

Memo

To: Kelly Thompson
From: Mark Arnold
CC: Mark Walker, Dan Heffernan, Jenny Inge, Leigh Ann Vradenburg
Date: February 25, 2006
Re: Soil Sampling Results

X-ray results provided were used to calculate the volumes of material that would need to be excavated and placed into an onsite repository constructed in the uncontaminated upper bench. I have attached three figures:

1. Figure 1 sample locations
2. Figure 2 400 ppm lead excavation depths
3. Figure 3 2920 ppm lead excavation depths

I have also attached an excel spreadsheet with the volume calculations.

Volume Calculation Assumptions

1. A 0.5-foot minimum excavation depth was used
2. For areas where contamination exceeded the standard at the maximum sample depth of 1.5-feet a 2.0-foot depth was used for calculations. The possibility exists that the contamination could extend deeper than 2.0-feet.

400 ppm Residential Standard

If we consider a 400 ppm Residential cleanup level we would need to excavate approximately 68,500 cy of material if we do not screen out the -1/2 inch fraction. If we screen the material and only place the -1/2 material in the repository we would need to excavate approximately 40,500 cy.

2920 ppm Residential Standard

If we consider a 2920 ppm Industrial cleanup level we would need to excavate approximately 31,800 cy of material if we do not screen out the -1/2 inch fraction. If we screen the material and only place the -1/2 material in the repository we would need to excavate approximately 17,700 cy. Using an Industrial standard may not be applicable to this site because the planned usage as a fairground would most likely require the Residential standard.

Summary

Because the site was not adequately characterized the volume of material to be excavated is much greater than anticipated. Considering the volumes that will most likely need to be excavated the Brownfield's grant may not be adequate to accomplish the remediation.

Recommendations

1. Have an outside laboratory confirm the lead concentrations on the 17 duplicate samples.
2. Determine if a Residential or Industrial Standard will be used for this site.
3. Prepare a conceptual repository design for a location cut into the uncontaminated upper bench that will be located under the planned parking lot.
4. Prepare a construction cost estimate for this conceptual design.
5. Review the project budget with respect to the construction cost estimate.

