Section: 3.01
Site 20903-5640 (White Oak)
Doc. #: 0009

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NSWC WHITE OAK
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107-4431

May 27, 1998

Ms. Armalia Berry
Engineering Field Activity Chesapeake
Washington Navy Yard, Building 212
901 M Street, S.E.
Washington, DC 20374-5018

Re: Review of Draft Work Plan for Remedial Investigation and Feasibility Study at the Former NSWC - White Oak

Dear Ms. Berry:

The U.S. Environmental Protection Agency Region III received the above subject report and offer the following comments:

## GENERAL COMMENTS

1. The RI Work Plan references the Master Field Sampling Plan (MFSP) for specifics about purging and sampling of the monitoring wells. However, the MFSP states both pumping or low-flow purging and sampling can occur at NSWC. The method of purging and sampling should be specified for each site, so that the adequacy can be determined. Based on the type of contamination prevalent across NSWC (i.e. volatile organics), it is recommended that both purging and sampling be accomplished with low flow techniques.

   It is also unclear from the MFSP whether continuous split spoon sampling will occur during monitoring well drilling. It is recommended that continuous split spoon sampling occur due to the heterogenous nature of the sites.

2. A general comment for all of the sites is that it is unclear how the first water bearing zone beneath the one chosen for all of the shallow monitoring wells will be determined. The plan implies that the vertical interval of the deeper wells will be chosen based upon water encountered during drilling; this is not always very accurate.

   The proposed deep monitoring wells are to be installed in the first water bearing zone located at least 30 feet deeper than the shallow monitoring wells. However, this standardized approach of hydropunch sampling to locating the well screen may not capture the zone of highest contamination within the aquifer. Based on the prevalent contaminants at NSWC, the presence of discontinuous silt and clay layers, and possible manmade interferences, it is recommended that the location of the well screens be determined through the use of hydropunch sampling. In addition, the hydropunch sampling can aide in determining the areas of highest contamination within the plume.

3. The site-specific field investigations detailed in Section 4 state that one sample of each matrix (e.g., groundwater) will be analyzed for gross alpha and gross beta radiation. It is unclear why only one sample will be analyzed for radiation. More than one sample is required to evaluate whether radioactive contamination exists. A more representative radiological sampling effort should be undertaken by collecting more samples at each site or provide justification for only taking one radiological sample.

   Also, it is unclear how the location of these sample(s) will be chosen. A rationale for the location of the radiological sample(s) should be included in the text.

4. Groundwater samples collected during this investigation are to be analyzed for TAL metals. For risk assessment purposes and general site characterization, all groundwater samples should also be analyzed for dissolved metals, unless turbidity is <10 NTU. The text should be revised to include dissolved metals analysis.

5. Groundwater samples from many of the sites will be collected from piezometers. It should be noted that EPA Region III does not recognize piezometer samples as appropriate data for use in risk assessment.

6. Quarterly groundwater sampling is needed to characterize the groundwater contamination for these sites. The BCT has made a consensus decision on this sampling frequency and should be reflected in this document.

7. The discussion regarding the selection of PCOCs via various screening processes states that frequency of detection will be used to exclude chemicals when 20 samples or more are available. This is inappropriate. Screening should be based on risk-based concentrations or on site-appropriate background concentrations (e.g., for inorganics); screening should not be based solely on frequency of detection.

8. The discussion regarding which exposure pathways are considered to be complete is not adequate. Justification for exclusion of pathways for assessment for certain receptors is not provided. For example, it is unclear why ingestion of fish and game are not considered potential exposure pathways for the recreational trespasser. Adequate justification should be provided regarding the elimination of the fish and game ingestion pathways or these pathways should be provided in the assessment of risks for the recreational trespasser scenarios. Likewise, it is unclear why indoor air exposure is not included ~~as~~ a potential pathway for the adult resident. Appropriate and reasonable justification for the exclusion of pathways that are listed in the conceptual site model as "incomplete exposure, relatively insignificant, or not applicable potential exposure" should be provided or these pathways should be included in the qualitative risk analysis.

9. The report states that historical surface and subsurface soil data will be combined with

more recent data to assess human health risks. A discussion should be added to the human health section regarding the analytical similarities and differences of the data sets that are to be combined and the data quality of each. It should be ensured that appropriate sampling practices, adequate analytical quantitation limits, and data validation were undertaken for all data that are included in the human health risk assessment.

