

1 BRIAN M. LEDGER (SBN: 156942)  
KRISTIN N. REYNA (SBN: 211075)  
2 KARA PERSSON (SBN: 210582)  
3 GORDON & REES LLP  
101 West Broadway, Suite 2000  
4 San Diego, CA. 92101  
Telephone: (619) 696-6700  
5 Fax: (619) 696-7124

6 JAN GOLDSMITH (SBN: 70988)  
7 FREDERICK M. ORTLIEB (SBN: 131751)  
DAVID J. KARLIN (SBN: 156178)  
8 OFFICE OF THE CITY ATTORNEY  
1200 Third Avenue, Suite 1100  
9 San Diego, CA. 92101  
Telephone: (619) 533-5800  
10 Fax: (619) 533-5856

11 Attorneys for CITY OF SAN DIEGO

12  
13 CALIFORNIA REGIONAL WATER QUALITY BOARD

14  
15 SAN DIEGO REGION

16 IN THE MATTER OF: )  
17 SHIPYARD SEDIMENT SITE ) CITY OF SAN DIEGO'S REPLY  
18 TENTATIVE CLEAN-UP AND ) COMMENTS AND LEGAL  
ABATEMENT ORDER NO. R9-2011-0001 ) ARGUMENT  
19 )  
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GORDON & REES LLP  
101 West Broadway, Suite 2000  
San Diego, CA. 92101

1 TO THE REGIONAL WATER QUALITY CONTROL BOARD, DESIGNATED PARTIES,  
2 AND THEIR ATTORNEYS OF RECORD:

3 The City of San Diego's Reply Comments and Legal Argument Pursuant to the May 12,  
4 2011 Notice of Extended Comment Period and Revised Comment Format, and the Third  
5 Amended Order of Proceedings, dated May 18, 2011, Designated Party The City of San Diego  
6 ("City") respectfully submits the following Reply Comments and Legal Arguments concerning  
7 the Tentative Cleanup and Abatement Order No. R9-2011-0001 ("TCAO") and its associated  
8 Draft Technical Report ("DTR") for the San Diego Bay Shipyard Sediment Site, San Diego  
9 County ("Shipyard Sediment Site" or "Site").

10 The City offers these reply comments and legal argument on selected issues consistent  
11 with the current procedural posture of this proceeding. The City expressly preserves, and does  
12 not waive, any and all objections to those comments, technical issues, evidence or legal  
13 argument to which the City does not address herein, and further reserves the right to supplement,  
14 modify or withdraw its comments on any issue identified herein. The City's reply comments and  
15 legal argument will address in turn those comments and legal argument from selected  
16 Dischargers and Interested Parties that were submitted on May 26, 2011.

17 I.

18 **STAR & CRESCENT BOAT COMPANY IS APPROPRIATELY NAMED AS A**  
19 **DISCHARGER BECAUSE IT IS THE LEGAL SUCCESSOR TO SAN DIEGO MARINE**  
20 **CONSTRUCTION COMPANY.**

20 A. INTRODUCTION

21 Star & Crescent Boat Company ("Star & Crescent Boat") claims that there is no evidence  
22 it is a legal successor to San Diego Marine Construction Company ("SDMCC"), one of the  
23 parties potentially responsible for contamination of the Shipyard Sediment Site as a result of its  
24 historical shipyard operations. Yet the very evidence submitted by Star & Crescent Boat with its  
25 comments to the Board demonstrates that it was a mere continuation of San Diego Marine  
26 Construction Company ("SDMCC"), if not a fraudulent transfer to hide or escape liabilities, such  
27 that Star & Crescent Boat is a corporate successor of SDMCC. A detailed review of the  
28 evidence Star & Crescent Boat submitted in fact demonstrates the strength of the successor

1 liability case against Star & Crescent Boat and proves it is the proper successor and that Star &  
2 Crescent Boat is appropriately named as a Discharger to this proceeding.

3         The evidence demonstrates that a few years after SDMCC changed its name to Star &  
4 Crescent Investment Company (“Investment Company”), Investment Company, led by O.J. Hall,  
5 Jr., created Star & Crescent Boat (installing himself and his children as directors) so as to  
6 transfer its \$800,000 harbor business to it, for which it received grossly inadequate consideration.  
7 Following the transfer, Star & Crescent Boat, led by O.J. Hall, Jr.’s children, continued the  
8 harbor business while Investment Company retained control over Star & Crescent Boat,  
9 reviewing its operations, financials, and dictating and approving its directors salaries, bonuses  
10 and its stock dividends (actually marked “approved” by O.J. Hall, Jr. in Board of Directors  
11 meeting minutes). The evidence also shows there was officer and director overlap between the  
12 two companies, first with O.J. Hall, Jr. leading both companies, and later via Kenneth Beiriger as  
13 a director of both companies and via Investment Company—still led by O.J. Hall, Jr.—  
14 controlling Star & Crescent Boat. Also, O.J. Hall, Jr.’s three children--Judy Hall, Stephen  
15 Carlstrom and Janet Miles--were the directors and shareholders of Star & Crescent Boat.

16         The evidence also supports the conclusion that the creation of Star & Crescent Boat and  
17 transfer of assets and liabilities to it was fraudulent in nature, based on sham initial director  
18 appointments, unsupported stock valuations, and questionable stock swaps, which is another  
19 basis for successor liability.

20 **B. STATEMENT OF RELEVANT FACTS AS TO STAR & CRESCENT BOAT**  
21 **COMPANY**

22         SDMCC operated a shipyard in the northern part of the Shipyard Sediment Site from  
23 approximately 1915 to 1972. In 1972, SDMCC sold its shipyard assets to Campbell Industries.  
24 Immediately thereafter, in July 1972, SDMCC changed its name to Star & Crescent Investment  
25 Company (“Investment Company”) by consent of SDMCC’s directors/shareholders, O.J. Hall,  
26 Jr. and G.E. Hall. (S&C Boat Ex .10<sup>1</sup>).

27 \_\_\_\_\_  
28 <sup>1</sup> “S&C Boat Ex. \_\_\_” shall refer to the exhibits submitted by Star & Crescent Boat with their Written Comment  
Submission.

1 Star & Crescent Boat was incorporated on April 7, 1976. Six directors were appointed  
2 that same day: Carole Lechlietner, Monica Triplett, Kay Harpold, Gail Lary, Jacqueline Rhodes  
3 and Dorine Schamens. (S&C Boat Ex. 16). Just two days later, on April 9, 1976, each of the  
4 initial directors of Star & Crescent Boat resigned simultaneously without explanation and six  
5 new directors were appointed: O.J. Hall, Jr., Judy Hall, Kenneth Beiriger, Stephen Carlstrom,  
6 Raleigh Miles, and Janet Miles. (S&C Boat Ex. 17). O.J. Hall, Jr. and Kenneth Beiriger were  
7 elected the President and Vice President-Treasurer, respectively, of Star & Crescent Boat on that  
8 same day, April 9, 1976. (*Id.*) O.J. Hall, Jr. was simultaneously a director of Investment  
9 Company when he was elected a director and President of Star & Crescent Boat Company.  
10 (S&C Boat Exs. 10, 11-14, 17). Kenneth Beiriger became an Investment Company director by at  
11 least 1977, if he was not already previously, and remained an Investment Company director  
12 simultaneously with his directorship at Star & Crescent Boat from at least 1977 to 1983. (S&C  
13 Boat Exs. 11-14,17-18, City Ex. 1-2<sup>2</sup>). Judy Hall, Janet Miles and Stephen Carlstrom are O.J.  
14 Hall, Jr.'s children. (City Ex. 3). Raleigh Miles appears to be the husband of Janet Miles and  
15 O.J. Hall's son-in-law.

16 Immediately after the replacement of the first group of "directors" by O.J. Hall, Jr. and  
17 others either related to Investment Company or his children,<sup>3</sup> on April 9, 1976, Star & Crescent  
18 Boat, via its new O.J. Hall, Jr./family-led group of directors, voted to acquire the significant  
19 harbor business related assets--over \$800,000 worth--of Investment Company in exchange for  
20 1,500 shares of newly created stock of the new Star & Crescent Boat. (S&C Boat Ex. 23) As  
21 Star & Crescent Boat had just been created two days earlier, these shares were basically created  
22 out of thin air. Even assuming a "value" could be ascribed to the newly created stock of Star &  
23 Crescent Boat at that time, the directors, on April 9, 1976, only placed its alleged "par value" at  
24 \$10 per share, making the 1,500 shares worth at most \$15,000. (*Id.*) Thus, Star & Crescent  
25 Boat "purchased" the \$800,000+ harbor business of Investment Company for at most \$15,000.

26 ///

27 \_\_\_\_\_  
28 <sup>2</sup> "City Ex. \_\_\_\_" shall refer to the exhibits/evidence attached hereto and submitted herewith by City of San Diego.

<sup>3</sup> In addition to Kenneth Beiriger, discussed above, the remaining directors were the children of O.J. Hall, Jr.

1           At the same time it designated the par value of the newly created 1,500 shares to be \$10  
2 per share, the Star & Crescent Boat O.J. Hall, Jr./family led-directors also designated the “fair  
3 market value” of the newly created shares to be over \$700,000, without any basis whatsoever,  
4 two days after the company was created out of thin air. (*Id.*) At the time of the valuation, the  
5 brand-new Star & Crescent Boat owned no capital, was not engaged in any business, and had no  
6 other identified assets. (*Id.*) No accounting statements were attached to the corporate minutes to  
7 indicate that an audit or any other accounting investigation supported the valuation. (*Id.*) The  
8 numbers were simply chosen by the directors, who conveniently were in charge of both sides of  
9 the transaction.

10           It is unclear where the \$15,000 came from for the initial consideration for the shares,  
11 given the relationship between Investment Company and Star & Crescent Boat at the time of this  
12 transaction and their co-leadership by O.J. Hall, Jr., as the head of the family enterprise, as well  
13 as their relationship thereafter. (S&C Boat Ex. 11-14, 17, 23; City Ex. 1-2). Due to the  
14 relationship, it likely came from O.J. Hall, Jr. and Investment Company, since he (and his  
15 family) controlled both companies. It is similarly unclear whether Star & Crescent Boat really  
16 assumed a claimed \$86,000 of liabilities of Investment Company as stated in the April 9, 1976  
17 Board of Directors meeting minutes, given the relationship of the companies and the fact that  
18 Investment Company was still paying Star & Crescent Boat’s directors’ salaries and bonuses,  
19 and determining and approving its stock dividends, for at least several years following the  
20 transaction, as also discussed in detail immediately below. (S&C Boat Ex. 11-14,17 and City  
21 Ex. 1-2).

22           Regardless, even if both the \$15,000 and \$86,000 are taken into account as consideration,  
23 Investment Company, led by O.J. Hall, Jr., still transferred its \$800,000+ harbor business to Star  
24 & Crescent Boat, also led by O.J. Hall, Jr. and his family, at its inception for, at most, pennies on  
25 the dollar, for Star & Crescent to continue that business. At the same time as the transaction was  
26 taking place, Star & Crescent Boat and Investment Company were both under O.J. Hall, Jr’s  
27 direct control. (S&C Boat Ex. 10, 17).

28   ///



1 Six months after the creation of Star & Crescent Boat and the issuance of these 1,500  
2 shares to Investment Company as the consideration for the purchase of the \$800,000 of assets of  
3 Investment Company, Investment Company gave the shares back to Star & Crescent Boat.  
4 (S&C Ex. 23). This is not entirely surprising given that this was clearly a family enterprise and  
5 the directors of Star & Crescent Boat O.J. Hall, Jr.'s children. Star & Crescent Boat and  
6 Investment Company remained under O.J. Hall, Jr's control when this gift of shares took place,  
7 as even after O.J. Hall, Jr. resigned as a director of Star & Crescent Boat, he retained control  
8 over Star & Crescent Boat via his presidency and directorship at Investment Company. (S&C  
9 Boat Ex. 11-14, City Ex. 1-2). After O.J. Hall, Jr. resigned his directorship from Star & Crescent  
10 Boat, his son, Stephen Carlstrom, became President and Mr. Carlstrom, Judy Hall, and Janet  
11 Miles—three of his four children—were the shareholders. (S&C Boat Ex. 17, City Ex. 3).

12 While Star & Crescent Boat made "payments" to Investment Company from its dividends  
13 for this stock over the next several years, during that same time, Investment Company was  
14 controlling and determining the amount of Star & Crescent Boat's dividend payments, as well as  
15 its directors' salaries and bonuses, and other operational and financial aspects of the business as  
16 well, as it operated under the umbrella of Investment Company as clearly part of the family  
17 enterprise:

- 18 • Investment Company and Star & Crescent Boat Company are discussed  
19 together in minutes of the Board of Directors meetings for Investment  
20 Company for years after Star & Crescent Boat's creation. Further, the  
21 minutes and proposals therein, including discussions and proposals  
regarding Star & Crescent Boat, were "Approved" by O.J. Hall, Jr. and  
K.N. Beiringer, both Investment Company directors. (S&C Boat Ex. 11-  
14).
- 22 • Salaries and bonuses for Star & Crescent Boat directors in 1978 were  
23 dictated and approved by Investment Company and its directors O.J. Hall,  
Jr. and K.N. Beiriger. (S&C Boat Ex. 11-12).
- 24 • In 1979 and 1981, the minutes of Investment Company Board of Directors  
25 meetings state that Investment Company reviewed Star & Crescent Boat's  
26 operations and financials and that the salaries and bonuses, and dividends,  
of Star & Crescent Boat Company were determined and approved by O.J.  
Hall, Jr. and K.N. Beiriger, directors of Investment Company. (S&C Boat  
27 Ex. 13-14).
- 28 • In 1981, Investment Company guaranteed a \$300,000+ loan for Star &  
Crescent Boat. (S&C Boat Ex. 30).

- 1 • Investment Company and Star & Crescent Boat Company are also  
2 discussed together in the minutes of Board of Directors meetings for Star  
3 & Crescent Boat Company in the years following Star & Crescent Boat's  
4 creation. (S&C Boat Ex. 30, City Ex. 1-2).  
5 • Minutes from Star & Crescent Boat Board of Directors meetings from  
6 1980 discussed Investment Company employee pay checks and stated that  
7 Investment Company and O.J. Hall approved of Star & Crescent Boat  
8 director salaries. (City Ex. 1-2).

9 In 1986, Star & Crescent Boat merged with San Diego Harbor Excursions. (S&C Boat  
10 Ex. 32).

11 **C. STAR & CRESCENT BOAT COMPANY HAS SUCCESSOR LIABILITY FOR  
12 SDMCC.**

13 The general rule of successor liability under the laws of California is that the corporate  
14 purchaser of another corporation's assets presumptively does not assume the seller's liabilities,  
15 unless:

- 16 (1) there is an express or implied agreement of assumption;  
17 (2) the transaction amounts to a consolidation or merger of the two corporations;  
18 (3) the purchasing corporation is a mere continuation of the seller; or  
19 (4) the transfer of assets to the purchaser is for the fraudulent purpose of escaping  
20 liability for the seller's debts.

21 *Ortiz v. South Bend Lathe* (1975) 46 Cal. App. 3d 842, 846, disapproved on other  
22 grounds in *Ray v. Alad Corp.* (1977) 19 Cal. 3d 22, 34; *Fisher v. Allis-Chalmers Corp. Prod.*  
23 *Liab. Trust* (2002) 95 Cal.App.4th 1182, 1188.

24 Here, as discussed further below, the evidence demonstrates that Star & Crescent Boat  
25 was a mere continuation of SDMCC/Investment Company, and also indicates that the creation of  
26 Star & Crescent Boat and Investment Company's transfer of assets to it was also of a fraudulent  
27 nature to escape or hide liabilities.

28 **1. Star & Crescent Boat Is A Mere Continuation of SDMCC/Investment  
Company.**

With respect to the mere continuation exception, in discussing this exception to the  
general rule of successor non-liability, the California Supreme Court in *Ray v. Alad* stated that

1 liability has been imposed on a successor corporation upon a showing of *one or both* of the  
2 following factual elements:

3 1) no adequate consideration was given for the predecessor corporation's assets and made  
4 available for meeting the claims of its unsecured creditors;

5 2) one or more persons were officers, directors, or stockholders of both corporations.  
6 *Ray v. Alad, supra*, 19 Cal. 3d at p. 29 (citing cases).

7 In this matter as to Star & Crescent Boat, both of these factors are met.

8 a. There Was Grossly Inadequate Consideration Paid for Investment  
9 Company's \$800,000 Harbor Assets.

10 On April 7, 1976, Star & Crescent Boat was created, with six "directors" who all, two  
11 days later, simultaneously resigned without explanation and were replaced by O.J. Hall, Jr., the  
12 president and director of Investment Company, along with five others, at least one of whom was  
13 also related to Investment Company (Kenneth Beiriger), with the remainder being O.J. Hall, Jr.'s  
14 children and one of their spouses. (S&C Boat Ex. 16, 17; City Ex. 3). Simultaneously with this  
15 uniform directorship replacement with O.J. Hall, Jr./family-led Investment Company personnel,  
16 Investment Company transferred its \$800,000+ harbor business to Star & Crescent Boat to  
17 continue that business in exchange for, at most, \$15,000 of newly created stock of Star &  
18 Crescent Boat and Star & Crescent Boat's assumption of \$86,000 of liabilities—grossly  
19 inadequate consideration for the significant assets conferred on Star & Crescent Boat. (S&C  
20 Boat Ex. 17).

21 The consideration becomes even more grossly inadequate and the marked mere  
22 continuation of the business revealed when one examines the inter-relationship of Investment  
23 Company and Star & Crescent Boat over the next several years following its creation and this  
24 asset transfer. This was clearly a family enterprise that O.J. Hall, Jr. created and controlled.  
25 While Star & Crescent Boat focuses in its Comment on how these shares were really worth over  
26 \$700,000 and how Star & Crescent Boat paid this back to Investment Company over the next  
27 few years (after Investment Company actually gave the shares back to Star & Crescent Boat six

28 ///

1 months later!),<sup>4</sup> it leaves out the critical facts that 1) it was O.J. Hall, Jr. and family who created  
2 the alleged \$700,000 “fair market value” for this stock out of thin air on April 9, 1976, two days  
3 after Star & Crescent Boat was created, when the stock’s par value was a maximum \$15,000  
4 (S&C Boat Ex. 17); 2) that O.J. Hall, Jr.’s children were the shareholders of Star & Crescent  
5 Boat (S&C Boat Ex. 17, 23; City Ex. 3) and 3) that Star & Crescent Boat was operationally and  
6 financially controlled by Investment Company following its creation such that any dividend  
7 payments being made by Star & Crescent Boat to Investment Company for this stock were  
8 basically payments to itself and the family business, because O.J. Hall, Jr. and Kenneth Beiriger,  
9 Investment Company officers and directors, were designating and approving the amounts of the  
10 dividends of Star & Crescent Boat! (S&C Boat Ex. 11-14; City Ex. 1-2).

11       The documents submitted by Star & Crescent Boat itself with its Comment undisputedly  
12 reflect that Investment Company and Star & Crescent Boat Company were closely inter-related  
13 and controlled by O.J. Hall, Jr. and family and Kenneth Beriger, and basically the same family-  
14 run company. They are discussed together in minutes of the Board of Directors meetings for  
15 Investment Company for years after Star & Crescent Boat’s creation. (S&C Boat Ex. 11-14).  
16 Discussions and proposals regarding Star & Crescent Boat were all “Approved” by O.J. Hall, Jr.  
17 and K.N. Beringer (Mr. Beiriger was also a Star & Crescent Boat director) including the  
18 designation of and approval of salaries and bonuses for Star & Crescent Boat directors in 1978;  
19 the review of Star & Crescent Boat’s operations and financials and designation of and approval  
20 of the salaries and bonuses, and dividends, of Star & Crescent Boat Company in 1979 and 1981;  
21 and Investment Company’s guaranty of a \$300,000+ loan for Star & Crescent Boat in 1981.  
22 (S&C Boat Ex. 11-14, 30).

23       Moreover, additional documents produced by Star & Crescent Boat reflect that  
24 Investment Company and Star & Crescent Boat Company are also discussed together in the  
25 minutes of Board of Directors meetings for Star & Crescent Boat Company in the years  
26 following Star & Crescent Boat’s creation, meetings which were at least in part led by Mr.

27 \_\_\_\_\_  
28 <sup>4</sup> For reasons unknown. As discussed further *infra*, the facts suggest that these transactions may also have been  
fraudulent in nature to escape or hide liabilities.

1 Beiriger. Minutes from Star & Crescent Boat Board of Directors meetings from 1980 discussed  
2 Investment Company employee pay checks and stated that Investment Company and O.J. Hall,  
3 Jr. approved of Star & Crescent Boat director salaries. (City Ex. 1-2).

4 These facts and evidence—largely submitted by Star & Crescent Boat itself in this  
5 proceeding—demonstrate that there was not adequate consideration was paid for Investment  
6 Company’s assets, and the relationship between Investment Company and Star & Crescent Boat  
7 was such that Star & Crescent Boat was a mere continuation of Investment Company.

8 b. Directors and Officers of Investment Company Were Directors and  
9 Officers of Star & Crescent Boat and/or Controlled Star & Crescent Boat.

10 Star & Crescent Boat does not dispute that Investment Company shareholder and director  
11 O.J. Hall, Jr. was directly involved in the creation of Star & Crescent Boat in that he became a  
12 director (and President) of Star & Crescent Boat two days after its inception and remained such  
13 for six months. (S&C Boat Ex. 17; p. 10 of S&C Comment). It also does not dispute that  
14 Kenneth Beiriger was simultaneously an Investment Company director and Star & Crescent Boat  
15 director at the same time for several years. (S&C Boat Ex. 11-14, 17, 30, p.10 of S&C  
16 Comment).

17 However, for some reason, Star & Crescent Boat turns a blind eye to the fact that even  
18 after O.J. Hall, Jr. stepped down as a director of Star & Crescent Boat in October 1976, he  
19 continued to control Star & Crescent Boat because he was a director and President of Investment  
20 Company, as is reflected in the numerous Board of Directors meetings of Investment Company  
21 wherein he approved Star & Crescent Boat operations, financials, director salaries and bonuses,  
22 and stock dividends. (S&C Boat Ex. 11-14, 30, City Ex. 1-2).

23 Star & Crescent Boat also wholly ignores the fact that the directors and shareholders of  
24 Star & Crescent Boat were all O.J. Hall, Jr.’s children. (S&C Ex. 17, 23; City Ex. 3).

25 The evidence clearly demonstrates officer and director overlap between the two  
26 companies, by key directors, a family-run enterprise by O.J. Hall, Jr. and his children, and  
27 control by Investment Company over Star & Crescent Boat following its creation. While  
28 director and officer overlap is not the only factor in assessing successor liability under a mere

1 continuation theory, here, as discussed in detail, *supra*, it is certainly not the only fact  
2 demonstrating the mere continuation. When all of the facts are coupled and reviewed together  
3 with the legal standard, Star & Crescent Boat is proven to be the successor to SDMCC under the  
4 mere continuation theory.

5 c. Star & Crescent Boat May Have Been Created to Accomplish a  
6 Fraudulent Transfer of Liabilities of SDMCC/Investment Company.

7 While Star & Crescent Boat all but brushes aside this other exception to the rule against  
8 successor liability, the facts and the evidence strongly suggest that the transaction whereby Star  
9 & Crescent Boat was created with fake directors and its subsequent unsupported stock valuations  
10 and stock swaps was for a fraudulent purpose of trying to escape or hide certain liabilities.

11 The facts support that Star & Crescent Boat was created by Investment Company for the  
12 financial purpose of shifting assets and liabilities from Investment Company to this new entity.  
13 The installment of the initial six “directors” on April 7, 1976 was clearly a sham, given their  
14 uniform, simultaneous resignations two days later and immediate replacement by the O.J. Hall,  
15 Jr./family-led Investment Company directors. (S&C Boat Ex. 16-17). The creation of 1,500  
16 shares of Star & Crescent Boat stock out of thin air—again, simultaneously with the installment  
17 of the O.J. Hall, Jr. family led directors—and designation by the directors that it had a par value  
18 of \$15,000 but a “fair market value” of over \$700,000—smacks of fraud. (S&C Boat Ex. 17).  
19 How could 1,500 newly created shares of a brand new company have a fair market worth of  
20 almost three-quarter of a million dollars, when at most, the capital behind them is \$15,000?

