

DEMOLITION[®]

The background of the cover is a photograph of a demolition site. A tall, white, cylindrical chimney stands prominently in the center, with the word 'ASARCO' written vertically on it. In the foreground, a large white excavator with 'Brandenburg' written on its arm is positioned. The excavator's arm is extended towards the left. The sky is blue with some light clouds. The overall scene is industrial and depicts the process of dismantling a large structure.

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ERM TACKLES TEXAS SMELTER COMPLEX

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TACKLES MAJOR ENVIRONMENTAL CHALLENGES AT TEXAS SMELTER COMPLEX

EL PASO, TEXAS



The Decommissioning, Decontamination, and Demolition of the Former ASARCO Smelter in West Texas

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Environmental Resources Management, Inc. (ERM) and its demolition practice take an innovative approach to recycling and waste management on all its projects. Instead of accepting the premise that most materials will be classified as demolition debris or construction waste that will have to be disposed of in a landfill, ERM dedicates itself to determining beneficial, alternate end uses for such materials in line with its principles on sustainability.

An ideal example of how ERM implemented this philosophy is the demolition of the former ASARCO smelter in El Paso, Texas. Smelting operations at the site began in 1887. For a century, until the mid-1990s, the facility conducted operations that included lead and copper smelting, cadmium oxide production, zinc recovery, and sulfuric acid refining.



In 1994 and 1995, after a series of compliance inspections, the Texas Natural Resource Conservation Commission (TNRCC) determined unauthorized discharges of solid waste, wastewater, and storm water had occurred at the site.

On May 20, 2005, the Texas Commission on Environmental Quality (TCEQ) issued a Corrective Action Directive to ASARCO to conduct remedial action for the El Paso site. That same year, ASARCO and related entities declared Chapter 11 bankruptcy. As a result of the bankruptcy proceedings, the United States District Court for the Southern District of Texas in Corpus Christi issued an order confirming the reorganization plan.

On December 9, 2009, ASARCO placed \$52,080,000 in an environmental custodial trust to address remedial activities. The Texas Custodial Trust was formed and appointed Mr. Roberto Puga of Project Navigator LTD as trustee. Mr. Puga awarded ERM the contract to decommission, decontaminate, and demolish the site. Mr. Puga established goals of addressing the concerns of the citizens of El Paso that the demolition would be conducted in regulatory compliant manner and to increase the funds available to the trust such that additional remedial measures not originally included in the settlement could be performed. Mr. Puga selected ERM based on the company's history and reputation on conducting safe, environmentally-conscious work, as well as identifying, developing, and executing plans for disposition of the abandoned assets onsite.



