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Control

January 8, 1998

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Attn: Mr. Ernesto Galang
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Peter M. Rooney
Secretary for
Environmental
Protection

**DRAFT FINAL ONSHORE REMEDIAL INVESTIGATION REPORT,
NAVAL STATION TREASURE ISLAND (SEPTEMBER, 1997)**

Dear Mr. Galang:

Please find enclosed additional comments from Dr. Calvin C. Willhite of the Department of Toxic Substances Control, Human and Ecological Risk Division. The enclosed comments only cover Volume III of the Remedial Investigation Report and are in addition to comments that were previously submitted in a letter dated December 19, 1997.

If you have any questions regarding this letter, please contact me at (510) 540-3763.

Sincerely,

David Rist
Hazardous Substances Scientist
Office of Military Facilities

Enclosure

cc: See next page.

Mr. Ernesto Galang
January 8, 1998
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**MEMORANDUM**

TO: Mary Rose Cassa
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FROM: Calvin C. Willhite, Ph.D.
Human and Ecological Risk Division
400 P Street, 4th Floor
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DATE: January 7, 1998

SUBJECT: Naval Station Treasure Island (NAVSTA TI)
San Francisco, California
Volume III, Onshore Remedial Investigation Report

PCA:14740 Site-WP: 200231-47

The Department of Toxic Substances Office of Military Facilities requested on October 8, 1997 that the Human and Ecological Risk Division (HERD) review and provide written comment on the five volume set: "Onshore Remedial Investigation Report. Naval Station Treasure Island. San Francisco, California" (Comprehensive Long-Term Environmental Action Navy[CLEAN I] Contract Task Order No. 0199)", dated September, 1997. These documents were produced by PRC Environmental Management, Inc. on behalf of the Department of the Navy, Naval Facilities Engineering Command, San Bruno, California. This memorandum covers only Volume III of the five volume set, the remainder to follow; Volume I and Volume II reviews were dated November 21, 1997 and December 16, 1997, respectively.

BACKGROUND

These reports present the findings by study area of the remedial investigations conducted at NAVSTA TI in San Francisco Bay. The remedial investigation was conducted by the Navy to determine the nature and extent of contamination from past military activities and to determine the risks to human health and the environment. The investigation was performed under the Navy's Installation Restoration Program in accord with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Federal Facility Site Remediation Agreement (September 29, 1992).; signatories to that agreement include the U.S. Navy, the DTSC and the California Regional Water

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Quality Control Board. The City of San Francisco and the U.S. EPA are also represented on the Base Realignment and Closure (BRAC) Cleanup Team. NAVSTA TI was designated for closure in 1993 and on September 30, 1997, NAVSTA TI was closed as an operational naval facility.

There are 29 total areas of concern identified at NAVSTA TI:

1. Medical Clinic (spilled X-ray developer)
2. eliminated
3. PCB Equipment Storage
4. eliminated
5. Old Boiler Plant (fuel lines, demolition debris)
6. eliminated
- 7/10. Pesticide Storage Area/Paint Shop (PAH, oil/fuels/metals, heptachlor)
8. Sludge Disposal (wastewater treatment plant sludge)
9. Foundary (paint shop/forge)
11. YBI Landfill (oil/fuels, metals)
12. Old Bunker Area (lead, PAH, metals)
13. eliminated
14. eliminated
15. eliminated
16. eliminated
17. Tanks 103/104 (PAH, oil, fuels, metals)
18. eliminated
19. eliminated
20. eliminated
21. Vessel Waste Oil Recovery (oil/fuel)
22. eliminated
23. eliminated
24. Fifth Street Fuel Release (abandoned fuel lines/dry cleaners)
25. eliminated
26. eliminated
27. eliminated
28. West Side on/off Ramp (lead)
29. East Side on/off Ramp (lead)

Volume III concerns tanks 103 and 104 (IR Site 17), the vessel waste oil area (IR Site 21), the 5th Street fuel release/dry cleaners (IR Site 24) and the soils adjacent to the on- and off-ramps to the Bay Bridge (IR Site 28). Since the drafting of these documents, the NAVSTA TI has been closed; the introductions to these sections should be updated to indicate same.

1. Page 13-1, Figure 13-1. Please indicate in the text the import and relevance of the statement, "Site 17 is directly adjacent to and downgradient of Site 5, the old boiler plant". As written, it is not clear why this statement is highlighted; for example, do we have migration of fuels from Site 17 to Site 5; do we have migration of spilled fuels or other materials from Site 5 to Site 17?