21 The fraudulent scheme continued when Investment Company, six months later, for  
22 unclear reasons, actually gave these shares back to Star & Crescent Boat (probably because the  
23 directors were O.J. Hall, Jr.’s children), and then was paid by Star & Crescent Boat, at least  
24 somewhat, for these shares over the next several years, out of its dividends, which dividends  
25 were designated and approved by Investment Company. Investment Company appears to have  
26 achieved payment to itself for transferring assets and liabilities to a new company, which it  
27 continued to control, as reflected on the Board of Directors meeting minutes. (S&C Boat Ex. 11-  
28 14, City Ex. 1-3).

1 Thus, there is also a strong suggestion of fraud in the transactions creating and sustaining  
2 Star & Crescent Boat and yet another basis for a finding of successor liability.

3 II.

4 **THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT THE TENTATIVE**  
5 **CLEANUP AND ABATEMENT ORDER IS TECHNICALLY INFEASIBLE TO**  
6 **ACHIEVE BECAUSE UNCONTROLLED SOURCES OF POLLUTION UNRELATED**  
7 **TO NASSCO ARE IMPACTING SEDIMENT AT THE SHIPYARDS.**

8 A. **THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT “THE**  
9 **PLUME OF CONTAMINATED WATER FROM CHOLLAS CREEK DURING**  
10 **RAIN EVENTS HAS BEEN SHOWN TO EXTEND MORE THAN A**  
11 **KILOMETER FROM THE DISCHARGE POINT INCLUDING THE AREAS**  
12 **WITHIN NASSCO’S LEASEHOLD, AND CONTRIBUTES AN ARRAY OF**  
13 **POLLUTANTS TO THE SITE.”**

14 In its comments submitted on May 26, 2011, NASSCO argues that “...The plume of  
15 contaminated water from Chollas Creek during rain events has been shown to extend more than a  
16 kilometer from the discharge point including the areas within NASSCO’s leasehold, and  
17 contributes an array of pollutants to the site.”<sup>5</sup>

18 The findings cited are based on studies conducted by Schiff et al (2003) and Chadwick et  
19 al (1999). The Schiff (2003) plume maps (figures 2 through 8 in Schiff (2003)) which show  
20 temperature, salinity, turbidity (beam attenuation), and toxicity results right up to the shore are  
21 likely not based directly on any data collected from these areas. Nowhere in Schiff (2003) is  
22 there mention of the authors having received access to these restricted areas to perform the  
23 sampling. The City believes the results showing the area of impacts on these figures are  
24 extrapolations based on Kriging the extent of the plume. This geostatistical method referred to  
25 as Kriging does not take into account advection, dispersion, or transformation. Where hard  
26 boundaries exist such as shorelines, Kriging will extrapolate right up to the boundary. However,  
27 in theory, advection to a hard boundary is very limited and movement toward a hard boundary  
28 tends to be via diffusion, which is a very slow process compared to advection. Schiff (2003) do  
not provide data indicating the Chollas Creek freshwater plume extends up to the shoreline. The

<sup>5</sup> Nassco’s Comments On The San Diego Regional Water Quality Control Board Cleanup Team’s September 15, 2010 Tentative Cleanup And Abatement Order No. R9-2011-0001, Draft Technical Report, And Shipyard Administrative Record (“NAASCO’s Comments”), p. 35.

1 use of Kriging or other geostatistical methods to predict concentrations beyond the boundaries of  
2 sampling is incorrect. Geostatistical tools are developed for characterizing data within the  
3 sampled area. Such tools have no predictive abilities, and thus should not have been used to  
4 determine the area influenced by the surface waters of Chollas Creek.

5 A similar deficiency is noted in the hydrodynamic model presented by Chadwick (1999).  
6 This model does not appear to take into account physical obstructions to flow such as ships  
7 docked at NASSCO piers 3-6 at the mouth of Chollas Creek, which is a typical situation. Such  
8 ships almost (or sometimes do) touch bottom at that location, which creates a physical  
9 impediment to flow from Chollas Creek to the Shipyard. The Doppler meters used to calibrate  
10 the hydrodynamic model were most likely placed outside of piers and probably could not show  
11 the effects of the piers on waters between them. Again, the locations of the Doppler meters are  
12 not provided in the report and so it is impossible to review this data. Also this model uses a 100  
13 meter grid which cannot be reasonably used to conclude movements of sediments at the scale of  
14 Chollas Mouth which is less than 100 m wide. Collectively these issues with the hydrodynamic  
15 modeling efforts in the shoreline area indicate model predicted results for this area are  
16 inaccurate.

17 So, while data collected during the 1999 period when the Chadwick study was being  
18 conducted and subsequently showed plumes of Chollas Creek water extending into San Diego  
19 Bay, there is no data showing that this Chollas Creek water or sediments from Chollas Creek  
20 circulate up to the remedial footprint of the shipyards site.

21 The U.S. Navy SPAWAR conducted a modeling study of discharges of sediments from  
22 Chollas Creek (Chadwick, et al, undated). They used sediment discharge data measured in  
23 Chollas Creek in 2001. In this study SPAWAR modeled 10 years of storms from Chollas Creek  
24 and the movement of sediments into San Diego Bay using a 3 dimensional estuary model.  
25 SPAWAR estimated that 46 to 92% of sediments discharging from Chollas Creek would be  
26 trapped in the creek mouth and not enter San Diego Bay. The amount of trapping would be  
27 dependent on the size of storm. Smaller storms would result in greater trapping in the mouth and  
28 larger storms would result in lower trapping in the mouth.



1 If Chollas Creek was a source of chemicals of concern (COCs) to the Shipyard, one  
2 would expect to see decreasing concentrations from Chollas Creek to the Shipyards site. When  
3 looking at the chemical concentrations of the COCs in Chollas Creek sediments, there is not a  
4 chemical gradient starting at Chollas Creek and decreasing to the Shipyards. Looking at  
5 Cadmium, which is not a COC, but which is more representative of urban runoff, there are  
6 gradients of Cadmium leading from Chollas Creek to the Shipyards. Based on this analysis of  
7 chemical gradients, the City submits that Chollas Creek is not a significant contributor of COCs  
8 to the Shipyard site.

9 If Chollas Creek was a source of COCs to the Shipyard, one would expect to see similar  
10 ratios of COCs in the Chollas creek mouth as one sees in other Shipyard sediment locations.  
11 When COC ratios are analyzed to evaluate differences or consistencies between locations, it  
12 appears that COC ratios are not consistent between the shipyards area and the mouth of Chollas  
13 Creek. Thus, the City concludes that Chollas Creek is not a source of Shipyard site COCs (Cu,  
14 PCB, Hg or TBT).

15 The statements made by NASSCO and RWQCB staff under deposition regarding how  
16 Chollas Creek is impacting the Shipyards sediment site outside the mouth of Chollas Creek are  
17 speculative and not based on any direct measurements or well calibrated field-verified models.

18 **B. THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT "...THE**  
19 **STORM WATER CONTAINS PCBs, PYROGENIC HYDROCARBONS, OIL**  
20 **AND GREASE, SYNTHETIC ORGANICS, AND HEAVY METALS, AMONG**  
21 **OTHER POLLUTANTS."**

22 In its comments submitted on May 26, 2011, NASSCO argues that "...The storm water  
23 contains PCBs, pyrogenic hydrocarbons, oil and grease, synthetic organics, and heavy metals,  
24 among other pollutants."<sup>6</sup>

25 In fact, PCBs have never been detected in Chollas Creek water. In fact, the RWQCB  
26 discontinued the requirement for PCB monitoring in Chollas Creek because PCBs had never  
27 been detected. PCBs found in Chollas Creek mouth or Shipyard sediments are likely from

28 <sup>6</sup> NASSCO's Comments, p. 36.

1 sources other than Chollas Creek.

2 **C. THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT "TO THE**  
3 **EXTENT MINOR IMPACTS ARE OBSERVED AT NASSCO, TRIAD RESULTS**  
4 **SUGGEST THAT CONTAMINANTS FROM CHOLLAS CREEK, NOT THE**  
5 **SHIPYARDS, ARE LINKED TO THE OBSERVED ENVIRONMENTAL**  
6 **IMPACTS."**

7 In its comments submitted on May 26, 2011, NASSCO argues that "to the extent minor  
8 impacts are observed at NASSCO, triad results suggest that contaminants from Chollas Creek,  
9 not the shipyards, are linked to the observed environmental impacts."<sup>7</sup> NASSCO then proceeds  
10 to argue that "...For example, stations NA20 and NA22 – which are not associated with  
11 shipyard-related chemicals, but are within the area of apparent sediment deposition from the  
12 Chollas Creek stormwater plume – are the only stations in the NASSCO leasehold with apparent  
13 benthic effects under the DTR analysis..”

14 NA20 and NA22 are located next to the piers where full thrust engine testing takes place,  
15 resulting in significant physical disturbance to the underlying sediments. Navy collected  
16 bathymetry data shows sediment elevation contours in this area suggesting of significant “blow-  
17 out” of sediments, likely from propeller activity during engine testing. The physical disturbance  
18 may be the factor affecting the benthic community. In fact, levels of chemicals of concern  
19 throughout the shipyard sediment site do not correlate with observed benthic community effects.  
20 However, at the only locations where significant physical disturbances take place routinely,  
21 benthic community effects are observed.

22 Next, in support of the same proposition that triad results suggest that contaminants from  
23 Chollas Creek, not the shipyards, are linked to the observed environmental impacts, NASSCO  
24 argues NASSCO argues that correlations are observed between pesticide concentrations and  
25 sediment toxicity and that “there is clear evidence that pesticides – which are not shipyard-  
26 associated chemicals – may be responsible for adverse biological effects observed at the  
27 shipyards, particularly adverse effects to bivalves.”<sup>8</sup>

28 ///

<sup>7</sup> NASSCO’s Comments, p. 36-38.

<sup>8</sup> NASSCO’s Comments, p. 36.

1 This statement drawn from conclusions made in the Exponent Report (Exponent, 2003)  
2 was based on only four samples. Four samples do not provide sufficient statistical power to  
3 conclude that there is or is not a correlation. Correlation analysis conducted on other chemicals  
4 of concern utilized upwards of 60 samples. The conclusion that there is “clear evidence that  
5 pesticides ...may be responsible for adverse effects...”should not be drawn on the basis of 4  
6 samples.

7 Next, in support of the same proposition that triad results suggest that contaminants from  
8 Chollas Creek, not the shipyards, are linked to the observed environmental impacts, NASSCO  
9 argues NASSCO argues that “Urban Runoff from Chollas Creek Is A Significant Contributor of  
10 Pollutants To The Shipyard.”<sup>9</sup>

11 Conclusions regarding the fate and transport of sediments from Chollas Creek are based  
12 on:

- 13 • no direct measurement of sediment loads to the inner portions of the  
14 shipyard site.
- 15 • The use of a technique called Kriging from points in the Bay where  
16 turbidity and toxicity data were measured during a storm to the shoreline.  
17 This technique is a mathematical algorithm for estimating the difference in  
18 concentrations between two known points and does not take into account  
19 the hydrodynamic effects of hard barriers to flow and sediment flux that  
20 are found at the Shipyard inner site. This technique is inappropriate for  
21 drawing conclusions on fate and transport of suspended sediments and  
22 does not accurately estimate sediment transport.

19 No comparison of mass discharges from Chollas Creek that may have migrated to the  
20 inner Shipyard area with mass discharges from historical shipyard operations were made.  
21 Statements made regarding the contribution of Chollas Creek to the inner Shipyard area are  
22 speculative and not based on any direct data or well calibrated models.

23 Comparisons conducted by the City of mass discharges from Chollas Creek that may  
24 have migrated to the inner Shipyard area with likely mass discharges from historical shipyard  
25 operations suggest that the amount of chemical of concern mass at the shipyard site is more than  
26 98% from shipyard operations. The concentrations within storm water are far lower than the  
27

28 <sup>9</sup> NASSCO’s Comments, p. 37-38.

1 concentrations in Shipyard waste discharges that were likely to occur prior to the enforcement of  
2 regulatory restrictions on those discharges began in the 1980s.

3 Next, in support of the same proposition that triad results suggest that contaminants from  
4 Chollas Creek, not the shipyards, are linked to the observed environmental impacts, NASSCO  
5 argues NASSCO argues that Observed Toxicity and Benthic Community Effects Are  
6 Attributable to Discharges Of Municipal Storm Water. Further, that "...the presence of  
7 pesticides, and the observed correlations between pesticides and toxicity, suggest that Chollas  
8 Creek and storm sewer discharges from areas outside the shipyards are contributing toxic levels  
9 of pesticides (and other chemicals) to shipyard sediments, and are also responsible for any  
10 observed effects."<sup>10</sup>

11 This statement drawn from conclusions made in the Exponent Report (Exponent, 2003)  
12 was based on only four samples. Four samples do not provide sufficient statistical power to  
13 conclude that there is or is not a correlation. Correlation analysis conducted on other chemicals  
14 of concern utilized upwards of 60 samples. The conclusion that Chollas Creek is causing  
15 observed toxicity because of pesticides should not be drawn on the basis of 4 samples.

16 Additionally, as stated elsewhere in responses to other NASSCO comments, the studies  
17 to date on the fate and transport of sediments from Chollas Creek do not show sediments  
18 migrating to the inner Shipyards site. Organochlorine pesticides would be attached to sediments  
19 due to their hydrophobicity. Studies to date show most (46% to 92% depending on the storm) of  
20 sediments remaining trapped in the Chollas Creek mouth and not even extending out to San  
21 Diego Bay. Of those that continue to the shipping channel in San Diego Bay during larger  
22 storms, data and modeling studies do not show significant migration to the inner shipyard.

23 **D. THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT**  
24 **"REMEDIAION GOALS CANNOT BE MET DUE TO RE-CONTAMINATION**  
25 **FROM OTHER SOURCES."**

26 In its comments submitted on May 26, 2011, NASSCO argues that "Remediation Goals  
27 Cannot Be Met Due to Re-Contamination From Other Sources."<sup>11</sup> The City is committed to

28 <sup>10</sup> NASSCO's Comments, p. 38.

<sup>11</sup> NASSCO's Comments, p. 38-39.

1 complying with the Chollas Creek metals TMDL. While actions are not required prior to 2018,  
2 80% reduction is required by 2018. The City has analyzed and evaluated different means of  
3 achieving compliance and is currently developing a plan that the City believes should achieve  
4 compliance. There are numerous technologies more effective (and not more costly) than sand  
5 filters at removing metals, including dissolve fractions, that are being considered for  
6 implementation throughout the Chollas Creek watershed.

7 As noted in responses to comments above, the discharges from Chollas Creek do not  
8 significantly affect inner Shipyard sediments. Predictions of mass discharges from Chollas  
9 Creek of copper, zinc, and lead as the TMDL is being implemented suggest that there will be no  
10 measureable increase in sediment concentrations of these constituents after remediation of  
11 Shipyards is complete. Accordingly, there should be no concerns that remediation goals cannot  
12 be met because of any concerns regarding recontamination from Chollas Creek.

13 **III.**

14 **SAN DIEGO GAS & ELECTRIC ("SDG&E") IS APPROPRIATELY NAMED AS A**  
15 **DISCHARGER.**

16 As demonstrated below, there is copious evidence that SDG&E's operations caused or  
17 contributed to discharges of the subject pollutants into the Shipyard Site.

18 **A. THERE IS SUFFICIENT EVIDENCE TO SHOW THAT PCBS WERE**  
19 **RELEASED FROM THE SDG&E SILVERGATE SUBSTATION/SWITCHYARD**  
20 **AREA AND THAT THE CONDITIONS AT THIS SUBSTATION/SWITCHYARD**  
21 **LED TO THE SUBSEQUENT DISCHARGE OF PCBS INTO THE STORM**  
22 **DRAIN IN SAMPSON STREET AND, ULTIMATELY, TO THE SHIPYARDS**  
23 **SITE AND SAN DIEGO BAY.**

24 The TN& Associates 2006 Underground Storage Tank closure report presents analytical  
25 results of samples collected from soils in the substation area beneath and adjacent to the closed  
26 underground storage tanks. These analytical results show concentrations of PCBs ranging from  
27 56 to 125,000 micrograms per kilogram. The maximum concentration is higher than  
28 contamination found in the Shipyards sediments. Shipyard sediment site background is 84  
micrograms per kilogram.

28 ///

1 The RBF 2006 Water Quality Technical Report and the 2006 SDG&E Hydrology report  
2 for the Silvergate substation/switchyard upgrade and modification project both state that  
3 “Approximately 3.0 acres of the site currently drains by means of surface flow to Sampson  
4 street.” Both reports go on to state “The site drains to the west side of Sampson Street where  
5 runoff flows to a curb inlet and catch basin (prior to the intersection of the railroad tracks on  
6 Sampson Street.” This evidence shows that: 1) PCBs were released to soils at the  
7 substation/switchyard, and 2) the substation/switchyard drained to the Sampson street storm  
8 drain, which City drawings show leads to the Shipyards Sediment site and San Diego Bay.  
9 Therefore, PCBs were released at the substation/switchyard. Rainwater left the  
10 substation/switchyard and entered Sampson Street, the storm drain, and San Diego Bay.

11 SDG&E has not presented any documentation or testimony stating that they removed  
12 released PCBs from substation/switchyard soils prior to a rain event or that they took any steps to  
13 treat runoff to remove PCBs from that runoff before leaving the substation/switchyard. SDG&E  
14 has produced no documentation or testimony stating that the transformers, capacitors, or other  
15 PCB containing equipment or vessels in the substation/switchyard were placed in secondary  
16 containment at the time of construction in the 1940s (SAR193281). The presence of secondary  
17 containment in 2004 as cited in the ENV America 2004 site investigation report (SAR193281) is  
18 not evidence of secondary containment having been put in place at the time of original  
19 construction. The standard practice in the 1940s for transformer and capacitor construction was to  
20 not place them in secondary containment because in the 1940s there were no regulations  
21 requiring that secondary containment be installed for these devices. In fact, the presence of  
22 PCBs in substation/switchyard soils during demolition in 2006 is direct evidence that SDG&E  
23 did not take steps to remove PCBs that had been released from soils at the substation/switchyard.

24 **B. THERE IS SUFFICIENT EVIDENCE TO SHOW THAT SDG&E DISCHARGED**  
25 **PCBS TO THE SHIPYARDS SITE AND SAN DIEGO BAY VIA THE COOLING**  
26 **TUNNELS.**

27 The 2006 SDG&E Hydrology Report states: “The roof and cooling water deck (south-  
28 west of the powerhouse) currently drain into the cooling water tunnels.” September 10, 1974,  
SDG&E Internal Correspondence (SAR193394) states that turbine room sump pumps discharged

1 to the cooling water discharge tunnel. Silver Gate Power Plant Waste Water Treatment Facility  
2 Training Manual (No Date) states: “The floor drains are in areas where large amounts of oil may  
3 be spilled.” (SAR193675). San Diego Gas and Electric Spill Prevention Control and  
4 Countermeasure Plan Silver Gate Power Plant (October 27, 1981) listed the following specific  
5 equipment in the turbine room and on the cooling water deck:

- 6 • (35-50KW) Steam Turbine – Generator Sets
- 7 • 8 (2,500 to 3,000 gallon) Turbine Lubricating Oil tanks
- 8 • Power and 2 Lighting Transformers Near GU 2 on CW Deck
- 9 • Auxiliary and 1 Lighting Transformers Near GU 1 on CW Deck

10 A U.S. EPA report published September 25, 1976 titled “PCBs in the United States  
11 Industrial Use and Environmental Distribution” lists the uses of PCBs in Heat Transfer fluids,  
12 Hydraulic Fluids, Lubricants, Transformers, Capacitors, Plasticizer Applications, and  
13 Miscellaneous Industrial. A Monsanto sales manual for PCBs published in 1944 states that the  
14 primary benefit of PCBs is how they stabilize oils under high temperature conditions. It is easy  
15 to conclude from this fact record that the SDG&E turbines and transformers used PCB  
16 containing oils because of the high temperatures at which they operated. One can also conclude  
17 that the turbines leaked oils. The presence of lubricating oil tanks is evidence that a reserve of  
18 oil for the turbines was necessary for the turbines to operate. Therefore, the turbines must have  
19 lost oil. Oil is not a volatile substance, so the primary means of loss would be through leaks.  
20 The leaks from the turbines would have been collected in the turbine sumps and pumped to the  
21 cooling water lines as stated in the above cited documents. Therefore, there is a direct link  
22 between turbine leaks and discharges in the cooling water lines. SDG&E has provided no  
23 documentation or testimony stating that they did not use PCB containing oils in their turbines,  
24 hydraulic systems, or transformers. SDG&E has not provided any evidence or testimony  
25 showing that the turbines never leaked.

26 Simply put, because concentrations of PCBs in cooling water tunnel sediments or  
27 sediments near cooling water tunnels are lower in concentration than in other Shipyard sediments  
28 is not sufficient evidence to prove that no PCBs were ever discharged from the cooling water  
tunnels. In fact, the presence of any PCBs in the cooling water tunnels is evidence that PCBs

1 were discharges and that the cooling water discharge is one of the sources of PCBs in the  
2 Shipyards site and San Diego Bay.

3 **C. THE PCBs DETECTED IN CATCH BASIN CB1 IS FURTHER EVIDENCE**  
4 **THAT SDG&E HAD DISCHARGED PCBs TO THE SAMPSON STREET**  
5 **STORM DRAIN AND SUBSEQUENTLY TO THE SHIPYARDS SEDIMENT**  
6 **SITE AND SAN DIEGO BAY.**

7 PCBs were detected In CB-1 after a visual inspection suggested that sampling was  
8 warranted. The 2006 TN and Associates letter presenting the results of their investigation of  
9 what drains led to the catch basin stated that a 6 inch roof drain led to the catch basin from the  
10 SilverGate Power Plant. This statement was not documented with any as-built drawings showing  
11 the 6 inch roof drain. No photos of the roof drain were presented. Samples were collected from  
12 the roof. Samples contained PCBs ranging from non detect to 1,400 micrograms per kilogram.  
13 1,400 micrograms per kilograms is higher than found in most Shipyard sediment samples.  
14 Shipyard background was set at 84 micrograms per kilogram, which was established to take into  
15 account general urban activity, which would include atmospheric deposition.

16 Irrespective of whether the investigators discovered a specific source on the roof, the high  
17 sample showed that there had been a release to the roof materials, whether from the constituents  
18 within the roof materials themselves, or from a release from the power plant resulting in deposits  
19 on the roof. The drainage of the roof is stated to lead to CB-1. PCBs were detected in CB-1.  
20 Drawings of CB-1 show that it leads to SW4 in Sampson Street, which leads to the Shipyards  
21 Site and San Diego Bay. Therefore, there is evidence showing: 1) a release of PCBs to the roof  
22 of the Silvergate Power Plant, 2) transport from the roof of the Silvergate Power Plant to CB-1,  
23 3) the presence of PCBs in CB-1, and 4) transport from CB-1 to the Shipyards Site and San  
24 Diego Bay.

25 **D. THERE IS SUFFICIENT EVIDENCE TO SHOW THAT THE SDG&E**  
26 **SILVERGATE POWER PLANT BILGE PUMPING SYSTEM THROUGH**  
27 **NOBLES LAKE DISCHARGED PCBs AND OTHER WASTES TO THE**  
28 **SHIPYARDS SITE AND SAN DIEGO BAY.**

The September 10, 1974, SDG&E Internal Correspondence (SAR193834) presents the  
figure shown below (Figure 1). This figure clearly shows that the bilge pumps lead to an 8 inch



1 pipe that leads to Nobles Lake. The bilge pumps emptied the basement of the Silvergate Power  
2 Plant, which contained boiler blow down tanks, boiler pumps, and hydraulic systems. Figure 2  
3 from Technical Report for RWQCB Investigation Order No. R9-2004-0026 Silver Gate Power  
4 Plant, San Diego, CA July 14, 2004, ENV America Inc., shows the wastes discharged from the  
5 Silvergate Power Plant. (SAR193272-SAR193329). This figure clearly documents oily wastes  
6 being discharged directly to San Diego Bay, either through Nobles Lake or through the Cooling  
7 Water Discharge.

