoir decommissioning and Site redevelopment activities caused and permitted the discharge of petroleum hydrocarbons onto the Site, left explicitly-known petroleum hydrocarbon impacted soil on Site, and spread petroleum hydrocarbon impacted soil on Site. The Waterstone Report also provides information that Barclay knowingly left petroleum impacted soil on Site and that Barclay removed only miniscule amounts of petroleum hydrocarbon impacted soil from the Site. Data from an extensive Site investigation over the past six years show that Barclay left a significant amount</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				of petroleum hydrocarbon impacted soil on site.
1.1.1	Waterstone Environmental Inc.	01/21/2014	Barclay's "Explicit-Knowledge" of Petroleum Hydrocarbons at the Time of Development was limited, and all known hydrocarbons were either removed from the Site or undisturbed.	<p>Regional Board Staff disagrees with Waterstone's comment that Barclay's "Explicit Knowledge of Petroleum Hydrocarbons at the Time of Development" was limited to petroleum hydrocarbons that Barclay removed from the Site or did not disturb.</p> <p>Regarding disposal of petroleum hydrocarbons and petroleum hydrocarbon impacted soil, the Waterstone Report states that Barclay disposed of only a minimal amount of petroleum hydrocarbon impacted soil during its activities on the Site: only three dump trucks of petroleum hydrocarbon impacted soil off site during its reservoir decommissioning and Site development activities (Bach deposition, Waterstone Report Page 51).</p> <p>Based on Site investigation data, Regional Board staff estimated the mass of total petroleum hydrocarbon (TPH-impacted soils) presently on the Site is approximately 14-million pounds. This estimate has been vetted by a Panel of Experts from UCLA.</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>The Regional Board/Expert Panel petroleum hydrocarbon mass estimate indicates that thousands of truckloads of petroleum hydrocarbon impacted soils would have been needed to export petroleum hydrocarbon impacted soil off-site. The miniscule amount of petroleum hydrocarbon impacted soil that was actually exported from the Site conforms with the eyewitness testimony that Barclay did not over-excavate in order to remove the petroleum hydrocarbon impacted soils during its reservoir decommissioning and Site development activities. The Regional Board staff's petroleum hydrocarbon mass estimate is supported by eyewitness testimony cited in the Waterstone Report that states Barclay did not overexcavate petroleum hydrocarbon impacted soil, and only petroleum hydrocarbon soil that was saturated with petroleum hydrocarbons was disposed off- site (Waterstone Report, Page 51). Therefore, Barclay left large amounts of petroleum hydrocarbon impacted soil on-site which is confirmed by the Site investigation data and Regional Board petroleum hydrocarbon mass estimate.</p>

Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013

No.	Author	Date	Comment	Response
				<p>As discussed in Regional Board responses below, the petroleum hydrocarbon mass estimate also indicates the reservoir berms were impacted by petroleum hydrocarbons in contradiction to claims throughout the Waterstone Report (Page 8, Section 1.6; Page 21, Opinion 15) that the berm soils were “clean.” The issue of berm soils is discussed in responses 1.1.7 and 1.1.17.</p> <p>The Waterstone Report also contends that the petroleum hydrocarbon impacted soils located below the reservoir floors were not disturbed by Barclay’s Site development activities. However, the Waterstone Report provides information that Barclay activities disturbed petroleum hydrocarbons beneath the reservoir floors when Barclay ripped the floors to provide adequate drainage for the redeveloped Site. The Waterstone Report indicates that some soils were brought to the top of the reservoir floor when the reservoir floors were ripped. This disturbance thereby allowed petroleum hydrocarbons to migrate to the groundwater underlying the Site and spread petroleum</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				hydrocarbon impacted soil on Site.
1.1.2	Waterstone Environmental Inc.	01/21/2014	3.1 Barclay Removed all “Explicitly-Known” Petroleum Hydrocarbons in Reservoir 7 and Disposed of Them Off-site	<p>The Waterstone Report states that “<i>Deposition testimony from eyewitnesses indicates that all of the petroleum hydrocarbon materials from Reservoir 7 were removed and hauled off-site</i>” (Page 43).</p> <p>Regional Board staff disagrees that eyewitness deposition testimony indicates that all of the petroleum hydrocarbon wastes from Reservoir 7 were disposed off-site. Regional Board staff reviewed the deposition by former Barclay employees and contractors provided in the Gibson Dunn supplemental submissions (January 21, 2014) from Alfred Vollmer, Site superintendent, and Leroy Vollmer, equipment operator who worked on the reservoirs decommissioning, Lowell Anderson, an equipment operator who worked on Site during Barclay’s redevelopment of the Site, and George Bach, an engineer who oversaw the project. The testimony provided in the Waterstone Report (George Bach Declaration 2011, page 6-7; Bach, G. 2013. Volume II Videotaped Deposition page 347: 8-22; Leroy Vollmer Deposition 2013, page 164-168), indicates that not all of the petroleum hydrocarbon materials from Reservoir 7 were removed and hauled off-site.</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>The statements by the eyewitnesses, cited in the Waterstone Report, indicate that Barclay used earthen sand berms to contain the petroleum hydrocarbon fluids so that it could be removed from Reservoir 7 by vacuum trucks. After removal of the petroleum hydrocarbon liquids, some of the sand that was used to herd the liquid was mixed with the fill materials in the reservoir (See Vollmer 2014, pages 33-34, 2013, page 138; Bach 2013, page 163; 2011, page 7; Anderson 2013, pages 16-17).</p> <p>Consequently, Regional Board staff concludes that Barclay knew of liquid hydrocarbon wastes in Reservoir 7 and attempted to remove those wastes by mobilizing them with a temporary berm constructed from Site soils. The soil berm was used to herd the viscous, liquid petroleum hydrocarbons in Reservoir 7 so that they could be removed by a vacuum truck. Page 43 of the Waterstone Report states “The material in Reservoir 7 consisted of water and a viscous, semi-solid petroleum hydrocarbon material which could not be pumped after all the water had been removed. Therefore, Barclay</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>created a soil berm to ‘push’ the remaining semi-solid petroleum hydrocarbon waste ahead of the berm towards where the vacuum trucks were located.”</p> <p>However, Page 52 of the Waterstone Report indicates that not all of the soil that was used in the temporary berm was disposed off-site. For example, Mr. L. Vollmer stated in his deposition cited at page 52: “a certain amount of [soil] did become contaminated with the gunk. And it was hauled off-site because it was not suitable for fill.” (Page 52).</p> <p>The Deposition of George Bach (March 11, 2013. page 336: 13-21) states <i>My impression was that, yes, we had material the he identified as oil stained or had a little bit of oil. None of it was really significant at that time. Our only thing that he wanted to verify was that he had percolation. Other than that, there wasn’t anything that we were really concerned about. The oil smell, it’s a VOC, it’s benzene or whatever it is, is gone. As soon as it hits the air, it’s gone. It wasn’t – it was just insignificant stuff.</i> (Ref: Waterstone Report, Page 61).</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>The above eyewitness statements show that Barclay knew of petroleum hydrocarbon impacted soils on Site and knowingly left those soils on Site.</p> <p>Furthermore, the Site investigation provides data that not all of the petroleum hydrocarbons from Reservoir 7 were disposed off-site. As part of the Site investigation, a trench was excavated to approximately 10 feet below ground surface (bgs) at the front yard of 24403 Ravenna Avenue in the Carousel tract. This property is situated on the footprint of the northern perimeter of Reservoir 7. The trench revealed the presence of a concrete slab that contained petroleum hydrocarbons on the concrete slab surface. This information from the Site investigation refutes Waterstone’s claim that Barclay removed all “Explicitly Known” petroleum hydrocarbons in Reservoir 7 and disposed them off-site.</p> <p>In conclusion, the Regional Board staff disagree with Waterstone’s conclusion that no petroleum hydrocarbons or petroleum hydrocarbon impacted soil from Reservoir 7 was left on the</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>subject property. Although the petroleum hydrocarbon liquids may have been disposed off-site, the record shows that not all of the soils that were impacted by petroleum hydrocarbons from Reservoir 7 were removed.</p> <p>Regarding other Site areas such as the reservoir berms, the swing pit, and the pump house, only petroleum hydrocarbon impacted soil that did not meet geotechnical criteria for Site development were disposed off-site. The Waterstone report indicates that only soils that were saturated by petroleum hydrocarbons and did not meet geotechnical criteria were disposed off-site. Therefore, the reservoir decommissioning and Site grading activities by Barclay resulted in the placement of petroleum hydrocarbon impacted fill material (i.e. soils containing petroleum hydrocarbons at concentrations less than the saturation concentration) into the reservoirs as fill. In placing the fill, Barclay spread petroleum hydrocarbon impacted soil over much of the Site.</p>
1.1.3	Waterstone Environmental	01/21/2014	3.2 Barclay Removed All “Explicitly-Known” Petroleum Hydrocarbons in Soil	The Regional Board staff disagrees with the Waterstone Report claims that Barclay removed

