

APPENDIX D

YARD 520 SAP USEPA COMMENTS AND RESPONSES

**RESPONSE TO USEPA COMMENTS DATED MARCH 24, 2005
YARD 520 SAP
PINES AREA OF INVESTIGATION**

For convenience, the comments received from USEPA have been numbered. The original comments are repeated in bold, with the response shown in plain text.

Yard 520 Sampling and Analysis Plan

As discussed with USEPA, the revised Yard 520 SAP and its QAPP will be re-submitted on June 3, 2005. These responses to comments were submitted to USEPA with the RI/FS Work Plan on May 23, 2005, and are included here for convenience of review of the Yard 520 SAP.

Y520.1 - Elements of "Draft" Version of the QAPP Needed to Complete the Review

Note: The entire QAPP should scrupulously follow the instructions prepared by Region 5 Superfund Division.

Response: The Yard 520 SAP was intended to include both a field sampling plan and the necessary quality assurance components. It was not intended as a stand-alone QAPP. To address the many comments related to QAPP components and formatting, a separate QAPP has been prepared to accompany the revised Yard 520 SAP.

Y520.2 - A1- Title and Approval Sheet

Response: As noted in the response to comment Y520.1, a separate QAPP has been prepared that includes this information.

Y520.3 - A2- Table of Contents must include a list of the figures and tables and appendices.

Response: The Table of Contents for the Yard 520 SAP does include a list of tables, figures, and appendices.

Y520.4 - A3- Distribution List; This element is missing *should be a table* or a written description of qualifications of major individuals and how they fit into the project process see: Region 5 QAPP Instructions.

Response: As noted in the response to comment Y520.1, a separate QAPP has been prepared that includes this information.

Y520.5 - A4- Project Organization

Response: The Yard 520 SAP does include a description of the project organization. This information will be repeated in the QAPP to accompany the revised Yard 520 SAP.

Y520.6 - A5- Problem Definition/Background; The problem definition and background are clearly stated. What is the history of the North Yard? Please elaborate here in the QAPP.

Response: The history of Yard 520 is included in the Site Management Strategy. Additional information has been provided in the revised Yard 520 SAP.

Y520.7 - A6 - Project/Task Description

Quantity Objectives and Criteria for Measurement Data

Although the number of samples is discussed, the rationale for the selection of 10 sites and their placement is not sufficiently described in this section or anywhere else in the QAPP. Such attempts to quantify the decision process must be made by the use of appropriate statistical design. See guidance element 7 and EPA QA/G-4. More detail is required for this element.

It is also of concern that there was a decision made not to sample in the adjacent site (Yard 520 North) without giving any appropriate rationale for this decision.

Your Section 4.0 entitled Field Sampling Procedures belongs here under Project/Task description.

Response: The USEPA requested approximately five to 10 samples to evaluate the presence of dioxins/furans, PAHs, and radionuclides in CCBs in the Pines Area of Investigation. The sampling plan includes 10 samples of CCBs from Yard 520. Based on further discussions regarding the background samples, the Yard 520 sampling plan now proposes a total of 25 samples to be collected in background locations. This will include 10 samples collected along roadways, 10 samples located in non-roadway areas (see comment Y520.25), and 5 samples located in wetland areas. Additional rationale on sample locations is being provided in the revised Yard 520 SAP and accompanying QAPP.

Y520.8 - In Section 4.2 : Selection of Sample Locations Within Yard 520

- 1. Please define Type II and Type III here in the QAPP.**
- 2. With regard to the Table on page 2-2:**

A detailed rationale for the selection of boring sites is required here.

Response: The definitions of Type II and Type III wastes are provided in the Site Management Strategy document, but will be repeated in the QAPP. As noted in response to comment Y520.7, rationale on sample locations is being provided in the revised Yard 520 SAP and accompanying QAPP.

Y520.9 - A9.- Documentation and Records

Response: The Yard 520 SAP does include a discussion of documentation and records. This information will be repeated in the separate QAPP to accompany the revised Yard 520 SAP.

Y520.10 - B1.- Sampling Methods Requirements. Field sampling SOPs are required for all samples with a rationale for each. No rationale is given for choosing new sites except for a general discussion in the work plan.(See element B1 in Region 5 Instructions for Sampling Design.) A detailed description of the methodology you plan to use to select “background locations” is required. Background must also be defined.

Response: This element of the QAPP guidance is being addressed in the separate QAPP. Rationale for sample selection is being included and “background” defined.

