

APPENDIX E

**PRE-AND POST-EXCAVATION
FIGURES AND TABLES**

Appendix E – Pre- and Post-Excavation Figures and Tables

Table of Contents

E-1	Unaffiliated Outfall 008 Pre-Excavation Figures and Tables
	Figure E-1.1 Outfall 008, Unaffiliated Pre-Excavation Sample Results
E-2	CYN-1 Pre-Excavation and Confirmation Figures and Tables
	Figure E-2.1 Outfall 008, CYN-1 Pre-Excavation Sample Results
	Table E-2.1 CYN-1 Pre-Excavation Sample Results
	Figure E-2.2 Outfall 008, CYN-1 Confirmation Sample Results
	Table E-2.2 CYN-1 Confirmation Sample Results
E-3	DRG-1 Pre-Excavation and Confirmation Figures and Tables
	Figure E-3.1 Outfall 008, DRG-1 Pre-Excavation Sample Results
	Table E-3.1 DRG-1 Pre-Excavation Sample Results
	Figure E-3.2 Outfall 008, DRG-1 Confirmation Sample Results
	Table E-3.2 DRG-1 Confirmation Sample Results
E-4	HVS-1 Pre-Excavation and Confirmation Figures and Tables
	Figure E-4.1 Outfall 008, HVS-1 Pre-Excavation Sample Results
	Table E-4.1 HVS-1 Pre-Excavation Sample Results
	Figure E-4.2 Outfall 008, HVS-1 Confirmation Sample Results
	Table E-4.2 HVS-1 Confirmation Sample Results
E-5	HVS-2A Pre-Excavation and Confirmation Figures and Tables
	Figure E-5.1 Outfall 008, HVS-2A Pre-Excavation Sample Results
	Table E-5.1 HVS-2A Pre-Excavation Sample Results
	Figure E-5.2 Outfall 008, HVS-2A Confirmation Sample Results
	Table E-5.2 HVS-2A Confirmation Sample Results
E-6	HVS-2B Pre-Excavation and Confirmation Figures and Tables
	Figure E-6.1 Outfall 008, HVS-2B Pre-Excavation Sample Results
	Table E-6.1 HVS-2B-1 Pre-Excavation Sample Results
	Table E-6.2 HVS-2B-2 Pre-Excavation Sample Results
	Figure E-6.2 Outfall 008, HVS-2B Confirmation Sample Results
	Table E-6.3 HVS-2B-1 Confirmation Sample Results
	Table E-6.4 HVS-2B-2 Confirmation Sample Results

- E-7 HVS-2C Pre-Excavation and Confirmation Figures and Tables**
Figure E-7.1 Outfall 008, HVS-2C Pre-Excavation Sample Results
Table E-7.1 HVS-2C Pre-Excavation Sample Results
Figure E-7.2 Outfall 008, HVS-2C Confirmation Sample Results
Table E-7.2 HVS-2C Confirmation Sample Results
- E-8 HVS-2D Pre-Excavation and Confirmation Figures and Tables**
Figure E-8.1 Outfall 008, HVS-2D Pre-Excavation Sample Results
Table E-8.1 HVS-2D Pre-Excavation Sample Results
Figure E-8.2 Outfall 008, HVS-2D Confirmation Sample Results
Table E-8.2 HVS-2D Confirmation Sample Results
- E-9 HVS-3 & HVS-4 Pre-Excavation and Confirmation Figures and Tables**
Figure E-9.1 Outfall 008, HVS-3 & HVS-4 Pre-Excavation Sample Results
Table E-9.1 HVS-3 Pre-Excavation Sample Results
Table E-9.2 HVS-4 Pre-Excavation Sample Results
Figure E-9.2 Outfall 008, HVS-3 & HVS-4 Confirmation Sample Results
Table E-9.3 HVS-3 Confirmation Sample Results
Table E-9.4 HVS-4 Confirmation Sample Results
- E-10 Unaffiliated Samples near A2LF-1 and A2LF-3, Pre-Excavation Figures and Tables – (In Progress)**
Figure E-10.1 Outfall 009, Unaffiliated Samples near A2LF-1 and A2LF-3 Pre-Excavation Sample Results
- E-11 A2LF-1 Pre-Excavation and Confirmation Figures and Tables**
Figure E-11.1 Outfall 009, A2LF-1 Pre-Excavation Sample Results, Shallow Soil
Figure E-11.2 Outfall 009, A2LF-1 Pre-Excavation Sample Results, Deeper Soil
Table E-11.1 A2LF-1 Pre-Excavation Sample Results
Figure E-11.3 Outfall 009, A2LF-1 Confirmation Sample Results
Table E-11.2 A2LF-1 Confirmation Sample Results

E-12 A2LF-3 Pre- and Post-Excavation Figures and Tables

Figure E-12.1 Outfall 009, A2LF-3 Pre-Excavation Sample
Results, Shallow Soil

Figure E-12.2 Outfall 009, A2LF-3 Pre-Excavation Sample
Results, Deeper Soil

Table E-12.1 A2LF-3 Pre-Excavation Sample Results

Figure E-12.3 Outfall 009, A2LF-3 Confirmation Sample Results

Table E-12.2 A2LF-3 Confirmation Sample Results

Outfall 008, Unaffiliated Pre-Excavation Sample Results

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Existing Building or Structure
- Planned ISRA Evaluation Area
- Surface Water Divide
- Outfall Water Divide
- Surface Water Drainage
- NPDES Outfall
- Elevation Contour
- Figure Map Frame

ISRA Constituents of Concern

Copper, Lead, Dioxins

2005 Background Comparison Concentrations

Copper: 29 mg/kg

Lead: 34 mg/kg

Dioxins (TCDD TEQ): 0.87 pg/g

Copper and/or Lead Sample Location (<7 feet bgs)

- ≤ Background (BG)
- >BG and <2x BG
- ≥2x BG and <10x BG
- ≥10x BG and <100x BG

Dioxin Sample Location (<2 feet bgs)

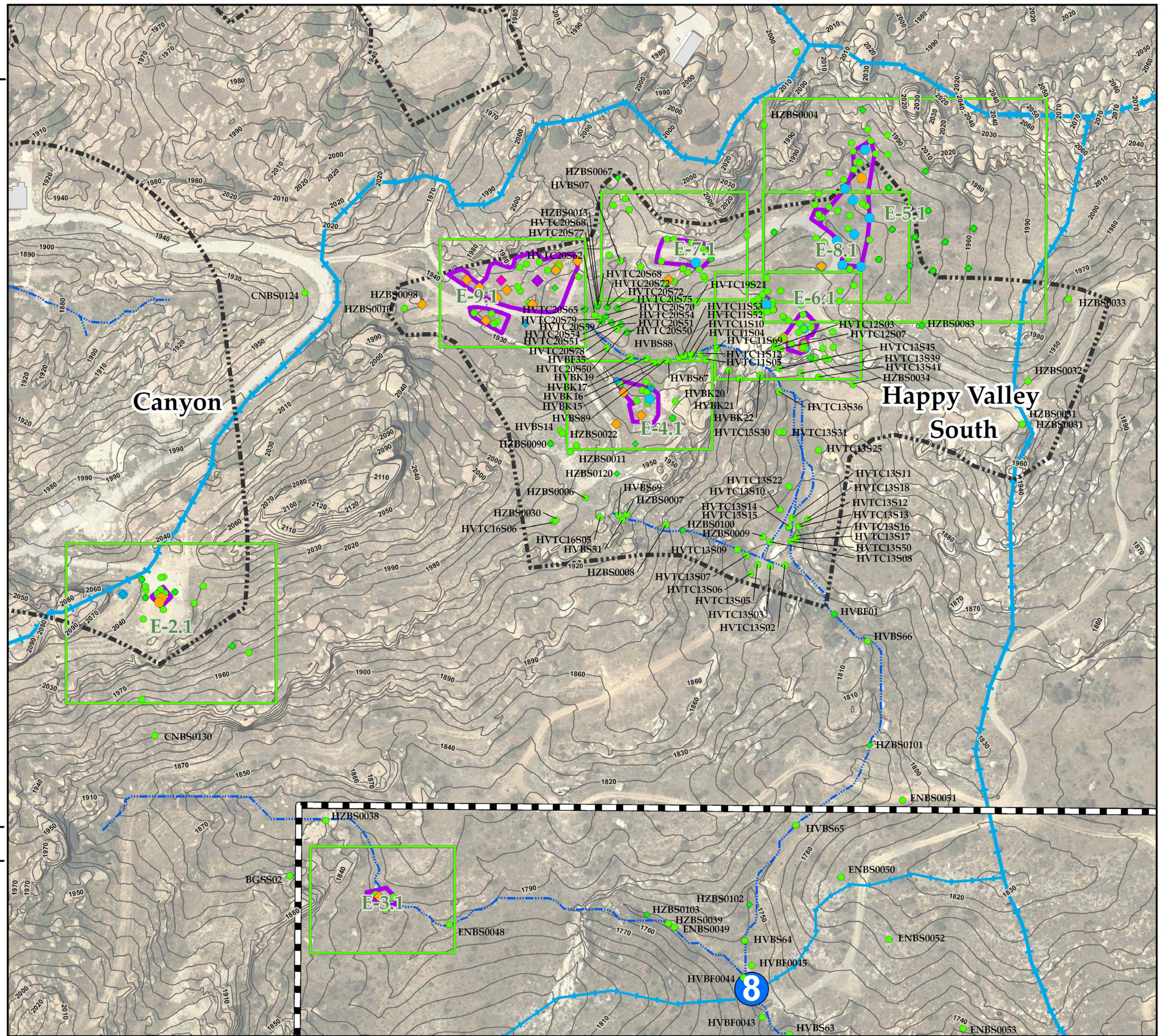
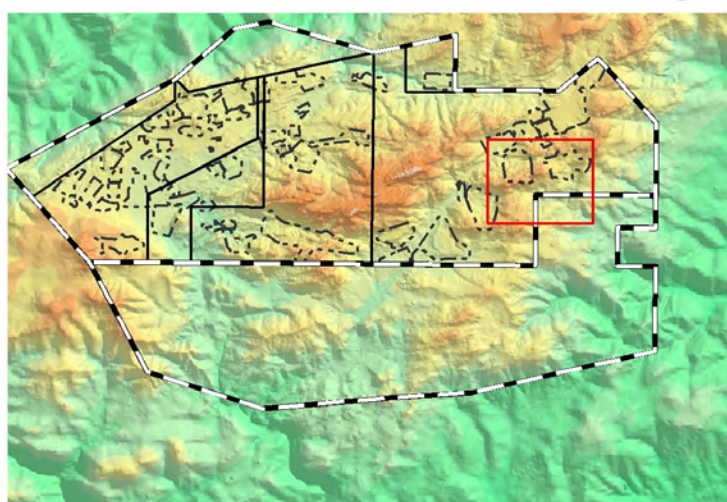
- ≤ Background (BG)
- >BG and <2x BG
- ≥2x BG and <10x BG
- ≥10x BG and <100x BG
- ≥100x BG

