

Baker

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Baker Environmental, Inc.
A Unit of Michael Baker Corporation

Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108

412-269-6119
FAX 412-269-2002

April 24, 2002

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Mr. Kirk Stevens, P.E.
Code EV23-KAS

Re: Contract N62470-95-D-4818
Navy CLEAN, District III
Contract Task Order (CTO) 0219
Response to Comments - Draft Feasibility Study Report
OU No. 19 Site 84, MCB Camp Lejeune

Dear Mr. Stevens:

Baker Environmental, Inc. (Baker) is pleased to submit one copy of the Response to Comments for the Draft Feasibility Study (FS) for OU No. 19, Site 84. Comments were received from MCB Camp Lejeune, North Carolina Department of Environmental Resources (NCDENR) Groundwater and Superfund Sections, the United States Environmental Protection Agency (USEPA) Region IV, Naval Environmental Health Center (NEHC) and the IT Group. Each comment and the corresponding response is provided in Attachment A. These comments will be addressed and incorporated into the Final FS.

Please review the attached responses and, upon making any changes you feel are necessary, distribute to the Partnering Team. For your convenience, an electronic copy was emailed to you for any edits you wish to make prior to your submittal.

Sincerely,

BAKER ENVIRONMENTAL, INC.



Jeffrey P. Tepsic, P.G.
Project Manager

REB/Ip

cc: Ms. Beth Collier, LANTDIV, Code AQ115 (w/o attachment)
Mr. Scott Bailey, CH2M Hill
Mr. Chris Bozinni, P.E., CH2M Hill

ChallengeUs.

**ATTACHMENT A
RESPONSE TO COMMENTS ON
SITE 84 DRAFT FS**

**Response to Partnering Team Comments on
DRAFT FEASIBILITY STUDY REPORT
Operable Unit 19, Site 84, MCB Camp Lejuene, North Carolina
CH2MHill/Baker Environmental, Inc.
April 15, 2002**

Partnering Team comments are provided below in **bold font**, followed by the CH2MHill/Baker Environmental Team response in *italics*. Comments on the Draft Feasibility Study have been provided by NEHC, NCDENR Groundwater and Superfund Sections, the USEPA, and the IT Group, and are addressed below in that order.

NEHC REVIEW COMMENTS:

I. General Comments:

1. **Our review of this Draft Feasibility Study focused on ensuring that NCP guidelines for the development of remedial action alternatives were followed, especially on the detailed analysis of the alternatives regarding the criterion for the overall protection of human health and the environment.**

No response needed.

2. **The document is very thorough and followed all the steps recommended in the NCP guidelines and other EPA guidance. In this FS the nine criteria used for the detailed analysis of the remedial action alternatives (RAA) were carefully considered. NEHC agrees with the detailed analysis of the criterion for the protection of human health and the environment on all alternatives except for RAAs 5 and 7 designated as appropriate for Low-Occupancy Land Use. In RAA 5 (Hot Spot Removal and Institutional Controls) and 7 (Hot Spot Removal and Capping) soil ingestion and dermal contact exposure pathways for PCB concentrations between 1 and 25 ppm allowed under low-occupancy land use are not adequately eliminated for recreational trespassers and other receptors who could spend more than 6.7 hours per week on average, or 335 hours per year at this site. This is because there is no adequate fencing to prevent unauthorized personnel from entering the site. Even though fencing the site perimeter is not required for leaving up to 25 ppm PCB in place for low-occupancy land use, there is no guarantee that trespassers will not spend more than 6.7 hours per week at this site. This is adequately prevented in RAA 6 (Hot Spot Removal and Fencing).**

Thank you! We agree that RAA 5 and RAA 7 do not account for recreational trespassers (e.g., fishermen) who could potentially be on site more than 335 hours per year. A fence could be added to RAA 5 and RAA 7 to address this issue, although the EPA has indicated that a fence does not necessarily control all trespassers. Therefore, a new remedial alternative has been added that includes risk-based cleanup goals to address recreational users of the site.

II. Specific Comments:

1. **Executive Summary, Remedial Action Objectives, page ES-3**

The first two bullets refer to removal or mitigation of potential exposure to contaminants in excess of the selected cleanup levels for high- and low-occupancy land use. For clarification

to the non-technical reader who may read only the Executive Summary, we suggest including in these bullets examples of high and low occupancy land use.

We agree. A definition and examples of high-occupancy and low-occupancy land uses have been added to the text.

