01.01-8/6/98-02364

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT

August 6, 1998

Commander, Atlantic Division
Naval Facilities Engineering Command
Code 1823
Attention: MCB Camp Lejeune, RPM
Ms. Katherine Landman
Norfolk, Virginia 23511-6287

Commanding General
Attention: AC/S, EMD/IRD
Marine Corps Base
PSC Box 20004
Camp Lejeune, NC 28542-0004

RE: NC Superfund Comments on the
Draft Phase I SWMU
Confirmatory Sampling Report
MCB Camp Lejeune, North Carolina

Dear Ms. Landman:

The referenced document has been received and reviewed by the North Carolina Superfund and Hazardous Waste Sections and our comments are attached.

Please call me at (919) 733-2801, extension 278 if you have any questions.

Sincerely,

David J. Lown, LG, PE
Geological Engineer
Superfund Section

Attachments

cc: Gena Townsend, US EPA Region IV
Neal Paul, MCB Camp Lejeune

401 OBERLIN ROAD, SUITE 150, RALEIGH, NC 27605
PHONE 919-733-4996 FAX 919-715-3605

ATTACHMENT 1

North Carolina Superfund Comments
Draft Phase I SWMU Confirmatory Sampling Report
Marine Corps Base, Camp Lejeune, North Carolina

General Comments

1. RCRA can only use residential exposure levels when assessing contamination at a SWMU.

2. Monitor Well Installation. Unless there is additional information, a minimum of three monitoring wells should be installed to test the groundwater at a SWMU. Determination of the groundwater flow direction may show that additional wells are needed to test for contamination.

3. Soil Sampling for VOCs. EPA Region IV has changed the sampling procedure for VOCs in soil. Effective immediately, method 5035, as described in SW846 should be used to sample soils for VOCs. See the attached RCRA memo.

4. Screening levels not contained in the NC Risk Analysis Framework. Table 1 contains the screening levels not found in the NC RAF. The levels were calculated using Region III Tap Water standards. If the standard is a non-carcinogen, only one-tenth the value was used. The residential soil concentrations are from Region III RBCs or the best professional judgment of our Industrial Hygienist. The non-carcinogenic residential soil screening levels are found by multiplying the Region III RBCs by 0.2. This is a conservative approach to account for multiple contaminants.

5. Determination of natural background concentrations of metals. Screening level exceedances of mercury, arsenic and other metals are described as being due to elevated natural background concentrations at Camp Lejeune. A thorough discussion of the base background levels and how they were determined needs to be included in this report.

6. If the source of contamination is greater than 18 years old (prior to 1980) and contamination is not present in the groundwater above regulatory standards, then the residential soil ingestion (S-1) screening level, instead of the S:3-G:1 screening level, can and should be used.

7. If the maximum detection limit for a non-detected contaminant is greater than the screening level, then additional information is requested. If the sampling density is seriously affected by the detection limit, then additional sampling is required. If

additional sampling is already proposed for the site, then the absence of a contaminant with a high detection limit should be confirmed.

SWMU-Specific Comments

1. **SWMU 2 - 1700 Pond A** Comment: Soil samples indicate that the soil around the Pond is not contaminated, however the integrity of the structure needs to be confirmed. Groundwater needs to be tested to confirm that the pond is not leaking. Mercury should be analyzed to confirm that it has not impacted the groundwater.

3. **SWMUs 53 and 296 - Coal Storage Area and Runoff Collection Basin** Mercury was detected above the Method I, S-3:G-1 screening concentration in surface soils. Arsenic was detected above Region III Industrial RBC.

   Comment: Arsenic should be compared to residential levels. If arsenic levels are greater than residential levels or 2 times the base background, then additional sampling may be warranted.

4. **SWMUs 256 and 257 - Oil/Water Separators 1700-1 and 1700-2**
   Benzo(a)anthracene was found in one surface soil sample at 440 ug/kg at SWMU 256. Method 1, S-3:G-1 for this is 343 ug/kg. Additional soil sampling is planned to confirm this hit.

   Comment: Benzo(a)pyrene exceeds the S:3-G:1 levels shown in Table 1. If the contamination is older 18 years and if the soil levels are lower than the S:1 levels, groundwater should be sampled next. If the G-1 screening level for groundwater is not exceeded, then additional soil sampling is not necessary.

5. **SWMU 5 - 575 Rack** Comment: Why is the 2-times-background mercury value (0.129 mg/kg) different from the number (0.094 mg/kg) used in the discussion of SWMU 2?

