HALACO ENGINEERING COMPANY

ATTACHMENT A

TABLES

Table 3-1
Halaco Metal Recylers
Site Iventory

Area	ID #	Container Number	Size/Quantity	Total Volume	Contents/Comments
Y-1	C-1	C-1-1	55 gal	55 gal	hydraulic oil
Y-1	C-1	C-1-2	55 gal	55 gal	motor oil - Hazardous waste label "Non RCRA haz waste" 7/28/04
Y-1	C-1	C-1-3	55 gal	55 gal	oil filters
Y-1	C-1	C-1-4	55 gal	55 gal	oil
Y-1	C-1	C-1-5	55 gal	55 gal	oil
Y-1	C-1	C-1-6	55 gal	55 gal	grease
Y-1	C-1	C-1-7	55 gal	55 gal	hydraulic oil
Y-1	C-1	C-1-8	55 gal	55 gal	gear oil
Y-1	C-1	C-1-9	55 gal	55 gal	motor oil
Y-1	C-1	C-1-10	55 gal	55 gal	empty
Y-1	C-1	C-1-11	55 gal	55 gal	oil
Y-1	C-1	C-1-12	55 gal	55 gal	oil filters
Y-1	C-1	13-19	55 gal	55 gal	empty
Y-1	C-2	na	na	na	debris
Y-1	C-3	na	na	na	empty
Y-1	C-4	na	<= 1 gal	<= 1 gal	paint related - approximately 50 containers
Y-1	C-5	na	na	na	debris - wood/metal, empty containers, few household chemicals <= 1 gal
Y-1	C-6	na	na	na	personal items
Y-2	C-7	C-7	1,300 lbs x 4	5200 lbs	magnesium alloys or magnesium - UN 2813, finished product, 4 boxes, each approx 1,300 lbs
Y-2	C-7	na	55 gal	55 gal	2 drums in back
Y-2	C-8	na	11 at 3'x3'x2'	98 cubic fe	large metal product, mold
Y-2	C-8	na	7 at 4'x5'x2'	280 ft3	semi-circle, metal product, molded
Y-2	C-9	C-9	1,300 lbs x 28	3260 lbs	magnesium alloys or magnesium - UN 2813
Y-2	C-10	C-10	9 sacs	9 sacs	light gray waste product
Y-2	C-11	C-11	18 sacs	18 sacs	light gray waste product
Y-2	C-12	C-12	28 x 55 gal	1540 gal	all empty
Y-2	C-13	na	na	na	metal parts
Y-2	C-14	na	na	na	empty
Y-2	C-15	C-15	9 sacs	9 sacs	light gray waste product
Y-2	C-16	C-16-1	5 gal x 70	350 gal	Chinese writing, heavy metal containers
Y-2	C-16	C-16-2	30 gal x 2	60 gal	unknown, full
Y-2	C-16	C-16-3	55 gal	55 gal	metal parts
Y-2	C-17	na	na	na	metal parts
Y-2	C-17	C-17-1	32 cu ft	32 cu ft	finished product
Y-2	C-18	C-18	18 sacs	18 sacs	light gray waste product
Y-2	C-19	C-19	18 sacs	18 sacs	light gray waste product
Y-2	C-20	C-20-1	55 gal	55 gal	finished product
Y-2	C-20	C-20-2	55 gal	55 gal	metal parts
Y-2	C-20	C-20-3	55 gal	55 gal	finished product
Y-2	C-20	C-20-4	55 gal	55 gal	finished product
Y-2	C-20	C-20-5	25 gal	25 gal	solid
Y-2	C-20	C-20-6	55 gal	55 gal	metal parts
Y-2	C-20	C-20-7	55 gal	55 gal	debris
Y-2	C-20	C-20-8	55 gal	55 gal	metal filings
Y-2	C-20	C-20-9	55 gal	55 gal	rainwater?
Y-2	C-20	C-20-10	25 gal	25 gal	solid
Y-2	C-20	C-20-11	25 gal	25 gal	solid
Y-2	C-20	C-20-12	25 gal	25 gal	solid
Y-2	C-21	C-21	12 sacs	12 sacs	light gray waste product
Y-2	C-21	C-21	pallet	pallet	refractory cement in paper sacks
Y-2	C-21	C-21	55 gal	55 gal	50% hydrogen peroxide
Y-2	C-21	C-21	55 gal x 4	220 gal	rinsewater with sodium hydroxide, pH<10
Y-2	C-21	C-21	55 gal x 4	220 gal	ammonia hydroxide, 29%
Y-2	C-22	C-22	14 sacs	14 sacs	light gray waste product
Y-2	C-22A	C-22A	100	100	large tires

Table 3-1
Halaco Metal Recylers
Site Iventory

Area	ID #	Container Number	Size/Quantity	Total Volume	Contents/Comments
Y-2	C-23	C-23	80	80	large tires
Y-2	C-24	C-24	18 sacs	18 sacs	light gray waste product
Y-2	C-25	C-25	11 sacs	11 sacs	aluminum shot, small pellets, finished product
Y-2	C-26	C-26	5 pallets	5 pallets	Moab salt, in sacks on pallet
Y-2	C-26	C-26	1 pallet	1 pallet	Boric acid, in sacks on pallet
Y-2	C-26	C-26	5 gal x 5	25 gal	Ceramic fiber
Y-2	C-26	C-26	12 bags	12 bags	North American Refractories Company
Y-2	C-26	C-26	50 lbs x 11	550 lbs	73M Phos Pl (phosphoric acid, solid?)
Y-2	C-27	na	na	na	scrap metal
Y-2	C-28	C-28	2 pallets	2 pallets	Kast-O-Lite, 55 lb bags
Y-2	C-28	C-28	5 gal x 40	200 gal	Met-L-X dry powder
Y-2	C-28	C-28	5 gal x 90	450 gal	99% graphite powder
Y-2	C-28	C-28	55 gal x 24	1320 gal	M-310 flux 400lb each
Y-2	C-28	C-28	55 gal	55 gal	poly drum with liquid
Y-2	C-29	C-29	9 sacs	9 sacs	light gray waste product
Y-2	C-30	na	na	na	consumer waste, automotive parts
Y-3	C-31	C-31	box 1/2 full	box 1/2 full	loose light gray waste product
Y-3	C-32	C-32	box 1/2 full	box 1/2 full	loose light gray waste product
Y-3	C-33	C-33	box 1/2 full	box 1/2 full	loose light gray waste product
Y-3	C-34	C-34	box 1/2 full	box 1/2 full	loose light gray waste product
Y-3	C-35	C-35	box 1/2 full	box 1/2 full	loose light gray waste product
Y-3	C-36	C-36	box 1/4 full	box 1/4 full	loose light gray waste product
Y-3	C-37	C-37	?	?	can't see in
Y-1	Y-1	Y-1-1	5 gal	5 gal	blue unmarked contains liquid
Y-1	Y-1	Y-1-2	55 gal	55 gal	solids
Y-1	Y-1	Y-1-3	11'x8'	1105 ft3	solids?
Y-1	S-1	S-1			compressed air cylinder and compressor
Y-1	S-1	S-1-1	55 gal	55 gal	magnesium powder
Y-1	S-1	S-1-2 thru S-1-17	5 gal x 17	85gal	magnesium powder, approx 1/2 full
Y-1	S-1	S-1-19	30 gal	30 gal	Radiant K-600 fluorescent colorant
Y-1	S-1	S-1	50 lb x 4	200lb	aluminum sulfate in bags
Y-1	S-1	S-1	1 gal	1 gal	sulfuric acid
Y-1	S-1	S-1	<=1 gal	<=1 gal	misc unlabeled containers
Y-1	S-2	na	na	na	files, clothes, books
Y-1	S-2	S-2	5 gal or less	5 gal or less	paints, few containers
Y-1	S-3	na	na	na	furniture, wood
Y-1	D-1	D-1	40 sacs	40 sacs	light gray waste product
Y-1	D-2	D-2	33 sacs	33 sacs	light gray waste product
Y-1	D-3	D-3	37 sacs	37 sacs	light gray waste product
Y-1	D-4	D-4	1 cu yd x 5	5 yd3	scrap metal
Y-1	D-4	D-4	55 gal x 6	330 gal	scrap metal
Y-1	D-4	D-4	55 gal x 11	605 gal	marked UN 1869, flam solid, maybe empty
Y-1	D-5	D-5	35 sacs	35 sacs	light gray waste product
Y-1	D-5	D-5	4 cu yds	4 cu yds	scrap metal in cu yd boxes
Y-1	D-5	D-5	3 cu yds	3 cu yds	sheet metal, not packaged/containerized
Y-1	D-6	D-6	37 sacs	37 sacs	light gray waste product
Y-1	D-6	D-6	1/2 cu yd	1/2 cu yd	metal shavings in cardboard box
Y-1	D-7	D-7	42 sacs	42 sacs	light gray waste product
Y-1	D-8	D-8	24 sacs	24 sacs	light gray waste product
Y-4	Y-4	Y-4			trailer with small amount of household chemicals
Y-4	Y-4	Y-4	500 gal	500 gal	AST mounted on trailer, UN 1993
Y-4	Y-4	Y-4	55 gal	55 gal	oil
Y-4	Y-4	Y-4	5 gal x 2	10 gal	oil
Y-4	Y-4	Y-4	15'x8'	15'x8'	metal AST, empty
Y-4	Y-4	Y-4	500 gal x 2	1000 gal	fiberglass ASTs, empty
Y-4	Y-4	Y-4	500 gal x 2	1000 gal	metal ASTs, empty
Y-4	Y-4	Y-4	3	3	very large ASTs, empty
Y-3	Y-3	Y-3	200 gal	200 gal	AST next to tumbler in sump area, 2 phases

Table 3-1
Halaco Metal Recylers
Site Iventory

Area	ID #	Container Number	Size/Quantity	Total Volume	Contents/Comments
Y-3	Y-3	Y-3	2 sacs	2 sacs	light gray waste product
Y-3	Y-3	Y-3-1 thru -18	18	18	cylinders
Y-3	Y-3	Y-3-19	8'x5'x10'	400 ft3	fiberglass AST, "Liquid fertilizer"
Y-3	Y-3	Y-3-20	12'x6' round	678 ft3	poly AST, empty?, West of B-3
Y-3	Y-3	Y-3	?	?	Clarifier west of building 3
Y-3	Y-3	Y-3-21	10'x10'x3'	300ft3	Ponded rainwater? West of B-3
Y-3	Y-3	Y-3-21	12'x12'x2'	288 ft3	Ponded rainwater? West of B-3
Y-3	Y-3	Y-3	4ft Circular	33 ft3	Vessel
Y-3	Y-3	Y-3	5 gal x 4	20 gal	detergent/grease, in electrical room south of B-2
Y-3	Y-3	Y-3-22	15'x3'	140 ft3	metal AST South of B-2
Y-3	Y-3	Y-3-23	55 gal	55 gal	light gray waste product
Y-3	Y-3	Y-3-24	55 gal	55 gal	light gray waste product, 1/2 full
Y-3	Y-3	Y-3-25	55 gal	55 gal	metal shavings, 1/2 full
Y-3	Y-3	Y-3-26	55 gal	55 gal	did not open
Y-3	Y-3	Y-3-27	55 gal	55 gal	did not open
Y-3	Y-3	Y-3-28	55 gal	55 gal	rainwater to top?
Y-3	Y-3	Y-3-29	55 gal	55 gal	rainwater?, 1/2 full
Y-3	Y-3	Y-30	1 pallet	1 pallet	above piping from B-2 to B-3, shed with pallet of bags
Y-3	Y-3	Y-3-32	5 gal	5 gal	Laundry Detergent
Y-3	Y-3	Y-3-33	5 gal	5 gal	Liquid
Y-3	Y-3	Y-3-34	5 gal	5 gal	Liquid
Y-3	Y-3	Y-3-35	30'x8'round	1440 ft3	UN1993, AST, SW corner
Y-3	Y-3	Y-3-36	50lb 5gal x 16	80 gal	N. American Refractories
Y-3	Y-3	Y-3-38	24'tall x 10' wide	1802 ft3	metal AST north of B-3
Y-3	Y-3	Y-3-39	4'tall x 5'wide	77 ft3	metal AST, full
B-2	B-2	B-2	10 sac	10 sac	light gray waste product
B-2	B-2	B-2-1 thru -44	55 gal x 44	2200 gal	magnesium chloride solid, drums in poor condition
B-2	B-2	B-2	50 lbs x 125	6250 gal	Seaforth Fluorspar sacks, phone #216-292-5820
B-2	B-2	B-2	48 sacs	48 sacs	gray waste product, darker in appearance, wetter?
B-2	B-2	B-2	55 gal x 8	440 gal	unknown solids
B-2	B-2	B-2	4'x3'x6'	72 ft3	light gray waste product
B-2	B-2	B-2	55 gal x 5	275 gal	magnesium chloride solid, drums in poor condition
B-2	B-2	B-2	60 sacs	60 sacs	gray waste product, darker in appearance, wetter?
B-2	B-2	B-2	100'x50'x5'	25000 ft3	light gray waste product
B-2	B-2	B-2	100 sacs	100 sacs	light gray waste product
B-2	B-2	B-2	50 lb x 513	25650 ft3	Potassium chloride in bags, ok condition
B-2	B-2	B-2	55 gal x 2	110 gal	grease
B-2	B-2	B-2	75 lb x 20 sacs	1500lbs	Kast C Poly
B-2	B-2	B-2-61 thru 64	55 gal x 4	220 gal	61 - Floor Dry 62 MT
B-3	B-3	B-3-1	15'x10'round	2355 ft3	AST
B-3	B-3	B-3-2	15'x10'round	2355 ft3	AST
B-3	B-3	B-3-3	500 gal	500 gal	empty, poly
B-3	B-3	B-3-4	55 gal	55 gal	"Enviroclean" poly drum
B-3	B-3	B-3-5	55 gal	55 gal	Hasa Antifoam, 1/2 full, grease?
B-3	B-3	B-3-6	55 gal	55 gal	poly
B-3	B-3	B-3-7	55 gal	55 gal	Flocculant WW600
B-3	B-3	B-3	35 sacs	35 sacs	light gray waste product
B-3	B-3	B-3-8	5'x6'	45 ft3	AST
B-3	B-3	B-3	77 sacs	77 sacs	light gray waste product
B-1	B-1	B-1-1	55 gal	55 gal	poly liq
B-1	B-1	B-1-2	30 gal	30 gal	green drum solid
B-1	B-1	B-1-3	30 gal	30 gal	metallurgical additive
B-1	B-1	B-1-4	55 gal	55 gal	poly white flakes
B-1	B-1	B-1-5	55 gal	55 gal	poly white flakes
B-1	B-1	B-1-6	55 gal	55 gal	poly white flakes
B-1	B-1	B-1-7	55 gal	55 gal	poly white flakes
B-1	B-1	B-1-8			
B-1	B-1	B-1-9	3'x3' round	42 ft3	oil AST?

Table 3-1
Halaco Metal Recylers
Site Iventory

Area	ID #	Container Number	Size/Quantity	Total Volume	Contents/Comments
B-1	B-1	B-1-10	55 gal	55 gal	grease
B-1	B-1	B-1-11	55 gal	55 gal	sodium hydroxide, 50%
B-1	B-1	B-1-12	5 gal	5 gal	sulfuric acid
B-1	B-1	B-1-13	55 gal	55 gal	Steel solids/Debris
B-1	B-1	B-1-14	5 gal	5 gal	empty
B-1	B-1	B-1-15	5 gal	5 gal	fire extinguisher recharge
B-1	B-1	B-1-16	5 gal	5 gal	rodentcide
B-1	B-1	B-1-17	5 gal	5 gal	semi-gloss
B-1	B-1	B-1-18	5 gal	5 gal	no label
B-1	B-1	B-1-19	55 gal	55 gal	white powder 1/2 full
B-1	B-1	B-1-20	50lbs x 11 bags	550 lbs	tire sulfur
B-1	B-1	B-1-21	3'x3' round	42 ft3	"Red diesel" metal AST
B-1	B-1	B-1-22	cylinder	cylinder	acetylene
B-1	B-1	B-1-23	cylinder	cylinder	oxygen
B-1	B-1	B-1-24	20 gal	20 gal	HCl
B-1	B-1	B-1-25	5 gal	5 gal	tote w/ brown liquid
B-1	B-1	B-1-26	1 gal x 5	5 gal	hydrogen peroxide 30%
B-1	B-1	B-1-27	room	room	<=5 gal, paint related, oils, aerosols, solvents
B-1	B-1	B-1-28	cylinder	cylinder	oxygen
B-1	B-1	B-1-29	cylinder	cylinder	acetylene
B-1	B-1	B-1-30			
B-1	B-1	B-1-31	55 gal	55 gal	oil
B-1	B-1	B-1-32	55 gal	55 gal	lube oil, Mobil
B-1	B-1	B-1-33	55 gal	55 gal	oil
B-1	B-1	B-1-34	55 gal	55 gal	oil, 15W-40
B-1	B-1	B-1-35	55 gal	55 gal	fiberboard drum
B-1	B-1	B-1-36	55 gal	55 gal	steel drum
B-1	B-1	B-1-37	25 gal	25 gal	ammonia hydroxide
B-1	B-1	B-1-38	40 x 4 oz	160 oz	no labels, clear liquid
B-1	B-1	B-1-39	<=.5L x 40	20 L	metal solutions (Thallium, nickel, lead, etc)
B-1	B-1	B-1-40	5 gal	5 gal	nitric acid
B-1	B-1	B-1-41	<=1L x 30	30 L	3 gal 70% nitric, pH 10 buffer, other misc
B-1	B-1	B-1-42	5 gal	5 gal	pump oil
B-1	B-1	B-1-43	54 x 1 gal	54 gal	nitric acid
B-1	B-1	B-1-43A	5 gal	5 gal	sanafloc
B-1	B-1	B-1-44	5 gal	5 gal	no label
B-1	B-1	B-1-45	1 gal x 6	6 gal	hydrofluoric, 47%
B-1	B-1	B-1-46	5 gal	5 gal	liq no label
B-1	B-1	B-1-47	5 gal	5 gal	no label
B-1	B-1	B-1-48	5 gal	5 gal	caustic alkali
B-1	B-1	B-1-49	5 gal	5 gal	no label
B-1	B-1	B-1-50	5 gal	5 gal	caustic alkali
B-1	B-1	B-1-51	8 gal	8 gal	no label
B-1	B-1	B-1	23	23	batteries
B-1	B-1	B-1	50 lbs x 38	1900 lbs	magnesium oxide
B-1	B-1	B-1	8 bags	8 bags	floor dry
B-1	B-1	B-1	5 gal	5 gal	nitric acid
B-1	B-1	B-1	1 gal x 6	6 gal	nitric acid, 70%
B-1	B-1	B-1	1 gal	1 gal	sulfuric acid

Table 3-2
Halaco Metal Recyclers
Inventory Analytical Results

Parameter	Y.1S.1	Y.1S.2	Y.2S.1	Y.3S.1A	Y.3S.1B	Y.3S.2	B.2S.1	B.2S.2	B.2S.3	B.2S.4	C.24S.1	C.29S.1	Y.3.21
Total Metals by EPA 6010B/7471A, mg/kg													
Antimony	<50	<10	<10	<10	<10	3.92 J	<10	3.41 J	<10	<10	<10	<10	NA
Arsenic	0.76 J	0.853 J	1.14	1.33	2.46	0.48 J	0.869 J	<1	0.556 J	1.1	0.685 J	0.822 J	NA
Barium	792	995	175	356	273	217	220	30.9	492	253	247	878	NA
Beryllium	95.7	100	47.3	55.1	33.6	51.4	50.4	29.2	117	45.7	59.9	148	NA
Cadmium	<5	<1	<1	<1	0.714 J	<1	<1	<1	<1	<1	<1	<1	NA
Chromium	27.1	24.3	15	31.1	28.1	14.8	38.9	5.21	35.9	13.5	15.8	21.1	NA
Cobalt	<10	1.46 J	1.32 J	1.02 J	2.54	1.68 J	1.44 J	<2	1.24 J	<2	1.01 J	2.01	NA
Copper	104	87.7	77	71.5	193	73	162	14.6	52.1	66.7	83.4	59.1	NA
Lead	13.2	9.27	8.76	7.69	22.8	9.2	12	3.42	5.52	7.11	7.82	8.06	NA
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Molyndeum	8.11 J	8.32	7.5	12	3.59 J	7.7	7.9	11.4	6.5	5.89	11.8	4.45 J	NA
Nickel	20.1	15.8	8.03	7.46	22.9	11.3	14.4	2.54	16.7	7.03	9.22	11.3	NA
Selenium	0.715 J	0.922 J	0.881 J	1.1	<1	0.742 J	0.832 J	1.27	0.766 J	<1	0.959 J	1.14	NA
Silver	7.06 J	3.55	1.65 J	11	2.74	2.26	2.48	<2	3.28	9.34	1.98 J	3.25	NA
Thallium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Vanadium	9.1 J	8.28	5.77	4.45	6.28	3.33	4.21	2.03	5.91	2.71	4.37	6.53	NA
Zinc	542	466	380	516	938	451	567	293	305	483	493	352	NA
STLC Metals by WET/EPA 6010B/7470A, mg/L													
Arsenic	0.0655 J	0.0647 J	0.0681 J	0.071 J	0.0782 J	0.0454 J	0.0619 J	0.0629 J	0.0629 J	0.0724 J	0.0591 J	0.0599 J	0.0593
Barium	4.38	7.18	5.32	6.86	3.12	6.69	4.46	1.25	4.09	10.2	6.01	3.69	0.0128
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0097 J
Chromium	0.166	0.149	0.113	0.0794	0.166	0.0895	0.0975	0.0329 J	0.161	0.0854	0.0808	0.16	0.853
Mercury	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
Lead	0.0833 J	0.0531 J	0.0897 J	0.0658 J	0.096 J	0.0351 J	0.0818 J	0.0229 J	0.0378 J	0.0795 J	0.0797 J	0.0438 J	0.0105
Selenium	0.0663 J	0.0599 J	0.07 J	0.0596 J	0.0707 J	0.0571 J	0.0715 J	0.0894 J	0.0427 J	0.0455 J	0.062 J	0.0611 J	NA
Zinc	8.42	6.84	7.75	8.16	28.7	6.49	8.8	8.39	5.43	7.23	7.01	6.26	3.36
TCLP Metals by EPA 1311/6010B/7470A, mg/L													
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA
Barium	0.894	0.942	0.885	1.58	3.12	1.76	1.67	0.261	0.532	3.82	1.89	0.464	NA
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA
Chromium	<0.05	<0.05	<0.05	0.0409 J	<0.05	0.0922	0.0562	<0.05	<0.05	<0.05	<0.05	<0.05	NA
Mercury	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA
Selenium	<0.05	<0.05	0.0266 J	<0.05	<0.05	<0.05	<0.05	0.034 J	0.044 J	<0.05	<0.05	<0.05	NA
Zinc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA
VOCs by EPA 8260B													
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.9 J
Ethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.42 J
Toluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.2
Xylenes	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 J
Total Ammonia (NH3-N) by EPA 350.2													
Ammonia	26.1	40.0	87.2	131	99.2	363	367	373	69.3	272	162	20.0	NA
pH by EPA9040													2.13

Notes:

NA Not analyzed

J Estimated value

< Less then laboratory analytical detection limits

Table 5-1
Halaco Metal Recyclers
Site Stabilization - Air Worker Safety Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	Air CG-021207	Air CG-021307	Air HR-021207	Air HR-021307	Air JW-021207	Air JW-021307	Air KB-021207
Antimony	0.000446756	0.5	**<0.20**	**<0.19**	**<0.22**	**<0.19**	**<0.19**	**<0.19**	**<0.19**
Arsenic	0.521428571	0.5	<0.30	<0.29	<0.32	<0.29	<0.29	<0.29	<0.28
Barium	0.000800439	0.5	**0.12**	**0.32**	**0.47**	**0.45**	**0.39**	**0.29**	**0.07**
Beryllium	0.001067251	0.002	***<0.05***	***<0.05***	***<0.05***	***<0.05***	***<0.05***	***<0.05***	***<0.05***
Cadmium	0.000160088	0.005	***<0.05***	***<0.05***	***<0.05***	***<0.05***	***<0.05***	***<0.05***	***<0.05***
Chromium	0.00068609	0.5	**0.24 U**	**0.41 U**	**0.41 U**	**0.48 U**	**0.32 U**	**0.37 U**	**0.40 U**
Cobalt	NA	0.1	*<0.10*	*<0.10*	*<0.11*	*<0.10*	*<0.10*	*<0.10*	<0.09
Copper	NA	0.1	*<0.15*	*0.44*	*0.33*	*0.30*	*0.52*	*0.72*	*0.15*
Lead	NA	0.025	*<0.13*	*<0.12*	*<0.13*	*<0.12*	*<0.12*	*<0.12*	*<0.12*
Molybdenum	NA	15	<0.10	<0.10	<0.11	<0.10	<0.10	<0.10	<0.09
Nickel	NA	1	0.08	0.14	0.11	0.15	0.09	0.13	0.11
Selenium	NA	0.2	*<0.30*	*<0.29*	*<0.32*	*<0.29*	*<0.29*	*<0.29*	*<0.28*
Silver	NA	0.01	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Thallium	NA	0.1	*<0.25*	*<0.24*	*<0.27*	*<0.24*	*<0.24*	*<0.24*	*<0.24*
Vanadium	NA	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	NA	15	0.36 U	0.39 U	0.59 U	0.49 U	0.35 U	0.33 U	0.27 U

Notes:

[A] U.S. EPA Preliminary Remediation Goals for Residential Soil in milligram per kilogram
[B] Occupation Safety and Health Administration Permissible Exposure Linits
U or < Not detected above laboratory analytical detection limits
J Estimated value
NA Not available
All results in microgam per cubic meter
Bolded values above PRG or PEL

Table 5-1
Halaco Metal Recyclers
Site Stabilization - Air Worker Safety Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	Air KB-021307	Air RB-021207	Air RB-021307	AIRCG-020907	AIRJW-020907	AIRKB-020907	AIRRB-020907
Antimony	0.000446756	0.5	**<0.19**	**<0.25**	**<0.19**	**<0.20**	**<0.21**	**<0.21**	**<0.19**
Arsenic	0.521428571	0.5	<0.29	<0.38	<0.29	<0.30	<0.31	<0.32	<0.28
Barium	0.000800439	0.5	**0.18**	***0.53***	***1.35***	***0.61***	***0.57***	**0.31**	**0.32**
Beryllium	0.001067251	0.002	***<0.05***	***<0.06***	***<0.05***	***<0.05***	***<0.05***	***<0.05***	***<0.05***
Cadmium	0.000160088	0.005	***<0.05***	***<0.06***	***<0.05***	***<0.05***	***<0.05***	***<0.05***	***<0.05***
Chromium	0.00068609	0.5	**0.35 U**	**0.40 U**	**0.40 U**	**0.32 U**	**0.39 U**	**0.35 U**	**0.36 U**
Cobalt	NA	0.1	*<0.10*	*<0.13*	*<0.10*	*<0.10*	*<0.10*	*<0.11*	<0.09
Copper	NA	0.1	*0.19*	*0.39*	*0.53*	*<0.15*	*0.28*	*<0.16*	*0.15*
Lead	NA	0.025	*<0.12*	*<0.16*	*<0.12*	*<0.13*	*<0.13*	*<0.13*	*<0.12*
Molybdenum	NA	15	<0.10	<0.13	<0.10	<0.10	<0.10	<0.11	<0.09
Nickel	NA	1	0.09	0.15	0.13	<0.05	<0.05	<0.05	0.09 U
Selenium	NA	0.2	*<0.29*	*<0.38*	*<0.29*	*<0.30*	*<0.31*	*<0.32*	*<0.28*
Silver	NA	0.01	*<0.05*	*<0.06*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Thallium	NA	0.1	*<0.24*	*<0.32*	*<0.24*	*<0.25*	*<0.26*	*<0.26*	*<0.23*
Vanadium	NA	0.5	<0.05	<0.06	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	NA	15	0.42 U	0.70 U	0.96	0.18	1.13	0.89	0.46

Table 5-2
Halaco Metal Recyclers
Site Stabilization - Station Metals Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	AIR1-020607	AIR1-020707	AIR1-020807	AIR1-020907	Air 1-021207	Air 1-021307	Air1-021407	Air1-021507
Antimony	0.000446756	0.5	**<0.29**	**<0.18**	**<0.18**	**<0.19**	**<0.20**	**<0.21**	**<0.19**	**<0.18**
Arsenic	0.521428571	0.5	<0.44	<0.27	<0.27	<0.29	<0.30	<0.31	<0.28	<0.27
Barium	0.000800439	0.5	**<0.07**	**0.05**	**0.05**	**0.05**	**<0.05**	**<0.05**	**0.05**	**0.06**
Beryllium	0.001067251	0.002	**<0.07**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.04**
Cadmium	0.000160088	0.005	**<0.07**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.04**
Chromium	0.00068609	0.5	**0.59 U**	**0.36 U**	**0.28 U**	**0.33 U**	**0.26 U**	**0.32 U**	**0.32 U**	**0.28 U**
Cobalt	0	0.1	<0.15	<0.09	<0.09	<0.10	<0.10	<0.10	<0.09	<0.09
Copper	0	0.1	<0.22	<0.14	<0.14	<0.15	<0.15	<0.15	<0.14	<0.13
Lead		0.025	<0.18	<0.11	<0.11	<0.12	<0.12	<0.13	<0.12	<0.11
Molybdenum	0	15	<0.15	<0.09	<0.09	<0.10	<0.10	<0.10	<0.09	<0.09
Nickel	0	1	<0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04
Selenium	0	0.2	<0.44	<0.27	<0.27	<0.29	<0.30	<0.31	<0.28	<0.27
Silver	0	0.01	<0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04
Thallium	N/A	0.1	<0.37	0.26	<0.23	<0.24	<0.25	<0.26	<0.24	<0.22
Vanadium	N/A	0.5	<0.07	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.04
Zinc	N/A	15	<0.15	<0.09	<0.09	0.23	0.14 U	0.11 U	<0.09	0.09

Notes:

[A] U.S. EPA Preliminary Remediation Goals for Residential Soil in milligram per kilogram
[B] Occupation Safety and Health Administration Permissible Exposure Linits
U or < Not detected above laboratory analytical detection limits
J Estimated value
N/A Not available
All results in microgam per cubic meter
Bolded values above PRG or PEL

Table 5-2
Halaco Metal Recyclers
Site Stabilization - Station Metals Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	Air1-021607	AIR1-022307	AIR1-022707	Air1- 030507	Air1- 031607	AIR1 - 031907	Air 1-032707	AIR1-040407
Antimony	0.000446756	0.5	**<0.18**	**<0.17**	**<0.17**	**<0.19**	**<0.21**	**<0.18**	**<0.17**	**<0.18**
Arsenic	0.521428571	0.5	<0.27	<0.26	<0.25	<0.29	<0.31	<0.27	<0.26	<0.27
Barium	0.000800439	0.5	**0.06**	**<0.04**	**<0.04**	**0.21**	**<0.05**	**<0.05**	**0.60**	**<0.04**
Beryllium	0.001067251	0.002	**<0.05**	**<0.04**	**<0.04**	**<0.05**	**<0.05**	**<0.05**	**<0.04**	**<0.04**
Cadmium	0.000160088	0.005	**<0.05**	**<0.04**	**<0.04**	**<0.05**	**<0.05**	**<0.05**	**<0.04**	**<0.04**
Chromium	0.00068609	0.5	**0.30 U**	**0.17 U**	**0.15 U**	**0.17 U**	**0.25 U**	**0.14 U**	**0.09 U**	**0.07 U**
Cobalt	0	0.1	<0.09	<0.09	<0.08	<0.10	<0.10	<0.09	<0.09	<0.09
Copper	0	0.1	<0.14	<0.13	<0.13	0.17	<0.16	<0.14	0.30	<0.13
Lead		0.025	<0.11	<0.11	<0.11	<0.12	<0.13	<0.11	<0.11	<0.11
Molybdenum	0	15	<0.09	<0.09	<0.08	<0.10	<0.10	<0.09	<0.09	<0.09
Nickel	0	1	<0.05	<0.04	<0.04	<0.05	<0.05	<0.05	<0.04	<0.04
Selenium	0	0.2	<0.27	<0.26	<0.25	<0.29	<0.31	<0.27	<0.26	<0.27
Silver	0	0.01	<0.05	<0.04	<0.04	<0.05	<0.05	<0.05	<0.04	<0.04
Thallium	N/A	0.1	<0.23	<0.22	<0.21	<0.24	<0.26	<0.23	<0.21	<0.22
Vanadium	N/A	0.5	<0.05	<0.04	<0.04	<0.05	<0.05	<0.05	<0.04	<0.04
Zinc	N/A	15	0.22	<0.09	<0.08	0.53 U	0.46 U	0.34	0.64 U	1.75

Table 5-2
Halaco Metal Recyclers
Site Stabilization - Station Metals Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	AIR2-020607	AIR2-020707	AIR2-020807	AIR2-020907	Air 2-021207	Air 2-021307	Air2-021407	Air2-021507	Air2-021607
Antimony	0.000446756	0.5	**<0.28**	**<0.20**	**<0.20**	**<0.21**	**<0.21**	**<0.20**	**<0.19**	**<0.19**	**<0.19**
Arsenic	0.521428571	0.5	<0.42	<0.30	<0.30	<0.31	<0.31	<0.30	<0.28	<0.29	<0.28
Barium	0.000800439	0.5	**<0.07**	**<0.05**	**<0.05**	**0.10**	**<0.05**	**0.14**	**0.10**	**0.12**	**0.10**
Beryllium	0.001067251	0.002	**<0.07**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**
Cadmium	0.000160088	0.005	**<0.07**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**
Chromium	0.00068609	0.5	**0.47 U**	**0.43 U**	**0.36 U**	**0.39 U**	**0.37 U**	**0.34**	**0.27 U**	**0.62 U**	**0.28 U**
Cobalt	0	0.1	<0.14	<0.10	<0.10	<0.10	<0.10	<0.10	<0.09	<0.10	<0.09
Copper	0	0.1	<0.21	<0.15	<0.15	0.25	<0.15	<0.15	<0.14	<0.14	<0.14
Lead		0.025	<0.17	<0.12	<0.13	<0.13	<0.13	<0.12	<0.12	<0.12	<0.12
Molybdenum	0	15	<0.14	<0.10	<0.10	<0.10	<0.10	<0.10	<0.09	<0.10	<0.09
Nickel	0	1	<0.07	<0.05	0.39 U	0.52 U	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	0	0.2	<0.42	<0.30	<0.30	<0.31	<0.31	<0.30	<0.28	<0.29	<0.28
Silver	0	0.01	<0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Thallium	N/A	0.1	0.42	<0.25	<0.25	<0.26	<0.26	<0.25	<0.24	<0.24	<0.23
Vanadium	N/A	0.5	<0.07	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	N/A	15	<0.14	<0.10	<0.10	<0.10	0.13 U	0.14	<0.09	<0.10	0.30

Table 5-2
Halaco Metal Recyclers
Site Stabilization - Station Metals Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	AIR2-022007	AIR2-022607	Air2- 030707	Air2- 031507	AIR2 - 031907	Air 2-032607	AIR2-040507	AIR3-020607	AIR3-020707
Antimony	0.000446756	0.5	**<0.19**	**<0.17**	**<0.16**	**<0.19**	**0.20 J**	**<0.19**	**<0.19**	**<0.28**	**<0.19**
Arsenic	0.521428571	0.5	<0.29	<0.26	<0.24	<0.28	<0.27	<0.28	<0.29	<0.42	<0.29
Barium	0.000800439	0.5	**0.11**	**0.09**	**0.29**	**0.08**	**0.22**	**<0.05**	**<0.05**	**<0.07**	**0.06**
Beryllium	0.001067251	0.002	**<0.05**	**<0.04**	**<0.04**	**<0.05**	**<0.04**	**<0.05**	**<0.05**	**<0.07**	**<0.05**
Cadmium	0.000160088	0.005	**<0.05**	**<0.04**	**<0.04**	**<0.05**	**<0.04**	**<0.05**	**<0.05**	**<0.07**	**<0.05**
Chromium	0.00068609	0.5	**0.72**	**0.22 U**	**0.11 U**	**0.16 U**	**0.12**	**0.08 U**	**0.09 U**	**0.62 U**	**0.32 U**
Cobalt	0	0.1	<0.10	<0.09	<0.08	<0.09	<0.09	<0.09	<0.10	<0.14	<0.10
Copper	0	0.1	0.15	<0.13	0.12	<0.14	0.20	<0.14	<0.15	<0.21	<0.14
Lead		0.025	<0.12	<0.11	0.15	<0.12	<0.11	<0.12	<0.12	<0.17	<0.12
Molybdenum	0	15	<0.10	<0.09	<0.08	<0.09	<0.09	<0.09	<0.10	<0.14	<0.10
Nickel	0	1	<0.05	<0.04	<0.04	<0.05	<0.04	<0.05	<0.05	<0.07	<0.05
Selenium	0	0.2	<0.29	<0.26	<0.24	<0.28	<0.27	<0.28	<0.29	<0.42	<0.29
Silver	0	0.01	<0.05	<0.04	<0.04	<0.05	<0.04	<0.05	<0.05	<0.07	<0.05
Thallium	N/A	0.1	<0.24	<0.22	<0.20	<0.23	<0.22	<0.23	<0.24	0.39	<0.24
Vanadium	N/A	0.5	<0.05	<0.04	<0.04	<0.05	<0.04	<0.05	<0.05	<0.07	<0.05
Zinc	N/A	15	<0.10	0.13	0.40 U	0.39 U	0.38 U	0.47 U	0.21 U	<0.14	<0.10

Table 5-2
Halaco Metal Recyclers
Site Stabilization - Station Metals Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	AIR3-020807	AIR3-020907	Air 3-021207	Air 3-021307	Air3-021407	Air3-021507	Air3-021607	AIR3-022007	AIR3-022607
Antimony	0.000446756	0.5	**<0.19**	**<0.20**	**<0.20**	**<0.20**	**<0.19**	**<0.19**	**<0.18**	**<0.19**	**<0.17**
Arsenic	0.521428571	0.5	<0.28	<0.29	<0.30	<0.29	<0.28	<0.28	<0.28	<0.28	<0.26
Barium	0.000800439	0.5	**0.06**	**0.09**	**<0.05**	**0.59**	**0.11**	**0.39**	**0.30**	**<0.05**	**0.33**
Beryllium	0.001067251	0.002	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.04**
Cadmium	0.000160088	0.005	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.04**
Chromium	0.00068609	0.5	**0.21 U**	**0.39 U**	**0.28 U**	**0.32**	**0.27 U**	**0.28 U**	**0.33 U**	**0.26 U**	**0.16 U**
Cobalt	0	0.1	<0.09	<0.10	<0.10	<0.10	<0.09	<0.09	<0.09	<0.09	<0.09
Copper	0	0.1	<0.14	<0.15	<0.15	0.17	<0.14	<0.14	<0.14	<0.14	<0.13
Lead		0.025	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.11
Molybdenum	0	15	<0.09	<0.10	<0.10	<0.10	<0.09	<0.09	<0.09	<0.09	<0.09
Nickel	0	1	<0.05	0.17 U	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04
Selenium	0	0.2	<0.28	<0.29	<0.30	<0.29	<0.28	<0.28	<0.28	<0.28	<0.26
Silver	0	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04
Thallium	N/A	0.1	<0.24	<0.25	<0.25	<0.24	<0.23	<0.23	<0.23	<0.23	<0.21
Vanadium	N/A	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04
Zinc	N/A	15	<0.09	<0.10	<0.10 U	0.21	<0.09	0.10	0.12	<0.09	<0.09

Table 5-2
Halaco Metal Recyclers
Site Stabilization - Station Metals Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	Air3- 030907	Air3- 031507	AIR3 - 031907	Air 3-032707	AIR4-020707	AIR4-020807	AIR4-020907	Air 4-021207	Air 4-021307
Antimony	0.000446756	0.5	**<0.16**	**<0.19**	**<0.18**	**<0.16**	**<0.19**	**<0.19**	**<0.21**	**<0.21**	**<0.20**
Arsenic	0.521428571	0.5	<0.24	<0.28	<0.27	<0.24	<0.29	<0.28	<0.31	<0.31	<0.30
Barium	0.000800439	0.5	**0.05**	**<0.05**	**0.15**	**0.24**	**<0.05**	**0.07**	**<0.05**	**<0.05**	**<0.05**
Beryllium	0.001067251	0.002	**<0.04**	**<0.05**	**<0.04**	**<0.04**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**
Cadmium	0.000160088	0.005	**<0.04**	**<0.05**	**<0.04**	**<0.04**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**
Chromium	0.00068609	0.5	**0.11 U**	**0.20 U**	**0.10 U**	**0.08 U**	**0.13 U**	**0.40 U**	**0.40 U**	**0.33 U**	**0.30 U**
Cobalt	0	0.1	<0.08	<0.09	<0.09	<0.08	**<0.10**	<0.09	<0.10	<0.10	<0.10
Copper	0	0.1	<0.12	<0.14	<0.13	0.16	<0.14	<0.14	0.25	<0.16	<0.15
Lead		0.025	<0.10	<0.12	<0.11	<0.10	<0.12	<0.12	<0.13	<0.13	<0.13
Molybdenum	0	15	<0.08	<0.09	<0.09	<0.08	<0.10	<0.09	<0.10	<0.10	<0.10
Nickel	0	1	<0.04	<0.05	<0.04	<0.04	0.07 U	0.09 U	0.28 U	<0.05	<0.05
Selenium	0	0.2	<0.24	<0.28	<0.27	<0.24	<0.29	<0.28	<0.31	<0.31	<0.30
Silver	0	0.01	<0.04	<0.05	<0.04	<0.04	<0.05	<0.05	0.07	<0.05	<0.05
Thallium	N/A	0.1	<0.20	<0.23	<0.22	<0.20	<0.24	<0.24	<0.26	<0.26	<0.25
Vanadium	N/A	0.5	<0.04	<0.05	<0.04	<0.04	0.06	0.06	<0.05	<0.05	<0.05
Zinc	N/A	15	0.34 U	0.36 U	0.31 U	0.84 U	0.28	<0.09	<0.10	0.15 U	0.80

Table 5-2
Halaco Metal Recyclers
Site Stabilization - Station Metals Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	Air 4-032607	Air4-021407	Air4-021507	Air4-021607	AIR4-022007	AIR4-022607	Air4- 030907	Air4- 031507	AIR4 - 031907
Antimony	0.000446756	0.5	**<0.19**	**<0.19**	**<0.17**	**<0.17**	**<0.17**	**<0.17**	**<0.16**	**<0.19**	**<0.17**
Arsenic	0.521428571	0.5	<0.28	<0.28	<0.25	<0.26	<0.25	<0.26	<0.24	<0.28	<0.26
Barium	0.000800439	0.5	**<0.05**	**0.05**	**0.10**	**<0.04**	**0.05**	**<0.04**	**0.08**	**<0.05**	**<0.04**
Beryllium	0.001067251	0.002	**<0.05**	**<0.05**	**<0.04**	**<0.04**	**<0.04**	**<0.04**	**<0.04**	**<0.05**	**<0.04**
Cadmium	0.000160088	0.005	**<0.05**	**<0.05**	**<0.04**	**<0.04**	**<0.04**	**<0.04**	**<0.04**	**<0.05**	**<0.04**
Chromium	0.00068609	0.5	**0.07 U**	**0.25 U**	**0.22**	**0.26 U**	**0.26 U**	**0.19 U**	**0.12 U**	**0.15 U**	**0.13 U**
Cobalt	0	0.1	<0.09	<0.09	<0.08	<0.09	<0.08	<0.09	<0.08	<0.09	<0.09
Copper	0	0.1	<0.14	<0.14	<0.13	<0.13	<0.12	<0.13	<0.12	<0.14	0.33
Lead		0.025	<0.12	<0.12	<0.11	<0.11	<0.10	<0.11	<0.10	<0.12	0.14
Molybdenum	0	15	<0.09	<0.09	<0.08	<0.09	<0.08	<0.09	<0.08	<0.09	<0.09
Nickel	0	1	<0.05	<0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.05	0.06
Selenium	0	0.2	<0.28	<0.28	<0.25	<0.26	<0.25	<0.26	<0.24	<0.28	<0.26
Silver	0	0.01	<0.05	<0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.05	<0.04
Thallium	N/A	0.1	<0.23	<0.24	<0.21	<0.22	<0.21	<0.22	<0.20	<0.24	<0.22
Vanadium	N/A	0.5	<0.05	<0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.05	<0.04
Zinc	N/A	15	0.43 U	<0.09	<0.08	<0.09	<0.08	<0.09	0.39 U	0.35 U	0.29 U