8 Figure 3 from the same ENV America report, shows the Nobles Lake area. This 1950  
9 aerial photo also shows a ditch leading directly to the Shipyards site and San Diego Bay.

10 Figure 4 from the same ENV America report, also shows the Nobles Lake area. This  
11 1952 aerial photo shows a new pond dug in the vicinity of Nobles Lake and the ditch, but not  
12 directly on Nobles Lake or the ditch.

13 Figure 5 from the same ENV America report, also shows the Nobles Lake area. This  
14 1953 aerial photo shows the new pond no longer there, but Nobles Lake and the ditch are clear in  
15 the photo.

16 Figure 6 from the same ENV America report, purportedly taken in 1955 shows the  
17 Nobles Lake releasing oily wastes to the surface and to the ditch leading to San Diego bay.

18 The ENV America report (2004) states: “Basement bilge water consisted of liquids that  
19 accumulated in trenches in the plant basement. The WWTP manual (SDGE 1978) lists the  
20 following waste sources: turbine drains, boiler drains, condenser drain, pump drains, cooling  
21 water supply drains, water box drains, service air compressor drains, fire pump drains, relief  
22 valve drains, condensate storage and overflow, and condensate makeup pump drains. The  
23 basement bilge system was divided into two areas: the turbine side and the boiler side. Diagrams  
24 from 1965 show that bilge water from the turbine side was piped into the discharge cooling water  
25 tunnels and the bilge water from the boiler side was pumped via an 8 inch diameter pipeline to an  
26 oil-water separating pond located on Parcel 2 referred to as ‘Nobles Lake,’ which was used for  
27 evaporation and settling. However it is noted that an ACE application SDGE 1972 stated that  
28 only blowdown and cooling water were discharged to the CW tunnels whereas other wastes were

1 disposed of by evaporation, discharge to sewer, or offsite disposal. Some water from the pond  
2 was discharged to the Bay. (SAR193289)

3 In a SDG&E internal correspondence dated September 10, 1974, A.W. Hovland wrote “  
4 The oil-water settling pond known as “Nobles Lake” is presently filled to overflowing condition,  
5 thus the discharge from Silver Gate will eventually find a path to the San Diego Bay.”  
6 (SAR193394)

7 Figure 7 shows the sampling locations of the SDG&E tidelands lease area (ENV  
8 America, 2004).

9 Figure 8 shows a 1952 aerial photo with the sampling locations from the 2004 ENV  
10 America report overlaid on the site. Note the ENV America investigation did not sample the  
11 oil/water separator location, known as “Nobles Lake” or the ditch running along the fenceline to  
12 San Diego Bay. The investigation focused primarily on the pond that aerial photos showed  
13 existed only from 1951 or 1952 to 1952. However, historical aerial photos and documents show  
14 the oil/water separator and ditch existing from at least 1950 to 1974. Therefore, the ENV  
15 America (2004) sampling results would not adequately characterize residual contamination in the  
16 tidelands due to SDG&E documented waste management operations in that area.

17 Figure 9 shows the approximate location of Nobles Lake based on analysis of aerial  
18 photos, the assumed location of Nobles Lake in the ENV Americas 2004 investigation, and  
19 another location for Nobles Lake based on a 1974 SDG&E memo. The ENV Americas 2004  
20 investigation apparently relied on the 1974 SDG&E memo and did not use historical aerial  
21 photos to identify true location of the oil/water separator and ignored the ditch observed in the  
22 aerial photos. The diagram also shows a discharge pipe from Nobles Lake to San Diego Bay.  
23 The investigation did not locate this pipe.

24 A U.S. EPA report published September 25, 1976 titled “PCBs in the United States  
25 Industrial Use and Environmental Distribution” lists the uses of Aroclor 1242, 1248, 1254, and  
26 1260 in hydraulic oils; 1248 and 1254 in vacuum pumps; 1242 in turbines; 1242, 1254, and 1250  
27 in transformer oils; and 1242 and 1254 in capacitors.

28 Data from the Shipyards sediment investigation show Aroclor 1242 and 1248 at higher

1 relative concentrations in the northern end of the Shipyards site closer to the ditch leading from  
2 Nobles Lake, and 1254 and 1260 at higher relative concentrations near the SW4 outfall, which  
3 drained the substation/switchyard. Discharges from Nobles Lake to the northern end of the  
4 Shipyards site near the BAE Pier 1 area, based on the fact record, would have contained oils  
5 from hydraulic systems, pumps, and turbines, which would be expected to be higher in relative  
6 concentration of Aroclor 1242 and 1248. Discharges from the substation/switchyard would have  
7 contained oils from transformers and capacitors, which would be expected to have higher relative  
8 concentration of Aroclor 1254 and 1260. Shipyard sediment Aroclor data show these general  
9 trends.

10 In conclusion, the evidence shows:

- 11 • PCBs were a component in oils within the Power Plant.
- 12 • Oils spilled within the boiler room side of the power plant were  
intentionally pumped to an oil/water separator called “Nobles Lake”
- 13 • Nobles Lake discharged oily waste to the Shipyards Sediment site and San  
Diego Bay, at a minimum, via a ditch observable in numerous aerial  
14 photos, and possibly via a discharge pipe.
- 15 • Aroclor ratios found in Shipyard sediments reflect the different types of  
wastes that were discharged from Nobles Lake and from the  
substation/switchyard.

16 The investigations conducted by SDG&E and their consultants to date have not  
17 adequately characterized the discharges or residual contamination left from these operations and  
18 do not refute the evidence showing the discharge of PCBs to the Site. The Aroclor mix in the  
19 Shipyard sediment site reflect the conceptual site model of the different waste types produced by  
20 SDG&E and their discharge locations and transport pathways.

21 **IV.**

22 **THERE IS SUFFICIENT EVIDENCE TO CONCLUDE THAT THE PORT HAS**  
23 **RESPONSIBILITY FOR DISCHARGES FROM ITS MS4 FACILITIES.**

24 In its comments submitted on May 26, 2011, the Port argues that because it does not own  
25 SW4 and SW9 of the MS4 permits, that its status as co-permittee under the NPDES permit for  
26 MS4 discharges does not make it liable for discharges into or from that part of the MS4 system.<sup>12</sup>  
27

28 <sup>12</sup> The San Diego Unified Port District’s Submission of Comments, Evidence and Legal Argument, p. 13-16.

1 ///

2 The MS4 permit requires all co-permittees to prohibit discharges into its MS4 system.  
3 The agreement between the co-permittees is that each co-permittee will implement programs to  
4 prevent discharges to the MS4 that runs through its jurisdiction. The Port District is a unique  
5 entity in that it is an overlay entity. The land within the Port District is also incorporated in the  
6 City of San Diego. However, the Port District has all rights of inspection and action on the land  
7 within its jurisdictional boundaries – namely, the tidelands. The City may have the easement  
8 that allows the storm drain to pass through the tidelands to drain the upland areas and tideland  
9 areas. But, the Port District is fully responsible, both under the MS4 permit and under its  
10 agreements with the co-permittees, to take all necessary actions to prevent discharges of  
11 pollutants into the MS4 system that runs through lands that are under the Port District’s  
12 jurisdiction. Thus, to the extent there is any determination that discharges of the subject  
13 pollutants from the MS4 system have caused or contributed to a condition or nuisance or  
14 pollution at the Site, the Port should be liable as a Discharger.

15 V.

16 **THE PROPOSED REMEDIAL FOOTPRINT PROPERLY EXCLUDES POLYGON**  
17 **NA22.**

18 The Coast Keeper / Environmental Health Coalition (“EHC”) comments state that the  
19 “Proposed Remedial Footprint excludes eight polygons that, under the DTR’s own methodology,  
20 should have been included” and that “[t]he Proposed Remedial Footprint improperly excludes  
21 NA22” and that “[t]he DTR acknowledges that polygon NA22 is “Likely” impaired and should  
22 be remediated because Contaminants of Concerns in sediments are likely adversely affecting  
23 benthic invertebrates within this polygon.”<sup>13</sup>

24 In reply, NA22 is located next to the piers where full thrust engine testing takes place,  
25 resulting in significant physical disturbance to the underlying sediments. Additionally, tugboat  
26 movements throughout the day and night most days of the year and large ship movements to and  
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28 <sup>13</sup> San Diego Coastkeeper and Environmental Health Coalition Technical Comments, Legal Argument, and Evidence (“EHC Comments”), p. 25-26.

1 from piers in the Mouth of Chollas Creek further disturb sediments. Navy collected bathymetry  
2 data shows sediment elevation contours in this area suggesting of significant “blow-out” of  
3 sediments, likely from propeller activity during engine testing. The physical disturbance may be  
4 the most significant factor affecting the benthic community. In fact, levels of chemicals of  
5 concern throughout the shipyard sediment site do not correlate with observed benthic community  
6 effects. However, at the only locations where significant physical disturbances take place  
7 routinely, benthic community effects are observed.

8 EHC also comments that “The TMDL process cannot provide a vehicle for remediating  
9 contaminated sediment within the NA22 polygon. A new and separate remediation process—  
10 another Cleanup and Abatement Order—would need to be initiated after completion of the Creek  
11 Mouth TMDL to address existing contaminated sediment in NA22, if it is not remediated under  
12 the current Order. When asked in depositions, no Cleanup Team member could point to a  
13 TMDL that had been implemented through dredging. This means that removing NA22 from the  
14 Proposed Remedial Footprint virtually guarantees that it will never be dredged—even though the  
15 DTR agrees that it is “Likely” impaired. Furthermore, TMDLs are given a long time period—  
16 typically twenty years—before they need to be implemented. Adding this delay together with the  
17 time it would take to develop another cleanup and abatement order to address NA22 means that  
18 any possible cleanup of NA22 would not be for decades down the road. It is a waste of time and  
19 resources to put off remediating NA22 when a framework for its remediation has already been  
20 established in this process.”<sup>14</sup>


21 In reply, the upper and lower Newport Bay organochlorine compound TMDL includes  
22 stipulations in its implementation plan for dredging of sediments in addition to special studies,  
23 natural attenuation, and discharge controls. The dischargers, among numerous other  
24 requirements, are to submit a report that “Evaluate[s] feasibility and mechanisms to fund future  
25 dredging operations within San Diego Creek, Upper and Lower Newport Bay.” See Santa Ana  
26 Regional Water Quality Control Board Resolution No. R8-2007-0024 (City Ex. 4). It is not  
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28 <sup>14</sup> EHC Comments, p. 26.

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unheard of to use a TMDL to compel a discharger to remediate contaminated sediments. It is the expectation of the City that the Regional Board will use the Chollas Mouth TMDL to compel dischargers to take necessary actions to mitigate the impairment and another cleanup and abatement order will not be necessary.

Dated: June 23, 2011

GORDON & REES, LLP  
  
By: \_\_\_\_\_  
Brian M. Ledger  
Kristin N. Reyna  
Kara Persson  
Attorneys for City of San Diego

# **EXHIBIT 1**

STAR & CRESCENT BOAT COMPANY

Minutes of Board of Directors Meeting

Directors present: Stephen P. Carlstrom, Judy E. Hall, Janet E. Miles,  
K. N. Beiriger

Directors absent: Raleigh J. Miles

This meeting was held on February 28, 1980, pursuant to notice of meeting and agenda dated February 7, 1980 at 2:00 P.M. in general office at 570 No. Harbor Drive, San Diego, California. Postponed from February 20 to February 28 by consent of the Directors.

1. Labor Management. This area presents a problem to us. Originally we had a negotiating meeting with IBU Union for January 29, 1980. This meeting was cancelled by IBU and a new date of February 4, 1980 was established and later cancelled by us since San Diego Employers Union was unable to attend. On February 4, 1980 a petition was filed by Seafarers International Union with the Labor Relations Board for representation of Star & Crescent employees. Case #21-RC-16267 was established, and March 7, 1980, 8:45 A.M. to 9:45 A.M., was set for an election by employees for IBU vs SIU or no representation. A hearing was also established for February 20, 1980. On February 15, 1980 the NLRB notified Star & Crescent that an unfair labor practice had been filed by IBU, therefore, the hearings were indefinitely postponed until the labor charge could be settled. The IBU claimed unfair labor in that Star & Crescent Management (they claim) refused to bargain with IBU, the recognized bargaining representative, and that we were aiding the Seaman's International Union. A hearing date has not been established
2. Computer review. The Board has seen some demonstrations and reviewed various proposals. Our legal counsel and our public accountants have both recommended that we retain a consultant to determine the best system.

We have proposals from:

- Benchmark Computers (Cado)
- Bosic Decisions (Bosic Four)
- Mesa Services, Inc. (Mesa Two)
- Agency Computers (Qantel)
- IBM (5110 & 5120)
- Compal Computer Systems (Compal)
- MPI Business Systems (Digital Equipment)
- Eyler Business Systems (Mitsubishi)
- Quantum Systems, Assoc. (QSA)

Further, members of the Board have brought in advertisements referring to Computer Office Systems (COS) and Radio Shack (Tandy TRS-80)

Put all of this together with floppy discs vs hard discs, sales pitches, software, etc., and it all comes down to the probability that any single one of these proposals would probably serve our purpose irrespective of competing sales personnel claims of other products.

S&C000309



However, in view of this complexity, plus the economic outlook currently faced by the company in San Diego and Star & Crescent, Nevada, it is advisable that the whole subject of computers be postponed until June or July, at which time a decision will be made on one system, and the vendor so notified.

3. Life Insurance. The program recommended by Connecticut General for increased coverage for Stockholders-Officers has been deferred until a more definitive pattern on summer business is established.

4. Other Business:

a. In connection with current business practice, a policy on the cashing of checks is hereby established:

Star & Crescent employees: 1) Star & Crescent pay checks OK  
2) Personal checks not to exceed \$100 unless approved by S. P. Carlstrom or Judy Hall


Other checks: Maximum of \$25 per check unless paying for tickets at the booth or for charters. Excess not to exceed \$25. Former employees, same as "Other Checks", \$25 maximum.

With business as it is today, there is too much risk on large check cashing. There can be exceptions to the rule of course, but only when prior approval of S. P. Carlstrom or Judy Hall is received.

b. K. N. Beiriger, Treasurer, is relieved of these check approvals because finance reports to him and from an accounting approval viewpoint he should be eliminated to provide adequate control.

c. Star & Crescent Investment: Employee pay checks may be cashed, and personnel employee checks to \$200. If more is required this will be accomplished at the bank when the daily deposit is made.

Meeting adjourned at 3:20 P.M.

  
K. N. Beiriger  
Secretary

February 29, 1980

## **EXHIBIT 2**

STAR & CRESCENT BOAT COMPANY

Board of Directors Meeting

and

Stockholders Meeting

Minutes of meeting held pursuant to agenda notice to Directors (also Stockholders) dated June 6, 1980.

Directors Present: Stephen P. Carlstrom, Judy E. Hall, Janet E. Miles, Raleigh J. Miles, K. N. Beiriger

Stockholders Present: Stephen P. Carlstrom, 500 shares  
Judy E. Hall, 500 shares  
Janet E. Miles, 500 shares  
100% of issued and outstanding shares present

1. Stockholders reviewed fiscal year 1980 results and pursuant to Stockholders Agreement and Stock Redemption Agreement of 21 September 1977 established a per share price of \$985.79 for currently issued stock. (Copy signed and attached for Board Minute Book.)

This action officially terminated Stockholders meeting and Board meeting took place from thence on.

1. The Board reviewed current status of labor/management negotiations with Seamens International Union and San Diego Employers Association. Monetary issues have not as yet been settled.
2. Board reviewed the public accountants' certified statements for fiscal year ending March 31, 1980.
3. Reviewing 1979 vs. 1980 for April and May. For the two months:

	1979	1980
Income	\$235,228	\$275,646
Direct Expense	164,684	163,687
Indirect Expense	94,768	191,064
Operating Loss	24,224	79,105

These months are normally loss months, however largest increase in expenses were:

Bonuses	1,000	71,925
Facility Maintenance (not boats)	3,763	11,706
Salaries & Wages-indirect	17,764	23,834
Salaries & Wages-direct	42,882	39,758
Advertising	7,089	11,346

% of Direct to Income	70.01	59.38
% of Indirect to Income (excludes other income and expense)	40.28	69.31

We obviously have to control some of our indirect expense including automobile, travel, entertainment, telephone, maintenance, etc. The Board reviewed the expense reports of officers for the months of March, April and May. These expenses must be reduced in future months.

- The Board approved officers' salaries, having received verbal approval of O. J. Hall and Star & Crescent Investment Co. via K. N. Beiriger, a director of said company. Salaries at March 31, 1980 were:

Stephen P. Carlstrom	\$47,256
July E. Hall	39,816
Janet E. Miles	21,360
Raleigh J. Miles	28,104
K. N. Beiriger	22,080

- The Board reviewed dividends paid in 1980 and approved in retrospect the issuance of same amounting to \$135,982. Looking to fiscal year 1981, the Board is contemplating approximately \$100,000 and has so approved.

As to bonuses to employees and officers, the Board has tentatively approved for 1981 bonus as follows, subject to review by the company's public accountants.

Stephen P. Carlstrom	\$35,846
Judy E. Hall	39,428
Janet E. Miles	56,954

Year bonuses at Christmas tentatively set for same amounts as paid in 1980 fiscal year for all employees and officers. Cost of Living adjustment for 1981 (payable in February 1981) estimated to be same as 1980 for non-union and office employees.

- Ticket prices: Requests are in for 1981 ticket prices so that catalogs may be produced by tour companies, airlines, etc. The Board discussed a fare as follows:

	Present	Suggested
2 hour adult	5.25	5.50
child	2.65	2.75
1 hour adult	3.50	3.75
child	1.75	1.95

The Board does not like to raise fares, but are faced with new labor rates, fuel increases, social security taxes, etc. As a means of getting around this, the Board discussed a future 1½ hour ride in lieu of 1 and 2 hour trips. This cannot be accomplished until 1982 because of printed schedules. In the meantime, it was decided present fares will be increased and a decision made by informal executive committee meeting within the month of June. S. P. Carlstrom will chair this committee action and results will be contained in the July Board minutes.

There being no further business, the meeting adjourned at 4:20 p.m.



K. N. Beiriger  
Secretary

June 19, 1980

SCHEDULE B

(AGREED VALUE)

Agreed Value of the Company:

\$1394.46 x 1500 sh = 2091690.00

Date 4-18-79

*Stephen P. Carlstrom*  
STEPHEN P. CARLSTROM

*Judy S. Hall*  
JUDY HALL

*Janet Miles*  
JANET MILES

985.79 x 1500 sh = 1478685.00

Date 6-18-80

*Stephen P. Carlstrom*  
STEPHEN P. CARLSTROM

*Judy S. Hall*  
JUDY HALL

*Janet Miles*  
JANET MILES

Based on 10 times earnings.

# **EXHIBIT 3**

**Oakley Josiah Hall Jr.**

HALL, Jr., OAKLEY JOSIAH La Jolla, CA- Oakley Josiah Hall Jr. passed away at Scripps Memorial Hospital on August 5, 2005. He was born on June 22, 1914 in San Diego, CA, where he spent most of his life. He lived in Hollywood, CA for a short time, where he graduated from Curtiss Wright Aviation School. He returned to San Diego where he joined his Father, Capt. O.J. Hall in the Star and Crescent Companies which included the Old Pedestrian Ferry known as the "Nickel Catcher", the original Harbor Excursion Co., San Diego Marine Construction Co. and various oil barges and tug boats with which he became known as the best Salvage Master on the Pacific Coast. The ship building company built many of the tuna services that are still sailing the seas today. In later years he formed the Star and Crescent Investment Co., which included the Florida Mining Co., the Lake Mead Ferry Boat Co. in Las Vegas and various other business ventures in the Las Vegas area. In 1954 he married Irene Houser Carlstrom where they merged his three daughters and her son and had a remarkable, happy and united family. The family enjoyed many happy years at their second home at Lake Tahoe. Mr. Hall will be remembered by all who knew him as a man of high integrity. He is survived by his wife Irene E. Hall of Escondido, CA; son Stephen P. Carlstrom of Lake Ozark, MO; daughters, Janet E. Miles and Judy E. Hall of San Diego, CA; Joan E. Willis of San Angelo, TX; grandchildren, Bill, Adam, Stephen Jr., Scott, Debbie and Steve. Six great-grandchildren and three great-great-grandchildren. There will be a private family Memorial Service and the family asks in lieu of flowers, donations can be made to the Salvation Army, P.O. Box 269, Alexandria, VA 22313 or the Aztec Doberman Rescue Club, 9821 Dunbar Lane, El Cajon, CA 92021 Please sign the guest book at [obituaries.uniontrib.com](http://obituaries.uniontrib.com)

Published in San Diego Union-Tribune on August 11, 2005



## **Exhibit 4**

## ATTACHMENT 2 TO RESOLUTION NO. R8-2007- 0024

*(NOTE: The language identified below is proposed to be inserted into Chapter 5 of the Basin Plan. If the amendment is approved, corresponding changes will be made to the Table of Contents, the List of Tables, page numbers, and page headers in the plan. Due to the two-column page layout of the Basin Plan, the location of tables in relation to text may change during final formatting of the amendment. In order to accommodate other new TMDLs adopted as Basin Plan amendments and to maintain their order by watershed, the table and figure identifiers may be modified in future formatting of the Basin Plan for re-publication purposes. However, no substantive changes to the tables/figures would occur absent a Basin Plan Amendment.)*

### **Chapter 5 - Implementation Plan, Discussion of Newport Bay Watershed (page 5-39 et seq), add the following to 4. Toxics Substances Contamination**

#### **4.b Organochlorine Compounds TMDLs**

Organochlorine compounds, including DDT, PCBs, toxaphene and chlordane, possess unique physical and chemical properties that influence their persistence, fate and transport in the environment. While these characteristics vary among the organochlorine compounds, they all exhibit an ability to resist degradation, partition into sediment, and to accumulate in the tissue of organisms, including invertebrates, fish, birds and mammals. The bioaccumulation of these compounds can adversely affect the health and reproductive success of aquatic organisms and their predators, and can pose a health threat to human consumers.

A TMDL technical report prepared by Regional Board staff [Ref. # 1] describes organochlorine-related problems in Newport Bay and its watershed and delineates the technical basis for the TMDLs that follow.

The waterbody-pollutant combinations for which organochlorine compounds TMDLs were established by the Regional Board are listed in Table NB-OCs-1. These TMDLs differ from those established by USEPA in 2002 in several respects:

First, based on an updated impairment assessment that utilized new data and applied the State Water Board's "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List" (2004) [Ref. # 2], the Regional Board established TMDLs for a list of organochlorine compound-waterbody combinations different from that of USEPA. As shown in Table NB-OCs-2, USEPA also established TMDLs for dieldrin, chlordane, and PCBs in San Diego Creek and for dieldrin in Lower Newport Bay. In contrast, the Regional Board found no impairment as the result of dieldrin in any of these waters, nor was impairment due to chlordane or PCBs found in San Diego Creek and its tributaries.

As described in the TMDL technical report, Regional Board staff also found no impairment due to DDT in San Diego Creek or its tributaries. However, in adopting the 2006 Section 303(d) list (October 25, 2006, Resolution No. 2006-0079), the State Water Board found impairment due to DDT in Peter's Canyon Channel. In response, the Regional Board established a TMDL for DDT in San Diego Creek and its tributaries, including Peters Canyon Channel.

Second, corrections and modifications were made to loading capacities and existing loads identified in USEPA's TMDLs. Finally, an implementation plan is specified (see Section 4.b.3).

