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Final Report on:
Former ASARCO Smelter Site, El Paso, Texas
Technical Comments on Community Concerns Regarding the
Draft Remedial Action Work Plan
25 May 2011

This report provides an independent technical response to community concerns about the *Draft Remedial Action Work Plan* (RAWP) for the former ASARCO smelter in El Paso, Texas. In a 12 October 2010 letter to the U.S. Environmental Protection Agency (EPA), community groups requested independent technical assistance to address a number of their concerns regarding the contamination, assessment and remediation of the site and off-site areas. This report focuses on the concerns expressed about the RAWP. Attachment A contains the Texas Custodial Trust's (the Trust's) responses to the 2 February 2011 draft of this report.

This report is provided by EPA's Technical Assistance Services for Communities (TASC) program, which is implemented by independent technical and environmental consultants. Its contents do not necessarily reflect the policies, actions or positions of EPA.

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 3. Community concern: Soil samples should be collected from the landfills identified by former ASARCO employees.
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A. Overview of community concerns

Concerned community members, represented by Veronica Carbajal of Texas RioGrande Legal Aid, have expressed the following concerns about the RAWP and the site's overall assessment and remediation:

1. The RAWP plans to sample for too few chemicals. It does not plan to sample for hydrazine or dioxin-like compounds (such as polychlorinated biphenyls (PCBs)); there is evidence that these should be chemicals of concern at the site.
2. The RAWP does not call for sampling at sufficient soil depths.
3. The RAWP should include plans to sample the landfills that former ASARCO employees have identified.
4. The Trust is demolishing buildings that handled waste from Encycle and selling components before sampling them.
5. Airborne contamination is a concern, especially during demolition, due to the area's windiness.
6. The facility's former handling of military waste is a concern.¹

B. Technical comments on community concerns

1. Community concern: The Trust should sample for more contaminants.

Community groups feel that the RAWP's sampling plan should include investigation of more chemicals. For example, they want the Trust to sample for hydrazine, cyanide, mercury, cadmium and dioxin-like compounds (including PCBs), which former ASARCO workers saw being used, stored or deposited at the site (Carbajal 2010; Carbajal 2011b). Of these five substances, the RAWP includes plans to sample only for mercury and cadmium.

Community members provided TASC with written documentation of PCB spills at the facility (ASARCO Inc. El Paso 2011). This documentation includes laboratory analytical data, numerous PCB spill reports and PCB transformer inspection reports detailing spills. A 1994 engineering document prepared for ASARCO planned for a "hydrazine treatment system for acid" (Carbajal 2010, Attachment F); TASC does not know whether this system was constructed. Former ASARCO workers have documented that they observed PCBs, hydrazine, cyanide, mercury and cadmium on the site (Carbajal 2011b). Former ASARCO workers saw cyanide dust in the "Old Cadmium area" in the 1980s, and several gallon containers of hydrazine at the "#2 Acid Plant between cooling towers and substation" in the 1990s (Carbajal 2011b).

According to the master Access databases of all soil and ground water sampling data for the site, compiled by Trust contractor Malcolm Pirnie, ground water and soil at the site have not been analyzed for cyanide, hydrazine or dioxin-like compounds (including PCBs). However, samples have been analyzed for cadmium (2,595 soil samples, 4,979 ground water samples) and mercury (57 soil samples, 39 ground water samples). Appendix A of the RAWP contains figures showing soil sample results for the eight constituents of concern (COCs); the cadmium figure shows that cadmium was detected above the 1,500 parts per million risk threshold in various locations across the site. Mercury was detected in 22 of the 57 soil

¹ Concerns 1-4 were expressed by Veronica Carbajal, representing concerned community members, to TASC via teleconference with Kirby Webster and Krissy Russell-Hedstrom on 16 December 2011. Concerns 5 and 6 were expressed via other communications, as documented in the text.

samples analyzed for mercury; all of these samples were from Pond 6, which has already been remediated. Mercury was never detected above EPA's drinking water standard in the 39 ground water samples analyzed for mercury.

EPA and the Texas Commission on Environmental Quality (TCEQ) have stated in their responses to public comments that certain metals at the site (such as lead and arsenic) are the "drivers" which pose the greatest environmental risk; by remediating the site to address these drivers, the other pollutants at the site will also be addressed in the process (Starfield 2010, p. 3 of itemized responses; TCEQ 2010, p. 3 of itemized responses). EPA stated that it "has not identified pollutants present above risk screening levels expected to have significantly different fate and transport mechanisms than those already being addressed" (Starfield 2010, p. 3 of itemized responses).

