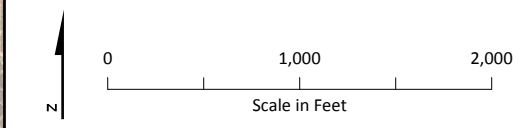


LEGEND

Sample Location by Analysis Type

- Acid-Base Accounting (ABA)
- Synthetic Precipitation Leaching Procedure (SPLP)
- - - Historic Rail Line
- River
- - - Intermittent Drainage
- ▭ Former Small Tailings Pile
- ▭ Slag Pile
- ▭ Tailings
- ▭ Dross Pile
- ▭ Former Iron King Mine Property
- ▭ Former Humboldt Smelter Property
- ▭ Area of Potential Site Impact
- ▭ Dewey-Humboldt Town Boundary



Note:
Image Source: USDA, 2015.

Figure 8-1
Acid-Base Accounting and Synthetic
Precipitation Leaching Procedure Sample
Locations
Iron King Mine – Humboldt Smelter Superfund Site
Dewey-Humboldt, Yavapai County, Arizona

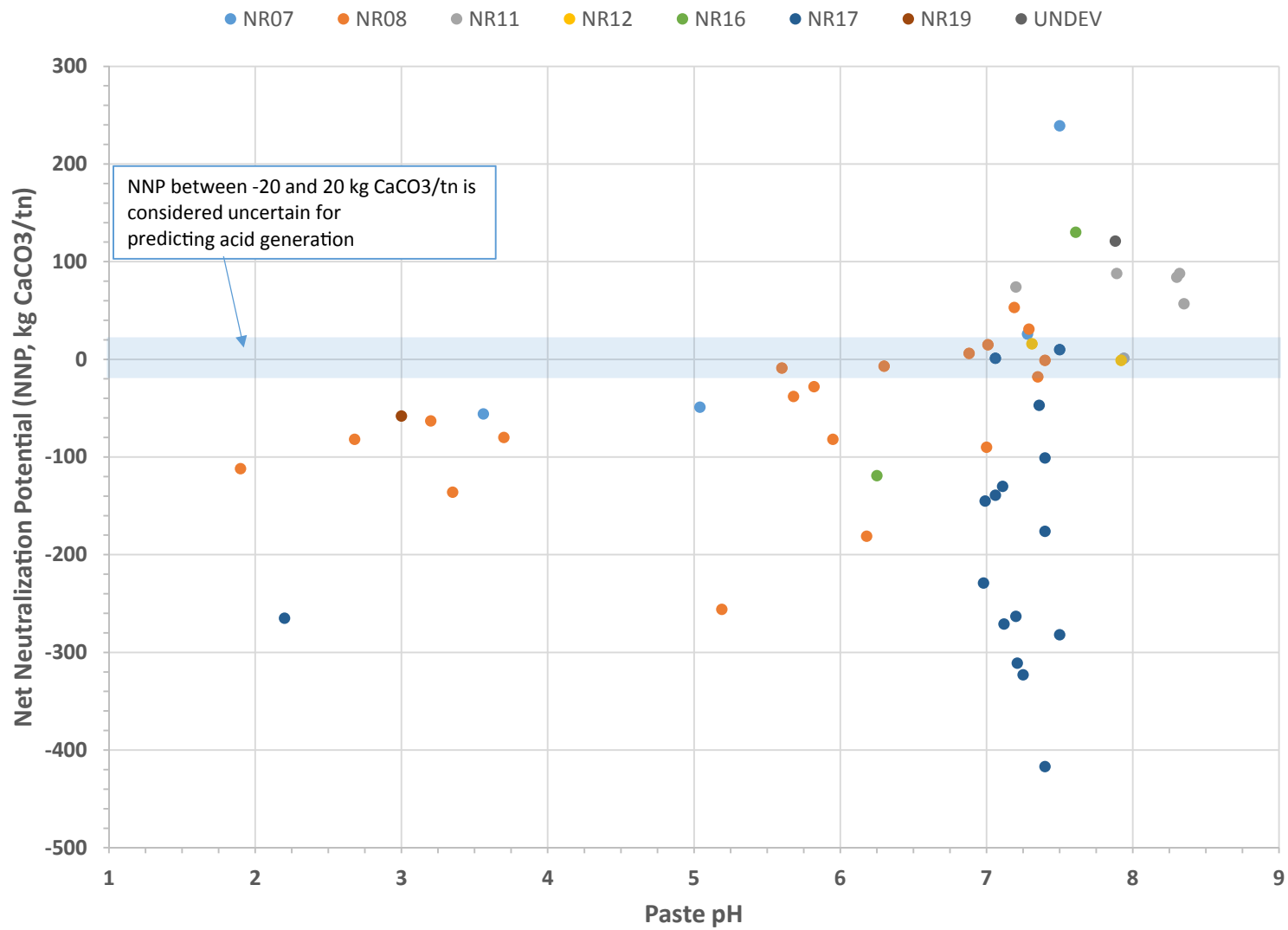
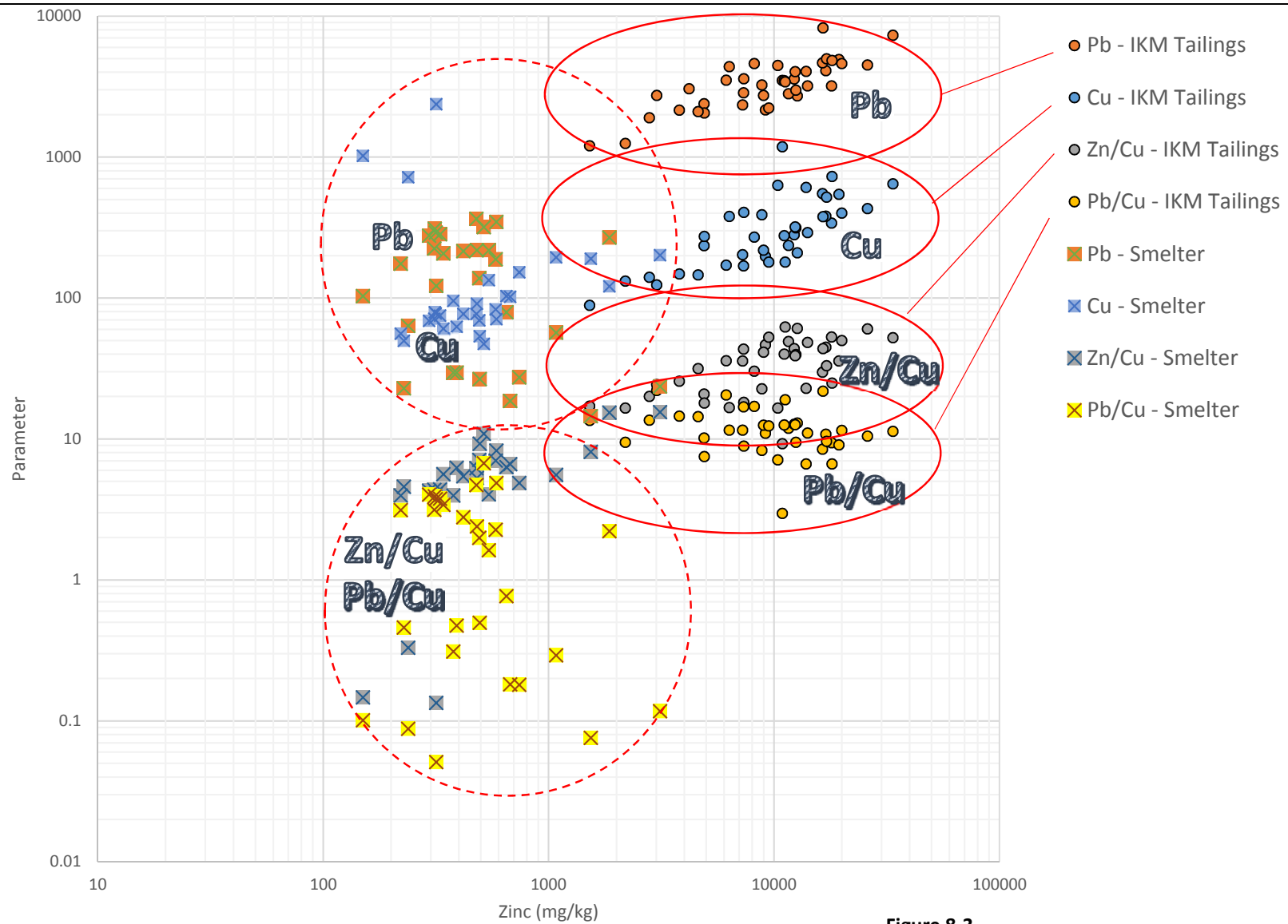


