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January 18, 2010 1

VIA EMAIL AND REGULAR MAIL

Mr. Galo Jackson Remedial Project Manager US EPA Region 4 61 Forsyth St. S.W. Atlanta, Georgia 30303-8960 Kirk J. Kessler, P.G. Principal

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Re: Screening of Constituents with Limited Detections and Detection Limits Exceeding the EPA Regional Screening Level Table Operable Unit #3 (OU3), LCP Chemicals Site, Brunswick, Georgia

Dear Mr. Jackson:

The purpose of this correspondence is to provide you with the information regarding the above-referenced subject that you requested during our meeting on December 8, 2010, which was held at the U.S. Environmental Protection Agency's ("EPA") offices, and during our follow-up webinar held on December 22, 2010.

The previous discussions between Honeywell and EPA regarding this topic focused on whether to carry forward in the Human Health Baseline Risk Assessment ("HHBRA") for OU3 as Constituents of Potential Concern ("COPC") chemicals that have not been detected in site soils or that have a low frequency of detection but have detection limits ("DLs") that often exceed the EPA's residential Regional Screening Levels ("RSLs")¹ for soil. The EPA suggested using a methodology of comparing the DLs for these chemicals with the EPA's Contract Required Quantitation Limits ("CRQLs") and RSLs. On December 2, 2010, EPA provided Honeywell with a table illustrating the proposed methodology applied to the Quadrant 4 data set.² Exhibits 1-6, which are attached to this letter, present the implementation of your proposed methodology to the full datasets used for the individual Exposure Units ("EUs") (comprised of the Offsite Tank Farm ("OTF") and Quadrants 1 through 4). For sake of completeness, we have also applied your proposed methodology to the site-wide data set (i.e., the pooled data for all EUs).

The specific criteria for the EPA's requested methodology includes the elimination of chemicals with fewer than: $a_{B^0}VE$

• 10% of detection limits below the CRQL (red font text in Exhibits 1-6);

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¹ These are the constituents identified with a "B" footnote in Exhibits A1-A5 of Honeywell's April 21, 2010 OU3 response to comment letter.

² An updated Quad 4 table was provided on December 21, 2010.

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r. Galo Jackson inuary 18, 2010 age 2 of 5 f^{BOVE} • 5% of detection limits below the RSL³ (blue font text in Exhibits 1-6); and • 10 analyses in the site-wide data set (yellow shaded rows in Exhibits 1-6).

The chemicals remaining after the application of the criteria listed above are shown in black font text in Exhibits 1-6 and are summarized in the following table:

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³ The RSLs for non-carcinogens were adjusted to a hazard quotient of 0.1. $1 - 2 = MA^{T}N$ 1 - 1 = 1 = 70 = 50 = 02

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The analysis illustrates that significantly fewer chemicals carry forward as COPC when the criteria are applied on a site-wide basis. This is because when the data set is segregated into smaller EU-specific data sets, a small number of DLs exceeding either the CRQLs or RSLs can disproportionately affect the exceedence percentages. In addition, the vast majority of detection limit exceedences of RSLs and CRQLs are those associated with the QAL on-site laboratory utilized during the Time Critical Removal Action.

It is our understanding that EPD perhaps desires the condition that all of the constituents eliminated as COPC based on this methodology would still be discussed qualitatively in the uncertainty section of the HHBRA. In addition, EPA's proposal also suggests that additional site characterization might be performed for the "black font" chemicals during a later stage in the remedial action process (e.g., remedial design). However as we discussed during our meeting on December 8, 2010, any method of examining data on a frequency–of-exceedence basis for this Site is strongly biased to the large percentage of on-site laboratory data records to the overall data set. Additional site characterization performed at a later stage in the remedial action process will not substantially change the percentages.

Because of this bias, EPA asked Honeywell to further examine the Level IV data portion of the overall data set for the "blank font" parameters with respect to comparison of detections and DL values to the respective RSL values. When the dataset is evaluated in this manner, there is still a significant amount of Level IV data collected from all areas of the Site for all of the parameters of interest herein. We have illustrated this using a GIS-based analysis that shows that for most of these parameters the Level IV data DLs are not of issue (i.e., DLs below CRQLs and RSLs). The figures associated with this analysis are provided as Exhibit 7.⁴

This GIS-based analysis demonstrates that all of the parameters evaluated herein have been adequately characterized and do not warrant being considered as COPC, given that there are very few detects and where detected the values are below RSLs. The parameters with more significant DLs issues are as follows:

- <u>2,4-dinitrotoluene</u> **no samples with detections**; 154 of 154 DLs (100%) exceed the adjusted RSL while 31 of 154 DLs (20%) exceed the actual RSL value.
- <u>3,3'-dichlorobenzidine</u> no samples with detections; 33 of 154 (21%) DLs exceed the RSL.
- <u>4.6-dinitro-2-methylphenol</u> of two detections, only one is above the RSL; 144 of 146 (99%) of DLs exceed the RSL. However, only 28/146 (19%) DLs exceed the CRQL on a site-wide basis. All of the samples with DLs that exceed the CQRL were analyzed by EPA's Environmental Sciences Division ("ESD") laboratory.
- <u>bis(2-chloroethyl)ether</u> no samples with detections; 153 of 154 (99%) DLs exceed the RSL. However, only 25/154 (16%) DLs exceed the CRQL on a site-wide basis. All of the samples with DLs that exceed the CQRL were analyzed by the ESD laboratory.