Environmental samples collected from the site have not been analyzed for PCBs, cyanide and hydrazine; these substances are documented in PCB-related documents and through the observations of former ASARCO workers to have been used and/or spilled at the site. TASC suggests that the community groups may want to request that the Trust, TCEQ and/or EPA provide their rationale for why PCBs, cyanide and hydrazine are sufficiently similar to the site's "drivers" (in location on the site, and environmental fate and transport) that the risks from these substances can be assumed to be addressed sufficiently without sampling.

TASC suggests that community groups may want to request that the Trust, TCEQ and/or EPA determine whether the planned hydrazine treatment system was actually constructed. If it is determined that samples should be collected to analyze for hydrazine, TASC recommends that the 1994 hydrazine system engineering document be consulted to identify potential sampling locations (e.g., the hydrazine receiving facility, the hydrazine dilution area). The Trust's response to an earlier draft of this report states that "there are no standard EPA methods for hydrazine in the environment, primarily due to the reactive nature of the compound" (see Attachment A, response to concern #1). However, some analytical methods are available for hydrazine in environmental samples (ATSDR 1997b, pp. 138, 141-142). The Agency for Toxic Substances and Disease Registry (ATSDR) states that hydrazines can "dissolve in water, where they usually break down into less toxic compounds within a few weeks. ... In soil, hydrazines may stick to particles and be changed within a few days to less harmful compounds" (ATSDR 1997a). TASC suggests that community groups may want to request that the Trust, TCEQ and/or EPA clarify whether the decision not to sample for hydrazine is based on any of the following:

- A lack of analytical methods.
- An assumption that any hydrazine spilled in the past has by now broken down into less toxic substances.
- A decision that hydrazine and its breakdown products are sufficiently similar to the site's drivers that sampling is not needed.
- Some other consideration.

TASC also suggests that the existing mercury sampling data be reviewed to ensure that the locations sampled include those areas where former ASARCO workers recall that mercury

was stored and/or used (e.g., by the zinc plant, east of the cadmium building); if these areas have not been sampled for mercury, then such sampling should be added to the RAWP.

EPA is currently in the process of imaging documents from Encycle-related boxes at the National Enforcement Investigations Center, to be posted on an EPA website. The community groups have requested that the Trust, TCEQ and EPA review these documents and revise the site's planned sampling and remediation, if appropriate.

2. Community concern: Soil samples should be collected from greater depths.

The RAWP proposes to collect soil samples for environmental analysis from maximum depths of approximately 5 feet (Table 7-2). These samples will be collected from locations not previously sampled. Community members believe that samples should be collected from greater depths.

Appendix D of the October 1998 Phase I *Remedial Investigation Report* shows that soil contaminants are present at depths far greater than the 5-foot depth proposed in the RAWP. Furthermore, Appendix D shows that at many soil sampling locations, contaminants are present at their greatest concentrations at depths greater than 5 feet (e.g., EP-73, EP-74, EP-79). Therefore, collecting samples from only the top 5 feet of soil may result in some sampling locations being considered uncontaminated when, in fact, contamination may be present at greater depth. Community groups may want to request that the Trust, TCEQ and/or EPA provide an explanation in laymen's terms of why soil contamination at depths greater than 5 feet is acceptable, considering the potential for contamination to migrate into ground water and surface water.

3. Community concern: Soil samples should be collected from the landfills identified by former ASARCO employees.

On 26 March 2011, former ASARCO workers toured the site with representatives of EPA, TCEQ, the Trust and Malcolm Pirnie, and identified eight locations where potentially toxic waste spilled or was buried (Roberts 2011b, Texas Custodial Trust 2011). In response to this information, the Trust plans to drill 12 additional borings at five of the areas identified by the former workers; soil from these borings will be sampled for the substances identified by the former workers, including PCBs, petroleum, mercury, pH and metals (Texas Custodial Trust 2011). The Trust believes that additional sampling, beyond what is outlined in the current plan, is not needed for the other three areas identified by the former workers (Texas Custodial Trust 2011).

4. Community concern: Potentially contaminated building components should be sampled before removal.

According to a 1998 brief by the U.S. Department of Justice, Encycle and ASARCO conducted "illegal treatment and disposal of hazardous waste" at Encycle's Corpus Christi facility and ASARCO's El Paso smelter (U.S. DOJ 1998, p. 4). Encycle conducted "sham recycling" because "numerous hazardous wastes with little or no recoverable metals value

were mixed into Encycle alleged ‘products’” (U.S. DOJ 1998, pp. 1, 2). These “products” were then shipped to ASARCO’s East Helena and El Paso smelters, where ASARCO did not properly store and dispose of them as hazardous waste (U.S. DOJ 1998, p. 1).

EPA’s June 1997 inspection report for Encycle includes as an attachment a whistleblower report written by David Cahill, a former operations manager at Encycle’s Corpus Christi facility, who was fired in April 1994 (Benjamin 1997, p. 119). The whistleblower report describes sham recycling and other inappropriate waste handling practices at Encycle’s facility. According to the whistleblower report, much of Encycle’s sham recycling consisted of mixing waste materials into the copper product that was shipped to ASARCO’s El Paso smelter.