Figure 8-2
Net Neutralizing Potential versus Paste pH
 Iron King Mine – Humboldt Smelter Superfund Site
 Dewey-Humboldt, Yavapai County, Arizona



Notes:
 IKM = former Iron King Mine
 Smelter = former Humboldt Smelter
 Cu = copper
 Pb = lead
 Zn = Zinc

Figure 8-3
Lead, Copper, and Zinc Data Analysis for Iron King
Mine Tailings and Humboldt Smelter Tailings
(Undisturbed)

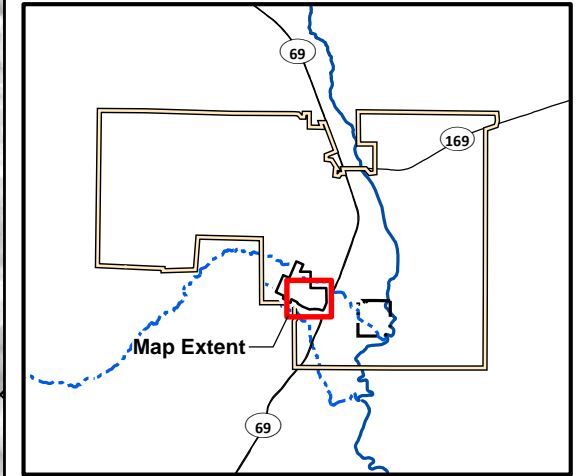
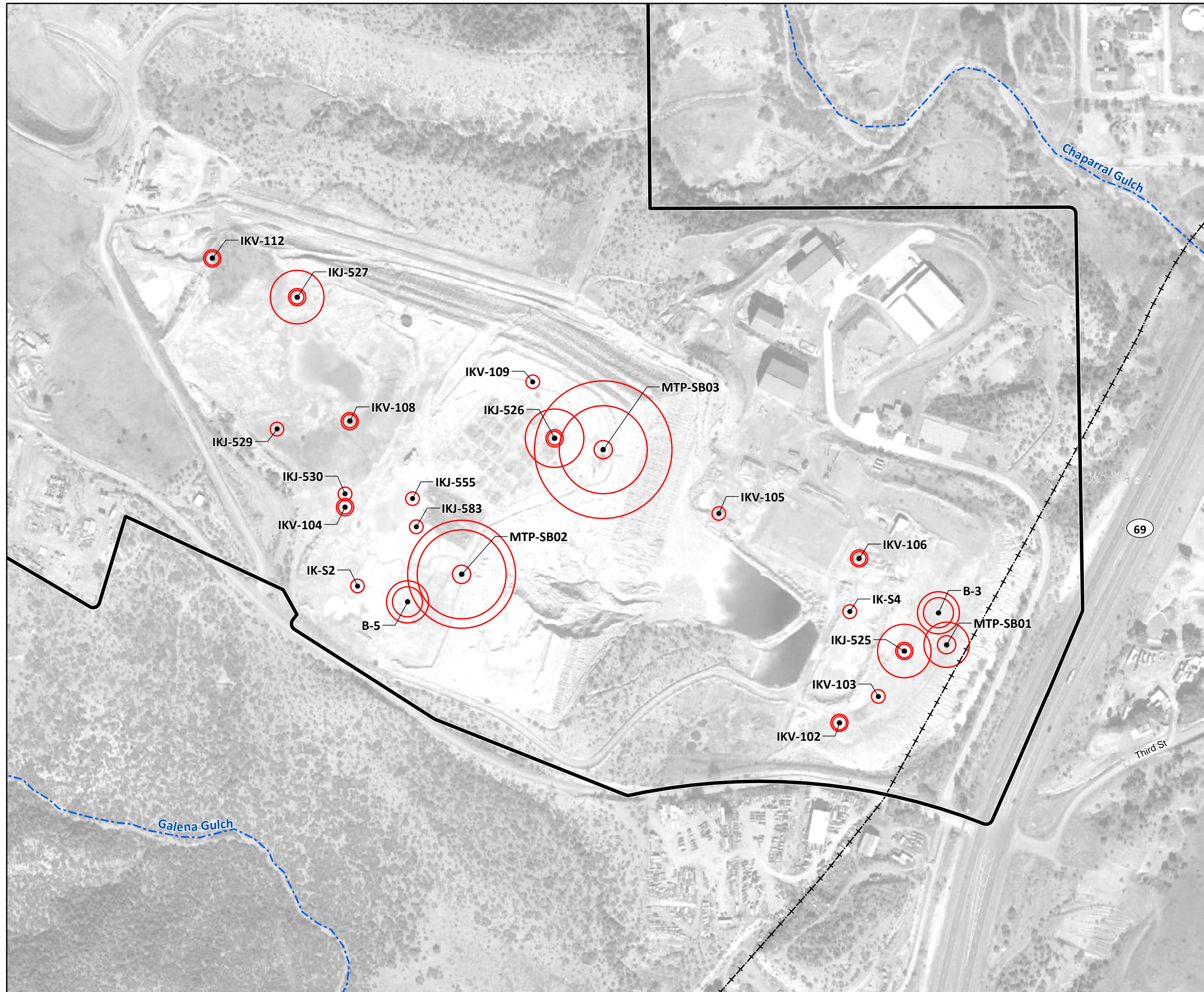
*Iron King Mine – Humboldt Smelter Superfund Site
 Dewey-Humboldt, Yavapai County, Arizona*