2. **Page 1-4, first paragraph and Figure 1-2, Section 1.2.1 Site Location and History,**

1. The text states, "Access to the site is limited along Highway 24 by a chain link fence." In Figure 1-2 fencing is only indicated around the building 45 foundation and the CP&L substation. The fence along Highway 24 is missing in Figure 1-2, and its location needs to be indicated for information purpose.

Existing fencing along Highway 24 will be added to Figure 1-2. Also, the fence is limited to the access road off of Highway 24, therefore, the text will be changed to say, "Vehicular access to the site is limited along Highway 24 by a chain-link fence".

2. Two little green symbols with a flowery appearance are shown in all maps but there is no legend explaining their meaning. One of the symbols is located at the intersection of Gravel Road and Dirt Road. We recommend including their meaning in the map.

The symbol represents a tree and will be added to the figure legends.

3. Two thick solid green lines are shown running along and parallel to Highway 24. The map legend refers to the green solid line as the "approximate wetland boundary line." It is not clear whether or not the green lines along Highway 24 are also considered wetland boundary lines. We recommend clarifying the legend.

It appears that these two lines may actually represent floodplains. The lines will be removed from the drawings so they are not mistaken for wetland boundaries.

3. **Pages 1-13 to 1-15, Section 1.6.1, "Surface Soil"**

The text mentions chemicals that were detected at concentrations exceeding their Region IX preliminary remediation goal (PRG). For the most part the text indicates the PRG for the chemical that was exceeded, but not for all chemicals, particularly for the SVOCs and Pesticides. Although PRGs are listed in section 2 tables, we suggest including the specific PRGs in a consistent manner whenever mentioning that its concentration exceeded the PRG. This will allow the reader to evaluate the magnitude of the exceedences in this section

The PRGs for each specific chemical mentioned in this section have been added to the text.

4. **Page 2-1, first paragraph, Section 2.0, Remediation Goals and Remedial Action Objectives"**

The first paragraph aims to explain that, as stated in the NCP, in developing and screening the remedial action alternatives, the lead agency shall establish remediation goals. The remediation goals are based on acceptable exposure levels that are protective of human health and the environment by considering Applicable or Relevant and Appropriate Requirements (ARARs), if available, and other factors such as acceptable exposure levels for systemic and carcinogenic toxicants. We suggest this be more clearly stated in this section by editing the second sentence in the first paragraph as follows: "The remediation

goal options and remedial action objectives are based on regulatory requirements, standards, and guidance, *also referred as Applicable or Relevant and Appropriate Requirements (ARARs) and those To Be Considered (TBCs), if available*, as well as *assessments of current and potential human health risks and future land use considerations for Site 84.* By clearly emphasizing ARARS and health risk assessments, the reader can better understand the purpose of presenting risk assessment results in addition to the selection of ARARS in the report.

Agreed. Sentence has been revised as suggested.

5. **Page 2-7, Section 2.0, “Remediation Goals and Remedial Action Objectives, USEPA Region IX PRGs”**

1. Since USEPA Region IX PRGs are not considered ARARS, but are more closely associated with risk assessments we suggest creating a separate section (for example 2.4.3) to address the PRGs. The last paragraph on this page states that (unless this is a direct quote then please place in italics) PRGs are tools for evaluating and cleaning up contaminated sites. To improve accuracy from the health risk perspective we suggest editing this whole paragraph as follows:

“PRGs) are not ARARS. They are health risk-based concentrations developed to predict single contaminant risk estimates for a specific environmental media. Human health risk estimates are used in conjunction with ARARS and or other factors when ARARS are not available for developing cleanup goals. PRGs are derived from standardized equations, combining exposure information, assumptions, and EPA toxicity data. PRGs are concentrations that correspond to either one in a million (10⁻⁶) cancer risk or a “safe” Reference Dose” (RfD) whichever is lower. Therefore, PRGs are concentrations of hazardous constituents in environmental media that are protective of human health and the environment. However, environmental levels that exceed PRGs will not necessarily produce adverse health effects.”

We agree that PRGs are not ARARS and are more closely associated with risk assessments. However, in the case of Site 84, PRGs are being used for screening purposes as well as initial remedial goals for SVOCs and pesticides. Therefore, we believe it appropriate to include a discussion of PRGs in the section that presents the basis for the selection of cleanup goals for the various constituents (Section 2.4.2.1 – Chemical-specific ARARs and TBCs). The referenced paragraph will be replaced by the suggested paragraph above.