Given that hazardous wastes were improperly handled at ASARCO’s El Paso smelter, community members are concerned that the Trust is dismantling buildings and selling components after only a power wash with soap and water, without sampling the building components for contamination (Carbajal 2010). They are concerned that this practice could be sending contaminated building components off site improperly. It is not known whether the building components are contaminated prior to or after washing, because no sampling has occurred. The Trust has stated that “the material that was sold generally is sprayed with high-pressure water to remove the dust, which contains the contaminants. It is then shipped to companies that are aware of pollution problems at the site” (Roberts 2011a). The 8 October 2010 demolition health and safety plan (demolition HASP) very briefly describes the decontamination of personnel, equipment and tools using soap and water (Environmental Resources Management Southwest 2010, pp. 24-25). The site’s 12 October 2010 *Project Manual: Contop & Old Reverb Asset Recovery* states that buildings will be rinsed prior to demolition in order to reduce dust; that document’s description of “decontamination” procedures refers to asbestos remediation and the cleaning of vehicles and personnel.

TASC believes that rinsing the buildings for dust control is not likely to remove all of the contaminants which may be present, especially those with low solubility in water, such as PCBs. Therefore, given the facility’s history of improper handling of hazardous wastes, it seems prudent to conduct confirmatory sampling of building components before demolition workers come into contact with the components, and before the components are shipped off site.

According to TCEQ’s notes summarizing a meeting with former ASARCO workers, TCEQ does not consider the demolition work to be remediation (Carbajal 2011a, p. 9); presumably, this distinction means that the demolition work is subject to less stringent TCEQ oversight. TASC suggests that the community groups request that TCEQ oversee all site activities that could result in spreading of contamination, including demolition and washing of potentially contaminated building components.

Community members are also concerned that the employees of the demolition subcontractor are not adequately protected from contamination during the demolition, because “the sampling data that would dictate the degree of protection required will not be available” (Carbajal 2010). According to the site’s overall health and safety plan (site HASP), each

contractor and subcontractor at the site is “expected to perform their operations in accordance with their own Trust approved site-specific HASP policies and procedures unique to the contractor/subcontractor’s work to ensure that hazards associated with the performance of the work activities are properly controlled” (Malcolm Pirnie 2010, pp. 1-3 to 1-4). According to the attorney representing concerned community members, the Trust has stated that it is not responsible for providing personal protective equipment (PPE) for the employees of subcontractors (Carbajal 2011a, p. 9). The 8 October 2010 demolition HASP lays out the demolition contractor’s procedures for selecting the proper level of PPE. PPE selection is to be based on ambient air concentrations of arsenic, cadmium, chromium, copper, iron, lead, selenium, silica and/or dust. Designated employees of the demolition contractor will determine when and where ambient air monitoring will occur (Environmental Resources Management Southwest, p. 16). The work area air monitoring and personal air monitoring to be conducted during demolition are described in the dust monitoring plan and the lead exposure compliance program (Appendices O and N of the demolition HASP).

The demolition HASP focuses on air monitoring to determine the level of PPE worn by workers. Because workers could also be exposed by direct contact with building components, the community groups may want to suggest that additional PPE criteria be added, based on the level of contamination on the surfaces of building components. TASC suggests that the results of these surface samples also be consulted prior to removal of components from the site.

5. Community concern: Airborne contamination.

Community members are concerned about airborne contamination from the site during demolition, especially during windy conditions (Carbajal 2011a, pp. 9, 12). The RAWP states that “sand and dust storms are present during the spring season, which is considered to be the windiest time of the year” (p. 2-3). Both the demolition HASP and the site HASP describe the protocols to be followed for air monitoring at the site, for the protection of site workers and nearby residents. According to the site HASP, the air monitoring is to include worker air monitoring (to monitor employee exposure), work area air monitoring (to measure concentrations in work areas) and perimeter air monitoring (to determine whether site work is causing contaminants to migrate off site) (pp. 6-2 to 6-7). According to the site HASP, air monitoring at the site’s perimeter will evaluate the levels of arsenic, cadmium, chromium, copper, iron, lead, selenium, zinc, airborne particulates and silica (p. 6-7). If work at the site causes the levels of these substances to be above action levels, then “work will be stopped and additional dust suppression activities will be implemented” (p. 6-7). The demolition HASP is not clear about what substances will be evaluated during air monitoring. Table 5-4 of the demolition HASP lists action levels and response actions for the same substances given above for the site HASP (except that Table 5-4 omits zinc), while Appendix O of the demolition HASP states that perimeter air samples will be analyzed for dust, lead, arsenic and cadmium. TASC suggests that the community request an explanation from the Trust regarding which substances are being evaluated during air monitoring.