6. **SWMU 43 - Former IR Site No. 11; Pest Control Shop**

   Comment: Benzo(a)pyrene, 4,4'-DDD and 4,4'-DDT exceed the S:3-G:1 levels in Table 1. The maximum non-detect for chlordane is an order of magnitude above the screening level. If the contamination is greater than 18 years old, then groundwater should be sampled before additional soil samples are taken. If the groundwater is not impacted, then the residential soil screening level (S-1) can be used.

7. **SWMU 46 - Former IR Site No. 15, Montford Point Dump Site** Site was operated between 1948 and 1958. Arsenic, cadmium, lead and mercury were detected above

screening levels. The lead is at 12,300 mg/kg. Additional soil and groundwater sampling is proposed.

Comment: The lead level is well above the lead cleanup target of 400 mg/kg. If groundwater sampling does not show elevated levels of metals, including lead, then the residential soil screening level (S-1) should be used to assess the site.

8. **SWMU 89 - SCCH785 Oil/Water Separator** The following compounds were detected in soils above the screening level:

    bromoform
    ethylbenzene
    methylene chloride
    naphthalene

    Additional soil and groundwater sampling is proposed. Existing monitoring wells are intended to be used.

    Comment: The following compounds have concentrations greater than the S:3-G:1 levels shown in Table 1:

    1,1,2,2-tetrachloroethane
    1,1,2-trichloroethane
    4-methyl-2-pentanone
    2 methylnaphthalene

    The following have maximum detection limits that are at least an order of magnitude greater than the screening levels:

    2-butanone
    bromoform
    tetrachloroethane
    2-hexanone
    1,1,2,2-tetrachloroethane
    1,1,2-trichloroethane

    Use of exiting monitoring wells for groundwater sampling is appropriate.

9. **SWMU 253 - 1205 Aboveground Storage Tank** No further action is recommended. Nothing was found above screening levels in the soils.

    Comment: If the residential RBCs are not exceeded, we concur.

10. **SWMU 254 - 1408 Dumpster** The following compounds were found in soils above the screening levels:

    mercury
    benzo(a)anthracene
    benzo(a)pyrene
    benzo(b)fluoranthene
    dibenz(a,h)anthracene

    Additional soil sampling and installation of two monitoring wells is proposed. Only sampling for SVOCs is proposed.

    Comment: Install three instead of two wells to determine groundwater flow direction. Mercury should be tested to confirm that it's not in the groundwater. Based on the levels shown in Table 1, the following contaminants were detected at concentrations greater than the S:3-G:1 screening levels: carbazole and indeno(1,2,3-cd)pyrene.

11. **SWMU 255 - Building 1502 Oil/Water Separator** Pentachlorophenol was detected at 210 ug/kg. The S-3:G-1 screening level is 23.1 ug/kg. Mercury was found above the screening level. Additional soil samples and installation of one monitoring well is proposed.

    Comment: If direction of groundwater flow is unknown, three monitoring wells should be installed and the flow direction determined. In addition to pentachlorophenol, mercury should be sampled to confirm that the water is not contaminated. If the groundwater is contaminated, the pH of the soils should be used to calculate the pentachlorophenol cleanup levels. Pentachlorophenol leaches more readily in soils with a higher pH.

12. **SWMU 258 - S1745 Oil/Water Separator** The following were detected above screening levels:

    mercury
    cadmium
    acetone

    Acetone was detected in surface sample and is probably due to lab contamination. Mercury and cadmium are attributed to background levels. No further action is recommended.

    Comment: The average cadmium concentration is well below the screening level. The mercury background levels should be confirmed by analyzing the groundwater for mercury. The concentration 1,1,2,2-tetrachloroethane is above the S:3-G:1

screening level shown in Table 1 and the maximum non-detect for 1,1,2,2-tetrachloroethane is at least an order of magnitude greater than the screening level.

13. **SWMU 260 - 1780 Oil/Water Separator-1** In operation since 1988. Nothing found above screening concentrations. No further action recommended.

    Comment: If the residential RBCs are not exceeded, we concur.

14. **SWMU 261 and 297 - 1780 Oil/Water Separator-2 and Underground Storage Tank-1 (?)** Following were found to be above screening levels:

    mercury
    cadmium
    chromium
    lead
    chloroethane

    Additional sampling is proposed for soil. Metals and VOCs are to be analyzed.

