N00296.001567
MOFFETT FIELD
SSIC NO. 5090.3

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION IX**
**75 Hawthorne Street**
**San Francisco, CA 94105-3901**

January 4, 1993

Stephen Chao
Western Division
Naval Facilities Engineering Command
900 Commodore Way, Bldg. 101
San Bruno, CA 94066-0720

Dear Mr. Chao:

The U.S. Environmental Protection Agency has reviewed the Draft RI Report (including the baseline risk assessment) for OU1 for the NAS Moffett Field site. Comments prepared by our representative, SAIC, Inc., are enclosed and should be addressed in the Draft Final document. Also, please note that the description of operable units on page 1-6 does not reflect the most recent definition of operable units and should be corrected. We would be available to meet with you to discuss your response to these comments prior to your submittal of the Draft Final RI. Please call me at (415) 744-2385 if you have any questions.

Sincerely,

Roberta Blank

Roberta Blank
Remedial Project Manager

Enclosures (2)

cc: Elizabeth Adams, RWQCB
Cyrus Shabahari, DTSC

Printed on Recycled Paper

1855

DCN: TZ4-C09015-RN-M15301

# TECHNICAL REVIEW OF
# DRAFT
# REMEDIAL INVESTIGATION REPORT
# OPERABLE UNIT 1: LANDFILL SITES 1 AND 2
# NAVAL AIR STATION, MOFFETT FIELD
# MOUNTAIN VIEW, CALIFORNIA

NOVEMBER 1992

SUBMITTED TO:

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 HAWTHORNE STREET
SAN FRANCISCO, CALIFORNIA 94105

SUBMITTED BY:

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
TECHNOLOGY SERVICES COMPANY
20 CALIFORNIA STREET, SUITE 400
SAN FRANCISCO, CALIFORNIA 94111

EPA CONTRACT NO. 68-W9-0008
EPA WORK ASSIGNMENT NO. C09015
SAIC/TSC PROJECT NO. 06-0794-03-0630

TECHNICAL REVIEW OF
DRAFT
REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 1: LANDFILL SITES 1 AND 2
NAVAL AIR STATION, MOFFETT FIELD
MOUNTAIN VIEW, CALIFORNIA

GENERAL COMMENTS

1. Documentation for analytical data is not presented for review in this report. Contamination of blanks is cited as a probable cause for acetone and methylene chloride detected in some samples, but analytical data for the blanks are not presented. The verification documentation should include laboratory analytical data sheets with detection limits listed for each analyte, and laboratory quality assurance/quality control documentation sheets. A summary of these documents prepared by the author of the report is inadequate to resolve discrepancies between summary tables, data cited in the text, and data on the figures. Future reports should include appendices containing these documents.

2. According to the data tables presented in Appendices B and C, the contract laboratory was unable to attain the contract required quantitation limits (CRQLs) for most samples. A majority of the analytical results show a level above the CRQL, but are footnoted as "U" or "analyzed for but not detected. Reported value is quantitation limit." Please explain in the text why the CRQLs were unattainable on so many of the analyses. In several cases the elevated detection limits have a significant impact on IT's interpretation of the extent of contamination at the sites (see Specific Comments).

3. Two burn pits are identified in figures showing Site 2, one within the boundary of the northwest corner of the landfill and one just outside the southeast corner of the landfill. Based on the reported results of current and historical sampling, no sampling of any media has been

performed within the boundaries of either of these burn pits. This is a deficiency in the assessment of the character of contamination at Site 2. Many contaminants are commonly found in burn pits of this nature. A sampling program should include, at least, soil sampling and analysis for inorganics, pesticides, dioxins, polynuclear aromatic hydrocarbons (PAHs), and, perhaps, polychlorinated biphenyls (PCBs).

4. The impact of metals, especially arsenic, leaching from the landfills has been downplayed in the text. (See the related Specific Comments.)

SPECIFIC COMMENTS

1. Section 2.1, Page 2-3, Paragraphs 4 and 5

The text states in paragraph 4, that the east-west alignment of geophysical soundings defined the location of two north-south trending trenches. Paragraph 5 states that the geophysical surveys were not able to accurately identify the boundaries of the trench. This contradiction should be corrected. Based on Figure 2.3-2, Site 1 Terrain Conductivity Contours, the geophysical survey did not define the boundaries of the trenches.

2. Section 4.2, Page 4-13, Paragraph 1

IT states that acetone was detected consistently in two leachate wells (W01-09(F) and W01-11(F)) at concentrations ranging from 180 to 3,200 parts per billion (ppb). The next sentence states that the highest acetone concentration was 2,700 ppb in W01-10(F). Please clarify which was the highest concentration, 2,700 or 3,200 ppb.