Demolition is underway at the site (Texas Custodial Trust 2010). Perimeter dust monitor data from August through December 2010 indicate that demolition activities did not cause dust

levels to rise above the “site-specific internal sentinel value of 43 $\mu\text{g}/\text{m}^3$ [micrograms per cubic meter]” (Texas Custodial Trust 2010). It is unclear why the “site-specific internal sentinel value” is greater than the 15 $\mu\text{g}/\text{m}^3$ permissible exposure limit for dust listed in Table 6-2 of the site HASP. Community groups may want to ask the Trust for an explanation. Air monitoring data for substances other than dust were not available for review.

The Trust’s response to an earlier draft of this report states that “Appendix O [the dust monitoring plan] of the demolition HASP has been updated to reflect current asset recovery activities ... The current demolition HASP is maintained on site” (see Attachment A, response to concern #5). TASC suggests that the community may want to request that the current version of the demolition HASP (and all other site documents) be maintained online.

6. Community concern: Military waste.

Community groups are concerned that the site may be contaminated by radioactive materials due to the smelter’s handling of waste from the Rocky Mountain Arsenal (RMA) (Starfield 2010, pp. 5-6 of itemized responses). Radioactivity is not addressed in the RAWP. According to the master Access databases of all soil and ground water sampling data for the site, ground water and soil at the site have not been analyzed for radioactivity.

RMA was a chemical weapons facility, not a nuclear facility, so its wastes are not expected to be radioactive. The 2005 *Five-Year Review Report for Rocky Mountain Arsenal* does not list radioactive isotopes as chemicals of concern at the site. According to a 14 May 2010 letter from EPA to community members, each waste shipment sent from RMA to Encycle (which later shipped the waste to the ASARCO’s El Paso smelter) was tested for radioactivity and found not to be radioactive.

Community members are also concerned about Encycle’s handling of brine water produced during the incineration of chemical warfare agents at the U.S. Army’s Tooele Chemical Agent Disposal Facility (TOCDF).² Community members are concerned that this waste may have been sent to ASARCO’s El Paso smelter. In 2005, a community member obtained records from TCEQ documenting Encycle’s treatment of at least six railroad tanker cars of incinerator quench water from TOCDF in 1997 (Clewis 1997, pp. 2-3; Harvey 1997a; Harvey 1997b). In 1998, Encycle told regulators that it “is no longer receiving rail cars of hazardous waste from Deseret Chemical in Tooele, Utah” (Clewis 1998). TOCDF uses incineration to destroy chemical weapons; during 1997 and 1998, TOCDF was destroying the nerve agent GB, also known as sarin (U.S. Army Chemical Materials Agency 2010, pp. 5-6).

Scrubber brine is a waste produced from treating the incinerators’ exhaust gases. “Spent brine is characterized as a hazardous waste. It contains water, dissolved salts, suspended solids, and trace amounts of heavy metals” (U.S. Army Chemical Materials Agency 2007, p. 1). It does not contain any organic compounds (such as chemical warfare agents), due to the extremely high incineration temperatures (U.S. Army Chemical Materials Agency 2010, p. 6). A 2007 legal declaration by a waste incinerator air pollution expert states that TOCDF has

² E-mail from Veronica Carbajal to TASC, 6 February 2011.

“air monitoring systems specifically intended to detect” the chemical warfare agents being destroyed (Carman 2007, pp. 8-9). The brine water received by Encycle was coded as waste containing arsenic, chromium and lead (Clewis 1997, p. 2), which are listed as COCs in the RAWP.

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- Appendix C. Field Sampling Plan.
- Appendix D. Review of ASARCO El Paso Smelting Processes.

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Attachment A: The Texas Custodial Trust's response to the 2 February 2011 draft of the TASC report on the *Draft Remedial Action Work Plan*

Response to TASC Comments received February 2, 2011; Former ASARCO Smelter Site, El Paso Texas, Technical Comments on Community Concerns with the Draft Remedial Action Work Plan.

1. Community concern: The Trust should sample for more contaminants.

Comment: Community groups feel that the RAWP's sampling plan should include investigation of more chemicals. For example, they want the Trust to sample for PCBs, hydrazine, cyanide, mercury and cadmium, which former ASARCO workers saw being used, stored or deposited at the site (Carbajal 2010; Carbajal 2011b). Of these five substances, the RAWP plans to sample only for cadmium.