Table 5-2
Halaco Metal Recyclers
Site Stabilization - Station Metals Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	AIR4-040407	Air5 - 030907	Air 5-032607	AIR5 - 031907	Air5- 031607	BKG-021307	Bkg-021407	AIRBKG-021307
Antimony	0.000446756	0.5	**<0.17**	**<0.17**	**<0.23**	**<0.18**	**<0.21**	**<0.22**	**<0.21**	N/A
Arsenic	0.521428571	0.5	<0.26	<0.25	<0.34	<0.28	<0.31	<0.33	<0.31	N/A
Barium	0.000800439	0.5	**<0.04**	**0.55**	**<0.06**	**0.92**	**0.09**	**<0.05**	**<0.05**	N/A
Beryllium	0.001067251	0.002	**<0.04**	**<0.04**	**<0.06**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	N/A
Cadmium	0.000160088	0.005	**<0.04**	**<0.04**	**<0.06**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	N/A
Chromium	0.00068609	0.5	**0.09 U**	**0.14 U**	**0.12 U**	**0.13 U**	**0.13 U**	**0.42 U**	**0.28 U**	N/A
Cobalt	0	0.1	<0.09	<0.08	<0.11	<0.09	<0.10	<0.11	<0.10	N/A
Copper	0	0.1	<0.13	0.16	<0.17	0.16	<0.16	0.45	<0.16	N/A
Lead		0.025	<0.11	<0.11	<0.14	<0.12	<0.13	<0.14	<0.13	N/A
Molybdenum	0	15	<0.09	<0.08	<0.11	<0.09	<0.10	<0.11	<0.10	N/A
Nickel	0	1	<0.04	<0.04	<0.06	<0.05	<0.05	<0.05	<0.05	N/A
Selenium	0	0.2	<0.26	<0.25	<0.34	<0.28	<0.31	<0.33	<0.31	N/A
Silver	0	0.01	<0.04	<0.04	<0.06	<0.05	<0.05	<0.05	<0.05	N/A
Thallium	N/A	0.1	<0.21	<0.21	<0.28	<0.23	<0.26	<0.27	<0.26	N/A
Vanadium	N/A	0.5	<0.04	<0.04	<0.06	<0.05	<0.05	<0.05	<0.05	N/A
Zinc	N/A	15	0.47 U	0.63 U	0.68 U	0.51 U	0.43 U	0.16 U	<0.10	N/A

Table 5-2
Halaco Metal Recyclers
Site Stabilization - Station Metals Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	AIRBKG-021407	BKG-021507	AIRBKG-022007	Air BKG-032607	AIRBKG-030107	AirBKG- 030607	AirBKG- 030807
Antimony	0.000446756	0.5	N/A	**<0.20**	**<0.17**	**<0.20**	**<0.17**	**<0.18**	**<0.33**
Arsenic	0.521428571	0.5	N/A	<0.30	<0.26	<0.30	<0.26	<0.28	<0.49
Barium	0.000800439	0.5	N/A	**<0.05**	**<0.04**	**<0.05**	**<0.04**	**<0.05**	**<0.08**
Beryllium	0.001067251	0.002	N/A	**<0.05**	**<0.04**	**<0.05**	**<0.04**	**<0.05**	**<0.08**
Cadmium	0.000160088	0.005	N/A	**<0.05**	**<0.04**	**<0.05**	**<0.04**	**<0.05**	**<0.08**
Chromium	0.00068609	0.5	N/A	**0.29 U**	**0.10 U**	**0.09 U**	**0.19 U**	**0.16 U**	**0.28 U**
Cobalt	0	0.1	N/A	<0.10	<0.09	<0.10	<0.09	<0.09	<0.16
Copper	0	0.1	N/A	<0.15	<0.13	<0.15	<0.13	<0.14	<0.24
Lead		0.025	N/A	<0.13	<0.11	<0.12	<0.11	<0.12	<0.20
Molybdenum	0	15	N/A	<0.10	<0.09	<0.10	<0.09	<0.09	<0.16
Nickel	0	1	N/A	<0.05	<0.04	<0.05	<0.04	<0.05	<0.08
Selenium	0	0.2	N/A	<0.30	<0.26	<0.30	<0.26	<0.28	<0.49
Silver	0	0.01	N/A	<0.05	<0.04	<0.05	<0.04	<0.05	<0.08
Thallium	N/A	0.1	N/A	<0.25	<0.22	<0.25	<0.21	<0.23	<0.41
Vanadium	N/A	0.5	N/A	<0.05	<0.04	<0.05	<0.04	<0.05	<0.08
Zinc	N/A	15	N/A	<0.10	<0.09	0.47 U	0.10	0.40 U	0.70 U

Table 5-2
Halaco Metal Recyclers
Site Stabilization - Station Metals Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	AirBKG- 030907	Air BKG- 031607	AIRBKG - 031907	AIRBKG-040407
Antimony	0.000446756	0.5	**<0.17**	**<0.19**	**<0.18**	**<0.17**
Arsenic	0.521428571	0.5	<0.25	<0.29	<0.27	<0.25
Barium	0.000800439	0.5	**<0.04**	**<0.05**	**<0.04**	**<0.04**
Beryllium	0.001067251	0.002	**<0.04**	**<0.05**	**<0.04**	**<0.04**
Cadmium	0.000160088	0.005	**<0.04**	**<0.05**	**<0.04**	**<0.04**
Chromium	0.00068609	0.5	**0.13 U**	**0.14**	**0.13 U**	**0.07 U**
Cobalt	0	0.1	<0.08	<0.10 U	<0.09	<0.08
Copper	0	0.1	<0.13	0.27	<0.13	<0.13
Lead		0.025	<0.11	<0.12	<0.11	<0.10
Molybdenum	0	15	<0.08	<0.10	<0.09	<0.08
Nickel	0	1	<0.04	<0.05	<0.04	<0.04
Selenium	0	0.2	<0.25	<0.29	<0.27	<0.25
Silver	0	0.01	<0.04	<0.05	<0.04	<0.04
Thallium	N/A	0.1	<0.21	<0.24	<0.22	<0.21
Vanadium	N/A	0.5	<0.04	<0.05	<0.04	<0.04
Zinc	N/A	15	0.46 U	0.33 U	0.30 U	0.37 U

Table 5-3
Halaco Metal recyclers
Site Stabilization - Station Radiation Air Sample Results

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	AIR1-021307	Air1-021407	Air1-021507	Air1-021607	AIR1-022007	AIR1-022807	Air1-030507	AIR1-031907
Thorium-228	N/A	0.1	N/A	*<0.24*	*<0.22*	*<0.23*	N/A	N/A	*<0.24*	*<0.23*
Thorium-230	0.15	0.15	>0.0000225	>0.0000303	>0.0000139	>0.0000478	>0.0000322	0.00000339	-0.0000895	-0.0000134
Thorium-232	3.49	3.49	0.0000423	0.0000167	0.00000549	0.0000339	>0.0000238	-0.00000062	0.000174	0.0000241

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	Air 1-032707	AIR1-040407	AIR2-021307	Air2-021407	Air2-021507	AIR2-022607	Air2- 030707	Air2-031507
Thorium-228	N/A	0.1	*<0.21*	*<0.22*	N/A	*<0.24*	*<0.24*	*<0.22*	*<0.20*	*<0.23*
Thorium-230	0.15	0.15	0.00004	0.0000102	>0.0000406	>0.0000258	>0.0000406	0.0000129	0.0000146	0.0000313
Thorium-232	3.49	3.49	0.0000526	0.00000718	0.0000245	0.0000118	0.0000314	0.00000647	0.00000202	0.0000385

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	AIR2-031907	Air 2-032607	AIR2-040507	Air3-021607	AIR3-022307	AIR3-022607	Air3-030907	Air3-031507
Thorium-228	N/A	0.1	N/A	*<0.23*	*<0.24*	*<0.23*	N/A	*<0.21*	*<0.20*	*<0.23*
Thorium-230	0.15	0.15	-0.00000633	0.00000223	0.000014	>0.0000327	>0.0000219	0.0000202	-0.0000212	0.0000391
Thorium-232	3.49	3.49	0.000000507	0.0000279	0.0000077	0.0000174	>0.0000153	0.0000106	0.0000756	0.0000229

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	Air 3-032707	AIR4-021307	AIR4-022107	AIR4-022607	Air4-030907	Air4-031507	AIR4-031907	Air 4-032607
Thorium-228	N/A	0.1	*<0.20*	N/A	N/A	*<0.22*	*<0.20*	*<0.24*	*<0.22*	*<0.23*
Thorium-230	0.15	0.15	0.0000357	>0.000357	>0.0000257	0.00000191	0.0000619	0.0000183	0.00000772	0.00000649
Thorium-232	3.49	3.49	0.0000351	0.000316	0.000021	0.0000103	0.000279	>0.0000195	-0.000009	0.0000134

Parameter/ID#	Residential PRG[A]	OSHA PEL[B]	AIR4-040407	Air5-030907	Air5- 031607	AIR5-031907	Air 5-032607
Thorium-228	N/A	0.1	*<0.21*	*<0.21*	*<0.26*	*<0.23*	*<0.28*
Thorium-230	0.15	0.15	0.000012	0.0000061	0.0000281	0.0000198	-0.00000317
Thorium-232	3.49	3.49	0.0000217	0.000123	0.0000294	0.0000426	0.000011

Notes:

[A] U.S. EPA Preliminary Remediation Goals for Residential Soil in milligram per kilogram
[B] Occupation Safety and Health Administration Permissible Exposure Linits
U or < Not detected above laboratory analytical detection limits
J Estimated value
N/A Not available
All results in microgam per cubic meter
Bolded values above PRG or PEL

Table 5-4
Halaco Metal Recyclers
Berm Assessment - XRF Results

Analyte	Arsenic	Cobalt	Chromium	Copper	Iron	Mercury	Manganese	Nickel	Lead	Selenium	Zinc
Residential PRG[A]	**0.0062[B]**	**900**	**210**	**3100**	**23000**	**23**	**1800**	**1600**	**150[B]**	**390**	**23000**
SOIL9-030707	8	<LOD	131	75	4024	<LOD	274	11	27	4	<LOD
SOIL9-030707-4	10	57	**282**	380	7794	**24**	798	43	51	<LOD	365
SOIL10-030707	19	<LOD	<LOD	487	8715	<LOD	1000	179	104	15	705
SOIL10-030807-2	0	102	31	222	5432	5	334	26	29	9	164
SOIL11-030707	<LOD	8	50	151	4522	<LOD	31	144	47	4	91
SOIL11-030907-3	<LOD	17	108	14	6564	12	205	7	34	<LOD	9
SOIL12-030707	-6	<LOD	106	51	5849	<LOD	107	38	31	1	35
SOIL12-030907-2	<LOD	<LOD	114	216	4589	3	362	<LOD	69	<LOD	321
SOIL12-030907-3.5	3	70	315	<LOD	4301	2	107	<LOD	14	14	55
SOIL13-030707	9	<LOD	<LOD	62	3280	2	299	<LOD	15	14	81
SOIL13-030907-2	6	135	105	41	4964	<LOD	149	<LOD	9	<LOD	<LOD
SOIL14-030707	<LOD	<LOD	<LOD	141	3918	15	184	27	19	7	103
SOIL14-030907-3	12	84	127	-15	6151	2	309	148	4	26	43
SOIL15-030707	23	22	64	494	4954	<LOD	799	<LOD	77	<LOD	715
SOIL15-030907-2	5	125	27	187	5007	7	159	8	16	23	47
SOIL16-030707	<LOD	<LOD	29	110	4669	18	277	88	49	6	106
SOIL16-030907-2.5	0	<LOD	61	26	5672	22	100	119	17	<LOD	9
SOIL17-030707	8	45	25	202	7365	<LOD	671	58	56	10	347
SOIL17-030907-2	<LOD	109	10	91	5156	24	303	42	30	5	<LOD
SOIL18-030707	2	<LOD	76	45	8712	<LOD	240	<LOD	29	2	209
SOIL18-030907-2	9	<LOD	<LOD	61	4641	<LOD	127	62	7	10	54
SOIL19-030707	<LOD	18	**323**	359	7222	<LOD	643	89	109	<LOD	545
SOIL19-030907-2	<LOD	143	18	49	7164	18	324	14	34	6	-21
SOIL20-030707	<LOD	132	93	157	5876	9	205	<LOD	55	<LOD	126
SOIL20-030907-2	<LOD	205	55	116	3176	<LOD	71	6	17	15	12
SOIL21-030707	13	<LOD	136	322	6721	<LOD	969	94	73	<LOD	588
SOIL21-030907-2	<LOD	242	143	78	5469	-8	245	64	12	8	90
SOIL22-030707	<LOD	<LOD	96	170	5869	4	511	10	70	<LOD	432
SOIL22-030907-2	<LOD	37	191	83	5054	0	249	172	27	1	-16
SOIL23-030707	<LOD	34	116	221	6346	7	504	<LOD	24	1	166
SOIL23-030907-2.5	<LOD	48	131	14	4871	15	195	<LOD	26	11	117
SOIL24-030707	12	<LOD	78	93	6442	<LOD	355	183	26	11	148
SOIL24-030907-1.5	2	94	122	122	5596	11	303	42	2	23	42
SOIL25-030707	1	<LOD	35	154	7092	**25**	686	<LOD	39	30	220
SOIL25-030907-2	<LOD	24	**292**	87	7288	15	256	<LOD	30	6	75
SOIL26-030707	5	<LOD	15	126	6181	<LOD	741	56	38	2	365
SOIL26-030907-3	<LOD	<LOD	59	<LOD	5440	4	283	<LOD	26	<LOD	57
SOIL27-030707	<LOD	32	12	252	6289	18	415	78	44	<LOD	162
SOIL27-030907-2	12	0	168	176	5829	13	129	13	8	15	110
SOIL28-030707	21	<LOD	**215**	210	6013	<LOD	767	16	56	14	564
SOIL28-030907-3	<LOD	62	68	195	4650	<LOD	83	<LOD	23	4	54
SOIL29-030707	<LOD	9	135	370	5677	<LOD	653	<LOD	86	12	648
SOIL29-030907-2	<LOD	95	82	44	5586	**33**	-2	35	19	10	15
SOIL30-030707	<LOD	<LOD	73	55	6447	<LOD	269	150	23	<LOD	78
SOIL30-030907-2	9	<LOD	<LOD	135	5083	4	216	<LOD	0	22	<LOD
SOIL31-030707	20	107	<LOD	116	8158	<LOD	586	82	25	3	100
SOIL31-030907-4	2	60	3	209	5059	3	328	-57	39	2	60
SOIL32-030707	14	98	203	89	6215	<LOD	404	<LOD	40	30	87
SOIL32-030907-1.5	8	<LOD	173	108	6328	23	126	<LOD	14	7	103
SOIL33-030707	<LOD	16	159	213	6959	<LOD	314	31	44	<LOD	198
SOIL33-030907-3	11	14	170	74	5292	1	149	<LOD	12	19	<LOD
SOIL34-030707	13	39	127	141	6607	<LOD	437	<LOD	29	20	70
SOIL34-030907-5	11	<LOD	**257**	<LOD	5684	<LOD	265	27	9	2	<LOD
SOIL35-030707	4	142	168	196	6353	<LOD	92	<LOD	32	<LOD	17
SOIL35-030907-4	<LOD	60	132	<LOD	5664	<LOD	142	128	23	20	129

Table 5-4
Halaco Metal Recyclers
Berm Assessment - XRF Results

Analyte	Arsenic	Cobalt	Chromium	Copper	Iron	Mercury	Manganese	Nickel	Lead	Selenium	Zinc
Residential PRG[A]	**0.0062[B]**	**900**	**210**	**3100**	**23000**	**23**	**1800**	**1600**	**150[B]**	**390**	**23000**
SOIL36-030707	-3	<LOD	146	232	8131	22	504	120	84	<LOD	342
SOIL37-030707	9	3	126	216	9304	<LOD	359	8	52	14	119
SOIL37-030907-04	6	<LOD	<LOD	45	4033	**37**	42	177	22	<LOD	<LOD
SOIL38-030707	13	61	83	101	6271	1	484	<LOD	33	9	209
SOIL38-030907-2	10	<LOD	84	82	6663	14	340	<LOD	20	10	11
SOIL39-030707	5	<LOD	118	127	8963	<LOD	396	233	53	<LOD	241
SOIL39-030907-3.5	7	<LOD	**225**	77	6291	**26**	192	<LOD	13	<LOD	63
SOIL40-030707	<LOD	12	67	316	11353	<LOD	569	<LOD	80	8	348
SOIL40-030907-3	9	<LOD	124	72	7424	15	297	29	27	7	<LOD
SOIL41-030707	11	42	205	88	8323	6	318	<LOD	58	3	217
SOIL41-030907-2	2	111	106	149	8480	**37**	299	112	16	17	<LOD
SOIL42-030707	<LOD	<LOD	<LOD	113	11094	6	504	<LOD	54	19	180
SOIL42-030907-2	5	<LOD	96	22	8850	**44**	68	<LOD	17	26	50
SOIL43-030707	6	259	89	38	13214	17	414	9	45	4	55
SOIL43-030907-3	7	<LOD	91	76	9507	<LOD	123	<LOD	18	12	<LOD
SOIL44-030707	10	<LOD	65	110	9903	<LOD	517	<LOD	28	5	61
SOIL44-030907-3	<LOD	70	7	59	6029	<LOD	368	19	33	7	37
SOIL45-030707	0	-17	149	146	12085	**32**	493	<LOD	43	12	101
SOIL46-030707	16	75	90	107	5790	4	551	54	20	26	67

Notes:
[A] USEPA Preliminary Remediation Goal (PRG) for Industrial Soil
[B] California-Modified PRG. For this site, an action level for arsenic has not yet been determined.
<LOD Analyte not observed above the limit of detection of the instrument
Results in **bold** exceed site-specific action level
Results units in mg/kg

Table 5-5
Halaco Metal Recyclers
Berm Assessment - Analytical Results

Parameter/ID#	Residential PRG[A]	Industrial PRG[B]	070214-M1	070215-01	070215-04	070215-H1	070215-H9	070215-M1	070221-04	070221-06	070221-07
		Location	Beach	Beach	Beach	Beach	Beach	Beach	Beach	Beach	Beach
Antimony	31.29	408.80	0.55 J	0.57 J	<0.395	<0.411	0.48 J	<0.402	5.6 J	0.77	<4.2
Arsenic	0.39	1.59	***2.6***	***2.4***	***3***	***3.7***	***2.1***	***2.6***	***10.5***	***5.1***	***12.5***
Barium	5374.91	66577.35	83.1 J	28.7 J	96.9 J	114 J	45.7 J	18 J	189 J	201 J	553 J
Beryllium	154.37	1940.69	0.16	0.17	0.2	0.28	0.14	0.15	0.36	0.37	0.59
Cadmium	37.03	451.41	0.21	0.26	0.33	0.44	0.21	0.23	<1.04	0.74	1.6
Chromium	210.68	448.32	6.6	5.1	7	10.4	3.5	4.5	26.9	14.2	29.2
Cobalt	902.89	1921.35	1.1	0.97	1.3	1.8	0.85	1.1	3.3	2.4	7.1
Copper	3128.55	40876.66	1.7	2.2	2.3	2.5	1.6	1.9	3.3	2.9	4
Lead	400.00	800.00	2.2 J	2 J	2.5 J	4.1 J	1.7 J	2.1 J	5.6 J	5 J	9.7 J
Molybdenum	391.07	5109.95	0.38	0.42	0.54	0.62	0.44	0.51	<2.08	0.69	<2.1
Nickel	1564.28	20439.16	3.9	3.2	3.7	4.7	2.8	3.8	5.1	4.7	5.8
Selenium	391.07	5109.95	<0.598	<0.584	0.88	7.6	<0.606	0.66	<0.623	<0.608	<6.3
Silver	391.07	5109.95	<0.0997	<0.0973	<0.0989	<0.103	<0.101	<0.101	<1.04	<1.01	<1.05
Thallium	5.16	67.45	<0.498	<0.486	<0.494	<0.513	<0.505	<0.503	<0.519	<0.507	<0.525
Thorium-228	0.15	NA	**0.88**	**0.86**	**0.724**	**2.9**	**0.613**	<0.356	**10.3**	**6.98**	**19.6**
Thorium-230	3.49	NA	0.382	0.742	0.722	1.06	0.83	0.293	3.09	1.74	**5.87**
Thorium-232	3.10	NA	1.14	1.23	0.784	3.22	0.779	0.409	**10.6**	**8.21**	**19.5**
Total Uranium	NA	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.9
Uranium-233/234	3.10	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**4.99**
Uranium-235/236	0.21	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.225**
Uranium-238	4.46	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**4.99**
Vanadium	78.21	1022.00	9.1	8.5	11	19.6	8.5	8.7	65.2	33	**88.7**
Zinc	23463.18	100000.00	10.3 J	9.4 J	10.9 J	16.5 J	9.4 J	11.1 J	15.6 J	14.1 J	18.8 J

Notes:

[A] U.S. EPA Preliminary Remediation Goals for Residential Soil in milligram per kilogram
[B] U.S. EPA Preliminary Remediation Goals for Industrial Soil in milligram per kilogram
NA Not available
< Not detected above laboratory analytical detection limits
J Estimated value
All results in milligram per kilogram
Bolded values above PRG

Table 5-5
Halaco Metal Recyclers
Berm Assessment - Analytical Results

Parameter/ID#	Residential PRG[A]	Industrial PRG[B]	Soil 1-021907	Soil 2-021907	Soil 3-021907	Soil 4-021907	Soil 5-021907	Soil 6-021907	Soil 7-021907	Soil 8-021907
		Location	Berm 1	Berm 1	Berm 1	Berm 1	Berm 1	Berm 1	Berm 1	Berm 1
Antimony	31.29	408.80	2.8 J	2.2 J	1 J	3.4 J	0.75 J	0.64 J	1.8 J	2.4 J
Arsenic	0.39	1.59	***12.4***	***14.2***	***5.7***	***11***	***3.8***	***3.4***	***6.3***	***10***
Barium	5374.91	66577.35	**9050 J**	**9990 J**	2560 J	5150 J	1470 J	1310 J	2750 J	3230 J
Beryllium	154.37	1940.69	27.1	29.1	10.3	19.8	4.4	6	10.5	12.8
Cadmium	37.03	451.41	2.7	3.8	1.6	3.2	0.94	0.87	2	2.6
Chromium	210.68	448.32	107	133	47.1	89.2	24.4	20.9	48.4	55.8
Cobalt	902.89	1921.35	<4.94	<6.07	<5.05	<5.37	<0.228	<0.239	<4.84	<5.15
Copper	3128.55	40876.66	669	961	237	588	121	83.3	252	299
Lead	400.00	800.00	97 J	131 J	46.3 J	94.5 J	25.7 J	22.7 J	55.9 J	70 J
Molybdenum	391.07	5109.95	3.4	9.8	1.5	5.2	0.95	1.1	3.1	2.5
Nickel	1564.28	20439.16	37.1	44.9	16.9	33.7	9.7	9.3	21.6	22.1
Selenium	391.07	5109.95	1	2.8	3.3	2.9	2	2.1	2.7	4.6
Silver	391.07	5109.95	9.9	11.5	2.5	5.9	1.1	0.74	1.5	2.1
Thallium	5.16	67.45	**<6.19**	**<7.52**	<0.61	<0.684	<0.567	<0.576	<0.596	<0.647
Thorium-228	0.15	NA	**14.7**	**13.4**	N/A	N/A	N/A	N/A	N/A	N/A
Thorium-230	3.49	NA	**29.4**	**26.5**	N/A	N/A	N/A	N/A	N/A	N/A
Thorium-232	3.10	NA	**13.7**	**12.9**	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium	NA	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Uranium-233/234	3.10	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Uranium-235/236	0.21	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Uranium-238	4.46	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vanadium	78.21	1022.00	31.9	37.4	20	32.4	18.8	15.3	27.5	28.3
Zinc	23463.18	100000.00	932 J	1230 J	345 J	876 J	171 J	132 J	312 J	447 J

Notes:

[A] U.S. EPA Preliminary Remediatic
[B] U.S. EPA Preliminary Remediatic
NA Not available
< Not detected above laboratory ar
J Estimated value
All results in milligram per kilogra
Bolded values above PRG

Table 5-5
Halaco Metal Recyclers
Berm Assessment - Analytical Results

Parameter/ID#	Residential PRG[A]	Industrial PRG[B]	SOIL9-030707-4	SOIL10-030707	SOIL12-030907-3.5	SOIL13-030707	SOIL15-030707	SOIL24-030907-1.5
		Location	Berm 2	Berm 2	Berm 2	Berm 2	Berm 2	Berm 2
Antimony	31.29	408.80	0.72	1.9	<0.406	<0.396	3.4	<0.407
Arsenic	0.39	1.59	***6.1***	***7.7***	**1.5**	***1.6***	***12.7***	***1.7***
Barium	5374.91	66577.35	2750	3180	86.1	147	**6610**	87.1
Beryllium	154.37	1940.69	7.3	10.5	0.36	0.89	27.8	0.31
Cadmium	37.03	451.41	1.1	1.9	0.21	0.31	3.4	0.14
Chromium	210.68	448.32	40.6	73.5	4.5	8.9	109	5.1
Cobalt	902.89	1921.35	<0.225	<2.19	0.93	0.87	<3.04	0.91
Copper	3128.55	40876.66	217	542	10.2	29.9	694	6.3
Lead	400.00	800.00	39.9	82.9	3.7	9.2	113	2.6
Molybdenum	391.07	5109.95	1.7	3	0.67	0.53	5.5	0.49
Nickel	1564.28	20439.16	17.1	34.5	3.2	4.6	44.2	3.4
Selenium	391.07	5109.95	2.9	2.9	1.1	0.64	3.9	<0.61
Silver	391.07	5109.95	3.3	4.8	<0.101	0.11	7.9	<0.102
Thallium	5.16	67.45	<0.562	<0.546	<0.507	<0.495	<7.6	<0.509
Thorium-228	0.15	NA	N/A	N/A	N/A	N/A	N/A	N/A
Thorium-230	3.49	NA	N/A	N/A	N/A	N/A	N/A	N/A
Thorium-232	3.10	NA	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium	NA	NA	N/A	N/A	N/A	N/A	N/A	N/A
Uranium-233/234	3.10	NA	N/A	N/A	N/A	N/A	N/A	N/A
Uranium-235/236	0.21	NA	N/A	N/A	N/A	N/A	N/A	N/A
Uranium-238	4.46	NA	N/A	N/A	N/A	N/A	N/A	N/A
Vanadium	78.21	1022.00	23.5	27.9	6.5	7.4	35.2	7.1
Zinc	23463.18	100000.00	315	768	24.1	61.2	1100	15.7

Notes:

[A] U.S. EPA Preliminary Remediatic
[B] U.S. EPA Preliminary Remediatic
NA Not available
< Not detected above laboratory ar
J Estimated value
All results in milligram per kilogra
Bolded values above PRG

Table 5-5
Halaco Metal Recyclers
Berm Assessment - Analytical Results

Parameter/ID#	Residential PRG[A]	Industrial PRG[B]	SOIL25-030707	SOIL28-030707	SOIL37-030707	SOIL39-030907-3.5
		Location	Berm 2	Berm 2	Berm 2	Berm 2
Antimony	31.29	408.80	0.62	0.77	<0.424	<0.406
Arsenic	0.39	1.59	***4.9***	***4.6***	***4.3***	***1.7***
Barium	5374.91	66577.35	1440	1690	901	105
Beryllium	154.37	1940.69	4.9	5.6	4.4	0.51
Cadmium	37.03	451.41	0.9	0.99	0.89	0.17
Chromium	210.68	448.32	26.5	28.6	22.4	4.9
Cobalt	902.89	1921.35	0.53	<0.226	1.7	1.2
Copper	3128.55	40876.66	143	157	85.9	9
Lead	400.00	800.00	28.5	32.3	31.7	4.4
Molybdenum	391.07	5109.95	1.5	1.7	1.2	0.76
Nickel	1564.28	20439.16	11.9	12.8	12.4	3.8
Selenium	391.07	5109.95	3.2	2.7	2.1	<0.61
Silver	391.07	5109.95	1.3	1.4	0.45	<0.102
Thallium	5.16	67.45	<0.566	<0.564	<0.529	<0.508
Thorium-228	0.15	NA	N/A	N/A	N/A	N/A
Thorium-230	3.49	NA	N/A	N/A	N/A	N/A
Thorium-232	3.10	NA	N/A	N/A	N/A	N/A
Total Uranium	NA	NA	N/A	N/A	N/A	N/A
Uranium-233/234	3.10	NA	N/A	N/A	N/A	N/A
Uranium-235/236	0.21	NA	N/A	N/A	N/A	N/A
Uranium-238	4.46	NA	N/A	N/A	N/A	N/A
Vanadium	78.21	1022.00	16.7	17.2	21.2	8
Zinc	23463.18	100000.00	214	242	157	21.2

Notes:

[A] U.S. EPA Preliminary Remediatic
[B] U.S. EPA Preliminary Remediatic
NA Not available
< Not detected above laboratory ar
J Estimated value
All results in milligram per kilogra
Bolded values above PRG

Table 5-6
Halaco Metal Recyclers
Site Stabilization - Asbestos Sample Results

Sample ID#	Sample Description	Visual Description	Asbestiform Minerals	Other Fiberous Materials	Non-Fiberous Materials
Building 1	Non-friable	Brown granular	None detected	Cellulose - <1%	Granular - opaques, mica
Building 2	Non-friable	Gray granular/gray fiberous	Amosite 15%	None detected	Granular - opaques

Table 5-7
Halaco Metal Recyclers
Site Stabilization - Building and Miscellaneous Sample Results

Parameter/ID#	BRICK 1- 030807	BRICK 2- 030807	COMPOSITE1-041107	COMPOSITE2-041107	Ingot 1- 031607	Ingot 1- 031607[A]	Ingot 2- 031607	Ingot 2- 031607[A]
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/L
Antimony	0.83 J	3.5 J	12.4	>10	4.8 B	0.06	4.01	0.06 U
Arsenic	0.73 J	*15.4 J*	*4*	0.984	5.9 U	NA	6.01	NA
Barium	58.9	705	347	244	0.984 U	0.32	1	0.032 B
Beryllium	0.76	6.4	9.27	13.4	5.9	NA	5.8	NA
Cadmium	0.18	2.05	5.12	0.35	0.984 U	0.01 U	1 U	0.01 U
Chromium	11.1	83	268	10.1	0.984 U	0.01 U	1 U	0.01 U
Cobalt	1.8	21.7	6.25	1.16	1.97 U	NA	2 U	NA
Copper	94.3	1140	2590	55.8	10.5	NA	10.9	NA
Hexavalent Chromium	0.0494 J	0.104	NA	NA	NA	NA	NA	NA
Lead	10.1	52.9	*835*	6.82	15.4	0.025 U	15.9	0.025 U
Mercury	NA	NA	0.0802	>0.1	NA	0.0006 UJ	NA	0.0006 UJ
Molybdenum	0.83 J	22.4 J	11	0.891	1.97 U	NA	2 U	NA
Nickel	8.8	128	149	7.67	6.4	NA	6.4	NA
Selenium	1.3 J	15.8 J	2.25	>1	152	0.08 B	145	0.06 U
Silver	0.13	2.05	3.2	0.482	0.984 U	0.01 U	1 U	0.01 U
Thallium	0.58	10.2	5	1.91	4.92 U	NA	5.01 U	NA
Thorium-228[B]	NA	NA	NA	NA	NA	-0.3 U	NA	0.0109 U
Thorium-230[B]	NA	NA	NA	NA	NA	0.179 U	NA	0.124 U
Thorium-232[B]	NA	NA	NA	NA	NA	0.02 U	NA	-0.0312 U
Vanadium	3.7	16.4	40.5	4.14	NA	NA	1 U	NA
Zinc	89.8	390	2360	303	62.2	NA	57.2	NA

Notes:

B Analyte was present in the method blank
J Estimated value
NA Not available
UJ Not detected above laboratory analytical detection limits and value is estimated
mg/kg Milligram per kilogram
mg/L Milligram per liter
[A] Samples run for Toxicity Characteristic Leaching Procedure (TCLP) metals for disposal
[B] Units for these samples picocurries per gram (pCi/g)

Table 5-8
Halaco Metal Recyclers
Radiation Assessment - Subsurface XRF Results

Sample Name	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Nickel	Titanium	Zinc
Residential PRG[A]	0.0062[B]	37	210	3100	23000	150[B]	1800	1600	100000	23000
B1-01	<LOD	**270**	**404**	2128	15577	**290**	**7089**	67	<LOD	6489
B1-05	6	**254**	<LOD	43	21262	122	292	<LOD	4930	155
B2-01	9	**263**	**468**	2684	19622	**218**	**3330**	28	3057	4898
B3-01	7	**266**	**324**	734	17482	138	**7766**	<LOD	<LOD	4242
B3-05	<LOD	**240**	**283**	639	13459	**163**	**9490**	25	<LOD	3322
B3-10	<LOD	**201**	208	1123	12774	**169**	**6691**	24	<LOD	2837
B4-01	<LOD	**274**	**306**	493	12582	**193**	**6888**	<LOD	<LOD	2827
B4-05	<LOD	**221**	**313**	946	**27327**	**240**	**7902**	<LOD	<LOD	2851
B5-05	4	**289**	183	113	7381	40	**2635**	<LOD	<LOD	885
B6-01	<LOD	**232**	**380**	842	11041	148	**5852**	<LOD	<LOD	4746
B6-05	<LOD	**248**	**388**	1481	10823	**187**	**3615**	30	<LOD	9391
B6-10	<LOD	**204**	**495**	1531	14547	**252**	**3396**	35	<LOD	6474
B7-01	<LOD	**236**	**287**	2215	13454	**283**	**3103**	47	502	3896
B7-05	<LOD	**260**	**321**	1652	15406	**234**	**2527**	44	819	4858
B9-01	<LOD	**250**	**413**	1575	15988	**198**	**3706**	19	575	4795
B9-05	8	**236**	**324**	37	6803	22	**8670**	<LOD	<LOD	1083
B09-10	<LOD	**218**	**1189**	329	20220	110	**9529**	<LOD	<LOD	3229
B10-01	9	**263**	184	**3389**	15289	**197**	**1850**	135	912	3962
B10-10	12	**256**	<LOD	184	**40999**	**381**	239	<LOD	3652	661
B11	32	**221**	<LOD	2030	**58746**	**856**	254	<LOD	3730	4347
B11-01	19	**241**	**342**	**5557**	9211	**330**	**2072**	160	1297	7010
B11-10	175	**263**	**372**	2534	**181152**	**3985**	1684	<LOD	7830	5201
B12-01	<LOD	**256**	**328**	542	14197	112	**3847**	<LOD	<LOD	3438
B12-10	<LOD	**240**	**276**	92	12101	43	**11868**	<LOD	<LOD	1724
B13-01	9	**260**	**793**	**5457**	20277	**391**	**4018**	400	<LOD	9716
B13-05	25	**236**	<LOD	391	**179409**	**732**	**2688**	<LOD	4856	3075
B14-01	19	**283**	**214**	**10051**	10409	**315**	**1901**	112	3755	5753
B15-01	<LOD	**261**	**307**	2769	11298	**317**	**2139**	87	<LOD	3388
B15-05	<LOD	**263**	**271**	1072	8236	**204**	**2358**	30	<LOD	2770
B15-10	<LOD	**276**	**462**	1967	8969	**254**	**3776**	86	706	3279
B15-20	<LOD	**270**	<LOD	119	7884	42	487	<LOD	872	273
B16-01	8	**279**	**264**	**3349**	14798	**254**	**11839**	109	921	4450
B16-05	7	**273**	**420**	2379	10769	**276**	**12816**	82	1289	3076
B16-10	10	**243**	**879**	703	7194	86	**2649**	<LOD	<LOD	2070
B17-01	6	**229**	147	1005	17076	99	1360	85	1434	1379
B17-05	<LOD	**198**	**316**	364	7386	88	**1979**	10	<LOD	1556
B17-05	9	**257**	**303**	1660	8353	**234**	**3830**	43	624	2393
B18-01	<LOD	**248**	**300**	1560	11988	**270**	**2709**	62	<LOD	3309
B18-05	<LOD	**189**	**325**	1618	9321	**329**	**3345**	67	564	2382
B18-10	<LOD	**250**	**665**	2624	14464	**331**	**7832**	51	<LOD	3616
B19-01	6	**251**	202	2258	**23422**	**333**	**1897**	<LOD	823	4921
B19-05	<LOD	**199**	**340**	1557	13143	**244**	**2703**	30	456	3654
B19-10	<LOD	**226**	**465**	1065	7401	**180**	**3463**	18	<LOD	2163
B20-01	<LOD	**251**	**336**	1193	10039	**220**	**2666**	26	458	2950
B20-05	<LOD	**279**	**271**	1511	8475	**254**	**2200**	37	<LOD	3538
B20-10	<LOD	**260**	**276**	1368	11644	**251**	**2147**	38	<LOD	4027
B20-15	6	**239**	<LOD	71	20421	69	198	<LOD	2615	159
B2-05	24	**262**	133	1000	**35724**	**606**	1211	<LOD	4111	2444
B21-05	<LOD	**261**	<LOD	<LOD	11126	13	76	<LOD	1281	34
B22-01	19	**242**	**231**	1321	**31686**	**364**	**1935**	<LOD	2295	3028
B22-05	<LOD	**239**	<LOD	16	18175	38	120	<LOD	2382	94
B22-10	<LOD	**254**	<LOD	40	22888	36	262	<LOD	3070	104
B23-011	9	**278**	<LOD	364	**34745**	**169**	513	<LOD	3395	945
B23-05	6	**201**	<LOD	27	**39643**	27	444	<LOD	4080	207
B23-10	4	**258**	<LOD	44	**25300**	47	270	<LOD	2992	166
B24-01	37	**195**	116	1024	**68316**	**1399**	503	<LOD	6702	2839
B24-05	46	**230**	**250**	1618	**54811**	**1655**	598	<LOD	8968	4665
B25-01	<LOD	**239**	122	1220	17340	119	771	<LOD	2087	1346
B25-05	<LOD	**272**	**419**	882	**57335**	**1467**	311	<LOD	3251	558
B26-01	8	**273**	145	1920	9591	101	**14750**	31	<LOD	4490
B27-05	12	**214**	**263**	951	7168	**228**	1626	31	572	2406
B27-10	<LOD	**280**	<LOD	<LOD	15001	16	221	<LOD	1751	53
B28-01	71	**283**	190	1488	**128612**	**2248**	755	<LOD	10827	4592
B28-10	<LOD	**267**	<LOD	21	**27211**	**164**	264	<LOD	2130	172
Bkg-01	<LOD	**245**	<LOD	301	**46054**	64	684	<LOD	4373	694
Bkg-05	5	**248**	<LOD	21	**24556**	87	172	<LOD	3573	165
oid06-01	17	**270**	157	1462	18605	**191**	1695	21	1881	2104
oid1-01-060507	5	**240**	168	426	19482	101	1657	<LOD	2174	997

Table 5-8
Halaco Metal Recyclers
Radiation Assessment - Subsurface XRF Results

Sample Name	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Nickel	Titanium	Zinc
Residential PRG[A]	**0.0062[B]**	**37**	**210**	**3100**	**23000**	**150[B]**	**1800**	**1600**	**100000**	**23000**
oid1-sed-060507	6	**259**	<LOD	49	**23576**	71	352	<LOD	3299	161
oid2-01-060507	6	**233**	117	962	22002	**164**	1518	<LOD	2253	1888
oid2-12-060507	<LOD	**253**	83	317	**24111**	85	626	<LOD	3441	673
oid2-sed-060507	5	**230**	92	150	**25967**	61	433	<LOD	3468	406
oid3-01-060507	9	**271**	126	1019	19870	143	1731	<LOD	1935	1623
oid3-12-060507	6	**244**	**219**	901	14159	**162**	**3008**	11	815	2176
oid3-sed-060507	<LOD	**259**	<LOD	33	21896	50	208	<LOD	3380	131
oid4-01	<LOD	**241**	**396**	1601	17013	**217**	**3643**	32	845	4214
oid4-12	<LOD	**282**	**1080**	1517	19190	**437**	**3936**	<LOD	<LOD	5918
oid4-sed	<LOD	**287**	**4927**	1702	17709	**386**	**2653**	<LOD	<LOD	12980
oid5-01	9	**257**	**392**	1761	17086	**226**	**3883**	34	571	6564
oid5-12	8	**235**	<LOD	209	**39937**	36	519	<LOD	4031	506
oid5-sed	<LOD	**234**	<LOD	29	20388	25	377	<LOD	7705	73
oid7-01	8	**273**	<LOD	751	18136	109	800	<LOD	2254	1132
oid7-12	6	**262**	113	1046	19795	131	1170	<LOD	2352	1659
oid7-14-060507	<LOD	**274**	**273**	794	12666	**153**	**2562**	11	616	1790
oid8-01	8	**230**	123	628	18507	79	701	<LOD	2211	641
oid8-12	<LOD	**278**	117	306	16373	116	**1925**	<LOD	1263	1235
soil1-060107	<LOD	**267**	**366**	1921	21448	**232**	**5067**	30	<LOD	4842
soil2-060107	<LOD	**284**	**370**	**3236**	5952	89	**1998**	<LOD	<LOD	13554
soil3-060107	36	**233**	**421**	**6860**	7257	**340**	**2026**	47	<LOD	11216
soil4-060107	8	**255**	169	**7448**	6804	**371**	593	228	491	4606
soil-5-060107	<LOD	**266**	<LOD	21234	**26673**	**971**	1003	368	1060	**26426**
soil6-060107	32	**307**	**903**	**13538**	**111567**	**1233**	1535	211	<LOD	13468
soil7-060107	<LOD	**246**	**242**	228	**34805**	**284**	**14779**	<LOD	<LOD	1321
soil8-060107	11	**297**	123	743	10589	**151**	**11706**	28	<LOD	2809

Notes:
[A]-USEPA Preliminary Remediation Goal (PRG) for Industrial Soil
[B]-California-Modified PRG. For this site, an action level for arsenic has not yet been determined.
<LOD Analyte not observed above the limit of detection of the instrument
Results in **bold** exceed site-specific action level
Results units in mg/kg

Table 5-9
Halaco Metal Recyclers
Radiation Assessment - Subsurface Sample Results