2. We recommend editing the last sentence of the second paragraph, on page 2-8, as follows: **“However, they are helpful in providing a *point of departure* toward remediation targets to use during the analysis of different remedial alternatives.”**

The sentence has been edited as suggested.

6. **Page 3-4, Section 3.0, “Identification and Preliminary Screening of Remedial Action Technologies, Site Access Restrictions”**

The last paragraph states that the site access restrictions process option includes the installation and or maintenance of security fencing and signs around the contaminated media at Site 84. Please clarify that this will be new fencing, which includes the border with Highway 24.

Suggested clarification has been made.

7. **Page 4-11, Section 4.0, “Development and Screening of Remedial Action Alternatives, RAA 5: Hot Spot Removal and Institutional Controls, page 4-9 and RAA 7: Hot Spot Removal and Capping”**

As stated on page 4-8, adding fencing in the northwest corner of the site in RAA 4 to restrict access to this site would then designate this as low-occupancy area. Therefore, it seems that in order to use this site as a low-occupancy area, fencing along the perimeter of the site should be required in RAA 5 and RAA 7 to prevent potential recreational trespassers or other receptors, who may spend more than 6.7 hours per week, from entering the site. Although fencing is not required for low occupancy areas with PCB concentrations less than 25 ppm, one cannot ensure that areas with these concentrations will remain low-occupancy without a fence to limit access to unauthorized personnel. To ensure that the site remains as a low-occupancy area we recommend fencing the whole site perimeter.

In order to provide a wide range of potential remedial alternatives and to comply with the TSCA regulation’s recommended cleanup standards for PCBs, the Partnering Team has agreed that RAA 5 and RAA 7 will remain as they are. However, a remedial alternative using risk-based cleanup standards for recreational use of the site, which addresses the recreational trespasser, has been added to the FS. Also, see response to NEHC Comment # 2.

8. **Pages 5-14 to 5-19, Section 5.0, “Detailed Analysis of Remedial Action Alternative, RAA 5: Hot Spot Removal and Institutional Controls”, and “RAA 7: Hot Spot Removal and Capping.”**

1. **On page 5-14, the paragraph addressing the Overall Protection of Human Health and the Environment for RAA 5, states that institutional controls will include land use restrictions that would limit future land use to low-occupancy uses such as non-office warehouse, equipment storage area, or an electrical substation. Since in this alternative the site is not entirely fenced, recreational trespassers may come in contact with soils and sediment in the wet lands contaminated with PCB concentrations between 1 and 25 ppm PCB for more than the 6.7 hours per week allowed for low occupancy areas.**

Agreed. See response to NEHC comment # 2 and # 7.

2. **We suggest adding the following to the third paragraph on page 5-15 addressing short-term effectiveness for RAA 5, “However, since the site is not totally fenced recreational trespassers spending more than 6.7 hours per week at the site may be exposed to PCB concentrations between 1 and 25 ppm.”**

The sentence has been added as suggested, however we have included it under the “Protection of Human Health and the Environment” criterion as it is a human health issue. This same sentence has been added to the evaluation for RAA 7.

3. **The second paragraph on page 5-18 addressing the Overall Protection of Human Health and the Environment for RAA 7 states that the capping alternative will prevent low-occupancy human and ecological receptors from coming into contact with soil contaminants. However, since in this alternative the site is not entirely fenced, recreational trespassers may come in contact with soils and sediment in the wetlands contaminated with less than 25 ppm PCB more than 6.7 hours per week allowed for low-occupancy areas.**

Agreed. See response to previous comment.

4. **On page 5-19, the paragraph addressing short-term effectiveness for RAA 7, we suggest adding the following after the second sentence: “However, since the site is not totally fenced recreational trespassers spending more than 6.7 hours per week at the site may be exposed to PCB concentrations between 1 and 25 ppm.”**

The sentence has been added as suggested. See response to previous comment #2.

III. Editorial Comments:

1. Page 1-12, Section 1.6.1 “Surface Soil”

According to the report formatting, a line space is needed after the first paragraph above the PCB abbreviation, which should be bolded and italicized to distinguish the subsection on PCB.

Agreed. Correction has been made.