Note:

1. Dioxin represents the sum of 17 dioxin/furan congener results adjusted for toxicity, normalized to 2,3,7,8-TCDD TEQ.
2. Sample IDs shown represent ISRA data gap, ISRA waste characterization and RCRA RFI samples located in the vicinity of the ISRA area.
3. Aerial imagery from Google Earth, 2007.
4. Topographic contours from Sage, July 2009.

Date: December 4, 2009

0 60 120 Feet



Outfall 008, CYN-1 Pre-Excavation Sample Results

Base Map Legend

-  Administrative Area Boundary
-  RFI Site Boundary
-  Planned Excavation Area
-  Previously Excavated Area
-  Potential Local Borrow Source
-  Excavation Edge Planned to be Graded to Reestablish Pre-Excavation Drainage Pattern
-  Elevation Contour
-  Sample On Hold





ISRA Constituents of Concern

Copper, Lead, Dioxins






2005 Background Comparison Concentrations

Copper: 29 mg/kg
Lead: 34 mg/kg
Dioxins (TCDD TEQ): 0.87 pg/g

Copper and/or Lead Sample Location (<2 feet bgs)

-  ≤ Background (BG)
-  >BG and <2x BG
-  ≥2x BG and <10x BG
-  ≥10x BG and <100x BG

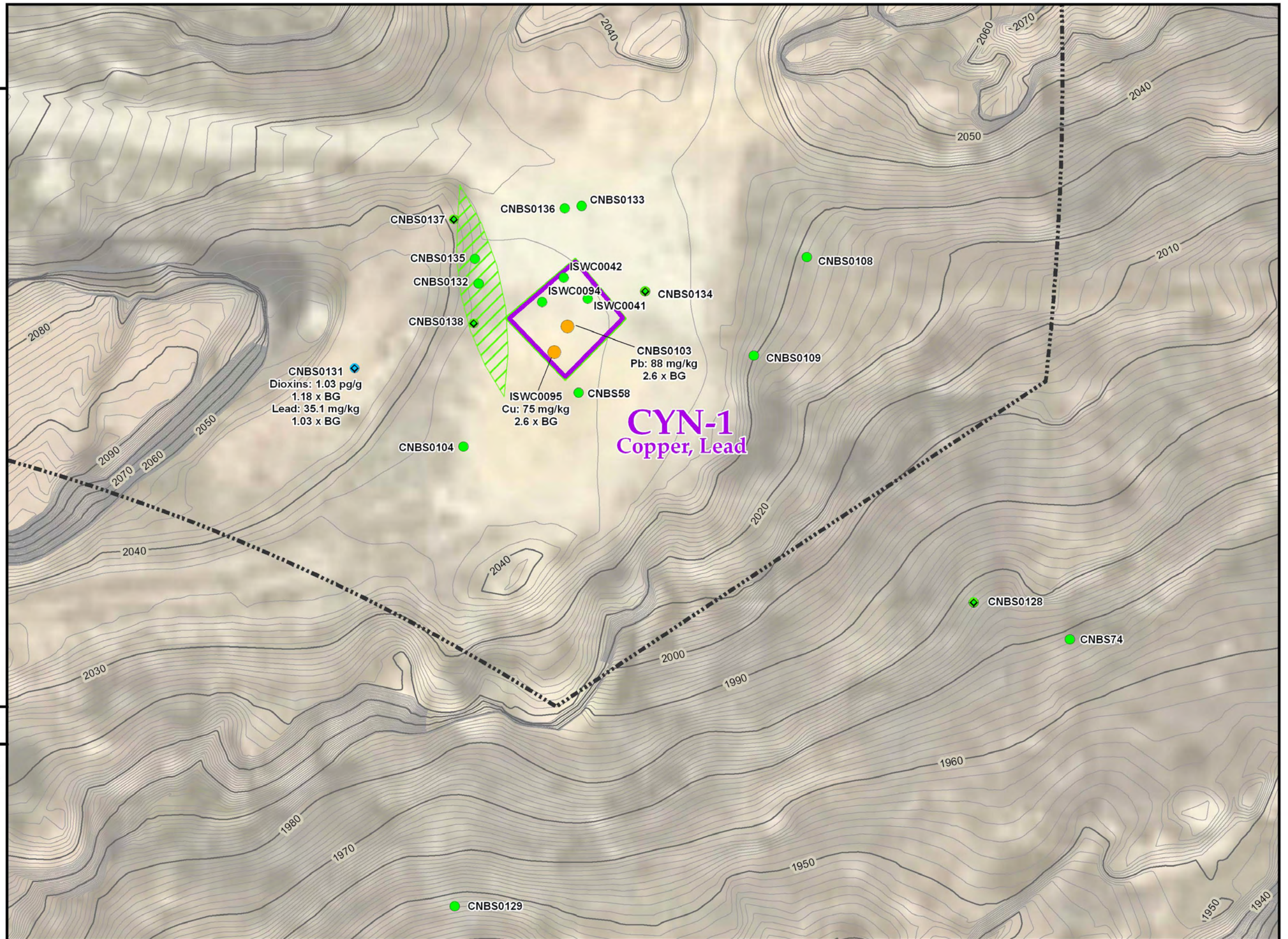
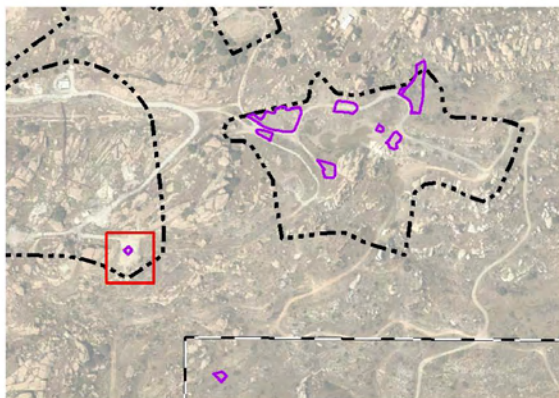
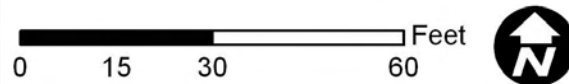
Dioxin Sample Location (<2 feet bgs)

-  ≤ Background (BG)
-  >BG and <2x BG
-  ≥2x BG and <10x BG
-  ≥10x BG and <100x BG
-  ≥100x BG

Note:

1. Dioxin represents the sum of 17 dioxin/furan congener results adjusted for toxicity, normalized to 2,3,7,8-TCDD TEQ.
2. Extent of local borrow source generalized and approximate. Actual extent will vary based on final excavation extents, as directed by project engineer.
3. Sample IDs shown represent ISRA data gap, ISRA waste characterization and RCRA RFI samples located in the vicinity of the ISRA area.
4. Aerial imagery from Google Earth, 2007.
5. Topographic contours from Sage, July 2009.