Sample Name	Region 9 PRG Residential [A]	Region 9 PRG Outdoor Worker[B]	TTLC[C]	B3-01	B3-10	B23-01	B23-10	B24-01	B24-05	B26-01	B26-5	B28-01	B28-10	RADSOIL-01	B-BKG-1	B-BKG-3	B9-01	B9-05	B6-01
Sample date				6/5/2007	6/5/2007	6/7/2007	6/7/2007	6/8/2007	6/8/2007	6/8/2007	6/8/2007	6/11/2007	6/11/2007	6/11/2007	6/4/2007	6/4/2007	6/4/2007	6/4/2007	6/4/2007
Sample location																			
Metals (mg/kg)																			
Aluminum	76,000	Not Appliacable	--	33100	36900	16600	11600	12100	17500	144000	27700	11500	6690	22800	12700	8740	54500	15900	53100
Antimony	31		*15*	6.14	6.56	5.64	4.22	17.7	22.3	12.4	24.1	*21.6*	1.26 J	4.91	4.07	5.23	9.51	3.6	14
Arsenic	2.2		*500*	15.1	14.7	7.72	7.57	0.318	0.276	10.5	17	43.9	10.9	4.4	6.14	7.75	15	10.1	
Barium	5,400		*10,000*	3,520	4,560	295	138	48.6	47.3	2580	1490	920	125	6570	151	333	1750	2440	**14900**
Beryllium	150		*75*	50.4	42.4	1.75	1.45	11	23.1	1	5.3	0.252	0.287 J	**214**	1.27	0.35	48.7	45.1	
Cadmium	37		*100*	3.76	2.58	12.3	1.37	64.7	48.3	3.1	3.53	17	ND	1.39	1.74	1.87	2.97	1.96	45.5
Chromium	210		*2,500*	116	120	43.5	22	0.882	ND	226	101	58.9	15.3	59.7	27.3	24.6	151	129	215
Cobalt	900		*8,000*	13.1	9.01	6.57	8.99	16.4	20.6	4.31	6.99	17.4	5.83	4.69	9.23	6.08	10.7	115	6.82
Copper	3,100		*2,500*	745	643	352	41.6	361	597	2270	1090	1300	25.3	318	175	104	1140	135	1630
Lead	150		*1,000*	95.1	93.5	132	22.7	2.29	11.9	109	817	**1780**	609	33.3	33.7	249	147	115	155
Magnesium	--		--	307000	263000	16600	8400	517	1030	174000	22600	4060	17200	98400	12700	4200	10.2	320000	171000
Molybdenum	390		*3500*	8.04	9.5	4.25	3.01	1,070	1,370	17.1	3.9	10.7	6.96 J	3.5	1.6	4.4	57.5	2.2	9.4
Nickel	1,600		*2,000*	54.5	88.8	59.9	21.6	**4500**	**4280**	95.5	113	75.1	13.6	31.6	23.3	14.5	79.1	17.4 J	96.8
Selenium	390		*100*	ND	ND	66.7	74.9	6.98	12.1	ND	116	**478**	**331**	ND	64.8	57	30.8	ND	ND
Silver	390		*100*	30.5	20.3	3.17	2.79	303	430	28.4	7.88	27.6	6.87	ND	3.71	7.75	**262000**	10.7	29.7
Thallium	5.2		*700*	ND	ND	0.937	1.68	23.7	21.5	ND	5.42	ND	ND	ND	1.44	1.75	D	ND	ND
Vanadium	550		*2,400*	26	20.8	28	39.4	25.6	25.1	28.9	30.1	24.6	24.6	17.1	31.5	27.9	30.8	8.41	31
Zinc	23,000		*5,000*	3110	1,630	1190	124	1740	2920	*4580*	*1760*	*2870*	119	*1140*	*297*	*533*	*3250*	*1540*	*4290*
Rad Alpha Spec (pCi/g)																			
Thorium-228	0.154	0.255		**10.8**	**14.6**	**1.12**	**1.119**	**0.741**	ND	**1.81**	**1.52**	**0.749**	ND	**61.1**	**0.578**	ND	**567**	**9.71**	**14.5**
Thorium-230	3.49	20.2		21.9	34.2	0.496	ND	0.763	0.646	1.22	4.89	ND	0.891	**21.1**	0.741	0.54	**770**	5.29	**39**
Thorium-232	3.1	19.0		11.0	14.9	1.22	0.576	0.486	0.693	1.26	1.92	ND	0.469	**70.8**	0.977	1.115	**653**	3.36	18.3
Rad Gamma Spec																			
Radium-226	0.0124	3.77		0.294	0.629	0.691	0.73	0.551	0.47	ND	0.487	0.625	0.335	0.592	0.5	0.737	**5.79**	ND	0.649
Radium-228	0.0677	0.15		**9.29**	**13.0**	**1.03**	**1.09**	**0.923**	**0.554**	**2.13**	**1.84**	**0.919**	**0.442**	**55.7**	**0.927**	**1.08**	**564**	**3.95**	**14.0**

Notes

[A] U.S. EPA Region 9 Preliminary Remediation Goals (PRGs) for residential soil; October 2004
[B] U.S. EPA Region 9 PRGs for Outdoor Worker
[C] Total Threshold Limit Concentration - State of California Title 22 Hazardous Waste Criteria
ND Analyte not detected above laboratory detection limits
mg/kg milligram per kilogram
pCi/g picocurrie per gram

Values above [A] are indicated as Red
Values above [B] are indicated as Blue
Values above [C] are indicated as *Itallics*
Values above multiple Screening values are **Red and BOLD**

Table 5-9
Halaco Metal Recyclers
Radiation Assessment - Subsurface Sample Results

Sample Name	Region 9 PRG Residential [A]	Region 9 PRG Outdoor Worker[B]	TTLC[C]	B13-05	B14-01	B15-01	B15-10	B20-05	B13-01	OID7-01	B9-10	B6-10	B14-05	B20-15	B15-01-DUP	B15-10-DUP
Sample date				6/5/2007	6/6/2007	6/6/2007	6/6/2007	6/7/2007	6/5/2007	6/11/2007	6/4/2007	6/4/2007	6/6/2007	6/7/2007	6/6/2007	6/6/2007
Sample location																
Metals (mg/kg)																
Aluminum	76,000	Not Appliacable	--	10200	197000	54700	64900	52000	168000	57000	6610	58300	5550	11400	57700	66100
Antimony	31		15	15	**42.1**	25.7	**44.7**	21.5	**34.3**	18.7	ND	19.2	3.65	5.05	24.5	25.9
Arsenic	2.2		500	28.5	19.3	13.2	16.2	16.9	15.5	15.9	41.9	17.3	23.7	9.72	13.5	16.8
Barium	5,400		10,000	504	3830	9590	7600	4560	5870	2990	5540	9800	179	149	6150	8350
Beryllium	150		75	0.798	17.2	43	54.6	19.3	23.5	18.1	12.8	36	0.291 J	0.675 J	50.3	56.6
Cadmium	37		100	2.02	12.6	5.43	4.13	7.51	4.32	4.75	2.7	4.41	ND	1.81	4.88	4.21
Chromium	210		2,500	82.1	256	218	284	245	763	245	56.5	233	61.2	21	252	296
Cobalt	900		8,000	15.9	8.16	3.91	36.4	3.63 J	9.1	7.27	ND	8.24	9.71	8.21	101	7.24
Copper	3,100		2,500	504	**7150**	1530	2110	1420	**4050**	1760	286	1710	206	41.5	1870	1840
Lead	150		1,000	773	**2090**	215	363	176	336	179	48.4	214	**2470**	48.9	209	221
Magnesium	--		--	6870	54800	209000	212000	177000	111000	79000	354000	170000	6140	8470	127000	194000
Molybdenum	390		3500	9.72	4.98	5.26	8.89	5.83	13.90	5.49	17.30	7.57	10.90	4.73	5.75	10.00
Nickel	1,600		2,000	104	222	79.5	107	48	565	99.2	20.7	150	32.4	21.7	**4270**	104
Selenium	390		100	**698**	34.8	ND	ND	ND	ND	ND	ND	ND	**836**	83	67.9	ND
Silver	390		100	33	15.2	8.76	24.6	11.8	19.5	10.2	15	32.2	37.6	2.45	12.2	26.9
Thallium	5.2		700	ND	7.26	ND	ND	ND	ND	3.21	ND	ND	ND	2.01 J	ND	ND
Vanadium	550		2,400	19.1	44.2	35.2	43.1	48.7	42.8	34.5	7.92	42.7	19.4	38.1	37.4	41.2
Zinc	23,000		5,000	3120	5100	1590	2540	2120	6100	2130	1460	8520	559	154	3210	2580
Rad Alpha Spec (pCi/g)																
Thorium-228	0.154	0.255		ND	**3.7**	**24.0**	**15.4**	**20.1**	**6.69**	**5.66**	**25.0**	**19.2**	**0.445**	**1.85**	**26.9**	**12.8**
Thorium-230	3.49	20.2		ND	2.93	**40.5**	**20.9**	**30.3**	9.79	7.31	**52.5**	**38.5**	0.577	1.9	**37.9**	**26.8**
Thorium-232	3.1	19.0		0.527	1.83	**24.4**	12.0	17.0	5.92	4.86	**26.2**	14.9	0.492	1.26	**24.1**	13.9
Rad Gamma Spec																
Radium-226	0.0124	3.77		0.449	0.152	0.589	0.465	0.662	0.352	0.591	0.583	0.525	0.448	0.643	0.682	0.477
Radium-228	0.0677	0.15		**0.628**	**2.33**	**20.3**	**10.5**	**16.9**	**5.52**	**5.31**	**20.2**	**14.1**	ND	**1.09**	**26.9**	**10.6**

Table 5-10
Halaco Metal Recyclers
Radiation Assessment - Groundwater Sample Results

Sample Name	**Region 9 PRG Residential [A]**	**3x Bkg from IA**	B1-W	B3-W	B6-W	B12-W	B3D-W	B4-W	B20-W	B9-W	B17-W
Sample date			6/11/2007	6/11/2007	6/11/2007	6/11/2007	6/11/2007	6/11/2007	6/11/2007	6/11/2007	6/11/2007
Sample location											
Rad Alpha Spec (pCi/L)											
Thorium-228	0.445	0.557 U	**2.84**	**61.1**	**63.8**	**111**	**58.8**	**70.8**	**31.7**	**142**	**18.9**
Thorium-230	0.523	0.433 U	**4.91**	**17.2**	**118**	**233**	**14.9**	**118**	**55.9**	**111**	**30.6**
Thorium-232	0.471	0.443 U	**3.21**	**7.12**	**53.6**	**148**	**7.5**	**50.2**	**27.7**	**57.0**	**16.7**
Rad Gamma Spec											
Radium-226	0.000823	--	**0.859**	**39.0**	**0.908**	**1.67**	**46.9**	**0.952**	**0.795**	**77.4**	ND
Radium-228	0.0458	--	ND	**207**	ND	ND	**239**	**4.3**	**9.68**	**206**	**2.55**

Notes

[A] U.S. EPA Region 9 Preliminary Remediation Goals (PRGs) for residential soil; October 2004
ND Analyte not detected above laboratory detection limits
pCi/L picocurrie per liter
Bolded values above site specific screening values

Table 5-11
Halaco Metal Recyclers
Radiation Assessment - OID Analytical Results

Sample Name	Region 9 PRG Residential [A]	Region 9 PRG Outdoor Worker[B]	TTLC[C]	OID1-01	OID2-SED	OID3-12	OID4-SED	OID4-01	OID4-12	OID5-01	OID7-01	OID8-12	OID6-12
Sample date				6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/11/2007	6/11/2007	6/11/2007
Sample location													
Metals (mg/kg)													
Aluminum	76,000	Not Appliacable	--	24500	16400	41100	27200	64500	42600	56400	57000	13400	39100
Antimony	31		*15*	8.58	5.4	13.3	ND	*16.4*	11.4	*17*	*18.7*	4.89	**155**
Arsenic	2.2		*500*	11.9	7.83	13.7	161	13.5	28.3	19.8	15.9	10.9	18.1
Barium	5,400		*10,000*	4930	251	5920	10100	5300	**10700**	7760	2990	4020	5440
Beryllium	150		*75*	25.9	1.6	28.4	15.9	25.4	23.5	36.3	18.1	13.1	27.2
Cadmium	37		*100*	1.56	1.29	3.53	2.05	3.16	3.55	3.45	4.75	2	ND
Chromium	210		*2,500*	71.6	26.6	149	112	179	166	200	245	60.3	**7660**
Cobalt	900		*8,000*	6.93	11.7	6.87	5.25 J	6.62	6.98	7.31	7.27	3.69	87.2
Copper	3,100		*2,500*	419	58.9	801	836	1780	1260	1570	1760	214	1100
Lead	150		*1,000*	68.3	26.9	111	108	155	172	164	179	45.5	135
Magnesium	--		--	78500	13400	210000	251000	94300	158000	137000	79000	42100	121000
Molybdenum	390		*3500*	3.9	2.3	7.15	16.8	11.8	9.14	9.80	5.49	7.44	64.40
Nickel	1,600		*2,000*	36	25.9	56.4	95.4	85.6	128	93.4	99.2	17.0	**3740**
Selenium	390		*100*	ND	70	ND	ND	ND	ND	ND	ND	25.5	52.5
Silver	390		*100*	11.5	3.55	12.1	271	23.6	183	21.6	10.2	7.07	26.7
Thallium	5.2		*700*	ND	2.75	ND	ND	ND	ND	ND	3.21	4.74	ND
Vanadium	550		*2,400*	43	48.6	47.2	23.4	39.7	32.9	37.9	34.5	20.3	47.9
Zinc	23,000		*5,000*	*781*	77.5	*1530*	*6720*	*3010*	*3480*	*4750*	*2130*	*639*	*2760*
Rad Alpha Spec (pCi/g)													
Thorium-228	0.154	0.255		**8.16**	**2.78**	**16.4**	**87.6**	**11.4**	**69.9**	**9.82**	**5.66**	**10.2**	**8.53**
Thorium-230	3.49	20.2		18.7	3.42	**35.1**	**57.8**	**20.8**	**71.1**	16.6	7.31	**22.2**	17.5
Thorium-232	3.1	19.0		8.5	2.08	17.2	**90.1**	12.0	**70.9**	9.63	4.86	10.7	10.2
Rad Gamma Spec													
Radium-226	0.0124	3.77		0.733	1.04	0.775	0.868	0.569	1.37	0.525	0.591	0.54	0.55
Radium-228	0.0677	0.15		**6.3**	**2.41**	**12.4**	**92.4**	**10.8**	**53.4**	**9.14**	**5.31**	**7.21**	**8.53**

Notes

[A] U.S. EPA Region 9 Preliminary Remediation Goals (PRGs) for residential soil; October 2004
[B] U.S. EPA Region 9 PRGs for Outdoor Worker
[C] Total Threshold Limit Concentration - State of California Title 22 Hazardous Waste Criteria
mg/kg milligram per kilogram
ND Analyte not detected above laboratory detection limits
OID Oxnard Industrial Drain
pCi/g picocurrie per gram

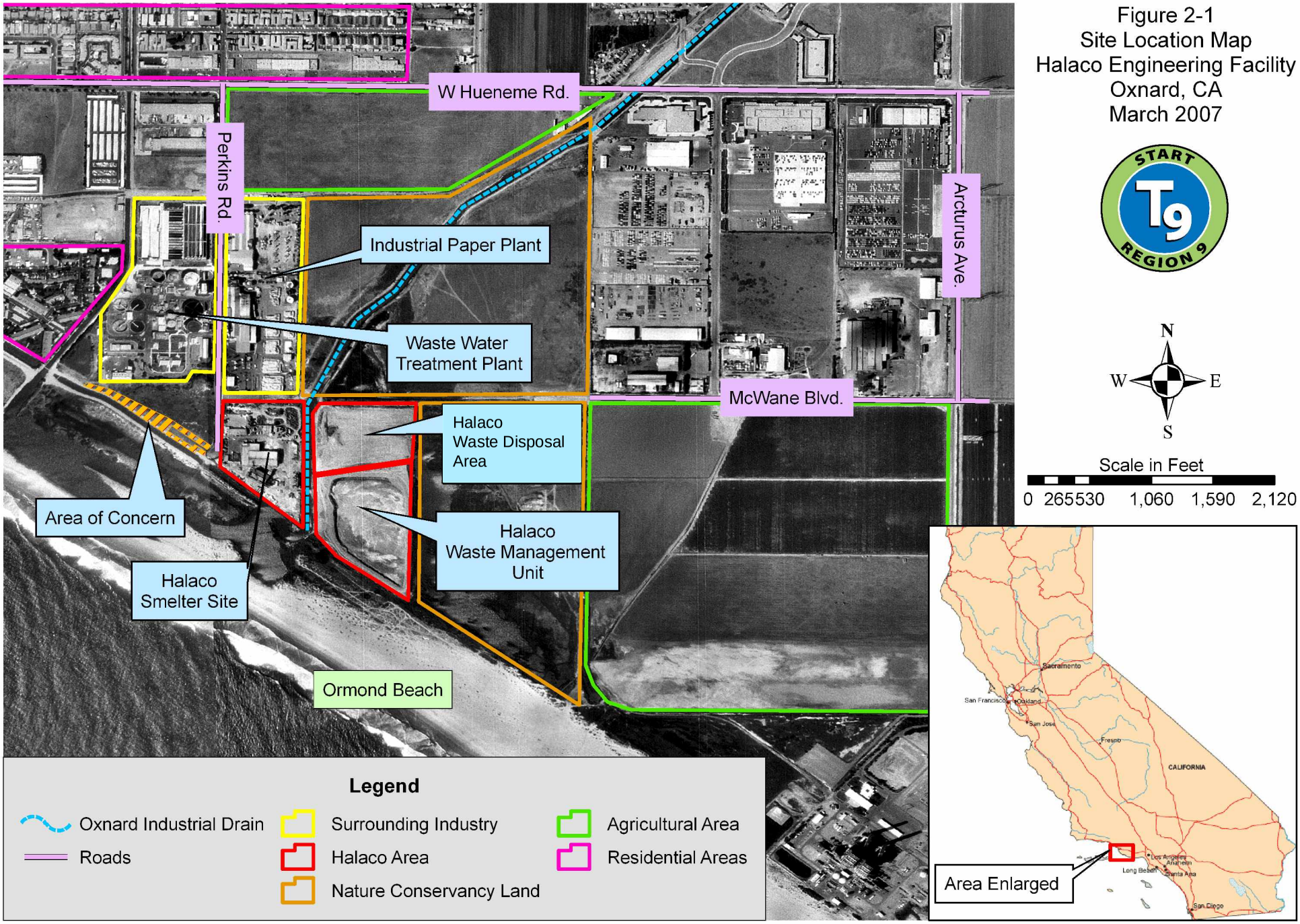
Values above [A] are indicated as Red
Values above [B] are indicated as Blue
Values above [C] are indicated as *Itallics*
Values above multiple Screening values are **Red and BOLD**

HALACO ENGINEERING COMPANY

ATTACHMENT B

FIGURES

Figure 2-1
Site Location Map
Halaco Engineering Facility
Oxnard, CA
March 2007



LEGEND

Site Perimeter

N

0 175 350 700 Feet

HALACO ENGINEERING
6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 2-2
SITE LAYOUT

TEAM 9

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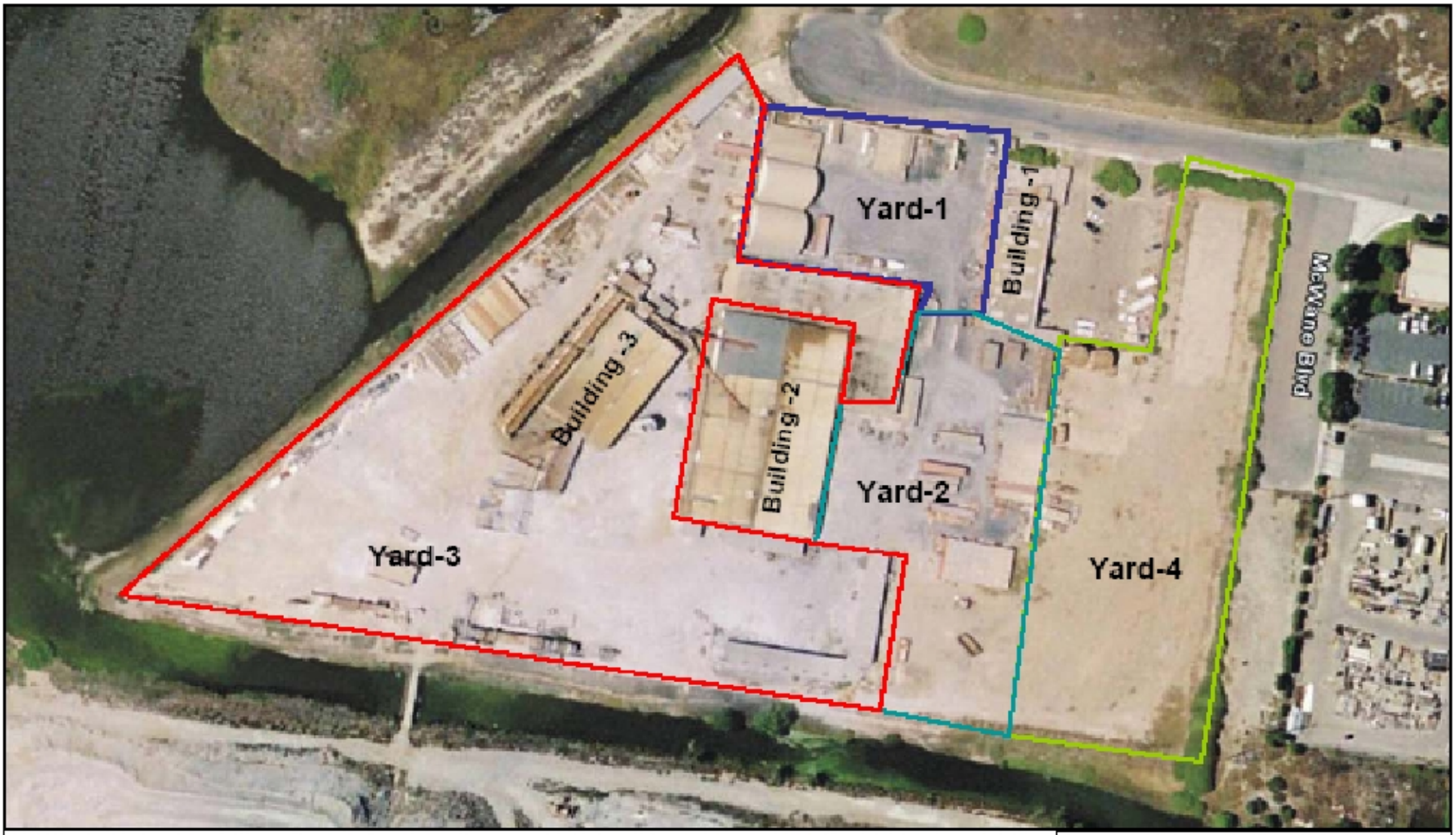


LEGEND

- Yard-1
- Yard-2
- Yard-3
- Yard-4

N

0 175 350 700 Feet

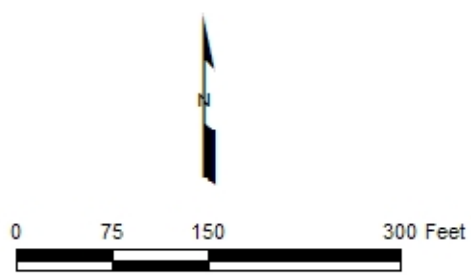
HALACO ENGINEERING
6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 3-1
SITE LAYOUT - ASSESSMENT

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Rad_assessment\Final_report\Fig3-1_site_map.mxd 070626 ALE

Base Map Source:
YCE Incorporated



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6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-1
WASTE MANAGEMENT UNIT
BEFORE STABILIZATION

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Rad_assessment\Fig5-1_WMU_Before_Stabilization.mxd 080429 ALE

N

0 75 150 300 Feet

HALACO ENGINEERING
6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-2
WASTE MANAGEMENT UNIT
AFTER STABILIZATION

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Rad_assessment\Fig5-1_WMU_Before_Stabilization.mxd 080429 ALE

LEGEND

Air monitoring location

N

0 150 300 600 Feet

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6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-3
AIR MONITOR LOCATIONS

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Rad_assessment\5-3_Air_Monitor_Locations.mxd

LEGEND

Berm Assessment Area

N

0 150 300 600 Feet

HALACO ENGINEERING
6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-4
SOIL BERM ASSESSMENT

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Rad_assessment\Final_report\Fig5-4_Soil_Berm_Assessment.mxd.mxd

LEGEND

- Berm assessment sample location
- Berm Assessment Area Closure

N

0 175 350 700 Feet

HALACO ENGINEERING
6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-5 - SOIL BERM ASSESSMENT AREA CLOSURE AND SAMPLE LOCATIONS

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Rad_assessment\Final_report\Fig5-5_Soil_Berm_Assessment_samples.mxd

LEGEND

● Radiation screening background location

N

0 100 200 400 Feet

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6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-6
RADIATION SCREENING
BACKGROUND LOCATIONS

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Rad_assessment\Fig5-6_Radiation_Screening_Bkg_Locs.mxd

LEGEND

- 0 - 2 x background
- 2 - 5 x background
- 5 - 10 x background
- >10 x background

N

0 37.5 75 150 Feet

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6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-7
SURFACE GAMMA RADIATION RESULTS

TEAM 9

C:\temp\Projects\START\Halaco\GIS\ArcGIS\Projects\Final_report\Fig5-7_rad_grid.mxd 070911 ALE

LEGEND

● Sample location

N

0 37.5 75 150 Feet

HALACO ENGINEERING
6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-8
SOIL BORING LOCATIONS

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Fianl_project\5-8_SoilBoring Locations .mxd 080501 ALE

LEGEND

● Sample location

A —— A' Cross section

0 37.5 75 150 Feet

HALACO ENGINEERING
6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-9
EAST-WEST CROSS SECTION

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Final_project\FIG5-9_East-West_Cross_Section.mxd 080501 ALE

LEGEND

● Sample location

C —— C' Cross section

N

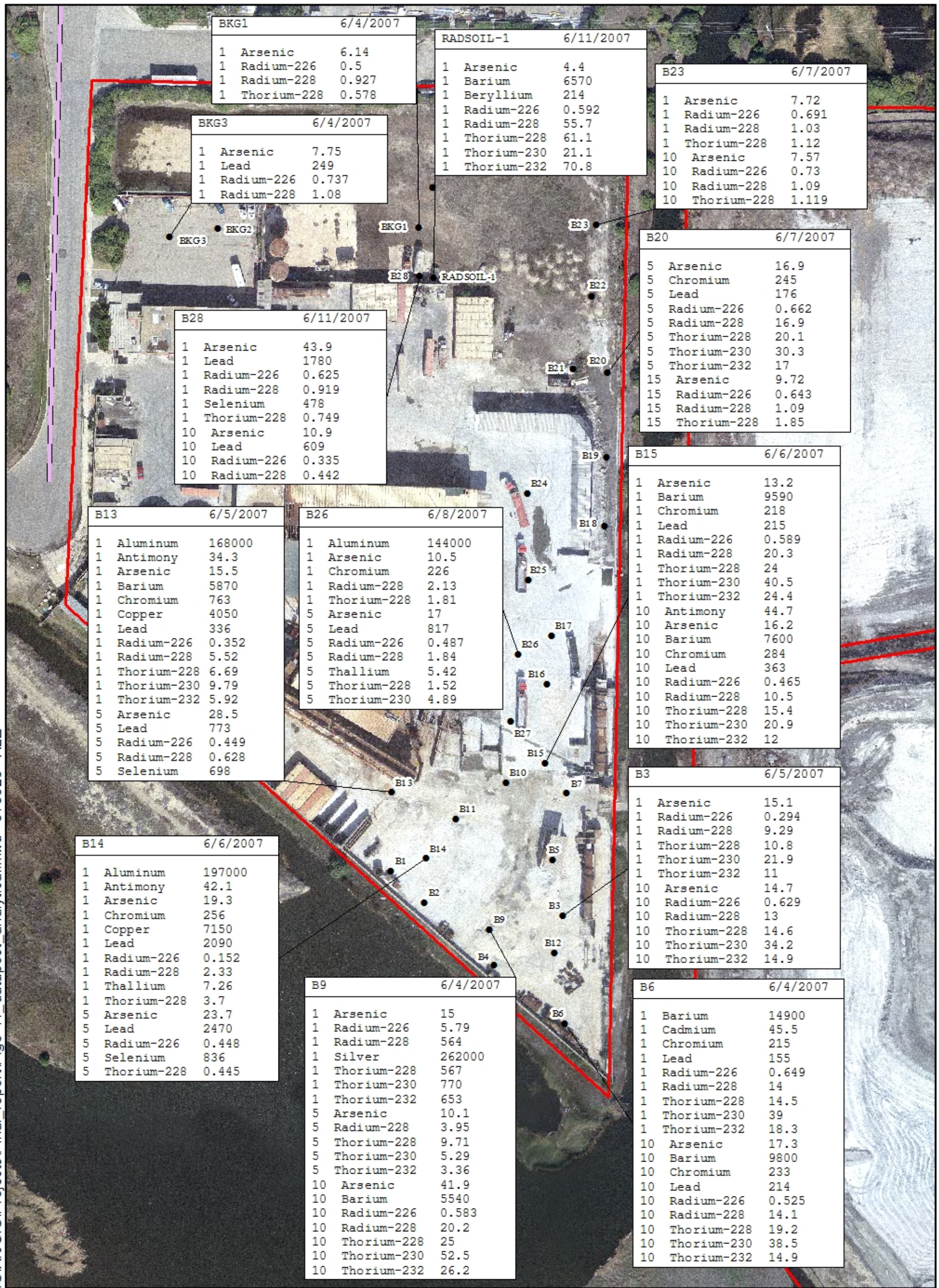
0 37.5 75 150 Feet

HALACO ENGINEERING
6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-10
NORTH-SOUTH CROSS SECTION

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Fianl_projectFIG5-9_North_South_Cross_Section.mxd 080501 ALE



BKG1		6/4/2007
1	Arsenic	6.14
1	Radium-226	0.5
1	Radium-228	0.927
1	Thorium-228	0.578

BKG3		6/4/2007
1	Arsenic	7.75
1	Lead	249
1	Radium-226	0.737
1	Radium-228	1.08

RADSOIL-1		6/11/2007
1	Arsenic	4.4
1	Barium	6570
1	Beryllium	214
1	Radium-226	0.592
1	Radium-228	55.7
1	Thorium-228	61.1
1	Thorium-230	21.1
1	Thorium-232	70.8

B23		6/7/2007
1	Arsenic	7.72
1	Radium-226	0.691
1	Radium-228	1.03
1	Thorium-228	1.12
10	Arsenic	7.57
10	Radium-226	0.73
10	Radium-228	1.09
10	Thorium-228	1.119

B20		6/7/2007
5	Arsenic	16.9
5	Chromium	245
5	Lead	176
5	Radium-226	0.662
5	Radium-228	16.9
5	Thorium-228	20.1
5	Thorium-230	30.3
5	Thorium-232	17
15	Arsenic	9.72
15	Radium-226	0.643
15	Radium-228	1.09
15	Thorium-228	1.85

B28		6/11/2007
1	Arsenic	43.9
1	Lead	1780
1	Radium-226	0.625
1	Radium-228	0.919
1	Selenium	478
1	Thorium-228	0.749
10	Arsenic	10.9
10	Lead	609
10	Radium-226	0.335
10	Radium-228	0.442

B15		6/6/2007
1	Arsenic	13.2
1	Barium	9590
1	Chromium	218
1	Lead	215
1	Radium-226	0.589
1	Radium-228	20.3
1	Thorium-228	24
1	Thorium-230	40.5
1	Thorium-232	24.4
10	Antimony	44.7
10	Arsenic	16.2
10	Barium	7600
10	Chromium	284
10	Lead	363
10	Radium-226	0.465
10	Radium-228	10.5
10	Thorium-228	15.4
10	Thorium-230	20.9
10	Thorium-232	12

B13		6/5/2007
1	Aluminum	168000
1	Antimony	34.3
1	Arsenic	15.5
1	Barium	5870
1	Chromium	763
1	Copper	4050
1	Lead	336
1	Radium-226	0.352
1	Radium-228	5.52
1	Thorium-228	6.69
1	Thorium-230	9.79
1	Thorium-232	5.92
5	Arsenic	28.5
5	Lead	773
5	Radium-226	0.449
5	Radium-228	0.628
5	Selenium	698

B26		6/8/2007
1	Aluminum	144000
1	Arsenic	10.5
1	Chromium	226
1	Radium-228	2.13
1	Thorium-228	1.81
5	Arsenic	17
5	Lead	817
5	Radium-226	0.487
5	Radium-228	1.84
5	Thallium	5.42
5	Thorium-228	1.52
5	Thorium-230	4.89

B3		6/5/2007
1	Arsenic	15.1
1	Radium-226	0.294
1	Radium-228	9.29
1	Thorium-228	10.8
1	Thorium-230	21.9
1	Thorium-232	11
10	Arsenic	14.7
10	Radium-226	0.629
10	Radium-228	13
10	Thorium-228	14.6
10	Thorium-230	34.2
10	Thorium-232	14.9

B14		6/6/2007
1	Aluminum	197000
1	Antimony	42.1
1	Arsenic	19.3
1	Chromium	256
1	Copper	7150
1	Lead	2090
1	Radium-226	0.152
1	Radium-228	2.33
1	Thallium	7.26
1	Thorium-228	3.7
5	Arsenic	23.7
5	Lead	2470
5	Radium-226	0.448
5	Selenium	836
5	Thorium-228	0.445

B9		6/4/2007
1	Arsenic	15
1	Radium-226	5.79
1	Radium-228	564
1	Silver	262000
1	Thorium-228	567
1	Thorium-230	770
1	Thorium-232	653
5	Arsenic	10.1
5	Radium-228	3.95
5	Thorium-228	9.71
5	Thorium-230	5.29
5	Thorium-232	3.36
10	Arsenic	41.9
10	Barium	5540
10	Radium-226	0.583
10	Radium-228	20.2
10	Thorium-228	25
10	Thorium-230	52.5
10	Thorium-232	26.2

B6		6/4/2007
1	Barium	14900
1	Cadmium	45.5
1	Chromium	215
1	Lead	155
1	Radium-226	0.649
1	Radium-228	14
1	Thorium-228	14.5
1	Thorium-230	39
1	Thorium-232	18.3
10	Arsenic	17.3
10	Barium	9800
10	Chromium	233
10	Lead	214
10	Radium-226	0.525
10	Radium-228	14.1
10	Thorium-228	19.2
10	Thorium-230	38.5
10	Thorium-232	14.9

LEGEND

● Sample location

NOTE

Depth shown as feet below ground surface

N

0 50 100 200 Feet

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6200 PERKINS ROAD
OXNARD, CALFORNIA

FIGURE 5-11
RADIATION ASSESSMENT
SUBSURFACE RESULTS

TEAM 9

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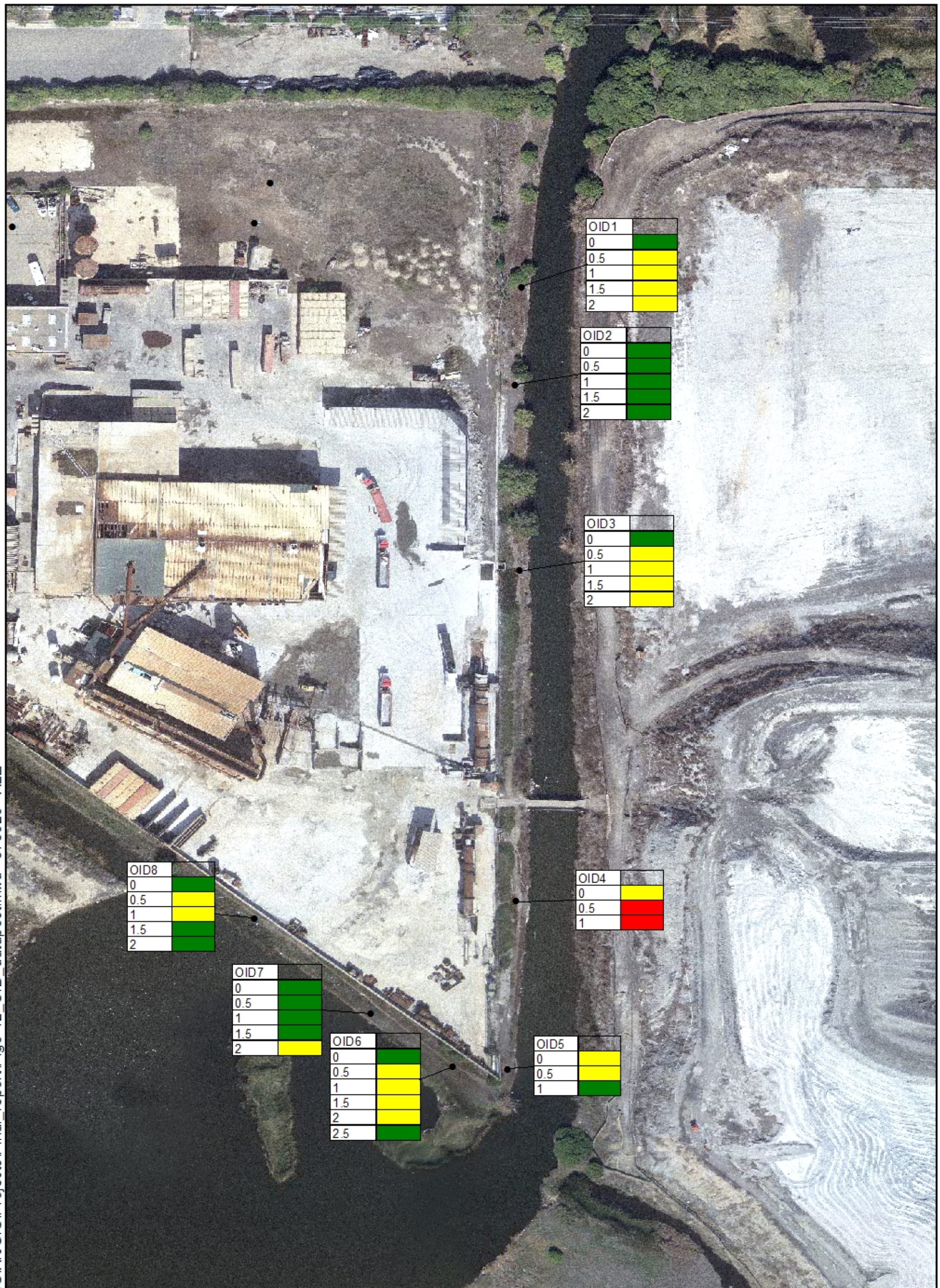

LEGEND

- Sample location
- 0 - 2 x background
- 2 - 5 x background
- 5 - 10 x background
- > 10 x background

NOTE

Depth shown as feet below ground surface

N

0 50 100 200 Feet

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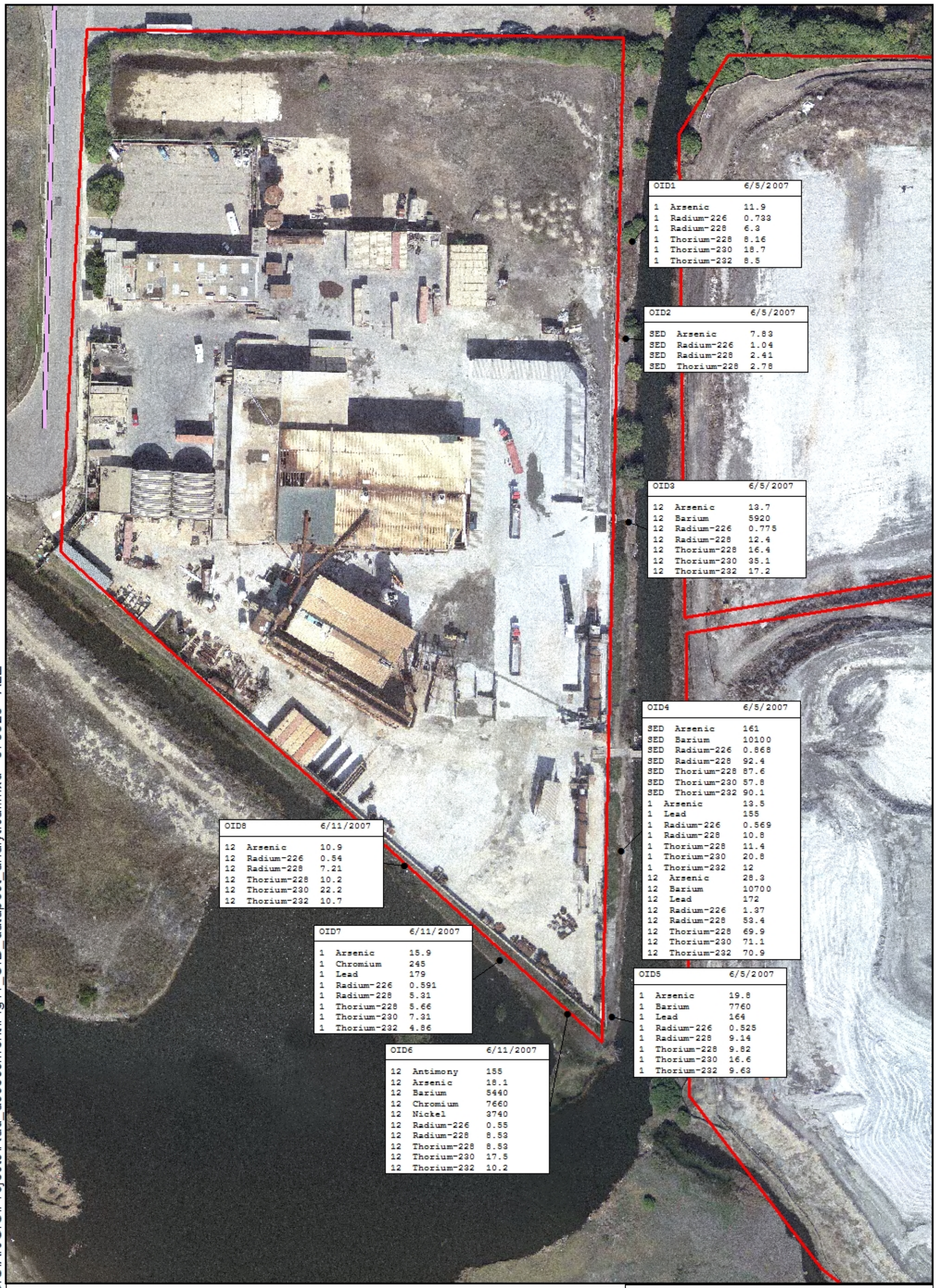
6200 PERKINS ROAD
OXNARD, CALIFORNIA

FIGURE 5-12
OID SURFACE AND SUBSURFACE RADIATION RESULTS

TEAM 9

Y:\Projects\START\Halaco\GIS\ArcGIS\Projects\Final_report\Fig5-12_OID_datapost.mxd 070626 ALE



LEGEND

● Sample location

NOTE

Depth shown as feet below ground surface

N

0 50 100 200 Feet

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6200 PERKINS ROAD
OXNARD, CALFORNIA

FIGURE 5-13
RADIATION ASSESSMENT
OID ANALYTICAL RESULTS

TEAM 9

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HALACO ENGINEERING COMPANY

ATTACHMENT C

HEALTH & SAFETY PLAN

TEAM 9

START 3, EPA Region 9

Health and Safety Plan (HASP) - Halaco

TDD: TO1-09-06-04-0007

Revision 4

Date: May 25, 2007

1. Introduction

This plan summarizes health and safety hazard information for the project described below. This plan delineates procedures that will allow personnel to work safely and respond swiftly and appropriately to site emergencies. The objective of the HASP is to identify the hazards present on site to adequately protect personnel from these hazards. This health and safety plan will be amended and updated as further information regarding the site is obtained or as site specific tasks change. In addition, audits will be conducted to ensure that the contents of this plan are being appropriately implemented for the duration of this project.

Individuals working on this project must have completed 40-hour training and the subsequent refresher training as specified in 29 CFR 1910.120 (e).

Note: **All personnel who work on this site must understand this plan and sign the attached employee acknowledgment form.** Field operations will conform to all applicable standards, regulations, and Team 9 Safety Management Standards. **In addition, a site briefing will be conducted prior to the initiation of operations, and on a daily basis prior to the commencement of each day's work. Documentation of these safety briefings will be logged in the field log book.**

Site Name: Halaco Metals **Project Number:** 60005003.27

Site Location: 6200 Perkins Road, Oxnard, CA 93033

Effective dates: From 4/20/06 **To** End

Amendment dates: 5/25/07 **Amendment No.:** 4

2. Key Personnel

TITLE	NAME
Project Manager	Chad Gibson
Field Team Leader	Nicole Testa
Health and Safety Team Member	Jason Winkler/Shelley Brown
Other Members	Jesse Hitchcock, Patrick Aiken, Ben Simes

3. Training and Medical Monitoring Requirements

All field personnel will be required to have completed training as specified in 29 CFR 1910.120. In addition, individuals involved in this project must be enrolled in a medical monitoring program as specified in 29 CFR 1910.120 (f). This plan will be amended as necessary to accommodate additional training and/or medical monitoring that may become necessary due to unforeseen site conditions. Documentation of these changes in required training or medical monitoring will be maintained in the field log book. In addition, at least one START personnel will have received radiation safety training.

Persons operating heavy equipment or ATV's must be qualified to do so by means of training or experience. At least one person on site will be currently certified in first aid / CPR.

4. General Scope of the Project

Halaco is a defunct metal recycler. Large amounts of process waste material are dispersed throughout the site, including a waste-pile, berm area, wetlands, beach, scrap metal piles, parking lot (Figure 1). Metals processing also generated ammonia liquid and vapor, flux salts, automotive fuels/oil, finished flammable metal solids, acids and bases which are dispersed throughout the site. Elevated metal concentrations and low level alpha emitters have been detected in soil located throughout the site.

U.S. EPA has tasked the Emergency Rapid Response Services Contractor (ERRS) with grading and stabilizing the waste-pile.