10. The receptors discussed in the ecological risk assessment are terrestrial wildlife, aquatic receptors and terrestrial plants. The use of these grouping is not specific enough to allow adequate risk assessment evaluation. Although some criteria for specific receptor selection are outlined in the section, additional criteria are required. For example, in the terrestrial wildlife group at least one herbivore and one carnivore receptor should be evaluated. The specific receptors from each group should be chosen appropriately for the site, that is receptors that are likely to be found at the site should be evaluated. Special consideration should be given to any national or state listed endangered species as well.

11. Throughout Section 4 it is stated that surface soil, and not subsurface soil, samples will be collected for risk assessment purposes. Both surface and subsurface soil samples are integral to risk assessment. Human health risk assessments rely on subsurface soil sample results to quantify exposure to construction and utility workers, and ecological risk assessments rely on subsurface soil samples to quantify risks to burrowing animals. Adequate numbers of subsurface soil samples should be taken to characterize subsurface soil concentrations for risk assessment purposes.

12. Seep detection via infrared air-photo analysis could prove very helpful for the Apple Orchard and Pistol Range Landfills.

13. Using GPR, in addition to EM, would help in determining locations of the leaching wells. The two methods complement each other and would add confidence, with not much added cost, to the former leaching wells.

## SITE SPECIFIC COMMENTS

### Site 2 - Apple Orchard Landfill

1. Paragraph 2 and Figure 3-1 provide the proposed surface and subsurface soil sampling locations. Soil samples taken on the northern side of the landfill during the Phase I/II RI, 2SL18 and 2SL21, revealed PCB contamination, but none of the proposed locations are in this area. Efforts should be made to delineate the PCB contamination in soil along Perimeter Road and the off-site adjacent residential area. Therefore, field investigation should be revised to include additional surface soil samples in this area.

   Paragraph 2 also lists the parameters for which the soil samples will be analyzed. TCLP metals is not included in the list of parameters. Table 4-3, however, states that soil

samples will be analyzed for TCLP metals. The text should be revised to include TCLP metals.

2. Paragraph 3 and Figure 3-1 provide the location of proposed monitoring well locations to delineate the lateral and vertical extent of chlorinated solvent contamination associated within the landfill. In order to fully delineate the plume, a downgradient boundary should be identified. This has not been accomplished on the west side of the landfill. A monitoring well should be placed across the stream from 02GW30 and/or 02GW45. Also, there are no monitoring wells from the location of 02GW45 north to Perimeter Road. The groundwater in this area should be characterized and the chlorinated solvent plume in this area (if any) should be delineated.

3. The Phase I/II RI states that PCB contamination in the sediment of the unnamed tributary flowing through Site 2 extends to the NSWC boundary. It is unclear whether sediment samples were taken in this tributary outside the NSWC boundary to confirm/deny the presence of PCBs. If sediment samples were not taken, the field investigation for Site 2 should include the collection of surface water/sediment samples near the NSWC boundary or just off site.

4. The text mentions sampling locations at the NPDES outfalls adjacent to the site. These outfalls are not identified on Figure 3-1. The figure should be revised to include the outfalls.

**Site 4 - Chemical Burial Site**

1. It is noted that investigations at Site 4 are superseded by the EE/CA Work Plan. However, efforts should be made during the RI field investigations to combine or complement activities proposed for the EE/CA.

2. The proposed subsurface soil samples will be collected at a depth of 2 to 4 feet within areas that are proposed for excavation. It is unclear why these samples are to be collected. They are not deep enough to adequately characterize the extent of buried wastes or determine possible source areas. While 2 to 4 feet is a typical depth of subsurface soil sample used for risk assessment purposes, these soils will be removed from the site. It is recommended that the subsurface soil samples either be collected a deeper depth or moved to locations south of the pit to identify any additional soil contamination that might contribute to human health risk or possible migration to groundwater.

3. Previously, the suspected source areas consisted solely of the four burial trenches. However, recent investigations have revealed that additional source areas may be present at Site 4. As a result of the additional source areas, contingencies should be made for collecting subsurface soil samples at areas of monitoring well borings in case stains,

odors, or high PID readings are encountered.

