

**EXCAVATION AND SAMPLING WORK PLAN FOR CATEGORY I MATERIALS  
EAST PROPERTY WASTE AND SLAG PILES  
FORMER ASARCO SMELTER SITE  
EL PASO, TEXAS**

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## **Purpose and Overview**

This work plan describes procedures that will be followed to excavate and remove Category I materials in various locations on the East Property. The primary purpose of this work plan is to remove known Category I materials and systematically identify and characterize suspected Category I materials for removal. Areas that have Category I materials are the existing landfill (Area 22) and portions of Areas 1, 1a, 3 and the north-eastern portion of Area 4 as shown in Figure 1. The secondary purpose of this work plan is to identify, characterize and quantify non-Category I materials for future planning. The minimum tasks to execute this plan are described below.

## **1. Prerequisites and Preremoval Requirements**

The following tasks or items shall be completed prior to beginning any Category I material handling or removal:

- **Excavation Work Health & Safety:** A Job Loss Analysis (JLA) and Job Safety Analysis (JSA) have been previously generated for work related to excavation, test pitting, and trenching. These procedures shall be reviewed and revised by the Site Safety Officer to be appropriate for this specific work plan. The work plan specific JLA and JSA shall be inserted into Appendix A for reference.
- **Storm Water Pollution Prevention Plan (SWPPP):** A SWPPP was developed for the East Borrow Source and is contained in Appendix B for reference. The existing landfill is contained within this plan. The SWPPP shall be reviewed by the field manager and any areas of deficiency shall be documented and corrected specific to this work plan. Any revisions or supplemental documentation shall be inserted into Appendix B. For excavations outside of the areas covered by the East Borrow Source Grading and Drainage Plan, the contractor will confirm with the Project Manager if additional documentation is required prior to starting.
- **East Borrow Source Grading and Drainage Plan:** The Borrow Area Grading and Drainage Plan was developed for the East Borrow Source and is contained in Appendix C for reference. The field manager shall review and become familiar with the design requirements of the plan.
- **Air Quality Monitoring:** There are two components to air monitoring, the work-zone monitoring required to be protective of worker health and safety and also perimeter air monitoring to be proactively protective of nonworkers.

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**Work Zone Monitoring:** All work being conducted onsite is being monitored for dust in the work zone. The overall dust number for the site is  $150 \text{ ng/m}^3$ . The action levels for this are established in the Site Health and Safety Plan and the Malcolm Pirnie Health and Safety Plan. Copies of these current plans are available onsite. However, based on concentrations from the east property Category I materials the **work zone action level** concentration for dust for donning of a respirator has been established at  $150 \text{ ng/m}^3$ . The spreadsheet used to derive this action level is provided in Appendix D. The action level should be reevaluated as additional XRF and sampling data is collected for the excavation of Category I material.

**Perimeter Air Monitoring:** An air quality monitoring plan was developed specifically for the Category I placement in Cell 4. The plan is contained in Appendix E. The field manager shall review and become familiar with this monitoring plan. As described in the Community Assurance Plan, all activities that have the potential to generate dust will be monitored with onsite dust monitoring. Monitoring values will be compared to the sentinel value of  $43 \text{ ng/m}^3$ . Immediate actions will be required if the sentinel value is exceeded during excavation of the Category I material. The field supervisor or the CQA representative in the field is responsible to ensure appropriate actions are taken to prevent dust generation during excavation and landfill filling. The stop work thresholds and trigger points are summarized in Appendix F. These will be updated as additional environmental information is collected.

- **Dust Control Procedures:** Due to the potential for sorting and excavation activities to generate dusts, the field manager will review the dust control methods summarized in Appendix G. Prior to initiating and sorting or excavation activities, these procedures will be followed as well as the indicated requirements for worker health and safety, also described in Appendix G.
- **XRF Health & Safety:** A JLA and JSA have been previously generated for general use of sealed source radiation instruments. The procedures shall be reviewed and revised by the Radiation Safety Officer as appointed by the Director of Health & Safety to be appropriate to this specific work plan. The work plan specific sealed source radiation instrument JLA and JSA shall be inserted into Appendix H for reference.
- **XRF Field Test:** The project engineer, field manager, and CQA monitors shall develop a field-based test in accordance with the project specific sealed source radiation instrument to determine the applicability to XRF testing. The purpose of the test is to verify health and safety procedures and validate the use of XRF testing. The Field test shall be summarized in a CQA document to be used to govern the use and acceptance of XRF testing. The Field Test summary and CQA document shall be inserted into Appendix I.