Y520.11 - B4.- Analytical Methods Requirement. Nonstandard methods are not addressed. It seems to this reviewer that the analysis of the samples you are planing [sic] to take for the site constitutes nonstandard samples because of the presence of CCBs.

Response: Inorganic analyses conducted to date on potential CCB samples have not indicated interferences by the matrix. A discussion of the CCB matrix and organic analyses is presented in response to comments Y520.12 and Y520.13 below.

Y520.12 - Table 1. All MRLs are ½ the expected values except for 2,3,7,8-Tetra-CDD. Please explain. Does the lab expect any problem with the matrix in the samples you will have analyzed. Carbon is well know to strongly adsorb organic compounds. Has the lab ever analyzed any control samples with a matrix with similar chemical characteristics to the samples you are planning to analyze? If so, is there a more realistic MRL for such samples? Please include a brief explanation of these questions if the QAPP in a section to precede the Tables in Section 9.

Response: In response to this comment, the laboratory provided their updated MRLs, which are based on a March 2005 MDL study. These estimated MRLs are included in the separate QAPP. Actual MRLs achieved for the samples will likely vary due to factors such as percent moisture or analytical dilutions.

CCB samples are not expected to contain particularly high levels of carbon. The carbon that makes up coal is largely burned to generate power in the power plant. Coal-combustion by-products (CCBs) are made up of the non-combustible portions of the coal, typically mineral and other inorganic fractions. The residual carbon content in CCBs is similar to or lower than typical soils. The Site Management Strategy provides a more detailed description of origin and chemical composition of CCBs.

In addition, matrix spike samples are being collected and analyzed to evaluate potential biases that may be caused by the matrix.

Y520.13 - Table 2. All MRLs are 1/5 the expected values except for all the listed polyaromatic compounds (PAHs) Once again the values seem too good to be true and suspicious since all of the compounds in the table are listed as having a PQL of 6.6 ug/Kg. Please explain. Does the lab expect any problem with the matrix in the samples you will have analyzed? Carbon is well know to strongly adsorb organic compounds. Has the lab ever analyzed any control samples with a matrix with similar chemical characteristics to the samples you are planning to analyze? If so, is there a more realistic MRL for such samples? Please include a brief explanation of these questions if the QAPP in a section to precede the Tables in Section 9.

Response: The PAHs listed in Table 2 have MRLs lower than full-scan PAHs due to the use of the selected ion mode (SIM), which gives greater sensitivity. It should be noted that these MRLs are estimated and that actual MRLs will likely be higher due to sample-specific factors such as percent moisture and analytical dilutions.

As noted in response to comment Y520.12, CCB samples are not expected to contain particularly high levels of carbon. The carbon that makes up coal is largely burned to generate power in the power plant. Coal-combustion by-products (CCBs) are made up of the non-combustible portions of the coal, typically mineral and other inorganic fractions. The residual carbon content in CCBs is similar to or lower than typical soils. The Site Management Strategy provides a more detailed description of origin and chemical composition of CCBs.

In addition, matrix spike samples are being collected and analyzed to evaluate potential biases that may be caused by the matrix.

Y520.14 - Table 3; *Laboratory Reporting Levels for Radionuclides*. There is a discrepancy in some of the reported achievable levels of detection of specific radionuclides and those achievable routinely by EPA laboratories. For example, according to EPA method 901.1 the detection limit (DL) for Uranium-235 background is usually 0.046pCi/g (so 0.2pCi/g DL is too high, should be at least .02pCi/g or less), and EPA reference 600/4-80-032 gives a DL for Thorium-234 of 0.1pCi/g (not 6.59pCi/g), Thorium-227 should have a DL of at least 0.013pCi/g (background is usually 0.046pCi/g), and for Ra-226 has a background of 0.52pCi/g so this DL must be loess than 0.52pCi/g (at least 0.2pCi/g), Actinium-228 usually occurs at a level of

0.5pCi/g or less (therefore 1.11pCi/g is not sensitive enough to detect AC-228), Bi-212 occurs at 1.0pCi/g in background so .56pCi sensitivity is a bit high and will require long counting times, Pb-214 occurs in background at 1pCi/g or so 0.64 is probably too high and not sensitive enough DL, Tl-208 has a background usually of 0.15pCi/g in soils so a DL of 0.29pCi/g is too high, and Pa-234 normally has a background value of 1.0pCi/g, therefore a DL of 33.6pCi/g will not be sufficient to detect Pa-234 if present at the site.