Date: August 24, 2009



S A N T A S U S A N A F I E L D L A B O R A T O R Y

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-2.1

TABLE E-2.1 CYN-1 PRE-EXCAVATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		CNBS58	CNBS74	CNBS0103	CNBS0104	CNBS0108	CNBS0109	CNBS0109	CNBS0128	CNBS0129
		Sample Name:		CNBS58S01	CNBS74S01	CNBS0103S001	CNBS0104S001	CNBS0108S001	CNBS0109S001	CNBS0109S002	CNBS0128S001	CNBS0129S001
		Collection Date:		10/13/2006	11/2/2006	8/15/2008	8/15/2008	8/13/2008	8/13/2008	8/13/2008	2/25/2009	2/25/2009
		Sample Depth (feet bgs):		0.0 - 1.0	0.0 - 1.0	0.0 - 0.5	0.0 - 0.5	0.5 - 1.0	0.5 - 1.0	4.5 - 5.0	0.0 - 0.5	0.0 - 0.5
		Status		In Place	In Place	Excavated	In Place	In Place	In Place	In Place	In Place	In Place
ANALYTE	UNITS	BACKGROUND ^a	ISRA SRG ^b	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
METALS												
Aluminum	mg/kg	20,000	--	11,000	11,000	9,030	9,490	9,780	9,750	11,500	--	--
Antimony	mg/kg	8.7	--	<0.16 J	<5 J	1.1	0.98	0.54 J	0.58 J	0.45 J	--	--
Arsenic	mg/kg	15	--	5.7	6.8	5.8	5.3	4.1	4.4	4.8	--	--
Barium	mg/kg	140	--	52	61	66.5	60.5	53.4	59.4	57.1	--	--
Beryllium	mg/kg	1.1	--	0.6	0.56	0.43	0.42	0.44 J	0.45 J	0.44 J	--	--
Boron	mg/kg	9.7	--	4.5	1.7	2.5 J	2.6 J	<1 J	0.99 J	<0.985 J	--	--
Cadmium	mg/kg	1	--	0.14	0.14	0.33	0.42	0.14 J	0.3 J	0.24 J	--	--
Chromium	mg/kg	36.8	--	25	18 J	32.8	19.9	13.2 J	16.9 J	17.2 J	0.21 J	0.18 J
Chromium, WET	mg/L	--	--	--	--	--	--	--	--	--	--	--
Cobalt	mg/kg	21	--	6.2	5.8	6.5	6	4.4	5	5.1	--	--
Copper	mg/kg	29	29	12	10	10.8 J	10.1 J	6.1 J	8.3 J	7.9 J	9.3	8.3
Lead	mg/kg	34	34	5	9.1	88 J	13.1 J	9 J	15.8 J	11.4 J	16.8	10.8
Lead, WET	mg/L	--	--	--	--	2.7	--	--	--	--	--	--
Mercury	mg/kg	0.09	--	0.01	0.019	0.01 J	0.011 J	0.013 J	0.017 J	0.014 J	--	--
Molybdenum	mg/kg	5.3	--	<0.53	<0.5	0.39	0.33	0.38 J	0.37 J	0.38 J	--	--
Nickel	mg/kg	29	--	17	14	14.9	14.2	8.4 J	11.2 J	11.1 J	--	--
Selenium	mg/kg	0.655	--	<1.1	<1	<0.507	<0.503	<0.504 J	<0.491 J	<0.504 J	--	--
Silver	mg/kg	0.79	--	<0.26	<0.25	0.041 J	0.055 J	<0.0403 J	0.12 J	0.042 J	--	--
Thallium	mg/kg	0.46	--	<0.53	<0.5	<0.25	<0.22	<0.202	<0.196	<0.202	--	--
Vanadium	mg/kg	62	--	35	31	34.2	29.7	25.1 J	28.4 J	28.6 J	--	--
Zinc	mg/kg	110	--	55	51	63.8	67.3	49.6 J	57.5 J	50.6 J	52.6	49.7
DIOXINS												
TCDD TEQ	pg/g	0.87	3.0	--	--	--	--	--	--	--	0.682	--

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-2.1

TABLE E-2.1 CYN-1 PRE-EXCAVATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		CNBS0131	CNBS0132	CNBS0133	CNBS0134	CNBS0135	CNBS0136	CNBS0137	CNBS0138	ISWC0041
		Sample Name:		CNBS0131S001	CNBS0132S001	CNBS0133S001	CNBS0134S001	CNBS0135S001	CNBS0136S001	CNBS0137S001	CNBS0138S001	ISWC0041S001
		Collection Date:		4/9/2009	2/25/2009	2/25/2009	2/25/2009	7/1/2009	7/1/2009	8/24/2009	8/24/2009	7/1/2009
		Sample Depth (feet bgs):		0.0 - 0.5	0.0 - 0.2	0.0 - 0.2	0.0 - 0.2	0.0 - 0.5	0.0 - 0.5	0.5 - 1.0	0.2 - 0.7	0.0 - 0.3
		Status		In Place	In Place	In Place	In Place	In Place	In Place	In Place	In Place	Excavated
ANALYTE	UNITS	BACKGROUND ^a	ISRA SRG ^b	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT ^c
METALS												
Aluminum	mg/kg	20,000	--	--	--	--	--	--	--	--	--	--
Antimony	mg/kg	8.7	--	--	--	--	--	<0.91	<0.91	--	--	<0.88
Arsenic	mg/kg	15	--	--	--	--	--	6	5.1	--	--	4.4
Barium	mg/kg	140	--	--	--	--	--	55	51	--	--	77
Beryllium	mg/kg	1.1	--	--	--	--	--	0.5 J	0.53	--	--	0.5
Boron	mg/kg	9.7	--	--	--	--	--	--	--	--	--	--
Cadmium	mg/kg	1	--	--	--	--	--	<0.21	<0.21	--	--	<0.2
Chromium	mg/kg	36.8	--	--	--	--	--	18	17	--	--	16
Chromium, WET	mg/L	--	--	--	--	--	--	--	--	--	--	--
Cobalt	mg/kg	21	--	--	--	--	--	4.9	5.2	--	--	6
Copper	mg/kg	29	29	9.29	--	--	--	10	8.1	8.23	11.3	16
Lead	mg/kg	34	34	35.1	2.1	5.2	6.4	3.7	4	9.57	7.19	3.8
Lead, WET	mg/L	--	--	--	--	--	--	--	--	--	--	--
Mercury	mg/kg	0.09	--	--	--	--	--	<0.0057	0.012 J	--	--	0.0088 J
Molybdenum	mg/kg	5.3	--	--	--	--	--	0.75 J	0.62 J	--	--	0.86 J
Nickel	mg/kg	29	--	--	--	--	--	13	12	--	--	12
Selenium	mg/kg	0.655	--	--	--	--	--	<1	<1.0	--	--	<1
Silver	mg/kg	0.79	--	--	--	--	--	<0.82	<0.83	--	--	<0.8
Thallium	mg/kg	0.46	--	--	--	--	--	0.92 J	1.1 J	--	--	1.1 J
Vanadium	mg/kg	62	--	--	--	--	--	28	28	--	--	29
Zinc	mg/kg	110	--	--	--	--	--	45	40	--	--	42
DIOXINS												
TCDD TEQ	pg/g	0.87	3.0	1.03	--	--	0.100	--	--	0.0386	0.222	--

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-2.1

TABLE E-2.1 CYN-1 PRE-EXCAVATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		ISWC0042	ISWC0094	ISWC0095
		Sample Name:		ISWC0042S001	ISWC0094S001	ISWC0095S001
		Collection Date:		7/1/2009	8/17/2009	8/17/2009
		Sample Depth (feet bgs):		0.0 - 0.5	0.0 - 0.5	0.0 - 0.3
		Status		Excavated	Excavated	Excavated
ANALYTE	UNITS	BACKGROUND ^a	ISRA SRG ^b	RESULT ^c	RESULT ^c	RESULT ^c
METALS						
Aluminum	mg/kg	20,000	--	--	--	--
Antimony	mg/kg	8.7	--	<0.88	<0.88 M2	<0.88
Arsenic	mg/kg	15	--	4.4	8.1	7.3
Barium	mg/kg	140	--	56	51	52
Beryllium	mg/kg	1.1	--	0.52	0.54	0.48 J
Boron	mg/kg	9.7	--	--	--	--
Cadmium	mg/kg	1	--	<0.2	<0.2	0.58
Chromium	mg/kg	36.8	--	16	25	28
Chromium, WET	mg/L	--	--	--	--	--
Cobalt	mg/kg	21	--	5.5	6.2	6.6
Copper	mg/kg	29	29	8.3	14	15
Lead	mg/kg	34	34	3.9	6.6	75
Lead, WET	mg/L	--	--	--	--	--
Mercury	mg/kg	0.09	--	0.01 J	<0.0055	<0.0055
Molybdenum	mg/kg	5.3	--	0.56 J	0.44 J	0.61 J
Nickel	mg/kg	29	--	12	17	17
Selenium	mg/kg	0.655	--	<1	<1	<1
Silver	mg/kg	0.79	--	<0.8	0.95 J	0.94 J
Thallium	mg/kg	0.46	--	1.3 J	<0.8	<0.8
Vanadium	mg/kg	62	--	29	35	31
Zinc	mg/kg	110	--	40	54	77
DIOXINS						
TCDD TEQ	pg/g	0.87	3.0	--	--	--

TABLE E-2.1 CYN-1 FOOTNOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

Notes:

"--" - not analyzed / not applicable

^a Soil background values from MWH (September 2005) Soil Background Report, Santa Susana Field Laboratory, Ventura County, California.

^b ISRA SRGs are established for ISRA Constituents of Concern, which include constituents that were detected at concentrations that exceeded NPDES permit limits/benchmarks. SRGs for metals are equal to the 2005 background comparison concentration and the SRG for dioxins is approximately 3 times the 2005 background comparison concentration.

bgs - below ground surface

^c Waste characterization sample results not validated

Dioxins/ TCDD TEQ - A sum of 17 dioxin / furan congener results adjusted for toxicity. The TEQ is calculated by multiplying the result of each congener by its respective 2005 World Health Organization (WHO) toxic equivalency factor (TEF), which is based on the relative potency of the congener to cause a toxic response relative to 2,3,7,8-TCDD. Non Detects are calculated as zero. TCDD TEQ values do not include laboratory data not quantified (DNQ) as specified in the NPDES permit.

Grey highlighted cells indicate concentration exceeds the Soil Remediation Goal (SRG).

J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

M2 - The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).

mg/kg - milligrams per kilogram

mg/L - milligrams per Liter

P - Preliminary data, data has not been validated

pg/g - picograms per gram

SRG - Soil Remediation Goal

TCDD TEQ - tetrachlorobenzo-p-dioxin toxic equivalent (normalized to 2,3,7,8-TCDD)

Outfall 008, CYN-1 Confirmation Sample Results

Base Map Legend

-  Administrative Area Boundary
-  RFI Site Boundary
-  Planned Excavation Area
-  Actual Excavation Area
-  Previously Excavated Area
-  Excavation Edge Planned to be Graded to Reestablish Pre-Excavation Drainage Pattern
-  Elevation Contour

Soil Remediation Goals (SRGs)

Copper = 29 mg/kg

Lead = 34 mg/kg

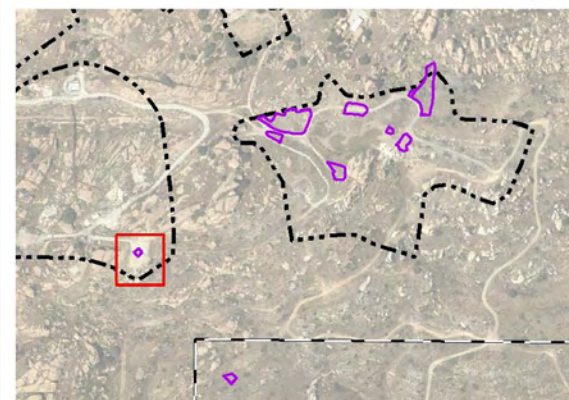
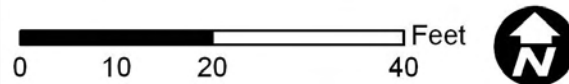
Dioxins = 3.0 pg/g

-  Floor Sample On Hold / Sample Results Pending
-  Floor Sample > SRGs
-  Floor Sample <= SRGs
-  Sidewall Sample On Hold / Sample Results Pending
-  Sidewall Sample > SRGs
-  Sidewall Sample <= SRGs

Note:

1. Dioxin represents the sum of 17 dioxin/furan congener results adjusted for toxicity, normalized to 2,3,7,8-TCDD-TEQ.
2. Sample IDs shown represent ISRA excavation confirmation samples.
3. Copper and Lead SRG is equal to the 2005 background comparison concentration, and SRG for dioxins is approximately 3 times the 2005 background comparison concentration.
4. Aerial imagery from Sage, November 2009.
5. Topographic contours from Sage, November 2009.

