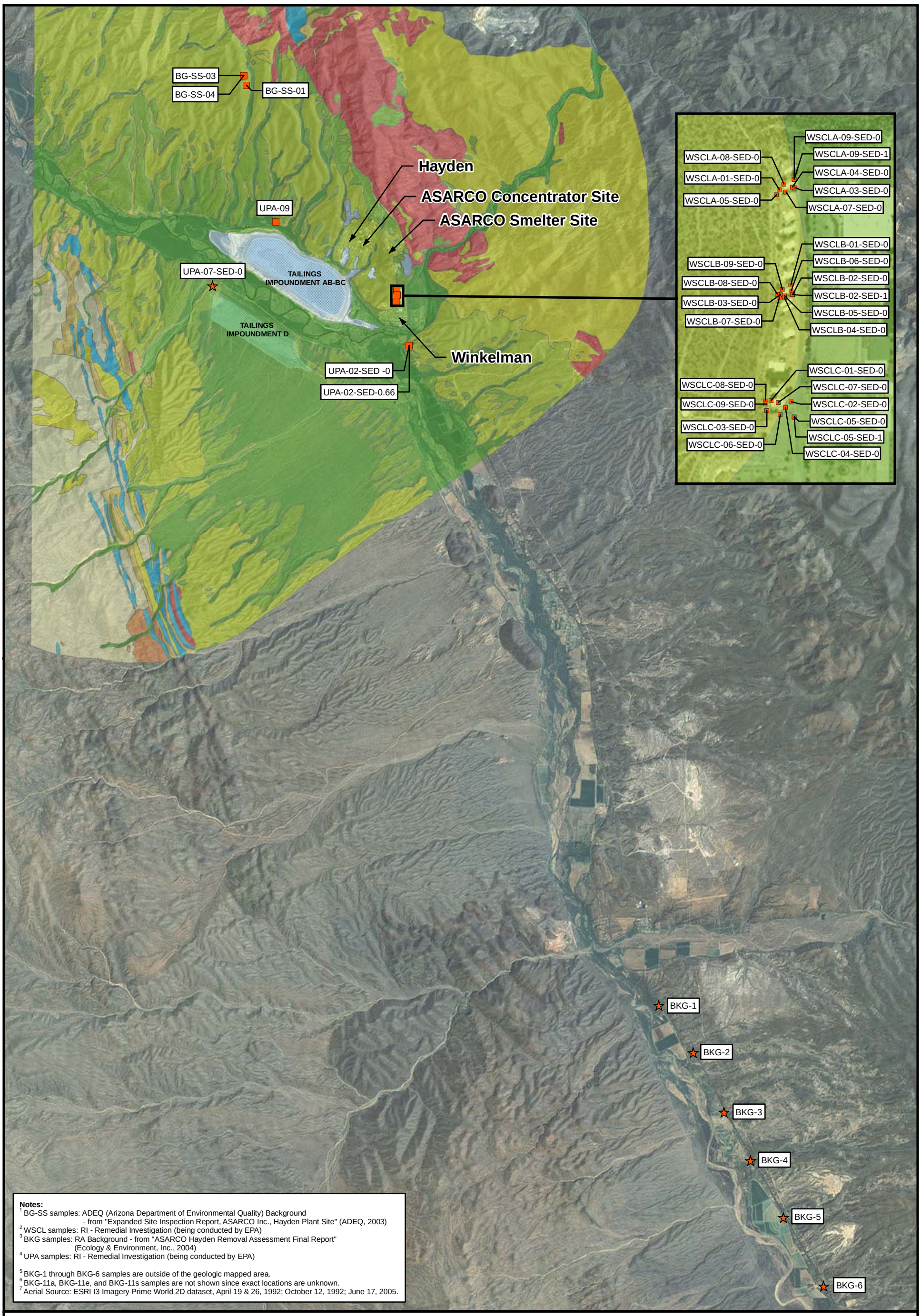

Legend

- Tertiary Sediment Sample (Ts)
- Older Quaternary Deposit Sample (Qo)
- Active Tailings Impoundment