⁴ The figures in Exhibit 7 are not individually numbered, but they do include all of the "black font" parameters in the table above and in Exhibits 1-6. There are two figures associated with each chemical; the first shows actual detections (no locations are depicted where all results are non-detect) and the second shows the non-detect DL values. In both cases the values are grouped into concentration range classes with "break points" corresponding to the residential RSL values.

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- <u>hexachlorobenzene</u> three detections all below the RSL value; 151 of 154 (98%) DLs exceed the RSL. However, only 25/154 (16%) DLs exceed the CRQL on a sitewide basis. All of the samples with DLs that exceed the CQRL were analyzed by the ESD laboratory.
- <u>n-nitroso-di-n-propylamine</u> no samples with detections; 154 of 154 (100%) DLs exceed the RSL. However, only 25/154 (16%) DLs exceed the CRQL on a site-wide basis. All of the samples with DLs that exceed the CQRL were analyzed by the ESD laboratory.
- <u>pentachlorophenol</u> no samples with detections; 128 of 154 (83%) DLs exceed the RSL. However, only 30/154 (19%) DLs exceed the CRQL on a site-wide basis. All of the samples with DLs that exceed the CQRL were analyzed by the ESD laboratory.
- thallium 31 samples with detections site-wide, all below the adjusted RSL; 92 of 122 DLs (75%) exceed the adjusted RSL; 16 of 122 (13%) DLs exceed the RSL.

The data for the polychlorinated biphenyls (PCB), as represented by the Aroclor-specific analyses, warrants further discussion in the context of this analysis. For most of the EUs, Aroclors 1254, 1260, and 1268 are identified as COPC based on maximum detected concentrations that exceed the residential RSLs. As shown in the Attachment 7 figures for these Aroclors, there are multiple detections in the Level IV laboratory data, many of which are above the residential RSL value of 0.22 mg/kg used for COPC screening. Indeed, these three Aroclors are known to have been used at the Site and, thus, is appropriate that they are indentified as COPC.

All of the other Aroclors, however, have very few detections and only one of these detections (for Aroclor 1221) exceeds the residential RSL within the entire Level IV data set. Further, the Level IV datasets for all of the Aroclors demonstrate robust spatial coverage of the Site and furthermore, the vast majority of detection limits that are below the residential RSLs. Given the fact that each Aroclor represents a mixture of individual PCB congeners, and that differential environmental "weathering" of these congeners over time can make it more difficult to identify the specific Aroclor present in a sample,⁵ it is not surprising that there might be a few detections reported by the laboratory for Aroclors not associated with the Site. A stark contrast in number of detections is evident when comparing the figures for the three site-related Aroclors (1254, 1260, and 1268) to all other Aroclors. Therefore, COPC status is justified only for the three site-related Aroclors – 1254, 1260, and 1268.

Finally, EPA's ESD laboratory did not differentiate between benzo(b)- and benzo(k)fluoranthene. There is no RSL value for benzo(b/k)fluoranthene. Honeywell proposes that the results reported by the ESD laboratory for benzo(b/k)fluoranthene be grouped with the analytical data for benzo(b)fluoranthene for calculating exposure point concentrations. This is a conservative manner of handling these data as the RSL value for benzo(b)fluoranthene is lower than the value for benzo(k)fluoranthene by one order of magnitude.

⁵ EPA's SW846 Method 8082A (Polychlorinated Biphenyls by Gas Chromatography) states "Aroclors are multicomponent mixtures. When samples contain more than one Aroclor, a higher level of analyst expertise is required to attain acceptable levels of qualitative and quantitative analysis. The same is true of Aroclors that have been subjected to environmental degradation ("weathering") or degradation by treatment technologies. Such weathered multi-component mixtures may have significant differences in peak patterns compared to those of Aroclor standards."

Mr. Galo Jackson January 18, 2010 Page 5 of 5

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We appreciate the opportunity to provide the above information to EPA for its consideration. Please let me know if you have any additional questions or need any other information related to this topic. As always, I can be reached at 973-722-1656.

Sincerely,

Lest Beach

Kirk J. Kessler, P.G. Environmental Planning Specialists, Inc.