    Comment: Which SWMU is the tank and which is the oil/water separator? Text is not clear. In addition to soils, at least three temporary monitoring wells should be installed and sampled. Mercury should be analyzed for. The S-3:G-1 target concentration for 1,2-dichloroethene is listed in the NC RAF by isomer and is 350 ug/kg for cis- and 380 ug/kg for trans- and, therefore, 350 ug/kg is appropriate for total 1,2-dichloroethene.

    The maximum non-detect concentration for 1,1,2-trichloroethane is at least an order of magnitude greater than screening level.

15. **SWMU 262 - 1780 Oil/Water Separator-3** Nothing was found to be above screening levels. NFA recommended.

    Comment: If the residential RBCs are not exceeded, we concur.

16. **SWMU 298 - Underground Storage Tank-2** Nothing was found to be above screening levels. NFA recommended.

    Comment: If the residential RBCs are not exceeded, we concur.

17. **SWMU 264 - 2611 Container** The following contaminants were found in soils above the screening levels:

    pentachlorophenol

chlordane
arsensic

Additional soil samples and one temporary groundwater monitoring well is proposed.

Comment: Unless the groundwater flow direction is known, three monitoring wells should be installed and sampled and the flow direction determined. If the groundwater is contaminated, the pH of the soil should be determined. Pentachlorophenol leaches to groundwater more readily at higher pH.

The maximum non-detect concentration for pentachlorophenol is at least one order of magnitude greater than the screening level.

18. **SWMU 265 - 2615 Oil/Water Separator** Nothing was found above the screening criteria; no further action is recommended.

    Comment: If the residential RBCs are not exceeded, we concur.

19. **SWMU 268 - 522 Dumpster** Nothing was found above the screening criteria; no further action is recommended.

    Comment: If the residential RBCs are not exceeded, we concur.

20. **SWMU 269 - Building 816 Oil/Water Separator** Nothing was found above the screening criteria; no further action is recommended.

    Comment: If the residential RBCs are not exceeded, we concur.

21. **SWMU 272 - AS137 Oil/Water Separator** The following contaminants were found in the soil above the S-3:G-1 screening levels:

    mercury
    pentachlorophenol
    naphthalene
    2-chlorophenol
    1,4-dichlorobenzene
    methylene chloride.

    Arsenic was found above the Region III Industrial RBC. Additional investigation is recommended. Soil samples to determine the extent of contamination. Additionally two temporary wells are proposed.

Comment: If the groundwater flow direction is not known, three wells should be installed. In addition to VOCs, SVOCs and arsenic, mercury should be analyzed. The maximum 2,4-dinitrotoluene (51J ug/kg) is above the S-3:G-1 screening level (43.1 ug/kg), it should be analyzed for in the groundwater. If it is not present in the groundwater and does not exceed the residential RBC, then it can be dropped from the COPC list.

The following contaminants have maximum detection limits at least one order of magnitude above the screening level:

2-butanone
acetone
methylene chloride
tetrachloroethane
2-chlorophenol
pentachlorophenol
mercury
2,4-dinitrotoluene.

22. **SWMU 273 - BA128/BA105 Dumpster** Located between Onslow Beach and the Intracoastal Waterway. Nothing was found above the screening criteria; no further action is recommended.

    Comment: If the residential RBCs are not exceeded, we concur.

23. **SWMU 275 - BB48 Dumpster, Construction Shop** Located 500 feet west of Courthouse Bay. Nothing was found above the screening criteria; no further action is recommended.

    Comment: If the residential RBCs are not exceeded, we concur.

24. **SWMU 276 - BB49 Dumpster** Dumpster located 800 feet east of Courthouse Bay. VOCs, SVOCs, and metals detected did not exceed the screening levels. No further action is recommended.

    Comment: If the residential RBCs are not exceeded, we concur.

25. **SWMU 277 - FC120 Oil/Water Separator** VOCs, SVOCs, and metals detected did not exceed the screening levels. No further action is recommended.

    Comment: If the residential RBCs are not exceeded, we concur.

26. **SWMU 279 - FC200 Oil/Water Separator** VOCs, SVOCs, and metals detected did not exceed the screening levels. No further action is recommended. Damaged monitoring well needs to be abandoned properly.

    Comment: If the residential RBCs are not exceeded, we concur.