Response: The list of radionuclides has been revised and now includes Ac-227, Pa-231, Pb-210, Po-210, Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238. Detection limits for these radionuclides are included in the separate QAPP. To the extent possible, they are of sufficient sensitivity to achieve the DQLs established from both risk-based and background levels.

Y520.15 - Table 4: Laboratory Reporting Levels for Inorganics (replace with Inorganic Compounds, Inorganics is not a term.) One of the Practical Quantitation Limits (PQL) are higher than one would expect for inorganic analysis in a soil matrix. Thus: The PQL for Selenium is reported as 20 mg/kg when one would expect a value of 3.5 mg/kg; whereas several of the listed metals seem to have unusually low PQLs; for example Aluminum has a PQL ½ of the expected value, and Barium and Cadmium are almost too good to be true with values for the PQL of 1/10 the expected PQL. How realistic are these reported PQLs to the CCB samples you intend to collect? Does the lab have previous experience measuring inorganic compounds in CCBs matrixes?

Response: The PQLs in Table 4 have been evaluated in comparison to the actual PQLs being achieved in the suspected CCB samples currently being analyzed under the MWSE SAP. The separate QAPP to accompany the revised Yard 520 SAP includes any revisions to the PQLs.

As noted in response to comment Y520.12 above, CCB samples are not expected to contain particularly high levels of carbon. The carbon that makes up coal is largely burned to generate power in the power plant. Coal-combustion by-products (CCBs) are made up of the non-combustible portions of the coal, typically mineral and other inorganic fractions. The residual carbon content in CCBs is similar to or lower than typical soils. The Site Management Strategy provides a more detailed description of origin and chemical composition of CCBs.

The matrix spike samples currently being collected and analyzed indicate no systematic bias caused by the CCB matrix.

Y520.16 - The laboratory schedule table should be here in the QAPP.

Response: As noted in the response to comment Y520.1, a separate QAPP has been prepared that will include this information.

Y250.17 - B5. - Quality Control Requirements; No schedule of sampling is given in Field Sampling Plan. What are the specific criteria for each chemical to be measured? Express in general terms of mathematical analysis for QC statistics: include bias and accuracy calculations.

Response: As noted in the response to comment Y520.1, a separate QAPP has been prepared that includes quality control information, including acceptance criteria and calculations for bias and precision.

The schedule for sampling is dependent on USEPA approval of the revised Yard 520 SAP. It is the intention of the Respondents to implement this sampling as soon as feasible upon USEPA approval of the SAP.

Y520.18 - B8.-Inspection/Acceptance Requirements for Supplies and Consumables. Specific names and titles required for field operations, not just laboratory personnel.

Response: This information is included in the separate QAPP.

Y520.19 - B9- Data Acquisition Requirements for Non-direct Measurements. There is no documentation of rationale for original data collection and its relevance to the project. If during the process of conducting the approved analyses for VOCs and SVOCs, tentatively identified compounds (TICs) are identified and estimated in quantity, Section IV of the presently effective Consent Order requires submission of "all results of sampling and tests and all other data received." To satisfy this requirement, the analytical results on the TICs must be provided. Please include the previous paragraph in the QAPP.

Response: Data acquisition requirements for non-direct measurements are addressed in the separate QAPP. The proposed analyses in the Yard 520 SAP are PAHs and do not include VOCs, full-list SVOC, or TICs.

SOPs

Y520.20 - SOP No:EXT-3550BPines. Method 3550B has been deleted and is upgraded to method 3350C. There are some very significant differences in the old and the new method and in the interest of the use of best available technology (BAT) the newer method is the only acceptable method. Some of the changes are that a 3/4 inch horn is required for low concentration analysis, and the use of a Sonebex™ disrupter system is recommended from Ultrasound, I.c., model 432B or equivalent

Response: In a recent check of the on-line SW-846 methods, it appeared that Method 3550B is still valid. The USEPA reviewer indicates that one of the changes is the use of a ¾-inch horn, which the laboratory is currently using. A copy of the revised SOP is included in the QAPP, along with the other laboratory SOPs.

Y520.21 - Section 1.1 Have 2-5 CCB samples collected from areas outside of the landfill. Off-yard deposits also have potential for impacting human health and the environment and probably should be given at least some characterization.

Response: Samples of suspected CCBs outside Yard 520 are being collected in accordance with the Municipal Water Service Extension Sampling and Analysis Plan (MWSE SAP), submitted to USEPA in 2004 and conditionally approved on March 22, 2005.

