



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

DEC 30 1991

5HRP-8J

CERTIFIED MAIL P 664 409 052  
RETURN RECEIPT REQUESTED

Commander J.W. Hays  
Public Works Officer  
Department of the Navy  
Naval Weapons Support Center  
Crane, Indiana 47522-5000

RE: Notice of Deficiency  
RFI Workplans  
Naval Weapons Support Center  
Crane, Indiana  
IN5 170 023 498

Dear Commander Hays:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the following documents, and found them incomplete:

1. RFI Workplan for Pest Control Area/R-150 Tank Site;
2. RFI QAPP for Pest Control Area/R-150 Tank Site;
3. RFI Safety and Health Plan and Spill Contingency Plan for the Naval Weapons Support Center for Pest Control Area/R-150 Tank Site. Additional comments on the health and safety plan for the Old Burn Pit and McComish Gorge are not included because the plan was essentially the same as for the Pest Control area;
4. RFI Workplan for Old Burn Pit and McComish Gorge; and
5. RFI QAPP for Old Burn Pit and McComish Gorge.

The workplans should have included decisions based upon the closure activities of the underground storage tank. Comments on these plans are enclosed as Attachments I, II, and III. Please respond to these comments, and provide revised workplans to this Agency within 45 days from the date of this letter.

If you have any questions regarding this matter, please contact Ms. Carol Witt-Smith of my staff, at (312) 886-6146, for assistance.

Sincerely,



Karl E. Bremer, Chief  
RCRA Permitting Branch

cc: Jim Hunsicker, NWSC (Code 0924)  
Byron Brant, NORTHNAVFACENGCOM (Code 1423/BB)  
Jeff Ciocco, NORTHNAVFACENGCOM (Code 1423/BB)  
Bill Murphy, USACE-WES (GG-YH)  
Bob Magee, USACE-Wilmington (EN-GG)  
TRC Members

ATTACHMENT I  
Comments on the RFI Work Plan  
for  
Pest Control Area/R-150 Tank Site  
Naval Weapons Support Center  
IN5 170 023 498

A. General Comments

1. The necessary elements of a workplan and a sampling and analysis plan are represented in this document. However, the organization of the document leads to confusion and redundancy. The main cause of the problem is that sampling and analysis information, which according to the main headings in the Table of Contents should be in Section 3.0, is actually spread out through Sections 2.0, 3.0, and 4.0. This causes the same, or nearly the same, material to be rehashed at as many as three locations. Section 3.0 should contain all the sampling and analysis plans and procedures. This would eliminate all of Section 2.2.0 (Technical Approach) from Section 2.0 (Management Plan). Then Section 2.0 could focus on its topic of Project Objectives and Project Management. All the contents of Section 4.0 (Well Construction) are plans and procedures for the investigation and logically belong within Section 3.0.
2. The Introduction section of the document does an ineffective job of presenting what is known about the site, and does not promote the evolution of a preliminary conceptual model which should be its purpose. There is little discussion about the hydrostratigraphy at the site and nothing on what, if anything is known about the hydraulic characteristics of the units that may be encountered. Also missing is a potential surface map of the area and a table containing the existing monitoring well construction details, both of which are basic to such a document.
3. Determining the lateral and vertical extent of ground water contamination requires a three-dimensional perspective. That perspective does not seem to be a part of the decision making process on the placement of wells and the depth of the well screens. (Discussed further in Specific Comments).

B. Specific Comments

1. Page 5

a. Paragraph 3

The closure plan procedures for the R-150 Tank must be included. This data is critical in determining how much contaminated soil was already removed, and what the current ground water monitoring program is. The closure activities also establish where the tank was and what material was backfilled.

The reference to the secure landfill should be changed to the specific type of landfill where the material will be disposed of. Will it go to the on-site solid waste landfill or somewhere else?

b. Section 1.1.4

This Site Hydrogeology section is very sparse. Data about the hydraulic characteristics of the over burden and the bedrock should be included, if known. Are any units, likely to be encountered, used for a water supply? Describe if there are any low conductivity units which might exist to form the bottom of the upper aquifer. Describe all potential aquifers and aquitards for the area. Describe if there is a link between ground water and surface water at the site.

