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20 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

21 SAN DIEGO REGION

22 IN RE TENTATIVE CLEANUP AND
23 ABATEMENT ORDER NO. R9-2011-0001
24 (formerly No. R9-2010-0002)

**BAE SYSTEMS SAN DIEGO SHIP REPAIR
INC.'S HEARING BRIEF REGARDING
TCAO/DTR NO. R9-2011-0001**

25 Presiding Officer: Grant Destache
26 Hearing Date: November 9, 14-16, 2011

27 Pursuant to the September 19, 2001 Notice of Public Hearing, and the Third Amended Order of
28 Proceedings dated June 8, 2011, Designated Party BAE Systems San Diego Ship Repair Inc. (“BAE”) respectfully submits this hearing brief concerning Tentative Cleanup and Abatement Order No. R9-2011-0001 (“TCAO”) and its associated Draft Technical Report (“DTR”) for the San Diego Bay Shipyard Sediment Site, San Diego County (“Shipyard Sediment Site” or “Site”).¹

¹ This brief incorporates by reference BAE Systems' comments on the proposed Final EIR, submitted concurrently.

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1 **I. INTRODUCTION**

2 Over the last decade BAE has expended tremendous efforts and resources in working
3 cooperatively with the Regional Board Staff on the Cleanup Team ("Cleanup Team"), the Regional Board,
4 and other Designated Parties toward developing an appropriate TCAO and DTR for the Site. BAE
5 recognizes and appreciates the significant contributions and diligence Regional Board Staff exhibited
6 during this process, and looks forward to finalizing an order and moving forward with a cleanup that
7 achieves remedial goals in a reasonable time, and includes an appropriate remedy for the Site.

8 After years of detailed studies of sediment conditions and analyses of the potential risks to human
9 health, aquatic life, and aquatic-dependent wildlife from contamination in the sediment at the Site, the
10 administrative record overwhelmingly demonstrates that the proposed TCAO is exceedingly protective of
11 beneficial uses, and provides for an extensive cleanup to levels unprecedented at similar sites in San Diego
12 Bay or anywhere in California. Importantly, the Cleanup Team agrees that the TCAO is based on highly
13 conservative and protective assumptions.

14 As a result of these highly conservative and protective assumptions, the TCAO requires areas of
15 the Site to be remediated where little or no risk to human health or the environment exists. The decision to
16 remediate those areas comes at a significant cost to all the Designated Parties. BAE urges the Regional
17 Board to carefully consider the entire record, including the absence of evidence of unreasonable impacts to
18 the beneficial uses at the Site. Given that the TCAO is already exceedingly protective, there is no
19 justifiable basis for expanding the cleanup footprint further, as certain parties have suggested. (*See, e.g.,*
20 Sections VI and VII *infra.*) To the contrary, substantial evidence demonstrates that the TCAO represents a
21 more protective approach than is necessary to protect human health and the environment.

22 While Staff is afforded latitude in deciding what constitutes "substantial evidence" supporting a
23 finding, the facts and assumptions underlying a finding must be reasonable. *Friends of Davis v. City of*
24 *Davis*, 83 Cal. App. 4th 1004, 1019 (2000). Some of the Staff's assumptions are so overly protective as to
25 constitute unreasonable assumptions.

26 BAE submits this brief to assist the Regional Board in sifting through the mountain of
27 data/evidence submitted and the various approaches submitted as to how to evaluate the data/evidence.
28 BAE looks forward to the opportunity to present to the Board its views regarding the terms of the TCAO
and DTR.

II. THE SHIPYARD SEDIMENT SITE

Since at least 1914, the leaseholds forming the Site have been occupied and operated as shipyards.
(*See, e.g.,* TCAO Finding 5.) BAE's and NASSCO's shipyard leases ensure that the Site will remain
shipyards through at least 2034 and 2040, respectively, and high-level security and prohibitions on fishing,

1 shell-fish harvesting and other activities that factor into the TCAO's findings will remain in place. (DTR
2 at 27-5.) The San Diego Unified Port District's ("Port") 2010 Master Plan, as well as the City of San
3 Diego's ("City") 2008 General Plan, likewise call for the continued operation of the existing marine related
4 industries and establish significant hurdles to any proposed land use changes to the prime industrial land
5 underlying the Site . (BAE 5/26/11 Comments Re TCAO/DTR, at 15-17.) And yet, as summarized
6 below, for purposes of the TCAO the Site is generally *not* considered a shipyard, but rather cleanup levels
7 and the remedial footprint are set as if the public had unrestricted and continuous access to, and indeed
8 continuously interacted with, the Site and wildlife that are assumed to live and forage exclusively within
9 the four corners of the Site. (*Id.*)

10 Moreover, multiple lines of available data demonstrate that the Site is becoming less contaminated
11 over time, indicating natural recovery is occurring within the Site. (*Id.* at 24-29; NASSCO's 5/26/11
12 Comments, at 39-44.) Natural recovery is a readily employable and proven remediation option.
13 (Deposition of David Barker ("Barker Depo"), at 262:23-263:1.) And yet natural recovery is not selected
14 as a primary remedy here. Instead, significant active dredging is the proposed remedy.