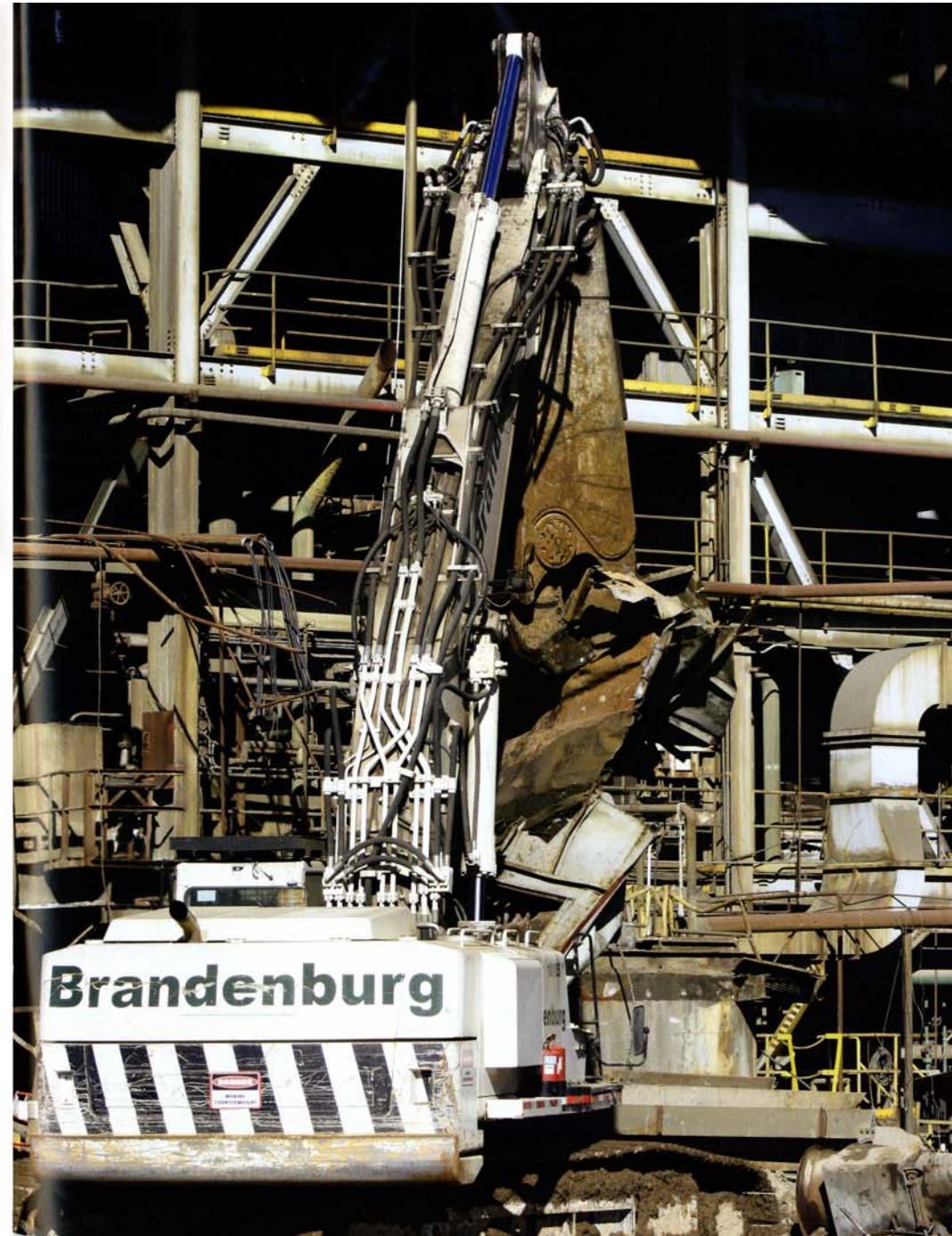


The ERM team, led by Robert Klotzbach and Jeff Bauguss, immediately began to develop an approach that would incorporate ERM's value of sustainability into all aspects of the project. This started with addressing the effects of site work on the environment and the surrounding community, followed by a monetary valuation of all hard assets onsite based on inventories provided by the bankruptcy proceedings and physical inspections of the site.

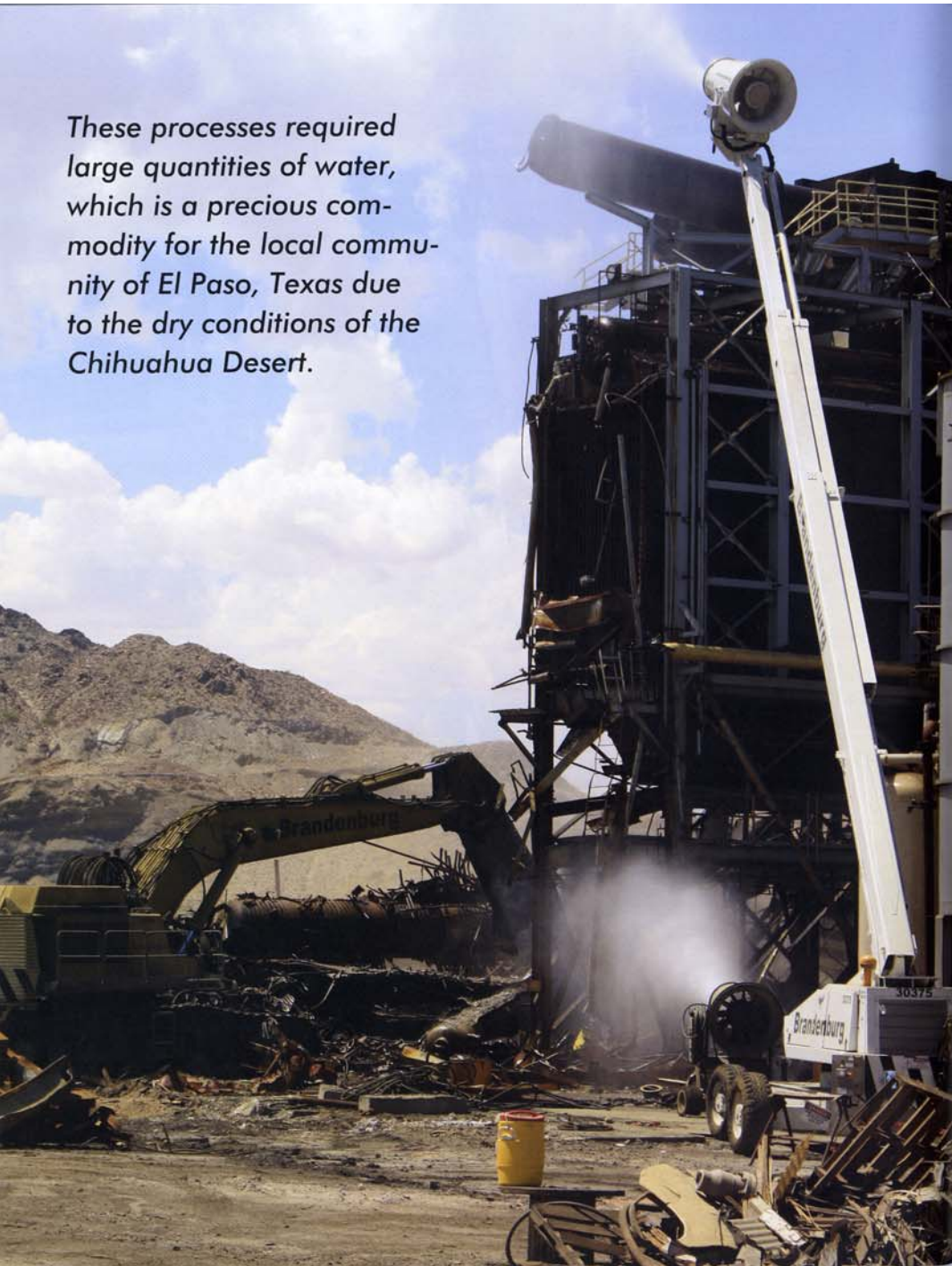
Site assessments showed significant levels of heavy metals resulting from decades of various smelting operations in the soil and dust within the entire footprint of the facility. As a result, continuous dust monitoring, dust suppression, and asset decontamination occurred throughout demolition activities as a part of the site's Community Assurance Plan.