2. Page 7

a. Paragraph 1. Last Sentence

The data from the ground water assessment should be used to determine further ground water studies for this area. Describe in the plan how the downgradient direction was determined. Describe any seasonal changes. A potentiometric map should be included from the previous data, and current conditions at the site.

b. Paragraph 2

- 1) A table should be included that summarizes the construction details of existing monitoring wells such as date of completion, depth drilled, screened zone, casing diameter, screen slot size, etc.
- 2) The location of monitoring wells WY1P, WT2P, WT3P, WT4P, WT5P, and WT6P should be shown on Figure 1.2.1. since they are discussed in the text. (Their locations are shown in Appendix E but they should be mentioned here also).
- 3) Well designations should be consistent between the text and Figure 1.2.1. (e.g., well 9-3-81 in text is WES-9-3-81 in the figure). It is potential and unnecessary confusion.

c. Paragraph 2, Line 5

Is monitoring well "WTIP-4P" referring to wells WT1P, WT2P, WT3P, and WT4P? If so, then the "I" in WTIP should be replaced with "1", and this sentence would be redundant with the sentence that follows. If not, then where is the well WTIP?

d. Paragraph 2, Line 1

Well WT40 should be WT4P.

e. Paragraph 2, Last Sentence

Complete the sentence by adding the underlined words as follows. "Trichloromethane in excess of the detection limit of 0.001 ppm was observed in wells 9-3-81, WT2P, WT3P, and WT4P."

3. Section 2.2.0.

As stated in the general comments, this section presents material which belongs in Section 3.0 (Sampling and Analysis Plan).

4. Page 10, Paragraph 2, Line 5

The plan states that one boring will be taken at the R-150 tank site in order to determine leakage. The closure activities have already determined leakage, and soil was removed down to bedrock. The closure data must be used to determine if further soil sampling is necessary to define the rate and extent of contamination.

5. Page 10, Section 2.2.1.

Explain the meaning of the acronym NGVD.

6. Page 10, Section 2.2.3.

Check for the missing text in lines 8 and 9.

7. Page 11, Paragraph 6; Table 2.2.2.; and Diagram 2.3.2

The text indicates that five rounds of ground water sampling will be conducted, but Table 2.2.2. seems to indicate only one set of ground water samples is to be collected (36 samples), and Diagram 2.3.2. indicates only one round of ground water sampling. When are the remainder of the ground water samples to be collected, analyzed, and reported?

Are field blanks appropriate for soil samples? What type of blanks will be taken?

Schedules should normally reference sampling activities from Day 1, where Day 1 is the date that the workplan is approved.

8. Page 12, Paragraph 1

How is the sampling order of the new wells to be established?

9. Page 12, Paragraph 2

In the last line, detection should be analysis.

10. Page 12, Paragraph 4, Lines 1-5

This is not a sentence.

11. Table 2.2.2.

Define the term "NR" in the table.

12. Page 15

a. Line 1

Were should be where.

b. Section 3.1.2, Line 3

Exist should be exists.

c. Second from Last Sentence

References to the surface soil sampling and the boring at the tank site should be modified taking into account the previous closure data.

13. Figure 3.1.2

All the well symbols are not defined in the legend.

14. Page 17

The locations of the borings and the well locations should be reconsidered after the discussions at the last TRC meeting, in going out to the site and establishing locations. The Pest Control buildings should have soil sampling to determine if there is any soil contamination from spillage on the ground, looking at worst case areas. The ground water sampling is a Phase III sampling to determine the rate and extent of contamination at the R-150 tank area.

15. Page 18, Paragraph 3

The text states that TCE and 1,2-trans DCE were detected at concentrations above a detection limit of 1 ug/L. Since the water quality criteria for these constituents are also above the detection limit of 1 ug/L, the text could be improved by specifying the actual concentrations at which TCE and 1,2-trans DCE were detected.

16. Page 18, Last Paragraph

The figure referred to several times in this paragraph should be Figure 3.1.2a.

17. Page 19

a. First Sentence

Section 3.0 (Sampling and Analysis Plan) should not have to refer to Section 2.0 for sampling plan information. It should all be in Section 3.0.

b. Second Paragraph

- 1) The sentence that begins on Line 7, should be modified by the addition of the underlined words as follows:  
"Samples will be taken from the least to most contaminated locations as determined from prior ground water analysis.";
- 2) The scope of the monitoring well installation plans at Buildings 55 and 2189, as described in this paragraph seem premature. Generally, an investigator would wait for the results of the soil sampling and analysis to decide whether and where to monitor the ground water. Oftentimes the decision to complete a soil sampling borehole as a well can be based on visual, olfactory, or instrumental evidence during the borehole drilling and sampling process. The investigators should consider being guided in their monitoring well

placement decisions by field observations and soil sampling analytical data. The workplan states that "...it is known that pesticide containers were rinsed in these areas...." With this in mind, it might be prudent to install one monitoring well at each building to see if any indication of ground water contamination exists. The placement of that well can be as previously described. But the 10 wells proposed for these two areas, at this point, seem to be overkill;

- 3) The sentence that begins on Line 10 of this paragraph, states that "...Six wells will be installed near the R-150 Tank Site to adequately define the contaminant plume." The comment here is that "adequate" characterization of a plume can only be determined after studying the data provided by the new and existing wells. The sentence would be more realistic if it were rewritten as "...Six wells will be installed near the R-150 Tank Site in an attempt to define the contaminant plume."; and
- 4) Spelling correction in Line 6, "plume".