2. Pages 13-1, 13-2. Please describe the construction of and condition of the 200,000 gallon ASTs. Are these tanks still standing on site? Is the foundation intact? If the foundation made of impermeable materials? Please show, using Navy purchasing receipts or other documentation, that diesel fuel was the only material stored in these tanks since before 1943. Were PCBs or other oils ever stored in these tanks?
3. Figure 13-1, Page 13-1. It is difficult to understand the 5th street fuel line and how it relates to Site 17. Where does this fuel pipeline begin and end? What did (does) this fuel line contain? Is the 5th street fuel line considered part of Site 17 where it apparently crosses beneath Site 17? Where are located the "...some underground fuel (what kind?) pipelines that run beneath the site in an east-west direction"? How deep are these lines and how many of them are there? What did (do) these lines contain? Are they connected to the AST at Site 17? What is the condition of these lines (intact? broken? taken out of service? If taken out of service, what was the last date of their operation? How do these lines relate to the tanks 103 and 104?
4. Figure 13-1 is confusing. The tanks are located within the Site 17 boundary, but Building 455 and surrounding areas are not included in the fuel spill/oil spraying area? Do data exist to show that the site boundary is not arbitrary? It would be most helpful to delineate at the outset the initial location of the 20,000 gallon spill and whether the 130-220 foot lateral extent of the spill includes areas outside of the box designated Site 17 in the figure.
5. Since the authors propose no CERCLA action (p. 13-23) and only the most vague reference to future monitoring and possible remediation of the fuel-soaked areas is given, some indication of the nature and extent of the apparently on-going fuel line/UST/AST tank removal program is helpful here. Are these activities similar to the U.S. Army Corps of Engineers FPALDR program at the Presidio [contact Mr. Roger Henderson or Mr. Brad Call, CESP-K-ED-EF, 1325 J Street, Sacramento, CA 95814-2922;]? What soil cleanup values are deemed acceptable under those efforts? Are the tanks 103 and 104 to be demolished, fuel lines excavated and removed and fuel-soaked soils treated or removed? Reasonable detail and supporting references should be supplied at the outset of this section of the introduction to the CERCLA discussion here.
6. Page 13-4. Provide greater detail as to how the data collected (Section 13.4) "adequately characterized the extent of contamination"? This is important given the assumption that Site 17 soil contamination "was assumed to be limited with the berms" where no empiric data are supplied to support that assumption; cannot the spilled fuels and oils have soaked beneath and adjacent to the berms, perhaps to soils and groundwater beneath Building 455 and beneath the tanks themselves?
7. Pages 13-1, 13-5. The text is confusing; while p. 13-1 is written in present tense (apparently tanks 103 and 104 remain on-site?), page 13-5 states that sampling was restricted because "...the ASTs had not been removed at time of sampling". Do these structures remain on-site? If not, when were they removed? If so, what is the schedule for their planned removal and what is to be their disposition? Why was vehicle access during sampling "in that area not possible (Section 13.4.2)?"
8. Page 13-7. Given that obvious fuel (and possibly other unspecified) odors were evident at sampling, why were no ambient air sampling efforts made here (pages 13-7 to 13-12)? Why were no air measurements made for benzene, carbon disulfide, PCE, toluene etc. that are found in soil and groundwater at this location?
9. Page 13-8. At Site 5, what if the source of the BETX found? What is the relation between Site 5 and Site 17? A simple discussion of why the boundaries of Sites 5 and 17 are drawn as they are, what groundwater movement or inter-site transfer of contaminants is known, etc. would clarify the text

presentation a great deal. For example, is there a concentration gradient between Site 5 and substances found at Site 17?

10. Pages 13-8, 13-9. When discussing PAH concentrations (e.g., 34 ppm in soil), do the statements here concern only individual compounds or are the values listed the sum total of the PAH found?

11. Page 13-9. Why are Tables 13-3 and Figure 13-4 groundwater data limited to "TPH-i"? It appears important to determine and state clearly the type(s) of petroleum found in Site 17 groundwater; perhaps cross-reference here to another data set is in order?

Please give an indication of the source (certainly not diesel fuel in tanks 103 and 104) of the PAH contamination. Was waste crankcase oil used in weed control around these tanks for fire suppression reasons?