To verify that site operations did not affect the surrounding community, ERM worked to develop a perimeter dust monitoring program. The plan included placing dust monitors around the site that provided 24-hour real time data on dust levels. As part of the ERM goal to deliver sustainable solutions, the dust equipment was powered using renewable energy. Each monitor was fastened with an individual solar panel.

Another preventative measure ERM used to minimize the effects of the work on the environment was to recycle all captured water on site. Due to the region's arid conditions, dust suppression was a continuous task during activities. Another issue ERM faced was the need to remove visible loose soil and dust accumulation from recyclable materials to reduce the potential for impacted dusts to be released during transport offsite.



These processes required large quantities of water, which is a precious commodity for the local community of El Paso, Texas due to the dry conditions of the Chihuahua Desert.



Prior to ERM's involvement, site management released all captured storm water per the site's storm water permit. The team made the decision to utilize this water for decontamination purposes to reduce the impact on the city of El Paso's water supply. ERM designed a filtration system to treat the captured waters from the decontamination procedures and dust suppression to make the water available for reuse in the same task. This dedication to recycling not only reduced the site's impact on the city's water supply, but also provided cost savings to the client and the contractors.

As part of the valuation of assets, ERM focused on two unique areas of the site to identify and for which to develop markets for potential reusable assets. These areas were: the acid production plants and the copper process furnaces.

As a byproduct to the copper smelting process, sulfate gases were created. In order to reduce the amount of sulfates emitted into the air, ASARCO collected, cooled, and refined the gases to produce sulfuric acid, a sellable commodity.

There were two acid plants in the facility. From these plants, two commodities were developed, harvested and recycled to the financial benefit of the client. The first asset identified was the lead metal used in the electrostatic precipitators. There were twelve units within the two plants, which provided over 1.3 million pounds of recyclable lead metal, the funds of which were directly added to the site trust fund.



The second commodity from the acid plants was abandoned low-grade sulfuric acid that remained in multiple tanks within the systems. Usually, this type of substance is neutralized at a very high cost in materials and labor. ERM worked diligently to find a market for the acid and succeeded. The overall net savings to the client by removing the neutralizing process was approximately \$250,000.

ERM then addressed the idled copper production facility. Through site investigation and research of historical documents, the presence of a potentially large amount of copper matte was discovered in and below the two furnaces on site.

Both furnaces were demolished to expose the refractory brick oven portion of the structure. Once this was accomplished, the refractory was carefully peeled back to reveal the copper matte material. The refractory was taken to a storage facility onsite to be tested for metal content and inventoried for possible reclamation. The copper matte material was excavated and removed. This material was also tested for metal content and inventoried.

The demolition of the furnaces allowed for the recovery of the copper cooling jackets, which were sold for \$1.8 million. The copper matte material excavated from the furnaces amounted to approx 16,000 cy of material that will yield approximately 3,500 tons of copper, 44,000 ounces of silver and 1200 ounces of gold. The material was sold for \$15 million. Completion of a contract for the approximately 8,000 cy of refractory will yield additional funds for the trust and while reducing the amount of material destined for land disposal.

To date, the project has returned over \$25 million to the trust to augment the \$52 million that was there originally. The increase in revenue will allow the project to enhance the remedial actions, extend the cleanup far beyond the original plans, and save over 24,000 cy of valuable landfill space. 🏠

