

**WISCONSIN DEPARTMENT OF NATURAL RESOURCES  
BUREAU FOR REMEDIATION AND REDEVELOPMENT**

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**TELEFAX COVER SHEET  
FAX # (608) 267-7646**

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DATE: 10/21/97

TO: Kristen Nell

AGENCY/COMPANY: WDNR

FAX #: NER

SUBJECT: BB BAPP

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FROM: Charlene Khazae

OFFICE PHONE #: (608) 267-0543

A TOTAL OF 11 PAGES WILL FOLLOW  
(Including Cover Sheet)

COMMENTS: *Would you like this sent electronically to you? Please call if you have questions/comments.*

**CORRESPONDENCE/MEMORANDUM****State of Wisconsin**Department of Natural Resources  
Bureau for Remediation and Redevelopment

**DATE:** October 20, 1997

**TO:** Kristen Nell - NER

**FROM:** Charlene Khazae - *RR/3*

**SUBJECT:** Better Brite Predesign and Treatability Study  
Work Plan and Quality Assurance Project Plan

I've reviewed the documents mentioned above except for the Health and Safety Appendix in the Work Plan and you may forward my comments to the consultant. If you believe any of these comments require discussion, I will be available this week and would welcome a phone call.

One general comment that I have regarding these documents is that the consultant has failed to include text, tables, and SOPs (including the analytical SOPs) that are specific to this project. Text, tables, and the SOPs that are included frequently contradict each other. This has greatly hampered the review.

**WORK PLAN**

<u>Section</u>	<u>Page</u>	<u>Comment</u>
2.2.1.2	2/3	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.
2.2.2	3/3	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.
2.3	3/3	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.

3.4

3/7

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 usability. 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 before hand.

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.

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.

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.

#### Work Plan SOPs Appendix A

<u>SOP</u>	<u>Page</u>	<u>Comment</u>
40100	5/7	Please define CSL and indicate if the text that follows pertains to this project.
40800	1/1	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.

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.

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 sample were being analyzed through the Contract Laboratory Program, which they are not. This statement should be eliminated.

- 40800 2/2 Describe how non-dedicated bailers will be decontaminated if dedicated bailers are not available or reference where this information can be found.
- 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.
- 2/2 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.
- 80100 1/4 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.
- 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 the appropriate places of the QAPP and WP must state so.
- 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.

- 9/41 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.
- 11/41 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 sample will be remeasured. State so in the text. (For this reason, consider performing this check of field instruments more frequently than every 4 hours.)

### QUALITY ASSURANCE PROJECT PLAN

<u>Section</u>	<u>Page</u>	<u>Comment</u>
1.5	17/20	List the parameters for the waste profile as stated earlier, so that parameters and methods can be verified.  List the dissolved metals that the aqueous samples will be analyzed for so that methods and SOPs can be checked.
		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.
1.5.1	18/20	For purposes other than health and safety, why are soil gas measurements being taken at locations where chromium concentrations are "heavy" and "average"?
1.6.1	19/20	See comments regarding referenced Table 1-1.
2.3	4/9	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.

- 2.4 5/9 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.
- 6/9 The HSI GeoTrans Field Technical Staff report to whom? Neither text nor Figure have this information. Please include.
- 2.5 6-9/9 The Figure 2-1 does not adequately reflect text of this subsection pertaining the laboratory personnel. Please correct.
- 3.1.3 1/7 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 5/7 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.
- 6/7 There is an unfortunate error in the Model QAPP which leads the site-specific QAPP writer to believe that laboratory QC is only performed for organic analyses. Please be aware that a sample spike and lab duplicate are also required for most, if not all, inorganic analyses. Extra volume (2-3 X) is required for aqueous samples, but generally no extra volume is required for soils. The inorganic matrix spikes/lab duplicate samples are analyzed at a frequency of 1/20 samples as well. Please include this information in the text and change any summary tables accordingly.
- 5.1 3/7 Second bullet item-There are no provisions for the Zinc Shop sump, the Chrome Shop sump, the French drain, the composite soil sample, or for the groundwater being collected from the hollow stem auger for the treatability study. Please include alpha-codes for these sample matrices.
- 6.1 1/3 This is the first mention of the use of a potentiometer. If this instrument is being used for this site, all text and appropriate

tables should contain information regarding this instrument such as what it is measuring and why, etc.. If this does not pertain to this site, please remove this statement.

Second paragraph-The first sentence, which has been lifted from the Model, does not specify which instrument(s) this pertains to. It can either be eliminated or clarified.

- 7.1 1/4 Eliminate the reference to Eh or include the information pertaining to this field measurement in all appropriate places of the WP and QAPP text and tables.
- 7.2.1 4/4 I am not familiar with the reference given here. Please explain "FR vol.49, no. 209, page 198-199" and more importantly, the consultant should obtain the MDL method reference from the contracted lab. (At the end of the QAPP Tables, the MDL determination reference is cited.)
- 7.2.2 4/4 Table 1-1, once revised, will list the field QC samples and the MS/MSD samples only. It would be more correct to state here that the laboratory QC samples are included in the individual lab SOPs.
- 9.0 1/6 "Validatable data package" has not been defined, but as a courtesy to the consultant, field data can be reduced (tabulated, for example), reviewed (for accuracy and completeness, etc.), and reported to the regulatory agencies when warranted, but validation of field data isn't necessary.
- 9.2.2 3/6 As stated previously, I'm recommending that the "baseline" groundwater 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, validation should be performed independently by a third party, trained individual.
- 10.2.2.2 3/4 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.)
- 11.2 1/1 See comments regarding referenced Table 11-2.



- 13.2 4/6 Please state where the method-specific corrective actions are found in the QAPP.
- 14.3 2/2 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.

### 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 groundwater 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 5 soil samples and two groundwater samples for a wider variety of parameters than is listed here. Please include this information for accuracy.

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.

#### Table 1-2

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

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?).

The detection limits of some VOCs are unusually high (6.85 ug/l for Acetone, for example). Please refer to NR 140.16 Wis. Admin. Code regarding laboratory data requirements. It should be noted that all groundwater 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.

**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.

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

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

**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.

**Table 1-5**

Same as comment above.

**Table 4-1**

Add information regarding VOC analysis for soil samples, including methanol preservation.

**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.)

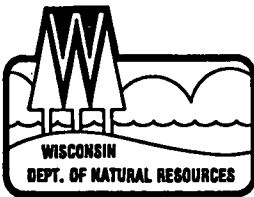
**QAPP Analytical SOPs Appendix A**

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.



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

George E. Meyer  
Secretary

Lake Michigan District Headquarters  
1125 N. Military Avenue  
P.O. Box 10448  
Green Bay, WI 54307-0448  
TELEPHONE # (414)492-5869  
TELEFAX # (414)492-5913

March 11, 1993.

File Ref: WIT-560010118  
WID-006132088  
Brown Co. SFND

Robert Karnauskas  
Simon Hydro-Search  
175 N. Corporate Dr., Suite 100  
Brookfield, WI 53045

Re: Better Brite - EPA QAPP Approval

Dear Mr. Karnauskas:

Please find attached two memoranda from EPA QAS providing partial approval for the Better Brite QAPP. The first memorandum, dated November 18, 1992 addresses soil matrix activities and the second dated January 28, 1993 addresses water matrix activities.

All soil matrix activities appear to be approved by EPA except for analytical methods for hexavalent chromium and analysis of sieved samples. Modification of aspects of the shipping (chain of custody) of samples and the sampling of test pits are also included. All water matrix activities appear to be approved by EPA. A few modifications to aspects of sample shipment (chain of custody) are noted.

WDNR comments to the QAPP will be completed as soon possible. These comments can then be incorporated into the most recent document. Any required changes associated with SAP modifications can then be addressed.

If you have any questions please call me.

Sincerely,

Terry Koehn  
State Project Manager

cc: G. Edelstien SW/3 with att.  
C. Khazae SW/3 with att.  
D. Linnear U.S. EPA w/o att.

RECEIVED  
MAR 18 1993  
BUREAU OF SOLID  
HAZARDOUS WASTE MANAGEMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD

CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:  
SQ-14J

MEMORANDUM

DATE: NOV 18 1992

SUBJECT: Partial Approval of the First Revision, Fund-Lead Quality Assurance Project Plan (QAPjP) for Remedial Investigation/Feasibility Study at Better Brite Plating, Inc., De Pere, Wisconsin

FROM: Curtis Ross   
Acting Regional Quality Assurance Manager

TO: James Mayka, Chief  
Michigan/Wisconsin Remedial Response Branch

ATTENTION: Dan Cozza, Remedial Project Manager

I am providing partial approval of the subject QAPjP. The Quality Assurance Section (QAS) received the subject QAPjP on November 4, 1992 (QAS Log-in No. 1820). All activities are approved except the sampling and analysis of soil samples for hexavalent chromium. The Central Regional Laboratory will work with the RPM to get the analytical method into a workable form.

To facilitate this partial approval, the following corrections have been made to the QAPjP and the changed pages are attached:


1. In Section 5.1.3, page 5 of 5, the following statement has been added, "The combination CLP Traffic Report/Chain of Custody and Combination SAS Packing List/Chain of Custody are in Appendix B.2."
2. The combination CLP Traffic Report/Chain of Custody and Combination SAS Packing List/Chain of Custody has been inserted into Appendix B.2

I have signed the attached signature page. Please have the remedial project manager provide final sign-off. We would like to receive a copy of the completed signature page within the next two weeks.

Attachments

cc: Kaushal Khanna, HSRLT-5J  
Charles Elly, SL-10C

REVISION 1  
TASK 2  
QUALITY ASSURANCE PROJECT PLAN  
REMEDIAL INVESTIGATION/  
FEASIBILITY STUDY  
BETTER BRITE CHROME AND ZINC SHOP SITES  
DE PERE, WISCONSIN

  
Robert J. Karnauskas, P.G., P.HG.  
Simon Hydro-Search Site Manager

  
Michael R. Noel  
Simon Hydro-Search QA Officer

  
Terry Koehn  
WDNR Project Manager

  
U.S. EPA Remedial Project Manager

  
Charles J. Eddy 11/18/92  
U.S. EPA Central Regional Laboratory Director

  
U.S. EPA Quality Assurance Manager

\*Partial Approval for all activities except  
the sampling analysis of soil samples for  
hexavalent chromium.

  
John Rather  
Ortek Quality Assurance Manager

 SIMON HYDRO-SEARCH

carriers are not required to sign off on the custody form as long as the custody forms are sealed inside the sample cooler and the custody seals remain intact.

The combination CLP Traffic Report/Chain of Custody and Combination SAS Packing List/Chain of Custody are in Appendix B.2.

### 5.2 Laboratory Chain-of-Custody Procedures

The chain of custody procedures for the CLP laboratory are described in the Statements of Work (SOWs) for RASs. The same custody procedure applies to SASs. These custody procedures along with the holding time requirements for CLP samples are described in the appropriate SOW (OLM01.1 for organics and ILM01.0 for inorganics).