Community members provided TASC with written documentation of PCB contamination at the facility (ASARCO Inc. El Paso 2011). This documentation includes laboratory analytical data, numerous PCB spill reports and PCB transformer inspection reports detailing spills. A 1994 engineering document prepared for ASARCO planned for a "hydrazine treatment system for acid" (Carbajal 2010, Attachment F). Former ASARCO workers have documented that they observed PCBs, hydrazine, cyanide, mercury and cadmium on the site (Carbajal 2011b). According to the master Access databases of all soil and ground water sampling data for the site, compiled by Trust contractor Malcolm Pirnie, ground water and soil at the site have not been analyzed for PCBs, cyanide or hydrazine. Samples have been analyzed for cadmium (2,595 soil samples, 4,979 ground water samples) and mercury (57 soil samples, 39 ground water samples), however.

EPA and TCEQ have stated, in their responses to public comments, that certain metals at the site (such as lead and arsenic) are the "drivers" which pose the greatest environmental risk; by remediating the site to address these drivers, the other pollutants at the site will also be addressed in the process (Starfield 2010, p. 3 of itemized responses; TCEQ 2010, p. 3 of itemized responses). EPA stated that it "has not identified pollutants present above risk screening levels expected to have significantly different fate and transport mechanisms than those already being addressed" (Starfield 2010, p. 3 of itemized responses). Environmental samples collected from the site have not been analyzed for PCBs, cyanide and hydrazine; these substances are documented to have been used and/or spilled at the site. TASC suggests that the community groups may want to request that the Trust, TCEQ and/or EPA provide their rationale for why PCBs, cyanide and hydrazine are sufficiently similar to the site's "drivers" (in location on the site, and environmental fate and transport) that the risks from these substances can be assumed to be addressed sufficiently without sampling. If it is determined that samples should be collected to analyze for hydrazine, TASC recommends that the 1994 hydrazine system engineering document be consulted to identify potential sampling locations (e.g., hydrazine receiving facility, hydrazine dilution area).

TASC also suggests that the existing mercury sampling data be reviewed to ensure that the locations sampled include those areas where former ASARCO workers recall that mercury was stored and/or used (by the zinc plant, east of the cadmium building); if these areas have not been sampled for mercury, then such sampling should be added to the RAWP.

Response:

PCBs: The Ex-ASARCO Workers made a request during the October 12, 2010 meeting that the Trust investigate potential PCB storage on the plant property, specifically east of the acid tanks. The project team has reviewed the request and will add two additional five-foot borings for sample collection and analysis to the Final RAWP for this purpose. If PCBs are encountered during the demolition process all appropriate safety precautions and PCB handling protocols will be followed.

Hydrazine: The Trust has evaluated the information that the Ex-ASARCO Workers provided during the October 12, 2010 meeting regarding hydrazine. The project team has reviewed the chemistry of hydrazine and discovered that there are no standard EPA methods for hydrazine in the environment, primarily due to the reactive nature of the compound. The Trust has informed the demolition team that hydrazine may be present in the acid plant area. All necessary safety precautions will be taken when work is performed in this area.

Cyanide: The Trust has interviewed additional former site employees related to cyanide storage and use on the plant property and has evaluated the use of cyanide related to the concentrates routinely smelted at the site. The Trust was informed by the former site employees that cyanide was not known to be stored on the plant property or used in the smelting operations conducted at the site. The concentrates smelted at the site were generated by flotation processes; cyanide is not routinely used during floatation of these ores. Therefore, cyanide is not to be expected to be present in the concentrates.

If the Ex-ASARCO Workers have additional documentation related to the storage or use of cyanide on the plant property, the Trust requests (for the protection of site workers and the community) that this information be provided to the Trust no later than three (3) weeks from the issue date of this response to comments. If credible evidence related to cyanide or other chemicals is found, these chemicals will be added to the analytes of interest list for future sampling and analysis.

Mercury: Mercury has been analyzed for in samples collected at 33 surface locations (all were non-detect). One of these samples is near the former Zinc Plant (EP-73). In addition, 24 samples were collected and analyzed during the former Pond 6 excavation. To augment the previous sampling results (as presented to the Ex-ASARCO Workers during the October 12, 2010 meeting) mercury was added as an analyte of interest (AOI) and will be sampled and analyzed for at all new locations (including by the zinc plant and east of the cadmium building) described in the RAWP.

Cadmium: As presented to the Ex-ASARCO Workers during the October 12, 2010 meeting, this element is a constituent of concern (COC) and will be sampled and analyzed for at all new locations described in the RAWP.

2. Community concern: Soil samples should be collected from greater depths.

Comment: The RAWP proposes to collect soil samples for environmental analysis from maximum depths of approximately 5 feet (Table 7-2). These samples will be collected from locations not previously sampled. Community members believe that samples should be collected from greater depths.