While the Regional Board did not establish TMDLs for chlordane and PCBs for San Diego Creek and tributaries, the Board did develop informational TMDLs for these substances in these waters, pursuant to Clean Water Act Section 303(d)(3). These informational TMDLs are shown in Table NB-OCs-3. This action was taken in light of several factors. First, the largest source of organochlorine compounds to Newport Bay is San Diego Creek. Second, the data suggest that the existing loading of chlordane to the Creek is greater than the loading capacity. This suggests that the lack of finding of impairment due to chlordane may be simply a reflection of a lack of data with which to assess impairment. Finally, these informational TMDLs may forward action to address organochlorine compound problems in the watershed. These informational TMDLs have no regulatory effect but may be used as the basis for further investigation of the relative contributions of the various sources of organochlorine compound inputs to San Diego Creek and thence the Bay. In the long-term, this would be expected to help assure proper apportionment of responsibility for implementation of the TMDLs identified in Table NB-OCs-1.

**Table NB-OCs-1. Waterbody-pollutant combinations for which Organochlorine Compound TMDLs are established**

<b>Waterbody</b>	<b>Pollutant</b>
San Diego Creek and tributaries	DDT, Toxaphene
Upper Newport Bay	Chlordane, DDT, PCBs
Lower Newport Bay	Chlordane, DDT, PCBs

**Table NB-OCs-2. Waterbody-pollutant combinations for which Organochlorine Compounds TMDLs were established by USEPA (2002) and Regional Board (2007)**

<i>Waterbody</i>	<i>TMDLs</i>	
	<b>USEPA</b>	<b>Regional Board</b>
San Diego Creek and tributaries*	Chlordane, dieldrin, DDT, PCBs, Toxaphene	DDT, Toxaphene
Upper Newport Bay	Chlordane, DDT, PCBs	Chlordane, DDT, PCBs
Lower Newport Bay	Chlordane, dieldrin, DDT, PCBs	Chlordane, DDT, PCBs

\*TMDLs are established for San Diego Creek and tributaries, even if impairment was only found in particular reaches (e.g., SWRCB found DDT impairment in Peter's Canyon Channel, a primary tributary to San Diego Creek Reach 1, but the TMDL includes all of San Diego Creek and tributaries).

**Table NB-OCs-3. Informational TMDLs**

<i>Waterbody</i>	<i>Informational TMDLs</i>
San Diego Creek and tributaries	Chlordane, PCBs

#### 4.b.1 Numeric Targets used in Organochlorine Compounds TMDLs

Numeric targets identify specific endpoints in sediment, water column or tissue that equate to attainment of water quality standards, which is the purpose of TMDLs. Multiple targets may be appropriate where a single indicator is insufficient to protect all beneficial uses and/or attain all applicable water quality objectives. The range of beneficial uses identified in this Basin Plan (see Chapter 3) for the waters addressed by the organochlorine compounds TMDLs makes clear that the targets must address the protection of aquatic organisms, wildlife (including federally listed threatened and endangered species) and human consumers of recreationally and commercially caught fish.

Sediment, water column and fish tissue targets are identified for these TMDLs, as shown in Table NB-OCs-4. The sediment and water column targets are identical to those selected by USEPA in the development of their organochlorine compounds TMDLs (2002). Fish tissue targets are added for the protection of aquatic life and wildlife.

The targets employed in the development of informational TMDLs for chlordane and PCBs in San Diego Creek and its tributaries are shown in Table NB-OCs-5.

**Table NB-OCs-4. Numeric Sediment, Fish Tissue, and Water Column TMDL Targets**

	Total DDT	Chlordane	Total PCBs	Toxaphene
<b>Sediment Targets<sup>1</sup>; units are µg/kg dry weight</b>				
San Diego Creek and tributaries	6.98			0.1
Upper & Lower Newport Bay	3.89	2.26	21.5	
<b>Fish Tissue Targets for Protection of Human Health<sup>2</sup>; units are µg/kg wet weight</b>				
San Diego Creek and tributaries	100			30
Upper & Lower Newport Bay	100	30	20	
<b>Fish Tissue Targets for Protection of Aquatic Life and Wildlife<sup>3</sup>; units are µg/kg wet weight</b>				
San Diego Creek and tributaries	1000			100
Upper & Lower Newport Bay	50	50	500	
<b>Water Column Targets for Protection of Aquatic Life, Wildlife &amp; Human Health<sup>4</sup> (µg/L)</b>				
San Diego Creek and tributaries				
<i>Acute Criterion (CMC)</i>	1.1			0.73
<i>Chronic Criterion (CCC)</i>	0.001			0.0002
<i>Human Health Criterion</i>	0.00059			0.00075
Upper & Lower Newport Bay				
<i>Acute Criterion (CMC)</i>	0.13	0.09		
<i>Chronic Criterion (CCC)</i>	0.001	0.004	0.03	
<i>Human Health Criterion</i>	0.00059	0.00059	0.00017	

<sup>1</sup>Freshwater and marine sediment targets, except toxaphene, are TELs from Buchman, M.F. 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle WA, Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration, 12 pp. Toxaphene target is from N.Y. Dept. of Environmental Conservation.

<sup>2</sup>Freshwater and marine fish tissue targets for protection of human health are OEHHA SVs.

<sup>3</sup>Freshwater and marine fish tissue targets for protection of aquatic life and wildlife are from Water Quality Criteria 1972. A report of the Committee on Water Quality Criteria, Environmental Studies Board, National Academy of Sciences, National Academy of Engineering. Washington, D.C., 1972.

<sup>4</sup>Freshwater and marine targets are from California Toxics Rule (2000).

**Table NB-OCs-5. Numeric Sediment, Fish Tissue, and Water Column Targets used in Informational TMDLs**

	Chlordane	Total PCBs
<b>Sediment Targets<sup>1</sup>; units are µg/kg dry weight</b>		
San Diego Creek and tributaries	4.5	34.1
<b>Fish Tissue Targets for Protection of Human Health<sup>2</sup>; units are µg/kg wet weight</b>		
San Diego Creek and tributaries	30	20
<b>Fish Tissue Targets for Protection of Aquatic Life and Wildlife<sup>3</sup>; units are µg/kg wet weight</b>		
San Diego Creek and tributaries	100	500
<b>Water Column Targets for Protection of Aquatic Life, Wildlife &amp; Human Health<sup>4</sup> (µg/L)</b>		
San Diego Creek and tributaries		
<i>Acute Criterion (CMC)</i>	24	
<i>Chronic Criterion (CCC)</i>	0.0043	0.014
<i>Human Health Criterion</i>	0.00059	0.00017

<sup>1</sup>Freshwater sediment targets are TELs from Buchman, M.F. 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle WA, Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration, 12 pp.

<sup>2</sup>Freshwater fish tissue targets for protection of human health are OEHHA SVs.

<sup>3</sup>Freshwater fish tissue targets for protection of aquatic life and wildlife are from Water Quality Criteria 1972. A report of the Committee on Water Quality Criteria, Environmental Studies Board, National Academy of Sciences, National Academy of Engineering. Washington, D.C., 1972.

<sup>4</sup>Freshwater targets are from California Toxics Rule (2000).

The linkage between adverse effects in sensitive wildlife species and concentrations of the organochlorine pollutants in sediments, prey organisms and water is not well understood at the present time, although work is underway to better understand ecological risk in Newport Bay. In addition, the State is in the process of developing sediment quality objectives that should provide guidance for assessing adverse effects due to pollutant bioaccumulation. Reducing contaminant loads in the sediment will result in progress toward reducing risk to aquatic life and wildlife. During implementation of these TMDLs, additional and/or modified wildlife or other targets will be identified as risk assessment information becomes available. These TMDLs will be revisited (see 4.b.3) and revised as appropriate.

#### **4.b.2. Organochlorine Compounds TMDLs, Wasteload Allocations, Load Allocations and Compliance Dates**

The organochlorine compounds TMDLs for San Diego Creek and its tributaries, Upper Newport Bay and Lower Newport Bay are shown in Tables NB-OCs-6 and NB-OCs-7. The TMDLs are expressed on a daily basis (average grams per day) in Table NB-OCs-6, and on an annual basis (grams per year) in Table NB-OCs-7. Expression of the TMDLs on a daily basis is intended to comply with a relevant court decision. However, because of the strong seasonality associated with the loading of organochlorine compounds during storm events, it is appropriate for implementation to occur based on average annual loadings. The TMDLs are to be achieved as soon as possible but no later than December 31, 2015.

**Table NB-OCs-6. TMDLs for San Diego Creek, Upper and Lower Newport Bay (expressed on a "daily" basis to be consistent with the D.C. Circuit Court of Appeals decision in *Friends of the Earth, Inc. v. EPA, et al.*, No. 05-5015 [D.C. Cir.2006])**

<b>Water Body</b>	<b>Pollutant</b>	<b>TMDL (average grams per day)<sup>a</sup></b>
San Diego Creek and Tributaries	Total DDT	1.08
	Toxaphene	0.02
Upper Newport Bay	Total DDT	0.44
	Chlordane	0.25
	Total PCBs	0.25
Lower Newport Bay	Total DDT	0.16
	Chlordane	0.09
	Total PCBs	0.66

<sup>a</sup> Compliance to be achieved as soon as possible but no later than December 31, 2015.

**Table NB-OCs-7. TMDLs for San Diego Creek, Upper and Lower Newport Bay (expressed on annual basis for implementation purposes)**

<b>Water Body</b>	<b>Pollutant</b>	<b>TMDL (grams per year)<sup>a</sup></b>
San Diego Creek and Tributaries	Total DDT	396
	Toxaphene	6
Upper Newport Bay	Total DDT	160
	Chlordane	93
	Total PCBs	92
Lower Newport Bay	Total DDT	59
	Chlordane	34
	Total PCBs	241

<sup>a</sup> Compliance to be achieved as soon as possible but no later than December 31, 2015.

Informational TMDLs for San Diego Creek and its tributaries for chlordane and total PCBs are shown in Table NB-OCs-8. Again, these informational TMDLs are expressed on average daily and annual bases.

**Table NB-OCs-8. Informational TMDLs for San Diego Creek and Tributaries (expressed on average daily and annual bases)**

<b>Water Body</b>	<b>Pollutant</b>	<b>TMDL (average grams per day)</b>
San Diego Creek and Tributaries	Chlordane	0.70
	Total PCBs	0.34
		<b>TMDL (grams per year)</b>
San Diego Creek and Tributaries	Chlordane	255
	Total PCBs	125



Wasteload and load allocations to achieve the TMDLs specified in Tables NB-OCs-6 and NB-OCs-7 are shown in Tables NB-OCs-9 and NB-OCs-10, respectively. Like the TMDLs, the allocations are expressed in terms of both average daily and annual loads. An explicit margin of safety (MOS) of ten percent was applied in calculating the allocations. Consistent with the TMDL compliance schedule, these allocations are to be achieved as soon as possible but no later than December 31, 2015.

Wasteload and load allocations necessary to meet the informational TMDLs shown in Table NB-OCs-8 are identified in Tables NB-OCs-11 (expressed as average daily loads) and NB-OCs-12 (expressed as annual loads). These allocations are identified only for informational purposes.

#### **4.b.3. Implementation of Organochlorine Compounds TMDLs**

These TMDLs are to be implemented within an adaptive management framework, with compliance monitoring, special studies, and stakeholder interaction guiding the process over time. Information obtained from compliance monitoring will measure progress towards achievement of WLAs and LAs, potentially leading to changes to TMDL allocations; ongoing investigations and recommended special studies, if implemented, may provide information that leads to revisions of the TMDLs, adjustments to the implementation schedule, and/or improved implementation strategies. Thus, implementation of the TMDLs is expected to be an ongoing and dynamic process.

The implementation plan identified in this section reflects the adaptive management, phased approach to the organochlorine compound TMDLs adopted by the Regional Board. The Board found a phased approach, with compliance schedules, appropriate in light of the following considerations. First, it was recognized that additional monitoring and special studies were either already underway or would be needed to address data limitations and significant uncertainty associated with the TMDL calculations, and that changes to the TMDLs might be appropriate based on the results of those investigations. Second, it was also understood that these data limitations and uncertainties pertained to the impairment assessment itself and the determination of the specific organochlorine compounds for which TMDLs are required. Third, the natural attenuation of these compounds over time is expected to affect significantly the selection, development and implementation of TMDLs. As described in the TMDL technical report [Ref.1], use of the organochlorine compounds addressed by these TMDLs has been banned for many years and trend analyses indicate declining concentrations of these substances in fish tissue over time. Natural attenuation should eventually reduce organochlorine pollutant levels to concentrations that pose no threat to beneficial uses in San Diego Creek or Newport Bay. While natural degradation of these compounds is likely the principal cause of the observed decline in fish tissue concentrations, the implementation of erosion and sediment controls and other Best Management Practices to address compliance with the sediment and nutrient TMDLs for Newport Bay and its watershed (see

**Table NB-OCs-9. TMDLs and Allocations for San Diego Creek, Upper and Lower Newport Bay (expressed on a "daily" basis to be consistent with the recent D.C. Circuit Court of Appeals decision in Friends of the Earth, Inc. v. EPA, et al., No. 05-5015 [D.C. Cir.2006]).<sup>a,b</sup>**

	Type	Total DDT	Chlordane	Total PCBs	Toxaphene
		(average grams/day)			
<b>San Diego Creek</b>					
<b>WLA</b>	Urban Runoff – County MS4 (36%)	0.35			0.005
	Construction (28%)	0.27			0.004
	Commercial Nurseries (4%)	0.04			0.001
	Caltrans MS4 (11%)	0.11			0.002
	<b>Subtotal – WLA (79%)</b>	<b>0.77</b>			<b>0.01</b>
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	0.05			0.001
	Open Space (9%)	0.09			0.001
	Streams & Channels (2%)	0.02			0.0003
	Undefined (5%)	0.05			0.001
	<b>Subtotal – LA (21%)</b>	<b>0.21</b>			<b>0.003</b>
<b>MOS (10% of total TMDL)</b>		<b>0.11</b>			<b>0.002</b>
<b>Total TMDL</b>		<b>1.08</b>			<b>0.02</b>
<b>Upper Newport Bay</b>					
<b>WLA</b>	Urban Runoff - County MS4 (36%)	0.14	0.08	0.08	
	Construction (28%)	0.11	0.06	0.06	
	Commercial Nurseries (4%)	0.02	0.01	0.01	
	Caltrans MS4 (11%)	0.04	0.03	0.02	
	<b>Subtotal – WLA (79%)</b>	<b>0.31</b>	<b>0.18</b>	<b>0.18</b>	
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	0.02	0.01	0.01	
	Open Space (9%)	0.04	0.02	0.02	
	Streams & Channels (2%)	0.01	0.005	0.005	
	Undefined (5%)	0.02	0.01	0.01	
	<b>Subtotal – LA (21%)</b>	<b>0.08</b>	<b>0.05</b>	<b>0.05</b>	
<b>MOS (10% of Total TMDL)</b>		<b>0.04</b>	<b>0.03</b>	<b>0.03</b>	
<b>Total TMDL</b>		<b>0.44</b>	<b>0.25</b>	<b>0.25</b>	
<b>Lower Newport Bay</b>					
<b>WLA</b>	Urban Runoff – County MS4 (36%)	0.05	0.03	0.21	
	Construction (28%)	0.04	0.02	0.17	
	Commercial Nurseries (4%)	0.01	0.003	0.02	
	Caltrans MS4 (11%)	0.02	0.01	0.07	
	<b>Subtotal – WLA (79%)</b>	<b>0.11</b>	<b>0.07</b>	<b>0.47</b>	
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	0.01	0.004	0.03	
	Open Space (9%)	0.01	0.01	0.05	
	Streams & Channels (2%)	0.003	0.002	0.01	
	Undefined (5%)	0.01	0.004	0.03	
	<b>Subtotal – LA (21%)</b>	<b>0.03</b>	<b>0.02</b>	<b>0.12</b>	
<b>MOS (10% of Total TMDL)</b>		<b>0.02</b>	<b>0.01</b>	<b>0.07</b>	
<b>Total TMDL</b>		<b>0.16</b>	<b>0.09</b>	<b>0.66</b>	

<sup>a</sup> Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the Total TMDL. Percent WLA and Percent LA add to 100%.

<sup>b</sup> Compliance to be achieved as soon as possible but no later than December 31, 2015.

**Table NB-OCs-10. TMDLs and Allocations for San Diego Creek, Upper and Lower Newport Bay (expressed on an "annual" basis for implementation purposes).<sup>a, b</sup>**

		Total DDT	Chlordane	Total PCBs	Toxaphene
Type		(grams per year)			
<b>San Diego Creek</b>					
<b>WLA</b>	Urban Runoff – County MS4 (36%)	128.3			1.9
	Construction (28%)	99.8			1.5
	Commercial Nurseries (4%)	14.3			0.2
	Caltrans MS4 (11%)	39.2			0.6
	<b>Subtotal – WLA (79%)</b>	<b>281.6</b>			<b>4.3</b>
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	17.8			0.3
	Open Space (9%)	32.1			0.5
	Streams & Channels (2%)	7.1			0.1
	Undefined (5%)	17.8			0.3
	<b>Subtotal – LA (21%)</b>	<b>74.8</b>			<b>1.1</b>
<b>MOS (10% of Total TMDL)</b>		<b>40</b>			<b>0.6</b>
<b>Total TMDL</b>		<b>395</b>			<b>6</b>
<b>Upper Newport Bay</b>					
<b>WLA</b>	Urban Runoff – County MS4 (36%)	51.8	50.1	29.8	
	Construction (28%)	40.3	23.9	23.2	
	Commercial Nurseries (4%)	5.8	3.3	3.3	
	Caltrans MS4 (11%)	15.5	9.2	9.1	
	<b>Subtotal – WLA (79%)</b>	<b>113.4</b>	<b>86.5</b>	<b>65.4</b>	
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	7.2	8	7	
	Open Space (9%)	13.0	7.6	7.5	
	Streams & Channels (2%)	2.9	1.7	1.7	
	Undefined (5%)	7.2	4.2	4.2	
	<b>Subtotal – LA (21%)</b>	<b>30.2</b>	<b>21.4</b>	<b>20.3</b>	
<b>MOS (10% of Total TMDL)</b>		<b>16</b>	<b>9</b>	<b>9</b>	
<b>Total TMDL</b>		<b>160</b>	<b>93</b>	<b>92</b>	
<b>Lower Newport Bay</b>					
<b>WLA</b>	Urban Runoff – County MS4 (36%)	19.1	11.0	78.1	
	Construction (28%)	14.9	8.6	60.7	
	Commercial Nurseries (4%)	2.1	1.2	8.7	
	Caltrans MS4 (11%)	5.8	3.4	23.9	
	<b>Subtotal – WLA (79%)</b>	<b>41.9</b>	<b>24.2</b>	<b>171.4</b>	
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	2.7	1.5	10.8	
	Open Space (9%)	4.8	2.8	19.5	
	Streams & Channels (2%)	1.1	0.6	4.3	
	Undefined (5%)	2.7	1.5	10.8	
	<b>Subtotal – LA (21%)</b>	<b>11.2</b>	<b>6.4</b>	<b>45.5</b>	
<b>MOS (10% of Total TMDL)</b>		<b>5.9</b>	<b>3.4</b>	<b>24</b>	
<b>Total TMDL</b>		<b>59</b>	<b>34</b>	<b>241</b>	

<sup>a</sup> Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the total TMDL. Percent WLA and Percent LA add to 100%.

<sup>b</sup> Compliance to be achieved as soon as possible but no later than December 31, 2015.

**Table NB-OCs-11. Informational TMDLs and Allocations for San Diego Creek (expressed on a “daily” basis)<sup>a</sup>**

Category	Type	Chlordane	Total PCBs
		(average grams per day)	
<b>San Diego Creek</b>			
<b>WLA</b>	Urban Runoff – County MS4 (36%)	0.23	0.11
	Construction (28%)	0.18	0.09
	Commercial Nurseries (4%)	0.03	0.01
	Caltrans MS4 (11%)	0.07	0.03
	<b>Subtotal – WLA (79%)</b>	<b>0.50</b>	<b>0.24</b>
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	0.03	0.02
	Open Space (9%)	0.06	0.03
	Streams & Channels (2%)	0.01	0.01
	Undefined (5%)	0.03	0.02
	<b>Subtotal – LA (21%)</b>	<b>0.13</b>	<b>0.08</b>
<b>MOS (10% of total TMDL)</b>		<b>0.07</b>	<b>0.03</b>
<b>Total TMDL</b>		<b>0.70</b>	<b>0.34</b>

<sup>a</sup> Percentages for WLA (79%) and LA (21%) are applied to the TMDL after subtracting the 10% MOS from the Total TMDL. Percent WLA and Percent LA add to 100%.

**Table NB-OCs-12. Informational TMDLs and Allocations for San Diego Creek (expressed on an "annual" basis)<sup>a</sup>**

Category	Type	Chlordane	Total PCBs
		(grams per year)	
<b>San Diego Creek</b>			
<b>WLA</b>	Urban Runoff – County MS4 (36%)	82.6	40.5
	Construction (28%)	64.3	31.5
	Commercial Nurseries (4%)	9.2	4.5
	Caltrans MS4 (11%)	25.2	12.4
	<b>Subtotal – WLA (79%)</b>	<b>181.3</b>	<b>88.9</b>
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	11.5	5.6
	Open Space (9%)	20.7	10.1
	Streams & Channels (2%)	4.6	2.3
	Undefined (5%)	11.5	5.6
	<b>Subtotal – LA (21%)</b>	<b>48.2</b>	<b>23.6</b>
<b>MOS (10% of total TMDL)</b>		<b>69</b>	<b>13</b>
<b>Total TMDL</b>		<b>255</b>	<b>125</b>

<sup>a</sup> Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the MOS from the total TMDL. Percent WLA and Percent LA add to 100%.

discussions of these TMDLs elsewhere in this Basin Plan) is a probable factor. In any case, the observed trends suggest that as monitoring continues in the watershed and pollutant levels decline, some or all of the organochlorine compounds may warrant delisting from the Clean Water Act Section 303(d) list of impaired waters. Again, these TMDLs would need to be revisited accordingly.

This implementation plan also reflects recommendations by regulated stakeholders in the Newport Bay watershed to convene a Working Group to develop and implement a comprehensive Work Plan to: address, as an early action item, the technical uncertainties in these TMDLs and make recommendations for revisions, as appropriate; identify and prioritize tasks necessary to implement the TMDLs; integrate TMDL implementation tasks with those already being conducted in response to other programs (e.g., permits, other TMDLs); and, investigate other pollutants of concern in the watershed.

Table NB-OCs-13 lists the tasks and schedules needed to implement the organochlorine TMDLs. This implementation plan is aimed at identifying actions to accelerate the decline in organochlorine compound concentrations in the watershed, and to augment their natural attenuation. The implementation plan is focused to a large extent on the monitoring and, where necessary, enhanced implementation of Best Management Practices (BMPs) to reduce the erosion and transport to surface waters of fine sediment to which the organochlorine compounds tend to adhere. Many of these BMPs are already in place as the result of existing permits issued by the Regional Board or State Water Resources Control Board for stormwater and construction activities, and/or in response to established TMDLs. The intent is to

assure that source control activities are implemented to reduce any active sources of the organochlorine compounds, and in other areas where such actions will be most effective in meeting the TMDL goals. Monitoring and special study requirements are included to provide for TMDL compliance assessment and refinement.

In response to the recommendation by watershed stakeholders, this implementation plan provides an opportunity for dischargers to participate in the development and implementation of a comprehensive Work Plan. The implementation tasks identified in Table NB-OCs-13 (except Tasks 1 and 4; see discussion of Task 7, below) will be considered in the development of the Work Plan and incorporated, as appropriate. Implementation of the Work Plan, which will be approved by the Regional Board at a public hearing, will obviate the need for individual actions on the tasks in Table NB-OCs-13 by members of the Working Group. Completion of the Work Plan will result, in part, in recommendations for revisions to these TMDLs based on review by an Independent Advisory Panel and the results of ongoing or requisite monitoring and investigations, and in the development of a comprehensive plan for BMPs and other actions needed to assure compliance with the TMDLs, wasteload allocations and load allocations as soon as possible after completion of execution of the Work Plan but no later than December 31, 2015<sup>1</sup>. Dischargers who elect not to participate in the Work Plan approach will be required to implement the tasks shown in Table NB-OCs-13, as appropriate.