Geology Formation

- Younger Precambrian Diabase
- Fill Material
- Quaternary Alluvium
- Older Quaternary Deposits (Qo)
- Tertiary Sediments and Airfall Deposits (Ts)
- Cretzceous/Tertiary Intrusive and Volcanic
- Older Precambrian Intrusives
- Older Precambian Pinal Schist
- Younger Precambrian Sedimentary & Volcanic Sequence
- Paleozoic Sediments and Metasediments

N W E S

0 0.75 1.5 3 Miles

FIGURE 4-1
STUDY AREA MAP WITH BACKGROUND SOIL SAMPLE LOCATIONS

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

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\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\03_FINAL\FIG4-1_BACKGROUND_SAMPLES_GEOLOGIC.MXD TJW 6/13/2008 11:56:53

Legend

Sample Location/ Concentration Range Color Key

- 1 - 10 mg/kg
- 10.1 - 25.9 mg/kg
- 26 - 47.9 mg/kg
- > 48 mg/kg

Parcel Boundary

Road

Parcel Zones

- Category 1
- Category 2

Notes:

[1] As = Arsenic
[2] J = Estimated value
[3] J- = Estimated value, biased low
[4] J+ = Estimated value, biased high
[5] mg/kg = milligrams per kilogram
[6] R-SRL = Residential Soil Remediation Level

[7] All concentrations are in mg/kg
[8] Soil concentrations in **RED** exceed Arizona-R-SRLs
[9] Arizona R-SRL for As = 10 mg/kg
[10] If a duplicate sample was collected, the higher concentration of the two is posted.

[11] Aerial Source: Environmental Protection Agency, 2004.

N W E S

0 250 500 1,000 Feet

FIGURE 4-2
NON-RESIDENTIAL SOIL LABORATORY RESULTS FOR ARSENIC
ASARCO CONCENTRATOR AND VICINITY
ASARCO, LLC Hayden Plant Site
Hayden, Arizona

The data on this figure are derived from tables 4-4, 4-6, 4-7, and D-1.

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\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\03_FINAL\FIG4-2_NONRES_SURFACESOILLABRESULTS_CONCENTRATORAREA_ARSENIC.MXD TJW 7/24/2008 15:29:22

Legend

Sample Location/ Concentration Range Color Key

- 1 - 3,100 mg/kg
- 3,101 - 8,699 mg/kg
- 8,700 - 17,100 mg/kg
- > 17,100 mg/kg

Parcel Boundary

Road

Parcel Zones

- Category 1
- Category 2

Notes:

[1] Cu = Copper
[2] J- = Estimated value, biased low
[3] mg/kg = milligrams per kilogram
[4] R-SRL = Residential Soil Remediation Level

[5] All concentrations are in mg/kg
[6] Soil concentrations in **RED** exceed Arizona-R-SRLs
[7] Arizona R-SRL for Cu = 3,100 mg/kg
[8] If a duplicate sample was collected, the higher concentration of the two is posted.

[9] Aerial Source: Environmental Protection Agency, 2004.

N W E S

0 250 500 1,000 Feet

FIGURE 4-3
NON-RESIDENTIAL SOIL LABORATORY RESULTS FOR COPPER
ASARCO CONCENTRATOR AND VICINITY
ASARCO, LLC Hayden Plant Site
Hayden, Arizona

The data on this figure are derived from tables 4-4, 4-6, 4-7, and D-1.