Appendix D of the October 1998 Phase I *Remedial Investigation Report* shows that soil contaminants are present at depths far greater than the 5 foot depth proposed in the RAWP. Furthermore, Appendix D shows that at many soil sampling locations, contaminants are present at their greatest concentrations at depths greater than 5 feet (e.g., EP-73, EP-74, EP-79). Therefore, collecting samples from only the top 5 feet of soil may result in some sampling locations being considered uncontaminated when, in fact, contamination may be present at greater depth. Community groups may want to reference Appendix D of the Phase I *Remedial Investigation Report* when suggesting that the Trust collect soil samples from greater depths.

Response: The Trust is aware that soils are impacted at various depths around the site, including at depths greater than five feet. Data from Appendix D of the Phase I Remedial Investigation Report and other sources were reviewed to determine data gaps. As we have previously stated, we believe in general, that the impacts to soils, ground water and surface water at the site have been reasonably documented by previous investigations at the site in light of the constituents that were analyzed. The planned investigations are being done to address data gaps identified from our review of existing data, and from our discussions with EX-ASARCO employees and other stakeholders with knowledge of the site. COCs and AOIs for planned investigation areas are summarized in the table below:

COCs and Analytes of Interest for Soils and Solids		
Area	COC List	Analytes of Interest
All New Samples	arsenic, cadmium, chromium, copper, iron, lead, selenium, zinc	antimony, barium, cobalt, mercury, molybdenum, nickel, silver
Caustic Areas	NA	hexavalent chromium
Unloading, Bedding and North Converter Staging Areas	NA	VOCs(1)
Unloading, Bedding and North Converter Staging Areas	NA	chlordan, endrin, hexachlorocyclopentadiene, methyl parathion
Diesel Spill Areas	BTEX (2) and total petroleum hydrocarbons	None
Transformer Staging Area	NA	Polychlorinated Biphenyls (PCBs)
(1) VOCs = tetrachloroethene, trichloroethene, methylene chloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, carbon tetrachloride, chlorobenzene, 1,2-dichlorobenzene, trichlorofluoromethane, 1,1,2-trichloro-1,2,2-trifluoroethane, dichlorodifluoromethane, xylenes, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, methanol (2) BTEX = benzene, toluene, ethylbenzene, and xylenes		

Our sampling and analysis rationale for each area is described below:

- **Raw Materials Feed Areas – Samples will be collected from 5-foot borings (samples at 0.5, 1.5, 3.5 and 5 foot depths) in the unloading building staging area, bedding building area and anode pour area. The depths are based on our understanding that rail cars may have leaked liquids or materials were spilled from rail cars to the soil surface in these areas during operations. Existing data from these areas and our experience at similar sites indicates this is an appropriate protocol.**

- **Closed Areas – Samples will be collected from 5-foot borings (samples at 0.5, 1.5, 3.5 and 5 foot depths [below the existing covers]) in the former Lead, Zinc and Cadmium plant areas. These are areas previously closed where confirmation data is needed to evaluate the conditions under the existing covers.**
- **Transformer Staging Area – Samples will be collected from 5-foot borings (samples at 0.5, 1.5, 3.5 and 5 foot depths) in the former transformer staging area. The sampling method and depths are consistent with this type of investigation to assess the potential presence of PCBs that may have been spilled.**
- **Baghouses and Electrostatic Precipitators - Surface samples will be collected in areas outside the baghouses (upper 6 inches) located adjacent to the unloading and bedding buildings. Surface samples will also be collected from the baghouses and electrostatic precipitators adjacent to the Contop-Reverb-Converter buildings. Surface samples are specified and appropriate in these areas to determine if impacts are present from unloading collected material from these facilities during operations.**
- **East Property - Surface samples will be collected (upper 6-inches) to characterize various small waste piles and the surface soils on the mountain area located east of the freeway. Surface samples are specified and appropriate in these areas since the waste piles are small and the mountain area would have been impacted from fugitive dust from the former facility.**

3. Community concern: Soil samples should be collected from the landfills identified by former ASARCO employees.

Comment: According to Veronica Carbajal, the attorney who represents concerned community members, former ASARCO workers know the locations of six on-site landfills “but are not willing to share that information with the EPA, TCEQ or the Trustee unless they are allowed on-site to identify their locations, members of the media are present, and there is a firm commitment to test for the appropriate constituents.”³

According to Appendix A of the RAWP, soil samples have been collected extensively from many locations across most of the site. However, if former ASARCO workers have additional information about contamination, TASC suggests that it be shared with EPA and/or TCEQ as soon as possible and without conditions, in order to provide the agencies with the most complete information about the site’s environmental history.

Response: The Trust is aware of the following landfills or waste piles on the property; all of which have either been addressed in the past or will be addressed as part of the Trust’s activities.

- **Cells 1, 2 and 3: Former on-site ponds that have been excavated to native material, lined and then filled with Category I and Category II material and capped.**

³ January 19, 2011, e-mail from Veronica Carbajal to TASC.