4. The extent of the contaminated groundwater at Site 4 is not known at this time. Therefore, additional monitoring wells should be installed near the suspected leading edge of the plume. In this instance, hydropunch samples may also provide the needed data quickly and cost effectively. It is recommended that additional wells be installed south of 04GW80 and 04GW81S/04GW81D; wells 04GW102 and 04GW103 be moved to the southeast, downgradient of 04GW48; and additional wells installed west of the site near the groundwater divide to determine the extent of plume movement in this area.

5. The Phase I/II RI identified several physical properties of Site 4 that should be quantified before modeling of the site can occur. These properties include soil moisture profile, soil carbon content, the cation exchange capacity of the soil, infiltration capacity of the soil, and the vertical hydraulic conductivity of the soil. These parameters are not identified in Tables 4-6 and 4-7. These parameters should be collected during this field investigation so that adequate fate and transport modeling and clean-up remedies can be determined.

**Site 7 - Ordnance Burn Area**

1. It appears that contamination detected in wells 07GW43 and 07GW41 is a result of the migration of the plume from Site 4. Therefore, it is imperative that proposed monitoring 07GW102 intersect this plume. The placement of the well should be contingent upon both fracture testing and hydropunch sampling to locate the area of highest contamination.

   In addition, the Phase I/II RI suggested that the plume from Site 4 may be migrating to Site 7 along manmade conduits. This possibility should be investigated so that this potential migration route can be adequately dealt with.

2. At this time, the exact source area for the chlorinated solvents at Site 7 is unknown. If additional monitoring wells do not reveal that the contamination is a result of the migration of the plume from Site 4, then additional investigation must be done to locate a possible source area. This may result in the addition of subsurface soil borings. Contingencies should be made to deal with this possibility.

3. The Phase I/II RI identified several physical properties that need to be determined before fate and transport modeling can occur for groundwater. These properties include soil moisture, soil carbon content, soil cation exchange capacity, infiltration capacity, and vertical hydraulic conductivity. A groundwater remedial action may occur at this site. Therefore, it is recommended that these parameters be collected during the RI investigation.

4. Based on Figure 3-4 and historical site information, no surface water/sediment samples

have been collected within the tributary that drains the site. Two samples, at a minimum, should be collected from this tributary to determine an ecological risks. One sample should be collected at the beginning of the tributary, directly downgradient of the site, and another sample should be collected downstream of this sample.

5. Table 4-8 presents the proposed samples for Site 7. The two samples proposed for east of the burn area are only surface soil samples. Subsurface samples should be taken at these two sample locations for risk assessment purposes.

**Site 8 - Abandoned Chemical Disposal Pit**

1. This paragraph states that soil samples are to be taken within and around the area excavated during the removal action for this site. The excavated area was backfilled with clean fill after excavation. Therefore, it is unclear why samples need to be taken within the clean fill. The location of the samples within the excavated area should be moved to locations outside the excavated area to adequately delineate contamination at the site.

2. This paragraph states that one offsite monitoring well, Well B1, will be sampled for this phase of the RI. Well B2 could also be influenced by Site 8 and should be sampled during the field investigation for this site.

3. Although a removal action has occurred at this site, the limits of excavation are not included on Figure 3-5. The figure should be revised to include the limits of excavation.

4. Table 4-10 presents the proposed samples for Site 8. Several surface soil samples are proposed but subsurface samples are not planned. Subsurface soils at this site are not currently adequately characterized for use in risk assessment. These surface soil locations should also be sampled for subsurface soil.

**Site 9 - Industrial Wastewater Disposal Area 300**

1. Leaching well (LW) 9 was found to contain significant amounts of contamination during the removal action. However, no monitoring wells are located downgradient of this area. It is recommended that hydropunch sampling occur downgradient of LW-9 to determine if this well contributed to groundwater contamination and to delineate the extent of groundwater contamination at the site.

2. The Phase I/II RI identified elevated levels of copper, mercury, and PCBs in fish samples. However, the source of this contamination has not been identified. It does not appear from the RI Work Plan that any additional investigation will be conducted to determine the source area. Please provide justification for not determining the source area for this fish contamination.