Y520.22 - Section 2.0: Describe visual inspection criteria.

Response: The rationale for visual inspection is described in more detail in Sections 4.2 and 4.3. The native soils in the Area of Investigation are typically white to tan sands in uplands and fine-grained organic soils in the lowlands. Fill materials, including suspected CCBs, have a distinctly different appearance in the field. The visual inspections are intended to ensure that samples of appropriate media are collected, for example, of suspected CCBs (rather than clay used as interim cover) or of native soils (without the presence of fill). The visual inspection will consist of examining and logging the observed soil materials. The plan has been revised to make this more clear.

Y520.23 - Section 2.3 Is data analysis and report writing the same as Database Activities and Data Submittal? Please clarify. Please provide the relationship between the timing of the sampling described in this document and the overall RIFS. More sampling for the potential COCs may be required as a part of the wider RIFS effort.

Response: AOC II requires that analytical data be submitted to USEPA once it is validated. Once validation is complete, the validated data will be uploaded into the project database along with validation qualifiers (database activities). The database is then used to generate the data reports to be submitted to USEPA (data submittal).

As noted in Section 2.3, the data evaluation and interpretation will be provided to the USEPA as a technical memorandum or addendum to the RI/FS Work Plan. It is recognized that the results will be used to determine whether additional RI activities are needed. Therefore, the Respondents would like to implement the Yard 520 sampling as soon as approval is received from the USEPA.

Section 2.3 will be modified to clarify the schedule components.

Y520.24 - Section 4.2: Explain how to insure that the variability expected in the CCB's will be covered by the planned sampling.

Response: The proposed sample locations will be modified slightly to collect more samples of older CCBs. The Type III (South) Area was used from approximately 1986 to 2001 (see chronology in Appendix D of the Site Management Strategy). The switch from high sulfur to low sulfur coal occurred in 1992. Therefore, the materials in the Type III (South) Area include CCBs derived from both types of coal. The proposed sample locations have been modified so that more samples are collected from the western side of the Type III (South) Area, where older CCBs are located. A detailed rationale is being included in the revised Yard 520 SAP.

Y520.25 - Section 4.3—background samples in roadside right-of-ways may be impacted by roadside runoff, which has the potential to result in erroneously high estimates of background concentrations of at least some COCs. Samples should be collected as far as is possible from the road (consistent with legal access) and in areas not likely to be impacted by runoff (ex. not in an area where surface drainage from the road would be concentrated) to minimize the potential for erroneous results.

Response: Because roadways transect residential areas, potential human receptors are exposed to materials along roadsides. Therefore, background sampling along roadsides provides relevant information regarding baseline exposures in the area. In order to provide information regarding potential exposures in non-roadside areas, a second set of background samples will be collected as suggested above. Additionally, samples from within wetland areas are also being collected. The sampling plan has been modified to include these additional background sample locations.

Y520.26 - The text is unclear as to whether or not plant matter (including roots and decaying matter) is to be included or excluded from these samples—especially the samples from the wetland area. The text seems to indicate that at least plant matter above ground surface will be excluded from the sample, at least for the non-wetland soils, but doesn't explicitly say so. I think USEPA preference is for the sample to exclude plant matter. Please clarify this issue.

Response: The intention is to remove foreign material from the samples. For typical granular soils, plant debris, particularly the surface litter layer, will be removed. But where plant material is a natural part of the soil structure, especially for samples of peat, it will not be removed. The text has been clarified.

Y520.27 - Is it valid to add the samples from the wetland area to the statistical work up of the background soils? Given the almost certain difference in soil type, pH, organic carbon content, mineralogy, etc. between the wetland areas and the other background locations it may be prudent to require an outlier test for these locations before including them in the analysis.

Response: We will consider whether to evaluate the background data in separate groups based on soil type and/or location. Details on the statistical evaluation are provided in the Human Health Risk Assessment Work Plan, part of the RI/FS Work Plan.

Y520.28 - Please explain the set of statistical analyses–tests for normal or lognormal distribution, robust methods to handle non-detects, outlier testing, etc. that will be used. These will become important if there needs to be a determination of whether or not a COC exceeds background.

Response: A statistically rigorous method for determining whether a constituent is consistent with background will be employed for constituents with concentrations above health based levels. If it is determined by this method that a constituent concentration is consistent with background, the constituent will be eliminated from further consideration in the risk assessment. Section 3.3.2 of the HHRA Work Plan presents the methods for statistical analysis.