- **Fines Pile:** Based on the samples collected as part of the RAWP the Trust will determine the most appropriate action.
- **Former Landfill Material East of I-10:** This former landfill has been identified during previous Remedial Investigations. The material will be excavated to native soils and placed in a new cell on the plant site as part of the long-term remediation strategy.
- **Various Waste Piles east of I-10:** As described in the RAWP each identified waste pile will be sampled for waste characterization purposes. The material will be removed from the property prior to selling or transferring the property to another owner in order to meet the requirements of a residential land use.

The Trust concurs with the conclusion documented by the TASC; if the Ex-ASARCO Workers have additional information related to undocumented landfills or buried waste on ASARCO property the Trust requests, for the protection of site workers and the community; that this information be provided within three (3) weeks of the issue date of this letter.

4. Community concern: Potentially contaminated building components should be sampled before removal.

Comment: Community members are concerned that the Trust is dismantling buildings and selling components after only a power wash with soap and water, without sampling the building components for contamination (Carbajal 2010). They are concerned that this practice could be sending contaminated building components off site improperly. It is not known whether the building components are contaminated prior to or after washing, because no sampling has occurred. The Trust has stated that “the material that was sold generally is sprayed with high pressure water to remove the dust, which contains the contaminants. It is then shipped to companies that are aware of pollution problems at the site” (Roberts 2011). According to TCEQ’s notes summarizing a meeting with former ASARCO workers, TCEQ does not consider the demolition work to be remediation (Carbajal 2011a, p. 9 of 17); presumably this distinction means that the demolition work is subject to less stringent TCEQ oversight.

TASC suggests that the community groups request that TCEQ oversee all site activities, including demolition and washing of potentially contaminated building comments that could results in the spreading of contamination. TASC also suggests that the community groups request that TCEQ or the Trust perform confirmatory sampling of building components prior to shipping off site, to verify that the components are not contaminated.

Response: TCEQ has been on-site on a weekly basis to participate in discussions about work activities and observe on-site activities. TCEQ’s participation has included a review of the decontamination procedures used on materials prior to them leaving the site. A description of the decontamination procedures is available on the Trust’s website www.recastingthesmelter.com. Air monitoring is performed at the perimeter of the site to assure that air coming from asset recovery operations does not exceed standards.

The Trust has considered the use of confirmatory sampling; however, the materials that are being shipped off site are metals which by their nature will contain concentrations of various elements that would be detected in confirmatory sampling, regardless of the decontamination methods used.

The materials being shipped off-site are being rinsed of dusts and other materials that may pose an exposure issue to workers handling the materials. Once the dusts and other gross contamination are removed from the items, the sources for chemical exposure are eliminated. Therefore, confirmatory samples are not being collected.

Comment: Community members are also concerned that the employees of the demolition subcontractor are not adequately protected from contamination during the demolition, because “the sampling data that would dictate the degree of protection required will not be available” (Carbajal 2010). According to the site’s health and safety plan (HASP), each contractor and subcontractor at the site is “expected to perform their operations in accordance with their own Trust approved site-specific HASP policies and procedures unique to the contractor/subcontractor’s work to ensure that hazards associated with the performance of the work activities are properly controlled” (Malcolm Pirnie 2010, pp. 1-3 to 1-4). According to the attorney representing concerned community members, the Trust has stated that it is not responsible for providing personal protective equipment (PPE) for the employees of subcontractors (Carbajal 2011a, p. 9 of 17). The October 8, 2010, demolition HASP lays out the demolition contractor’s procedures for selecting the proper level of PPE. PPE selection is to be based on ambient air concentrations of arsenic, cadmium, chromium, copper, iron, lead, selenium, silica and/or dust. Designated employees of the demolition contractor will determine when and where ambient air monitoring will occur (Environmental Resources Management Southwest, p. 16). The work area air monitoring and personal air monitoring to be conducted during demolition are described in the dust monitoring plan and the lead exposure compliance program (Appendices O and N of the demolition HASP).

The demolition HASP focuses on air monitoring to determine the level of PPE worn by workers. Because workers could also be exposed by direct contact with building components, the community groups may want to suggest that additional PPE criteria be added, based on the level of contamination on the surfaces of the building components. The results of these surface samples should also be consulted prior to removal of components of the site.

Response: The demolition HASP focuses on demolition topics beyond what is covered in the Site HASP. The site demolition HASP, as is the case with all safety plans, is an evergreen document that is updated as hazards are identified and safe work procedures are developed. The need for worker PPE is evaluated by the professional safety personnel of each employer working at the site based on the biological, chemical and physical hazards (to include multiple exposure pathways such as inhalation, dermal contact, ingestion) at the site. Each employer at the site is responsible for supplying employee PPE as required by the site HASP and OSHA. The majority of the work being conducted as part of the demolition scope of work is conducted using mechanical means which results in lower potential for workers coming into direct contact with affected materials. In instances where workers are coming into direct contact with materials on-site, the need for worker PPE is evaluated based on the hazards associated with a particular task and the employer supplies the employee the appropriate PPE in accordance with OSHA regulations.