START has been tasked with the following activities:

1. Oversight
2. Air Sampling
3. Soil Screening (radiation)
4. Trash Removal
5. Soil Sampling (metals and radiation)
6. Wipe Sampling (radiation)
7. Well Installation
8. Groundwater Sampling

5. Task Hazard Analysis

Task: 1. Oversight	**PPE Level**: D	**Decon Required**: no
Description: ERRS will grade and stabilize the waste pile, START will provided oversight which includes documentation in a log book, photographing and general monitoring of compliance with the work plan.		
Contaminant(s)of Concern: none		

Hazard	Controls
Heavy Equipment	• Caution and awareness • Do not enter the work zone unless necessary • Should entrance be necessary, ensure that equipment operator(s) are aware of your presence • Be aware of back-up alarms
Noise Exposure	• Section 7.4
Overhead Hazards	• Wear hard hat • Remove hazards when possible
Slips, Trips, Falls	• See Section 7.1
Chemical Exposure	• Wear PPE, See Section 9 & 10
Radiation Exposure	• Not applicable
Biological Exposure	• See Section 7.5
	•
	•

Task: 2. Air Monitoring	**PPE Level**: D	**Decon Required**: no
Description: START will set-up and operate up to 6 high volume air samplers around the perimeter of the site, Filters will be collected on a daily basis, analytes include Thorium and metals. START will also operate Data Rams for measuring airborne dust, and Area RAEs for measuring airborne ammonia.		
Contaminant(s)of Concern: none		

Hazard	Controls
Heavy Equipment	• Caution and awareness • Do not enter the work zone unless necessary • Should entrance be necessary, ensure that equipment operator(s) are aware of your presence • Be aware of back-up alarms
Noise Exposure	• Section 7.4
Overhead Hazards	• Wear hard hat • Remove hazards when possible
Slips, Trips, Falls	• See Section 7.1
Chemical Exposure	• Wear PPE, See Section 9 & 10
Radiation Exposure	• Not applicable
Biological Exposure	• See Section 7.5
	•
	•

Task: 3. Soil Screening (alpha/gamma radiation)	**PPE Level**: D	**Decon Required**: no
Description: EPA, ORIA and START will use radiation detectors to screen for alpha and gamma radiation in soil and surfaces located at the 1)beach, 2)berm area, 3)wetland, 4)road, e)buildings. Soil and surfaces will not be disturbed during radiation screening.		
Contaminant(s)of Concern: none		

Hazard	Controls
Heavy Equipment (1,2, 4)	• Caution and awareness • Do not enter the work zone unless necessary • Should entrance be necessary, ensure that equipment operator(s) are aware of your presence • Be aware of back-up alarms
Noise Exposure	• Section 7.4
Overhead Hazards	• Wear hard hat • Remove hazards when possible
Slips, Trips, Falls	• See Section 7.1
Chemical Exposure	• Wear PPE, See Section 9 & 10
Radiation Exposure	• Not applicable
Biological Exposure	• See Section 7.5
Surface Water (1)	• See Section 7.7
Traffic	• See Section 7.6
	•

Task: 4. Trash Removal	**PPE Level**: D	**Decon Required**: no
Description: START will collect trash and debris from the Oxnard Industrial Drain (OID). Access to the drain is by boat, captained by the U.S. Coast Guard. Trash and debris will be bagged and transferred to a disposal receptacle.		
Contaminant(s)of Concern: none		

Hazard	Controls
Noise Exposure	• Section 7.4
Overhead Hazards	• Wear hard hat • Remove hazards when possible
Slips, Trips, Falls	• See Section 7.1
Chemical Exposure	• Wear PPE, See Section 9 & 10
Radiation Exposure	• Not applicable
Biological Exposure	• See Section 7.5
Surface Water	• See Section 7.7 (access to OID is by boat only)
Sharps	• Use hand tools to avoid direct contact with sharp objects • Wear leather work gloves
	•

Task: 5. Soil Sampling	**PPE Level**: C	**Decon Required**: Yes, Section 11

Description: START will collect soil samples at multiple depths using a hand auger and plastic scoop, each sample will be screened using a XFR to determine need for further laboratory analysis. Soil will be disturbed and handled by START. Samples will be collected in the 1) berm area, 2)parking lot, 3)wetland. Analytes include Thorium and metals.
Contaminant(s)of Concern: Thorium and metals

Hazard	Controls
Heavy Equipment (1)	• Caution and awareness • Do not enter the work zone unless necessary • Should entrance be necessary, ensure that equipment operator(s) are aware of your presence • Be aware of back-up alarms
Noise Exposure	• Section 7.4
Overhead Hazards	• Wear hard hat • Remove hazards when possible • Remove hand auger flights prior to raising overhead to avoid hitting overhead utilities
Slips, Trips, Falls	• See Section 7.1
Chemical Exposure	• Wear PPE, See Section 9 • Air monitoring, See Section 10
Radiation Exposure	• Wear PPE, See Section 9 • Air monitoring, See Section 10
Biological Exposure	• See Section 7.5
Sprain Strains	• See Section 7.10
Underground Utilities	• See Section 7.9
Traffic	• See Section 7.6

Task: 6. Wipe Sampling	**PPE Level**: D	**Decon Required**: no
Description: START will collect wipe samples from various surfaces throughout the site by wiping a gauze or cotton pad over a surface. Samples will be collected in areas to confirm cross contamination has not occurred and measure the effectiveness of decontamination, exposure to contaminants is unlikely. Analytes include Thorium and metals.		
Contaminant(s) of Concern: none		

Hazard	Controls
Slips, Trips, Falls	• See Section 7.1
Chemical Exposure	• Not applicable
Radiation Exposure	• Not applicable
Overhead Hazards	• Wear hard hat • Remove hazards when possible • Remove hand auger flights prior to raising overhead to avoid hitting overhead utilities

7. Well Installation	**PPE Level**: D	**Decon Required**: no
Description: Direct Push Drilling and subsequent installation of temporary 1” wells		
Contaminant(s)of Concern: Alpha and Gamma Radiation and Metals (Various)		

Hazard	Controls
• Noise levels exceeding the OSHA PEL of 90 dBA are both a hazard and a hindrance to communication. • Exhaust (carbon monoxide) from the drill rig. • Overhead utility wires, i.e., electrical and telephone, can be hazardous when the drill rig boom is in the upright position. • Underground pipelines and utility lines can be ruptured or damaged during active drilling operations. • Moving parts, i.e. augers, on the drill rig may catch clothing. Free or falling parts from the cat head may cause head injury. • Moving the drill rig over uneven terrain may cause the vehicle to roll over or get stuck in a rut or mud. Be aware of hazards associated with moving heavy machinery and other associated injury. • High pressure hydraulic lines and air lines used on drill rigs are hazardous when they are in ill repair or incorrectly assembled. • On-site chemical and radiological hazards.	• Ear muffs and ear plugs effectively reduce noise levels. • Review the contaminants suspected to be onsite and perform air monitoring as required. Shut down drill rig and/or divert exhaust fumes. • To avoid contact with any overhead lines, the drill rig boom shall be lowered prior to moving the rig. Overhead utilities should be considered "live" until determined otherwise. • The rig mast shall not be erected within 20 feet of an overhead electrical line until the line is deenergized, grounded, or shielded and an electrician has certified that arcing cannot occur. • A thorough underground utilities search shall be conducted before the commencement of a drilling project. • All chains, lines, cables shall be inspected daily for weak spots, frays, etc. • Hard hats shall be worn at all times when working around a drill rig. Secure loose clothing. Check boom prior to approaching drill rig. • A site surveillance shall be performed by foot to choose a clear driving path. • All high pressure lines shall be checked prior to and during use. • Conduct radiation monitoring with direct reading instrument in work area.

8.Groundwater Sampling	**PPE Level**: D	**Decon Required**: no
Description: Sampling of monitoring wells		
Contaminant(s)of Concern: Alpha and Gamma Radiation and metals (various)		

Hazard	Controls
• Exposure to irritant and toxic plants such as poison ivy and sticker bushes may cause allergic reactions to personnel. • Native wildlife such as rodents, ticks, and snakes present the possibility of insect bites and associated diseases such as Lyme disease. • Surfaces covered with heavy vegetation and under growth may create a slipping, tripping, or falling hazard. • Slipping on wet, muddy surfaces. • Irritation from dust. • Heat stress/cold stress exposure. • Back strain from clearing vegetation or carrying instruments, tools, or equipment, or moving heavy objects. • Physical hazards associated with the use of tools, equipment, or instruments. • Crushing or pinching hazard due to placing or moving, tools, equipment, instruments, or heavy and/or bulky objects. • Driving vehicles or operating heavy construction equipment on uneven surfaces may create the possibility of the vehicle or heavy construction equipment rolling or getting stuck in mud or ditches, or of an accident due to flat tires or striking obstacles or vehicles. • Electrical hazards due to fallen utility lines. • Electrical hazards associated with the use of electrical equipment or as a result of power sources to run equipment, tools, or instruments, particularly around water or in wet conditions.	• Wear long sleeved clothing, pants and appropriate PPE to minimize contact with irritant and toxic plants and to protect against insect bites. Have available appropriate first aid for a person's known allergic reactions. • Avoid wildlife when possible. In case of an animal bite, perform first aid and the affected worker should seek medical attention. Perform a tick check after leaving a wooded or vegetated area. • Be alert and observe terrain while walking to minimize slips and falls. Wear steel toed boots with steel shanks to provide additional support and stability. • Slipping on wet surfaces can be prevented by wearing boots with good treads and being alert of where personnel are walking to decrease the chance of slipping. • Dust suppression techniques (i.e., wetting the soil with water) shall reduce dust exposure. • Implement heat stress management techniques such as shifting work hours, fluid intake, and monitoring personnel, especially for high risk workers. • Use proper lifting techniques to prevent back strain. Back strain can be prevented by frequent breaks in routine. Use slow, even, movements and proper lifting techniques (i.e., with the legs). • Personnel shall be familiar with the use, limitations, and operating characteristics of the tools, equipment, and instruments being used. Tools, equipment, and instruments shall be operated and properly maintained in accordance with the manufacturer's instructions. • Work gloves can reduce the incidence of hand injury and blisters. • Proper vehicle maintenance may prevent avoidable vehicle breakdowns in the field. In order to minimize accidents from uneven terrain, a site surveillance may be performed on foot to choose a clear driving path. • Seat belts shall be worn at all times when operating a vehicle.

• Water splashing in eyes during sampling. • Contact with or inhalation of potentially high concentrations of organic vapors in the well head. • Using substances that may be hazardous including organic, acidic, or basic chemicals. • On-site chemical and radiological hazards.	• Avoid contact with fallen utility lines. • To reduce the hazard of electric shock, grounded plugs shall be used when a power source is needed. A ground fault interrupter shall be used in the absence of properly grounded circuitry or when pumps are used around wet conditions. • Generators shall be used in dry areas, away from possible ignition sources. Do not stand in water or other liquids when handling equipment. Electrical equipment shall conform to OSHA 29 CFR 1910.303(a), 29 CFR 1910.305(a), and (f)(3). • Extension cords shall be protected or guarded from damage (i.e., cuts from other machinery) and maintained in good condition. • To minimize exposure to volatiles when the well head is initially opened, a monitoring instrument (i.e., photo ionization detector - PID) shall be placed near the opening to monitor organic levels. The breathing zone shall also be monitored. • Proper protective clothing such as a rubber apron, gloves, goggles and/or face shield shall be used when handling hazardous chemicals. A 15-minute eyewash and first aid kit shall be available. Hazardous chemicals shall be handled and stored in appropriate and clearly marked areas. • Review the potential contaminants that may be encountered and perform air monitoring as required. Proper personal protective equipment (PPE) and the appropriate level of respiratory protection shall be used.

6. Chemical Hazards

The following table lists the potential chemical hazards that may be encountered on this project either found at the site or brought on site by START personnel. The manufacturer's specific Material Safety Data Sheets or National Institute for Occupational Safety and Health (NIOSH) Chemical Safety Data Sheets for these chemical hazards are included as Attachment A. The proper air concentration should be selected for the occupational exposure limits, e.g. PEL should be either in ppm or mg/m^3.

Chemical Compound	PEL	TLV – TWA	IDLH	Photo Ionization Potential	Odor Threshold	Physical Description and Properties at 70 degrees F.	Routes of Exposure	Carcinogen	Max. Conc. Found On-site	Acute Symptoms
Organic Vapor (fuels)	300 ppm	300 ppm	NA	10.2eV	Low	Vapor	Inh	No		Anesthesia, irritation, narcosis.
Ammonia as N	50ppm or 35mg/m3	25ppm	300ppm	10.18eV	Low	Vapor	Inh, Abs, Ing. Con	No		Pulm edema, weak, head, nas
Chromium (metal, dust)	1.0mg/m3	0.5mg/m3	250mg/m3.	NA	None	Solid	Inh, Ing	Yes		Irrit eyes & skin
Cadmium (metal, dust)	0.005mg/m3	0.005mg/m3	9 mg/m3	NA	None	Solid	Inh, Ing	Yes		Pulm edema, head, chill, cough
Lead (metal, dust)	0.05mg/m3	0.05mg/m3	100 mg/m3	NA	None	Solid	Inh, Ing.	No		Weak, Insom
232-Thorium	rPRG: 3.1 piC/g 3 times background (24,000 cpm)*				None	Emission from solid	Inh, Ing	Yes	13.7 pCi/g	
Beryllium (metal)	0.002 mg/m3	0.002 mg/m3	4.0mg/m3	NA	None	Solid	Inh, Ing, Con	Yes		Pulm, cough, nasu
Copper (metal, dust)	1.0 mg/m3	1.0 mg/m3.	100 or mg/m3.	NA	None	Solid	Inh, Ing.	No		Irrit eyes, nose, memb

**Action level provided by Roger Shurer, CHP*
*** Value obtained from "Integrated Assessment Halaco Engineering Company," Weston Solutions, Inc. December 21, 2006*

7. Physical Hazards

Physical hazards during the course of operations pose a risk to site workers; the following list presents the potential physical hazards which may be encountered during operations and the recommend control measures. Physical hazards associated with specific tasks are outline in Section 5.

7.1 Slip, Trip, and Falls

Slip, trip and fall hazards may include slippery surfaces, uneven terrain, hoses, cords, and debris. Good housekeeping practices as outline in Section 4.1.3 will be implemented to minimize the risk of a slip, trip and fall injury. When working at unprotected heights (no guardrails) greater than 4 feet, Team 9 member will wear fall protection.

7.2 Heat Stress

When outdoor temperatures exceed 80ºF or Level A Personal Protective Equipment is in use, medical monitoring of personnel is required to prevent heat related illness such as heat stoke and heat exhaustion. The following action levels and control measures will be implemented:

	Heart Rate	Oral Temperature		Water Loss
Action Level	Exceeds 100 bpm following work cycle	Exceeds 99.6(ºF)	Exceeds 100.6	Weight reduced by 1.5%
Action	Rest, allow heart rate to return to normal and reduce work cycle by 1/3	Rest, shorten work cycle by 1/3	Remove from work cycle allow temperature to return to normal	Rest, re-hydrate

7.3 Cold Stress

Cold stress results in hypothermia or frostbite. To prevent cold stress, the Team 9 member should only work in cold temperature when protective clothing is available. Team 9 member should cease work and redress when clothing becomes wet. The buddy system will be implemented when risk of cold stress exists.

7.4 Noise

Exposure to noise results in hearing loss. Hearing is monitored annually as part of the Team 9 Medical Surveillance Program (Section 7). The 8 hour PEL for noise exposure is 90 dBA. Team 9 members are unlikely to work is conditions where persistent noise exists above the PEL, however hearing protection in the form of moldable ear plugs or ear muffs will be provided to Team 9 members when the risk of noise exposure exists.

7.5 Biological

Biological hazards may include insect bites and stings, snake and spider bites, exposure to poison ivy or poison oak, or exposure to blood borne pathogens. In addition to covering exposed skin, Team 9 members working in areas where biological hazards exist will be equipped and trained to administer basic first aid for stings, bites and exposure to poison ivy and oak. Team 9 members will practice *Universal Precautions* when treating first aid injuries and where exposure to blood borne pathogens exists.

7.6 Traffic

Automotive or heavy equipment traffic poses a stuck by and pinch hazard. High visibility vests will be worn by Team 9 members working in areas where traffic exists. In addition, cones or delineators will be used to mark the work zone and prevent unauthorized vehicles or equipment from entering.

7.7 Surface Water

When working on or near surface water hazards include falling into water and cold stress from wet and damp clothing. Team 9 members working aboard vessels are required to wear United States Coast Guard approved personal floatation devices. Team 9 members will use keep hands/fingers inside of vessel when approaching docks, pilings and other stationary objects to prevent pinching fingers and hands. Reaching over the side of the boat to retrieve debris is permitted as long as balance is maintained and no Team 9 member is in danger of falling overboard. When working near the edge of surface water, Team 9 members will exercise caution and awareness of ledges, practice good housekeeping to remove trip hazards and slippery surfaces.

7.8 Radiation Hazards

Radiation poses a series risk to Team 9 members. Team 9 members will conduct an initial survey of the work zone. Action levels and appropriate actions are outlined in Section 10.1. In addition, all Team 9 members working on a hazardous waste sites will wear thermoluminescent dosimetry (TLD) badges to measure personal exposure to radiation.

7.9 Overhead/Underground Utilities

Overhead and underground utilities will be identified prior to the start of operations. When feasible, utilities maybe moved, marked or de-energized to reduce the risk of damage or injury when struck. When work must be preformed around utilities, the equipment operator will proceed with caution and use a spotter. Pot-holing or another technique may be employed when un-located underground pipelines exist.

USA Ticket completion date: March 07, 2007
USA Ticket for Smelter side radiation investigation:

7.10 Sprains, Strains and Ergonomic Hazards

All equipment must be operated as designed; modifying equipment or using it improperly may result in personal injury. Proper lifting technique must be used to
Prevent personal injury, the buddy system will be implemented for heavy loads.

7.11 Flammable/Combustible Liquids and Solids

All flammable or combustible liquids and solids shall be handled and labeled in accordance with state and federal fire codes and regulations. Liquids shall be stored and transported in approved United States Department of Transportation containers. Spill prevention and control measures shall be implemented whenever liquids are being handled or stored. A fire extinguisher (ABC rated) will be immediately available for use in the area of flammable or combustible materials.

Note: A binder containing the applicable safety management standards is located in the response vehicle. Review the applicable standard and implement the required procedures to minimize the risk of injury.

8. Confined Space

A confined space is a space that is large enough for personnel entry with limited or restricted means for entry or exit, and is not designed for continuous human occupancy.

Permit-required confined space hazards include risks of asphyxiation; fire or explosion; chemical exposure; engulfment or drowning; electrocution; or dismemberment. Examples include, but are not limited to, sewers, utility vaults, tanks, sump pits, and excavations where there is the potential for atmospheric hazards.

A non-permit-required space is a confined space that does not present any serious hazards, nor will the work performed therein create a hazardous condition.

Confined space present: ☐ Yes ☒ No

9. Personal Protective Equipment (PPE)

9.1 Levels of Protection

LEVEL D:

Note: Level D may consist of regular work clothing, hard hat and safety glasses. The following modifications may be implemented to avoid soiling of clothing.

☒ **Applicable** ☐ **Possible** ☐ **Not Applicable**

Outer Suit Type: Tyvek Coverall
Outer Glove Type: Nitrile
Outer Protective Boot Covers: Latex booties over Steel Toed Boots

☐ Hearing Protection ☐ Face Shield ☒ Hard Hat ☐ Two-way radio communications
☒ Other: Cell phones (support zone only)

LEVEL C:

Note: Assistance in the selection of appropriate respirator cartridges can be found in the respirator manufacturer's website.

☒ **Applicable** ☐ **Possible** ☐ **Not Applicable**

Air Purifying Respirator (APR) with OV/HEPA-P100 Cartridges

Inner/Outer Suit Type: Hooded Tyvek taped at wrist, zipper, and top of booties
Inner/Outer Glove Type: Nitrile inner/butyl outer
Outer Protective Boot Covers: Latex booties over Steel Toed Boots

☐ Hearing Protection ☐ Face Shield ☒ Hard Hat ☐ Two-way radio communications
☒ Other: Cell phones (support zone only)

Comments: Per a conversation between OSC Robert Wise and Greg Dempsy- EPA Radiation specialist, respirators are not necessary for this task. However respirators are being worn as a precautionary measure.

9.2 Rationale for Upgrade

General Action Levels for upgrade of PPE are provided below. The action levels that will be used for this scope of work are presented in Section 10.

Level C: There are unknown organic vapors from weathered fuels in the breathing zone that range between one to fifty parts per million above the ambient background concentration.
or
Radiation levels exceed 3 X background,

or
A specific airborne contaminant is in excess of its Permissible Exposure Limit (PEL), Threshold Limit Value (TLV), or Short Term Exposure Limits (STEL). However, the contaminant concentration does not exceed the capability of the respirator, e.g. maximum use concentration or cartridge limits.

Level B: The oxygen concentration is 20% or less.
or:
Unknown organic vapors in the breathing zone that are at a concentration at least five hundred (500) parts per million above the ambient background concentration
or
Radiation levels exceed 30 X BG,
or
A specific airborne contaminant is in excess of its Immediately Dangerous to Life or Health (IDLH) level but does not represent a skin hazard.

Level A: There are unknown organic vapors in the breathing zone that are at a concentration greater than 500 parts per million,
or
Radiation levels exceed 30 X BG**,**
or
IDLH conditions through skin exposure are possible.

10. Air Monitoring

10.1 Real-time Air Monitoring

All instrumentation must be calibrated in accordance with manufacturer's recommendations. Readings must be taken with sufficient frequency to ensure the safety of on-site personnel and the results are to be logged in a log book. At a minimum, monitoring must be conducted when work begins in a different area of the site or when site conditions change. Hazard action guides are provided in the table below. START team members have undergone training and use on a regular basis of the Ludlum Alpha Meter. The Ludlum Alpha Meter detects to 1 count per minute of alpha radiation which is appropriate for the site conditions.

In addition, START team members were trained on-site to monitor radiological hazards by the United States Environmental Protection Agency (USEPA) Radioactive Emergency Response Team (RERT).

INSTRUMENT	ACTION LEVELS	ACTIONS

Combustible gas indicator – fire and/or explosion conditions	>10% LEL	Potential Explosion hazard. Withdraw from area immediately and contact H&S Officer.
Oxygen level indicator	< 19.5% 19.5-23.5% > 23.5%	Monitor wearing SCBA. Note: Combustible gas readings not valid in atmosphere < 19.5% oxygen. Continue monitoring with caution. SCBA not needed based only on oxygen content. Potential Explosion hazard. Withdraw from area immediately and contact H&S Officer.
Radiation survey instrument (Ludlum 2360 Alpha detector)	Background 3 X background (24,000 cpm*)	Continue monitoring. Level C, or withdraw from area immediately and contact H&S Officer
Photoionization or flame ionization detector – fuel organic vapors	> 50 PID units above background ≥ 500 PID units above background > 500 PID units above background, and skin hazard	Level C Protection. Level B Protection Level A Protection
Ammonia Detection – Area Rae	> 25 ppm > 250 ppm	Level C Protection. Level B Protection

**Action level provided by Roger Shurer, CHP*

10.2 Area and Personal Air Sampling

Area or personal air sampling may be performed for chemical contaminants to document site conditions instead of monitoring if there is no real time direct reading instrumentation technology available for the chemical(s) of concern.

Personal dosimetry will be performed in order to documents the adequacy of radiological protection on the site.

11. Decontamination Procedures

Although site contamination is reported to be minimal, a decontamination station will be set up adjacent to intrusive activities which may generate airborne contamination. Modification to the procedure described below maybe authorize by the Site Safety Officer to accommodate site conditions and activities.

ALL EQUIPMENT AND PERSONNEL MUST BE DECONTAMINATED PRIOR TO LEAVING THE SITE.

Equipment such as air monitors will be bagged whenever feasible to prevent contamination.

Decontamination procedures for this site include:

1. Deposit equipment on site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool down station may be set up within this area.
2. Full body alpha radiation scans will be performed upon leaving the sampling work zone. If an alpha source is detected a piece of tape will be applied to the PPE prior to removal to encapsulate the alpha source. Also notify the site H&S Officer.
3. Remove tape around boots and gloves and deposit in plastic liner.
4. Remove boot covers and deposit in plastic liner.
5. Remove outer gloves and deposit in plastic liner.
6. Remove hard hat and eye protection. Wash and sanitize at least daily.
7. Remove tyvek coverall and deposit in plastic liner.
8. Wipe down the respirator exterior with a wet paper towel, remove and deposit in plastic liner. Avoid touching face with fingers. Respirators shall be washed in a sanitizing solution (or equivalent), rinsed with potable water and allowed to air dry at the end of each day.
9. Remove inner gloves and deposit in plastic liner.
10. Wash hands, face and any other potentially contaminated areas with a potable water/mild soap solution followed by a potable water rinse.
11. Shower and launder personal clothing separately as soon as possible upon completing daily activities.

12. Emergency Procedures/Site Control Information

12.1 Local Resources (List each telephone number; not all areas use 911).

Ambulance:	911 (verify prior to work)
Fire Department:	City of Oxnard Fire Station , 805-385-7722
Police:	805-385-7722
Poison Control:	1-800-8POISON
Hospital:	Ventura County Medical Center, 805-385-8675
Address:	1400 Vanguard Drive, Suite C Oxnard, CA 93033-2402
Directions to the Hospital from the Site:	See Appendix A, Figure 2

Note: Contact hospital to confirm medical capability to treat chemical exposures.

Spill Containment: Not Applicable

12.2 Other Emergency Information

Decon Water Supply Source: Water bottles
On-site Telephone Location and Number, if applicable: USEPA OSC Robert Wise 562-889-2572
Base Radio Location and Channel Number:
Evacuation Route: Indicated on the Site Map
Head Count Area: Indicated on the Site Map

Emergency Equipment: First Aid Kit is available in all START vehicles
Each START member has own cell phone

12.3 Emergency Contacts

Name	Cell Number	Office Number
Shelley Brown	(415) 828-9331	(562) 989-8494
Darlene McCray	(415) 830-7391	(415) 243-3848
Chad Gibson	(310) 894-3494	(562) 989-8494

For technical questions related to health and safety contact Shelley Brown, 415-828-9331. You can also contact Richard Renzi, Director of Health and Safety for Metcalf & Eddy at 781-224-6450 (work), 1-800-532-5870 (pager), 781-266-7472 (cell) or 978-475-0190 (home).

If an injury occurs notify Team 9 lead person Des Garner at (415) 896-5858 for potential workers compensation claims and fill out an injury incident report. Des Garner will perform appropriate notification of Team 9 employees.

12.4 Site Control

Site entry procedure:

All personnel must complete the attached control log entry and exit of the site. All persons must provide documentation of training, respirator fit test, and medical eligibility to gain access to the Exclusion Zone.

The command post it located on the site map.

Access corridors will be established based on daily activities. This location will be upwind of the Exclusion Zone. No unauthorized personnel will be allowed on site.

Control boundaries will be established, and the Exclusion Zone, Contamination Reduction Zone, and Support Zone will be identified and designated. These will be site specific and based on local conditions, prevailing wind direction, and physical conditions, as well as any other hazards present, and are shown on Figure 1 and/or are as follows:

(TO BE ADDED ON SITE WHEN ZONES ARE SET UP) (Describe boundaries and/or attach map of controlled area).

_____

_____

_____

_____

_____

Personnel in the Exclusion Zone should remain in constant communication with personnel outside the Exclusion Zone. **Radios are required if visual contact is not possible. The "Buddy System" will be used at all times.**

Three blasts on the car horn is the emergency signal for all personnel to leave the Exclusion Zone.

The following hand signals will be used in case of radio communications failure:

Hand gripping throat: ..... Out of air/can't breathe
Grip partner's wrist or both hands around waist: Leave area immediately
Hands on top of head: ..... Need assistance
Thumbs up: ..... Okay; I am all right; I understand

- Employee Acknowledgment -

I hereby certify that I have read, understand, and will comply with the safety and health guidelines contained in this Site Specific Safety and Health Plan for this project:

Name	Signature	Date

Plan Reviewed and Authorized By:

Shelley Brown, MPH **Date:** May 30, 2007
Health and Safety Representative

Joseph E Sanders **Date:** May 31, 2007
Joe Sanders, CIH

Daily Site Control Log

Project Name: Halaco Metals

Date	Name	Signature	Affiliation	Time In	Time Out

FIGURE 1

Site Map

Figure A
Sample Location Map

Halaco Engineering, Inc
Proposed Soil Boring Locations
Oxnard, California
May 26, 2007

Approximate Area of Concern

Proposed Boring Location

FIGURE 2

Map and Route to Hospital

EPA Facts About Thorium July 2002

What is thorium?

Thorium is a naturally occurring radioactive metal that is found at low levels in soil, rocks, water, plants and animals. Almost all naturally occurring thorium exists in the form of either radioactive isotope thorium-232, thorium-230 and thorium-228. There are more than 10 other thorium isotopes that can be artificially produced. Smaller amounts of these isotopes are usually produced as decay products of other radionuclides and as unwanted products of nuclear reactions.

What are the uses of thorium?

Thorium is used to make ceramics, lantern mantles, welding rods, camera and telescope lenses, and metals used in the aerospace industry.

How does thorium change in the environment?

Thorium-232 is not a stable isotope. As thorium-232 decays, it releases radiation and forms decay products which include radium-228 and thorium-228. The decay process continues until a stable, nonradioactive decay product is formed. In addition to thorium-232, thorium-228 is present in background. Thorium-228 is a decay product of radium-228 and thorium-228 decays into radium-224.

The radiation from the decay of thorium and its decay products is in the form of alpha and beta particles, and gamma radiation. Alpha particles can travel only short distances and cannot penetrate human skin. Beta particles are generally absorbed in the skin and do not pass through the entire body. Gamma radiation, however, can penetrate the body.

The half-life of thorium-232 is very long at about 14 billion years. Due to the extremely slow rate of decay, the total amount of natural thorium in the earth remains fairly constant, but it can be moved from place to place by natural processes and human activities.

How are people exposed to thorium?

Since thorium is present at very low levels almost everywhere in the natural environment, everyone is exposed to it in air, food, and water. Normally, very little of the thorium in lakes, rivers, and oceans is absorbed by the fish or seafood that a person eats. The amounts in the air are usually small and do not constitute a health hazard.

Exposure to higher levels of thorium may occur if a person lives near an industrial facility that mines, mills or manufactures products with thorium.

Thorium-232 on the ground is of a health risk because of the rapid build up of radium-228 and its associated gamma radiation. Thorium-230 is part of the uranium-238 decay series. Thorium- 230 is typically present with its decay product radium-226 and it

is therefore a health risk from gamma radiation from radium decay products, lung exposure from radon gas and its decay products, and inhalation and ingestion exposure.

How does thorium get into the body?

Thorium can enter the body when it is inhaled or swallowed. In addition, radium can come from thorium deposited in the body. Thorium enters the body mainly through inhalation of contaminated dust. If a person inhales thorium into the lungs, some may remain there for long periods of time. In most cases, the small amount of thorium left in the lungs will leave the body in the feces and urine within days.

If thorium is swallowed in water or with food, most of it will promptly leave the body in the feces. The small amount of thorium left in the body will enter the bloodstream and be deposited in the bones, where it may remain for many years.

Is there a medical test to determine exposure to thorium?

Special tests that measure the level of radioactivity from thorium or thorium isotopes in the urine, feces, and exhaled air can determine if a person has been exposed to thorium. These tests are useful only if taken within a short period of time after exposure. They require special equipment and cannot be done in a doctor's office.

How can thorium affect people's health?

Studies of workers have shown that inhaling thorium dust will cause an increased risk of developing lung disease, including lung cancer, or pancreatic cancer. Liver disease and some types of cancer have been found in people injected in the past with thorium in order to take special X-rays. Bone cancer is also a potential health effect due to the storage of thorium in the bone.

What recommendations has the Environmental Protection Agency made to protect human health?

Please note that the information in this section is limited to recommendations EPA has made to protect human health from exposure to thorium. General recommendations EPA has made to protect human health, which cover all radionuclides including thorium, are summarized in the Introduction section of this booklet.

For uranium mill tailing sites, EPA has established 5 picocuries per gram (pCi/g) of radium as a protective health based level for the cleanup of the top 15 centimeters of soil. Since thorium decays into radium, these regulations for radium under 40 CFR Part 192.12 have often been used as ARARs at Superfund sites for thorium contaminated soil. The EPA OSWER Directive 9200.4-25, "Use of Soil Cleanup Criteria in 40 CFR Part 192 as Remediation Goals for CERCLA sites" provides guidance regarding when 5 pCi/g of thorium is an ARAR or otherwise recommended cleanup level for any 15 centimeters of subsurface thorium contaminated soil other than the first 15 centimeters.

If regulations under 40 CFR Part 192.12 are an ARAR for radium in soil at a Superfund site, then NRC regulations for uranium mill tailing sites under 10 CFR Part 40 Appendix A, I, Criterion 6(6) may possibly be an ARAR at the same site. Criterion 6(6) requires that an estimate be made of the level of radiation, called a "benchmark dose," that an individual would receive after that site was cleaned up to the radium soil regulations under 40 CFR Part 192.12. This benchmark dose then becomes the maximum level of

radiation that an individual may be exposed to from all radionuclides, except radon, in both the soil and buildings at the site. The EPA OSWER Directive 9200.4-35P, "Remediating Goals for Radioactively Contaminated CERCLA Sites Using the Benchmark Dose Cleanup Criterion 10 CFR Part 40 Appendix A, I, Criterion 6(6)" provides guidance regarding how Criterion 6(6) should be implemented as an ARAR at Superfund sites, including using a radium soil cleanup level of 5 pCi/g in both the surface and subsurface when estimating a benchmark dose.

EPA has established a Maximum Contaminant Level (MCL) of 15 picocuries per liter (pCi/l) for alpha particle activity, excluding radon and uranium, in drinking water. Thorium would be covered under this MCL. For more information about how EPA addresses thorium at Superfund sites, please contact either:

EPA's Superfund Hotline 1-800-424-9346 or 1-800-535-0202or EPA's Superfund Radiation Webpagehttp://www.epa.gov/superfund/resources/radiation

ATTACHMENT B

Revision Log

Revision Log, Halaco Metals

Date	Description	Approval

3/20/07	Updated Section 5 (Task Hazard Analysis for new tasks	Joe Sanders and Shelley Brown
4/30/07	Added JHA to Section 5 for Direct Groundwater Well Installation	Joe Sanders and Shelley Brown

ATTACHMENT A

Material Safety Data Sheets
and/or
NIOSH Chemical Safety Data Sheets

HALACO ENGINEERING COMPANY

ATTACHMENT D

SAMPLING PLANS

EPA Emergency Response Section (ERS) and Superfund Technical Assessment and Response Team (START)

Emergency Response and Time Critical Quality Assurance Sampling Plan for Air Sampling

Response Location: Halaco
6200 Perkins Road, Oxnard, CA

Date: February 1, 2007

Prepared by: Chad Gibson

Reviewed by: Howard Edwards

Approved by: Rob Wise

This sampling plan was prepared and delivered to the EPA OSC (select one):
X Prior to Sampling **Post Sampling (within one month of sampling)**

This emergency sampling plan is intended to be used in conjunction with the EPA's Region 9 Emergency Response Section's Generic Data Quality Objectives (DQOs) for Emergency Responses and Time Critical Evaluations. This sampling plan has been designed to assist field responders in their preparation for collecting, analyzing, shipping, storing and handling samples collected during an emergency response or quick turn around sample events. The use of this generic sampling plan will involve forethought and planning that should help direct the sampling and analytical work. It is meant to be used in the case of emergency responses or time-critical responses when sampling teams may not have the opportunity to write a more thorough sampling plan. Sampling teams should always reference standard quality procedures, standard operations procedures, standard methods for sampling and analytical guidance.

The development of this generic plan will improve the documentation, communication, planning, and overall quality associated with the sampling and analysis by:

1) encouraging field teams to consider their goals and objectives before the generation of environmental data,
2) documenting predetermined information in a standardize format,
3) increasing the communication between sampling personnel and decision makers, and
4) detailing expectations and objective before samples are collected.

1.0 Introduction and Background. *Describe the site and specify the geographic boundaries for the site and any specific areas of concern. What is the problem, what precipitated the response, which agencies and other entities (e.g., contractors) are on site, who has taken the lead for the response and for environmental clean-up actions?*

Halaco Engineering Co. (Halaco) is located at 6200 Perkins Road, Ventura County, Oxnard, California. The Halaco site consists of two parcels of land separated by the Oxnard Industrial Drain (OID). A former smelter consisting of 15 acres is located on the east side of the OID and a waste disposal area (including a waste management unit [WMU]) consisting of 28 acres is located on the west side of the OID. The OID drains to the Pacific Ocean, approximately 300 feet to the south. Smelter operations took place for approximately 40 years. Some waste material generated during the smelting process was used as fill material for expansion and creation of concrete structures. Currently the smelter area consists of several abandoned concrete structures and large paved and unpaved surfaces. The responsible party (RP) conducted a stabilization effort to consolidate all the smelter waste material into one building. The waste disposal area consists of a disputed wetlands and a large WMU. This Air ER QASP will focus on the WMU.

The Halaco site was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCIS) on November 1, 1979. U.S. EPA completed a preliminary Assessment/Site Inspection (PA/SI) on April 1, 1983 and an Expanded Site inspection (ESI) on August 7, 1992. In 2006, U.S. EPA conducted a removal assessment and an Integrated Assessment (IA). Historical data from these reports indicate the presence elevated concentrations of metals and radioactive materials in the waste material in the waste disposal area and the smelter. The historical data indicates that these contaminants have migrated and will continue to migrate to the adjacent soils, wetlands, groundwater, and surface water.

The U.S. EPA has elected to mitigate these concerns by implementing and engineering grading and stormwater runoff plan for the waste disposal area and securing of the wastes that are stored on the smelter property.

2.0 Objectives. *Brief statement on the general project objective. What is the overall goal or objective? Specific objectives are summarized in Table D.*

During all mitigation efforts conducted at the site START will perform perimeter air monitoring and sampling to determine if airborne waste material will migrate offsite**.** START will collect air samples for metals and radionuclides (thorium series). START will also use Data Ram dust particulate monitors to collect real time nuisance dust concentrations at the air monitoring locations. Samples will be collected everyday that construction activities take place. During the first week of work samples will be submitted from each sample location everyday. After the first week one sample from each location will be submitted for analysis. The sample selected for analysis will be from the day with the highest Data Ram dust particulate reading. A total of 4 samples will be submitted per week excluding background. A site specific background will be established for site comparison purposes.

An Area Rae will be used to assess the release of Ammonia from the WMU during all construction activities.

2.1 Data Use Objectives. (How will the data be used?)

Data that are generated will be used: (Select Appropriate Boxes)

1	X	To compare with site-specific action levels or risk-based action levels (e.g., EPA PRGs) to determine if a chronic health threats exist.
2	□	To compare with site-specific action levels or risk-based action levels (e.g., RELs or MRLs) to determine if an acute health threats exist.
3	X	To compare to an established background level or with collected background sample(s).
4	□	To assist with determining the area of impact due to a hazardous material release.
5	□	To assist in the identification of the potential source of an airborne contaminant or odor.
6	X	To compare with federal or state occupational health limits (On-Site Health and Safety Assessment data).
7	□	As definitive confirmatory data for non-definitive (screening) data.
8	□	To assist in with an off-site acute exposure assessment.
9	X	Other Establish a site specific background
10	X	To assist in the selection definitive laboratory sample for analysis

2.2 Sampling Objectives. (What are you proposing to do?)

1	X	Air monitoring (real-time) within the area of concern to determine contamination levels.
2	□	Air sampling within the area of concern to determine contamination levels.
3	X	Perimeter air sampling to determine contaminant concentration levels

4 X Perimeter air monitoring (real-time) to determine contaminant concentration levels.

5 □ Personal air sampling of on-site personnel.

6 □ Personal air monitoring of on-site personnel.

7 X Down-wind air monitoring

8 X Down-wind air sampling

9 □ Other objectives:

2.3 Data Type

In general, data type and data needs should be decided prior to data generation. The data can be generally divided into three categories: definitive methodology data (generally data generated using standardize methods), non-definitive methodology data (also referred to as screening data) and screening data with at least 10% definitive conformation. The generation of definitive data is preferable, however in emergency and time critical situations where definitive data is not available, non-definitive data should be generated. Note that the data type is not an indicator of precision, accuracy or documentation completeness, or quality! Reported data should be verified (by a party other than the laboratory) as meeting specific quality control and data category requirements by following a verification or validation procedure. Refer to the START or ERS Quality Assurance Plans for specific quality parameters and requirements.

Check appropriate box(es):

1 X Screening data will be generated. START will use Data Ram dust particulate monitors to provide screening data for nuisance dust generation. The data by itself may not be verifiable. **Due to the time critical situation, the data must be reported and may be used to make decisions.**

2a □ Screening data with at least 10 percent definitive data will be generated. Data using non-definitive analytical methodologies will be generated. **Due to the time critical situation, the data must be reported and may be used to make decisions prior to generation of definitive data.** The screening data by itself may not be verifiable. Screening data will be evaluated and reported with definitive data at a later time.

2b □ Screening data with 10 percent definitive data will be generated. Data using non-definitive analytical methodologies will be generated. **Data will not be reported until it is evaluated against definitive data.**

3a □ Definitive data will be generated. The sampling and analysis must be done on an emergency basis. **Due to the time critical situation, the preliminarily data must be reported and used for comparison without validation. Analytical data packages will be required**. **However, since the data was not used or intended for decision making, validation of the data package will not be performed.** (Document generic DQO deviation in Section 4.4)

3b X Definitive data will be generated. START will collect metals and radionuclide air samples. Screening data will be used to assist in the selection of samples to be analyzed. The sampling must be done on an emergency basis. **Due to the time critical situation, preliminary data must be reported and may be used to make decisions without validation. The generated analytical documentation packages will be reviewed and validated. Qualified data will be reported after validation.**

3c □ Definitive data will be generated. **Full documentation will be required. Analytical data packages will be reviewed and validated prior to reporting.**

2.4 Contaminants of Concern

Potential contaminants of potential concern (COPC), proposed analytical method, proposed action levels and available reporting limit are summarized in Table A.

Table A
Contaminants of Concern

Potential COC	Proposed Analytical Method	Proposed Action Level	Available Reporting Limit
Metals by ICP	NIOSH 7300	Background	
Radionuclides (Isotopic Thorium series)	HASL 300 Th-01-RC Mod	2x Background	
Respirable Particulates	MIE Data Ram with cyclone	PEL – See Below	
Amonia			
Other Data Collection Activity (non-chemical) *(circle all that apply)*	**GPS** Visual Interviews Magnetometer Other Geophysical Modeling **Photography** File Search		

Respirable Particulate action levels are calculated based on sample data from the U.S. EPA IA and ½ the OSHA

PEL. See table below for the calculations for respirable dust particulates.

Analyte	IA Highest Concentration (mg/kg)	PEL (mg/m^3)	1/2 PEL (mg/m3)	Proposed Action Level (mg/m3)
Barium	19,000	0.5	0.25	13.16
Aluminum	290000	15	7.5	25.86
Berryllium	170	0.002	0.001	**5.88**
Copper	12000	1	0.5	41.67
Lead	1100	0.05	0.025	22.73

Bolded is lowest action

3.0 Approach and Sampling Methodologies

3.1 Sampling Approach

Indicate sampling approaches to be used (select approach)

1 □ Due to the lack of site information the approach will be determined in the field based on professional judgment of START.

2 □ Due to the lack of site information the approach will be determined in the field based on professional judgment of US EPA.

3 □ Due to the lack of site information the approach will be determined in the field based on professional judgment of local regulator.

4 X Judgmental (Biased)
- X Near a point source
- X Down wind of a point source
- X Up wind of a point source
- X Other: START will collect air samples in the same locations that U.S. EPA collected air samples during the IA. There will be one up gradient, 2 close down gradient, and 1 distant down gradient. START will collect samples at these 4 locations for approximately 8 weeks.

5 □ Random

6 □ Grid

3.2 Field Sampling

3.2.1 Sampling Collection Equipment

Field equipment requirements are summarized in Table B.