NCDENR (Groundwater Section) REVIEW COMMENTS:

1. **The Groundwater Section has no comment on the remedial strategies proposed, however, the Groundwater Section is in favor of a long term monitoring program.**

The report has been revised to include a more thorough discussion of groundwater issues at the site. Two remedial action alternatives have been added to address groundwater - a no action alternative and a groundwater monitoring alternative.

NCDENR (Superfund Section) REVIEW COMMENTS:

1. **The groundwater contains contaminants above the NC groundwater standards. Groundwater contamination must be addressed before the cleanup is complete.**

See response to NCDENR (Groundwater Section) Comment #1.

2. **The soil contains arsenic levels above the Region IX PRG and the base background levels. How will the arsenic be managed?**

The maximum detected concentration of arsenic at the site is 9.1 ppm, which does exceed the Region IX PRG and Base background levels. However, this concentration is less than 20 ppm, which EPA indicated in a March 28, 2002 conference call is an acceptable screening value for arsenic for residential land use. Leaching of arsenic to groundwater also does not appear to be an issue, as there are no exceedances of the North Carolina soil-to-groundwater leaching value for arsenic (26.2 ppm) and there are no exceedances of the federal MCL or North Carolina 2L standard for arsenic in groundwater at the site.

3. **Tables 1 through 3 list potential state ARARs for this cleanup.**

The ARAR tables have been modified as required to include these state ARARs.

**TABLE 1
NORTH CAROLINA POTENTIAL CHEMICAL -
SPECIFIC ARARS, CRITERIA, AND GUIDANCE**

Potential State ARAR	Citation	Comment
Oil Pollution and Hazardous Substances Control Act	NCGS 143-215.75 et seq.	Protects the land and waters of NC from pollution
NC Water Quality Standards and Surface Water Effluent Limitations	15A NCAC 2B	Establishes a series of classifications and water quality standards for surface waters and limits effluent discharged to surface water.
NC Groundwater Standards	15A NCAC 2L	Establishes allowable levels of organic and inorganic compounds in groundwater
NC Air Pollution Control Regulations	15A NCAC 2D, 2H, 2Q	Regulates ambient air quality and establishes air quality standards for hazardous air pollutants.
NC Hazardous Waste Management Rules	15A NCAC 13A .0009 & .0012	Establishes standards for hazardous waste that is excavated and stored or treated as part of Remedial Action.

**TABLE 2
NORTH CAROLINA POTENTIAL LOCATION -
SPECIFIC ARARS, CRITERIA, AND GUIDANCE**

Potential State ARAR	Citation	Comment
NC Hazardous Waste Management Rules	15A NCAC 13A	Location requirements and land disposal restrictions for hazardous waste excavated, stored, and/or treated onsite.
NC Solid Waste Management Rules	15A NCAC 13B .1600	Siting requirements for solid waste landfill facilities
NC Recordation of Inactive Hazardous Substance or Waste Disposal Sites	NCGS 130A-310.8	State requirement for recordation of inactive hazardous waste sites
NC Coastal Management	15A NCAC 7H	Guidelines for areas of environmental concern.

**TABLE 3
NORTH CAROLINA POTENTIAL ACTION -
SPECIFIC ARARS, CRITERIA, AND GUIDANCE**

Potential State ARAR	Citation	Comment
NC Groundwater Corrective Action	15A NCAC 2L .0106	Regulations for cleanup of contaminated groundwater.
NC Well Construction Standards	15A NCAC 2C .0100	Construction and abandonment requirements for water wells.
NC Injection Well Construction Standards	15A NCAC 2C .0200	Construction requirements for injection wells.
NC Water Quality Discharge Requirements	15A NCAC 2H .0100 & .0200	Waste water requirements for discharges and infiltration galleries.
NC Sedimentation Control Rules	15A NCAC 4B	Requirements for storm water management and erosion control
NC Hazardous Waste Management Rules	15A NCAC 13A	Design and treatment requirements for hazardous waste
NC Solid Waste Management Rules	15A NCAC 13B	Design and monitoring requirements for solid waste disposal sites
NC Air Pollution Control Requirements	15A NCAC 2D, 2H .0600, 2Q	Regulates air quality and establishes emissions standards.