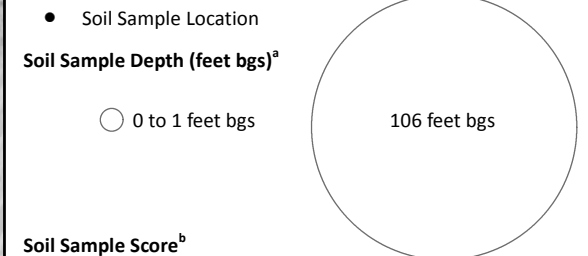
Notes:
 HS = former Humboldt Smelter
 IKM = former Iron King Mine
 Cu = copper
 Pb = lead
 Zn = Zinc

Figure 8-4
Lead, Copper, and Zinc Data Analysis for Iron King
Mine Tailings and Humboldt Smelter Tailings
(Reworked)

Iron King Mine – Humboldt Smelter Superfund Site
Dewey-Humboldt, Yavapai County, Arizona



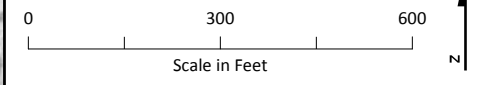
LEGEND



Soil Sample Score^b

Score	Lead (mg/kg)	Zinc (mg/kg)
1	>1000	>1000
2	>900	>900
3	>800	>800
4	>700	>700
5	>600	>600
6	>500	>500
7	>0	>0
NS	--	--

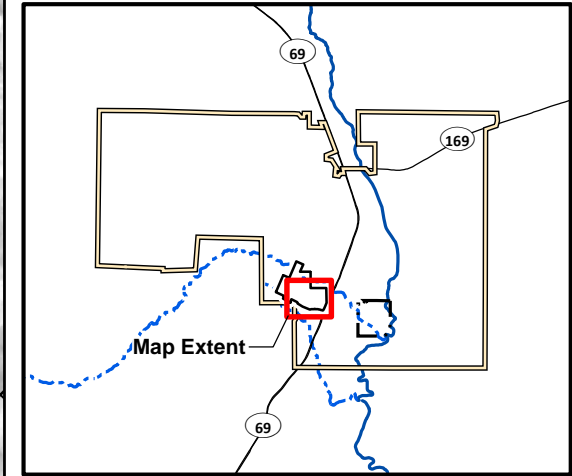
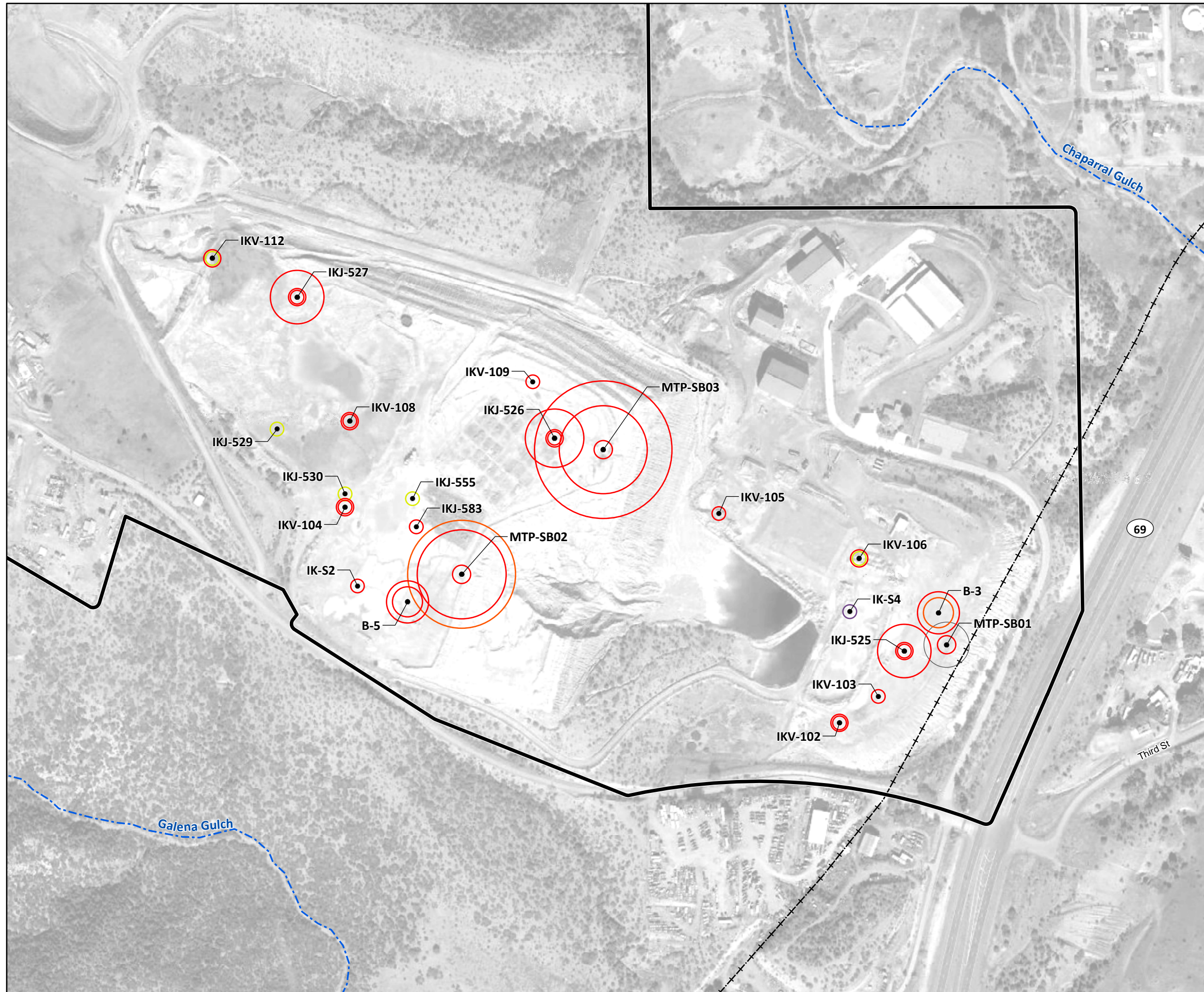
- Historic Rail Line
- River
- - - Intermittent Drainage
- ▭ Former Iron King Mine Property
- ▭ Former Humboldt Smelter Property
- ▭ Dewey-Humboldt Town Boundary



