



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
William R. Selbig, Regional Director

Remediation and Redevelopment Program
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February 24, 1998

Ms. Judy Fassbender
HSI GeoTrans
175 North Corporate Drive, Suite 100
Brookfield, WI 53045

Subject: Better Brite Chrome and Zinc Superfund Site
DePere, Wisconsin

Dear Ms. Fassbender:

Enclosed please find the Wisconsin Department of Natural Resources' final comments to the following submittals: *Predesign Investigation and Treatability Study Work Plan, HSI GeoTrans' Standard Operating Procedures, Quality Assurance Project Plan, Remedial Design/Remedial Action Work Plan and Addendum to Treatability Study.*

This letter will serve as your notice to proceed with the Predesign Investigation and Treatability Study at the Better Brite Chrome and Zinc Superfund site. Please note the Department is granting you this approval with the understanding that the comments made on the attached pages will be incorporated.

Within 30 days, please provide the Department with written documentation of the revisions. Please be advised that it is not necessary to resubmit hard copies of the entire documents listed above. The Department would prefer to receive only the modified pages/sections for incorporation into the preexisting documents.

If you have any questions or comments, please contact me in Green Bay at (920) 492-5943.

Sincerely,

Kristin Nell
Hydrogeologist
Remediation and Redevelopment Program

Enclosure



Quality Natural Resources Management
Through Excellent Customer Service



CHANDLER AND COMPANY, INC.

1915

THE CHANDLER AND COMPANY, INC. HAS THE HONOR TO ANNOUNCE THAT IT HAS
BEEN ORGANIZED AS A CORPORATION UNDER THE LAWS OF THE STATE OF CALIFORNIA
AND THAT THE CAPITAL STOCK OF SAID CORPORATION IS NOW BEING OFFERED FOR
SALE TO THE PUBLIC BY THE CHANDLER AND COMPANY, INC. AS UNDERWRITERS.

THE CHANDLER AND COMPANY, INC. HAS THE HONOR TO ANNOUNCE THAT IT HAS

BEEN

ORGANIZED AS A CORPORATION UNDER THE LAWS OF THE STATE OF CALIFORNIA

5/12/98
HBC

**WDNR COMMENTS TO
PREDESIGN INVESTIGATION AND
TREATABILITY STUDY WORK PLAN
December 10, 1997**

TITLE PAGE

✓ Change date to reflect revisions.

2.0 PREDESIGN INVESTIGATION

2.1.1 Groundwater Sampling

(Page 1 of 4)

✓ Last paragraph on this page, when will the wells be abandoned? Assuming we will have analytical data back before the wells are abandoned.

3.0 TREATABILITY STUDY

3.3 Treatability Study Sample Collection

(Page 1 of 7)

✓ Line 3 of first paragraph, specify who the Treatability Study vendor is and where they are located.

(Pages 2 and 3 of 7)

✓ Modify bullets to reflect the new sampling regime or reference the addendum (include the title and date of the addendum).

3.5 Chemical Testing

(Pages 3 and 4 of 7)

✓ Last sentence of first paragraph, explain who will be doing this sampling. Will it be Specialized Assays only or will STC also be doing some of this testing?

(Page 5 of 7)

✓ No longer need to reference TCLP testing.

✓ Need to mention something about groundwater leach testing.

3.6 Physical Testing

(Page 5 of 7)

✓ Second sentence, specify the parameters the Treatability Study Vendor will be looking at.

Table 3-1 Summary of confirmed NR 140 Groundwater Enforcement Standard Exceedances - Better Brite Chrome Shop

Please fill in blank spaces with numbers

APPENDIX A - HSI GEOTRANS' STANDARD OPERATING PROCEDURES

Table 1

✓ Need to add in the Waste A Characterization procedures.

1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research. It also provides a brief overview of the methodology used in the study.

2. The second part of the report is a detailed description of the methodology used in the study. It discusses the data sources, the data collection methods, and the data analysis methods. It also provides a detailed description of the statistical methods used in the study.

3. The third part of the report is a detailed description of the results of the study. It discusses the findings of the study and the implications of the findings. It also provides a detailed description of the statistical results of the study.

4. The fourth part of the report is a detailed description of the conclusions of the study. It discusses the main findings of the study and the implications of the findings. It also provides a detailed description of the statistical results of the study.

5. The fifth part of the report is a detailed description of the recommendations of the study. It discusses the main findings of the study and the implications of the findings. It also provides a detailed description of the statistical results of the study.

S/12/98
HBL

**WDNR COMMENTS TO
PREDESIGN INVESTIGATION AND
TREATABILITY STUDY
QUALITY ASSURANCE PROJECT PLAN
December 10, 1997**

✓ **TITLE PAGE**
Change date to reflect revisions.

1.0 PROJECT DESCRIPTION

1.5 Project Objectives

(Page 17 of 20)

✓ Line ten of first paragraph, modify sentence beginning with "Five subsurface soil ..." to reflect the changes made in the Treatability Study.

(Page 17 of 20)

✓ First line of second paragraph, capitalize "Specialized" and specify where Specialized Assays Environmental is located.

(Page 17 of 20)

✓ Last two sentences in second paragraph, specify who the Wisconsin certified laboratory will be (assume this too will be Specialized Assays). Specify who the selected Treatability Study vendor is and where they are located. Still make reference to the addendum but place the title and date of the addendum in this sentence.

1.5.1 Specific Objectives and Associated Tasks

(Page 18 of 20)

✓ Second line, change "a" to "at"

Table 1-1 Summary Table of Sampling and Analysis Program

✓ TREATABILITY STUDY - Subsurface Soils

Remove the reference to "TCLP Chromium" as we will no longer be doing this sampling.

✓ Mention the groundwater leach test which will be conducted.

✓ Specify either in the title or as a note whether this table includes the analysis which will be conducted by STC. If it does not, make another note to see the addendum (include title and date) for specifics.

✓ Mention the gravel washing somewhere in this table.

Table 1-3 Soil Analytical Parameters, QA Objectives, and Detection Limits

2 Leave TCLP in this table only if it is making reference to the soil sampling to be conducted as part of the Zinc Shop basement waste sampling. If referring to the Treatability Study remove as we will no longer be doing any TCLP testing.

REPUBLICAN PARTY
1860
AND
DEMOCRATIC PARTY
1860

THE
ELECTION
OF
1860
AND
THE
REPUBLICAN PARTY
AND
THE
DEMOCRATIC PARTY

✓ **Table 1-4 Intended Data Usage**

Subsurface Soil Sampling

Get rid of TCLP as we will no longer be doing this analysis.

✓ What about making reference to the groundwater leach test which was proposed by STC.

✓ Mention something about the gravel washing in this table.

Table 1-5 Rationale for Sampling Locations

Chrome Shop - Groundwater for Treatability Study

✓ Get rid of average, my understanding is we are only looking at worst case scenario.

1.7 Project Schedule

1.7.1 Anticipated Date of Project Mobilization

✓ (Page 20 of 20)

Change "January 5, 1998" to "March 1, 1998"

1.7.2 Task Bar Chart and Associated Timeframes

✓ (Page 20 of 20)

Modify Figure 1-2 to reflect the new projected schedule.

Table 4-1 Sample Container, Preservation, and Holding Time Requirements

✓ MATRIX - Soil

Can we get rid of TCLP here?

✓ What about the groundwater leach testing?

✓ What about the gravel wash sampling?

5.0 CUSTODY PROCEDURES

5.1 Field Custody Procedures

✓ (Page 5 of 6)

Third line of (f), change "collocated" to "collected"

6.0 CALIBRATION PROCEDURES AND FREQUENCY

6.1 Field Instrument Calibration

✓ (Page 1 of 2)

Third line of first paragraph under this subsection, change "manufacture's" to "manufacturer's"

11.0 PREVENTATIVE MAINTENANCE

✓ **11.2 Laboratory Instrument Preventative Maintenance**

(Page 1 of 1)

Eighth line, change "manufacture's" to "manufacturer's"

S/12/98
HBC

**WDNR COMMENTS TO
HEALTH AND SAFETY PLAN
PREDESIGN INVESTIGATION
AND TREATABILITY STUDY
December 10, 1997**

TITLE PAGE

✓ Change date to reflect revisions.

2.0 KEY PERSONNEL/IDENTIFICATION OF HEALTH AND SAFETY PERSONNEL

2.1 Key Personnel

✓ (Page 1 of 2)
Mention STC somewhere in here.

3.0 TASK/OPERATION HEALTH AND SAFETY RISK ANALYSIS

3.1 Historical Overview of Site

✓ (Page 2 of 4)
Lines three and six of first paragraph on this page, spell out 1,1-DCE, 1,1,1-TCA, TCE and PCE.

6.2 Equipment Decontamination

✓ (Page 1 of 2)
Line 3, Appendix G does not have Figures 3 and 4. Please provide.

8.10 Emergency Equipment/Facilities

✓ (Page 5 of 5)
Make reference to the Emergency Shower existing at the Chrome Shop.

5/11/98
KBL

**WDNR COMMENTS TO
REMEDIAL DESIGN/REMEDIAL
ACTION WORK PLAN
December 10, 1997**

TITLE PAGE

✓ Change date to reflect revisions.

2.0 SELECTED REMEDY DESCRIPTION

2.1 Chrome Shop

(Page 1 of 6)

✓ Last sentence of first paragraph, rephrase to indicate washed gravel backfill may be hauled off-site as clean fill depending upon the volume increases involved with the S/S process.

(Page 1 of 6)

✓ Fifth line of second paragraph, we also want to look at the metals in addition to the VOCs.

5.0 PROJECT SCHEDULE

(Page 1 of 1)

✓ Modify Figure 5-1 to reflect new schedule.

(Page 1 of 1)

✓ Third line of second paragraph, change "December 1997" to "March 1998"

(Page 1 of 1)

✓ Fourth line of second paragraph, change "the first week of January 1998" to "in mid March 1998"

(Page 1 of 1)

✓ Sixth line of second paragraph, change "April 1998" to a more accurate date based on schedule changes.

(Page 1 of 1)

✓ Seventh line of second paragraph, change "May 1998" to a more accurate date based on schedule changes.

(Page 1 of 1)

✓ Eighth line of second paragraph, change "May 1998" to a more accurate date based on schedule changes.

(Page 1 of 1)

✓ Last line of second paragraph, change "June 1998" to a more accurate date based on schedule changes.