Y520.29 - Section 4.4.1–Please clarify if the vertical location of the sample will be restricted to its depth? Or is the GPS surveying meant to allow an estimate of the altitude of the sample as well? In which case what is the accuracy of the altitude measurement? Presumably it isn't 3-5 meters. Please clarify.

Response: The GPS unit also provides information on elevation (altitude), which is recorded in the field, although it is less accurate than the horizontal readings. The selected GPS unit has been modified in the revised Yard 520 sampling plan and information on accuracy provided.

Y520.30 - Section 4.4.3–parts of the text seem to imply that the actual sample material that is to be submitted to the lab for analysis will not be described, only the stuff that is left over. Obviously, this would not be optimal. Please clarify what materials will actually be described.

Response: The text has been clarified.

Y520.31 - It would be best to backfill the entire hole with bentonite, rather than just the top 3 feet. This technique would likely form a better seal.

Response: The CCBs removed from the borings are a Type III Restricted Waste and were deposited of at Yard 520 under its operating permit. Therefore, the CCBs removed during coring will be replaced back into Yard 520. As explained in the Yard 520 SAP, the upper 3 feet of each boring will be filled with bentonite to ensure a surface seal.

Y520.32 - Section 4.4.4: Please explain how to insure that background locations do not have CCBs.

Response: Suspected CCBs in the Area of Investigation are typically visually distinguishable from the sands and peats that are the native soils. Therefore, sample locations will be selected where suspected CCBs do not appear to be present. In addition, the SAP also specifies that additional volume will be collected so that additional testing can be performed to verify CCB content.

Y520.33 - Section 7.2.1: 2nd para: please edit to the following: ...it will be necessary that all levels of project management and U.S. EPA be notified for approval.

Response: The text will be modified as requested. The revised text will be included in the separate QAPP to accompany the revised Yard 520 SAP.

Y520.34 - Table 3—analyses should include the total concentrations of at least U, Ra, and Th, not just the isotopes listed in the table. Restricting the analyses to specific isotopes, U-235 for example, is likely to result in a substantial underestimation of the concentration of these elements in the samples

Response: The list of radionuclides will include the suggested analytes. In addition, the list has been modified to agree with the list of radionuclides associated with coal ash as defined in:

USEPA. 1993. *Diffuse NORM Wastes - Waste Characterization and Preliminary Risk Assessment*. Prepared by S. Cohen and Associates, Inc., and Rogers & Associates Engineering Corp., for the U.S. Environmental Protection Agency Office of Radiation and Indoor Air.

The list of radionuclides to be evaluated, based on USEPA, 1993, is therefore: Ac-227, Pa-231, Pb-210, Po-210, Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238. The sampling plan has been modified.

Y520.35 - Table 4—the MDL for sulfur seems rather high. Is this a typical value?

Response: The current MDL for sulfur is lower and will be included in the separate QAPP to accompany the revised Yard 520 SAP.

**SUMMARY OF CHANGES MADE
TO THE JUNE 3, 2005 SUBMITTAL OF THE YARD 520 SAP
PINES AREA OF INVESTIGATION**

In June and July 2005, the USEPA provided verbal feedback on the Yard 520 Sampling and Analysis Plan (SAP) for the Pines Area of Investigation submitted to USEPA on June 3, 2005. The following changes were made to the Yard 520 SAP and the appended Quality Assurance Project Plan (QAPP) in response to USEPA verbal comments. USEPA conditionally approved these changes to the QAPP on August 5, 2005 and the overall SAP on August 24, 2005.

1. In Section 4.3 of the Yard 520 SAP, the language was modified to make it clear that the three types of background samples (road-way, non-road-way, and organic soils) were not intended to be combined together into a single dataset. In addition, reference was made to the HHRA Work Plan where the detailed procedures for the comparison to background data are provided.
2. In Section A7.1 of the QAPP (Appendix C of the Yard 520 SAP), a sentence was added mentioning the three other samples to be collected at Yard 520 under the Field Sampling Plan of the RI/FS Work Plan. Note that USEPA approval of the Yard 520 QAPP was obtained on August 5, 2005.
3. In Tables A-3, A-4, A-5, and A-6 of the QAPP, a footnote was added referring the reader to Section A.7.2 of the QAPP for a discussion of sensitivity.
4. The use of gamma spectroscopy was clarified in Tables A-5 and B-2 of the QAPP.
5. The revised version of ENSR SOP 7510Pines was incorporated into this plan. A note was added to Table B-1 of the QAPP concerning placement of glass bottles into bags prior to shipping.