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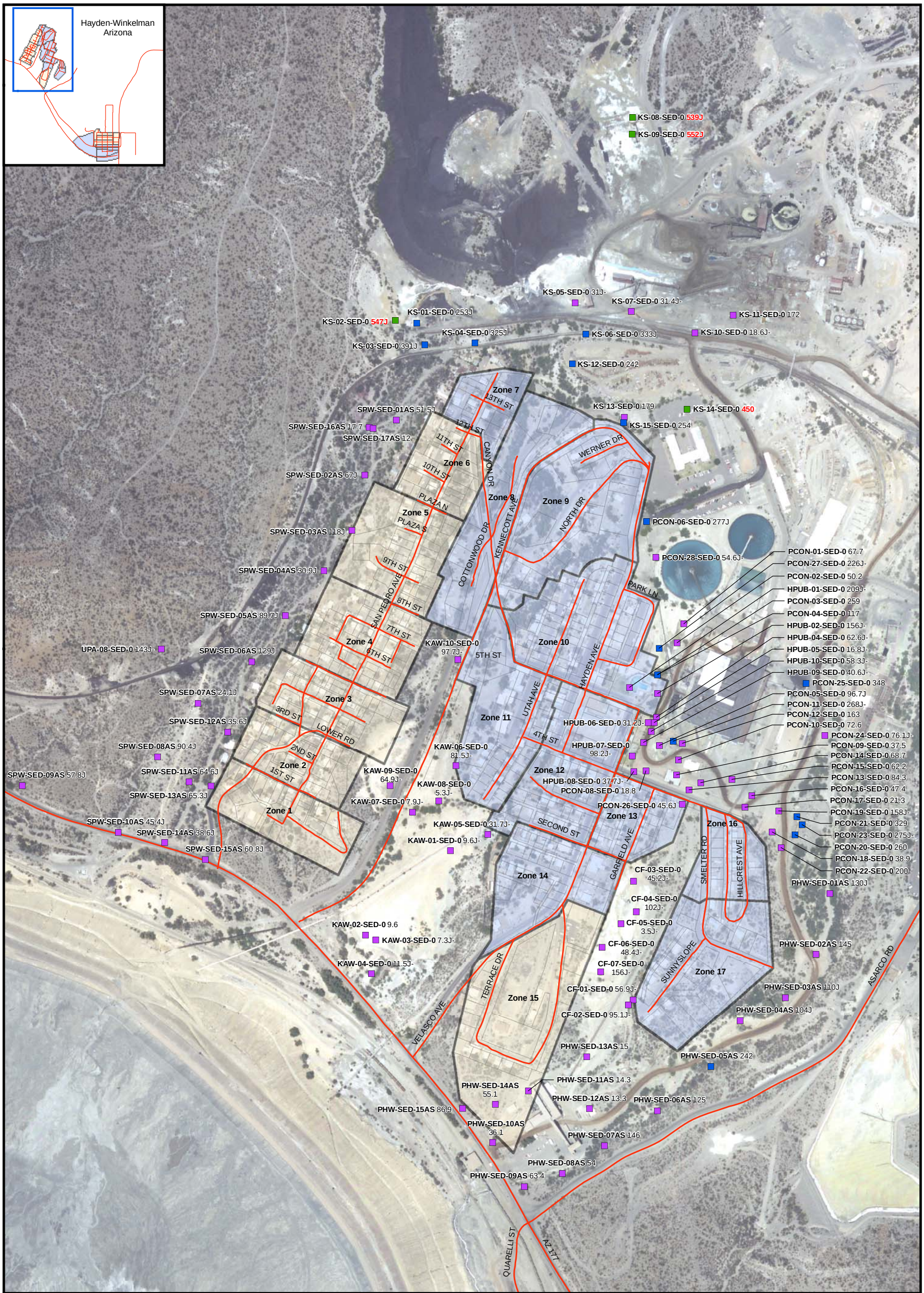
\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\03_FINAL\FIG4-3_NONRES_SURFACESOILLABRESULTS_CONCENTRATORAREA_COPPER.MXD TJW 7/24/2008 15:29:22



Legend

Sample Location/ Concentration Range Color Key

- 0 - 212 mg/kg
- 213 - 400 mg/kg
- 401 - 1,199 mg/kg
- 1,200 - 2,400 mg/kg*
- >2,400 mg/kg*