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
	Inc.		<p>Outside the Reservoirs and Disposed of It Off-site. The Waterstone Response indicates that “assumed encounters with residual petroleum hydrocarbons in soil which were transported off-site according to protocol is not present on site at present time.”</p>	<p>all explicitly known petroleum hydrocarbons from the Site. The Waterstone Report cites eyewitness testimony of former Barclay contractors that no “explicitly known” hydrocarbons were left on site.</p> <p>The Regional Board staff reviewed the testimony of former Barclay contractors that was cited in the Waterstone Report. The Waterstone Report described the “protocol” to determine which soils would be disposed off-site by Barclay. Regional Board staff disagrees that all of the soils explicitly known to Barclay outside of the Reservoirs were disposed off-site because the “protocol” that Barclay used to determine which soils were to be disposed off-site was not based on the presence of petroleum hydrocarbons sorbed to soil, but rather on geotechnical considerations for permeability and compaction. According to the Waterstone Report, only geotechnical criteria, specifically permeability and load bearing strength, were used to determine which wastes were disposed off-site. The Waterstone Report states (page 18): <i>“In addition, at the time of development, County Inspectors were primarily concerned with the soil</i></p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p><i>column's ability to drain water properly. All soil testing was performed to evaluate the drainage and load-bearing properties of the soil. Testing for potential petroleum hydrocarbons in the berm soil was simply not an issue and analytical test methods for evaluating petroleum hydrocarbons in berm soil was simply not an issue and analytical test methods for evaluating petroleum hydrocarbons in soil were not available in the mid-1960s."</i></p> <p>Furthermore, the Waterstone Report at pages 49 through 51 describes procedures for identifying soils for off-site disposal. The Waterstone Report indicates that petroleum hydrocarbon impacted soils were left on site because only those soils that contained petroleum hydrocarbons at saturated concentrations were considered to be <i>problematic</i> from a geotechnical standpoint and disposed off-site. Mr. Bach stated in response to the question "What – what in your mind would make a quantity of oil problematic?": <i>"if we looked at material and said whatever is there, water or whatever, is going to prevent us from compacting it or making a good fill or it looks – we just don't like the looks of it would go off. If it –if it was moist and we</i></p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p><i>could maybe pick it up and squeeze it to see if it was compactible, it stayed. And so a lot of those things – the things they are basing on judgment, they are opinion and they have to do with experience and what we felt was appropriate and what wasn't....” (Waterstone Report, page 50).</i></p> <p>Regional Board staff also note that the protocol for determining which soil was sent off-site for disposal was not always implemented by qualified professionals. Page 51 of the Waterstone Report indicates that the decisions during site development were made by equipment operators without supervision by registered engineers. Barclay’s practice of determining which soils were to be disposed off-site without supervision by qualified professionals may have contributed to the large quantities of soil that were impacted by petroleum hydrocarbons that were left on Site by Barclay.</p> <p>The Waterstone Report states that only saturated soils were disposed off-site. Regional Board staff also note that soils impacted by petroleum hydrocarbons at levels less than</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>saturation may not necessarily exhibit poor permeability and low strength. The Waterstone Report also indicates no soil was imported for Site redevelopment. Consequently, Regional Board staff concludes that soil impacted by hydrocarbons at levels less than saturated were left on Site and used in Site redevelopment.</p> <p>The Waterstone Report states that Barclay was knowledgeable about petroleum hydrocarbon impacted soils because these soils were documented in the geotechnical report on Site soils that was known to Barclay. <i>The Pacific Soils Engineering (PSE) Report dated January 7, 1966</i> (PSE Report) documented observations, such as: “The laboratory results show that even though the soils are oil stained they are still permeable.” In addition to visible staining of the soils which could be observed by on Site personnel, these types of soils were “explicitly known” to Barclay because they were characterized by Site personnel as exhibiting hydrocarbon odors. Based on Mr. Bach’s deposition, cited in the Waterstone Report, it is clear that soil that may have been characterized</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>as “oily” was allowed to remain on Site. <i>“The laboratory results show that even though the soils are oil stained they are still permeable.”</i> In his deposition testimony, Mr. Bach (Waterstone Report 2014; page 61) acknowledged that <i>“we had material that he identified as oil stained or had a little bit of oil. None of it was really significant. Our only thing that he wanted to verify was that he had percolation. Other than that, there wasn’t anything we were really concerned about. The oil smell, it’s a VOC, it’s benzene or whatever it is, is gone. As soon as it hits the air, it’s gone. It wasn’t – it was just insignificant stuff”</i>.</p> <p>In other areas of the Site, such as the swing pit and pump house, the Waterstone Report indicates that only soils that did not meet geotechnical criteria were removed. In order to address soils with oil at levels less than saturation levels, it is the Regional Board staff’s technical opinion that such soils would need to be over-excavated. However, Mr. Vollmer indicated in his deposition cited at Page 89-90 of the Waterstone Report that there was no over-excavation at the Site. Barclay’s lack of over-excavation permitted significant quantities of petroleum hydrocarbon impacted soil to be</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>left on Site because the off-site disposal decisions were based solely on geotechnical criteria to achieve the necessary filling and compaction to meet the geotechnical requirements for a residential development.</p> <p>The Waterstone Report indicates that petroleum hydrocarbon saturated soil was found and disposed off-site. However, Regional Board staff note that due to the particulate and porous nature of soil, liquids such as petroleum hydrocarbons migrate through soil due to gravity and capillary forces. Migration of liquids through soil is retarded by sorption of the liquid to and within the soil particles. Sorption of the liquid is limited by the sorption capacity of the soil, and in instances in which the amount of petroleum hydrocarbon waste exceeds the sorption capacity of the soil, the liquid petroleum migrates to the adjacent soil. Soils that are adjacent to petroleum hydrocarbon saturated soil are impacted by hydrocarbon wastes at concentrations that are less than petroleum hydrocarbon saturation. Consequently, areas of the Site that were impacted by petroleum hydrocarbon wastes that</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>were known to Barclay, such as the pump house, swing pit, and areas where Barclay discharged liquid petroleum hydrocarbon wastes from pipes that were removed by Barclay, contained petroleum hydrocarbon impacted soils that were known to Barclay and not disposed off-site because Barclay removed only some saturated soils and did not over-excavate soils that were impacted by petroleum hydrocarbons at concentrations less than the saturation concentration. Consequently, Regional Board staff do not agree that Barclay removed all petroleum hydrocarbon impacted soils that were known to Barclay disposed of them off-site.</p> <p>Regional Board staff note that the volume of petroleum hydrocarbon impacted soil that was removed and hauled from the Site is miniscule compared with the volume of soil that was handled during the Site development.</p>
1.1.4	Waterstone Environmental Inc.	01/21/2014	Barclay Did Not Disturb the “Explicitly-Known” Minor Amounts of Petroleum Hydrocarbon Contamination Observed Beneath the Reservoir Floors”	Regional Board staff disagrees with Waterstone’s assertions that Barclay did not disturb the soils beneath the reservoir floors. Regional Board staff note that Barclay was knowledgeable of the presence of petroleum

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>hydrocarbon impacted soils beneath the reservoir floors because Barclay was knowledgeable of the PSE Report. The PSE report indicated the presence of oil stained soil beneath the reservoir floors.</p> <p>The Waterstone Report acknowledges that the soils below the reservoir floor were impacted by petroleum hydrocarbons or oil-stained (George Bach Declaration 2011, page 9) and claims that only “minor amounts” of petroleum hydrocarbon material were found below the reservoir floors. Regional Board staff note that the Waterstone Report does not indicate that the PSE Report indicated that the amounts of petroleum hydrocarbon impacted soil were limited.</p> <p>Based on the Waterstone Report (Pages 58 and 59), Regional Board staff conclude that the developer had explicit knowledge of petroleum wastes beneath Reservoir 6 from (1) data generated from geotechnical test pits that were implemented on-site, and (2) observations of soil that was revealed from ripping the concrete reservoir floor of Reservoir 6. The Waterstone</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>Report also states at page 59: <i>“With one exception, every individual soil sample collected from each of the six borings (from soils beneath the floor of Reservoir 6) included the following descriptions of oil smell and staining: ‘trace of oil’, ‘petroleum odor apparent’, ‘oil smell,’”</i>, <i>‘heavy oil smell,’ ‘oily,’ “oil stained,’ or ‘slightly oily.”</i> The Waterstone Report includes at page 60 portions of the deposition of Mr. Bach who acknowledges his knowledge of the geotechnical soil boring logs that described soils impacted by petroleum hydrocarbon waste.</p> <p>Furthermore, the Waterstone Report describes Barclay’s process of “ripping” concrete trenches in the reservoir floors. (Waterstone’s Report, Sections 1.5.1, 1.5.3, 1.9, Opinions 7, 8; Vollmer, L. 2013. Volume I Videotaped Deposition of Leroy H. Vollmer. March 15. p. 24: 1-5). This Site activity resulted in bringing soil from beneath the reservoir floor to the surface of the reservoir floor which was then mixed with the broken concrete and incorporated into the fill materials over the reservoir floor (Vollmer 2013, p.51 & 53; and Bach 2013, p.188). Mr. Bach’s deposition also indicates that the observed soils immediately</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>beneath the reservoir floors were oil-stained (Bach 2011, p.9). The PSE Report states that “break up in place the bottom slabs sufficiently to allow drainage” and “All sludge and water remaining in the reservoirs shall be wasted from the site”; and the PSE Report dated March 11, 1966 states that “Nearly 6000 lineal feet of trench were punched through the concrete floor” and “trenches were cut through the reservoir concrete floors bases to allow drainage/infiltration of any water or liquid that might pond on the concrete”; and the PSE Report dated June 11, 1968 states “The concrete was thoroughly mixed with soil, watered and compacted in place”. In addition, the PSE Report dated October 12, 1967, describes the process of removing water and sludge in the reservoirs, burying concrete and compacting the concrete and soil, and drilling holes in the concrete to allow for percolation into the subsurface. There is no information in the Waterstone Report that the permeability test water was recovered and disposed off-site so this test water percolated through and thereby would have mobilized the petroleum hydrocarbons.</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>Overall, the PSE Reports cited above document that Barclay cut trenches in the reservoir floors to allow the percolation of water and petroleum hydrocarbons from the reservoirs into the subsurface.</p> <p>Based on the Waterstone Report, the Regional Board staff concludes that Barclay developer left the waste in place and by ripping the concrete floors, created a condition where wastes were further mobilized deeper into the subsurface.</p>
1.1.5	Waterstone Environmental Inc.	01/21/2014	4.0 Barclay’s “Explicit-Knowledge” of Petroleum Hydrocarbons. Information in this Report indicates that no visible petroleum hydrocarbons from areas outside the reservoirs were left on the property by Barclay. Barclay had no “explicit knowledge” that any petroleum hydrocarbons were left onsite. Barclay effectively removed from the site all petroleum hydrocarbons encountered during redevelopment and did not cause the action of “spreading the waste” as stated in	The Regional Board staff disagrees with the Waterstone Report that “All encountered petroleum hydrocarbons and soil containing petroleum hydrocarbons were stockpiled and removed off-site by Barclay” (Waterstone Report at page 85). The Waterstone Report indicates that Barclay knew of wastes in the swing pit sump, pump house, and pipeline areas and discharged petroleum hydrocarbons from pipelines that were encountered during Site development activities into the Site soil.

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			the draft CAO.	<p>The Waterstone Report indicates that Barclay did not effectively remove all petroleum hydrocarbons encountered during Site redevelopment. Specifically, the Waterstone Report indicates that only a small amount of the petroleum hydrocarbon impacted soil was disposed off-site. Due to the permeability of Site soil, the developer would have had to over-excavate the petroleum hydrocarbon impacted areas to remove all of the petroleum hydrocarbon waste. However, Mr. Vollmer's deposition testimony indicates that there was no over-excavation of areas that contained petroleum hydrocarbon waste containing soils during the Site redevelopment (Vollmer, A. 2014. Videotaped Deposition page 38: 4 to page 40:3). (Waterstone Report at pp. 89-90). Due to the particulate and porous nature of soil, liquids such as petroleum hydrocarbons migrate through soil due to gravity and capillary forces. Migration of liquids through soil is retarded by sorption of the liquid to and within the soil particles. Sorption of petroleum hydrocarbon liquid is limited by the sorption capacity of the soil, and in instances in which the amount of petroleum hydrocarbon waste exceeds the</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>sorption capacity of the soil, the liquid petroleum migrates to the adjacent soil. Consequently, Regional Board staff concludes that over-excavation is necessary to remove petroleum hydrocarbon impacted soil from the Site.</p> <p>The issue of berm soils is also discussed in Regional Board responses 1.1.6, 1.1.19, 1.1.20, and 1.1.24</p>