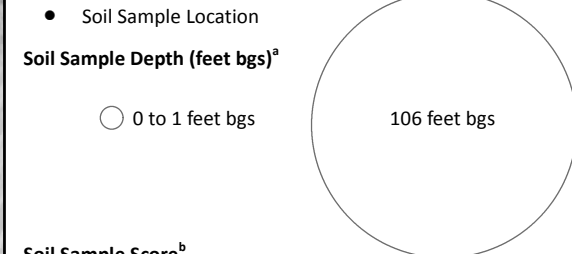
^aProportional symbols represent 1-foot sample intervals between 0 and 106 feet bgs. Each symbol represents a separate sample.
^bSamples in Figures 8-5A and 8-6A are assigned a score of 1 to 7 using the lead and zinc sample concentrations. All samples in this figure are assigned a score of 1.

Notes:
 feet bgs = feet below ground surface
 Image Source: Google Earth™; Image date November 6, 2015. Accessed February 2, 2016.

Figure 8-5A
Iron King Mine Tailings Signatures, Lead and Zinc Concentration Scores
 Iron King Mine – Humboldt Smelter Superfund Site
 Dewey-Humboldt, Yavapai County, Arizona

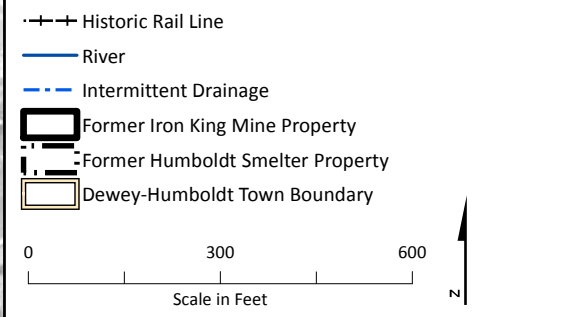


LEGEND



Soil Sample Score^b

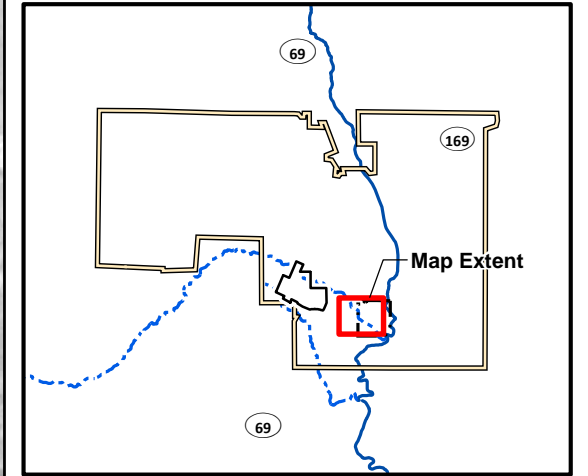
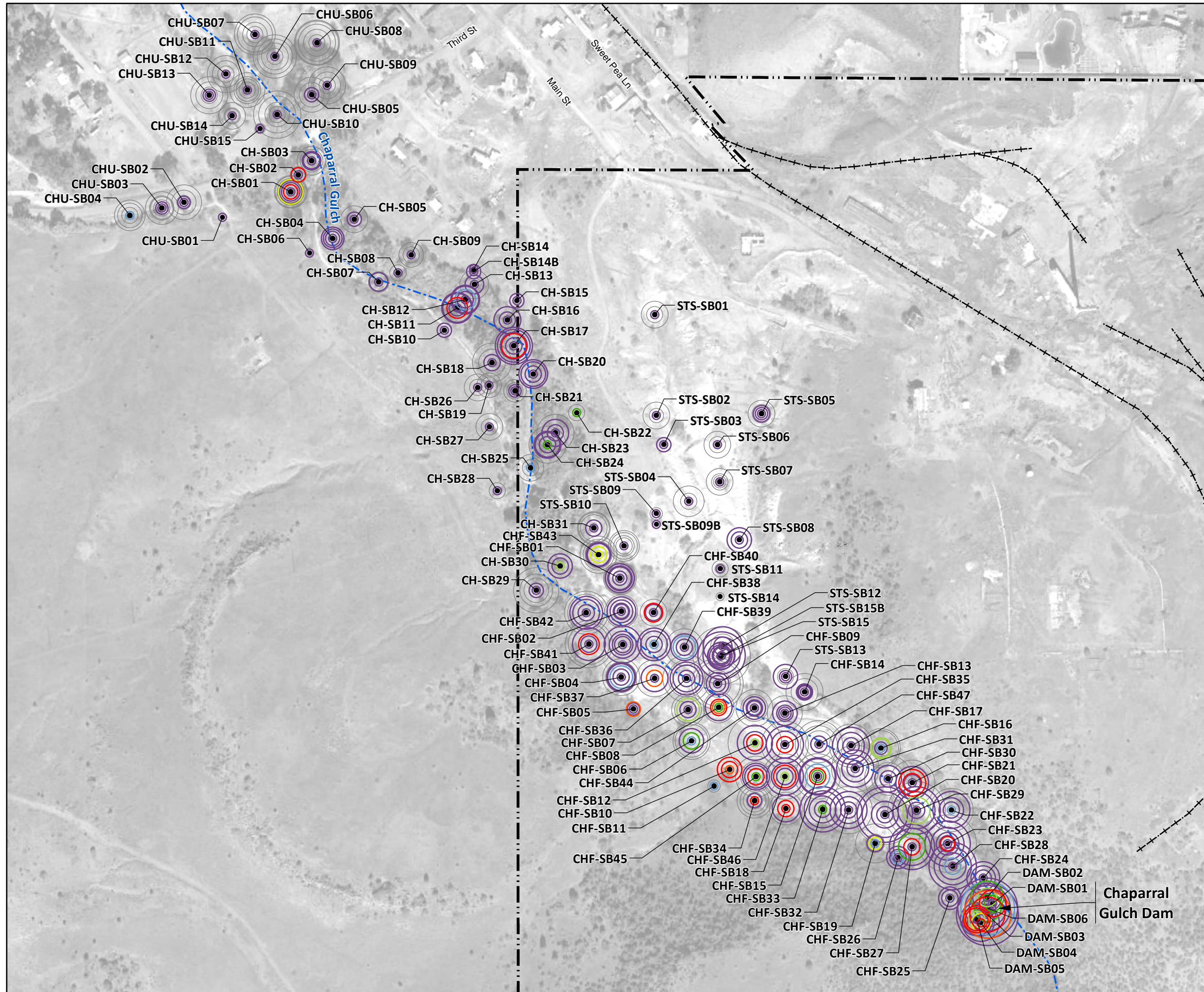
Score	Lead (mg/kg)	Zinc (mg/kg)	Zinc/Copper Ratio	Lead/Copper Ratio
1	>1000	>1000	>20	>6
2	>900	>900	>18	>5.5
3	>800	>800	>16	>5
4	>700	>700	>14	>4.5
5	>600	>600	>12	>4
6	>500	>500	>10	>3.5
7	>0	>0	>0	>0
NS	-	-	-	-