3. Significant levels of contamination were detected in monitoring wells located at the south end of Site 9. These monitoring wells are also located near the facility boundary and close to off site residences. The Phase I/II RI concluded that contamination in this area is moving faster than calculated. Therefore, additional physical properties data should be collected in this area. At a minimum, the RI investigation should determine the vertical and horizontal hydraulic conductivity of the area, so that a more accurate estimation of groundwater flow can be determined for this area.

   It is also recommended that an additional monitoring well be installed just outside of the NSWC fence line, downgradient of wells 09GW57S/09GW57D and 09GW83.

4. It is recommended that some of the surface water/sediment samples along West Farm Branch be moved to more representative locations. The surface water/sediment sample upstream of proposed wells 09GW100 and 09GW102 should be moved so that is just downstream of these two wells. In addition, another surface water/sediment sample should be located just downstream of 09GW83 before West Farm Branch passes under Floral Drive.

**Site 11 - Industrial Wastewater Disposal Area 100**

1. The geophysical survey, including an EM survey, to delineate the location of suspected leaching wells is described in this paragraph. The description does not include which areas will be investigated during the EM survey. The text and Figure 3-7 should be revised to include the location of the proposed EM survey.

2. This paragraph delineates which monitoring wells will be sampled for this phase of the RI. Only 19 existing monitoring wells are listed for sampling. Considering the mobile nature of chlorinated solvents in groundwater, all monitoring wells at this site should be sampled to determine the extent and mobility of the chlorinated solvent plume. The field investigation should be revised to include sampling of all monitoring wells at Site 11 or justification should be provided for sampling selective wells.

3. Figure 3-7 identifies the locations of monitoring wells to be installed for this investigation. The chlorinated solvent plume surrounding well 11GW22 has not been completely delineated. The Phase I/II RI states that there is a western component of groundwater flow in this area that may transport chlorinated solvents. As a result, this area or the site should be further characterized. A monitoring well should be placed to the west of 11GW 22. The investigation and text should be modified accordingly.

## SPECIFIC COMMENTS

1. **Section 3.5.2.10, page 3-42**. Parameters that samples were analyzed for during the Groundwater Characterization Study are delineated in this section. The table of

parameters does not include TAL metals as one of the parameters. TAL metals should be added to the text.

2. **Section 3.7.2.5, page 3-58, paragraphs 2 and 4**. Paragraph 2 states that existing intact leaching wells at Site 11 include LW-6 and LW-7. This statement does not agree with paragraph 4, which states that previous efforts to locate LW-6 and LW-7 were unsuccessful. The Post Removal Action Report for Site 11 does not identify these wells as being removed. Please clarify this issue and revise the text accordingly.
3. **Table 4-1**. MS/MSD samples are listed and counted in the total number of samples in this table. Matrix spike samples are not separate samples and do not provide analytical data. These samples are meant to provide an estimate of laboratory quality control and data accuracy. Therefore, these samples should not be included in the total number of samples. The table should be revised.

**Human Health Risk Assessment**

1. The EPA Region III no longer uses generic Soil Screening Levels (SSLs) for transfer from soil to air or groundwater. Site-specific SSLs should be determined by using EPA's *Soil Screening Guidance: User's Guide, April 1996.* Further, the most recent Region III RBC Table is dated October 22, 1997.

2. The EPA Region III cautions the use of composite sampling, because this can cause masking of contaminants hot spots, as well as areas of low contaminant concentration. See page 3-9, first paragraphs.

3. Section 5.6, Data Validation. The Data Validation section should include information regarding third party validation, a summary of the EPA data qualifiers, and a brief explanation of the data qualifier coding.

4. Section 6.1.2, Page 6-5. This section discusses the PCOC screening for the human health risk assessment. It is unclear if the analysis is to include a comparison of analytical quantitation limits to risk-based screening levels for chemicals with non-detects. Analysis of chemicals for which risk-based screening values may be lower than the detection limit should be included in the risk assessment. A discussion regarding the metho~~dologies~~ that will be followed in this analysis should be added to the text.

