

Appendix A. Boring Logs

Boring Log

BORING LOCATION East 18th St Right of Way, NW of Tacoma Metals property		Boring Name B-31	
DRILLING COMPANY Cascade		DRILLER Jaymen	
DRILLING METHOD(S) Geoprobe		DRILL BIT(S) SIZE 2-inch	
ISOLATION CASING N/A		FROM N/A TO N/A FT.	
BLANK CASING N/A		FROM N/A TO N/A FT.	
SLOTTED CASING N/A		FROM N/A TO N/A FT.	
SIZE AND TYPE OF FILTER PACK N/A		FROM N/A TO N/A FT.	
SEAL Bentonite Chips		FROM 0 TO 28 FT.	
GROUT N/A		FROM N/A TO N/A FT.	
		ELEVATION AND DATUM	TOTAL DEPTH 28.0 ft. bgs
		DATE STARTED 3/24/05	DATE COMPLETED 3/24/05
		INITIAL WATER DEPTH (FT) 11	
		LOGGED BY DKM	
		SAMPLING METHODS MacroCore w/PVC liner	WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	OVA	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"							
SS	3							GW	Well-graded GRAVEL Gray/green/brown, well graded gravel.
SS	2.5		5	B31-6-7		3.2		Wood	WOOD DEBRIS Brown/orange, wood material, medium chips to fine sawdust sized, no evident soil, moist, no evident odor, no sheen.
SS	2		10		approx.			ML	Gravelly SILT Dark brown to gray, silty material with some gravel and wood chips, oily appearance locally, soft, moist, no evident odor, no evident sheen.
SS	0		15					ML	SILT Dark brown, silty material with <25% wood material, some fine sand, soft, moist, no evident odor, no evident sheen.
SS	2.5		20	B31-19-20		100.1		Wood	WOOD DEBRIS Gray/brown, wood material, blocky, <10% matrix in recovered sample material, wet below ~11 feet, no evident odor, no sheen.
SS	4		25			523.0		SP	16 to 20 foot sample--material above sand is very wet (sloppy, runny) and large NAPL blebs are present on the water surface in the sampler.
SS	3.5		25	B31-24-25		1,292			Poorly graded SAND Gray, poorly graded medium sand, coarsens gradually downwards, wet, strong creosote odor, heavy sheen on surface in sampler appears to increase with depth, no evident NAPL but gloves/baggies are stained.
SS						8.4		CL/ML	Silty CLAY Brown/gray, silty clay to clayey silt, moderately stiff, moderate plasticity, low dilatancy, wet, no evident odor, no sheen.

NOTES

1. Reconnaissance groundwater sample B31-RGW screen placed ~21-25 feet bgs.

KJ PNW LOGS B24 TO B33.GPJ KJ PNW.GDT 5/5/05

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Northeast Corner Simpson Property		Well Name MW-29 / B-34	
DRILLING COMPANY Cascade		DRILLER Casey / Jaymen	
DRILLING METHOD(S) HSA / GeoProbe		PROJECT NAME Former Tacoma Metals	
ISOLATION CASING N/A		PROJECT NUMBER 998098.00	
BLANK CASING 2" Schedule 40 PVC Pipe		ELEVATION AND DATUM	
SLOTTED CASING 2" Schedule 40 PVC Pipe, 0.010-Slot		TOTAL DEPTH 36.0 ft. bgs	
SIZE AND TYPE OF FILTER PACK Lapis Lustre #2/12 Monterey Sand		DATE STARTED 2/14/06	
SEAL Pure Gold Bentonite Chips		DATE COMPLETED 2/15/06	
GROUT Concrete		INITIAL WATER DEPTH (FT) 10.0	
		LOGGED BY DKM	
		SAMPLING METHODS MacroCore w/PVC Liner	
		WELL COMPLETION <input checked="" type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	OVA	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV (FEET)	PENETR. RESIST. BLOWS/6'							
SH	2							SW	Well-graded SAND with gravel Gray, medium sand with 10-15% gravel and ~5% red/brown woody material locally, moderately dense, moist, no odor, no sheen.
SH	1		5	B34-7-8				Wood	WOOD DEBRIS Red/brown, woody material, fine chips to coarse sawdust size, locally up to 5% silt but typically no matrix material, soft, moist, no odor, no sheen.
SH	0.5		10					Wood	WOOD DEBRIS Dark gray to dark orange/brown, blocky wood material, typically coated with silt and fine sand, 5-10% matrix material, moist to wet below 10 feet bgs, no odor, no sheen.
SH	3		15						
SH	2.5		20	B34-18-19				ML	Sandy SILT Medium gray/brown, silt with fine sand, <5% sand at top, 15-20% sand by ~16 feet bgs, ~20% sand by 20 feet bgs, moderately dense overall but loose 20-22.5 feet bgs, wet, no odor, no sheen.
SH	4		25					ML	SILT Gray, silt, becomes sandier (fine sand) with depth, up to 10% sand by ~24 feet bgs, moderately stiff, wet, no odor, no sheen.
SH	2.5		30	B34-30-31				SP	Poorly graded SAND Gray, medium to coarse sand at top, primarily medium sand by ~28 feet bgs, fine sand present below ~30 feet bgs, moderately dense, wet, slight creosote odor, no sheen.
SH	3.5		35	B34-34-35				SM	Silty SAND Gray, silty fine sand, 15-20% silt, moderately dense, wet, no odor, no sheen.
SH	3.5							SP	Poorly graded SAND Gray, medium to fine sand at top, grading to mostly medium/coarse sand by 36 feet bgs, moderately dense, wet, no odor, no sheen.

NOTES

1. Sampling and lithologic logging were performed during GeoProbe boring on 2/14/06. The well was installed at the same location on 2/15/06.

KJ PNW LOGS MW-28R TO MW-31 2006.GPJ KJ PNW.GDT 2/19/13

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Simpson Property center well		Well Name MW-30 / B-35	
DRILLING COMPANY Cascade		DRILLER Casey / Jaymen	
DRILLING METHOD(S) HSA / GeoProbe		Project Name Former Tacoma Metals	
ISOLATION CASING N/A		Project Number 998098.00	
BLANK CASING 2" Schedule 40 PVC Pipe		ELEVATION AND DATUM TOTAL DEPTH 44.0 ft. bgs	
SLOTTED CASING 2" Schedule 40 PVC Pipe, 0.010-Slot		DATE STARTED 2/14/06	
SIZE AND TYPE OF FILTER PACK Lapis Lustre #2/12 Monterey Sand		DATE COMPLETED 2/15/06	
SEAL Pure Gold Bentonite Chips		INITIAL WATER DEPTH (FT) 9.0	
GROUT Concrete		LOGGED BY DKM	
		SAMPLING METHODS MacroCore w/PVC Liner	
		WELL COMPLETION <input checked="" type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	OVA	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SH	1.5							SW	Well-graded SAND with gravel Brown/gray, sand with 25-30% rounded gravel, some silt below ~4 feet bgs, moist, no odor, no sheen.
SH	2.5		5	B35-6-7		0.3		SM	Silty SAND with gravel Dark gray to black, granular (sand-sized) material mixed with 15-20% silt and some angular gravel material, oily surface appearance locally, moist, no odor, no sheen.
SH	2.5		10					Wood	WOOD DEBRIS Gray to brown/yellow (on exposed surfaces), blocky wood debris with gray silty matrix material (5-10%) typically coating wood surfaces, wet, no odor, no sheen.
SH	1		15			0.5			
SH	0		20						
SH	3		25	B35-23-24		0.4		SP	Poorly graded SAND Medium gray, poorly graded medium to coarse sand, locally minor fine sand, wet, no odor, no sheen above ~24 feet bgs.
SH	4		30			1.1			Slight creosote odor and no sheen ~24-28 feet bgs.
SH	4		35	B35-32-33		1.4		SP	Slight to moderate creosote odor and no sheen ~28-35 feet bgs (strongest odor ~30-33').
SH	4		40	B35-39-40		5.6			No odor or sheen below ~35 feet bgs.
SH	4					0.4			
SH	4					0.9		ML	SILT Tan/gray, silt, minor fine sand and clay, stiff, moderate plasticity and dilatency, wet, no odor, no sheen.
NOTES 1. Sampling and lithologic logging were performed during GeoProbe boring on 2/14/06. The well was installed at the same location on 2/15/06.									
								SP	Poorly graded SAND Medium gray, poorly graded medium to coarse sand, wet, no odor, no sheen.
								ML	SILT Tan/gray, silt, minor fine sand and clay, stiff, moderate plasticity and dilatency, wet, no odor, no sheen.
								SP	SILT Tan/gray, silt, minor fine sand and clay, stiff, moderate plasticity and dilatency, wet, no odor, no sheen.

(See next page for lithology description)

KJ PNW LOGS MW-28R TO MW-31 2006.GPJ KJ PNW.GDT 2/19/13

Project Name Former Tacoma Metals Project Number 998098.00 Well Name MW-30 / B-35

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	OVA	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							

Poorly graded SAND
 Medium gray, poorly graded medium to coarse sand, wet, no odor, no sheen.

KJ PNW LOGS MW-28R TO MW-31 2006.GPJ KJ PNW.GDT 2/19/13

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Simpson Property nearest Portland Avenue		Well Name MW-31 / B-36	
DRILLING COMPANY Cascade		DRILLER Casey / Jaymen	
DRILLING METHOD(S) HSA / GeoProbe		DRILL BIT(S) SIZE 9-inch / 2-inch	
ISOLATION CASING N/A		Project Name Former Tacoma Metals	
BLANK CASING 2" Schedule 40 PVC Pipe		Project Number 998098.00	
SLOTTED CASING 2" Schedule 40 PVC Pipe, 0.010-Slot		ELEVATION AND DATUM TOTAL DEPTH 36.0 ft. bgs	
SIZE AND TYPE OF FILTER PACK Lapis Lustre #2/12 Monterey Sand		DATE STARTED 2/14/06	
SEAL Pure Gold Bentonite Chips		DATE COMPLETED 2/15/06	
GROUT Concrete		INITIAL WATER DEPTH (FT) 10.0	
		LOGGED BY DKM	
		SAMPLING METHODS MacroCore w/PVC Liner	
		WELL COMPLETION <input checked="" type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	OVA	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SH	2							GW/ GM	Well-graded GRAVEL with silt and sand Tan, gravel fill with sand and silt, dense, moist, no odor, no sheen.
SH	3.5		5					Wood	WOOD DEBRIS Orange/brown, wood material, fine chips to coarse sawdust size, some silt present locally (<5% total), moderately loose, moist, no odor, no sheen.
SH	3.5		10	B36-8-10		72.6		SM	Silty SAND with gravel Dark brown, Mixture of silt (20-30%), gravel (10-15%), fine sand, and wood material, moderately loose, moist to wet, moderate odor with moderate sheen ~7-10 feet bgs, slight odor but no sheen below ~10 feet.
SH	3		15					Wood	WOOD DEBRIS Gray, coarse wood material coated with silt and fine sand matrix (5-10% overall but locally variable), wet, no odor, light to moderate sheen increasing with depth.
SH	1		20			6.7		Wood	NAPL blebs are locally visible on the water surface in the sampler, increasing with depth.
SH	3		25	B36-23-24		20.8		SP	Poorly graded SAND Dark gray, poorly graded sand, mostly fine sand at 23 feet bgs, medium to coarse sand ~24-25 feet bgs, becoming silty (up to ~10%) below ~26 feet bgs, wet, strong creosote odor with heavy sheen and brownish NAPL blebs visible ~23-24 feet bgs, moderate odor and sheen (no visible NAPL blebs) below ~24 feet bgs.
SH	3		30			3.4		SP/ SM	Poorly graded SAND with silt Gray, poorly graded fine sand with 10-15% silt, moderately dense, wet, slight creosote odor, light sheen.
SH	2.5		35	B36-31-32		31.5		SP	Poorly graded SAND Gray to dark gray, fine to medium sand at top grading to mostly medium sand by ~32 feet bgs, moderately dense, wet, moderate creosote odor and sheen above ~31 feet bgs, strong odor with heavy sheen with NAPL blebs visible below ~31 feet bgs.
SH	3.5			B36-34-35		1.1		SM	
						0.8		SP	Silty SAND Gray, fine sand with 15-20% silt, moderately dense, wet, no odor, no sheen.

NOTES

1. Sampling and lithologic logging were performed during GeoProbe boring on 2/14/06. The well was installed at the same location on 2/15/06.

(See next page for lithology description)

KJ PNW LOGS MW-28R TO MW-31 2006.GPJ KJ PNW.GDT 2/19/13

Project Name Former Tacoma Metals Project Number 998098.00 Well Name MW-31 / B-36

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	OVA	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							

Poorly graded SAND
 Gray, poorly graded medium to coarse sand, moderately dense, wet, no odor, no sheen.

KJ PNW LOGS MW-28R TO MW-31 2006.GPJ KJ PNW.GDT 2/19/13

Boring Log

BORING LOCATION Simpson Property		DRILLER Kasey		Boring Name B-37	
DRILLING COMPANY Cascade		DRILL BIT(S) SIZE 2-inch		Project Name Tacoma Metals	
DRILLING METHOD(S) GeoProbe		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM ground surface	
BLANK CASING N/A		FROM TO FT. N/A N/A		TOTAL DEPTH 24.0 ft. bgs	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/29/07	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		DATE COMPLETED 10/29/07	
SEAL Bentonite		FROM TO FT. 0 24		INITIAL WATER DEPTH (FT) 9.5	
GROUT N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
				SAMPLING METHODS MacroCore with PVC Liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SH	3.5					0	GW	GW	Well-graded GRAVEL with sand Brown, gravel and sand fill, moist, no odor, no sheen.
SH	3		5	B37-5-6		0	SW	SW	Well-graded SAND with gravel Layered green-gray/dark gray/tan, abrupt contacts between different colored layers, sand with 20-30% gravel overall (locally variable), some silt locally, moderately dense, moist, no odor, no sheen.
SH	2.5		10			0	Wood	Wood	WOOD DEBRIS Dark brown to red-brown, wood material with 5-10% silty matrix, moist, no odor, no sheen.
SH	2.5		15	B37-14-15		0	SP	SP	Poorly graded SAND Dark gray, poorly graded medium sand, moderately dense, moist to wet at ~9.5 feet bgs, no odor, no sheen.
SH	3		20			0	SM	SM	Silty SAND Gray/brown, silty fine sand, some woody material locally, moderately dense, wet, no odor, no sheen.
SH	3		21-22	B37-21-22		0	CL/	CL/	Silty CLAY Gray, silty clay, moderately stiff, moderately high plasticity, wet, no odor, no sheen.

NOTES

1. Reconnaissance groundwater sample B37-RGW screen set 18-22 feet bgs.

ML	Poorly graded SAND Gray, poorly graded medium sand, moderately dense, wet, no odor, no sheen.
SP	Sandy SILT Gray, sandy silt, moderately stiff, low plasticity, wet, no odor, no sheen.

KJ PNW LOGS B37 TO B47 2007.GPJ KJ PNW.GDT 2/19/13

Boring Log

BORING LOCATION City of Tacoma Right of Way		DRILLER Eli		Boring Name B-37A	
DRILLING COMPANY Cascade		DRILL BIT(S) SIZE 2-inch		Project Name Tacoma Metals	
DRILLING METHOD(S) GeoProbe		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM ground surface	
BLANK CASING N/A		FROM TO FT. N/A N/A		TOTAL DEPTH 24.0 ft. bgs	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 1/25/08	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		DATE COMPLETED 1/25/08	
SEAL Bentonite		FROM TO FT. 0 24		INITIAL WATER DEPTH (FT) 10.0	
GROUT N/A		FROM TO FT. N/A N/A		LOGGED BY RCZ	
				SAMPLING METHODS MacroCore with PVC Liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SH	3							GP	Poorly graded GRAVEL with sand Brown, gravely fill material, moderately dense, no odor, no sheen.
						0		SP	Poorly graded SAND with gravel Gray, poorly graded medium-fine sand with 5-10% gravel, moderately dense, no odor, no sheen.
			5					SP/ SM	Poorly graded SAND with silt Brown, sand with 30% silt, some organic debris and wood chip material, soft, no odor, no sheen.
SH	2.5					0		SW	Well-graded SAND with gravel Dark gray, sand with 50% gravel, moderately dense, no odor, no sheen.
								SW/ SM	Well-graded SAND with silt Dark gray to brown, sand with 30% silt, moderately dense, moist, no odor, no sheen.
SH	2.3		10			0		Wood	WOOD DEBRIS Dark brown to red-brown, wood material with 5-10% silty matrix, moist, no odor, no sheen.
								GW/ GM	Well-graded GRAVEL with silt and sand Dark gray, well graded gravel with 10% fine sand and 20% silt, moderately dense, wet, no odor, no sheen.
SH	1.3		15					GM	Poorly graded SAND Gray, poorly graded medium sand, 5% fine to medium gravel in upper 2 feet, grading to fine sand by 20-21 feet, moderately dense, wet, no odor, no sheen.
SH	0.5		20			0		SP	
SH	3					0		CL/ ML	Silty CLAY Gray, silty clay, moderately stiff, medium-low plasticity, wet, no odor, no sheen.

NOTES

1. Reconnaissance groundwater sample B37A-RGW screen set 18-22 feet bgs.

KJ PNW LOGS B37 TO B47 2007.GPJ KJ PNW.GDT 2/19/13

Boring Log

BORING LOCATION Simpson Property			DRILLER Kasey			Boring Name B-38		
DRILLING COMPANY Cascade			DRILL BIT(S) SIZE 2-inch			Project Name Tacoma Metals		
DRILLING METHOD(S) GeoProbe			FROM TO FT. N/A N/A			Project Number 996098*00		
ISOLATION CASING N/A			FROM TO FT. N/A N/A			ELEVATION AND DATUM ground surface		TOTAL DEPTH 28.0 ft. bgs
BLANK CASING N/A			FROM TO FT. N/A N/A			DATE STARTED 10/29/07		DATE COMPLETED 10/29/07
SLOTTED CASING N/A			FROM TO FT. N/A N/A			INITIAL WATER DEPTH (FT) 9.0		
SIZE AND TYPE OF FILTER PACK N/A			FROM TO FT. N/A N/A			LOGGED BY DKM		
SEAL Bentonite			FROM TO FT. 0 28			SAMPLING METHODS MacroCore with PVC Liner		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.
GROUT N/A			FROM TO FT. N/A N/A					

SAMPLES		PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV. (FEET)								
SH	3							GW	Well-graded GRAVEL with sand Tan, gravelly fill material, moderately dense, slightly moist, no odor, no sheen.
SH	3		5	B38-5-6				SP/	Poorly graded SAND with silt Dark gray, sand with 10-15% silt and 5-10% gravel, moderately dense, moist, no odor, no sheen.
SH	2.8		10			0		SM	Silty SAND Gray, very fine sand with 30-40% silt, moderately dense, moist, no odor, no sheen.
SH	3.2		15	B38-14.5-15.5		0		SP	Poorly graded SAND Gray, poorly graded medium sand, local small (<1/2") silt nodules in lower ~5 feet, moderately dense, wet, possible slight creosote odor ~15-20 feet bgs, no odor otherwise, no sheen.
SH	2.5		20			0		SP	
SH	3.5		25	B38-22.5-23.5		0		CL/	@ ~23 feet bgs 1/2" thick layer of gray/brown silty clay
SH	4		25					ML	Silty CLAY Gray, silty clay, some fine sand locally, moderately stiff, high plasticity, wet, no odor, no sheen.

NOTES

1. Reconnaissance groundwater sample B38-RGW screen set 20-24 feet bgs.

KJ PNW LOGS B37 TO B47 2007.GPJ KJ PNW.GDT 2/19/13

Boring Log

BORING LOCATION Simpson Property		DRILLER Kasey		Boring Name B-39	
DRILLING COMPANY Cascade		DRILL BIT(S) SIZE 2-inch		Project Name Tacoma Metals	
DRILLING METHOD(S) GeoProbe		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM ground surface	
BLANK CASING N/A		FROM TO FT. N/A N/A		TOTAL DEPTH 28.0 ft. bgs	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/29/07	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		DATE COMPLETED 10/29/07	
SEAL Bentonite		FROM TO FT. 0 28		INITIAL WATER DEPTH (FT) 10.0	
GROUT N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
				SAMPLING METHODS MacroCore with PVC Liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SH	2							GW	Well-graded GRAVEL with sand Brown to gray/brown, gravelly fill, moderately dense, no odor, no sheen.
SH	3.5		5	B39-5.5-6.5		0	Wood	SM	Silty SAND Brown/red, silty fine sand with 10-20% wood chip material, soft, moist, no odor, no sheen.
SH	3		10	B39-10-11		0		SM	WOOD DEBRIS Brown/gray, wood debris with <5% silt/sand matrix material, moist, creosote odor, no sheen.
SH	0		15			0		SM	Silty SAND Dark gray, silty sand with some wood debris, moderately dense, moist, possible slight creosote odor, medium sheen.
SH	3.5		20			0		SP	Silty SAND Tan/gray, fine sand with >40% silt, moderately dense, moist, no odor, no sheen.
SH	4		25	B39-21-22		0			Poorly graded SAND Dark gray, poorly graded medium sand, coarser sand with some fine gravel in lower ~3 feet, moderately dense, wet, no odor, medium to heavy sheen ~21-22 feet bgs, no sheen otherwise.
SH	4		25	B39-23-24		0		ML/	Clayey SILT Gray, clayey silt, moderately stiff, wet, no odor, no sheen.
SH	4		25					CL	Poorly graded SAND with silt Gray, fine sand with 10-15% silt overall, layered texture with interbedded poorly graded sand to silty fine sand, moderately dense, wet, no odor, no sheen.
								SP/	Silty CLAY Gray, silty clay, moderately stiff, high plasticity, wet, no odor, no sheen.
								SM	
								CL/	
								ML	

NOTES
1. Reconnaissance groundwater sample B39-RGW screen set 19-23 feet bgs.

KJ PNW LOGS B37 TO B47 2007.GPJ KJ PNW.GDT 2/19/13

Boring Log

BORING LOCATION JJ Port Property		DRILLER Eli		Boring Name B-39A	
DRILLING COMPANY Cascade		DRILL BIT(S) SIZE 2-inch		Project Name Tacoma Metals	
DRILLING METHOD(S) GeoProbe		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM ground surface	
BLANK CASING N/A		FROM TO FT. N/A N/A		TOTAL DEPTH 28.0 ft. bgs	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 1/25/08	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		DATE COMPLETED 1/25/08	
SEAL Bentonite		FROM TO FT. 0 28		INITIAL WATER DEPTH (FT) 10.0	
GROUT N/A		FROM TO FT. N/A N/A		LOGGED BY RCZ	
				SAMPLING METHODS MacroCore with PVC Liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SH	3		0					GW	Well-graded GRAVEL with sand Dark orange/brown, gravelly fill with 30-40% sand, moderately dense, no odor, no sheen.
			5			0		SW/ SM	Well-graded SAND with silt Dark orange/brown, silty fine sand with 10-20% wood chip material and 10% gravel, moderately dense, moist, no odor, no sheen.
SH	3		10			0		SW/ SM	Well-graded SAND with silt Tan/gray, silty fine sand with 5-10% gravel, moderately dense, moist, no odor, no sheen.
			15			0		SW/ SM	Well-graded SAND with silt Dark orange/brown, fine sand with 10% silt, moderately dense, moist, no odor, no sheen.
SH	2.5		20			0		SW/ SM	WOOD DEBRIS Brown/red, wood debris with up to 50% silt/sand matrix material, moist, no odor, no sheen.
			25			0		Wood SM	Silty SAND Tan/gray, fine sand with 30-40% silt, moderately dense, moist, no odor, no sheen.
SH	2.5		30			0		SM	Poorly graded SAND Dark gray, poorly graded medium sand, coarsening downwards to medium/coarse sand, some gravel at 24 feet, moderately dense, wet, no odor, no sheen.
SH	3		35			0		SP	
SH	2		40			0			
SH	3.5		45			0		ML/ CL	Clayey SILT Gray, clayey silt with 5% fine sand, moderately stiff, high plasticity, wet, no odor, no sheen.