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- **Preconstruction conference:** The field manager shall distribute this work plan complete with all prerequisites listed above. The field manager shall conduct a preconstruction conference with the Project Manager, Contractor, Air Quality Engineer, and the Radiation Safety Officer. In addition to review of the contractors work plan and schedule, all prerequisite and prerule requirements shall be reviewed during the conference.

## **2. Material Identification and Sorting**

Possible Category I materials were identified based on test pit sampling performed in November 2012. The areas are shown in Figure 1 and summarized in Table 1. According to previous investigations, not all of the material in these designated areas is Category I. It will therefore be necessary to separate the materials prior to any excavations. The materials in the East Property Category I areas include oversized concrete, demolition debris including bricks and wood debris, slag pieces and fine sand-type materials. Photographs of the various areas are included in the Photo Log for reference (Appendix J).

- Prior to initiating any sorting, the test pit logs and photo logs shall be referenced by the contractor and the contractor shall determine the appropriate material sorting approach for each general type of anticipate material. The approaches shall be presented and approved in the preconstruction meeting.
- To the greatest extent possible the contractor shall sort and separate material larger than 18 inches nominally (oversized) for inspection by the Field Manager or CQA monitor. Oversized material that is visibly and obviously stained or discolored shall not be separated.
- The Field Manager or CQA monitor shall inspect separated material and identify it as Category I, non-Category I, or slag. Category I material shall be transported to the Cell 4 Landfill as noted below. Non-Category I and slag material shall be sorted in a manner that groups like materials together for final disposition. Material shall be inspected by visual or analytical test means as determined appropriate by the Field manager. Material ready for inspection shall be wetted prior to inspection and as requested by the inspection team.

Sorted materials shall be stored or stockpiled within the footprint of the original area to the greatest extent possible. Where not possible, the contractor shall submit plans for approval to the field manager during the preconstruction meeting on how non-impacted areas will be protect and isolated from the impacted materials.

- The categorization of the materials will be documented using field notes and photographs showing the separation of the materials and the approximate volume distribution of each material for each area.

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- The East Property Landfill may include materials that contain asbestos. For health and safety purposes, procedures and training have been developed to assist workers in identifying asbestos-containing materials (ACM) and the proper procedures for worker safety and disposal of this material. The necessary training and procedures are summarized in Appendix L.

**3. Excavation and Transportation of Category 1 Material to Cell 4**

- The piles of Category I material will be loaded into trucks using an excavator. Prior to loading, the contractor shall apply water throughout the prior days shift. Contractor shall apply additional water as necessary during loading to prevent the generation of visible dust. Transport trucks will use predetermined transport routes identified during the preconstruction conference to haul the material to the Cell 4 area. The contractor shall keep a daily and total truck count and volume of material transported to Cell 4. Total truck count and volume shall be update daily and submitted to the Field Manager.
- Prior to transport to the Cell 4 area, the trucks will be guided over rumble strips to remove any Category I material from the truck tires and to remove any potential Category I material that would otherwise fall onto non-Category I areas. This rumble strip area will be inspected daily and maintained as necessary. The inspection and maintenance of the rumble strips and haul routes shall be documented in a log and photographed.
- The excavation shall be guided in the field to limit the material removal to visible waste piles and not to include the native materials under the piles prior to field characterization and Project Manager's input. It is assumed that the majority of the Category I material is above the native land surface.
- Once the piles have been removed, the native material below the piles will be analyzed in the field using a stationary XRF analyzer that will be contained within the onsite trailer and properly isolated for meeting the health and safety requirements.
- A 50 x 50 foot grid shall be established for XRF sampling and analyzed (see Figure 2 for sampling grid). The final orientation of a sampling grid will be based on extents of the actual excavation. This will be submitted as a map of the grid to the field engineer for approval. Composite soil samples will be collected in the 1 foot vertical interval and passed through a #10 wire mesh sieve. The sieved material will be placed in a Ziploc bag and labeled appropriately to identify its location.
- Samples will then be taken to the stationary XRF analyzer. Analysis will consist of placing the Ziploc bag against the detector window for 30 seconds.