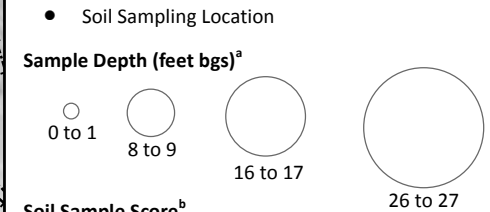
^aProportional symbols represent 1-foot sample intervals between 0 and 106 feet bgs. Each symbol represents a separate sample.
^bSamples in Figures 8-5B and 8-6B are assigned a score of 1 to 7 using the lead, zinc, and copper sample concentrations. The only scores used in this figure are 1, 2, 3, 7 and NS. NS indicates that no score is assigned. One sample in this figure, MTP-SB01 at 27.5 feet bgs, is shown with a score of NS. Copper was not detected in this sample and therefore no score is assigned.

Notes:
 feet bgs = feet below ground surface
 Image Source: Google Earth™; Image date November 6, 2015. Accessed February 2, 2016.

Figure 8-5B
Iron King Mine Tailings, Lead and Zinc Concentration and Ratio Scores
 Iron King Mine – Humboldt Smelter Superfund Site
 Dewey-Humboldt, Yavapai County, Arizona

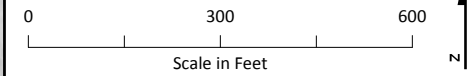
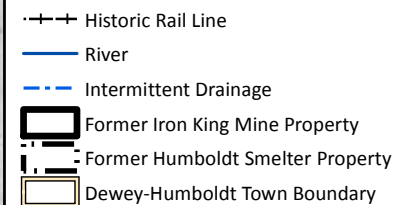


LEGEND



Soil Sample Score^b

Score	Lead (mg/kg)	Zinc (mg/kg)
1	>1000	>1000
2	>900	>900
3	>800	>800
4	>700	>700
5	>600	>600
6	>500	>500
7	>0	>0
NS	--	--

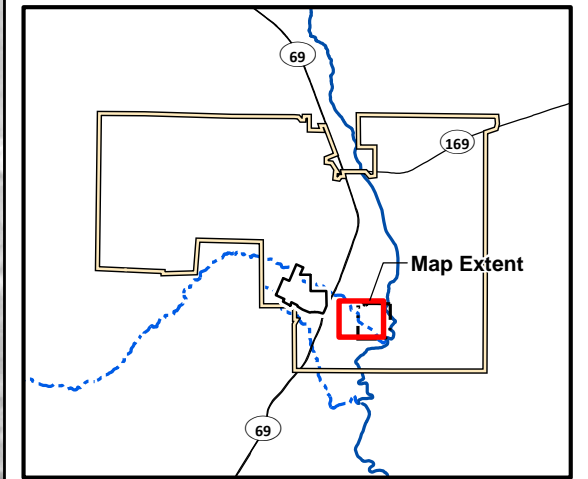
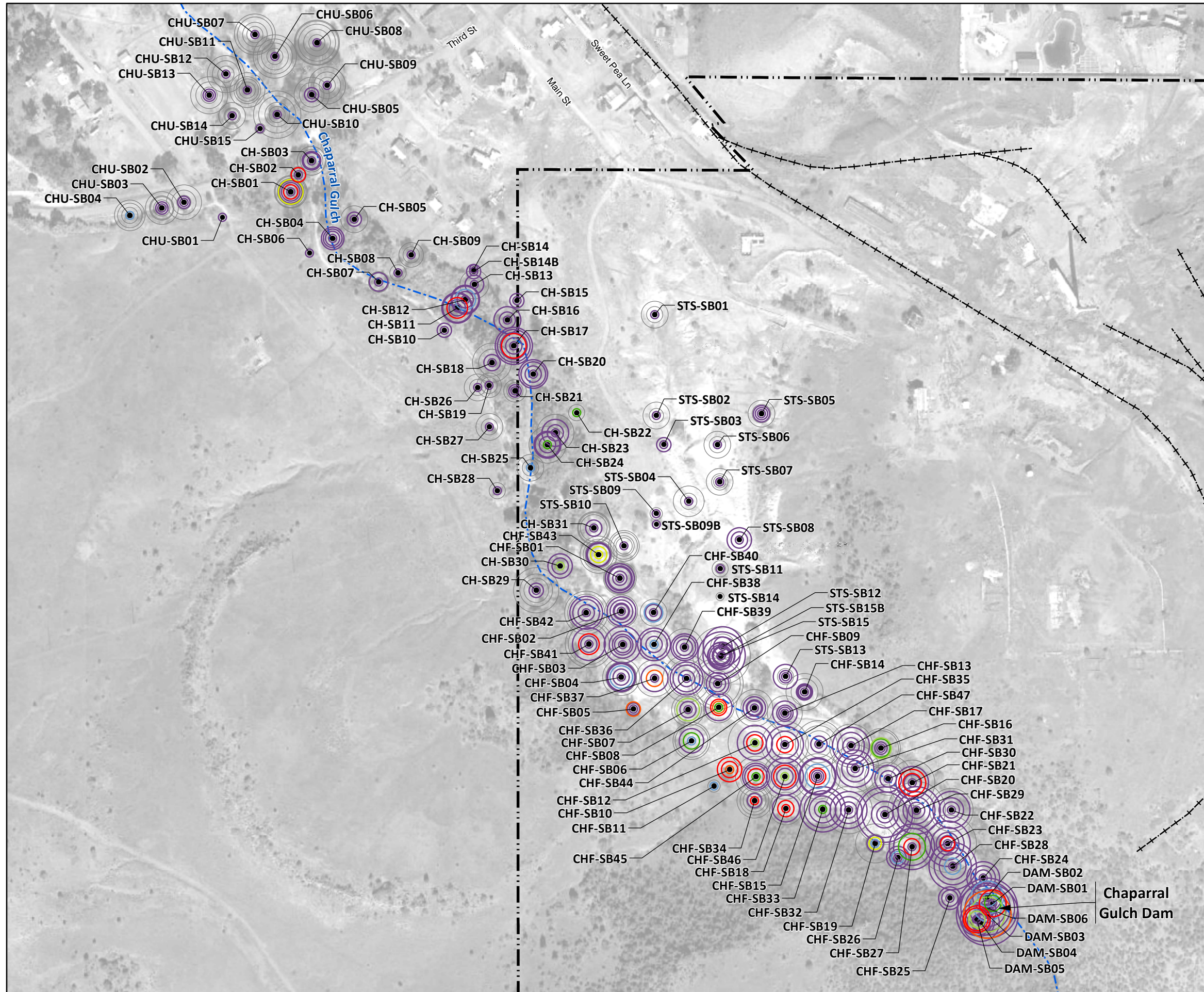


^aProportional symbols represent 1-foot sample intervals between 0 and 27 feet bgs. Each symbol represents a separate sample and is color coded according to the sample score.