NOTES

1. Reconnaissance groundwater sample B39A-RGW screen set 22.5-26.5 feet bgs.

KJ PNW LOGS B37 TO B47 2007.GPJ KJ PNW.GDT 2/19/13

Boring Log

BORING LOCATION Northeast of B36 Simpson Property		DRILLER Noel		Boring Name B48	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.20 ft.	
BLANK CASING N/A		FROM TO FT. N/A N/A		TOTAL DEPTH 15.0 ft. bgs	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/7/14	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		DATE COMPLETED 10/7/14	
SEAL Bentonite Granules		FROM TO FT. 0 15		INITIAL WATER DEPTH (FT) 8.5	
GROUT N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
				SAMPLING METHODS Macrocore w/liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	3							SW	Well-graded SAND with gravel Tan/light brown, sand with up to 50% gravel, <10% silt, moderately dense, slightly moist, no odor, no sheen.
						0.0	Wood		WOOD DEBRIS (upper wood fill) Brown/orange, wood fill (chips/sawdust/shavings), no soil matrix, moderately loose, slightly moist to moist, no odor, no sheen.
						25.9	GP		Poorly graded GRAVEL Light gray, angular rock or broken concrete, no odor, no sheen.
SS	2.5		5	B48-4.5-7		4.8		SP/SM	Poorly graded SAND with silt and gravel Dark gray, medium to fine sand with ~10-20% silt and ~10-15% gravel, moderately dense, moist to wet, tideflat-like odor, possible light sheen.
						0.6			
SS	3		10	B48-7-9				Wood	WOOD DEBRIS (lower wood fill) Medium gray to tan, wood debris with 10-20% sandy silt matrix (varies locally), wet, no odor, no sheen.
						0.0			

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORKING

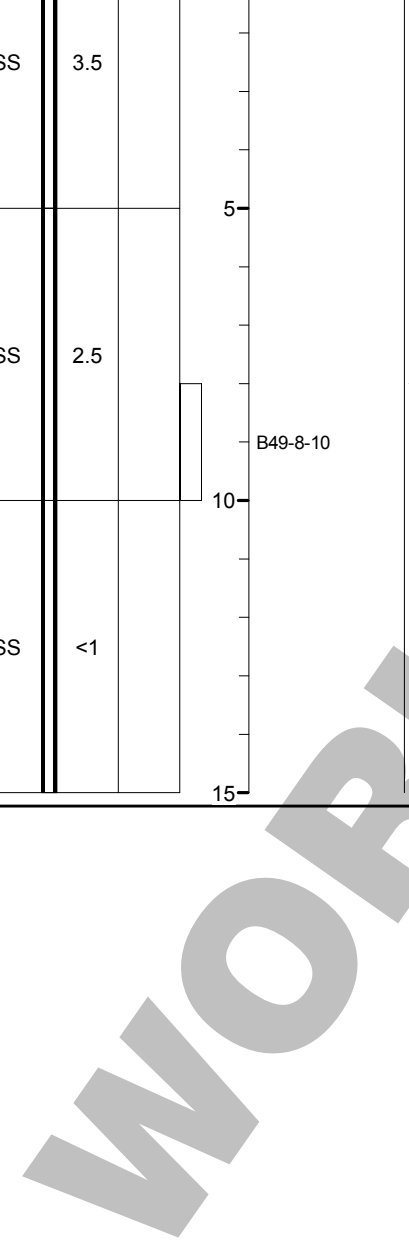
Boring Log

Kennedy/Jenks Consultants

BORING LOCATION East of B36 Simpson Property			DRILLER Noel			Boring Name B49		
DRILLING COMPANY ESN			DRILL BIT(S) SIZE 2-inch			Project Name Former Tacoma Metals		
DRILLING METHOD(S) Direct Push			FROM TO FT. N/A N/A			Project Number 996098*00		
ISOLATION CASING N/A			FROM TO FT. N/A N/A			ELEVATION AND DATUM bgs 10.00 ft.		TOTAL DEPTH 15.0 ft. bgs
BLANK CASING N/A			FROM TO FT. N/A N/A			DATE STARTED 10/7/14		DATE COMPLETED 10/7/14
SLOTTED CASING N/A			FROM TO FT. N/A N/A			INITIAL WATER DEPTH (FT) 8.0		
SIZE AND TYPE OF FILTER PACK N/A			FROM TO FT. N/A N/A			LOGGED BY DKM		
SEAL Bentonite Granules			FROM TO FT. 0 15			SAMPLING METHODS		
GROUT N/A			FROM TO FT. N/A N/A			WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.		
GROUT N/A			FROM TO FT. N/A N/A			Macrocore w/liner		

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"							
SS	3.5					0.0	SW		Well-graded SAND with gravel Brown/tan, sand with up to 50% gravel, <10% silt, moderately dense, slightly moist, no odor, no sheen.
						0.1	Wood		WOOD DEBRIS (upper wood fill) Orange/brown, wood fill (chips/sawdust/shavings), no soil matrix, some gravel in bottom 6 inches, moderately loose, slightly moist, no odor, no sheen.
SS	2.5		5	B49-8-10		0.5	SM		Silty SAND Dark gray to dark brown, silty sand with 10-20% wood debris, some gravel, moderately loose, moist to wet, faint odor in lower 2 feet, no sheen.
SS	<1		10			2.6	Wood		WOOD DEBRIS (lower food fill) Brown, wood debris with 10-20% silty matrix (varies locally), wet, slight to moderate odor, moderate to heavy sheen, no evident NAPL.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15



Boring Log

BORING LOCATION South of B36 Simpson Property		DRILLER Noel		Boring Name B50	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 9.80 ft.	
BLANK CASING N/A		FROM TO FT. N/A N/A		TOTAL DEPTH 11.0 ft. bgs	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/7/14	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		DATE COMPLETED 10/7/14	
SEAL Bentonite Granules		FROM TO FT. 0 11		INITIAL WATER DEPTH (FT) 8.5	
GROUT N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
				SAMPLING METHODS Macrocore w/liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	3			B50-4-5				SW/SM	Well-graded SAND with silt Tan/brown, sand with gravel and 10-15% silt, moderately dense, slightly moist, no odor, no sheen.
			5			0.2		Wood	WOOD DEBRIS (upper wood fill) Orange/brown, wood fill (chips/sawdust/shavings), no soil matrix, moderately loose, moist, no odor, no sheen.
SS	4			B50-7-8 B50-8-9		2.0		SM	Silty SAND with gravel Dark gray, silty sand with 10-15% wood debris and some gravel, moderately dense, moist to wet, moderate odor from ~4-5 feet bgs decreasing with depth, no sheen.
			10					Wood	WOOD DEBRIS (lower wood fill) Tan to gray, woody debris with 10-20% silty matrix material overall (varies locally), wet, no odor, no sheen.
SS	<1					0.2			

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15



Boring Log

BORING LOCATION Southwest of B36 Simpson Property			Boring Name <u>B51</u>		
DRILLING COMPANY ESN		DRILLER Noel		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		DRILL BIT(S) SIZE 2-inch		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM	TO	FT.	ELEVATION AND DATUM bgs 9.40 ft.
BLANK CASING N/A		FROM	TO	FT.	TOTAL DEPTH 15.0 ft. bgs
SLOTTED CASING N/A		FROM	TO	FT.	DATE STARTED 10/7/14
SIZE AND TYPE OF FILTER PACK N/A		FROM	TO	FT.	DATE COMPLETED 10/7/14
SEAL Bentonite Granules		FROM	TO	FT.	INITIAL WATER DEPTH (FT) 9.0
GROUT N/A		FROM	TO	FT.	LOGGED BY DKM
		FROM	TO	FT.	SAMPLING METHODS
		FROM	TO	FT.	Macrocore w/liner
		FROM	TO	FT.	WELL COMPLETION
		FROM	TO	FT.	<input type="checkbox"/> SURFACE HOUSING
		FROM	TO	FT.	<input type="checkbox"/> STAND PIPE _____ FT.

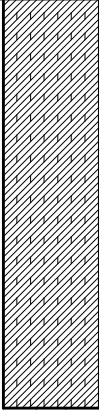



SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	3		5	B51-3.5-5				SW	Well-graded SAND with gravel Brown, mixed sand with gravel fill, some silt, moderately dense, slightly moist, no odor, no sheen.
						1.1	Wood	GP	WOOD DEBRIS (upper wood fill) Orange/brown, wood fill (chips/sawdust/shavings), no soil matrix, no odor, no sheen.
						5.3			Poorly graded GRAVEL Gray, crushed angular rock or concrete, no odor, no sheen.
SS	3.5		10	B51-8.5-10		3.3		SM	Silty SAND Dark orange/brown to dark gray, silty sand, minor gravel, <10% wood debris including blocky wood with moderate odor between ~7-7.5 feet bgs, moderately dense, moist to wet, slight odor and sheen decreasing with depth.
						0.6			WOOD DEBRIS (lower wood fill) Gray to brown, blocky wood debris with 10-15% silty matrix overall (matrix % varies locally), wet, faint to moderate odor, medium sheen.
SS	<1		15			2.7		Wood	
						2.4			

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORKING

Boring Log

BORING LOCATION North of B36 JJ Port Property				DRILLER Noel		Boring Name B52	
DRILLING COMPANY ESN				DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push				FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A				FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 6.80 ft.	
BLANK CASING N/A				FROM TO FT. N/A N/A		TOTAL DEPTH 7.0 ft. bgs	
SLOTTED CASING N/A				FROM TO FT. N/A N/A		DATE STARTED 10/7/14	
SIZE AND TYPE OF FILTER PACK N/A				FROM TO FT. N/A N/A		DATE COMPLETED 10/7/14	
SEAL Bentonite Granules				FROM TO FT. 0 7		INITIAL WATER DEPTH (FT) 6.8	
GROUT N/A				FROM TO FT. N/A N/A		LOGGED BY DKM	
						SAMPLING METHODS Macrocore w/liner	
						WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

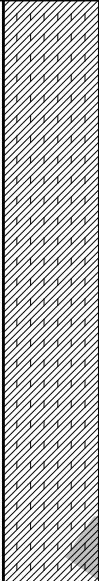


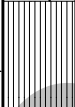
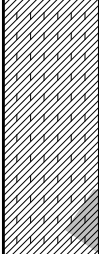

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"							
SS	2.5		5	B52-3.5-5		0.0		SW	Well-graded SAND with gravel Tan/brown, sandy fill with up to 50% gravel, <10% silt, moderately dense, slightly moist, no odor, no sheen.
									0.0
SS	1.5					0.1		Wood	WOOD DEBRIS (lower wood fill) Gray/brown, blocky wood debris with 5-10% silty matrix, moist, no odor, no sheen.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORKING

Boring Log

BORING LOCATION West of B36 JJ Port Property		DRILLER Noel		Boring Name B53	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 7.00 ft. TOTAL DEPTH 10.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/7/14 DATE COMPLETED 10/7/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 6.5	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 10		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS			
TYPE	RECOV (FEET)	PENETR. RESIST. BLOWS/6"										
SS	3		5	B53-4-5		0.0		SW	Well-graded SAND with gravel Medium brown, sandy fill with up to 40% gravel, <10% silt, moderately dense, slightly moist, no odor, no sheen.			
									0.0		SP	Poorly graded SAND with gravel Orange/brown, medium to fine sand with 10-15% gravel, <10% silt, moderately dense, moist, no odor, no sheen.
									0.0		SM	Silty SAND with gravel Dark gray, silty sand with ~15-20% gravel, moderately dense, moist to wet, no odor, no sheen.
SS	2		10			0.0		Wood	WOOD DEBRIS (lower wood fill) Gray to gray/brown, blocky wood debris with 5-15% silty matrix coating wood surfaces, wet, no odor, possible light sheen below ~9' bgs otherwise no sheen.			

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORKING

Boring Log

BORING LOCATION Northeast of B36 Simpson Property			DRILLER Noel			Boring Name B54		
DRILLING COMPANY ESN			DRILL BIT(S) SIZE 2-inch			Project Name Former Tacoma Metals		
DRILLING METHOD(S) Direct Push			FROM TO FT. N/A N/A			Project Number 996098*00		
ISOLATION CASING N/A			FROM TO FT. N/A N/A			ELEVATION AND DATUM bgs 10.30 ft.		TOTAL DEPTH 10.0 ft. bgs
BLANK CASING N/A			FROM TO FT. N/A N/A			DATE STARTED 10/7/14		DATE COMPLETED 10/7/14
SLOTTED CASING N/A			FROM TO FT. N/A N/A			INITIAL WATER DEPTH (FT) 8.5		
SIZE AND TYPE OF FILTER PACK N/A			FROM TO FT. N/A N/A			LOGGED BY DKM		
SEAL Bentonite Granules			FROM TO FT. 0 10			SAMPLING METHODS Macrocore w/liner		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.
GROUT N/A			FROM TO FT. N/A N/A					

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	3							SW	Well-graded SAND with gravel Brown, sandy fill with up to 40% gravel, <10% silt, moderately dense, slightly moist, no odor, no sheen.
								Wood	WOOD DEBRIS (upper wood fill) Brown/orange, wood fill (chips/sawdust/shavings), no soil matrix, moderately loose, moist, no odor, no sheen.
			5	B54-6-7				SP/SM	Angular crushed rock or concrete in sampler tip (below ~4.8' bgs) Poorly graded SAND with silt and gravel Dark gray to dark brown, sand with 10-20% silt and 10-15% gravel, some wood debris, moderately loose, moist to wet, slight odor, no sheen.
SS	1.5							Wood	WOOD DEBRIS (lower wood fill) Brown to gray, blocky wood debris with 5-15% silty matrix (varies locally), wet, no odor, no sheen.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORKING

Boring Log

Kennedy/Jenks Consultants

BORING LOCATION East of B36 Simpson Property		DRILLER Noel		Boring Name B55	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.50 ft.	
BLANK CASING N/A		FROM TO FT. N/A N/A		TOTAL DEPTH 12.0 ft. bgs	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/7/14	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		DATE COMPLETED 10/7/14	
SEAL Bentonite Granules		FROM TO FT. 0 12		INITIAL WATER DEPTH (FT) 10.0	
GROUT N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
				SAMPLING METHODS Macrocore w/liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	3.5		5	B55-4-5		0.0	SW		Well-graded SAND with gravel Gray/brown to medium brown, sand with 40-45% gravel, minor silt, fill, moderately dense, slightly moist, no odor, no sheen.
SS	2.5		10	B55-7.5-9		0.0	Wood		WOOD DEBRIS (upper wood fill) Orange/brown, wood fill (chips/sawdust/shavings), no soil matrix, moderately loose, moist, no odor, no sheen.
SS	1		10	B55-10-12		0.0	SP/SM		Poorly graded SAND with silt and gravel Dark brown (above ~7 feet bgs) to dark gray, sand with up to 20% silt, 5-10% gravel, >10% red/brown wood debris below ~7 feet bgs, moderately loose, moist to wet, slight odor and light sheen below ~7 feet bgs.
SS						0.0	Wood		WOOD DEBRIS (lower wood fill) Brown, wood debris with 10-20% silty matrix overall (varies locally), wet, slight odor and light sheen.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORK

Boring Log

BORING LOCATION Southeast of B36 Simpson Property		DRILLER Noel		Boring Name B56	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.10 ft.	
BLANK CASING N/A		FROM TO FT. N/A N/A		TOTAL DEPTH 15.0 ft. bgs	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/7/14	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		DATE COMPLETED 10/7/14	
SEAL Bentonite Granules		FROM TO FT. 0 15		INITIAL WATER DEPTH (FT) 9.0	
GROUT N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
				SAMPLING METHODS Macrocore w/liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	3.5						SW		Well-graded SAND with gravel Brown/tan, sandy fill with >40% gravel, some silt, moderately dense, slightly moist, no odor, no sheen.
						0.1	Wood		WOOD DEBRIS (upper wood fill) Orange/brown, wood fill (chips/sawdust/shavings), no soil matrix, moderately loose, moist, no odor, no sheen.
			5			0.0	ML		SILT with sand (with wood debris) Dark brown, silt with >50% red/brown woody material, moderately soft, moist, no odor, no sheen.
SS	3			B56-7-8.5		0.8	SM		Silty SAND Dark gray, silty sand with some gravel, some wood debris, moderately loose, moist to wet, slight to moderate odor, light sheen.
			10			0.0	Wood		WOOD DEBRIS (lower wood fill) Gray, wood debris with 20-30% silty matrix overall (varies locally), wet, no odor, very light sheen.
SS	3			B56-13-14		0.0	Wood		
			15						

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORK IN PROGRESS

Boring Log

BORING LOCATION South of B36 Simpson Property		DRILLER Noel		Boring Name B57	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 9.90 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/7/14 DATE COMPLETED 10/7/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 8.5	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	2.5					0.0		SW	Well-graded SAND with gravel Tan/brown, sandy fill with gravel, some silt, moderately dense, slightly moist, no odor, no sheen.
						0.3		Wood	WOOD DEBRIS (upper wood fill) Orange/brown, wood fill (chips/sawdust/shavings), up to 10% silty soil matrix, moderately loose, moist, faint odor, no sheen.
						1.0		Wood	
						84.6		Wood	WOOD DEBRIS (blocky wood, no matrix) Dark brown/gray, blocky wood with oily (stained) appearance, strong odor, heavy sheen.
SS	3.5		5	B57-7.5-8.5		3.4		SM	Silty SAND with gravel Dark brown to dark gray, sand with >30% silt, some gravel, some wood debris, moist to wet, slight odor, light to medium sheen.
						2.5			
			10	B57-9-12		24.7			WOOD DEBRIS (lower wood fill) Gray/silver, wood debris with 10-15% silty matrix (varies locally) between and coating wood material, soft matrix, wet, strong odor, heavy sheen, small NAPL blebs locally.
SS	4					73.3		Wood	
						15.6			

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORK

Boring Log

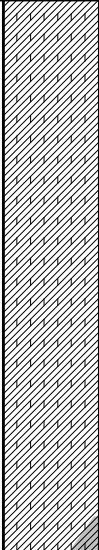

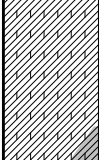

BORING LOCATION Southwest of B36 Simpson Property		DRILLER Noel		Boring Name B58	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 9.30 ft.	
BLANK CASING N/A		FROM TO FT. N/A N/A		TOTAL DEPTH 20.0 ft. bgs	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/7/14	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		DATE COMPLETED 10/7/14	
SEAL Bentonite Granules		FROM TO FT. 0 20		INITIAL WATER DEPTH (FT) 8.0	
GROUT N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
				SAMPLING METHODS Macrocore w/liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	2.5		5	B58-4-5		0.1	SW		Well-graded SAND with gravel Brown, sandy fill with <30% gravel and some silt, moderately dense, slightly moist, no odor, no sheen.
						1.2	GP ML		Poorly graded GRAVEL Gray, crushed rock or concrete, no odor, no sheen.
									SILT with sand (with wood debris) Orange/brown, sandy silt with >50% wood (chips/sawdust/shavings) debris, moderately soft, moist, no odor, no sheen.
SS	3.5		10	B58-7.5-8.5		0.4	SP/ SM		Poorly graded SAND with silt and gravel Dark gray, sand with 10-15% silt and some gravel, moderately loose, moist to wet, faint odor, light sheen.
						4.0			WOOD DEBRIS (lower wood fill) Gray/silver to dark gray (varies locally), blocky wood debris with 5-10% silty matrix (varies locally) coating wood surfaces, wet, moderate to strong odor, medium to heavy sheen, NAPL blebs locally below ~16 feet bgs.
						34.7			
SS	3.5		15			39.0			
						5.6	Wood		
						31.8			
SS	3.5		20			52.1			
						74.3			

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

Boring Log

BORING LOCATION North of B36 JJ Port Property			DRILLER Noel			Boring Name B59	
DRILLING COMPANY ESN			DRILL BIT(S) SIZE 2-inch			Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push			FROM TO FT. N/A N/A			Project Number 996098*00	
ISOLATION CASING N/A			FROM TO FT. N/A N/A			ELEVATION AND DATUM bgs 6.60 ft. TOTAL DEPTH 9.5 ft. bgs	
BLANK CASING N/A			FROM TO FT. N/A N/A			DATE STARTED 10/8/14 DATE COMPLETED 10/8/14	
SLOTTED CASING N/A			FROM TO FT. N/A N/A			INITIAL WATER DEPTH (FT) 7.0	
SIZE AND TYPE OF FILTER PACK N/A			FROM TO FT. N/A N/A			LOGGED BY DKM	
SEAL Bentonite Granules			FROM TO FT. 0 9.5			SAMPLING METHODS Macrocore w/liner	
GROUT N/A			FROM TO FT. N/A N/A			WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"							
SS	2		5	B59-3.5-4.5		0.1		SW	Well-graded SAND with gravel Brown, sandy fill with gravel and some silt, moderately dense, slightly moist, no odor, no sheen.
									0.0
SS	2					0.2		Wood	WOOD DEBRIS (lower wood fill) Gray, blocky to fibrous wood debris with 10-15% silty matrix (varies locally) decreasing to <10% below ~7 feet bgs, wet, no odor, no sheen.

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WORKING

Boring Log

BORING LOCATION Southwest of B36 JJ Port Property		DRILLER Noel		Boring Name B60	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 7.30 ft. TOTAL DEPTH 16.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/8/14 DATE COMPLETED 10/8/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 8.5	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 16		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'							
SS	1		5	B60-4.5-5		0.5	SW		Well-graded SAND with gravel Brown, sandy fill with gravel and some silt, moderately dense, slightly moist, no odor, no sheen.
SS	2.5		10			0.2	SM		Silty SAND with gravel Dark brown to dark gray, silty sand with up to 20% gravel, moderately loose, moist, faint odor, very light sheen.
SS	2		15	B60-9-15		0.1	Wood		WOOD DEBRIS (lower wood fill) Brown to gray-brown (below ~9 feet bgs, sharp color change), blocky to fibrous wood debris with 10-15% silty matrix (varies locally), moist to wet, no odor, no sheen above ~9 feet bgs, strong odor and heavy sheen below ~9 feet bgs, NAPL blebs on water surface in sampler 15-16 feet bgs.
SS	<1		15			1.2			

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WORK IN PROGRESS

Boring Log

BORING LOCATION Southwest of B36 JJ Port Property		DRILLER Noel		Boring Name B61	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 9.20 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/8/14 DATE COMPLETED 10/8/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 9.5	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6'							
SS	1					0.1	GW		Well-graded GRAVEL with sand Brown/tan to orange/brown, gravel fill with >40% sand, some silt, moderately dense, slightly moist to moist, no odor, no sheen.
SS	3		5	B61-7-8		0.0	ML		SILT (with wood debris) Dark brown to brown/orange, silt with up to 75% woody material, moderately soft, moist, faint odor, no sheen.
			10			0.2	Wood		WOOD DEBRIS (lower wood fill) Brown/gray, wood debris with 10-15% silty matrix (varies locally), moist to wet, faint odor, light sheen starting below ~9 feet bgs.
SS	3.5		15	B61-13-14		5.9	ML		In upper part of 10-15' sample (~11-13 feet bgs); loose, wet gravel and sand present in matrix with strong odor, heavy sheen, and small NAPL blebs locally.
						1.2	ML		Sandy SILT Brown, sandy silt, moderately stiff, wet, slight odor, light sheen.
						0.9	SP		Poorly graded SAND Brown, medium to fine sand, moderately dense, wet, slight odor, light sheen.
						0.2			

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WORK IN PROGRESS

Boring Log

BORING LOCATION West of B36 JJ Port Property		DRILLER Noel		Boring Name B62	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 7.50 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/8/14 DATE COMPLETED 10/8/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 9.0	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	3		0.0 - 3.0	B62-4-5		0.0	SW	Well-graded SAND with gravel Brown, sandy fill with up to 40% gravel, some silt, minor brick debris, moderately dense, slightly moist, no odor, no sheen.	
SS	2.5		3.0 - 5.5	B62-8-9		0.0	SM	Silty SAND with gravel Dark brown, silty sand with 10-15% gravel, some wood debris, moderately loose, moist to wet, no odor, no sheen.	
SS	1		10.0 - 11.0			0.0	Wood	WOOD DEBRIS (lower wood fill) Brown to gray/brown, blocky to fibrous wood debris, 10-15% silty matrix (varies locally), wet, no odor, no sheen.	