18. Page 19, Section 3.1.3

The last three sentences in the first paragraph of this section, and the last four sentences in the second paragraph of this section, say the same thing. There is no need for this information to appear twice. To aid in identification, both groups of sentences begin with "...The list of analytical test parameters...."

Explain the relationship of the soil samples to the fill from the closure of the tank.

19. Paragraph 4

a. First Sentence

The underlined words are suggested to replace those in the text as follows. "...Ground water sampling will be done at the site using existing and proposed monitoring wells."

b. Line 2

"The results of these analyses will be..."

c. Line 5

The word basis should be used. How was the probability of occurrence determined?

20. Pages 15-18

a. Top

We would recommend that consideration be given to dropping the use of TOX for Corrective Action Sampling. First, it has yet to be shown that this is a reliable screening technique, the method has been deleted from the proposed RCRA Subtitle D (Sanitary Landfill monitoring requirements), and it is to be deleted from the revised Subtitle C monitoring requirements in the near future. The logic that the contaminants of interest contain chloride, and therefore should be detected with a TOX procedure, is valid. However, the TOX procedure is 10 to 50 times less sensitive than routine GC/MS procedures such as Method 8240.

If TOX is to be performed, it should be added to Table 3.1.3.

b. Table 3.1.3

The Table does not clarify whether the ground water samples to be analyzed for inorganics are to be filtered or not filtered.

c. Paragraph 3.1.4

How close do the "defining parameters" have to be to reality in order for the results to be acceptable? Or conversely, at what level are the results unacceptable? What are these defining parameters? How will they be measured?

21. Pages 18-19

a. Table 3.1.4a

Strictly speaking, "Extraction" should be "Digestion". Also, "G" following arsenic should be "GF".

b. Paragraph 3.1.5

"Physical" should be "physically".

22. Page 19, Paragraph 3.2.1, Line 3

This sentence should read: "To minimize cross contamination between samples,...."

23. Page 21

a. Second Paragraph

In this paragraph, and also on Page 23, Section 3.2.5, it is stated that the purge water and the excess sample water "...will be discharged to the ground surface no closer than 10 feet from the well." This practice is incompatible with the waste containment plans for water, as identified in Detection 3.5.2. Section 3.5.2 indicates that possibly contaminated water will be stored in drums and left on-site for later disposal. This section identifies these waste waters as resulting from decontamination pad construction, drilling, well installation, and decontamination operations. Surely, potentially contaminated ground water resulting from purging and sampling should be treated in the same manner. If analyses show waste waters not to be of an environmental concern, they can then be discharged in an appropriate manner.

b. Section 3.2.3

Describe if the samples will be iced, and how.

Describe how the paperwork will be enclosed in the cooler. Usually it is sealed in a plastic bag and taped to the inner lid.

Describe how plastic will be used to protect the ground during sampling in order to protect the ground from contamination.

24. Page 22

a. Section 3.2.5

The text states that ground water parameters (pH, conductivity, and temperature) must be stable before samples can be collected. What is the definition of "stable" for the purpose of this investigation?

b. Section 3.3.2, Step 3

Rinse with 0.1 N nitric acid.

c. Section 3.3.2, Step 5

If the rinsate will be tested for pesticides, a pesticide reagent should not be used.

25. Page 23, Table 3.3.3

The table should list that the jars are wide mouth glass.

26. Page 24, Figure 3.4.2

The custody form should include a space for airbill numbers, container type (e.g., 40 ml), and a dedicated sheet number that can be cross referenced with the rest of the paperwork.

27. Page 25, Section 3.4.3, Step 7

Sample preservative used.

28. Page 26, Figure 3.4.3

The sample analyses planned during the site investigation are specified on Tables 3.1.5a and 3.1.5b. These analyses are not all represented on the sample tag. These analyses should be added to the tag.

29. Data Management Plans

A copy of the field notes must be included as attachments. A discussion must be included on how the data will be evaluated (i.e., comparison to background, etc.).

30. Page 39, Section 3.5.1

What is the definition of "contaminated material" versus "uncontaminated material"? We recognize that this will depend on the analytical results, but the definition of "contaminated" should be clearly stated before the study is initiated.

31. Page 40

a. Section 4.0

Section 4.0 contains information which should all be included within the Sampling and Analysis Plan, Section 3.0 (see General Comment).

b. Section 4.1.1

The use of the word "adequately" in the second sentence draws the same comment as provided earlier on Page 19, first full paragraph.

This paragraph indicates that 26 ground water samples will be collected. However, Table 2.2.2 indicates that 36 samples will be collected, and Diagram 2.3.2 indicates that 20 existing wells will be sampled and 16 new wells installed. This difference must be resolved.