**WDNR COMMENTS TO
ADDENDUM TO TREATABILITY STUDY
BETTER BRITE PLATING, INC.
DE PERE, WISCONSIN
February 12, 1998**

1.0 INTRODUCTION

(Page 1-1)

✓ Second line of first paragraph, specify who the selected treatability study vendor is and where they are located.

(Page 1-1)

✓ Sixth line of third paragraph, change "onsite" to "on-site"

(Page 1-1)

✓ Need to mention that calculations for volume increase will need to be completed after we know the chemical mix ratio for S/S.

(Page 1-1)

✓ Last paragraph, indicate somehow that the reactive wall is being looked at in conjunction with the solidification/stabilization option.

(Page 1-2)

✓ Fourth line of first paragraph, delete "a lower cost of remediation for soils in the saturated zone"

(Page 1-2)

✓ Last three sentences of first paragraph, mention the potential direct contact threat for the unsaturated soils.

(Page 1-2)

✓ Last line of first full paragraph, change "on site" to "on-site"

(Page 1-2)

✓ Last line of last paragraph, what do you mean by "in the field?" It is anticipated that this testing will be done prior to the actual stabilization to ensure that the washing technique will actually work.

2.0 NATIVE CLAY TREATABILITY STUDY

(Page 2-1)

✓ First line of first paragraph, specify who the treatability study vendor is going to be.

(Page 2-1)

✓ Line three of first paragraph, specify what project specifications are (ie. to reduce groundwater concentrations to below the WAC NR 140 PALs).

(Page 2-1)

✓ Sixth line of first paragraph, change "waste sample" to something like "the impacted soils found at the Chrome Shop" (use your discretion).

2.1 The S/S Treatability Study Procedures

(Page 2-1)

✓ End of first line and beginning of second in first paragraph of this section, "native clay sample" specify where this sample will be obtained (ie. location, saturated vs. unsaturated, estimated contaminant concentrations high vs. low).

(Page 2-1)

✓ Waste Sample Description, specify where on the property this sample will be obtained and the relative contaminant concentrations (high vs. low).

(Page 2-1)

✓ Second line of Goal of Treatability Study, change "protect" to "protects"

(Page 2-2)

✓ Test Methods to be Utilized in Evaluating above Listed Goals, specify what you mean by total contaminant concentrations (assuming you mean metals).

✓ Identify which methods you will be using to conduct the testing.

(Page 2-1)

✓ First line of first paragraph, delete "waste"

(Page 2-1)

✓ Second line of first paragraph, change "seven" to "six" (unless there are seven steps, in that case add the additional procedure to the S/S Treatability Study Procedures section at the bottom of the page).

(Page 2-1)

✓ Fourth line of first paragraph, delete "waste"

(Page 2-1)

✓ Last line of first paragraph, change "Better Brite Superfund site" to "Better Brite Chrome Shop"

(Page 2-1)

✓ Point two of S/S Treatability Study Procedures, change "waste" to "native clay"

2.1.1 Sample Preparation

(Page 2-3)

✓ First line of first paragraph, delete "waste"

(Page 2-3)

✓ Fourth line of first paragraph, change "waste" to "native clay"

(Page 2-3)

✓ Fifth line of first paragraph, change "waste" to "native clay"

(Page 2-3)

✓ Sixth line of first paragraph, change "waste" to "native clay"

(Page 2-3)

✓ Eighth line of first paragraph, change "waste " to "native clay"

(Page 2-3)

✓ Eleventh line of first paragraph, change "waste" to "native clay"

(Page 2-3)

✓ Twelfth line of first paragraph, change "wastes" to "soils"

2.1.2 Untreated Waste Sample Analysis

(Page 2-3)

✓ Change "Waste" to "Native Clay" in the heading of this subsection.

(Page 2-3)

✓ First line of first paragraph in this subsection, change "waste" to "native clay soil"

(Page 2-3)

✓ Seventh line of first paragraph in this subsection, specify which Wisconsin Certified laboratory will be doing the testing.

(Page 2-3)

✓ Ninth line of first paragraph in this subsection, place "native clay" in front of "waste"

2.1.3 Initial and Iterative Mix Formulations

(Page 2-4)

✓ Eighth line of second paragraph, add "hexavalent" before the word "chromium"

(Page 2-5)

✓ Fifth line of second paragraph, spell out chromium.

(Page 2-5)

✓ Eleventh line of second paragraph, spell out chromium.

(Page 2-5)

✓ Fifth line of third paragraph, spell out chromium.

(Page 2-6)

✓ Second line of first paragraph, add "native clay" before "waste"

(Page 2-6)

✓ First line of second bullet, add "native clay" before "waste"

✓ (Page 2-6)

First line of third bullet, add "native clay" before "waste"

✓ (Page 2-6)

Lines one and two of fourth bullet, add "native clay" before "waste"

2.1.4 Analysis of Phase I Treated Samples

✓ (Page 2-6)

First sentence in the first paragraph under this subsection, shouldn't there be something else added to this sentence?

✓ (Page 2-7)

Second line in first paragraph, delete "analytical"

✓ (Page 2-7)

Third line of first paragraph, delete "treatability study vendor's laboratories"

✓ (Page 2-7)

Fourth line of first paragraph, change "minimize" to "minimizing"

✓ (Page 2-7)

Sixth line of first paragraph, delete "provided on the following page for your reference"

✓ (Page 2-7)

Seventh line of first paragraph, change "contaminant" to "contaminants"

✓ (Page 2-7)

Eighth line of first paragraph, specify who the treatability study vendor will be.

2.1.5 Phase II - Final Mix Formulations

✓ (Page 2-7)

Fifth line of first paragraph in this subsection, spell out "chromium"

✓ (Page 2-7)

Eighth line of first paragraph in this subsection, place "native clay" in front of "waste"

✓ (Page 2-7)

Ninth line of first paragraph in this subsection, specify which laboratory.

(Page 2-7)

✓ Ninth line of first paragraph in this subsection, can we develop and reference a table which has the analytical parameters listed. Will the post sampling be the same as the pre sampling? If yes, can we reference Table 2.1.2?

(Page 2-7)

✓ Twelfth line of first paragraph in this subsection, is the sentence beginning with "The Phase II testing" really necessary?

2.1.6 Analysis of Phase II Treated Samples

✓ (Page 2-8)

Fifth line of first paragraph, change "analytical" to "laboratory"

✓ (Page 2-8)

Sixth line of first paragraph, specify who the Wisconsin Certified laboratory will be.

✓ (Page 2-8)

Third line of second paragraph, spell out chromium.

✓ (Page 2-8)

Fourth line of second paragraph, change "superfund site" to "Chrome Shop"

✓ (Page 2-9)

Second line of second paragraph, change "Superfund site" to "Chrome Shop"

3.0 GROUNDWATER/REACTIVE WALL TREATABILITY STUDY

3.1 The Reactive Wall Treatability Study Procedures

✓ (Page 3-1)

First line of first paragraph, specify who the treatability study vendor will be.

✓ (Page 3-1)

Fourth line of first paragraph, specify what the project specifications are.

✓ (Page 3-1)

First line of third paragraph, place "portion of the" in front of "treatability study"

✓ (Page 3-1)

Second line of third paragraph, replace "of this" with "for the reactive wall"

(Page 3-1)

✓ Waste Sample Description, specify where the groundwater samples will be obtained and what type of concentrations are being dealt with (high vs. low). Assuming we will be looking at worst case.

✓ (Page 3-2)

Fourth line of Goals of Treatability Study, change "concentration" to "concentrations"

✓ (Page 3-2)

Second paragraph of Goals of Treatability Study, we also need to consider the other metals/contaminants of concern and not just chromium.

3.1.2 Untreated Waste Sample Analysis

✓ (Page 3-3)

Seventh line of second paragraph, specify who the Wisconsin Certified laboratory will be.

3.1.3 Phase I Testing - Review of Hydrologic Data and Iterative Testing of Reactive Wall Treatment Process Parameters

(Page 3-4)

✓ Sixth line of second paragraph, "data from the untreated waste analysis" what data are you referring to soil or groundwater?

(Page 3-7)

✓ Last line of last paragraph on this page, delete "simply all"

3.1.4 Analysis of Phase I Treated Groundwater Samples

(Page 3-9)

✓ Last sentence of first paragraph, who will be performing this testing? Assuming it will be Specialized Assays.

(Page 3-10)

✓ Second line of second paragraph, specify who the Wisconsin Certified laboratory will be.

3.1.6 Analysis of Phase II Treated Groundwater Samples

(Page 3-10)

✓ Specify who the Wisconsin Certified laboratory will be.

4.0 GRAVEL WASHING TREATABILITY STUDY

(Page 4-1)

✓ First line of second paragraph, when will this treatability study be conducted (ie. will a test run be completed before we actually do the final treatment at the site).

(Page 4-1)

✓ First line of second paragraph, where will this gravel sample be collected? Assuming it will be from an area with the highest chromium concentrations.

(Page 4-1)

✓ Fifth line of second paragraph, specify who the Wisconsin Certified laboratory will be.

(Page 4-1)

✓ Second line of last paragraph, capitalize "After"

(Page 4-1)

✓ Last paragraph, specify how you plan on disposing of the wash water and groundwater during this phase of the treatability study? How will you contain it during the washing procedure?

(Page 4-1)

✓ Need to mention that calculations for volume increase will need to be completed after we know the chemical mix ratio for S/S.

Table 2.1.2 Native Clay Untreated Waste Analysis

✓ Separate table into parameters for Specialized Assays and for STC.

Table 2.1.6 Phase II Treated S/S Samples - Testing Performed by State Certified Lab

✓ Specify that Specialized Assays will be doing the testing.

✓ What about our other contaminants of concern (metals).

✓ **Table 3.1.2 Groundwater Untreated Waste Analysis**

Separate table into parameters for Specialized Assays and for STC.

Table 3.1.6 Phase II Reactive Wall Treated Samples - Testing Performed by State Certified Lab

✓ Specify that Specialized Assays will be doing the testing.



Predesign Investigation and Treatability Study Work Plan

Acronyms

AETS - Advanced Environmental Technical Services

bgs - below ground surface

PAL - Preventive Action Limit

These acronyms have been added to the document

1.2 Background

(Page 1 of 15)

Last line of page one, change "was detected" to "have been detected"

This change has been made.

1.2.1.3.2 Water Treatment (Page 7 of 15) Line six of first paragraph, change "south and western" to "southern and western"

This change has been made.

(Page 8 of 15)

Line six of second paragraph, change "Chemical Waste Management" to "Advanced Environmental Technical Services (AETS)"

This change has been made.