12. Page 13-10. Prior to reaching conclusions about soil aluminum, beryllium, silver, vanadium and zinc, please compare the concentrations of metals found in Site 17 soil and rock to Bay Area regional range of background values. Please also compare ambient TI groundwater metals concentrations to those found in Site 17 groundwater.

13. Page 13-12. Please a) compare unfiltered groundwater metals concentrations at Site 17 to ambient metals concentrations in TI groundwater and b) supply groundwater metals concentrations in filtered groundwater samples, the latter to be compared to state and federal water quality criteria for enclosed bays and estuaries.

14. Page 13-11. How can PCE, TCE and vinyl chloride in Site 17 groundwater be attributed to, "The presence of these compounds is likely a result of petroleum contamination at the site"? Please list for each chemical discussed here the range of concentrations found in comparison to regulatory values (e.g., 22 CCR 64444, Article 5.5); in the absence of any such comparisons, the public will have considerable difficulty in determining the significance of the chemicals found and concentrations listed. As the text is written, it appears vinyl chloride is present in Site 17 groundwater at 10 ug/L? If so, a discussion of environmental reductive dehalogenation of the parent PCE and TCE with references to the published literature (e.g., *Appl. Environ. Microbiol.* 49: 1080-1083, 1985; *Ibid* 45: 1286-1294, 1983; *Waste Mgmt. Res.* 3: 357-360, 1985; *J. Amer. Water Works Assoc.* 76: 56-59, 1984; *Environ. Sci. Technol.* 19: 277-279, 1985; *Environ. Toxicol. Chem.* 4: 739-742, 1985) including major intermediates and minor intermediates (e.g., trans-1,2-DCE) should be provided and rates of biotransformation to vinyl chloride to the ultimate product CO₂ here listed. Should the site remain undisturbed, what is the length of time required here for ultimate degradation of the chlorinated materials found to CO₂ and H₂O (e.g., P.R. Wood, R.F. Lang and I.L. Payan. 1985. Anaerobic transformation, transport and removal of chlorinated organics in groundwater. In Ground Water Quality. (C.H. Ward et al., eds.), pp. 493. Wiley, New York)?

15. Page 13-13, Section 13.7.1.2 Please compare calcium, iron, magnesium, potassium and sodium concentrations in Site 17 and ambient TI soil/rock (Volume 1, Table 3-5) to Bay Area background (preferably with mention of source lithology) prior to drawing conclusions about COPC for these elements. It would be helpful to reference and summarize the Volume 1, Table 3-5 information in brief in the text here.

16. Page 13-14, Section 13.7.1.3 Please compare antimony, arsenic, barium, chromium, cobalt, copper, lead, manganese, mercury and nickel concentrations in Site 17 and ambient TI soil/rock to Bay Area background (preferably with mention of source lithology) prior to drawing conclusions about COPC for these elements. It would be helpful here to reference Volume 1, Table 3-4, in the text discussion.

17. Page 13-14, Section 13.7.1.4 Please compare aluminum, beryllium, silver, vanadium and zinc concentrations in Site 17 and ambient TI soil/rock to Bay Area background (preferably with mention of source lithology) prior to drawing conclusions about COPC for these elements. It would be helpful to reference and discuss Table 3-4 from Volume 1 here is the text in relation to the concentrations in native Bay Area soil and rock.

18. Page 13-15, Section 13.7.2.2 Since the spilled fuels, VOCs and SVOCs in groundwater can be contacted by future theme park construction workers, the present risk assessment is incomplete in the absence of consideration of that pathway.

19. Page 13-15, 13-18. Why were no on-site ambient air analyses performed here given the acknowledged odors arising during soil sample collection?

20. Page 13-16, Section 13.7.3 Provide toxicologic rationale, with citation to relevant published studies, for RfD surrogate selection. Why were the spilled petroleum fractions not evaluated on a whole-product basis, given that the selected indicator chemicals occur only at very low concentrations in these fuels/oils as fresh product and are nearly non-detectable upon weathering?

21. Pages 13-18 and 13-19. The specifics of the "conservative NAVSTA TI groundwater model" as applied to Site 17 should be presented and discussed in detail here.

22. Page 13-19. How was the 14,300 ppb diesel, gasoline and motor oil 'screening level' in Site 17 groundwater determined? Is this an acute toxicity value? How can one value be applied to petroleum products of such diverse toxicities and diverse physical properties?