32. Page 43

a. Section 4.1.3, First Paragraph

What site specific observations have gone into the determination to use the 0.100-inch slot screen size? It is becoming the state-of-the-art practice that well screen slot sizes are determined in the field on the basis of a field sieve analysis of geologic materials retrieved from the zone to be monitored.

b. Section 4.1.3, Second Paragraph

No method is presented which will be used to determine the size grading of the filter pack material. This information should be included.

This paragraph says that the monitoring wells will be 40 feet in length (30 feet casing and 10 feet screen). How can the wells be 40 feet long, when it is proposed to extend the top of the well screen 5 feet above the ground water level, and the depth to water, as described in Section 1.1.4, is about 14 feet? This discrepancy must be corrected.

33. Page 43, Section 4.1.3, Last Paragraph

The ground water investigation and monitoring well installation plans, up to this point, do not contain any three-dimensional perspective. This paragraph gives token attention to this perspective and implies that monitoring wells may be placed at different levels, which is appropriate because the vertical extent of contamination is also of concern. However, there is no indication that the three-dimensional perspective goes beyond this short paragraph. It is surely not evident in the well installation plans. There should be more attention paid to the characterization of the vertical extent of contamination. The plans must take into consideration data from the R-150 Tank closure and define the rate and extent of the plume three-dimensionally.

Something appears to be missing from the text in Lines 3 and 4.

34. Page 46, Second Paragraph

If compressed air development is determined not to be appropriate by the site investigators for the proposed monitoring wells, why is the method proposed to be used if redevelopment of existing monitoring wells is required, as indicated on Page 19, second paragraph, second sentence.

35. Page 48

a. Paragraph 6.1.0, Line 5

"Chemical and physical data are reduced."

b. Paragraph 6.5.0, Line 1

"Characteristics of a release are dependent on...."

ATTACHMENT II  
Comments on the RFI QAPP  
for  
Pest Control Area/R-150 Tank Site  
Naval Weapons Support Center  
IN5 170 023 498

A. General Comments

1. The PCA/R-150 Quality Assurance (QA) Plan generally follows the topical outline presented in the "Region V Model RCRA Quality Assurance Project Plan" (QAPjP), dated May 1991.
2. The document does not provide any explicit Data Quality Objectives (DQOs) for the project. Duplicate samples, spiked sample analysis, and trip blanks, will be performed at an adequate frequency, but quantitative DQOs have not been presented. There are several references to the use of CLP criteria. However, CLP criteria change with time, and the specific CLP criteria to be used have not been identified. In addition, the use of laboratory criteria can only be applied to laboratory analyses. A laboratory cannot compare field duplicates without knowing the sample codes, but if a laboratory knows the sample codes, then independent analyses of the samples becomes suspect.

It would be acceptable to use CLP criteria but they should be explicitly stated as project DQOs.

3. The draft QAPP does not address completeness as a DQO. Since the document indicates that some samples may not be rerun if holding times are exceeded, and CLP does not address completeness, a project DQO should be established for this parameter.
4. There is no discussion of the detection limits that are to be achieved. We would assume that the intended detection limit for VOCs in the ground water samples is on the order of 1 ug/L but no information was provided on the necessary detection limits for semi-volatile organics, pesticides, herbicides, and metals. Specific detection limits for each parameter to be measured in both soil and water matrices should be tabulated. Perhaps it could be specified that detection limits equal to one-half the established water quality criteria will be used. For the soil samples, it may be necessary to specify the minimum sample size that will be analyzed.

It will be necessary to specify detection limits in order to make a judgment on the acceptability of trip blanks and reagent blanks.

5. The topic of comparability was not addressed. This can be remedied by defining project detection limits as suggested above.

6. There was no discussion as to whether the ground water samples to be analyzed for trace metals are to be filtered or not. If "toxicity" issues are important, we would recommend that the samples be filtered prior to analysis (0.45 u pore-size filters). If ground water mapping is the important issue, analysis of unfiltered samples may be sufficient (but it should be recognized that increased data variability could be encountered due to the presence of particulate matter from the well casings or the borings).
7. The program outlined in the draft QAPP may be sufficient to define the quality of project data after the fact but we have reservations as to whether it is adequate to control the quality of the data being generated.

B. Specific Comments

1. Page 1, Paragraph 3, Line 6

24D and 24T should be 2,4-D and 2,4-T.

2. Page 3, Paragraph 3, Line 2

Figure 1.2.1, does not show that contamination was detected, what the contaminants were, what their concentrations were, or the orientation of the plume.