5. Section 6.1.2.2, Lead as a PCOC. The report states, "OPPTS identifies 2,000 to 5,000 ppm as an appropriate range for areas where contact with soil by children in a residential setting is less frequent." This statement is confusing, and seems to imply that 2,000 to 5,000 ppm of lead in soil is an appropriate screening level in areas where children visit ess frequently (e.g., industrial areas). The EPA, Region III suggests a screening level of 1,000 ppm for industrial lead in soil. Further, if children are known to visit (trespass) within the industrial area zone, than a screening level of 400 ppm would apply.

6. Section 6.1.2.4, Determination of Site-Related Chemicals. Literature background values should not be used to eliminate COCs, since regional values do not reflect the characteristics of local site soil.

7. Inhalation of indoor air should be included as a potential pathway for Onsite Residents. Section 6.2.1.2, Potential Exposure Pathways/Receptors.

8. Section 6.2.3, Exposure Concentrations. This section discusses the determination of exposure concentrations (ECs) for the human health risk assessment. It is stated that for data sets with less than 10 samples, the lesser of the maximum and the arithmetic mean will be used as the EC. This is inappropriate for use in assessing the reasonable maximum exposure (RME) scenario. The maximum concentration should be used, not the arithmetic mean.

   The first paragraph would more appropriately be stated "For data sets with 10 or more samples and the distribution is undefined (both the normal and lognormal distributions fail the Wilkes-Shapiro test, W-test), the data set is assumed to be log-normally distributed provided the 95% UCL does not exceed the maximum concentration. For data sets with less than 5 samples, the UCL is considered to be a poor estimate of the mean, and the exposure concentration is defined as the maximum detected and arithmetic mean (if less than maximum) for RME and CTE scenarios, respectively."

   The report also states, "Conventional statistical methods are used to determine the distribution and UCL of a particular data set." Please provide the names of the conventional statistical methods.

9. Section 6.2.4.2, Dermal Contact with Soil/Sediment. The report should provide a brief description of the dermal absorption factors that will be used (e.g., metals- 1%, arsenic-3%, SVOCs-10%, VOCs-3%).

10. Section 6.2.5, Page 6-27. This section discusses the assessment of human exposure to lead. It is stated that average chemical concentrations will be used in the lead blood level modeling. This is inappropriate in assessing an RME scenario. For data sets where greater than 10 samples are available, the lesser of the 95% UCL and the maximum detected should be used. For data sets with less than 10 samples, the maximum concentrations should be used.

**Exposure Assumptions**

1. The exposure assumptions should be listed for each pathway and media of concern, for each receptor, to avoid missing parameters and to demonstrate variations in exposure assumptions according to the pathway and medium.

**Full-time Employee**

2. The exposure frequency (EF) for the Full-time Employee and Construction Worker should be 219 days/year for CTE and 250 days/year for RME (based on a 5-day work week and 2-week vacation) per EPA's *"Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure, November 4, 1993."*

3. The "professional judged" exposure frequency for all receptors assumes a lengthy snow coverage time (e.g., 22 weeks). 16 weeks/year is a more conservative estimate of the average snow/frozen coverage time.

**Construction Worker**

1. Please provide a legend explaining the rationale and the specific body parts included in the selected 20% total body surface area (SA) assumed for the Full-time Employee, Maintenance/Utility Worker, and Construction Worker?

2. The exposure time (ET) for the Construction Worker should be 8 hours/day, thereby representing the average working day hours.

3. The assumed surface area (SA) of 20% for the Construction Worker appears to be low. Generally, a Construction Worker total exposed skin area is 5,300 $cm^2$/day, which includes the head, hands, forearms, and lower legs.

4. The ingestion rate (IR) for the Construction Worker should be 480 mg/day for RME, and 240 mg/day for CTE, per EPA's *"Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure, November 4, 1993."* This value is based on a contact intensive rate for adults.

**Adolescent Trespasser**

1. Please provide a legend explaining the rationale and the specific body parts included in the selected 25% total body surface area (SA) assumed for Adolescent Trespassers?

2. The inhalation rate (IRa) for Adolescent Trespassers should be derived based on age, sex, and activity level. Generally for adolescent trespassers a moderate to heavy level is assumed. Therefore, the assumed inhalation rate would be 3.2 $m^3$/hour, assuming a moderate activity level.