15 The history of the Site as compared with the assumptions in the TCAO regarding its future use,
16 and the selection of dredging as the primary remedy, are but two examples of the Regional Board deciding
17 to use the most conservative and protective assumptions possible in order to ensure, in its view, the highest
18 level of protection to the identified beneficial uses. These assumptions are representative of the approach
19 taken by the Regional Board and its Cleanup Team in preparing this TCAO for consideration. They also
20 serve, as do other examples identified below, as counterweights to the arguments this Regional Board will
21 receive from certain parties asserting that this TCAO does not go far enough. The evidence and analyses
22 submitted by Designated Parties and the Cleanup Team alike demonstrate otherwise – this is the largest
23 and most stringent sediment remediation in the history of San Diego Bay.

24 **III. CLEANUP LEVELS AND REMEDIAL FOOTPRINT**

25 The TCAO establishes cleanup levels to which the Site is to be remediated and a remedial
26 footprint of those areas requiring remediation to meet those cleanup levels. BAE provides the following
27 brief summary of how the cleanup levels were derived and the remedial footprint identified. BAE looks
28 forward to assisting the Board in understanding how the conservative cleanup levels were derived and how
those levels led to a remedial footprint that is overly protective of beneficial uses.

29 **A. Cleanup Levels for Identified Beneficial Uses of the Bay.**

30 The extensive investigations conducted at the Site were designed to evaluate potential risks related
31 to conditions that actually occur at the Site, based on state-of-the-art methods. The multiple lines of
32 evidence included sediment chemistry, multiple measures of sediment toxicity, multiple measures of

1 benthic community health, fish histopathology, and bioaccumulation by fish, lobsters and mussels. These
2 lines of evidence were combined in a weight-of-evidence approach to determine whether ecological or
3 human health risks are present at the Site, and whether they are likely related to chemical toxicity. This
4 approach was also used to develop site-specific sediment quality values that were used to identify
5 potentially toxic sediments for remediation that are economically and technologically feasible.

6 Cleanup levels were set for aquatic life, aquatic-dependent wildlife, and human health, each of
7 which includes specific beneficial uses for San Diego Bay. (*See* TCAO, Findings 14, 21, 25.)

8 Site-specific aquatic life standards ensure that all areas determined to have sediment
9 contamination levels likely to adversely affect the health of the sediment-dwelling organisms (i.e., the
10 benthic macroinvertebrates community) are to be remediated. (DTR, § 18.) The DTR analysis evaluates
11 risks to benthic macroinvertebrates based on the three lines of evidence (the "Triad") of sediment
12 chemistry, sediment toxicity and benthic community data. The Triad approach is considered to be state of
13 the art in sediment quality assessment.

14 Aquatic-dependent wildlife and human health are analyzed differently than aquatic life. For these
15 sets of beneficial uses, two tiers of risk assessment were performed, and ultimately numeric cleanup levels
16 for human health and aquatic-dependent wildlife were established for the five primary constituents of
17 concern ("COCs"). The cleanup levels represent the Surface Weighted Average Concentrations
18 ("SWACs") of the five primary COCs. The cleanup levels were established at SWAC values that do not
19 pose unacceptable risks to human health or aquatic-dependent wildlife.

20 **B. Remedial Footprint.**

21 The proposed remedial footprint (portion of the Site targeted for remediation) was determined by:

- 22 • Subdividing the Site into polygonal areas (Thiessen Polygons, whose boundaries define
23 the area that is closest to each sampling point relative to all other sampling points).
- 24 • Identifying the polygons that contained sediment contaminants likely to adversely affect
25 the health of the benthic community, and ranking each polygon based on the level of contamination by the
26 five primary COCs. Polygons with contaminants sufficient to adversely affect the benthic community
27 were identified in two ways: (1) where sediment quality Triad data were available, any polygon that was
28 deemed "likely" impaired was included in the proposed remedial footprint, and "possibly" impaired
polygons were further evaluated. For non-Triad stations, sediment chemistry data alone were used to
identify polygons for inclusion in the footprint. A prioritization method was next applied to determine
which of the non-Triad stations would be included.

1 • Establishing a hierarchy using a ranking method and applying the composite SWACs to
2 decide which polygons should be remediated. An index of contamination also was used to identify the
3 most contaminated polygons that should be removed on a "worst-first" basis.

4 • Using these procedures, 23 polygons were included in the proposed remedial footprint.
5 At the Hearing, BAE will further explain how the remedial footprint was conservatively
6 determined and how it more than adequately protects all Bay beneficial uses.

6 **IV. THE TCAO IS PREMISED UPON OVERLY PROTECTIVE ASSUMPTIONS**

7 **A. 2003 Exponent Report Found Very Low Risk to Ecological and Human Health**

8 The TCAO and DTR are based primarily upon the results of the detailed sediment investigation
9 BAE and NASSCO conducted at the Site in 2001-2002 in accordance with guidelines established by the
10 Regional Board. (*See* TCAO, Finding 13.) The 2003 Exponent Report provided comprehensive data
11 measuring sediment chemistry, toxicity, benthic macroinvertebrate communities, bioaccumulation in
12 fishes and invertebrates, and fish health using multiple independent indicators (*Id.*; *see also* 2003
13 Exponent Report.) According to Staff, it was "the most extensive sediment investigation ever conducted
14 for a site in San Diego Bay." (2003 Exponent Report at 1-2 – 1-4; Barker Depo. at 80:2-80:22, 82:3-82:4.)

14 The results of this highly detailed and exhaustive investigation found that risks to human health
15 and aquatic-dependent wildlife at the Site "are well within acceptable levels," that certain risks are
16 attributable to pesticides rather than any of the primary COCs at issue, and concluded that active dredging
17 would provide minimal incremental benefit at a very high cost. (2003 Exponent Report, at 19-1, 19-13.)