The chain of custody procedures for samples shipped to the CRL are described in the CRL's SOP. The chain-of-custody procedures for samples shipped to the CSL (Ortek) are included with the Ortek SOP as Appendix D. Chain-of-custody procedures for the samples sent to the material property testing laboratory will follow the Simon Hydro-Search Chain-Of-Custody Standard Operating Procedure 40500 (Appendix F).

### 5.3 Final Evidence Files Custody Procedures

Simon Hydro-Search is the custodian of the evidence file and maintains the contents of evidence files for the RI, including all relevant records, reports, logs, field notebooks, pictures, subcontractor reports, correspondence, laboratory logbooks, chain of custody form, and LSSS of CRL's data reviews in a secured, limited access area and under custody of the contractor's site manager.

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COMBINATION CLP TRAFFIC REPORT/  
CHAIN OF CUSTODY AND COMBINATION SAS PACKING LIST/  
CHAIN OF CUSTODY  
(refer to attached examples)

A. GENERAL:

The combination traffic report/chain of custody is used to ship samples to the EPA contract lab for routine analytical services. The combination SAS packing list/chain of custody is used to ship samples to the EPA Contract lab for special analytical services. These reports must be filled out and shipped with each code sent to the contract lab.

B. DISTRIBUTION:

1. First copy - Send to RSCC.
2. Second copy - Mail to SMO.
3. Third and fourth copies - Send to laboratory.

C. PREPARATION:

1. Case Number - Supplied by SMO.
2. SAS Number - Enter SAS number if applicable.
3. Project Code - Optional
4. Account Code - Optional
5. Regional Information - Enter 'TFA102'
6. Non-Superfund Program - Leave blank
7. Site Name, City, State - Enter site name and location.
8. Site Spill ID - Enter 'ZZ' for all SI work unless the site is listed on the NPL; in that case, enter the EPA site/spill ID (2 digit)Coc
9. Region No. - Enter "5"
10. Sampling Company - Enter "PRC"
11. Sampler, Sampler Signature - Print and sign your name.



- 
12. **Type of Activity - Check appropriate activity, i.e. SSI**
  13. **Date Shipped - Enter the date samples were shipped to lab.**
  14. **Carrier - Federal Express**
  15. **Airbill Number -- Enter the Federal Express airbill number.**
  16. **Ship To - Enter the lab name, address, and the person who is supposed to receive shipment.**
  17. **Sample Numbers - Enter the appropriate sample numbers.**
  18. **Sample Description - Enter appropriate number from box No. 7 on traffic report.**
  19. **Concentration - Enter the expected concentration of the sample (L, M, H).**
  20. **Sample Type - Indicate either grab or composite.**
  21. **Preservative - Enter the appropriate number or letter from box No. 6.**
  22. **Analysis - Check the appropriate analyses for each sample indicated on traffic report.**
  23. **Sample Tag Numbers - Indicate the sample tag numbers that correspond to each sample number.**
  24. **Station Location Number -- Enter the assigned location number where each sample was collected, i.e. MW-01, MW-02.**
  25. **Month/Day/Year/Time of Sample Collection -- Enter the date and time of sample collection.**
  26. **Sampler Initials - Optional**

- 
27. Corresponding CLP Sample Number - Enter the corresponding inorganic sample number on the organic traffic report and enter the corresponding organic sample number on the inorganic traffic report.

Use the space at the right of the traffic report to indicate which sample numbers are blanks and duplicates. Indicate the custody seal numbers in the box labeled "TR." On the SAS packing list, indicate custody seal numbers in the space between the sample information and the chain of custody record.

If all samples collected under an assigned case number were shipped on the same day, circle "Y" in the "shipment for Case Complete?" box, on the appropriate traffic reports, to indicate the shipment for the case number was complete. If a portion of the samples for a case number are collected and shipped, then circle "N" on the appropriate traffic reports to indicate that shipment is incomplete for the case number.

The sampler should sign their name in the "Relinquished by:" box prior to shipment. The date and time should also be entered. The "Split Samples" box should indicate whether split samples were accepted or declined.

See attached Examples of completed forms.

28. Identify the sample to be used for the us/USD or spike/duplicate analysis in the appropriate box.

**SAMPLE TAG**  
(refer to attached example)

**A. GENERAL:**

A sample tag is completed for every sample collected and attached to the sample container.

**B. PREPARATION:**

1. Project Code/Case#:

2. Station Number

3. Month/Day/Year

4. Time

5. Designate

6. Sample # :

7. Samplers

8. Preservative

9. Analysis

10. Remarks

11. Tag Number

12. MS/USD:

- SAS or*  
The SMO assigned Case # is entered  
- For samples being shipped to the CLP.  
For CRL samples, the 1st 6 digits of the CRL log # is the project code
- Enter sample point (station) code number;  
Code number must correlate with sample plan.  
Some examples:  
Monitor well = MW  
Sediment = SE  
Existing well = GW  
Lake = LK  
Stream = SW  
Lagoon = LG  
Soil = SO  
Leachate = LE  
Sludge = SL  
Blank = BL
- Self explanatory  
- Use military format  
- i.e. 1430 for 2:30 P.M.  
- Comp (Composite) or grab (Check only one.)  
- Enter the CLP Sample #.  
For CRL samples, enter the last three digits of the CRL log #.  
- Enter signature of sampler.  
- Check off the type of preservative used.  
- Check analysis desired.  
- Identifying field blanks
- Enter number in logbook, on custody sheet and/or Sample Description Form.

Identify the sample to be used for the org. MS/USD or inorg. spike/dup. by checking this box.



United States Environmental Protection Agency  
 Contract Laboratory Program Sample Management Office  
 PO Box 010 Alexandria, VA 22313  
 703-557-2490 FTS 557-2490

### Inorganic Traffic Report & Chain of Custody Record

(For Inorganic CLP Analysis)

SAS No. (if applicable)

Case No.  
Case #

1. Project Code		Account Code		2. Region No. V		3. Sampling Co. Company Name		4. Date Shipped Date		Carrier Carrier Name		6. Preservative (Enter in Column D)		7. Sample Description (Enter in Column A)			
Regional Information				Sampler (Name) Sampler Name				Airbill Number Airbill Number				1. HCl 2. HNO3 3. NaOH 4. H2SO4 5. K2Cr2O7 6. Ice only 7. Oil (SAS) (Specify) N. Not preserved					
Non-Superfund Program				Sampler Signature Sampler Signature				5. Ship To Laboratory Name Address Attn: Name									
Site Name Site Name				4. Type of Activity				Removal <input checked="" type="checkbox"/> LEAD <input type="checkbox"/> P/A <input type="checkbox"/> P/S <input type="checkbox"/> ST <input type="checkbox"/> FED <input type="checkbox"/> SSI <input type="checkbox"/> LSI <input type="checkbox"/> O&M <input type="checkbox"/> NPLD <input type="checkbox"/> CLEM <input type="checkbox"/> HEMA <input type="checkbox"/> IEM <input type="checkbox"/> OIL <input type="checkbox"/> UST									
City, State City, State		Site Spill ID Code		SF		Pre Remedial						NIFS		HID		HIA	
CLP Sample Numbers (from labels)		A Enter # from Box 7	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative Box 6	E - IAS Analysis				F Regional Specific Tracking Number (Log Numbers)		G Station Location Number	H Mo/Day/Year/Time Sample Collection		I Sampler Initials	J Corrosp. CLP Orig. Samp. No.	K Designated Field QC
MEPA01	2	L	G	2	X							5-12345712346	MW01	Date/Time		EPA01	
MEPA01				3		X						5-12347712348	MW01	Date/Time			
MEPA02				2	X							5-12349	MW02	Date/Time		EPA02	
MEPA02				3		X						5-12350	MW02	Date/Time			
MEPA03				2	X							5-12351	MW03	Date/Time		EPA03	MEPA03-MEPA04
MEPA03				3		X						5-12352	MW03	Date/Time			Field duplicates
MEPA04				2	X							5-12353	MW03	Date/Time		EPA04	
MEPA04				3		X						5-12354	MW03	Date/Time			
MEPA05	3			2	X							5-12355	FB01	Date/Time		EPA05	Field Blank
MEPA05	3			3		X						5-12356	FB01	Date/Time			Field Blank
Shipment for Case complete? (Y/N) Circle One		Page 1 of 3		Sample used for a spike and/or duplicate MEPA01				Additional Sampler Signatures				Chain of Custody Seal Number COC Seal #s					

Figure E8 - 2

#### CHAIN OF CUSTODY RECORD

Relinquished by: (Signature) Signature	Date / Time Date Military Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Is custody seal intact? Y/N/none

EPA Form 9110-1 (Rev. 8-81) Replaces EPA Form (2078-6), previous edition which may be used  
 DISTRIBUTION:  
 Green - Region Copy Pink - SMO Copy White - Lab Copy Yellow - Lab Copy for return to SMO

Split Samples  Accepted (Signature)  
 Declined

1 014401



United States Environmental Protection Agency  
 Contract Laboratory Program Sample Management Office  
 PO Box 818 Alexandria, VA 22313  
 703-557-2490 FTS 557-2490

**Organic Traffic Report  
 & Chain of Custody Record**  
 (For Organic CLP Analysis)

SAS No.  
 (if applicable)

Case No.

Case #

1. Project Code	Account Code	2. Region No. <b>V</b>	Sampling Co. <b>Company Name</b>	4. Date Shipped <b>Date</b>	Carrier <b>Carrier Name</b>	6. Preservative (Enter in Column D)  1. HCl 2. HNO <sub>3</sub> 3. NaHSO <sub>4</sub> 4. H <sub>2</sub> SO <sub>4</sub> 5. Other (SAS) (Specify) 6. Ice only N. Not preserved	7. Sample Description (Enter in Column A)  1. Surface Water 2. Ground Water 3. Leachate 4. Rinse 5. Soil/Sediment 6. Oil (SAS) 7. Waste (SAS) 8. Other (SAS) (Specify)
Regional Information		3. Sampler (Name) <b>Sampler Name</b>		Airbill Number <b>Airbill Number</b>			
Non-Superfund Program		3. Sampler Signature <b>Sampler Signature</b>		5. Ship To <b>Laboratory Name</b>			
Site Name <b>Site Name</b>		3. Type of Activity		Address			
City, State <b>City, State</b>		<input checked="" type="checkbox"/> SF <input type="checkbox"/> PIP <input type="checkbox"/> ST <input type="checkbox"/> FED		<input checked="" type="checkbox"/> CLEM <input type="checkbox"/> NEMA <input type="checkbox"/> REM <input type="checkbox"/> OIL <input type="checkbox"/> UST		Attn: Name	

