

**NSWC CRANE
CRANE, INDIANA**

**QUALITY ASSURANCE PROJECT PLAN FOR FULL-SCALE OPERATIONS
AT THE BIOREMEDIATION FACILITY
REV. 1, March 04, 1998**

COMMENT- RESOLUTION

A. Comments on QAPP

Comments by: Allen A. Debus, EPA Region 5, Dated March 6, 1998

Comment 1 The U.S. Navy Crane cannot take credit for dilution effects due to addition of compost amendments toward the 90% to 99% reduction in mobility and toxicity objective. Since this is the second version of the QAPP which has been written in this manner, language will be inserted into the QAPP indicating that a Day 0 compost sample will be taken for laboratory analysis at Southwest for 8330 explosives. This sample will define the "entry level" of compost. (Note that higher initial concentration values for explosives, may require longer treatment period, possibly even extending beyond 28 days.)

Furthermore, all compost samples to be collected for Day 0 and final day analysis of 8330 explosives shall be homogenized using the Wiley Mill/riffle splitter. This procedure should be performed in the field, not in the laboratory, as a condition of approval in lieu of other homogenization techniques mentioned in section 7.0 of SOP QAPP 3.0, deemed adequate for soil sampling. This will correspond to the field laboratory "preparation" cited for compost composite samples in section 5 of SOP QAPP 3.0. The basis for this is that the Wiley method is thought to be more thorough than the cited soil homogenization technique, and a compost matrix is of lesser uniformity and possibly more heterogeneous than soil. Because the modifications to the QAPP would be so rampant, I can only require this as a condition of approval, to be changed by the US Navy Crane representatives.

Also, I noticed that the SOP for judging the toxicity of the compost was not yet submitted. As this falls within the 90 to 99% criterion, the microtox procedure should be employed both on entry compost as well as fully treated compost. The appropriateness of this procedure is an issue in itself. Not being a toxicologist, I have no means of evaluating the relative merits of microtox, versus, earthworm assays, or the Ames carcinogenicity test. However, I am aware that Region 10 places the least reliance on data stemming from the microtox test. This is experience we would take highly into consideration. The anticipated data need for defining "toxicity" and managing treated compost should be associated with an appropriate test method.

- Response 1**
- a. The "entry" level concentration of the soil will be determined, as suggested, on Day 0 on the compost as discussed and agreed during the conference call of March 9, 1997 with Allen Debus, U. S. EPA Region 5. The Navy acknowledges the fact that higher initial concentration values for explosives may require longer treatment period, possibly extending beyond 28 days. Refer to Figure 1-3 of the Full-Scale Operational Plan for decision-making steps that will be taken for treatment options if a compost pile does not meet the cleanup goals.
 - b. As discussed and agreed during the conference call of March 9, 1997 with Allen Debus, U. S. EPA Region 5, the Navy proposes the following procedure to ensure that homogeneity of the sample will be achieved:

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Five compost samples will be collected on Day 0 and End of Cycle (estimated to be Day 28) from the first compost pile during full-scale operations. These samples will be split from five of the fifteen samples on Day 0 and End of Cycle. These five splits will be homogenized using the Wiley Mill/Riffle Splitter and sent to the laboratory for explosives analysis by Method 8330. The fifteen samples on Day 0 and End of Cycle will be collected and homogenized as specified in the QAPP. However, the five samples from which the splits for Wiley Method was collected will be retained at the site with preservation and shipped to the laboratory along with the splits prepared by the Wiley Method. Data from these two sets (i.e., 10 samples homogenized using the protocols as currently specified in the QAPP and the 10 samples homogenized using the Wiley Method) will be compared to establish a correlation of results. The comparison data will be provided to EPA for review.

- c. As discussed and agreed during the conference call of March 9, 1997 with Allen Debus, U. S. EPA Region 5, the Navy proposes to perform the toxicity and leaching tests at the fully treated compost. A procedure describing the methodology for the toxicity and leaching tests (Pathogen Test, Worm Test, Microtox Test, and TCLP analysis) will be provided to the EPA for review and approval as an addendum to the Full-Scale Operational Plan (Appendix G) and QAPP (Appendix G). Note that these tests are required only if disposal of treated compost in areas other than the on-site solid waste landfill is needed. Refer to Figure 1-3 of the Full-Scale Operational Plan for details. Therefore approval of the plans as written should not affect the processing of the soil.