3. The units for exposure frequency, fish ingestion by the Adolescent Trespasser is meals/year.

**Adult Recreational User**

1. Please provide a legend explaining the rationale and the specific body parts included in the selected 50% total body surface area (SA) assumed to be available for sediment contact and the 20,000 $cm^2$/day assumed to be available for surface water contact for the Adult Recreational User? Further, there appears to be an error with the input parameter for surface water, e.g., A ($cm^2$)?

2. The fish ingestion rate for the Adult Recreational User should be .066 kg/day, per EPA's *Exposure Factors Handbook, Volume 1 - General Factors, August 1996.*

**On-site Resident**

1. The exposure frequency for the Onsite Resident should be the same for all pathways and medium, 350 days/year for RME and 234 days/year for CTE, per EPA's *"Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure, November 4, 1993."*

2. Please provide a legend explaining the rationale and the specific body parts included in the selected 25% total body surface area (SA) assumed for Adult and Child Onsite Resident exposed to soil and sediment? Further, there appears to be an error with the input parameter for showering/bathing, e.g., A ($cm^2$)?

3. Please provide a legend explaining the rationale and the specific body parts included in the selected 50% total body surface area (SA) assumed for Onsite Resident exposed to surface water? Further, there appears to be an error with this input parameter, e.g., A ($cm^2$)?

**Day Care Child**

1. The exposure frequency for Day Care Child should be the same for all pathways and medium, 250 days/year.

2. Please provide a legend explaining the rationale and the specific body parts included in the selected 25% total body surface area (SA) assumed for Day Care Child exposed to soil?

3. The soil ingestion rate for the Day Care Child should be 200 mg/day, because this value is not based on residential exposure but instead children ingestion rates. Please review EPA's *"Exposure Factors Handbook, Volume I - General Factors, August 1996."*

4. The inhalation rate for the Day Care Child should be increased to 1.2 $m^3$/hour (moderate activity) to account for the increased activity normally seen in children during play.

Please review EPA's *"Exposure Factors Handbook, Volume I - General Factors, August 1996."*

**Toxicity Assessment**

1. a. Section 6.3.2, Toxicity Criteria for Dermal Exposure. There appears to be confusion regarding the terminology and usage of "Absorption Efficiencies" and "Absorption Factors." Absorption Efficiencies are used to extrapolate oral RfDs and CSFs to dermal RfDs and CSFs, and the report describes these methods accurately. However, if no absorption efficiency factor can be found for a particular chemical, the oral reference dosage or a value from the same/similar chemical class should be used. Absorption Factors are used to reflect the desorption of the chemical from soil and the absorption of the chemical across the skin into the bloodstream. This value should be used within the intake equation and is reflected as such in EPA's RAGS, *Volume I, December 1989, pg. 6-41* and EPA's *"Assessing Dermal Exposure from Soil," December 1995.* Also see comment #9.

   b. Polycyclic Aromatic Hydrocarbons, PAHs should not be evaluated for dermal exposure because they react directly upon contact.

2. The EPA Region III requires chromium to be screened at the hexavalent form, unless chromium speciation has been conducted prior to the risk assessment. Should chromium (hexavalent) conclude as a risk driver, further investigation regarding the presence (previous site history) and state (trivalent vs. hexavalent) of chromium should be determined at that time.

3. The report should include a Quality Assurance/Quality Control (QA/QC) Plan section.

4. The Health and Safety Plan should be reviewed by a qualified Industrial Hygienist or Health and Safety Officer for completeness.

**<u>Ecorisk Assessment</u>**

<u>General Comments</u>

The Ecological Risk Assessment (ERA) process outlined in chapter 7 does not appear to follow a specific logic process. The general concepts outlined in section 7.1 to 7.7 do not identify specific assessment endpoints that are appropriate for the White Oak. However, the site specific ERA sections identify specific measurement endpoints that draw upon these unidentified assessment endpoints. Reviewing the measurement endpoints without a clear understanding of the assessment endpoints is impossible. In addition, chapter 7 is intertwined with risk management tools that are inappropriate for an ERA work plan.

Specific Comments

1. Section 1.2, Page 1-9, Scope and Objective- The overall goal is confusing. One of the objectives should be to determine if the site poses an ecological risk to the environment, not "whether the facility and surrounding environmental media is protective".