Each of the tasks identified in Table NB-OCs-13 is described below.

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<sup>1</sup> This compliance schedule and/or the organochlorine compounds TMDLs may be modified, through the Basin Planning process, in response to information provided by implementation of the Work Plan tasks and/or other investigations.

**Table NB-OCs-13. Organochlorine Compounds TMDLs Implementation Tasks and Schedule**

<b>Task</b>	<b>Description</b>	<b>Compliance Date – As Soon As Possible But No Later Than <sup>b</sup></b>
<b>PHASE I IMPLEMENTATION</b>		
1	Revise existing WDRs and NPDES permits: <i>Commercial Nursery WDRs, MS4 Permit, Other NPDES Permits</i>	Upon OAL approval of BPA and permit renewal
2 <sup>a</sup>	a. Develop proposed agricultural BMP and monitoring program to assess and control OCs discharges. b. Implement program	a. (3 months after OAL approval of BPA) b. Upon Regional Board approval
3 <sup>a</sup>	a. Identify responsible parties for open space areas b. Develop proposed monitoring program to assess OCs inputs from open space areas c. Implement proposed monitoring program d. Develop plan to implement effective erosion and sediment control BMPs for management of fine particulates (if found necessary based on monitoring results) e. Implement BMP plan	a. (1 month after OAL approval of BPA) b. 2 months after notification of responsible parties c. Upon Regional Board approval d. Within 6 months of notification of need to develop plan e. Upon Regional Board approval
4 <sup>a</sup>	Implement effective sediment and erosion control BMPs for management of fine particulates on construction sites: Regional Board: a. Develop SWPPP Improvement Program MS4 permittees: b. Revise planning processes as necessary to assure proper communication of SWPPP requirements c. Evaluate/implement BMPs effective in reducing/eliminating organochlorine discharges: i. Submit proposed plan and schedule for BMP studies and implement plan ii. Submit studies report; including plan and schedule to implement BMPs/include in Guidance Manual iii. Implement BMPs/include in Guidance Manual	a. (Upon OAL approval of BPA) b. Within 3 months of appropriate revision of the MS4 permit c. i. Submit plan within 3 months of 13267 letter issuance/MS4 permit revision and implement upon Executive Officer approval; ii. Within 6 months of completion of studies plan; iii. Upon Executive Officer approval
5 <sup>a</sup>	Evaluate sources of OCs; develop and implement BMPs accordingly: a. Submit proposed plan and schedule for source	a. Submit plan within 3 months of 13267 letter issuance/appropriate revision of the MS4 permit

	area investigations b. Implement investigation plan c. Submit report of investigation findings and plan/schedule for implementation of BMPs d. Implement BMP plan	b. Upon Executive Officer approval c. Within 6 months of completion of investigation plan d. Upon Executive Officer approval
6 <sup>a</sup>	Evaluate feasibility and mechanisms to fund future dredging operations within San Diego Creek, Upper and Lower Newport Bay	Submit feasibility/funding report within <i>(3 years after OAL approval of BPA)</i>
7	Develop comprehensive Work Plan to meet TMDL implementation requirements, consistent with an adaptive management approach a. Convene Working Group b. Submit proposed Work Plan c. Implement Work Plan d. Complete execution of Work Plan	a. <i>(one month of OAL approval of BPA)</i> b. <i>(3 months after OAL approval of BPA)</i> c. Upon Regional Board approval d. Within 5 years of Work Plan approval
8 <sup>a</sup>	Revise regional monitoring program	<i>(3 months after OAL approval of BPA); Annual Reports due November 15</i>
9	Conduct special studies	As funding allows, and in order of priority identified in comprehensive Work Plan (Task 7), if applicable
<b>PHASE II IMPLEMENTATION</b>		
10	Review TMDLs, including numeric targets, WLAs and LAs; delist or revise TMDLs pursuant to established Sediment Quality Objectives, new data, and results of special studies	No later than <i>(5 years from OAL approval of BPA)</i>

a. The tasks and schedules identified in the Regional Board approved Work Plan developed by the Working Group shall govern implementation activities by members of the Working Group.

b. Final compliance with the TMDLs to be achieved no later than December 31, 2015.



**Table NB-OCs-14. Existing NPDES Permits and WDRs Regulating Discharges in the Newport Bay Watershed**

No.	Permit Title	Order No.	NPDES No.
1	Waste Discharge Requirements for the United States Department of the Navy, Former Marine Corps Air Station Tustin, Discharge to Peters Canyon Wash in the San Diego Creek/Newport Bay Watershed	R8-2006-0017	CA8000404
2	Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the Incorporated Cities of Orange County within the Santa Ana Region - Areawide Urban Storm Water Runoff - Orange County (MS4 permit)	R8-2002-0010	CAS618030
3	National Pollutant Discharge Elimination System (NPDES) Permit Statewide Storm Water Permit and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation (Caltrans)	99-06-DWQ	CAS000003
4	General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (de minimus) Threat to Water Quality	R8-2003-0061 as amended by R8-2005-0041 and R8-2006-0004	CAG998001
5	General Waste Discharge Requirements for Short-term Groundwater-Related Discharges and De Minimus Wastewater Discharges to Surface Waters Within the San Diego Creek/Newport Bay Watershed	R8-2004-0021	CAG998002
6	General Groundwater Cleanup Permit for Discharges to Surface Waters of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Petroleum Hydrocarbons, Solvents and/or Petroleum Hydrocarbons mixed with Lead and/or Solvents	R8-2002-0007, as amended by R8-2003-0085 and R8-2005-0110	CAG918001
7	Waste Discharge Requirements for City of Tustin's 17th Street Desalter	R8-2002-0005	CA8000305
8	Waste Discharge Requirements for City of Irvine, Groundwater Dewatering Facilities, Irvine, Orange County,	R8-2005-0079	CA8000406
9	Waste Discharge Requirements for Bordiers Nursery, Inc.	R8-2003-0028	
10	Waste Discharge Requirements Hines Nurseries, Inc.	R8-2004-0060	
11	Waste Discharge Requirements for El Modeno Gardens, Inc., Orange County	R8-2005-0009	
12	Waste Discharge Requirements for Nakase Bros. Wholesale Nursery, Orange County	R8-2005-0006	

## **Phase I Implementation**

### **Task 1: WDRs and NPDES Permits**

The Regional Board shall review and revise, as necessary, existing NPDES permits and/or WDRs to incorporate the appropriate TMDL WLAs, compliance schedules, and monitoring program requirements. These permits are identified in Table NB-OCs-14. The appropriate TMDL WLAs, compliance schedules and monitoring program requirements shall be included in new NPDES permits/WDRs. The NPDES permits/WDRs shall specify TMDL-related provisions that apply provided that: (1) the dischargers are and remain members of the Working Group (see Task 7); and (2) the approved Work Plan developed by the Working Group is implemented in a timely and effective manner. The NPDES permit/WDRs shall also include TMDL-related provisions that apply if the discharger(s) do not participate or discontinue participation in the Working Group and/or if the approved Work Plan is not implemented effectively or in a timely manner.

Compliance with the TMDLs and wasteload allocations is to be achieved as soon as possible, but no later than December 31, 2015. The way that this deadline applies to a particular discharger differs depending on whether the discharger is participating in the Working Group:

1. Working Group Participants. Provisions in NPDES permits/WDRs issued during implementation of the Work Plan will specify the following for Working Group members:

(a) Interim effluent limitations. Participation in the Working Group and timely and effective implementation of the Regional Board-approved Work Plan will constitute interim, performance-based effluent limitations to implement the wasteload allocations. Adhering to these interim effluent limitations satisfies the requirement, during the Work Plan implementation period, to achieve compliance with the TMDLs and wasteload allocations "as soon as possible."

(b) Final effluent limitations. Final effluent limitations based on the wasteload allocations will also be specified, with a schedule requiring compliance as soon as possible but no later than December 31, 2015.<sup>2</sup> Compliance with the interim, performance-based limitations will fulfill the "as soon as possible" requirement. The NPDES permits/WDRs will specify further that the status of compliance with the final effluent limitations based on the wasteload allocations will be reviewed on an annual basis. Compliance with these limitations will be required prior to the completion of the Work Plan tasks, in accordance with a schedule approved by the Regional Board's Executive Officer, if it is demonstrated to the satisfaction of the Executive Officer that such earlier compliance is reasonably feasible.

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<sup>2</sup> It is recognized that this schedule may exceed the five year terms of NPDES permits. This schedule will be reflected in subsequent renewals of these NPDES permits.

Following the completion of the Work Plan tasks, NPDES permits/WDRs will require dischargers to comply with wasteload allocations in the shortest practicable time, but in no event later than December 31, 2015.

2. Non-Working Group Dischargers. For dischargers not participating in the Working Group, NPDES permit/WDR provisions will require compliance with the wasteload allocations as soon as possible after adoption of NPDES permits/WDRs that implement the TMDLs, but no later than December 31, 2015. In this case, the determination of what constitutes "as soon as possible" will be at the discretion of the Regional Board's Executive Officer.

Completion of the Work Plan and/or other investigations conducted by the Regional Board or others may result in modification of the TMDLs, wasteload allocations and the compliance schedule through the Basin Planning process. Subsequent issuance/revision of NPDES permit/WDRs will implement any such changes.

Ultimate compliance with permit limitations based on wasteload allocations is expected to be based upon iterative implementation of effective BMPs to manage the discharge of fine sediments containing organochlorine compounds, along with monitoring to measure BMP effectiveness.

Permit revisions shall be accomplished as soon as possible upon approval of these TMDLs. Given Regional Board resource constraints and the need to consider other program priorities, permit revisions are likely to be tied to renewal schedules.

For commercial nurseries covered under existing WDRs, revisions of these WDRs shall address the following identified needs:

- (1) Evaluation of sites to determine/verify potential storm water and nonstorm water discharge locations;
- (2) Evaluation of current monitoring programs and methods of sampling and analysis for consistency with other monitoring efforts in the watershed;
- (3) In cooperation with U .C. Cooperative Extension, evaluation of BMPs for adequacy and implementation of the most effective BMPs to reduce/eliminate the discharge of potentially-contaminated fine sediments in both storm water and non-storm water discharges;
- (4) Monitoring to better quantify nursery runoff as a potential source of organochlorine compounds and to assure that load reductions are achieved; and
- (5) Based on the results of the preceding tasks, development of a workplan to be submitted within one month of the effective date of these TMDLs that identifies: (a) the BMPs implemented to date and their effectiveness in reducing fine sediment and organochlorine compound discharges; (b) the adequacy and consistency of monitoring efforts, and proposed improvements; (c) a plan and schedule for implementation of revised BMPs and monitoring protocols, where appropriate. It is recognized that

most nursery operations are likely to be of very limited duration due to the expiration of land leases. The workplan shall identify recommendations for BMP and monitoring improvements that are effective, reasonable and practicable, taking this consideration into account. This workplan shall be implemented upon approval by the Regional Board Executive Officer.

Revisions to the Municipal Separate Storm Sewer System (MS4) permit (R8-2002-0010, NPDES No. CAS618030), including the monitoring program shall address the monitoring and BMP-related tasks identified below, as appropriate. The Regional Board will coordinate also with the State Water Resources Control Board regarding revision of the Caltrans permit to address these monitoring and BMP-related tasks. These include: oversight and implementation of construction BMPs (Task 4); organochlorine compound source evaluations (Task 5); assessment of dredging feasibility and identification of a funding mechanism (Task 6); and, revision of the regional monitoring program (Task 8).

NPDES permits that regulate discharges of ground water to San Diego Creek or its tributaries shall be reviewed and revised as necessary to require annual (at a minimum) monitoring, using the most sensitive analytical techniques practicable, to analyze for organochlorine compounds in the discharges. If organochlorine compounds are found to be present, the dischargers shall be required to evaluate whether and to what extent the discharges would cause or contribute to an exceedance of wasteload allocations and to implement appropriate measures to reduce or eliminate organochlorine compounds in the discharges. New NPDES permits issued for these types of discharges shall incorporate the same requirements.

These dischargers (nurseries, MS4 permittees, Caltrans, ground water dischargers) may address the specific requirements identified above through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7).

### **Task 2: Develop and Implement an Agricultural BMP and Monitoring Program**

Apart from certain nurseries, agricultural operations in the watershed are not currently regulated pursuant to waste discharge requirements. The SWRCB's "Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program" (Nonpoint Source Policy) (2004) requires that all nonpoint source dischargers be regulated under WDRs, waivers of WDRs, Basin Plan prohibitions, or some combination of these three administrative tools. Board staff is developing recommendations for an appropriate regulatory approach to address agricultural discharges. It is expected that the Regional Board will be asked to consider these recommendations and to approve a regulatory approach in late 2007. Appropriate load allocations to implement these TMDLs will be included in WDRs or a waiver of

WDRs, if and when issued by the Regional Board to address discharges from agricultural operations.

In the interim, agricultural operators shall identify and implement a monitoring program to assess OCs discharges from their facilities, and identify and implement a BMP program designed to reduce or eliminate those discharges. The proposed monitoring and BMP program shall be submitted as soon as possible but no later than *(3 months from OAL approval of this Basin Plan Amendment (BPA))*. These monitoring and BMP programs will be components of the waste discharge requirements or conditional waiver of waste discharge requirements that Board staff will recommend to implement the Nonpoint Source Policy. Load allocations identified in these TMDLs will also be specified in the WDRs/waiver, with a schedule of compliance.

It is recognized that most agricultural operations are expected to be of very limited duration due to the expiration of land leases. The monitoring and BMP programs proposed by the agricultural operators should include recommendations that are effective, reasonable and practicable, taking this consideration into account. The BMP and monitoring programs shall be implemented upon approval by the Regional Board. The BMP and monitoring programs may be implemented individually or by a group or groups of agricultural operators.

In addition, responsible parties may address these BMP/monitoring program requirements through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7). WDRs or conditional waivers of WDRs issued to agricultural operators pursuant to the Nonpoint Source Policy shall specify that for those operators who participate in the development and implementation of a Regional Board approved Work Plan, compliance with the TMDLs and load allocations is to be achieved as soon as possible, but no later than December 31, 2015. The way that this deadline applies to a particular agricultural operator differs depending on whether the operator is participating in the Working Group:

1. Working Group Participants. Provisions in WDRs or conditional waivers of WDRs issued during implementation of the Work Plan will specify the following for Working Group members:

(a) Interim limitations: Participation in the Working Group and timely and effective implementation of the Regional Board-approved Work Plan will constitute interim, performance-based limitations to implement the load allocations. Adherence to these interim limitations satisfies the requirement, during the Work Plan implementation period, to achieve compliance with the TMDLs and load allocations "as soon as possible."

(b) Final limitations: Final limitations based on the load allocations will also be specified in the WDRs/waivers, with a schedule requiring compliance as soon as

possible but no later than December 31, 2015. Compliance with the interim, performance-based limitations will fulfill the "as soon as possible" requirement. The WDRs/waivers will specify further that the status of compliance with the final limitations based on the load allocations will be reviewed on an annual basis. Compliance with these limitations will be required prior to the completion of the Work Plan tasks, in accordance with a schedule approved by the Regional Board's Executive Officer, if it is demonstrated to the satisfaction of the Executive Officer that such earlier compliance is reasonably feasible.

Following the completion of the Work Plan tasks, WDRs/waivers will require agricultural operators to comply with load allocations in the shortest practicable time, but in no event later than December 31, 2015.

2. Non-Working Group Dischargers. For agricultural operators not participating in the Working Group, provisions in WDR/waivers of WDRs will require compliance with the load allocations as soon as possible after adoption of WDRs/waivers of WDRs that implement the TMDLs, but no later than December 31, 2015. In this case, the determination of what constitutes "as soon as possible" will be at the discretion of the Regional Board's Executive Officer.

Completion of the Work Plan and/or other investigations conducted by the Regional Board or others may result in modification of the TMDLs, load allocations and the compliance schedule through the Basin Planning process. Subsequent issuance/revision of WDRs/conditional waivers of WDRs will implement any such changes.

**Task 3: Identify Parties Responsible for Open Space Areas; Develop and Implement an OCs Monitoring Program to Assess Open Space Discharges; Develop and Implement an OCs BMP Program, if Necessary**

Nonpoint source discharges from open space are also subject to State regulation. During Phase I of these TMDLs, sufficient data shall be collected by the responsible parties to determine whether discharges of OCs from designated open space, as well as discharges resulting from erosion in and adjacent to unmodified streams, are causing or contributing to exceedances of water quality objectives and/or impairment of beneficial uses of San Diego Creek and Newport Bay. With the assistance of the stakeholders, Regional Board staff will identify the responsible parties as soon as possible but no later than (*one month from OAL approval of this BPA*). Board staff will notify the identified responsible parties of their obligation to propose an organochlorine compound monitoring program within two months of notification. The monitoring program shall be implemented upon Regional Board approval.

Based on the results of this monitoring program, the responsible parties shall develop a BMP implementation plan within 6 months of notification by the Regional

Board's Executive Officer of the need to do so. The responsible parties shall implement that plan upon Regional Board approval.

The responsible parties may address these monitoring and BMP implementation program requirements through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7).

The Regional Board will consider whether WDRs or a WDR waiver is necessary and appropriate for responsible parties not currently regulated, based on the monitoring results. WDRs or a WDR waiver, if issued, will include appropriate load allocations to implement these TMDLs. For responsible parties compliance with the TMDLs and load allocations is to be achieved as soon as possible, but no later than December 31, 2015. The way that this deadline applies to a particular responsible party differs depending on whether that responsible party is participating in the Working Group:

1. Working Group Participants. Provisions in WDRs or conditional waivers of WDRs issued during implementation of the Work Plan will specify the following for Working Group members:

(a) Interim limitations: Participation in the Working Group and timely and effective implementation of the Regional Board-approved Work Plan will constitute interim, performance-based limitations to implement the load allocations. Adherence to the interim, performance-based limitations satisfies the requirement, during the Work Plan implementation period, to achieve compliance with the TMDLs and load allocations "as soon as possible."

(b) Final limitations: Final limitations based on the load allocations will also be specified in the WDRs/waivers, with a schedule requiring compliance as soon as possible but no later than December 31, 2015. Compliance with the interim, performance-based limitations will fulfill the "as soon as possible" requirement. The WDRs/waivers will specify further that the status of compliance with the final limitations based on the load allocations will be reviewed on an annual basis. Compliance with the final limitations will be required prior to the completion of the Work Plan tasks, in accordance with a schedule approved by the Regional Board's Executive Officer, if it is demonstrated to the satisfaction of the Executive Officer that such earlier compliance is reasonably feasible.

Following the completion of the Work Plan tasks, WDRs/waivers will require responsible parties to comply with load allocations in the shortest practicable time, but in no event later than December 31, 2015.

2. Non-Working Group Dischargers. For responsible parties not participating in the Working Group, compliance with the load allocations will be as soon as possible after TMDLs adoption and approval, but no later than December 31, 2015. In this

case, the determination of what constitutes "as soon as possible" will be at the discretion of the Regional Board's Executive Officer.

Completion of the Work Plan and/or other investigations conducted by the Regional Board or others may result in modification of the TMDLs, load allocations and the compliance schedule through the Basin Planning process. Subsequent issuance/revision of WDRs/conditional waivers of WDRs will implement any such changes.

#### **Task 4: Develop and Implement Appropriate BMPs for Construction Activities**

Currently, all construction activities in the watershed are regulated under the State Water Resource Control Board's (SWRCB) General Permit for Discharge of Storm Water Runoff Associated with Construction Activity (Order No. 99-08-DWQ, NPDES No. CAS000002; the "General Construction Permit"), SWRCB National Pollutant Discharge Elimination System (NPDES) Permit Statewide Storm Water Permit and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation (Caltrans) (Order No. 99-06-DWQ, NPDES No. CAS000003; the Caltrans MS4 permit), and/or the Orange County MS4 NPDES permit. The requirements of these permits and an iterative, adaptive management BMP approach, coupled with monitoring, are the foundation for meeting the TMDL WLAs for construction. The General Construction Permit, and the Orange County and Caltrans MS4 permits are expected to be revised over time. The specific tasks identified below may be addressed by revisions to one or more of these permits. In that case, the Regional Board will integrate requirements for implementation of this Task with the requirements of the Orange County and Caltrans MS4/General Construction permits so as to prevent conflict and/or duplication of effort.

To assure that effective construction BMPs are identified and implemented, program improvements are needed in the following areas: (a) Storm Water Pollution Prevention Plans (SWPPPs) prepared in response to the General Construction Permit must include supporting documentation and assumptions for selection of sediment and erosion control BMPs, and must state why the selected BMPs will meet the Construction WLAs for the organochlorine compounds; (b) SWPPP provisions must be rigorously implemented on construction sites; (c) sampling and analysis for the organochlorine pesticides and PCBs in storm and nonstorm discharges containing sediment from construction sites is necessary to determine the efficacy of BMPs, as well as compliance with the construction WLAs; sampling and analysis plans must be included in SWPPPs; (d) additional BMPs, including enhanced BMPs, must be evaluated to determine those that may be appropriate for reducing or eliminating organochlorine compound discharges from construction sites (e.g., BMPs effective in control of fine particulates) without significant adverse environmental effects (e.g., toxicity that might result from improper storage and/or application of polymers); (e) outreach is necessary to assure the effective implementation of these SWPPP requirements; and (e) enforcement of the SWPPP requirements is necessary.



To address these program improvements, Regional Board staff shall develop a SWPPP Improvement Program that identifies the Regional Board's expectations with respect to the content of SWPPPs, including documentation regarding the selection and implementation of BMPs, and a sampling and analysis plan. The Improvement Program shall include specific guidance regarding the development and implementation of monitoring plans, including the constituents to be monitored, sampling frequency and analytical protocols. The SWPPP Improvement Program shall be completed by *(the date of OAL approval of this BPA)*. No later than two months from completion of the Improvement Program, Board staff shall assure that the requirements of the Program are communicated to interested parties, including dischargers with existing authorizations under the General Construction Permit. Existing, authorized dischargers shall revise their project SWPPPs as needed to address the Program requirements as soon as possible but no later than *(three months of completion of the SWPPP Improvement Program)*. Applicable SWPPPs that do not adequately address the Program requirements shall be considered inadequate and enforcement by the Regional Board shall proceed accordingly. The Caltrans and Orange County MS4 permits shall be revised as needed to assure that the permittees communicate the Regional Board's SWPPP expectations, based on the SWPPP Improvement Program, with the Standard Conditions of Approval.

The MS4 permittees shall conduct studies to evaluate BMPs that are most appropriate for reducing or eliminating organochlorine compound discharges from construction sites (e.g., fine particulates), including advanced treatment BMPs. The evaluation shall consider the potential for adverse environmental effects associated with implementation of each of the BMPs identified. MS4 Permittees shall include these BMPs in the Orange County Stormwater Program Construction Runoff Guidance Manual and the Caltrans Storm Water Management Plan (SWMP). Implementation of these MS4 permittee requirements shall commence upon issuance of appropriate Water Code Section 13267 letters or renewal of the MS4 permits, whichever occurs first. The Section 13267 letters/revised permits shall require the permittees to: (a) submit a proposed plan and schedule for studies to evaluate appropriate BMPs, as described above, within three months of issuance of the 13267 letter or permit revision; (b) implement the plan and schedule upon approval by the Regional Board's Executive Officer; (c) submit a report of the BMP investigations within 6 months of approval of the study plan, provided that sufficient storms, as defined in the study plan, have occurred within that period. If the number of storms does not conform to the study plan, then the report shall be submitted in accordance with a schedule approved by the Executive Officer once the requisite number of storms has occurred. The report shall include a proposed plan and schedule for implementation of the BMPs, as appropriate, and inclusion of the BMPs in the Orange County Guidance Manual and in the Caltrans SWMP and related guidance documents; (d) implement the BMP plan upon approval by the Executive Officer.

The MS4 permittees may address these SWPPP and construction site BMP-related requirements through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7).