No.	Author	Date	Comment	Response
			4.1 Berm Soil Did Not Contain Visible Petroleum Hydrocarbons	<p>The Waterstone Report asserts that berm soil did not contain visible petroleum hydrocarbons, and, therefore, Barclay had no explicit knowledge of the presence of petroleum in the berm soil. The Regional Board staff disagrees with the Report's conclusion. Section 4.1 of the Waterstone Report describes the Site berms and their construction. Section 4.1 provides no information as to whether the berm soil contained visible petroleum hydrocarbons. Nevertheless, Waterstone concludes that the berm soil did not contain visible petroleum</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>hydrocarbons. That conclusion is inconsistent with the information actually contained in the the Waterstone Report. Sections 4.2.1, 4.2.2, and 4.2.3.2 of the Waterstone Report provide information indicating that the berm soil was impacted by petroleum hydrocarbons. As described in response to comment 4.2 below, these soils were known to contain petroleum hydrocarbons due to the observed petroleum hydrocarbon odor.</p> <p>The issue of berm soils is also discussed in Regional Board responses 1.1.6, 1.1.19, 1.1.20, and 1.1.24</p>
			<p>4.2 There was no “explicit knowledge” by Barclay or any of the other development parties that the berm soil contained any residual petroleum hydrocarbons/oil. Barclay eyewitness testimony indicates that no petroleum hydrocarbons were observed in the berm soil.</p>	<p>Regional Board staff disagree. The Waterstone Report indicates that Barclay personnel smelled petroleum hydrocarbons in soils and did not dispose of those soils off-site. The Waterstone Report also provides evidence that the berm soils were impacted, as it states that the berm soils of Reservoirs 1 and 2, which are similar oil storage reservoirs that were located in Carson and decommissioned in the 1960s, were characterized as impacted by petroleum hydrocarbons. As noted in the Waterstone</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				Report, analytical methods to test soil for petroleum hydrocarbons were not available in the 1960s, when the Site reservoirs were decommissioned. However, the Waterstone Report contains references to petroleum odors in Site soils that were noted by Barclay during site development.
			4.3 The Current Contamination Pattern in the Top Ten Feet of Soil Could Not Have Been Caused by Previously Contaminated Berm Soil Given the Procedure Barclay Used to Backfill and Compact Berm Soil in the Former Reservoirs	Regional Board staff disagree with Waterstone's conclusions. It is Regional Board staff's conclusion that the current contamination pattern in the Site soil is explained by the procedure Barclay used to backfill and compact berm soil into the former reservoirs which resulted in a random pattern that characterizes the present hydrocarbons on Site. Berm soils contained petroleum hydrocarbons and those soils were used to fill in the reservoirs. The Waterstone Report states "...if any petroleum hydrocarbon contamination was present in the berm soil, it would have been placed randomly in the reservoir...where the bottom-up contamination pattern would occur repeatedly in all three reservoirs as, in fact, occurred would be impossible." Regional Board staff note that data from the Site investigation indicate placement of