27. **SWMU 280 - FC285 Aboveground Storage Tank** Arsenic is slightly above the Region III Industrial RBC. The soil is subsurface. No other screening levels were exceeded. The arsenic is probably natural background. No further action is recommended.

    Comment: If the residential RBCs or 2 times the average natural background are not exceeded, we concur.

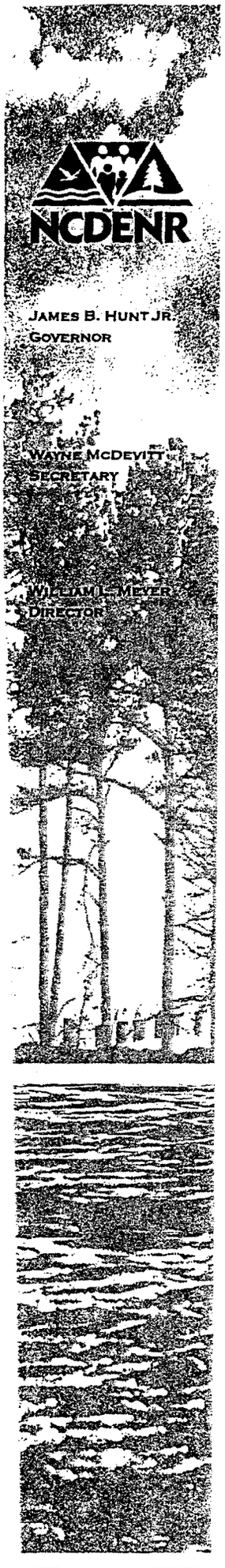
28. **SWMU 283 - FC279 Release** A small area adjacent to a materials storage area in which stressed vegetation was observed. No organics detected. All detected metals are below screening concentrations. No further action is recommended.

    Comment: If the residential RBCs are not exceeded, we concur

Table 1. Soil Screening Concentrations for Contaminants Not Found in the NC Risk Analysis Framework

CONTAMINANT	Koc [L/kg]	Henry's Law Constant [atm-m3/mol]	Henry's Law Constant [unitless]	G-1 Target Concentration [mg/L]	LFsw	S:3-G:1 Soil Screening Level [mg/kg]	S-1 Soil Screening Level [mg/kg]
acenaphthylene	2500	0.00145	0.05945	0.21	2.70515233	11.4	460
benzo(a)pyrene	696000		0.00005	0.0000092	696.200004	0.128	
benzo(b)fluoranthene	1.23E+06		4.55E-03	0.000092	1230.20039	2.26	
benzo(k)fluoranthene	1.23E+06	8.29E-07	0.000033989	0.00092	1230.2	22.6	
benzo(ghi)perylene							460
bis(2-chloroethyl) ether	7.59E+01	1.80E-05	0.000738	0.0000092	0.27596396	0.0000508	
bromomethane	8.32E+01	3.18E-02	1.3038	0.87	0.396196	6.89	
carbazole	3.93E+03	1.53E-08	6.273E-07	0.0033	4.13000005	0.273	
4-chloro-3-methylphenol[a]	776	2.50E-07	0.00001025	0	0.97600089	0	a
4,4'-DDD	4.58E+04	4.00E-06	0.000164	0.00028	46.0000142	0.258	
4,4'-DDE	8.64E+04	2.10E-05	0.000861	0.0002	86.6000746	0.346	
4,4'-DDT	6.78E+04	8.10E-06	0.0003321	0.0002	68.0000288	0.272	
dalapon (herbicide)[b]	0	6.30E-08	0.000002583	0.11	0.20000022	0.440	
dibenz(a,h)anthracene	1.79E+06	1.47E-08	6.027E-07	0.0000092	1790.2	0.329	
dibenzofuran	1.66E+06	1.70E-06	0.0000697	0.015	1660.20001	498	
di-n-butyl phthalate	1.38E+03	6.30E-05	0.002583	0.37	1.58022386	11.7	156
2,4-dinitrotoluene	95.5	9.26E-08	3.7966E-06	0.0073	0.29550033	0.0431	
2-hexanone	135	1.75E-03	0.07175	0.15	0.34121833	1.02	620
indeno(1,2,3-cd)pyrene	3.47E+06	1.60E-05	0.000656	0.000092	3470.20006	6.39	
isophorone	46.8	6.64E-06	0.00027224	0.071	0.24682359	0.350	
2-methylnaphthalene	8511	3.18E-04	0.013038	0.15	8.71212996	26.1	620
4-methyl-2-pentanone	6.16	3.90E-04	0.01599	0.29	0.2075458	1.20	1,260
4-methylphenol	49	7.92E-07	0.000032472	0.0018	0.24900281	0.00896	
4-nitrophenol	214	3.50E-05	0.001435	0.29	0.41412437	2.40	
n-nitrosodiphenylamine	1290	5.00E-06	0.000205	0.014	1.49001777	0.417	
phenanthrene							460
tetrachloroethane 1,1,2,2-	79	0.00038	0.01558	0.000053	0.28035027	0.000297	
trichloroethane 1,1,2-	75	0.00091	0.03731	0.00019	0.27823353	0.00106	