**Task 5: Evaluate Sources of OCs to San Diego Creek and Newport Bay; Identify and Implement Effective BMPs to Reduce/Eliminate Sources**

Based on the regional monitoring program being implemented by the Orange County MS4 permittees and/or on the results of other monitoring and investigations, all MS4 permittees shall conduct source analyses in areas tributary to the MS4 system demonstrating elevated concentrations of OCs. Based on mass emissions monitoring (described below) and source analysis, the permittees shall implement additional/enhanced BMPs as necessary to ensure that organochlorine discharges from significant land use sources to surface waters are reduced or eliminated. As part of the investigation task, if the results indicate that additional OCs soil remediation is necessary on MCAS Tustin and MCAS El Toro, the responsible parties for such remediation will be identified. The responsible party will be tasked to implement those portions of the BMP plan identified for the responsible party for MCAS Tustin and MCAS El Toro.

The permittees shall develop and implement a collection program for all banned OC pesticides and PCBs. This type of program has had demonstrated success in other geographic areas in collecting and disposing of banned pesticides. Residents and businesses in the watershed may have stored legacy pesticides that could be collected through such a program; if this is the case, this task would prevent future use and improper disposal of these banned pesticides.

Implementation of these requirements shall commence upon issuance of appropriate Water Code Section 13267 letters or approval of an appropriately revised MS4 permits, whichever occurs first. Revisions to the Orange County MS4 permit and Caltrans SWMP shall implement requirements specified in applicable Section 13267 letters, if used to implement TMDL-related requirements. The 13267 letters/revised permit shall specify require the permittees to: (a) submit a proposed plan and schedule for source analyses of MS4 tributary areas with elevated OCs concentrations within 3 months of issuance of the 13267 letters or permit revision; (b) implement the proposed plan upon approval by the Regional Board's Executive Officer; (c) submit a report within 6 months of completion of the approved study plan. The report shall provide the study results and include a proposed plan and schedule for prioritized implementation of BMPs in OCs source areas; (d) implement the BMP plan upon Executive Officer approval.

The permittees may address these requirements through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (Task 7).

**Task 6: Evaluate Feasibility and Mechanisms to Fund Future Dredging Operations**

Because large-scale erosion and sedimentation primarily occurs during large storm events, traditional BMPs may have limited success in reducing/eliminating the discharge of potentially-contaminated sediments to receiving waters during wet weather. In such cases, dredging within Newport Bay and/or San Diego Creek may be the most feasible and appropriate method of reducing OCs loads in these waters. However, the feasibility and effectiveness of dredging projects in removing OCs would require careful consideration, since dredging may or may not expose sediments with higher concentrations of OCs. Financing of such projects is also a significant consideration.

Entities discharging potentially contaminated sediment in the watershed shall analyze the feasibility of dredging to achieve water quality standards, and shall identify funding mechanisms for ensuring that future dredging operations can be performed, as necessary, within San Diego Creek, Upper and Lower Newport Bay. A report that presents the results of this effort shall be submitted no later than (*three years from the date of OAL approval of this BPA*). It is recognized that dredging activities are likely to be an integral part of efforts to comply with other established TMDLs, particularly the sediment TMDL. Ideally, dredging feasibility and funding investigations would be integrated with implementation and review of the sediment TMDL through the comprehensive Work Plan (Task 7). The responsible parties may address this Task requirement through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan.

**Task 7: Develop a Comprehensive Work Plan to Meet TMDL Implementation Requirements, Consistent with the Adaptive Management Approach**

During the development of these organochlorine compounds TMDLs, regulated stakeholders in the Newport Bay watershed expressed concerns that the numeric targets used to develop the TMDLs, wasteload allocations and load allocations were flawed and that scientific review by an independent panel of experts was necessary. Further, these stakeholders suggested that pollutants other than the organochlorine compounds, such as metals, pyrethrins or other, emerging pollutants may pose the more real or significant threat to beneficial uses in the watershed. Finally, it was recommended that an integrated approach to TMDL implementation, and to the development of pending TMDLs and refinement of established TMDLs, would be a more effective and efficient approach.

Substantial efforts are already being made by many stakeholders in the watershed to address established permit and/or TMDL requirements for BMP implementation and monitoring and to conduct special investigations to understand and improve water quality conditions in the watershed. Thus, the framework exists to develop a

comprehensive watershed plan for addressing water quality, not only as it relates to the organochlorine compounds, but on a larger scale that encompasses all sources of water quality impairment.

This implementation plan provides the opportunity for regulated stakeholders to form a Working Group and to participate in the development and implementation of a comprehensive Work Plan to evaluate the scientific basis of these organochlorine TMDLs, to prioritize TMDL implementation tasks, to integrate implementation with other TMDL and/or permit requirements, and to investigate unknown sources of toxicity in the watershed. As noted in the previous Task descriptions, participation by responsible parties in the Working Group and the development and implementation of a Regional Board Work Plan would address the responsible parties' obligations pursuant to the Tasks in Table NB-OCs-13. Dischargers who elect not to participate in the Working Group/Work Plan will be required to implement these Tasks, as described above.

Dischargers interested in participating in a Working Group to develop and implement a comprehensive Work Plan must commit to do so by *(within one month of OAL approval of the BPA)*. Submittal of a draft Work Plan is required no later than *(three months of OAL approval of the BPA)*. The schedules for implementation of the tasks identified in the Work Plan must reflect the shortest practicable time necessary to complete the tasks. Implementation of the Work Plan will commence upon approval of the Work Plan by the Regional Board at a properly noticed public hearing. Execution of the Work Plan must be complete within five years of Regional Board approval. Substantive changes to the tasks and schedules included in the approved Work Plan are contingent on Regional Board approval at a subsequent, properly noticed public hearing(s). However, the Regional Board's Executive Officer is authorized to revise the approved tasks and schedules if no significant comments are received during the public notice period.

At a minimum, the expected result of the execution of the Work Plan is a comprehensive, watershed plan for BMP implementation, monitoring, special investigations and other actions that will assure compliance with the OCs TMDLs, as they may be amended, as soon as possible after completion of execution of the Work Plan but no later than December 31, 2015<sup>3</sup>.

The specific detailed Work Plan tasks and schedules will be determined as the Work Plan is developed. Regional Board staff will work with the Working Group to identify a suitable Work Plan. Key initial tasks are expected to include the following:

1. Convene an Independent Advisory Panel (IAP) of experts with relevant expertise. To avoid questions of objectivity, the panel shall be convened by a neutral third party organization such as the National Water Research Institute. The Working Group and Regional Board staff will work together to define the desired qualifications needed for IAP participants, define the scope and

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<sup>3</sup> This compliance date is subject to change through the Basin Planning process.

authority of the IAP, and identify and describe the primary issues that will require guidance, recommendations, or specific actions from the IAP.

## 2. Re-evaluate OCs TMDLs Numeric Targets and Loads

With input and recommendations from the IAP, and using data being generated through ongoing scientific investigations in the watershed, the Work Plan should assess the current OCs TMDLs numeric targets, evaluate potential alternative numeric targets, and determine if the current targets should be revised, or whether targets based on site-specific data can be developed. If site-specific targets can be developed, the process or methods that will be used to develop targets should be determined, such as risk assessments or re-calculation of targets using accepted, peer-reviewed scientific methodologies.

It is recognized that there is a need for flexibility to respond to unanticipated findings and events, and to changes that may be recommended by the Independent Advisory Panel (see below). However, at a minimum, each of the Tasks identified in Table NB-OCs-13 (except Task 1, which requires action by the Regional Board, and Task 4, which requires action by the Regional Board and the MS4 permittees based on established MS4 permit requirements) must be considered in Work Plan development and implementation. If one or more of these tasks is not proposed for inclusion in the Work Plan, or where modifications of these tasks/schedules are recommended, a written description and justification must be provided with the draft Work Plan submittal. In addition, consideration shall be given to the following:

### Develop conceptual models

Data interpretation and monitoring must be organized around a systematic conceptual view of the sources of the different organochlorine compounds and their distribution and behavior in the watershed. Development of conceptual models for these compounds would significantly enhance our understanding of their sources and impacts and would help to structure hypothesis development, monitoring design, and data interpretation. Development of the conceptual models should be based on a review of available data and information about the OCs in the watershed, and the models should be updated as new information accumulates. Characterization of sources and of habitats at risk should be based on a review of available data, framed in terms of the conceptual models and supported with the collection of new data as needed. It is expected that the IAP would provide critical review and recommendations in this process.

### Develop Information Management System

Different types of data – water column, sediment, fish or bird egg tissue, infaunal surveys, hydrology, etc. – are being or will be collected throughout

the Newport Bay watershed through a variety of studies, monitoring programs, or other projects. Since these data are often collected for different purposes (e.g., in response to various TMDLs and/or permits), at different times and in different areas, much of the data may be in non-comparable formats, redundant, or not spatially or temporally compatible. In order to determine what data are useful or significant, where data gaps may still occur, or where current data needs are sufficient, a comprehensive information management system should be developed that (1) establishes clear procedures for assessing data quality for data acquisition and transfer and for control of evolving versions of datasets; (2) is a relational database that can manage the variety of data types and has appropriate mechanisms for ensuring and maintaining data quality; (3) can conduct quality control checks and needed reformatting to ensure needed consistency across all data types and sources as data from other sources are obtained; (4) provides for straightforward query and data sub-setting routines to streamline access to the data; and (5) ensures that GIS capability is available for analysis, modeling, and presentation purposes. Development of a comprehensive information management system will allow for the identification of significant data gaps that need to be addressed and will provide a vehicle for establishing monitoring guidelines and preventing redundant or superfluous data collection.

To the extent that there are any conflicts between the individual tasks and schedules identified in Table NB-OCs-13, and the prioritized plan and schedule identified in the Work Plan, the Work Plan would govern implementation activities with respect to the stakeholders responsible for Work Plan development and implementation as part of the Working Group.

#### **Task 8: Revise Regional Monitoring Program**

The County of Orange, as Principal Permittee under the County's MS4 permit, oversees the countywide monitoring program. Implementation of the monitoring program is supported by funds shared proportionally by each of the Permittees named in the Orange County MS4 permit. Some monitoring requirements identified in this implementation plan are already reflected in the current program.

By (3 months from OAL approval of BPA), the Orange County MS4 permittees shall: (1) document each of the current monitoring program elements that addresses the monitoring requirements identified in the preceding tasks; and, (2) revise the monitoring program as necessary to assure compliance with these monitoring requirements.

Review of/revisions to the monitoring program shall address:

- (1) Estimation of mass emissions of chlordane, DDT, PCBs and toxaphene.

- (2) Determination of compliance with MS4 wasteload allocations for Upper and Lower Newport Bay, and of status of achievement with the informational wasteload allocations for San Diego Creek for chlordane and PCBs.
- (3) Assessment of temporal and spatial trends in organochlorine compound concentrations in water, sediment and tissue samples.
- (4) Semi-annual sediment monitoring in San Diego Creek and Newport Bay. Measurements of sediment chemistry in these waters should be evaluated with respect to evidence of biological effects, such as toxicity and benthic community degradation.
- (5) Evaluation of organochlorine bioaccumulation and food web biomagnification
- (6) Assessment of the degree to which natural attenuation is occurring in the watershed.

Accurately quantifying the very small mass loads that are allowable under these TMDLs will be very challenging; analytical strategies for quantifying loads of the organochlorine compounds must be carefully explored.

Revisions to the monitoring program shall take into consideration the following recommendations provided by members of the Organochlorine Compounds TMDL Technical Advisory Committee (TAC):

- (1) The analytical parameters measured need to be established for each matrix of interest (e.g., sediment, tissue, ambient water). The representative list of compounds to be measured needs to be identified (e.g., what chlordane compounds will be measured and summed to represent "total chlordane;" will PCB congeners be measured and summed or will Aroclors?).
- (2) Data quality will need to be consistent with the State's Surface Water Ambient Monitoring Program (SWAMP). Detection limits, accuracy and precision of analytical methods should be adequate to assure the goals of the monitoring efforts can be achieved.
- (3) Bioaccumulation/biomagnification in high trophic level predators may not immediately respond to load reductions; appropriate time scales and schedules for monitoring that are supported by empirical data and/or modeling should be established.
- (4) Sentinel fish and wildlife species should be selected for monitoring based on home range, life history, size and age.

MS4 permittees may address the requirements specified herein by participation in the Working Group and development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7).

**Task 9: Conduct Special Studies**

The following special studies should be conducted, in addition to the studies already underway in the watershed. This list is based, in part, on recommendations of the technical advisory committee for the organochlorine compounds TMDLs. These studies will be implemented as resources become available, and the results will be used to review and revise these TMDLs. Stakeholder contributions to these investigations are encouraged and would facilitate review of the TMDLs.

- (1) Evaluation of sediment toxicity in San Diego Creek and tributaries, and Upper and Lower Newport Bay.

Previous studies have included Toxicity Identification Evaluations (TIEs) that have yielded inconclusive results as to the cause of toxicity in Newport Bay. Sediment toxicity within San Diego Creek is not well-documented or well-understood. There is evidence that pyrethroid compounds may be a significant contributor. In determining the extent to which nonpolar organic compounds are causing or contributing to sediment toxicity, the differential contribution of both the organochlorine compounds and pyrethroids should be determined to assure that control actions are properly identified and implemented. Monitoring should be performed year-round at multiple locations within San Diego Creek and Newport Bay (to encompass spatial and temporal variability), and should include various land use types in order to quantify the relative contributions from various sources.

- (2) Refinement of sediment and tissue targets.

A study is being conducted by the San Francisco Estuary Institute to develop indicators and a framework for assessing the indirect effects of sediment contaminants. The objective is to provide methodology that will assist in evaluating indirect adverse biological effects for bioaccumulative pollutants (e.g. due to food web biomagnification), as part of the overall goal of developing statewide sediment quality objectives. Newport Bay is being used as a case study to show how the proposed methodology could be implemented on a screening level. Multiple lines of evidence will be evaluated to determine impacts of organochlorine pesticides and PCBs to humans and wildlife. A conceptual foodweb model will be developed, and sensitive wildlife receptors will be identified. Empirical field data and a steady-state food web model will be used to calculate bioaccumulation factors for the organochlorine compounds. The bioaccumulation factors will be combined with effects thresholds to identify sediment concentrations that are protective of target wildlife and humans.

Once completed by SFEI, a thorough evaluation of the Newport Bay case study needs to be initiated, and any additional analyses required for a more in-depth risk analysis should be identified and completed. Protective sediment and tissue targets for indirect effects to humans and wildlife should be developed by the time the TMDLs are re-opened. Furthermore, once TIEs have identified the likely toxicant(s)



responsible for sediment toxicity in San Diego Creek and Newport Bay (direct effects), field and laboratory studies should be conducted in order to determine bioavailability and the dose-response relationship between sediment concentrations and biologic effects.

- (3) Evaluation of regional BMPs (e.g., constructed wetlands and sediment detention basins) for mitigating potential adverse water quality impacts of sediment-associated pollutants (e.g., OCs, pyrethroids).

Large-scale, centralized BMPs such as constructed wetlands and storm water retention basins may be more effective than project-level BMPs in reducing adverse environmental impacts of sediment-borne pollutants. Regional BMPs are either being planned or are in place within the watershed (e.g., IRWD NTS). Their potential effectiveness for capturing the organochlorine compounds and mitigating impacts needs to be evaluated.

- (4) Improvement in linkage between toxaphene measured in fish tissue and toxaphene in bed sediments.

The toxaphene impairment listing for San Diego Creek is based on fish tissue exceedances that have no measured linkage with toxaphene in sediments. While sediment is the primary TMDL target for these TMDLs, toxaphene is usually not detected in sediment. Because of its chemical complexity, there is a large degree of analytical uncertainty with measurements of toxaphene in environmental samples that use standard methods (e.g., EPA Method 8081a), especially at low levels. Confirmations of toxaphene in fish and sediment samples in San Diego Creek (and possibly Newport Bay) using other techniques (e.g., GC-ECNI-MS or MS/MS) is recommended.

- (5) Evaluation of relative importance of continuing OCs discharges to receiving waters through erosion and sedimentation processes, versus recirculation of existing contaminated bed sediments, in causing beneficial use impairment in San Diego Creek and Newport Bay.

This study should allow for determination of the most effective implementation strategies to reduce organochlorine compounds in the MS4 and other receiving waters.

## **Phase II Implementation**

### **Task 10: TMDL Reopener**

These TMDLs will be reopened no later than *(five (5) years following OAL approval of this BPA)* in order to evaluate the effectiveness of Phase I implementation. At that time, all new data will be evaluated and used to reassess impairment, BMP

effectiveness, and whether modifications to the TMDLs are warranted. If BMPs implemented during Phase I have been shown to be ineffective in reducing levels of organochlorine compounds, then more stringent BMPs may be necessary during Phase II implementation.

Implementation of these TMDLs and the schedule for implementation are very closely tied with other TMDLs that are currently being implemented in the watershed. The sediment TMDL allowable load for San Diego Creek was the basis for calculating organochlorine compound loading capacities. The sediment TMDL is scheduled for revision in 2007; changes to the sediment TMDLs will likely necessitate changes to these organochlorine compounds TMDLs as well.

Draft

SALESMEN'S MANUAL

AROCLOR

DESCRIPTION AND PROPERTIES

The Aroclors are a series of chlorinated hydrocarbons based on biphenyl and terphenyl. They are not pure compounds but are mixtures of closely related chlorine substitution products manufactured essentially to a set of specifications based on physical properties rather than chemical composition.

The approximate chlorine content is indicated by the last two figures of the Aroclor number. The chemical composition closely approaches the average for the indicated chloro-derivatives as follows, but should not be represented as simple chemical compositions according to the formula shown:

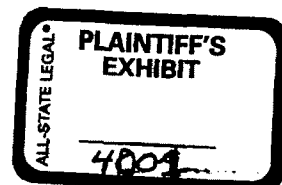
Approximate Equivalent Chemical Compound

1219+	Monochlorobiphenyl
1272	Dichlorobiphenyl
1242	Trichlorobiphenyl
1248	Tetrachlorobiphenyl
1254	Pentachlorobiphenyl
1260	Hexachlorobiphenyl
1262	Heptachlorobiphenyl
1268	Nonachlorobiphenyl
1271	Decachlorobiphenyl
5460	Nonachloroterphenyl

Reference should be made to technical bulletin P-115 for tables and graphs of physical properties. This manual contains only that information which is not designed for general public distribution or has been made more recently available than permitted incorporation in the printed bulletin.

The following Aroclors not in commercial production (but available) have been proposed:

Aroclor No.	<u>5448</u>	<u>5454</u>
Fixed Chlorine	47.9%	54.83%
Color (Lovibond)	6.0	20.0
Four Point	60°	84°
Softening Point	63°	85°



MONSANTO CHEMICAL COMPANY

10-1-44

Aroclor No.	5448	5454
Viscosity 98.9°C (210°F)	395.0*	-
Flash Point	250°C	-
Burn Point	400°C	-
Chlorides	None	None
Acidity - mg. KOH/g.	0.008	0.004
Evaporation	0.006	0.007
Resistivity	--	--
Ageing	--	--
Dielectric Constant	4.65	4.17

\*SUS

ELECTRICAL PROPERTIES

	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 5442
*Dielectric Constant @ 100°C	4.63	4.15-4.35	3.6-3.8	4.92
**Resistivity @ 100°C. OHMS/CM <sup>3</sup>	500x10 <sup>9</sup>	Above 500x10 <sup>9</sup>	Above 500x10 <sup>9</sup>	1469x10 <sup>9</sup>
***Dielectric Strength	35 KV Min.			
Power Factor (100°C, 1000 kc)	Less than 0.1%		Less than 0.1%	

- \* IRS Method E-3955871
- \*\* Resistivity @ 100° under 500 Volts DC
- \*\*\* ASTM D-177-11

<u>Refractive Index</u>	<u>Range</u>	<u>Midpoint</u>
Aroclor 1270	1.691-1.74	1.712
Aroclor 1271	1.691-1.74	1.712
Tetradecachlorometaterphenyl	1.712-1.718	--
Tetradecachloroparaterphenyl	1.691-1.74	1.712

<u>Heat of Vaporisation</u>	<u>B.I.U./lb.</u>
Aroclor 1260 (3 mm. pressure)	104
Aroclor 1262 (760 mm. pressure)	72.4
Aroclor 1169 (0.151 atm. @ 350°C)	69.2
(0.079 atm. @ 325°C)	70.6

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SOLUBILITY

Solvent	Aroclor 1268	
	Cold	Hot
Acetone	I	I
Alcohol, Formula 3-A	I	I
Amyl Acetate	S	S
Amyl Alcohol	FS	S
Benzene	S	S
Butyl Acetate	S	S
N. Butyl Alcohol	I	FS
Carbitol	I	S
Carbon Disulfide	S	S
Cellucolve <i>Carbon Tetrachloride</i>	I	70-80°C
Chloroform	S	S
Di Butyl Phthalate	S	S
Ether	S	S
Ethyl Acetate	FS	FS
Ethyl Lactate	I	S
Ethylene Dichloride	I	S
40% Formaldehyde	I	I
Furfural	FS	FS
High Test Gasoline		
Glycerin	I	I
Kerosene	FS	S
Linseed Oil	I	S
Methyl Acetate	FS	FS
Mineral Spirits	FS	110°C
Paraffin		
Phenol 90%	FS	S
Pine Oil	S	S
Pyridine	S	S
Toluene	S	S
Tri Cresyl Phosphate	S	S
Tung Oil	I	S
Turpentine	FS	120-125°C
Xylene	FS	110°C

I = Insoluble  
 FS = Partially Soluble  
 S = Soluble

Solvent	Gms. Aroclor 1270 per 100 cc. Solvent	Approx. Temp. at which soln. complete
Furfural	2.0	105-110°C
Furfural	4.0	120-125°C
Secondary Amyl Acetate	4.0	110-115°C
Secondary Amyl Alcohols	4.0	Not completely soluble at boil
Carbitol	4.0	Above 125°C
Heavy White Mineral Oil	4.0	110-115°C

STABILITYToward Heat

Aroclor 1248 was heated to 650°F in stainless steel autoclave with the resulting changes indicated in the following tabulation:

	<u>Time of Heating (Hours)</u>	<u>Temperature</u>	<u>Acidity mg. NaOH/gm. Aroclor 1248</u>
Original Sample	0	--	.0021
Autoclave #1	331	343°C. 650°F.	.0392
Autoclave #2	500	343°C. 650°F.	.0809
Autoclave #3	669	343°C. 650°F.	.0800

These results are interpreted as indicating very excellent stability for Aroclors under the conditions of test.

Toward Oxidation

When Aroclor 1254 is heated for 50 or 60 days at 150°C in the presence of oxygen and copper, there is likely to be some attack on the copper. Examination of Aroclor 1254 after that period of time will usually show the presence of soluble copper. This also occurs with mineral oil and other insulating liquids.

In general, even after severe oxidation conditions no evidence of chlorine splitting from the parent hydrocarbon has been found.

Toward Acids

Aroclors 1242 and 1254 were stirred with an equal volume of concentrated Sulfuric Acid (98%), dilute Sulfuric Acid (10%), Nitric Acid (70%), and dilute Nitric Acid (5%), at room temperature (25°C) for 150-250 hours. The Aroclor was then washed until neutral, dehydrated with Sodium Sulfate, then analyzed in comparison with a control sample for the various properties which are regularly considered, without causing these properties to depart from specification limits.

Aroclor 1262 was treated for 160 hours suspended in the same acids as above at 50 to 55°C. The concentrated Nitric Acid caused an increase in color, otherwise no significant change in characteristics.

The acid layer from the treatment of Aroclor 1254 was concentrated Sulfuric Acid at room temperature for 150 hours and was tested for chloride content. The quantity of HCl found was so small that it was not possible by ordinary methods to obtain a quantitative figure. Thus it appears that practically no hydrogen chloride is evolved under these conditions.

CORROSION

Additional corrosion data not included in bulletin P-115 (Pl 4-43-R) is as follows:

<u>Metal</u>	<u>Temperature</u>	<u>Time of Exposure</u>	<u>Penetration in/yr.</u>
Monel	342°C	360 hrs.	.008
Dow Metal	150°C	40 days	.001
Yellow Brass	325°C	2,960 hrs. in steel bomb	.003
Al alloy 173T	120°C	21	.00035*
Al alloy 525H	120°C	21	.00035*
Al alloy 535T	120°C	21	.00038*

\*The weight loss occurred in the first seven days of the test. Negligible loss was encountered in the last 14 days.