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>soil that was impacted by petroleum hydrocarbon wastes, including berm soil, accounts for the current contamination pattern. In its attempt to explain the current contamination pattern, Waterstone ignores evidence of petroleum hydrocarbon impacts to berm and other soils of similar reservoirs. Given that Barclay personnel observed petroleum odors in Site soils, and did not dispose of those soils off-site, but rather mixed those petroleum hydrocarbon impacted soils with other soils on the Site, Regional Board staff find that the contamination pattern presently on site likely resulted from Site development activities of fill and grading with Site soils.</p>
			<p>4.4 Petroleum Hydrocarbon Materials from Reservoir 7 Did Not Migrate Into Soil after Barclay Entered the Subject Property.</p>	<p>Regional Board staff disagree with this comment. The Waterstone Report indicates that Barclay mixed the petroleum hydrocarbon materials from Reservoir 7 with soil. Only miniscule amounts of the petroleum hydrocarbon impacted soil was removed from the Site.</p>
			<p>4.5 Barclay’s “Explicit-Knowledge” of Petroleum Hydrocarbons Associated with Pipelines, the Pump House, and the Swing</p>	<p>Staff agree that minor amounts of petroleum hydrocarbons in pipelines and in other areas encountered during the redevelopment were</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>Pipe Pit Caused the Stockpiling and Off-site Disposal of This Material. Minor amounts of petroleum hydrocarbons in pipelines and in other areas encountered during the redevelopment were stockpiled and removed off-site by Barclay.</p>	<p>stockpiled and removed off-site by Barclay. However, the Waterstone Report indicates that Barclay knew of petroleum hydrocarbon wastes in pipelines, the pump house and swing pit but did not remove all petroleum hydrocarbon impacted soils from these areas. These areas are characterized as having petroleum hydrocarbon saturated soils. Regional Board staff notes that clean soils that are located adjacent to soils that are saturated by petroleum hydrocarbons become impacted by capillary action. Consequently, areas of the Site such as the pump house, swing pit, and areas where Barclay discharged petroleum hydrocarbons from pipes that were present on Site, are areas that contain both petroleum hydrocarbon saturated soils and petroleum hydrocarbon impacted soils. However, because Barclay did not over-excavate the petroleum saturated soils, the petroleum hydrocarbon impacted soils were left on Site by Barclay. Consequently, Barclay did not remove all wastes associated with the pump house area, sumps, pipeline area, and the swing pipe pit.</p>
			<p>4.6 Barclay Did Not Have “Explicit-Knowledge” of Petroleum Hydrocarbons in</p>	<p>Regional Board staff disagrees that Barclay did not have “explicit knowledge” of petroleum</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			Soil at Pond and Sump Locations	hydrocarbons at the Pond and Sump locations. The Waterstone Report indicates that discharged oil from pipelines was left at these areas of the Site.
1.1.6	Waterstone Environmental Inc.	1/21/2014	<p>5.0 Upward Chemical Migration at Shell Oil Reservoirs 1, 2, 5, 6 & 7; Section 5 provides a comparison of the Site reservoirs (Reservoirs 5, 6, and 7) to similar oil storage reservoirs in Carson that were decommissioned in the 1990s (Reservoirs 1 and 2). This section of the Waterstone Report contends that the procedures used to deconstruct and backfill the reservoirs were similar and that upward migration of petroleum hydrocarbons into the fill material placed inside the reservoirs occurred in similar locations within all the reseveroirs.</p> <p>Waterstone analyzed Shell's assessment and remediation reports of Shell Reservoirs 1</p>	<p>Regional Board staff agrees that the Shell Reservoirs 1 and 2 (Wilmington Refinery) and Reservoirs 5, 6, and 7 (Kast Tank Farm) were similar. Regional Board staff disagrees that upward migration of contaminants can account for the distribution of petroleum hydrocarbon wastes that currently exist at the Site. The Waterstone Report relies on an upward chemical migration theory to support a conceptual site model in which the petroleum hydrocarbons resting on and underneath the concrete reservoir floors migrated to shallow depths through capillary action, a naturally occurring process, rather than Site development activities such as grading. The Waterstone Report also cites several peer reviewed papers to support its upward migration theory.</p> <p>Regional Board staff reviewed information from the Site Investigation, data provided by Waterstone regarding similar oil storage</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>and 2, which are located on the Wilmington Section of the Shell Wilmington Manufacturing Complex (Wilmington Refinery). Shell reservoirs 1 and 2 were built in the 1920s at the same time and using the same type of construction as Reservoirs 5, 6, and 7 on the Site. The data in the Shell reports demonstrates that significant upward chemical migration occurred at Reservoirs 1 and 2 that were decommissioned in a similar manner to Reservoirs 5, 6, and 7.</p>	<p>reservoirs, including the Wilmington Refinery reservoirs (i.e., Reservoirs 1 and 2), and the academic papers cited by Waterstone to evaluate whether upward chemical migration can account for the petroleum hydrocarbon pattern presently on Site.</p> <p>Regional Board staff agrees that upward chemical migration (capillary action) of petroleum hydrocarbons from deeper soils may occur to a limited extent at the Site. However, based on patterns of varying concentrations of petroleum hydrocarbons with depth, upward chemical migration cannot account solely for the patterns of distribution of petroleum hydrocarbons found in shallow surface soils across the Site. Throughout the Site there are varying fairly random concentrations of petroleum hydrocarbons – in some areas concentrations are higher in the shallow soils than in the deeper soils (i.e., downward migration). Regional Board staff acknowledges the possibility of only limited upward migration of hydrocarbons at the Site and conclude that upward migration of hydrocarbons cannot</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>account for the pattern of contamination at the Site for the following reasons:</p> <ol style="list-style-type: none"> 1) Approximately 11,000 shallow soil samples from the Site have been analyzed from 2008 to present. Results of the sampling confirm that there are numerous instances where higher concentrations of petroleum hydrocarbons are observed at shallower depths than at deeper depths; and 2) The overall physical and chemical properties which affect transport and fate of petroleum hydrocarbons (i.e. viscosity, density, interfacial tension, and wettability favor downward migration under the force of gravity and only a fraction will be retained by capillary forces. (Ref: USEPA Ground Water Issue – EPA/540/S-95/500 - Light Nonaqueous Phase Liquids).
			<p>5.1 The Shell Wilmington Manufacturing Complex contained several reservoirs at different locations. Reservoirs 1 and 2 were decommissioned in the 1990s and were similar to the Site reservoirs. The berm soils in Reservoirs 1 and 2 exhibited</p>	<p>Regional Board staff agrees that Reservoirs 1, and 2, and reservoirs 5, 6, and 7 were similar. Regional Board staff agrees that berm soil in Reservoirs 1 and 2 were impacted by petroleum hydrocarbons and that Reservoirs 5, 6, and 7 were not analyzed for petroleum hydrocarbons.</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>petroleum hydrocarbon contamination, and there was evidence of upward chemical migration after Reservoirs 1 and 2 were decommissioned.</p>	<p>Regional Board staff agrees that upward chemical migration may be evident in certain areas of decommissioned Reservoirs 1 and 2, and Regional Board staff agrees that upward chemical migration may be evident in limited locations within decommissioned Reservoirs 5, 6, and 7. However, the distribution of contaminants in reservoirs 1 and 2 and in 5, 6, and 7 cannot be attributed solely to upward chemical migration.</p>
			<p>5.2 Similarities Between Shell Reservoirs 1 and 2 and Reservoirs 5, 6 & 7 on the Subject Property are used to review four scenarios that most likely account for Existing Soil Contamination and conclude that Upward Contaminant Migration accounts for contaminant distribution at the Site; TPH as diesel is the appropriate marker</p>	<p>Regional Board staff disagree that upward chemical migration accounts for waste distribution at the Site. Specifically, a scenario in which filling the reservoirs with berm soils (scenario 3) is improperly rejected by Waterstone because Waterstone erroneously assumes that berm soil is clean. However, as discussed above there is no evidence that the berm soil was clean. To the contrary, berm soils were documented to have petroleum odors. And, when comparing the 5 reservoirs, since they were all operated similarly it would make sense for the berm soils for Reservoirs 5, 6, and 7 to contain petroleum hydrocarbons since the berm soils in Reservoirs 1 and 2 contained significant concentrations of</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				petroleum hydrocarbons.
			5.3 Comparison of Upward Contaminant Migration in Reservoirs 1 & 2 with Reservoirs 5, 6 & 7 showed that soils near the surface in the relic berms exhibited localized bleeding of hydrocarbons to the surface.	<p>The vertical mobility of petroleum hydrocarbons depends on many factors including permeability, wettability, saturation, capillary pressure, and fluid viscosity. Capillary pressure is just one of many factors that affect vertical mobility of petroleum hydrocarbons. For porous media, the heterogeneity of soil layers, viscosity of wetting and non-wetting media, and gravity force could significantly reduce vertical mobility such that the capillary height would be affected and would not reach the heights observed at the Site. (EPA/540/S-95/500)</p> <p>The concrete slabs at the Site serve as impervious media that prevent upward migration via capillary action so that the capillary height would be less than 10 feet.</p> <p>The Nerantzis technical study cited by the Waterstone Report titled, “The Upward Immiscible Displacement Movement of BTEX Compounds in Unsaturated Soil” that was cited on Page 149 of the Waterstone Report does not provide rationale that the contaminant</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>distribution at the Site is caused by upward chemical migration. The Regional Board staff has reviewed this report and finds that it has limited applicability to the Site because the liquids used in the study are significantly less viscous than the petroleum hydrocarbons at the Site. Further, the study is based on a condition of a closed horizontal boundary, whereas the Site has no such boundary. Additionally, the conclusions of this report are based on the increase in volume of contaminated soils from upward rise rather than an evaluation of the height of the capillary rise. Further, staff notes that the liquids used in the study are less viscous than that of the crude oil contaminants. These factors all limit the applicability of the Nerantzis study as the basis for a theoretical underpinning for contaminant movement at the Site.</p> <p>The Waterstone Report describes Shell's oil storage reservoirs, Reservoirs 1 and 2, at the Wilmington Refinery in Carson that were decommissioned in the 1990s and states that the reservoirs were similar in design, construction and operation to the Site reservoirs, Reservoirs</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>5, 6 and 7 and the decommissioning and demolition procedures were similar. The Waterstone Report cites a key difference between the decommissioning of Reservoirs 1 and 2, and the decommissioning of Reservoirs 5, 6, and 7 because the demolition of Reservoirs 1 and 2 were accompanied by analytical testing for petroleum hydrocarbons of the soils in the berms surrounding the reservoirs. Barclay used the berm soils for backfill in the Site development. Analytical testing in the 1990s at Reservoirs 1 and 2 provide information about the levels of hydrocarbons in the berm soils that were present at the Site that is overlooked by the Waterstone Report in developing its conceptual site model based solely on upward chemical migration for the Site.</p> <p>Regional Board staff notes that data from decommissioning petroleum storage Reservoirs 1 and 2 in the 1990s provide information that contradicts Waterstone's theories of upward contaminant mobilization as a basis to explain the contaminant distribution on the Site. Page 103 of the Waterstone Report document</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>concentrations of total recoverable petroleum hydrocarbons (TRPH) as high as 43,000 mg/kg and approximately 30% of the samples had detectable levels of TRPH in the berm soils of Reservoirs 1 and 2. Page 104 of the Waterstone Report states “Soil underlying the reservoirs contained ‘similar hydrocarbons and in similar concentrations as the berm material.’ Figures 23 and 24 of the Waterstone Report depict high concentrations of TRPH found throughout the berms.</p> <p>The analytical results from Reservoirs 1 and 2 show high concentrations of petroleum hydrocarbons in soil under the reservoirs and in the berms. However, the Waterstone Report asserts on Page 40 and 49 that the berms at the Site reservoirs were “clean and dry”. There are no analytical data that support Waterstone’s conclusion the berm soils at the Site were “clean”.</p> <p>The Waterstone Report indicates that impacted soil from the sidewall berms was pushed into reservoirs at the Site to fill voids around the</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				concrete slabs, fill the reservoirs, and blended into fill soil during the Site development.
1.1.7	Waterstone Environmental Inc.	1/21/2014	<p>6.0 Technical Explanation for Upward Chemical Migration. Section 6 provides an overview of the theory of upward chemical migration as applied to the Site.</p> <p>6.1 Theory of Capillary Action</p> <p>6.2 Summary of Some Relevant Technical Articles Regarding Upward Chemical Migration</p> <p>6.3 Capillary Break</p>	<p>Regional Board staff finds the Waterstone explanation of upward chemical migration at the Site to be speculative and incomplete. The Regional Board staff disagrees with the Waterstone Report's conclusions that upward chemical migration can account for the waste distribution pattern at the Site. Based on Site investigation data, Regional Board staff concludes that the lateral and vertical distribution of petroleum hydrocarbons in soils at the Site is highly variable and could not have resulted solely from upward capillary migration.</p> <p>Page 22 of the Waterstone Report states: "...the only plausible explanation for vertical contaminant profile documented within the former reservoirs is the upward migration of petroleum hydrocarbons into the clean reservoir fill soil from residual petroleum hydrocarbons which remained beneath the former reservoir soils floors due to Shell's historic operations at the Subject Property."</p> <p>Page 118 of the Waterstone Report presents and rejects a scenario in which contaminated soil</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>from the berms may have been filled into the reservoirs. Waterstone erroneously rejected this scenario because berm soil was assumed to be clean.</p> <p>Regional Board staff finds that a conceptual site model in which placement of the berm soil causes the pattern of petroleum hydrocarbons presently on site was rejected inappropriately by Waterstone because there is information that the berm soil was impacted by petroleum hydrocarbons. Regional Board staff disagree that upward migration is the only plausible explanation for the distribution of petroleum hydrocarbons at the Site. As discussed above, decommissioning of Reservoirs 1 and 2 did not show that upward migration was a primary mechanism of contaminant distribution.</p> <p>Regarding the technical basis for upward chemical migration cited in the Waterstone Report, Regional Board staff find the claim that capillary pressure provides sufficient force to mobilize petroleum hydrocarbons upward through interconnected pores to the height</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>observed on the Stie lacks a firm theoretical foundation. It is known that capillary pressure is a measure of the relative attraction of the molecules of a liquid (cohesion) for each other and for a solid surface (adhesion). Capillary pressure is represented by the tendency of the porous medium to attract the wetting fluid and repel the non-wetting fluid. In general, capillary pressure increases with decreasing pore size, decreasing initial moisture content, and increasing interfacial tension. Capillary conditions affect the configuration and magnitude of residual light non-aqueous phase liquid (LNAPL), i.e. soil that is immobilized by soil. The capillary forces that may hold residual LNAPL in pores are relatively strong and limit the magnitude of capillary rise. (Ground Water Issue- Light Non-aqueous Phase Liquids, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency Washington, DC, EPA 540-S-95-500).</p> <p>The analogy of models between those adopted at Superfund sites with LNAPL and that of the proposed capillary force driven upward</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>migration model for the Site that is set forth in the Waterstone Report is not supported. Differences in the physical and chemical properties of water and LNAPL result in the formation of a physical interface between the liquids which prevents the two fluids from mixing. According to the EPA 540-S-95-500, upon release to the unsaturated zone, LNAPL tends to migrate downward under the force of gravity where a fraction of the hydrocarbon will be retained by capillary forces in the soil pores. Once the capillary fringe is reached, the LNAPL may move laterally as a continuous, free-phase layer along the upper boundary of the water-saturated zone due to gravity and capillary forces.</p> <p>The upward migration theory of chemical migration is also contradicted by data from the Site investigation that show intact and continuous concrete slabs observed at the Site. These concrete slabs serve as impervious dense material that can prevent upward migration via capillary action since capillary pressure is only true in porous media. Soil containing petroleum</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>hydrocarbons lies on top of intact concrete slabs and that cannot have been caused by capillary but by placing berm soils on top of the concrete.</p> <p>In addition, Site investigation data from vertical profiling of some Cone Penetrometer Test / Ultraviolet Optical Screening Tool (CPT/UVOST®) data generally support a decreasing trend in petroleum hydrocarbon concentrations with depth. These data support a model of downward migration at the Site.</p> <p>The Waterstone Report cites technical studies to support its theories of upward chemical migration. The Regional Board staff reviewed these studies and find that the studies do not support the Waterstone theory of upward chemical migration at the Site. The Waterstone Report summarizes a technical study by Simantiraki et. al., 2008 (Page 149) as follows, <i>“Based on these results the author concluded that the fine sand had a higher capillary pressure and capillary rise as a result of the smaller pore throat size for this soil type compared to the coarse sand. These results indicate a maximum capillary rise for diesel fuel to be</i></p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p><i>approximately 5-feet for coarse sand and 6.7 feet for fine sand, and for Soltrol 220 a maximum capillary rise of 2.18 feet for coarse sand and 3.35 feet for fine sand was observed.</i></p> <p>The Waterstone Report presents a value of maximum capillary rise for the diesel fraction of petroleum hydrocarbons to be approximately 5-feet for coarse sand and 6.7 feet for fine sand, and for Soltrol 220 a maximum capillary rise of 2.18 feet in coarse sand and 3.35 feet for fine sand. Waterstone's citation of maximum capillary rise is based on Simantriaki et al (2008) pressure-saturation experiment. The Regional Board staff note that the Simantiraki et al (2008) study investigates downward movement of petroleum in soils and not upward capillary and the maximum distance of downward movement was only 7 inches. Johnson (June 16, 2014) discussed the theoretical capillary rise of crude oil or other petroleum products in soils consisted of sand would be less than 1.4 feet. Based on the discussion above, the Regional Board staff disagrees with Waterstone's estimate of the magnitude of capillary rise at the Site.</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>Regional Board staff also find Waterstone’s use of diesel as a marker does not represent the properties of the petroleum hydrocarbons at the Site which consist of total petroleum hydrocarbons containing gasoline, diesel and motor oil fractions, not just diesel. The capillary rise is also proportional to the size of the soil pores which in turn is governed by the soil particle size. The Site soils consist of silty sand and clayey sand, that offer smaller pore sizes than the sand lithology used in the study.</p> <p>Page 149 of the Waterstone Report also cites a technical study by Nerantzis entitled, “<i>The Upward Immiscible Displacement Movement of BTEX Compounds in Unsaturated Soil.</i>” Regional Board staff reviewed this report and finds that it has limited applicability to the Site because the liquid used in the study is less viscous than the petroleum hydrocarbons at the Site, and the study apparatus imposed a closed horizontal boundary which is not present at the Site. Further, the conclusions of this report are based on the increase in volume of contaminated soils from upward rise rather than an evaluation of</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>the height of the capillary rise. In summary, Regional Board staff notes the applicability of this study as the basis for a theoretical underpinning for contaminant movement at the Site is questionable.</p> <p>Regional Board staff understands that upward contaminant migration may occur in some circumstances at the Site, but the Waterstone Report does not provide data or literature citations that support a theory for the waste distribution due to upward migration at areas of the Site within the reservoir footprints. The Site investigation data are more consistent with and support the conclusion that Shell left petroleum hydrocarbons on Site and Barclay removed only a miniscule amount, then assisted in mobilizing those remaining petroleum hydrocarbons through its demolition and grading activities.</p>
1.1.9	Waterstone Environmental Inc.	1/21/2014	8.0 Opinions – The opinions stated in the Waterstone Report are stated by the author to be within reasonable scientific certainty which means that it is more likely than not that they are true.	The Waterstone Report sets forth 20 opinions to support its contention that there were only three sources of residual hydrocarbons that were known of during Barclay’s development activities: (i) residual petroleum hydrocarbon