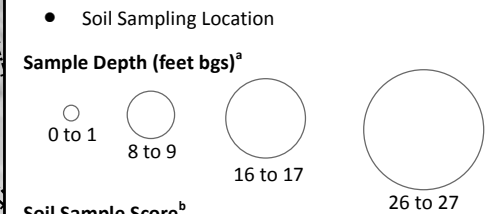
^bSamples characterized as recent materials are assigned a score of 1 to 7 using the lead and zinc sample concentrations. NS indicates no score is assigned. Scores are only assigned for samples characterized as recent material and with detections of lead and zinc.

Notes:
feet bgs = feet below ground surface
Image Source: Google Earth™, Image date November 6, 2015. Accessed February 2, 2016.

Figure 8-6A
Chaparral Gulch Materials and Signatures, Lead and Zinc Concentration Scores, Recent Materials (Tailings and Channel Deposits)
*Iron King Mine – Humboldt Smelter Superfund Site
Dewey-Humboldt, Yavapai County, Arizona*

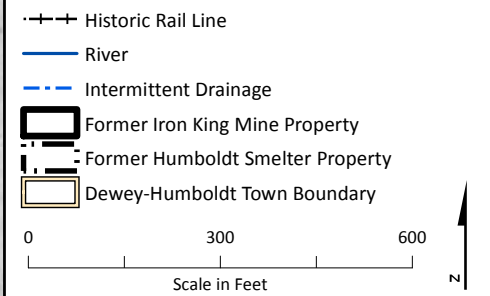


LEGEND



Soil Sample Score^b

Score	Lead (mg/kg)	Zinc (mg/kg)	Zinc/Copper Ratio	Lead/Copper Ratio
1	>1000	>1000	>20	>6
2	>900	>900	>18	>5.5
3	>800	>800	>16	>5
4	>700	>700	>14	>4.5
5	>600	>600	>12	>4
6	>500	>500	>10	>3.5
7	>0	>0	>0	>0
NS	--	--	--	--

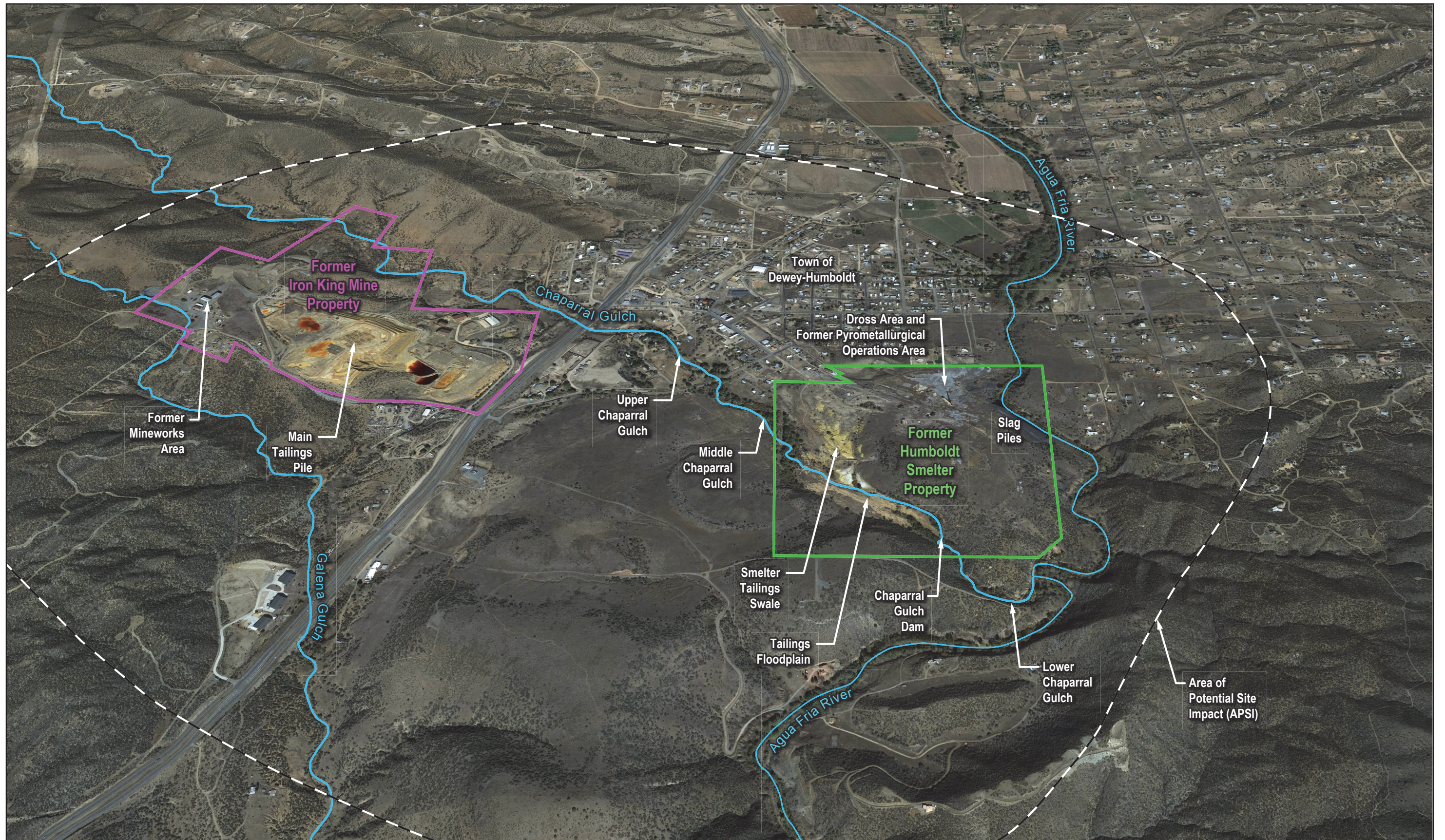


^aProportional symbols represent 1-foot sample intervals between 0 and 27 feet bgs. Each symbol represents a separate sample and is color coded according to the sample score.