CLP Sample Numbers (from labels)	A Enter # from Box 7	B Conc. Low Mod High	C Sample Type: Comp./ Grab	D Preservative from Box 6	E RAS Analysis				F Regional Specific Tracking Number or Log Number	G Station Location Number	H Mo/Day/Year/Time Sample Collection	I Sampler Initials	J Corresp. CLP Inorg. Samp. No.	K Designated Field QC
					VOA	BNA	Pos/PCB	High ARO/TOX						
EPA01	2	L	G	1	X				5-12357-712362	MW01	Date/Time	MEPA01		
EPA01						X	X		5-12363-712366	MW01	Date/Time			
EPA02				1	X				5-12367-712368	MW02	Date/Time	MEPA02		
EPA02						X	X		5-12369-712370	MW02	Date/Time			
EPA03				1	X				5-12371-712372	MW03	Date/Time	MEPA03	(EPA03-EPA04) Field duplicates	
EPA03						X	X		5-12373-712374	MW03	Date/Time			
EPA04				1	X				5-12375-712376	MW03	Date/Time	MEPA04		
EPA04	↓					X	X		5-12377-712378	MW03	Date/Time			
EPA05	3			1	X				5-12379-712380	FB01	Date/Time	MEPA05	Field Blank	
EPA05	3	↓	↓			X	X		5-12381-712382	FB01	Date/Time			

Shipment for Case complete? (Y/N) Circle One	Page 1 of 3	Sample used for a spike and/or duplicate <b>EPA01</b>	Additional Sampler Signatures	Chain of Custody Seal Number <b>COC Seal #5</b>
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CHAIN OF CUSTODY RECORD

Relinquished by: (Signature) <b>Signature</b>	Date / Time Date Military Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Is custody seal intact? Y/N/none

EPA Form 9110-2 (Rev. 5-81) Replaces EPA Form (2075-7), previous edition which may be used  
 DISTRIBUTION:  
 Blue - Region Copy Pink - SMO Copy White - Lab Copy Yellow - Lab Copy for Retention SMO

Split Samples  Accepted (Signature)  
 Declined

Figure EB - 1

0014202



United States Environmental Protection Agency  
 Contract Laboratory Program Sample Management Office  
 P.O. Box 818 Alexandria, VA 22313  
 703-557-2400 FTS 557-2400

**Special Analytical Service**  
 Packing List/Chain of Custody

SAS No.

1234 E

1. Project Code		Account Code		2. Region No. <u>V</u> Sampling Co. <u>Your Company</u>		4. Date Shipped <u>3/1/91</u> Carrier <u>Fed Ex</u>		6. Sample Description (Enter in Column A)		7. Preservative (Enter in Column C)	
Regional Information				3. Sampler (Name) <u>Your Name</u>		Air/Well Number <u>12345678</u>		1. Surface Water 2. Ground Water 3. Leachate 4. Plineto 5. Soil/Sediment 6. Oil 7. Waste 8. Other (Specify)		1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. NaOH 6. Other (SAS) (Specify) 7. Ice only N. Not preserved	
Non-Superfund Program				Sampler Signature <u>Your Signature</u>		5. Ship To <u>Lab Name</u> <u>Address</u> <u>Attn:</u>					
Site Name <u>Landfill</u>				3. Type of Activity							
City, State <u>Chicago, IL</u>		Site Spill ID <u>ZZ</u>		Remedial Removal SF <input type="checkbox"/> PA <input type="checkbox"/> RIFS <input type="checkbox"/> <input checked="" type="checkbox"/> CLEM PNP <input type="checkbox"/> RA <input type="checkbox"/> (11) <input type="checkbox"/> REMA ST <input type="checkbox"/> SSI <input type="checkbox"/> O&M <input type="checkbox"/> OIL FED <input type="checkbox"/> LSI <input type="checkbox"/> NPLD <input type="checkbox"/> UST							
Sample Numbers	A Matrix Enter from Box 6	B Conc Low Med High	C Preservative Used from Box 7	D Analysis	E Sample used for spiko and/or duplicate	F Regional Specific Tracking Number or Tag Number	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Sampler Initials	J Designated Field QC	
1. E01	2	L	4	TOC, Nitr., COD		5-12345	FB-01	3/1/91 9:00		Blank	
2. E02	2	L	4	↓ ↓ ↓		5-12347	MW-02	3/1/91 10:00			
3. E03	2	L	4	↓ ↓ ↓		5-12348	MW-03	3/1/91 11:00			
4. E04	2	L	4	↓ ↓ ↓	X	5-12349-12350	MW-04	3/1/91 13:00			
5. E01	2	L	7	SO4, TSS, TDS		5-12351	FB-01	3/1/91 9:00		Blank	
6. E02	2	L	7	↓ ↓ ↓		5-12352	MW-02	3/1/91 10:00			
7. E03	2	L	7	↓ ↓ ↓		5-12353	MW-03	3/1/91 11:00			
8. E04	2	L	7	↓ ↓ ↓	X	5-12354-12355	MW04	3/1/91 13:00			
9.											
10.											
Shipment for SAS complete? <input checked="" type="checkbox"/> Y/N		COC Seal #s 45678-45679									

Figure E8 - 3

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature) <u>Signature</u>	Date / Time <u>3/1/91 18:00</u>	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Is custody seal intact? Y/N/none
Split Samples <input type="checkbox"/> Accepted (Signature)			<input checked="" type="checkbox"/> Declined		

<b>DESIGNATE</b>		<b>Grab</b>		PRESERVATIVE: H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/>		
		<b>Comp.</b>			HCL <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> NaOH <input type="checkbox"/> Other <input type="checkbox"/>	
<b>Month/Day/Year</b>	<b>Time</b>	<b>Analyses</b>			VOA	METALS
					ABN	CYANIDE
<b>Sample Number</b>	<b>Station Number and Location</b>	<b>Samplers (signatures)</b>			PEST/PCB	
						Mercury
<b>Case # or Project Code</b>					Pesticides	Fluoride
					Herbicides	Nitrate/Nitrite
					PCB	TOC
					PCDD/PCDF	BOD
					2,3,7,8-TCDD	CCS
					Ames Mutagen	TDS
					Asbestos	TSS
					Phosphorus	O&G
					TO1	Sulfate
					TO2	Chloride
						Sulfide
					TOX	Ammonia
					CBOD	Alkalinity
					Bio-Acute	Acidity
					Bio-Chronic	TKN
					Remarks:	
					USE FOR MS/MSD <input type="checkbox"/>	
					Tag Number:	Lab Sample Number
					CJ1 — 169834	

## 4.0 SUBTASK-1Z DOCUMENTED AND SUSPECTED IMPACTS TO SUBSURFACE SOILS

### 4.1 Subtask Description

Subtask-1Z involves source and physical characterization activities necessary to define the nature and extent of impacted subsurface soils located under the Zinc Shop building as well as soils in the area immediately adjacent to the building. The soils under and around the building (Figure 4-1) are suspected source areas based upon previous investigative work, WDNR interviews with former Better Brite personnel, and review of historical spill and release records. Information obtained from investigations at plating facilities with similar histories indicate that the foundation slab has likely been penetrated by the chromium solutions especially in areas with floor drain trenches and floor drain basins. An additional source of impacts may be underground plating tanks which are suspected at the Shop and have been tentatively confirmed by U.S. EPA (WDNR, 1991). *The building and the foundation will be removed and the soils from the excavation will be sampled.*

These impacted soils are contained by a relatively impermeable cover (Zinc Shop building and slab). During previous investigations, subsurface soil impacts were detected around the perimeter of the Zinc Shop building but extent of contamination was not determined. Completion of the characterization requirements for Subtask-1Z consist of source exploration activities <sup>after the excavation is complete</sup> ~~primarily at known or suspected release areas.~~ These include soils ~~at the bottom of the excavated area~~ ~~under the building foundation, especially at the suspected UST plating tanks, along the former floor drains and floor drain trench, and in the north end of the building where drums had been stored.~~ Additional areas of concern include the loading dock to the north, near the drum storage area where accumulations of plating rinse water were previously noted by WDNR, to the east near the sanitary sewer manway, to the east near the current extraction system near the area with documented releases, along the southern building wall where historical records indicate leakage of solutions into the soils from discharges along the sill.



plate, and west of the Zinc Shop where service laterals enter the shop. Liquid solutions and waste are known or likely to have been released in these vicinities. Probable response actions, if any, cannot be defined at this time. Data needed for alternative screening includes definition of the areal extent of impacts to subsurface soils.

Limited information has been collected during previous investigations to determine the chemical and physical characteristics of the soils and ground water at the site. Samples collected in 1987 through 1991 have detected elevated levels of organic and inorganic compounds. This subtask will ~~include performing a source characterization to evaluate the~~ magnitude and extent of contaminants present at the site. <sup>after the removal of the building and the underlying soils.</sup> Activities necessary to conduct this characterization include collection and analysis of soil samples.

#### 4.2 Sampling Objectives

The objectives of the sampling and analysis plan for Subtask-1Z include the following:

1. ~~Determine metals and VOC concentrations in the unsaturated zone under the building where liquid waste releases are likely to have covered;~~
2. Evaluate the existence of impacted soils at known or suspected source areas or potential spill sites or in contaminant migration pathways in areas not covered by the building foundation, including along service laterals exiting the west side of the former building.
3. Determine the quantity, extent, and magnitude of impacted soils not covered by the building foundation.

1. Evaluate the levels of chromium remaining after the removal of the building, foundation and underlying soils.

Sampling and Analysis Plan  
Section: 4  
Revision: 1  
Date: 10/13/92  
Page: 3 of 7

- 2-4. Evaluate the presence of subsoil fractures and their effect on chromium distribution within source areas and chromium mobilization resulting from geochemical reactions in the subsurface.
- 3-5. Determine chromium species present; and
- 4-6. Determine the physical characteristics of the subsurface soils to enable evaluation of remedial alternatives, if appropriate.

Discharge of liquids from the plating procedure to the ground surface has been documented in earlier investigations. Discharge of liquid within the building or under the building (from USTs) is also likely to have occurred during the operation of the plant. The presence of metal and/or VOC-impacted soils under the building foundation and around the building will be evaluated directly through soil sampling, visual analysis, field screening, and laboratory analysis. ~~Soil borings will be completed through the building foundation to evaluate soils under the building, and test pits will be used to allow more thorough visual analysis of subsurface conditions beyond the building foundation.~~ Soil samples will be collected and submitted to a laboratory for analytical testing and for testing of material properties to determine the physical properties of the soil.