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>materials that Barclay removed from Reservoir 7 and transported off-site. (ii) assumed encounters with residual petroleum hydrocarbons in the soil, which were transported off-site according to protocol; and (iii) the residual petroleum hydrocarbons that were identified in the six borings beneath the floor of Reservoir 6. These sources are distinguished from the residual hydrocarbons that remain on Site. These opinions are key to Waterstone’s theory as to whether Barclay is a discharger under the Water Code. Regional Board Staff respond to these opinions below.</p>
1.1.10	Waterstone Environmental Inc.	1/21/2014	8.1 Opinion 1 - Historical Crude Oil Storage Operations Conducted on the Subject Property by Shell are Responsible for All Chemical Releases at the Subject Property	<p>Regional Board staff agrees that historical crude oil storage operations conducted by Shell at the Site caused discharges of waste – petroleum hydrocarbons – at the Site. Regional Board staff do not agree that the crude oil storage operations are solely responsible for all discharges of waste nor account for the current contamination pattern at the Site. The Waterstone Report provides documentation that (1) development activities resulted in discharges of petroleum hydrocarbons from pipelines and</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>other structures and permitted those petroleum hydrocarbons to remain on the Site; (2) petroleum hydrocarbons were blended into Site soils which were then used by Barclay for Site development; (3) berm soils containing petroleum hydrocarbons were used by Barclay to fill the reservoirs during grading; (4) concrete floors were ripped and/or removed allowing movement (i.e., discharges) of petroleum hydrocarbons to groundwater.</p>
1.1.11	Waterstone Environmental Inc.	01/21/2014	8.2 Opinion 2 - TPHd is an Appropriate Marker for Oil Contamination on the Subject Property, and Analysis of TPHd Indicates that the Largest Petroleum Hydrocarbon Releases at the Subject Property Are Beneath the Edges of the Former Reservoir Floors	<p>Regional Board staff partially agrees and partially disagrees that TPHd is an appropriate marker for petroleum hydrocarbon contamination on Site. The Waterstone Report provides a rationale on pages 121 to 122 to support the selection of diesel as an appropriate marker. One of the key reasons for Waterstone's selection of diesel is "The ratio of TPHd (or TPH (C10 –C22)) to the other chemicals listed above remains relatively constant regardless of whether the TPH detected is several hundred or several thousand mg/kg."</p> <p>Regional Board staff note that historical records show that the waste stored at the Site was</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>characterized as crude oil and Bunker C. The Site investigation used EPA-promulgated analytical methods (USEPA Method 8015B (M)) to characterize the hydrocarbon wastes. These methods characterize hydrocarbons in accordance with the number of carbon atoms in the petroleum products. Ranges of the carbon molecules are typically termed “gasoline range (C₄ to C₁₂)”, “diesel range (C₁₀ to C₂₂)”, “motor oil range (C₁₇ to C₄₄)”, “extractable petroleum hydrocarbons (C₉ to C₃₆)”. The different carbon ranges impart different physical properties to the petroleum hydrocarbons that can affect the fate and transport of the wastes in soils and groundwater. Crude oil contains hydrocarbons ranges in all four ranges and more and exhibits a wide range of physical properties that affect their mobility in soil under capillary forces.</p> <p>Waterstone’s opinion that diesel serves as an appropriate marker for the petroleum hydrocarbons on Site contradicts Waterstone’s upward chemical migration theory at the Site. The theory of upward chemical migration would be characterized by different relative</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>concentrations of the petroleum hydrocarbon fractions with distance from the source areas as the lighter fraction will migrate to a greater extent than the heavier fractions. However, Waterstone notes a constant ratio of diesel and other petroleum hydrocarbon fractions throughout the Site. Regional Board staff agrees that the Site Investigation data showed a relatively constant ratio of petroleum hydrocarbon fractions throughout the Site. This constant petroleum hydrocarbon confutes Waterstone's theory of upward chemical migration. Regional Board staff opines that consideration of the petroleum hydrocarbon waste as a single fraction leads to erroneous conclusions, and Regional Board staff disagree with Waterstone's opinion that TPHd is an appropriate marker for the contamination on Site.</p> <p>As discussed above, Waterstone's maximum capillary rise theory is based on Simantriaki et al (2008) pressure-saturation experiment that investigates downward movement of petroleum in soils and not upward migration due to</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>capillary forces. According to the Simantriaki study, the maximum distance of downward movement was only 7 inches. Johnson (June 16, 2014) discussed the theoretical capillary rise of crude oil or other petroleum products in soils consisted of sand and concluded that it would be less than 1.4 feet.</p> <p>Based on the discussion above, the Regional Board staff disagrees with Waterstone’s estimate of the magnitude of capillary rise because it is based on TPHd as representative of the petroleum hydrocarbons on Site.</p> <p>Response to comments related to the Waterstone’s upward migration theory are also discussed above in Sections 1.1.6, 1.1.7, and 1.1.8.</p>
1.1.12	Waterstone Environmental Inc.	1/21/2014	8.3 Opinion 3 – Groundwater Impacts Mirror the Deep Soil Contamination Found on the Subject Property	Regional Board Staff agree with the comment. In addition, Regional Board staff note that groundwater impacts by petroleum hydrocarbons were exacerbated by Site activities that ripped and removed reservoir floors.
1.1.13	Waterstone Environmental	1/21/2014	8.4 Opinion 4 – There is no evidence that Barclay released any chemicals on the	Regional Board staff disagree that there is no evidence that Barclay released any chemicals on

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
	Inc.		subject property	the Site. The Regional Board staff agrees that petroleum hydrocarbons are present on the Site due to Shell’s activities. However, there is evidence documented in the Waterstone Report that Barclay discharged petroleum hydrocarbons from pipelines that were removed as part of its Site redevelopment activities. There is also evidence documented in the Waterstone Report that Barclay blended petroleum hydrocarbons on Site into fill materials and left those materials on Site. See Response to Comment 1.10 below.
1.1.14	Waterstone Environmental Inc.	1/21/2014	8.5 Opinion 5 - Residual Petroleum Hydrocarbon Materials Left Onsite by Shell and “Explicitly-Known” to Barclay Were Disposed of Off-site by Barclay and Included Residual Petroleum Hydrocarbon Materials Left in Reservoir 7 and Residual Petroleum Hydrocarbons at the Swing Pit Area	As discussed in response 1.1.5 above, Regional Board staff does not agree that all petroleum hydrocarbon materials that were known to Barclay were disposed of off-site. In section 3.1.3 of the Waterstone Report, Waterstone claims that Barclay removed all liquids and petroleum hydrocarbon wastes from Reservoir 7 and transported them off-site. As discussed in Opinions 5, 6 and 7, not all of the petroleum hydrocarbon wastes from Reservoir 7 were removed off-site. The Site investigation found that the north eastern portion of the Site contained remnants of concrete from Reservoir 7 that exhibited tarry petroleum hydrocarbon

Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013

No.	Author	Date	Comment	Response
				<p>materials that were adhered to the concrete slab remnant.</p> <p>Residual slabs were observed at a test trench performed during the Site investigation at 24403 Ravenna Avenue in the Carousel tract. These slabs showed sludge and tarry materials overlying and adhered to a concrete slab remnant that was left on Site by Barclay. This observation shows that not all of the petroleum hydrocarbon materials from Reservoir 7 were disposed off-site. Oily smelling soil from the berms was used to fill the reservoirs.</p> <p>The data from the Site investigation shows that Barclay's ripping of the concrete floors of the former reservoirs caused the discharge of the residual petroleum hydrocarbons beneath the reservoir floors and subsequent leaching of petroleum hydrocarbons into the vadose zone and groundwater beneath the Site. Based on extensive environmental drilling conducted at the site in combination with historical records regarding the former facility layout, the location of the former reservoir slabs has been adequately</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				defined. According to the PSE Report and URS Report (2013), the western part of Reservoir 5 central slab was completely removed. The Site investigation detected liquid petroleum hydrocarbons in two wells at this location. The Site investigation shows that the removal of the slabs allowed seepage of petroleum hydrocarbons into the vadose zone and to the groundwater underlying the Site.
1.1.15	Waterstone Environmental Inc.	1/21/2014	Opinion 6 - Residual Petroleum Hydrocarbon Materials in Reservoir 7 Did Not Impact the Site Between the Time Barclay Entered the Subject Property and the Time Those Materials Were Removed	Regional Board Staff disagree that residual petroleum hydrocarbons in Reservoir 7 did not impact the Site between the time Barclay entered the Site and the time those materials were removed. As discussed above, the Site investigation included excavation of a test trench to approximately 10 feet below ground surface (bgs) performed at the front yard of 24403 Ravenna Avenue. The Site investigation trench showed concrete slabs with significant staining of petroleum hydrocarbons. The concrete slab overlain by petroleum hydrocarbons, sludge and petroleum hydrocarbon saturated and impacted soil. This parcel is situated on the footprints of the northern perimeter of Reservoir 7, where undisturbed reservoir floor and sludge is

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				observed lying on the concrete reservoir slabs. The Site is impacted by petroleum hydrocarbons from Reservoir 7 that were left on Site by Barclay.
1.1.16	Waterstone Environmental Inc.	1/21/2014	8.7 Opinion 7 - Barclay Adequately Ripped the Concrete Floors of the Former Reservoirs	Regional Board staff agree that Barclay’s ripping of the concrete reservoir floors would achieve appropriate drainage for a residential housing tract. However, Regional Board staff also note that Barclay’s ripping of the floors allowed petroleum hydrocarbons to be mobilized deeper into the vadose zone and to groundwater.
1.1.17	Waterstone Environmental Inc.	1/21/2014	8.8 Opinion 8 - Minor Amounts of Residual Petroleum Hydrocarbons Beneath the Reservoir Floors Left Onsite by Shell and “Explicitly-Known” to Barclay Were Not Disturbed by Barclay	Regional Board staff disagree that the petroleum hydrocarbons beneath the reservoir floors were not disturbed by Barclay. Ripping of the reservoir floors allows water to percolate through the impacted soils and can delocalize the petroleum hydrocarbons sorbed to soils.
1.1.18	Waterstone Environmental Inc.	1/21/2014	8.9 Opinion 9 - There Is No Evidence that Berm Soils Were Impacted with Petroleum Hydrocarbons When Barclay Used Berm Soil to Fill in the Reservoirs	Regional Board staff disagree that there is no evidence that berm soils were impacted with petroleum hydrocarbons. The Waterstone Report provides description of similar reservoirs used for petroleum storage that were decommissioned in the 1990s (i.e Reservoirs 1 and 2). These reservoirs were characterized by analytical testing that indicated high

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>concentrations of petroleum hydrocarbons. The Waterstone Report provides evidence that the Site berm soils were impacted by petroleum hydrocarbons given the similarities in Reservoirs 1 and 2 and the Site reservoirs.</p>
1.1.19	Waterstone Environmental Inc.	1/21/2014	8.10 Opinion 10 – Contamination “Explicitly-Known” to Barclay Was Not Present at Other Features on the Subject Property or If Found Was Taken Off-site for Disposal	<p>Regional Board staff disagrees with Opinion 10 because it is unclear as to what the “other features on the Subject Property” refers to. Barclay explicitly knew of petroleum hydrocarbon impacted soils in Reservoir 7, the swing pit and pump house areas of the Site, and discharged petroleum hydrocarbons from pipes that Barclay came into contact with during Site decommissioning and redevelopment activities. The Waterstone Report states that only those soils found that were saturated with petroleum hydrocarbons were removed from the Site.</p> <p>The issue of berm soils is also discussed in Regional Board responses 1.1.6, 1.1.19, 1.1.20, and 1.1.24</p>
1.1.20	Waterstone	1/21/2014	8.11 Opinion 11 - Upward Chemical	Regional Board staff agree that upward chemical