- Comment 2** Referring to comment 8 in the Navy's Response, please note that N-nitroso-diphenylamine is an SVOC and that the comment is still relevant to this discussion. Thus far, the matter has not been accounted for in this draft QAPP.
- Response 2** The Navy recognizes that N-nitroso-diphenylamine degrades to diphenylamine. The laboratory will report diphenylamine as N-nitroso-diphenylamine.
- Comment 3** The tone of the response [for Comment 15] is fine, but can someone lead me to where this person's data validation responsibility is stated?
- Response 3** As stated in Section 2.4, the MK Project Chemist will be responsible for overseeing data verification and data validation. The text in QAPP Section 2.4 has been revised to indicate that data verification and data validation will be performed by MK staff.
- Comment 4** The VOCs issue in soil may be resolved, but I still have to spend time reviewing the proposal.
- Response 4** Comment noted.

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- Comment 5** Referring to comment 24 in the Response, note that for critical measurements, such as for the explosives compounds, the Navy should be encouraged to aim higher than simply 90%. This semi-quantitative criterion should really be considered from the perspective of which data is most critical, such that its loss would cripple efforts at subsequent data assessment. The Model QAPP does specify a 95% benchmark criterion for lab data. It is most important to obtain complete data sets for critical data sets....(i.e. entry and final data for explosives compounds).
- Response 5** Comment noted. The Navy will try to achieve greater than 90% for completeness as suggested for critical data sets.
- Comment 6** Referring to comment # 26.a, the new Model QAPP is being revised to reflect the intent of SW-846, which does account for customized matrix spiking solutions. To keep this project progressing, however, I will accept the Navy's position this time. Please note that in future phases of activity planned for the U.S. Navy Crane project, the original EPA recommendation shall be complied with.
- Response 6** Comment noted.
- Comment 7** Referring to comment 31.c, although it is implied in a QAPP table that only the total 8330 explosives will be reported serving in lieu of TCLP data, in other places of the QAPP (Table 1-4c and Table 1-11) it is implied that a sample will be collected for analysis of explosives by method 8330/1311. I am willing to accept that if total 8330 results are less than the targeted TC levels stated in Table 1-4c that it would be acceptable to declare those soil additions as non hazardous with respect to NB and 2,4 DNT. However, the QAPP must express this idea and proposed procedures consistently. Finally, note that the Southwest reporting limit is greater than the TC level, meaning that according to the TCLP regulations, that the reporting limit becomes the "regulatory limit".
- Response 7** The intent is to perform total analysis and use the correction factor of 20 to obtain the TCLP limits. Note that this approach would provide a more conservative number for TCLP because it is derived from totals analysis. If a sample fails the TCLP criteria based on using the correction factor, then the sample will be re-analyzed by TCLP protocols to verify if indeed the sample exceeds the TCLP criteria. This approach is provided in Section 1.3.1 of the Full-Scale Operational Plan. The QAPP Section 1.4.1 has been revised to include this discussion. Laboratory reporting limits will meet the TCLP regulatory limits.
- Comment 8** Referring to comment 38, note that metals would not require a sample matrix duplicate. It will be acceptable to obtain a sample duplicate out of the same jar used for matrix spiking purposes (i.e. matrix spike sample).
- Response 8** Comment noted.

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Comment 9 Referring to comment 42, if it's okay with Carol, it's okay with me.

Response 9 Comment noted.

Comment 10 Referring to comment 46.c, the significant issue has been neglected. So the QAPP shall be restated, for non- explosives data 10% of the data shall be validated independently. For explosives data, 100% of the entry and final day data sets shall be validated independently.

Response 10 As discussed and agreed during the conference call of March 9, 1997 with Allen Debus, U. S. EPA Region 5, the Navy proposes to perform data verification on all the samples (i.e., 100%). Particular emphasis will be made to review the analytical chromatograms during the data verification step. The QAPP Section 9.2.2 has been revised to include this information.

Comment 11 I need to check which changes if any were made to the field SOP for the Ensys test kits.