#### 4.3 Data Quality Objectives

DQOs for Subtask-1Z will encompass a combination of field screening and analytical laboratory quality objectives as follows:

<u>Sampling Objective</u>	<u>Parameter</u>	<u>Data Quality Objective</u>
Determine potential presence of impacts in soils	Photoionizable VOCs	PID Field Screening (DQO Level I)
Determine extent and magnitude of impacted soil	TAL Metals and Cyanide TCL VOCs Soil pH	Establish presence/absence and vertical/horizontal boundaries of impacts.  Provide data for risk assessment. (DQO Level IV and V)
Determine the physical characteristics of the soil	Material Properties Testing	Provide data for determine contaminant migration potential (DQO Level III)

#### 4.4 Technical Approach

##### 4.4.1 Scope of Investigation

##### 4.4.1.1 Impacts Under the Building

*The building (already removed) and the foundation will be removed along with all contaminated soils as determined via screening and visual observation. The bottom of the excavation will be sampled*

~~To evaluate impacts under the building, five test borings will be completed in the suspect area of releases within the Zinc Shop building as shown on Figure 4-1. Three borings will be completed to the water table, approximately 4 feet below ground surface (bgs). A silt or sand zone has been noted at a depth of approximately 15 feet bgs at some areas across the site so one boring will be extended to a depth of 20-feet and a second will be extended to bedrock (approximately 30 feet bgs) so a determination can be made as to whether this zone is continuous across the site.~~

The boring which extends to bedrock will be drilled in an area of suspected USTs where plating solutions may have potentially been released. The boring will be extended to the bedrock surface to evaluate chromium levels with depth in the potential source area. The boring which is advanced to bedrock will be sealed following NR141 abandonment procedures. This will be done to reduce the potential for contaminants in the soils to migrate to the bedrock surface through the borehole.

*Samples will be taken with a backhoe and*  
~~The test borings will be advanced using hollow stem augers with continuous samples collected using split-spoon samplers. The split-spoon samples will be visually inspected for the presence of chromium-bearing materials and screened for VOC content using a PID. A 2-foot maximum field screening interval will be used targeting zones with visual impacts. Up to one sample from each 4-foot boring and two samples from the deeper borings will be submitted to the laboratory for analysis. Samples which exhibit elevated PID response or visible chromium bearing materials, if any, will be preferentially selected for analysis. One sample from each stratigraphic unit encountered in the borings will be submitted for material property testing, up to a maximum of six samples.~~

#### 4.4.1.2 Impacts Adjacent to the Building

~~For evaluating impacts adjacent to the building, one boring and four test pits will be completed to determine the subsurface conditions in four areas with known or suspected impacts. Boring and test pit locations are indicated on Figure 4-1. The boring will be completed to 15 feet following the procedures documented in Section 4.4.1.1. Each test pit location may be investigated using more than one pit in close proximity to provide necessary detail but limit the amount of disturbance to impacted soil. The pits will be dug no closer than 5 feet from the building foundation to avoid potential structural damage to the foundation and to the approximate depth of the water table (estimated at 4 feet).~~

Representative samples from each boring and test pit will be examined for the presence of chromium bearing materials and screened for VOC content. Chromium compounds are visible in soils and can be differentiated in the field using a hand lens. These compounds are found predominantly on the fracture planes in clay. Crystalline dichromate is a platy mineral which is bright orange in color. Trivalent chrome precipitates are black or dark green and chromium staining on calcium carbonate turns the crystals bright yellow, making even the micro-crystals of silt size or finer, visible. *one sample per 50 sq. feet within the excavation* ~~Up to three samples from each of the five locations~~ will be submitted for laboratory analysis of the parameters listed in Section 4.5. ~~A total of up to three boring and test pit samples will be submitted for material property testing to define subsurface conditions at the site.~~

4.4.2 Sampling Procedures

Field investigation procedures applicable to the activities described above are summarized in Section 15.0 of this SAP. Detailed procedures are contained in Appendix A.

4.5 Analytical Requirements

Analysis of samples described above will be performed as follows:

<u>Media</u>	<u>Parameters</u>	<u>Method</u>
Soil	VOCs	HNu PID Model PI-101 (Field Screening)
	TAL Metals and Cyanide	CLP-RAS
	TCL VOCs	CLP-RAS
	pH	CLP-SAS
	<del>Material Property Testing</del> <i>hex chrome</i>	<del>Non-CLP-ASTM</del> <i>CLP GAS</i>

#### 4.6 Summary

A summary of site investigation activities for Subtask-1Z is shown on Table 4-1. The results of this activity will be reported in Technical Memoranda #1, Initial Investigative Results, and #2, Source Characterization.

## 15.0 SAMPLING PROCEDURES

Sampling procedures and protocols necessary to conduct the RI activities described for each of the subtasks are summarized on Table 15-1. The specific details of each of the sampling procedures referenced are contained in Appendix A. This appendix contains Standard Operating Procedures (SOPs) which will be uniformly adhered to for sample collection and handling activities.

A summary table of sample matrices, analytical parameters, and frequencies of sample collection are shown on Table 15-2.

### 15.1 Sample Identification and Documentation

Each sample container will be tagged with the following information as required by CLP:

- ◆ Sample identification code,
- ◆ Date/time of collection,
- ◆ Preservative, and
- ◆ Any special information, including potential level of contamination.

The sample identification code is an alpha-numeric code used to specify the material type, location, and sampling interval (i.e., depth), where appropriate, for each sample. Listed below are the standard codes to identify the type of material to be sampled. To an extent, these codes also identify the sampling location.

- ◆ SB - Soil borehole
- ◆ MW - Water table monitoring well (soils and ground water)
- ◆ P - Piezometer Monitoring well (soils and ground water)

- ◆ ST - Trench or test pit soil
- ◆ SS - Surficial soil
- ◆ SW - Surface water
- ◆ SD - Sediment
- ◆ SP - Sump
- ◆ Ex - Excavation

For example, SB110-3 to 5 refers to a soil sample from borehole location 110 over the three to five-foot interval; and MW-203 refers to a ground-water sample from monitoring well location 203. Additional guidance for sample identification includes the following:

- ◆ Subsurface exploration involving drilling or hand augering to depths exceeding 12 inches will be identified as soil borings (SB). Samples collected from the ground surface to a depth of 12 inches, or less, will be identified as surficial soil samples (SS).
- ◆ Soil boring logs for boring locations instrumented as monitoring wells will be identified as monitoring wells (MW).
- ◆ Exploration locations will be numbered consecutively so that each sampling location is unique (e.g., SB-1, SB-2, MW-3, MW-4, ST-5). The numeric code will not be duplicated, except to identify sample locations vertically or differing media (e.g., SB-1, 3'; SB-1, 5'; or SB-1, 3'SG).
- ◆ If a sample is a composite, the letter "C" will follow the depth intervals over which the composite was collected. An appropriate description of the sample will be recorded on the chain-of-custody record and field notebook.



Trip blanks will be prepared prior to field work using laboratory-grade deionized water in laboratory quality sample vials. Trip blanks will be labelled, tagged, and preserved as if they were investigative samples and they will be designated as trip blanks on U.S. EPA paperwork.

To further reduce the potential for sample identification errors and duplication of previous site investigation sample locations, each series of subtasks has been assigned numbers for use in identifying sampling locations. The numbers available for each subtask are as follows:

**Subtasks Associated with the Better Brite Zinc Shop:**

<u>Subtasks</u>	<u>Sample Location Numbers</u>
1Z through 5Z	Z001 through Z900

**Subtasks Associated with the Better Brite Chrome Shop:**

<u>Subtasks</u>	<u>Sample Location Numbers</u>
1C through 5C	C001 through C900

Sample location numbers Z901 through Z999 and C901 through C999 are reserved for duplicate and field blank QA samples. For example, a duplicate ground-water sample from monitoring well MW-Z001 would be identified as MW-Z901. Other duplicate samples or field blanks will be numbered in succession. Samples collected for matrix spike duplicates analysis will be identified with the code MSD (e.g., MWZ001-MSD). Only soil samples are being sent to the CSL, so trip blanks and MS/MSD sample volumes will not be sent to the CSL, but a limited number of duplicate samples will be sent.

**Table 4-1. Summary of Data Collection Activities: SUBTASK-1Z**

Description: Subtask-1Z: Documented and suspected impacts to subsurface soils at the Zinc Shop.

Media/Activity	No. of Locations	Depth (ft.)	Maximum Number of Samples		Analytical Parameters
			per location	total	
<i>1 sample/50 ft bottom of excavation Soil</i>					
Soil Borings	<del>3</del>	<del>4</del>	<del>1</del>	<del>3</del>	TAL Metals and Cyanide, TCL VOCs, pH
	<del>1</del>	<del>20</del>	<del>1-2</del>	<del>1-2</del>	
	<del>1</del>	<del>30</del>	<del>1-2</del>	<del>1-2</del>	
	<del>6</del>	<del>15</del>	<del>1-3</del>	<del>3</del>	
	<del>6</del>	<del>4-30</del>	<del>1</del>	<del>6</del>	<del>Material Properties<sup>1</sup></del>
Test Pits	<del>4</del>	<del>4</del>	<del>1-3</del>	<del>4-12</del>	TAL Metals and Cyanide, TCL VOCs, pH
	<del>4</del>	<del>4</del>	<del>1-3</del>	<del>4</del>	
	<del>4</del>	<del>4</del>	<del>1-3</del>	<del>4</del>	<del>Material Properties<sup>1</sup></del>

<sup>1</sup> Material properties includes grain size distribution.

Table SAP15-2 Table of Samples and Matrices

Matrix	Test Parameter	# of Samples		<sup>1</sup> Field Dup.		<sup>1</sup> Field Blank		<sup>2</sup> Trip Blank		<sup>3</sup> MS/MSD	Total Sample
		Zinc	Chrom	Zinc	Chrom	Zinc	Chrom	Zinc	Chrom		
<b>SOIL BORINGS</b>											
Soil	<del>RAS CLP TAL Metals and Cyanide RAS CLP TCL VOA SAS CLP pH</del>	10	6	1	1	0	0	0	0	1	18
<b>EXCAVATIONS</b>											
Soil	<del>RAS CLP TAL Metals and Cyanide RAS CLP TCL VOA SAS CLP pH</del>	9	<del>4</del>	1	<del>2</del>	0	<del>1</del>	0	<del>2</del>	1	<del>12</del> 12
<b>MONITOR WELL INSTALLATIONS</b>											
Soil	<del>RAS CLP TAL Metals and Cyanide RAS CLP TCL VOA SAS CLP pH</del>	<del>10</del>	<del>16</del>	<del>1</del>	<del>2</del>	<del>0</del>	<del>0</del>	<del>0</del>	<del>0</del>	<del>2</del>	<del>29</del>
	<del>SAS CLP Hexavalent Chromium SAS CLP Cation Exchange Capacity SAS CLP Total Organic Carbon</del>	<del>0</del>	<del>0</del>	<del>1</del>	<del>1</del>	<del>0</del>	<del>0</del>	<del>0</del>	<del>0</del>	<del>1</del>	<del>20</del>
<b>SURFICIAL SOIL</b>											
Soil	CSL SOP - Total Chromium	72 <del>38</del>	140 <del>68</del>	7 <del>2</del>	14 <del>2</del>	0	0	0	0	10 <del>2</del>	213 <del>78</del>
	RAS CLP TAL Metals and Cyanide (Total Sample) SAS CLP Hexavalent Chromium (Total Sample)	30 <del>48</del>	38 <del>72</del>	3 <del>2</del>	4 <del>8</del>	0	0	0	0	4 <del>2</del>	79 <del>28</del>
	SAS CLP Selected TAL Metals and Cyanide (steved Sample)	10	18	1	2	0	0	0	0	2	31
<b>SURFACE WATER RUNOFF</b>											
Water	<del>RAS CLP TAL Metals and Cyanide RAS CLP TCL VOA SAS CLP Hexavalent Chromium</del>	5	7	1		0		1		1	16
<b>MONITOR WELLS</b>											
Water	<del>Round 1: RAS CLP TAL Metals and Cyanide<sup>5</sup> RAS CLP TCL VOA CRL SOP Hexavalent Chromium SAS CLP Total Organic Carbon</del>	26	33	3	4	3	4	3	4	4	80
	<del>Round 2: RAS CLP TAL Metals and Cyanide<sup>5</sup> RAS CLP TCL VOA CRL SOP Hexavalent Chromium SAS CLP Total Organic Carbon</del>	26	33	3	4	3	4	3	4	4	80

SIMON HYDRO-SERVICES

## 40400 SAMPLE IDENTIFICATION

### 1.0 Purpose

Locations for collection of samples are affixed alpha-numeric codes which are used to track affixed laboratory results and enable presentation of data on maps and drawings. Each planview location where a sample is collected is issued a unique numeric code (number) which corresponds to a specific map location at a site. An alpha-code (letter) is used to describe the type of sampling activity performed at the specific numeric location.