Table B
Field Sampling Equipment

Analyses	Sampling Equipment	Quantity	Dedicated or Reusable	Decon Solution	Resource/ Contractor
VOA	□ SUMMAs or Equivalent				
	□ Cartridges for VOAs				
	□ Tedlar bags for VOAs.				
SVOAs.	□ Cartridges of SVOAs.				
	□ Cartridges of PAHs				
Pesticides	□ Cartridges of Pesticides				
Acids	□ Cartridges for Acid Gas samples				
Cyanide	□ Cartridges for Cyanide samples				
Inorganic Particulate	X MCE FilterCassettes for Total Inorganic samples.	180	Dedicated	NA	U.S.EPA
Radionuclide (thorium series)	X 4" filters	180	Dedicated	NA	U.S. EPA

Samples will be collected everyday that construction activities take place. During the first week of work samples will be submitted from each sample location everyday. After the first week one sample from each location will be submitted for analysis. The sample selected for analysis will be from the day with the highest Data Ram dust particulate reading. A total of 4 samples will be submitted per week excluding background.

3.2.2 Sample Location:

Indicate the Sampling Location Name and describe the rationale for the each sample location chosen. All sample locations correlate with the sample locations collected during the U.S. EPA IA. The same nomenclature will be used for consistency.

Air-1: Located up gradient of the WMU at the SW corner.

Air-2: Located down gradient on the north side of the WMU

Air-3: Located down gradient on the east side of the WMU

Air 4: Located approximately 1500 feet down gradient in the NE direction

BKG – Background sample located west of the site

Gradient is determined using onshore flow

Sketch a map of the site and any areas of concern. Indicate sampling locations or sampling areas in Figure A and included names. Use a scale that is meaningful for the sampling work covered under this plan. Sketch out where the samples will be collected and include sampling location names. Attach a local map to this plan if it is available.

Figure 1
Sample Location Map

See Attached.

3.2.3 Sample Containers and Preservatives

Containers and preservatives are summarized in Table C.

Table C **Containers and Preservatives**			
Analyses and Matrix	**Container Type (per sample)**	**Preservation Method**	**Holding Time**
Metals	MCE 37 mm, 5um tared filter in 2 part cassette	None	None
Radionuclides (thorium series)	4" diameter filter	none	none

.

3.2.4 Sample Labeling and Documentation

Sample Collection Media Labels

Sample labels will clearly identify the particular sample and should include the following:

1. Site name
2. Time and date samples were taken
3. Sample preservation
4. Analysis requested
5. Sample location and/or identification number

Sample labels will be securely affixed to the sample container.

Chain of Custody Record

A chain of custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a secured container sealed with a custody seal.

The chain of custody record should include (at minimum) the following:

1. Sample identification number
2. Sample information
3. Sample location
4. Sample date and time

5. Names(s) and signature(s) of sampler(s)
6. Signature(s) of any individual(s) with control over samples

Custody Seals

Custody seals demonstrate that a sample container has not been tampered with or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the samples= packaging, should be noted in the field book.

All sample documents will be completed legibly in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing the error. These include the logbooks, the chain of custody forms, this field QASP and any other tracking forms.

Field Logbook

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries and will include the following:

1. Site name and project number
2. Names of sampling personnel
3. Dates and times of all entries (military time preferred)
4. Descriptions of all site activities, especially sampling start and ending times. Include site entry and exit times
5. Noteworthy events and discussions
6. Weather conditions
7. Site observations
8. Identification and description of samples and locations
9. Subcontractor information and names of on-site personnel
10. Date and time of sample collections, along with chain of custody information
11. Record of photographs
12. Site sketches
13. Exact times of various activities and occurrences related to sampling
14. Deviations from standard procedures or methods and the rational for the deviations.

3.3 Analysis

3.3.1 Monitoring Equipment

Specify the monitoring equipment to be used. Check the appropriate boxes.

☐ Organic Vapor Monitor (OVM with PID)	☐ Organic Vapor Analyzer (FID)	☐ HCN Monitor
☐ H_2S Monitor	☐ CO monitor	☐ $S0_2$ Monitor
☐ Multiple Gas Analyzer	☐ O_2 monitor	☐ Combustible Gas
☐ Combustible Gas Meter:	X Aerosol and Particulate Monitor	☐ Radiation Meter Monitor
X Other: Area Rae with Ammonia sensor	☐ Other:	☐ Other:

3.3.2 Analysis Procedures and Summary

Check boxes of methods used for analysis. The analytical methods per sample and sample location are presented in Table D.

NIOSH Methods:

☐ Acids, Inorganic [7903]	☐ Hydrocarbons, aromatic [1501]	☐ PAHs (HPLC) [5506]
☐ Chromium, hexavalent [7600]	☐Hydrocarbons, halogenated [1003]	☐PAHs (GC) [5515]
X Elements (ICP) [7300]	☐ Hydrogen cyanide [6010]	☐ PNOS (0500)
☐ Asbestos & other fibers [7400]	☐ Trichloroethylene	

X *other:* HASL 300 Th-01-RC Mod (thorium series)

EPA Toxic Organic Methods:

☐ Volatile organic compounds (SUMMA Canisters, GC) [TO-14A/15]

☐ *other:* _____

3.4 Analytical Methods and Procedures

The analytical methods per sample and sample location are presented in Table D. General field QC considerations and requirements are presented in Table E.

Table D **Sample Locations and Data Objective** **Summary**					
Sampling Locations and Identifiers should correspond to location indicated on Figure A					
Sample Location(s) **(should match with 3.3.1 and Figure A)**	**Sample Identifiers**	**Analytical Method** **Refer to Table A**	**Data Use Objective(s)** **Refer to Section 2.1**	**Data Category** **Refer to Section 2.3**	**Samples Matrix** **(soil or water)**
Air-1	Air-1 –Date (Ex. Air-1-020707)	NIOSH 7300, HASL 300 Th-01-RC Mod	1,3,6	3b	Air
Air-2	Air-2 –Date	NIOSH 7300, HASL 300 Th-01-RC Mod	1,3,6	3b	Air
Air-3	Air-3 –Date	NIOSH 7300, HASL 300 Th-01-RC Mod	1,3,6	3b	Air
Air-4	Air-4 –Date	NIOSH 7300, HASL 300 Th-01-RC Mod	1,3,6	3b	Air
Air 1-4	Air-x-Date	Data Ram nuisance dust	10	1	Air
Background	BKG-Date	NIOSH 7300, HASL 300 Th-01-RC Mod	9	3b	Air

Add additional pages if necessary.

3.6 Quality Assurance and Quality Control

General field QA/QC considerations and requirements are presented in Table E.

Table E
Quality Control Samples and Data Quality Indicator Goals

QC Sample	Number/Frequency	Data Quality Indicator Goals & Evaluation Criteria	Comments/Exceptions *Site specific remarks:*
FIELD SPECIFIED QA/QC			
Background or reference sample	**At least one sample should be collected from an area believed to be unaffected by source contamination.**	**Source samples should be at least 3 times background.**	**Collect 1 background sample every other week** *:*
Field Blanks	**1 per SDG[1], per matrix, per method**	**Source samples should be at least 3 times the blank.**	**Filter blanks will be submitted with every sample shipment** *:*
Sampling Media	1 per SDG, per matrix, per method	Source samples should be at least 3 times the blank.	.NA *:*
Equipment Blanks	1 per SDG, per matrix, per method	Source samples should be at least 3 times the blank.	NA *:*
Field Duplicates or Replicates	1 per SDG, per matrix, per method	35% RPD[2]	As needed by sampling objectives. The procedure for collecting duplicate samples can greatly effect the reproducibility.NA *:*
SELECTED LABORATORY QA/AC			
Method Blank	1 per SDG, per matrix, per method	Stds and samples should be at least 3 times the blank.	Mandatory.
Matrix Spike	1 per SDG, per matrix, per method on field designated sample.	75 -125 %R	Designate sample on COC.
Matrix Spike Duplicate or Replicate	1 per SDG, per matrix, per method on field designated sample.	≤50 RPD for organics; ≤20 RPD for metals	Designate sample on COC.
Reference Standards	1 per SDG, per matrix, per method	75 -125 %R	If available.
Internal Standards	All samples	50 -200 %R	All GC/MS and some GC analyses only.
Laboratory Control Standards	1 per SDG, per matrix, per method	75 - 125 %R	Per method for organic analyses.

[1] SDG = Sample Delivery Group (Maximum 20 samples)
[2] RPD = Relative Percent Difference
[3] %R = Percent Recovery
Bold: Samples to be collected in this event

4.0 Project Organization and Responsibilities

4.1 Schedule of Sampling Activities

Sampling activities are summarized in Table F.

Table F **Proposed Schedule of Work For Soil/Water Sampling Activities**		
Activity	**Start Date**	**End Date**
START Perimeter Air Sampling	02/05/07	04/06/06
START Perimeter Air Monitoring	02/05/07	04/06/06

Add additional pages if necessary.

4.2 Project Laboratories

Laboratories used for this project are summarized in Table G.

Table G **Laboratories**	
Lab Name/ Location	**Methods**
GEL Laboratories, LLC 2040 Savage Road Charleston, SC 29407	NIOSH 7300, HASL 300 Th-01-RC Mod

Add additional pages if necessary.

4.3 Project Personnel and Responsibilities

Personnel and responsibilities are summarized in Table H.

Table H **Sample Team(s) Personnel**	
Personnel (Agency)	**Responsibility**
Mindy Song	START, Sampling, QA/QC
Chad Gibson/Jason Winkler	START PM, Sampling
Nicole Testa, Patrick Aiken, Jesse Hitchcock, Ben Simes	START Samplers

Add additional pages if necessary.

4.4 Modification or Additions to the Generic Data Quality Objective for Emergency and Time Critical Sampling

Project specific modification to the generic DQO statements for this are summarized in Table I. Also indicate which DQO step corresponds to the addition or modification.

Table I **DQO Modifications and Additions**	
Additions or Modifications to the Generic DQO Output Statements	**DQO Step**

Add additional pages if necessary.

EPA Emergency Response Section (ERS)
And Superfund Technical Assessment and Response Team (START)

Emergency Response and Time Critical
Quality Assurance Sampling Plan
For
Soil, Water and Miscellaneous Matrix Sampling

Response Location: Oxnard, California

(Site Name and TDD#) Halaco, T01-09-06-04-0007

Date: 03.05.2007

Prepared by: Nicole Testa

Reviewed by: Howard Edwards

Approved by:

This sampling plan was prepared and delivered to the EPA OSC (select one):
☒ **Prior to Sampling** ☐ **Post Sampling (within one month of sampling)**

This emergency sampling plan is intended to be used in conjunction with the EPA=s Region 9 Emergency Response Sections Generic Data Quality Objectives (DQOs) for Emergency Responses and Time Critical Evaluations. This sampling plan has been designed to assist field responders in their preparation for collecting, analyzing, shipping, storing and handling samples collected during an emergency response. The use of this generic sampling plan will involve forethought and planning that should help direct the sampling and analytical work. It is meant to be used in the case of emergency responses or time-critical responses when sampling teams may not have the opportunity to write a more thorough sampling plan. Sampling teams should always reference standard quality procedures, standard operations procedures, standard methods for sampling and analytical guidance.

The development of this generic plan will improve the documentation, communication, planning, and overall quality associated with the sampling and analysis by:

1) encouraging field teams to consider their goals and objectives before the generation of environmental data,
2) documenting predetermined information in a standardize format,
3) increasing the communication between sampling personnel and decision makers, and
4) detailing expectations and objective before samples are collected.

1.0 Introduction and Background. ***Describe the site and specify the geographic boundaries for the site and any specific areas of concern***. *What is the problem, what precipitated the response, which agencies and other entities (e.g., contractors) are on site, who has taken the lead for the response and for environmental clean-up actions?*

Halaco Engineerying Co (Halaco) is located at 6200 Perkins Road, Oxnard California. The Halaco Site consists of two parcels of land separated by the Oxnard Industrial Drain (OID). A former smelter consisting of 15 acres is located on the east side of the OID and a waste disposal area including a waste management unit consisting of 28 acres is located on the west side of the OID. Ormond Beach is located to the south of the smelter side and Perkins Road. A recent aerial photograph provided by Southern California Surveyors revealed a berm like feature on Ormond Beach. Visual inspection suggests that these materials may be similar to hazardous materials found on site. Additional investigation performed by the Radiation and Indoor Environmental National Laboratory indicated elevated levels of alpha and gamma radiation. Preliminary berm sampling was completed by START on February 19, 2007. Analytical results indicate metal and radiation concentration above residential preliminary remediation goals (rPRGs). To better delineate the horizontal and vertical extent for removal purposes this ERQASP for additional berm soil sampling has been prepared.

2.0 Objectives. *Brief statement on the general project objective. What is the overall goal or objective? Specific objectives are summarized in Table D.*

Soil sampling within the berm area and along Ormond Beach will be performed in order to delineate the horizontal and vertical extent of off-site impact. START along with the United States Coast Guard Pacific Strike Team (USCG PST) will collect soil samples every 50 feet along the berm. Two soil samples per location will be collected. One at surface level and a second when clean soil is perceived.

2.1 Data Use Objectives. (How will the data be used?)

Data that are generated will be used: (Select Appropriate Boxes)

1 ☒ To be compared with a background or reference sample(s).

2 ☐ To be compared with an available detection or quantification level.

3 ☒ To assist in determining the presence or absence of a hazardous material or substance at levels above an available detection or quantification level.

4 ☒ To assist with determining the area of impact due to a hazardous material release. (i.e., horizontal and lateral extent).

5 ☒ To be compared with site-specific action levels or risk-based action levels (e.g., EPA PRGs) to assist in determination if health threats exist.

6 ☐ As definitive confirmatory data for confirmation of non-definitive (screening) data.

7 ☐ Other objectives:

2.2 Sampling Objectives. (What are you proposing to do?)

1 ☒ Sampling to determine only the presence or absence of a hazardous substance within the area of concern.

2 ☐ Sampling to estimate:
contamination levels within the area of concern.
contamination area(s) within a site.

3 ☐ Sampling to determine the location of hot spots within the area of concern..

4 ☒ Surface soil sampling to estimate the lateral extent of contamination
of specific source area(s) or areas of concern
over entire site

5 ☒ Sub-surface sampling to estimate the vertical extent of contamination
G of specific source area(s) or areas of concern
G over entire site.

6 ☒ Sampling off site to determine: areas of concern and lateral impact off site.

2.3 Sample Matrices

1 ☒ Surface soils

2 ☒ Subsurface soil
Depth(s): when perceived clean.

3 ☐ Surface water

4 ☐ Groundwater
Depth(s):

5 ☐ Other aqueous matrices
Please specify:

6 ☐ Wipe samples

7 ☐ Biota
Please specify:

8 ☐ Other matrices:

Please note: Please use other QASPs for air and containerized samples.

2.4 Data Type

In general, data type and data needs should be decided prior to data generation. The data can be generally divided into three categories: definitive methodology data (generally data generated using standardize methods), non-definitive methodology data (also referred to as screening data) and screening data with at least 10% definitive conformation. The generation of definitive data is preferable, however in emergency and time critical situations where definitive data is not available, non-definitive data should be generated. Note that the data type is not an indicator of precision, accuracy or documentation completeness, or quality! Reported data should be verified (by a party other than the laboratory) as meeting specific quality control and data category requirements by following a verification or validation procedure. Refer to the START or ERS Quality Assurance Plans for specific quality parameters and requirements.

Check appropriate box(es):

1 ☐ Screening data will be generated. The data by itself may not be verifiable. **Due to the time critical situation, the data must be reported and may be used to make decisions.**

2a ☒ Screening data with at least 10 percent definitive data will be generated. Data using non-definitive analytical methodologies will be generated. **Due to the time critical situation, the data must be reported and may be used to make decisions prior to**

generation of definitive data. The screening data by itself may not be verifiable. Screening data will be evaluated and reported with definitive data at a later time.

2b ☐ Screening data with 10 percent definitive data will be generated. Data using non-definitive analytical methodologies will be generated. **Data will not be reported until it is evaluated against definitive data.**

3a ☐ Definitive data will be generated. The sampling and analysis must be done on an emergency basis. **Due to the time critical situation, the preliminarily data must be reported and used for comparison without validation. Analytical data packages will be required. However, since the data was not used or intended for decision making, validation of the data package will not be performed.** (Document generic DQO deviation in Section 4.4)

3b ☐ Definitive data will be generated. The sampling must be done on an emergency basis. **Due to the time critical situation, preliminary data must be reported and may be used to make decisions without validation. The generated analytical documentation packages will be reviewed and validated. Qualified data will be reported after validation.**

3c ☐ Definitive data will be generated. **Full documentation will be required. Analytical data packages will be reviewed and validated prior to reporting.**

2.5 Contaminants of Concern

Potential contaminants of potential concern (COPC), proposed analytical method, proposed action levels and available reporting limit are summarized in Table A.

Table A
Contaminants of Concern

Potential COC	Proposed Analytical Method	Proposed Action Level	Available Reporting Limit
Thorium and daughter products	DOE EML HASL-300, Th-01-RC Modified	rPRGs, ^{228}Th: 0.15 pCi/g ^{230}Th: 3.49 pCi/g ^{232}Th: 3.10 pCi/g	
Metals (excluding Mercury)	NIOSH 6010B Metals	rPRGs	
Other Data Collection Activity (non-chemical) *(circle all that apply)*	GPS Visual Interviews Magnetometer Other Geophysical Modeling Photography File Search		

Add additional pages if necessary.

3.0 Approach and Sampling Methodologies

3.1 Sampling Approach

Indicate sampling approaches to be used (select approach)

1 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of START.

2 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of US EPA.

3 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of local regulator.

4 ☐ Judgmental (Biased)

5 ☐ Random

6 ☒ Systematic

7 ☐ Transects

8 ☐ Search-Grid

If a search-grid, specify grid type (circle one): Square Triangle Rectangle

Size of contamination hot-spot to be detected:

Shape of hot-spot (circle one): Circle Elliptical Elongated-Elliptical

Required Grid Spacing:

Acceptable probability of missing hot-spot (circle one): 5 % 10 % 20% 40%

3.2 Field Analysis Equipment

Field analysis equipment requirements are summarized in Table B1.

Table B1 **Field Analytical Equipment**				
Analysis Equipment Specify the field analytical procedures to be used. Select the appropriate boxes.	**Model**	**Analyses**	**Matrix**	**Resource/Contractor**
☒ X-Ray Fluorescence (XRF) Device [for metals]	Niton	Metals	Soil	
☐ Lumex (XRF) Mercury Instrument				
☐ Oil Analysis Kit [for oils]				
☐ Immunoassay Test Kits [pesticides, oils, chlorinated substances]				
☐ Chlor-N-Soil/Chlor-N-Oil test kits[PCBs, chlorinated substances]				
☐ pH Meter				
☐ Other field test kits [for pesticides]				
☒ Radiation Meter (such as Victoreen)	Ludlum	Alpha radiation	soil	
☐				
☐				
☐				

3.3 Field Sampling Equipment

Field equipment requirements are summarized in Table B2.

Table B2
Field Sampling and Decontamination Equipment

Analyses and Matrix	Sampling Equipment	Dedicated or Reusable	Decontamination Solution	Resource/ Contractor
Soil Samples-surface	Shovels	Dedicated	n/a	
Soil samples-Below ground surface	Hand auger	Reusable	Alconox triple rinse followed by a nitric acid spray and final rinse.	

Add additional pages if necessary.

3.4 Field Methods and Procedures

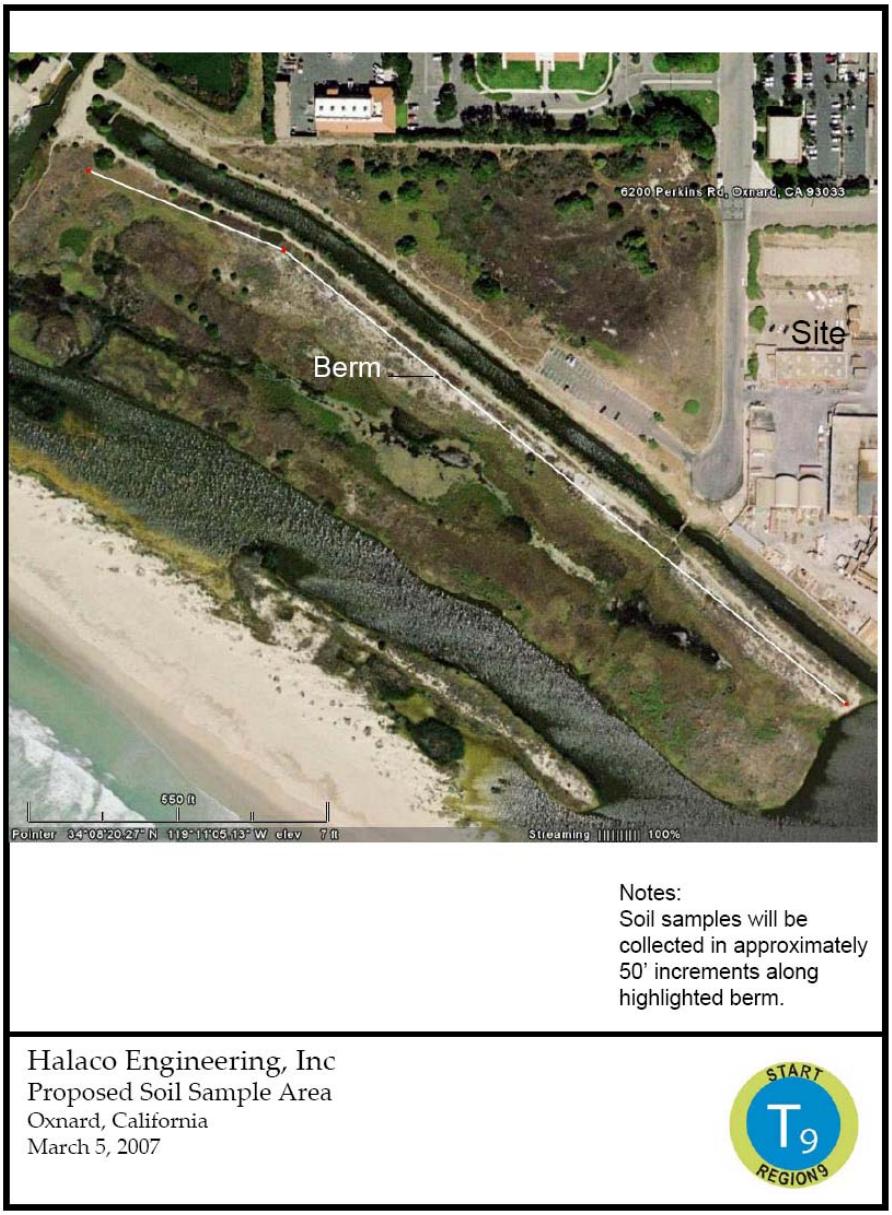
3.4.1 Sample Locations. Indicate the sampling location name, describe location, and indicate rationale for each sample location chosen.

At the request of OSC Robert Wise, soil samples will be collected in fifty foot increments (east to west) beginning at previously collected soil1-021707. Additional soil samples may also be collected in a north south direction based on field personnel's professional judgment. Soil samples will be numbered beginning with soil9 which will be the easternmost sample. Soil sample names will be followed by the date and depth. For example, soil sample 9 collected on March 7, 2007 at 10 feet below ground surface (bgs) will be named soil9-030707-10. It is estimated that soil samples will be collected in 35 locations (2 samples per location.)

Add additional pages if necessary.

Sketch a map of the site and any areas of concern. Indicate sampling locations or sampling areas in Figure A and included names. Use a scale that is meaningful for the sampling work covered under this plan. Sketch out where the samples will be collected and include sampling location names. Attach a local map to this plan if it is available.

Figure A
Sample Location Map



Add additional maps if necessary.

3.4.2 Sample Labeling and Documentation

Sample Jar Labels
Sample labels will clearly identify the particular sample and should include the following:

1. Site name
2. Time and date samples were taken
3. Sample preservation
4. Analysis requested
5. Sample location and/or identification number

Sample labels will be securely affixed to the sample container.

Chain of Custody Record
A chain of custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a secured container sealed with a custody seal.

The chain of custody record should include (at minimum) the following:

1. Sample identification number
2. Sample information
3. Sample location
4. Sample date and time
5. Names(s) and signature(s) of sampler(s)
6. Signature(s) of any individual(s) with control over samples

Custody Seals
Custody seals demonstrate that a sample container has not been tampered with or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the samples= packaging, should be noted in the field book.

All sample documents will be completed legibly in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing the error. These include the logbooks, the chain of custody forms, this field QASP and any other tracking forms.

Field Logbook

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries and will include the following:

1. Site name and project number
2. Names of sampling personnel
3. Dates and times of all entries (military time preferred)
4. Descriptions of all site activities, especially sampling start and ending times. Include site entry and exit times
5. Noteworthy events and discussions
6. Weather conditions
7. Site observations
8. Identification and description of samples and locations
9. Subcontractor information and names of on-site personnel
10. Date and time of sample collections, along with chain of custody information
11. Record of photographs
12. Site sketches
13. Exact times of various activities and occurrences related to sampling
14. Deviations from standard procedures or methods and the rational for the deviations.

3.4.3 Sample Containers and Preservatives

Containers and preservatives are summarized in Table C.

Table C
Containers and Preservatives

Analyses and Matrix	Container Type (per sample)	Preservation Method	Holding Time
Metals-soil	8 oz. jar	none	
Radiation- soil	8 oz. jar (same as radiation sample)	none	

Add additional pages if necessary.

3.5 Analytical Methods and Procedures

The analytical methods per sample and sample location are presented in Table D. General field QC considerations and requirements are presented in Table E.

Table D **Sample Locations and Data Objective** **Summary**					
Sampling Locations and Identifiers should correspond to location indicated on Figure A					
Sample Location(s) **(should match with 3.3.1 and Figure A)**	**Sample Identifiers**	**Analytical Method** **Refer to Table A**	**Data Use Objective(s)** **Refer to Section 2.1**	**Data Category** **Refer to Section 2.3**	**Samples Matrix**
To be determined					

Add additional pages if necessary.

3.6 Quality Assurance and Quality Control

General field QA/QC considerations and requirements are presented in Table E.

Table E
Quality Control Samples and Data Quality Indicator Goals

QC Sample	Number/Frequency	Data Quality Indicator Goals & Evaluation Criteria	Comments/Exceptions *Site specific remarks:*
FIELD SPECIFIED QA/QC			
Background or reference sample	At least one sample should be collected from an area believed to be unaffected by source contamination.	Source samples should be at least 3 times background.	Surface soil: up-slope. Surface water: upstream. Ground water: up-gradient. *:*
Field Duplicates or Replicates	1 per SDG, per matrix, per method	Water - 25% RPD[2] Soil - 35% RPD[2] Other - 35%	As needed by sampling objectives. The procedure for collecting duplicate samples can greatly effect the reproducibility. *:*
SELECTED LABORATORY QA/AC			
Method Blank	1 per SDG, per matrix, per method	Stds and samples should be at least 3 times the blank.	Mandatory.
Matrix Spike	1 per SDG, per matrix, per method on field designated sample.	75 -125 %R	Designate sample on COC.
Matrix Spike Duplicate or Replicate	1 per SDG, per matrix, per method on field designated sample.	≤50 RPD for organics; ≤20 RPD for metals	Designate sample on COC.
Reference Standards	1 per SDG, per matrix, per method	75 -125 %R	If available.
Internal Standards	All samples	50 -200 %R	All GC/MS and some GC analyses only.
Laboratory Control Standards	1 per SDG, per matrix, per method	75 - 125 %R	Per method for organic analyses.

[1] SDG = Sample Delivery Group (Maximum 20 samples)
[2] RPD = Relative Percent Difference
[3] %R = Percent Recovery

4.0 Project Organization and Responsibilities

4.1 Schedule of Sampling Activities

Sampling activities are summarized in Table F.

Table F Proposed Schedule of Work For Sampling Activities		
Activity	**Start Date**	**End Date**
Marking of soil sample locations	March 6, 2007	March 6, 2007
USA ticket meet and mark	March 7, 2007	March 7, 2007
Hand Augering and soil sample collection	March 7, 2007	March 9, 2007

Add additional pages if necessary.

4.2 Project Laboratories

Laboratories used for this project are summarized in Table G.

Table G Laboratories	
Lab Name/ Location	**Methods**
GEL/ Charleston, South Carolina	NIOSH 6010B/ HASL 300- Modified

Add additional pages if necessary.

4.3 Project Personnel and Responsibilities

Personnel and responsibilities are summarized in Table H.

Table H **Sample Team(s) Personnel**	
Personnel (Agency)	**Responsibility**
START	Hand Augering, Soil sampling and logging
USCG Pacific Strike Team	Hand Augering and Decon

Add additional pages if necessary.

4.4 Modification or Additions to the Generic Data Quality Objective for Emergency and Time Critical Sampling

Project specific modification to the generic DQO statements for this are summarized in Table I. Also indicate which DQO step corresponds to the addition or modification.

Table I **DQO Modifications and Additions**	
Additions or Modifications to the Generic DQO Output Statements	**DQO Step**

Add additional pages if necessary.

Notes:
Soil samples will be collected in approximately 50' increments along highlighted berm.

Halaco Engineering, Inc
Proposed Soil Sample Area
Oxnard, California
March 5, 2007

EPA Emergency Response Section (ERS) And Superfund Technical Assessment and Response Team (START)

Emergency Response and Time Critical Quality Assurance Sampling Plan For Soil, Water and Miscellaneous Matrix Sampling

Response Location: Oxnard, California

(Site Name and TDD#) Halaco, T01-09-06-04-0007

Date: 05.25.2007

Prepared by: Nicole Testa

Reviewed by: Howard Edwards

Approved by: Chad Gibson, Robert Wise

This sampling plan was prepared and delivered to the EPA OSC (select one):
☒ **Prior to Sampling** ☐ **Post Sampling (within one month of sampling)**

This emergency sampling plan is intended to be used in conjunction with the EPAs Region 9 Emergency Response Sections Generic Data Quality Objectives (DQOs) for Emergency Responses and Time Critical Evaluations. This sampling plan has been designed to assist field responders in their preparation for collecting, analyzing, shipping, storing and handling samples collected during an emergency response. The use of this generic sampling plan will involve forethought and planning that should help direct the sampling and analytical work. It is meant to be used in the case of emergency responses or time-critical responses when sampling teams may not have the opportunity to write a more thorough sampling plan. Sampling teams should always reference standard quality procedures, standard operations procedures, standard methods for sampling and analytical guidance.

The development of this generic plan will improve the documentation, communication, planning, and overall quality associated with the sampling and analysis by:

1) encouraging field teams to consider their goals and objectives before the generation of environmental data,
2) documenting predetermined information in a standardize format,
3) increasing the communication between sampling personnel and decision makers, and

4) detailing expectations and objective before samples are collected.

1.0 Introduction and Background. ***Describe the site and specify the geographic boundaries for the site and any specific areas of concern***. *What is the problem, what precipitated the response, which agencies and other entities (e.g., contractors) are on site, who has taken the lead for the response and for environmental clean-up actions?*

Halaco Engineering, Co (Halaco) is located at 6200 Perkins Road, Oxnard California. The Halaco Site consists of two parcels of land separated by the Oxnard Industrial Drain (OID). A former smelter consisting of 15 acres is located on the east side of the OID and a waste disposal area including a waste management unit consisting of 28 acres is located on the west side of the OID. Ormond Beach is located to the south of the smelter side and Perkins Road.

A preliminary investigation performed by ORIA suggested elevated gamma radiation in the southeast portion of the smelter side. A gamma radiation survey performed in April 2007 by the Superfund Technical Assessment and Response Team (START), under the guidance of the Palladino Company (TPC) revealed gamma radiation significantly above background in that area. This ERQASP has been developed to better define the vertical and horizontal extent of soil radiation impaction within this area of the Site.

2.0 Objectives. *Brief statement on the general project objective. What is the overall goal or objective? Specific objectives are summarized in Table D.*

A two-part radiological survey consisting of both a surface and subsurface investigation will be performed within the Area of Concern (AOC). Prior to the investigation, background measurements will be taken to establish action levels for each activity.

1. Surface investigation: The AOC (Figure 1) will be surveyed utilizing a sodium iodide probe for the detection of gamma radiation. This survey will attempt to establish the lateral extent of surface impaction.

2. Subsurface investigation:

   - Direct push borings: Approximately 18 direct push borings will be advanced to approximately 10' bgs, until clean native soil is observed or groundwater, whichever is deeper. Proposed boring locations are illustrated on Figure 1. Boring locations are subject to change based on the results of the surface investigation. All borings will undergo continuous core sampling and will be completed as temporary 1" radiation survey wells.
     - Up to 5 soil boring locations may be completed as temporary groundwater monitoring wells by setting 5' of .010 slotted PVC casing within the groundwater.
     - Groundwater monitoring wells will be developed by purging at least 10 well volumes and then allowed to sit for a minimum of 72 hours prior to sampling.
     - A groundwater sample will then be collected for radiation laboratory analysis.

   - Subsurface soil analysis: Collected sample cores resulting from the direct push drilling will undergo the following:
     - Visual Inspection
     - Geologic logging
     - Alpha Radiation Survey
     - Gamma Radiation Survey
     - Soil samples may be collected for:
       - X-Ray Fluorescence (XRF) analysis
       - Total metals (excluding mercury) laboratory analysis
       - Thorium series laboratory analysis.

   - Determination of the vertical extent of radiation impaction: A sodium iodide probe will be used to determine the vertical extent of gamma radiation contamination. The probe will be placed within the temporary wells to measure gamma radiation at various depths below ground surface. Any results significantly above background will be noted.

2.1 Data Use Objectives. (How will the data be used?)

Data that are generated will be used: (Select Appropriate Boxes)

1 ☒ To be compared with a background or reference sample(s).
2 ☐ To be compared with an available detection or quantification level.
3 ☒ To assist in determining the presence or absence of a hazardous material or substance at levels above an available detection or quantification level.
4 ☒ To assist with determining the area of impact due to a hazardous material release. (i.e., horizontal and lateral extent).
5 ☒ To be compared with site-specific action levels or risk-based action levels (e.g., EPA PRGs) to assist in determination if health threats exist.
6 ☐ As definitive confirmatory data for confirmation of non-definitive (screening) data.
7 ☐ Other objectives:

2.2 Sampling Objectives. (What are you proposing to do?)

1 ☐ Sampling to determine only the presence or absence of a hazardous substance within the area of concern.
2 ☒ Sampling to estimate:
contamination levels within the area of concern.
3 ☐ Sampling to determine the location of hot spots within the area of concern..
4 ☒ Surface soil sampling to estimate the lateral extent of contamination
of specific source area(s) or areas of concern
5 ☒ Sub-surface sampling to estimate the vertical extent of contamination
of specific source area(s) or areas of concern.
6 ☐ Sampling off site to determine: areas of concern and lateral impact off site.

2.3 Sample Matrices

1 ☒ Surface soils

2 ☒ Subsurface soil
Depth(s): when perceived clean.

3 ☐ Surface water

4 ☒ Groundwater
Depth(s):

5 ☐ Other aqueous matrices
Please specify:

6 ☐ Wipe samples

7 ☐ Biota
Please specify:

8 ☐ Other matrices:

Please note: Please use other QASPs for air and containerized samples.

2.4 Data Type

In general, data type and data needs should be decided prior to data generation. The data can be generally divided into three categories: definitive methodology data (generally data generated using standardize methods), non-definitive methodology data (also referred to as screening data) and screening data with at least 10% definitive conformation. The generation of definitive data is preferable, however in emergency and time critical situations where definitive data is not available, non-definitive data should be generated. Note that the data type is not an indicator of precision, accuracy or documentation completeness, or quality! Reported data should be verified (by a party other than the laboratory) as meeting specific quality control and data category requirements by following a verification or validation procedure. Refer to the START or ERS Quality Assurance Plans for specific quality parameters and requirements.

Check appropriate box(es):

1 ☐ Screening data will be generated. The data by itself may not be verifiable. **Due to the time critical situation, the data must be reported and may be used to make decisions.**

2a ☒ Screening data with at least 10 percent definitive data will be generated. Data using non-definitive analytical methodologies will be generated. **Due to the time critical situation, the data must be reported and may be used to make decisions prior to**

generation of definitive data. The screening data by itself may not be verifiable. Screening data will be evaluated and reported with definitive data at a later time.

2b ☐ Screening data with 10 percent definitive data will be generated. Data using non-definitive analytical methodologies will be generated. **Data will not be reported until it is evaluated against definitive data.**

3a ☐ Definitive data will be generated. The sampling and analysis must be done on an emergency basis. **Due to the time critical situation, the preliminarily data must be reported and used for comparison without validation. Analytical data packages will be required. However, since the data was not used or intended for decision making, validation of the data package will not be performed.** (Document generic DQO deviation in Section 4.4)

3b ☐ Definitive data will be generated. The sampling must be done on an emergency basis. **Due to the time critical situation, preliminary data must be reported and may be used to make decisions without validation. The generated analytical documentation packages will be reviewed and validated. Qualified data will be reported after validation.**

3c ☐ Definitive data will be generated. **Full documentation will be required. Analytical data packages will be reviewed and validated prior to reporting.**

2.5 Contaminants of Concern

Potential contaminants of potential concern (COPC), proposed analytical method, proposed action levels and available reporting limit are summarized in Table A.

Table A
Contaminants of Concern

Potential COC	Proposed Analytical Method	Proposed Action Level	Available Reporting Limit
Thorium and daughter products	DOE EML HASL-300, Th-01-RC Modified	rPRGs, ^{228}Th: 0.15 pCi/g ^{230}Th: 3.49 pCi/g ^{232}Th: 3.10 pCi/g	
Metals (excluding Mercury)	NIOSH 6010B Metals	rPRGs	Included as Attachment 1
Other Data Collection Activity (non-chemical) *(circle all that apply)*	(GPS) (Visual) Interviews Magnetometer Other Geophysical Modeling (Photography) File Search		

Add additional pages if necessary.

3.0 Approach and Sampling Methodologies

3.1 Sampling Approach

Indicate sampling approaches to be used (select approach)

1 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of START.

2 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of US EPA.

3 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of local regulator.

4 ☒ Judgmental (Biased)

5 ☐ Random

6 ☒ Systematic Grid Sampling

7 ☐ Transects

8 ☐ Search-Grid

If a search-grid, specify grid type (circle one): Square Triangle Rectangle

Size of contamination hot-spot to be detected:_ 0.8'

Shape of hot-spot (circle one): Circle Elliptical Elongated-Elliptical

Required Grid Spacing: Max: 50.35

Acceptable probability of missing hot-spot (circle one): 5 % 10 % 20% 40%

3.2 Field Analysis Equipment

Field analysis equipment requirements are summarized in Table B1.

Table B1 **Field Analytical Equipment**				
Analysis Equipment Specify the field analytical procedures to be used. Select the appropriate boxes.	**Model**	**Analyses**	**Matrix**	**Resource/Contractor**
☒ X-Ray Fluorescence (XRF) Device [for metals]	Niton	Metals	Soil	US EPA/ Eagle
☐ Lumex (XRF) Mercury Instrument				
☐ Oil Analysis Kit [for oils]				
☐ Immunoassay Test Kits [pesticides, oils, chlorinated substances]				
☐ Chlor-N-Soil/Chlor-N-Oil test kits[PCBs, chlorinated substances]				
☐ pH Meter				
☐ Other field test kits [for pesticides]				
☒ Radiation Meter (Zinc Sulfide)	Ludlum	Alpha radiation	soil	US EPA/ORIA/Eagle
☒ Radiation Meter (Sodium Iodide)	Ludlum	Gamma radiation	soil	US EPA/ORIA/Eagle
☐				
☐				

3.3 Field Sampling Equipment

Field equipment requirements are summarized in Table B2.

Table B2
Field Sampling and Decontamination Equipment

Analyses and Matrix	Sampling Equipment	Dedicated or Reusable	Decontamination Solution	Resource/ Contractor
Soil	Geoprobe. ®. type hydraulic punch equipment	Reusable	Gross Decon with water	U.S EPA/ Eagle/ USGC PST
Soil	Hydraulic punch Sample Sleeves	Dedicated	n/a	U.S EPA/ Eagle/
Soil	Hydraulic punch Macro Cores	Reusable	Detergent wash Triple rinse with water.	U.S EPA/ Eagle
Soil	Hydraulic punch-Sampling tip	Reusable	Detergent wash Triple rinse with water.	U.S EPA/ Eagle
Soil	Shovels	Dedicated	n/a	START

Add additional pages if necessary.

3.4 Field Methods and Procedures

3.4.1 Sample Locations. Indicate the sampling location name, describe location, and indicate rationale for each sample location chosen.

Soil boring locations were selected utilizing a visual sampling plan with a triangulated grid. Eighteen boring locations were identified (B-1 through B-18). Proposed soil boring locations are illustrated in Figure 1. Soil boring quantity and location may be altered based on field observations. An additional borehole will be advanced at a to be determined location (B-BKG) to collect background radiation data.

Soil Borings were labeled west to east beginning with B-1. Sample names will reflect the boring location, followed by the sample depth, then date. For example, a sample selected from Soil Boring location B-1 at 2' bgs on June 4, 2007 will be labeled B-1-2-060407.

Add additional pages if necessary.

Figure 1
Sample Location Map

Halaco Engineering, Inc
Proposed Soil Boring Locations
Oxnard, California
May 26, 2007

Approximate Area of Concern

Proposed Boring Location

3.4.2 Sample Labeling and Documentation

Sample Jar Labels
Sample labels will clearly identify the particular sample and should include the following:

1. Site name
2. Time and date samples were taken
3. Sample preservation
4. Analysis requested
5. Sample location and/or identification number

Sample labels will be securely affixed to the sample container.

Chain of Custody Record
A chain of custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a secured container sealed with a custody seal.

The chain of custody record should include (at minimum) the following:

1. Sample identification number
2. Sample information
3. Sample location
4. Sample date and time
5. Names(s) and signature(s) of sampler(s)
6. Signature(s) of any individual(s) with control over samples

Custody Seals
Custody seals demonstrate that a sample container has not been tampered with or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the samples= packaging, should be noted in the field book.

All sample documents will be completed legibly in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing the error. These include the logbooks, the chain of custody forms, this field QASP and any other tracking forms.

Field Logbook

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries and will include the following:

1. Site name and project number
2. Names of sampling personnel
3. Dates and times of all entries (military time preferred)
4. Descriptions of all site activities, especially sampling start and ending times. Include site entry and exit times
5. Noteworthy events and discussions
6. Weather conditions
7. Site observations
8. Identification and description of samples and locations
9. Subcontractor information and names of on-site personnel
10. Date and time of sample collections, along with chain of custody information
11. Record of photographs
12. Site sketches
13. Exact times of various activities and occurrences related to sampling
14. Deviations from standard procedures or methods and the rational for the deviations.

3.4.3 Sample Containers and Preservatives

Containers and preservatives are summarized in Table C.

Table C
Containers and Preservatives

Analyses and Matrix	Container Type (per sample)	Preservation Method	Holding Time
Metals-soil	8 oz. jar	none	6 months
Radiation- soil	8 oz. jar (same as radiation sample)	none	14 days
Metals - water	1 liter amber	HNO_3	14 days

Add additional pages if necessary.

3.5 Analytical Methods and Procedures

The analytical methods per sample and sample location are presented in Table D. General field QC considerations and requirements are presented in Table E.

Table D **Sample Locations and Data Objective** **Summary**					
Sampling Locations and Identifiers should correspond to location indicated on Figure A					
Sample Location(s) **(should match with 3.3.1 and Figure A)**	**Sample Identifiers**	**Analytical Method** **Refer to Table A**	**Data Use Objective(s)** **Refer to Section 2.1**	**Data Category** **Refer to Section 2.3**	**Samples Matrix**
Surface samples from Borehole locations	<borehole #>-<depth interval>-<date>	DOE EML HASL-300, Th-01-RC Modified NIOSH 6010B Metals	To assist with determining the area of impact due to a hazardous material release. (i.e., horizontal and lateral extent). To be compared with site-specific action levels or risk-based action levels (e.g., EPA PRGs) to assist in determination if health threats exist.	Definitive data will be generated. **Full documentation will be required. Analytical data packages will be reviewed and validated prior to final reporting.**	Soil
Sub-surface samples from Borehole locations	<borehole #>-<depth interval>-<date>				soil
Field Duplicate locations selected at random and documented in field log book.	Same identifier as original with <dup>following the depth interval		Project Quality Assurance		Soil
Equipment Blank	EB-<date>		Project Quality Assurance		Water

Add additional pages if necessary.