Date: November 13, 2009



S A N T A S U S A N A F I E L D L A B O R A T O R Y

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-2.2

TABLE E-2.2 CYN-1 CONFIRMATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		CNET0100	CNET0100	CNBS58
		Sample Name:		CNET0100S001	CNET0100S001-RWQCB	CNBS58S01
		Collection Date:		9/23/2009	9/23/2009	10/13/2006
		Sample Type:		Sidewall	Sidewall	Sidewall
		Sample Depth (feet)^a:		1.8 - 2.0	2.0	0.0 - 1.0
		Status:		In Place	In Place	In Place
ANALYTE	UNITS	Background^b	ISRA SRG^c	RESULT	RESULT	RESULT
METALS						
Copper	mg/kg	29	29	6.23	10	12
Lead	mg/kg	34	34	4.03	4.9	5

TABLE E-2.2 CONFIRMATION FOOTNOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

Notes:

"--" - not applicable, not analyzed

* - Zero value for TCDD TEQ result indicates that all the analytical results used to calculate the TEQ were non-detect.

^a feet below pre-existing ground surface

^b Soil background values from MWH (September 2005) Soil Background Report, Santa Susana Field Laboratory, Ventura County, California.

^c SRGs are for ISRA COCs. SRGs for metals are equal to the 2005 background comparison concentration and the SRG for dioxins is approximately 3 times the 2005 background comparison concentration.

Dioxins/ TCDD TEQ - A sum of 17 dioxin / furan congener results adjusted for toxicity. The TEQ is calculated by multiplying the result of each congener by its respective 2005 World Health Organization (WHO) toxic equivalency factor (TEF), which is based on the relative potency of the congener to cause a toxic response relative to 2,3,7,8-TCDD. Non Detects are calculated as zero. TCDD TEQ values do not include laboratory data not quantified (DNQ) as specified in the NPDES permit.

Grey highlighted cells indicate concentration exceeds SRG^c

J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

mg/kg - milligrams per kilogram

P - Preliminary data, data has not been validated








pg/g - picograms per gram

TCDD TEQ - tetrachlorobenzo-p-dioxin toxic equivalent (normalized to 2,3,7,8-TCDD)

RWQCB - Regional Water Quality Control Board split samples.

Outfall 008, DRG-1 Pre-Excavation Sample Results

Base Map Legend

-  Administrative Area Boundary
-  RFI Site Boundary
-  Planned Excavation Area
-  Excavation Edge Planned to be Graded to Reestablish Pre-Excavation Drainage Pattern
-  Surface Water Drainage
-  Elevation Contour
-  Sample On Hold

ISRA Constituents of Concern

Copper, Lead, Dioxins





2005 Background Comparison Concentrations

Copper: 29 mg/kg






Lead: 34 mg/kg

Dioxins (TCDD TEQ): 0.87 pg/g

Copper and/or Lead Sample Location (<2 feet bgs)

-  ≤ Background (BG)
-  >BG and <2x BG
-  ≥2x BG and <10x BG
-  ≥10x BG and <100x BG

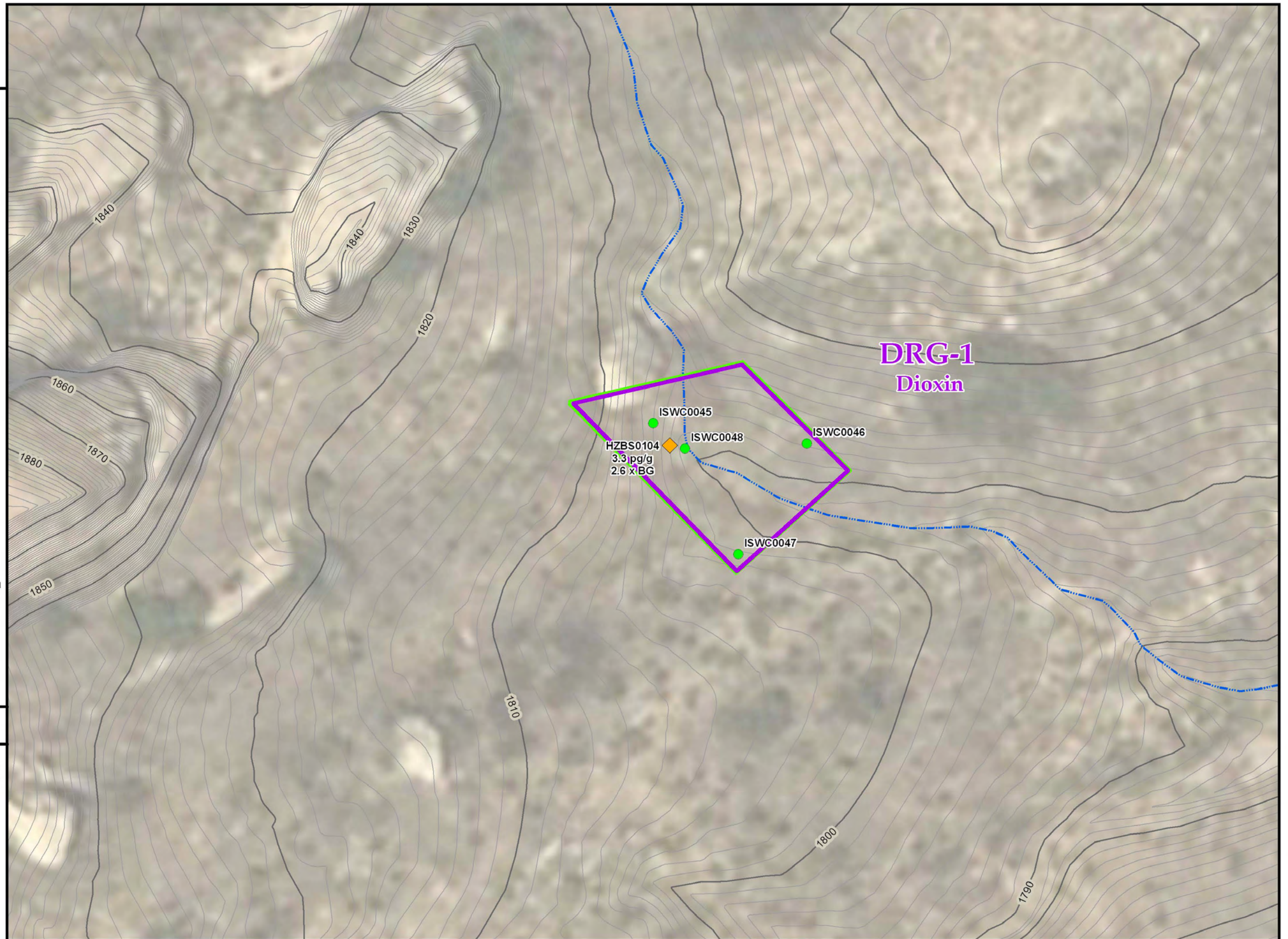
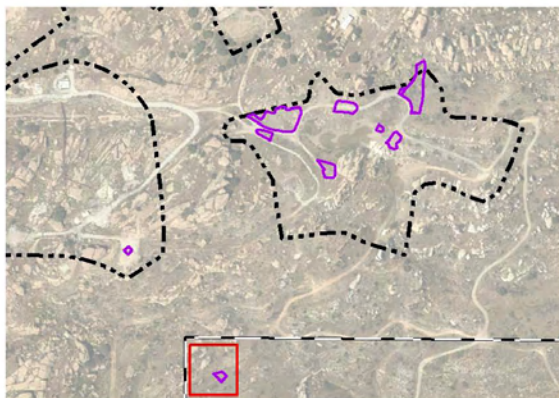
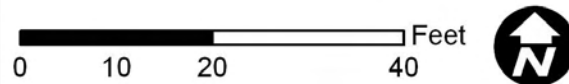
Dioxin Sample Location (<2 feet bgs)

-  ≤ Background (BG)
-  >BG and <2x BG
-  ≥2x BG and <10x BG
-  ≥10x BG and <100x BG
-  ≥100x BG

Note:

1. Dioxin represents the sum of 17 dioxin/furan congener results adjusted for toxicity, normalized to 2,3,7,8-TCDD TEQ
2. Extent of local borrow source generalized and approximate. Actual extent will vary base on final excavation extents, as directed by project engineer.
3. Sample IDs shown represent ISRA data gap, ISRA waste characterization and RCRA RFI samples located in the vicinity of the ISRA area.
4. Aerial imagery from Google Earth, 2007.
5. Topographic contours from Sage, July 2009.