a No toxicological data available.
b No data for Koc. Zero used as a conservative estimate.



NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT

Sampling Method 5035
North Carolina Hazardous Waste Section
Policy Guidance Document

July 8, 1998

Introduction

On June 13, 1997, SW846 was revised to include changes in the soil collection and analysis procedures for volatile organic compounds (VOCs). The updated procedures are contained in SW846 Method 5030B and Method 5035. EPA Region 4 has since released a memo on the subject of the determination of VOCs in soil. This memo includes background information on Method 5035 and recommendations for application. In response to these revisions and the EPA Region 4 memo, the North Carolina Hazardous Waste Section has developed this document in order to provide guidance for complying with the new requirements as applicable under North Carolina regulations.

Method 5035

Method 5035, as described in SW846, includes the following information:

- The collection and analysis of low level VOC solid samples (soils, sediments, and solid waste with VOC concentrations in the range of 0.5 to 200 *ug*/kg). The analysis consists of a closed-system purge-and-trap method.
- Procedures for collection and preparing solid samples containing high concentrations of VOCs and for oily wastes.

The revised methods require different sampling and analysis procedures for samples having high concentration of VOCs versus low concentrations of VOCs. These sample collection techniques are more complicated for volatile organic analysis than those of the previous method; however, the accuracy of the revised method soil collection techniques warrant their immediate use versus traditional methods. Previous methodology has been shown to report significantly lower concentrations of VOCs in soil.

Applicability

The North Carolina Hazardous Waste Section (HWS) recommends that facilities performing RCRA activities determine VOCs in soil using sample collection procedures consistent with Method 5035. Soil VOC samples which are collected and analyzed by the HWS will be consistent with Method 5035. The HWS initiated the use of this soil method in June 1998.

Method 5035 will be required if a facility wants to conclude "no further action" at a solid waste management unit or to use risk-based cleanup levels. For site assessment purposes, at a minimum, facilities should sample the outermost sampling points (below detection levels) using Method 5035 to confirm that soil contamination has been delineated.

If you have any questions, please contact Sandra Moore in the North Carolina Hazardous Waste Section at 919/733-2178 ext. 231 or Pierre Lauffer at ext. 212.

401 OBERLIN ROAD, SUITE 150, RALEIGH, NC 27605
PHONE 919-733-4996 FAX 919-715-3605

Attachment 2

Comments by Patrick Watters, Hazardous Waste Section

NCDENR

JAMES B. HUNT JR.
GOVERNOR

WAYNE MCDEVITT
SECRETARY

WILLIAM L. MEYER
DIRECTOR

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT

RECEIVED
AUG 05 1998
SUPERFUND SECTION

August 5, 1998

MEMORANDUM

To: David Lown
Superfund Section

From: Patrick Watters
Hazardous Waste Section
Facility Management Branch

Subject: Comments on Camp Lejeune's Confirmatory Sampling Report dated February 17, 1998.

I have completed my portion of the review of the Confirmatory Sampling Report referenced above. My comments are attached. If there are any questions about this, please call me at extension 240.

Enclosure

rc: Pete Doorn
Kathy Lawson

c:\wpfiles\melodi\jpw\cs-rpt.wpd

401 OBERLIN ROAD, SUITE 150, RALEIGH, NC 27605
PHONE 919-733-4996 FAX 919-715-3605

MCB Camp Lejeune
Confirmatory Sampling Report
dated February 17, 1998

General

1 - RCRA can only consider residential exposure levels when assessing contamination at a SWMU.

2 - EPA Region IV has changed the sampling protocol for VOCs in soil. Method 5035, as described in SW 846 should be used in the future to sample soils for VOCs.