^bSamples characterized as recent materials are assigned a score of 1 to 7 using the lead, zinc, and copper sample concentrations. NS indicates no score is assigned. Scores are only assigned for samples characterized as recent material and with detections of lead, zinc and copper.

Notes:
feet bgs = feet below ground surface
Image Source: Google Earth™; Image date November 6, 2015. Accessed February 2, 2016.

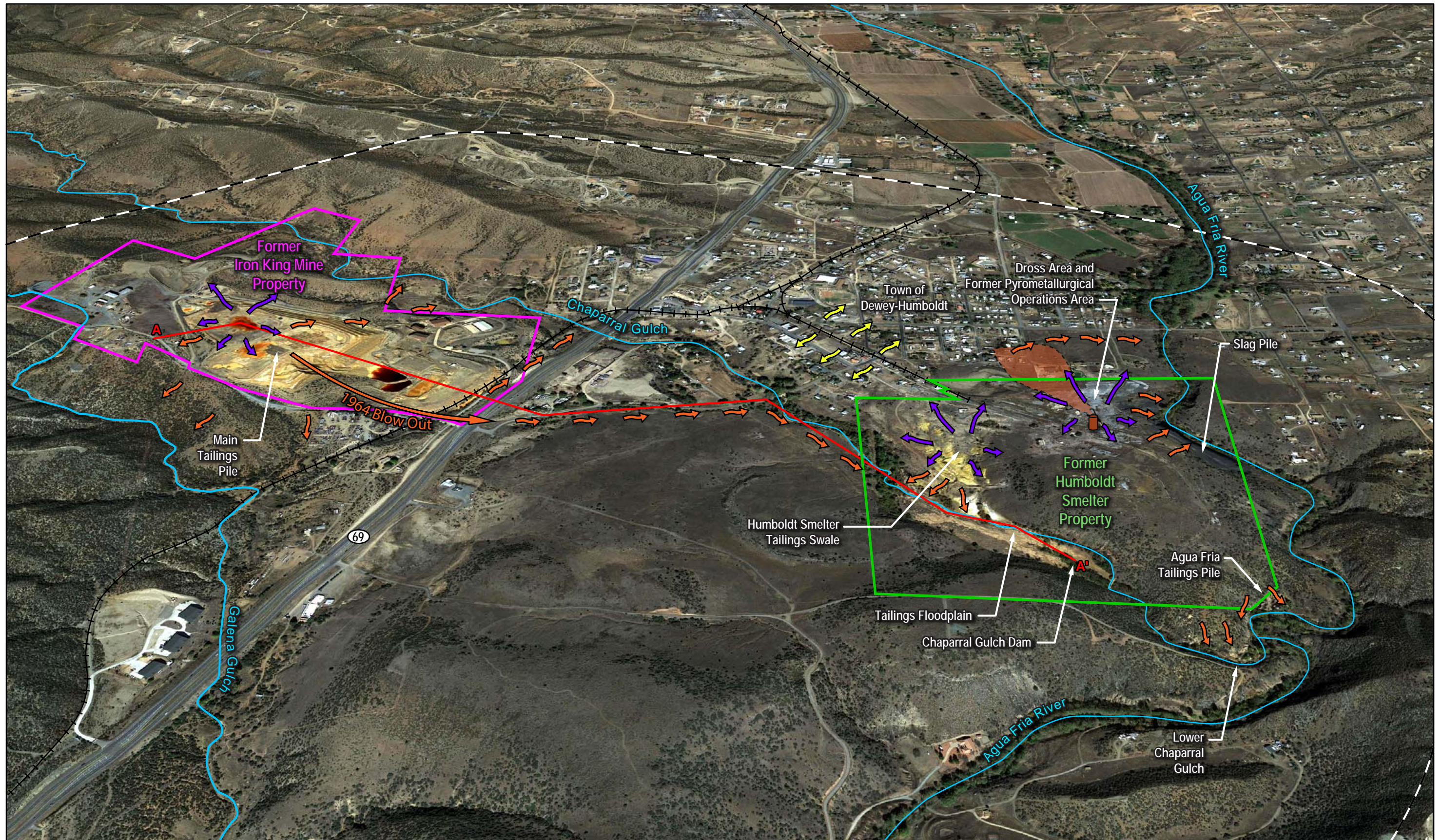
Figure 8-6B
Chaparral Gulch Materials and Signatures, Lead and Zinc Concentration and Ratio Scores, Recent Materials (Tailings and Channel Deposits)
 Iron King Mine – Humboldt Smelter Superfund Site
 Dewey-Humboldt, Yavapai County, Arizona



LEGEND

- River or Intermittent Drainages
- Former Iron King Mine Property
- Former Humboldt Smelter Property
- Area of Potential Site Impact

Figure 8-7
Conceptual Site Model – Overview
 Iron King Mine – Humboldt Smelter Superfund Site
 Dewey-Humboldt, Yavapai County, Arizona



LEGEND

- River or Intermittent Drainages
- Former Humboldt Smelter Property
- Historic Rail Line
- Area of Potential Site Impact
- Former Iron King Mine Property