3.6 Quality Assurance and Quality Control

General field QA/QC considerations and requirements are presented in Table E.

Table E
Quality Control Samples and Data Quality Indicator Goals

QC Sample	Number/Frequency	Data Quality Indicator Goals & Evaluation Criteria	Comments/Exceptions *Site specific remarks:*
FIELD SPECIFIED QA/QC			
Background or reference sample	At least one sample should be collected from an area believed to be unaffected by source contamination.	Source samples should be at least 3 times background.	Surface soil: up-slope. Surface water: upstream. Ground water: up-gradient. *:*
Field Duplicates or Replicates	1 per SDG, per matrix, per method	Water - 25% RPD[2] Soil - 35% RPD[2] Other - 35%	As needed by sampling objectives. The procedure for collecting duplicate samples can greatly effect the reproducibility. *:*
SELECTED LABORATORY QA/AC			
Method Blank	1 per SDG, per matrix, per method	Stds and samples should be at least 3 times the blank.	Mandatory.
Matrix Spike	1 per SDG, per matrix, per method on field designated sample.	75 -125 %R	Designate sample on COC.
Matrix Spike Duplicate or Replicate	1 per SDG, per matrix, per method on field designated sample.	≤50 RPD for organics; ≤20 RPD for metals	Designate sample on COC.
Reference Standards	1 per SDG, per matrix, per method	75 -125 %R	If available.
Internal Standards	All samples	50 -200 %R	All GC/MS and some GC analyses only.
Laboratory Control Standards	1 per SDG, per matrix, per method	75 - 125 %R	Per method for organic analyses.

[1] SDG = Sample Delivery Group (Maximum 20 samples)
[2] RPD = Relative Percent Difference
[3] %R = Percent Recovery

4.0 Project Organization and Responsibilities

4.1 Schedule of Sampling Activities

Sampling activities are summarized in Table F.

Table F Proposed Schedule of Work For Sampling Activities		
Activity	**Start Date**	**End Date**
Above Ground Gamma Survey	May 29, 2007	June 2, 2007
USA Notification	May 29, 2007	May 29, 2007
Below Ground Surface Investigation	June 4, 2007	June 8, 2007

Add additional pages if necessary.

4.2 Project Laboratories

Laboratories used for this project are summarized in Table G.

Table G Laboratories	
Lab Name/ Location	**Methods**
GEL 2040 Savage Road Charleston, South Carolina 29407	NIOSH 6010B/ HASL 300- Modified

Add additional pages if necessary.

4.3 Project Personnel and Responsibilities

Personnel and responsibilities are summarized in Table H.

Table H **Sample Team(s) Personnel**	
Personnel (Agency)	**Responsibility**
START	Direct Push Drilling assistance, Soil sampling and logging, Radiation Monitoring
USCG Pacific Strike Team	Direct push drilling and Decon
The Palladino Company	Radiation Monitoring

Add additional pages if necessary.

4.4 Modification or Additions to the Generic Data Quality Objective for Emergency and Time Critical Sampling

Project specific modification to the generic DQO statements for this are summarized in Table I. Also indicate which DQO step corresponds to the addition or modification.

Table I **DQO Modifications and Additions**	
Additions or Modifications to the Generic DQO Output Statements	**DQO Step**

Add additional pages if necessary.

HALACO ENGINEERING COMPANY

ATTACHMENT E

DATA VALIDATION

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 181336**
Sampling Dates: 2/21/07	**Sample Matrix: Soil**
Analytical Method: ***METALS (EPA 6010B)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	070221-06	181336001
2	070221-04	181336002
3	070215-01	181336003
4	070221-07	181336004
5	070215-H1	181336005
6	070215-H9	181336006
7	070215-M1	181336007
8	070214-M1	181336008
9	070215-04	181336009
10	Duplicate-1	181336010
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- * Matrix Spike recoveries
- * Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- * ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**NO**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**NO**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Soil 1-021907 was used for matrix spike and matrix spike duplicate analysis. Recoveries of Sb, Ba, Cu, and Zn in Soil1-021907MS were outside of required range. Qualification for Ba, Cu, and Zn was not required because the amounts of these metals present in the parent sample were greater than four times the amounts spiked. The associated detected results of Sb were qualified as estimated (J). Sample Soil 1-021907 was used for serial dilution and percent differences were less than 10% with the exception of Ba, Pb, and Zn. Detected results of Ba, Pb, and Zn were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

_____ Acceptable
___X__ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample 070221-06 was used for matrix spike and matrix spike duplicate analysis. Recoveries of Sb and Ba in 070221-06MS were outside of required range. Qualification for Ba was not required because the amounts of Ba present in the parent sample were greater than four times the amounts spiked. The associated detected results of Sb were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

___X___Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

___X___Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X___Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of MS & MSD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample 070221-06 was used for serial dilution and percent differences were less than 10% with the exception of Zn. Detected results of Zn were qualified as estimated (J).

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X____ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample 070221-06
Ba: (1979.2 ug/L) (0.05L/0.509g) (100/95.5) = 203.6 ug/g= 204 mg/kg.
Lab reported 201 mg/kg.
Cu: (28.524 ug/L) (0.05 L/0.509g) (100/95.5) = 2.93 ug/g= 2.93 mg/kg.
Lab reported 2.9 mg/kg.
Pb: (48.951 ug/L) (0.05L/0.509g) (100/95.5) = 5.035 ug/g= 5.035 mg/kg.
Lab reported 5 mg/kg.
Zn: (139.15 ug/L) (0.05L/0.509g) (100/95.5) = 14.31 ug/g= 14.3 mg/kg.
Lab reported 14.1 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
__X__ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 181434**
Sampling Dates: 2/20 & 23/07	**Sample Matrix: Air Filters**
Analytical Method: ***METALS (NIOSH 7300)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	AIR1-022307	181434001
2	AIR2-022007	181434002
3	AIR3-022007	181434003
4	AIR4-022007	181434004
5	AIRBKG-022007	181434005
6	FIELD BLANK-022007	181434006
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- * Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples. No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.28 g/filter) was found in the field blank. Detected chromium results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being air filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
___X___ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.28 ug/ filter) was found in the field blank.
Detected chromium results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X___ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LSD were less than 35% except antimony (40%).
Qualification was not required since no antimony was found in the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Air1-022307 was used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
__X__ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.

Sample AIR2-022007
Ba: (2.313 ug/L) (0.05 L/filter) (2) = 0.2313 ug/filter. Lab reported 0.23 ug/ filter.
Cr: (14.883 ug/L) (0.05 L/filter) (2) = 1.4883 ug/filter. Lab reported 1.5 ug/ filter.
Cu: (3.2363 ug/L) (0.05 L/filter) (2) = 0.3236 ug/filter. Lab reported 0.32 ug/ filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 181840**
Sampling Dates: 2/26 &27/07	**Sample Matrix: Air Filters**
Analytical Method: ***METALS (NIOSH 7300)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Howard Edwards **Date: _____**
Project Manager: Chad Gibson **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Field Blank-022607	181840001
2	AIR1-022707	181840002
3	AIR2-022607	181840003
4	AIR3-022606	181840004
5	AIR4-022607	181840005
6	AIRBKG-030107	181840006
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- * Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples. No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.34 ug/ filter) was found in the field blank. Detected chromium results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being air filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___ Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
___X___ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.34 ug/ filter) was found in the field blank.
Detected chromium results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X___ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LSD were less than 35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Air1-022707 was used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
__X__ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.

Sample AIR2-022607
Ba: (2.073 ug/L) (0.05 L/filter) (2) = 0.2073 ug/filter. Lab reported 0.21 ug/ filter.
Cr: (5.0347 ug/L) (0.05 L/filter) (2) = 0.50347 ug/filter. Lab reported 0.5 ug/ filter.
Zn: (2.9082 ug/L) (0.05 L/filter) (2) = 0.2908 ug/filter. Lab reported 0.29 ug/ filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 182226**
Sampling Dates: 3/8/07	**Sample Matrix: Soil**
Analytical Method: ***METALS (EPA 6010B)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Brick1-030807	182226001
2	Brick2-030807	182226002
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- * Matrix Spike recoveries
- * Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- NR ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**NO**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: Soil sample 7071-1104 Paint Chips from other SDG was used for matrix spike and matrix spike duplicate analysis. Recoveries of As, Sb, Mo, and Se were outside of required range. The associated detected results were qualified as estimated (J). N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

_____ Acceptable
___X__ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Soil sample 7071-1104 Paint Chips from other SDG was used for matrix spike and matrix spike duplicate analysis. Recoveries of As, Sb, Mo, and Se were outside of required range. The associated detected results were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

_____ Acceptable
__X__ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of MS & MSD <35% except antimony.
Detected antimony results were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample 7071-1103 Paint Chips was used for serial dilution and percent differences were less than 10%.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Brick2-030807
Ba: (344.68 ug/L) (0.05L/0.509g) (100/96) (20) =9098 ug/g= 705.38 mg/kg.
Lab reported 705 mg/kg.
Cu: (556.94 ug/L) (0.05 L/0.509g) (100/96) (20) =1139.8 ug/g= 1139.8 mg/kg.
Lab reported 1140 mg/kg.
Pb : (25.868 ug/L) (0.05L/0.509g) (100/96) (20)=52.939 ug/g= 52.939 mg/kg.
Lab reported 52.9 mg/kg.
Zn: (190.69 ug/L) (0.05L/0.509g) (100/96) (20) =390.246 ug/g= 390.246 mg/kg.
Lab reported 390 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Comments: Data as reported are valid.

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 182293**
Sampling Dates: 3/5-9 &12/07	**Sample Matrix: Air Filters**
Analytical Method: ***METALS (NIOSH 7300)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Air1-030507	182293001
2	AirBKG-030607	182293002
3	Air2-030707	182293003
4	AirBKG-030807	182293004
5	Air3-030907	182293005
6	Air4-030907	182293006
7	Air5-030907	182293007
8	AirBKG-030907	182293008
9	Field Blank-031207	182293009
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- * Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples. No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.280 ug/ filter) and zinc (0.780 ug/filter) was found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being air filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
___X___Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.280 ug/ filter) and zinc (0.780 ug/filter) was found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

___X___Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X___Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LSD were less than 35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Air1-030507 was used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
__X__ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.

Sample Air5-030907
Ba: (13.243 ug/L) (0.05 L/filter) (2) = 1.3243 ug/filter. Lab reported 1.3 ug/ filter.
Cr: (3.4345 ug/L) (0.05 L/filter) (2) = 0.3435 ug/filter. Lab reported 0.34 ug/ filter.
Cu: (3.6935 ug/L) (0.05 L/filter) (2) = 0.3693 ug/filter. Lab reported 0.37 ug/ filter.
Zn: (15.054 ug/L) (0.05 L/filter) (2) = 1.5054 ug/filter. Lab reported 1.5 ug/ filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 182479 & 182491**
Sampling Dates: 3/7 & 3/9/07	**Sample Matrix: Soil**
Analytical Method: ***METALS (EPA 6010B)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	SOIL24-030907-1.5	182479001
2	SOIL25-030307	182479002
3	SOIL12-030907-3.5	182479003
4	SOIL37-030707	182479004
5	SOIL39-030907-3.5	182479005
6	SOIL9-030707-4	182479006
7	SOIL13-030707	182479007
8	SOIL15-030707	182479008
9	SOIL28-030707	182479009
10	SOIL10-030707	182479010
11	EB-030907	182491001
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- * Matrix Spike recoveries
- * Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- NR ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**NO**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: Sample Soil10-030707 was used for matrix spike and matrix spike duplicate analysis. Recoveries of Ba, Cu, and Zn were outside of required range. Qualification was not required because the amount of those metals in the parent sample was greater than 4 times the amount spiked. N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

___X___Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample Soil10-030707 was used for matrix spike and matrix spike duplicate analysis. Recoveries of Ba, Cu, and Zn were outside of required range. Qualification was not required because the amount of those metals in the parent sample was greater than 4 times the amount spiked.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of Soil10-030707 and Soil10-030707 Dup were all less than 35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Soil10-030707 was used for serial dilution and percent differences were less than 10%.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Soil 24-030907-1.5
Ba: (856.38 ug/L) (0.05L/0.508g) (100/96.7) = 87.1658 ug/g= 87.17 mg/kg.
Lab reported 87.1 mg/kg.
Cu: (62.158 ug/L) (0.05 L/0.508g) (100/96.7) = 6.3267 ug/g= 6.33 mg/kg.
Lab reported 6.3 mg/kg.
Pb : (25.872 ug/L) (0.05L/0.508g) (100/96.7) = 2.633 ug/g= 2.63 mg/kg.
Lab reported 2.6 mg/kg.
Zn: (154.5 ug/L) (0.05L/0.508g) (100/96.7) = 15.7256 ug/g= 15.73 mg/kg.
Lab reported 15.7 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

___X___ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: MS/MSD and LCS pages were left blank. GEL was requested to submit MS/MSD and LCS report.

Resolution: The correct forms were received.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 182616**
Sampling Dates: 3/16/07	**Sample Matrix: Soil**
Analytical Method: ***METALS (EPA 6010B)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Ingot1-031607	182616001
2	Ingot2-031607	182616002
3		
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- X Matrix Spike recoveries
- X Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- NR ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**YES**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Soil sample Ingot1-031607 was used for matrix spike and matrix spike duplicate analysis. Recoveries were within a range of 75-125%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of MS & MSD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Ingot1-031607 was used for serial dilution and percent differences were less than 10%.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Ingot1-031607
Be: (5.9931ug/L) (0.05L/0.051g) (100/99.64) = 5.897 ug/g= 5.897 mg/kg.
Lab reported 5.9 mg/kg.
Cu: (10.642 ug/L) (0.05 L/0.051g) (100/99.64) = 10.47 ug/g= 10.47 mg/kg.
Lab reported 10.5 mg/kg.
Pb: (15.624 ug/L) (0.05L/0.051g) (100/99.64) = 15.37 ug/g= 15.37 mg/kg.
Lab reported 15.4 mg/kg.
Se: (30.875 ug/L) (0.05L/0.051g) (100/99.64) (5) = 151.89 ug/g= 151.89 mg/kg.
Lab reported 152 mg/kg.
Zn: (12.652 ug/L) (0.05L/0.051g) (100/99.64) (5) = 62.24 ug/g= 62.24 mg/kg.
Lab reported 62.2 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

__X__ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Comments: Data as reported are valid.

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 183103**
Sampling Dates: 3/19/07	**Sample Matrix: Air Filters**
Analytical Method: ***METALS (NIOSH 7300)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Air1-031907	183103001
2	Air2-031907	183103002
3	Air3-031907	183103003
4	Air4-031907	183103004
5	Air5-031907	183103005
6	AirBKG-031907	183103006
7	Field Blank-031907	183103007
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- * Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**NO**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Percent recoveries of LCS except antimony were within the control limits. Detected antimony result in sample Air2-031907 was qualified as estimated (J). No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.20 ug/ filter) and zinc (0.970 ug/filter) was found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

_____ Acceptable
___X___Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS except antimony were within the control limits. Detected antimony result in sample Air2-031907 was qualified as estimated (J).

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being air filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
___X___Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.20 ug/ filter) and zinc (0.970 ug/filter) was found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

___X___Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X____Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LSD were less than 35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Air1-031907 was used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X____ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.

Sample Air4-031907
Cr: (2.8943 ug/L) (0.05 L/filter) (2) = 0.2894 ug/filter. Lab reported 0.290 ug/ filter.
Cu: (7.6768 ug/L) (0.05 L/filter) (2) = 0.7677 ug/filter. Lab reported 0.770 ug/ filter.
Zn: (6.7255 ug/L) (0.05 L/filter) (2) = 0.67255 ug/filter. Lab reported 0.670 ug/ filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 183591**
Sampling Dates: 3/26, 27 &4/3/07	**Sample Matrix: Air Filters**
Analytical Method: ***METALS (NIOSH 7300)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Air1-032707	183591001
2	Air2-032607	183591002
3	Air3-032707	183591003
4	Air4-032607	183591004
5	Air5-032607	183591005
6	AirBKG-032607	183591006
7	Field Blank-040307	183591007
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- * Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples. No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.140 ug/ filter) and zinc (1.40 ug/filter) was found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being air filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
___X___Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.140 ug/ filter) and zinc (1.40 ug/filter) was found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

___X___Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X____Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LSD were less than 35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Air1-032707 was used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X____ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.

Sample Air3-032707
Ba: (6.0072 ug/L) (0.05 L/filter) (2) = 0.6007 ug/filter. Lab reported 0.60 ug/ filter.
Cr: (2.0138 ug/L) (0.05 L/filter) (2) = 0.2014 ug/filter. Lab reported 0.20 ug/ filter.
Cu: (3.9992 ug/L) (0.05 L/filter) (2) = 0.3999 ug/filter. Lab reported 0.40 ug/ filter.
Zn: (21.273 ug/L) (0.05 L/filter) (2) = 2.1273 ug/filter. Lab reported 2.1 ug/ filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 182756**
Sampling Dates: 3/15-20/07	**Sample Matrix: Air Filters**
Analytical Method: ***METALS (NIOSH 7300)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Air1-031607	182756001
2	Air2-031507	182756002
3	Air3-031507	182756004
4	Air4-031507	182756006
5	Air5-031607	182756013
6	AirBKG-031607	182756009
7	Field Blank-032007	182756011
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- * Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples. No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.230 ug/ filter) and zinc (1.20 ug/filter) was found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being air filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
___X___Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.230 ug/ filter) and zinc (1.20 ug/filter) was found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

___X___Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X____Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LSD were less than 35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Air1-031607 was used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X____ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.

Sample Air2-031507
Ba: (1.6097 ug/L) (0.05 L/filter) (2) = 0.161 ug/filter. Lab reported 0.160 ug/ filter.
Cr: (3.4851 ug/L) (0.05 L/filter) (2) = 0.3485 ug/filter. Lab reported 0.35 ug/ filter.
Zn: (8.3052 ug/L) (0.05 L/filter) (2) = 0.8305 ug/filter. Lab reported 0.83 ug/ filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 183851**
Sampling Dates: 4/4 & 4/5/07	**Sample Matrix: Air Filters**
Analytical Method: ***METALS (NIOSH 7300)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Air1-040407	183851001
2	Air2-040507	183851002
3	Air4-040407	183851003
4	AIRBKG-040407	183851004
5	Field Blank-040507	183851-005
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- * Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples. No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.160 ug/ filter) and zinc (0.430 ug/filter) was found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being air filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
___X___Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.160 ug/ filter) and zinc (0.430 ug/filter) was found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

___X___Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X____Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LSD were less than 35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Air1-032707 was used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X____ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.

Sample Air4-040407
Cr: (1.9465 ug/L) (0.05 L/filter) (2) = 0.19465 ug/filter. Lab reported 0.20 ug/ filter.
Zn: (11.087 ug/L) (0.05 L/filter) (2) = 1.1087 ug/filter. Lab reported 1.1 ug/ filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ **Acceptable**
___X___ **Acceptable with Qualification**
_____ **Rejected**

Accepted data meet the minimum requirements for the following EPA data category:
_____ **ERS Screening**
_____ **Non-definitive with 10 % Conformation by Definitive Methodology**
_____ **Definitive, Comprehensive Statistical Error Determination was performed.**
___X___ **Definitive, Comprehensive Statistical Error Determination was not performed.**

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 187759**
Sampling Dates: 6/5-11/07	**Sample Matrix: Soil**
Analytical Method: ***METALS (EPA 6010B)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	B3-01-060507	187759-001
2	B3-10-060507	187759-002
3	B23-01-060507	187759-003
4	B23-10-060707	187759-004
5	B24-01-060807	187759-005
6	B24-05-060807	187759-006
7	B26-01-060807	187759-007
8	B26-05-060807	187759-008
9	B28-01-061107	187759-009
10	RADSOIL-01-061107	187759-010
11	B28-10-061107	187759-011
12	B-BKG-1-060407	187759-012
13	B-BKG-5-060407	187759-013
14	B9-01-060407	187759-014
15	B9-05-060407	187759-015
16	B6-01-060407	187759-016
17	OID 1-01-060507	187759-017
18	OID 2-SED-060507	187759-018
19	OID 3-12-060507	187759-019
20	OID 4-SED-060507	187759-020

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Sample No.	Sample I.D.	Laboratory I.D.
21	OID 4-01-060507	187759-021
22	OID 4-12-060507	187759-022
23	OID 5-01-060507	187759-023
24	B13-05-060507	187759-024
25	B14-01-060607	187759-025
26	B15-01-060607	187759-026
27	B15-10-060607	187759-027
28	B20-05-060707	187759-028
29	B13-01-060507	187759-029
30	OID 7-01-061107	187759-030
31	OID 8-12-061107	187759-031
32	OID 6-12-061107	187759-032
33	B9-10-060407	187759-033
34	B6-10-060407	187759-034
35	B14-05-060607	187759-035
36	B20-15-060707	187759-036
37	B15-01-060607-DUP	187759-037
38	B15-10-060607-DUP	187759-038

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- * Matrix Spike recoveries
- * Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- * ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**NO**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**NO**
7	**Interference Check Samples and Serial Dilution Analysis**	**NO**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Sample B23-10-060707 for Batch #642598 was used for matrix spike and matrix spike duplicate analysis. Recoveries of Al, Mg, Tl and Zn in B23-10-060707MS were outside of required range. Qualification for Al and Mg was not required because the amounts of these metals present in the parent sample were greater than four times the amounts spiked.
The associated detected Tl and Zn results in Batch #642598 were qualified as estimated (J).
Also, sample OID4-01-060507 in batch #642600 was used for matrix spike analysis. Recoveries of Al, Ba, Cu, Mg, and Zn were outside of control limits. Qualification for those metals was not required because the amounts of these metals present in the parent sample were greater than four times the amounts spiked. No contamination except trace amount of zinc (0.433 mg/kg and 1.12 mg/kg) was found in the method blank at reporting limit level. Qualification was not necessary since the zinc concentration in the sample was greater than 5x the blank concentration. B15-01-060607 DUP is a field duplicate of B15-01-060607 and RPDs for Ba, Co, Mg, Ni, and Zn were greater than 35%. Detected results of those metals in B15-10-060607 and B15-10-060607 DUP were qualified as estimated (J). B15-10-060607-DUP is a field duplicate of B15-10-060607 and RPDs for Sb, Co, and Pb were greater than 35%. Detected results of those metals in B15-10-060607 and B15-10-060607 DUP were qualified as estimated (J). Sample B23-10-060607 in Batch #642598 was used for serial dilution and percent differences were less than 10% with the exception of Ba, Cr, Pb, Mo, V and Zn. Detected results of Ba, Cr, Pb, Mo, and Zn in Batch #642598 were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Sample OID4-01-060507 in Batch #642600 was used for serial dilution and percent differences were less than 10%.

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

_____ Acceptable
___X__ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample B23-10-060707 for Batch #642598 was used for matrix spike and matrix spike duplicate analysis. Recoveries of Al, Mg, Tl and Zn in B23-10-060707MS were outside of required range. Qualification for Al and Mg was not required because the amounts of these metals present in the parent sample were greater than four times the amounts spiked.
The associated detected Tl and Zn results in Batch #642598 were qualified as estimated (J).
Also, sample OID4-01-060507 in batch #642600 was used for matrix spike analysis. Recoveries of Al, Ba, Cu, Mg, and Zn were outside of control limits. Qualification for those metals was not required because the amounts of these metals present in the parent sample were greater than four times the amounts spiked.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___ Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination except trace amount of zinc (0.433 mg/kg and 1.12 mg/kg) was found in the method blank at reporting limit level. Qualification was not necessary since the zinc concentration in the sample was greater than 5x the blank concentration.

6. DUPLICATE ANALYSES

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
___X___ Field Duplicates
_____ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Comments:

Analyte (mg/kg)	B15-01-060607	B15-01-060607 DUP	RPD (%)
Antimony	25.7	24.5	5
Arsenic	13.2	13.5	2
Barium	9590	6150	44*
Beryllium	43	50.3	16
Cadmium	5.4	4.9	10
Chromium	218	252	14
Cobalt	3.9	101	185*
Copper	1530	1870	20
Lead	215	209	3
Magnesium	209000	127000	49*
Molybdenum	5.3	5.8	9
Nickel	79.5	4270	193*
Selenium	90.7	67.9	29
Silver	8.8	12.2	32
Thallium	7.56	7.63	1
Vanadium	35.2	37.4	6
Zinc	1590	3210	68*

Comments: B15-01-060607 DUP is a field duplicate of B15-01-060607 and RPDs for Ba, Co, Mg, Ni, and Zn were greater than 35%. Detected results of those metals in B15-10-060607 and B15-10-060607 DUP were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Analyte (mg/kg)	B15-10-060607	B15-10-060607 DUP	RPD (%)
Antimony	44.7	25.9	53*
Arsenic	16.2	16.8	4
Barium	7600	8350	9
Beryllium	54.6	56.6	4
Cadmium	4.1	4.2	2
Chromium	284	296	4
Cobalt	36.4	7.2	134*
Copper	2110	1840	14
Lead	363	221	49*
Magnesium	212000	194000	9
Molybdenum	8.9	10	7
Nickel	107	104	3
Selenium	91	93.4	3
Silver	24.6	26.9	9
Thallium	7.58	7.78	3
Vanadium	43.1	41.2	5
Zinc	2540	2580	2

Comments: B15-10-060607-DUP is a field duplicate of B15-10-060607 and RPDs for Sb, Co, and Pb were greater than 35%. Detected results of those metals in B15-10-060607 and B15-10-060607 DUP were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample B23-10-060607 in Batch #642598 was used for serial dilution and percent differences were less than 10% with the exception of Ba, Cr, Pb, Mo, V and Zn. Detected results of Ba, Cr, Pb, Mo, and Zn in Batch #642598 were qualified as estimated (J). Sample OID4-01-060507 in Batch #642600 was used for serial dilution and percent differences were less than 10%.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample B-BKG-1-060407
Ba:(1321.4 ug/L)(0.05L/0.507g)(100/86)=151.5 ug/g= 151.5 mg/kg. Lab reported 151 mg/kg.
Cu:(1529.1 ug/L)(0.05 L/0.507g)(100/86)=175.3 ug/g= 175.3 mg/kg. Lab reported 175 mg/kg.
Pb:(294.46 ug/L)(0.05L/0.507g)(100/86)=33.77 ug/g= 33.77 mg/kg. Lab reported 33.7 mg/kg.
Zn: (2597.2 ug/L)(0.05L/0.507g)(100/86)=297.8 ug/g= 297.8 mg/kg. Lab reported 297 mg/kg.

Sample B24-01-060807
Ba:(647.13 ug/L)(0.05L/0.5g)(100/90)(5)=360.8 ug/g= 360.8 mg/kg. Lab reported 361 mg/kg.
Cu:(926.76 ug/L)(0.05 L/0.5g)(100/90)(5)=515 ug/g= 515 mg/kg. Lab reported 517 mg/kg.
Pb:(1919.2 ug/L)(0.05L/0.5g)(100/90)(5)=1066 ug/g= 1066 mg/kg. Lab reported 1070 mg/kg.
Zn: (3117.8 ug/L)(0.05L/0.5g)(100/90)(5)=1732 ug/g= 1732 mg/kg.Lab reported 1740 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Comments: Data as reported are valid.

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 184318**
Sampling Dates: 3/16/07	**Sample Matrix: Soil**
Analytical Method: ***TCLP METALS (EPA 1311/ 6010B)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Ingot1 -031607	184318001
2	Ingot2-031607	184318002
3		
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- X Matrix Spike recoveries
- NR Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- NR ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**NO**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**YES**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: Holding time for mercury analysis was missed and non-detected mercury results were qualified as estimated (UJ). N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: Holding time for mercury analysis was missed and non-detected mercury results were qualified as estimated (UJ).

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

_____ Acceptable
___X___Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Soil sample Ingot1 -031607 was used for matrix spike and the recoveries were within the control limts.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of Ingot1-031607 and Ingot1-031607 Dup <35%.

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample 7071-1103 Paint Chips was used for serial dilution and percent differences were less than 10%.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
__X__ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Ingot1-031607
TCLP Ba: (32.294 ug/L) (20mL/2mL) =322.94 ug/L= 0.32294 mg/L.
Lab reported 0.320 mg/L.
TCLP Se: (7.99 ug/L) (20mL/2mL) =79.9 ug/L= 0.0799 mg/L.
Lab reported 0.080 mg/L.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

Laboratory: EMAX Laboratories	**Lab Project Number: 07D041**
Sampling Dates: 04/04/07	**Sample Matrix: Liquid**
Analytical Method: ***TPH as Diesel & Oil by EPA 8015M***	**Data Reviewer: Mindy Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibon **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Sludge1-040407	07D041-01
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- O Matrix Spike/Spike Duplicate Recoveries
- X Laboratory Control Sample Recoveries
- X Method Blank Summaries
- X Initial Calibration Data
- X Continuing Calibration Data
- X Surrogate Compound Recovery Summary
- NR Internal Standard Area Summary

Sample and Blank Data Package Section

- X Chromatograms
- X Quantitation Reports

Raw QC Data Package Section

- X Quantitation Reports for Standards, LCS, and MS/MSD
- X List of Instrument Detection Limits
- X Chain-of-Custody Records
- X Sample Preparation and Analysis Run Logs

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Instrument Performance Criteria**	**YES**
3	**Initial Calibrations**	**YES**
4	**Continuing Calibrations**	**YES**
5	**Laboratory Control Sample**	**YES**
6	**Matrix Spike/Matrix Spike Duplicate**	**NA**
7	**Blanks and Background Samples**	**YES**
8	**Surrogate Compounds**	**YES**
9	**Internal Standards**	**N/A**
10	**Duplicate Analyses**	**YES**
11	**Analyte Identification**	**YES**
12	**Analyte Quantitation**	**YES**
13	**Overall Assessment of Data**	**YES**
14	**Usability of Data**	**YES**

Comments: NA: Not Analyzed N/A: Not Applicable

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

1. HOLDING TIMES

___X___Acceptable
_____Acceptable with qualification
_____Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

Water Samples:
Purgeable analyses: 14 days (from collection) to analysis.
Extractable analyses: 7 days (from collection) to extraction; 40 days (from extraction) to analysis.
Soil or Other Matrices:
Purgeable analyses: 14 days (from collection) to analysis.
Extractable analyses:14 days (from collection) to extraction;40 days (from extraction) to analysis.

Comments: Analytical holding time was met.

2. INSTRUMENT PERFORMANCE CRITERIA

X	**Raw data has been checked to verify that there is adequate resolution (>25%) between peaks of the standard compounds.**
X	**Raw data has been checked to verify that retention time windows are reported and that all standard compounds are within the windows.**

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

3. INITIAL CALIBRATIONS

___X___Acceptable
_____Acceptable with qualification
_____Unacceptable

Unless flagged below, a 5-point initial calibration was run. In addition, average Relative Response Factor (RRF), and percent relative Standard Deviation (%RSD) values were within control limits (%RSD <= 20). For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the low calibration level was not detected, the non-detected results are qualified (UJ).

Comments: TPH as diesel standard was used and %RSD values were within the control limit.

4. CONTINUING CALIBRATIONS

___X___Acceptable
_____Acceptable with qualification
_____Unacceptable

Unless flagged below, continuing calibrations were performed at the beginning and at the end of any group of samples and at least every 12 hours. In addition, Relative Response Factors (RRF), and Percent Difference (%D) values were within control limits (%D <= 15). For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the %D is very high and indicates a severe loss of instrument sensitivity, the associated non-detected results may be qualified as estimated (UJ) or rejected (R) based on the professional judgment of the reviewer.

Comments: Diesel standard was analyzed and percent difference values were within the control limit.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

5. LABORATORY CONTROL SAMPLE

__X____Acceptable
_____Acceptable with qualification
_____Unacceptable
_____No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: LCS recovery was within the control limit.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

_____Acceptable
_____Acceptable with qualification
_____Unacceptable
__X____ No Matrix Spike/Matrix Spike Duplicates Analyzed

Matrix spike and matrix spike duplicate recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. The RPD between the recoveries is used for a qualitative indication of precision. Spike recovery limits of 80% to 120% are specified in EPA/540/G-90/004. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). At the discretion of the reviewer, other limits may be used only if justification can be provided.

Comments: No sample was designated but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

7. BLANKS AND BACKGROUND SAMPLES

___X___Acceptable
_____Detection Limits Adjusted

The following blanks were analyzed:
__X____Method (preparation) Blanks
_____Field Blanks
_____Instrument Blanks
_____Rinsate Blanks
_____Background Samples
_____VOA Trip Blanks

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

8. SURROGATE COMPOUNDS

_____Acceptable
_____Acceptable with qualification
___X___Unacceptable
_____ No surrogates analyzed

Surrogate compound recoveries for samples analyzed within a sample group must be within the limits specified in the method. If the surrogate recovery is between 10% and the lower limit, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the surrogate recovery is <10%, the associated detected results are qualified as estimated (J) and the non-detected results are rejected (R). If the surrogate recovery is above the upper limit, the associated detected results are qualified as estimated (J). Surrogate recoveries which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms. If there are no limits specified in the method, laboratory limits based on historical performance may be used at the discretion of the reviewer.

Comments: The surrogate recoveries could not be evaluated due to dilution.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

9. INTERNAL STANDARDS

_____Acceptable
_____Acceptable with qualification
_____Unacceptable
___X___No internal standards analyzed

Internal Standard area counts for samples analyzed within a sample group must be within the range of 50% to 200% of the internal standard area for the continuing calibration. If the internal standard area is between 10% and 50% of this value, the associated detected results are qualified as estimated (J) and the nondetected results are qualified as estimated (UJ). If the internal standard area is <10% of the calibration area, both the detected and nondetected results are rejected (R). If the internal standard area is >200% of the calibration area, the associated detected results are qualified as estimated (J). Internal standards which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

Comments:

10. DUPLICATE ANALYSES

___X___Acceptable
_____Acceptable with qualification
_____Unacceptable
_____No Duplicates Analyzed

Type of duplicates analyzed:
_____Field Duplicates
__X____Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the results as estimated (J) for any analyte whose RPD exceeds that specified in the Sampling and Analysis Plan.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPD of LCS and LCD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

11. ANALYTE IDENTIFICATION

Verify that positive results have been confirmed on a dissimilar second column, that the sample chromatograms agree with the correct daily standard chromatograms, and that the retention time windows match.

Comments: The chromatogram indicated the presence of motor oil like fuel pattern.

12. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Purgeable analyses, water samples:

ug/L = $\frac{\text{(analyte area)(amount of external standard, ng)}}{\text{(external standard area)(volume of water purged, mL)}}$

Purgeable analyses, soil samples:

ug/kg = $\frac{\text{(analyte area)(amount of external standard, ng)}}{\text{(external standard area)(weight of soil extracted, g)(fraction solids)}}$

Extractable analyses, water samples:

ug/L = $\frac{\text{(analyte area)(amount of external standard, ng)(total volume of extract, uL)}}{\text{(external standard area)(volume of sample extracted, mL)(injection volume, uL)}}$

Extractable analyses, soil samples:

ug/kg = $\frac{\text{(analyte area)(amount of external standard, ng)(total volume of extract, uL)}}{\text{(external standard area)(weight of sample extracted, g)(fraction solids)(injection volume, uL)}}$

Comments:

Sample LC-SS-1
Diesel, C10-C24: (14101291/29579.7) (mg/L) (5 mL/ 230 mL) (10) = 103.6 mg/L.
Lab reported 100 mg/L.
Motor Oil, C24-C38: (35911096/24685.6) (mg/L0 (5 mL/ 23 mL) (10) = 316.248 mg/L.
Lab reported 320 mg/L.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

13. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

___X___Acceptable
_____Acceptable with Qualification
_____Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ERS Screening
_____Non-definitive with 10 % Conformation by Definitive Methodology
_____Definitive, Comprehensive Statistical Error Determination was performed.
___X___Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, CA**
Project TDD Number: TO1-09-06-04-0007	**PAN: 60005003.27**

14. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

15. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-4-0007**

Laboratory: EMAX Laboratories	**Lab Project Number: 07D041**
Sampling Dates: 4/4/07	**Sample Matrix: Liquid**
Analytical Method: ***GC-MS VOCs by EPA 8260B***	**Data Reviewer: M. Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Howard Edwards **Date: _____**
Project Manager: Chad Gibson **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Sluge1-040407	07D041-01
2		
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- NR Matrix Spike/Spike Duplicate Recoveries
- X Laboratory Control Sample Recoveries
- X Method Blank Summaries
- X GC/MS Tuning and Mass Calibration
- x Initial Calibration Data
- X Continuing Calibration Data
- X Surrogate Compound Recovery Summary
- X Internal Standard Area Summary

Sample and Blank Data Package Section

- X Reconstructed Ion Current (RIC) Chromatogram
- X Quantitation Reports
- X Raw and Enhanced Mass Spectra
- X Reference Mass Spectra for Target Compounds
- NR Mass Spectral Library Search for TICs

Raw QC Data Package Section

- X DFTPP and/or BFB mass spectra and mass listings
- X RIC Chromatogram for Standards, LCS, and MS/MSD
- X Quantitation Reports for Standards, LCS, and MS/MSD
- NR List of Instrument Detection Limits
- X Chain-of-Custody Records
- X Sample Preparation and Analysis Run Logs

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**GC/MS Tuning Criteria**	**YES**
3	**Initial Calibrations**	**YES**
4	**Continuing Calibrations**	**YES**
5	**Laboratory Control Sample**	**YES**
6	**Matrix Spike/Matrix Spike Duplicate**	**NA**
7	**Blanks and Background Samples**	**YES**
8	**Surrogate Compounds**	**YES**
9	**Internal Standards**	**YES**
10	**Duplicate Analyses**	**YES**
11	**Analyte Identification**	**YES**
12	**Analyte Quantitation**	**YES**
13	**Overall Assessment of Data**	**YES**
14	**Usability of Data**	**YES**

Comments: NA: Not Analyzed.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-4-0007**

1. HOLDING TIMES

___X___Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the non-detected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

Water Samples:
EPA 8260B: 14 days (from collection) for analysis.
EPA 8270C: 7 days (from collection) for extraction; 40 days (from extraction) for analysis.
Soil or Other Matrices:
EPA 8260B: 14 days (from collection) for analysis.
EPA 8270C:14 days (from collection) for extraction;40 days (from extraction) for analysis.

Comments: Analytical holding time was met.

2. GC/MS INSTRUMENT PERFORMANCE CRITERIA

X	**BFB (EPA 8260B) or DFTPP (EPA 8270C) has been run for every 12 hours of sample analysis per instrument.**
X	**The BFB or DFTPP ion abundance criteria indicated in EPA/540/G-90/004 have been met for each instrument.**

Comments: None.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-4-0007**

3. INITIAL CALIBRATIONS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, a 5-point initial calibration was run. In addition, average Relative Response Factor (RRF), and percent relative Standard Deviation (%RSD) values were within control limits (average RRF >= 0.05; %RSD <= 30). For analytes which exceeded the %RSD control limit, associated detected results are qualified as estimated (J). If the low calibration level was not detected, the non-detected results are qualified (UJ). For analytes which exceeded the RRF control limit, associated detected results are qualified as estimated (J) and the non-detected results are qualified as rejected (R).

Comments: Percent relative standard deviation values of all target analytes were within the control limits.

4. CONTINUING CALIBRATIONS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, continuing calibrations were performed at the beginning and at the end of any group of samples and at least every 12 hours. In addition, Percent Difference (%D) values were within the control limit (%D <= 25). For analytes which exceeded the %D control limit, associated detected results are qualified as estimated (J). In cases where the %D is very high and indicates a severe loss of instrument sensitivity, the associated non-detected results may be qualified as estimated (UJ) or rejected (R) based on the professional judgement of the reviewer.

Comments: Percent difference values of target analytes were within the control limits.

5. LABORATORY CONTROL SAMPLE

__X____Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: LCS recoveries were within the control limits.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spike/Matrix Spike Duplicates Analyzed

Matrix spike and matrix spike duplicate recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. The RPD between the recoveries is used for a qualitative indication of precision. Spike recovery limits of 80% to 120% are specified in EPA/540/G-90/004. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). At the discretion of the reviewer, other limits may be used only if justification can be provided.

Comments: No MS/MSD sample was designated but LCS and LCD were analyzed. The recoveries of LCS & LCD were within the control limit.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-4-0007**

7. BLANKS AND BACKGROUND SAMPLES

__X___ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X____ Method (preparation) Blanks
_____ Field Blanks
_____ Instrument Blanks
_____ Rinsate Blanks
_____ Background Samples
_____ VOA Trip Blanks

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method reporting limit level.

8. SURROGATE COMPOUNDS

__X____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Surrogate compound recoveries for samples analyzed within a sample group must be within the limits specified in the method. If the surrogate recovery is between 10% and the lower limit, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the surrogate recovery is <10%, the associated detected results are qualified as estimated (J) and the non-detected results are rejected (R). If the surrogate recovery is above the upper limit, the associated detected results are qualified as estimated (J). Surrogate recoveries which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-4-0007**

Comments: Surrogate recoveries were within the control limit.

9. INTERNAL STANDARDS

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Internal Standard area counts for samples analyzed within a sample group must be within the range of 50% to 200% of the internal standard area for the continuing calibration. If the internal standard area is between 10% and 50% of this value, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the internal standard area is <10% of the calibration area, both the detected and non-detected results are rejected (R). If the internal standard area is >200% of the calibration area, the associated detected results are qualified as estimated (J). Internal standards which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

Comments: The internal standard areas of sample were within the range of 50% to 200% of the internal standard area for the continuing calibration.

10. DUPLICATE ANALYSES

__X____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X____ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the results as estimated (J) for any analyte whose RPD exceeds that specified in the Sampling and Analysis Plan.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LCD < 35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-4-0007**

11. ANALYTE IDENTIFICATION

Evaluate the ion profiles for the sample analytes and compare them to the library ion profiles provided by the laboratory. Note any identifications which are not sufficiently supported by comparison to known ion profiles.

Comments: Analyte identification was acceptable.

12. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

EPA 8260B, water samples:

$$\text{ug/L} = \frac{\text{(analyte area)(amount of internal standard, ng)}}{\text{(internal standard area)(RF)(volume of water purged, mL)}}$$

EPA 8260B, soil samples:

$$\text{ug/kg} = \frac{\text{(analyte area)(amount of internal standard, ng)}}{\text{(internal standard area)(RF)(weight of soil extracted, g)(fraction solids)}}$$

EPA 8270C, water samples:

$$\text{ug/L} = \frac{\text{(analyte area)(amount of internal standard, ng)(total volume of extract, uL)}}{\text{(internal standard area)(RF)(volume of sample extracted, mL)(injection volume, uL)}}$$

EPA 8270C, soil samples:

$$\text{ug/kg} = \frac{\text{(analyte area)(amount of internal standard, ng)(total volume of extract, uL)}}{\text{(internal standard area)(RF)(weight of sample extracted, g)(fraction solids)(injection volume, uL)}}$$

Comments: No target analytes were detected in the sample.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-4-0007**

13. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

__X__ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-4-0007**

14. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

15. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06D171**
Sampling Dates: 4/21/06	**Sample Matrix: Liquid and Solid**
Analytical Method: ***METALS (6010B/7471A)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Howard Edwards **Date: _____**
Project Manager: Caren Welch **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Y.3.21	D171-01
2	Y.1S.1	D171-02
3	Y.1S.2	D171-03
4	Y.2S.1	D171-04
5	Y.3S.1A	D171-05
6	Y.3S.2	D171-06
7	B.2S.1	D171-07
8	B.2S.2	D171-08
9	B.2S.3	D171-09
10	B.2S.4	D171-10
11	C.24S.1	D171-12
12	C.29S.1	D171-13
13	Y.3S.1B	D171-14
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- NR CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- * Matrix Spike recoveries
- * Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- * ICP Serial Dilution results
- NR Instrument Detection Limits
- NR ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**NO**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**NO**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Sample Y.1S.1 was used for matrix spike and matrix spike duplicate.
Recoveries of Sb, Co, Mo, Ni, Ag, and Zn in Y.1S.1- MS were outside of required range. Qualification for Zn was not required because the amount of Zn present in the parent sample was greater than four times the amount spiked. The associated detected results of Sb, Co, Mo, Ni, and Ag were qualified as estimated (J). Sample Y.1S.1 was used for serial dilution and percent differences of Cr, Ni, and Zn were outside of control limits. The associated detected results of Zn were qualified as estimated (J) since only the zinc concentration was greater than 50 times the IDL.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

_____ Acceptable
___X__ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample Y.1S.1 was used for matrix spike and matrix spike duplicate. Recoveries of Sb, Co, Mo, Ni, Ag, and Zn in Y.1S.1- MS were outside of required range. Qualification for Zn was not required because the amount of Zn present in the parent sample was greater than four times the amounts spiked. The associated detected results of Sb, Co, Mo, Ni, and Ag were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of MS & MSD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Y.1S.1 was used for serial dilution and percent differences of Cr, Ni, and Zn were outside of control limits. The associated detected results of Zn were qualified as estimated (J) since only the zinc concentration was greater than 50 times the IDL.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Y.1S.2
Ba: (9.955 ug/mL)(100mL/1g) =995.5 ug/g= 995.5 mg/kg.
Lab reported 995 mg/kg.
Cu: (0.8774 ug/mL)(100mL/1g) = 87.74 ug/g= 87.74 mg/kg.
Lab reported 87.7 mg/kg.
Pb :(0.09267 ug/mL)(100mL/1g) =9.267 ug/g= 9.267 mg/kg.
Lab reported 9.27 mg/kg.
Zn: (4.663 ug/mL)(100mL/1g) =466.3 ug/g= 466.3 mg/kg.
Lab reported 466 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and

comments on the data validity for each specific data package.