3 - Background values for naturally occurring substances in soil are used as part of the process to determine if the levels of detected contaminants are significant. If a contaminant is detected at levels below twice the average background level then no further action is required. It was not clear in the Confirmatory Sampling Report how the soil background values were established. Provide appropriate justification in the CS report to demonstrate that the background values are representative. This information should include maps to show sample locations and the proximity to SWMUs, CERCLA sites or other potentially contaminated areas.

SWMU Specific Comments

1 - **SWMU 284 - S947 Container**
Arsenic was detected above the Residential Soil Screening Level. Mercury was detected above the Soil to Groundwater Screening Level. The CS Report recommended no further action for this SWMU, however if the levels detected for these metals are greater than twice their respective average background level, then additional work will be required to determine the extent of contamination.

2 - **SWMU 285 - S947 Oil/Water Separator**
The detection limit (18U) for PCE at sample IS03 is inconclusive. Also, methylene chloride was detected (25ug/Kg) at location IS03 which is above the Soil to Groundwater Screening Level of 22 ug/Kg. As a result, the proposed follow up actions should include VOCs as part of the sampling and analytical scheme in addition to the SVOC and arsenic analyses.

3 - **SWMU 286 - S947 Waste Pile**
Arsenic was detected above the Residential Soil Screening Level. Mercury was

detected above the Soil to Groundwater Screening Level. The CS Report recommended no further action for this SWMU, however if the levels detected for these metals are greater than twice their respective average background level, then additional work will be required to determine the extent of contamination.

4 - **SWMU 291 - 034 Ditch**
Mercury was detected above the Soil to Groundwater Screening Level. Follow up actions include additional soil samples for arsenic and chromium and the removal of sediment from the ditch. If the levels of mercury are greater than twice the average background level, then additional work will be required to assess the extent of the mercury contamination.

5 - **SWMU 292 - 1106/1107 Aboveground Storage Tank**
Mercury was detected above the Soil to Groundwater Screening Level. The CS Report recommended no further action for this SWMU, however if the levels detected for mercury are greater than twice the average background level, then additional work will be required to determine the extent of contamination.

6 - **SWMU 293 - 1106/1107 Oil/Water Separator**
Since the lead detected in the soil was above the Soil to Groundwater Screening Level, the follow up actions for SWMU 293 should include groundwater samples for lead in addition to the proposed soil samples for lead.

7 - **SWMU 294 - 1203 Oil/Water Separator**
Detection limits for PAHs at sample locations IS01-03 and IS05-03 (1900 ug/Kg and 1100 ug/Kg respectively) are too high to be conclusive. These two locations need to be resampled and analyzed with detection levels comparable with the other soil analyses. Additional assessment work will be required for mercury if the contamination levels are greater than twice the average background.

8 - **SWMU 295 - 1601 Aboveground Storage Tank**
Arsenic was detected above the Residential Soil Screening Level. Follow up actions include additional soil samples and the installation of temporary monitoring wells. The additional soil and groundwater samples are to be analyzed for SVOCs. If the levels for arsenic are greater than twice the average background level, then additional work will be required to determine the extent of contamination.

9 - **SWMU 299 - AS114 Aboveground Storage Tank - MCAS Auto Hobby Shop**
Arsenic was detected above the Residential Soil Screening Level. Mercury was detected above the Soil to Groundwater Screening Level. Follow up action planned for this SWMU include engineering controls and additional soil and

groundwater samples analyzed for VOCs, SVOCs, Cd, Pb, and Ag. If the arsenic and mercury levels are greater than twice their respective average background levels, then additional work will be required to determine the extent of contamination.

10 - **SWMU 300 - AS118 Aboveground Storage Tank**
Arsenic was detected above the Residential Soil Screening Level. Mercury was detected above the Soil to Groundwater Screening Level. Follow up action planned for this SWMU include additional soil and groundwater samples analyzed for SVOCs. If the arsenic and mercury levels are greater than twice their respective average background levels, then additional work will be required to determine the extent of contamination.

11 - **SWMU 301 - AS4115 Aboveground Storage Tank**
Arsenic was detected above the Residential Soil Screening Level. Mercury was detected above the Soil to Groundwater Screening Level. The CS Report recommended no further action for this SWMU, however if the levels detected for arsenic and mercury are greater than twice their respective average background level, then additional work will be required to determine the extent of contamination.