17 And yet the current TCAO and DTR find impairment of aquatic life, aquatic-dependent wildlife,
18 and human health beneficial uses, and provide for extensive active dredging as the primary remedy. To
19 reach these conclusions, the TCAO and DTR rely upon overly protective and unsupportable assumptions,
20 some of which are summarized below. These issues have been thoroughly set forth by Designated Parties'
21 expert reports, briefing and evidence, and largely have been acknowledged by the Cleanup Team.

21 **B. Aquatic life Impairment Analysis is Premised Upon Overly Protective Assumptions**

22 The TCAO concludes that aquatic life beneficial uses are impaired due to the elevated levels of
23 pollutants in the sediment at the Site. Staff recognized that the best evidence of aquatic life impairment is
24 biologic data and that chemistry data alone is insufficient to predict biological effects. (Deposition of
25 David Gibson ("Gibson Depo"), at 143; Deposition of Tom Alo ("Alo Depo") at 228:33-229:3.)
26 Unfortunately, the DTR does not reflect that understanding, and instead Staff placed too great a weight on
27 chemical analysis thereby creating an overly conservative assessment of aquatic life impairment.
28 Evidence of the overly conservative assumptions relied upon by Staff includes:

 • The site-specific bioavailability of chemicals at the Site is not adequately addressed in the

1 DTR, and as a result the weight-of-the-evidence approach to evaluate potential impairments to aquatic life
2 is overly conservative. (Ginn 3/11/11 Expert Report, at 13; BAE 5/26/11 Comments Re TCAO/DTR, at
3 1-2.)

4 • The DTR does not give the benthic community leg of the Triad more weight than the
5 sediment chemistry and sediment toxicity legs, and ignores the greater importance of that leg, as
6 documented in studies and authorities. This results in an overly conservative assessment that gives
7 unwarranted weight, in particular, to the sediment chemistry leg of the Triad. (Ginn 3/11/11 Expert
8 Report, at 14, 28; BAE 5/26/11 Comments Re TCAO/DTR, at 2-4.) Had the DTR more appropriately
9 weighted the biological measures of adverse effects, many of the polygons that were determined to be
10 “likely” impaired would have been determined to be unimpaired.

11 • The DTR does not address the significant issues and discrepancies identified with the
12 bivalve larvae test, resulting in an overly conservative analysis. (Ginn 3/11/11 Expert Report, at 23; BAE
13 5/26/11 Comments Re TCAO/DTR, at 4-6.) The irregularities of the bivalve larvae results are so
14 important because the other testing on benthic life – amphipod and sea urchin – showed little toxicity and
15 no impairment. As for benthic community effects, the other kind of biological indicator showed little to
16 no impairment at the same locations as questionable bivalve larvae data, resulting in highly questionable
17 characterizations of certain polygons. (DTR, Tables 18-8 and 18-9.) Impairment of then benthic
18 community in up to 12 polygons based on toxicity testing, therefore, rests on the value of questionable
19 data. (DTR, Table 18-13.) Staff has likewise recognized this issue, but yet heavily relied on the bivalve
20 larvae results. (See Alo Depo at 255:18-25 (agreeing that bivalve test is more susceptible to confounding
21 factors and is less certain than the amphipod survival test).)

22 • It is likely that the Regional Board’s risk assessment conclusions have been overstated for
23 risks that certain chemicals pose to various Bay organisms by inappropriately interpreting bioaccumulation
24 data. (Allen 3/11/11 Expert Report, at 19-20; BAE 5/26/11 Comments Re TCAO/DTR, at 6-7.) Again,
25 Staff has agreed that the Site data supports the conclusion that the contaminants are not bioavailable.
26 (Barker Depo, at 104:22-105:22; 111:18-112:17.)

27 These, and other oversimplifications identified in the parties' prior comment briefs, together form
28 a series of overly conservative assumptions that lead to the insufficiently supported conclusion that aquatic
life beneficial uses are unreasonably impaired.

29 **C. Aquatic-Dependent Wildlife Impairment Analysis is Premised Upon Overly**
30 **Protective Assumptions**

31 The DTR's aquatic-dependent wildlife impairment analysis included a "Tier II risk assessment
32 objective [which] was to more conclusively determine whether or not Shipyard Sediment Site conditions
33

1 pose an unacceptable risk to aquatic-dependent wildlife receptors of concern.” (TCAO, Finding 24.)
2 Based on the Tier II results, the Regional Board "determined that ingestion of prey caught within all four
3 assessment units at the Shipyard Sediment Site poses a risk to all aquatic-dependent wildlife receptors of
4 concern (excluding the sea lion).” (DTR, § 24.1.)

5 But to reach that conclusion, the DTR relies on dramatically unrealistic assumptions. Most
6 notably, the DTR utilizes an area use factor ("AUF") of "1" which equates to an assumption that the
7 wildlife receptors selected for this analysis will catch and consume 100% of their prey from within the
8 Shipyard Sediment Site.² (Alo Depo, at 329:7-12.) However, expert opinions, as well as that of the
9 Cleanup Team itself, are in accord: the DTR’s use of a 100% AUF assumption in this Tier II analysis is
10 overly conservative, unsupported by evidence or authority, and results in a significant overestimation of
11 risk to aquatic-dependent wildlife. (See BAE 5/26/11 Comments Re TCAO/DTR, at 7-12; Ginn 3/11/11
12 Expert Report, at 74 (this assumption "results in dramatic overestimates of risk to wildlife."); Alo Depo,
13 at 303:3-9; 331:16-19 (this is a "very conservative" assumption).) The DTR also assumes the maximum
14 detected chemical concentration for prey species, rather than more realistic average or mean
15 concentrations, or a statistical method. (*Id.* at 317.)