The groundwater pathway for construction workers is not necessarily incomplete (comment #17, above); why are Site 5 groundwater metals concentrations (unfiltered samples?) compared to those at Site 17? How do Site 5 and Site 17 groundwater metals concentrations compare to those for the whole of TI?

23. Page 13-20. Please discuss the toxicologic endpoint and methods used for motor oil (fresh? used? mineral-based? synthetic?) and diesel (No. 2? No. 1 (marine)? fresh? weathered?) (CAS Nos. 68476-31-3; 68476-30-2; 68476-34-6; 68334-30-5; 8008-20-6?) determination of the 430 ppm soil 'screening level'. Please define what the term "soil TPH screening level" means in practice.

24. Page 13-20. The Site 17 characterization appears inadequate; the authors apparently have no data on the lateral and vertical extent of the spills here, but have only assumed the contamination is limited to the bermed area?

25. Page 13-21. The paragraph and conclusions concerning soil beryllium and source are speculation; please compare Site 17 soil beryllium to the range of concentrations in Bay Area rock/soil prior to arriving at any conclusions about beryllium here or any conclusions about fate and transport of this element.

26. Page 13-21. Section 13.10. Provide references to published literature on the behavior of diesel and motor oil in soil and groundwater to substantiate the statements made here.

27. Page 13-21, 13-22. The discussion in 13.10 is diffuse and rambling. What empirical data are available to substantiate the assumption of anaerobic soil conditions at Site 17? The speculations detract from the presentation of the limited quantitative data available for this location. As written, do the authors intend to rely on "tidal flushing" to remediate the significant petroleum/PAH contamination here?

28. Page 13-22. What are the concentrations of gasoline, diesel and heavy oils in groundwater beneath the fuel-soaked soil areas? What are the soil and groundwater concentrations of PAH and fuel components beneath tanks 103 and 104?

29. Given the extensive PAH contamination (well above the 1 ppm San Francisco/Los Angeles urban background for total PAH) that increases with depth bgs (Table 13-8: minimum detected 2' bgs = 86 ppm) at Site 17, this reviewer cannot agree with the page 13-23 conclusion that no CERCLA-directed action is warranted at Site 17. No information is given (page 13-20, Table 13-8) on PAH concentrations at depths greater than 2' bgs despite the increase in PAH values as depth increases?

30. Section 14.1. Greater specifics are needed in the site history and description. What is the total area of Site 21? For the annual 270,000+ gallons of "waste oil from the ships" handled from 1946 at this facility, please indicate the type(s) of oil and their use history. Were these hydraulic oils, waste crankcase oils, Bunker C, other? Would one expect these oils (based on data from current operations of ships homeported elsewhere) to contain incomplete combustion products (e.g., PAH), elevated metals, etc? Please describe the types, nature and chromatographic results of oils handled in the bottomless 2000 gallon 'donuts'. What waste oil is stored in Building 325? What does the phrase (p. 14-1) "little staining is still visible" mean? How large is the stained area? Are historic photos and current photos available to document same? Please describe the TI-wide Navy program for removal of fuel lines, fuel farm and tanks; what specifically does the phrase, "The Navy is planning to remove the fuel line [and associated soils?] in 1997" mean? What this accomplished in 1997?

31. Figure 14-1. Either a figure legend or text discussion should be supplied to explain the rationale for site boundary selection. For example, why isn't the gangway area or Buildings 290, 325 and 289 and associated "PIPE" included here? Why isn't all of Pier 12 included here? While the site boundary may be justified as presented, no clear rationale for inclusion or exclusion of TI features is provided.

32. Page 14-3. Please note that "chemical cleaners" for aircraft, automotive and other similar industries commonly include mineral spirits, Stoddard solvent and related light hydrocarbons in addition to TCE. PCE and similar chlorinated/fluorinated hydrocarbons. From the text description presented, it appears one of the principal problems here could be spilled, leaked or otherwise released diesel fuel which can dissolve PAH and related (normally relatively immobile) oil components and serve as a vehicle for dispersion.

33. Page 14-4. Please describe the rationale for locations of the 23 soil borings across Site 21. Why were the 8 wells located in the areas selected? What justification is available to show that the numbers and locations of groundwater wells and soils borings is (are) adequate to characterize the nature and extent of contamination at Area 21? Why were soils sampled only to 5' bgs (due to groundwater at 5.9-6.7' bgs (p. 14-7)?

34. Page 14-5. Eleven soil borings were located "near the oil recovery system and fuel oil (Bunker C? marine diesel?) pipeline"; is the oil recovery facility still intact? What is the reason that soil directly beneath/adjacent to the oil separator was not sampled?

