

## APPENDIX C

### EVALUATION OF DATA QUALITY OBJECTIVES ATTAINMENT

| Activity   | Objectives  | Action  | Objective Attained?   | Recommendations  |
|--|---|---|---|--|
| <b>Objective 1: Meet TNRCC Requirements for Site Closure</b>                             |   |   |   |  |
| <b>Attainment of Risk Reduction Standard Number 1: Closure/Remediation to Background</b> |   |   |   |  |
|  | Remove all hazardous and nonhazardous waste and waste residues and contaminated design and operating system components such as liners, leachate collection systems, and dikes from the unit or area of the unauthorized discharge. For remediation of media that have become contaminated by releases from a waste management unit or by other unauthorized discharge of hazardous or nonhazardous waste, the contaminated media must be removed or decontaminated to cleanup levels specified in this section (30 TAC 335.554(b) and (c)). | A geophysical survey was conducted to determine if there is evidence of buried waste at the site. The suspect pipe bedding containing lead and shot were excavated, stabilized and removed. | No. The geophysical survey did not indicate the presence of buried waste. However, a small amount of the pipe bedding containing lead and shot was not removed. | Remove the remaining contaminated pipe bedding and collect conformation samples for metals analysis. |

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|----------|--|--|---|---|
|          | <p>Determine compliance with RRS1 closure requirements by comparing to background as represented by results of analyses of samples taken from media that are unaffected by waste management or industrial activities. If the practical quantitation limit (PQL) is greater than background, then the PQL rather than background shall be used as the cleanup level provided that the person satisfactorily demonstrates to the executive director that lower levels of quantitation of a contaminant are not possible (30 TAC 335.554(d)).</p> | <p>Contaminant concentrations were compared to revised background levels (Parsons, February 2002) or PQLs.</p>                       | <p>No. Barium, chromium, zinc, cadmium, and lead were detected at concentrations that exceed their respective background levels in one sample and nickel was detected at concentrations exceeding background levels in two samples.</p> | <p>The levels of metals detected were at or slightly above RRS1, with the exception of barium, chromium, zinc, cadmium, and lead in one sample, and nickel in two samples. However, the sampled material had more of the properties of the soils at CSSA and less properties of the Glen Rose Limestone to which it was compared. None of the reported concentrations were above the comparison criteria for soils at CSSA. Material at similar depths in adjacent borings was described as soil in the boring log, and none of the analytes in those borings exceed background soils levels. If future conformation sampling produces results below the CSSA soils comparison criteria, closure under RRS1 is recommended.</p> |
|          | <p>Attainment of cleanup levels shall be demonstrated by collection and analysis of samples from the media of concern (30 TAC 335.554(e)).</p>   | <p>Subsurface soil samples were collected at the site and analyzed for contaminants of concern, including metals and explosives.</p> | <p>Yes. Six subsurface soil samples from three soil borings collected beneath the former contaminated pipe bedding.</p>   | <p>Collect additional soil samples after the remaining portion of contaminated has been removed.</p>  |

| Activity   | Objectives   | Action  | Objective Attained? | Recommendations                          |
|--|--|---|---------------------|--|
| <b>Objective 2: Meet Requirements of 3008(h) Order for RFI</b>   |  |   |                     |  |
| <b>RFI Workplan Requirements</b>   |  |   |                     |  |
| Field Sampling<br><i>(Detailed listing of methods and procedures are provided in project plans which are incorporated by reference).</i> | Conduct field sampling in accordance with procedures defined in the project work plan, SAP, QAPP, and HSP. | All sampling was conducted in accordance with the procedures described in the project plans.  | No.                 | Additional samples need to be collected. |
| <b>Facility Investigation</b>  |  |   |                     |  |
| Characterization of Environmental Setting - Hydrogeology (B.3.A.1)   | Evaluate hydrogeologic conditions at the site.   | Shallow groundwater was not encountered during drilling at the site.<br><br>Groundwater of the Trinity Aquifer is being addressed through the Groundwater Investigation.  | NA                  | NA                                       |
| Characterization of Environmental Setting- Soils (B.3.A.2)   | Characterize soils in accordance with USCS soil classification system (B.3.A.2 (a)).                       | Soil types at the site are based on the SCS Bexar County Soil Survey (USDA, 1991) and are described in Section 1.2.1.   | Yes.                | NA                                       |
|  | Determine soil pH (B.3.A.2 (e)).   | The pH of each of the soil types evaluated as part of the background metals concentration study was determined through laboratory analysis. According to those analyses, the pH of Krum complex and Bracket soils is 7.87 and 7.85, respectively. | Yes.                | NA                                       |
|  | Determine moisture content (B.3.A.2 (g)).  | The moisture content of each sample was analyzed. Moisture content values are provided in the laboratory data packages.   | Yes.                | NA                                       |