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Boring Log

BORING LOCATION Southwest of B36 JJ Port Property		DRILLER Noel		Boring Name B63	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 9.00 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/8/14 DATE COMPLETED 10/8/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 9.5	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	2							SW	Well-graded SAND with gravel Brown to gray (below ~3 feet bgs), sandy fill with gravel and some silt, moderately dense, slightly moist, no odor, no sheen.
			5	B63-4-5		0.0		SP	Poorly graded SAND with gravel Brownish gray, sand to fine gravel sized granular fill, some wood chips, moderately dense, slightly moist, no odor, no sheen.
SS	3					0.0		ML	SILT (with wood debris) Brown, silt with up to 80% soft woody debris, moderately soft, moist, no odor, no sheen.
			10			0.4		Wood	WOOD DEBRIS (lower wood fill) Brown to gray, blocky wood debris, <5% silty matrix, moist to wet, no odor, no sheen.
				B63-10.5-11.5		0.0		GP	Poorly graded GRAVEL with sand Brown, gravel (fine grains) with ~40% medium to coarse sand, some silt, loose, wet, faint odor, light sheen.
SS	4.5					0.0		ML	Sandy SILT Brown, sandy silt, soft at top grading downward to moderately stiff, wet, faint odor and light sheen in upper few inches, otherwise no odor and no sheen.
			15			0.0		SP	Poorly graded SAND Medium gray, poorly graded medium to coarse sand, some silt locally in small nodules, moderately dense, wet, no odor, no sheen.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORK IN PROGRESS

Boring Log

BORING LOCATION South of B36 Simpson Property		DRILLER Noel		Boring Name B64	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 9.60 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/8/14 DATE COMPLETED 10/8/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 10.0	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	2							SW	Well-graded SAND with gravel Brown, sandy fill with gravel and some silt, moderately dense, slightly moist, no odor, no sheen.
			5					SP	Poorly graded SAND with gravel Gray, medium to coarse sand, minor gravel, moderately dense, moist, faint odor, no sheen.
SS	3.5			B64-7.5-8.5		1.5		ML	SILT (with wood debris) Brown, silt with up to 70% soft woody debris, moderately soft, moist to wet, faint odor, light sheen.
			10			3.4		Wood	WOOD DEBRIS (lower wood fill) Greenish-brown to orange-brown, blocky wood debris, ~5% silty matrix, wet, moderate odor, medium sheen.
						10.9		GP	Poorly graded GRAVEL with sand Gray, angular gravel (small fragments) with ~30% sand, some silt, wet, strong odor, heavy sheen, small NAPL blebs locally.
SS	3.5			B64-14-15		7.6		ML	WOOD DEBRIS (lower wood fill) Brown to dark gray, wood debris with 10-15% silty matrix (varies locally), wet, moderate odor, heavy sheen.
			15			3.4		SP	Sandy SILT Brown, sandy silt, moderately stiff, wet, slight odor, light sheen.
									Poorly graded SAND Gray, poorly graded medium sand, moderately dense, wet, slight odor, light sheen.

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Boring Log

BORING LOCATION South of B36 Simpson Property			DRILLER Noel			Boring Name B65	
DRILLING COMPANY ESN			DRILL BIT(S) SIZE 2-inch			Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push			FROM TO FT. N/A N/A			Project Number 996098*00	
ISOLATION CASING N/A			FROM TO FT. N/A N/A			ELEVATION AND DATUM bgs 9.80 ft. TOTAL DEPTH 20.0 ft. bgs	
BLANK CASING N/A			FROM TO FT. N/A N/A			DATE STARTED 10/8/14 DATE COMPLETED 10/8/14	
SLOTTED CASING N/A			FROM TO FT. N/A N/A			INITIAL WATER DEPTH (FT) 9.0	
SIZE AND TYPE OF FILTER PACK N/A			FROM TO FT. N/A N/A			LOGGED BY DKM	
SEAL Bentonite Granules			FROM TO FT. 0 20			SAMPLING METHODS Macrocore w/liner	
GROUT N/A			FROM TO FT. N/A N/A			WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	2.5			B65-3.5-4.5		0.0		SW	Well-graded SAND with gravel Brown, sandy fill with gravel and some silt, moderately dense, slightly moist, no odor, no sheen.
			5			0.8	Wood		WOOD DEBRIS (upper wood fill) Orange/brown, wood fill (chips/sawdust/shavings), no soil matrix, moderately loose, moist, no odor, no sheen.
						0.1		SM	
						0.0		SP/SM	Silty SAND with gravel Dark gray, silty sand with some gravel, moderately dense, moist, faint odor, no sheen.
SS	3			B65-8-9		0.2		SP	Poorly graded SAND with silt Medium gray, medium sand with ~5-10% silt, moderately dense, moist, no odor, no sheen.
			10			18.3			Poorly graded SAND with gravel Brown, medium to coarse sand with ~10-15% gravel, moist to wet, no odor, no sheen.
									WOOD DEBRIS (lower wood fill) Dark brown (upper ~6 inches) to medium brown (above ~9.5 feet bgs) to medium gray (below ~9.5 feet bgs), wood debris with 10-15% silty matrix (varies locally), wet, moderate odor and medium to heavy sheen below ~9.5 feet bgs.
SS	2					3.3		Wood	
			15			10.9			
						5.2		GP	Poorly graded GRAVEL with sand Gray, gravel (fine grains) with >30% sand, wet, slight odor, light sheen.
SS	4			B65-17-18		3.5			
			20			2.9		SP	Poorly graded SAND Gray, poorly graded medium sand, moderately dense, wet, slight odor, light sheen.

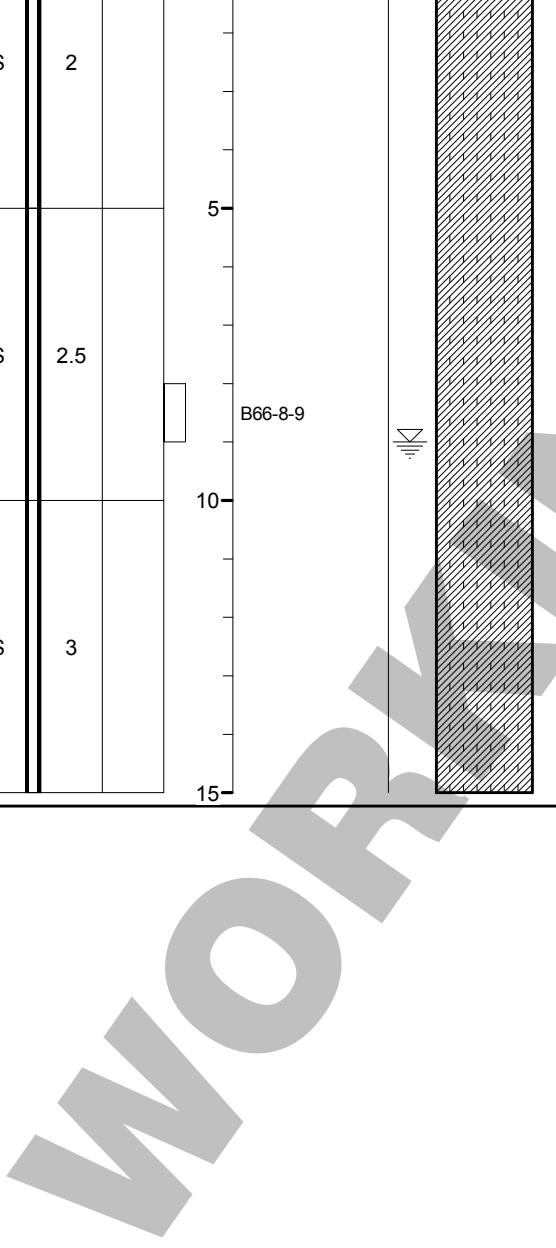
KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

Boring Log

BORING LOCATION Southeast of B36 Simpson Property		DRILLER Noel		Boring Name B66	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.10 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/8/14 DATE COMPLETED 10/8/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 9.0	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	2					1.3	SW		Well-graded SAND with gravel Brown, sandy fill with gravel and some silt, moderately dense, slightly moist, no odor, no sheen.
						2.8	Wood		WOOD DEBRIS (blocky wood, no matrix) Blocky wood with no matrix material, moist, slight odor, light sheen.
			5			14.0	SW		Well-graded SAND with gravel Brown, sandy fill with gravel and some silt, moderately dense, slightly moist, no odor, no sheen.
SS	2.5			B66-8-9		0.5	SM		Silty SAND with gravel Brown, sandy silt with some gravel, some wood debris, moderately loose, moist to wet, faint odor, no sheen.
						1.1			
			10			2.7	Wood		WOOD DEBRIS (lower wood fill) Brown to gray, wood debris with 5-15% silty matix (varies locally), wet, moderate to strong odor, medium to heavy sheen, NAPL blebs locally on water surface in 10-15 foot sampler but not observed on wood/silt surfaces.
SS	3					38.9			
						22.6			
			15			29.0			

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Boring Log

BORING LOCATION Southeast of B36 Simpson Property			Boring Name <u>B67</u>		
DRILLING COMPANY ESN		DRILLER Noel		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		DRILL BIT(S) SIZE 2-inch		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM	TO	ELEVATION AND DATUM bgs 10.10 ft.	
BLANK CASING N/A		N/A		TOTAL DEPTH 15.0 ft. bgs	
SLOTTED CASING N/A		N/A		DATE STARTED 10/8/14	DATE COMPLETED 10/8/14
SIZE AND TYPE OF FILTER PACK N/A		N/A		INITIAL WATER DEPTH (FT) 8.5	
SEAL Bentonite Granules		FROM	TO	LOGGED BY DKM	
GROUT N/A		0 15		SAMPLING METHODS	
		N/A		Macrocore w/liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	3		0.0	B67-4-5		0.0	SW		Well-graded SAND with gravel Tan/brown, sandy fill with gravel, some silt, moderately dense, slightly moist, no odor, no sheen.
			5			0.0	Wood		WOOD DEBRIS (upper wood fill) Orange (above ~3.5 feet bgs) to brown (below ~3.5 feet bgs), wood fill (chips/shavings/sawdust), no soil matrix, moderately loose, moist, faint odor and light sheen at ~4 to 4.5 feet bgs, otherwise no odor, no sheen.
SS	3		2.2	B67-8-9		0.0	SM		Silty SAND Dark gray, silty fine sand with up to 20% soft wood material, moderately loose, moist to wet, faint odor, light sheen.
			10			0.0	ML		SILT (with wood debris) Gray, silt with up to 40% wood debris, moderately soft, wet, faint odor and light sheen locally.
SS	3		15	B67-9-13			Wood		WOOD DEBRIS (lower wood fill) Gray/brown, blocky to fibrous wood debris with 5-15% silty matrix (varies locally), wet, faint odor, very light sheen.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORKING

Boring Log

BORING LOCATION Southeast of B36 Simpson Property		DRILLER Noel		Boring Name B68	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.40 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/8/14 DATE COMPLETED 10/8/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 9.0	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6'							
SS	3		5	B68-4-5		0.0	SW	Well-graded SAND with gravel Tan/brown, sandy fill with gravel and some silt, moderately dense, slightly moist, no odor, no sheen.	
						0.2	Wood	WOOD DEBRIS (upper wood fill) Orange to brown-orange, wood fill (chips/sawdust/shavings), no soil matrix, moderately loose, moist, faint odor in lower few inches, otherwise no odor, no sheen.	
SS	3		10			0.0	SM	Silty SAND with gravel Dark gray, silty sand with some gravel, moderately loose, moist, faint odor, no sheen.	
						0.0	GW	Well-graded GRAVEL with sand Tan/brown, sandy gravel, moderately loose, moist, faint odor, no sheen.	
						0.0	SM	Silty SAND Gray, silty fine to medium sand, some wood debris, moderately loose, moist to wet, no odor, no sheen.	
SS	3		15	B68-13.5-15		50.3	Wood	WOOD DEBRIS (lower wood fill) Brown (upper ~2 feet) to dark gray, blocky to fibrous wood debris with 10-15% silty matrix (varies locally), wet, no odor and no sheen above ~11 feet bgs, strong odor and medium sheen below ~11 feet bgs.	
						37.2			
						2.2			
						2.6			
						4.3	SP	Poorly graded SAND Gray, poorly graded medium sand, minor silt, moderately dense, wet, slight to moderate odor, light sheen.	

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Boring Log

BORING LOCATION South of B36 Simpson Property		DRILLER Noel		Boring Name B69	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name Former Tacoma Metals	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number 996098*00	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 9.80 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/8/14 DATE COMPLETED 10/8/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 8.5	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

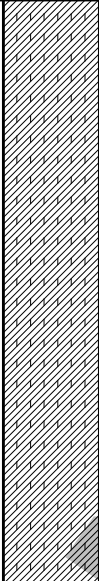

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	3		0 - 3	B69-3.5-4.5		0.5	SW	Well-graded SAND with gravel Tan/brown, sandy fill with gravel and some silt, moderately dense, slightly moist, no odor, no sheen.	
			3 - 5			1.2	SM	Silty SAND with gravel Dark gray, silty sand with some gravel, moderately loose, moist, faint odor, no sheen.	
			5 - 8			8.0	Wood	WOOD DEBRIS (lower wood fill) Dark gray, blocky wood debris with 10-15% silty matrix (varies locally), moist, moderate odor, medium sheen.	
SS	3		8 - 11	B69-8.5-9.5		12.2		Silty SAND (with wood debris) Dark gray to dark brown/gray, silty sand with some gravel locally, up to 30% block to fibrous wood debris, moist to wet, moderate odor, medium to heavy sheen.	
			11 - 15			8.5	SM		
						8.8			
SS	4.5		12.5 - 17	B65-12.5-13.5		23.5		SILT Brown, silt, some fine root-like material, moderately stiff, wet, moderate odor, medium sheen.	
						3.5	ML		
						20.3		Poorly graded SAND Dark gray, poorly graded medium sand, moderately dense, wet, strong odor, heavy sheen, NAPL blebs present.	
						10.7	SP		
						14.7			

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORK IN PROGRESS

Boring Log

BORING LOCATION North of B36 JJ Port Property		DRILLER		Boring Name <u>B70</u>	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 7.20 ft. TOTAL DEPTH 10.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/30/14 DATE COMPLETED 10/30/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 6.5	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 10		SAMPLING METHODS	
GROUT N/A		FROM TO FT. N/A N/A		Macrocore w/liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	3		5	B70-4.5-5		1.0	GW	Well-graded GRAVEL with sand Tan/brown, sandy gravel fill with some silt, moderately dense, slightly moist, no odor, no sheen.	
						0	Wood	WOOD DEBRIS (blocky wood, no matrix) Brown, blocky wood debris, slight odor, no sheen.	
SS	2		7.8			1.8	ML	Gravelly SILT with sand Dark brown, sandy silt with ~10% woody debris, moderately soft, moist, no odor, no sheen.	
							Wood	WOOD DEBRIS (lower wood fill) Brown, blocky wood fill with 10-15% silty matrix material, slight odor and sheen locally on wood surface above ~9 feet bgs; otherwise no odor, no sheen.	

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORKING

Boring Log

BORING LOCATION West of B36 Simpson Property		DRILLER		Boring Name <u>B71</u>	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.00 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/30/14 DATE COMPLETED 10/30/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 8.0	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	
				Macrocore w/liner	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	3.5		0 - 3.5	B71-4-5		0	SW	SW	Well-graded SAND with gravel Brown, sandy fill with gravel and some silt, moderately dense, slightly moist, no odor, no sheen.
			3.5 - 4.0			0	GP SP SM		Poorly graded GRAVEL Gray, angular crushed rock or concrete, no odor, no sheen.
			4.0 - 5.0			0			Poorly graded SAND Tan, poorly graded medium sand, minor silt and gravel, moderately loose, moist, no odor, no sheen.
SS	3		5.0 - 8.5	B71-8.5-9.5		0	SP/ SM	SP/SM	Silty SAND with gravel Dark gray, sand with ~30% silt and 10-15% gravel, moderately dense, moist, no odor, possible light sheen.
			8.5 - 9.5			0	ML	ML	Poorly graded SAND with silt Dark gray, medium to coarse sand with 10-15% silt, minor gravel, some wood debris locally (<10% overall), moderately loose, moist, no odor, possible light sheen.
			9.5 - 10.5			0	SM	SM	Sandy SILT Tan/brown, sandy silt, moderately stiff, moist to wet, no odor, no sheen.
			10.5 - 12.5			0			Silty SAND Tan/brown, fine sand with ~30% silt, moderately dense, wet, no odor, no sheen at top of unit; slight odor and light sheen below ~8.5 feet bgs.
SS	4		12.5 - 15.0	B71-14-15		0	SP	SP	Poorly graded SAND Medium gray, poorly graded medium sand, minor silt and gravel, moderately dense, wet, faint odor, no sheen.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORK IN PROGRESS

Boring Log

BORING LOCATION Southwest of B36 Simpson Property		Boring Name <u>B72</u>	
DRILLING COMPANY ESN		DRILLER	
DRILLING METHOD(S) Direct Push		DRILL BIT(S) SIZE 2-inch	
ISOLATION CASING N/A		FROM N/A TO N/A FT.	
BLANK CASING N/A		FROM N/A TO N/A FT.	
SLOTTED CASING N/A		FROM N/A TO N/A FT.	
SIZE AND TYPE OF FILTER PACK N/A		FROM N/A TO N/A FT.	
SEAL Bentonite Granules		FROM 0 TO 15 FT.	
GROUT N/A		FROM N/A TO N/A FT.	
ELEVATION AND DATUM bgs 10.10 ft.		TOTAL DEPTH 15.0 ft. bgs	
DATE STARTED 10/30/14		DATE COMPLETED 10/30/14	
INITIAL WATER DEPTH (FT) 8.0		LOGGED BY DKM	
SAMPLING METHODS Macrocore w/liner		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6'	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	3		5	B72-4-5		0	GW		Well-graded GRAVEL with sand Brown to tan, gravel fill with sand and some silt, minor brick-like fragments locally, moderately dense, slightly moist, no odor, no sheen.
SS	4		10	B72-8-9		0	SP/SM		Poorly graded SAND with silt and gravel Dark gray, sand with 10-20% silt and up to 10% gravel, some wood debris locally, moderately loose, moist, no odor, no sheen.
SS	4.5		15	B72-13-14		0	SP		Sandy SILT Tan/brown, silt with 30% fine sand, layered texture, moderately stiff, moist to wet, no odor, no sheen.
									Poorly graded SAND Medium gray, poorly graded medium sand, minor silt and fine gravel locally, moderately dense, wet, faint odor, no sheen.

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WORKING

Boring Log

BORING LOCATION South of B36 Simpson Property		DRILLER		Boring Name <u>B73</u>	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.50 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/30/14 DATE COMPLETED 10/30/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 8.0	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	
				Macrocore w/liner	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	2.5		0 - 2.5	B73-3.5-4.5		0	GW	Well-graded GRAVEL with sand Brown, gravel fill with sand and some silt, moderately dense, slightly moist, no odor, no sheen.	
			2.5 - 5.0			0	Wood SM	WOOD DEBRIS (upper wood fill) Red/brown, approximately 2-inch layer of fine wood debris (chips/sawdust/shavings), no matrix, moderately loose, no odor, no sheen.	
SS	4		5.0 - 9.0	B73-9-10		0	SW	Silty SAND Dark gray, silty sand with minor gravel, some wood debris locally, moderately loose, moist, no odor, no sheen.	
			9.0 - 10.5			0	SM	Well-graded SAND with gravel Brown changing to gray in lower 3 inches, medium to coarse sand with 10-20% gravel, moderately dense, moist, no odor, no sheen.	
			10.5 - 12.0			0		Silty SAND Tan/brown, fine sand with ~30% silt, sand content increases with depth, moderately dense, moist to wet, no odor, no sheen.	
SS	4		12.0 - 15.0			0	SP	Poorly graded SAND Gray, poorly graded medium sand with 5-10% silt, moderately dense, wet, faint odor below ~14 feet bgs; otherwise no odor, no sheen.	

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORKING DRAFT

Boring Log

BORING LOCATION South of B36 Simpson Property		DRILLER		Boring Name <u>B74</u>	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 9.90 ft. TOTAL DEPTH 12.5 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/30/14 DATE COMPLETED 10/30/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 8.5	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 12.5		SAMPLING METHODS	
GROUT N/A		FROM TO FT. N/A N/A		Macrocore w/liner WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	3							GW	Well-graded GRAVEL with sand Gravel fill material; depth uncertain (~3" gravel in sampler above wood fill material), no odor, no sheen.
			5					Wood	WOOD DEBRIS (upper wood fill) Orange/brown changing to medium brown below ~3.5 feet bgs, wood fill (chips/sawdust/shavings), no matrix, moderately loose, moist, no odor, no sheen. At ~4.5 feet bgs, angular rock fragments are mixed with wood material.
SS	2.5			B74-8-9		0		SM	Silty SAND with gravel Medium to dark gray, silty sand with some gravel, moderately dense, moist to wet, no odor, no sheen.
SS	1.5		10			6.3		Wood	WOOD DEBRIS (lower wood fill) Brown, blocky wood debris with 10-15% gray silty matrix, wet, moderate odor and medium sheen below ~11 feet bgs.