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
	Environmental Inc.		Migration Was Discovered at Shell Reservoirs 1 & 2	migration was observed at Shell Reservoirs 1 and 2. However, upward chemical migration at Reservoirs 1 and 2 was limited to certain areas. Staff does not agree that upward chemical migration alone accounts for the majority of petroleum hydrocarbon vertical distribution across the Site.
1.1.21	Waterstone Environmental Inc.	1/21/2014	8.12 Opinion 12 – Both Shell and the RWQCB Were Familiar with the Decommissioning Activities at Shell Reservoirs 1 and 2, and the Associated Upward Migration of Chemicals through the Fill	<p>Regional Board staff agrees that Shell and Regional Board staff were familiar with the decommissioning activities at Reservoirs 1 and 2 and there may have been upward migration of chemicals through the Site fill materials (i.e., soil).</p> <p>However, Waterstone does not provide sufficient evidence to support upward chemical migration alone as the sole mechanism for the distribution of petroleum hydrocarbons at the Site. Generally, TPH concentration data from the Site Investigation for shallow soil suggest a highly variable pattern with some data showing a top-down petroleum hydrocarbon waste profile of increasing concentrations of petroleum hydrocarbons with depth. There are many</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>locations at the Site where hydrocarbon concentrations in shallow soils are much greater than in deeper soils and a top-down mobilization is evident. Regional Board staff disagree with the Waterstone's theory that capillary rise is responsible for the presence of petroleum hydrocarbon of all shallow soils at the Site. Instead the distribution of petroleum hydrocarbons in shallow soils reflects the history of the site demolition and grading activities for the following reasons:</p> <p>1. It is known that capillary pressure is a measure of the relative attraction of the molecules of a liquid (cohesion) for each other and for a solid surface (adhesion). Capillary pressure is represented by the tendency of the porous medium to attract the wetting fluid and repel the non-wetting fluid. In general, capillary pressure increases with decreasing pore size, decreasing initial moisture content, and increasing interfacial tension. Upward petroleum hydrocarbon migration is limited by viscosity and the wettability of the petroleum hydrocarbons and waste. (Ground Water Issue-Light Non-aqueous Phase Liquids, Office of</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>Solid Waste and Emergency Response, U.S. Environmental Protection Agency Washington, DC, EPA 540-S-95-500).</p> <p>2. The analogy of models between those adopted at Superfund sites with LNAPL and that of the proposed capillary force driven upward migration model for the Carousel Tract is not supported in the Waterstone Report. According to USEPA 540-S-95-500, upon release to the unsaturated zone, LNAPL tends to migrate downward under the force of gravity where a fraction of the hydrocarbon will be retained by capillary forces in the soil pores.</p> <p>The reason for the upward migration of LNAPL hydrocarbons at Superfund sites is because capillary pressure only operates or is observed in the presence of two immiscible fluids in contact with each other in small pores. However, the Waterstone model is assuming hydrocarbon saturated soil beneath the concrete slabs triggering capillary pressure without any physical interface between two immiscible liquids. In the absence of forces of molecular attraction within the fluids, no macroscopic capillary pressure can</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>be developed to support the Waterstone's argument of capillary rise of hydrocarbons with respect to the residual concrete slabs.</p> <p>3. The relatively intact and continuous concrete slabs observed at the Site can be characterized as an impervious dense material that can prevent upward migration via capillary action since capillary pressure is only true in porous media.</p> <p>4. Vertical profiling of some Cone Penetrometer Test / Ultraviolet Optical Screening Tool (CPT/UVOST®) data generally suggests a decreasing trend in UVOST from surface to the depth of completion (ie., CPT-2; CPT-6); consistent with downward migration.</p>
1.1.22	Waterstone Environmental Inc.	1/21/2014	8.13 Opinion 13 – The Pattern of Migration of Petroleum Hydrocarbons at the Subject Property is Upward Migration and is Similar to Upward Chemical Migration Found at Shell Reservoirs 1 and 2	The Waterstone Report documents upward migration at Reservoirs 1 and 2. The Waterstone Report also documents petroleum hydrocarbon impacted berm soils at Reservoirs 1 and 2. Those berm soils were used at the Site for backfill. Regional Board Staff disagree that upward migration alone is responsible for contamination pattern at the Site. The Waterstone Report does not provide a detailed analysis of the contamination patterns at

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				Reservoirs 1 and 2 that substantiate upward migration accounts for the contamination profile at the Site.
1.1.23	Waterstone Environmental Inc.	1/21/2014	8.14 Opinion 14 – Similarities in the History, Decommissioning, Backfill, and Contamination of Reservoirs 1, 2, 5, 6, & 7 Provide Support for Upward Contaminant Migration in Reservoirs 5, 6, & 7	Regional Board Staff disagrees that similarities in the decommissioning of Reservoirs 1 and 2 provide support that upward migration is the sole cause of contaminant distribution at the Site. Waterstone’s theory of upward migration neglects to address the facts that the berms of Reservoirs 1 and 2 were characterized as impacted by petroleum hydrocarbon wastes. The Waterstone Report fails to consider that spreading of petroleum hydrocarbon wastes in the berm soils during Site development has distributed petroleum hydrocarbon wastes at varying depths throughout the Site.
1.1.24	Waterstone Environmental Inc.	1/21/2014	8.15 Opinion 15 – The Soil Contamination Data Collected within the Former Reservoirs Is Consistent With the Upward Chemical Migration Scenario and Does not Support the Hypothetical Downward Migration Scheme	Regional Board staff disagree that the soil contamination data are consistent with the upward migration scenario. Data from the Site investigation show multiple instances in which petroleum hydrocarbon concentrations are greater at shallower depths than deeper depths. The issue of berm soils is also discussed in Regional Board responses 1.1.5, 1.1.6, and 1.1.25

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				in which the contaminant concentration in borings at shallower depths is greater than data from the same boring at deeper depths.
1.1.25	Waterstone Environmental Inc.	1/21/2014	8.16 Opinion 16 - The Backfill and Compaction Procedure Used by Barclay in Former Reservoirs 5 through 7 Would Make It Impossible to Create the Pattern of Contamination that the Data from Shell Investigations Shows	Regional Board Staff disagree that the backfill and compaction procedure used by Barclay would make it impossible to create the pattern of contamination presently on Site. A pattern of contamination consistent with backfilling of berm soils that are impacted by petroleum hydrocarbon wastes, either with or without upward chemical migration, would create the pattern of contamination shown by the Site investigation. This Waterstone opinion overlooks the record that indicates that the berm soils were impacted by petroleum hydrocarbons and used as backfill for Site redevelopment.
1.1.26	Waterstone Environmental Inc.	1/21/2014	8.17 Opinion 17 - Concerns and Issues Raised by the RWQCB Staff Were Addressed	Regional Board staff disagree that concerns and issues raised by Regional Board staff were addressed by Waterstone. At the Regional Board staff meeting with Waterstone, Regional Board staff asked clarifying questions regarding the Waterstone presentation of the upward chemical migration theory, but did not express its own views.

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
1.1.27	Waterstone Environmental Inc.	1/21/2014	8.18 Opinion 18 – There Are Well Documented Technical Explanations for Upward Chemical Migration	<p>Regional Board staff agrees that there are technical explanations for upward chemical migration. Regional Board staff disagree that the documented technical explanation cited by the Waterstone Report can account for the pattern of contamination at the Site nor the magnitude of upward chemical migration that is claimed by Waterstone at the Site.</p> <p>Upward chemical migration is also addressed in Regional Board responses 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1. 27, 1.1.28, and 1.1.29</p>
1.1.28	Waterstone Environmental Inc. Waterstone Environmental Inc.	1/21/2014 1/21/2014	8.19 Opinion 19 - Other Shell Sites Exhibiting Upward Chemical Migration Exist in Southern California	Regional Board staff agrees that there are other Shell sites exhibiting upward chemical migration. Regional Board staff disagrees that the other Shell sites exhibiting upward chemical migration cited by the Waterstone Report can account for the pattern of contamination at the Site.
1.1.29	Waterstone Environmental Inc. Waterstone Environmental Inc.	1/21/2014 1/21/2014	8.20 Opinion 20 - Other Non-Shell Case Studies Exhibiting Upward Chemical Migration Exist in Southern California	Regional Board staff agrees that there are other non-Shell sites exhibiting upward chemical migration. Regional Board staff disagree that the other non- Shell sites exhibiting upward chemical migration cited by the Waterstone Report can account for the pattern of contamination at the Site.

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
1.1.30	Waterstone Environmental Inc.	1/21/2014	Waterstone met with Re: Meeting with Regional Board Staff (Pages 129 through 133) and addressed concerns and comments raised by the RWQCB.	Pages 129 through 133 of the Waterstone Report describe a meeting of Waterstone representatives and Regional Board staff. The Waterstone Report describes a number of questions and responses at the meeting. The Waterstone Report, however, mischaracterizes the Regional Board staff questions as “theories” of Regional Board staff. Since the meeting was primarily a presentation of Waterstone’s technical findings, the Regional Board staff did not advance any theories during the meeting but simply asked questions of the Waterstone representatives. Regional Board staff did not agree or disagree with Waterstone representatives at the meeting.
1.2.0	Declaration of Donald E. Shepardson	1/20/2014	Opinion 1 - 8. The supervised Grading Reports by PSEI and reviewed by the County of Los Angeles.... Complied with the then current requirements, and were accepted by Los Angeles County Department of Engineering	Regional Board staff does not agree nor disagree with this comment. Approval of grading reports by Los Angeles County is not relevant to whether the developer is named as a responsible party in a CAO.
1.2.1	Declaration of Donald E.	1/20/2014	Opinion 2 - 9. The preliminary soil investigation performed by PSEI complied	Regional Board staff does not agree nor disagree with this comment. Approval of soils

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
	Shepardson		with governmental agencies' requirements.	investigation reports by Los Angeles County is not relevant to whether the developer is named as a responsible party in a CAO.
1.2.2	Declaration of Donald E. Shepardson	1/20/2014	Opinion 3 - 10. The subsurface drainage study completed by PSEI confirmed adequate percolation through the reservoir structure and underlying soils. The significance of the descriptions in the boring logs and the results of the falling head permeability tests is that the soils immediately under the reservoirs did not contain sufficient oil residue to fill the available voids in the soil.	The Regional Board staff disagrees with the opinion stating that the fate-and-transport of liquid petroleum products in the subsurface is determined only by saturation of the pore spaces. The fate-and-transport of liquid petroleum products in the subsurface is a function of a combination of many other characteristics such as other soil properties, relative permeability, capillary pressure, wettability and hydrocarbon properties such as density, viscosity and interfacial tension.
1.2.3	Declaration of Donald E. Shepardson	1/20/2014	Opinion 4 - 11. ...compare the documents prepared by PSEI with the documents prepared by other Geotechnical engineers of Record on similar projects in this specific area, and at a similar time period.	Regional Board staff does not agree nor disagree with this comment. Approval of grading reports by Los Angeles County is not relevant to whether the developer is named as a responsible party in a CAO.
1.2.4	Declaration of Donald E. Shepardson	1/20/2014	Opinion 5 - 12.the recommendations and procedures, described by PSEI in their reports.... Were in compliance with Standard and Practice in the Los Angeles area for similar projects during the 1965 to 1970 time period.	Regional Board staff do not agree nor disagree with this comment. Recommendations and Procedures in geotechnical reports are not relevant to whether the developer is named as a responsible party in a CAO.