The following alpha codes will be used:

- ◆ B - Borehole (no monitoring well installed)
- ◆ MW - Water table monitor well
- ◆ P - Piezometer well
- ◆ PW - Private residential well
- ◆ T - Test pit
- ◆ S - Surface soil
- ◆ SW - Surface water sampling station
- ◆ A - Air sampling station
- ◆ D - Sediment

Each number used at a site should correspond to one, and only one, location. A typical series of alpha numeric codes for a site might include test pit locations T-1 through T-12; borings B-13, B-14, B-15; monitor wells MW-16, MW-17, MW-18, etc. A borehole drilled with the intent of installing a monitor well or piezometer will be identified as MW or P. There should not be a borehole log B-1 for monitor well MW-1.

If previous work has been performed at a site, the alpha-numeric code should continue with previous successive numbers. If there is any potential for conflict with identified sample number identifiers, the proposed sample number should begin with series 101, 10001, or other appropriate system.

## 2.0 Container Labeling

Each sample container, tag, and/or label will contain the following information:

- ◆ Project number;
- ◆ Sample type identification code and number,
- ◆ Media (soil, water, air, sediment),
- ◆ Date/time of collection, and
- ◆ Preservative.

The sample identification code will be an alpha-numeric code used to specify the material type, location, and sampling interval (i.e., depth), where appropriate, for each sample. For example: SB110-3 to 5 refers to a soil sample from borehole location 110 over the 3 to 5-foot depth interval, and MW-203 refers to a ground-water sample from monitor well location 203.

Listed below are the standard codes to identify the type of material to be sampled. To an extent, these codes also identify the sampling location.

- ◆ SB - Sample from a soil borehole
- ◆ WB - Water sample from a borehole with no monitor well
- ◆ MW - Water table monitor well (soils and ground water)
- ◆ P - Piezometer well (soils and ground water)
- ◆ PW - Private residential well water samples

- ◆ ST - Trench or test pit (soil)
- ◆ WT - Trench or test pit (water)
- ◆ SS - Surficial soil
- ◆ SW - Surface water
- ◆ SD - Sediment
- ◆ A - Air

If a sample is a composite, the letter "C" should follow the depth intervals over which the composite was collected. An appropriate description of the sample should be recorded on the chain-of-custody record and field notebook.

## 40500 CHAIN-OF-CUSTODY PROCEDURES

### 1.0 Purpose

Chain-of-custody procedures are established to provide sample integrity. Sample custody protocols will be based on procedures as described in "NEIC Policies and Procedures", EPA-330/9-78-DD1-R, Revised June, 1985. This custody is in two parts: sample collection and laboratory analysis. A sample is under a person's custody if it meets the following requirements:

- \* It is in the person's possession;
- \* It is in the person's view, after being in the person's possession;
- \* It was in the person's possession and it was placed in a secured location; or
- \* It is in a designated secure area.

### 2.0 Field Specific Custody Procedures

The sample packaging and shipment procedures summarized below will assure that the samples will arrive at the laboratory with the chain-of-custody intact.

Field procedures are as follows:

- (a) The field sampler is personally responsible for the care and custody of the samples until they are transferred or properly dispatched. As few people as possible should handle the samples.
- (b) All bottles should be tagged with sample numbers and locations.
- (c) Sample tags should be filled out using waterproof ink for each sample.

- (d) The Project Manager should review all field activities to determine whether proper custody procedures were followed during the field work and decide if additional samples are required.

**Transfer of Custody and Shipment Procedures are as follows:**

- (a) Samples should be accompanied by a properly completed chain-of-custody form. The sample numbers and locations will be listed on the chain-of-custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage area.
- (b) Samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and secured with strapping tape in at least two locations for shipment to the laboratory.
- (c) Whenever samples are split with a source or government agency, a separate Sample Receipt is prepared for those samples and marked to indicate with whom the samples are being split. The person relinquishing the samples to the facility or agency should request the representative's signature acknowledging sample receipt. If the representative is unavailable or refuses, this is noted in the "Received By" space.
- (d) All shipments will be accompanied by the Chain-of-Custody record identifying the contents. The original record will accompany the shipment, and the pink and yellow copies will be retained by the sampler for returning to the sample office.



- (e) If the samples are sent by common carrier, a bill of lading should be used. Receipts of bills of lading will be retained as part of the permanent documentation. If sent by mail, the package will be registered with return receipt requested. Commercial carriers are not required to sign off on the custody form as long as the custody forms are sealed inside the sample cooler.

**40600 SAMPLE CONTAINER, PREPARATION, PRESERVATION**  
**AND MAXIMUM HOLDING TIMES**

**1.0 Purpose**

Sampling containers and preservatives will be provided in laboratory-quality containers. The general requirements for sample containers, preservatives, and analytical holding times are shown on the attached table.

All containers will be obtained from one or more of the CLP laboratories to be used, or from I-Chem, Hayward, California, or be of equivalent quality. All I-Chem containers are cleaned in accordance with U.S. EPA protocols. Each lot of these containers is analyzed in accordance with I-Chem quality control requirements and is not shipped by I-Chem unless the QC requirements are met. The types of containers that will be provided for each analyses are listed on Table 1, along with required volumes and preservatives required for each analysis.

All sample containers will be shipped with chain-of-custody records. These chain-of-custody records will be compiled by the field sampling personnel and returned with the samples.

Preservatives will be reagent grade or better.

Matrix	Analysis	Container	Preservation	Holding Time	Volume of Samples	Shipping	Normal Packaging
SOIL/SEDIMENT	Total Chromium (screening)	One 8-oz. wide mouth glass bottle	Iced to 4°C	6 months	Fill 3/4 full	Ship Daily by Overnight Carrier or deliver by courier	Vermiculite
	TCL VOA	Two 120 ml wide mouth glass vials	Iced to 4°C	14 days	Fill completely no headspace	Ship Daily by Overnight Carrier	Vermiculite
	TAL Metals and Cyanide (Total Sample)	One 8-oz. wide mouth glass bottle	Iced to 4°C	6 months (26 days Hg, 14 days CN)	Fill to 3/4 full	Ship Daily by Overnight Carrier	Vermiculite
	Selected TAL Metals and Cyanide (Sieved portion)	One 8-oz. wide mouth glass bottle	Iced to 4°C	6 months (14 days CN)	Fill to 3/4 full	Ship Daily by Overnight Carrier	Vermiculite
	Hexavalent Chromium	One 8-oz. wide mouth glass bottle <sup>3</sup>	Iced to 4°C	None established prior to extraction; 24 hours after extraction	Fill to 3/4 full	Ship Daily by Overnight Carrier	Vermiculite
	pH	8-oz. wide mouth glass bottles	None	Analyze immediately	Fill to 3/4 full	Ship Daily by Overnight Carrier	Vermiculite
	TOC	8-oz. wide mouth glass bottle	None	28 days	Fill to 3/4 full	Ship Daily by Overnight Carrier	Vermiculite
	CEC	8-oz. wide mouth glass bottle	None	Not established	Fill to 3/4 full	Ship Daily by Overnight Carrier	Vermiculite
PHYSICAL PROPERTIES	Grain size, Moisture content	Two 8-oz. wide mouth glass jars	None	Not established	Fill 3/4 full	Ship by Carrier	Bubble wrap and packing peanuts
	Atterburg Limits, Permeability	3-inch Shelby tube	None	Not established	Fill completely	Ship by Carrier	Vermiculite or bubble wrap in upright position

## Notes:

- \* Detection limits appropriate for drinking water
- \*\* Sample will require special handling if residual chlorine or sulfide is suspected
- HDPE High density polyethylene
- TOC Total organic carbon
- CEC Cation exchange capacity
- 1 Only the samples collected from monitor wells for metals analysis should be field filtered.
- 2 Mercury preservative: Dissolve 250 ml of concentrated HNO<sub>3</sub> and 25 g of K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> in deionized distilled water and dilute to one liter. Collect approximately 500 ml of sample and add 10 ml of this preservative. (Caution: Do not store the preservative solution in plastic containers.)
- 3 If TAL metals and cyanide analysis is also done, no additional sample volume is needed for hexavalent chromium. The soil quantity collected for the TA metals analysis is adequate to include hexavalent chromium.

For QA/QC: No additional volume is required for soil samples.  
 3 times the sample volume is required for organic analyses of aqueous samples done by CRL. No additional volume needed for aqueous samples analyzed by CLP.  
 2 times the sample volume is required for inorganic analyses on aqueous samples.

Excavation  
80300 TEST PIT SAMPLING

Excavation  
1.0 Test Pit/Trench Sampling

Test pit <sup>Excavations</sup> are usually <sup>dry</sup> constructed using backhoes from which soil samples can be obtained. <sup>The excavation will</sup> Test pits expose shallow soil units in order to obtain detailed soil descriptions and multiple samples from specific soil horizons. Backhoes equipped with front end loader attachments are generally used for excavation. ~~The front end bucket facilitates backfilling of the test pit following completion of work.~~ <sup>The excavation will be shored up with sheet piling</sup>

Test pits are excavated by incrementally removing soil material and placing it away from the edge of the test pit. Test pits usually are not excavated to depths greater than five feet unless the walls are properly braced or sloped as described in OSHA regulations. Test pits exhibiting evidence of headwall cracking or slumping should not be entered until properly stabilized.

The Excavation

Test pits which will remain open for longer than one day <sup>so it</sup> will be barricaded, using a snow fence or other appropriate material, to minimize the risk of inadvertent entry of unauthorized personnel or animals. The fence should be erected at a distance no less than six feet from the perimeter of the test pit. <sup>The excavation will be</sup> Test pits are backfilled as soon as practicable following completion of sampling and soil profile description, <sup>and construction of a groundwater collection system.</sup>

At all hazardous waste sites, air quality within the test pit should be determined to ensure proper personal protection is donned prior to entry into the pit. Soil sampling within <sup>the excavation</sup> test pits is accomplished using any of the devices described in Section 80200, including trowels, shovels, core samplers, or augers. ~~Core samplers may be used to obtain vertical or horizontal soil samples for use in hydraulic conductivity determinations from test pits.~~

## 2.0 Sample Collection

Soil samples may be collected for field screening and/or laboratory analysis. Under no circumstances will the same soil sample be used for screening and for laboratory analysis; separate samples will be collected.