16 Utilizing the Exponent-calculated actual AUFs for the receptors within the Site, the DTR's stated
17 aquatic-dependent wildlife risk at the BAE leasehold is overstated by approximately 500% for five of the
18 six receptors, and by approximately 167% for the sixth. (BAE 5/26/11 Comments Re TCAO/DTR, at 11.)

19 **D. Human Health Impairment Analysis is Premised Upon Highly Protective**
20 **Assumptions**

21 The DTR's human health impairment analyses are overly conservative, employ unrealistic
22 assumptions, and do not comply with relevant state and federal guidance. BAE, NASSCO, and SDG&E
23 all submitted detailed comments regarding these issues. In relevant part, those issues include:

- 24 • Fractional Intake ("FI") – the DTR assumes that all of the seafood consumed by
25 recreational and subsistence anglers that catch and eat fish and shellfish from San Diego Bay would come
26 entirely from fish and lobsters caught at the Site, despite the site being a high-security area, with no public
27 access, where fishing/lobstering are strictly prohibited.
- 28 • Consumption Rate – the DTR assumes that subsistence anglers always consume the entire
fish or shellfish, including skin, guts, filter organs, etc., and not just the filet or edible portion.
- Exposure Duration – the DTR uses the highest EPA default point estimate for exposure
duration of 30 years, without explanation or justification, when current EPA guidance recommends 9 years

² Indeed several of the selected receptors are migratory, and thus by definition cannot be permanent residents of the Site. (Alo Deposition, Vol. II, at 334:20-23.)

1 and other data support a lower exposure duration than assumed in the DTR.

2 • According to written reports from designated experts, the result of these overly
3 conservative assumptions is a significantly overstated risk of chemical exposure to human health. (*See*,
4 *e.g.*, Ginn 3/11/11 Expert Report, at 81-82; Environ 3/11/11 Expert Report, at 7-13; Finley 3/11/11 Expert
5 Report at 16-17.) Mr. Alo, the Cleanup Team's designated "person most knowledgeable" regarding human
6 health impairment, agreed that, in particular, the 100% AUF is an "extremely conservative assumption"
7 (Alo Depo, Vol. I, at 95:1-4), that there is no known evidence supporting the possibility of fishing or
8 lobstering at the Site despite the security measures and prohibitions (*id.* at 93:5-18), or that sediment
9 pollutants may migrate to areas outside the leasehold where fishing or lobstering is accessible. (*Id.* at
10 109:8-110:3). Mr. Alo also agreed that the 30 year exposure duration is unrealistic and overly
11 conservative. (*Id.* at 144:9-14.)

12 The Cleanup Team readily admits that it made "conservative assumptions about exposure and
13 consumption in the Tier II risk assessment calculations" (Cleanup Team's 8/23/11 Response to Comments,
14 at Response 28.1), but argues it is legally required to do so in order to meet its obligations. (*Id.*) BAE
15 disagrees with the Cleanup Team's use of such overly conservative data to formulate the alternative
16 cleanup standards and therefore in the drawing of the TCAO's remedial footprint. But BAE and the
17 Cleanup Team do agree with just how conservative the alternative cleanup levels are and that it is
18 unnecessary to require more protective cleanup levels or a larger footprint.

19 The major assumptions underlying the other impairment analyses set forth in the DTR are also
20 overly conservative. Collectively, these overly conservative assumptions have led to a cleanup plan that is
21 more extensive than is necessary to protect beneficial uses.

22 **E. The Proposed Alternative Cleanup Levels for this Site are Overly Stringent and**
23 **Unprecedented Compared to Other Similar Sites**

24 State Water Board Resolution 92-49 requires the Regional Board to "prescribe cleanup levels
25 which are consistent with appropriate levels set by the Regional Water Board for analogous dischargers
26 that involve similar wastes, site characteristics, and water quality considerations." Nonetheless, the instant
27 TCAO provides for significantly more stringent cleanup levels as compared to similar sites.

28 For example, the Campbell Shipyard Site is substantially similar to the instant Site. (Barker Depo.
at 362-15:365:5.) Yet the cleanup levels proposed in this TCAO are far more stringent than those for the
Campbell Site, and other similar sites, for the same constituents. (*See* NASSCO's 5/26/11 Comments, at
5-6.) For example, at the Campbell Site the Regional Board used the same apparent effects approach.
Here, however, Staff utilizes the lowest apparent effects threshold, and then adds a 40% buffer to
unnecessarily reduce the level, resulting in an exceedingly low cleanup level compared to Campbell and

1 other sites. (*Id.* at p. 6; Barker Depo. at 373:14-374:22.) Copper cleanup levels at other sites around the
2 Bay were between 1000 mg/kg and 530 mg/kg, yet at this Site the cleanup level is 159 mg/kg. Likewise,
3 mercury cleanup levels at the various other Bay sites were 4.8 mg/kg, which is almost seven times greater
4 than the Site goal of 0.68 mg/kg. Cleanup levels for primary COCs, such as total PCBs and TBT, are also
5 significantly more stringent at the Site compared with the Campbell Site. (Barker Depo. at 362-377.)

6 Moreover, the proposed remedial and post-remedial monitoring programs are far more stringent
7 than any other that has been required for San Diego Bay. (Gibson Depo. at 103:23-104:12; 133:17-135:7.)