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
1.2.5	Declaration of Donald E. Shepardson	1/20/2014	Opinion 6 - 13.the preparation and grading of Tract Nos. 24836, 28564, 28441 and 28086 complied with the then current requirements of the Los Angeles County Department of Engineering.	Regional Board staff do not agree nor disagree with this comment. Approval of site preparation and grading by Los Angeles County is not relevant to whether the developer is named as a responsible party in a CAO.
1.3.0	Declaration of Marcia E. Williams	1/16/2014	Opinion 1 - 6. In the mid to late 1960s when the property in this case was developed from industrial into residential use, oil was not considered hazardous and both virgin oil and used oils were widely utilized in a broad array of land-based applications.	Regional Board staff does not agree nor disagree with this comment. Consideration of oil as a hazardous waste is not relevant to whether the developer is named as a responsible party in a CAO. Oil is considered a “waste” under the California Water Code.
1.3.1	Declaration of Marcia E. Williams	1/16/2014	Opinion 2 - 7. In the mid to late 1960s when the property in this case was purchased by Barclay, developed, and sold for residences, environmental regulations..... would not have regulated the decommissioning of the Kast property or precluded the use of the Kast property for residences	Regional Board staff does not agree nor disagree with this comment. Environmental regulations at the time of Site redevelopment is not relevant to whether the developer is named as a responsible party in a CAO.
1.3.2	Declaration of Marcia E. Williams	1/16/2014	Opinion 3 - 8. The type of environmental due diligence performed in the 1960s was extremely limited to the extent it occurred at all, it focused solely on prospective	Regional Board staff does not agree nor disagree with this comment. Environmental due diligence in the 1960s is not relevant to whether the developer is named as a responsible party in

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			environmental compliance issues at industrial properties.	a CAO.
1.3.3	Declaration of Marcia E. Williams	1/16/2014	Opinion 4 - 9. Redevelopment of crude oil tank farm property and other oil properties in general was widespread throughout California as the population expanded.developments were also frequently located next to active petrochemical facilities and waste management facilities.	Regional Board staff does not agree nor disagree with this comment. Redevelopment of oil properties throughout California is not relevant to whether the developer is named as a responsible party in a CAO.
1.3.4	Declaration of Marcia E. Williams	1/16/2014	Opinion 5 - 10. In order to determine whether Barclay meets the definition of a discharger under today's Water Code, it is necessary to evaluate a set of Barclay specific facts against the current and historical regulations covering discharge.	Regional Board staff do not agree nor disagree with this comment.
2.1	Morgan Lewis Counselors At Law on behalf of Shell Oil Products US ("Shell")	6/16/2014	The Declaration of George Bach, dated May 13, 2011	Staff reviewed the declaration of George Bach dated May 13, 2011. The declaration provided information about the reservoir demolition and site development. Staff found the most relevant information to be contained on page 7 where Mr. Bach states that soils containing petroleum hydrocarbons were blended in the fill.
2.2.0	Thomas Johnson	6/16/2014	Waterstone Theory: Waterstone presents several arguments purporting to show that	Regional Board staff agree with Johnson's (June 16, 2014) comment for the following reasons: 1)

**Regional Board Site Cleanup Program
Response to Comments**

**On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
	Associates, Morgan Lewis Counselors At Law on behalf of Shell Oil Products US ("Shell")		petroleum contamination was not present in shallow soils (less than 10 feet deep) when Barclay developed the Site in the late 1960s, and that all petroleum contamination in shallow soils at the Site resulted from upward migration through capillary action from deeper soils. The following comments respond to those portions of the Waterstone document suggesting that capillary rise is responsible for petroleum contamination of all shallow soils at the Site. Results of extensive site investigations, statements by former Site workers, and calculations indicate that the Waterstone theory is not valid, and that the current distribution of petroleum hydrocarbons in shallow soils resulted primarily from reservoir demolition, and site grading and development activities, and could not have resulted from the alleged mechanism of upward capillary migration.	<p>the distribution of the primary petroleum hydrocarbons in on-site shallow soils reflects the history of the developer's filling and grading activities not the result of upward migration; although a limited upward capillary migration could have also occurred; and 2) the scientific studies cited by Waterstone, the Nerantzis technical study titled, "The Upward Immiscible Displacement Movement of benzene, toluene, ethylbenzene, and xylene (BTEX) Compounds in Unsaturated Soil" (Page 149 of the Waterstone Technical Report) cited to support upward migration is not consistent with what is observed at the Kast Site primarily because the contaminant fluid is crude oil not BTEX.</p> <p>The Nerantzis study has limited or questionable applicability due to the fact that BTEX is less viscous than the crude oil contaminants at the Site, and the study apparatus imposed a closed horizontal boundary. Further, the conclusions of this report are based on the increase in volume of contaminated soils from upward rise rather than an evaluation of the height of the capillary rise.</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				Response to Comments related to the Waterstone’s upward migration theory are also discussed above in Sections 1.1.6, 1.1.7, 1.1.8, 1.1.11, and 1.1.20.
2.2.1	Thomas Johnson Associates	6/16/2014	Site Demolition and Grading Activities account for the distribution of petroleum hydrocarbons in Soil at the Site. Site Demolition and Grading Activities Occurrence of Petroleum Hydrocarbons in Shallow Soils Wilmington Complex Reservoirs No. 1 and 2 Findings Evaluation of Waterstone Capillary Migration Hypothesis, Waterstone Theory: Waterstone presents several arguments purporting to show that petroleum contamination was not present in shallow soils (less than 10 feet deep) when Barclay developed the Site in the late 1960s, and that all petroleum contamination in shallow soils at the Site resulted from upward migration through capillary action from deeper soils. The following responds to	Regional Board staff agree that site demolition and grading activities account for the occurrence of petroleum hydrocarbons in shallow soils in Reservoirs 5, 6 , and 7 formerly at the Site. Regional Board staff agree with the Johnson’s (June 16, 2014) comment for the following reasons: 1) the distribution of the primary petroleum hydrocarbons in on-site shallow soils reflects the history of the developer’s filling and grading activities not the result of upward migration; although a limited upward capillary migration could have also occurred; and 2) the scientific studies cited by Waterstone, the Nerantzis technical study titled, “The Upward Immiscible Displacement Movement of BTEX Compounds in Unsaturated Soil” (Page 149 of the Waterstone Technical Report) cited to support upward migration is not consistent with what is observed at the Kast Site primarily

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>those portions of the Waterstone document suggesting that capillary rise is responsible for petroleum contamination of all shallow soils at the Site: Results of extensive site investigations, statements by former Site workers, and calculations indicate that the Waterstone theory is not valid, and that the current distribution of petroleum hydrocarbons in shallow soils resulted primarily from reservoir demolition, and site grading and development activities, and could not have resulted from the alleged mechanism of upward capillary migration.</p>	<p>because the contaminant fluid is crude oil not BTEX.</p> <p>The Nerantzis study has limited or questionable applicability due to the fact that BTEX is less viscous than the crude oil contaminants at the Carousel site, and the study apparatus imposed a closed horizontal boundary. Further, the conclusions of this report are based on the increase in volume of contaminated soils from upward rise rather than an evaluation of the height of the capillary rise.</p> <p>Response to Comments related to the Waterstone's upward migration theory are also discussed above in Sections 1.1.6, 1.1.7, 1.1.8, 1.1.11, and 1.1.20.</p>
2.3	Douglas J. Weimer, On behalf of Shell Oil Products US and Shell Oil Company (collectively,	6/16/2014	Comment Letter – Site data do not support the theory that upward contaminant migration solely cannot account for petroleum hydrocarbon contamination at the Site.	Regional Board staff agrees that Attachment A provides site data showing the vertical profiling of petroleum hydrocarbons in shallow soils at the Site. Regional Board staff agree that the data provided in Attachment A of the comment letter do not support a upward migration theory throughout the Site. Based on the Site data, the

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
	"Shell")			Regional Board staff concludes that the distribution of petroleum hydrocarbons and other Site-related constituents of concern in shallow soils resulted from reservoir demolition, site grading, and other site development activities, and could not have resulted solely from the alleged mechanism of upward capillary migration. Regional Board Staff agree that site demolition and grading activities account for the occurrence of petroleum hydrocarbons in shallow soils in Reservoirs 5, 6, and 7 formerly at the Site.
3.0	Gibson, Dunn & Crutcher LLP	6/30/2014	<p>Shell Is The Sole Discharger Of Petroleum Hydrocarbons At The Former Kast Property; Shell Has Struck Out After Failing In All Three Of Its Attempts To Implicate Barclay As A Discharger To Share Responsibility For Contamination At The Site;</p> <p>a. There Is No Evidence To Support Thomas Johnson's Speculation That Petroleum Hydrocarbons Were Churned Up Into The Fill Soil During The Concrete Ripping</p>	Regional Board staff agrees that Shell discharged waste at the Site since it operated the crude oil tank farm and sold it without decommissioning the Site to the developers. Shell, however, is not the sole discharger because the Site developer acquired the Site with knowledge that it contained petroleum hydrocarbons, caused the movement, i.e., discharges of waste, from pipelines and other structures on the Site, moved petroleum containing soils around the Site during grading and development activities, and ripped and removed concrete causing discharges of waste to groundwater. Regional

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>Process; In Fact, All Evidence Is To The Contrary;</p> <p>b. Thomas Johnson Misinterprets Deposition Testimony When He Theorizes That Sidewall Berms “Were Likely Impacted By Petroleum Hydrocarbons”; and</p> <p>1) Thomas Johnson’s Theory About Alleged Contamination During The Clean-out of Reservoir 7 Is Also Contradicted By The Deposition Testimony of the Witnesses Who Were Present At The Time; Comment Letter – Former Kast Property Tank Farm – Revised CAO and attached Appendix A</p>	<p>Board staff disagrees with the comment and supporting arguments for the assertion that “There Is No Evidence To Support Thomas Johnson’s Speculation That Petroleum Hydrocarbons Were Churned Up Into The Fill Soil During The Concrete Ripping Process”.</p> <p>Based on the extensive environmental investigation conducted at the Site in combination with historical records regarding the former facility layout, the location of the former reservoir slabs has been adequately defined. According to the Pacific Soils Engineering (PSE) (June 11, 1968) and URS (2013), the western part of the central slab of Reservoir No. 5 was completely removed from Tract 24836, which includes properties on the eastern side of Marbella Avenue near 247th Street. There are 17 shallow monitoring wells on the Site that are screened across the water table. Out of the network of 17 wells, LNAPL was detected in two wells designated as MW-03 and MW-12 that are located on the western part of the central slab of Reservoir No. 5 where the</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>slab was completely removed. The Site investigation data show that the removal of the slabs allowed the seepage of crude oil into the vadose zone and presumably a source of the LNAPL that continues to accumulate in the two wells. The above observation is an evidence for the role of the concrete ripping process in allowing the discharge of hydrocarbons into the vadose zone.</p> <p>In addition, the observations made at a test trench performed at the front yard of a property located at 24403 Ravenna Avenue are contrary to the above assertions. The trench was approximately 10 feet below ground surface (bgs) and showed concrete slabs that are continuous and intact with significant staining overlain by sludge or hydrocarbon saturated residual soil or oily soil (see photos attached). The trench or parcel is situated on the footprints of the northern perimeter of Reservoir 7, where undisturbed reservoir floor and sludge is observed lying on the concrete reservoir slabs.</p>
3.0.1	Gibson, Dunn & Crutcher LLP	6/30/2014	The Technical Opinions of Shell's Expert, Thomas Johnson, Offer No Reason To	The Regional Board staff disagree with this comment. However, the Regional Board staff