Parcel Boundary

Road

Parcel Zones

- Category 1
- Category 2

Notes:

[1] Pb = Lead
[2] J = Estimated value
[3] J- = Estimated value, biased low
[4] mg/kg = milligrams per kilogram
[5] R-SRL = Residential Soil Remediation Level

[6] All concentrations are in mg/kg
[7] Soil concentrations in **RED** exceed Arizona-R-SRLs
[8] Arizona R-SRL for Pb = 400 mg/kg
[9] If a duplicate sample was collected, the higher concentration of the two is posted.
[10] * = Lead concentrations do not exceed 1,199 mg/kg

[11] Aerial Source: Environmental Protection Agency, 2004.

N W E S

0 250 500 1,000 Feet

FIGURE 4-4
NON-RESIDENTIAL SOIL LABORATORY RESULTS FOR LEAD
ASARCO CONCENTRATOR AND VICINITY
ASARCO, LLC Hayden Plant Site
Hayden, Arizona

The data on this figure are derived from tables 4-4, 4-6, 4-7, and D-1.

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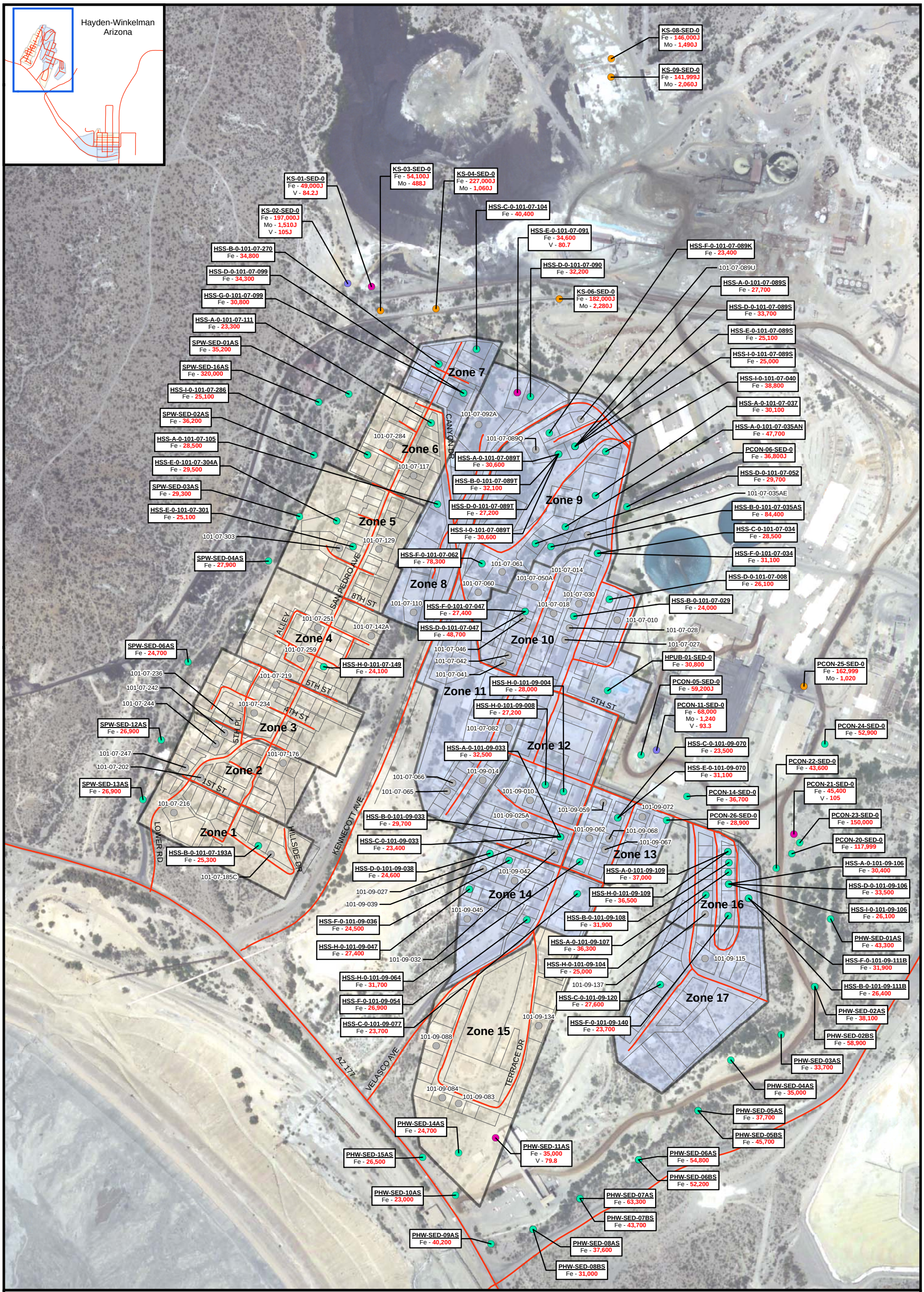
\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\03_FINAL\FIG4-4_NONRES_SURFACESOILLABRESULTS_CONCENTRATORAREA_LEAD.MXD TJW 7/24/2008 15:29:22