3. Page 8, Paragraph 2, Lines 7-8

This statement is inappropriate. First, Cd would be considered a "toxic" metal yet, it is not included in any of the discussions in the text (i.e., the list of inorganic substances considered in the text is not a complete list of "toxic" inorganic substances). Second, if toxicity is a point of concern, it will be necessary to distinguish between the "dissolved" and "total" portion of a substance in ground water samples because the "dissolved" fraction will give a reasonable estimate of "toxicity" but the "total" fraction will only estimate potential "toxicity". This has not been addressed in the text. Third, if toxicity is the point of concern, some explicit toxicity threshold should be stated (i.e., chemicals with a "toxicity" greater than x mg/L).

4. Page 12, Paragraph 2, Lines 3-4

Holding times, in and of themselves, cannot and do not assure the quality of analytical data. If holding times are violated, the data are suspect. However, if holding time criteria are satisfied, this does not assure the quality of analytical data. We believe the text should be modified to indicate that holding times are a necessary part of an effective data quality control program.

5. Page 12, Table 1

- a. For completeness and correctness, the preservation column should indicate degrees C.
- b. These holding times are for water samples. What holding times will be used with soil samples?

6. Page 19, Table 2 and Page 20, Table 3

Neither listing of methods identifies the detection limits that will be needed for the study. Also, this type of listing does not differentiate between detection limits for soil samples and water samples. In addition, this listing does not identify the sample size necessary to achieve a specific detection limit.

7. Page 21, Paragraph 1, Line 4

The text states that method blanks for metals and other wet chemical analyses should be below the method detection limit. However, the text does not define required detection limits for these parameters. Also, the way the present text is written, method blanks for organic analytes are not addressed.

8. Page 22

- a. Paragraph 2, Line 4  
Aloquotes should be aliquots.
- b. Paragraph 2, Line 11  
Recover should be recovery.
- c. Paragraph 3, Line 1  
Aliquote should be aliquot.
- d. Paragraph 4, Line 1  
Aliquote should be aliquot.

9. Pages 21-22

No project Data Quality Objectives are given in the internal quality control checks section. It specifies what the individual quality control mechanisms are, but no limits are provided (i.e., there are no stated limits for replicate reproductivity, spike recovery, analytical detection limits, and there is no mention of using any mechanism to check accuracy).

10. Page 23

a. Paragraph 1, Lines 2-3

The following is a description of the data reduction and reporting procedures that will be used.

b. Paragraph 1, Line 4

Chemical detection data? The procedures should be described and, at a minimum, properly referenced.

c. Table 4

Example of the forms to be used for tabulating the data should be included.

11. Page 24, Table 4

It might be more correct to state a duplicate sample will be collected daily for every set of 20 samples or less.

12. Page 26, Paragraph 1

Since the CLP criteria changes with time, the criteria to be used with this project should be clearly stated.

13. Page 27

a. Paragraph 1, Line 2

What CLP criteria?

b. Paragraph 7, Lines 1-2

This states that any results which exceed internal QC limits set by the laboratory.... The purpose of a QAPP is to establish project specific data quality objectives.

14. Page 28

a. Paragraph 2

What are the CLP limits?

b. Paragraph 4

What are the CLP criteria?

15. Pages 29-31

There are no established DQOs for completeness and the frequency of performance audits is not specified.

ATTACHMENT III  
Comments on the RFI Safety and Health Plan  
and Spill Contingency Plan  
for  
Pest Control Area/R-150 Tank Site  
Naval Weapons Support Center  
IN5 170 023 498

1. The plan is very generic. It contains too many "boiler plate" paragraphs and not enough site-specific information. It does not appear to have been carefully reviewed for content, spelling, organization, etc.
2. A number of training topics are specified by 29 CFR 1910.120(e)(2). The training topic outline on Pages 6 and 7 of the subject plan does not include the following required topics: the names of personnel and alternates responsible for site safety and health; the safe use of engineering controls and equipment at the site; and medical surveillance requirements.
3. Reference the Medical Surveillance program, Page 8. A termination physical is a mandatory requirement of the medical surveillance criteria of 29 CFR 1910.120(f). A termination physical is not mentioned in subject document.
4. Reference Page 13, Paragraph 10.2.3.1. The last sentence of this paragraph is incomplete.
5. Title 29 CFR 1910.120(a)(4) requires that the site-specific safety and health plan include specific information on the frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment to be used. The plan contains some very general information on these subjects on Page 13; however, the published information is not adequate enough to satisfy the above requirement.
6. Title 29 CFR 1910.120(d) requires appropriate site control procedures to be implemented. The subject plan appears to cover some required items, but does not address some others such as a buddy system, site communications, and standard operating procedures. According to 29 CFR 1910.120, these topics can be covered in other documents and need not be repeated in the plan; however, it is suggested that some reference be included in the plan on where to locate information on the topics in question.
7. Pages 17 and 18 appear to be out of place. Page 19 should follow Page 16.