8 **V. THE TCAO CORRECTLY APPLIES STATE WATER BOARD RESOLUTION 92-49**
9 **AND FINDS CLEANUP TO BACKGROUND LEVELS IS NOT ECONOMICALLY**
10 **FEASIBLE**

11 State Water Board Resolution 92-49 allows designated parties to remediate a site based on
12 alternative cleanup levels, rather than to background levels, if it can be demonstrated that it is
13 economically infeasible to remediate a site to background. Determining "economic feasibility" requires an
14 objective balancing of the incremental benefits of attaining further reduction in the concentrations of
15 primary COCs as compared with the incremental cost of achieving those reductions. (*Id.*; *see also* TCAO
16 Finding 31.) "Economic feasibility does not refer to the dischargers ability to finance cleanup." (*Id.*) The
17 Regional Board engaged in a comprehensive evaluation of the criteria and factors that underlie the
18 economic feasibility analysis, concluding that it

19 revealed that the incremental benefit of cleanup diminishes significantly
20 with additional cost beyond a certain cleanup level, and asymptotically
21 approaches zero as remediation approaches background. Based on these
22 considerations, cleaning up to background sediment chemistry levels is
23 not economically feasible.

24 (TCAO Finding 31.)

25 Not only does the TCAO (and accompanying DTR) demonstrate that it is economically infeasible
26 to remediate the site to background, but two other designated experts, Arcadis, Inc. ("Arcadis") and
27 Integral Consulting, Inc. ("Integral"), have submitted written reports setting forth the same opinion.
28 (BAE's 6/23/11 Reply to SDC and EHC's Comments ("BAE Reply to SDC/EHC Comments"), at 5-6.)
Arcadis and Integral used different methodologies to assess cost-effectiveness than did the Regional Board
but nonetheless each derived the same conclusion. Cleanup to background was not only substantially
more expensive to achieve than cleaning to the DTR's alternative cleanup levels, but also is substantially
less cost-effective than cleaning to the DTR-established cleanup levels. (*Id.* at 5-15.)

The Environmental Parties previously submitted written comments arguing that the Regional
Board and the other Designated Parties have not complied with Resolution 92-49 in that, *inter alia*, the
economic feasibility analysis is incorrect. BAE (and other parties) have strenuously argued the alternative

1 cleanup levels comply with the terms of Resolution 92-49.

2 The Cleanup Team, in its Response to Comments Report, rejects the Environmental Parties'
3 arguments and provides that with respect to economic feasibility considerations:

4 As detailed in the Cleanup Team's Response 31.1, the TCAO's proposed
5 alternative cleanup levels require active remediation by dredging of
6 sediments to a point where the incremental costs of further dredging
7 outweigh the incremental environmental benefits. Under the Cleanup
8 Team's analysis, the alternative cleanup levels result in concentrations of
9 COCs that do not unreasonably impact beneficial uses.

10 * * *

11 In fact, even EHC's and Coastkeeper's own economic feasibility analysis
12 supports a determination that it is not economically feasible to remediate
13 the Shipyard Sediment Site to background since that analysis concludes
14 that incremental costs outweigh incremental benefits after an addition of 8
15 polygons to the TCAO's proposed cleanup footprint, and would leave
16 COCs behind at above-background levels.

17 (Cleanup Team Response to Comments, at 1-29.)

18 The Cleanup Team's analysis concludes:

19 A more reasonable interpretation of the economic feasibility analysis as it
20 relates to the remedial footprint is that the \$58 million cost estimate for
21 the cleanup of the proposed remedial footprint, which consists of 23
22 polygons, is at a point beyond the initial high exposure reduction per cost
23 scenario represented by the first 18 polygons. The cost effectiveness
24 analysis in the Arcadis Report also supports this conclusion. Thus, the
25 Cleanup Team is satisfied that the alternative cleanup levels are the
26 lowest that are economically achievable in light of the "total values"
27 analysis required by Resolution No. 92-49.

28 (Cleanup Team Response to Comments, at 31-33) (emphasis added.)

The current versions of the TCAO and DTR correctly apply the requirements of Resolution 92-49
and, as a result, remediation to background is not economically feasible. The Regional Board should
confirm this important finding.

VI. THE REGIONAL BOARD SHOULD REJECT THE ENVIRONMENTAL PARTIES' ASSERTIONS AND CRITICISMS OF THE TCAO AND DTR

A. Alternative Cleanup Levels are Appropriately Set Site-Wide Rather than on a Constituent by Constituent Basis as Urged by the Environmental Parties

SDC/EHC and their expert Don MacDonald have argued that in analyzing whether background
levels are achievable and what alternative cleanup levels are appropriate, the Regional Board must conduct
that analysis on a constituent-by-constituent basis. (SDC/EHC 5/26/11 Comments.) BAE's 6/23/11 Reply
to SDC/EHC Comments provides a detailed response demonstrating that the Regional Board has applied
the correct standard in the TCAO/DTR. The Cleanup Team, in its Response to Comments Report,
definitively agrees that with respect to this issue: "Resolution No. 92-49 does not require, as Coastkeeper

1 and EHC argue, that the San Diego Water Board engage in its economic and/or technological feasibility
2 analyses on a “constituent by constituent” basis, by grouping polygons in a specific way, or in any other
3 particular manner." (*Id.* at 1-29.) "NASSCO and BAE... make a persuasive argument that EHC’s and
4 Coastkeeper’s argument for constituent by constituent cleanup levels fails. The Cleanup Team
5 incorporates those arguments in this response as if set forth in full." (*Id.* at 1-31, fn 12.) For these reasons,
6 the Regional Board should likewise reject the Environmental Parties' argument.