35. Page 14-8, top line; Metals. Please compare Site 21 soil beryllium (0.21-0.27 ppm) and other metals to the range of Bay Area native rock/soil background (with indication of lithologic source material) prior to making any conclusions in this regard.

36. Page 14-9. It would be helpful for the reader not familiar with the importance of the VOC concentrations listed here to compare the concentration ranges to a regulatory (e.g., 22 CCR 64444) or other published benchmark. Please indicate in a brief discussion the apparent reductive dehalogenation of parent PCE and TCE to vinyl chloride with references to supporting published literature on the subject.

37. Page 14-5; Pages 14-9 and 14-10. The authors make effort to highlight their concern for dense nonaqueous phase liquids (DNAPL) at Site 21, yet no mention of this is made in Section 14.6.2. To

what depth in groundwater does the PCE, TCE, TCA, DCA, DCE and VC extend below TI? Do these contaminated groundwaters (presumably brackish?) communicate directly with the waters of the Bay?

38. Page 14-11. Please supply groundwater metals concentrations from filtered samples here.

39. Page 14-13. Please compare Site 21 soil calcium, iron, magnesium, potassium and sodium to Bay Area background concentrations, with indication of corresponding lithology.

40. Page 14-13. Please compare Site 21 soil aluminum, arsenic, barium, chromium, cobalt, copper, lead, manganese, nickel, silver, thallium, vanadium, zinc and other metals retained as potential COC to Bay Area background prior to reaching the conclusions presented here. Conclusions about beryllium on page 14-21 are premature in the absence of such comparisons.

41. Pages 14-14, 14-15. Since foundation and utility installation at any future film studio or other construction would entail intrusion into soil depths where vinyl chloride contamination would be encountered, it is important to include utility and construction worker dermal and inhalation risk by direct contact with chlorinated solvents, their degradation products, phenol, etc in soil from groundwater and soil and volatilization from groundwater and soil (as contrast to simple flux chamber extrapolations into ambient air through an asphalt or other barrier, p. 14-16).

42. Page 14-17. Describe in detail the parameters, methods and assumptions used to substantiate the conclusion: "Conservative screening level modeling showed that the chlorinated solvents and metals in groundwater at Site 21 are not expected to reach the shoreline (over what period of time?) at concentrations exceeding the AWQC".

43. Page 14-18. Unless prior administrative controls or other land use prohibit removal of the asphalt/concrete/building cover at Site 21 and in the absence of indoor and outdoor air monitoring data, due to the presence of vinyl chloride in Site 21 groundwater, this reviewer cannot concur with the conclusion that TPH-m "is the only COC in soil at Site 21". Should construction/excavation in vinyl chloride-affected areas occur at Site 21, release of this and related substances would be expected to occur.

44. Page 14-18. Since no formal petroleum fate and transport analyses were completed, how can the conclusion be supported that the various "TPH" are not ecologic constituents of concern? Since a soil reservoir of fuel/oil can contribute to groundwater degradation and "may act as a future source of contaminants to aquatic receptors in the Bay", a comprehensive fate and transport analysis is needed here.

45. Page 14-18. Rather than refer the reader to Site 24 analyses, it is preferable that the methods, assumptions, data and descriptions of all input parameters to determine DNAPL at Site 21 be provided here.

46. Page 14-19, lines 3-4 from top. Please compare and contrast soil metals values to Bay Area ambient range of background concentrations; please compare metals concentrations in filtered Site 21 groundwater to the range of metals values in background (off-site reference) groundwater filtered prior to identification of arsenic, chromium, copper, lead, mercury and zinc as constituents of concern.

47. Page 14-19. For the chlorinated solvents, please delineate the extent to which the "solvent plume appears to extend towards the Bay". The statements here appear to contradict the p. 14-17 conclusion that chlorinated solvents in groundwater at Site 21 are not expected to reach the shoreline?

48. Page 14-20, Section 14.10.1. Please provide a robust discussion - with citations to key review papers and original data - on the fate and transport of motor oils in soil/groundwater environments.

Please explain what is meant by the phrase, "The primary fate and transport bioaccumulation in living organisms"? Does this mean birds, fish, marine mammals, earthworms, humans?

49. Section 14.11. Prior to reaching risk-based or source-based conclusions about soil beryllium, please compare and contrast TI soil/rock beryllium to the regional ambient concentration range for this element.