1.2.2.3 Corrective Measures

(Page 13 of 15)

Line one of fourth paragraph, change "Zinc shop" to "Zinc Shop"

This change has been made.

2.1.1 Groundwater Sampling (Page 1 of 3) How likely is it that these wells will need redevelopment? If likely address this issue.

It is not anticipated that the wells will require redevelopment at this time. The wells will be bailed dry before sampling, and will be sampled once a sufficient volume of water has recovered for sample collection.

List the wells which are anticipated to be abandoned and specify when the abandonment will occur. (Is this information listed somewhere else?)

The wells which are proposed for abandonment are: B-102, MW-106B, MW-107B, MW-108B, MW-114, W-1, W-9, MW-109, MW-109A, MW-109B, and B-105B. This information has been added to the last paragraph of Section 2.1.1 page 1 of 4 .

2.2.1.2 Laboratory Parameters (Page 2 of 3) Last line of first paragraph, please indicate where Specialized Assays Environmental is located (i.e., city, state).

Specialized Assays is located in Nashville, TN. This reference has been added as requested.

Last line of second paragraph, please list the laboratory methods that will be used for dissolved metals and total cyanide or you may reference a particular section of the QAPP. Indicate which laboratory these samples will be submitted to.

* *Which metals*

Dissolved metals will be analyzed by Method 6010A and total cyanide will be analyzed by Method 9010. These samples will be submitted to Specialized Assays Environmental of Nashville, TN. These references have been added to this paragraph.

2.2.2 Soil Sampling
(Page 3 of 3)

WDNR needs to review soil sample locations.

Based on a telephone conversation on October 30, 1997, the WDNR has indicated that the soil sample locations are acceptable.

First line on this page, indicate what "surface soil samples" means. At what depths will these samples be collected?

Surface soil samples will be collected from 0" to 18" below ground surface. This reference has been added to this section.

Third line on this page, please list the laboratory methods that will be used for total lead, total chromium, and hexavalent chromium in soil or you may reference a particular section of the QAPP. Indicate the laboratory these samples will be submitted to.

Total lead and total chromium will be extracted by Method 3051A and analyzed by Method 6010A.

Hexavalent chromium will be prepared and analyzed by Method 7196A. The samples will be analyzed by Specialized Assays Environmental of Nashville, TN. These references have been added to this section.

Last two sentences in this section. How many composite samples will be submitted for laboratory analysis? Will samples be collected from all sides of these two buildings? At what depths will the samples be collected? Will the composite samples be separated by location (i.e., 401 S. Sixth Street and 548 Butler Street)? Where will these samples be submitted for laboratory analysis? How will the structural integrity of the buildings be determined during this phase of the project?

One composite sample will be collected for analysis. The sample will be collected from the sides of the building which will be excavated as part of the basement isolation portion of the remediation. The composite soil samples will be collected from 1 to 2 feet below ground surface. The composite sample will not be separated by location. The sample will be submitted to Specialized Assays Environmental for analysis. The structural integrity will be evaluated by visually inspecting the basements to determine if there are any obvious concerns related the integrity of the basement. These reference have been added to the text.

2.3 Data Validation

(Page 3 of 3)

Would it seem appropriate to reference the QAPP here?

A reference to the QAPP has been added at the end of this section.

Who is the third party that will be providing validation services? [This statement contradicts the QAPP - Section 9.2.2 Procedures to Validate Laboratory Data (Page 3 of 6)]

There is no third party that has been selected to do data validation at this time. The costs for laboratory analysis at this site include preparing not only a laboratory summary report, but copies of all the back-up data, including laboratory QC data. This data package will have all the information necessary to validate the data should the WDNR require. However, the costs in the proposal do not include third party data validation. HSI GeoTrans has worked extensively with several third party data validators on other projects, and would be happy to coordinate validation of the laboratory data, however additional funding will be required to complete this work.

3.1 Regulatory Authority

(Page 1 of 7)

Please put periods after the "U" and "S" of USEPA

The punctuation has been added.

3.2 Treatability Study Objectives - CHEMICAL CRITERIA (Page 1 of 7) Line ten of first paragraph, change "onsite" to "on-site" and "offsite" to "off-site"

This change has been incorporated in the text.

(Page 1 of 7) Last sentence of first paragraph states "It is reasonable to conclude that this gravel will be treated on-site to remove any contaminants, hauled off-site as clean fill, and replaced with the increased volume of native clay which results from the S/S process." However, the RD/RA Work Plan (Section 2.1 Chrome Shop - Page 2 of 6) states "the extra material will be graded and left at the Chrome Shop site." These two documents need to be consistent. WDNR will check into whether or not the material needs to be hauled off-site and if it can be considered "clean fill"

There are two significantly different soil types at the site, the native clay till and the crushed limestone sump backfill. The proposed remedial technique for the crushed limestone is to wash the limestone, and capture the rinse water for treatment in the on-site batch plant. Once the impacts have been removed from the limestone backfill it will be transported off-site as clean fill. The selected form of remediation for the native clay materials is solidification and stabilization. As part of this process there will be an increase in the volume of material due to the addition of the solidification and stabilization agent. It is this additional volume that is proposed for grading on-site.

PHYSICAL CRITERIA

Have Dave Carper (WDNR Engineer) look this portion over.

The WDNR indicated in a telephone conversation on October 30, 1997, that the physical criteria is acceptable, therefore no changes have been made to this section.

3.4 Homogenization of Soil Materials

(Page 3 of 7)

Very important.

HSI GeoTrans appreciates the importance of this section. Additional information related to the treatability study will be prepared in an addendum to this Work Plan once the treatability study vendor has been selected.

3.5 Chemical Testing

(Page 3 of 7)

Do we know which laboratory will be doing the testing?

We will provide this information to the WDNR in an Addendum to the Work Plan once a treatability study vendor has been selected.

(Page 4 of 7)

Have Charlene Khazae look this table over. Place a sentence in here about the QAPP detailing the procedures for these particular methods.

Ms. Khazae has reviewed this table and her comments have been incorporated.

(Page 4 of 7)

Please estimate the number of samples which will be submitted for TCLP and SPLP analysis.

An estimate of the number of TCLP and SPLP samples will be provided to the WDNR once a treatability study vendor has been selected.

(Page 4 of 7) Line six states samples will be analyzed for total and hexavalent chromium by SW846. How will other metals and VOCs be measured?

Page 4 of 7 includes a table which presents the analytical method for metals, hexavalent chromium, and VOCs in soil and groundwater.

APPENDIX A - HSI GEOTRANS' STANDARD OPERATING PROCEDURES

Table of Contents

(Page 1 of 2)

30000 Data Management

Re-number subsections. (i.e., 31000 should be 30100)

(Page 2 of 2) 80000 Soil Sampling and Measurement Procedures General Shallow Soil Sampling Procedures (80100) and Surface Soil Sampling (80200). Merge these two sections together as the equipment descriptions are repeats.

Equipment Decontamination (80500) is a repeat of 40800. Section 80500 should refer the reader to section 40800.

Re-number 85000 to 80500.

(Page 2 of 2)

90000 Groundwater/Leachate Sampling and Measurement Procedures

Re-number 91000 and 96000 to 90100 and 90600, respectively.

Please note that this is a copy of HSI GeoTrans' Standard Operating Procedures. This is not a site specific document, but is rather intended to be used in conjunction with the Work Plan. HSI GeoTrans can prepare site-specific SOPs, however additional funding would be required to complete this task. The Table of Contents has not been re-numbered at this time.

Acronyms

ASTM	- American Society for Testing and Materials
CERCLA	- Comprehensive Environmental Response, Compensation, & Liability Act
CLP	- Contract Laboratory Procedure
CRP	- Community Relations Plan
CSL	- This acronym has been removed
DMP	- Data Management Plan
HSP	- Health and Safety Plan
LNAPLs	- Light Non-Aqueous Phase Liquids
MSDS	- Material Safety Data Sheets
OSHA	- Occupational Safety and Health Administration
PMP	- Project Management Plan
RCRA	- Resource Conservation and Recovery Act
QAO	- Quality Assurance Officer
QAPP	- Quality Assurance Project Plan
QA/QC	- Quality Assurance/Quality Control
SAP	- Sampling and Analysis Plan
TDS	- Total Dissolved Solids

TSDP - *This was a typo - should be TSOP*
TSOP - *Technical Standard Operating Procedure*
TRC - *Technical Review Committee*
USCS - *Unified Soil Classification System*
U.S. EPA - *United States Environmental Protection Agency*
VOCs - *Volatile Organic Compounds*
WDNR - *Wisconsin Department of Natural Resources*

20100 OVERVIEW

2.0 Personnel Responsibilities

(Page 1 of 1)

Shouldn't WDNR also be considered in the discussion of any changes?

The WDNR is considered to be part of the project's "supervisory personnel"

20200 PROCEDURE AND PROTOCOL DEVELOPMENT

3.0 Document Preparation

(Page 3 of 4 - Development)

Please spell out ASTM.

This change has been incorporated as requested.

20300 STAFF TRAINING AND RESPONSIBILITIES

5.0 On-Site Experience

Second line in first paragraph, change "ground-water" to "groundwater"

Please note that this is a copy of HSI GeoTrans' Standard Operating Procedures and, as such, it is not site specific. It is intended to be used in conjunction with the Work Plan. HSI GeoTrans can prepare site-specific SOPs, however additional funding would be required to complete this task. It is HSI GeoTrans' company policy to refer to the noun ground water as two words and the adjective as ground-water with hyphenation. Thus, "ground-water" has not been changed to "groundwater" at this time.

20400 QUALITY ASSURANCE AUDITS, REPORTS TO MANAGEMENT AND CORRECTIVE ACTION

1.0 Purpose

(Page 1 of 3)

Line four, correct spacing between "for" and "to"

This change has been made as requested.

2.0 Quality Control

(Page 1 of 3)

Line three, correct spacing between "all" and "technical"

This change has been made as requested.

3.0 Quality Assurance

(Page 1 of 3)

Line four, correct spacing between "each" and "project"

This change has been made as requested.

4.0 QA/QC Audits

(Page 2 of 3)

Change "QA/OC" in section heading to "QA/QC"

This change has been made as requested.

(Page 2 of 3)

Fifth line in second bullet, change "earlyin" to "early in"

This change has been made as requested.

5.0 Corrective Action

(Page 3 of 3)

Line four, correct spacing between "each" and "office"

This change has been made as requested.

32000 FIELD NOTEBOOKS

3.3 Sample Collection Entries

(Page 3 of 6)

Third line, change "also noted" to "also be noted"

This change has been made as requested.