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- Three separate 30 second analyses for each bag will be done on different areas of the bag and averaged to produce the results.
- Sample results shall be compared to the residential and commercial/industrial TRRP total-soil-combined levels are provided in Table 2. Where grid samples exceed residential level, a test pit shall be excavated and additional samples taken in 1 foot increments to determine the depth of impacted material. A summary field report shall be prepared that includes a plan of the 50 x 50 grid labeled with a unique identification number, the XRF results, and estimated volume of impacted material to achieve residential and commercial/industrial limits. The grid numbering system will consist of the area number and the unique grid number, which will be created during the process of establishing the sampling grid (i.e., A4-Gr1 to represent Area 4, Grid 1). The field manager shall submit the summary report to the Project Manager. The Project Manager shall provide written field directive prior to the removal of additional material. The field directive will establish the removal goals.
- If necessary, additional material shall be excavated, loaded, and transported as noted for Category I material described above.

Upon completion of any additional removal as directed, XRF samples on the same 50 x 50 foot grid shall be taken. Should any sample exceed the goal established in the field directive, an additional 1 foot shall be removed and resampled. If the sample exceeds the goal, a new test pit shall be constructed and additional samples in 1 foot increments shall be taken. No additional material shall be removed prior to consulting with the project manager.

- Excavation oversight and documentation will be provided by Malcolm Pirnie field staff and will include the following:
  - Documentation of the excavation and placement activities including volumes removed and transported and the locations of any temporary stockpiling.
  - GPS survey and photographs of the extents of the excavated areas.
  - Daily field notes.

#### **4. Confirmation Sampling**

Following the removal of Category I material as verified by XRF sampling, it will be necessary to verify that the areas are below the goals established in the field directive by confirmation sampling. The methods for sampling are described below:

- The same 50 x 50 foot grid used for the XRF sampling will be used for the analytical sampling and a composite soil sample in the surface to a 1 foot depth interval will be collected. Figure 2 shows the sampling grid for the Category I areas. Samples will be taken at five equally spaced locations within each grid square (one at the grid center and four taken at the midpoint of a diagonal line drawn to each corner). These will be mixed

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in a bucket using a shovel and a single composite sample will be placed in a sampling jar to be sent for analysis.

- The following will be included as part of the confirmation sampling:
  - Full documentation of sampling, including sample names, methods, conditions and results.
  - Records of shipments.
  - GPS record of sampling locations.
  
- Samples will be shipped via overnight delivery to TestAmerica, Inc. and analyzed using a 24 hour turn-around time and analyzed using Methods 6020B and 7471A for the analytes shown in Table 2.

**TABLE 1****EAST PROPERTY CATEGORY I AREA SUMMARY  
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<b>Area Designation</b>	<b>Material Description</b>	<b>Estimated Average Depth to Native Soil (feet)</b>	<b>Estimated Volume (CY)</b>
Area 1	Dark gray medium and fine sand with bricks, slag, concrete and concrete piers	17	10,000
Area 1a	Slag, slag pieces	4	6,222
Area 3	Concrete, bricks, metal and fiberglass with fine to cobble-sized slag pieces	3	4,378
Area 4	Concrete, bricks, stone, ceramics, some slag	4	4,850
Area 22	East Property Landfill, demolition debris (bricks, concrete and concrete piers, possibly slag)	20	40,000