3. Section 4.2, Page 4-15, Paragraph 3

Arsenic is a human carcinogen with an EPA defined $10^{-6}$ risk level of 0.02 ppb. The state and federal maximum contaminant level (MCL) for drinking water for arsenic is 50 ppb. Even if it can be argued that the drinking

water standards may not apply to the leachate, the marine aquatic life protection limiting concentrations as defined by the California Ocean Plan list a daily maximum concentration for arsenic of 32 ppb and the EPA National Ambient Water Quality Criteria to Protect Freshwater Aquatic Life lists a maximum concentration (1-hour average) as 69 ppb. Based on the analytical data reported in Appendix C, leachate samples from four wells at Site 1 had laboratory quantitation limits of 70 ppb, above these limiting concentrations. The background level for arsenic, established at well W01-06(A1) is 3.2 ppb. Arsenic was detected in surface water sample MOF-485 and in sediment samples SED-04 and SED-05 at concentrations above background levels. Based on these results there is evidence for migration of arsenic from Site 1. (Note that arsenic is normally one of the more mobile metals.) Please address this issue.

4. Section 5.5, Page 5-20, Paragraph 1

Levels of arsenic detected in leachate samples from well W02-10 (F) range from 3 ppb to 6,200 ppb. The MCL for arsenic is 50 ppb; the EPA National Ambient Water Quality Criteria to Protect Freshwater Aquatic Life lists 2,319 ppb as an acutely toxic level; the California Ocean Plan limiting concentrations for marine aquatic life protection gives an instantaneous maximum concentration (maximum allowable concentration for any one sample) of 80 ppb for arsenic. Surface water and sediment samples at Site 2 also showed elevated levels of arsenic which indicate an impact from the landfill on these media. IT should explain more fully the reasoning behind the statement that elevated metals concentrations in surface water and sediment samples do not indicate a conclusive impact of metals contamination from the landfill materials.

5. Section 6.2.1, Page 6-8, Paragraph 4

IT states that methylene chloride was detected in only three subsurface soil samples at Site 1 and reported the highest concentration as 27 ppb. According to Appendix B, sample detection limits for fifteen samples were higher than 27 ppb. For example, the sample detection limit for boring

samples W01-07 (5 to 10 feet)(75 ppb), W01-08 (3 to 5 feet)(93 ppb), and W01-09 (1 to 3 feet)(73 ppb) were well above the "detected" high of 27 ppb. Since the sample detection limits were higher in these fifteen samples than the level IT reported to be the highest detected concentration, it cannot be stated that methylene chloride was not present at, or above, 27 ppb in these samples.

According to Appendix B, leachate analysis results from Site 1 showed 36 samples to have detection limits above the CRQL for methylene chloride (5 ppb), including W01-09 (110 ppb) and W01-11 (99 ppb). None of these analyses with significantly high detection limits was mentioned in the text of the report, instead, IT stated (page 6-9, paragraph 1) that methylene chloride is a common laboratory contaminant. IT concluded that, because of the "sporadic and inconsistent detections" of methylene chloride, contamination is not present at Sites 1 and 2.

Insufficient evidence has been presented by IT to conclude that methylene chloride contamination is not present at these sites. This is an example of how data has been invalidated and dismissed due to elevated sample detection limits. Documentation explaining why the CRQL cannot be attained should be submitted.

6. <u>Section 6.2.1, Page 6-11, Paragraph 6</u>

The statement that toluene was detected in subsurface soil and surface soil at concentrations higher than those in leachate water at both sites is incorrect. Monitoring well and leachate soil boring samples at Site 1 showed concentrations as high as 89 ppb; analytical results of leachate samples showed high concentrations of 440 ppb. This statement should be corrected.

7. Section 6.2.2, Page 6-17, Paragraph 2

The statement that PCBs were not detected in leachate samples is incorrect. Aroclor-1242 was detected in leachate monitoring well W01-10(F) at a concentration of 1.4 ppb.