12 - **SWMU 302 - AS563 Aboveground Storage Tank**
Cadmium was detected above the Soil to Groundwater Screening Level. The CS Report recommended no further action for this SWMU, however if the levels detected for cadmium are greater than twice the average background level, then additional work will be required to determine the extent of contamination. Also, benzo(a)pyrene was detected at 200J and 420 ug/Kg which is above the soil to groundwater screening level of 128 ug/Kg as calculated by the Superfund Section. Additional assessment work is therefore necessary for SVOCs at this SWMU.

13 - **SWMU 303 - Aboveground Storage Tank**
Acetone was detected at 14,000 ug/Kg at location IS04. We agree that acetone can be a common laboratory/field contaminant however the data from the blank samples do not support that conclusion. The proposed follow up actions include additional soil samples for SVOC's and metals. Since there are some contaminants above the Soil to Groundwater Screening Levels, groundwater samples need to be taken as well. The follow up action should also include another soil boring near sample location IS04 to confirm the acetone level.

14 - **SWMU 304 - BA103 Oil/Water Separator**
Arsenic was detected above the Residential Soil Screening Level. The CS Report recommended no further action for this SWMU, however if the levels detected for arsenic are greater than twice the average background level, then additional work

will be required to determine the extent of contamination.

15 - **SWMU 305 - BB224 Pile**
Arsenic was detected above the Residential Soil Screening Level. The CS Report recommended no further action for this SWMU, however if the levels detected for arsenic are greater than twice the average background level, then additional work will be required to determine the extent of contamination.

16 - **SWMU 306 - FC230 Oil/Water Separator**
Mercury was detected above the Soil to Groundwater Screening Level. The proposed follow up actions include additional soil samples only for silver. If the levels of mercury are greater than twice the average background level, then additional work will be required to determine the extent of contamination for mercury.

17 - **SWMU 307 - G649 Wash Rack**
Arsenic was detected above the Residential Soil Screening Level. Mercury was detected above the Soil to Groundwater Screening Level. The CS Report recommended no further action for this SWMU, however if the levels detected for these metals are greater than twice their respective average background level, then additional work will be required to determine the extent of contamination.

18 - **SWMU 308 - GP19 Oil/Water Separator**
The CS Report recommended no further action for this SWMU. Bis(2-chloroethyl)ether was detected at 260J ug/Kg which is above the soil to groundwater screening level of .0508 ug/Kg calculated by the Superfund Section. Additional assessment work is therefore necessary to address the SVOCs at this SWMU.

19 - **SWMU 309 - NH118 Underground Storage Tank**
Arsenic was detected above the Residential Soil Screening Level. The CS Report recommended no further action for this SWMU, however if the levels detected for arsenic are greater than twice their average background level, then additional work will be required to determine the extent of contamination.

20 - **SWMU 310 - PT33 Pond Oil/Water Separator**
Arsenic was detected above the Residential Soil Screening Level. The proposed follow up actions were to remove some debris from the pond and restrict access. If the levels of arsenic are greater than twice the average background level, then additional work will be required to determine the extent of the arsenic contamination.

21 - **SWMU 311 - S1619 Oil/Water Separator**
Arsenic was detected above the Residential Soil Screening Level. Mercury was detected above the Soil to Groundwater Screening Level. The proposed follow up action includes soil and groundwater samples for VOCs, SVOCs, and certain metals. If the levels detected for arsenic and mercury are greater than twice their respective average background level, then the follow up action should include mercury and arsenic in the metals analyses.

22 - **SWMU 312 - S1735 Oil/Water Separator**
Benzo(a)pyrene and arsenic were detected above their respective Residential Soil Screening Level. Mercury was detected above the Soil to Groundwater Screening Level. The CS Report recommended no further action for this SWMU, however additional investigation is needed to address the Benzo(a)pyrene contamination. If the levels detected for mercury and arsenic are greater than twice their respective average background level, then follow up action will need to address these contaminants.

23 - **SWMU 313 - S1753 Oil/Water Separator and Aboveground Storage Tank**
Arsenic was detected above the Residential Soil Screening Level. Mercury was detected above the Soil to Groundwater Screening Level. The proposed follow up action included an additional boring to confirm the presence of silver. Since silver exceeded the Soil to Groundwater Screening Level, there needs to be a groundwater sample taken as well. If the levels detected for mercury and arsenic are greater than twice their respective average background level, then follow up action will be needed to address these contaminants as well.