(Page 3 of 6) Second to the last paragraph, notebooks should also specify how the sample are preserved, stored and shipped. Notebooks should also state where the samples are being shipped to, by whom, and chain of custody.

A reference has been added to this section to indicate that the field notebooks should include how the samples are preserved, stored, and shipped, where the samples are being shipped, by whom, and the chain of custody of the samples.

30400 DATA STORAGE AND PRESENTATION

2.5 Work Plans

Please put in acronyms.

These acronyms have been added to the acronym list at the beginning of the document.

40100 SAMPLE HANDLING AND CLASSIFICATION

3.1 Packaging

In first paragraph, spell out CLP and CSL. Add these to Acronyms.

CLP has been spelled out. The reference to CSL has been removed.

40400 SAMPLE IDENTIFICATION 3.0 Sample Identification - Multi Site Projects (Page 3 of 4) and 40403 SAMPLE IDENTIFICATION - MULTI SITE PROJECTS 1.0 Purpose (Page 1 of 1) are repeats. Get rid of one of them or cross reference.

Section 40403 has been removed.

40600 SAMPLE CONTAINER, PREPARATION, PRESERVATION AND MAXIMUM HOLDING TIMES

Table 1. Sample Containers, Sample Volumes, Preservation, and Holding Times
What about metals analysis in soil and groundwater? WDNR will determine whether or not soil samples submitted for VOC analysis need to be preserved with methanol.

This table has been removed, and has been replaced with an undated version of Table 4-1 which has now been re-named Table 1.

QAPP Table 4-1 Sample Quantities, Containers, Preservatives, and Packaging The title of this table should be changed. WDNR will determined whether or not soil samples submitted for VOC analysis need to be preserved with methanol. Add another note that container sizes/quantity may change due to laboratory specifications (CLP vs. non-CLP).

This table has been re-named Table 1. The table has been updated to include methanol preservation of soil samples collected for VOC analysis. A note has also been added to the end of the table to indicate that the sample container sizes/quantities may vary due to laboratory specifications.

40800 EQUIPMENT DECONTAMINATION

4.0 Ground-water Sampling

(Page 2 of 2)

Change title to Groundwater Sampling

Please note that this is a copy of HSI GeoTrans' Standard Operating Procedures. "Ground-water" is hyphenated because it is used as an adjective. The "ground-water" has not been changed to "groundwater" at this time.

(Page 2 of 2) Last line indicates "probes will be rinsed after each measurement." What will the probes be rinsed with?

The probes will be rinsed with distilled water. This information has been added to this section of the SOPs.

6.0 Demobilization

(Page 2 of 2)

Second line, change "on site" to "on-site"

This document is not intended to be a site specific SOP. This change has not been made at this time.

(Page 2 of 2)

Last line, change "off site" to "off-site"

This document is not intended to be a site specific SOP. This change has not been made at this time.

50000 EQUIPMENT CALIBRATION, OPERATION AND MAINTENANCE

1.0 Purpose

(Page 1 of 1)

Is there a brand name available for the digital pH meter?

HSI GeoTrans owns several different varieties of digital hand-held pH meters. Information of the Cole-Palmer Digital pH Meter, which is proposed for use on this project, is found in Section 50350.

50050 IN-FIELD MEASUREMENTS: TEMPERATURE, SPECIFIC CONDUCTANCE, pH, APPEARANCE

(Page 1 of 3)

First Line, capitalize the "D" on "Department's"

This change has been incorporated.

50200 HNU PID

2.0 Overview of Operation

(Page 1 of 7)

Second line in second paragraph, spell out VOCs

This change has been incorporated.

(Page 1 of 7)

Fourth line of second paragraph, fix spacing between "within" and "an"

This change has been incorporated

50250 PID CALIBRATION PROCEDURES

(Page 1 OF 8)

Third line of first paragraph, place the word "to" between "able" and "measure"

This change has been incorporated.

(Page 1 of 8) Second line of second paragraph, take out "used for the site investigation is an" and replace with "is a"

This change has been incorporated.

(Page 2 of 8) Line three of the first whole paragraph, replace "were followed" with "will be followed"

This change has been incorporated.

(Page 3 of 8)
Point 6 under Zero Gas Calibration Procedure, capitalize the "O" on "One"

This change has been incorporated.

(Page 6 of 8)
Second line of third PID Measurement Procedures, change "indoor" to "indoors"

This change has been incorporated.

(Page 8 of 8)
Fourth line, place a comma between "user" and "dates"

This change has been incorporated.

50350 COLE-PALMER DIGITAL HANDHELD pH METER

4.2 Calibration Checks

(Page 4 of 4)

Line two, get rid of the "u" in front of the 4 and replace "ground-water" with "groundwater"

The "u" in front of the 4 has been removed. As a company policy, "ground-water" as an adjective has not been changed to "groundwater" at this time.

70100 HOLLOW STEM AUGER DRILLING 2.0 Methodology (Page 1 of 2) Mention something about installing the wells according to WAC NR 141. If you use WAC add this to acronyms.

There are not going to be any wells installed during this phase of the project, therefore the SOP for monitoring well installation has not been included.

3.0 Sample Collection and Description (Page 2 of 2) Last paragraph, won't sample collection (i.e., quantity and preservative) be dependent upon the type of analysis being performed?

This paragraph has been revised to reflect different methods of preservation.

(AS MENTIONED ABOVE UNDER TABLE OF CONTENTS: SECTIONS 80100 AND 80200 SHOULD BE MERGED TOGETHER)

Please note that this is a copy of HSI GeoTrans' Standard Operating Procedures. This is not a site specific document, but is rather intended to be used in conjunction with the Work Plan. Section 80100 has not been merged with 80200 at this time.

80100 GENERAL SHALLOW SOIL SAMPLING PROCEDURES 2.0 Soil Sample Types (Page 1 of 4) Second paragraph, it may not be necessary to collect the sample in this manner. Sample collection (i.e., quantity and preservative) will be dependent upon the type of analysis being performed.

A note has been added that composite soil samples are appropriate for waste profile analysis. All other soil samples collected will be grab soil samples collected in the manner described. The paragraph related to sample volume has been removed as this information is contained in SOP 40600.

(Page 1 of 4)

Third line of fourth paragraph, change "ground water" to "groundwater"

HSI GeoTrans company policy deems that "ground water" used as a noun has not been changed to "groundwater" at this time.

(Page 2 of 4)

Second line of first paragraph, change "ground water" to "groundwater"

HSI GeoTrans company policy deems that "ground water" used as a noun has not been changed to "groundwater" at this time.

(Page 2 of 4)

Third line of first paragraph, shouldn't "Section 8000" be "Section 90100"

This reference has been changed to 91000.

(Page 2 of 4) Last sentence of first paragraph, Is this sentence necessary? If yes, there is no Standard Operating Procedure 80600 included.

Please note that this is a copy of HSI GeoTrans' Standard Operating Procedures. This is not a site specific document, but is rather intended to be used in conjunction with the Work Plan. SOP 80600 has not been included as sediment sampling is not proposed for this site, however the reference has not been removed as it is necessary on other projects for which these general SOPs are used.

80200 SURFACE SOIL SAMPLING

3.0 Sample Collection

(Page 4 of 4)

Second paragraph, mention something about preservation techniques here.

The paragraph related to preservation techniques has been modified to indicate that the samples will be properly preserved. Additional information related to sample preservation is included in SOP 40600.

4.0 Decontamination

(Page 4 of 4)

"SOP 85000" should be changed to "SOP 40800" as mentioned under the Table of Contents section above.

SOP 85000 is specifically related to decontamination procedures related to soil sampling. This SOP has not been changed.

80300 TEST PIT SAMPLING

1.0 Test Pit/Trench Sampling

(Page 1 of 3)

Third line of second paragraph, spell out OSHA

As test pits will not be completed at this site, SOP 80300 has been removed from this document.

(Page 1 of 3)

Third line of fourth paragraph, "Section 80200" may need to be changed depending upon how the changes in Section 80100 and 80200 will be made.

As test pits will not be completed at this site, SOP 80300 has been removed from this document.

(Page 2 of 3) Laboratory samples - Second to the last sentence in the second paragraph, it may not be necessary to collect the sample in this manner. Sample collection (i.e., quantity and preservative) will be dependent upon the type of analysis being performed.

As test pits will not be completed at this site, SOP 80300 has been removed from this document.

(Page 3 of 3)

"SOP 85000" should be changed to "SOP 40800" as mentioned under the Table of Contents section above.

As test pits will not be completed at this site, SOP 80300 has been removed from its document.

80400 SUBSURFACE SOIL SAMPLING

1.0 General

(Page 1 of 3)

Second line, place a comma between "contaminants" and "and"

This change has been incorporated.

3.1 Split Spoons (Page 2 of 3) Third and fourth paragraphs, sample collection (i.e., quantity and preservative) will be dependent upon the type of analysis being performed.

The third paragraph has been modified to indicate that appropriate laboratory provided jars will be used. The fourth paragraph has been eliminated. Additional information on sample quantity and preservative can be found in SOP 40600.

80500 EQUIPMENT DECONTAMINATION See Table of Contents section above. Either delete this section or cross reference 40800

Please note that this is a copy of HSI GeoTrans' Standard Operating Procedures. This is not a site specific document, but is rather intended to be used in conjunction with the Work Plan. SOP 80500 is specifically related to the decontamination procedures required for soil sampling and has not been modified at this time.

91000 GROUND-WATER SAMPLING

Change "GROUND-WATER" in title to "GROUNDWATER" and section should be renumbered to 90100

Please note that this is a copy of HSI GeoTrans' Standard Operating Procedures. This is not a site specific document, but is rather intended to be used in conjunction with the Work Plan. As per company policy, "ground-water" is used as an adjective and has not been changed to "groundwater" at this time.

1.0 Purpose (Page 1 of 41)

First sentence of first paragraph, change "ground water" to "groundwater"

The "ground-water" has not been changed to "groundwater" at this time.

(Page 1 of 41)

First line of second paragraph, change "ground-water" to "groundwater"

The "ground-water" has not been changed to "groundwater" at this time.

(Page 1 of 41)

Second line of second paragraph, change "ground water" to "groundwater"

The "ground-water" has not been changed to "groundwater" at this time.

(Page 1 of 41)

Second line of third paragraph, change "ground-water" to "groundwater"

The "ground-water" has not been changed to "groundwater" at this time.