Legend

Soil Sample Location

- Only Fe Exceeded
- Fe and Mo Exceeded
- Fe and V Exceeded
- Fe, Mo and V Exceeded
- No Fe Exceedance

Parcel Boundary

Road

Parcel Zones

Category 1

Category 2

Notes:

[1] HSS-C-101-09-077 = Location ID
[2] Mo = Molybdenum
[3] V = Vanadium
[4] Fe = Iron
[5] J = Estimated value
[6] mg/kg = milligrams per kiogram
[7] R-SRL = Residential Soil Remediation Level
[8] PRG = Preliminary Remediation Goals
[9] All concentrations are in mg/kg
[10] Soil concentrations in **RED** exceed one or more of the exceedance criteria, Arizona R-SRL or EPA PRG.

Lab Parameter	SRL	PRG
Iron	--	23,000
Molybdenum	390	390
Vanadium	78	78

[11] Aerial Source: Environmental Protection Agency, 2004.

N W E S

0 225 450 900 Feet

FIGURE 4-5
RESIDENTIAL AND NON-RESIDENTIAL SOIL EXCEEDANCES FOR MOLYBDENUM, VANADIUM, AND IRON HAYDEN, ARIZONA

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

The data on this figure are derived from tables 4-7, 4-9, D-1, and E-1.

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\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\03_FINAL\FIG4-5_NONRES_FE_MO_V_EXCEEDANCES_HAYDEN.MXD TJW 7/24/2008 14:12:55

Legend

Sample Location/ Concentration Range Color Key

- 1 - 10 mg/kg
- 10.1 - 25.9 mg/kg
- 26 - 47.9 mg/kg
- > 48 mg/kg

Parcel Boundary

Road

Parcel Zones

- Category 1
- Category 2

Notes:

[1] As = Arsenic
[2] J = Estimated value
[3] J- = Estimated value, biased low
[4] mg/kg = milligrams per kilogram
[5] R-SRL = Residential Soil Remediation Level

[6] All concentrations are in mg/kg
[7] Soil concentrations in **RED** exceed Arizona-R-SRLs
[8] Arizona R-SRL for As = 10 mg/kg
[9] If a duplicate sample was collected, the higher concentration of the two is posted.

[10] Aerial Source: Environmental Protection Agency, 2004.

N W E S

0 300 600 1,200 Feet

FIGURE 4-6
NON-RESIDENTIAL SOIL LABORATORY RESULTS FOR ARSENIC SMELTER AND VICINITY

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

The data on this figure are derived from tables 4-4, 4-6, 4-7, and D-1.

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\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\03_FINAL\FIG4-6_NONRES_SURFACESOILLABRESULTS_SMELTERAREA_ARSENIC.MXD TJW 7/24/2008 15:29:22