EPA REVIEW COMMENTS:

GENERAL COMMENTS

1. **The Remedial Investigation (RI) report identified several compounds in groundwater that exceeded North Carolina Water Quality Standards and/or were found to pose unacceptable risk to future groundwater users. Granted, this particular piece of property has no identifiable near term or long-term users of groundwater as a source of drinking water. However, as part of the CERCLA process, unrestricted access to all site media, including groundwater, must be considered during the FS. Simply saying that there is low likelihood of exposure and therefore groundwater media will not be evaluated is not acceptable. This report should be revised to include an evaluation of the remedial action objectives for groundwater and an array of response actions to be considered. The decision for the remedial action objective for a given medium should only be made after a thorough evaluation in the FS.**

One of the remedial action objectives identified in the FS is to “protect human health by mitigating the potential for exposure to the contaminated surficial aquifer”. To achieve this objective, each remedial alternative presented in the Draft FS (except the no action alternative), included aquifer use restrictions to mitigate the potential for exposure to the contaminated groundwater and thereby protect human health.

The Final FS has been amended to address groundwater separately as an environmental medium of concern. In the Final FS, the aquifer use restrictions will be removed from the soil remedial action alternatives (RAAs) and instead will be included in the groundwater RAAs. Remedial alternatives evaluated for groundwater will include no action and groundwater monitoring. Active remediation of the surficial aquifer is not considered in the FS because active remediation of the surficial aquifer at the site is currently being conducted under the UST Program.

2. **Large sections of the RI report dealing with risk assessment scenarios were transcribed nearly verbatim and included in Section 1.0 of the FS. As there were a number of comments generated for these sections of the RI, the sections may be revised during the comment resolution period. Please revise the appropriate sections of the FS to reflect the agreed upon changes in the RI.**

The FS will be revised to reflect the Final RI Report.

3. **Section 5 does a good job in evaluating potential remedial actions for contaminated soil and sediment. Additionally, at numerous points in the FS, the text states that the potential use of shallow groundwater is low and therefore should not be considered as a medium of concern. In the detailed Individual Analysis of Alternatives all seven Remedial Action Alternatives (RAA) mention the risk associated with the contaminated shallow aquifer or how this RAA provides additional protection from the contaminated aquifer. It is most curious that an FS that does not consider groundwater a medium of concern goes to such great lengths to point out how all the RAAs protect populations from the contaminated surficial aquifer. Please see General Comment 1.**

Please see response to General Comment # 1.

SPECIFIC COMMENTS

1. **Page 2-3, Section 2.3, First Paragraph.** While there may be no planned use for the groundwater in this area, compounds are present that do present an unacceptable risk. Therefore, groundwater should be addressed in the Feasibility Study as one of the Media of Concern. The contaminants that exceeded the North Carolina Water Quality Standards and/or were found to have unacceptable risk to future groundwater users should be evaluated as Contaminants of Concern.

Please see response to General Comment # 1.

2. **Page 2-11, Section 2.6.** This section deals with Areas of Concern. As the groundwater medium is added to this FS, please revise this section to include groundwater areas of concern.

Section will be revised. Please see response to General Comment # 1.

3. **Page 2-12, Section 2.7.** This paragraph states that the "specific media(s) to be address is (are) contaminated soil ... and sediment". The third bullet of this section lists one of the remedial action objectives as "Protect human health by mitigating the potential for exposure to the contaminated surficial aquifer". Please revise the beginning of this section to include groundwater as one of the specific media to be addressed.

Section will be revised. Please see response to General Comment # 1.

4. **Page 4-3, Section 4.1.1.** This section about the No Action alternative says that the site's contaminants are expected to attenuate over time through various processes. The site is contaminated with PCBs and benzo-a-pyrene. These compounds are known for their environmental persistence, not their tendency to attenuate. Please revise this section to the approximate time frame that this attenuation might be expected to occur.

The timeframe for natural attenuation of the site contaminants is difficult to predict. The discussion will be revised to indicate that these contaminants are known to be persistent in the environment and that the referenced attenuation processes would require a very long period of time.

5. **Page 5-1, Section 5.0.** The last paragraph on this page appears to have left the USEPA out of the future review process. Please revise the text to include full USEPA involvement in this review process.

We apologize for this oversight. The text will be revised to include the USEPA in the review process.

6. **Tables 5-1 and -2.** It is unclear why these RAAs, which are simple excavations and refilling of the excavation, require approximately 300 more cubic yards of soil to fill the excavations than was taken out of the excavation. Please provide an explanation or revise the tables.

The additional backfill volume includes soil needed to backfill the lagoon area. An explanation will be provided as a footnote in the cost tables.