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>Doubt Waterstone's Upward Migration Theory As a Pathway For Contamination Of The Soils Used To Fill The Former Reservoirs;</p> <p>a. Thomas Johnson Is Addressing A Straw Man In A Laboratory, Not The Upward Migration Theory That Waterstone Applies Under Actual Conditions That Exist At Carousel;</p> <p>b. Thomas Johnson Misunderstands What Occurred At Reservoirs 1 and 2</p>	<p>acknowledge the possibility of a mechanism of limited upward chemical migration of hydrocarbons at the Site but do not agree that upward migration can account for all petroleum hydrocarbons found in shallow soils at the site. Staff agree with the comments of Thomas Johnson Associates that questions Waterstone's upward migration theory as a primary pathway for contamination of the soils used to fill the former reservoirs for the following reasons;</p> <p>1. That the upward height of chemical (LNAPL/DNAPL) migration due to capillary action could reach up to 10 feet is questionable. The capillary force could hold residual NAPL to a certain height in pores, but they can be overcome to some degree by viscous forces associated with the porous medium. To move the residual hydrocarbons upward by manipulating hydraulic gradient alone is very difficult or impossible. The required hydraulic gradients are so high for many aquifers (greater than 1 ft/ft) that no reasonable configuration of pumping and injection wells could sweep all of the residual</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>NAPL trapped in the pores of the aquifer (Groundwater Water Issue, USEPA, EPA/540/S-95/500).</p> <p>2. The vertical mobility of NAPLs depends on many factors including relative permeability, wettability, saturation, capillary pressure, etc.. The capillary pressure is just one of many factors that would affect vertical mobility of NAPLs. For porous medium, the heterogeneity of soil layers, viscosity of wetting and non-wetting media and gravity force could significantly reduce vertical mobility such that the capillary height would be affected and wouldn't be reached as high as 2m that have been reported at sites in the USA (Environmental Agency, Illustrated handbook of DNAPL transport and fate in the subsurface).</p> <p>3. The concrete slabs below the berm at the Site serve as impervious medium that can prevent upward migration via capillary action so that the capillary height should be less than 10 feet.</p> <p>Response to comments related to the Waterstone's upward migration theory are also</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				discussed above in Sections 1.1.6, 1.1.7, 1.1.8, 1.1.11, 1.1.20, and 2.2.0.
3.0.2	Gibson, Dunn & Crutcher LLP	6/30/2014	<p>When Properly Analyzed, The Data Submitted By Shell’s Project Manager, Douglas J. Weimer, Strongly Supports Waterstone’s Theory Of Upward Migration;</p> <ul style="list-style-type: none"> a. The Data In Appendix A To Mr. Weimer’s Letter Support Waterstone’s Upward Migration Theory; and b. Appendix B Also Provides Tools That Confirm Waterstone’s Upward Migration Theory. 	<p>Regional Board staff does not agree that the data submitted by Mr. Weimer (Shell) supports Waterstone’s theory of upward migration. The complete review of the Site investigation data in the Regional Board database and the information contained in Appendices A and B do not support Waterstone’s <i>Theory Of Upward Migration</i>. In addition, the Regional Board staff concludes that the developer moved waste around the Site and by ripping the concrete floors, created a condition where wastes could be mobilized deeper into the subsurface. In addition, the ripping of the concrete floors of Reservoir 6 disturbed the soils that were, prior to development, preventing infiltration from contacting and mobilizing the wastes beneath the floor.</p> <p>The distribution of petroleum hydrocarbons in on-site shallow soils resulted primarily from reservoir demolition, and site grading and</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				development activities, and could not have resulted from the alleged mechanism of upward migration. The Regional Board Staff disagree with this comment. However, the Regional Board staff acknowledge the possibility of a mechanism of upward chemical migration of hydrocarbons at the Site but does not agree that upward migration can account for all petroleum hydrocarbons found in shallow soils at the site.
3.0.3	Gibson, Dunn & Crutcher LLP	6/30/2014	Shell's Response Concedes Nearly Every Point Made In Developer's Comment Letter	<p>Regional Board staff disagree that Shell's response concedes nearly every point made in the developer's comment letter. The Regional Board staff reviewed the comments submitted by Morgan Lewis Counselors At Law on behalf of Shell Oil Products US ("Shell") dated June 16, 2014, and Response to comment submitted by Gibson, Dunn & Crutcher LLP on behalf of Dole Food Company. Based on the review, the Regional Board staff concluded that;</p> <ul style="list-style-type: none"> a. Barclay had explicit knowledge that petroleum hydrocarbons were present at the Site and undertook redevelopment activities that moved waste and left waste on Site;

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>b. Barclay discharged and mobilized hydrocarbon wastes during site redevelopment activities;</p> <p>c. Barclay ripped concrete above the wastes and allowed infiltration to mobilize the hydrocarbon wastes;</p> <p>d. Barclay's protocol for disposal of wastes off-site was based on geotechnical considerations rather than environmental considerations. Consequently, Barclay disposed of off-site only miniscule amounts of petroleum hydrocarbon waste and petroleum hydrocarbon waste impacted soil and left most of the wastes on site. The Waterstone Report states that Barclay disposed of three dump trucks of petroleum hydrocarbon impacted soil during reservoir decommissioning and Site development activities. Based on Site investigation data, the Regional Board has estimated that approximately 14 million pounds of hydrocarbon impacted soils are presently on Site. This estimate has been vetted by a Panel</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				<p>of Experts from UCLA.</p> <p>e. The Regional Board/Expert Panel mass estimate of TPH indicates that thousands of truckloads of petroleum hydrocarbon impacted soils would have been needed to have been exported off-site to account for impacted soils that are presently onsite. The insufficient amount of soil that was exported from the Site conforms with the eyewitness testimony that Barclay did not over-excavate petroleum hydrocarbon impacted areas to remove all impacted soils. The mass estimate also supports eyewitness testimony cited in the Waterstone Report that there was no over-excavation and large amount of petroleum impacted soil was left on Site. The mass estimate also indicates the reservoir berms were impacted by petroleum hydrocarbon wastes.</p> <p>f. Theories of hydrocarbon transport after site redevelopment are not supported by</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				data from the Site investigation nor the scientific references cited in the Waterstone Report.
3.1	Declaration of Charles F. Faust, Gibson, Dunn & Crutcher LLP	6/20/2014	c. Waterstone Report.....discusses the role of capillary and buoyancy forces in combination that can cause upward migration of hydrocarbons in the natural setting of the Site. Mr. Johnson does not address the full set of data or the complex set of dynamic forces that affect the movements of hydrocarbons in soil below the Site, and therefore, he did not provide adequate context for his comments on Waterstone's analyses or conclusions.	Comments relating to the presence of petroleum hydrocarbon wastes at shallow depths on the Site within the context of the theory of upward migration from the reservoir floors to shallow depths has been adequately addressed in response to similar comments above.
3.1.1	Declaration of Charles F. Faust	6/20/2014	Mr. Johnson's analysis fails to account for differences between laboratory and Site conditions.	Regional Board staff recognizes differences between laboratory and Site conditions and considered both laboratory and Site conditions in its conclusion that upward chemical migration cannot solely explain the petroleum hydrocarbon distribution at the Site.

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
			<p>Mr. Johnson’s conclusion about the lack of uniformity in hydrocarbon distribution at the Site ignores the significance of heterogeneity and multiple forces that cause hydrocarbons to move through the soil.</p>	<p>The Regional Board staff has reviewed Mr. Johnson’s “Evaluation of Waterstone Capillary Migration Hypothesis”. The discussion recognizes that petroleum distribution in soil is based partially on the properties of the soil. Furthermore, Mr. Johnson described the height of capillary rise as governed by the size of the capillary tube or soil pore, and properties of the soil, and is a balance between capillary tension and the downward pull of gravity. The height of capillary rise of a fluid in coarse-grained soil, such as sand, is less than capillary rise in smaller pores of fine-grained soil, such as silt. The above citations all indicate the recognition of the lack of uniformity in hydrocarbon distribution due to variation in soil particle size, although no direct reference to soil heterogeneity was cited.</p>
			<p>Mr. Johnson’s conclusion regarding the lack of opportunity for migration through trenches punched in reservoir floors ignores lateral movement.</p>	<p>Regional Board staff agrees. The trenches punched in reservoir floors aided by the downward pull of gravity favor or allow more fluid infiltration or the downward movement rather than lateral migration. Therefore, the ripped concrete above the wastes allowed</p>

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
				infiltration to mobilize the hydrocarbon wastes.
3.2	Declaration of George Bach	6/20/2014	In the 2011 Statement I did not attempt to distinguish facts known to me from what I had personally observed and information derived from hearsay or surmise.	Regional Board staff does not agree nor disagree with this comment.
3.3.1	Declaration and Technical Response of Jeffrey V. Dagdigian to Shell's Comment Letter	6/30/2014	Mr. Johnson's Analysis of Upward Migration Fails to Evaluate All Components of Waterstone's Theory.	Regional Board staff does not agree nor disagree with this comment. Comments regarding the presence of petroleum hydrocarbon wastes at shallow depths on the Site based on a theory of upward migration from the reservoir floors to shallow depths has been adequately addressed in response to comments above.
3.3.2	Jeffrey V. Dagdigian	6/30/2014	Occurrence of Petroleum Hydrocarbons in Shallow Soils is due to Upward Contaminant Migration	Regional Board staff does not agree nor disagree with this comment. Regional Board staff finds that a theory of upward chemical migration cannot explain the petroleum hydrocarbon waste profile in the Site's shallow soils.
3.3.3	Jeffrey V. Dagdigian	6/30/2014	Site Demolition and Grading Activities	Regional Board staff agrees with Mr. Johnson's view of the role of Site Demolition and Grading Activities, which was largely based on statements by former workers for the developer's contractors. The reservoir demolition and site grading and development activities at the Site mobilized hydrocarbon wastes during site redevelopment.

**Regional Board Site Cleanup Program
Response to Comments
On the Draft Revised Cleanup and Abatement Order, Former Kast Property Tank Farm
(Cleanup and Abatement Order R4-2011-0046) dated October 31, 2013**

No.	Author	Date	Comment	Response
3.3.4	Jeffrey V. Dagdigian	6/30/2014	Evaluation of Information Provided by Douglas Weimer.	Regional Board staff agrees that data provided in Mr. Weimer's comment demonstrate that Waterstone's theory of upward contaminant migration cannot explain the petroleum hydrocarbon waste distribution on the Site.
3.4	Declaration of Robert W. Loewen]	6/30/2014	Documents were collected as part of the Litigation	Comment noted.