6 **B. Designated Expert Don MacDonald's Opinions are Not Scientifically Valid**

7 In his March 11, 2011 expert report,³ the Environmental Parties' designated expert Don
8 MacDonald states that additional polygons should be included in the remediation footprint at the Site
9 based on overly conservative assumptions that do not account for site-specific conditions. Those
10 assumptions are sometimes used in early screening-level evaluations of whether sediments may pose
11 ecological risks at a study site, but are inappropriate when actual risks are evaluated at a site. As
12 demonstrated thoroughly in the DTR, prior briefing, and in the Cleanup Team's Response to Comments
13 Report, the ecological evaluations conducted at the Site were designed to evaluate potential risks under the
14 site-specific conditions that actually occur at the Site, based on state-of-the-art methods. Thus, the risk
15 assessment methods used at the Site, while overly conservative, were technically sound, environmentally
16 protective, and more appropriate than the limited screening-level approach suggested by Mr. MacDonald.

17 Mr. MacDonald also asserts that the monitoring activities at the Site will not be environmentally
18 protective during and after remediation. This is clearly incorrect. The TCAO specifies that a Remedial
19 Monitoring Plan and a Post-Remediation Monitoring Plan both be submitted to the Regional Board within
20 90 days of adoption of the CAO to ensure monitoring activities are environmentally protective. These
21 plans must identify the detailed components of all monitoring activities and will be subjected to detailed
22 review by the Regional Board to ensure that they are technically adequate and environmentally protective.
23 In addition, the TCAO specifies that numerous environmental indicators such as sediment chemistry,
24 sediment toxicity, benthic community health, and bioaccumulation, be evaluated during post-remedial
25 monitoring, to ensure that the monitoring is environmentally protective. Moreover, the TCAO specifies
26 that determinations of whether remedial goals have been achieved will be made two, five, and ten years
27 after remediation has been completed. The TCAO therefore contains sufficient safeguards to ensure that
28 all monitoring activities will be technically sound and environmentally protective.

29 For these reasons, as well as those detailed in BAE's 5/26/2011 Comments re TCAO/DTR, and the
30 Cleanup Team's Responses to Comments Report, both of which rebut each and every material assertion of

31 ³ This report and expressed opinions are subject to a pending motion in limine that may result in its exclusion.

1 Mr. MacDonald, the Regional Board should disregard the opinions of Mr. MacDonald.

2 **VII. SDG&E'S PROPOSED "TOXIC UNIT" APPROACH SHOULD BE REJECTED**

3 After years of effort, analysis and discussion between the Cleanup Team and Designated Parties in
4 developing appropriate cleanup levels for the Site, SDG&E recently proposed that all such work be
5 scrapped and that a different method be used to set cleanup levels at the Site. SDG&E's May 26, 2011
6 comments included submission of an untimely expert report by Dr. Jason Conder⁴ which advocates
7 replacing the DTR's purportedly "critically flawed" benthic beneficial use impairment ("BUI") with a
8 putative "causal approach" to adequately identify risks (the "Toxic Unit" approach). Dr. Conder argues:

8 "The sediment chemistry line of evidence approaches used in the [DTR]
9 do not represent a complete or accurate characterization of chemical risk
10 potential to benthic invertebrates because they do not include all COCs
11 and they are not based on cause-and-effect toxicity endpoints.... As a
12 result the current Triad and Non-Triad Data approaches set forth in the
13 DTR are not scientifically valid or supportable, and should not be used to
14 identify Aquatic Life Beneficial Use Impairment." (*Id.* at 2.)

12 The Toxic Unit approach concludes that a remedial footprint much larger than the one proposed in
13 the DTR is warranted based solely on benthic BUI. (*Id.*, at 4; Figure 3.)

13 As summarized below, other Designated Parties, their experts, and the Cleanup Team all view the
14 Toxic Unit approach as scientifically and technically invalid. Moreover, it is fundamentally an
15 impermissible argument regarding allocation of liability. For any or all of these reasons, it should be
16 rejected by the Regional Board.

17 **A. The Toxic Unit Approach is Scientifically and Technically Invalid.**

17 After careful consideration of the arguments and evidence submitted by Designated Parties during
18 the comment and rebuttal period, the Cleanup Team issued its Responses to Comments Report which
19 contains a detailed rebuttal to SDG&E's radical Toxic Unit approach. In summary, the Cleanup Team's
20 position states:

21 Contrary to the assertions of SDG&E and their expert Mr. Conder, the
22 DTR's approach to assessing benthic beneficial use impairment at the
23 Triad and Non-Triad stations is not critically flawed.... The DTR
24 approach is reasonable, complete, and scientifically supportable. The
25 various empirical, consensus based, and site derived SQGs used to
26 support the assessment are technically and scientifically sound,
27 appropriately applied, and well suited for overall assessment of potential
28 biological effects.

* * *

27 ⁴ On June 23, 2011, BAE Systems submitted a motion to exclude Dr. Conder's untimely expert report, which
28 remains pending as of the date of this Hearing brief.

1 The Cleanup Team agrees with NASSCO's and BAEs comments and
2 rebuttals that support the DTR Triad WOE and Non-Triad SS-
3 MEQ/60%LAET derived approaches for determining aquatic life
4 beneficial use impairment and for designing a remedial dredge footprint
5 that is protective of beneficial uses The Cleanup Team also agrees
6 with those rebuttal comments that identify potential weaknesses in the
7 toxic unit approach proposed by SDG&E.