(Page 1 of 41) Second line of third paragraph, change "program--the sampling" to "program -- the sampling"

This change has been incorporated.

(Page 1 of 41)

Last sentence of third paragraph, "ground-water" should not be hyphenated if "groundwater" can fit all on one line

The "ground-water" has not been changed to "groundwater" at this time.

4.2 Bailers

(Page 7 of 41)

Fifth line, spell out LNAPLs

Light non-aqueous phase liquids (LNAPL) has been spelled out.

4.4 Shuttles and Sample Bottles

(Page 9 of 41)

Last line of fourth paragraph, does this refer to a table? If so, which one?

This refers to Table 1. A reference to Table 1 has been added at the end of the paragraph.

4.6 Calibration and Use of Meters (Page 11 of 41) For Calibration of the pH meter and Calibration of the specific conductivity meter cross reference sections SOP 50350 and SOP 50400, respectively

These SOPs have not been referenced because HSI GeoTrans has many different types of pH and specific conductivity meters. When it is known which meters will be used on a specific project, only the SOPs for that particular meter are included. However, SOPs with individual SOP numbers do exist for other brands of meter and are used on other projects where different meter types are proposed.

5.2 Well Purge Form (Page 14 of 41) Field Measurements First line, "ground-water" and "ground water" should be replaced with "groundwater"

"Ground-water" and "ground water" have not been replaced with "groundwater" at this time.

6.2 Measurement to Determine Purge Volume

(Page 17 of 41)

In equation, change "Ground-water" to "Groundwater"

"Ground-water" has not been changed to "Groundwater" at this time

7.1 General

(Page 21 of 41)

Last line of first paragraph, change "ground water" to "groundwater"

"Ground water" has not been changed to "groundwater" at this time.

8.3 Filling Sample Bottles

(Page 30 of 41)

Fourth line in point 6, change "time a the" to "time at the"

This change has been incorporated.

(Page 30 of 41) Point 8, if there are extra bottles, caps, or septums available use a new one rather than rinsing them off.

This change has been incorporated.

8.6 Filtration

(Page 33 of 41)

WDNR will check to see if Total Heavy Metals need to be filtered

* *Total metals analysis should not be filtered. Dissolved metals analysis requires filtration. We are proposing collecting dissolved metals samples at this site, and are therefore planning on field filtering all the ground-water samples to be collected for TAL metals.*

(Page 33 of 41)

Last line in first paragraph, change "ground water" to "groundwater"

"Ground water" has not been changed to "groundwater" at this time.

(Page 33 of 41)

First line of second paragraph, change "ground-water" to "groundwater"

"Ground-water" has not been changed to "groundwater" at this time.

(Page 34 of 41)

Filtration Equipment and Procedures, change "ground-water" to "groundwater"

"Ground-water" has not been changed to "groundwater" at this time.

QAPP Table 4-1 Sample Quantities, Containers, Preservatives, and Packaging The title of this table should be changed. WDNR will check into whether or not soil samples submitted for VOC analysis need to be preserved with methanol. Add another note that container sizes/quantity may change due to laboratory specifications (CLP vs. non-CLP). This Table should already be modified under SOP 40600

This table was re-named Table 1 and was modified under SOP 40600.

APPENDIX B - QUALITY ASSURANCE PROJECT PLAN

Signature Page

Add Charlene Khazae, WDNR Quality Assurance Reviewer

This change has been incorporated.

"John Peterson" should be changed to "Jon Peterson"

This change has been incorporated.

List of Persons Receiving This Document

Add Charlene Khazae

Wisconsin Department of Natural Resources
101 South Webster
P.O. Box 7921
Madison, WI 53707

This change has been incorporated

"John Peterson" should be changed to "Jon Peterson"

This change has been incorporated.

Acronyms

AETS - Advanced Environmental Technical Services

SPM - State Project Manager

These acronyms have been added

1.2 Site Description

(Page 1 of 20)

Line six, change "Ground water" to "Groundwater"

This change has not been made at this time.

Line seven, change "was" to "has been"

This change has been incorporated.

1.3.1.1 Site History

(Page 4 of 20)

Line two of first paragraph, spell out "RI"

This change has been incorporated.

1.3.1.2.2 Water Treatment

(Page 7 of 20)

Line six, change "south and western" to "southern and western"

This change has been incorporated.

(Page 7 of 20)

Line seven, add the word "pond" between "holding" and "located"

This change has been incorporated.

(Page 9 of 20)

Line six of first paragraph, change "Chemical Waste Management" to "Advanced Environmental Technical Services (AETS)" Add AETS to the list of acronyms

This change has been incorporated.

1.5 Project Objectives (Page 16 of 20) First paragraph, what about the structural integrity of the basements around 401 South Sixth Street 548 Butler Street?

A bullet has been added which includes evaluating the structural integrity of the basements as one of the project objectives.

(Page 17 of 20) First bullet under "the field investigation will include" WDNR will need to check into 0 - 18 inches for sampling

Based upon our discussion with the WDNR on October 30, 1997, the 0"-18" sample interval will be adequate.

(Page 17 of 20) Another bullet needs to be added under "the field investigation will include" it should address the sampling/investigation necessary to determine the soil concentrations and structural integrity of the buildings located at 401 South Sixth Street and 548 Butler Street.

A bullet has been added which explains that the basements will be visually inspected to determine if there are any obvious structural concerns related to the basements of these structures.

(Page 17 of 20) Last paragraph, what laboratory methods will be used for each type of analysis? How many samples are anticipated to be submitted? What laboratory will be analyzing these samples?

A description of the number of samples and laboratory methods required for each type of laboratory analysis have been added to the text of the first full paragraph on this page. A notation has also been included to indicate that Specialized Assays Environmental is the selected laboratory.

1.5.3 Quality Objectives and Criteria for Measurement Data
(Page 18 of 20)

Line one of first paragraph, place an "a" between "is" and "series"

This change has been incorporated.

(Page 19 of 20)

Second line of first whole paragraph, change "are" to "is"

DQO stands for data quality objectives, therefore, we have not made this change.

1.7.1 Anticipated Date of Project Mobilization (Page 20 of 20) Change "October 6, 1997" to "October 20, 1997" This is a tentative date at this time.

The current anticipated date of mobilization is January 5, 1998. The schedule has been updated to reflect this change.

2.2 Management Responsibilities

(Page 1 of 9)

Second paragraph, change "John Peterson" to "Jon Peterson"

This change has been incorporated.

2.3 Quality Assurance (QA) Responsibilities (Page 4 of 9) HSI GeoTrans QA Manager - First line, change "the laboratory" to "the selected non- CLP laboratory" You may also want to add that the laboratory will be certified to conduct work in the State of Wisconsin

This change has been incorporated.

(Page 4 of 9)

WDNR Quality Assurance Reviewer - add that the WDNR reviewers are Charlene Khazae and Kristin Nell

This change has been incorporated.

2.4 Field Responsibilities

(Page 5 of 9)

HSI GeoTrans Field Leader - Second and fifth bullet, delete "of"

This change has been incorporated.

(Page 6 of 9)

Second bullet, delete "of"

This change has been incorporated.

(Page 7 of 9)

Who will the SAE QA be if they are independent of the laboratory?

The SAE QA will be completed by the SAE QA officer. The SAE QA is independent of the day to day laboratory analysis, the SAE QA officer is only responsible for assessing the quality of the data reported by the laboratory analysts.

3.1.3 Laboratory Precision Objectives

(Page 1 of 7)

Third line, capitalize the "S" on Section

This change has been made.

3.4.3 Measures to Ensure Representativeness of Laboratory Data

(Page 4 of 7)

Proper preservation, storage, and shipping procedures should also be mentioned here

The first sentence of this section has been modified to indicate that proper preservation, storage, and shipping procedures aid in measuring the representativeness of laboratory data.

3.5.2 Measures to Ensure Comparability of Field Data

(Page 4 of 7)

Second line, capitalize the "I" in "Investigation"

This change has been incorporated.

3.6 Level of Quality Control Effort

(Page 5 of 7)

First paragraph, shouldn't a temperature blank be added?

A temperature blank was added to the first sentence of this paragraph.

(Page 5 of 7)

Line seven of paragraph two, change "blank" to "blanks"

This change has been made.

(Page 5 of 7)

Last line of second paragraph, change "container" to "containers"

This change has been incorporated.

(Page 6 of 7)

Third line on page, how will we be able to reproduce/measure the inorganics (i.e., metals)?

The omission of the inorganics was an error in the model QAPP provided by the EPA. This section has been revised, and MS/MSD samples will be collected and analyzed for inorganics.

(Page 6 of 7)

Second line of third full paragraph, capitalize the "I" in "Investigation"

This change has been incorporated.

(Page 6 of 7)

Fourth full paragraph, is this appropriate or do we need CLP-like QC/QA?

We will be receiving a CLP-like data package, however we will not be doing CLP-like QA/QC. The purpose of the CLP-like data package is to have sufficient raw and QC data available to allow for data validation if it is determined that validation of the data package is necessary.

4.0 Sampling Procedures

(Page 1 of 2)

Point 7, change "Equipments" to "Equipment"

This change has been made.

5.1 Field Custody Procedures

(Page 3 of 7)

First line in first bullet, change "identified" to "identify"

This change has been made.

(Page 5 of 7)

Point (e), Mention something about proper sample preservation

Mention of proper sample preservation has been added to the first line of point (e).

6.1 Field Instrument Calibration

(Page 1 of 3)

First line of second paragraph, which instrument(s) are you referring to?

A list of the field instruments which are proposed for use during this phase of the investigation has been added as the second sentence of this paragraph.

9.1.1 Field Data Reduction Procedures

(Page 1 of 6)

Line five of first paragraph, change "section" to "Section"

This change has been made.

9.2.2 Procedures to Validate Laboratory Data (Page 3 of 6) Last sentence of

second paragraph states "Additional independent data validation will not be performed for this facility" This contradicts the Predesign Investigation Treatability Work Plan - Section 2.3 Data Validation (Page 3 of 3)

Additional data validation will not be performed at this facility. The Treatability Study Work Plan states that a validatable data package will be prepared for the analyses. Therefore, if at some time in the future, it becomes necessary to complete third-party validation, all the required data will be available.

(Page 4 of 6) Laboratory data will be displayed in tables in addition to supplying laboratory analytical data sheets.

A note stating that laboratory data will be supplied in table has been added to Section 9.3.2 - Laboratory Data Reporting.

9.3.1 Field Data Reporting

(Page 4 of 6)

The sample locations and type shall be clearly labeled on these forms/tables

This section has been modified to indicate that the sample locations will be clearly labeled on the field forms/tables.