NOTES

1. Refusal at 12.5 feet bgs.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORKING

Boring Log

BORING LOCATION South of B36 Simpson Property		DRILLER		Boring Name <u>B75</u>	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.30 ft. TOTAL DEPTH 25.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/30/14 DATE COMPLETED 10/30/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 8.5	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 25		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	1.5		0-1.5						Fill - Gravel and Wood (sawdust/chips/shavings, without matrix) Gravel, silty soil with grass and wood debris mixed in top part of sampler, actual depths uncertain (poor sample recovery).
			5	B75-4-7				SW	Well-graded SAND with gravel Medium gray, sand with ~30% gravel, some silt, moderately dense, moist, no odor, no sheen.
SS	3.5		5-9					Wood	WOOD DEBRIS (lower wood fill) Dark gray (upper ~6 inches) to reddish brown, blocky wood debris with 10-15% matrix (tan/brown to gray/brown silt), moist to wet, no odor, no sheen.
SS	3.5		10-13.5					ML	Sandy SILT Brown, sandy silt with 10-20% woody material, moderately soft, wet, no odor, no sheen.
SS	5		13.5-18.5					SP	Poorly graded SAND Gray, poorly graded medium sand, moderately dense, wet, no odor, no sheen.
SS	4		18.5-22.5					CL/ML	Silty CLAY Tan, silty clay, interbedded with silty fine sand in upper 6 inches, moderately stiff to stiff, moderately high plasticity, wet, no odor, no sheen.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

Boring Log

BORING LOCATION South of B36 Simpson Property		DRILLER		Boring Name <u>B76</u>	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.30 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/30/14 DATE COMPLETED 10/30/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 9.0	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	
				Macrocore w/liner	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	3.5						SW		Well-graded SAND with gravel Tan/brown, gravel fill with sand, some silt, moderately dense, slightly moist, no odor, no sheen.
			5			0	Wood		WOOD DEBRIS (upper wood fill) Orange/brown (above ~3.8 feet) changing to dark brown, wood fill (chips/sawdust/shavings) with no matrix, moderately loose, no odor, no sheen.
SS	4			B76-8-9		0	SW		Well-graded SAND with gravel Gray, gravelly sand, moderately dense, moist, no odor, no sheen.
			10			0	SP/SM		Poorly graded SAND with silt and gravel Dark gray, sand with 10-20% silt and some gravel, some wood material, moderately dense, moist to wet, no odor, no sheen.
SS	1.5			B76-12-14			Wood		WOOD DEBRIS (lower wood fill) Brown, blocky wood debris with 10-15% silty matrix, wet, no odor, no sheen in upper portion; light sheen and odor below ~13.5 feet bgs.
			15			0.1			Approximately 1 foot thickness of brown, soft, silt recovered in sampler, exact depth uncertain but estimated between 12-14 feet bgs.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15

WORK IN PROGRESS

Boring Log

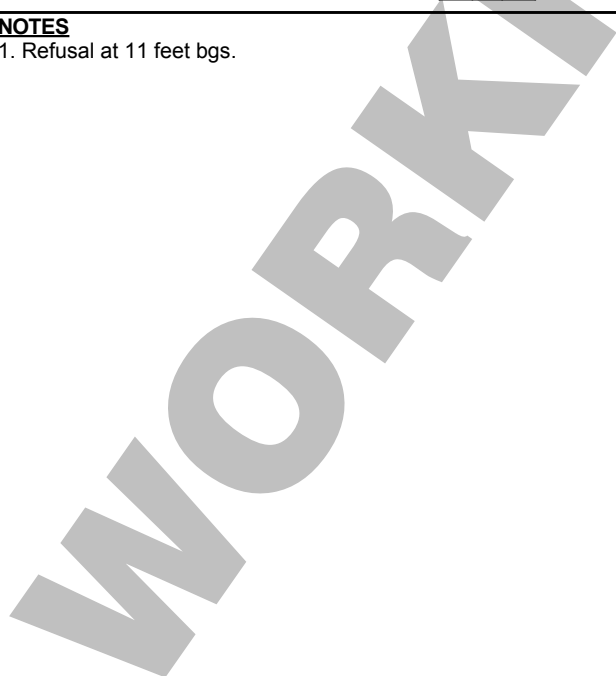
BORING LOCATION Southeast of B36 Simpson Property		DRILLER		Boring Name <u>B77</u>	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.20 ft. TOTAL DEPTH 11.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/30/14 DATE COMPLETED 10/30/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 9.0	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 11		SAMPLING METHODS	
GROUT N/A		FROM TO FT. N/A N/A		Macrocore w/liner	
				WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	2							GW	Well-graded GRAVEL with sand Brown, gravel fill with sand and some silt, no odor, no sheen.
			5			0		Wood	WOOD DEBRIS (upper wood fill) Brown/orange (above ~3.5 feet bgs) to dark brown, wood debris (chips/sawdust/shavings) with no matrix, moderately loose, no odor, no sheen.
SS	3			B75-7.5-8.5		0.8		SM	Silty SAND with gravel Dark gray, silty sand with some gravel, minor wood debris locally, moderately soft to moderately dense (varies locally), moist to wet, slight to moderate odor, medium sheen.
SS	1		10			0.2		Wood	WOOD DEBRIS (lower wood fill) Brown, blocky wood debris with 10-20% silty matrix, wet, no odor, no sheen.

NOTES

- Refusal at 11 feet bgs.

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15



Boring Log

BORING LOCATION East of B36 Simpson Property		DRILLER		Boring Name <u>B78</u>	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.60 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/30/14 DATE COMPLETED 10/30/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 9.5	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	
				Macrocore w/liner	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	2.5							GW	Well-graded GRAVEL with sand Gravel fill with sand and some silt (suspected based on ground surface, but not recovered in sampler).
			5			0		Wood	WOOD DEBRIS (upper wood fill) Brown/orange (above ~4.5 feet bgs) changing to dark brown, wood debris (chips/sawdust/shavings) with no matrix, moderately loose, no odor, no sheen.
SS	3			B78-7.5-9		0		SM	Silty SAND Dark brown to dark gray, silty sand with 10-15% wood debris, moderately loose, moist to wet, no odor, no sheen.
			10					Wood	WOOD DEBRIS (lower wood fill) Brown, wood debris with 20-30% silty matrix (varies locally), wet, medium to heavy sheen and medium odor below ~9.5 feet bgs.
SS	2.5			B78-14-15		0		ML	SILT (with wood debris) Brown with silvery appearance locally, silt with up to 30% wood debris, soft, wet, medium to heavy sheen, medium odor.
			15						

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WORK IN PROGRESS

Boring Log

BORING LOCATION East of B36 Simpson Property		DRILLER		Boring Name <u>B79</u>	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.80 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/30/14 DATE COMPLETED 10/30/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 9.3	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS	
GROUT N/A		FROM TO FT. N/A N/A		Macrocore w/liner WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

TYPE	SAMPLES		DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
	RECOV (FEET)	PENETR. RESIST. BLOWS/6"							
SS	5		0			0.3	SW	Well-graded SAND with gravel Brown, fill gravel with sand, <10% silt, moderately dense, slightly moist, no odor, no sheen.	
						0	Wood	WOOD DEBRIS (upper wood fill) Orange/brown, wood debris (chips/sawdust/shavings) with no matrix, moderately loose, no odor, no sheen.	
			5			0	SM	Silty SAND with gravel Brown, silty sand with some gravel and wood debris, moderately loose, moist, no odor, no sheen.	
SS	5		5	B79-7.5-8.5		0	SP/SM	Poorly graded SAND with silt Dark gray, sand with 10-15% silt, some wood debris, minor gravel, moderately loose, moist to wet, no odor, no sheen.	
			10			0	ML	Sandy SILT (with wood debris) Brown, sandy silt with 20-30% wood debris overall (varies locally), soft, wet, slight to moderate odor locally, light sheen.	
SS	5		15	B79-12-14		0			
						0.4	SP	Poorly graded SAND Medium gray, poorly graded medium sand, moderately dense, wet, heavy sheen and medium odor.	

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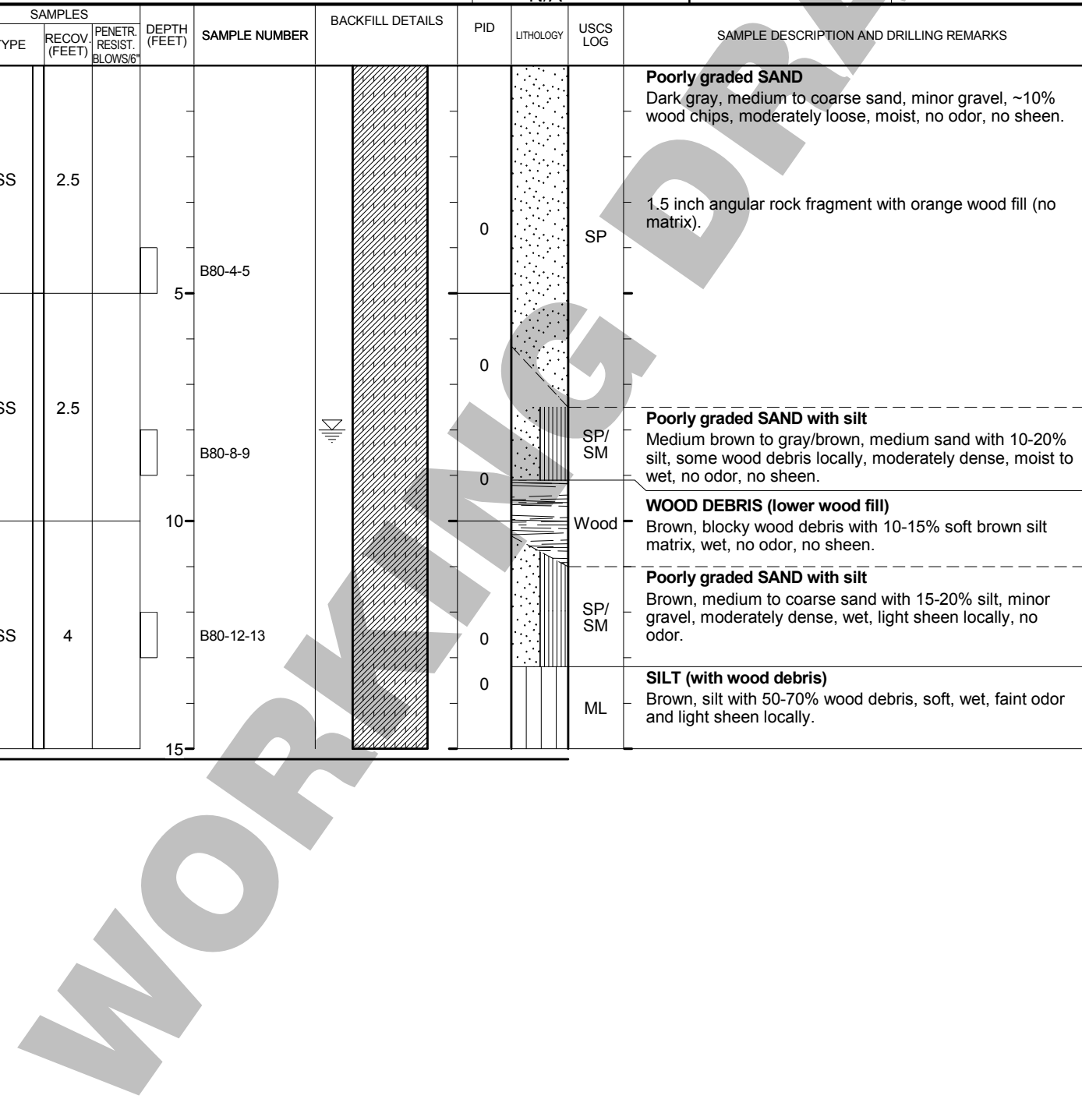
WORK IN PROGRESS

Boring Log

BORING LOCATION Southeast of B36 Simpson Property		DRILLER		Boring Name <u>B80</u>	
DRILLING COMPANY ESN		DRILL BIT(S) SIZE 2-inch		Project Name <u>Former Tacoma Metals</u>	
DRILLING METHOD(S) Direct Push		FROM TO FT. N/A N/A		Project Number <u>996098*00</u>	
ISOLATION CASING N/A		FROM TO FT. N/A N/A		ELEVATION AND DATUM bgs 10.10 ft. TOTAL DEPTH 15.0 ft. bgs	
BLANK CASING N/A		FROM TO FT. N/A N/A		DATE STARTED 10/30/14 DATE COMPLETED 10/30/14	
SLOTTED CASING N/A		FROM TO FT. N/A N/A		INITIAL WATER DEPTH (FT) 8.0	
SIZE AND TYPE OF FILTER PACK N/A		FROM TO FT. N/A N/A		LOGGED BY DKM	
SEAL Bentonite Granules		FROM TO FT. 0 15		SAMPLING METHODS Macrocore w/liner	
GROUT N/A		FROM TO FT. N/A N/A		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"	DEPTH (FEET)	SAMPLE NUMBER	BACKFILL DETAILS	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	2.5		5	B80-4-5		0	SP		<p>Poorly graded SAND Dark gray, medium to coarse sand, minor gravel, ~10% wood chips, moderately loose, moist, no odor, no sheen.</p> <p>1.5 inch angular rock fragment with orange wood fill (no matrix).</p>
SS	2.5		10	B80-8-9		0	SP/SM		<p>Poorly graded SAND with silt Medium brown to gray/brown, medium sand with 10-20% silt, some wood debris locally, moderately dense, moist to wet, no odor, no sheen.</p>
			10				Wood		<p>WOOD DEBRIS (lower wood fill) Brown, blocky wood debris with 10-15% soft brown silt matrix, wet, no odor, no sheen.</p>
SS	4		15	B80-12-13		0	SP/SM		<p>Poorly graded SAND with silt Brown, medium to coarse sand with 15-20% silt, minor gravel, moderately dense, wet, light sheen locally, no odor.</p>
			15			0	ML		<p>SILT (with wood debris) Brown, silt with 50-70% wood debris, soft, wet, faint odor and light sheen locally.</p>

KJ PNW WK DRAFT B36 AREA BORING LOGS OCT 2014.GPJ KJ PNW.GDT 1/6/15



Appendix B. Data Validation Report

To	Paul Kalina, Project Manager	Info	FINAL
Subject	Summary Data Quality Review IP – Tacoma Metals Soil Sampling – October 2014 ALS Laboratory Groups K1505210		
From	Lucy A. Panteleeff, Chemist Amy L. Dahl, Chemist		
Date	June 24, 2015		

The summary data quality review of 6 soil samples collected October 7 through October 30, 2014 has been completed. The samples were submitted to the ALS Environmental (ALS) laboratory located in Kelso, Washington. Samples were analyzed for ultra low-level polycyclic aromatic hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 8270D modified by selected ion monitoring (SIM) and total solids (TS) by EPA Method 160.3. Select samples were analyzed for total petroleum hydrocarbons (TPH, diesel and residual range) by Washington State Department of Ecology (Ecology) Method NWTPH-Dx. The analyses were performed in general accordance with methods specified in EPA's *Test Methods for Evaluating Solid Waste (SW-846)*, Ecology's *Analytical Methods for Petroleum Hydrocarbons*, June 1997, and Standard Methods for the Examination of Water and Wastewater. For this report, the sample identifications do not include the sampling date suffix. The following samples are associated with ALS laboratory group K1505210:

Sample ID	ALS ID	Parameters
B-58-S-4-100714	K1505210-001	PAHs, TS
B-69-5-4.5-100814	K1505210-002	PAHs, TS
B-49-S-7-100714	K1505210-003	PAHs, TPH, TS
B-50-S-4-100714	K1505210-004	PAHs, TS
B-55-S-4-100714	K1505210-005	PAHs, TS
B-77-S-5-103014	K1505210-006	PAHs, TPH, TS

Upon receipt by ALS, the sample jar information was compared to the associated chain-of-custody (COC). The cooler and cooler blank temperatures were recorded as part of the check-in procedure. One cooler temperature (-0.6°C) was outside the EPA-recommended limits of greater than 0°C and less than or equal to 6°C. Data were not qualified based on the cooler temperature.

Data validation is based on method performance criteria and quality control (QC) criteria as documented in the *Sampling and Analysis Plan (SAP), Area E Additional Investigation, Near Tacoma Metals Property, Tacoma, Washington, October 2014* and current ALS control limits. The laboratory provided EPA Contract Laboratory Program-equivalent validatable data packages. For the summary quality assurance (QA) review, holding times, instrument performance, initial and continuing calibrations, method blanks, surrogate recoveries, laboratory control sample (LCS) results, matrix duplicate results, matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. Calculation checks and review of the raw data were not included in the data review. If data qualification was required, data were qualified in accordance with *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, June 2008 and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, January 2010.

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Soil Sampling – October 2014
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The data reported for laboratory group K1505210 applies to a subset of samples collected in October 2014 by AECOM that were splits of samples collected by Kennedy Jenks and fills a gap in the data (refer to the main text of the Feasibility Study Addendum for additional information). Additional data for a subset of these sample splits was reported by ALS in November 2014 as part of laboratory groups K1411111 and K1411112. As the analytical results of the split samples reported in November 2014 confirmed the Kennedy Jenks data, no data from K1411111 or K1411112 were reported except for dibenzofuran, which was not analyzed for the samples collected by Kennedy Jenks. A streamlined data review was performed for the dibenzofuran data associated with laboratory groups K1411111 and K1411112 covering the QA elements identified above but will not be discussed further in this report. No validation qualifiers for dibenzofuran results were warranted based on this review.

A summary of qualifiers assigned to results in these laboratory groups are included in Table 1. Qualifiers that may be assigned to results include:

- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- DNR - Do Not Report. Another result is available that is more reliable or appropriate.

Organic Analyses

Samples were analyzed for TPH and PAHs by the methods identified in the introduction to this report.

1. Holding Times – Acceptable except as noted below:

General – At the request of AECOM, samples were analyzed several months outside of holding time. All data were qualified as estimated and flagged 'J' based on holding time exceedances.

PAHs by Method 8270D-SIM – B-69-S-4.5 was originally analyzed on October 27, 2014 and reported with laboratory group K1411111. The percent differences between the results for B-69-S-4.5 reported with laboratory group K1505210 and the original analysis varied from 6% to 69%. Therefore, the PAH results reported out of holding time for laboratory group K1505210 should be considered qualitative and should not be used to assess compliance with action levels.

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2. Instrument Performance (Tunes – applicable to PAHs only) – Acceptable
3. Initial Calibrations – Acceptable
4. Continuing Calibrations – Acceptable except as noted below:

PAHs by Method 8270D-SIM – The percent differences for the following PAHs were outside the control limits of +/- 20% in several continuing calibration verifications.

Analysis Date:	Analyte	% Difference
June 1, 2015	Pyrene	26%
	Terphenyl-d14	24%
June 3, 2015	Benzo(g,h,i)perylene	-23%
June 4, 2015	Dibenz(a,h)anthracene	-24%
	Benzo(g,h,i)perylene	-24%

The data were not qualified based on the surrogate (terphenyl-d14) outlier. As dibenz(a,h)anthracene and benzo(g,h,i)perylene were not reported from the analysis on June 4, 2015, no data were qualified based on these continuing calibration verification results. The results for pyrene in samples B-58-S-4, B-69-4.5, and B-77-S-5 and benzo(g,h,i)perylene in samples B-49-S-7, B-50-S-4, and B-55-S-4 were qualified based on holding time exceedances; therefore, no further qualification was necessary.

5. Blanks – Acceptable
6. Surrogates – Acceptable except as noted below:

NWTPH-Dx – The percent recoveries of o-terphenyl (771%) and n-triacontane (0%) in B-77-S-5 were outside the control limits of 50-150%. As the diesel-range and residual-range TPH results for B-77-S-5 were qualified based on holding time exceedances, no further qualification was necessary.

PAHs by Method 8270D-SIM – The percent recoveries for several surrogates were outside the control limits in the following samples due to high PAH concentrations:

Sample ID	Fluorene-d10	Fluoranthene-d10	Terphenyl-d14
Control Limits:	17-104%	27-106%	35-109%
B-58-S-4	141%	110%	360%
B-69-S-4.5	215%	ok	693%
B-77-S-5	581%	338%	890%
B-58-S-4 (MS)	176%	118%	334%
B-58-S-4 (MSD)	159%	ok	275%

ok –recovery was within control limits

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As the PAH results for these samples were qualified based on holding time exceedances, no further qualification was necessary.

7. Internal Standards (applicable to PAHs only) – Acceptable
8. Laboratory Control Sample/ Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable
9. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable except as noted below:

NWTPH-Dx – An MS/MSD was not performed in association with this analysis. Precision was assessed using the duplicate results. Accuracy was assessed using the LCS results.

PAHs by Method 8270D-SIM – An MS/MSD was performed using B-58-S-4. The percent recoveries for all the PAHs and several relative percent differences were outside control limits.

As the concentrations for all PAHs in B-58-S-4 were more than four times the spike concentration and the PAH results were qualified based on holding time exceedances, data were not qualified for PAHs based on these MS/MSD results.

10. Laboratory Duplicate – Acceptable where applicable

NWTPH-Dx – A laboratory duplicate was performed using a sample from an unrelated project. Results were comparable.

11. Reporting Limits – Acceptable

General – The results for one or more organic analytes were flagged 'D' by the laboratory to indicate that the result was reported from a dilution of the sample. No additional qualifiers are necessary based on the 'D' qualifier assigned by the laboratory.

NWTPH-Dx – The results for diesel-range and/or residual-range TPH in all samples were flagged 'Z', 'to indicate that the chromatographic fingerprint did not resemble a petroleum product. No additional qualifiers are necessary based on the 'Z' qualifiers assigned by the laboratory.

Conventional Parameter

The samples were analyzed for total solids by EPA Method 160.3.

1. Holding Times – Acceptable
2. Laboratory Duplicate – Acceptable

A laboratory duplicate was performed using B-58-S-4-100714. Results were comparable.

3. Reporting Limits – Acceptable



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Overall Assessment

The data reported in this laboratory group, as qualified, are considered to be usable for meeting project objectives. The completeness for laboratory group K1505210 is 100%.

**Summary Data Quality Review
 IP – Tacoma Metals
 Soil Sampling – October 2014
 ALS Laboratory Group K1505210**

Table 1. Summary of Qualified Data

Sample ID	Laboratory ID	Analyte	Laboratory Result	Units	Final Result
B-58-S-4	K1505210-001	1-Methylnaphthalene	3,100	ug/Kg	3,100 J
		2-Methylnaphthalene	3,400	ug/Kg	3,400 J
		Acenaphthene	13,000	ug/Kg	13,000 J
		Acenaphthylene	3,900	ug/Kg	3,900 J
		Anthracene	51,000	ug/Kg	51,000 J
		Benz(a)anthracene	110,000	ug/Kg	110,000 J
		Benzo(a)pyrene	130,000	ug/Kg	130,000 J
		Benzo(b)fluoranthene	170,000	ug/Kg	170,000 J
		Benzo(g,h,i)perylene	59,000	ug/Kg	59,000 J
		Benzo(k)fluoranthene	59,000	ug/Kg	59,000 J
		Chrysene	210,000	ug/Kg	210,000 J
		Dibenz(a,h)anthracene	17,000	ug/Kg	17,000 J
		Dibenzofuran	7,700	ug/Kg	7,700 J
		Fluoranthene	150,000	ug/Kg	150,000 J
		Fluorene	10,000	ug/Kg	10,000 J
		Indeno(1,2,3-cd)pyrene	65,000	ug/Kg	65,000 J
		Naphthalene	3,800	ug/Kg	3,800 J
		Phenanthrene	71,000	ug/Kg	71,000 J
		Pyrene	170,000	ug/Kg	170,000 J
B-69-S-4.5	K1505210-002	1-Methylnaphthalene	2,200	ug/Kg	2,200 J
		2-Methylnaphthalene	3,100	ug/Kg	3,100 J
		Acenaphthene	6,500	ug/Kg	6,500 J
		Acenaphthylene	3,400	ug/Kg	3,400 J
		Anthracene	64,000	ug/Kg	6,4000 J
		Benz(a)anthracene	140,000	ug/Kg	140,000 J
		Benzo(a)pyrene	220,000	ug/Kg	220,000 J
		Benzo(b)fluoranthene	270,000	ug/Kg	270,000 J
		Benzo(g,h,i)perylene	94,000	ug/Kg	94,000 J
		Benzo(k)fluoranthene	91,000	ug/Kg	91,000 J
		Chrysene	290,000	ug/Kg	290,000 J
		Dibenz(a,h)anthracene	27,000	ug/Kg	27,000 J
		Dibenzofuran	2,200	ug/Kg	2,200 J
		Fluoranthene	150,000	ug/Kg	150,000 J
		Fluorene	6,000	ug/Kg	6,000 J
		Indeno(1,2,3-cd)pyrene	100,000	ug/Kg	100,000 J
		Naphthalene	2,200	ug/Kg	2,200 J
		Phenanthrene	20,000	ug/Kg	20,000 J
		Pyrene	180,000	ug/Kg	180,000 J