8 (Cleanup Team Response to Comments, No. 18.4, at 18-20 - 18-21.)

9 The Toxic Unit approach is theoretical, and would ignore available site-specific information
10 regarding exposure-response relationships at the Site. It is based on empirical assessments *at other sites,*
11 *not at the Shipyard Sediment Site.* In contrast, the DTR's use of *site-specific* chemistry data, sediment
12 toxicity testing (using three different organisms), and benthic community analysis is far better approach
13 from which to assess causality. Furthermore, SDG&E incorrectly asserts that the cleanup levels derived in
14 the DTR are not based on a causal analysis. In fact the apparent effects threshold approach used in the
15 DTR explicitly uses causal logic to identify chemical concentrations likely to cause adverse effects. Thus,
16 SDG&E mischaracterizes the approach used in the DTR in order to put forward an alternative that ignores
17 all of the site-specific effects data that are available.

18 BAE urges the Regional Board to support the analysis of the Cleanup Team and a number of
19 Designated Parties, including BAE, and disregard the scientifically and technically invalid Toxic Unit
20 approach proposed by SDG&E.

21 **B. The Toxic Unit Approach is an Impermissible Allocation Argument**

22 Allocation of liability issues are explicitly outside the purview of these proceedings.⁵ Indeed,
23 SDG&E is well aware of that prohibition, having recently argued to this Regional Board “the state and
24 regional boards are precluded from apportioning responsibility for remedial activities under a CAO.”
25 (SDG&E's 6/23/11 Rebuttal, pp. 10-11.) Yet SDG&E's proposed Toxic Unit approach is fundamentally
26 an allocation argument. At the eleventh hour, SDG&E seeks to radically alter the basis for the DTR and
27 resulting remedial footprint by transparently focusing on the COC tributyltin ("TBT") as the purported
28 driver of the cleanup, a chemical SDG&E argues is strongly associated with shipyard activities (and not
SDG&E's activities). The Cleanup Team's Response to Comments Report succinctly identifies the
impermissible allocation-based purpose of SDG&E's newly proposed Toxic Unit approach:

SDG&E argues that the entire analysis in the DTR based on site-specific
data should be scrapped, and that toxic unit values derived from textbooks
without the benefit of site specific toxicity and benthic community

⁵ See, e.g., Third Amended Order of Proceedings, at FN 5: "The Presiding Officer also made clear on several occasions that while allocation of responsibility among the Designated Parties is desirable, it is not an issue in which the San Diego Water Board should or intends to involve itself. (See, e.g., Order dated October 8, 2009.)"

1 analyses should be used to replace it. The argument is one specifically
2 contrived to minimize SDG&E's potential share of responsibility, and is
3 addressed by the Cleanup Team in its Responses to Comments on
4 Findings 18 and 32.

(Cleanup Team Response to Comments, at FN 7) (emphasis added.)

5 The Cleanup Team proceeds to explain (again) in detail the bases for and rationale supporting the
6 exclusion of TBT from the sediment chemistry analyses in the DTR. (*See id.*, No. 18.4, at 18-22 - 18-2.)
7 For all of these reasons, the Regional Board should wholly reject SDG&E's proposed Toxic Unit approach.

8 **VIII. ALL CURRENTLY NAMED PERSONS RESPONSIBLE SHOULD REMAIN SO**
9 **DESIGNATED IN THEIR CURRENT CAPACITIES**

10 BAE supports the general bases for the naming of current responsible parties as set for in the
11 TCAO and DTR. Certain parties have argued that they should not be named as dischargers, or their
12 liability status should be reduced. BAE has briefed those issues previously, and the Cleanup Team's
13 responses to comments concur with BAE. The material issues are summarized below.

14 **A. The TCAO Properly Designates the Port as a Primarily Liable Party.**

15 Since 1962 the Port has held and managed the Site. The Regional Board has correctly named the
16 Port a "discharger" which is "accountable for discharges which occurred on the landowner's property."
17 (DTR, § 11.) The Port has primary "responsibility for the actions, omissions and operations of its tenants"
18 including but not limited to defunct and non-participating former shipyard tenant San Diego Marine
19 Construction Co. from 1962-1972. (*Id.*) BAE does not necessarily agree that Star & Crescent is the
20 successor to that entity, thus the Port remains primarily liable for that time period.

21 The Port's recent arguments that it is entitled to mere secondary liability is legally and factually
22 incorrect. There are no lease provisions in any tenant lease that releases or indemnifies the Port for
23 discharges. (BAE 6/23/11 Reply to Port Comments.) And the insurance information the Port has
24 improperly proffered is clearly deficient and unpersuasive. (*Id.*) In addition, there is ample evidence to
25 support the DTR's conclusion that the Port has discharged COCs through its municipal separate
26 stormwater sewer system ("MS4"). (*Id.*)

27 Importantly, the Cleanup Team agrees with BAE that the Regional Board should not now change
28 the Port's liability status to secondary. (Cleanup Team's Response to Comments, at 11-30 to 11-33.) The
Cleanup Team also agrees that substantial evidence supports the Port's liability for COC discharges from
its MS4 system to the Site. (*Id.* at 11-33 to 11-35.)