Date: August 24, 2009



S A N T A S U S A N A F I E L D L A B O R A T O R Y

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-3.1

TABLE E-3.1 DGR-1 PRE-EXCAVATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		HZBS0104	ISWC0045	ISWC0046	ISWC0047	ISWC0048
		Sample Name:		HZBS0104S001	ISWC0045S001	ISWC0046S001	ISWC0047S001	ISWC0048S001
		Collection Date:		3/20/2009	7/1/2009	7/1/2009	7/1/2009	7/1/2009
		Sample Depth (feet bgs):		0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.6 - 1.1	1.0 - 1.5
		Status:		Excavated	Excavated	Excavated	Excavated	Excavated
ANALYTE	UNITS	BACKGROUND ^a	ISRA SRG ^b	RESULT	RESULT ^c	RESULT ^c	RESULT ^c	RESULT ^c
METALS								
Antimony	mg/kg	8.7	--	--	<0.88	<0.88	<0.88	<0.88
Arsenic	mg/kg	15	--	--	4.6	5.4	6	5.6
Barium	mg/kg	140	--	--	43	70	49	45
Beryllium	mg/kg	1.1	--	--	0.5	0.65	0.68	0.51
Cadmium	mg/kg	1	--	--	<0.2	<0.2	<0.2	<0.2
Chromium	mg/kg	36.8	--	--	12	15	14	14
Cobalt	mg/kg	21	--	--	5.5	4.9	4.2	4.1
Copper	mg/kg	29	29	--	6.4	7.6	4.9	7.8
Lead	mg/kg	34	34	--	7.8	17	4.9	5.6
Mercury	mg/kg	0.09	--	--	0.0085 J	0.018 J	0.026 J	0.012 J
Molybdenum	mg/kg	5.3	--	--	0.64 J	0.88 J	0.88 J	0.8 J
Nickel	mg/kg	29	--	--	10	12	10	10
Selenium	mg/kg	0.655	--	--	<1	<1	<1	<1
Silver	mg/kg	0.79	--	--	<0.8	<0.8	<0.8	<0.8
Thallium	mg/kg	0.46	--	--	1.2 J	<0.8	<0.8	1.2 J
Vanadium	mg/kg	62	--	--	19	26	25	22
Zinc	mg/kg	110	--	--	35	49	36	260
DIOXINS								
TCDD TEQ	pg/g	0.87	3.0	3.31	--	--	--	--

TABLE E-3.1 DRG-1 FOOTNOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

Notes:

"--" - not analyzed / not applicable

^a Soil background values from MWH (September 2005) Soil Background Report, Santa Susana Field Laboratory, Ventura County, California.

^b ISRA SRGs are established for ISRA Constituents of Concern, which include constituents that were detected at concentrations that exceeded NPDES permit limits/benchmarks. SRGs for metals are equal to the 2005 background comparison concentration and the SRG for dioxins is approximately 3 times the 2005 background comparison concentration.

bgs -below ground surface

^c Waste characterization sample results not validated

Dioxins/ TCDD TEQ - A sum of 17 dioxin / furan congener results adjusted for toxicity. The TEQ is calculated by multiplying the result of each congener by its respective 2005 World Health Organization (WHO) toxic equivalency factor (TEF), which is based on the relative potency of the congener to cause a toxic response relative to 2,3,7,8-TCDD. Non Detects are calculated as zero. TCDD TEQ values do not include laboratory data not quantified (DNQ) as specified in the NPDES permit.

Grey highlighted cells indicate concentration exceeds the Soil Remediation Goal (SRG).

J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

mg/kg - milligrams per kilogram








pg/g - picograms per gram

SRG - Soil Remediation Goal

TCDD TEQ - tetrachlorobenzo-p-dioxin toxic equivalent (normalized to 2,3,7,8-TCDD)



Outfall 008, DRG-1 Confirmation Sample Results

Base Map Legend

-  Administrative Area Boundary
-  RFI Site Boundary
-  Planned Excavation Area
-  Actual Excavation Area
-  Excavation Edge Planned to be Graded to Reestablish Pre-Excavation Drainage Pattern
-  Surface Water Drainage
-  Elevation Contour

Soil Remediation Goals (SRGs)

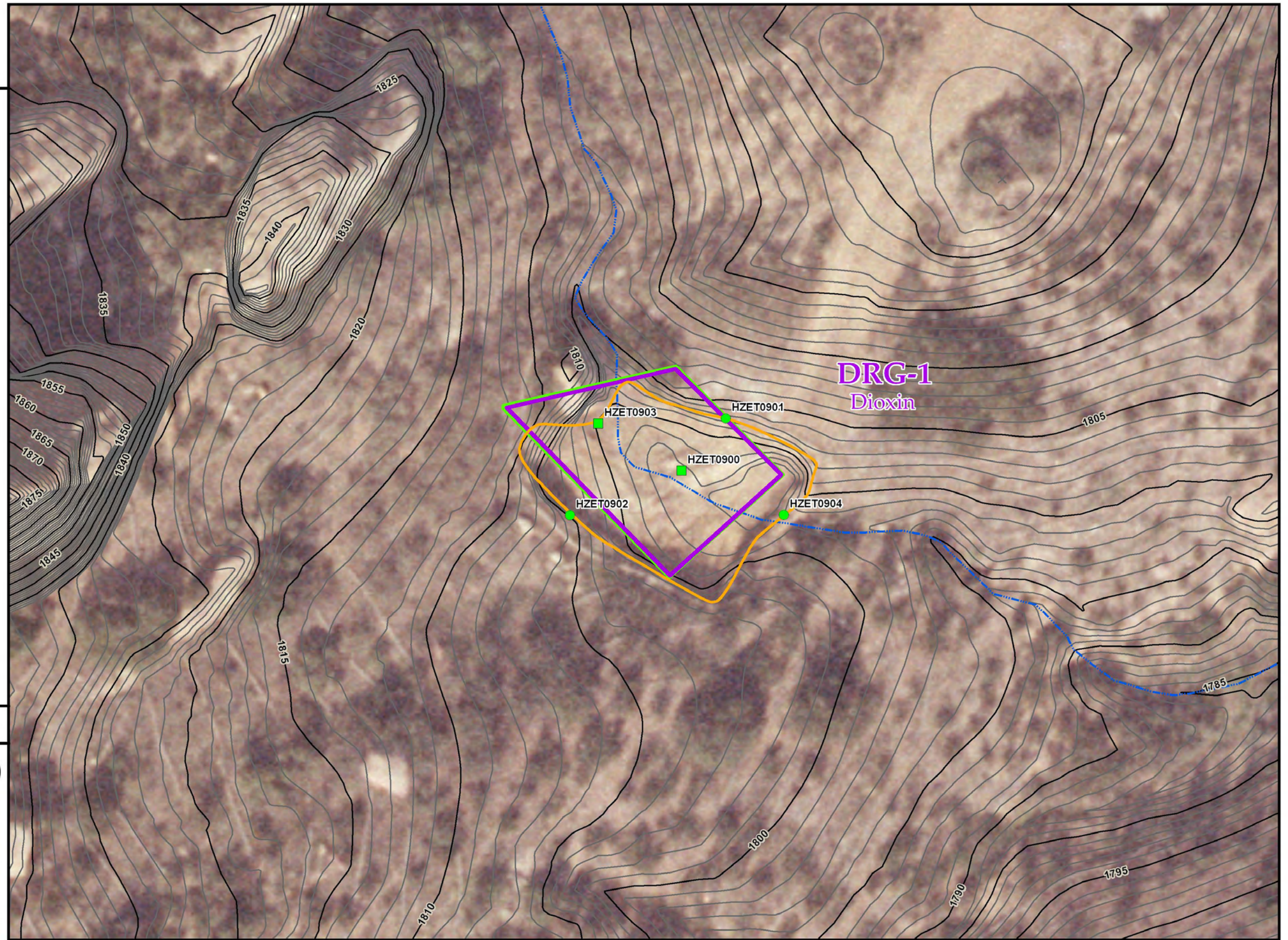
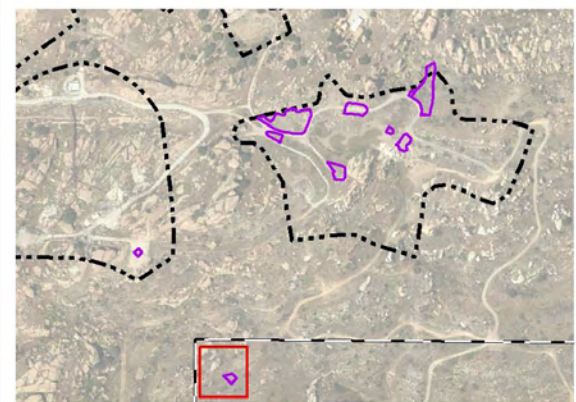
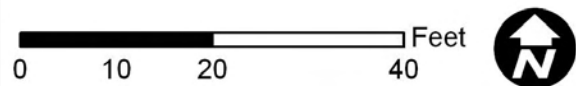
Copper = 29 mg/kg
Lead = 34 mg/kg
Dioxins = 3.0 pg/g

-  Floor Sample On Hold / Sample Results Pending
-  Floor Sample > SRGs
-  Floor Sample <= SRGs
-  Sidewall Sample On Hold / Sample Results Pending
-  Sidewall Sample > SRGs
-  Sidewall Sample <= SRGs

Note:

1. Dioxin represents the sum of 17 dioxin/furan congener results adjusted for toxicity, normalized to 2,3,7,8-TCDD-TEQ.
2. Sample IDs shown represent ISRA excavation confirmation samples.
3. Copper and Lead SRG is equal to the 2005 background comparison concentration, and SRG for dioxins is approximately 3 times the 2005 background comparison concentration.
4. Aerial imagery from Sage, November 2009.
5. Topographic contours from Sage, November 2009.