Summary Data Quality Review
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Sample ID	Laboratory ID	Analyte	Laboratory Result	Units	Final Result
B-49-S-7	K1505210-003	1-Methylnaphthalene	96	ug/Kg	96 J
		2-Methylnaphthalene	180	ug/Kg	180 J
		Acenaphthene	74	ug/Kg	74 J
		Acenaphthylene	110	ug/Kg	110 J
		Anthracene	960	ug/Kg	960 J
		Benz(a)anthracene	1,100	ug/Kg	1,100 J
		Benzo(a)pyrene	2,700	ug/Kg	2,700 J
		Benzo(b)fluoranthene	3,700	ug/Kg	3,700 J
		Benzo(g,h,i)perylene	1,300	ug/Kg	1,300 J
		Benzo(k)fluoranthene	780	ug/Kg	780 J
		Chrysene	4,000	ug/Kg	4,000 J
		Dibenz(a,h)anthracene	430	ug/Kg	430 J
		Dibenzofuran	130	ug/Kg	130 J
		Fluoranthene	920	ug/Kg	920 J
		Fluorene	74	ug/Kg	74 J
		Indeno(1,2,3-cd)pyrene	1,500	ug/Kg	1,500 J
		Naphthalene	330	ug/Kg	330 J
		Phenanthrene	630	ug/Kg	630 J
		Pyrene	1,500	ug/Kg	1,500 J
		Diesel-range TPH	160	mg/Kg	160 J
Residual-range TPH	2,000	mg/Kg	2,000 J		
B-50-S-4	K1505210-004	1-Methylnaphthalene	43	ug/Kg	43 J
		2-Methylnaphthalene	69	ug/Kg	69 J
		Acenaphthene	31	ug/Kg	31 J
		Acenaphthylene	26	ug/Kg	26 J
		Anthracene	82	ug/Kg	82 J
		Benz(a)anthracene	150	ug/Kg	150 J
		Benzo(a)pyrene	300	ug/Kg	300 J
		Benzo(b)fluoranthene	440	ug/Kg	440 J
		Benzo(g,h,i)perylene	230	ug/Kg	230 J
		Benzo(k)fluoranthene	140	ug/Kg	140 J
		Chrysene	480	ug/Kg	480 J
		Dibenz(a,h)anthracene	73	ug/Kg	73 J
		Dibenzofuran	33	ug/Kg	33 J
		Fluoranthene	290	ug/Kg	290 J
		Fluorene	25	ug/Kg	25 J
		Indeno(1,2,3-cd)pyrene	220	ug/Kg	220 J
		Naphthalene	100	ug/Kg	100 J
Phenanthrene	140	ug/Kg	140 J		
Pyrene	440	ug/Kg	440 J		

B-55-S-4	K1505210-005	1-Methylnaphthalene	16	ug/Kg	16 J
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Summary Data Quality Review
 IP – Tacoma Metals
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Sample ID	Laboratory ID	Analyte	Laboratory Result	Units	Final Result
		2-Methylnaphthalene	24	ug/Kg	24 J
		Acenaphthene	10	ug/Kg	10 J
		Acenaphthylene	6	ug/Kg	6 J
		Anthracene	11	ug/Kg	11 J
		Benz(a)anthracene	33	ug/Kg	33 J
		Benzo(a)pyrene	44	ug/Kg	44 J
		Benzo(b)fluoranthene	67	ug/Kg	67 J
		Benzo(g,h,i)perylene	28	ug/Kg	28 J
		Benzo(k)fluoranthene	21	ug/Kg	21 J
		Chrysene	75	ug/Kg	75 J
		Dibenz(a,h)anthracene	8	ug/Kg	8 J
		Dibenzofuran	15	ug/Kg	15 J
		Fluoranthene	67	ug/Kg	67 J
		Fluorene	8.9	ug/Kg	8.9 J
		Indeno(1,2,3-cd)pyrene	28	ug/Kg	28 J
		Naphthalene	39	ug/Kg	39 J
		Phenanthrene	63	ug/Kg	63 J
		Pyrene	83	ug/Kg	83 J
B-77-S-5-103014	K1505210-006	1-Methylnaphthalene	45,000	ug/Kg	45,000 J
		2-Methylnaphthalene	16,000	ug/Kg	16,000 J
		Acenaphthene	540,000	ug/Kg	540,000 J
		Acenaphthylene	30,000	ug/Kg	30,000 J
		Anthracene	380,000	ug/Kg	380,000 J
		Benz(a)anthracene	320,000	ug/Kg	320,000 J
		Benzo(a)pyrene	240,000	ug/Kg	240,000 J
		Benzo(b)fluoranthene	300,000	ug/Kg	300,000 J
		Benzo(g,h,i)perylene	110,000	ug/Kg	110,000 J
		Benzo(k)fluoranthene	110,000	ug/Kg	110,000 J
		Chrysene	420,000	ug/Kg	420,000 J
		Dibenz(a,h)anthracene	31,000	ug/Kg	31,000 J
		Dibenzofuran	330,000	ug/Kg	330,000 J
		Fluoranthene	1,300,000	ug/Kg	1,300,000 J
		Fluorene	380,000	ug/Kg	380,000 J
		Indeno(1,2,3-cd)pyrene	120,000	ug/Kg	120,000 J
		Naphthalene	21,000	ug/Kg	21,000 J
		Phenanthrene	1,800,000	ug/Kg	1,800,000 J
		Pyrene	1,000,000	ug/Kg	1,000,000 J
		Diesel-range TPH	140,000	mg/Kg	140,000 J
		Residual-range TPH	140,000	mg/Kg	140,000 J

Appendix C. Laboratory Reports



ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T: 1-360-577-7222
F: 1-360-636-1068
www.alsglobal.com

November 10, 2014

Analytical Report for Service Request No: K1411111

Paul Kalina
URS Corporation
1501 4th Ave., Suite 1400
Seattle, WA 98101

RE: IP Tacoma Metals/33764085

Dear Paul:

Enclosed are the results of the sample(s) submitted to our laboratory on October 9, 2014. For your reference, these analyses have been assigned our service request number **K1411111**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3375. You may also contact me via email at Janet.Malloch@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Janet Malloch
Project Manager

Page 1 of 1337

ALS ENVIRONMENTAL

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request No.: K1411111
Date Received: 10/09/14

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Five soil samples were received for analysis at ALS Environmental on 10/09/14. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Diesel and Residual Range Organics by NWTPH-Dx

Elevated Detection Limits:

Several samples required dilution due to the presence of elevated levels of non-target analyte. The reporting limits were adjusted to reflect the dilution.

Surrogate Exceptions:

The control criteria for o-Terphenyl or n-Triacontane in several samples were not applicable. The analysis of the samples required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) criterion for the replicate analysis of Residual Range Organics (RRO) in sample was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Sample Notes and Discussion:


The samples did not resemble Stoddard solvent or a petroleum product.

No other anomalies associated with the analysis of these samples were observed.

Gasoline Range Organics by NWTPH-Gx

No anomalies associated with the analysis of these samples were observed.

Approved by



Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:

The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS13\1021F003.D: Chloromethane. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

The ALS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) MS13\1021F003.D: Dichlorodifluoromethane. In accordance with ALS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verifies instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question, and the field samples analyzed in this sequence did not contain the analyte in question, the data quality has not been significantly affected. No further corrective action was taken.

No other anomalies associated with the analysis of these samples were observed.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Calibration Verification Exceptions:

The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS07\1028F002.D: Fluoranthene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

Approved by Janet Mallock



PC JM

Cooler Receipt and Preservation Form

Client / Project: URS Service Request K14 11111

Received: 10/8/14 Opened: 10/8/14 By: UA Unloaded: 10/9/14 By: [Signature]

- 1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
- 2. Samples were received in: (circle) Cooler Box Envelope Other _____ NA
- 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
4.5	4.4	8.8	8.7	-0.1	345			
2.8	2.7	5.5	5.4	-0.1	325			

- 4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
- 5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
- 6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
- 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
- 8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
- 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
- 10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
- 11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
- 12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil
Analysis Method: 160.3 Modified
Prep Method: None

Service Request: K1411111
Date Collected: 10/8/14
Date Received: 10/9/14
Units: Percent
Basis: As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
B-69-S-4.5-100814	K1411111-003	74.3	-	1	10/22/14 11:41	
B-69-S-8.5-100814	K1411111-004	50.6	-	1	10/22/14 11:41	
B-69-S-12.5-100814	K1411111-005	79.9	-	1	10/22/14 11:41	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: URS Corporation
Project IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/14
Date Received: 10/09/14
Date Analyzed: 10/22/14

Replicate Sample Summary
General Chemistry Parameters

Sample Name: B-69-S-12.5-100814
Lab Code: K1411111-005

Units: Percent
Basis: As Received

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>MRL</u>	<u>Sample Result</u>	<u>Duplicate Sample K1411111-005DUP Result</u>	<u>Average</u>	<u>RPD</u>	<u>RPD Limit</u>
Solids, Total	160.3 Modified	-	79.9	78.0	79.0	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111

**Surrogate Recovery Summary
 Diesel and Residual Range Organics**

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
B-69-S-4.5-100814	K1411111-003	106 D #	285 D #
B-69-S-8.5-100814	K1411111-004	191 D *	103 D
B-69-S-12.5-100814	K1411111-005	134 D	117 D
Batch QC	K1411494-003	87 D	100 D
Batch QCDUP	KWG1414518-1	37 D *	40 D *
Method Blank	KWG1414518-5	82	87
Lab Control Sample	KWG1414518-4	84	86

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Solid

Service Request: K1411111
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1414518-5
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	25	1	10/21/14	10/31/14	KWG1414518	
Residual Range Organics (RRO)	ND	U	99	1	10/21/14	10/31/14	KWG1414518	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	82	50-150	10/31/14	Acceptable
n-Triacontane	87	50-150	10/31/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Diesel and Residual Range Organics

Sample Name: B-69-S-4.5-100814
Lab Code: K1411111-003
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	6500	DZ	1400	20	10/21/14	11/01/14	KWG1414518	
Residual Range Organics (RRO)	27000	DZ	5400	20	10/21/14	11/01/14	KWG1414518	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	106	50-150	11/01/14	Acceptable
n-Triacontane	285	50-150	11/01/14	Outside Control Limits

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Diesel and Residual Range Organics

Sample Name: B-69-S-8.5-100814
Lab Code: K1411111-004
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	49000	DZ	740	5	10/21/14	10/31/14	KWG1414518	
Residual Range Organics (RRO)	22000	DZ	3000	5	10/21/14	10/31/14	KWG1414518	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	191	50-150	10/31/14	Outside Control Limits
n-Triacontane	103	50-150	10/31/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Diesel and Residual Range Organics

Sample Name: B-69-S-12.5-100814
Lab Code: K1411111-005
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	9600	DZ	240	5	10/21/14	10/31/14	KWG1414518	
Residual Range Organics (RRO)	4400	DZ	940	5	10/21/14	10/31/14	KWG1414518	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	134	50-150	10/31/14	Acceptable
n-Triacontane	117	50-150	10/31/14	Acceptable

Comments: _____

QA/QC Report

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Solid

Service Request: K1411111
Date Extracted: 10/21/2014
Date Analyzed: 11/01/2014

**Duplicate Sample Summary
 Diesel and Residual Range Organics**

Sample Name: Batch QC
Lab Code: K1411494-003
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1414518

Analyte Name	MRL	Sample Result	Batch QCDUP KWG1414518-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Diesel Range Organics (DRO)	640	ND	ND	ND	-	40
Residual Range Organics (RRO)	640	2100	1000	1600	69 #	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Solid

Service Request: K1411111
Date Extracted: 10/21/2014
Date Analyzed: 10/31/2014

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1414518

Lab Control Sample
 KWG1414518-4
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Diesel Range Organics (DRO)	233	267	87	42-134
Residual Range Organics (RRO)	151	133	113	48-141

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: URS Corporation
Project: IP Tacoma Metals/33764085

Service Request: K1411111

**Cover Page - Organic Analysis Data Package
Gasoline Range Organics**

Sample Name	Lab Code	Date Collected	Date Received
B-69-S-8.5-100814	K1411111-004	10/08/2014	10/09/2014
B-69-S-12.5-100814	K1411111-005	10/08/2014	10/09/2014
B-69-S-8.5-100814	KWG1414551-1	10/08/2014	10/09/2014

QA/QC Report

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111

**Surrogate Recovery Summary
 Gasoline Range Organics**

Extraction Method: EPA 5030A/5030B
Analysis Method: NWTPH-Gx

Units: Percent
Level: Med

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
B-69-S-8.5-100814	K1411111-004	85
B-69-S-12.5-100814	K1411111-005	86
B-69-S-8.5-100814DUP	KWG1414551-1	89
Method Blank	KWG1414551-3	81
Lab Control Sample	KWG1414551-2	83

Surrogate Recovery Control Limits (%)

Sur1 = 4-Bromofluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: NA
Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1414551-3
Extraction Method: EPA 5030A/5030B
Analysis Method: NWTPH-Gx

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	5.0	1	10/22/14	10/22/14	KWG1414551	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	81	50-150	10/22/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Gasoline Range Organics

Sample Name: B-69-S-8.5-100814
Lab Code: K1411111-004
Extraction Method: EPA 5030A/5030B
Analysis Method: NWTPH-Gx

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	2900	Y	590	1	10/22/14	10/22/14	KWG1414551	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	85	50-150	10/22/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Gasoline Range Organics

Sample Name: B-69-S-12.5-100814
Lab Code: K1411111-005
Extraction Method: EPA 5030A/5030B
Analysis Method: NWTPH-Gx

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	490	Y	74	1	10/22/14	10/22/14	KWG1414551	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	86	50-150	10/22/14	Acceptable

Comments: _____

QA/QC Report

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Extracted: 10/22/2014
Date Analyzed: 10/22/2014

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: B-69-S-8.5-100814
Lab Code: K1411111-004
Extraction Method: EPA 5030A/5030B
Analysis Method: NWTPH-Gx

Units: mg/Kg
Basis: Dry
Level: Med
Extraction Lot: KWG1414551

Analyte Name	MRL	Sample Result	B-69-S-8.5-100814DUP KWG1414551-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Gasoline Range Organics-NWTPH	590	2900	3000	2900	3	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Extracted: 10/22/2014
Date Analyzed: 10/22/2014

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030A/5030B
Analysis Method: NWTPH-Gx

Units: mg/Kg
Basis: Dry
Level: Med
Extraction Lot: KWG1414551

Lab Control Sample
 KWG1414551-2
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Gasoline Range Organics-NWTPH	27.0	25.0	108	77-122

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: URS Corporation
Project: IP Tacoma Metals/33764085

Service Request: K1411111

**Cover Page - Organic Analysis Data Package
Volatile Organic Compounds**

Sample Name	Lab Code	Date Collected	Date Received
B-69-S-8.5-100814	K1411111-004	10/08/2014	10/09/2014
B-69-S-12.5-100814	K1411111-005	10/08/2014	10/09/2014

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111

**Surrogate Recovery Summary
 Volatile Organic Compounds**

Extraction Method: EPA 5035A/5030B
Analysis Method: 8260C

Units: Percent
Level: Med

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
B-69-S-8.5-100814	K1411111-004	104	100	100
B-69-S-12.5-100814	K1411111-005	100	99	101
Batch QC	K1411237-001	99	98	100
Method Blank	KWG1414207-4	103	98	98
Method Blank	KWG1414698-3	101	99	97
Batch QCMS	KWG1414207-1	102	102	106
Batch QCDMS	KWG1414207-2	101	100	105
Lab Control Sample	KWG1414207-3	101	101	102
Lab Control Sample	KWG1414698-1	100	101	100
Duplicate Lab Control Sample	KWG1414698-2	100	101	102

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	55-132
Sur2 = Toluene-d8	81-124
Sur3 = 4-Bromofluorobenzene	64-132

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1414207-4
Extraction Method: EPA 5035A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	*
Chloromethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	*
Vinyl Chloride	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Bromomethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Chloroethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Trichlorofluoromethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,1-Dichloroethene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Acetone	ND	U	2.0	1	10/21/14	10/21/14	KWG1414207	
Carbon Disulfide	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Methylene Chloride	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
Methyl tert-Butyl Ether	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
trans-1,2-Dichloroethene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,1-Dichloroethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
2,2-Dichloropropane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
cis-1,2-Dichloroethene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
2-Butanone (MEK)	ND	U	2.0	1	10/21/14	10/21/14	KWG1414207	
Bromochloromethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Chloroform	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,1,1-Trichloroethane (TCA)	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Carbon Tetrachloride	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,1-Dichloropropene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Benzene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,2-Dichloroethane (EDC)	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Trichloroethene (TCE)	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,2-Dichloropropane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Dibromomethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Bromodichloromethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
cis-1,3-Dichloropropene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
4-Methyl-2-pentanone (MIBK)	ND	U	2.0	1	10/21/14	10/21/14	KWG1414207	
Toluene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
trans-1,3-Dichloropropene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,1,2-Trichloroethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Tetrachloroethene (PCE)	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1414207-4
Extraction Method: EPA 5035A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Hexanone	ND	U	2.0	1	10/21/14	10/21/14	KWG1414207	
1,3-Dichloropropane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Dibromochloromethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,2-Dibromoethane (EDB)	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
Chlorobenzene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Ethylbenzene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,1,1,2-Tetrachloroethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
m,p-Xylenes	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
o-Xylene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Styrene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Bromoform	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Isopropylbenzene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
1,1,2,2-Tetrachloroethane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
Bromobenzene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
n-Propylbenzene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
1,2,3-Trichloropropane	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
2-Chlorotoluene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
1,3,5-Trimethylbenzene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
4-Chlorotoluene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
tert-Butylbenzene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
1,2,4-Trimethylbenzene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
sec-Butylbenzene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
4-Isopropyltoluene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
1,3-Dichlorobenzene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,4-Dichlorobenzene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
n-Butylbenzene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
1,2-Dichlorobenzene	ND	U	0.050	1	10/21/14	10/21/14	KWG1414207	
1,2-Dibromo-3-chloropropane	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
1,2,4-Trichlorobenzene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
Hexachlorobutadiene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
Naphthalene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	
1,2,3-Trichlorobenzene	ND	U	0.20	1	10/21/14	10/21/14	KWG1414207	

* See Case Narrative

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1414207-4

Units: mg/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	55-132	10/21/14	Acceptable
Toluene-d8	98	81-124	10/21/14	Acceptable
4-Bromofluorobenzene	98	64-132	10/21/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1414698-3
Extraction Method: EPA 5030A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Chloromethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Vinyl Chloride	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Bromomethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Chloroethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Trichlorofluoromethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,1-Dichloroethene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Acetone	ND	U	2.0	1	10/21/14	10/22/14	KWG1414698	
Carbon Disulfide	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Methylene Chloride	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
Methyl tert-Butyl Ether	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
trans-1,2-Dichloroethene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,1-Dichloroethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
2,2-Dichloropropane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
cis-1,2-Dichloroethene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
2-Butanone (MEK)	ND	U	2.0	1	10/21/14	10/22/14	KWG1414698	
Bromochloromethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Chloroform	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,1,1-Trichloroethane (TCA)	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Carbon Tetrachloride	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,1-Dichloropropene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Benzene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,2-Dichloroethane (EDC)	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Trichloroethene (TCE)	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,2-Dichloropropane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Dibromomethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Bromodichloromethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
cis-1,3-Dichloropropene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
4-Methyl-2-pentanone (MIBK)	ND	U	2.0	1	10/21/14	10/22/14	KWG1414698	
Toluene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
trans-1,3-Dichloropropene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,1,2-Trichloroethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Tetrachloroethene (PCE)	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1414698-3
Extraction Method: EPA 5030A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Hexanone	ND	U	2.0	1	10/21/14	10/22/14	KWG1414698	
1,3-Dichloropropane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Dibromochloromethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,2-Dibromoethane (EDB)	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
Chlorobenzene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Ethylbenzene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,1,1,2-Tetrachloroethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
m,p-Xylenes	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
o-Xylene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Styrene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Bromoform	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Isopropylbenzene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
1,1,2,2-Tetrachloroethane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
Bromobenzene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
n-Propylbenzene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
1,2,3-Trichloropropane	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
2-Chlorotoluene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
1,3,5-Trimethylbenzene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
4-Chlorotoluene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
tert-Butylbenzene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
1,2,4-Trimethylbenzene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
sec-Butylbenzene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
4-Isopropyltoluene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
1,3-Dichlorobenzene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,4-Dichlorobenzene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
n-Butylbenzene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
1,2-Dichlorobenzene	ND	U	0.050	1	10/21/14	10/22/14	KWG1414698	
1,2-Dibromo-3-chloropropane	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
1,2,4-Trichlorobenzene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
Hexachlorobutadiene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
Naphthalene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	
1,2,3-Trichlorobenzene	ND	U	0.20	1	10/21/14	10/22/14	KWG1414698	

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1414698-3

Units: mg/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	55-132	10/22/14	Acceptable
Toluene-d8	99	81-124	10/22/14	Acceptable
4-Bromofluorobenzene	97	64-132	10/22/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Volatile Organic Compounds

Sample Name: B-69-S-8.5-100814
Lab Code: K1411111-004
Extraction Method: EPA 5035A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	*
Chloromethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	*
Vinyl Chloride	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Bromomethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Chloroethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Trichlorofluoromethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
1,1-Dichloroethene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Acetone	ND	U	300	1	10/21/14	10/21/14	KWG1414207	
Carbon Disulfide	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Methylene Chloride	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
Methyl tert-Butyl Ether	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
trans-1,2-Dichloroethene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
1,1-Dichloroethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
2,2-Dichloropropane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
cis-1,2-Dichloroethene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
2-Butanone (MEK)	ND	U	300	1	10/21/14	10/21/14	KWG1414207	
Bromochloromethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Chloroform	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
1,1,1-Trichloroethane (TCA)	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Carbon Tetrachloride	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
1,1-Dichloropropene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Benzene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
1,2-Dichloroethane (EDC)	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Trichloroethene (TCE)	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
1,2-Dichloropropane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Dibromomethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Bromodichloromethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
cis-1,3-Dichloropropene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
4-Methyl-2-pentanone (MIBK)	ND	U	300	1	10/21/14	10/21/14	KWG1414207	
Toluene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
trans-1,3-Dichloropropene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
1,1,2-Trichloroethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Tetrachloroethene (PCE)	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Volatile Organic Compounds

Sample Name: B-69-S-8.5-100814
Lab Code: K1411111-004
Extraction Method: EPA 5035A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Hexanone	ND	U	300	1	10/21/14	10/21/14	KWG1414207	
1,3-Dichloropropane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Dibromochloromethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
1,2-Dibromoethane (EDB)	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
Chlorobenzene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Ethylbenzene	11		7.3	1	10/21/14	10/21/14	KWG1414207	
1,1,1,2-Tetrachloroethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
m,p-Xylenes	18		7.3	1	10/21/14	10/21/14	KWG1414207	
o-Xylene	10		7.3	1	10/21/14	10/21/14	KWG1414207	
Styrene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Bromoform	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Isopropylbenzene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
1,1,2,2-Tetrachloroethane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
Bromobenzene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
n-Propylbenzene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
1,2,3-Trichloropropane	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
2-Chlorotoluene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
1,3,5-Trimethylbenzene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
4-Chlorotoluene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
tert-Butylbenzene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
1,2,4-Trimethylbenzene	33		30	1	10/21/14	10/21/14	KWG1414207	
sec-Butylbenzene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
4-Isopropyltoluene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
1,3-Dichlorobenzene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
1,4-Dichlorobenzene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
n-Butylbenzene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
1,2-Dichlorobenzene	ND	U	7.3	1	10/21/14	10/21/14	KWG1414207	
1,2-Dibromo-3-chloropropane	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
1,2,4-Trichlorobenzene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
Hexachlorobutadiene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	
Naphthalene	4500	D	590	20	10/21/14	10/22/14	KWG1414698	
1,2,3-Trichlorobenzene	ND	U	30	1	10/21/14	10/21/14	KWG1414207	

* See Case Narrative

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Volatile Organic Compounds

Sample Name: B-69-S-8.5-100814
Lab Code: K1411111-004

Units: mg/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	55-132	10/21/14	Acceptable
Toluene-d8	100	81-124	10/21/14	Acceptable
4-Bromofluorobenzene	100	64-132	10/21/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Volatile Organic Compounds