B. The TCAO Properly Identifies the City's Liability for MS4 Discharges.

Although the City continues to dispute the sufficiency of the evidence that it discharged surface
storm water through its SW4 (City's 5/26/11 Comments), BAE and others have rebutted those arguments.
The Cleanup team agrees there is ample evidence to support a finding that the City's storm water outfall

1 SW4 and SW9 discharges contributed to elevated levels of COCs at the Site. (Cleanup Team's Response
2 to Comments, at 4-15 to 4-18.) In fact, the City not only knew that surface storm waters from its SW4
3 emptied into the Bay, its leases starting in 1925 contractually obligated its lessees to install storm water
4 discharge conveyance to the Bay and to pay for it at their own expense: "upon the express condition that
5 said Lessee will make such provisions for the disposal of surface storm waters emptying into the Bay. . .
6 the cost of making such provision for the disposal of such storm waters shall be borne wholly by the said
7 Lessee." (See, e.g., SAR163050; SAR179537; SAR179528; SAR179495.)

8 Notwithstanding this knowledge, the City asserts that there is no data indicating that SW4 has
9 contributed significantly to elevated levels of COCs at the Site. There is, however, ample data to support
10 the DTR's conclusion that runoff discharged through SW4 historically and presently contains significant
11 levels of COCs. (See BAE's 6/23/11 Reply to City Comments) (detailing significant and persuasive
12 evidence.) The City also argues that it is not currently contributing to pollution of sediments at the Site.
13 Even if that were true, which it is not, the City's point is irrelevant under Water Code section 13304,
14 which clearly authorizes the issuance of CAOs to any person who has historically discharged waste.

15 **C. The TCAO Properly Designates SDG&E as a Discharger.**

16 The Regional Board properly designated SDG&E as a discharger in the TCAO. SDG&E
17 discharged PCBs and other COCs from the Silver Gate Power Plant directly to the Bay via cooling water
18 tunnels, ponds and oil/water separators located on the adjacent tidelands, as well as through the MS4. This
19 is confirmed by the substantial, reasonable, and credible evidence cited in the Cleanup Team's Response
20 to Comments, BAE's 6/26/11 Response to SDG&E's Rescindment Request ("BAE Response to SDG&E"),
21 and the documents and testimony contained in the Administrative Record.

22 First, SDG&E readily admits that large quantities of PCBs and other COCs were used throughout
23 the Silver Gate Power Plant from 1943 until 1984. (Cleanup Team's Response to Comments, No. 9.1.)

24 Second, SDG&E's documents show that it discharged large quantities of PCBs and COCs to the Bay:

25 • Large PCB-containing transformers, electrical and hydraulic equipment located in the
26 power plant, and in the switchyard frequently leaked until 2006 when the plant was demolished. (*Id.* at 9-7
27 – 9-10; BAE Response to SDG&E at 4-7, 8-16.)

28 • Liquid wastes containing COCs that collected in the trenches of the turbine side of the
power plant were discharged via the cooling water tunnels directly to the Bay for over thirty years before
SDG&E installed a wastewater treatment facility. (Cleanup Team's Response to Comments at 9-6 to 9-8;
BAE Response to SDG&E at 8-12)

• Leaks and spills were inadequately contained, allowing them to be carried by stormwater
to a drain located in the switchyard that connected to the MS4 system, and discharged to the Bay at SW4.

1 (Cleanup Team's Response to Comments at 9-8 to 9-10; BAE Response to SDG&E at 12-16.)

2 • SDG&E discharged liquid wastes containing COCs that collected in the trenches of the
3 boiler side of the power plant to ponds and oil/water separators on the tidelands. These liquid wastes were
4 discharged to the Bay either via a trench that led directly from the ponds to the Bay or via overflows of the
5 ponds and oil/water separators. (Cleanup Team's Response to Comments at 9-10 to 9-12; BAE Response
6 to SDG&E at 18-23)

7 • Samples of sediment in the power plant trenches and cooling water tunnels, and soil from
8 the switchyard and the location of the former ponds contained elevated levels of PCB Aroclors 1254 and
9 1260, copper and mercury. These are the same COCs found in the sediment near the SDG&E cooling
10 water tunnels and stormwater outfall at SW4. (Cleanup Team's Response to Comment at 9-8, 9-10 to 9-
11 11; BAE Response to SDG&E at 10-14, 16, 20-21.)

12 SDG&E attempts to deflect the Regional Board's attention from the weight of this evidence
13 through its assertion that TBT should be a clean up driver. In making this claim, SDG&E relies on its
14 expert Environ's May 26, 2011 Technical Comments. However, these Technical Comments were
15 duplicative and untimely and should be excluded from the Administrative Record. (See BAE's Motion to
16 Exclude Environ's Technical Comments.) More importantly, TBT should not be a cleanup driver because
17 it is not a risk driver for human health, aquatic-dependent wildlife or aquatic life. (BAE Response to
18 SDG&E at 29-30; BAE 10/19/11 Comments re Revised TCAO/DTR.)

19 **IX. CONCLUSION**

20 The current TCAO proposes the most stringent and largest sediment remediation action in the
21 history of San Diego Bay. The substantial evidence submitted into the record overwhelmingly
22 demonstrates that the proposed TCAO is premised upon overly conservative assumptions that have led to a
23 cleanup plan that is more extensive than is necessary to protect beneficial uses. Given that the TCAO is
24 already exceedingly protective, there is simply no basis for expanding the remedial footprint or applying
25 more stringent alternative cleanup levels.

26 BAE looks forward to presenting these issues to the Regional Board at the scheduled Hearing.

27 Dated: October 19, 2011

Dated: October 19, 2011

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