Date: November 13, 2009



S A N T A S U S A N A F I E L D L A B O R A T O R Y

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-3.2

TABLE E-3.2 DRG-1 CONFIRMATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		HZET0900	HZET0901	HZET0902	HZET0903	HZET0904
		Sample Name:		HZET0900S001	HZET0901S001	HZET0902S001	HZET0903S001	HZET0904S001
		Collection Date:		8/26/2009	8/26/2009	8/26/2009	8/26/2009	8/26/2009
		Sample Type:		Floor	Sidewall	Sidewall	Floor	Sidewall
		Sample Depth (feet) ^a :		2.5 - 3.0	1.0 - 1.5	0.5 - 1.0	3.0 - 3.5	0.0 - 0.5
		Status:		In Place	In Place	In Place	In Place	In Place
ANALYTE	UNITS	Background^b	ISRA SRG^c	RESULT	RESULT	RESULT	RESULT	RESULT
METALS								
Zinc	mg/kg	110	--	38.7	66.6	43.1	45.4	43.3
DIOXINS								
TCDD TEQ	pg/g	0.87	3	0.0015	0 *	0.0361	0.0712	0.3345

TABLE E-3.2 CONFIRMATION FOOTNOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

Notes:

"--" - not applicable, not analyzed

* - Zero value for TCDD TEQ result indicates that all the analytical results used to calculate the TEQ were non-detect.

^a feet below pre-existing ground surface

^b Soil background values from MWH (September 2005) Soil Background Report, Santa Susana Field Laboratory, Ventura County, California.

^c SRGs are for ISRA COCs. SRGs for metals are equal to the 2005 background comparison concentration and the SRG for dioxins is approximately 3 times the 2005 background comparison concentration.

Dioxins/ TCDD TEQ - A sum of 17 dioxin / furan congener results adjusted for toxicity. The TEQ is calculated by multiplying the result of each congener by its respective 2005 World Health Organization (WHO) toxic equivalency factor (TEF), which is based on the relative potency of the congener to cause a toxic response relative to 2,3,7,8-TCDD. Non Detects are calculated as zero. TCDD TEQ values do not include laboratory data not quantified (DNQ) as specified in the NPDES permit.

Grey highlighted cells indicate concentration exceeds SRG^c

J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

mg/kg - milligrams per kilogram

P - Preliminary data, data has not been validated

pg/g - picograms per gram

TCDD TEQ - tetrachlorobenzo-p-dioxin toxic equivalent (normalized to 2,3,7,8-TCDD)

RWQCB - Regional Water Quality Control Board split samples.

Outfall 008, HVS-1 Pre-Excavation Sample Results

Base Map Legend

-  Administrative Area Boundary
-  RFI Site Boundary
-  Planned Excavation Area
-  Previously Excavated Area
-  Excavation Edge Planned to be Graded to Reestablish Pre-Excavation Drainage Pattern
-  Surface Water Drainage
-  Elevation Contour





● Sample On Hold

ISRA Constituents of Concern
Copper, Lead, Dioxins






2005 Background Comparison Concentrations

Copper: 29 mg/kg
Lead: 34 mg/kg
Dioxins (TCDD TEQ): 0.87 pg/g

Copper and/or Lead Sample Location (<2 feet bgs)

-  ≤ Background (BG)
-  >BG and <2x BG
-  ≥2x BG and <10x BG
-  ≥10x BG and <100x BG

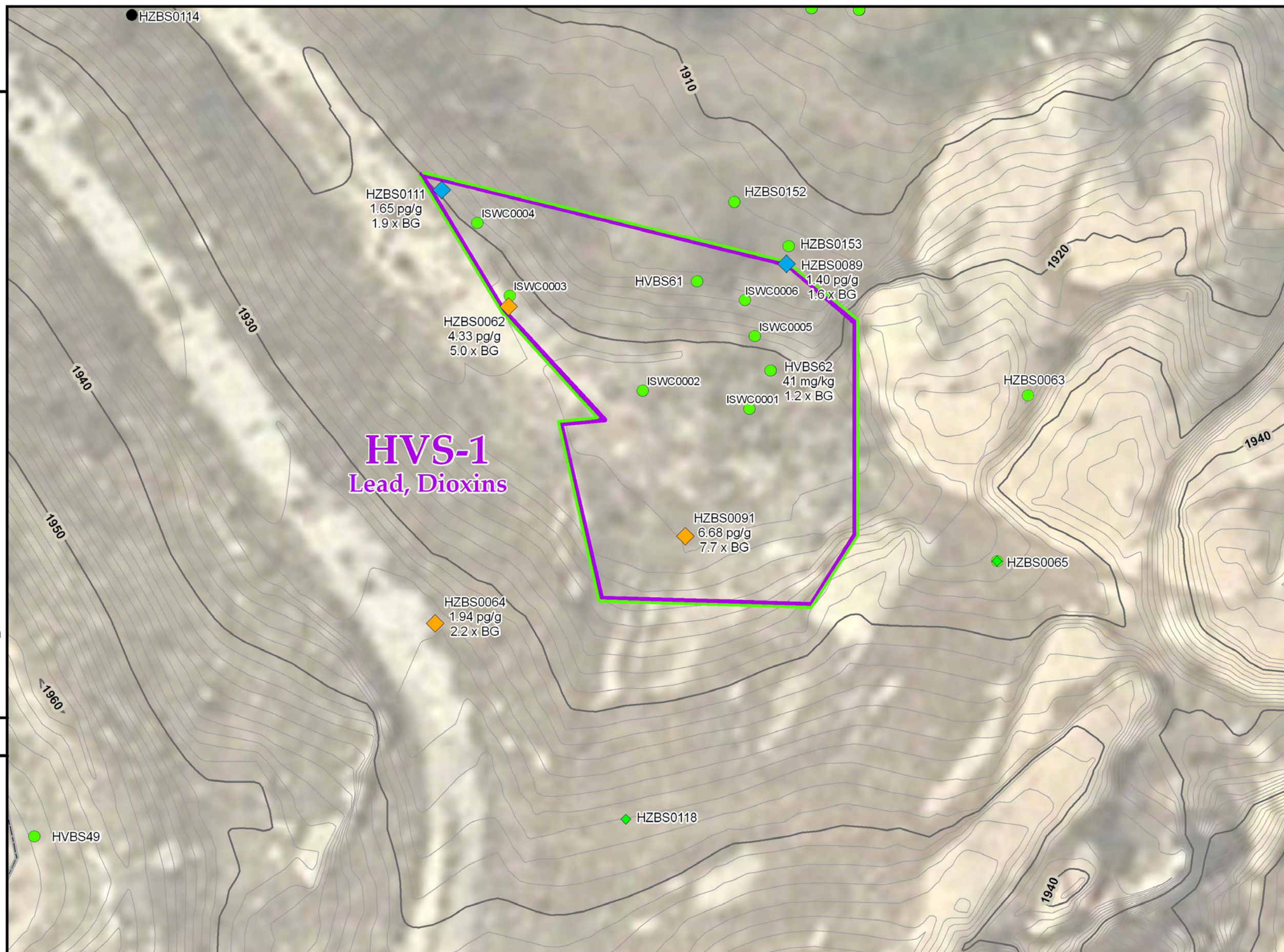
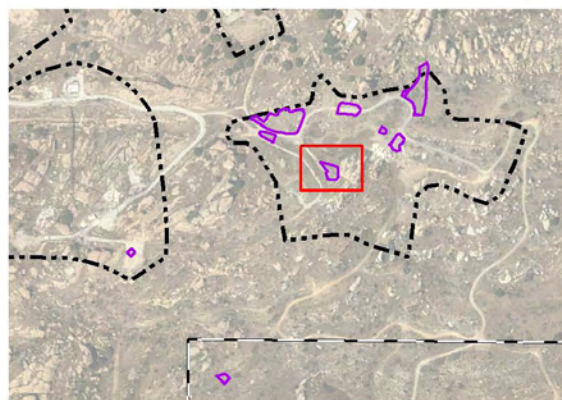
Dioxin Sample Location (<2 feet bgs)

-  ≤ Background (BG)
-  >BG and <2x BG
-  ≥2x BG and <10x BG
-  ≥10x BG and <100x BG
-  ≥100x BG

- Note:
1. Dioxin represents the sum of 17 dioxin/furan congener results adjusted for toxicity, normalized to 2,3,7,8-TCDD TEQ.
 2. Extent of local borrow source generalized and approximate. Actual extent will vary based on final excavation extents, as directed by project engineer.
 3. Sample IDs shown represent ISRA data gap, ISRA waste characterization and RCRA RFI samples located in the vicinity of the ISRA area.
 4. Aerial imagery from Google Earth, 2007.
 5. Topographic contours from Sage, July 2009.