CY = cubic yard

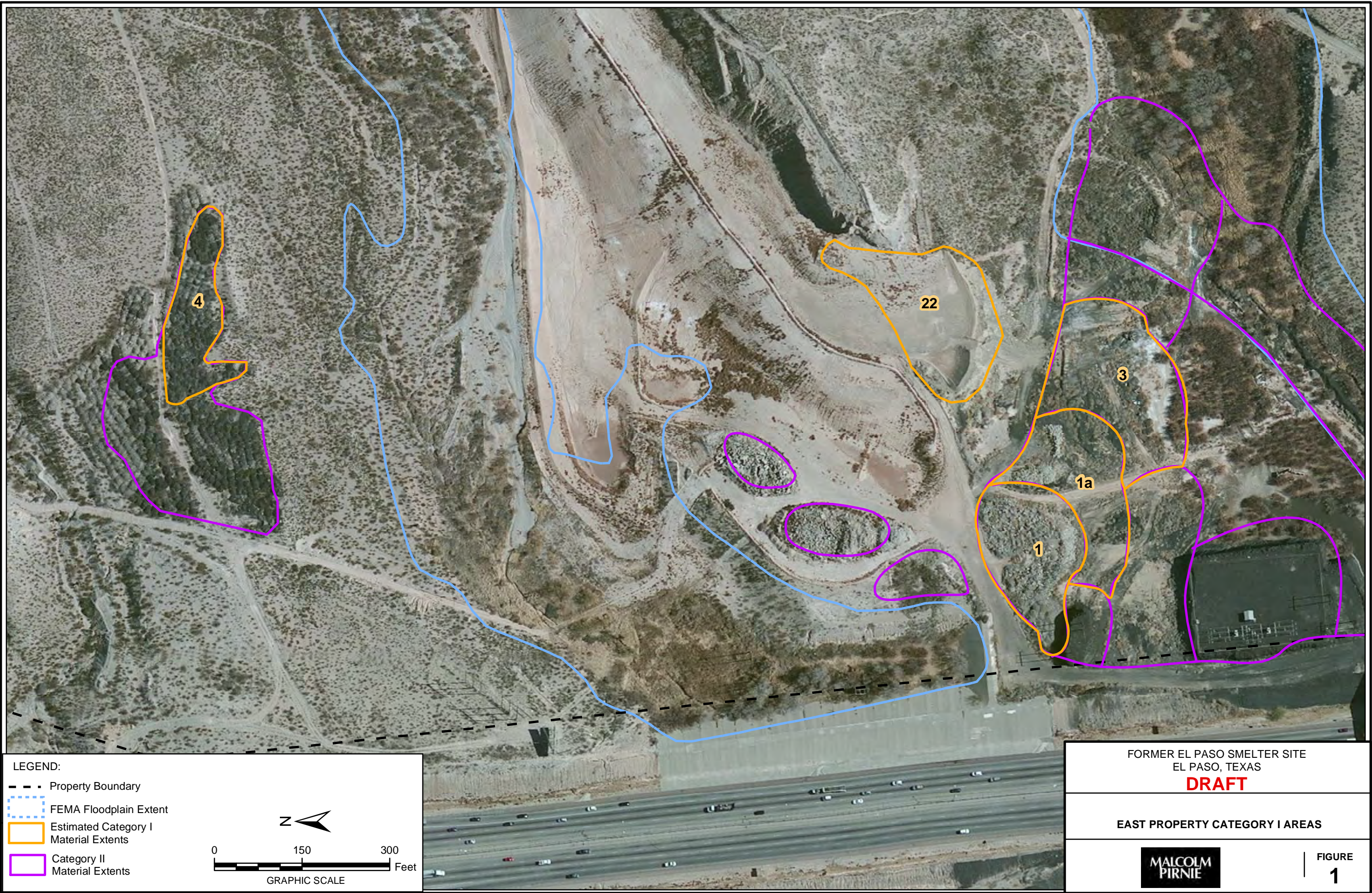
**TABLE 2****COCs FOR ANALYSIS AND TRRP STANDARDS SUMMARY  
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<b>Analyte</b>	<b>TRRP Total Soil Combined (C/I) (mg/kg)</b>	<b>TRRP Total Soil Combined (Residential) (mg/kg)</b>
Antimony	310	15
Arsenic	200	24
Barium	120,000	8,100
Cadmium	850	52
Chromium	75,000	27,000
Cobalt	270	21
Copper	39,000	550
Iron	--	--
Lead	1,600	500
Mercury	3.3	2.1
Molybdenum	4,500	160
Nickel	7,900	830
Selenium	4,900	310
Silver	2,300	97
Zinc	250,000	9,900

mg/kg = milligram/kilogram



CITY: Highlands Ranch DIV/GROUP: GIS DB: BG  
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**LEGEND:**

- - - Property Boundary
- FEMA Floodplain Extent
- Estimated Category I Material Extents
- Category II Material Extents