2. Section 1.2, Page 1-9, Scope and Objective- The RI should state the ecological risk posed by the site.

3. Section 1.3.1, Page 1-12, Nature and Extent of Contamination - This section states that the EPA Region III BTAG values will be used to evaluate the extent of contamination. The BTAG screening levels are for ERA screening purposes only. Some contaminants are found at naturally high concentrations in background samples. The investigator should rely on other methods of defining the extent of contamination.

4. Section 1.3.3, Page 1-13, Ecological Risk Assessment - This section should add a statement about the potential collection and evaluation of site specific data.

5. This section should state that all parties must agree on the assessment endpoints, models, receptors, etc. prior to initiating the work.

6. Ground water should be compared to chronic AWQCs, when there is a potential discharge to surface water.

7. The last sentence of this section would come in at a scientific management decision point (in the ERA guidance). Doing any of these may compromise the integrity of the ERA. Once these factors are brought into the process, the ERA is ended.

8. Section 2.2.10, Page 2-6, Wetlands and Sensitive Habitats- Appropriate state and federal agencies should be contacted annually at a minimum to determine the presence of threatened or endangered species. Documentation should be included in the RI.

9. Section 2.5.7, Page 2-21, White tailed Deer - This section should be removed from the document, as it is not consistent with the other sections pertaining to site ecological description (i.e., specific habitat types).

10. The tables in Section 4 should include the ground water to surface water pathway, if warranted.

11. Table 4-3, Page 4-6 - This table states that both Target Analyte List (TAL) metals, and Total Collectable Leachate Procedure (TCLP) metals analysis is necessary at the Apple Orchard Landfill. The associated text on page 4-3 does not state that TCLP metals will be analyzed. The purpose of the TCLP analysis is unclear.

12. Total Organic Carbon analysis on surface water is not necessary in Table 4-2, Table 4-3, Table 4-4, Table 4-5, Table 4-12, Table 4-13, Table 4-14, Table 4-15, Table 4-16, Table 4-17 and associated text on Page 4-9, Page 4-14, Page 4-32, Page 4-36.

13. Section 4.2.3, Page 4-19, Chemical Burial Area - A statement why surface water and sediment are not being collected is necessary to complete this section. The statement should document the rationale why these media were not sampled.

14. Section 4.2.5, Page 4-23, Site 8- Abandoned Chemical Disposal Pit - A statement why surface water and sediment are not being collected is necessary to complete this section. The statement should document the rationale why these media were not sampled.

15. Section 4.2.6, Page 4-27, Site 9- Industrial Wastewater Disposal Area 300 - A statement why soils are not being collected is necessary to complete this section. The statement should document the rationale why this media was not sampled.

16. Section 4.2.7, Page 4-32, Site 11- Industrial Wastewater Disposal Area 100- A statement why soils are not being collected is necessary to complete this section. The statement should document the rationale why this media was not sampled.

17. Section 7.1.1, Page 7-5; Screening Level Problem Formulation- Future land use should not be included. The purpose of the ERA is to assess the risk that a site poses. Future use is a management decision.

18. Page 7-6, The draft BTAG screening levels should only be compared to site maximum concentrations. They should not be used for the development of doses.

19. Page 7-8, The models and toxicity values should be gathered from literature and all parties must agree. These values should be appropriate to the assessment endpoints and other site-specific factors. It is not appropriate to agree to any values or sources until the preliminary screen is conducted, assessment endpoints are chosen, and appropriate methods and papers are selected. In addition, the values that are in EPA ERT risk assessments are from an older literature search and were developed for a specific purpose. There ~~may be~~ more appropriate values available at this time.

20. The document should be corrected to delete all reference to ERT methods. ERT assisted the BTAG in conducting several risk assessments. The method that was followed is the 1997 EPA Superfund Guidance for ERAs.

21. Page 7-9, all references to EPA's draft 1994 ERA guidance, by Bob Davis should be deleted. This guidance is not used anymore. The current Superfund Guidance is the 1997 document.

22. Page 7-13, it is premature to develop food chain models. The model on this page is inappropriate and the BTAG will not support its use. The correct calculation should be the following:

**Dose = (maximum conc. in food X food ingestion rate) + (max sed. X sed. ing.) + (max soil X soil I) + (max surface water X sw. ing.)/ body weight**

In addition, all parties must agree on the assessment endpoints and receptors and all parameters.