Date: August 24, 2009

0 4.5 9 18 Feet



S A N T A S U S A N A F I E L D L A B O R A T O R Y

 **MWH** FIGURE E-4.1

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-4.1

TABLE E-4.1 HVS-1 PRE-EXCAVATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		HVBS49	HVBS61	HVBS62	HVBS62	HZBS0062	HZBS0063	HZBS0064	HZBS0065	HZBS0089
		Sample Name:		RS651	RJ727	RJ729	RJ731	HZBS0062S001	HZBS0063S001	HZBS0064S001	HZBS0065S001	HZBS0089S001
		Collection Date:		1/23/1998	10/24/2000	10/24/2000	10/24/2000	2/24/2009	2/24/2009	2/24/2009	2/24/2009	2/24/2009
		Sample Depth (feet bgs):		0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
		Status		In Place	Excavated	Excavated	Excavated	Excavated	In Place	In Place	In Place	Excavated
ANALYTE	UNITS	BACKGROUND ^a	ISRA SRG ^b	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
METALS												
Aluminum	mg/kg	20,000	--	9000 J	10,800	8,680	9,080	--	--	--	--	--
Antimony	mg/kg	8.7	--	<11 J	0.27 J	0.46 J	0.71 J	--	--	--	--	--
Arsenic	mg/kg	15	--	7	6.4	4.1	3.2	--	--	--	--	--
Barium	mg/kg	140	--	63 J	57.2	57.3	75.7	--	--	--	--	--
Beryllium	mg/kg	1.1	--	<0.6	1	6.9	16.6	--	--	--	--	--
Boron	mg/kg	9.7	--	<11 J	<4.1 J	<4.4 J	<4.6	--	--	--	--	--
Cadmium	mg/kg	1	--	1	<0.16 J	3.6 J	2.8	--	--	--	--	1.62 J
Calcium	mg/kg	--	--	--	1,530	1,550	2,640	--	--	--	--	--
Chromium	mg/kg	36.8	--	17	18.1	19.7	18.8	--	--	--	--	--
Cobalt	mg/kg	21	--	6	5.7	5.3	6.2	--	--	--	--	--
Copper	mg/kg	29	29	14	8	19.6	16.4	12.3	--	--	--	--
Iron	mg/kg	28,000	--	--	16,100	15,700	13,100	--	--	--	--	--
Lead	mg/kg	34	34	26	6.9	40.8	25.1	13.3	25.7	11.7	13.1	14.9
Magnesium	mg/kg	--	--	--	3,940	3,530	3,450	--	--	--	--	--
Manganese	mg/kg	495	--	--	248	237	222	--	--	--	--	--
Mercury	mg/kg	0.09	--	0.3 J	<0.01	0.21	0.16	--	--	--	--	--
Molybdenum	mg/kg	5.3	--	<11	<10 J	<10 J	<10 J	--	--	--	--	--
Nickel	mg/kg	29	--	13	11.9	15.4	12.6	--	--	--	--	--
Potassium	mg/kg	6,400	--	--	2,830	2,010	2,090	--	--	--	--	--
Selenium	mg/kg	0.655	--	<6	<1.7	<1.8	<1.9	--	--	--	--	--
Silver	mg/kg	0.79	--	<1	<4.5 J	5.7 J	<4.5 J	--	--	--	--	--
Sodium	mg/kg	110	--	--	55.7 J	58.3 J	105	--	--	--	--	--
Thallium	mg/kg	0.46	--	<6	0.26 J	0.27 J	<0.24	--	--	--	--	--
Vanadium	mg/kg	62	--	29	26.1	23.9	26.7	--	--	--	--	--
Zinc	mg/kg	110	--	160 J	59.3 J	174 J	181	--	--	--	--	80.6 J
DIOXINS												
TCDD TEQ	pg/g	0.87	3.0	--	--	--	--	4.33	--	1.94	0.718	1.41

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-4.1

TABLE E-4.1 HVS-1 PRE-EXCAVATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		HZBS0091	HZBS0111	HZBS0118	HZBS0152	HZBS0153	ISWC0001	ISWC0002	ISWC0003
		Sample Name:		HZBS0091S001	HZBS0111S001	HZBS0118S001	HZBS0152S001	HZBS0153S001	ISWC0001S001	ISWC0002S001	ISWC0003S001
		Collection Date:		2/24/2009	6/1/2009	6/1/2009	7/1/2009	7/1/2009	7/1/2009	7/1/2009	7/1/2009
		Sample Depth (feet bgs):		0.0 - 0.3	0.0 - 0.5	0.0 - 0.5	0.5 - 1.0	0.5 - 1.0	1.5 - 2.0	1.5 - 2.0	1.5 - 2.0
		Status		Excavated	In Place	In Place	In Place	Excavated	Excavated	Excavated	Excavated
ANALYTE	UNITS	BACKGROUND ^a	ISRA SRG ^b	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT ^c	RESULT ^c	RESULT ^c
METALS											
Aluminum	mg/kg	20,000	--	--	--	--	--	--	--	--	--
Antimony	mg/kg	8.7	--	--	--	--	<0.91	<0.91	<0.88	<0.88	<0.88
Arsenic	mg/kg	15	--	--	--	--	5.9	7.1	5.6	7.4	7.1
Barium	mg/kg	140	--	--	--	--	66	76	67	67	72
Beryllium	mg/kg	1.1	--	--	--	--	0.7	2	0.62	0.66	0.83
Boron	mg/kg	9.7	--	--	--	--	--	--	--	--	--
Cadmium	mg/kg	1	--	--	0.354	--	<0.2	0.40 J	<0.2	<0.2	<0.2
Calcium	mg/kg	--	--	--	--	--	--	--	--	--	--
Chromium	mg/kg	36.8	--	--	--	--	18	20	17	18	18
Cobalt	mg/kg	21	--	--	--	--	4.7	5	4.6	5	4.9
Copper	mg/kg	29	29	--	--	--	7.8	9.8	7.7	8	8.3
Iron	mg/kg	28,000	--	--	--	--	--	--	--	--	--
Lead	mg/kg	34	34	8	11.6 J	--	4.6	9	4.3	5.6	6.7
Magnesium	mg/kg	--	--	--	--	--	--	--	--	--	--
Manganese	mg/kg	495	--	--	--	--	--	--	--	--	--
Mercury	mg/kg	0.09	--	--	--	--	0.0087 J	0.02 J	0.0081 J	0.008 J	0.011 J
Molybdenum	mg/kg	5.3	--	--	--	--	0.9 J	0.95 J	0.73 J	0.65 J	0.95 J
Nickel	mg/kg	29	--	--	--	--	12	13	11	12	13
Potassium	mg/kg	6,400	--	--	--	--	--	--	--	--	--
Selenium	mg/kg	0.655	--	--	--	--	<1	<1	<1	<1	<1
Silver	mg/kg	0.79	--	--	--	--	<0.8	<0.8	<0.8	<0.8	<0.8
Sodium	mg/kg	110	--	--	--	--	--	--	--	--	--
Thallium	mg/kg	0.46	--	--	--	--	<0.8	<0.8	<0.8	<0.8	<0.8
Vanadium	mg/kg	62	--	--	--	--	27	32	27	29	29
Zinc	mg/kg	110	--	--	72.2 J	--	49	59	42	43	45
DIOXINS											
TCDD TEQ	pg/g	0.87	3.0	6.68	1.62	0.588	--	--	--	--	--

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-4.1

TABLE E-4.1 HVS-1 PRE-EXCAVATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		ISWC0004	ISWC0005	ISWC0006
		Sample Name:		ISWC0004S001	ISWC0005S001	ISWC0006S001
		Collection Date:		7/1/2009	7/1/2009	7/1/2009
		Sample Depth (feet bgs):		1.5 - 2.0	0.0 - 0.5	1.5 - 2.0
		Status		Excavated	Excavated	Excavated
ANALYTE	UNITS	BACKGROUND ^a	ISRA SRG ^b	RESULT ^c	RESULT ^c	RESULT ^c
METALS						
Aluminum	mg/kg	20,000	--	--	--	--
Antimony	mg/kg	8.7	--	<0.88 M2	<0.88	<0.88
Arsenic	mg/kg	15	--	5.6	<0.81	4.8
Barium	mg/kg	140	--	56	120	92
Beryllium	mg/kg	1.1	--	0.94	0.96	1.2
Boron	mg/kg	9.7	--	--	--	--
Cadmium	mg/kg	1	--	0.29 J	0.2 J	<0.2
Calcium	mg/kg	--	--	--	--	--
Chromium	mg/kg	36.8	--	16	4.7	11
Cobalt	mg/kg	21	--	4.4	5	4.5
Copper	mg/kg	29	29	8	7.8	9.3
Iron	mg/kg	28,000	--	--	--	--
Lead	mg/kg	34	34	8.6	3	6.3
Magnesium	mg/kg	--	--	--	--	--
Manganese	mg/kg	495	--	--	--	--
Mercury	mg/kg	0.09	--	0.011 J	0.037	0.012 J
Molybdenum	mg/kg	5.3	--	0.65 J	0.36 J	0.58 J
Nickel	mg/kg	29	--	11	5	8
Potassium	mg/kg	6,400	--	--	--	--
Selenium	mg/kg	0.655	--	<1	1.1 B, J	<1
Silver	mg/kg	0.79	--	<0.8	<0.8	<0.8
Sodium	mg/kg	110	--	--	--	--
Thallium	mg/kg	0.46	--	<0.8	<0.8	<0.8
Vanadium	mg/kg	62	--	24	26	26
Zinc	mg/kg	110	--	53	53	53
DIOXINS						
TCDD TEQ	pg/g	0.87	3.0	--	--	--

TABLES E-4.1 HVS-1 HVS-4 FOOTNOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

Notes:

"--" - not analyzed / not applicable

^a Soil background values from MWH (September 2005) Soil Background Report, Santa Susana Field Laboratory, Ventura County, California.

^b ISRA SRGs are established for ISRA Constituents of Concern, which include constituents that were detected at concentrations that exceeded NPDES permit limits/benchmarks. SRGs for metals are equal to the 2005 background comparison concentration and the SRG for dioxins is approximately 3 times the 2005 background comparison concentration.

^c Waste characterization sample results not validated

B - Analyte was detected in the associated Method Blank.

bgs - below ground surface

Dioxins/ TCDD TEQ - A sum of 17 dioxin / furan congener results adjusted for toxicity. The TEQ is calculated by multiplying the result of each congener by its respective 2005 World Health Organization (WHO) toxic equivalency factor (TEF), which is based on the relative potency of the congener to cause a toxic response relative to 2,3,7,8-TCDD. Non Detects are calculated as zero. TCDD TEQ values do not include laboratory data not quantified (DNQ) as specified in the NPDES permit.

Grey highlighted cells indicate concentration exceeds the Soil Remediation Goal (SRG).