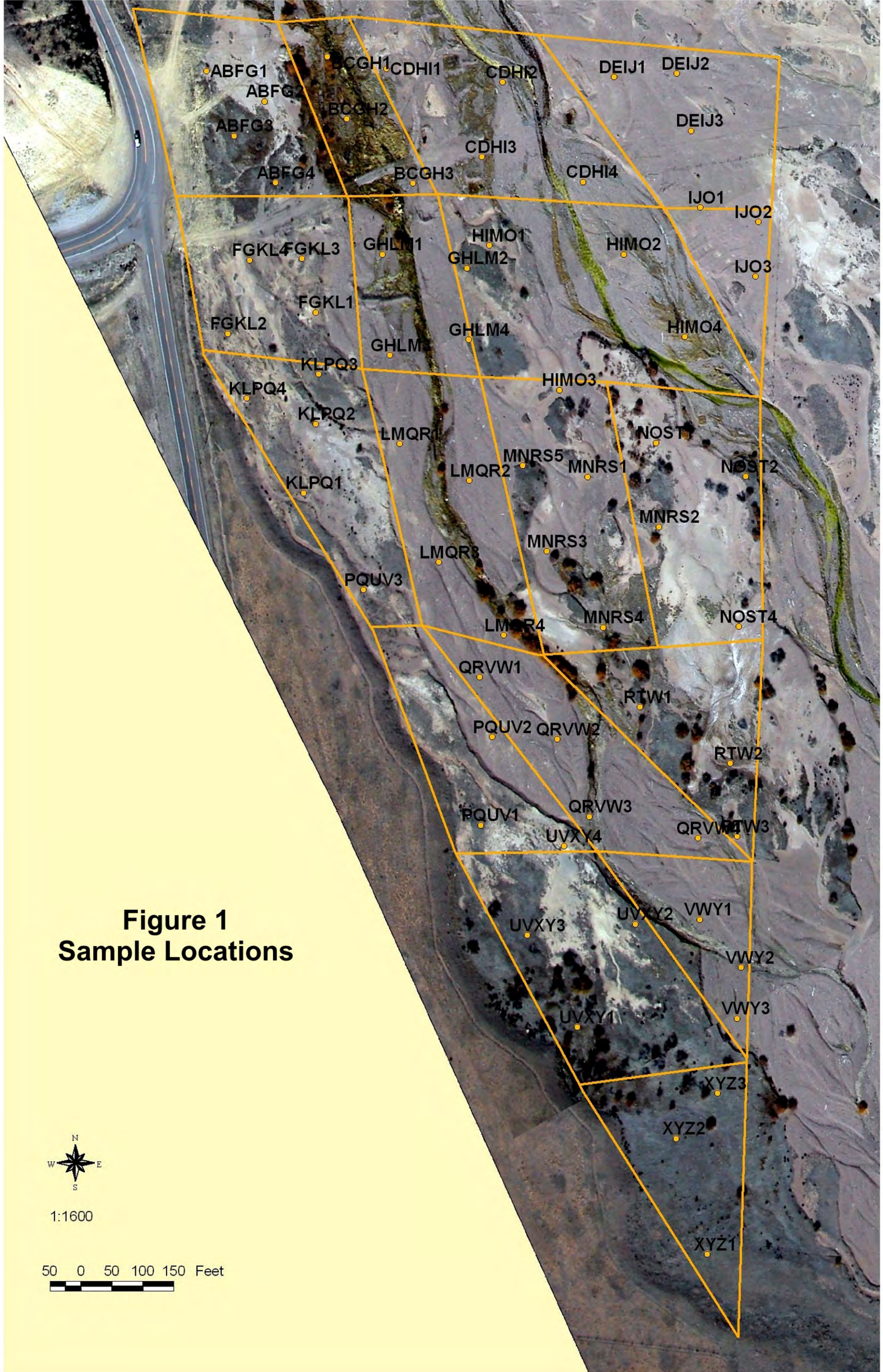
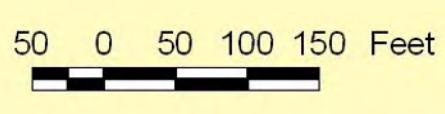