Sample Name: B-69-S-12.5-100814
Lab Code: K1411111-005
Extraction Method: EPA 5035A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	*
Chloromethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	*
Vinyl Chloride	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Bromomethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Chloroethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Trichlorofluoromethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,1-Dichloroethene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Acetone	ND	U	74	1	10/21/14	10/21/14	KWG1414207	
Carbon Disulfide	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Methylene Chloride	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
Methyl tert-Butyl Ether	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
trans-1,2-Dichloroethene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,1-Dichloroethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
2,2-Dichloropropane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
cis-1,2-Dichloroethene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
2-Butanone (MEK)	ND	U	74	1	10/21/14	10/21/14	KWG1414207	
Bromochloromethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Chloroform	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,1,1-Trichloroethane (TCA)	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Carbon Tetrachloride	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,1-Dichloropropene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Benzene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,2-Dichloroethane (EDC)	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Trichloroethene (TCE)	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,2-Dichloropropane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Dibromomethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Bromodichloromethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
cis-1,3-Dichloropropene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
4-Methyl-2-pentanone (MIBK)	ND	U	74	1	10/21/14	10/21/14	KWG1414207	
Toluene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
trans-1,3-Dichloropropene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,1,2-Trichloroethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Tetrachloroethene (PCE)	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Volatile Organic Compounds

Sample Name: B-69-S-12.5-100814
Lab Code: K1411111-005
Extraction Method: EPA 5035A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Hexanone	ND	U	74	1	10/21/14	10/21/14	KWG1414207	
1,3-Dichloropropane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Dibromochloromethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,2-Dibromoethane (EDB)	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
Chlorobenzene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Ethylbenzene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,1,1,2-Tetrachloroethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
m,p-Xylenes	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
o-Xylene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Styrene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Bromoform	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Isopropylbenzene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
1,1,2,2-Tetrachloroethane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
Bromobenzene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
n-Propylbenzene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
1,2,3-Trichloropropane	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
2-Chlorotoluene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
1,3,5-Trimethylbenzene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
4-Chlorotoluene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
tert-Butylbenzene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
1,2,4-Trimethylbenzene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
sec-Butylbenzene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
4-Isopropyltoluene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
1,3-Dichlorobenzene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,4-Dichlorobenzene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
n-Butylbenzene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
1,2-Dichlorobenzene	ND	U	1.9	1	10/21/14	10/21/14	KWG1414207	
1,2-Dibromo-3-chloropropane	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
1,2,4-Trichlorobenzene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
Hexachlorobutadiene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	
Naphthalene	1600	D	300	20	10/21/14	10/21/14	KWG1414207	
1,2,3-Trichlorobenzene	ND	U	7.4	1	10/21/14	10/21/14	KWG1414207	

* See Case Narrative

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Volatile Organic Compounds

Sample Name: B-69-S-12.5-100814
Lab Code: K1411111-005

Units: mg/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	55-132	10/21/14	Acceptable
Toluene-d8	99	81-124	10/21/14	Acceptable
4-Bromofluorobenzene	101	64-132	10/21/14	Acceptable

Comments: _____

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Extracted: 10/21/2014
Date Analyzed: 10/21/2014

**Lab Control Spike Summary
 Volatile Organic Compounds**

Extraction Method: EPA 5035A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med
Extraction Lot: KWG1414207

Lab Control Sample
 KWG1414207-3
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Dichlorodifluoromethane	0.705	1.00	71	21-143
Chloromethane	0.704	1.00	70	50-121
Vinyl Chloride	0.835	1.00	84	53-125
Bromomethane	0.916	1.00	92	29-171
Chloroethane	1.01	1.00	101	53-134
Trichlorofluoromethane	0.764	1.00	76	42-119
1,1-Dichloroethene	0.989	1.00	99	67-141
Acetone	5.56	5.00	111	47-142
Carbon Disulfide	1.90	2.00	95	48-140
Methylene Chloride	0.850	1.00	85	69-121
Methyl tert-Butyl Ether	0.979	1.00	98	64-126
trans-1,2-Dichloroethene	0.963	1.00	96	76-128
1,1-Dichloroethane	1.01	1.00	101	70-124
2,2-Dichloropropane	0.955	1.00	96	49-136
cis-1,2-Dichloroethene	0.941	1.00	94	77-124
2-Butanone (MEK)	5.25	5.00	105	65-139
Bromochloromethane	0.978	1.00	98	73-117
Chloroform	0.952	1.00	95	73-125
1,1,1-Trichloroethane (TCA)	0.936	1.00	94	61-136
Carbon Tetrachloride	0.941	1.00	94	72-140
1,1-Dichloropropene	0.963	1.00	96	65-130
Benzene	0.956	1.00	96	70-134
1,2-Dichloroethane (EDC)	0.976	1.00	98	70-126
Trichloroethene (TCE)	0.911	1.00	91	69-126
1,2-Dichloropropane	0.936	1.00	94	73-121
Dibromomethane	0.975	1.00	98	75-124
Bromodichloromethane	0.960	1.00	96	76-128
cis-1,3-Dichloropropene	0.968	1.00	97	57-132
4-Methyl-2-pentanone (MIBK)	5.05	5.00	101	73-126
Toluene	0.930	1.00	93	74-118
trans-1,3-Dichloropropene	0.853	1.00	85	55-129
1,1,2-Trichloroethane	0.949	1.00	95	73-118
Tetrachloroethene (PCE)	0.930	1.00	93	65-126
2-Hexanone	4.67	5.00	93	54-123
1,3-Dichloropropane	0.919	1.00	92	70-121

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Extracted: 10/21/2014
Date Analyzed: 10/21/2014

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5035A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med
Extraction Lot: KWG1414207

Lab Control Sample
 KWG1414207-3
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Dibromochloromethane	0.951	1.00	95	64-126
1,2-Dibromoethane (EDB)	0.973	1.00	97	70-122
Chlorobenzene	0.951	1.00	95	72-115
Ethylbenzene	0.943	1.00	94	72-121
1,1,1,2-Tetrachloroethane	0.952	1.00	95	71-120
m,p-Xylenes	1.98	2.00	99	74-124
o-Xylene	0.992	1.00	99	73-123
Styrene	1.02	1.00	102	77-122
Bromoform	0.987	1.00	99	54-141
Isopropylbenzene	0.977	1.00	98	68-121
1,1,2,2-Tetrachloroethane	0.918	1.00	92	63-127
Bromobenzene	0.937	1.00	94	66-118
n-Propylbenzene	0.919	1.00	92	61-134
1,2,3-Trichloropropane	0.957	1.00	96	76-128
2-Chlorotoluene	0.960	1.00	96	68-127
1,3,5-Trimethylbenzene	0.976	1.00	98	68-129
4-Chlorotoluene	0.903	1.00	90	66-121
tert-Butylbenzene	0.947	1.00	95	65-131
1,2,4-Trimethylbenzene	0.975	1.00	98	69-123
sec-Butylbenzene	0.917	1.00	92	57-132
4-Isopropyltoluene	0.980	1.00	98	68-127
1,3-Dichlorobenzene	0.922	1.00	92	69-117
1,4-Dichlorobenzene	0.918	1.00	92	69-114
n-Butylbenzene	0.926	1.00	93	52-142
1,2-Dichlorobenzene	0.923	1.00	92	75-114
1,2-Dibromo-3-chloropropane	0.842	1.00	84	46-132
1,2,4-Trichlorobenzene	0.916	1.00	92	55-134
Hexachlorobutadiene	0.917	1.00	92	52-136
Naphthalene	0.814	1.00	81	48-144
1,2,3-Trichlorobenzene	0.975	1.00	98	49-149

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Extracted: 10/21/2014
Date Analyzed: 10/22/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med
Extraction Lot: KWG1414698

Analyte Name	Lab Control Sample KWG1414698-1 Lab Control Spike			Duplicate Lab Control Sample KWG1414698-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Dichlorodifluoromethane	0.688	1.00	69	0.625	1.00	63	21-143	10	40
Chloromethane	0.719	1.00	72	0.676	1.00	68	50-121	6	40
Vinyl Chloride	0.863	1.00	86	0.801	1.00	80	53-125	7	40
Bromomethane	0.847	1.00	85	0.850	1.00	85	29-171	0	40
Chloroethane	1.03	1.00	103	0.991	1.00	99	53-134	3	40
Trichlorofluoromethane	0.814	1.00	81	0.746	1.00	75	42-119	9	40
1,1-Dichloroethene	1.05	1.00	105	0.982	1.00	98	67-141	7	40
Acetone	5.50	5.00	110	5.58	5.00	112	47-142	1	40
Carbon Disulfide	1.98	2.00	99	1.87	2.00	93	48-140	6	40
Methylene Chloride	0.891	1.00	89	0.849	1.00	85	69-121	5	40
Methyl tert-Butyl Ether	1.06	1.00	106	1.07	1.00	107	64-126	1	40
trans-1,2-Dichloroethene	1.02	1.00	102	0.969	1.00	97	76-128	5	40
1,1-Dichloroethane	1.04	1.00	104	1.02	1.00	102	70-124	2	40
2,2-Dichloropropane	1.02	1.00	102	0.976	1.00	98	49-136	4	40
cis-1,2-Dichloroethene	0.972	1.00	97	0.940	1.00	94	77-124	3	40
2-Butanone (MEK)	5.59	5.00	112	5.72	5.00	114	65-139	2	40
Bromochloromethane	1.03	1.00	103	1.02	1.00	102	73-117	1	40
Chloroform	0.973	1.00	97	0.953	1.00	95	73-125	2	40
1,1,1-Trichloroethane (TCA)	1.02	1.00	102	0.980	1.00	98	61-136	4	40
Carbon Tetrachloride	1.00	1.00	100	0.939	1.00	94	72-140	6	40
1,1-Dichloropropene	1.01	1.00	101	0.960	1.00	96	65-130	5	40
Benzene	0.999	1.00	100	0.960	1.00	96	70-134	4	40
1,2-Dichloroethane (EDC)	0.973	1.00	97	0.952	1.00	95	70-126	2	40
Trichloroethene (TCE)	0.965	1.00	97	0.937	1.00	94	69-126	3	40
1,2-Dichloropropane	0.955	1.00	96	0.933	1.00	93	73-121	2	40
Dibromomethane	0.979	1.00	98	0.990	1.00	99	75-124	1	40
Bromodichloromethane	0.978	1.00	98	0.963	1.00	96	76-128	2	40
cis-1,3-Dichloropropene	0.990	1.00	99	0.981	1.00	98	57-132	1	40
4-Methyl-2-pentanone (MIBK)	5.53	5.00	111	5.66	5.00	113	73-126	2	40
Toluene	0.963	1.00	96	0.934	1.00	93	74-118	3	40
trans-1,3-Dichloropropene	0.877	1.00	88	0.875	1.00	88	55-129	0	40
1,1,2-Trichloroethane	0.963	1.00	96	0.981	1.00	98	73-118	2	40
Tetrachloroethene (PCE)	0.979	1.00	98	0.933	1.00	93	65-126	5	40
2-Hexanone	5.13	5.00	103	5.42	5.00	108	54-123	6	40
1,3-Dichloropropane	0.924	1.00	92	0.928	1.00	93	70-121	0	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Extracted: 10/21/2014
Date Analyzed: 10/22/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030A/5030B
Analysis Method: 8260C

Units: mg/Kg
Basis: Dry
Level: Med
Extraction Lot: KWG1414698

Analyte Name	Lab Control Sample KWG1414698-1 Lab Control Spike			Duplicate Lab Control Sample KWG1414698-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Dibromochloromethane	0.966	1.00	97	0.968	1.00	97	64-126	0	40
1,2-Dibromoethane (EDB)	0.968	1.00	97	0.984	1.00	98	70-122	2	40
Chlorobenzene	0.961	1.00	96	0.956	1.00	96	72-115	1	40
Ethylbenzene	0.973	1.00	97	0.944	1.00	94	72-121	3	40
1,1,1,2-Tetrachloroethane	0.972	1.00	97	0.976	1.00	98	71-120	0	40
m,p-Xylenes	2.04	2.00	102	2.00	2.00	100	74-124	2	40
o-Xylene	1.02	1.00	102	1.00	1.00	100	73-123	1	40
Styrene	1.07	1.00	107	1.05	1.00	105	77-122	2	40
Bromoform	0.990	1.00	99	1.04	1.00	104	54-141	5	40
Isopropylbenzene	1.00	1.00	100	0.982	1.00	98	68-121	2	40
1,1,2,2-Tetrachloroethane	0.926	1.00	93	0.920	1.00	92	63-127	1	40
Bromobenzene	0.942	1.00	94	0.927	1.00	93	66-118	2	40
n-Propylbenzene	0.962	1.00	96	0.917	1.00	92	61-134	5	40
1,2,3-Trichloropropane	0.948	1.00	95	0.955	1.00	96	76-128	1	40
2-Chlorotoluene	0.985	1.00	99	0.954	1.00	95	68-127	3	40
1,3,5-Trimethylbenzene	1.02	1.00	102	0.984	1.00	98	68-129	4	40
4-Chlorotoluene	0.936	1.00	94	0.908	1.00	91	66-121	3	40
tert-Butylbenzene	0.996	1.00	100	0.947	1.00	95	65-131	5	40
1,2,4-Trimethylbenzene	1.06	1.00	106	1.02	1.00	102	69-123	4	40
sec-Butylbenzene	0.960	1.00	96	0.904	1.00	90	57-132	6	40
4-Isopropyltoluene	1.05	1.00	105	1.01	1.00	101	68-127	4	40
1,3-Dichlorobenzene	0.936	1.00	94	0.917	1.00	92	69-117	2	40
1,4-Dichlorobenzene	0.934	1.00	93	0.906	1.00	91	69-114	3	40
n-Butylbenzene	1.05	1.00	105	0.990	1.00	99	52-142	5	40
1,2-Dichlorobenzene	0.950	1.00	95	0.919	1.00	92	75-114	3	40
1,2-Dibromo-3-chloropropane	0.971	1.00	97	0.972	1.00	97	46-132	0	40
1,2,4-Trichlorobenzene	1.02	1.00	102	1.01	1.00	101	55-134	0	40
Hexachlorobutadiene	0.982	1.00	98	0.923	1.00	92	52-136	6	40
Naphthalene	1.06	1.00	106	1.05	1.00	105	48-144	0	40
1,2,3-Trichlorobenzene	1.07	1.00	107	1.03	1.00	103	49-149	4	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: URS Corporation
Project: IP Tacoma Metals/33764085

Service Request: K1411111

**Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS**

Sample Name	Lab Code	Date Collected	Date Received
B-69-S-4.5-100814	K1411111-003	10/08/2014	10/09/2014
B-69-S-8.5-100814	K1411111-004	10/08/2014	10/09/2014
B-69-S-12.5-100814	K1411111-005	10/08/2014	10/09/2014

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111

**Surrogate Recovery Summary
 Semi-Volatile Organic Compounds by GC/MS**

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
B-69-S-4.5-100814	K1411111-003	70	70	99
B-69-S-8.5-100814	K1411111-004	80 D	67 D	85 D
B-69-S-12.5-100814	K1411111-005	63	67	85
Method Blank	KWG1414210-3	53	53	66
Lab Control Sample	KWG1414210-1	60	65	74
Duplicate Lab Control Sample	KWG1414210-2	66	61	71

Surrogate Recovery Control Limits (%)

Sur1 = Nitrobenzene-d5	29-116
Sur2 = 2-Fluorobiphenyl	32-104
Sur3 = Terphenyl-d14	37-133

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG1414210-3
Extraction Method: EPA 3541
Analysis Method: 8270D

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
2-Methylnaphthalene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Acenaphthylene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Acenaphthene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Dibenzofuran	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Fluorene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Phenanthrene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Anthracene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Fluoranthene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Pyrene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Benz(a)anthracene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Chrysene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Benzo(b)fluoranthene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Benzo(k)fluoranthene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Benzo(a)pyrene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Indeno(1,2,3-cd)pyrene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Dibenz(a,h)anthracene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Benzo(g,h,i)perylene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	53	29-116	10/27/14	Acceptable
2-Fluorobiphenyl	53	32-104	10/27/14	Acceptable
Terphenyl-d14	66	37-133	10/27/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name: B-69-S-4.5-100814
Lab Code: K1411111-003
Extraction Method: EPA 3541
Analysis Method: 8270D

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	4.3		2.6	1	10/21/14	10/27/14	KWG1414210	
2-Methylnaphthalene	9.5		2.6	1	10/21/14	10/27/14	KWG1414210	
Acenaphthylene	11		2.6	1	10/21/14	10/27/14	KWG1414210	
Acenaphthene	14		2.6	1	10/21/14	10/27/14	KWG1414210	
Dibenzofuran	6.0		2.6	1	10/21/14	10/27/14	KWG1414210	
Fluorene	15		2.6	1	10/21/14	10/27/14	KWG1414210	
Phenanthrene	28		2.6	1	10/21/14	10/27/14	KWG1414210	
Anthracene	95	D	13	5	10/21/14	10/29/14	KWG1414210	
Fluoranthene	160	D	13	5	10/21/14	10/29/14	KWG1414210	*
Pyrene	270	D	51	20	10/21/14	10/29/14	KWG1414210	
Benz(a)anthracene	200	D	13	5	10/21/14	10/29/14	KWG1414210	
Chrysene	460	D	51	20	10/21/14	10/29/14	KWG1414210	
Benzo(b)fluoranthene	460	D	51	20	10/21/14	10/29/14	KWG1414210	
Benzo(k)fluoranthene	150	D	51	20	10/21/14	10/29/14	KWG1414210	
Benzo(a)pyrene	350	D	51	20	10/21/14	10/29/14	KWG1414210	
Indeno(1,2,3-cd)pyrene	170	D	13	5	10/21/14	10/29/14	KWG1414210	
Dibenz(a,h)anthracene	45		2.6	1	10/21/14	10/27/14	KWG1414210	
Benzo(g,h,i)perylene	140	D	13	5	10/21/14	10/29/14	KWG1414210	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	70	29-116	10/27/14	Acceptable
2-Fluorobiphenyl	70	32-104	10/27/14	Acceptable
Terphenyl-d14	99	37-133	10/27/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name: B-69-S-8.5-100814
Lab Code: K1411111-004
Extraction Method: EPA 3541
Analysis Method: 8270D

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	3400	D	200	50	10/21/14	10/29/14	KWG1414210	
2-Methylnaphthalene	1700	D	200	50	10/21/14	10/29/14	KWG1414210	
Acenaphthylene	29	D	20	5	10/21/14	10/27/14	KWG1414210	
Acenaphthene	1200	D	200	50	10/21/14	10/29/14	KWG1414210	
Dibenzofuran	570	D	39	10	10/21/14	10/29/14	KWG1414210	
Fluorene	1000	D	200	50	10/21/14	10/29/14	KWG1414210	
Phenanthrene	3000	D	200	50	10/21/14	10/29/14	KWG1414210	
Anthracene	780	D	39	10	10/21/14	10/29/14	KWG1414210	
Fluoranthene	1400	D	200	50	10/21/14	10/29/14	KWG1414210	*
Pyrene	1300	D	200	50	10/21/14	10/29/14	KWG1414210	
Benz(a)anthracene	320	D	20	5	10/21/14	10/27/14	KWG1414210	
Chrysene	290	D	20	5	10/21/14	10/27/14	KWG1414210	
Benzo(b)fluoranthene	240	D	20	5	10/21/14	10/27/14	KWG1414210	
Benzo(k)fluoranthene	81	D	20	5	10/21/14	10/27/14	KWG1414210	
Benzo(a)pyrene	190	D	20	5	10/21/14	10/27/14	KWG1414210	
Indeno(1,2,3-cd)pyrene	75	D	20	5	10/21/14	10/27/14	KWG1414210	
Dibenz(a,h)anthracene	24	D	20	5	10/21/14	10/27/14	KWG1414210	
Benzo(g,h,i)perylene	68	D	20	5	10/21/14	10/27/14	KWG1414210	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	80	29-116	10/27/14	Acceptable
2-Fluorobiphenyl	67	32-104	10/27/14	Acceptable
Terphenyl-d14	85	37-133	10/27/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Collected: 10/08/2014
Date Received: 10/09/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name: B-69-S-12.5-100814
Lab Code: K1411111-005
Extraction Method: EPA 3541
Analysis Method: 8270D

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	370	D	120	50	10/21/14	10/29/14	KWG1414210	
2-Methylnaphthalene	260	D	120	50	10/21/14	10/29/14	KWG1414210	
Acenaphthylene	4.7		2.4	1	10/21/14	10/27/14	KWG1414210	
Acenaphthene	340	D	120	50	10/21/14	10/29/14	KWG1414210	
Dibenzofuran	180	D	12	5	10/21/14	10/28/14	KWG1414210	
Fluorene	320	D	120	50	10/21/14	10/29/14	KWG1414210	
Phenanthrene	1000	D	120	50	10/21/14	10/29/14	KWG1414210	
Anthracene	150	D	12	5	10/21/14	10/28/14	KWG1414210	
Fluoranthene	440	D	120	50	10/21/14	10/29/14	KWG1414210	*
Pyrene	370	D	120	50	10/21/14	10/29/14	KWG1414210	
Benz(a)anthracene	110	D	12	5	10/21/14	10/28/14	KWG1414210	
Chrysene	86	D	12	5	10/21/14	10/28/14	KWG1414210	
Benzo(b)fluoranthene	81	D	12	5	10/21/14	10/28/14	KWG1414210	
Benzo(k)fluoranthene	28	D	12	5	10/21/14	10/28/14	KWG1414210	
Benzo(a)pyrene	67	D	12	5	10/21/14	10/28/14	KWG1414210	
Indeno(1,2,3-cd)pyrene	24		2.4	1	10/21/14	10/27/14	KWG1414210	
Dibenz(a,h)anthracene	7.4		2.4	1	10/21/14	10/27/14	KWG1414210	
Benzo(g,h,i)perylene	22		2.4	1	10/21/14	10/27/14	KWG1414210	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	63	29-116	10/27/14	Acceptable
2-Fluorobiphenyl	67	32-104	10/27/14	Acceptable
Terphenyl-d14	85	37-133	10/27/14	Acceptable

Comments: _____

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411111
Date Extracted: 10/21/2014
Date Analyzed: 10/27/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: mg/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1414210

Analyte Name	Lab Control Sample KWG1414210-1 Lab Control Spike			Duplicate Lab Control Sample KWG1414210-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Naphthalene	2.19	3.33	66	2.13	3.33	64	44-92	3	40
2-Methylnaphthalene	2.23	3.33	67	2.12	3.33	64	44-95	5	40
Acenaphthylene	2.54	3.33	76	2.23	3.33	67	48-105	13	40
Acenaphthene	2.53	3.33	76	2.14	3.33	64	49-97	17	40
Dibenzofuran	2.62	3.33	78	2.24	3.33	67	47-101	15	40
Fluorene	2.63	3.33	79	2.23	3.33	67	46-103	17	40
Phenanthrene	2.82	3.33	84	2.67	3.33	80	52-108	5	40
Anthracene	2.98	3.33	89	2.73	3.33	82	53-106	9	40
Fluoranthene	3.01	3.33	90	2.86	3.33	86	47-117	5	40
Pyrene	2.79	3.33	84	2.53	3.33	76	53-124	10	40
Benz(a)anthracene	2.73	3.33	82	2.61	3.33	78	54-109	4	40
Chrysene	2.72	3.33	82	2.51	3.33	75	53-109	8	40
Benzo(b)fluoranthene	2.82	3.33	85	2.61	3.33	78	53-110	8	40
Benzo(k)fluoranthene	2.52	3.33	75	2.53	3.33	76	52-112	0	40
Benzo(a)pyrene	2.66	3.33	80	2.69	3.33	81	51-114	1	40
Indeno(1,2,3-cd)pyrene	2.91	3.33	87	2.71	3.33	81	53-112	7	40
Dibenz(a,h)anthracene	2.69	3.33	81	2.69	3.33	81	53-114	0	40
Benzo(g,h,i)perylene	2.80	3.33	84	2.70	3.33	81	50-110	4	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T: 1-360-577-7222
F: 1-360-636-1068
www.alsglobal.com

November 10, 2014

Analytical Report for Service Request No: K1411112

Paul Kalina
URS Corporation
1501 4th Ave., Suite 1400
Seattle, WA 98101

RE: IP Tacoma Metals/33764085

Dear Paul:

Enclosed are the results of the sample(s) submitted to our laboratory on October 9, 2014. For your reference, these analyses have been assigned our service request number **K1411112**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3375. You may also contact me via email at Janet.Malloch@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Janet Malloch
Project Manager

Page 1 of 801

ALS ENVIRONMENTAL

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request No.: K1411112
Date Received: 10/09/14

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty soil samples were received for analysis at ALS Environmental on 10/09/14. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Diesel and Residual Range Organics by NWTPH-Dx

Elevated Detection Limits:

Several samples required dilution due to the presence of elevated levels of non-target analytes. The reporting limits were adjusted to reflect the dilution.