The discussion lacks a section on reductive dehalogenation of PCE and TCE; no mention is made of the ultimate or intermediate biodegradation products. While it may be true that Site 21 is now paved, unless clear assurances are put in place that the Navy will maintain the integrity of the asphalt parking lot/cap and control the spread of the PCE/TCE plume, a construction/utility worker exposure scenario during TI reuse (Section 14.8) having dermal (soil, groundwater) and inhalation (VOC) exposures should be included and the risks tabulated. Are data available to show that no vinyl chloride exists in these areas (Table 14-4)? The data presented (e.g., 199CC571; 199Q5035; 199Q6035; 199Q7035) indicate considerable microbiologic catabolism of the parent solvents. The risk of exposure to the volatile vinyl chloride, *cis/trans*-1,2-DCE, 1,1-DCE, TCE and PCE during construction and movement into and accumulations in indoor air of any future structure to be built on-site should be evaluated here.

50. Page 16-1, Table 16-1. Please provide data on sample collection depth; "Forty shallow soil samples..." Please indicate why no other metals (e.g., cadmium) were not included in the Blain investigation?

51. Page 16-3. Please provide greater detail and reference to DTSC/EPA-approved rationale for selection of sampling locations.

52. Page 16-4, Section 16.6.1 Please indicate pH of the soil samples.

53. Pages 16-5, 16-7. Please compare soil zinc and thallium concentrations to off-site regional Bay Area concentration range for these elements. Please compare the lead (inorganic? tetraethyl lead?) concentrations listed to those along the freeway corridor (Appl. Occup. Environ. Hyg. 8(4): 217-220, 1993; Am. Ind. Hyg. Assoc. J. 54: 557-559, 1993).

54. Page 16-16. Section 16.9.2 Please clarify and restate at each point the 400 ppm USEPA PRG is referenced the underlying assumptions about unrestricted residential land use; it appears highly unlikely to this reviewer that single family homes will be built, sold and occupied that are directly beneath/adjacent to the Bay Bridge on- and off-ramps. The authors should also note here that the USEPA PRG for commercial/industrial land use values are exceeded or not, should provide a brief rationale for selection of the 400 ppm screening value and provide the environmental screening concentration (with rationale and references to the published literature) in order to place the soil Pb concentrations listed for Site 28 into perspective.

Please also indicate whether the Pb analyses differentiate inorganic Pb from organic Pb (tetraethyl Pb and its decomposition products) arising from Bay Bridge vehicle emissions.

Since the most likely use of areas adjacent/beneath the Bay Bridge ramps would be recreational hikers/visitors, what exposure parameters and subsequent soil Pb value can be recommended for protection of human health?

55. Page 16-17, Section 16.10. Please indicate the soil pH at Site 28, the chemical species of the Pb found and the physical form (e.g., metal rebar, dust, paint chips, etc.) found here. How do statements like, "...the migration pathway is partly inhibited in areas where Site 28 is paved, except in areas where the pavement is cracked or broken", relate in any measurable or quantitative manner to the fate and

transport issues discussed here? What does the statement, "Since the nature of groundwater occurrence at Site 28 has not been established...", mean?

How can the fate and transport section be considered acceptable when: "...the migration potential of lead and other metals leaching through the shallow soil to the deeper soil and groundwater is unknown."?

56. Page 16-19. General/vague statements with no clear relevance detract from the analysis presented: "Since the risk analysis for terrestrial vertebrates categorizes all sites at YBI as Category 2 sites [please define and indicate the significance, if any, of this categorization], risk management must be practiced within the context of the site and other components within the risk assessment."?

57. Section 16.11; Table 16-1. It should be noted that the lead concentrations listed (except 206-1913, 206-1915, 206-1902, 206-1924) and the Site 28 mean concentration, while greater than the soil inorganic Pb concentration normally considered acceptable for unrestricted (single family) residential exposure, the concentrations found are consistent with an industrial/commercial (e.g., adults, no home gardening) exposure scenario. The conclusion as written is so vague that the reader cannot understand what the expensive site characterization/analysis has brought to the project to date and the significance of that effort. For example, what does a HQ of $6.92E+4$ for the peregrine falcon mean? Does this indicate that all of YBI is Pb-contaminated to the point that it is an ecologic menace? Greater explanation with increased clarity and relevance is needed here.

Reviewed by: S.M. DiZio, PhD
Senior Toxicologist