DCN: TZ4-C09015-RN-M15421

# TECHNICAL REVIEW OF

# DRAFT

# BASELINE RISK ASSESSMENT

# OPERABLE UNIT 1: LANDFILL SITES 1 AND 2

# NAVAL AIR STATION, MOFFETT FIELD

# MOUNTAIN VIEW, CALIFORNIA

NOVEMBER 1992

**Submitted to:**

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 HAWTHORNE STREET
SAN FRANCISCO, CALIFORNIA 94105

**Submitted by:**

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
TECHNOLOGY SERVICES COMPANY
20 CALIFORNIA STREET, SUITE 400
SAN FRANCISCO, CALIFORNIA 94111

EPA CONTRACT NO. 68-W9-0008
EPA WORK ASSIGNMENT NO. C09015
SAIC/TSC PROJECT NO. 06-0794-03-0630

TECHNICAL REVIEW OF DRAFT
BASELINE RISK ASSESSMENT
OPERABLE UNIT 1: LANDFILL SITES 1 AND 2
NAVAL AIR STATION, MOFFETT FIELD
MOUNTAIN VIEW, CALIFORNIA

GENERAL COMMENTS

1. The purposes of this baseline risk assessment (BRA) are to qualitatively and quantitatively evaluate the actual and potential risks to human health and the environment posed by Operable Unit No. 1 (OU1) at NAS Moffett Field in the absence of remedial action, and to assess the uncertainties associated with the BRA. This document was reviewed with the following EPA guidance documents: *Risk Assessment Guidance for Superfund* (RAGS, 1989), *CERCLA Compliance with Other Laws Manual*, EPA 1988; *Superfund Exposure Assessment Manual*, EPA 1988; *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*, EPA April 1991; *Human Health Evaluation Manual Supplemental Guidance*: "Standard Default Factors," EPA May 1991; *Human Health Evaluation Manual, Part B*: "Development of Risk-based Preliminary Remediation Goals," EPA December 1991; *Human Health Evaluation Manual, Part C: "Risk Evaluation of Remedial Alternatives,"* EPA, December 18, 1991; *Draft Risk Assessment Guidance for Superfund Ecological Assessments/Region IX*, EPA 1989; *Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual*, EPA 1988; *Ecological Assessment of Superfund Site an Overview, ECO Updates*, Volume 1 1991, and other guidance, and directives, such as *Dermal Exposure Assessment: Principles and Applications*, EPA 1991.

2. The inorganic background concentrations used to screen chemicals of potential concern (COPCs) in Tables 7.2-3 - 7.2.9 may be appropriate but essential information regarding how these <u>new</u> background concentrations were established and the rationale for their use must be presented clearly and concisely in the BRA. (It is noted that background concentrations for inorganics from these tables differ significantly from those listed in Table 3.5-1).

3. In Tables 7.2-3 - 7.2.10, the reasonable maximum exposure (RME) concentration or the 95 percent upper confidence limit (UCL) is prematurely rounded off to one or two significant figures. For example, in Table 7.2-3, the 95 percent UCL for acetone is listed as 130 μg/kg but should be 132 μg/kg; 4-methylphenol is listed as 470 μg/kg but should be 475 μg/kg; 4-nitrophenol is listed as 880 μg/kg but should be 876 μg/kg; phenol is listed as 400 μg/kg but should be 386 μg/kg; and PCB is listed as 1300 μg/kg but should be 1292 μg/kg. It is not apparent if the average or mean exposure concentrations presented in Tables 7.2-3 - 7.2-10 were rounded off in the same manner. This pattern of rounding off calculations is continued throughout the entire BRA and could result in inaccurate risk estimates. In the BRA it is only appropriate to round off the final risk estimate.

4. The summary and conclusions regarding the actual and potential health effects associated with exposure to OU1 could not be verified by the reviewer because current toxicity information needed to compute the health risk associated with exposure to OU1 was not used and essential background data was not clearly and concisely presented.

5. It is not apparent if the metal data collected for the leachate were from filtered or unfiltered groundwater samples. Only unfiltered groundwater data should be used in risk assessment, because it provides accurate information concerning possible mobile metal contaminant species.

SPECIFIC COMMENTS

***The paragraph number refers to the paragraph within the specific section. However, when a section covers several pages, the paragraph number refers to the location on the page.***

1. Page 7-4, Section 7.1.2, Paragraph 1

Please provide examples of "potentially hazardous waste" disposed of at the Site 2 landfill.

2. Page 7-6, Section 7.2.2, Paragraph 2

Which analytical parameters had contract required quantitation limits (CRQLs) higher than the applicable health based concentration or preliminary remediation goal (PRG)?

3. Page 7-7, Section 7.2.2, Paragraph 4

Please explain the statement "the analytical results for the AirSWAT have not been validated". If this data has not been validated, it cannot be used in the BRA nor can it be used to evaluate potential risk associated with the landfills.

4. Page 7-11, Section 7.2.4, Paragraph 3

The comparison screen with background for inorganics in leachate is not appropriate and should not be used in the BRA.