Surrogate Exceptions:

The control criteria for n-Triacontane in several samples were not applicable. The analysis of the samples required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

Sample Notes and Discussion:

The samples did not resemble a Stoddard solvent fingerprint nor a petroleum product.

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) criterion for the replicate analysis of Residual Range Organics (RRO) in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____

Janet Mallock

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Calibration Verification Exceptions:

The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS07\1028F002.D: Fluoranthene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Elevated Detection Limits:

Sample B-57-S-9-100714 required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

No other anomalies associated with the analysis of these samples were observed.

Approved by Janet Mallock



Cooler Receipt and Preservation Form

Client / Project: URS Service Request K14 11112

Received: 10/8/14 Opened: 10/8/14 By: UA Unloaded: 10/9/14 By: M

- 1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
- 2. Samples were received in: (circle) Cooler Box Envelope Other NA
- 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
<u>4.5</u>	<u>4.4</u>	<u>8.8</u>	<u>8.7</u>	<u>-0.1</u>	<u>345</u>			
<u>2.8</u>	<u>2.7</u>	<u>5.5</u>	<u>5.4</u>	<u>-0.1</u>	<u>325</u>			

- 4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
- 5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
- 6. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA Y N
- 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
- 8. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N
- 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
- 10. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below. NA Y N
- 11. Were VOA vials received without headspace? Indicate in the table below. NA Y N
- 12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Out of	Head-	Broke	pH	Reagent	Volume	Reagent Lot	Initials	Time
	Bottle Type	Temp	space				added	Number		

Notes, Discrepancies, & Resolutions: _____

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil
Analysis Method: 160.3 Modified
Prep Method: None

Service Request: K1411112
Date Collected: 10/7/14
Date Received: 10/9/14
Units: Percent
Basis: As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
B-49-S-8-100714	K1411112-005	45.7	-	1	10/22/14 11:41	
B-57-S-7.5-100714	K1411112-019	37.9	-	1	10/22/14 11:41	
B-57-S-9-100714	K1411112-020	41.7	-	1	10/22/14 11:41	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil
Analysis Method: 160.3 Modified
Prep Method: None

Service Request: K1411112
Date Collected: NA
Date Received: NA

Units: Percent
Basis: As Received

Replicate Sample Summary

Solids, Total

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1411111-005DUP	-	79.9	78.0	79.0	2	20	10/22/14
Batch QC	K1411224-012DUP	-	22.5	22.4	22.5	<1	20	10/22/14

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: URS Corporation
Project: IP Tacoma Metals/33764085

Service Request: K1411112

**Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics**

Sample Name	Lab Code	Date Collected	Date Received
B-49-S-8-100714	K1411112-005	10/07/2014	10/09/2014
B-57-S-7.5-100714	K1411112-019	10/07/2014	10/09/2014
B-57-S-9-100714	K1411112-020	10/07/2014	10/09/2014

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411112

**Surrogate Recovery Summary
 Diesel and Residual Range Organics**

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
B-49-S-8-100714	K1411112-005	91 D #	141 D #
B-57-S-7.5-100714	K1411112-019	98 D #	245 D #
B-57-S-9-100714	K1411112-020	129 D	168 D *
Batch QC	K1411494-003	87 D	100 D
Batch QCDUP	KWG1414518-1	37 D *	40 D *
Method Blank	KWG1414518-5	82	87
Lab Control Sample	KWG1414518-4	84	86

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Solid

Service Request: K1411112
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1414518-5
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	25	1	10/21/14	10/31/14	KWG1414518	
Residual Range Organics (RRO)	ND	U	99	1	10/21/14	10/31/14	KWG1414518	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	82	50-150	10/31/14	Acceptable
n-Triacontane	87	50-150	10/31/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411112
Date Collected: 10/07/2014
Date Received: 10/09/2014

Diesel and Residual Range Organics

Sample Name: B-49-S-8-100714
Lab Code: K1411112-005
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	20000	DZ	2200	20	10/21/14	11/01/14	KWG1414518	
Residual Range Organics (RRO)	32000	DZ	8800	20	10/21/14	11/01/14	KWG1414518	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	91	50-150	11/01/14	Acceptable
n-Triacontane	141	50-150	11/01/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411112
Date Collected: 10/07/2014
Date Received: 10/09/2014

Diesel and Residual Range Organics

Sample Name: B-57-S-7.5-100714
Lab Code: K1411112-019
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	11000	DZ	2700	20	10/21/14	11/01/14	KWG1414518	
Residual Range Organics (RRO)	60000	DZ	11000	20	10/21/14	11/01/14	KWG1414518	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	98	50-150	11/01/14	Acceptable
n-Triacontane	245	50-150	11/01/14	Outside Control Limits

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411112
Date Collected: 10/07/2014
Date Received: 10/09/2014

Diesel and Residual Range Organics

Sample Name: B-57-S-9-100714
Lab Code: K1411112-020
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	34000	DZ	1200	5	10/21/14	10/31/14	KWG1414518	
Residual Range Organics (RRO)	22000	DZ	4800	5	10/21/14	10/31/14	KWG1414518	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	129	50-150	10/31/14	Acceptable
n-Triacontane	168	50-150	10/31/14	Outside Control Limits

Comments: _____

QA/QC Report

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Solid

Service Request: K1411112
Date Extracted: 10/21/2014
Date Analyzed: 11/01/2014

**Duplicate Sample Summary
 Diesel and Residual Range Organics**

Sample Name: Batch QC
Lab Code: K1411494-003
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1414518

Analyte Name	MRL	Sample Result	Batch QCDUP KWG1414518-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Diesel Range Organics (DRO)	640	ND	ND	ND	-	40
Residual Range Organics (RRO)	640	2100	1000	1600	69 #	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Solid

Service Request: K1411112
Date Extracted: 10/21/2014
Date Analyzed: 10/31/2014

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1414518

Lab Control Sample
 KWG1414518-4
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Diesel Range Organics (DRO)	233	267	87	42-134
Residual Range Organics (RRO)	151	133	113	48-141

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: URS Corporation
Project: IP Tacoma Metals/33764085

Service Request: K1411112

**Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS**

Sample Name	Lab Code	Date Collected	Date Received
B-49-S-8-100714	K1411112-005	10/07/2014	10/09/2014
B-57-S-7.5-100714	K1411112-019	10/07/2014	10/09/2014
B-57-S-9-100714	K1411112-020	10/07/2014	10/09/2014

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411112

**Surrogate Recovery Summary
 Semi-Volatile Organic Compounds by GC/MS**

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
B-49-S-8-100714	K1411112-005	64	73	88
B-57-S-7.5-100714	K1411112-019	71	74	93
B-57-S-9-100714	K1411112-020	61 D	61 D	77 D
Method Blank	KWG1414210-3	53	53	66
Lab Control Sample	KWG1414210-1	60	65	74
Duplicate Lab Control Sample	KWG1414210-2	66	61	71

Surrogate Recovery Control Limits (%)

Sur1 = Nitrobenzene-d5	29-116
Sur2 = 2-Fluorobiphenyl	32-104
Sur3 = Terphenyl-d14	37-133

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411112
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG1414210-3
Extraction Method: EPA 3541
Analysis Method: 8270D

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
2-Methylnaphthalene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Acenaphthylene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Acenaphthene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Dibenzofuran	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Fluorene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Phenanthrene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Anthracene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Fluoranthene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Pyrene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Benz(a)anthracene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Chrysene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Benzo(b)fluoranthene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Benzo(k)fluoranthene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Benzo(a)pyrene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Indeno(1,2,3-cd)pyrene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Dibenz(a,h)anthracene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	
Benzo(g,h,i)perylene	ND	U	0.33	1	10/21/14	10/27/14	KWG1414210	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	53	29-116	10/27/14	Acceptable
2-Fluorobiphenyl	53	32-104	10/27/14	Acceptable
Terphenyl-d14	66	37-133	10/27/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411112
Date Collected: 10/07/2014
Date Received: 10/09/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name: B-49-S-8-100714
Lab Code: K1411112-005
Extraction Method: EPA 3541
Analysis Method: 8270D

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	46		4.4	1	10/21/14	10/27/14	KWG1414210	
2-Methylnaphthalene	21		4.4	1	10/21/14	10/27/14	KWG1414210	
Acenaphthylene	ND	U	4.4	1	10/21/14	10/27/14	KWG1414210	
Acenaphthene	31		4.4	1	10/21/14	10/27/14	KWG1414210	
Dibenzofuran	13		4.4	1	10/21/14	10/27/14	KWG1414210	
Fluorene	22		4.4	1	10/21/14	10/27/14	KWG1414210	
Phenanthrene	57		4.4	1	10/21/14	10/27/14	KWG1414210	
Anthracene	320	D	22	5	10/21/14	10/28/14	KWG1414210	
Fluoranthene	250	D	22	5	10/21/14	10/28/14	KWG1414210	*
Pyrene	330	D	22	5	10/21/14	10/28/14	KWG1414210	
Benz(a)anthracene	170	D	22	5	10/21/14	10/28/14	KWG1414210	
Chrysene	550	D	87	20	10/21/14	10/28/14	KWG1414210	
Benzo(b)fluoranthene	210	D	22	5	10/21/14	10/28/14	KWG1414210	
Benzo(k)fluoranthene	72	D	22	5	10/21/14	10/28/14	KWG1414210	
Benzo(a)pyrene	150	D	22	5	10/21/14	10/28/14	KWG1414210	
Indeno(1,2,3-cd)pyrene	64		4.4	1	10/21/14	10/27/14	KWG1414210	
Dibenz(a,h)anthracene	22		4.4	1	10/21/14	10/27/14	KWG1414210	
Benzo(g,h,i)perylene	56		4.4	1	10/21/14	10/27/14	KWG1414210	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	64	29-116	10/27/14	Acceptable
2-Fluorobiphenyl	73	32-104	10/27/14	Acceptable
Terphenyl-d14	88	37-133	10/27/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411112
Date Collected: 10/07/2014
Date Received: 10/09/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name: B-57-S-7.5-100714
Lab Code: K1411112-019
Extraction Method: EPA 3541
Analysis Method: 8270D

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	21	1	10/21/14	10/27/14	KWG1414210	
2-Methylnaphthalene	21		21	1	10/21/14	10/27/14	KWG1414210	
Acenaphthylene	28		21	1	10/21/14	10/27/14	KWG1414210	
Acenaphthene	31		21	1	10/21/14	10/27/14	KWG1414210	
Dibenzofuran	ND	U	21	1	10/21/14	10/27/14	KWG1414210	
Fluorene	45		21	1	10/21/14	10/27/14	KWG1414210	
Phenanthrene	120		21	1	10/21/14	10/27/14	KWG1414210	
Anthracene	1000	D	110	5	10/21/14	10/28/14	KWG1414210	
Fluoranthene	260		21	1	10/21/14	10/27/14	KWG1414210	
Pyrene	710	D	110	5	10/21/14	10/28/14	KWG1414210	
Benz(a)anthracene	910	D	110	5	10/21/14	10/28/14	KWG1414210	
Chrysene	3400	D	1100	50	10/21/14	10/28/14	KWG1414210	
Benzo(b)fluoranthene	1500	D	110	5	10/21/14	10/28/14	KWG1414210	
Benzo(k)fluoranthene	510	D	110	5	10/21/14	10/28/14	KWG1414210	
Benzo(a)pyrene	1200	D	110	5	10/21/14	10/28/14	KWG1414210	
Indeno(1,2,3-cd)pyrene	630	D	110	5	10/21/14	10/28/14	KWG1414210	
Dibenz(a,h)anthracene	290		21	1	10/21/14	10/27/14	KWG1414210	
Benzo(g,h,i)perylene	540	D	110	5	10/21/14	10/28/14	KWG1414210	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	71	29-116	10/27/14	Acceptable
2-Fluorobiphenyl	74	32-104	10/27/14	Acceptable
Terphenyl-d14	93	37-133	10/27/14	Acceptable

Comments: _____

Analytical Results

Client: URS Corporation
Project: IP Tacoma Metals/33764085
Sample Matrix: Soil

Service Request: K1411112
Date Collected: 10/07/2014
Date Received: 10/09/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name: B-57-S-9-100714
Lab Code: K1411112-020
Extraction Method: EPA 3541
Analysis Method: 8270D

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	1400	D	240	50	10/21/14	10/28/14	KWG1414210	
2-Methylnaphthalene	810	D	48	10	10/21/14	10/28/14	KWG1414210	
Acenaphthylene	ND	U	24	5	10/21/14	10/27/14	KWG1414210	
Acenaphthene	720	D	48	10	10/21/14	10/28/14	KWG1414210	
Dibenzofuran	280	D	24	5	10/21/14	10/27/14	KWG1414210	
Fluorene	460	D	24	5	10/21/14	10/27/14	KWG1414210	
Phenanthrene	1700	D	240	50	10/21/14	10/28/14	KWG1414210	
Anthracene	990	D	240	50	10/21/14	10/28/14	KWG1414210	
Fluoranthene	900	D	48	10	10/21/14	10/28/14	KWG1414210	*
Pyrene	760	D	48	10	10/21/14	10/28/14	KWG1414210	
Benz(a)anthracene	220	D	24	5	10/21/14	10/27/14	KWG1414210	
Chrysene	440	D	24	5	10/21/14	10/27/14	KWG1414210	
Benzo(b)fluoranthene	180	D	24	5	10/21/14	10/27/14	KWG1414210	
Benzo(k)fluoranthene	55	D	24	5	10/21/14	10/27/14	KWG1414210	
Benzo(a)pyrene	140	D	24	5	10/21/14	10/27/14	KWG1414210	
Indeno(1,2,3-cd)pyrene	60	D	24	5	10/21/14	10/27/14	KWG1414210	
Dibenz(a,h)anthracene	ND	U	24	5	10/21/14	10/27/14	KWG1414210	
Benzo(g,h,i)perylene	56	D	24	5	10/21/14	10/27/14	KWG1414210	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	61	29-116	10/27/14	Acceptable
2-Fluorobiphenyl	61	32-104	10/27/14	Acceptable
Terphenyl-d14	77	37-133	10/27/14	Acceptable

Comments: _____



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June 08, 2015

Analytical Report for Service Request No: K1505210

Paul Kalina
AECOM
1501 4th Ave., Suite 1400
Seattle, WA 98101

RE: IP Tacoma Metals / 33764085.

Dear Paul,

Enclosed are the results of the sample(s) submitted to our laboratory October 08, 2014
For your reference, these analyses have been assigned our service request number **K1505210**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3375. You may also contact me via email at Janet.Malloch@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

For JM

Janet Malloch
Project Manager

ALS ENVIRONMENTAL

Client: AECOM
Project: IP Tacoma Metals/ 33764085.
Sample Matrix: Soil

Service Request No.: K1505210
Date Received: 10/08/14-10/31/14

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six soil samples were received for analysis at ALS Environmental between 10/08/14 and 10/31/14. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory. These samples were originally logged under Service Requests K1411110, K1411111, K1411112, and K14123304.

Diesel Range Organics by Method NWTPH-Dx

Holding Time Exceptions:

The samples were received past holding time. The analysis was performed as soon as possible after receipt by the laboratory. The data was flagged to indicate the holding time violation.

Surrogate Exceptions:

The control criteria for o-Terphenyl and n-Triacontane in sample B-77-S-5-103014 were not applicable. The analysis of the sample required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

Elevated Detection Limits:

The detection limit was elevated for Diesel Range Organics (DRO) and Residual Range Organics (RRO) in all field samples. The sample extracts were diluted prior to instrumental analysis to protect the instrument injection port from unnecessary fouling. The extracts were highly colored, which suggested the presence of elevated levels of higher-boiling components and indicated the need to perform a dilution prior to injection into the instrument.

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) criterion for the replicate analysis of Residual Range Organics (RRO) in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by: _____

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Holding Time Exceptions:

The analysis of all samples was initially performed past the recommended holding time. The extraction was not requested within the holding time of the samples. Efforts were made to analyze the samples as soon as possible once the extraction was requested. The data was flagged to indicate the holding time violation.

Calibration Verification Exceptions:

The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS14\0601F002.D: Pyrene and Terphenyl-d14. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS14\0603F003.D: Benzo(g,h,i)perylene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS14\0604F002.D: Dibenz(a,h)anthracene and Benzo(g,h,i)perylene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Surrogate Exceptions:

The control criteria for Fluorene-d10, Fluoranthene-d10, and Terphenyl-d14 in samples B-58-S-4-100714, B-58-S-4-100714MS, B-58-S-4-100714DMS, B-69-S-4.5-100814 and B-77-S-5-103014 were not applicable. The analysis of the sample required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:

The control criteria for matrix spike recovery of all analytes for sample B-58-S-4-100714 were not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) for Naphthalene, 2-Methylnaphthalene, 1-Methylnaphthalene, Acenaphthene, and Dibenzofuran in the replicate matrix spike analyses of sample B-58-S-4-100714 was outside control criteria. All spike recoveries and the RPD for the analytes in question were within acceptance limits in the LCS/DLCS, indicating the analytical batch was in control. No further corrective action was taken.

Elevated Detection Limits:

The detection limit was elevated for all analytes in samples B-58-S-4-100714, B-58-S-4-100714MS, B-58-S-4-100714DMS, B-69-S-4.5-100814, and B-77-S-5-103014. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored and viscous, which indicated the need to perform a dilution prior to injection into the instrument. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. The results were flagged to indicate the matrix interference.

Sample B-58-S-4-100714 required dilution due to the presence of elevated levels of Chrysene. The reporting limits were adjusted to reflect the dilution.

Approved by _____

Sample B-49-S-7-100714 required dilution due to the presence of elevated levels of Chrysene, Benzo(b)fluoranthene, and Benzo(a)pyrene. The reporting limits were adjusted to reflect the dilution.

Sample B-77-S-5-103014 required dilution due to the presence of elevated levels of Acenaphthene, Phenanthrene, Fluoranthene, and Pyrene. The reporting limits were adjusted to reflect the dilution.

The detection limit for all analytes for samples B-58-S-4-100714 and B-55-S-4-100714 was elevated due to less than optimal sample mass extracted for analysis. The sample contained low percent solids which prevented extraction of the sample mass necessary to achieve target detection limits.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____





PC JM

Cooler Receipt and Preservation Form

Client / Project: URS Service Request K14 11110

Received: 10/8/14 Opened: 10/8/14 By: UA Unloaded: 10/9/14 By: A

- 1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
- 2. Samples were received in: (circle) Cooler Box Envelope Other NA
- 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
4.5	4.4	8.8	8.7	-0.1	345				
2.8	2.7	5.5	5.4	-0.1	325				

- 4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
- 5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
- 6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
- 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
- 8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
- 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
- 10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
- 11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
- 12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Out of	Head-	Broke	pH	Reagent	Volume	Reagent Lot	Initials	Time
	Bottle Type	Temp	space				added	Number		

Notes, Discrepancies, & Resolutions: _____



PC TM

Cooler Receipt and Preservation Form

Client / Project: URS Service Request K14 11111

Received: 10/8/14 Opened: 10/8/14 By: UA Unloaded: 10/9/14 By: R

- 1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
- 2. Samples were received in: (circle) Cooler Box Envelope Other NA
- 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
4.5	4.4	8.8	8.7	-0.1	345				
2.8	2.7	5.5	5.4	-0.1	325				

- 4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
- 5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
- 6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
- 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
- 8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
- 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
- 10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
- 11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
- 12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____



PC JM

Cooler Receipt and Preservation Form

Client / Project: URS Service Request K14 11112

Received: 10/8/14 Opened: 10/8/14 By: UA Unloaded: 10/9/14 By: AK

- 1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
- 2. Samples were received in: (circle) Cooler Box Envelope Other NA
- 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID		Tracking Number		NA	Filed
						NA		NA			
4.5	4.4	8.8	8.7	-0.1	345						
2.8	2.7	5.5	5.4	-0.1	325						

- 4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
- 5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
- 6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
- 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
- 8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
- 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
- 10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
- 11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
- 12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____



CHAIN OF CUSTODY

1317 South 13th Ave., Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 3 OF 3 SR# K1412304 COC#

PROJECT NAME	IP - Tacoma Metals
PROJECT NUMBER	33764085
PROJECT MANAGER	Paul Kalina
COMPANY NAME	URS
ADDRESS	1501 4th Ave, Suite 1400
CITY/STATE/ZIP	Seattle, WA 98101-3225
E-MAIL ADDRESS	Paul.Kalina@URS.Com
PHONE #	206-438-2172 FAX # 866-495-5282
SAMPLER'S SIGNATURE	<i>[Signature]</i> Eric Starkerson

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	ANALYSIS CHECKBOXES																				REMARKS							
						Semivolatile Organics by GC/MS 825 <input type="checkbox"/>	Volatile Organics by GC/MS 824 <input checked="" type="checkbox"/>	Gas 826 <input type="checkbox"/>	Hydrocarbons (*see below) 8021 <input type="checkbox"/>	Oil & Grease/TRPH 1664 <input type="checkbox"/>	PCBs 1664 HEM <input type="checkbox"/>	Atoclers 1664 SGT <input type="checkbox"/>	Pesticides/Herbicides 608 <input type="checkbox"/>	Chlorophenolics 8141 <input type="checkbox"/>	Metals, Total or Dissolved (See List below) 8151 <input type="checkbox"/>	Cyanide <input type="checkbox"/>	(circle) pH, Cond, Cl, SO ₄ , PO ₄ , F, NO ₂ , NO ₃ , BOD, TSS, TDS, Turb. DOC, NH ₃ -N, COD, TKN, TOC, TOX 9020 <input type="checkbox"/>	Alkalinity <input type="checkbox"/>	Dioxins/Furans 1613 <input type="checkbox"/>	Dissolved Gases RSK 175 <input type="checkbox"/>	CO ₂ <input type="checkbox"/>	Ethane <input type="checkbox"/>	Ethene <input type="checkbox"/>										
B-80-S-12-103014	10/30/14	1305		S	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

REPORT REQUIREMENTS <input checked="" type="checkbox"/> I. Routine Report: Method Blank, Surrogate, as required <input type="checkbox"/> II. Report Dup., MS, MSD as required <input type="checkbox"/> III. CLP Like Summary (no raw data) <input type="checkbox"/> IV. Data Validation Report <input type="checkbox"/> V. EDD	INVOICE INFORMATION P.O. # 33764085 Bill To: Paul Kalina	Circle which metals are to be analyzed: Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg
	TURNAROUND REQUIREMENTS <input type="checkbox"/> 24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/> 5 day <input type="checkbox"/> Standard (15 working days) <input type="checkbox"/> Provide FAX Results Requested Report Date: HOLD	*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE) SPECIAL INSTRUCTIONS/COMMENTS: <p style="font-size: 2em; text-align: center;">HOLD upon receipt</p> <input type="checkbox"/> Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY: <i>[Signature]</i> Signature: Eric Starkerson Date/Time: 10/30/14 1500 Firm: AECOM	RECEIVED BY: <i>[Signature]</i> Signature: Brad Kell Date/Time: 10/31/14 0930 Firm: ALS	RELINQUISHED BY: Signature: _____ Date/Time: _____ Firm: _____	RECEIVED BY: Signature: _____ Date/Time: _____ Firm: _____
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Cooler Receipt and Preservation Form

PC Janet

Client / Project: URS / IP - Tacoma Metals Service Request K14 12304

Received: 10/31/14 Opened: 10/31/14 By: BK Unloaded: 10/31/14 By: BK

- 1. Samples were received via? *Mail* Fed Ex *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
- 2. Samples were received in: (circle) Cooler *Box* *Envelope* *Other* NA
- 3. Were custody seals on coolers? *NA* Y *N* If yes, how many and where? 1 front
 If present, were custody seals intact? Y *N* If present, were they signed and dated? Y *N*

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
-0.5	-0.16	1.0	0.9	-1	339		8416 377 0630		

- 4. Packing material: *Inserts* *Baggies* Bubble Wrap *Gel Packs* Wet Ice *Dry Ice* *Sleeves*
- 5. Were custody papers properly filled out (ink, signed, etc.)? *NA* Y *N*
- 6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* *NA* Y *N*
- 7. Were all sample labels complete (i.e analysis, preservation, etc.)? *NA* Y *N*
- 8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* *NA* Y *N*
- 9. Were appropriate bottles/containers and volumes received for the tests indicated? *NA* Y *N*
- 10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA *Y* *N*
- 11. Were VOA vials received without headspace? *Indicate in the table below.* NA *Y* *N*
- 12. Was C12/Res negative? NA *Y* *N*

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Out of	Head-	Broke	pH	Reagent	Volume	Reagent Lot	Initials	Time
	Bottle Type	Temp	space				added	Number		

Notes, Discrepancies, & Resolutions: _____

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil
Analysis Method: 160.3 Modified
Prep Method: None

Service Request: K1505210
Date Collected: 10/07/14 - 10/30/14
Date Received: 10/08/14 - 10/31/14
Units: Percent
Basis: As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
B-58-S-4-100714	K1505210-001	49.9	-	1	05/27/15 11:44	
B-69-S-4.5-100814	K1505210-002	79.7	-	1	05/27/15 11:44	
B-49-S-7-100714	K1505210-003	66.9	-	1	05/27/15 11:44	
B-50-S-4-100714	K1505210-004	69.1	-	1	05/27/15 11:44	
B-55-S-4-100714	K1505210-005	49.2	-	1	05/27/15 11:44	
B-77-S-5-103014	K1505210-006	53.1	-	1	05/27/15 11:44	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: AECOM/URS Corporation
Project IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Collected: 10/07/14
Date Received: 10/08/14
Date Analyzed: 05/27/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name: B-58-S-4-100714
Lab Code: K1505210-001

Units: Percent
Basis: As Received

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>MRL</u>	<u>Sample Result</u>	<u>Duplicate Sample K1505210-001DUP Result</u>	<u>Average</u>	<u>RPD</u>	<u>RPD Limit</u>
Solids, Total	160.3 Modified	-	49.9	51.8	50.9	4	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.