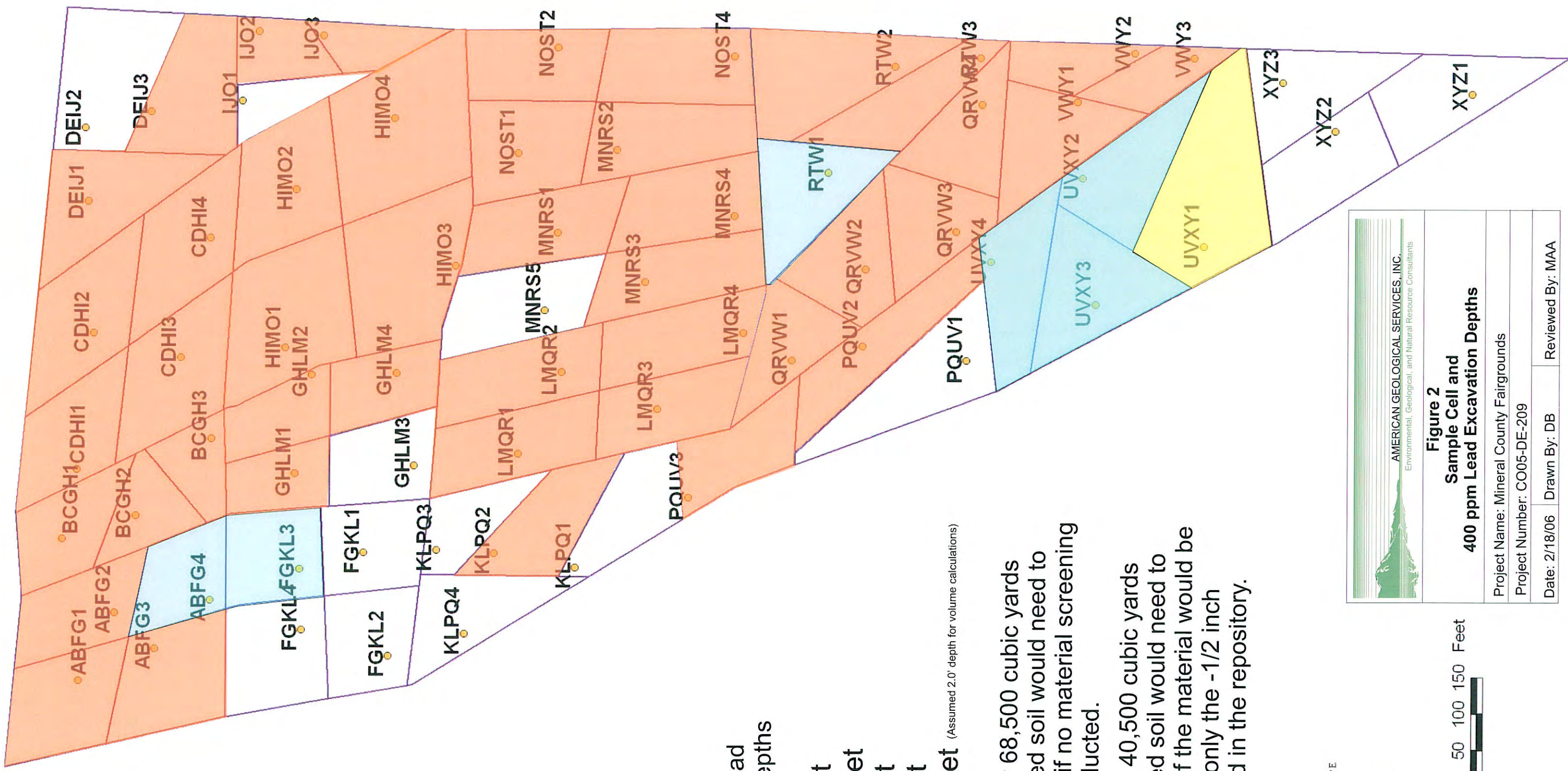