### Field Screening Samples

Samples collected for field PID screening will be visually observed and placed in a glass mason jar sealed with two layers of aluminum foil.

### Laboratory Samples

Unless otherwise specified, all samples obtained for laboratory analysis will be discrete grab samples which are representative of the material under consideration. Composite samples are only obtained when it has been demonstrated that the data generated will provide useful information in site conditions. Field screening may include visual inspection, photoionization detector (PID) screening, or other appropriate techniques. PID screening of soil samples is described in SOP 50200.

The volume of soil necessary for grab samples is determined by the parameter(s) to be analyzed. The appropriate number and size of laboratory-quality sample jars will be obtained prior to initiation of sampling. Each container is filled to 75 to 100 percent by volume, depending upon the analytical parameter(s). For parameters which may decrease due to volatilization loss, every attempt will be made to fill the jar 100 percent by volume. Soil samples will be immediately sealed, tagged, and placed in a cooler at approximately 40°C for potential submission to an analytical laboratory.

#### 4.0 Decontamination

All sampling implements must be decontaminated between samples to minimize potential for cross-contamination of soil samples. Equipment decontamination procedures are described in SOP 85000.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

8Q-14J

**MEMORANDUM**

**DATE:** JAN 28 1993

**SUBJECT:** Partial Approval of the Second Revision, Fund-Lead Quality Assurance Project Plan (QAPjP) for Remedial Investigation/Feasibility Study at Better Brite Plating, Inc., De Pere, Wisconsin

**FROM:** Curtis Ross   
Acting Regional Quality Assurance Manager

**TO:** James Mayka, Chief  
Michigan/Wisconsin Remedial Response Branch

**ATTENTION:** Dan Cozza, Remedial Project Manager

I am providing partial approval of the subject QAPjP. The Quality Assurance Section (QAS) received the subject QAPjP on January 6, 1993 (QAS SF Log-in No. 1854).

This partial approval covers all water matrix activities. A partial approval was previously given (memo dated November 18, 1992) for the sampling and analysis of all soil samples except those for hexavalent chromium analysis and sieved samples for selected TAL metals and cyanide which are still not approvable.

To facilitate this partial approval, the following corrections have been made to the QAPjP and the corrected pages are attached:

1. In Section 5.1.3, page 5 of 5, the following statement has been added, "The combination CLP Traffic Report/Chain of Custody and Combination SAS Packing List/Chain of Custody are in Appendix B.2."
2. The combination CLP Traffic Report/Chain of Custody and Combination SAS Packing List/Chain of Custody has been inserted into Appendix B.2.
3. In the SAS for the Total Organic Analysis of groundwater, surface water, and residential well samples, the statement in Item No. 1 has been revised to read, "all samples will be unfiltered (total)".


I have signed the attached signature page. Please have the remedial project manager provide final sign-off. We would like to receive a copy of the completed signature page within the next two weeks.


**Attachments**

cc: Kaushal Khanna, HSRLT-5J



REVISION 1  
TASK 2  
QUALITY ASSURANCE PROJECT PLAN  
REMEDIAL INVESTIGATION/  
FEASIBILITY STUDY  
BETTER BRITE CHROME AND ZINC SHOP SITES  
DE PERE, WISCONSIN

  
Robert J. Karnauskas, P.G., P.HG.  
Simon Hydro-Search Site Manager

  
Michael R. Noel  
Simon Hydro-Search QA Officer

\_\_\_\_\_  
Terry Koehn  
WDNR Project Manager

\_\_\_\_\_  
David Linnear  
U.S. EPA Remedial Project Manager

 2/1/93  
U.S. EPA Central Regional Laboratory Director

 1/28/93  
U.S. EPA Quality Assurance Manager

\_\_\_\_\_  
John Rather  
Ortek Quality Assurance Manager

\*This partial approval covers all water matrix activities. A partial approval was previously given for sampling and analysis of all soil samples except those for hexavalent chromium analysis and sieved samples for selected TAL metals and cyanide which are still not approvable.

carriers are not required to sign off on the custody form as long as the custody forms are sealed inside the sample cooler and the custody seals remain intact.

The combination CLP Traffic Report/Chain of Custody and Combination SAS Packing List/Chain of Custody are in Appendix B.2.

### 5.2 Laboratory Chain-of-Custody Procedures

The chain of custody procedures for the CLP laboratory are described in the Statements of Work (SOWs) for RASs. The same custody procedure applies to SASs. These custody procedures along with the holding time requirements for CLP samples are described in the appropriate SOW (OLM01.1 for organics and ILM01.0 for inorganics).

The chain of custody procedures for samples shipped to the CRL are described in the CRL's SOP. The chain-of-custody procedures for samples shipped to the CSL (Ortek) are included with the Ortek SOP as Appendix D. Chain-of-custody procedures for the samples sent to the material property testing laboratory will follow the Simon Hydro-Search Chain-Of-Custody Standard Operating Procedure 40500 (Appendix F).

### 5.3 Final Evidence Files Custody Procedures

Simon Hydro-Search is the custodian of the evidence file and maintains the contents of evidence files for the RI, including all relevant records, reports, logs, field notebooks, pictures, subcontractor reports, correspondence, laboratory logbooks, chain of custody form, and LSSS of CRL's data reviews in a secured, limited access area and under custody of the contractor's site manager.

---

**COMBINATION CLP TRAFFIC REPORT/  
CHAIN OF CUSTODY AND COMBINATION SAS PACKING LIST/  
CHAIN OF CUSTODY  
(refer to attached examples)**

**A. GENERAL:**

The combination traffic report/chain of custody is used to ship samples to the EPA contract lab for routine analytical services. The combination SAS packing list/chain of custody is used to ship samples to the EPA Contract lab for special analytical services. These reports must be filled out and shipped with each code sent to the contract lab.

**B. DISTRIBUTION:**

1. First copy - Send to RSCC.
2. Second copy - Mail to SMO.
3. Third and fourth copies - Send to laboratory.

**C. PREPARATION:**

1. Case Number - Supplied by SMO.
2. SAS Number - Enter SAS number if applicable.
3. Project Code - Optional
4. Account Code - Optional
5. Regional Information - Enter 'TFA102'
6. Non-Superfund Program - Leave blank
7. Site Name, City, State - Enter site name and location.
8. Site Spill ID - Enter 'ZZ' for all SI work unless the site is listed on the NPL; in that case, enter the EPA site/spill ID (2 digit) Coc
9. Region No. - Enter "5"
10. Sampling Company - Enter "PRC"
11. Sampler, Sampler Signature - Print and sign your name.

- 
12. **Type of Activity - Check appropriate activity, i.e. SSI**
  13. **Date Shipped - Enter the date samples were shipped to lab.**
  14. **Carrier - Federal Express**
  15. **Airbill Number -- Enter the Federal Express airbill number.**
  16. **Ship To - Enter the lab name, address, and the person who is supposed to receive shipment.**
  17. **Sample Numbers - Enter the appropriate sample numbers.**
  18. **Sample Description - Enter appropriate number from box No. 7 on traffic report.**
  19. **Concentration - Enter the expected concentration of the sample (L, M, H).**
  20. **Sample Type - Indicate either grab or composite.**
  21. **Preservative - Enter the appropriate number or letter from box No. 6.**
  22. **Analysis - Check the appropriate analyses for each sample indicated on traffic report.**
  23. **Sample Tag Numbers - Indicate the sample tag numbers that correspond to each sample number.**
  24. **Station Location Number -- Enter the assigned location number where each sample was collected, i.e. MW-01, MW-02.**
  25. **Month/Day/Year/Time of Sample Collection -- Enter the date and time of sample collection.**
  26. **Sampler Initials - Optional**

- 
27. Corresponding CLP Sample Number - Enter the corresponding inorganic sample number on the organic traffic report and enter the corresponding organic sample number on the inorganic traffic report.

Use the space at the right of the traffic report to indicate which sample numbers are blanks and duplicates. Indicate the custody seal numbers in the box labeled "TR." On the SAS packing list, indicate custody seal numbers in the space between the sample information and the chain of custody record.

If all samples collected under an assigned case number were shipped on the same day, circle "Y" in the "shipment for Case Complete?" box, on the appropriate traffic reports, to indicate the shipment for the case number was complete. If a portion of the samples for a case number are collected and shipped, then circle "N" on the appropriate traffic reports to indicate that shipment is incomplete for the case number.

The sampler should sign their name in the "Relinquished by:" box prior to shipment. The date and time should also be entered. The "Split Samples" box should indicate whether split samples were accepted or declined.

*See attached Examples of completed forms.*

28. *Identify the sample to be used for the us/USD or spike/duplicate analysis in the appropriate box.*

**SAMPLE TAG**  
(refer to attached example)

**A. GENERAL:**

A sample tag is completed for every sample collected and attached to the sample container.

**B. PREPARATION:**

1. Project Code/Case#:

*The SMC assigned Case # is entered  
or  
For samples being shipped to the CLP.  
For CRL samples, the 1st 6 digits of the CRL  
log #  
is  
the  
project  
code.*

2. Station Number

- Enter sample point (station) code number;  
Code number must correlate with sample plan.

Some examples:

Monitor well	=	MW
Sediment	=	SE
Existing well	=	GW
Lake	=	LK
Stream	=	SW
Lagoon	=	LG
Soil	=	SO
Leachate	=	LE
Sludge	=	SL
Blank	=	BL

3. Month/Day/Year

- Self explanatory

4. Time

- Use military format.

- i.e. 1430 for 2:30 P.M.

5. Designate

- Comp (Composite) or grab (Check only one.)

6. Sample # :

- Enter the CLP Sample #.  
*For CRL samples, enter the last three digits of the CRL log #.*

7. Samplers

- Enter signature of sampler.

8. Preservative

- Check off the type of preservative used.

9. Analysis

- Check analysis desired.

10. Remarks

- Identify field blanks

11. Tag Number

- Enter number in logbook, on custody sheet and/or Sample Description Form.