5. Page 7-11, Section 7.2.4, Paragraph 6

The additional screening process to reduce the number of COPCs is not found in the RI report and is unnecessary for the BRA.

6. Page 7-12, Section 7.2.5, Paragraph 3

The list of COPCs for surface soils contain a few discrepancies with the information presented in Table 7.2-3. For example, tetrachloroethylene (PCE) is not listed as a COPC for surface soil in Table 7.2-3. Also, arsenic and selenium should be added to the list of inorganic COPCs in this section, unless it can be statistically shown (T-Test) that they are within background concentrations.

7. Page 7-12, Section 7.2.5, Paragraph 4

Information presented in Table 7.2-4 indicates that ethyl benzene should be included in the list of COPCs for subsurface fill materials of Site 1. Also, arsenic, mercury and selenium should be added to list of inorganic COPCs unless it can be statistically shown (T-Test) they are within background concentrations.

8. Page 7-14, Section 7.2.5, Paragraph 1

Mercury and selenium are both above background concentrations (Table 7.2-8) and should be included in the list of COPCs for the leachate at Site 1.

9. Page 7-14, Section 7.2.5, Paragraph 2

Mercury is above the background concentration (Table 7.2-9) and should be included in the list of COPCs for the leachate at Site 2.

10. Page 7-27, Section 7.3.3, Paragraph 5

The AirSWAT data has been previously identified as not being validated. Please explain why it is used in the BRA for OU1.

11. Page 7-39, Section 7.3.4.2, Paragraph 4

Please explain why the paths adjacent to the landfills are not passable during the rainy season. In addition the frequency of exposure was determined only by field crews, whose primary function was not to count individuals, therefore, this frequency may be a low estimate. The 39 week per year recreational exposure frequency is also low considering that California is experiencing it's seventh year of drought.

12. Page 7-46, Section 7.4

EPA's biokinetic uptake model for lead should be used to evaluate the toxicity of lead.

13. Table 7.4-1

The oral cancer slope factors (CSFs), are inconsistent with current California (Cal) EPA and EPA toxicity data for vinyl chloride and nickel (nickel subsulfide). For example vinyl chloride is listed as 1.9E+1 $(mg/kg\text{-}day)^{-1}$ but should be 1.9E+0 $(mg/kg\text{-}day)^{-1}$; nickel (nickel subsulfide) is listed as no CSF available but should be 1.7 $(mg/kg\text{-}day)^{-1}$. Additionally, chromium (VI) and nickel (nickel subsulfide) are considered carcinogenic via ingestion by Cal EPA. They should, therefore, be evaluated as carcinogenic in the BRA, due to the absence of conclusive data regarding the presence of these forms of chromium and nickel at OU1.

The inhalation CSFs for methylene chloride, trichloroethane and arsenic are inconsistent with current Cal EPA and EPA toxicity data. For example methylene chloride is listed as 6.3E-3 $(mg/kg\text{-}day)^{-1}$ but should be 1.6E-03 $(mg/kg\text{-}day)^{-1}$ (EPA) and 3.5E-03 $(mg/kg\text{-}day)^{-1}$ (Cal EPA); trichloroethene is listed as 1.7E-02 $(mg/kg\text{-}day)^{-1}$ but should be 1.5E-02 $(mg/kg\text{-}day)^{-1}$ (Cal EPA) and 6.0E-03 $(mg/kg\text{-}day)^{-1}$ (EPA); and arsenic is listed as 5E+1 $(mg/kg\text{-}day)^{-1}$ but should be 1.5E+1 $(mg/kg\text{-}day)^{-1}$ (EPA).

This table states that no oral or inhalation CSF potency estimates were provided by EPA for 2-methylphenol, 4-methylphenol, or cadmium. The reviewer suggests these constituents be identified as having no EPA approved CSF estimates available.