The vapor condenser and the product receiver of the plant distillation unit for producing Aroclor 1254 is constructed of Monel and no failure in the system nor any noticeable reaction between the Aroclor and the Monel has been discovered after three years of operation.

SOLUBILITY OF WATER IN AROCLOR 1242

The water content of a sample of Aroclor 1242 saturated with water at approximately 30°C was determined, using the Karl Fischer reagent, to be about 0.00%.

Aroclor 1242, as regularly produced, contains by the same test less than 0.001% water.

SURFACE TENSION

The surface tension of Aroclor 1254 is as follows:

<u>Temperature</u>	<u>Dynes per Centimeter</u>
25°C	50.3
80°C	44.0
100°C	42.0

TOXICITY

All chlorinated hydrocarbons have measurable degree of toxicity to the animal organism. Aroclors are no exception. The symptoms of Aroclor poisoning are:

1. Pore acne (chloer-ache) nodular eruptions of the hair follicles or sebaceous glands as a result of insufficient cleansing of the skin.

2. Acute yellow atrophy of the liver in which the liver cells show swelling, hypergranulation, hyaline inclusions and vacuolation as a result of extensive exposure over long periods of time.

These symptoms may also result from exposure to other chlorinated hydrocarbons of commerce, such as: carbon tetrachloride, dichloroethylene, trichloroethylene, chlorinated naphthalene (Halowax). The best known (at present) measure of the degree of toxicity of the Aroclors is presented below:

Permissible Limits (in mg./cu.m.) of Concentration in Air of Work Rooms: (Journal of Industrial Hygiene & Toxicology 21: 155, 1939)

Tested on Rats by Inhalation

	Chlorine Content %	Permissible Limit mg./cu.m.
Aroclor 1268	68	10.0
Aroclor 4465	65	0.5 *
Aroclor 5460	60	0.5
Aroclor 1254	54	0.5
Trichloronaphthalene plus trace Tetrachloronaphthalene	49.9	10.0 *
Tetra and Pentachloronaphthalenes	56.4	1.0 *
Penta and Hexachloronaphthalenes	62.6	0.5 *
Tetra and Pentachloronaphthalenes plus Refined Chlorinated Diphenyl	43.5	0.5 *
% Penta and Hexachloronaphthalenes / Aroclor 4465	63.0	0.5 *
Chlorinated Diphenyl Oxide	54.0	0.5
Chlorinated Diphenyl Oxide	57.0	0.5
Hexachlor Diphenyl Oxide / % Trichloronaphthalene	50-55	0.5
Hexachloronaphthalene and Crude Chlorinated Diphenyl	--	0.5
Special Chlorinated Naphthalene	50-56	0.5

\*Tested also by feeding.

Summary of Gross Feeding Experiments

Of the various materials fed rats in large doses, Trichloronaphthalene plus traces of Tetrachloronaphthalene was quite innocuous. Tetra and Pentachloronaphthalene showed definite liver damage. Penta and Hexachloronaphthalenes caused a similar grade of injury. The addition of chlorinated diphenyl to Penta and Hexachloronaphthalenes increased the toxicity. Chlorinated Diphenyl alone produced liver lesions but in the dosage used was less effective than when mixed with highly chlorinated naphthalenes. In no case did the compounds



used produce acute yellow atrophy but the lesions observed indicate this might be possible if one found a dosage which could act for the proper period of time.

Feeding Precise Doses by Stomach Tube: The compounds employed were suspended in gum acacia. In figuring the dosage the total amount a man of 50 kg. would inhale in an 8-hour day, assuming an air concentration of 20 mgm. per cu.m., was first calculated and reduced to milligrams per kilogram. The rats and rabbits received this dose each day. The compounds used were those employed in the gross feeding experiments and the results were essentially similar though the lesions were less severe.

Subcutaneous Injections: The same gum acacia suspensions were injected subcutaneously into rats and rabbits, the dosage being calculated on the basis of 4 mgm. per cu.m. of air. Again similar results were obtained. In all such experiments there must of necessity be differences in the degree of effect but invariably the liver was the sole organ affected and the lesions were those already described many times.

Recommendations for Industrial Practice: Unless there is a very good reason for using the hot method of impregnation, all new installations should use the cold or solvent method of impregnation with chlorinated naphthalenes and diphenyls. Where the hot method is now being used it should be changed over to cold, if possible, or surrounded with every known protective measure. 7 A

General hygienic measures should be followed, but in no case should these be allowed to supersede engineering control of the primary source of the exposure, the operations in the plant.

The following hygienic measures may be considered good practice where these compounds are handled:

- (a) Two lockers for each worker exposed to chlorinated waxes (one for working and one for street clothes).
- (b) All work clothes above the underwear should be provided and laundered at least twice a week by the management.
- (c) The workers should change to clean underwear at the end of each shift before getting into his street clothes.
- (d) Supervised cleaning: (1) At noon the workers should remove outer clothing and scrub hands and face under supervision; (2) at the end of the shift they should be required to take a supervised shower before changing back to street clothes.

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- (e) Protective skin creams or protective clothing should be provided by the management at the discretion of the foreman, nurse, medical, or plant superintendent.
- (f) All departments handling chlorinated synthetic waxes should be thoroughly cleaned according to a prearranged schedule. This should include the removal of all deposits of waxy material from the machines, floors and surrounding objects. Workers doing the cleaning should be provided with protective clothing and supplied air or organic vapor masks where exhaust ventilation is inadequate or not possible.

The foremen of all departments where this material is handled should be apprised of the toxic nature of the material and instructed in safe handling procedures. These men should make it their duty to check up on the workers in their departments and instruct them in safe practice.

Pre-employment and periodic physical examinations should be made of all exposed workers. These should include the taking of a full clinical history, with special emphasis on gastro-intestinal disturbances and dermatitis. In addition, the skin should be carefully examined periodically and the more reliable liver function tests performed. Gastro-intestinal complaints developing in a worker at any time should be a signal for an immediate medical check-up. A history of liver disease, jaundice, or anti-syphilitic treatment should automatically exclude a worker from jobs involving a possible toxic exposure. Pregnant women should not be employed where there is a possible exposure to the synthetic chlorinated waxes.

Engineering control of plant operations cannot be over-emphasized but specific recommendations are not applicable to all cases. It would be wise for a plant using this class of materials to check their control measures with the state industrial hygiene agency, the insurance carrier and some competent consultant before occupational disease occurs.

APPLICATIONS OF AROCLORS

ADHESIVES

Adhesives of good electrical characteristics can be prepared containing Aroclors. The following are typical examples:

	<u>Typical Values</u>
#105 Aroclor 4465 (Code 3140-0144)	47.0%
(XV) Paraffin 50.800	1.0
Mineral Oil (Extra Heavy White)	2.0
Barytes - Nephaw's #2	50.0

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		<u>Typical Values</u>
#103B	Aroclor 2565 (S.P. 77.5°C) (Code 3140-0114)	46.50%
(XB)	Paraffin 50.8°C	1.17
	Mineral Oil (Extra Heavy White - Sonneborn's)	2.33
	Barytes - Nephram's #2	50.00
#131	Aroclor 4465 (Code 3140-0144)	16.10%
E-11	Ester Gum - EKEG #1202XXXX Pale	14.35
65B	Paraffin 50.8°C	4.55
	Barytes - Nephram's #2	65.00
#135	Aroclor 4465 (Code 3140-0144)	20.70%
	Ester Gum - EKEG #1202XXXX Pale	18.45
	Mineral Oil (Extra Heavy White - Sonneborn's)	5.85
	Barytes - Nephram's #2	55.00
#H	Aroclor 4465 (Code 3140-0144)	46.0%
50B	Mineral Oil (Extra Heavy White - Sonneborn's)	4.0
	Barytes - Nephram's #2	50.0
#"M"	Aroclor 4465	89.5%
	Mineral Oil (Extra Heavy White - Sonneborn's)	10.5
#"M"	Aroclor 4465	58.2%
	Mineral Oil (Extra Heavy White - Sonneborn's)	6.8
	Silica (Schults, Champlain & Bibbo)	35.0

For the preparation of thermo-plastic adhesives Purdue University found that the harder Aroclors are better than anything else discovered to date, primarily because of their high compatibility with other resins and their thermo-stability.

ELECTRICAL

Dielectrics and Electrical Insulators

The Aroclors have excellent dielectric properties, that is, low dielectric constant and resistivity and low power factor. Aroclor 1242 has the highest dielectric constant of the whole series which we are manufacturing commercially, while higher chlorine Aroclors have higher resistivity.

The Aroclors have found usefulness as a dielectric in condensers and as a dielectric and cooling medium in transformers; and a number of miscellaneous similar uses where the characteristics above named are of importance.

AROCLORS AS SATURANTS

Saturation may be defined as that operation by which liquids or gases are caused to penetrate relatively porous materials. The penetrating medium is known as the saturant and is generally in

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the liquid state. Saturation may be assisted or accelerated by means of increased temperature and pressure or by the use of a vacuum.

Various classes of products are saturated for the purpose of giving them a wide variety of properties. Some of the properties attained by saturation are: water and flame resistance; resistance to chemicals; abrasion; moisture; light and weather changes; increased strength; and increased weight.

Among the articles that are treated to obtain some one or all of the above mentioned properties are included the various fibres and fabrics; animal; vegetable and mineral; woods, both hard and soft; ceramics ware and cement; and certain kinds of electrical apparatus, such as carbon resistors.

The saturants, or, as they are sometimes called, the impregnants, are usually made up of waxes, oils, resins, or water solutions of certain inorganic salts.

#### Applications

At present the saturating applications that are of chief interest are insulated wire, low voltage cable commonly called network cable, and carbon resistor fields. These proposed uses are described more fully under the separate headings which follow.

#### Network Cable

Attempts are being made to develop a use for Aroclor as a saturant for secondary network or low voltage cable. Cable of this kind is used in electrical network distribution systems. Generally, it consists of the copper conductor or conductors, the paper insulation, and the lead sheath. The paper is saturated with an oil, usually a good grade of oil such as the General Electric Company's Transil Oil. This form of construction is objectionable because under the conditions imposed by a short circuit, combustible gases are generated which flow through the conduits to the manholes, at which point they may form explosive mixtures with the air and, in turn, cause explosions in the manholes. Both the paper and the oil are sources of combustible gases. It is therefore desirable to replace them -- the paper with an inert form of insulation, if possible, and the oil with a non-inflammable saturant such as Aroclor. Thus far, Aroclor 1254 appears to meet the requirements of this use.

The more important cable manufacturers in the country are already at work on the development of a flame resistant cable and also one in which the explosion hazard will be lessened or eliminated.

**FIGURE - 1**

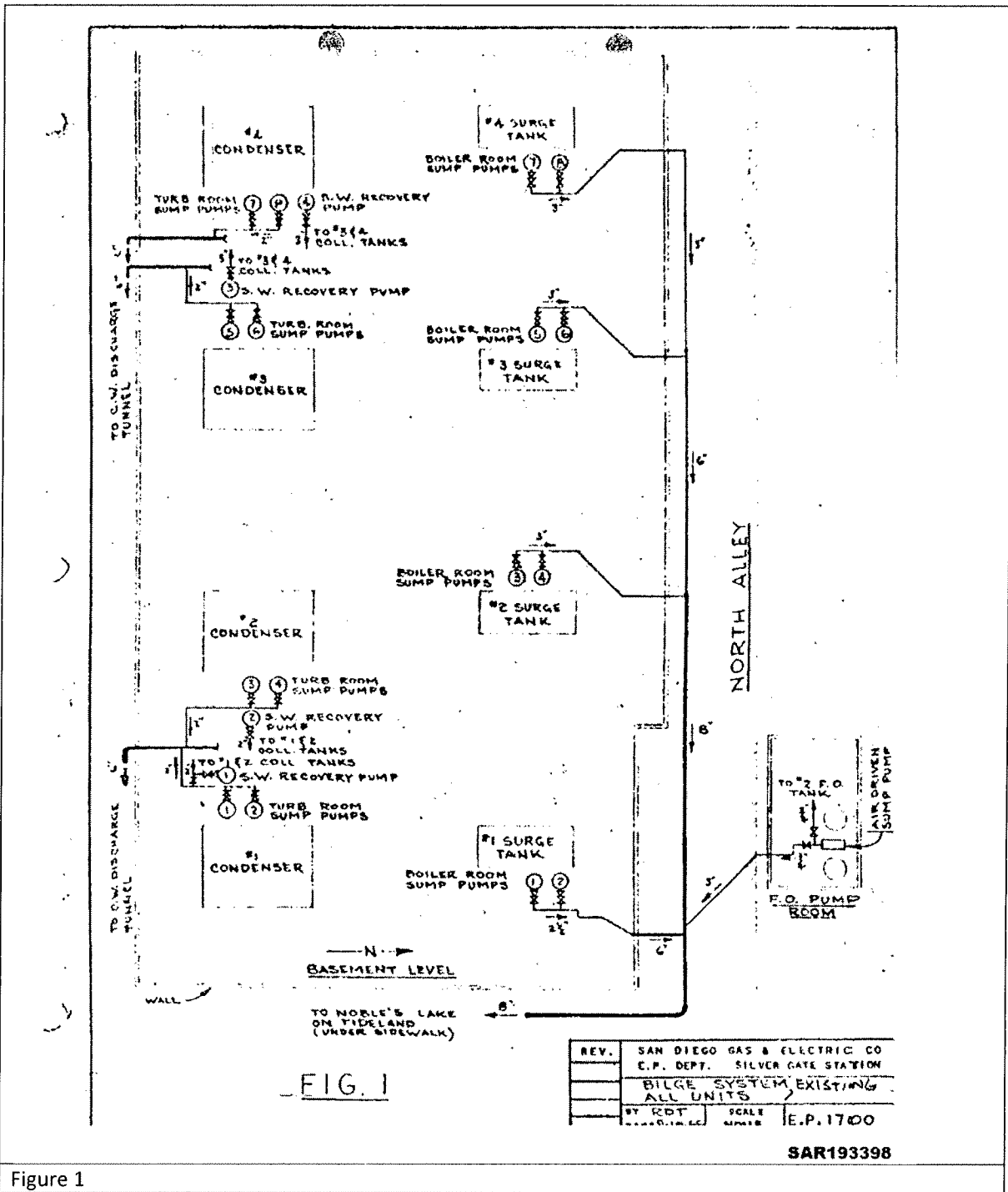


Figure 1

**FIGURE - 2**

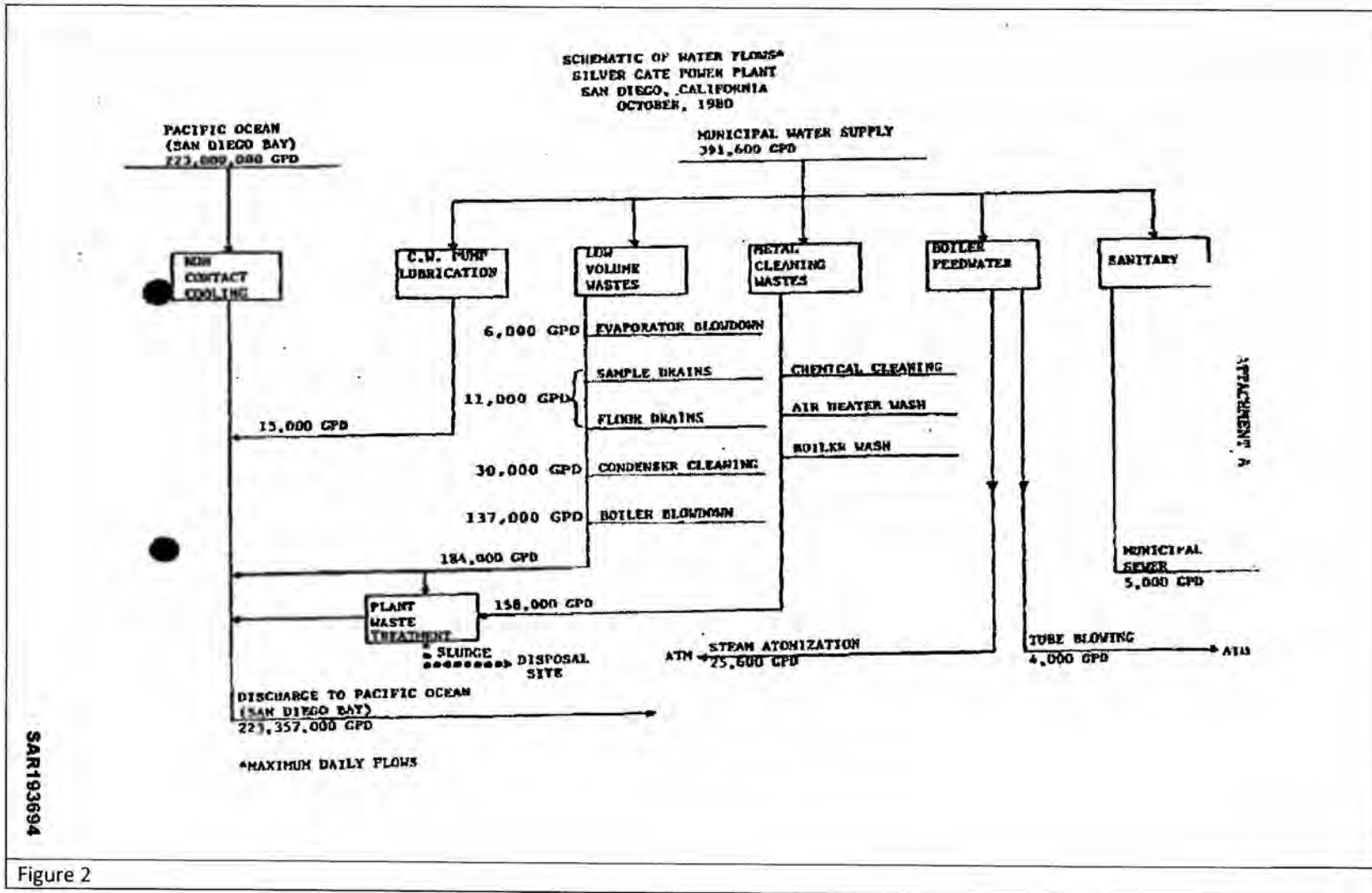
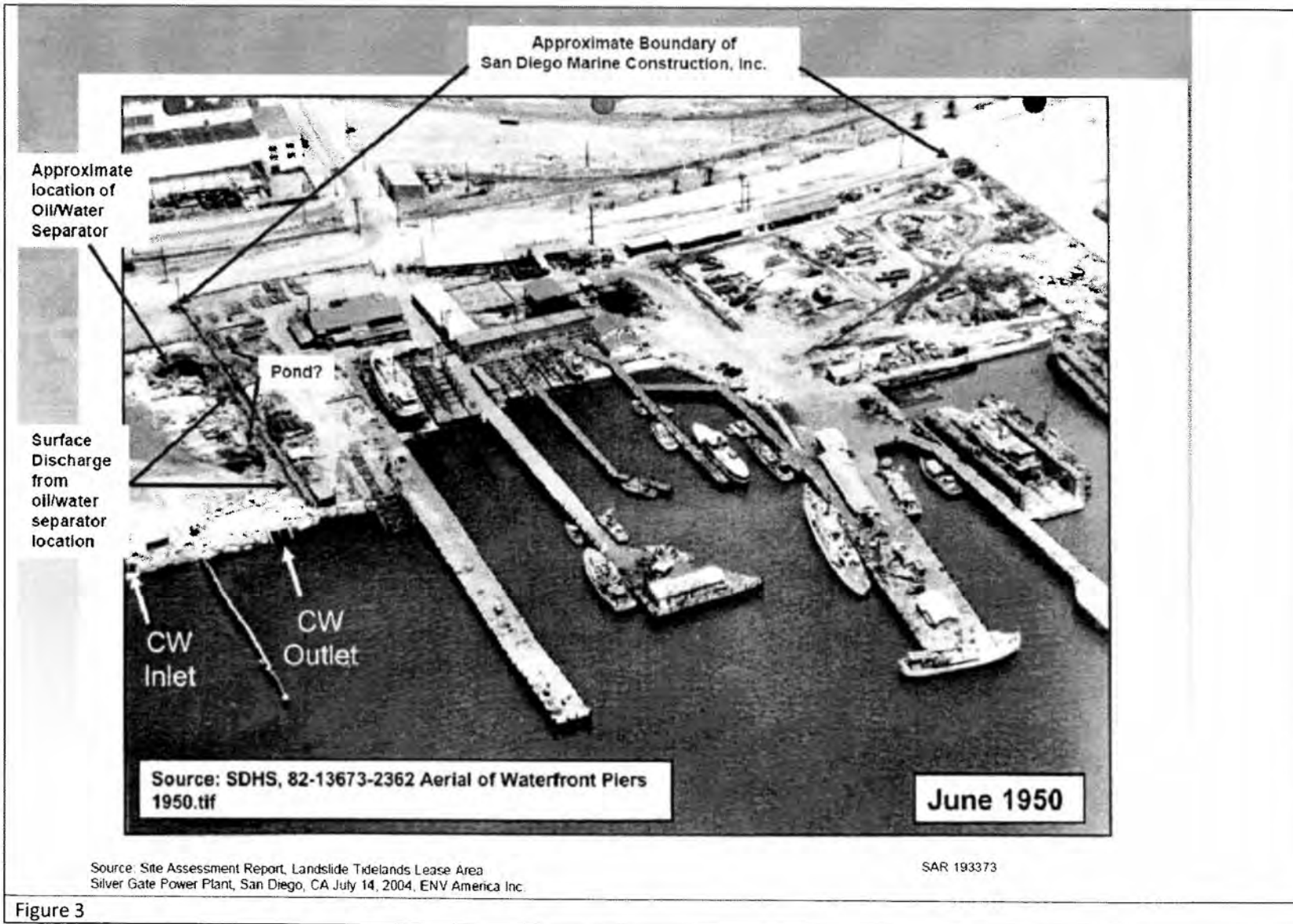