Figure 1
Sample Locations



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400 ppm Lead
Excavation Depths

- 0.5 feet
- 0.75 feet
- 1.0 feet
- 1.5 feet
- >1.5 feet (Assumed 2.0' depth for volume calculations)

Approximately 68,500 cubic yards of contaminated soil would need to be excavated if no material screening would be conducted.

Approximately 40,500 cubic yards of contaminated soil would need to be excavated if the material would be screened and only the -1/2 inch material placed in the repository.



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50 0 50 100 150 Feet


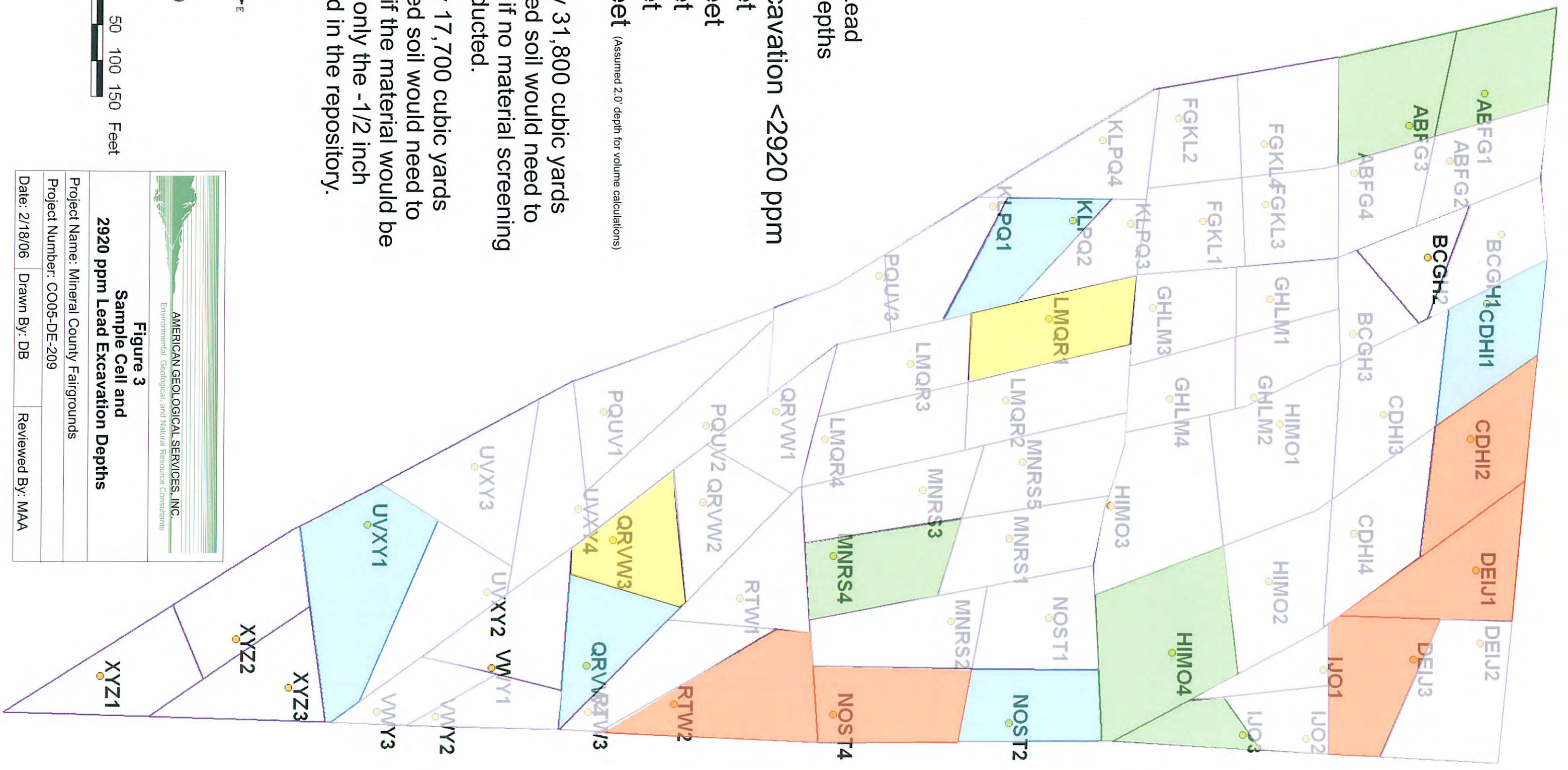


Figure 2
Sample Cell and
400 ppm Lead Excavation Depths

Project Name: Mineral County Fairgrounds	
Project Number: CO05-DE-209	
Date: 2/18/06	Drawn By: DB
Reviewed By: MAA	



**2920 ppm Lead
Excavation Depths**

- No excavation <2920 ppm
- 0.5 feet
- 0.75 feet
- 1.0 feet
- 1.5 feet
- >1.5 feet (Assumed 2.0' depth for volume calculations)

Approximately 31,800 cubic yards of contaminated soil would need to be excavated if no material screening would be conducted.

Approximately 17,700 cubic yards of contaminated soil would need to be excavated if the material would be screened and only the -1/2 inch material placed in the repository.



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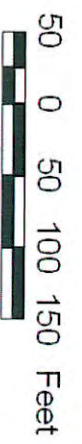


Figure 3

**Sample Cell and
2920 ppm Lead Excavation Depths**

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