Service Request: K1505210

**Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics**

Sample Name	Lab Code	Date Collected	Date Received
B-49-S-7-100714	K1505210-003	10/07/2014	10/08/2014
B-77-S-5-103014	K1505210-006	10/30/2014	10/31/2014

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210

**Surrogate Recovery Summary
 Diesel and Residual Range Organics**

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
B-49-S-7-100714	K1505210-003	100 D	103 D
B-77-S-5-103014	K1505210-006	711 D #	0 D #
Batch QC	K1505236-002	114	118
Batch QCDUP	KWG1504510-1	114	122
Method Blank	KWG1504510-3	106	108
Lab Control Sample	KWG1504510-2	115	106

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

Analytical Results

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Sediment

Service Request: K1505210
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank **Units:** mg/Kg
Lab Code: KWG1504510-3 **Basis:** Dry
Extraction Method: EPA 3550B **Level:** Low
Analysis Method: NWTPH-Dx

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	25	1	05/22/15	06/01/15	KWG1504510	
Residual Range Organics (RRO)	ND	U	100	1	05/22/15	06/01/15	KWG1504510	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	106	50-150	06/01/15	Acceptable
n-Triacontane	108	50-150	06/01/15	Acceptable

Comments: _____

Analytical Results

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Collected: 10/07/2014
Date Received: 10/08/2014

Diesel and Residual Range Organics

Sample Name: B-49-S-7-100714 **Units:** mg/Kg
Lab Code: K1505210-003 **Basis:** Dry
Extraction Method: EPA 3550B **Level:** Low
Analysis Method: NWTPH-Dx

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	160	DZ	76	2	05/22/15	06/02/15	KWG1504510	*
Residual Range Organics (RRO)	2000	DZ	310	2	05/22/15	06/02/15	KWG1504510	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	100	50-150	06/02/15	Acceptable
n-Triacontane	103	50-150	06/02/15	Acceptable

Comments: _____

Analytical Results

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Collected: 10/30/2014
Date Received: 10/31/2014

Diesel and Residual Range Organics

Sample Name: B-77-S-5-103014 **Units:** mg/Kg
Lab Code: K1505210-006 **Basis:** Dry
Extraction Method: EPA 3550B **Level:** Low
Analysis Method: NWTPH-Dx

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	140000	DZ	5200	20	05/22/15	06/01/15	KWG1504510	*
Residual Range Organics (RRO)	140000	DZ	21000	20	05/22/15	06/01/15	KWG1504510	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	711	50-150	06/01/15	Outside Control Limits
n-Triacontane	0	50-150	06/01/15	Outside Control Limits

Comments: _____

QA/QC Report

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Sediment

Service Request: K1505210
Date Extracted: 05/22/2015
Date Analyzed: 06/01/2015

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name: Batch QC
Lab Code: K1505236-002
Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1504510

Analyte Name	MRL	Sample Result	Batch QCDUP KWG1504510-1 Duplicate Sample		Relative Percent Difference	RPD Limit
			Result	Average		
Diesel Range Organics (DRO)	33	67	68	67	2	40
Residual Range Organics (RRO)	130	250	260	260	2 #	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Sediment

Service Request: K1505210
Date Extracted: 05/22/2015
Date Analyzed: 06/01/2015

**Lab Control Spike Summary
 Diesel and Residual Range Organics**

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: mg/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1504510

Lab Control Sample
 KWG1504510-2
 Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Diesel Range Organics (DRO)	290	267	109	42-134
Residual Range Organics (RRO)	140	133	105	48-141

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.

Service Request: K1505210

**Cover Page - Organic Analysis Data Package
 Polynuclear Aromatic Hydrocarbons**

Sample Name	Lab Code	Date Collected	Date Received
B-58-S-4-100714	K1505210-001	10/07/2014	10/08/2014
B-69-S-4.5-100814	K1505210-002	10/08/2014	10/08/2014
B-49-S-7-100714	K1505210-003	10/07/2014	10/08/2014
B-50-S-4-100714	K1505210-004	10/07/2014	10/08/2014
B-55-S-4-100714	K1505210-005	10/07/2014	10/08/2014
B-77-S-5-103014	K1505210-006	10/30/2014	10/31/2014
B-58-S-4-100714MS	KWG1504770-1	10/07/2014	10/08/2014
B-58-S-4-100714DMS	KWG1504770-2	10/07/2014	10/08/2014

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210

**Surrogate Recovery Summary
 Polynuclear Aromatic Hydrocarbons**

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
B-58-S-4-100714	K1505210-001	141 D #	110 D #	360 D #
B-69-S-4.5-100814	K1505210-002	215 D #	79 D #	693 D #
B-49-S-7-100714	K1505210-003	62	57	63
B-50-S-4-100714	K1505210-004	72	65	67
B-55-S-4-100714	K1505210-005	58	57	60
B-77-S-5-103014	K1505210-006	581 D #	338 D #	890 D #
Method Blank	KWG1504770-5	63	73	59
B-58-S-4-100714MS	KWG1504770-1	176 D #	118 D #	334 D #
B-58-S-4-100714DMS	KWG1504770-2	159 D #	90 D #	275 D #
Lab Control Sample	KWG1504770-3	69	73	68
Duplicate Lab Control Sample	KWG1504770-4	68	73	69

Surrogate Recovery Control Limits (%)

Sur1 = Fluorene-d10	17-104
Sur2 = Fluoranthene-d10	27-106
Sur3 = Terphenyl-d14	35-109

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

Analytical Results

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG1504770-5
Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
2-Methylnaphthalene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
1-Methylnaphthalene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Acenaphthylene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Acenaphthene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Dibenzofuran	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Fluorene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Phenanthrene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Anthracene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Fluoranthene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Pyrene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Benz(a)anthracene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Chrysene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Benzo(b)fluoranthene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Benzo(k)fluoranthene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Benzo(a)pyrene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Indeno(1,2,3-cd)pyrene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Dibenz(a,h)anthracene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	
Benzo(g,h,i)perylene	ND	U	2.5	1	05/28/15	06/03/15	KWG1504770	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	63	17-104	06/03/15	Acceptable
Fluoranthene-d10	73	27-106	06/03/15	Acceptable
Terphenyl-d14	59	35-109	06/03/15	Acceptable

Comments: _____

Analytical Results

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Collected: 10/07/2014
Date Received: 10/08/2014

Polynuclear Aromatic Hydrocarbons

Sample Name: B-58-S-4-100714
Lab Code: K1505210-001
Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	3800	D	510	100	05/28/15	06/01/15	KWG1504770	*
2-Methylnaphthalene	3400	D	510	100	05/28/15	06/01/15	KWG1504770	*
1-Methylnaphthalene	3100	D	510	100	05/28/15	06/01/15	KWG1504770	*
Acenaphthylene	3900	D	510	100	05/28/15	06/01/15	KWG1504770	*
Acenaphthene	13000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Dibenzofuran	7700	D	510	100	05/28/15	06/01/15	KWG1504770	*
Fluorene	10000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Phenanthrene	71000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Anthracene	51000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Fluoranthene	150000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Pyrene	170000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Benz(a)anthracene	110000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Chrysene	210000	D	2600	500	05/28/15	06/01/15	KWG1504770	*
Benzo(b)fluoranthene	170000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Benzo(k)fluoranthene	59000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Benzo(a)pyrene	130000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Indeno(1,2,3-cd)pyrene	65000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Dibenz(a,h)anthracene	17000	D	510	100	05/28/15	06/01/15	KWG1504770	*
Benzo(g,h,i)perylene	59000	D	510	100	05/28/15	06/01/15	KWG1504770	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	141	17-104	06/01/15	Outside Control Limits
Fluoranthene-d10	110	27-106	06/01/15	Outside Control Limits
Terphenyl-d14	360	35-109	06/01/15	Outside Control Limits

Comments: _____

Analytical Results

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Collected: 10/08/2014
Date Received: 10/08/2014

Polynuclear Aromatic Hydrocarbons

Sample Name: B-69-S-4.5-100814
Lab Code: K1505210-002
Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	2200	D	780	250	05/28/15	06/01/15	KWG1504770	*
2-Methylnaphthalene	3100	D	780	250	05/28/15	06/01/15	KWG1504770	*
1-Methylnaphthalene	2200	D	780	250	05/28/15	06/01/15	KWG1504770	*
Acenaphthylene	3400	D	780	250	05/28/15	06/01/15	KWG1504770	*
Acenaphthene	6500	D	780	250	05/28/15	06/01/15	KWG1504770	*
Dibenzofuran	2200	D	780	250	05/28/15	06/01/15	KWG1504770	*
Fluorene	6000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Phenanthrene	20000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Anthracene	64000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Fluoranthene	150000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Pyrene	180000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Benz(a)anthracene	140000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Chrysene	290000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Benzo(b)fluoranthene	270000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Benzo(k)fluoranthene	91000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Benzo(a)pyrene	220000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Indeno(1,2,3-cd)pyrene	100000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Dibenz(a,h)anthracene	27000	D	780	250	05/28/15	06/01/15	KWG1504770	*
Benzo(g,h,i)perylene	94000	D	780	250	05/28/15	06/01/15	KWG1504770	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	215	17-104	06/01/15	Outside Control Limits
Fluoranthene-d10	79	27-106	06/01/15	Acceptable
Terphenyl-d14	693	35-109	06/01/15	Outside Control Limits

Comments: _____

Analytical Results

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Collected: 10/07/2014
Date Received: 10/08/2014

Polynuclear Aromatic Hydrocarbons

Sample Name: B-49-S-7-100714
Lab Code: K1505210-003
Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	330		3.7	1	05/28/15	06/03/15	KWG1504770	*
2-Methylnaphthalene	180		3.7	1	05/28/15	06/03/15	KWG1504770	*
1-Methylnaphthalene	96		3.7	1	05/28/15	06/03/15	KWG1504770	*
Acenaphthylene	110		3.7	1	05/28/15	06/03/15	KWG1504770	*
Acenaphthene	74		3.7	1	05/28/15	06/03/15	KWG1504770	*
Dibenzofuran	130		3.7	1	05/28/15	06/03/15	KWG1504770	*
Fluorene	74		3.7	1	05/28/15	06/03/15	KWG1504770	*
Phenanthrene	630		3.7	1	05/28/15	06/03/15	KWG1504770	*
Anthracene	960		3.7	1	05/28/15	06/03/15	KWG1504770	*
Fluoranthene	920		3.7	1	05/28/15	06/03/15	KWG1504770	*
Pyrene	1500		3.7	1	05/28/15	06/03/15	KWG1504770	*
Benz(a)anthracene	1100		3.7	1	05/28/15	06/03/15	KWG1504770	*
Chrysene	4000	D	37	10	05/28/15	06/04/15	KWG1504770	*
Benzo(b)fluoranthene	3700	D	37	10	05/28/15	06/04/15	KWG1504770	*
Benzo(k)fluoranthene	780		3.7	1	05/28/15	06/03/15	KWG1504770	*
Benzo(a)pyrene	2700	D	37	10	05/28/15	06/04/15	KWG1504770	*
Indeno(1,2,3-cd)pyrene	1500		3.7	1	05/28/15	06/03/15	KWG1504770	*
Dibenz(a,h)anthracene	430		3.7	1	05/28/15	06/03/15	KWG1504770	*
Benzo(g,h,i)perylene	1300		3.7	1	05/28/15	06/03/15	KWG1504770	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	62	17-104	06/03/15	Acceptable
Fluoranthene-d10	57	27-106	06/03/15	Acceptable
Terphenyl-d14	63	35-109	06/03/15	Acceptable

Comments: _____

Analytical Results

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Collected: 10/07/2014
Date Received: 10/08/2014

Polynuclear Aromatic Hydrocarbons

Sample Name: B-50-S-4-100714
Lab Code: K1505210-004
Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	100		3.6	1	05/28/15	06/03/15	KWG1504770	*
2-Methylnaphthalene	69		3.6	1	05/28/15	06/03/15	KWG1504770	*
1-Methylnaphthalene	43		3.6	1	05/28/15	06/03/15	KWG1504770	*
Acenaphthylene	26		3.6	1	05/28/15	06/03/15	KWG1504770	*
Acenaphthene	31		3.6	1	05/28/15	06/03/15	KWG1504770	*
Dibenzofuran	33		3.6	1	05/28/15	06/03/15	KWG1504770	*
Fluorene	25		3.6	1	05/28/15	06/03/15	KWG1504770	*
Phenanthrene	140		3.6	1	05/28/15	06/03/15	KWG1504770	*
Anthracene	82		3.6	1	05/28/15	06/03/15	KWG1504770	*
Fluoranthene	290		3.6	1	05/28/15	06/03/15	KWG1504770	*
Pyrene	440		3.6	1	05/28/15	06/03/15	KWG1504770	*
Benz(a)anthracene	150		3.6	1	05/28/15	06/03/15	KWG1504770	*
Chrysene	480		3.6	1	05/28/15	06/03/15	KWG1504770	*
Benzo(b)fluoranthene	440		3.6	1	05/28/15	06/03/15	KWG1504770	*
Benzo(k)fluoranthene	140		3.6	1	05/28/15	06/03/15	KWG1504770	*
Benzo(a)pyrene	300		3.6	1	05/28/15	06/03/15	KWG1504770	*
Indeno(1,2,3-cd)pyrene	220		3.6	1	05/28/15	06/03/15	KWG1504770	*
Dibenz(a,h)anthracene	73		3.6	1	05/28/15	06/03/15	KWG1504770	*
Benzo(g,h,i)perylene	230		3.6	1	05/28/15	06/03/15	KWG1504770	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	72	17-104	06/03/15	Acceptable
Fluoranthene-d10	65	27-106	06/03/15	Acceptable
Terphenyl-d14	67	35-109	06/03/15	Acceptable

Comments: _____

Analytical Results

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Collected: 10/07/2014
Date Received: 10/08/2014

Polynuclear Aromatic Hydrocarbons

Sample Name: B-55-S-4-100714
Lab Code: K1505210-005
Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	39		5.1	1	05/28/15	06/03/15	KWG1504770	*
2-Methylnaphthalene	24		5.1	1	05/28/15	06/03/15	KWG1504770	*
1-Methylnaphthalene	16		5.1	1	05/28/15	06/03/15	KWG1504770	*
Acenaphthylene	6.0		5.1	1	05/28/15	06/03/15	KWG1504770	*
Acenaphthene	10		5.1	1	05/28/15	06/03/15	KWG1504770	*
Dibenzofuran	15		5.1	1	05/28/15	06/03/15	KWG1504770	*
Fluorene	8.9		5.1	1	05/28/15	06/03/15	KWG1504770	*
Phenanthrene	63		5.1	1	05/28/15	06/03/15	KWG1504770	*
Anthracene	11		5.1	1	05/28/15	06/03/15	KWG1504770	*
Fluoranthene	67		5.1	1	05/28/15	06/03/15	KWG1504770	*
Pyrene	83		5.1	1	05/28/15	06/03/15	KWG1504770	*
Benz(a)anthracene	33		5.1	1	05/28/15	06/03/15	KWG1504770	*
Chrysene	75		5.1	1	05/28/15	06/03/15	KWG1504770	*
Benzo(b)fluoranthene	67		5.1	1	05/28/15	06/03/15	KWG1504770	*
Benzo(k)fluoranthene	21		5.1	1	05/28/15	06/03/15	KWG1504770	*
Benzo(a)pyrene	44		5.1	1	05/28/15	06/03/15	KWG1504770	*
Indeno(1,2,3-cd)pyrene	28		5.1	1	05/28/15	06/03/15	KWG1504770	*
Dibenz(a,h)anthracene	8.0		5.1	1	05/28/15	06/03/15	KWG1504770	*
Benzo(g,h,i)perylene	28		5.1	1	05/28/15	06/03/15	KWG1504770	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	58	17-104	06/03/15	Acceptable
Fluoranthene-d10	57	27-106	06/03/15	Acceptable
Terphenyl-d14	60	35-109	06/03/15	Acceptable

Comments: _____

Analytical Results

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Collected: 10/30/2014
Date Received: 10/31/2014

Polynuclear Aromatic Hydrocarbons

Sample Name: B-77-S-5-103014
Lab Code: K1505210-006
Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	21000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
2-Methylnaphthalene	16000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
1-Methylnaphthalene	45000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Acenaphthylene	30000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Acenaphthene	540000	D	12000	2500	05/28/15	06/01/15	KWG1504770	*
Dibenzofuran	330000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Fluorene	380000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Phenanthrene	1800000	D	12000	2500	05/28/15	06/01/15	KWG1504770	*
Anthracene	380000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Fluoranthene	1300000	D	12000	2500	05/28/15	06/01/15	KWG1504770	*
Pyrene	1000000	D	12000	2500	05/28/15	06/01/15	KWG1504770	*
Benz(a)anthracene	320000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Chrysene	420000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Benzo(b)fluoranthene	300000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Benzo(k)fluoranthene	110000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Benzo(a)pyrene	240000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Indeno(1,2,3-cd)pyrene	120000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Dibenz(a,h)anthracene	31000	D	1200	250	05/28/15	06/01/15	KWG1504770	*
Benzo(g,h,i)perylene	110000	D	1200	250	05/28/15	06/01/15	KWG1504770	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	581	17-104	06/01/15	Outside Control Limits
Fluoranthene-d10	338	27-106	06/01/15	Outside Control Limits
Terphenyl-d14	890	35-109	06/01/15	Outside Control Limits

Comments: _____

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Extracted: 05/28/2015
Date Analyzed: 06/01/2015

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name: B-58-S-4-100714
Lab Code: K1505210-001
Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1504770

Analyte Name	Sample Result	B-58-S-4-100714MS KWG1504770-1 Matrix Spike			B-58-S-4-100714DMS KWG1504770-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Naphthalene	3800	7880	498	818 #	4640	498	168 #	23-114	52 *	40
2-Methylnaphthalene	3400	4600	498	232 #	2610	498	-168 #	24-115	55 *	40
1-Methylnaphthalene	3100	3220	498	33 #	1810	498	-250 #	26-133	56 *	40
Acenaphthylene	3900	8430	498	901 #	6230	498	460 #	32-117	30	40
Acenaphthene	13000	5790	498	-1403 #	3780	498	-1806 #	33-118	42 *	40
Dibenzofuran	7700	4450	498	-649 #	2900	498	-961 #	34-131	42 *	40
Fluorene	10000	4940	498	-1058 #	4240	498	-1200 #	33-125	15	40
Phenanthrene	71000	24200	498	-9328 #	17600	498	-10652#	29-125	31	40
Anthracene	51000	31100	498	-4091 #	30300	498	-4253 #	30-127	3	40
Fluoranthene	150000	76300	498	-15015#	74100	498	-15458#	35-139	3	40
Pyrene	170000	111000	498	-12593#	110000	498	-12796#	27-134	1	40
Benz(a)anthracene	110000	94800	498	-2558 #	87300	498	-4057 #	35-122	8	40
Chrysene	210000	214000	498	1223 #	187000	498	-4098 #	36-126	13	40
Benzo(b)fluoranthene	170000	215000	498	8060 #	184000	498	1944 #	35-124	15	40
Benzo(k)fluoranthene	59000	69600	498	2048 #	63300	498	796 #	38-124	9	40
Benzo(a)pyrene	130000	172000	498	8208 #	147000	498	3262 #	37-123	15	40
Indeno(1,2,3-cd)pyrene	65000	97400	498	6562 #	78200	498	2715 #	28-133	22	40
Dibenz(a,h)anthracene	17000	23500	498	1324 #	20100	498	639 #	32-125	16	40
Benzo(g,h,i)perylene	59000	94300	498	6997 #	74700	498	3064 #	33-128	23	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: AECOM/URS Corporation
Project: IP Tacoma Metals/33764085.
Sample Matrix: Soil

Service Request: K1505210
Date Extracted: 05/28/2015
Date Analyzed: 06/01/2015

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1504770

Analyte Name	Lab Control Sample KWG1504770-3 Lab Control Spike			Duplicate Lab Control Sample KWG1504770-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Naphthalene	347	500	69	330	500	66	32-124	5	40
2-Methylnaphthalene	341	500	68	321	500	64	27-126	6	40
1-Methylnaphthalene	334	500	67	316	500	63	37-129	5	40
Acenaphthylene	371	500	74	348	500	70	38-126	6	40
Acenaphthene	371	500	74	350	500	70	39-124	6	40
Dibenzofuran	366	500	73	346	500	69	41-130	6	40
Fluorene	382	500	76	366	500	73	39-129	4	40
Phenanthrene	370	500	74	352	500	70	39-123	5	40
Anthracene	387	500	77	369	500	74	38-130	5	40
Fluoranthene	394	500	79	376	500	75	39-135	5	40
Pyrene	436	500	87	423	500	85	39-134	3	40
Benz(a)anthracene	423	500	85	401	500	80	46-120	5	40
Chrysene	407	500	81	391	500	78	49-120	4	40
Benzo(b)fluoranthene	443	500	89	425	500	85	51-121	4	40
Benzo(k)fluoranthene	401	500	80	375	500	75	55-120	7	40
Benzo(a)pyrene	396	500	79	371	500	74	49-122	6	40
Indeno(1,2,3-cd)pyrene	372	500	74	333	500	67	40-128	11	40
Dibenz(a,h)anthracene	390	500	78	363	500	73	43-125	7	40
Benzo(g,h,i)perylene	404	500	81	379	500	76	49-122	6	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.