11.1 Field Instrument Preventative Maintenance

(Page 1 of 1)

Line one, a PID should be added to this list

This change has been made.

12.0 Specific Routine Procedures Used to Assess Data Precision, Accuracy and Completeness

(Pages 1 and 2 of 2)

These types of calculations will be performed on what samples (i.e., matrix and parameters)?

These calculation will be performed on the matrix spike and matrix spike duplicate samples. A sentence has been added in this section to clarify this point.

13.1 Field Corrective Action

(Page 4 of 6)

Third line of first paragraph, change "recommended" to "recommend"

This change has been incorporated.

Figure 1-2

Changes will need to be made to compensate for the late start

This figure has been updated.

Figure 2-1

Change "John Peterson" to "Jon Peterson"

This change has been made.

Table 1-1

Bullet one, change "investigative" to "investigative"

This change has been made.

Bullet two, change "smample" to "sample"

This change has been made.

Bullet six, change "excat" to "exact"

This change has been made.

Table 1-2

Many MDLs are above WAC NR 140 ESs or PAIs

The MDLs are based on what the laboratory is capable of quantifying and are based upon the limitation of the instrumentation and the methodology. Values noted above the detection limit, but below the MDL will be noted on the laboratory report and flagged as estimated values.

Tables 1-4 and 1-5 Add in a row for the composite soil sampling for 401 South Sixth Street and 548 Butler Street basements

This change has been incorporated.

Table 4-1 Modifications need to be made to this table to account for filtering and preservation (see comments above from Predesign Investigation and Treatability Study Work Plan and HSI GeoTrans SOPs)

This table has been modified to account for filtering.

Table 11-1

Move "U.S. EPA is presented" behind "the"

This change has been incorporated.

Table 11-2

Change title to "Preventive Maintenance for Laboratory Analytical Instruments"

This change has been incorporated.

APPENDIX C - HEALTH AND SAFETY PLAN

1.1 Overview (Page 1 of 3) Line two of first paragraph, identify that there are two sites (the Chrome and Zinc Shops) associated with the Better Brite site.

This change has been incorporated.

1.2 Scope and Applicability of the Site Health and Safety Plan (Page 2 of 3)
Second line of first paragraph, place the word "sites" between the words "Brite" and "during"

This change has been made.

(Page 2 of 3) Line three of the third paragraph, place the word "the" after "at" and place the word "sites" after "Brite"

This change has been made

2.1 Key Personnel (Page 1 of 2) Area code for Kristin Nell has changed to "920." Get the telephone numbers to line up better.

These changes have been made.

(Page 1 of 2)
Change "John Peterson" to "Jon Peterson"

This change has been made.

3.1 Historical Overview of Site
(Page 1 of 4)
Line seven of first paragraph, change "was" to "has been"

This change has been made.

(Page 1 of 4)
Last line on this page, change "ground water" to "groundwater"

This change has not been made at this time.

(Page 2 of 4)

Please spell out the VOCs in line three.

This change has been made.

(Page 2 of 4)

Line four, change "ground water" to "groundwater"

This change has not been made at this time.

3.2.2 Chemical Hazard Review

(Page 3 of 4)

Line one of first paragraph, change "ground water" to "groundwater"

This change has not been made at this time.

4.1.3 Level D - Modified (Page 2 of 4) May want to consider having painters masks available to reduce the amount of dust inhalation for workers

A note has been added indicating that painters masks will be available.

5.1 Monitoring Instruments

(Page 1 of 5)

A section should be added to the HSI GeoTrans SOPs to account for these instruments.

Most of these instruments are not likely to be used for this portion of the investigation. Specific instruments are presented in Section 5.2.

5.2.1 General

(Page 1 of 5)

Line four, change "ground water" to "groundwater" in both places

This change has not been made at this time.

5.2.2 Background Levels

(Page 2 of 5)

Line one, change "results" to "result"

This change has been made.

5.3.1 Personal Sampling

(Page 3 of 5)

Lines three and four, what are the NIOSH methods and where can they be found. Should they be listed as an appendix?

NIOSH is the National Institute of Occupational Safety and Health. If you require copies of the NIOSH methods are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington D.C. 20420, or are available through Publications Dissemination, DSDTT, National Institute for Occupation of Safety and Health, 4676 Columbia Parkway, Cincinnati, Ohio, 45226 - telephone number (513)533-8287. Because these are well known federal regulations, HSI GeoTrans has not reproduced these methods in an Appendix.

(Page 3 of 5)

Line five, add the Miniram Model PDM-3 aerosol monitor to the HSI GeoTrans SOPs

This piece of equipment is not proposed for use during this phase of the project. Additional information on this equipment will be provided when the HASP for the RA is completed.

6.2 Equipment Decontamination (Page 1 of 2) Reference should be made to the decontamination process/procedures outlined in HSI GeoTrans' SOPs

This information has been incorporated.

8.5 Emergency Contact/Notification

(Page 3 of 5)

Area code for Kristin Nell and Green Bay Area has changed to "920"

This change has been made.

(Page 3 of 5)

If using a cellular phone the 911 numbers may not be for the appropriate area. Please list the full ten digit numbers

Both 911 and the full ten digit numbers have been included.

(Page 3 of 5)

Change "John Peterson" to "Jon Peterson"

This change has been made.

8.10 Emergency Equipment/Facilities (Page 5 of 5) An emergency shower does exist within the pretreatment building at the Chrome Shop

A note has been added to indicate that the emergency shower exists.

9.0 Spill Containment Program

(Page 1 of 1)

Bullet one, list where these regulations can be found

There are several different regulations dependant upon the nature of the spill. In the unlikely event of a spill all applicable regulations related to the specific compound will be complied with.

(Page 1 of 1)

Bullet two, while on-site daily security checks should be conducted

This change has been incorporated.

Appendix B - Standard Operating Procedures

Standard Operating Procedures Trenches and Excavations

Line one of point three, change "as" to "at"

This change has been made.

Line two of point three, change "ground water" to "groundwater" and "overburden" to "overburden"

This change has been made.

Appendix C - Heat Stress Guidelines

2.1.2 Treatment

Line one, change "remove" to "move"

This change has been made

2.2.2. Treatment

Line one, change "remove" to "move"

This change has been made.

First line on second page of this section, change "remove" to "move"

This change has been made.

2.3.2 Treatment

Line two, change "remove" to "move"

This change has been made.

REMEDIAL DESIGN/REMEDIAL ACTION WORK PLAN

Acronyms

AETS - Advanced Environmental Technical Services

This acronym has been added.

1.1 Background

(Page 1 of 17)

Line ten of first paragraph, change "was" to "has been"

This change has been made.

1.1.1.3.2 Water Treatment

(Page 7 of 17)

Line six, change "south and western" to "southern and western"

This change has been made.

(Page 7 of 17)

Line seven, add "pond" between "holding" and "located"

This change has been made.

(Page 9 of 17) Lines five and six of first full paragraph, change "Chemical Waste Management" to "Advanced Environmental Technical Services (AETS)"

This change has been made.

2.1 Chrome Shop (Page 2 of 6) Second paragraph states "the extra material will be graded and left at the Chrome Shop site" but the Predesign Investigation and Treatability Study Work Plan (Section 3.2 Treatability Study Objectives - Chemical Criteria) mentions the soil will be treated on-site and hauled away as clean fill. The Predesign Investigation and Treatability Work Plan and the RD/RA Work Plan need to be consistent.

There are two different soil types which will be addressed during the remedial action, the crushed limestone sump backfill and the native clay till. The crushed limestone sump backfill will be excavated and washed on-site. The rinsewater from this process will be treated in the batch ground-water treatment plant. The crushed limestone, once washed, will be transported off-site as clean fill. The remaining soil will be treated by solidification/stabilization. The soil will be solidified/stabilized by the addition of a solidification/stabilization agent. The introduction of this agent will cause an increase in soil volumes at the site. This additional volume of soil will be graded and left on-site. This has been clarified in the text.

2.2.1 Groundwater Control and Remediation

(Page 3 of 6)

First paragraph which is a continuation from page two, Aren't we building a more sturdy building with additional storage space and containment at the Zinc Shop? Pieces of the old building will be reused.

* *It is HSI GeoTrans understanding that the existing treatment building is in good condition, and will be disassembled, transported to the Zinc Shop site, and re-assembled on a new concrete pad. No additional work to the building is planned at this time.*

2.3 Groundwater Monitoring (Page 6 of 6) Groundwater samples will be collected from selected monitoring wells from both the Chrome and Zinc Shops on a semi-annual basis. After a period of time, it will be possible to reduce the sampling frequency. Reference the Groundwater Monitoring and Sampling Plan (this will be prepared at a later date).

This change has been made.

3.1 Additional Studies

(Page 1 of 9)

Third line, replace "properties" with "locations"

This change has been made.

(Page 1 of 9)

Third line, replace "zinc shop" with "Zinc Shop"

This change has been made.

(Page 1 of 9) Third and fourth line, visual inspection for structural integrity and "composite soil sampling" will be conducted

This change has been made.

3.2 Task 2 - Remedial Design

(Page 1 of 9)

Line five, change "action a the" to "action at the"

This change has been made.

3.3.3 Field Sampling Plan

(Page 6 of 9)

Should basement sampling and foundation drain sampling/work be mentioned here?

This work will have been completed by the time the field sampling plan will be prepared, thus it will not be mentioned as part of this document.

4.2.2 U.S. Environmental Protection Agency (U.S. EPA)

(Page 1 of 3)

Line two, change "John Peterson" to "Jon Peterson"

This change has been made.

5.0 Project Schedule (Page 1 of 1) Line three of second paragraph, change "late September 1997" to "mid-October 1997"

This has been changed to "late-November 1997" to reflect the new schedule.

(Page 1 of 1)

Line four of second paragraph, change "first week" to "third week"

This paragraph has been revised to reflect the new schedule.

Project Organization Chart

Change "John Peterson" to "Jon Peterson"

This change has been made.

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WORK PLAN

2.2.1.2 Here and in other pertinent places of the Work Plan and QAPP, list which metals these selected aqueous samples will be analyzed for. Analytical methods can not be verified without this information.

Ground-water samples will be analyzed for VOCs by Method 8260, total chromium by Method 3005A (preparation)/Method 6010A (analysis), and hexavalent chromium by Method 7196A. TAL metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, titanium, vanadium, and zinc) will be analyzed by method 6010A. Cyanide will be analyzed by Method 9010. References to these methods has been added to this section.