Response 11 Comment noted.

Comment 12 [Referring to Comment 59,] is the Navy still pondering the nitrate removal step for RDX?

Response 12 The Navy will review the Region 10 Black & Veatch report to determine if the nitrate removal step for RDX can be eliminated. A revision to the Field SOP QAPP-5.0 will be issued if the step will be eliminated.

Comment 13 Referring to Section 1.4.4 of the revised QAPP, what is an "MPR".

Response 13 MPR stands for monthly progress reports. Text in the QAPP has been revised to reflect this definition.

Comment 14 Referring to Table 1-11, task 5, p. 43, change the reference to method 8240 to method 8260.

Response 14 Comment noted. Text in the QAPP has been changed as indicated.

Comment 15 I was unable to find the "outline" for the Audit demonstration plan for the Ensys test kit analyses of compost during my cursory review. Was this prepared? Why wasn't this task mentioned in the performance & Systems audit section of the QAPP?

Response 15 Section 1.4.4 of the QAPP indicates that the audit demonstration of the field test analyses will be performed for the compost. The "outline" for the audit demonstration of compost will be as specified by U.S. EPA and agreed by the Navy. Audit demonstration of field test kit analyses of compost will be performed as proposed in the response to U.S. EPA Region 5 Comment A.3 of the Rev. 0,

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February 9, 1998 QAPP. The audit results will be presented similar to that of the excavated soil audit demonstration (See Appendix H of the QAPP).

Comments by: Allen A. Debus, EPA Region 5, Dated March 11, 1998 (E-mail)

Comment 1 For Mine Fill A, Section 1.4.2.1 lists 15 explosives 8330 compounds to be reported. The Southwest lab SOP however only lists the standard 14. The additional compound on the site target list is PETN, which is ordinarily measured by a method other than 8330. What SOP will be utilized to report PETN? If a validated SOP has not been submitted to date, then this must occur before approval of this QAPP is possible.

Response 1 Southwest Lab is currently developing a procedure for analyzing PETN. The lab SOP will be issued for review and approval.

Comment 2 Also, why have compounds 1,2 DNB and 1,4 DNB been excluded from the Section 1 concentration based objectives tables in the QAPP. It could be simply because they are not included on the standard 8330 list. But if Southwest lab can resolve these isomers of 1,3 DNB and, given that they do have assigned toxicity factors, perhaps they should be measured and reported after all. A Southwest lab SOP modification would be necessary. (Note that the table appearing on p. 1 of 16 indicates 1,3 DNB exclusively, but that subsequent tables indicate DNB generically. My guess is that these 3 isomers should be resolvable, but lab data could refute this speculation.

Response 2 1,2 DNB, 1,4 DNB, and DNT (total) are not identified as constituents of concern at the SWMU-sites and are not routinely analyzed as part of the U. S. EPA SW846 Method 8330. Therefore, these compounds will not be analyzed as requested by EPA.

Note that 1,3-Dinitrobenzene is abbreviated as "DNB" on page 1 of 16 of the Southwest Lab procedure SWL-OL-200 included in Appendix C of the QAPP. Therefore, the notation DNB on the remaining pages of the procedure indicates that it is 1,3-Dinitrobenzene.

Comment 3 In Table 1-12, 3rd column, one is left with the impression that there are only three cross sections being made in the pile for Ensys test kit analyses, but a total of 5 cross sections for other field parameters. Is this correct? Also, it is evident from reading this table that no compositing of compost samples will be made for RDX and TNT field analyses. Is my interpretation correct?

Response 3 Table 1-12 has been revised to reflect that one composite sample per cross-section from location 1, 2, & 3 will be collected (for a total of 5 samples per windrow pile) as indicated in Table 4-2 of the QAPP and Table 6-1 of the Full-Scale Operational Plan.

Comment 4 References to Sections 5.4.1 and 6.4.1 in section 1.3.4 of the QAPP, p. 20 seem to refer to a portion

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of the Operational Plan, not the QAPP. therefore, the phrase, "...of the OP." should perhaps be inserted after the phrase, "...may be found in Sections 5.4.1 and 6.4.1...". This comment should be applied to other sections of the QAPP, (in descriptions of the other SWMUs to be affected by this QAPP) where the OP was not correctly referenced.