J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

M2 - The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).

mg/kg - milligrams per kilogram

P - Preliminary data, data has not been validated









pg/g - picograms per gram

SRG - Soil Remediation Goal

TCDD TEQ - tetrachlorobenzo-p-dioxin toxic equivalent (normalized to 2,3,7,8-TCDD)

Outfall 008, HVS-1 Confirmation Sample Results

Base Map Legend

-  Administrative Area Boundary
-  RFI Site Boundary
-  Planned Excavation Area
-  Actual Excavation Area
-  Previously Excavated Area
-  Excavation Edge Planned to be Graded to Reestablish Pre-Excavation Drainage Pattern
-  Surface Water Drainage
-  Elevation Contour

Soil Remediation Goals (SRGs)

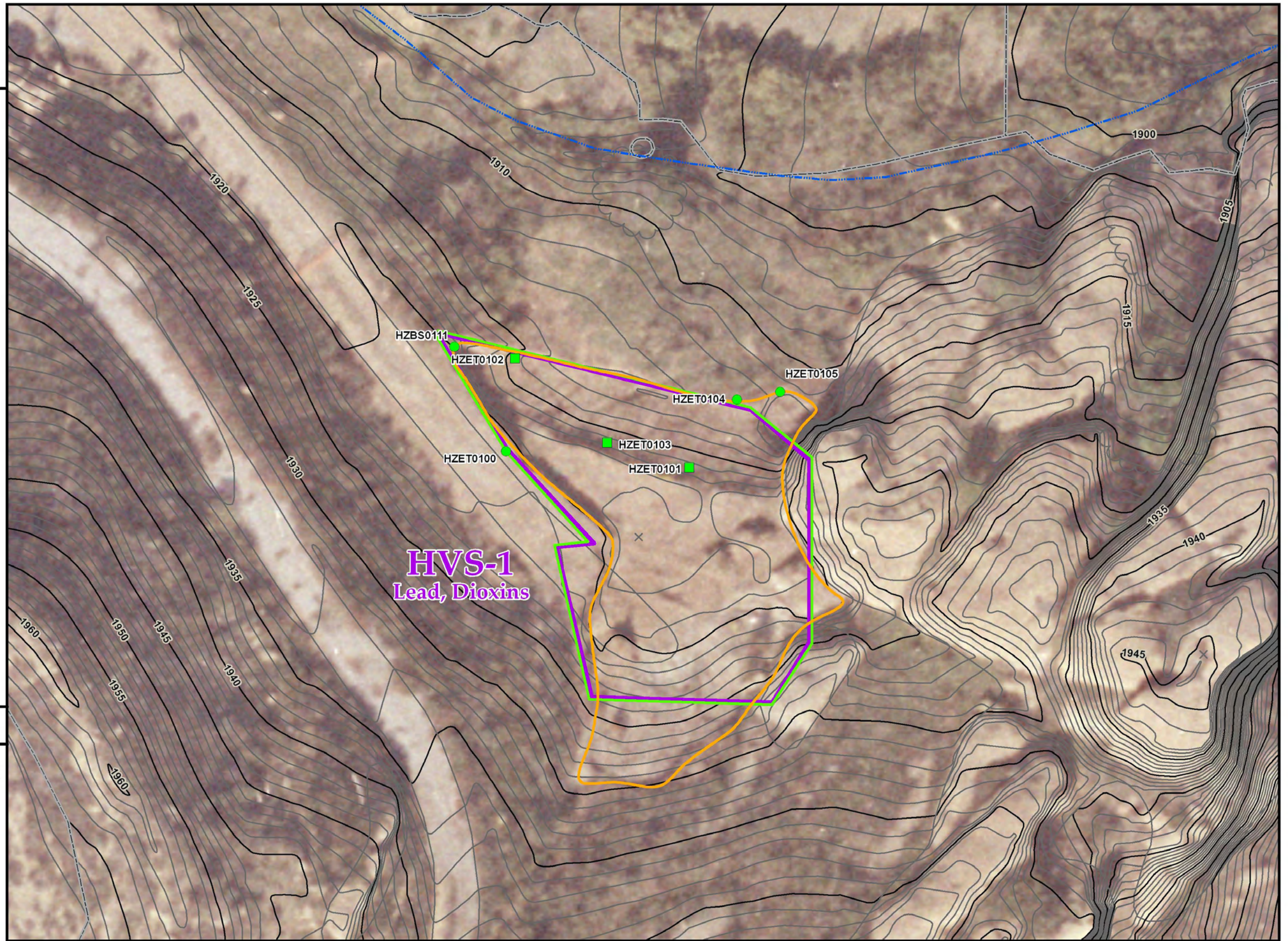
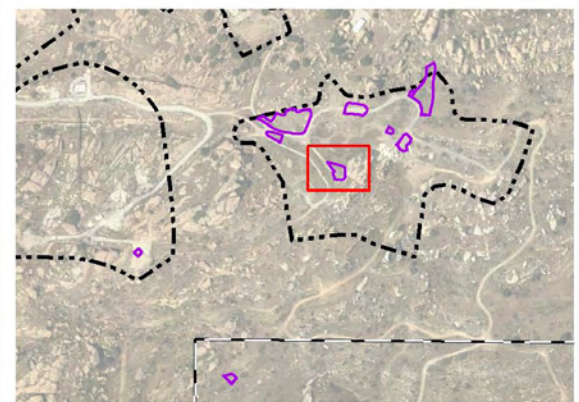
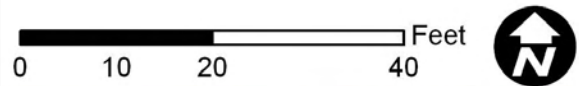
Copper = 29 mg/kg
Lead = 34 mg/kg
Dioxins = 3.0 pg/g

-  Floor Sample On Hold / Sample Results Pending
-  Floor Sample > SRGs
-  Floor Sample <= SRGs
-  Sidewall Sample On Hold / Sample Results Pending
-  Sidewall Sample > SRGs
-  Sidewall Sample <= SRGs

Note:

1. Dioxin represents the sum of 17 dioxin/furan congener results adjusted for toxicity, normalized to 2,3,7,8-TCDD TEQ.
2. Sample IDs shown represent ISRA excavation confirmation samples.
3. Copper and Lead SRG is equal to the 2005 background comparison concentration, and the SRG for dioxins is approximately 3 times the 2005 background comparison concentration.
4. Aerial imagery from Sage, November 2009.
5. Topographic contours from Sage, November 2009.

Date: November 13, 2009



S A N T A S U S A N A F I E L D L A B O R A T O R Y

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-4.2

TABLE E-4.2 HVS-1 CONFIRMATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		HZET0100	HZET0100	HZET0100	HZET0101	HZET0101	HZET0101	HZET0102	HZET0103
		Sample Name:		HZET0100D001	HZET0100S001	HZET0100S001-RWQCB	HZET0101S001	HZET0101S001-RWQCB	HZET0101S002	HZET0102S001	HZET0103S001
		Collection Date:		9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009
		Sample Type:		Sidewall	Sidewall	Sidewall	Floor	Floor	Floor	Floor	Floor
		Sample Depth (feet) ^a :		0.8 - 1.0	0.8 - 1.0	0.8 - 1.0	0.0 - 0.5	0.0 - 0.5	3.5 - 4.0	1.0 - 1.25	0.0 - 0.5
		Status:		In Place	In Place	In Place	In Place	In Place	In Place	In Place	In Place
ANALYTE	UNITS	BACKGROUND ^b	ISRA SRG ^c	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
METALS											
Cadmium	mg/kg	1	--	0.223	0.329	<0.5	0.254	<0.5	0.125	0.158	0.226
Lead	mg/kg	34	34	6.55	9.43	7.8	5.93	6.2	5.02	5.53	6.69
Zinc	mg/kg	110	--	59.0	69.4	53	61.1	54	48.5	52.0	82.2
DIOXINS											
TCDD TEQ	pg/g	0.87	3	0.346	1.28	1.04	0.0714	0.0663	0.0340	0.0436	0.349

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

Table E-4.2

TABLE E-4.2 HVS-1 CONFIRMATION SAMPLE RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

		Object Name:		HZET0103	HZET0104	HZET0105	HZBS0111
		Sample Name:		HZET0103S002	HZET0104S001	HZET0105S001	HZBS0111S001
		Collection Date:		9/21/2009	9/29/2009	9/29/2009	6/1/2009
		Sample Type:		Floor	Sidewall	Sidewall	Sidewall
		Sample Depth (feet) ^a :		3.5 - 4.0	0.5 - 1.0	0.5 - 1.0	0.0 - 0.5
		Status:		In Place	In Place	In Place	In Place
ANALYTE	UNITS	BACKGROUND ^b	ISRA SRG ^c	RESULT	RESULT	RESULT	RESULT
METALS							
Cadmium	mg/kg	1	--	0.149	0.292	0.0723 J	0.354
Lead	mg/kg	34	34	5.3	6.43	5.41	11.6 J
Zinc	mg/kg	110	--	53.3	52.3	45	72.2 J
DIOXINS							
TCDD TEQ	pg/g	0.87	3	0.0945	0.0483	0 *	1.62

TABLE E-4.2 CONFIRMATION FOOTNOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

Notes:

"--" - not applicable, not analyzed

* - Zero value for TCDD TEQ result indicates that all the analytical results used to calculate the TEQ were non-detect.

^a feet below pre-existing ground surface

^b Soil background values from MWH (September 2005) Soil Background Report, Santa Susana Field Laboratory, Ventura County, California.

^c SRGs are for ISRA COCs. SRGs for metals are equal to the 2005 background comparison concentration and the SRG for dioxins is approximately 3 times the 2005 background comparison concentration.

Dioxins/ TCDD TEQ - A sum of 17 dioxin / furan congener results adjusted for toxicity. The TEQ is calculated by multiplying the result of each congener by its respective 2005 World Health Organization (WHO) toxic equivalency factor (TEF), which is based on the relative potency of the congener to cause a toxic response relative to 2,3,7,8-TCDD. Non Detects are calculated as zero. TCDD TEQ values do not include laboratory data not quantified (DNQ) as specified in the NPDES permit.

Grey highlighted cells indicate concentration exceeds SRG^c

J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

mg/kg - milligrams per kilogram

P - Preliminary data, data has not been validated

pg/g - picograms per gram

TCDD TEQ - tetrachlorobenzo-p-dioxin toxic equivalent (normalized to 2,3,7,8-TCDD)

RWQCB - Regional Water Quality Control Board split samples.