| <b>Activity</b>  | <b>Objectives</b>  | <b>Action</b>  | <b>Objective Attained?</b>   | <b>Recommendations</b>   |
|--|--|--|--|--|
| Characterization of Environmental Setting – Surface Water and Sediment (B.3.A.3) | Characterize marshes, creeks, wetland areas, or ditches at the site. | An ephemeral creek traverses SWMU B-33, from west to east. This creek flows only after rainfall events. Direction of runoff flow has been evaluated in Section 1.2.1.        | Yes.   | NA   |
| Source Characterization (B.3.B)  | Identify the source area (B.3.B.1).                                  | A description of the source area is provided in Section 1.1.2.   | Yes. Sampling at the site was biased toward areas most suspected of contamination, including several locations beneath the suspect pipe bedding.   | None. Several metals were detected above RRS1 criteria; however, no contamination was found at concentrations exceeding the comparison criteria for soils at CSSA. |
|  | Identify the location of the unit/disposal area (B.3.B.2 (a)).       | The boundary of the site was reviewed during preparation of this report and adjusted, if necessary based on observations made during the field investigation.                | Yes. Although the accuracy of the boundary survey of the site is estimated to have an approximate error of 25 feet, this accuracy is sufficient for closure under RRS1. If CSSA opts to close the site under RRS2, a metes and bounds survey by a licensed surveyor will be necessary. | NA   |
|  | Identify the type of unit/disposal area (B.3.B.2 (b)).               | The type of unit/disposal area was identified as part of CSSA waste management operations. Based on records review, interviews with base personnel, and aerial photo review. | Yes. The type of unit was confirmed during excavation.   | NA   |
|  | Identify design features (B.3.A.2(c)).                               | Information regarding design features was obtained during the Environmental Assessment (ES, 1993) and through visual observation during the field investigation.             | Yes.   | NA   |

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|--|--|---|---|--|
|  | Identification of past and present operating practices, period of operation, age of unit/disposal area, and method used to close the unit/disposal area (B.3.B.2 (d), (e), (f), and (h)).            | All known information regarding these items is provided in Section 1.1. This information is from the Environmental Assessment, records review, interviews, aerial photo review, and visual observations.                                      | Yes. To the extent possible with data available.  | NA   |
|  | Determine general physical conditions of the site (B.3.B.2(g))   | The general physical condition of the site was determined during the field investigation. This information is presented in Section 1.1.2.   | Yes.  | NA   |
|  | Identify waste characteristics, including type of waste placed in the unit, physical and chemical characteristics of the wastes, and migration and dispersal characteristics of the waste (B.3.B.3). | Records regarding historic waste disposal practices at CSSA are very limited. All known information, derived from the Environmental Assessment, records review, interviews, and visual observations at the site is provided in Section 1.1.2. | Yes.  | NA   |
| Contamination Characterization – Groundwater (B.3.C.1) | Characterize the vertical and horizontal extent of groundwater contamination.  | Shallow groundwater was not encountered during drilling at the site.<br>Groundwater of the Trinity Aquifer is being addressed through the Groundwater Investigation.  | NA  | NA   |
| Contamination Characterization – Soil (B.3.C.2)        | Determine vertical and horizontal extent of contamination (B.3.C.2 (a)).   | Three soil borings were advanced beneath the suspect pipe bedding material. Two samples were collected from each boring and analyzed for metals and explosives.   | No. The extent of contamination has been defined per TNRCC RRS1 requirements for the areas surrounding and adjacent to the excavated area. Additional samples will be collected after removal of the remaining material | Confirmation samples should be collected after removal of the remaining contaminated material. |