8. The Contingency Plan, Section 11.0, does not appear to include all the topics required by 29 CFR 1910.120(1). For example, it appears that the topics of emergency recognition and prevention, safe distances and places of refuge, site security and control, evacuation routes and procedures (evacuation route diagrams are mentioned), and critique of response and followup have not been addressed.
9. Confined space entry procedures are not included. Based on the description of work, confined space entries should not be necessary, however, it may be appropriate to mention this fact in the plan.
10. While the Spill Contingency Plan contains a great deal of information, it is poorly organized, is very difficult to follow, and has limited applicability to the drill site operations. It does not appear to adequately cover the topics required by 29 CFR 1910.120(j), and contains very little information that would be useful to any of the drill site employees.

ATTACHMENT IV  
Comments on the RFI Work Plan  
for  
Old Burn Pit and McComish Gorge  
Naval Weapons Support Center  
IN5 170 023 498

A. General Comments

1. The necessary elements of a work plan and a sampling and analysis plan are represented in this document. It clearly presents the current understanding of the contamination and hydrogeological conditions at the site. The plans presented for release characterization at the site are generally appropriate. They address all necessary issues (other than as described in the following Specific Comments) and correctly stress the importance of flexibility in plan execution.
2. This work plan contains less redundancy than the RFI Work plan for the Pest Control Area/R-150 Tank Site, where similar material was repeatedly presented in different sections (see General Comment 1 in that review). We would suggest, however, that Section 2.2.0 (Technical Approach) should be consolidated within the sampling and analysis plan of Section 3.0.
3. The facility has been referred to in the text as Naval Weapons Support Center, Crane, Indiana; NWSCC; NNSC Crane; and Crane. It would be better to establish a single convention for the name of the facility. The name established in the permit should be used and an acronym established for it, if necessary.

B. Specific Comments

1. Page 1

a. Paragraph 2, Line 2

There should be a sentence break as follows "...sites were investigated. Of these 19 sites, ...."

b. Last Paragraph

- 1) Separate the township-range and the latitude-longitude description of each site.
- 2) OBP should be defined as the Old Burn Pit. The first time the site is mentioned in the text, it should appear as Old Burn Pit (OBP).

2. Page 4

a. Paragraph 3

The author should indicate in this paragraph that metals contamination has been found in ground water samples from the McComish Gorge Site.

b. Last Paragraph

There should be compatibility of boring and monitoring well designations between the text and the figures. Incompatibilities that exist could lead to potential and unnecessary confusion. For example, boring 05/03-06-90 in the text is represented only as 6-90 on Figure 8.

3. Page 9

a. Paragraph 3

Does any information exist regarding the hydraulic characteristics of the Mansfield bedrock under the site, e.g., lab permeability studies, field tests, fracture density, and dilation, etc.? If so, include it in this paragraph.

What does "4.9" refer to near the end of the paragraph?

b. Paragraph 4

Figure 14, the potentiometric map of the Old Burn Pit Site, should be referenced from this paragraph.

4. Page 16, Figure 13

The figure title should make clear that the generalized area of high metal concentrations is drawn based on the results of soil sample analysis.

5. Page 17, Figure 14

A north arrow should be added to the figure for orientation.

6. Page 18

a. Paragraph 2

Figure 14 shows ground water contours at the OBP, not the clay and silt thickness at the McComish Gorge site. Check the List of Figures to insure that it is compatible with text changes.

b. Paragraph 3

"24DNTOL" is not a standard chemical abbreviation. It is also the first time this abbreviation is used in the text and it should be properly identified (i.e., 2,4-dinitro toluene (2,4-DNT)).

c. Last Paragraph

Exponent missing on Line 6.

Add the underlined words to the last sentence as follows, "...thickest sands, shown on Figure 15 would act...."

7. Page 19. Figure 15

Appropriate units should be added to this figure.

8. Page 20. Figure 16

A scale must be included.

9. Page 28

a. Paragraph 2

This paragraph indicates that the shallowest aquifer discharges into the Culpepper Branch. If this is the case, has that stream been monitored for contamination? If not, why not? Does it have cross-media contamination potential, that requires further investigation?

b. Paragraph 3

It is standard practice when studying a site at which prior monitoring wells have been installed, that a well construction table be provided which contains the pertinent details of those wells. No such table is provided. A table or figure displaying the reduced results of earlier sampling and analysis events is also suggested.

c. Paragraph 5

The first sentence should be rewritten.

The last sentence in this paragraph states that the purpose of this study is to conduct an RFI Phase III ground water study. However, Paragraph 8 on this same page discusses a RFI Phase II release assessment. The plan should be internally consistent.

10. Page 29, Figure 24

The author should at least provide well numbers in the figure. Other landmarks would also be helpful for perspective.