23. Section 7.1.2, Page 7-7, Screening-level Ecological Effects Evaluation - This section lists a number of possible choices for screening values. Please provide BTAG with a list of screening values for approval before the screening level ecological risk assessment is submitted. This follows the guidance and the scientific management decision points.

24. Section 7.1.4, Page 7-14, Screening-Level Risk Calculations - The interpretations outlined in this section exceed the abilities of the information provided in a screening level risk assessment. In a screening level risk assessment any constituent whose Environmental Effects Quotient (EEQ) exceeds one has the potential for risk. The magnitude of this risk cannot be determined until site specific data is collected and analyzed. Thus, the use of the ecological effects index is inappropriate. Likewise, scaling risk using the 1-10, 10-100, >100 as low medium and high risk is inappropriate and should be removed.

25. Section 7.1.4 goes on to outline a number of risk management tools that can be applied during risk characterization such as recalculating risk using less conservative assumptions, and taking into account habitat value. Any discussion of risk management should be removed from the ERA section.

26. Section 7.2.1, Page 7-16, Assessment Endpoint Refinement - This section outlines examples of assessment endpoint strategies. We recommend that assessment endpoints are geared around protection of a trophic level. The use of endangered species, 95%Upper Confidence Interval or background are not acceptable endpoints.

27. Section 7.2.2, Page 7-16, Refinement of Preliminary PCOCs - This section identifies risk management tools for refining Potential Contaminants of Concern. Risk management does not belong in the ecological risk assessment work plan. This section should be removed from the ERA section of the work plan.

28. Section 7.3.2, Page 7-18, Field Investigations and Study Designs- It is premature to discuss this in any detail. If further site-specific work is warranted, this will include

further media sampling and possibly toxicity tests, bioacumulations studies, and tissue samples. For any site-specific work, full scan media samples are necessary. In addition to the tissue sampling for avian and mammalian receptors, aquatic pathway analysis may also be necessary. Additional sampling depends on the previous steps of the ERA. As stated previously, the details in this discussion are premature. In addition it is unlikely that the BTAG will support the transport models for use in the ERA.

29. Section 7.6, Page 7-20, Risk Characterization- All data interpretation and uses of the data must be agreed to by all parties before the additional data is collected. This should be added to the work plan.

30. Section 7.7, Page 7-21- Risk Management- It should be noted that if risk management decisions are made, the quality of any site-specific data may be impacted. If the data suggest that site-specific work is warranted, risk management should be used at the end.

31. Section 7.8, Page 7-22, Site Specific ERA Approaches - The general ERA concept outlined in section 7.1 and 7.2 does not identify specific assessment endpoints for the base. However, the site specific ERA approaches in section 7.8 clearly identify measurement endpoints for food chain modeling. This is premature since there are not agreed upon assessment endpoints, preliminary contaminants of concern and mechanisms of toxicity to provide a basis for the site-specific approach. This discussion is premature at this stage.

32. Page 7-23-what is the basis for the statement "no fish are present in the stream in the landfill area"? Was there electrofishing of the stream or is it based on professional judgement?

33. Page 7-31- Background should not be discussed in the ERA process.

34. Appendix A-2, ERA/ERM DQO's - This section identifies Total Suspended Solids, Total Dissolved Solids, Total Organic Carbon, and grain size as chemical classes of concern. The author should correct this to indicate that these are analysis required to help identify chemical classes of concern.

35. Assumption #7 in this appendix states, "We will use food chain modeling as a secondary screening process for those chemicals that exceed BTAG values." This statement should be changed to "We will use food chain modeling <u>to refine the</u> screening process, where appropriate and for those chemicals that exceed the BTAG values."

36. The second bullet in the decision section of this appendix states, "Do the COPC concentrations in environmental media within the PB watershed pose an unacceptable risk to ecological receptors? If so, can we determine whether those elevated concentrations are originating from any of our 7 sites?" This statement should be

changed to ". . . elevated concentrations are originating from Naval Surface Warfare Center?"

If you have any questions regarding the above comments, please call me at (215) 566-3369.

Sincerely,

Yazmine J. Yap-Deffler
Remedial Project Manager
Federal Facilities Branch

cc: H. Sokolowski, EPA
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