14. Table 7.4-2

The oral reference doses (RfDs), are inconsistent with current EPA toxicity data for butylbenzylphthalate, carbon disulfide, chlorobenzene, chloroethane, 1,4-dichlorobenzene, diethylphthalate, fluoranthene, methyl isobutyl ketone, pyrene, trichloroethene, barium, lead, silver, thallium and zinc. For example, butylbenzylphthalate is listed as 2E+0 (mg/kg-day) but should be 2E-1 (mg/kg-day); carbon disulfide is listed as ND but should be 1E-1 (mg/kg-day); chlorobenzene is listed as ND but should be 2E-2 (mg/kg-day); chloroethane is listed as ND but should be 2E-2 (mg/kg-day); 1,4-dichlorobenzene is listed as ND but should be 2E-1 (mg/kg-day); diethylphthalate is listed as 8E+0 (mg/kg-day) but should be 8E-1 (mg/kg-day); fluoranthene is listed as 4E-1 (mg/kg-day) but should be 4E-2 (mg/kg-day); methyl isobutyl ketone is listed as ND but should be 5E-2 (mg/kg-day); pyrene is listed as 3E-1 (mg/kg-day) but should be 3E-2 (mg/kg-day); trichloroethene is listed as ND but should be 6E-3 (mg/kg-day); barium is listed as 5E-2 (mg/kg-day) but should be 7E-2 (mg/kg-day); lead is listed as 7E-4 (mg/kg-day) but should be 1E-7 (mg/kg-day); silver is listed as 3E-3 (mg/kg-day) but should be 5E-3 (mg/kg-day); thallium is listed as 7E-5 (mg/kg-day) but should be 8E-5 (mg/kg-day); and zinc is listed as 2E-1 (mg/kg-day) but should be 3E-1 (mg/kg-day).

The inhalation RfDs are inconsistent with current EPA toxicity data for benzene, benzoic acid, 2-butanone, carbon disulfide, chlorobenzene, chloroethane, methyl isobutyl ketone, toluene, xylene, barium, and cobalt. For example, benzene is listed as ND but should be 5.7E-4 (mg/kg-day); benzoic acid is listed as ND but should be 4E+0 (mg/kg-day); 2-butanone is listed as 9E-2 (mg/kg-day) but should be 2.9E-1 (mg/kg-day); carbon disulfide is listed as 1E-1 (mg/kg-day) but should be 2.9E-3 (mg/kg-day), chlorobenzene is listed as 5E-3 (mg/kg-day) but should be 5.7E-3 (mg/kg-

day); chloroethane is listed as ND but should be 2.9E+0 (mg/kg-day); methyl isobutyl ketone is listed as 8E-2 (mg/kg-day) but should be 2.3E-2 (mg/kg-day); toluene is listed as 5.71E-1 (mg/kg-day) but should be 1.1E-1 (mg/kg-day); xylene is listed as 8.57E-2 (mg/kg-day) but should be 2E-1 (mg/kg-day); barium is listed as 1E-4 (mg/kg-day) but should be 1.4E-4 (mg/kg-day); and cobalt is listed as ND but should be 2.9E-4 (mg/kg-day).

Additionally, oral RfDs should be used for both oral and inhaled exposures for organic compounds lacking inhalation RfDs; and inhalation RfDs should be used for both inhalation and oral exposures for organic compounds lacking oral values.

15. Tables 7.5-1 - 7.5-20

Please include all chemicals of potential concern for the appropriate site on each table.

16. Table 7.5-1 - 7.5-9

The inhalation CSF for PCE is listed as 1.0E-2 $(mg/kg\text{-}day)^{-1}$ but should be 5.1E-2 $(mg/kg\text{-}day)^{-1}$.

17. Table 7.5-10

The inhalation CSF for PCE is listed as 1.2E-2 $(mg/kg\text{-}day)^{-1}$ but should be 5.1E-2 $(mg/kg\text{-}day)^{-1}$.

18. Table 7.6-1

This summary of potential carcinogenic and noncarcinogenic health risks associated with OU1 is not correct based on the toxicity value errors and calculation errors previously identified. These values should be corrected and health risks recalculated.

19. Appendix F, Page F.3-1, Section F.3.1, Paragraph 1

Please explain EPA method TO-14.

20. Appendix F, Table 2

The molecular weight of benzene is incorrectly listed at 119; it should be 78.12.

21. Appendix F, Table 2

The conversions of volumetric concentrations of soil gases into mass per volume concentrations can not be reproduced nor verified with the equation and data given. Please recalculate.

22. Appendix F, Table 3

The molecular weights for benzene and chloroform are listed as 119 and 78, respectively, but should be 78 and 119. Please recalculate all equations using this corrected data.

23. Appendix F, Table 9

Please use the current and approved toxicity values to calculate risk associated with ingestion of soil containing background metals. Please list the background concentrations utilized in the same table.

ERRATA SHEET

1. Table 7.4-1

The oral and inhalation CSF units are incorrectly listed as mg/kg-day but should be $(mg/kg\text{-}day)^{-1}$

2. Table 7.4-1, Page 2 of 2

Inhalation CSFs are incorrectly referred to in the header for this table as oral CSFs.

3. Table 7.4-2

In this table subscript g is referenced, but no subscript g is defined in the footnotes.

4. Table 7.5-6

4-Methylphenol is not a COPC for Site 2.