12. MS/MSD:

*Identify the sample to be used for the org. MS/MSD or inorg. spike/dup. by checking this box.*



United States Environmental Protection Agency  
 Contract Laboratory Program Sample Management Office  
 PO Box 010 Alexandria, VA 22313  
 703-557-2490 FTS 557-2490

**Inorganic Traffic Report  
& Chain of Custody Record**  
 (For Inorganic CLP Analysis)

SAS No.  
(if applicable)

Case No.  
**Case #**

1. Project Code		Account Code		2. Region No. <b>V</b>		3. Sampling Co. <b>Company Name</b>		4. Date Shipped <b>Date</b>		Carrier <b>Carrier Name</b>		6. Preservative (Enter in Column D) 1. HCl 2. HNO <sub>3</sub> 3. NaOH 4. H <sub>2</sub> SO <sub>4</sub> 5. K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> 6. Ice only 7. Other (SAS) (Specify)		7. Sample Description (Enter in Column A) 1. Surface Water 2. Ground Water 3. Leachate 4. Filtrate 5. Soil/Sediment 6. Oil (SAS) 7. Waste (SAS) 8. Other (SAS) (Specify)																									
Regional Information				Sampler (Name) <b>Sampler Name</b>				Airbill Number <b>Airbill Number</b>				6. Preservative (Specify) N. Not preserved																											
Non-Superfund Program				Sampler Signature <b>Sampler Signature</b>				5. Ship To <b>Laboratory Name</b> <b>Address</b> <b>Attn: Name</b>																															
Site Name <b>Site Name</b>				4. Type of Activity SF <input type="checkbox"/> PNP <input type="checkbox"/> ST <input type="checkbox"/> FEI <input type="checkbox"/> Load <input checked="" type="checkbox"/> Nonmetal <input type="checkbox"/> Removal <input type="checkbox"/> RIFS <input type="checkbox"/> IIA <input type="checkbox"/> (J&M) <input type="checkbox"/> NPLD <input type="checkbox"/> CLEM <input type="checkbox"/> HEMA <input type="checkbox"/> IEM <input type="checkbox"/> OIL <input type="checkbox"/> UST <input type="checkbox"/>				Site Spill ID City, State Code				CLP Sample Numbers (from labels)				A Enter # from Box 7		B Conc. Low Med High		C Sample Type: Comp./Grab		D Preservative from Box 6		E. IAS Analysis Metals: Total, Dissolved, Cyanide, Nitrate/Nitrite, Fluoride, pH, Conductivity				F Regional Specific Tracking Number (Tag Numbers)		G Station Location Number		H Mo/Day/Year/Time Sample Collection		I Sampler Initials		J Corresp. CLP Orig. Samp. No.		K Designated Fluid QC	
MEPA01		2		L		G		2		X												5-12345712346		MW01		Date/Time		EPAD1											
MEPA01								3		X		X										5-12347712348		MW01		Date/Time													
MEPA02								2		X												5-12349		MW02		Date/Time		EPAD2											
MEPA02								3		X		X										5-12350		MW02		Date/Time		EPAD2											
MEPA03								2		X												5-12351		MW03		Date/Time		EPAD3		MEPA03-MEPA04 Field duplicates									
MEPA03								3		X		X										5-12352		MW03		Date/Time		EPAD4											
MEPA04								2		X												5-12353		MW03		Date/Time		EPAD4											
MEPA04		3		↓		↓		3		X		X										5-12354		MW03		Date/Time		EPAD4											
MEPA05		3		↓		↓		2		X												5-12355		FB01		Date/Time		EPAD5		Field Blank									
MEPA05		3		↓		↓		3		X		X										5-12356		FB01		Date/Time		EPAD5		Field Blank									
Shipment for Case complete? (Y/N) <b>Circle One</b>				Page 1 of 1		Sample used for a spike and/or duplicate <b>MEPA01</b>						Additional Sampler Signatures				Chain of Custody Seal Number <b>COC Seal #s</b>																							

**CHAIN OF CUSTODY RECORD**

Relinquished by: (Signature) <b>Signature</b>	Date / Time <b>Date Military Time</b>	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Is custody seal intact? Y/N/none

EPA Form 9110-1 (Rev. 5-91) Replaces EPA Form (2075-6), previous edition which may be used  
 DISTRIBUTION:  
 Green - Region Copy Pink - SMO Copy White - Lab Copy Yellow - Lab Copy for return to SMO

Split Samples  Accepted (Signature)  
 Declined

1014401

Figure EB - 2



United States Environmental Protection Agency  
 Contract Laboratory Program Sample Management Office  
 PO Box 618 Alexandria, VA 22313  
 703-557-2490 FIS 557-2490

**Organic Traffic Report  
 & Chain of Custody Record**  
 (For Organic CLP Analysis)

SAS No. (if applicable)  
 Case No. **Case #**

6. Preservative (Enter in Column D)  
 1. HCl  
 2. HNO3  
 3. NaHSO4  
 4. H2SO4  
 5. Other (SAS) (Specify)  
 6. Ice only  
 N. Not preserved

7. Sample Description (Enter in Column A)  
 1. Surface Water  
 2. Ground Water  
 3. Leachate  
 4. Filtrate  
 5. Soil/Sediment  
 6. Oil (SAS)  
 7. Waste (SAS)  
 8. Other (SAS) (Specify)

1. Project Code Account Code  
 2. Region No. **V** Sampling Co. **Company Name**  
 4. Date Shipped **Date** Carrier **Carrier Name**

Regional Information  
 Sampler (Name) **Sampler Name**  
 Airbill Number **Airbill Number**

Non-Superfund Program  
 Sampler Signature **Sampler Signature**  
 5. Ship To **Laboratory Name**  
**Address**  
**Attn: Name**

3. Type of Activity  
 Removal Removal  
 SF  PA  O&M  CLEM   
 PIP  PA  O&M  PEM   
 ST  SS  O&M  OIL   
 FED  LSI  NPLD  UST

Site Name  
**Site Name**

City, State Site Spill ID  
**City, State Code**

CLP Sample Numbers (from labels)	A Enter # from Box 7	B Conc. Low Mod High	C Sample Type: Comp/Grab	D Preservative from Box 6	E RAS Analysis				F Regional Specific Tracking Number or Tag Numbers	G Station Location Number	H Date/Time Sample Collection	I Sampler Initials	J Corresp. CLP Inorg. Samp. No.	K Designated Field QC
					VOA	BNA	Posu PCB	High ARO/TOX						
EPA01	2	L	G	1	X				5-12357-12362	MW01	Date/Time		MEPA01	
EPA01						X	X		5-12363-12366	MW01	Date/Time			
EPA02				1	X				5-12367-12368	MW02	Date/Time		MEPA02	
EPA02						X	X		5-12369-12370	MW02	Date/Time			
EPA03				1	X				5-12371-12372	MW03	Date/Time		MEPA03	(EPA03-EPA04)
EPA03						X	X		5-12373-12374	MW03	Date/Time			Field duplicate
EPA04				1	X				5-12375-12376	MW03	Date/Time		MEPA04	
EPA04	3					X	X		5-12377-12378	MW03	Date/Time			
EPA05	3			1	X				5-12379-12380	FB01	Date/Time		MEPA05	Field Blank
EPA05	3					X	X		5-12381-12382	FB01	Date/Time			

Shipment for Case complete? (Y/N) **Circle One**

Page 1 of **3**

Sample used for a spiko and/or duplicate **EPA01**

Additional Sampler Signatures

Chain of Custody Seal Number **COC Seal #s**

**CHAIN OF CUSTODY RECORD**

Relinquished by: (Signature) <b>Signature</b>	Date / Time Date <b>Date</b> Military Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Is custody seal intact? Y/N/none

EPA Form 8110-2 (Rev. 6-91) Replaces EPA Form (2075-7), previous edition which may be used  
 DISTRIBUTION:  
 Blue - Region Copy Pink - SMO Copy White - Lab Copy Yellow - Lab Copy for Rel... SMO

Spill Samples  Accepted (Signature)  
 Declined

Figure E8 - 1

0014202





United States Environmental Protection Agency  
 Contract Laboratory Program Sample Management Office  
 PO Box 818 Alexandria, VA 22313  
 703-557-2400 FTS 557-2400

### Special Analytical Service

Packing List/Chain of Custody

SAS No.

1234 E

1. Project Code	Account Code	2. Region No. I	Sampling Co. Your Company	4. Date Shipped 3/1/91	Carrier Fed Ex	6. Sample Description (Enter in Column A)  1. Surface Water 2. Ground Water 3. Leachate 4. Filtrate 5. Soil/Sediment 6. Oil 7. Waste 8. Other (Specify)	7. Preservative (Enter in Column C)  1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. NaOH 6. Other (SAS) (Specify) 7. Ice only N. Not preserved
Regional Information		Sampler (Name) Your Name		Airbill Number 12345678			
Non-Superfund Program		Sampler Signature Your Signature		5. Ship To Lab Name Address			
Site Name Landfill		3. Type of Activity Remedial Removal SF <input type="checkbox"/> PA <input type="checkbox"/> NIFS <input type="checkbox"/> CLEM <input checked="" type="checkbox"/> PFP <input type="checkbox"/> PA <input type="checkbox"/> IID <input type="checkbox"/> REM <input type="checkbox"/> ST <input type="checkbox"/> SSI <input type="checkbox"/> O&M <input type="checkbox"/> OIL <input type="checkbox"/> FED <input type="checkbox"/> LSI <input type="checkbox"/> NPLU <input type="checkbox"/> UST <input type="checkbox"/>		Attn:			
City, State Chicago, IL	Site Spill ID ZZ						

Sample Numbers	A Matrix Enter from Box 6	B Conc Low Med High	C Preservative Used from Box 7	D Analysis	E Sample used for spike and/or duplicate	F Regional Specille Tracking Number or Tag Number	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Sampler Initials	J Designated Field QC
1. E01	2	L	4	TOC, Nitr., COD		5-12345	FB-01	3/1/91 9:00		Blank
2. E02	2	L	4	↓ ↓ ↓		5-12347	MW-02	3/1/91 10:00		
3. E03	2	L	4	↓ ↓ ↓		5-12348	MW-03	3/1/91 11:00		
4. E04	2	L	4	↓ ↓ ↓	X	5-12349-12350	MW-04	3/1/91 13:00		
5. E01	2	L	7	SO4, TSS, TDS		5-12351	FB-01	3/1/91 9:00		Blank
6. E02	2	L	7	↓ ↓ ↓		5-12352	MW-02	3/1/91 10:00		
7. E03	2	L	7	↓ ↓ ↓		5-12353	MW-03	3/1/91 11:00		
8. E04	2	L	7	↓ ↓ ↓	X	5-12351-12355	MW-04	3/1/91 13:00		
9.										
10.										