11. Page 30

a. Paragraph 2

In Line 2, DBP should be OBP.

In Line 5, "...monitoring wells will be installed."

b. Section 2.2.2

Change the first sentence to reflect the subject sites of this work plan and not the Mustard Gas Burial Ground site.

c. Section 2.2.3

Existing ground water monitoring wells and newly installed wells will be used to sample ground water.

In the work plans for other SWMU RFIs at NWSC, a survey plan is provided which identifies the survey datum and acceptable tolerances. Why is it not in this work plan? Provide it.

12. Page 31

a. Paragraph 1

Figures 24 and 25 are not in agreement with figure references from the text.

b. Paragraph 2

This paragraph indicates samples will be taken from the least contaminated locations first. If relative contamination levels are to be based on the analysis of prior well samples, then this should be stated in the paragraph.

c. Paragraph 3

Should the undefined table on Line 3 be Table 3.1.3?

13. Page 34

a. Section 3.1.2

The authors develop the three-dimensional perspective in the investigation plans by describing their intended use of cluster wells to investigate the vertical as well as the lateral extent and rate of contamination migration. We would suggest that the hydrostratigraphic units that may be encountered should be discussed here. These units are shown on Figure 27, along with typical well installations, but are never tied to the investigation plans in the text.

b. Section 3.1.3

On Line 6, correct contaminants.

On Line 7, bases should be basis.

14. Pages 34-37

The discussion of metal analyses to be performed does not specify whether the samples are to be filtered or not, prior to analysis.

15. Page 39

a. Section 3.2.1. Paragraph 2

On Line 2, it is probably redundant to talk of measuring water levels and the potentiometric surfaces.

b. Section 3.2.3. Paragraph 1

All wells in a cluster must be logged, not only the deepest well. Comparison of these logs can provide the investigator with insight into the near-field variability of geologic units. It provides some feeling for how far an investigator might comfortably correlate between wells which are further separated.

c. Section 3.2.4

What site-specific observations have resulted in the decision to use the 0.020-inch screen slot size? It is becoming state-of-the-art practice that well screen slot sizes are determined in the field on the basis of a field sieve analysis of geologic materials retrieved from the zone to be monitored.

16. Page 40

a. Paragraph 1

What is the procedure to be used for determining the filter sand size based on the size of the sand in the aquifer being screened?

b. Section 3.2.5, Paragraph 2

It would be helpful if the statement, that oil can be introduced into an aquifer even if an inline filter is used, were properly referenced.

Paragraphs 2 and 4 are duplicates.

17. Page 42

a. Paragraph 1, Line 4

With respect to this procedure, what is the definition of "stable"?

b. Table 3.2.3

- 1) Chloride and conductance are included in the sample container list but they are not included on the List of Parameters (Table 3.1.3).
- 2) Cyanide is included in the List of Parameters (Table 3.1.3), but it is not included in Table 3.2.3. Also, the sample preservation techniques discussed/mentioned with respect to Table 3.2.3 are not suitable for cyanide.
- 3) Total Organic Halogen is included in this table, but it was not mentioned in Table 3.1.3 or Table 3.1.4b. If Total Organic Halogen is to be run, it should be stated that samples will be collected and treated as volatile organic samples (i.e., they should be collected first and the sample bottle should be completely filled to exclude air bubbles).

c. Section 3.3.5

How will it be determined if the wastewater is contaminated, and therefore must be collected?

18. Page 43, Section 3.4.3, Step 7

Preservation should be preservative.

19. Page 45, Figure 29

The sample analyses planned during the investigation are specified on Tables 3.1.4a and 3.1.4b. These analyses are not all represented on the sample tag.

ATTACHMENT V  
Comments on the RFI QAPP  
for  
Old Burn Pit and McComish Gorge  
Naval Weapons Support Center  
IN5 170 023 498

A. General Comments

1. The draft Quality Assurance Project Plan (QAPP) for the Old Burn Pit (OBP) and the McComish Gorge (MG) site investigations addresses the elements of the Region V RCRA model QAPP. However, the discussion of these elements in the draft QAPP is more philosophical than quantitative. For example, the text defines field blanks, surrogates, and duplicates, but project specific limits for these parameters are not identified. Although limits in the EPA Contract Laboratory Program (CLP) are referred to, we have several reservations with this approach:
  - a. The CLP limits being referred to are not properly referenced.
  - b. The CLP limits have changed frequently over the course of time. What QA goals are to be used if the CLP limits are changed during the OBP and MG investigation?
  - c. A portion of the monitoring program is directed toward explosives. Since the required methods for these compounds are (generally) not in the CLP and are not standardized methods in SW-846, how will the quality of analytical data for these parameters be controlled?
2. The response with many of the blank samples (trip blanks, reagent blanks) is based on a comparison of the results with method detection limits. However, the draft QAPP does not present any goals for project detection limits for each of the analytes. Although many of these limits for soil samples can fluctuate with sample size, project specific detection limit goals for both water and soil samples should be explicitly stated in the QAPP. Also, since the monitoring program includes several nonstandard analytes (explosive), the detection limits for these compounds in each sample matrix should be included in the plan.
3. The work plan refers at times to chloride and sulfate analyses. However, analytical methods and data quality objectives for these parameters are not included in the QAPP.