2.2.2 Here and in other pertinent places of the Work Plan and QAPP, list the parameters for "Waste Protocol A analysis" so that analytical methods can be verified. It is also important to have the parameters listed because compositing soil samples for some parameters is inappropriate. This needs to be checked, also.

Waste Protocol A analysis includes pH (SW846-9045), specific gravity (ASTM), total solids (EPA), free liquids (paint filter), flash point (closed cup), percent acidity (if pH is less than or equal to 4), percent alkalinity (if pH is greater than or equal to 10), percent chlorine by weight (bomb calorimeter), reactive sulfide (SW846 7.3.4), free cyanide, TCLP metals, TCLP SVOAs, and TCLP VOCs. This list has been added to this section of the report. Compositing of this soil sample is appropriate because the soil sample is not an investigative sample for determining the extent of contamination. The purpose of the composite soil sample is to gain landfill acceptance of excavated soil materials.

2.3

It is my recommendation that the "baseline" groundwater data and the surficial soils data which will "aid in the determination if shallow soil contamination poses an on-going health threat at the Zinc Shop" be validated. Section 9.0 of the QAPP should include the procedures by which this data will be validated.

Costs for third party validation of the laboratory data have not been included in the estimated costs for this project. HSI GeoTrans has worked with several third-party data validators in the past and would be happy to coordinate third party validation of the laboratory data. However, additional funding will be required. HSI GeoTrans has discussed this issue with Ms. Kristin Nell, who is currently evaluating the data validation issue. If it is determined that the data requires validation, an amendment to Section 9.0 of the QAPP will be issued.

3.4

The contracted vendor needs to understand it is critical that the process of homogenizing the soil samples not cause a loss of VOCs. Since the vendor and the laboratory(ies) performing the analyses (before, during, and after the treatability study) are not mentioned and specific lab SOPs and the methods by which these samples will be handled before treatment are not included, it is impossible to determine the effects on data useability. It should be noted here that without the specifics of the treatability study, we have no way of determining if the treatability study reagents will cause an interference to the subsequent analyses. Rather than simply having a Treatability Study Vendor Report after the fact, we need to give some thought to these issues by addressing them in an Addendum to the WP and QAPP beforehand.

Although there are high concentrations of VOCs in the ground water at this site, hexavalent chromium is the primary contaminant of concern. The VOC impacts are limited to the sump area. Therefore, VOCs are only a concern for the sump backfill material, not the native clay till. The sump backfill is composed of crushed limestone (gravel), and it is not planned to be included in the

solidification/stabilization process. The proposed remediation method for the sump backfill includes removing the crushed limestone, washing it to removed the contaminants, treating the rinsate water in the batch treatment plant, and hauling the backfill off-site as clean fill. This process will remove the VOCs from the soil. Thus, VOC loss during homogenization of the soil samples as part of the treatability study is not expected to pose a significant concern at this site. HSI GeoTrans agrees that there are several other issues related to the treatability study that cannot be addressed until a treatability study vendor has been selected and the scope of the treatability study defined. These issues will be addressed in an addendum to the Work Plan and QAPP once the selection has been completed.

4/7

The methods listed here are incomplete. SW-846 Method 6010 for ICP determination of metals does not include sample preparation/digestion. Please include in the text and tables in all appropriate places of the WP and QAPP what this (these) method(s) is (are). This is necessary for all metals analyses, not just the treatability study samples. There is more than one method for sample preparation in the QAPP SOPs. It should be clear which method will be used for which samples and for which metals analyses.

The dissolved metals (Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Ti, V, Zn) samples will be prepared/digested by Method SW846-3005A and analyzed by Method SW846-6010A. Total chromium and lead analyses in soil will be prepared/digested by Method SW846-3051A, and will be analyzed by SW846-6010A. Hexavalent chromium samples will be prepared/digested and analyzed by Method SW846-7196A. These references have been added to the text of this document.

SW-846 Method 3060A is only an alkaline digestion method to prepare soil samples for hexavalent chromium analysis. It is not included with the lab SOPs. The analytical method has not been cited here in the text. There is

a lab SOP for hexavalent chromium in the Appendix, but it is not clear what matrices will be analyzed using this method. Please include this information.

Soil and ground-water samples for hexavalent chromium analysis will be analyzed by SW846-7196A. This information has been included in the text.

Conceptually, the treatability study is very difficult to follow because we have no way of knowing the results of the solidification/stabilization study and the effect of those results on the rest of the treatability study analyses. For example, how solid and/or stable will the soil be and for how long into the future? How will the stability/solidification be tested? Is it beneficial to perform leaching tests for parameters of concern or would it be better to perform the analyses on the treated soil directly? (Performing a leachate test and then analyzing leachate for hexavalent chromium is extremely questionable. Both leachate tests being proposed use acidic extraction procedures, and an alkaline digestion is warranted for testing of hexavalent chromium in soils so that conversion to trivalent chromium will not occur.) How has it been determined that the SPLP leaching test will give a more accurate reflection of site conditions (before and/or after soil treatment)? Why would we want a "conservative indication of the quantity of total and hexavalent chromium"? In short, there is concern that the data being generated from this portion of the project will not be usable and will not adequately reflect real conditions in the field.

It is difficult to address all of these issues until a treatability study vendor has been selected. Once a treatability study vendor is selected an addendum to the Work Plan and QAPP will be prepared and submitted to the WDNR for review. Although part of the solidification/stabilization process will include reducing the hexavalent chromium to the more stable trivalent chromium, it is still expected that the total chromium concentration in the soil will exceed NR720 soil standards. However, the purpose of the solidification/stabilization is to limit the

amount of contamination leaching to the ground water, so that NR140 ground-water standards can be achieved. Therefore, leaching tests are proposed to aid in the determination of the contaminant concentration that may leach to the ground water. Although the SPLP extraction is slightly acidic, the pH of the extraction fluid is meant to mimic the pH of rainwater in this part of the country, therefore providing a representative model of what is expected to happen at the site. However, the lab has indicated that if it is preferable to the WDNR, it would also be possible to complete the extraction with D/I water for the SPLP test instead of using an extraction fluid designed to mimic rainwater.

SOPs - Appendix A

40100 Please define CSL and indicate if the text that follows pertains to this project.

The reference to CSL has been removed, the text that follows pertains to DOT classified hazardous materials. The Better Brite samples are not DOT classified hazardous materials.

40600 Please state that sample containers, regardless of where they are obtained, will be accompanied by a certificate of analysis substantiating the absence of contamination and that these certificates will be retained with the project files. If certificates are not available, it is strongly recommended that "bottle blanks" be prepared and analyzed for each lot of containers utilized.

The SOPs have not been changed as they are not a project specific document. However, sample containers will be accompanied by a certificate of analysis substantiating the absence of contamination and these certificates will be retained with the project files.

Table 1-1 is not specific to this project. WDNR requires soil samples for VOC analysis to be preserved in methanol. The maximum holding time for

a methanol-preserved soil is 21 days. Usually, a minimum of 2 vials is required for soil VOCs, one for the methanol-preserved soil and the other for the percent moisture determination. The reference to air samples should be eliminated since it does not pertain to this project.

As the information on Table 1-1 duplicated the information on Table 4-1, Table 1-1 has been eliminated and Table 4-1 has been renamed Table 1-1.

Table 4-1 is not specific to this project and contains erroneous information. Semivolatile analysis of aqueous samples will not be performed; eliminate this information. Check with the laboratory so that the correct number of VOC vials is correct; four may be too many. It is not necessary to have a separate container for mercury analysis and have potassium dichromate added (is mercury one of the metals analyses for the selected aqueous samples?). It should be clearly stated in the text of these documents and all relative tables why semivolatile analysis for soils is being performed. Is this even pertinent to this project? As indicated previously, VOC soil samples should be methanol preserved and the holding time changed accordingly. The landfill gas samples in SUMMA canisters should be eliminated since this is not specific to this project. The footnote "Detection limits appropriate for drinking water" would be relevant if these samples were being analyzed through the Contract Laboratory Program, which they are not. This statement should be eliminated.

The VOC soil sample information has been updated to reflect methanol preservation requirements. In addition, the information pertaining to the separate bottle for mercury analysis has been removed from the table. Site specific information is presented in the QAPP for this site. These SOPs are specific to HSI GeoTrans' methodology and are not site specific. It would be possible to prepare site specific SOPs, however, additional funding would be required and the

WDNR project manager has indicated that she does not want to authorize funding for site specific SOPs at this time.

40800

Describe how non-dedicated bailers will be decontaminated if dedicated bailers are not available or reference where this information can be found.

It is HSI GeoTrans policy to use either disposable or dedicated bailers on all sites. Non-dedicated or non-disposable ground-water sampling equipment will not be used. Currently, all of the Better Brite wells have dedicated PVC bailers. The bailers are stored in the wells to reduce any possibility of cross-contamination. The ground-water extraction sumps and the french drain are sampled using disposable sampling equipment due to the high contaminant concentrations in these locations.

70100

There is mention in the text of the Work Plan that water samples for the treatability study will be collected during the hollow stem auger drilling. None of this information is included here. Please do so or reference where this information is located in these documents.

Water samples for the treatability study will not be collected from the hollow stem augers. Water samples for the treatability study will be collected from the Chrome Shop sump and the french drain. This has been clarified in the text of the document.

The last paragraph only pertains to VOC soil samples. Please give accurate information pertaining to the collection, handling, and preservation of methanol-preserved soils for VOC analysis. Also include information for the collection, handling and preservation of soils for other analyses specific to this project.

This paragraph has been revised to include a description of soil sample collection for VOC and non-VOC laboratory analysis. Site specific information was not included in this paragraph as this is an SOP for all soil sample collection.

80100

2.0. The information in this subsection needs to be specific to this project. Composite sampling will be done and VOC soils need to be methanol preserved.

A reference to composite soil sampling being appropriate for waste profile analysis was added to the first paragraph of Section 2.0. The reference to VOC bottles and preservation has been removed as this information is presented in SOP 40600. Site specific information is included in the Work Plan.

80300

Why is this SOP included here? Are test pit excavations being done? If not, please eliminate. If test pits are pertinent to this project, text in all appropriate places of the QAPP and WP must state so.

Initially it was not known if it would be necessary to use a backhoe to collect treatability study soil samples. It has since been determined that this will not be necessary. Therefore, this section has been removed.