| Activity | Objectives   | Action   | Objective Attained? | Recommendations |
|----------|--|--|---------------------|-----------------|
|          | Describe contaminant and soil properties with the contaminant source area, including contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation, and other factors that might affect contaminant migration and transformation (B.3.C.2 (b)). | See Characterization of Environmental Setting- Soils (B.3.A.2), above. | Yes                 | NA              |
|          | Describe soil properties (B.3.C.2(c)).   | See "Characterization of Environmental Setting – Soils" above.         | Yes.                | NA              |
|          | Identify the direction of contaminant movement (B.3.C.2 (d)).  | No actions taken.  | NA                  | NA              |
|          | Extrapolate future contaminant movement (B.3.C.2 (e)).   | No actions taken.  | NA                  | NA              |

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|          | Implement a soil boring investigation to determine the extent of soil contamination. Soil gas monitoring will be performed during drilling of all borings. Laboratory analysis of borings for contaminants of potential concern will be performed on soils at depths where either visual contamination is evident, or soil gas concentrations indicate contamination. All boreholes shall be properly abandoned. | Three soil borings were advanced to determine the extent of soil contamination. Six soil samples were collected and analyzed for metals and explosives. The soil borings were properly abandoned upon completion of field activities. | No. The extent of contamination has been defined per TNRCC RRS1 requirements for the areas surrounding and adjacent to the excavated area. Additional samples will be collected after removal of the remaining contaminated material. | Confirmation samples should be collected after removal of the remaining contaminated material. |
|          | Prepare a map of all areas included in the investigation (B.3.C.2 (i)).  | Figures included in this report show all areas included in the investigation.   | Yes.  | NA   |
|          | All reporting limits should be below regulatory criteria.  | RLs were approved by TNRCC on October 5, 1999. SQLs based on these RLs are considered RRS1 standards for all analytes except metals. Metals background levels for CSSA were approved by TNRCC on April 23, 2002.                      | Yes.  | NA   |
|          | Perform all analyses in accordance with the AFCEE QAPP.  | All analyses were performed in accordance with the AFCEE QAPP and approved variances.   | Yes.  | NA   |
|          |  | All data flagged with "U," "F," "M," and "J" are considered usable for site characterization purposes.  | Yes. "J" flagged data are also considered usable. The estimation of quantitation does not significantly affect the sample results.  | NA   |

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|---|---|---|---------------------|---|
|   |   | All "R" flagged data are considered unusable. Non-compliance of the relative percent difference (RPD) of the field duplicate collected on the same day lead to "R" flagged data for one metal. There were five sets of field duplicates collected on the same day at different sites. The non-compliant RPD was a field duplicate collected for surface soil samples. This non-compliance resulted in flagging one metal for two soil boring samples. In addition, two out of the five sets of field duplicates collected were for soil boring samples. Both these sets of quality control (QC) data were within QC criteria. | Yes.                | As the field duplicates for the soil boring samples were compliant, it is evident that the sample collection procedures were not compromised. Since the non-compliant field duplicate was a surface soil sample and the rejected metal was from a soil boring sample, the data are considered usable for characterization and closure purposes. |
| Contaminant Characterization – Sediment and Surface Water (B.3.C.3) | Characterize the extent of sediment and surface water contamination.  | NA.   | NA                  | NA  |
| Potential Receptors (B.3.D).  | Collect the information necessary to describe the human populations and environmental systems that are susceptible to contamination exposure from the Facility. | Potential receptors are discussed in Section 1.2.5 of this report.  | Yes.                | NA  |