Comments: Data as reported are valid.

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).*

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERIAL EXTENT).

TO BE COMPARED TO WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINATION IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a

copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06F308**
Sampling Dates: 6/20/06 thru 6/26/06	**Sample Matrix: Air Filter**
Analytical Method: ***METALS (6010B/7471A)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Mike Schwennesen **Date: _____**
Project Manager: Caren Welch **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	AIR-1-200606-1750	F308-01
2	AIR-2-200606-1738	F308-02
3	AIR-3-200606-1743	F308-03
4	AIR-4-200606-1800	F308-04
5	AIR-5-200606-1809	F308-05
6	AIR-1-210606-1721	F308-06
7	AIR-2-210606-1727	F308-07
8	AIR-3-210606-1733	F308-08
9	AIR-4-210606-1740	F308-09
10	AIR-5-210606-1747	F308-10
11	AIR-6-210606-1729	F308-11
12	AIR-1-220606-1719	F308-12
13	AIR-2-220606-1725	F308-13
14	AIR-3-220606-1730	F308-14
15	AIR-4-220606-1736	F308-15
16	AIR-5-220606-1741	F308-16
17	AIR-6-220606-1728	F308-17
18	AIR-1-230606-1703	F308-18
19	AIR-6-230606-1658	F308-19
20	AIR-1-240606-1741	F308-20

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Sample No.	Sample I.D.	Laboratory I.D.
21	AIR-2-240606-1752	F308-21
22	AIR-1-260606-1317	F308-22
23	AIR-2-260606-1310	F308-23
24	AIR-4-260606-1259	F308-24
25	BLANK FILTER	F308-25

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- NR CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- O Matrix Spike recoveries
- O Matrix Duplicate results
- * Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- NR Instrument Detection Limits
- NR ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**NO**
4	**Matrix Spike**	**NA**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable. NA: Not Analyzed
Twenty five air filter samples were analyzed for CAM Metals by EPA 6010B/7471A.
Percent recoveries of LCS except barium and zinc were within the control limits.
Detected barium and zinc results were qualified as estimated (J). Blank Filter was submitted for analysis. Trace levels of Sb, As, Co, Cu, Pb, Ni and Tl were detected but Ba, Cr, V, & Zn were found at concentration above the reporting limit. These metals detected in the samples were qualified as non-detect (U) when the sample concentration was less than 5X the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

1. HOLDING TIMES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

3. LABORATORY CONTROL SAMPLE

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS except barium and zinc were within the control limits. Detected barium and zinc results were qualified as estimated (J).

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike and matrix spike duplicate but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___ Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: Blank Filter was submitted for analysis. Trace levels of Sb, As, Co, Cu, Pb, Ni and Tl were detected but Ba, Cr, V, & Zn were found at concentrations above the reporting limit. These metals detected in the samples were qualified as non-detect (U) when the sample concentration was less than 5X the blank concentration.

6. DUPLICATE ANALYSES

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X___ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LCD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample AIR-1-200606-1750 was used for serial dilution and analytical spike and QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
__X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL)
(Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL)
(weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable. Laboratory reported results in ug/filter and ng/ft3.Sample AIR-1-200606-1750 (4901.175 ft3)
Ba: (12850ug/L) (0.1L/filter) = 1285ug/filter. Lab reported 1290ug/filter.
(1285ug) (1000ng/ug) / (4901.175 ft3) = 262.2ng/ft3. Lab reported 262ng/ft3.
Cr: (84.80ug/L) (0.1L/filter) = 8.48ug/filter. Lab reported 8.48ug/filter.
(8.48ug) (1000ng/ug) / (4901.175 ft3) = 1.73ng/ft3. Lab reported 1.73ng/ft3.
Zn: (8946ug/L) (0.1L/filter) = 894.6ug/filter. Lab reported 895ug/filter.
(894.6ug) (1000ng/ug) / (4901.175 ft3) = 182.5ng/ft3. Lab reported 183ng/ft3.

Sample AIR-2-240606-1752 (4617.6 ft3)
Ba: (13510ug/L) (0.1L/filter) = 1351ug/filter. Lab reported 1350ug/filter.
(1351ug) (1000ng/ug) / (4617.6 ft3) = 292.6ng/ft3. Lab reported 293ng/ft3.
Cu: (132.2ug/L) (0.1L/filter) = 13.22ug/filter. Lab reported 13.2ug/filter.
(13.22ug) (1000ng/ug) / (4617.6ft3) = 2.86ng/ft3. Lab reported 2.87ng/ft3.
Zn: (9019ug/L) (0.1L/filter) = 901.9ug/filter. Lab reported 902ug/filter.
(901.9ug) (1000ng/ug) / (4617.6ft3) = 195.3 ng/ft3. Lab reported 196ng/ft3.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate

section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).*

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERAL EXTENT).

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINING IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: Dilution factor and results for sample AIR-1-230606-173 was incorrect. Additional metals (Al, Mn, & Mg) results were requested.

Resolution: Revised Form I (data summary) was received and additional results were provided.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a

copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06G006**
Sampling Dates: 6/26/06 thru 6/28/06	**Sample Matrix: Air Filter**
Analytical Method: ***METALS (6010B/7471A)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Mike Schwennesen **Date: _____**
Project Manager: Caren Welch **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	AIR-1-270606-1633	G006-01
2	AIR-2-270606-1637	G006-02
3	AIR-3-270606-1644	G006-03
4	AIR-4-270606-1623	G006-04
5	AIR-6-270606-1638	G006-05
6	AIR-6-260606-1309	G006-06
7	AIR-2-280606-1544	G006-07
8	AIR-1-280606-1548	G006-08
9	AIR-3-280606-1553	G006-09
10	AIR-4-280606-1556	G006-10
11	AIR-6-280606-1544	G006-11
12	FIELD ANALYTICAL BLANK	G006-12
13		
14		
15		
16		
17		
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- NR CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- O Matrix Spike recoveries
- O Matrix Duplicate results
- * Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- NR Instrument Detection Limits
- NR ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**NO**
4	**Matrix Spike**	**NA**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable. NA: Not Analyzed
Twelve air filter samples were analyzed for CAM Metals by EPA 6010B/7471A.
Percent recoveries of LCS except barium and zinc were within the control limits.
Detected barium and zinc results were qualified as estimated (J). A blank filter was submitted for analysis. Trace levels of Be, Co, Pb, & Mo were detected but Ba, Cr, Cu, Ni, V & Zn were found at concentrations above the reporting limit. These metals detected in the samples were qualified as non-detect (U) when the sample concentration was less than 5X the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

1. HOLDING TIMES

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

3. LABORATORY CONTROL SAMPLE

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS, except barium and zinc were within the control limits. Detected Barium and Zinc results were qualified as estimated (J).

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike and matrix spike duplicate but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___ Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: A blank filter was submitted for analysis. Trace levels of Be, Co, Pb, & Mo were detected but Ba, Cr, Cu, Ni, V & Zn were found at above the reporting limit. These metals detected in the samples were qualified as non-detect (U) when the sample concentration was less than 5X the blank concentration.

6. DUPLICATE ANALYSES

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X___ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LCD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

__X____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample AIR-6-280606-1544 was used for serial dilution and analytical spike and QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
__X____ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Laboratory reported results in ug/filter and ng/ft3.
Sample AIR-6-270606-1638 (10174.61 ft3)
Ba: (15330ug/L) (0.1L/filter) = 1533ug/filter. Lab reported 1530ug/filter.
(1533ug) (1000ng/ug) / (10174.61 ft3) = 150.7ng/ft3. Lab reported 150ng/ft3.
Cr: (137.8ug/L) (0.1L/filter) = 13.78ug/filter. Lab reported 13.8ug/filter.
(13.78ug) (1000ng/ug) / (10174.61 ft3) = 1.35ng/ft3. Lab reported 1.35ng/ft3.
Zn: (9476ug/L) (0.1L/filter) = 947.6ug/filter. Lab reported 948/filter.
(947.6ug) (1000ng/ug) / (10174.61 ft3) = 93.1ng/ft3. Lab reported 92.9ng/ft3.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).*

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERAL EXTENT).

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINING IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: Additional metals (Al, Mn, & Mg) results were requested.

Resolution: Revised data summary (Form Is) were submitted.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: EMAX Laboratories	**Lab Project Number: 07D041**
Sampling Dates:4/4/07	**Sample Matrix: Liquid**
Analytical Method: ***METALS (EPA 6010B)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Sludge1-040407	07D041-01
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ___X___ Included: no problems
- ___*___ Included: problems noted in review
- ___O___ Not Included and/or Not Available
- ___NR___ Not Required
- ___RS___ Provided As Re-submission

Case Narrative:

- ___X___ Case Narrative present

Quality Control Summary Package:

- ___X___ Data Summary sheets
- ___X___ Initial and Continuing Calibration results
- ___NR___ CRDL Standard results
- ___X___ Preparation Blank and Calibration Blank results
- ___X___ ICP Interference Check Sample results
- ___NR___ Matrix Spike recoveries
- ___NR___ Matrix Duplicate results
- ___X___ Laboratory Control Sample recoveries
- ___NR___ Method of Standard Additions results
- ___X___ ICP Serial Dilution results
- ___X___ Instrument Detection Limits
- ___X___ ICP Interelement Correction Factors
- ___NR___ ICP Linear Ranges
- ___X___ Preparation Log
- ___X___ Analysis Run Log

Raw QC Data Package Section

- ___X___ Chain-of-Custody Records
- ___X___ Instrument Printouts
- ___X___ Sample Preparation Notebook Pages
- ___X___ Logbook and Worksheet Pages
- ___NR___ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**NA**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: NA: Not Analyzed N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X__ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No MS/MSD sample was designated. LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LCD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Sludge1-040407 was used for serial dilution and percent differences were less than 10%.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Sludge1-040407
Ba: (0.19299 mg/L) (50mL/50mL) = 0.19299 mg/L.
Lab reported 0.193 mg/L.
Cu: (0.10703 mg/L) (50mL/50mL) = 0.107 mg/L.
Lab reported 0.107 mg/L.
Pb: (0.02638 mg/L) (50mL/50mL) = 0.0264 mg/L.
Lab reported 0.0264 mg/L.
Zn: (0.61193 mg/L) (50mL/50mL) = 0.61193 mg/L
Lab reported 0.612 mg/L.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

___X___ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: EMAX Laboratories	**Lab Project Number: 07D234**
Sampling Dates:4/19/07	**Sample Matrix: Soil**
Analytical Method: ***METALS (EPA 6010B)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Howard Edwards **Date: _____**
Project Manager: Chad Gibson **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Road1-041907	07D234-01
2	Road2-041907	07D234-02
3		
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- NR CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**NA**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: NA: Not Analyzed N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No MS/MSD sample was designated. LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LCD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample, SDG D247-1 was used for serial dilution and percent differences were less than 10%.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Road 1-041907
Ba: (18.921 mg/L) (0.1L/1g) (100/87.3) (1000g/1kg) = 2167 mg/kg.
Lab reported 2170 mg/kg.
Cu: (5.7412 mg/L) (0.1L/1g) (100/87.3) (1000g/1kg) = 657.6 mg/kg.
Lab reported 658 mg/kg.
Pb: (0.7768 mg/L) (0.1L/1g) (100/87.3) (1000g/1kg) = 88.98 mg/kg.
Lab reported 89.0 mg/kg.
Zn: (5.1050 mg/L) (0.1L/1g) (100/87.3) (1000g/1kg) = 584.77 mg/kg.
Lab reported 585 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

___X___ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: EMAX Laboratories	**Lab Project Number: 07D235**
Sampling Dates:4/11/07	**Sample Matrix: Soil**
Analytical Method: ***METALS (EPA 6010B)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Howard Edwards **Date: _____**
Project Manager: Chad Gibson **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Composite1-041107	07D235-02
2	Composite2-041107	07D235-03
3		
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ___X___ Included: no problems
- ___*___ Included: problems noted in review
- ___O___ Not Included and/or Not Available
- ___NR___ Not Required
- ___RS___ Provided As Re-submission

Case Narrative:

- ___X___ Case Narrative present

Quality Control Summary Package:

- ___X___ Data Summary sheets
- ___X___ Initial and Continuing Calibration results
- ___NR___ CRDL Standard results
- ___X___ Preparation Blank and Calibration Blank results
- ___X___ ICP Interference Check Sample results
- ___NR___ Matrix Spike recoveries
- ___NR___ Matrix Duplicate results
- ___X___ Laboratory Control Sample recoveries
- ___NR___ Method of Standard Additions results
- ___X___ ICP Serial Dilution results
- ___X___ Instrument Detection Limits
- ___X___ ICP Interelement Correction Factors
- ___NR___ ICP Linear Ranges
- ___X___ Preparation Log
- ___X___ Analysis Run Log

Raw QC Data Package Section

- ___X___ Chain-of-Custody Records
- ___X___ Instrument Printouts
- ___X___ Sample Preparation Notebook Pages
- ___X___ Logbook and Worksheet Pages
- ___NR___ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**NA**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: NA: Not Analyzed N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No MS/MSD sample was designated. LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LCD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample, SDG D247-1 was used for serial dilution and percent differences were less than 10%.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Composite1-041107
Ba: (3.4664 mg/L) (0.1L/1g) (1000g/1kg) = 346.6 mg/kg.
Lab reported 347 mg/kg.
Cu: (25.861 mg/L) (0.1L/1g) (1000g/1kg) = 2586 mg/kg.
Lab reported 2590 mg/kg.
Pb: (8.3511 mg/L) (0.1L/1g) (1000g/1kg) = 835.11 mg/kg.
Lab reported 835 mg/kg.
Zn: (23.578 mg/L) (0.1L/1g) (1000g/1kg) = 2357.8 mg/kg.
Lab reported 2360 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

__X__ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06D171**
Sampling Dates: 4/21/06	**Sample Matrix: Liquid**
Analytical Method: Ammonia by EPA	**Data Reviewer: M. Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Caren Welch **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Y.1S.1	D171-02
2	Y.1S.2	D171-03
3	Y.2S.1	D171-04
4	Y.3S.1A	D171-05
5	Y.3S.2	D171-06
6	B.2S.1	D171-07
7	B.2S.2	D171-08
8	B.2S.3	D171-09
9	B.2S.4	D171-10
10	C.24S.1	D171-12
11	C.29S.1	D171-13
12	Y.3S.1B	D171-14
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DATA PACKAGE COMPLETENESS CHECKLIST:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X Preparation Blank and Calibration Blank results
- X Matrix Spike recoveries
- NR Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Instrument Detection Limits
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- NR Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**YES**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Analyte Quantitation**	**YES**
8	**Overall Assessment of Data**	**YES**
9	**Usability of Data**	**YES**

Comments: NA: Not Applicable.

1. HOLDING TIMES

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the non-detected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Cyanide: 14 days (from collection) for analysis.
Nitrate (unpreserved water samples): 48 hours (from collection) for analysis.
All other anions: 28 days (from collection) for analysis.

Comments: Analysis met holding time criteria.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 90-110%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 75% or above 125%, all associated data are rejected (R).

Comments: ICV and CCV recoveries were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

3. LABORATORY CONTROL SAMPLE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: LCS recovery was within the control limit.

4. MATRIX SPIKE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample Y.3S.1B was used for matrix spike and the recovery was within the control limit.

5. BLANKS AND BACKGROUND SAMPLES

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	Location: Oxnard, California
Project Number: 60005003.27	

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments:	Y.3S.1B	Y.3S.1B Dup	RPD(%)
Ammonia as N, mg/kg	99.2	99.2	0

7. ANALYTE QUANTITATION

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation was acceptable.

Sample Y.2S.1: ((0.344 X 5.04266)- (-0.00878)) X 5 X (100/10)= 87.2 mg/kg
Lab reported 87.2 mg/kg.

8. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

__X__ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

9. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA*

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERIAL EXTENT).

TO BE COMPARED TO WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINATION IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

10. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06D171**
Sampling Dates: 4/21/06	**Sample Matrix: Liquid**
Analytical Method: pH by EPA 9040	**Data Reviewer: M. Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Caren Welch **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Y.3.21	D171-01
2		
3		
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- NR Preparation Blank and Calibration Blank results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Instrument Detection Limits
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- NR Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**N/A**
6	**Duplicate Analyses**	**YES**
7	**Analyte Quantitation**	**YES**
8	**Overall Assessment of Data**	**YES**
9	**Usability of Data**	**YES**

Comments: NA: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

1. HOLDING TIMES

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the non-detected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Cyanide: 14 days (from collection) for analysis.
Nitrate (unpreserved water samples): 48 hours (from collection) for analysis.
All other anions: 28 days (from collection) for analysis.

Comments: Analysis met holding time criteria.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 90-110%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 75% or above 125%, all associated data are rejected (R).

Comments: Buffers of pH 2, pH 7, and pH 10 were used to calibrate pH meter.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

3. LABORATORY CONTROL SAMPLE

__X____Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Buffer of pH 7 was used as LCS and the recovery was within the control limit.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments:

5. BLANKS AND BACKGROUND SAMPLES

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	Location: Oxnard, California
Project Number: 60005003.27	

_____ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
_____ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments:

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments:	Y.3.21	Y.3.21 Dup	RPD (%)
pH	2.13	2.12	0

7. ANALYTE QUANTITATION

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Not applicable.

8. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

__X__ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

9. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM*

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERIAL EXTENT).

TO BE COMPARED TO WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINATION IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

10. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06D171**
Sampling Dates: 4/21/06	**Sample Matrix: Solid**
Analytical Method:STLC *METALS (6010B/7470A)*	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Howard Edwards **Date: _____**
Project Manager: Caren Welch **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Y.1S.1	D171-02
2	Y.1S.2	D171-03
3	Y.2S.1	D171-04
4	Y.3S.1A	D171-05
5	Y.3S.2	D171-06
6	B.2S.1	D171-07
7	B.2S.2	D171-08
8	B.2S.3	D171-09
9	B.2S.4	D171-10
10	C.24S.1	D171-12
11	C.29S.1	D171-13
12	Y.3S.1B	D171-14
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

TA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- NR CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- X Matrix Spike recoveries
- X Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- NR Instrument Detection Limits
- NR ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**YES**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**YES**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: No STLC metals data were qualified from these project specific samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

1. HOLDING TIMES

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: Analysis met holding time criteria.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of initial and continuing calibration verification were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample Y.3S.1B was used for MS and MSD and the recoveries of zinc were outside of control limits. Qualification was not required because the zinc amount in the parent sample was greater than four times the spiked amount.

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of MS & MSD <20%

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limits.
Sample Y.3S.1B was used for a serial dilution and the percent differences for analyte concentrations greater than 50 times the IDL were within the control limit.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Y.3S.2
STLC Barium : (1.339 mg/L) (50mL/10mL)= 6.695 mg/L
Lab reported 6.69 mg/L.
STLC Zinc: (1.297 mg/L)(50mL/10mL)= 6.485 mg/L
Lab reported 6.49 mg/L.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

__X__ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).*

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERIAL EXTENT).

TO BE COMPARED TO WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINATION IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06F309**
Sampling Dates: 6/23,24, & 25/06	**Sample Matrix: Solid**
Analytical Method:STLC *METALS (6010B/7470A)*	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Mike Schwennesen **Date: _____**
Project Manager: Caren Welch **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	SW1-1/20-240606-1720	F309-01
2	SW1-2/15-250606-1212	F309-02
3	SW1-4/10-250606-1028	F309-03
4	SW1-4/5-250606-1024	F309-04
5	SW1-5/5-250606-0941	F309-05
6	SW1-6/20-250606-0920	F309-06
7	SW1-7/15-250606-0825	F309-07
8	SW2-1/20-230606-1703	F309-08
9	SW2-2/20-230606-1615	F309-09
10	SW2-3/15-240606-1203	F309-10
11	SW2-4/15-240606-0838	F309-11
12	SW2-5/15-240606-0926	F309-12
13	SW2-6/20-240606-1030	F309-13
14	SW2-7/5-240606-1044	F309-14
15	SW3-1/10-270606-1628	F309-16
16	SW3-2/20-280606-1028	F309-17
17	SW3-3/10-280606-0904	F309-18
18	SW3-4/5-270606-1523	F309-19
19	SW3-5/20-270606-1415	F309-20

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

TA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ___X___ Included: no problems
- ___*___ Included: problems noted in review
- ___O___ Not Included and/or Not Available
- ___NR___ Not Required
- ___RS___ Provided As Re-submission

Case Narrative:

- ___X___ Case Narrative present

Quality Control Summary Package:

- ___X___ Data Summary sheets
- ___X___ Initial and Continuing Calibration results
- ___NR___ CRDL Standard results
- ___X___ Preparation Blank and Calibration Blank results
- ___X___ ICP Interference Check Sample results
- ___X___ Matrix Spike recoveries
- ___X___ Matrix Duplicate results
- ___X___ Laboratory Control Sample recoveries
- ___NR___ Method of Standard Additions results
- ___X___ ICP Serial Dilution results
- ___NR___ Instrument Detection Limits
- ___NR___ ICP Interelement Correction Factors
- ___NR___ ICP Linear Ranges
- ___X___ Preparation Log
- ___X___ Analysis Run Log

Raw QC Data Package Section

- ___X___ Chain-of-Custody Records
- ___X___ Instrument Printouts
- ___X___ Sample Preparation Notebook Pages
- ___X___ Logbook and Worksheet Pages
- ___NR___ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**YES**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**YES**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: Nineteen soil samples were analyzed for STLC Metals. The laboratory did not receive sample SW2-9/5-230606-0930. No data were qualified from this SDG.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

1. HOLDING TIMES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: Analysis met holding time criteria.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of initial and continuing calibration verification were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample SW2-1/20-230606-1703 was used for MS and MSD and all recoveries were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of MS & MSD <20%

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limits.
Sample SW2-1/20-230606 was used for a serial dilution and post-analytical spike and all requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample SW3-1/10-270606-1628
STLC Barium: (2.972 mg/L) (50mL/10mL) = 14.86 mg/L
Lab reported 14.9 mg/L.
STLC Beryllium: (0.4354 mg/L) (50mL/10m) = 2.177 mg/L
Lab reported 2.18 mg/L.
STLC Lead: (0.04162 mg/L) (50mL/10mL) = 0.2081 mg/L.
Lab reported 0.208 mg/L.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

__X__ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).*

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERAL EXTENT).

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINING IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06F310**
Sampling Dates: 6/22, 24, 26, & 27/06	**Sample Matrix: Solid**
Analytical Method:STLC *METALS (6010B/7470A)*	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Mike Schwennesen **Date: _____**
Project Manager: Caren Welch **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	SW3-6/10-270606-1309	F310-01
2	SW3-7/20-270605-1230	F310-02
3	SW3-9/10-270606-1100	F310-03
4	SW4-1/5-220606-1545	F310-04
5	SW4-2/5-220606-1655	F310-05
6	SW4-3/5-240606-1537	F310-06
7	SW4-4/10-220606-1255	F310-07
8	SW4-5/20-220606-1355	F310-08
9	SW4-6/20-270606-0945	F310-09
10	SW4-7/15-270606-0845	F310-10
11	SW5-1/5-260606-1046	F310-11
12	SW5-2/15-260606-1012	F310-12
13	SW5-3/20-260606-0935	F310-13
14	SW5-4/15-260606-0851	F310-14
15	SW5-5/5-260606-1130	F310-15
16	SW5-6/5-260606-1414	F310-16
17	SW5-7/10-260606-1708	F310-17
18	SW5-9/15-260606-0945	F310-18
19		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

TA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- NR CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- X Matrix Spike recoveries
- X Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- NR Instrument Detection Limits
- NR ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**YES**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**YES**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: Eighteen soil samples were analyzed for STLC Metals and no data were qualified from this SDG.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

1. HOLDING TIMES

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: Analysis met holding time criteria.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of initial and continuing calibration verification were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample SW3-7/20-270606-1230 was used for MS and MSD and all recoveries were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

5. BLANKS AND BACKGROUND SAMPLES

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: Method blanks were free of contamination at the reporting limit except barium. A trace amount (0.18 mg/L) of barium was detected in the method blank. Finding does not affect the reported results since barium in all samples was greater than 17 times the blank concentration.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of MS & MSD <20%

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limits.
Sample SW3-7/20-270606-1230 was used for a serial dilution and post-analytical spike and all requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
__X__ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample SW5-5/5-260606-1130
STLC Barium: (1.209 mg/L) (50mL/10mL) = 6.045 mg/L
Lab reported 6.04 mg/L.
STLC Beryllium: (0.4232 mg/L) (50mL/10m) = 2.116 mg/L
Lab reported 2.12 mg/L.
STLC Lead: (0.1909 mg/L) (50mL/10mL) = 0.9545 mg/L.
Lab reported 0.955 mg/L.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

__X__ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Atlas Metals	**Location: Watts, California**
Project TDD Number: 09-05-06-0005	**PAN: 0575.01RS**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).*

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERAL EXTENT).

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINING IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06D171**
Sampling Dates: 4/21/06	**Sample Matrix: Liquid**
Analytical Method: ***GC-MS (EPA 8270C)***	**Data Reviewer: M. Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Howard Edwards **Date: _____**
Project Manager: Caren Welch **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Y.3.21	06D171-01
2		
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- O Matrix Spike/Spike Duplicate Recoveries
- X Laboratory Control Sample Recoveries
- X Method Blank Summaries
- X GC/MS Tuning and Mass Calibration
- * Initial Calibration Data
- X Continuing Calibration Data
- X Surrogate Compound Recovery Summary
- X Internal Standard Area Summary

Sample and Blank Data Package Section

- X Reconstructed Ion Current (RIC) Chromatogram
- X Quantitation Reports
- X Raw and Enhanced Mass Spectra
- X Reference Mass Spectra for Target Compounds
- NR Mass Spectral Library Search for TICs

Raw QC Data Package Section

- X DFTPP and/or BFB mass spectra and mass listings
- X RIC Chromatogram for Standards, LCS, and MS/MSD
- X Quantitation Reports for Standards, LCS, and MS/MSD
- NR List of Instrument Detection Limits
- X Chain-of-Custody Records
- X Sample Preparation and Analysis Run Logs

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**GC/MS Tuning Criteria**	**YES**
3	**Initial Calibrations**	**NO**
4	**Continuing Calibrations**	**YES**
5	**Laboratory Control Sample**	**YES**
6	**Matrix Spike/Matrix Spike Duplicate**	**NA**
7	**Blanks and Background Samples**	**YES**
8	**Surrogate Compounds**	**YES**
9	**Internal Standards**	**YES**
10	**Duplicate Analyses**	**YES**
11	**Analyte Identification**	**YES**
12	**Analyte Quantitation**	**YES**
13	**Overall Assessment of Data**	**YES**
14	**Usability of Data**	**YES**

Comments: NA: Not Analyzed.
Percent RSD values for all target analytes except 2,4-Dinitrophenol were within the control limits. A non-detected result of 2,4-Dinitrophenol in sample Y.3.21 was qualified as rejected (R).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

1. HOLDING TIMES

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the non-detected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer=s judgement.

Water Samples:
EPA 8260B: 14 days (from collection) for analysis.
EPA 8270C: 7 days (from collection) for extraction; 40 days (from extraction) for analysis.
Soil or Other Matrices:
EPA 8260B: 14 days (from collection) for analysis.
EPA 8270C:14 days (from collection) for extraction;40 days (from extraction) for analysis.

Comments: Analytical holding time was met.

2. GC/MS INSTRUMENT PERFORMANCE CRITERIA

X	**BFB (EPA 8260B) or DFTPP (EPA 8270C) has been run for every 12 hours of sample analysis per instrument.**
X	**The BFB or DFTPP ion abundance criteria indicated in EPA/540/G-90/004 have been met for each instrument.**

Comments: None.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

3. INITIAL CALIBRATIONS

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable

Unless flagged below, a 5-point initial calibration was run. In addition, average Relative Response Factor (RRF), and percent relative Standard Deviation (%RSD) values were within control limits (average RRF >= 0.05; %RSD <= 30). For analytes which exceeded the %RSD control limit, associated detected results are qualified as estimated (J). If the low calibration level was not detected, the non-detected results are qualified (UJ). For analytes which exceeded the RRF control limit, associated detected results are qualified as estimated (J) and the non-detected results are qualified as rejected (R).

Comments: Percent RSD values for all target analytes except 2,4-Dinitrophenol were within the control limits. Non-detected result of 2,4-Dinitrophenol in sample Y.3.21 was qualified as rejected (R).

4. CONTINUING CALIBRATIONS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, continuing calibrations were performed at the beginning and at the end of any group of samples and at least every 12 hours. In addition, Percent Difference (%D) values were within the control limit (%D <= 25). For analytes which exceeded the %D control limit, associated detected results are qualified as estimated (J). In cases where the %D is very high and indicates a severe loss of instrument sensitivity, the associated non-detected results may be qualified as estimated (UJ) or rejected (R) based on the professional judgement of the reviewer.

Comments: Percent difference values for all analytes were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

5. LABORATORY CONTROL SAMPLE

__X____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: The laboratory established control limits and used them for evaluation of laboratory control spike recoveries. It is the opinion of the reviewer that limits of 80%-120% may be too stringent for this method of analysis. All laboratory control spikes were within the limits established by the laboratory.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spike/Matrix Spike Duplicates Analyzed

Matrix spike and matrix spike duplicate recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. The RPD between the recoveries is used for a qualitative indication of precision. Spike recovery limits of 80% to 120% are specified in EPA/540/G-90/004. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). At the discretion of the reviewer, other limits may be used only if justification can be provided.

Comments: No MS/MSD sample was designated but LCS & LCD were analyzed.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

7. BLANKS AND BACKGROUND SAMPLES

__X___ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X____ Method (preparation) Blanks
_____ Field Blanks
_____ Instrument Blanks
_____ Rinsate Blanks
_____ Background Samples
_____ VOA Trip Blanks

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method reporting limit level.

8. SURROGATE COMPOUNDS

__X____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Surrogate compound recoveries for samples analyzed within a sample group must be within the limits specified in the method. If the surrogate recovery is between 10% and the lower limit, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the surrogate recovery is <10%, the associated detected results are qualified as estimated (J) and the non-detected results are rejected (R). If the surrogate recovery is above the upper limit, the associated detected results are qualified as estimated (J). Surrogate recoveries which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

Comments: The recoveries of surrogates were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

9. INTERNAL STANDARDS

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Internal Standard area counts for samples analyzed within a sample group must be within the range of 50% to 200% of the internal standard area for the continuing calibration. If the internal standard area is between 10% and 50% of this value, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the internal standard area is <10% of the calibration area, both the detected and non-detected results are rejected (R). If the internal standard area is >200% of the calibration area, the associated detected results are qualified as estimated (J). Internal standards which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

Comments: The internal standard areas of samples were within the range of 50% to 200% of the internal standard area for the continuing calibration.

10. DUPLICATE ANALYSES

__X____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X____ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the results as estimated (J) for any analyte whose RPD exceeds that specified in the Sampling and Analysis Plan.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: All RPDs of LCS and LCD were within control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

11. ANALYTE IDENTIFICATION

Evaluate the ion profiles for the sample analytes and compare them to the library ion profiles provided by the laboratory. Note any identifications which are not sufficiently supported by comparison to known ion profiles.

Comments: Analyte identification is acceptable.

12. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

EPA 8260B, water samples:

$$\text{ug/L} = \frac{\text{(analyte area)(amount of internal standard, ng)}}{\text{(internal standard area)(RF)(volume of water purged, mL)}}$$

EPA 8260B, soil samples:

$$\text{ug/kg} = \frac{\text{(analyte area)(amount of internal standard, ng)}}{\text{(internal standard area)(RF)(weight of soil extracted, g)(fraction solids)}}$$

EPA 8270C, water samples:

$$\text{ug/L} = \frac{\text{(analyte area)(amount of internal standard, ng)(total volume of extract, uL)}}{\text{(internal standard area)(RF)(volume of sample extracted, mL)(injection volume, uL)}}$$

EPA 8270C, soil samples:

$$\text{ug/kg} = \frac{\text{(analyte area)(amount of internal standard, ng)(total volume of extract, uL)}}{\text{(internal standard area)(RF)(weight of sample extracted, g)(fraction solids)(injection volume, uL)}}$$

Comments: Sample was analyzed with a dilution factor of 10 due to insufficient volume and no analytes were detected in the sample.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

13. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X____ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

14. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).*

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERAL EXTENT).

TO BE COMPARED TO WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINATION IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

15. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06D171**
Sampling Dates: 4/21/06	**Sample Matrix: Solid**
Analytical Method:TCLP *METALS (6010B/7470A)*	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Howard Edwards **Date: _____**
Project Manager: Caren Welch **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Y.1S.1	D171-02
2	Y.1S.2	D171-03
3	Y.2S.1	D171-04
4	Y.3S.1A	D171-05
5	Y.3S.2	D171-06
6	B.2S.1	D171-07
7	B.2S.2	D171-08
8	B.2S.3	D171-09
9	B.2S.4	D171-10
10	C.24S.1	D171-12
11	C.29S.1	D171-13
12	Y.3S.1B	D171-14
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DATA PACKAGE COMPLETENESS CHECKLIST:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- NR CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- X Matrix Spike recoveries
- X Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- NR Instrument Detection Limits
- NR ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

DATA VALIDATION SUMMARY

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**YES**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**YES**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: TCLP metals data were not qualified from these project specific samples.

1. HOLDING TIMES

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: Analysis met holding time criteria.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of initial and continuing calibration verification were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample Y.1S.1 was used for matrix spike and matrix spike duplicate and the recoveries were within the control limits.

5. BLANKS AND BACKGROUND SAMPLES

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

__X__ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X__ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X__ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of MS & MSD <25%

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Serial Dilution Analysis: Not applicable.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
__X__ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

9. ANALYTE QUANTITATION

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Y.3S.2
TCLP Barium : (0.3518 mg/L) (50mL/10mL)= 1.759 mg/L
Lab reported 1.76 mg/L.
TCLP Chromium: (0.01843 mg/L)(50mL/10mL)= 0.09215 mg/L
Lab reported 0.0922 mg/L.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

__X__ Acceptable
_____ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM*

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERIAL EXTENT).

TO BE COMPARED TO WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINATION IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Laboratory: EMAX Laboratories	**Lab Project Number: 06D171**
Sampling Dates: 4/21/06	**Sample Matrix:Liquid**
Analytical Method: ***GC-MS (EPA 8260B)***	**Data Reviewer: M. Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Mike Schwennesen **Date: _____**
Project Manager: Caren Welch **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Y.3.21	06D171-01
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- NR Matrix Spike/Spike Duplicate Recoveries
- X Laboratory Control Sample Recoveries
- X Method Blank Summaries
- X GC/MS Tuning and Mass Calibration
- * Initial Calibration Data
- X Continuing Calibration Data
- X Surrogate Compound Recovery Summary
- X Internal Standard Area Summary

Sample and Blank Data Package Section

- X Reconstructed Ion Current (RIC) Chromatogram
- X Quantitation Reports
- X Raw and Enhanced Mass Spectra
- X Reference Mass Spectra for Target Compounds
- NR Mass Spectral Library Search for TICs

Raw QC Data Package Section

- X DFTPP and/or BFB mass spectra and mass listings
- X RIC Chromatogram for Standards, LCS, and MS/MSD
- X Quantitation Reports for Standards, LCS, and MS/MSD
- NR List of Instrument Detection Limits
- X Chain-of-Custody Records
- X Sample Preparation and Analysis Run Logs

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**GC/MS Tuning Criteria**	**YES**
3	**Initial Calibrations**	**NO**
4	**Continuing Calibrations**	**YES**
5	**Laboratory Control Sample**	**YES**
6	**Matrix Spike/Matrix Spike Duplicate**	**NA**
7	**Blanks and Background Samples**	**YES**
8	**Surrogate Compounds**	**YES**
9	**Internal Standards**	**YES**
10	**Duplicate Analyses**	**YES**
11	**Analyte Identification**	**YES**
12	**Analyte Quantitation**	**YES**
13	**Overall Assessment of Data**	**YES**
14	**Usability of Data**	**YES**

Comments: NA: Not Analyzed.
Percent relative standard deviation values of all target analytes except iodomethane were within the control limits. A non-detected result of iodomethane in sample Y.3.21 was qualified as rejected (R).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

1. HOLDING TIMES

___X___Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the non-detected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

Water Samples:
EPA 8260B: 14 days (from collection) for analysis.
EPA 8270C: 7 days (from collection) for extraction; 40 days (from extraction) for analysis.
Soil or Other Matrices:
EPA 8260B: 14 days (from collection) for analysis.
EPA 8270C:14 days (from collection) for extraction;40 days (from extraction) for analysis.

Comments: Analytical holding time was met.

2. GC/MS INSTRUMENT PERFORMANCE CRITERIA

X	**BFB (EPA 8260B) or DFTPP (EPA 8270C) has been run for every 12 hours of sample analysis per instrument.**
X	**The BFB or DFTPP ion abundance criteria indicated in EPA/540/G-90/004 have been met for each instrument.**

Comments: None.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

3. INITIAL CALIBRATIONS

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable

Unless flagged below, a 5-point initial calibration was run. In addition, average Relative Response Factor (RRF), and percent relative Standard Deviation (%RSD) values were within control limits (average RRF >= 0.05; %RSD <= 30). For analytes which exceeded the %RSD control limit, associated detected results are qualified as estimated (J). If the low calibration level was not detected, the non-detected results are qualified (UJ). For analytes which exceeded the RRF control limit, associated detected results are qualified as estimated (J) and the non-detected results are qualified as rejected (R).

Comments: Percent relative standard deviation values of all target analytes except iodomethane were within the control limits. Non-detected result of iodomethane in sample Y.3.21 was qualified as rejected (R).

4. CONTINUING CALIBRATIONS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, continuing calibrations were performed at the beginning and at the end of any group of samples and at least every 12 hours. In addition, Percent Difference (%D) values were within the control limit (%D <= 25). For analytes which exceeded the %D control limit, associated detected results are qualified as estimated (J). In cases where the %D is very high and indicates a severe loss of instrument sensitivity, the associated non-detected results may be qualified as estimated (UJ) or rejected (R) based on the professional judgement of the reviewer.

Comments: Percent difference values of target analytes were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

5. LABORATORY CONTROL SAMPLE

__X____Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: LCS recoveries were within the control limits.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spike/Matrix Spike Duplicates Analyzed

Matrix spike and matrix spike duplicate recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. The RPD between the recoveries is used for a qualitative indication of precision. Spike recovery limits of 80% to 120% are specified in EPA/540/G-90/004. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). At the discretion of the reviewer, other limits may be used only if justification can be provided.

Comments: No MS/MSD sample was designated but LCS and LCD were analyzed. The recoveries of LCS & LCD were within the control limit.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

7. BLANKS AND BACKGROUND SAMPLES

__X___ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X____ Method (preparation) Blanks
_____ Field Blanks
_____ Instrument Blanks
_____ Rinsate Blanks
_____ Background Samples
_____ VOA Trip Blanks

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method reporting limit level.

8. SURROGATE COMPOUNDS

__X____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Surrogate compound recoveries for samples analyzed within a sample group must be within the limits specified in the method. If the surrogate recovery is between 10% and the lower limit, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the surrogate recovery is <10%, the associated detected results are qualified as estimated (J) and the non-detected results are rejected (R). If the surrogate recovery is above the upper limit, the associated detected results are qualified as estimated (J). Surrogate recoveries which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

Comments: Surrogate recoveries were within the control limit.

9. INTERNAL STANDARDS

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Internal Standard area counts for samples analyzed within a sample group must be within the range of 50% to 200% of the internal standard area for the continuing calibration. If the internal standard area is between 10% and 50% of this value, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the internal standard area is <10% of the calibration area, both the detected and non-detected results are rejected (R). If the internal standard area is >200% of the calibration area, the associated detected results are qualified as estimated (J). Internal standards which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

Comments: The internal standard areas of sample were within the range of 50% to 200% of the internal standard area for the continuing calibration.

10. DUPLICATE ANALYSES

__X____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X____ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the results as estimated (J) for any analyte whose RPD exceeds that specified in the Sampling and Analysis Plan.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LCD <50%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

11. ANALYTE IDENTIFICATION

Evaluate the ion profiles for the sample analytes and compare them to the library ion profiles provided by the laboratory. Note any identifications which are not sufficiently supported by comparison to known ion profiles.

Comments: Analyte identification was acceptable.

12. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

EPA 8260B, water samples:

$$\text{ug/L} = \frac{\text{(analyte area)(amount of internal standard, ng)}}{\text{(internal standard area)(RF)(volume of water purged, mL)}}$$

EPA 8260B, soil samples:

$$\text{ug/kg} = \frac{\text{(analyte area)(amount of internal standard, ng)}}{\text{(internal standard area)(RF)(weight of soil extracted, g)(fraction solids)}}$$

EPA 8270C, water samples:

$$\text{ug/L} = \frac{\text{(analyte area)(amount of internal standard, ng)(total volume of extract, uL)}}{\text{(internal standard area)(RF)(volume of sample extracted, mL)(injection volume, uL)}}$$

EPA 8270C, soil samples:

$$\text{ug/kg} = \frac{\text{(analyte area)(amount of internal standard, ng)(total volume of extract, uL)}}{\text{(internal standard area)(RF)(weight of sample extracted, g)(fraction solids)(injection volume, uL)}}$$

Comments: Analyte quantitaiton was acceptable.
Toluene in sample Y.3.21
(224543) (10 ug/L) / (1243624) (0.832) = 2.17 ug/L
Lab reported 2.2ug/L.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

13. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	

14. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, APRIL 18, 2006 (QASP).*

The following data use objective was indicated in the *QASP:*

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

TO ASSIST WITH DETERMINING THE AREA OF IMPACT DUE TO A HAZARDOUS MATERIAL RELEASE. (I.E., HORIZONTAL AND LATERIAL EXTENT).

TO BE COMPARED TO WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO ASSIST IN DETERMINATION IF HEALTH THREATS EXIST.

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: TO PROVIDE EVIDENCE OF AN IMMINENT AND SUBSTANTIAL ENDANGERMENT PURSUANT TO THE NCP.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.4 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE D OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

15. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-04-0007**

Laboratory: GEL Laboratories	**Lab Project Number: 182226**
Sampling Dates: 03/08/07	**Sample Matrix: Solid**
Analytical Method: Cr6 EPA 7196A	**Data Reviewer: M. Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Brick1-030807	182226001
2	Brick2-030807	182226002
3		
4		
5		
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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-04-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X Preparation Blank and Calibration Blank results
- * Matrix Spike recoveries
- NR Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Instrument Detection Limits
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- NR Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-04-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**NO**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Analyte Quantitation**	**YES**
8	**Overall Assessment of Data**	**YES**
9	**Usability of Data**	**YES**

Comments: Sample Brick1-030807 was used for matrix spike and the recovery was outside of control limit. Detected Cr(VI) result was qualified as estimated (J). NA: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-04-0007**

1. HOLDING TIMES

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the non-detected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Cyanide: 14 days (from collection) for analysis.
Nitrate (unpreserved water samples): 48 hours (from collection) for analysis.
All other anions: 28 days (from collection) for analysis.

Comments: Analysis met holding time criteria.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 90-110%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 75% or above 125%, all associated data are rejected (R).

Comments: ICV and CCV recoveries were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-04-0007**

3. LABORATORY CONTROL SAMPLE

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: LCS recovery was within the control limit.