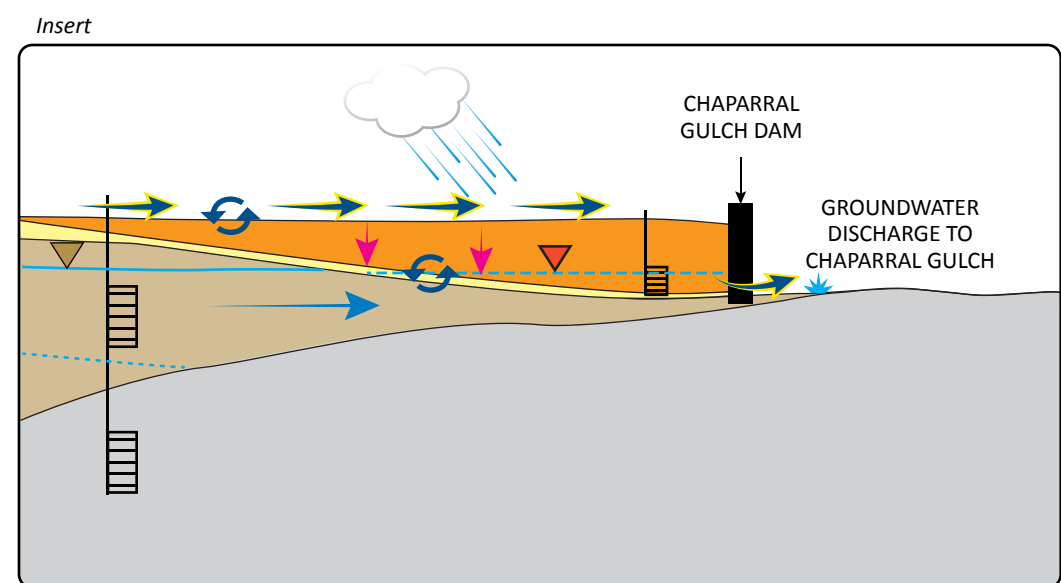
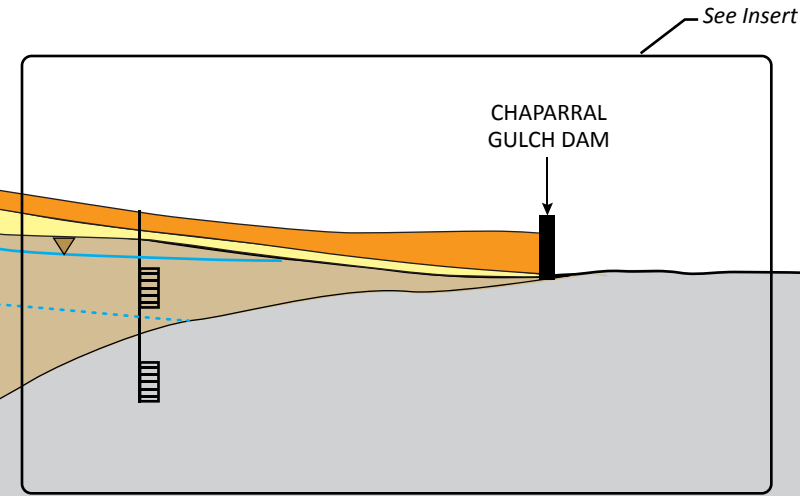
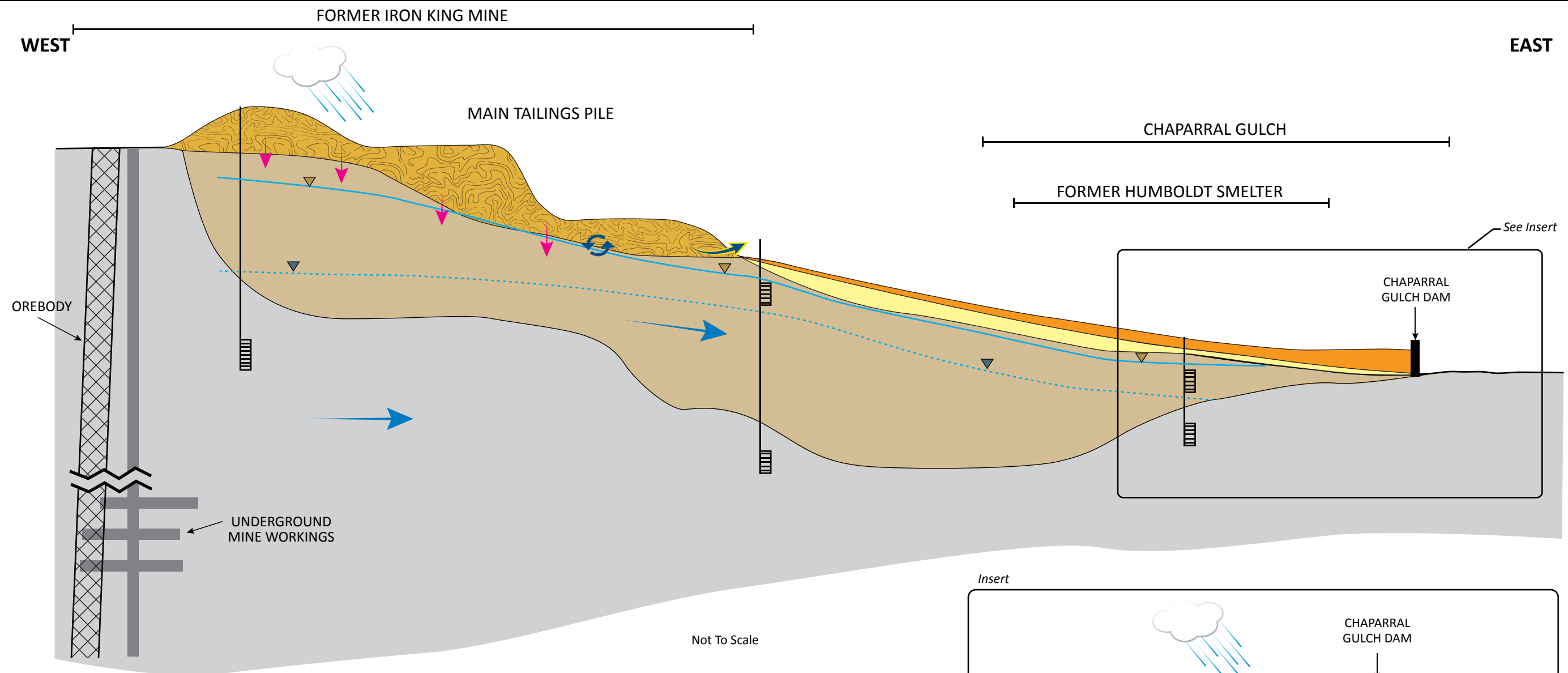
Transport Mechanisms

- ➔ Erosion, historical operational discharges, or other releases to surface water
- ➔ Windblown particulates and aerial dispersion
- ➔ Historical spills along rail line

- Location of Cross Section A-A' (See Figure 8-9)
- Historical smelter stack emissions

Note:
 Transport mechanisms not depicted on this diagram or the associated cross section include placement or dumping of waste or use of tailings, waste rock, or contaminated soil as construction fill or road base in surrounding areas.

Figure 8-8
Conceptual Site Model – Transport Mechanisms
Iron King Mine – Humboldt Smelter Superfund Site
Dewey-Humboldt, Yavapai County, Arizona



LEGEND

- Tailings
- Tailings and Tailings-Alluvium Mixtures
- Quarternary Alluvium
- Tertiary Hickey Formation
- Precambrian Bedrock
- Piezometric Surface (Tailings - Alluvium Mixture in Chaparral Gulch)
- Piezometric Surface (Hickey)
- Piezometric Surface (Precambrian)

- Regional groundwater flow direction
- Rainfall, percolation, generation of acid rock drainage (ARD), and leaching of metals
- Releases to surface water by erosion, runoff, and groundwater seepage
- Geochemical transformation by dissolution, precipitation, and adsorption reactions
- Well Screen

Figure 8-9
Conceptual Site Model Cross Section
 Iron King Mine – Humboldt Smelter Superfund Site
 Dewey-Humboldt, Yavapai County, Arizona