B. Specific Comments

1. Page 2, Paragraph 7, Lines 5-6

...and Dichloroethylene) and metals (cadmium, chromium, fluoride, iron, manganese, mercury, sodium, and sulfate).

Fluoride and sulfate are not metals.

2. Page 3

a. Paragraph 1, Lines 1-2

...run to detect the presence of....

b. Paragraph 1, Line 2

We would suggest that the term "toxic" be deleted from the text. First, the water quality criteria for iron, manganese, and sodium are not based on toxicity. Secondly, if the ground water samples are to be analyzed for "total" concentrations of metals, the results are not a consistent and direct measure of toxicity.

3. Page 5

a. Paragraph 4, Line 3

What is "A 12 separate...."?

b. Paragraph 7

At a minimum, it would be appropriate to reference the instrument-specific procedures that will be used to calibrate the field instruments.

4. Page 7

a. Paragraph 1, Line 4

We do not feel that the statement "...current CLP criteria shall be used...." is acceptable. First, the term current is not referenced to a particular CLP document. What happens if the current CLP requirement changes during the conduct of the investigation at the OBP and MG? Secondly, there are separate CLP requirements in different contracts (i.e., routine analytical services and special analytical services). It is currently acceptable to use CLP procedures, but they should be clearly defined and/or properly referenced.

b. Paragraph 2

1) Lines 4-5

At a minimum, the statement that "...calibration acceptance criteria specified by the methods...." should be properly referenced.

2) Lines 5-6

The purpose of a QAPP is to specify the quality of data that must be achieved for a study. In this context, it is not adequate to state that the calibration curve shall be plotted and the correlation coefficient and response factors evaluated. The QAPP should specify acceptance windows for the correlation coefficient or response factor for each analyte.

c. Paragraph 4, Line 4

The QAPP should specify the method detection limits to be achieved for each analyte.

d. Bottom

It might be better to state that instrument results will be recorded and the results used to detect any drift in the instrument reading. If too much drift is detected (how is this to be defined for this study?), the instrument will be recalibrated.

5. Page 9, Control Samples

We feel that the information in this section is inadequate. The purpose of a QAPP is to define the level of data quality needed for a particular project. The section defines the various types of QA samples to be run, but it does not define the number/frequency of required analyses. Most of the information on frequency can be extracted from Table 3. However, no information is presented on analytical accuracy or analytical precision. These goals must be clearly stated for each project analyte.

6. Page 10

a. Data Reduction (1)

...detection data are reduced....

What are these data reduction procedures. At a minimum, a complete reference citation should be given.

b. Data Reduction (2)

...data are determined....

c. Data Reduction (4)

...slug test data are recorded....

d. Bottom

The CLP forms should be tied to a specific date because they change with time.

7. Page 13

a. The Blank/Spike Control Samples paragraph refers to internal QC limits set by the laboratory. These must be clearly stated in the project QAPP.

b. The surrogate section refers to unreferenced CLP limits. Such limits can be used in the project, but they must be stated or properly referenced.

c. The approach presented in the Method Blank section is acceptable. The problem is that detection limits for the project have not been stated.

d. Matrix/Spike Control Samples, Surrogates, Blanks, and Matrix Spike/Spike Duplicate sections for semi-volatile compounds.

8. Page 14

Similar comments on Blank/Spike Control Samples, Surrogates, Blanks, and Matrix Spike/Spike Duplicate sections for semi-volatile compounds.

9. Page 15

a. Method Blanks, Line 4

Delete No.

b. Blank/Spike Laboratory Control Samples

What are the internal QC limits being referred to?

c. Bottom

...maintained on at least a weekly....

10. Page 16. Control Charts

Although this item refers to the submission of control charts, the project QAPP does not discuss the creation of Control Charts or, more importantly, the establishment of control chart limits for each project analyte.

11. Pages 15-16

This section does not address performance audits (in the QA sense). There is no mention of the analysis of performance samples over the course of the project.

12. Page 17. Element 14

This section states that all data are checked for completeness, precision, accuracy, and "reasonableness and trends". The project QAPP does not present any goals for completeness, accuracy, or precision. Also, trends (bias) can be ascertained through the use of control charts, but this topic was not discussed in the report, and there was no discussion of setting project-specific control chart limits.