Response 4 References to Sections 5.4.1 and 6.4.1 in Section 1.3.4 of the QAPP refer to the August 1992 EMR prepared by Halliburton NUS. This document is referenced in Section 15 of the QAPP. All other sections of the QAPP have been checked and all refer to documents provided in Section 15 of the QAPP.

B. Comments on Field SOP QAPP-1.0

Comments by: Allen A. Debus, EPA Region 5, Dated March 10, 1998 (E-mail)

Comment 1 Page 3 of 7: In section 3.1.1.3, shouldn't the phrase "...for metals & explosives." be inserted after the phrase, "...marked grabs"?

Response 1 Comment noted. Text in the QAPP Field SOP has been changed as indicated.

Comment 2 Page 3 of 7: In 3.1.1.4, should the reference to field duplicates for VOCs analyses be mentioned as well? (See section 3.4.)

Response 2 Comment noted. Text in the QAPP Field SOP has been changed as indicated.

Comment 3 Page 3 of 7: For grid block sampling under Task 1, it only seems as if VOCs will be definitely sampled from the 12 to 18 inch depth at the center of the grid block. It is possible that VOCs might also be collected from the 2.5 to 3.0 foot depth and at the grid corners from the 1 to 1.5 foot depth interval IF the PID data is above background. Please answer the following, how will the "background" PID reading be defined? Also, what is the rationale for selecting the 12 to 18 inch depth interval as the only default location for sampling VOCs on an unconditional basis?

Response 3 Background levels for the PID are established for every sampling event based on ambient air independent of the excavation location. Text in the QAPP Field SOP has been revised to include this definition.

The 12 to 18 inch depth for VOC sampling location was selected to provide consistency in sample locations from one grid to another. However, provisions are made for additional VOC sampling when PID readings are above background levels and/or unusual odors and stains are discovered. This will permit for additional sampling when site situations require additional analysis as stated in section 3.1.1.11 of the Field SOP.

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- Comment 4** Page 4 of 7: In section 3.1.1.11, the brief reference to VOCs analysis should include a reference to the Encore procedure. (See "Note".)
- Response 4** Comment noted. Text in QAPP Field SOP has been changed as indicated.
- Comment 5** Page 4 of 7: In section 3.1.1.12, the stated Homogenization soil procedure should state exactly what Region 10's approach happens to be, as cited in a previous section of this QAPP.
- Response 5** Comment noted. Please refer to **A. Response 1.b**
- Comment 6** Page 5 of 7: Section ~~3.2.1.42~~ ~~3.2.1.3~~ should also reflect the Region 10 soil homogenization technique.
- Response 6** Comment noted. Please refer to **A. Response 1.b**
- Comment 7** Page 5 of 7: Referring to section 3.3.1, why wouldn't VOCs be sampled using the Encore sampler for final confirmation purposes in Grid blocks for Task 5 at the 2 to 3 foot depth? Please provide rationale. (Note that in Table 1-8, column 3, it is stated that levels of SWMU specific contaminants remaining after the excavation is complete & prior to backfilling will be determined. This should also apparently include VOCs (and other non explosives contaminants) determined in the laboratory. Are VOCs still being sampled in Task 5 but at a shallower depth?
- Response 7** Volatile samples are still being sampled in Task 5 but at a shallower depth. Section 3.3.1(Task 5) refers to post excavation sampling. In this phase, a sample will be collected from 0" - 12" for explosives, metals, and semi-volatiles listed in Section 1.4.2.1 of QAPP and a second sample will be collected from the 12" - 18" for volatiles. This procedure is stated in section 3.1.1.3 and 3.1.1.4 for center grid samples and section 3.1.1.7 and 3.1.1.8 for corner samples.
- Comment 8** Page 6 of 7: Referring to the QC section, the following matters should probably be addressed. How will contents of coolers be preserved? (mention blue ice...etc..) Encore samplers should be placed securely in marked plastic zipper baggies.
- Response 8** Comment noted. Field SOP 6.0 of this QAPP refers to sample packaging and shipping procedures. This comment has been incorporated into the Field SOP 6.0 of this QAPP.