24 - **SWMU 314 - SM187 Oil/Water Separator**
Benzo(a)pyrene and arsenic were detected at levels above their respective Residential Soil Screening Levels. Mercury was detected above the Soil to Groundwater Screening Level. The PAH detection limits (1900 ug/Kg) for sample IS01-00 are too high to be conclusive for a few of the PAH compounds. The CS Report recommended no further action for this SWMU, however additional follow up action is needed to address the inconclusive PAH results at sample IS01-00. If the levels detected for mercury and arsenic are greater than twice their respective average background level, then follow up action will be needed to address these contaminants as well.

25 - **SWMU 315 - SM269 Oil/Water Separator near building M200**
Arsenic was detected at levels above the Residential Soil Screening Level and mercury was detected above the Soil to Groundwater Screening Level. The proposed follow up action includes additional soil samples and groundwater samples from temporary wells analyzed for SVOCs and silver. The follow up

action should include additional assessment of the arsenic and mercury contamination if the levels are greater than twice their respective average background level.

26 - **SWMU 316 - TC773 Oil/Water Separator**
Benzo(a)pyrene and arsenic were detected above their respective Residential Soil Screening Levels. The CS Report recommended no further action for this SWMU, however there needs to be further assessment of the PAH contamination at this site. Also, if the arsenic levels are greater than twice the average background level, then additional follow up action will be necessary to assess the arsenic contamination as well.

27 - **SWMU 317 - TT2453 Release**
Arsenic was detected at levels above the Residential Soil Screening Level and mercury was detected above the Soil to Groundwater Screening Level. The proposed follow up action includes additional soil samples and a groundwater sample from a temporary well to be analyzed for lead. The follow up action should include additional assessment of the arsenic and mercury contamination if the levels are greater than twice their respective average background level.

28 - **SWMU 318 - AS515 Oil/Water Separator**
Mercury was detected above the Soil to Groundwater Screening Level. The proposed follow up action includes additional soil samples and groundwater samples from temporary wells analyzed for VOCs, SVOCs, As, Cd, Cr, and Ag. The follow up action should include additional assessment of the mercury if the levels are greater than twice the their respective average background level.

29 - **SWMU 319 - Camp Geiger Wastewater Treatment Plant**
Arsenic was detected at levels above the Residential Soil Screening Level and mercury was detected above the Soil to Groundwater Screening Level. The proposed follow up action includes additional soil samples analyzed for SVOCs. The follow up action should also include groundwater samples analyzed for SVOCs and additional assessment of the arsenic and mercury contamination if the levels are greater than twice their respective average background level.

30 - **SWMU 336 - AS4106 Paint Stripper**
We understand your problem in obtaining necessary samples from this SWMU. There still needs to be some kind of confirmatory sample to show that this SWMU has not impacted the soil and groundwater in the area. Various sampling options were outlined in the Recommendations Section however none were described a being a viable alternative. At some point the drain lines have to exit the building. Provide information to show where these drain lines exit the SWMU and what path this effluent takes once it exits the SWMU.

31 - **SWMU 337 - AS518 Paint Stripper**
Arsenic was detected above the Residential Soil Screening Level. The CS Report recommended no further action for this SWMU however if the arsenic levels are greater than twice the average background then additional action will be needed to assess the arsenic contamination.

32 - **SWMU 339 - AS4146 Sandblasting Area**
Acetone was detected above the Soil to Groundwater Screening Level and arsenic was detected above the Residential Soil Screening Level. No further investigative action was recommended for this SWMU. We agree that acetone can be a common laboratory/field contaminant however the data from the blank samples do not support that conclusion. An additional soil sample needs to be taken to confirm your conclusion on the acetone level. Additional follow up action may be needed for arsenic if the levels are greater than twice the average background level. Additional assessment work is necessary for 4-methylphenol which was detected at 2600 ug/kg which is above the soil to groundwater screening level of 8.96 ug/Kg as calculated by the Superfund Section.

It was recommended that the Base institute additional operational controls to prevent the migration of contaminated sand and grit to the stormwater collection system. Based on the sample results and the photograph of SWMU 339 in the Confirmatory Sampling Work Plan, we agree that additional physical and operational controls are needed to control the migration of contaminated sand and grit into the stormwater collection system. Also, since the sampling results clearly show that there is contamination in the storm drain above screening levels, we need to know about the feasibility of removing the contaminated sand and grit. Provide additional information about the storm drain (dimensions, layout, etc.), the quantity of contaminated sand/grit that is in the drain and the path that this effluent takes once it exits the SWMU.