5. Community concern: Airborne contamination

Comment: Community members are concerned about airborne contamination from the site during demolition, especially during windy conditions (Carbajal 2011a, pp. 9, 12 of 17). The RAWP states that “sand and dust storms are present during the spring season, which is considered to be the windiest time of

the year” (p. 2-3). Both the demolition HASP and the site’s overall HASP describe the protocols to be followed for air monitoring at the site, for the protection of site workers and nearby residents. According to the site HASP, the air monitoring is to include worker air monitoring (to monitor employee exposure), work area air monitoring (to measure concentrations in work areas) and perimeter air monitoring (to determine whether site work is causing contaminants to migrate off site) (pp. 6-2 to 6-7). According to the site HASP, air monitoring at the site’s perimeter will evaluate the levels of arsenic, cadmium, chromium, copper, iron, lead, selenium, zinc, airborne particulates and silica (p. 6-7). If work at the site causes the levels of these substances to be above action levels, then “work will be stopped and additional dust suppression activities will be implemented” (p. 6-7). The demolition HASP is not clear about what substances will be evaluated during air monitoring.

Table 5-4 of the demolition HASP lists action levels and response actions for the same substances given above for the site HASP (except that Table 5-4 omits zinc), while Appendix O of the demolition HASP states that perimeter air samples will be analyzed for dust, lead, arsenic and cadmium. TASC suggests that the community request an explanation from the Trust regarding which substances are being evaluated during air monitoring.

Response: Total dust is measured at the fence line during asset recovery and demolition activities. The total dust measurements are compared to a site-specific total dust sentinel value (see response below for clarification of this value). The computed total dust sentinel value represents the allowable amount of total airborne dust above which may result in a potential airborne constituent concentration equal to the ESL or NAAQS value for that constituent. The sentinel value assumes that all dust contains the following constituents arsenic, cadmium, chromium, copper, iron, lead, mercury, selenium, and zinc. Appendix O of the demolition HASP has been updated to reflect current asset recovery activities and will be updated to present the sentinel value and to reflect all of the constituents that were used to calculate the sentinel value. The current demolition HASP is maintained on site. Periodic constituent air samples will be collected from fence line locations during the demolition project for the following constituents: arsenic, cadmium, chromium, copper, iron, lead, mercury, selenium, and zinc.

In addition to ongoing fence line monitoring, air samples are being collected within and near the work area and work area perimeter for constituent analyses (arsenic, cadmium, lead) in accordance with the demolition HASP and OSHA standards.

Comment: Demolition is underway at the site (Texas Custodial Trust 2010). Perimeter dust monitor data from August through December 2010 indicate that demolition activities did not cause dust levels to rise above the “site-specific internal sentinel value of $43 \mu\text{g}/\text{m}^3$ ” (Texas Custodial Trust 2010). It is unclear why the “site-specific internal sentinel value” is greater than the $15 \mu\text{g}/\text{m}^3$ permissible exposure limit for dust given in Table 6-2 of the site HASP. Community groups may want to ask the Trust for an explanation. Air monitoring data for substances other than dust were not available for review.

Response: The concentration of $15 \mu\text{g}/\text{m}^3$ permissible exposure limit was misprinted in the Draft Final version of the site HASP and should read $15 \text{mg}/\text{m}^3$, which is consistent with the Permissible Exposure Limit (PEL) concentrations published by OSHA. This value is greater than the site sentinel value of $43 \mu\text{g}/\text{m}^3$.

6. Community concern: Radioactivity

Comment: Community groups are concerned that the site may be contaminated by radioactive materials due to its handling of waste from the Rocky Mountain Arsenal (RMA) (Starfield 2010, pp. 5-6 of itemized responses). Radioactivity is not addressed in the RAWP. According to the master Access databases of all soil and ground water sampling data for the site, compiled by Malcolm Pirnie, ground water and soil at the site have not been analyzed for radioactivity.

RMA was a chemical weapons facility, not a nuclear facility, so its wastes are not expected to be radioactive. The *2005 Five-Year Review Report for Rocky Mountain Arsenal* does not list radioactive isotopes as chemicals of concern at the site. According to a May 14, 2010, letter from EPA to community members, each waste shipment sent from RMA to Encycle (which later shipped the waste to the ASARCO site) was tested for radioactivity, and found not to be radioactive.

Response: The Trust concurs with the conclusion documented by the TASC; the materials shipped from the RMA were not radioactive. Therefore, material shipped from RMA could not have caused radioactive material contamination at the site.