Figure 2



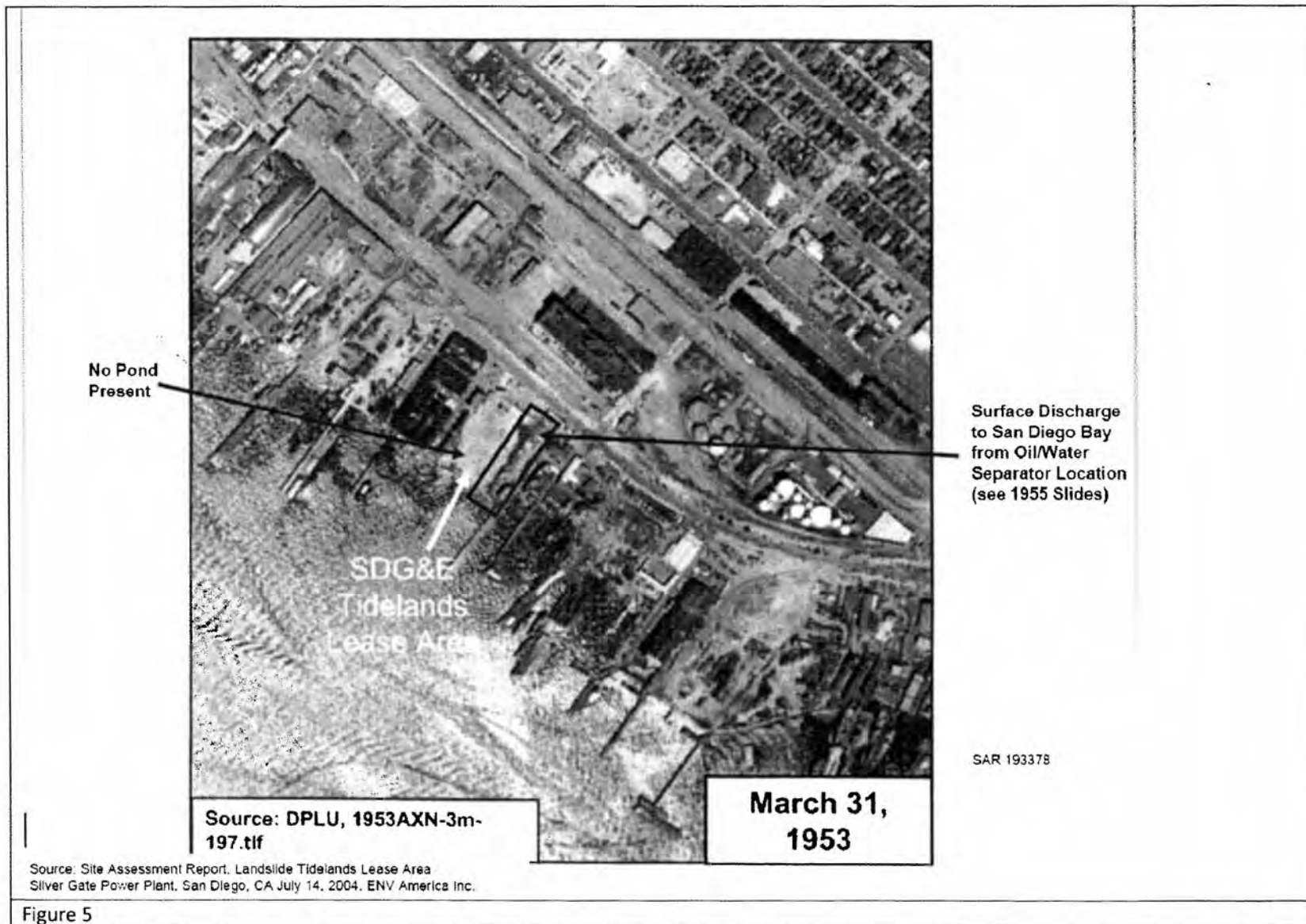
**FIGURE - 3**



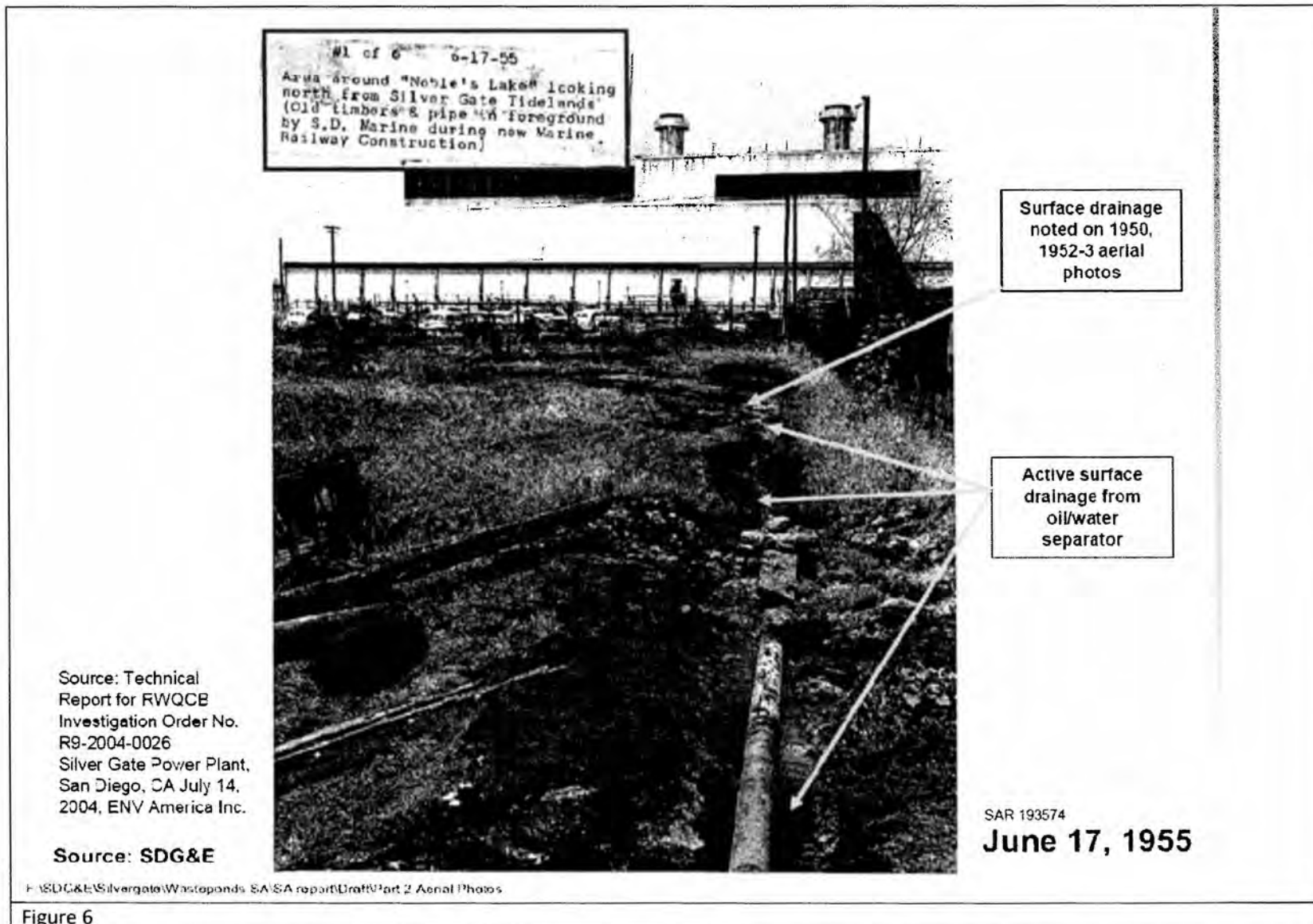
**FIGURE - 4**



**FIGURE - 5**



**FIGURE - 6**





**FIGURE - 7**

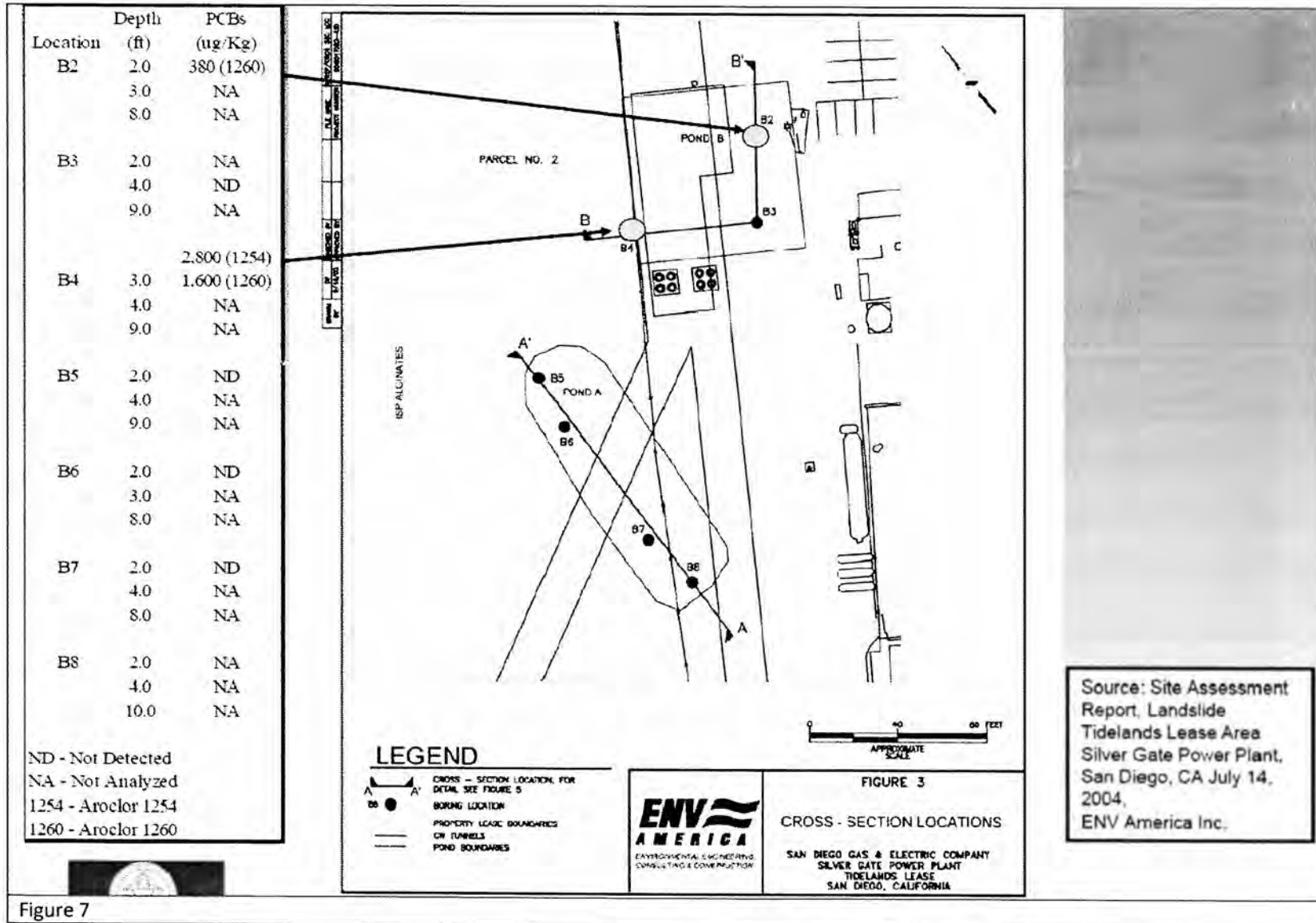


Figure 7

**FIGURE - 8**



**FIGURE - 9**

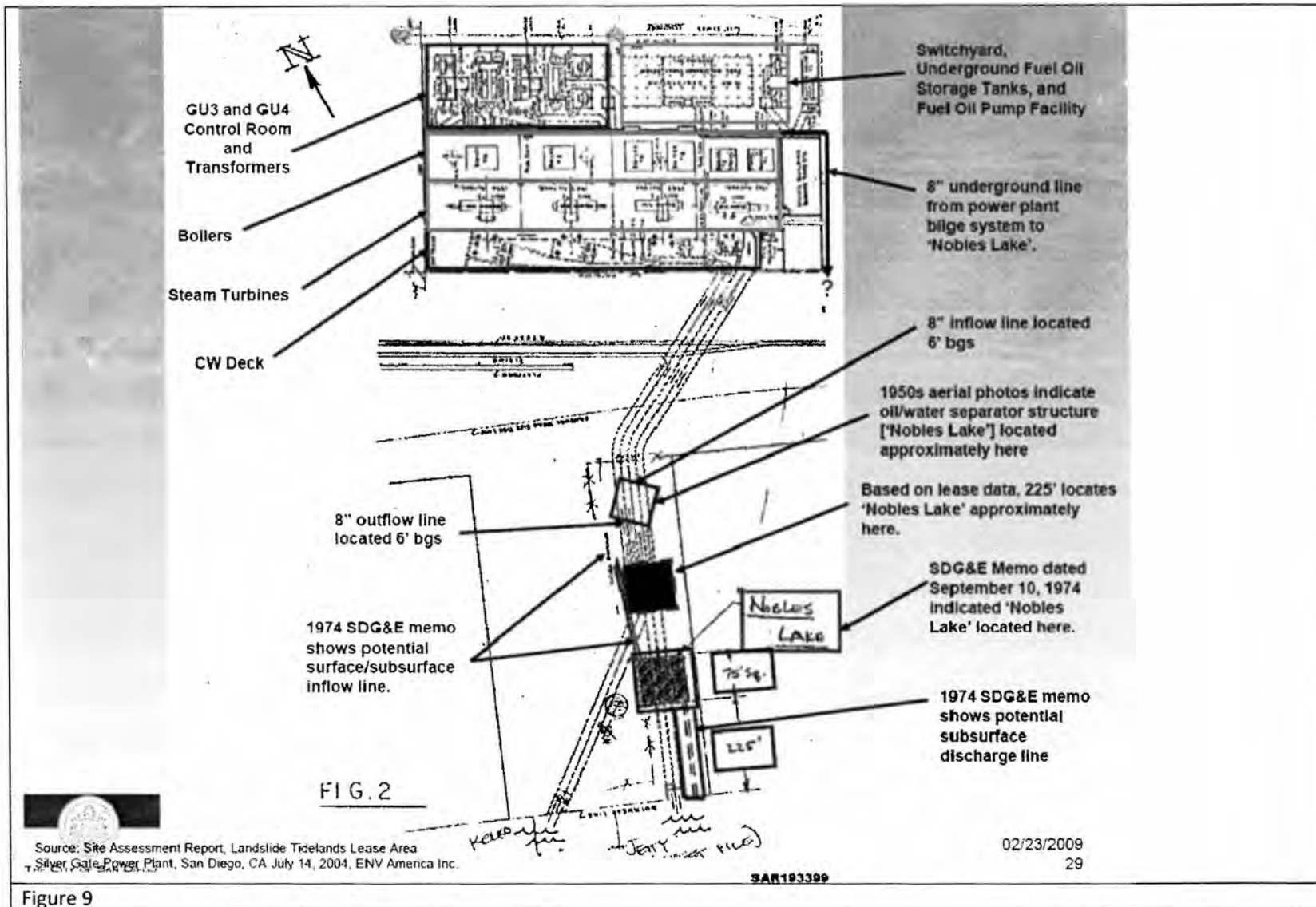


Figure 9

Gordon & Rees LLP  
101 West Broadway, Suite 2000  
San Diego, CA 92101

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PROOF OF SERVICE

I am a resident of the State of California, over the age of eighteen years, and not a party to the within action. My business address is: Gordon & Rees LLP 101 W. Broadway, Suite 2000, San Diego, CA 92101. On June 23, 2011 I served the within documents:

**1. City of San Diego's Reply Comments and Legal Argument.**

- by transmitting via facsimile the document(s) listed above to the fax number(s) set forth below on this date before 5:00 p.m.
- by personally delivering the document(s) listed above to the person(s) at the address(es) set forth below.
- by placing the document(s) listed above in a sealed envelope with postage thereon fully prepaid, in United States mail in the State of California at San Diego, addressed as set forth below. [12 COPIES MAILED TO FRANK MELBOURNE ONLY]
- By Electronic Mail Service. I caused all of the pages of the above-entitled document(s) to be electronically served on the parties listed below.

SEE ATTACHED SERVICE LIST

I am readily familiar with the firm's practice of collection and processing correspondence for mailing. Under that practice it would be deposited with the U.S. Postal Service on that same day with postage thereon fully prepaid in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after the date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on June 23, 2011 at San Diego, California.

  
Maria Gonzalez

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Catherine Hagan  
Staff Counsel  
California Regional Water Quality Control  
Board  
chagan@waterboards.ca.gov

Michael McDonough  
Jim Dragna  
Bingham McCutchen LLP  
Attorney for BP West Coast Products LLC  
Michael.mcdonough@bingham.com  
Jim.dragna@bingham.com

Jill Tracy  
David Barrett  
Sempra Energy  
Attorney for San Diego Gas & Electric Co.  
jtracy@semprautilities.com  
dbarrett@sempra.com

Marco Gonzalez  
Coast Law Group LLP  
Attorney for Environmental Health Coalition  
and San Diego Coastkeeper  
marco@coastlawgroup.com

Sharon Cloward  
Executive Director  
San Diego Port Tenants Assoc.  
Attorney for San Diego Port Tenants  
Association  
Sharon@sdpta.com

Nate Cushman  
Associate Counsel  
U.S. Navy  
Nate.cushman@navy.mil

Frank Melbourne  
California Regional Water Quality Control  
Board  
9174 Sky Park Court, Suite 100  
San Diego, CA 92123  
FMelbourn@waterboards.ca.gov

Raymond Parra  
Senior Counsel  
BAE Systems Ship Repair, Inc.  
Raymond.parra@baesystems.com

Christopher McNevin  
Brian Wall  
Pillsbury Winthrop Shaw Pittman LLP  
Attorney for Chevron USA, Inc.  
chrismcnevin@pillsburylaw.com  
bwall@chevron.com

Christian Carrigan  
Senior Staff Counsel  
State Water Resources Control Board  
ccarrigan@waterboards.ca.gov

James Handmacher  
Attorney for Marine Construction & Design  
Co. and Campbell Industries  
jvhandmacher@bvmm.com

Leslie Fitzgerald  
Deputy Port Attorney  
San Diego Unified Port District  
lfitzger@portofsandiego.org

Kelley E. Richardson  
Jeff Carlin  
Ryan Waterman  
Latham & Watkins  
Attorney for NASSCO  
Kelly.richardson@lw.com  
Jeff.carlin@lw.com  
Ryan.waterman@lw.com

Suzanne Varco  
Opper & Varco LLP  
Attorney for Star & Crescent Boat  
Company  
svarco@envirolawyer.com



1 Michael Tracy  
Amy G. Nefouse  
2 Matthew B. Dart  
Amanda C. Fitzsimmons  
3 DLA Piper LLP  
Attorneys for BAE Systems San Diego Ship  
4 Repair, Inc.

5 Thomas Stahl  
Office of the U.S. Attorney  
6 Attorney for U.S. Navy  
Thomas.stahl@usdoj.gov  
7

8 Gabe Solmer, Esq.  
Jill Witowski, Esq.  
9 San Diego Coastkeeper  
Attorneys for San Diego Coastkeeper  
10 gabe@sdcoastkeeper.org  
jill@sdcoastkeeper.org  
11

12 Sandi Nichols  
Allen Matkins  
13 Attorney for San Diego Unified Port District  
snichols@allenmatkins.com  
14

15 Sarah Brite Evans  
Schwartz Semerdjiam Ballard & Cauley LLP  
Attorney for Star & Crescent Boat Company  
16 sarah@ssbclaw.com  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28

Laura Hunter, Esq.  
Environmental Health Coalition  
Attorneys for Environmental Health  
Coalition  
laurah@environmentalhealth.org

Roslyn Tobe, Esq.  
Senior Environmental Litigation Attorney  
U.S. Navy  
Attorney for U.S. Navy  
Roslyn.tobe@navy.mil

William D. Brown  
Wentzelee Botha  
Brown & Winters  
Attorneys for San Diego Unified Port  
District  
bbrown@brownandwinters.com  
wbotha@brownandwinters.com

C.Scott Spear  
U.S. Department of Justice  
Attorney for U.S. Navy  
Scott.spear@usdoj.gov

**ELECTRONIC MAIL SERVICE LIST**  
**ALL DESIGNATED AND INTERESTED CONTACT LIST**

[talo@waterboards.ca.gov](mailto:talo@waterboards.ca.gov)  
[manderso@ospr.dfg.ca.gov](mailto:manderso@ospr.dfg.ca.gov)  
[melanie.andrews@usdoj.gov](mailto:melanie.andrews@usdoj.gov)  
[dbarker@waterboards.ca.gov](mailto:dbarker@waterboards.ca.gov)  
[steveb@SCCWRP.ORG](mailto:steveb@SCCWRP.ORG)  
[rbrodber@oehha.ca.gov](mailto:rbrodber@oehha.ca.gov)  
[ecarlin@post.harvard.edu](mailto:ecarlin@post.harvard.edu)  
[ccarlisle@waterboards.ca.gov](mailto:ccarlisle@waterboards.ca.gov)  
[chadwick@spawar.navy.mil](mailto:chadwick@spawar.navy.mil)  
[jchan@waterboards.ca.gov](mailto:jchan@waterboards.ca.gov)  
[mchee@nassco.com](mailto:mchee@nassco.com)  
[rob.chichester@navy.mil](mailto:rob.chichester@navy.mil)  
[kathryn.colson@slc.ca.gov](mailto:kathryn.colson@slc.ca.gov)  
[hcumberland@geosyntec.com](mailto:hcumberland@geosyntec.com)  
[fairey@mlml.calstate.edu](mailto:fairey@mlml.calstate.edu)  
[curtis.foosum@slc.ca.gov](mailto:curtis.foosum@slc.ca.gov)  
[dgibson@waterboards.ca.gov](mailto:dgibson@waterboards.ca.gov)  
[sgoldberg@downeybrand.com](mailto:sgoldberg@downeybrand.com)  
[vgonzales@sempra.com](mailto:vgonzales@sempra.com)  
[brian.gordon@navy.mil](mailto:brian.gordon@navy.mil)  
[richard.haimann@ghd.com](mailto:richard.haimann@ghd.com)  
[sandor.halvax@baesystems.com](mailto:sandor.halvax@baesystems.com)  
[justin.hawkins@stantec.com](mailto:justin.hawkins@stantec.com)  
[bhays@portofsandiego.org](mailto:bhays@portofsandiego.org)  
[theinrichs@sandiego.gov](mailto:theinrichs@sandiego.gov)  
[bhitchens@geosyntec.com](mailto:bhitchens@geosyntec.com)  
[lhonma@waterboards.ca.gov](mailto:lhonma@waterboards.ca.gov)  
[ckatz@spawar.navy.mil](mailto:ckatz@spawar.navy.mil)  
[felicia\\_kit@10news.com](mailto:felicia_kit@10news.com)  
[rkolb@sandiego.gov](mailto:rkolb@sandiego.gov)  
[gkostyrko@waterboards.ca.gov](mailto:gkostyrko@waterboards.ca.gov)  
[jenlk@sdcoastkeeper.org](mailto:jenlk@sdcoastkeeper.org)  
[jennifer.lucchesi@slc.ca.gov](mailto:jennifer.lucchesi@slc.ca.gov)  
[matthew.luxton@nassco.com](mailto:matthew.luxton@nassco.com)  
[emaher@portofsandiego.org](mailto:emaher@portofsandiego.org)  
[mmartin@ospr.dfg.ca.gov](mailto:mmartin@ospr.dfg.ca.gov)  
[kmcfadden@sandiego.gov](mailto:kmcfadden@sandiego.gov)  
[dmerk@portofsandiego.org](mailto:dmerk@portofsandiego.org)  
[amonji@waterboards.ca.gov](mailto:amonji@waterboards.ca.gov)  
[tmulder@tnainc.com](mailto:tmulder@tnainc.com)  
[mark.s.myers@noaa.gov](mailto:mark.s.myers@noaa.gov)  
[pnyquist@alston.com](mailto:pnyquist@alston.com)  
[loneal@brownandwinters.com](mailto:loneal@brownandwinters.com)

[fortlieb@sandiego.gov](mailto:fortlieb@sandiego.gov)  
[wpaznokas@dfg.ca.gov](mailto:wpaznokas@dfg.ca.gov)  
[peugh@cox.net](mailto:peugh@cox.net)  
[douglas.reinhart@bp.com](mailto:douglas.reinhart@bp.com)  
[bruce@sdcoastkeeper.org](mailto:bruce@sdcoastkeeper.org)  
[vrodriguez@waterboards.ca.gov](mailto:vrodriguez@waterboards.ca.gov)  
[sevensonwest@sbcglobal.net](mailto:sevensonwest@sbcglobal.net)  
[pgs@marcoglobal.com](mailto:pgs@marcoglobal.com)  
[mscully@gordonrees.com](mailto:mscully@gordonrees.com)  
[david.silverstein@navy.mil](mailto:david.silverstein@navy.mil)  
[john.skance@bp.com](mailto:john.skance@bp.com)  
[jsmith@waterboards.ca.gov](mailto:jsmith@waterboards.ca.gov)  
[smithj@slc.ca.gov](mailto:smithj@slc.ca.gov)  
[kasmith@waterboards.ca.gov](mailto:kasmith@waterboards.ca.gov)  
[laurie.sullivan@noaa.gov](mailto:laurie.sullivan@noaa.gov)  
[sharon\\_taylor@fws.gov](mailto:sharon_taylor@fws.gov)  
[btobler@waterboards.ca.gov](mailto:btobler@waterboards.ca.gov)  
[swilliams@geosyntec.com](mailto:swilliams@geosyntec.com)  
[pwyels@waterboards.ca.gov](mailto:pwyels@waterboards.ca.gov)  
[katie\\_zeeman@fws.gov](mailto:katie_zeeman@fws.gov)