Shipment for SAS complete? (Y/N)  Y

COC Seal #s: 45678-45679

#### CHAIN OF CUSTODY RECORD

Relinquished by: (Signature) Signature	Date / Time 3/1/91 18:00	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Is custody seal intact? Y/N/none

Split Samples  Accepted (Signature)  
 Declined

Figure E8 - 3

<b>DESIGNATE</b>		<b>Grab</b>	PRESERVATIVE: H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/>		
			HCL <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> NaOH <input type="checkbox"/> Other <input type="checkbox"/>		
<b>Comp.</b>	<b>Time</b>	<b>Month/Day/Year</b>	<b>Sample Number</b>	<b>ANALYSES</b>	
				<b>VOA</b>	<b>METALS</b>
<b>Case # or Project Code</b>	<b>Station Number and Location</b>	<b>Samplers (signatures)</b>		<b>ABN</b>	<b>CYANIDE</b>
				<b>PEST/PCB</b>	
					<b>Mercury</b>
				<b>Pesticides</b>	<b>Fluoride</b>
				<b>Herbicides</b>	<b>Nitrate/Nitrite</b>
				<b>PCB</b>	<b>TOC</b>
				<b>PCDD/PCDF</b>	<b>BOD</b>
				<b>2,3,7,8-TCDD</b>	<b>CCB</b>
				<b>Ames Mutagen</b>	<b>TDS</b>
				<b>Asbestos</b>	<b>TSS</b>
				<b>Phosphorus</b>	<b>O&amp;G</b>
				<b>TO1</b>	<b>Sulfate</b>
				<b>TO2</b>	<b>Chloride</b>
					<b>Sulfide</b>
				<b>TOX</b>	<b>Ammonia</b>
				<b>CBOD</b>	<b>Alkalinity</b>
				<b>Bio-Acute</b>	<b>Acidity</b>
				<b>Bio-Chronic</b>	<b>TKN</b>
Remarks:					
USE FOR MS/MSD <input type="checkbox"/>					
			<b>Tag Number:</b>	<b>Lab Sample Number</b>	
			C1 - 169834		

SAS Number
------------

SPECIAL ANALYTICAL SERVICES  
Client Request

Regional Transmittal       Telephone Request

- A. EPA Region/Client: Region V
- B. RSCC Representative: Jan Pels
- C. Telephone Number: (312) 353-2720
- D. Date of Request: \_\_\_\_\_
- E. Site Name: Better Brite Chrome & Zinc Shops

Please provide below a description of your request for Special Analytical Services under the Contract Laboratory Program. In order to most efficiently obtain laboratory capability for your request, please address the following considerations, if applicable. Incomplete or erroneous information may result in delay in the processing of your request. Please continue response on additional sheets, or attach supplementary information as needed.

1. General description of analytical service requested: Analysis for total organic carbon in water (groundwater, surface water, and residential wells). All samples will be unfiltered (total). All samples will be preserved at time of collection. Results are reported as mg/L C.


2. Definition and number of work units involved (specify whether whole samples or fractions; whether organics or inorganics; whether aqueous or soil and sediments; and whether low, medium, or high concentration):

166 low to medium level aqueous samples

3. Purpose of analysis (specify whether Superfund (Remedial or Enforcement), RCRA, NPDES, etc.):

Superfund-Remedial

**CORRESPONDENCE/MEMORANDUM**

DATE: November 9, 1992  
TO: Terry Koehn - Lake Michigan District  
FROM: Charlene Khazae - SW/3   
SUBJECT: Better Brite Revised Work Plans

I have reviewed the responses/corrections to our comments on the Draft Work Plans prepared by Simon Hydro-search. There are still several, although some minor, deficiencies. You may alert Simon Hydro-Search to these problems as you deem appropriate.

There are two general problems that are prevalent in the work plans. The first is that CLP protocol still needs to be better defined. The second is that there are many laboratory programs being utilized and the text must address the proper procedures for each-the close-support laboratory, the CLP (both RAS and SAS), the CRL, and the material properties lab(s). The present revisions make it much easier for me to offer specific guidance to HSI on these matters. As always, should there be any questions I would welcome a phone call from you or Judy Fassbender.

**COMMENTS ON THE REVISED QAPP**

<u>Section</u>	<u>Page</u>	<u>Comment</u>
3	2	Last paragraph and continuing onto the next page several corrections need to be made. First, the statement that begins "The level of QC effort for RAS analysis provided by the CRL/CLP is specified..." is incorrect since CRL does not provide RAS analysis, only SAS. The SOWs for organics and inorganics are for RAS analysis only. Eliminate "CRL" to make this statement correct. Second, the sentence "CRL's Contract Required Quantitation Limits (CRQL) for TAL inorganic analysis..." should specify that it is for <u>drinking water</u> (residential wells or municipal wells). "Because CRL may be used for analyzing water samples for hexavalent chromium..." should be changed. Please change <u>may be to will be</u> ; we have a firm commitment. The statement "The CSL (Ortek) will be used to screen soil samples for hexavalent chromium..." is misleading since they will analyze for total chromium. Please

correct. Also, the sentence near the end of this paragraph beginning "Select soil samples will be submitted to a CLP laboratory for confirmation..." Should be reworded for accuracy. The CLP hexavalent chromium samples cannot truly confirm the total chromium screening samples since the analyses are totally different. It is better to say that select soil samples will be sent to a CLP laboratory for hexavalent chromium analysis based on screening data.

Table QA1-1

Under the categories of Private Water Supply Wells and Municipal Water Supply Wells there are Field Blanks (one for each category). Normally field blanks are not collected for these types of samples because the sample containers are filled directly and filtering is not done. Please correct by removing these numbers (and changing the "totals") or, if HSI has a reason for these that I am not aware of, please explain.

For Surface Water Runoff/Hexavalent Chromium, please correct SAS CLP to read CRL SOP to be correct and consistent with other aqueous samples.

Footnote #2-Please eliminate "laboratory prepared".

Table QA1-2

The most recent guidance from EPA now has the analytical holding time for mercury at 28 days. This table, and perhaps elsewhere, has 26 days in some sections. Please correct.

The last (unnumbered) footnote should read MS/MSD instead of QA/QC. (The second statement regarding organic MS/MSD samples is correct, however HSI is advised to prepare for the extra volume for all aqueous samples. They may not know until just before sampling where the residential wells will be accepted.)

Table QA7-1

For Total Chromium Screening/Method this is not a SAS. "SAS" may either be eliminated or HSI may use "non-CLP" as is done with the ASTM methods.

For both TAL inorganics and TCL organics LOW LEVEL, the media should be changed from "groundwater" to "residential wells/municipal wells".

### **COMMENTS ON THE REVISED SAP**

<b><u>Section</u></b>	<b><u>Page</u></b>	<b><u>Comment</u></b>
4	5	Second paragraph-I have compared the Draft to the Revised and have found that the only thing that changed in this paragraph was the number of samples. Please include a very definitive description of chromium-bearing material.
5	7	The screening soil samples for hex chrome should be CSL-non CLP, not SAS.
8	3	The sampling method for municipal wells is only referenced in the text and the specific document title is not given. Since there seems to be some confusion on the need of a field blank, and perhaps other QC requirements, it would make my review easier if the sampling method was specified in the text as requested.
8	4	I can not find a separate SOP for basement sump sampling. I have made a check of the Table of Contents and several sections of the SAP and can not find this sampling method in the text. Please reference where this can be found.
10	3	Does "<P200" = "<35 microns"? If so, you may use either, but for clarity please use one term consistently. The SAS request (and perhaps other places) will have to be changed to <P200.

### **COMMENTS ON SOP'S**

<b><u>SOP</u></b>	<b><u>Page</u></b>	<b><u>Comment</u></b>
40100	4 & 6	Since this SOP has been eliminated, please state where I can find these modifications or this information as indicated in the response letter.
40500	2	Item (a)-The text no longer makes reference to Attachment A but the response letter does. I still can't find an Attachment A. There is only one example of a chain-of-custody form (Hydro-Search's) at the end of this SOP. This is not enough. There are 4 different chain-of-custody form that will be used for this project and examples of each must be included here

or there location referenced. This is the second request for this information

Item (b) has not been modified to include custody seal information as requested. If it is included elsewhere, please indicate in the text where it can be found.

Item (d) has not been modified as indicated. Again, please be aware that several chain-of-custody forms will be used. While a reference to pink and yellow copies may be correct for HSI's form, it is invalid for CLP forms. If the guidance provided is not sufficient to clear up these misunderstandings-call me.

40600

**PLEASE FOLLOW CLP PROTOCOL AS INDICATED IN THE GUIDANCE PROVIDED.** As stated several times previously, CLP labs do not provide containers or preservatives and any such statement to this effect must be eliminated.

Commercially obtained sample containers that are cleaned according to EPA's highest standards will come with a certificate of analysis substantiating the absence of contamination. HSI is to retain these forms with the project files. If chain-of-custody forms come with these containers, and this is unusual, these forms should be retained in HSI's project files also. There is no reason to send the supplier's forms with the samples to the lab. In this SOP please reference the U. S. EPA Bottle Requirement in the QAPP's Appendix A.

The Table which follows this SOP (the number has been hole-punched) has two Page 2's. Please provide page 1. Also, the mercury holding time should be 28 days. The last (unnumbered) footnote should be changed from QA/QC to MS/MSD.

50100

This SOP has not been removed as indicated in the response letter.

80200

4

There is an unfortunate typo here and in SOP 80300, page 2. The temperature should be 4° C not 40°.

91000

2

Subsection 3.1, coordinating with the close-support laboratory, does not belong in an SOP for groundwater sampling. The CSL will analyze soils only. Please eliminate.

- 9           **Second paragraph-HSI should be aware that the volume for a trip blank is the same as the volume of the samples it represents; 2-40 ml vials for groundwater, surface water, etc., and 3-40 ml vials for drinking water samples. Please correct the text to indicate this.**
- 29           **8.4-Reference to SUMMA canisters and gas sampling does not belong in this SOP for groundwater sampling. Gas sampling will not be done at Better Brite. Please eliminate.**
- 35           **9.1-If HSI has made special arrangements with the bottle/preservative supplier to return empty ampules with unused bottles, this statement is correct. If the text means that empty ampules should accompany sample bottles to the lab, this needs changing.**
- 38           **9.3 First paragraph-For all RAS parameters and most SAS parameters, a Friday arrival is perfectly alright. Saturday arrivals are also acceptable for RAS parameters and frequently acceptable for SAS parameters. The only exception to this will probably be the hexavalent chromium analysis for aqueous samples because of the 24 hour holding times and CRL's work schedule. It probably won't be necessary to have screening samples analyzed on a Saturday. HSI is instructed to refer to the guidance provided regarding schedules and shipping information for CLP samples. The text should include this information exactly. The information for the non-CLP labs may be left out to afford the flexibility it needs.**
- Second paragraph-Please check the guidance provided regarding shipping. CLP protocol calls for shipping samples within 24 hours of collection by overnight carrier, not arriving within 80 hours.**
- 39           **It is totally incorrect that a CLP laboratory (RAS or SAS) will contact any one other than Sample Management or Regional Sample Control Center to resolve any deficiencies. This is only true for the non-CLP labs (CSL or material properties). Please correct.**

QA Table 1-2

There are two page 1's here (the other half of the 40600 Table?).



100100      1      Please eliminate any reference to Sauk County Landfill.

120300           If this SOP has been replaced by a more pertinent SOP,  
please reference its location.

**COMMENTS ON DRAFT DMP**

<u>Section</u>	<u>Page</u>	<u>Comment</u>
3	6	3.2.3.13 Chain-of-Custody Forms-Text has left out the SAS Packing List/Chain-of-Custody Form. Please include. Also, please include examples of all 4 forms or reference their location (at the end of SOP 91000).