7. **Tables 5-3 and -4.** It is unclear why soil washing, which in theory is supposed to reduce the amount of material required for special disposal, is estimated to require more than seven times the amount of special off-site PCB disposal than simple excavation. Again, the amount of material required to fill the excavation exceeds the amount removed. Please provide an explanation or revise the tables.

The soil washing process is a physical separation process that actually would concentrate the PCBs into the fine-grained fraction of the soil. For this alternative, it was assumed that the fine-grained soil fraction constitutes 20% of the total soil volume. Thus, contaminants "washed" from the coarser-grained soil fraction (80% of total volume) become concentrated into a smaller volume, theoretically increasing the average PCB concentration by a factor of five. The resulting treatment residual containing higher concentrations of PCBs may or may not average greater than 50 ppm of PCBs. To be conservative, it was assumed that the average PCB concentration in the treatment residual would require off-site disposal at a TSCA-permitted landfill.

IT GROUP REVIEW COMMENTS:

General:

Mention that POL soils or PCB/POL mixed soils will not be disposed at the Base landfill.

Mr. Gene Jones (Camp Lejeune EMD) has confirmed with the State of North Carolina (Mr. John Crowder, NCDENR Solid waste) that soil from Site 84 containing less than 50 ppm PCBs can be disposed in the Base Landfill and in fact can be used as daily cover material.

Suggest that for the wetland areas consider employing a supersucker or vacuum truck as the excavator rather than removing ALL vegetation and having to replant which is both expensive and time consuming.

If it is feasible, this approach is recommended for implementation of the remedial action. However, getting access to the portion of the wetland that is contaminated (samples DP-71 and DP-84) would necessitate significant clearing of vegetation and possibly construction of a temporary access road through the wetland area (see Figure 4-5), which would result in significant destruction of wetland/woodland habitat. As the contamination in the wetland/wooded areas is not significant, we believe that a better, more environmentally sound approach is to preserve this habitat and simply restrict human access to this portion of the site.

Pg. 3-5, sec 3.5.4

Note that the woodland area should probably thoroughly grubbed also, to prevent immediate re-growth up through the cap

Agree. Referenced text has been edited as suggested.

Tables 5-1 to 5-9

Assuming a lagoon diameter of 70 feet and 2 feet of estimated sediment, the estimate of 10 CY of sediment appears low.

Agreed. The estimated sediment volume has been increased to 50 CY (100 CY following solidification). The actual diameter of the lagoon, as estimated by field personnel, is approximately 25 feet. The figures have been revised accordingly.

No line item has been provided for the dewatering of the lagoon or transport of the water prior to sediment excavation. Note that sediments may need to be gravity dewatered, and lagoon dewatering may be necessary for the duration of the sediment excavation.

Lagoon dewatering costs are included in the "Contaminated Stormwater Management" line item. We assumed solidification of the sediment directly in the lagoon following pumping out of any standing water. The addition of lime or cement may absorb enough moisture that gravity dewatering outside of the lagoon may not be necessary. However, the specific methodology to be used should be determined by the RAC.

The pricing used for the comparisons seems to be inconsistent and usually low. Where small quantities or areas or precise depths are to be excavated, Means pricing does not accurately reflect the cost of the work.

Baker has strived to be consistent in costing between alternatives in the FS. Baker has reviewed the cost estimates again to ensure consistency. In addition, we have adjusted various elements of the cost estimates as follows: 1) increased the cost to solidify / excavate lagoon sediments, 2) increased wetland restoration costs, and 3) increased bid/scope contingency on direct costs from 25% to 35%. These changes resulted in an overall increase in each cost estimate. Baker recognizes that Means unit costs may not necessarily accurately reflect true costs when estimated construction quantities are small (e.g. the relatively small quantity of lagoon sediments), and the cost estimates have been revised accordingly.

The cost estimates were conducted in accordance with guidance presented in "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study" (EPA 540-R-00-002 / OSWER Directive 9355.0-75, dated July 2000). This EPA guidance document references Means Cost Estimating Guide as legitimate source of cost data for Feasibility Studies.

Per EPA guidance, the FS cost estimate is considered to be "order-of-magnitude" because the remedial design has not yet been completed and the remedial plan is still very conceptual in nature. EPA states that the expected range of accuracy of an FS cost estimate should be within -30% to +50%. This means that for an FS cost estimate of \$1,000,000, the actual remediation cost is expected to range from \$700,000 to \$1,500,000. The FS cost estimate is for planning purposes only.