0 150 300 Feet  
GRAPHIC SCALE

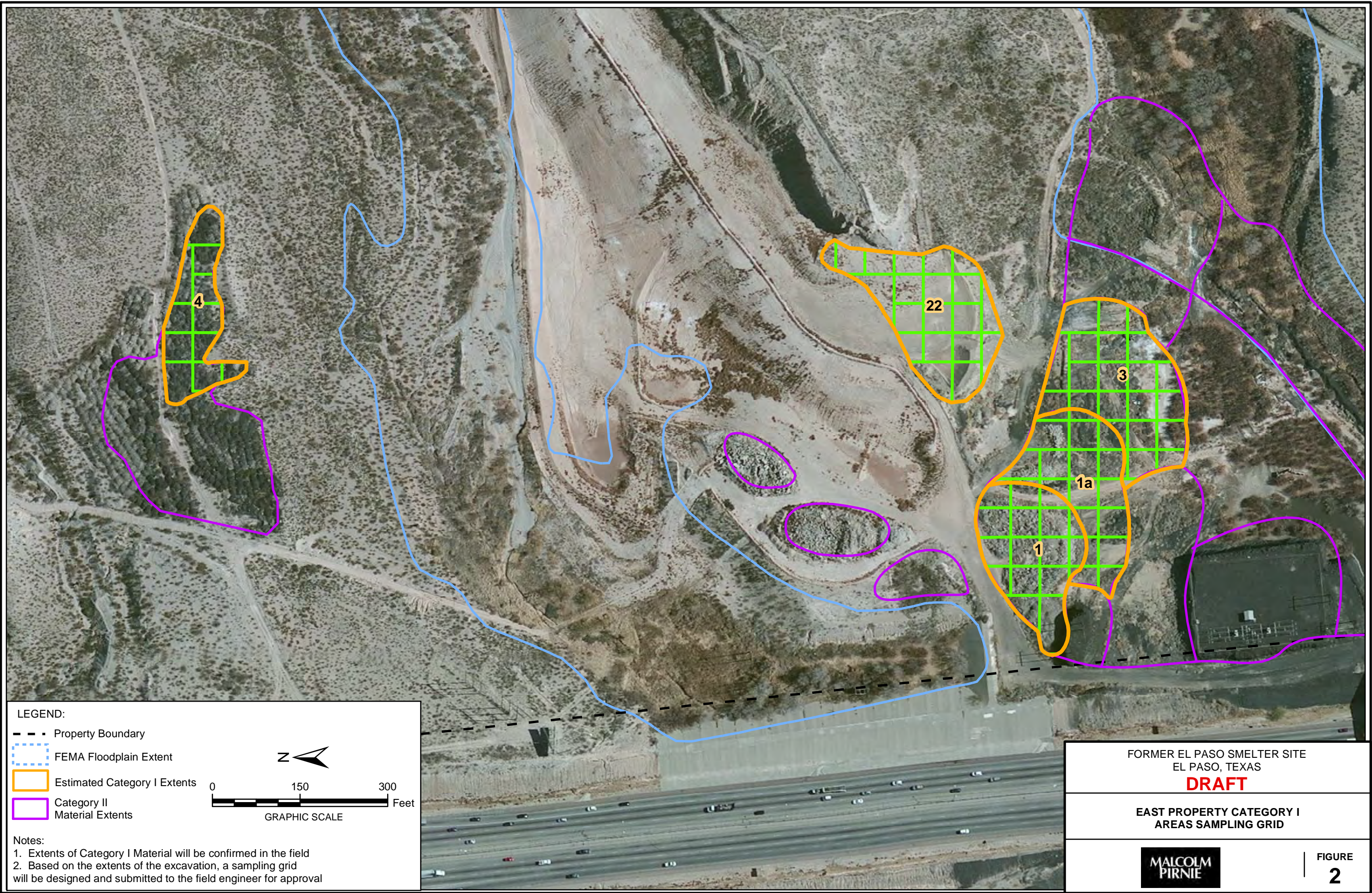
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EAST PROPERTY CATEGORY I AREAS





FIGURE 1

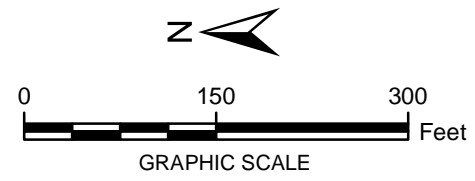


CITY: Highlands Ranch DIV/GROUP: GIS DB: BG  
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**LEGEND:**

-  Property Boundary
-  FEMA Floodplain Extent
-  Estimated Category I Extents
-  Category II Material Extents



- Notes:**
1. Extents of Category I Material will be confirmed in the field
  2. Based on the extents of the excavation, a sampling grid will be designed and submitted to the field engineer for approval

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EAST PROPERTY CATEGORY I AREAS SAMPLING GRID	
	FIGURE <b>2</b>