4. MATRIX SPIKE

_____ Acceptable
__X__ Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample Brick1-030807 was used for matrix spike and the recovery was outside of control limit. Detected Cr(VI) result was qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-04-0007**

5. BLANKS AND BACKGROUND SAMPLES

__X___ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
__X___ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
__X___ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPD of MS & MSD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-04-0007**

7. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation was acceptable.
Hexavalent Chromium: (0.00498 mg/L) (0.04L/4.023g)(100/99.67)(1000g/1kg) = 0.0497 mg/kg
Lab reported 0.0494 mg/kg.

8. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD NO: TO1-09-06-04-0007**

9. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR DRUM, TANK AND WASTE PILE SAMPLING, GRAYBILL SITE, LOS ANGELES, LOS ANGELES COUNTY, CALIFORNIA, MAY 15, 2006 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH RCRA OR OTHER REGULATOR LIMITS ON WASTE.

TO PROFILE A WASTE MATERIAL FOR OFF-SITE DISPOSAL TREATMENT.

AS DEFINITIVE CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.4 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

10. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 180579**
Sampling Dates: 2/6, 2/7, & 2/8/07	**Sample Matrix: Air Filters**
Analytical Method: ***METALS (NIOSH 7300)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	AIR1-020907	180579001
2	AIRKB-020907	180579002
3	AIRJW-020907	180579003
4	AIRCG-020907	180579004
5	AIR1-020607	180579005
6	AIR2-020607	180579006
7	AIR3-020607	180579007
8	AIR1-020707	180579008
9	AIR2-020707	180579009
10	AIR3-020707	180579010
11	AIR4-020707	180579011
12	AIR1-020807	180579012
13	AIR2-020807	180579013
14	AIR3-020807	180579014
15	AIR4-020807	180579015
16	AIR2-020907	180579016
17	AIR3-020907	180579017
18	AIR4-020907	180579018
19	AIRRB-020907	180579019
20	Field Blank 020907	180579020

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ___X___ Included: no problems
- ___*___ Included: problems noted in review
- ___O___ Not Included and/or Not Available
- ___NR___ Not Required
- ___RS___ Provided As Re-submission

Case Narrative:

- ___X___ Case Narrative present

Quality Control Summary Package:

- ___X___ Data Summary sheets
- ___X___ Initial and Continuing Calibration results
- ___X___ CRDL Standard results
- ___*___ Preparation Blank and Calibration Blank results
- ___X___ ICP Interference Check Sample results
- ___NR___ Matrix Spike recoveries
- ___NR___ Matrix Duplicate results
- ___X___ Laboratory Control Sample recoveries
- ___NR___ Method of Standard Additions results
- ___X___ ICP Serial Dilution results
- ___X___ Instrument Detection Limits
- ___X___ ICP Interelement Correction Factors
- ___NR___ ICP Linear Ranges
- ___X___ Preparation Log
- ___X___ Analysis Run Log

Raw QC Data Package Section

- ___X___ Chain-of-Custody Records
- ___X___ Instrument Printouts
- ___X___ Sample Preparation Notebook Pages
- ___X___ Logbook and Worksheet Pages
- ___NR___ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Percent recoveries of LCS except silver were within the control limits. Qualification was not required since no silver was detected in the samples. No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.620 ug/filter) and nickel (0.790 ug/filter) were found in the field blank. Detected chromium and nickel results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS except silver were within the control limits. Qualification was not required since no silver was detected in the samples.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being air filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
___X___ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.620 ug/filter) and nickel (0.790 ug/filter) were found in the field blank. Detected chromium and nickel results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X___ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LSD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Air-1-020907 and Air4-020707 were used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X____ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample AIR1-020907
Ba: (1.1153 ug/L) (0.05 L/filter) (2) = 0.1153 ug/filter. Lab reported 0.11 ug/filter.
Cr: (6.7477 ug/L) (0.05 L/filter) (2) = 0.675 ug/filter. Lab reported 0.68 ug/filter.
Zn: (4.6489 ug/L) (0.05 L/filter) (2) = 0.46489 ug/filter. Lab reported 0.47 ug/filter.

Sample AIRRB-020907
Ba: (6.9621 ug/L) (0.05 L/filter) (2) = 0.696 ug/filter. Lab reported 0.70 ug/filter.
Cr: (7.7399 ug/L) (0.05 L/filter) (2) = 0.774 ug/filter. Lab reported 0.77 ug/filter.
Cu: (3.1892 ug/L) (0.05 L/filter) (2) = 0.3189 ug/filter. Lab reported 0.32 ug/filter.
Ni: (1.9905 ug/L) (0.05 L/filter) (2) = 0.199 ug/filter. Lab reported 0.20 ug/filter.
Zn: (10.229 ug/L) (0.05 L/filter) (2) = 1.0229 ug/filter. Lab reported 1.0 ug/filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
__X__ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
__X__ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 180800**
Sampling Dates: 2/12 &2/13/07	**Sample Matrix: Air Filters**
Analytical Method: ***METALS (NIOSH 7300)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Howard Edwards **Date: _____**
Project Manager: Chad Gibson **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	AIR1-021207	180800001
2	AIR2-021207	180800002
3	AIR3-021207	180800003
4	AIR4-021207	180800004
5	AIRRB-021207	180800005
6	AIRKB-021207	180800006
7	AIRJW-021207	180800007
8	AIRCG-021207	180800008
9	AIRHR-021207	180800009
10	Field Blank-021207	180800010
11	AIR1-021307	180800011
12	AIR2-021307	180800012
13	AIR3-021207	180800013
14	AIR4-021207	180800014
15	AIRRB-021307	180800015
16	AIRKB-021307	180800016
17	AIRJW-021307	180800017
18	AIRCG-021307	180800018
19	AIRHR-021307	180800019
20	Field Blank-021307	180800020
21	BKG-021307	180800021

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.60 ug/filter) and zinc (0.21 ug/filter) were found in the field blank.
Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being air filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
___X___Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.60 ug/filter) and zinc (0.21 ug/filter) were found in the field blank. Detected chromium and zinc results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

___X___Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X____Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LSD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Air RB-021207 and Air1-021207 were used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.

Sample AIRJW-021207
Ba: (8.1318 ug/L) (0.05 L/filter) (2) = 0.8132 ug/filter. Lab reported 0.81 ug/filter.
Cr: (6.8349 ug/L) (0.05 L/filter) (2) = 0.6835 ug/filter. Lab reported 0.68 ug/filter.
Zn: (7.4157 ug/L) (0.05 L/filter) (2) = 0.7416 ug/filter. Lab reported 0.74 ug/filter.

Sample AIRHR-021207
Ba: (8.7941 ug/L) (0.05 L/filter) (2) = 0.8794 ug/filter. Lab reported 0.88 ug/filter.
Cr: (7.5947 ug/L) (0.05 L/filter) (2) = 0.7595 ug/filter. Lab reported 0.76 ug/filter.
Cu: (6.2304 ug/L) (0.05 L/filter) (2) = 0.6230 ug/filter. Lab reported 0.62 ug/filter.
Ni: (2.0745 ug/L) (0.05 L/filter) (2) = 0.2075 ug/filter. Lab reported 0.21 ug/filter.
Zn: (11.285 ug/L) (0.05 L/filter) (2) = 1.1285 ug/filter. Lab reported 1.1 ug/filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Comments: Data as reported are valid.

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 181115**
Sampling Dates: 2/14-19/07	**Sample Matrix: Air Filters**
Analytical Method: ***METALS (NIOSH 7300)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date: _____**
Technical QA Reviewer: Howard Edwards **Date: _____**
Project Manager: Chad Gibson **Date: _____**

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	AIR1-021607	181115001
2	AIR2-021607	181115002
3	AIR3-021607	181115003
4	AIR4-021607	181115004
5	BKG-021607	181115010
6	AIR1-021407	181115021
7	AIR2-021407	181115022
8	AIR3-021407	181115023
9	AIR4-021407	181115024
10	BKG-021407	181115030
11	Field Blank-021407	181115031
12	AIR1-021507	181115032
13	AIR2-021507	181115033
14	AIR3-021507	181115034
15	AIR4-021507	181115035
16	BKG-021507	181115036
17	Field Blank	181115042
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**N/A**
5	**Blanks and Background Samples**	**NO**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**YES**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples. No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.58 and 1 g/filter) was found in the field blank. Detected chromium results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS except antimony were within the control limits. Qualification was not required since no antimony was detected in the samples.

4. MATRIX SPIKE

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being air filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

_____ Acceptable
___X___Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
___X___ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level but trace amount of chromium (0.58 and 1 ug/ filter) was found in the field blank.
Detected chromium results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X___ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of LCS & LSD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

__X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Air-1-021607 was used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
__X__ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample AIR3-021607
Ba: (6.6424 ug/L) (0.05 L/filter) (2) = 0.6642 ug/filter. Lab reported 0.66 ug/filter.
Cr: (7.1836 ug/L) (0.05 L/filter) (2) = 0.7184 ug/filter. Lab reported 0.72 ug/filter.
Zn: (2.7239 ug/L) (0.05 L/filter) (2) = 0.2724 ug/filter. Lab reported 0.27 ug/filter.

Sample AIR3-021507
Ba: (8.2545 ug/L) (0.05 L/filter) (2) = 0.8255 ug/filter. Lab reported 0.83 ug/filter.
Cr: (5.9144 ug/L) (0.05 L/filter) (2) = 0.5914 ug/filter. Lab reported 0.59 ug/filter.
Zn: (2.1198 ug/L) (0.05 L/filter) (2) = 0.212 ug/filter. Lab reported 0.21 ug/filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ Acceptable
___X___ Acceptable with Qualification
_____ Rejected

Accepted data meet the minimum requirements for the following EPA data category:
_____ ERS Screening
_____ Non-definitive with 10 % Conformation by Definitive Methodology
_____ Definitive, Comprehensive Statistical Error Determination was performed.
___X___ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

Laboratory: GEL Laboratories, LLC	**Lab Project Number: 181154**
Sampling Dates: 2/19/07	**Sample Matrix: Soil**
Analytical Method: ***METALS (EPA 6010B)***	**Data Reviewer: M.Song**

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song **Date:** _____
Technical QA Reviewer: Howard Edwards **Date:** _____
Project Manager: Chad Gibson **Date:** _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Soil 1-021907	181154001
2	Soil 2-021907	181154002
3	Soil 3-021907	181154003
4	Soil 4-021907	181154004
5	Soil 5-021907	181154005
6	Soil 6-021907	181154006
7	Soil 7-021907	181154007
8	Soil 8-021907	181154008
9		
10		
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12		
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14		
15		
16		
17		
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- * CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- * Matrix Spike recoveries
- * Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- * ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	**Holding Times**	**YES**
2	**Initial and Continuing Calibrations**	**YES**
3	**Laboratory Control Sample**	**YES**
4	**Matrix Spike**	**NO**
5	**Blanks and Background Samples**	**YES**
6	**Duplicate Analyses**	**YES**
7	**Interference Check Samples and Serial Dilution Analysis**	**NO**
8	**Post Digestion Spike and Standard Addition Analysis**	**N/A**
9	**Analyte Quantitation**	**YES**
10	**Overall Assessment of Data**	**YES**
11	**Usability of Data**	**YES**

Comments: N/A: Not Applicable.
Soil 1-021907 was used for matrix spike and matrix spike duplicate analysis. Recoveries of Sb, Ba, Cu, and Zn in Soil1-021907MS were outside of required range. Qualification for Ba, Cu, and Zn was not required because the amounts of these metals present in the parent sample were greater than four times the amounts spiked. The associated detected results of Sb were qualified as estimated (J). Sample Soil 1-021907 was used for serial dilution and percent differences were less than 10% with the exception of Ba, Pb, and Zn. Detected results of Ba, Pb, and Zn were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

1. HOLDING TIMES

__x___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

__X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

3. LABORATORY CONTROL SAMPLE

___X__ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

_____ Acceptable
___X___Acceptable with qualification
_____ Unacceptable
_____ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Soil 1-021907 was used for matrix spike and matrix spike duplicate analysis. Recoveries of Sb, Ba, Cu, and Zn in Soil1-021907MS were outside of required range. Qualification for Ba, Cu, and Zn was not required because the amounts of these metals present in the parent sample were greater than four times the amounts spiked. The associated detected results of Sb were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

5. BLANKS AND BACKGROUND SAMPLES

___X___ Acceptable
_____ Detection Limits Adjusted

The following blanks were analyzed:
___X___ Method (preparation) Blanks
_____ Field Blanks
_____ Calibration Blanks
_____ Rinsate Blanks
_____ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

___X___ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
_____ No Duplicates Analyzed

Type of duplicates analyzed:
_____ Field Duplicates
___X___ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: RPDs of MS & MSD <35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

_____ Acceptable
___X___ Acceptable with qualification
_____ Unacceptable
_____ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Sample Soil 1-021907 was used for serial dilution and percent differences were less than 10% with the exception of Ba, Pb, and Zn. Detected results of Ba, Pb, and Zn were qualified as estimated (J).

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

_____ Acceptable
_____ Acceptable with qualification
_____ Unacceptable
___X___ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL) / (Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) / (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.
Sample Soil 1-021907
Ba: (3660.9 ug/L) (0.05L/0.503g) (100/80) (20) =9098 ug/g= 9098 mg/kg.
Lab reported 9050 mg/kg.
Cu: (5409.1 ug/L) (0.05 L/0.503g) (100/80) =672 ug/g= 672 mg/kg.
Lab reported 669 mg/kg.
Pb : (784.72 ug/L) (0.05L/0.503g) (100/80) =97.5 ug/g= 97.5 mg/kg.
Lab reported 97 mg/kg.
Zn: (376.92 ug/L) (0.05L/0.503g) (100/80) (20) =936.7 ug/g= 936.7 mg/kg.
Lab reported 932 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

_____ **Acceptable**
___X___ **Acceptable with Qualification**
_____ **Rejected**

Accepted data meet the minimum requirements for the following EPA data category:
_____ **ERS Screening**
_____ **Non-definitive with 10 % Conformation by Definitive Methodology**
_____ **Definitive, Comprehensive Statistical Error Determination was performed.**
___X___ **Definitive, Comprehensive Statistical Error Determination was not performed.**

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco	**Location: Oxnard, California**
Project Number: 60005003.27	**TDD No: TO1-09-06-4-0007**

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the *EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR AIR SAMPLING, HALACO SITE, OXNARD, VENTURA COUNTY, CALIFORNIA, FEBRUARY 1, 2007 (QASP).*

The following data use objective was indicated in the *QASP:*

TO BE COMPARED WITH SITE-SPECIFIC ACTION LEVELS OR RISK-BASED ACTION LEVELS (E.G., EPA PRGS) TO DETERMINE IF A CHRONIC HEALTH THREATS EXIST.

TO COMPARE TO AN ESTABLISHED BACKGROUND LEVEL OR WITH COLLECTED BACKGROUND SAMPLES.

TO COMPARE WITH FEDERAL OR STATE OCCUPATIONAL HEALTH LIMITS (ON-SITE HEALTH AND SAFETY ASSESSMENT DATA).

AS DEFINITIVE CONFIRMATORY DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

OTHER: ESTABLISH A SITE SPECIFIC BACKGROUND.

TO ASSIST IN THE SELECTION DEFINITIVE LABORATORY SAMPLE FOR ANALYSIS.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the *QASP.*

AS INDICATED IN SECTION 2.3 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

HALACO ENGINEERING COMPANY

ATTACHMENT F

BORING LOGS

BOREHOLE LOG

START T9 REGION 9

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B-BKG-1 (N)

Date: 06.04.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'					.972				Silt with some sand. Fine grain well graded with few gravels 10YR 3/6: Dark yellowish brown. Dry No odor.	
					.972					
					1.10					
					1.10					
					1.00					
					1.40					
					1.52					
					1.34					
					0.86					
5'					1.01				3 1/2': color Δ 10YR 3/2: Very Dark Grayish Brown. Glass & other Debris.	
					0.97					
					0.89					
					0.71					
					0.67					
					1.00					
									5': color Δ: 10YR 2/1: Black Fill Material. Wet. Slight odor.	
10'										
15'										
20'									Total Depth: ~~5 1/2'~~ bgs. (NT) 7 1/2' bgs.	
25'									Avg BKG: 1.6	
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: BKG-2

Date: 06.03.2007

Logged By: NT.

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM) γ	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'					1.3				Asphalt @ surface.	
					1.5				Silty sand. Fine grain poorly graded.	
					1.5				10 YR 4/3 · Brown · Moist. No odor.	
					1.5					
					1.6				2': Silt with few ~~small to med.~~ (NT)	
					1.6				Fine to coarse gravels 10 YR 3/1:	
					1.7				very dark gray. Moist. Slight organic	
					1.7				odor.	
5'					1.7					
					1.8				4': Silt. ~~Slig~~ (NT) 10 YR 3/1: very dark	
					1.6				gray moist.	
					1.5					
					1.7					
					1.5					
					1.7					
					1.6				5': 6" layer of gravels.	
					1.5		▼			
					1.7					
10'					1.6				7': color change to 10 YR 4/1: dark	
					1.7				gray w/ some brown staining.	
									Very moist.	
									10': Sand. Fine grain poorly graded. Gray. Wet.	
15'									TOD: 10' Bgs	
									TWD: 10' Bgs	
20'									6" AGS: 0.70	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

START T9 REGION 9

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: BK6-3

Date: 06.05.2007

Logged By: NT.

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									Asphalt @ surface. (6" gravelly fill.)	
					1.2				6": Silty Sand. Fine grain poorly graded. 10 YR 4/3: Brown. Slightly moist. No odor.	
					1.5					
					1.4					
					1.5					
					1.7					
					1.8					
					1.7				2": Silt w/ few fine to coarse gravels. 10 YR 3/1: very dark gray. Moist. Slight organic odor.	
					1.8					
5'					1.8					
					1.8					
					1.6				4": Silt. 10 YR 3/1: very dark gray moist.	
					1.5					
					1.7				5': 6" layer of gravels.	
					1.7					
					1.7					
					1.4				6': Color change to 10 YR 4/2: Dark grayish brown. Very moist. No odor.	
					1.4	▼				
					1.4					
10'					1.4				~~10': Sand Fine grain~~	
					1.4				10': Silty Sand. Fine grain poorly graded 10 YR 4/2: Dark grayish brown. Wet.	
									TDD: 12' BGS	
									TWD: 10' BGS	
15'										
20'										
									6" ABS: 0.77 (γ)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B1

Date: 06-04-2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B1-01-060407 (1601)		4.6, 3.9, 3.0, 2.3, 2.0, 1.5, 1.3, 1.3, 1.3, 1.4, 1.5, 1.8, 1.8, 1.5, 1.3, 1.1, 0.9, 0.77, 0.61, 0.57, 0.55, 0.7, 0.8				Sandy silt. Fine grain poorly graded w/ few gravels. 10 YR 4/1: Dark Gray w/ few blue specks. Slightly moist. No odor.	
5'			B1-08-060407 (1607)						4½: white flakey material. Dry. (6")	
									6': sand. Fine grain poorly graded. 10 YR 5/4: yellowish brown. slightly moist. No odor. (Appears to be Native)	
10'									*8-12' sleeve: No Recovery.	
									12-16': poor recovery. ~~B0~~ NT Recovered 6" contains glass and other debris. Black. wet ~~with~~ NO organic odor. Possible burn ash material.	
15'					0.66					0.010 screen 10'-15' bgs 1" PVC
20'									TDD: 16' bgs TWD: 15' bgs.	
25'									6" AGS: 2.3 (0)	
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

START T9 REGION 9

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B-2

Date: 06.04.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B2-01-060407 (1658)		4.1				Waste Material 10YR 4/1: Dark gray. Some Dry white Flakes throughout. Dry No odor	
					3.5					
					2.8					
					3.0					
					3.3					
					1.8					
					1.4					
					1.3					
					1.2					
5'			B2-05-060407 (1700)		1.2					
					1.3					
					1.3					
					1.3					
					1.3					
					1.2					
					1.3					
					1.3					
					1.4					
10'					1.2					
					1.0					
					0.9					
					0.8					
					0.7					
									3.5': Sandy Silt. Fine grain. poorly graded. 10YR 3/2: Very dark grayish brown. Slightly moist. No odor. (Possible burn ash)	
									7': Sand. Fine grain. poorly graded. 10YR 4/3: Brown. Moist. No odor. (Appears to be Native).	
									8-12': Poor Recovery.	
									TDD 12' bgs	1" PVC
									TWD 12' bgs	No slots.
15'										
20'									6" AGS: 20 (γ)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B-3

Date: 06.05.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'					5.8				Waste Material w/ some white dry flakes throughout. Gravelly. 10YR 5/1: Gray Slightly Moist. Slight ammonia odor. 3'-1': White Flakey Material: Strong ammonia odor.	
			B3-01-060507 (0955)		6.3					
					7.4					
					6.6					
					6.3					
					7.9					
					12.6					
					10.2					
5'					11.5					
			B3-05-060507 (0958)		10.7					
					8.5					
					6.0				5': Same as above but ~~very~~ moist (NT)	
					9.1					
					7.7					
					5.8					
					4.4					
					3.5					
					4.0					
10'					3.9	▼			10': Same as above but wet.	
			B310-060507 (1010)		3.7					
					3.3					
					3.6					
15'					1.9					0.010 slots 10-15' bgs.
									TOD: 16' bgs	
									TWD: 15' bgs	1" PVC
20'										
									6" AGS: 3.1 (γ)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B-4

Date: 06.05.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									waste materials. 10 YR 4/1: Dark gray w/ some white flakey materials throughout Dry. No odor	
			B4-01-060507 (0912)		6.1, 7.4, 7.5, 9.9, 10.2, 7.9, 9.6, 9.3				1½': 1" white flakey material	
5'			B4-05-060507 (0916)		9.9, 10.6, 11.6, 10.3, 8.7, 9.3, 8.1, 7.4, 7.4, 7.6, 7.6, 9.8, 13.2, 15.1				6': same as above but moist.	
									8-12": No recovery.	
10'									12: sand. Fine grain poorly graded. 7.5 YR 4/1: Dark gray. Wet.	
					1.96				13': Appears to be black burn ash. (approx 1').	
15'									14': Clayey waste Materials. 7.5YR 4/1: Dark gray. Wet.	
20'									TDD: 16' bgs TWD: 14' bgs	
25'									6" AGS: 2.6 (γ)	
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B-5

Date: 06.05.2007

Logged By: MT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'					1.9				Rock cover @ surface to 4" bgs.	
					1.9				Sand. well graded with coarse and	
					2.4				fine gravels. 2.5 Y 3/3: Dark olive brown.	
					2.6					
			*B5-03-060507		2.5					
			(1048)		3.7					
					7.8				4': Waste materials (clayey) 10 YR 5/1:	
					7.8					
5'					5.6					
			B5-05-060507		4.7					
			(1095)		3.6					
					4.4					
					4.1					
					4.0				7': White flakey materials w/ some	
					4.0	▽7'			orange coloring throughout.	
					3.7					
					3.0					
					3.3				8-12': No recovery.	
10'					3.0					
					3.3					
					3.2					
					3.6					
									12': Sand. Fine grain poorly graded. Black.	
									Wet. Appears to be native	
									14'1/2': color Δ to 10 YR 4/1. Dark gray.	
15'					2.1					
									TDD: 16' BGS	
									TWD: 15' BGS	
20'										
									6" AGS: 1.3	
25'										
									* Due to ↑ amt. of ~~cobbles~~ fill @	
									1' bgs sample collected @ 3' bgs.	
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

START T9 REGIONS

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B6

Date: 06.04.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM) K	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B6-01-060407 (1145)		5.5				Waste Materials. 10YR: ~~B/T~~ NT: 6/1: Gray Moist. Slight Ammonia odor.	
					5.5					
					5.8					
					5.8					
					6.1					
					5.4					
					5.6					
					5.7					
					5.5					
5'			B6-05-060407 (1150)		5.6				Same as above	
					5.5					
					5.7					
					6.4				6.5': Approx 3" of light gray material w/ strong ammonia odor.	
					7.0					
					7.0					
					7.6					
					7.0	▼			8': Sandy Clay. Dark gray. Very moist. No odor.	
					6.2					
10'			B6-10-060407 (1159)		3.5					
					1.5				11' bgs: Sand. Fine grain poorly graded. 10YR 5/4: yellowish brown. Wet. No odor	
					1.7					
15'									TD: 14' BGS	0.010 screen: 9'-14' bgs
20'									6" Ags: 2.0 (γ)	1" PVC.
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B7

Date: 06.05.07

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B7-01-060507 (1150)		1.7				Rock cover @ surface.	
					3.5				6": ~~Fill~~ Waste material (clayey): 5YR 5/1: gray w/ slight blue tint. Slightly moist. Some slight iron staining throughout. No odor.	
					5.5					
					5.6					
					6.4					
					6.5					
					6.5					
					6.6					
5'			B7-05-060507 (1205)		5.1				4': Same as above but w/ slight ammonia odor.	
					5.2					
					5.3					
					5.9					
					8.2				8-12' No recovery.	
					12.5					
					5.0				REFUSAL @ 12'.	
					3.8					
					3.2					
					2.5					
10'					2.3				TDD: 12' Bgs	
									TWD: 9' ~~H~~ Bgs.	
15'										
									6" Ags: 0.7	
20'										
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B-9

Date: 06.04.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM) K	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'					90.8				Sandy Silt w/ some gravels. 10YR 3-2 Very Dark grayish brown. White specks throughout. Sticky consistency. Moist. 2': Appears to be waste Materials. Slight ammonia odor. 5': Waste Material, Slight ammonia odor.	
			B9-01-060407 (1100)		77.4					
					33.1					
					18.9					
					14.3					
					10.9					
					10.0					
					9.7					
					9.4					
5'			B9-05-060407 (1108)		9.1					
					7.9					
					7.2					
					9.1					
					14.2					
					15.2					
					13.7					
					11.5					
					9.5	▼				
10'			B9-10-060407 (11A)		7.0				Same as above but wet. Some 7.5 YR 7/3 (Pink) specks throughout.	
					5.7					
					4.4					
					3.5					
15'					4.9					
									Total Depth: 15' bgs	1" PVC 0.010 slot
20'										
									6" Ags - 8.2 (γ)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe / 1x1:

0 ↑ Area Elevated above surrounding gs (approx 3').

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B10

Date: 06.05.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									Rock cover @ surface.	
			B10-01-060507 (1545)		1.1				Sandy silt. Fine grain well graded w/ few fine to coarse gravels. 10 YR 3/1: Very dark gray. with some white & blue flakes throughout. Waste material throughout. (approx 50%) Slightly moist. Slight Ammonia odor.	
					1.4					
					2.6					
					3.4					
					3.6					
					3.8					
					3.6					
					5.6					
5'					8.3					
					10.1					
					13.1					
					13.8					
					13.0					
					4.8					
					1.9					
					1.4					
					1.3					
					1.3					
10'					1.2					
					1.0					
					1.0					
					1.0					
15'					0.9					
									TOD: 16' bgs	
									TWD: 15' bgs	
20'										
									6" Ags: 0.7	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

START T9 REGIONS

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B11

Date: 060607

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM) (β/γ)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									Top 6": Sand well graded w/ fine to coarse gravels. Brown. Slightly moist. No odor	
			B11-01-060607 (0930)		1.8, 1.7, 1.6, 1.5, 1.4, 1.4, 1.3, 1.3, 1.2				6": Silty Sand w/ ~50% mix of waste materials. 10 YR 4/1: Dark Gray w/ some dry white flakes throughout. Slightly moist. No odor.	
5'			B11-05-060607 (0943)		1.2, 1.4, 1.2, 1.1, 1.1, 0.8, 0.7, 0.6, 0.6, 0.6, 0.6, 0.7, 0.7				3½': Appears to be burn ash.	
10'			B11-10-060607 (0950)						12': Sand w/ burn ash material throughout. Med. grain poorly graded. Wet. No odor 2.5Y 2.5/1: Black	
15'					0.4				14': Silty clay. 10^NT 5Y 4/1: Dark gray. wet. organic odor.	
20'									TDD: 16' Bgs TWD: 15' BGS.	
25'									6" Ags: 0.9 (γ)	
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B-12

Date: 06.04.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM) K	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B12-01-060407 (1563)		22.6				Waste Material w/ white ammonia waste throughout. 10 YR 4/1 Dark gray. Dry. Hard. Slight ammonia odor. (POOR RECOVERY)	
					29.2					
					17.1 (NT)					
					21.4					
					11.8					
					15.7					
					27.6					
					70.6					
					126					
5'			B12-05-060407 (1613)		158				Same as above. but not hard.	
					170					
					151					
					121					
					<24					
					62				9': color change to white. very moist. slight ammonia odor.	
					55					
					49					
					21.9					
					8.2					
10'			B12-10-060407 (1524)		6.8				11': color change back to gray and black. clay like waste materials. 10 YR 4/1: Dark gray. Wet. Slight ammonia odor.	
					6.3					
					7.2					
					10.4					
					2.33					
15'									15': Sand. Fine grain poorly graded. 10 YR 4/1: Dark gray. wet. No odor (Appears to be native).	14' 0.010 slot ~~14~~ NT 9'-14' bgs. 1" temp well.
20'										
25'									TD: 16' BGS collapse: 14' BGS.	
0'									6" AGS: 13.6 K (γ)	

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe / 1x1 NaI Probe.

BOREHOLE LOG

START T9 REGION 9

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B 13

Date: 06.05.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'					2.4				Waste Materials w/ white flakes throughout. Slightly moist.	
			B13-01-060507 (1670)		1.7					
					1.5					
					1.1					
					1.1					
					1.1					
					1.2					
					1.1					
					0.9					
5'			B13-05-060507 (1620)		0.8					
					0.7					
					0.6					
					0.8					
					0.8					
					0.7				7': color change to black & very moist	
					0.6					
					0.7					
					0.7					
					0.7				8-12': Poor recovery - same as above but wet.	
10'					0.8					
					0.9					
					0.9					
15'					0.9					
									TDD: 16' Bgs	
									TWD: 15' bgs.	
20'										
									6" ags: 1.2	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B-14

Date: 06.06.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM) K	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									sand and gravel @ surface.	
			B14-01-060607 (1050)		1.6				6": waste material w/ white flakes throughout	
					2.0				10 YR 4/1: Dark gray. Some bluish flakes	
					1.7				throughout. Slightly moist. No odor.	
					1.2					
					1.2				3': Appears to be burn ash.	
					1.2					
					1.3					
					1.4					
5'			B14-05-060607 (1056)		1.4				4'-8': poor recovery (25%)	
					1.4					
					1.3					
					1.3				8'-12': poor recovery	
					1.3					
					1.3					
					1.2					
					1.2					
					1.1					
					1.0					
10'					0.8					
					0.8					
					0.8					
					1.0					
15'					0.8					
									TDD: 16' Bgs	
									TWD: 15' Bgs	
20'										
									6" AGS: 1.0 (8)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

START T9 REGION 9

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B15

Date: ~~AP~~ 06.06.07

Logged By: AE

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B15-01-060607 (1350)		1.0, 1.3, 2.0, 5.3				Concrete at surface	
			B15-01-060607 DUP (1350)		7.1, 7.2, 5.5, 4.6, 4.5, 4.5				silt with 15% waste material 10YR 4/2 ~~2 ft~~ dark greyish-brown slightly moist, no odor	
5'					4.6, 5.7, 7.1, 5.9, 5.5, 5.0				2 ft. waste material clayey. blue & white flakes throughout.	
10'			B15-05-060607 (1400)			4.7, 5.5, 5.2, 5.9, 4.9, 4.6			5YR 4/1 Dark grey Moist No odor	
			B15-05 060607 DUP (1400)						4 ft - Same as above but with strong ammonia odor.	
15'						4.6				
			B15-10-060607 (1410)						5 ft Same as above but with strong ammonia odor.	
20'			B-15-10 060607 DUP (1410)						15.5 ft - Sand, fine-grain, poorly graded 10YR 4/1, dark grey wet, no odor.	
25'			B15-20-060607 (1420)							
			B15-20 060607 DUP (1420)						TDD: 20' BGS TWD: 15' BGS 6" Ags 0.6	
30'									* Materials similar looking to blue/gray beach materials	

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

LT June 25TH June 26TH - 27TH 28TH

BOREHOLE LOG

START T9 REGION 9

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B16

Date: 06.06.07

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									concrete @ surface.	
					1.03				sandy silt. Fine to med grain. Brown.	
			B16-02-06 0607		1.07				Slightly moist. No odor.	
			+ DUP		1.44					
			(1520)		1.7				3': Silt with large areas of white	
					2.0				and orange flakes. Dark brown.	
					1.9				Slightly moist. Strong Ammonia odor.	
					2.0					
					3.2					
5'					3.4					
			B16-03-060607		3.5					
			+DUP		4.5					
			(1530)		6.5					
					6.0					
					5.9					
					3.2					
					1.9				8½': waste material (clayey) 2.5Y 5/1: Gray.	
					1.5				Very Moist. No odor	
					1.4					
10'			B16-10-060607		1.5				10': color Δ to light bluish gray. & wet	
			(1531) +DUP		1.4					
					1.2					
15'					5.7					
20'										
25'										

TDD: 16' Bgs

TWD: 15' Bgs

6" Ags 0.6 (γ)

Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

START T9 REGION 9

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B17

Date: 06.07.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									concrete @ surface.	
					1.0				6": silty sand well graded w/ some fine to	
			B17-01-060707		1.3				coarse gravels. ~75% waste material. gray	
			(0855)		1.9				w/ some dry white flakes throughout.	
					3.9				Slightly moist. Strong Ammonia odor.	
					4.5					
					4.0				2" Waste Material (clayey). Dark gray w/	
					4.2				some dry white flakes throughout. Slightly	
					4.4				moist. Slight Ammonia odor	
					4.3					
5'			B17-05-060707		4.0					
			(0900)		3.9					
					3.6					
					3.2				7" color change to light gray.	
					2.6					
					1.8					
					1.2					
					1.3					
					1.1	▽				
					1.2					
10'			B17-10-060707		1.5					
			(0910)		2.3				11" Sand. Well graded. Dark gray	
					6.1				wet. No odor. (Possibly Native).	
					8.9					
					12.0					
					4.7					
					4.5					
15'					7.2					
									6" AGS 0.7 (γ)	
20'										
25'										
0'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B-18

Date: 06.07.07

Logged By: MT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM) K	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B18-A-060706 (1020) +DUP		2.3 2.9 7.6 9.0 8.1 8.6 8.4 8.7 8.0				Silt. ~~10YR~~ (N) 2.5Y 4/3: Olive Brown. with ~ 50% gray waste material. Slightly moist. Slight ammonia odor, 2'½': Bluish gray waste material (clayey) Slightly mast. Slight ammonia odor.	
5'			B18-05-060707 (1025) +DUP		7.2 7.8 7.6 7.6 7.8 8.3 10.4 11.3 12.0 8.2				same as above but strong ammonia odor	
10'			B18-05-060707 (1035) +DUP		5.5 4.4 4.5	▽			same as above but wet.	
15'					1.6					
20'									TOD: 16' BGS TWD: 15' BGS 6" AGS: 1.1 (γ)	
25'									* Fluctuation in γ Reading (5 → End) ~±1.5 K	
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

START T9 REGIONS

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B19

Date: 06.07.07

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B19-a-060707 (1059)						silt. to.M 2.5 Y 4/3: olive brown w/ ~50% gray. waste material. Dry white flakes throughout. slightly moist. No odor.	
2.1										
3.8										
6.0										
5.8										
6.0										
6.2										
5.8										
5' 6.2			B19-05-060707 (1108)						6': Sandy Silt. Fine grain poorly graded. 2.5 Y 4/3: olive brown. Little to No waste materials moist. No odor	
6.3										
6.9										
9.1										
8.6										
6.5										
7.1										
7.1										
7.6						▼			7½': Waste material (clayey) Bluish gray.	
9.0										
10' 7.0			B19-10-060707 (1115)							
5.4										
7.2										
9.0										
15' 1.5									Above 6" = 1.2	
20'										
25'										

r / Drilling Co.: USCG-PST

ment: DP- Geoprobe

BOREHOLE LOG

START T9 REGION 9

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B20

Date: 06.07.07

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B20-01-060707 (1172)						6" BROWN sandy silt @ surface.	
									6": Bluish gray waste material (clayey). slightly moist. No odor	
									3': Silt w/ ~50% gray waste materials. 2.5 Y 4/3: olive brown. slightly moist. No ~~HC odor~~ (NT) Ammonia.	
			B20-05-060707 (1200)							
									8': Bluish gray waste Material Wet. ~~No odor~~ (NT) Slight ammonia odor	
10'			B20-10-060707 (1205)			▼				
									14'1/2: clayey silt w/ traces of fine grain sand. Black. wet. Strong organic odor	
15'			B20-15-060707 (1215)							
									6" above = 3.6	
20'										
25'										

Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

START T9 REGIONS

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B21

Date: 06.07.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									6" layer of silty sand fill.	
	1.1								6" layer of what appears to be concrete.	
	1.2		B21-01-060707 (1455)							
	1.5	1.3							1' silt. 10 YR 4/3 : Brown. slightly moist. No odor	
	1.3	1.4								
	1.6	1.3								
5'	1.6	1.6							#1-4 NR: Poor Recovery (~50%)	
	1.5	1.4	B21-01-060707 (1500)						5': ~~Sand~~ NT Silty sand w/ traces of clay. Fine grain poorly graded. 10YR 4/3: Brown Slightly moist. No odor.	
	1.5	1.5								
	1.5	1.5								
	1.5	1.5								
10'	1.4	1.5							8-12' : No Recovery.	
	1.5	1.5								
	1.5									
									13' : Sand. Fine grain poorly graded 10YR 4/1: Dark gray Wet. No odor	
15'			B21-10-060707 (1515)							
20'									above 6" = 0.9	
25'										

Drilling Co.: USCG-PST

Rig: DP- Geoprobe

BOREHOLE LOG

START T9 REGIONS

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B22

Date: 06.07.07

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B22-01-060707 (1530)		1.1 1.1 1.8 3.9 4.5 2.6 1.8 1.5 1.3				sandy silt. Fine grain well graded. ~50% waste material throughout. (Bluish gray) Slightly moist.	
5'			B22-03-060707 (1539)		1.4 1.5 1.5 1.5 1.6 1.5 1.7 1.6 1.8	▽			4': ~~Sandy~~ Silty Sand. Fine grain poorly gradded. 10 YR 4/3. Brown. Very moist. No odor. same but wet.	
10'			B22-10-060707 (1540)		1.7 1.6 1.5 1.9				9'1/2: gradual color change to 2.5Y 4/1: Dark gray – silty clay wet.	
15'					1.3				15': Same as above but strong organic odor. 15'1/2: Med grain sandy silt. Brown. wet.	
20'									6" Ags 0.8	
25'									TDD: 16' BGS TWD: 15' BGS	

Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

START T9 REGIONS

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B23

Date: 06.07.07

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B23-01-060707 (1610)		.87, 1.1, 1.3, 1.5, 1.5, 1.4, 1.5, 1.8				sandy silt. Fine grain poorly graded. 10 YR 4/3: Brown. Slightly moist. No odor. Poor Recovery 0-4'. ~25%	
5'			B23-05-060707 (1615)		2.0, 1.8, 1.8, 1.7, 1.5, 1.5, 1.5, 1.5, 1.4, 1.4	▽			silty clay. 10 YR 4/3 Brown w/ some gray throughout. Slightly moist. No odor.	
10'			B23-05-060707 (1620)		1.6, 1.7, 1.6, 1.4				9.5' : sand. Fine grain. poorly graded (NT) wet. No odor.	
15'					1.6					
									TDD: 16' Bgs TWD: 15' Bgs.	
20'									6" AGS: 0.70 (γ)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B24

Date: 06.08.07

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B24-01-060807 (1002)		1.0				CONCRETE @ SURFACE.	
					1.2				6": Silt w/ ~50% gray waste material throughout.	
					1.6				Slightly moist No odor.	
					1.8				1': Silt with glass and other debris	
					1.7				throughout. 7.5 YR 3/3: Dark Brown.	
					1.3				Slightly moist. No odor. Possibly burn ash	
					1.2					
					1.0					
5'			B24-05-060807 (1010)		0.9					
					0.9					
					0.8					
					0.7					
					0.7					
					0.7					
					0.6					
					0.4					
					0.5					
					0.5				8-12': No recovery.	
10'					0.5					
					0.5					
15'										
									TDD: 16' Bgs	
									TWD: 10' Bgs	
20'										
									6" ABS: 0.6 (γ)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B25

Date: 06-08-2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM) K	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									concrete @ surface.	
					0.9					
			B25-01-060807 (0901)		1.0				1': Silty Sand. Brown w/ ~50% gray waste material w/ white flaky material throughout. Slight ammonia odor	
					1.1					
					1.3					
					2.0					
					1.7					
					1.6					
					1.4					
5'			B25-05-060807 (0907)		1.5				2½': Varying fill materials including black asphaltic materials, gravels & rock.	
					1.4					
					1.4					
					1.4					
					1.2					
					1.0					
					0.8				5': Sandy Silt. Fine grain poorly graded w/ few ~~cobbles~~ gravels NT throughout 7.5YR 2.5/2: very dark brown. slightly moist. No odor.	
					0.6					
					0.7					
					0.9					
					1.2					
10'			B25-10-060807		1.4				* 4-8': Poor recovery (~50%)	
					1.6					
					1.5					
									* 8-12': No recovery.	
									12-16': Poor Recovery (~10%)	
					1.4					
15'										
									TOD: 16' BGS	
									TWD: 14' BGS	
20'										
									6" Ags: 0.7 (γ)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

START T9 REGION 9

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B26

Date: 06, 08.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									concrete @ surface	
			B26-01-060807 (1114)		1.0, 1.1, 1.2, 1.2, 1.4, 1.3, 1.4, 1.9, 1.7				Silt. 10YR 4/3: Brown w/ ~5% gray waste material throughout gray w/ white & blue flaky material. Slightly mast. Slight ammonia odor	
5'			B26-05-060807 (1170)		1.6, 1.6, 1.4, 1.0, 0.85, 0.80, 0.66, 0.52, 0.58, 0.79, 1.1, 1.4				3': Bluish gray waste material 5': Appears to be burn ash. 10 YR 2/2: very dark brown w/ glass throughout	
10'									8-12': No recovery.	
15'					1.4				TOD: 16' Bgs TWD: 15' Bgs	
20'									6" ABS: 0.86 (γ)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B27

Date: 06.08.07

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'									concrete @ surface.	
					0.8				0-4': Sleeve stuck.	
					1.0					
					1.6					
					3.1					
					4.2					
					7.8					
					4.1					
					3.2				4': Bluish gray waste material, clayey, slightly moist	
					2.1				No odor	
5'			B27-05-060807		1.7					
			(1530)		1.6					
					2.0					
					2.3					
					1.5					
					1.2					
					1.2					
					1.1					
					1.2					
					1.2					
10'			B27-10-060807		1.5					
			(1540)		1.6					
					1.3					
									12': sandy silt w/ traces of clay.	
									Dark gray. wet. Slight organic odor	
15'					1.4					
									TDD: 16' Bgs	
									TWD: 15' Bgs	
20'										
									6" Ags 0.7 (γ)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe

BOREHOLE LOG

Project Name: Halaco Engineering

Address: 6200 Perkins Road

Borehole Number: B28

Date: 06.11.2007

Logged By: NT

DEPTH	% REC	BLOWS	SAMPLE I.D.	Alpha (CPM)	Gamma (CPM)	DTW First	DTW Static	USCS SYMBOL	SOIL DESCRIPTION	Well Construction
0'			B28-a-061107 (0800)		1.1				concrete @ surface. 6" layer of silty fill. 6": Appears to be burn ash. Dark Brown w/ glass & other debris throughout - Wet.	
					1.1					
					1.1					
					~~1.0~~					
					0.9					
					0.9					
					0.9					
5'					0.8				4-8': No recovery	
					0.7					
					0.8					
					0.8					
					0.8					
					0.8					
					0.7				7.5YR 4/1: 9'½': Clayey silt. Dark gray. Wet. Strong organic odor.	
					0.6					
					0.6					
10'					0.6					
					0.4					
					0.5					
					0.6					
					0.7					
					0.6					
15'				14:	1.0					
									TDD: 16' BGS	
									TWD: 14' BGS	
20'										
									6" Ags: 0.7 (γ)	
25'										
30'										

Driller / Drilling Co.: USCG-PST

Equipment: DP- Geoprobe