91000

General comment: the disadvantage of a generic SOP of this nature is that there is no mention in the text of these documents which alternatives within the SOP will be utilized (pumps or bailers, for example). Field QC may vary according to the method of sample collection. I have no way of checking if QC is adequate without these fine points.

The ground-water samples at the site will be collected using dedicated bailers for the monitoring wells and disposable bailers for the sumps and french drain. This information has been included in the Work Plan and the QAPP.

4th paragraph - The list of sample bottles which is "attached", labeled QAPP Table 4-1, is neither specific to groundwater samples nor to this project. Please refer to previous comments regarding tables for sample containers, preservation, analyses, and holding times.

This table (now renamed Table 1) has been revised based on the previous comments.

It is a standard practice that if check samples are not within the prescribed values and the field instrument requires recalibration, all samples measured since the last "in control" check samples will be remeasured. State so in the text. (For this reason, consider performing this check of field instruments more frequently than every 4 hours.)

A reference has been added to this section to indicate that if check samples are not within the prescribed values and the field instrument requires recalibration, all samples measured since the last "in-control" check sample will be re-measured.

QUALITY ASSURANCE PROJECT PLAN

1.5 List the parameters for the waste profile as stated earlier, so that parameters and methods can be verified.

This information has been added to the text as requested.

List the dissolved metals that the aqueous samples will be analyzed for so that methods and SOPs can be checked.

This information has been added to the text as requested.

The text in this subsection makes no mention of the composite soil sample collected at the Zinc Shop, nor does it make mention of the groundwater for the treatability study. These issues need to be addressed and pertinent information included in the text.

Text has been added to include the composite soil sample in this section. The ground-water samples for the treatability study will be addressed in an addendum to the QAPP once the treatability study vendor has been selected and detailed scope is available.

1.5.1 For purposes other than health and safety, why are soil gas measurements being taken at locations where chromium concentrations are "heavy" and "average"?

Soil gas measurements are being collected only for the purposes of health and safety during drilling. HSI GeoTrans is unclear about the location of the "heavy" and "average" reference, however, because of the nature of the source areas, areas with high chromium concentrations are more likely to have elevated VOC concentrations than non-chromium impacted locations.

1.6.1 See comments regarding referenced Table 1-1.

Table 1-1 has been revised.

2.3 The WDNR Quality Assurance Reviewer is not included in Figure 2-1. The text here is misleading, as it is not a responsibility of the WDNR QA Reviewer to conduct laboratory audits. The information pertaining to the Department's Laboratory Certification Program's lab audits belongs in Section 10 of this QAPP.

The text has been revised to incorporate these comments.

2.4 Jennifer Ronk is listed in the text as "Field Leader" and on the Figure 2-1 as "Laboratory QA Task Coordinator". Please correct this inconsistency.

Jennifer Ronk will be acting as both the "Field Leader" and as the "Laboratory QA Task Coordinator" . Figure 2-1 has been revised to reflect both tasks.

The HSI GeoTrans Field Technical Staff report to whom? Neither text nor Figure have this information. Please include.

This figure and text have been revised to show that the HSI GeoTrans Field Technical Staff report to the Field Team Leader.

2.5 The Figure 2-1 does not adequately reflect text of this subsection pertaining the laboratory personnel. Please correct.

The figure has been updated to reflect the subsection pertaining to the laboratory personnel.

3.1.3 See comments regarding referenced Table 1-2.

Once information regarding which metals the selected monitoring wells, sumps, and French drain will be analyzed for is specified in the revised documents, precision values will be checked for those parameters.

See comments regarding referenced Table 1-3.

3.6 Second paragraph - Please describe how field rinsate blanks are prepared and state here and in all pertinent places of the QAPP (text and tables) that field rinsate blanks are analyzed for all parameters for which the field samples are analyzed.

The validatable data package will be provided for the laboratory data. This data package will contain all the information necessary for third party data validation, if required. Field data will be tabulated, reviewed, and reported to the regulatory agencies when warranted, but will not be validated.

9.2.2 As stated previously, I'm recommending that the "baseline" ground-water data and the surficial soil (grab, only) data at the Zinc Shop be validated. The rest of the data can receive validation only if HSI, EPA, or DNR feel it is warranted. As stated in the WP, Section 2.3 page 3/3, validations should be performed independently by a third party, trained individual.

HSI GeoTrans will provide a laboratory data package with sufficient information for data validation should the EPA or the WDNR decide that data validation is warranted. Completion of third party data validation is not included in the current scope and would require additional funding should EPA or WDNR feel it is warranted.

10.2.2.2 It is more accurate to state here that the WDNR conducts periodic lab audits as a part of the Department's Laboratory Certification Program. (The frequency of these audits depends on a number of variables. it should be noted that WDNR does not perform project-specific lab audits.)

This has been noted in the text.

11.2 See comments regarding referenced Table 11-2.

13.2 Please state where the method-specific corrective actions are found in the QAPP.

This has been added to the text.

14.3 As a courtesy to the consultant, it isn't necessary to send a monthly report to WDNR's QA Reviewer. The language in the Model QAPP need not be utilized here.

QA reports will be provided in the monthly status reports to the SPM to identify and correct potential problems before they negatively impact the project. The SPM will discuss the monthly status reports with the WDNR's QA reviewer if warranted.

QAPP Tables

General comment: It would benefit this project greatly and facilitate the review of revised documents if there was one table listing all the matrices specific to the predesign and treatability study portions of this project and clearly listing all the parameters associated with each matrix.

Table 1-1 This Table does not contain information that is critical to this project. Under the ground-water matrix, please include the metals that the selected aqueous samples will be analyzed for. A footnote will do. Please include all information pertaining to the composite surficial soil sample from the Zinc Shop for waste parameters and list what the parameters are. Based on the Work plan, the treatability study consists of no less than 6 soil samples and two ground-water samples for a wider variety of parameters than is listed here. Please include this information for accuracy.

A footnote has been included which lists the metals the aqueous samples will be analyzed for and which lists the waste profile parameters. The information related to the treatability study samples will be presented in an addendum to the work plan once the treatability study contractor has been selected and the treatability study scope confirmed.

There should be one field duplicate sample for the surficial soils to be analyzed for total chromium, hexavalent chromium, and total lead. Based on previous comment, one matrix spike/lab duplicate sample should be designated for the inorganic soil sample as well. (It would be acceptable to call all lab QC MS/MSDs and have one column heading for simplicity.) As a courtesy to the consultant, one field duplicate and one field blank for all 7 filtered metals and cyanide, rather than two, would be adequate.

Based upon a conversation with Ms. Charlene Khazae, there is now a guidance document which details the methods and acceptance parameters for duplicate soil samples. Ms. Khazae indicated that she would provide a copy of this guidance to HSI GeoTrans. HSI GeoTrans will update this section once we have received a copy of the guidance from the WDNR on duplicate soil samples. The table has been updated to include a matrix spike/matrix spike duplicate for the inorganic soil sample. In addition, the table has been revised to indicate that one field duplicate sample will be adequate for all 7 dissolved metals samples.

Table 1-2 Table 1-2 does not include precision values for hexavalent chromium or cyanide.

Precision values for hexavalent chromium and cyanide have been added to this table.

It would be helpful if this Table, and all QAPP Tables, were specific to the project. For example, only the matrices which are specific to this project should be listed here. For example, please eliminate SW for surface water and EFF (for effluent?).

References to surface water and effluent samples have been removed.

The detection limits of some VOCs are unusually high (6.85 $\mu\text{g}/\ell$ for Acetone, for example). Please refer to NR 140.16 Wis. Admin. Code regarding laboratory data requirements. It should be noted that all ground-water detects should be reported. Concentrations between the detection limit and the quantitation limit can be qualified as estimated, but should not be censored. There are QC checks in place to eliminate false positives attributed to common laboratory contaminants.

A footnote has been added to the table which explains that all ground-water detections will be reported. Concentrations above the detection limit but below the limit of quantitation will be flagged as estimated values by the laboratory.

Table 1-3 Page 1/4 of Table 1-3. What's this stuff for? If this is supposed to be the waste characterization parameters for the composite sample, it doesn't seem right and it does not match well with the "odd ball" SOPs submitted in the Appendix A. Why are nitrates listed twice and why would soils be analyzed for amenable cyanide? This part of the project needs work.

This table has been revised so that it does not include any analyses that are not being complete for this project.

Table 1-3 does not have a precision value for hexavalent chromium in soils. Please include.

This has been added to the table.

Generally, the comments above also apply to accuracy control limits for these Tables. Please include the missing information.

Accuracy and control limits have been added to the tables as well.

Table 1-4 There is no mention here of the composite soil sample from the Zinc Shop or of the water samples associated with the treatability study. Please include this important information. *This information has been added to the table.*

Table 1-5 Same as comment above. *The information has been added to the table.*

Table 4-1 Add information regarding VOC analysis for soil samples, including methanol preservation.

There are no VOC soil samples proposed for collection at this time. If VOC soil samples are required by the treatability study vendor, the methods of collection and preservation will be provided in an addendum to the QAPP.

Table 11-2 This Table needs to be project-specific. Please remove superfluous material and include information from instruments that are missing. (There is no mention of the automated instrument used for cyanide determination, for example.)

Information regarding the automated instrument for cyanide determination has been added and the superfluous material has been removed from Table 11-2.

QAPP Analytical SOPs Appendix A

General comment: As previously stated, the review of laboratory SOPs is hampered because it has not been fully established in these documents what the analyses will be for the composite soil sample, nor has it been specified what metals the selected aqueous samples will be analyzed for. Once the

revised documents contain this valuable information, the consultant is urged to check the SOPs to make sure all the necessary ones are obtained from the lab(s) and that no unnecessary ones have been added. For example, why have SOPs for BTU determination and semivolatile organic compound analysis been included? Once this revision is made, analytical SOPs will be reviewed.

It should be noted that no SOPs were submitted for the physical soil parameters as stated in Section 3.6 of the Work Plan. WDNR Project Manager can decide if this can be overlooked or to consider this a deficiency.

The Index of the Appendix should reflect the contents.

on the proposed schedule for this time. If you can provide a list of the SOPs that you are currently using, please submit them to the QA/QC team.

Please remove equipment materials from the laboratory that are missing. (There is no equipment listed in the laboratory for cyanide determination for the laboratory.)

the laboratory for cyanide determination for the laboratory. Please refer to Table 11-2 for the list of equipment.

Appendix A

Current equipment list for the laboratory. The equipment list is provided in the documents which are attached to this email. The equipment list is provided in the documents which are attached to this email. The equipment list is provided in the documents which are attached to this email.