Exhibits

cc: Jim McNamara, Georgia EPD Prashant Gupta, Honeywell

	CRQL Medium Soil ⁽¹⁾ (ppm)	Residential RSL ⁽²⁾ (ppm)	<=10 # of records	# DL above CRQL	<10% Above % DL above CRQL	# DL above RSL	<5% Above % DL above RSL	Comments
2,4-Dinitrotoluene	5 V	1.6	(3)	0	0	0	0	
4,6-Dinitro-2-methylphenol	10 6	0.49	3	0	0	0	0	
Aroclor-1016	0.033 🗸	0.39	27	27	100	V 24	89	ALL ONL
Aroclor-1221	0.033 🗸	0.14	27	27	100	V 24	89	ALL PAL
Aroclor-1232-	0.033 🗸	0.14	27	27	100	V 24	89	ALL OAL
Aroclor-1242	0.033 V	0.22	27	27 🗸	100	V 24	89	11 11
Aroclor-1248	0.033 V	0.22	27	27 🗸	100	V 24	89	11 11
Aroclor-1254 Roth	0.033 🗸	0.22	27	27 🗸	100	V 24	89	11 11
Aroclor-1260 Letp	0.033 🗸	0.22	27	27 _V	100	V 24	89	11 11
Aroclor-1268 Leep	0.033 🗸	0.22	27	27 V	100	1/ 24	89	
bis(2-Chloroethyl) ether	5 V	0.21	3	0 1/2	0	V 3	100	arity 3 Records
Indeno(1,2,3-cd)pyrene	5 V	0.15	27	0 V	0	L 27	100	ALL DAL
N-Nitroso-di-n-propylamine	5 V	0.069	3	0 V	0	V 3	100	JIL COLL
Thallium	2.5 8 2	0.51	3	010	0	1/3	100	DII COPR

Exhibit 1 Comparisons of Detection Limits to CRQLs and RSLs - OTF Data Set

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Notes:

(1) Values are the current EPA Contract Laboratory Program "Medium Soil" Contract Required Quantitation Limits (CRQL).

(2) Values are November 2010 Residential RSLs; RSLs for non-carcinogens were adjusted to a HQ of 0.1.

Yellow shaded rows indentify chemicals with fewer than 10 analytical records in the Sitewide dataset.

Red text indentifies chemicals with less than 10% of the detection limits (DLs) exceeding the relevant Medium Soil CRQLs.

Exhibit 2	
Comparisons of Detection Limits to CRQLs and RSLs - Qua	d 1 Data Set

	CRQL Medium Soil ⁽¹⁾ (ppm)	Residential RSL ⁽²⁾ (ppm)	<=10 # of records	# DL above CRQL	<10% Above % DL above CRQL	# DL above RSL	<5% Above % DL above RSL	Comments
1,2,3-Trichloropropane	NA	0.005	10	NA	NA	7	70	ALL ESD
1,2,4-Trichlorobenzene	V 0.25	22	45	12	93	1,6	2 18.3	ALL ESD
2-Nitroaniline	10	61	42	1	2	0	0	
2,4-Dinitrophenol	10	12	42	/ 19	45	V 17	40.5	ALL ESD
2,4-Dinitrotoluene	V 5	1.6	42	V 19	45	V 19	45.2	ALL ESD
2,6-Dinitrotoluene	V 5	6.1	42	V 19	45	17	40.5	ALL ESD
3-Nitroaniline	V 10	61	42	1	2	0	0	
3,3'-Dichlorobenzidine	5	1.1	42	V 19	45	V 19	45.2	ALL ESD
4-Chloroaniline	5	2.4	42	19	45	V 19	45.2	RLL ESD
4,6-Dinitro-2-methylphenol	10	0.49	42	19	45	42 19	100 45.2	ALL ESD
Aroclor-1016	0.033	0.39	60	- 48	80	V 24	40	ALL ONL
Aroclor-1221	0.033	0.14	60	V 48	80	24	40	ALL QAL & ESD
Aroclor-1232	0.033	0.14	60	48	80	24	40	ALL OCL LESD
Aroclor-1242	0.033	0.22	60	¥ 48	80	24	40	DRE 6 ESD
Aroclor-1248	0.033	0.22	60	V 48	80	V 24	40	ORL BESD
Aroclor-1254	0.033	0.22	60	45	75	24	40	
bis(2-Chloroethyl) ether	5	0.21	42	19	45	¥ 42	100	SLL ESN
Hexachlorobenzene	5	0.3	42	V 19	45	V 42	100	ALL ESD
Hexachlorobutadiene	5	6.2	45	19	42	V 17	37.8	ALL ESD
Naphthalene	5	3.6	68	19	28	V 19	27.9	ALL ESD
Nitrobenzene	5	4.8	42	V 19	45	V 19	45.2	ALL ESD
N-Nitroso-di-n-propylamine	5	0.069	42	/ 19	45	V 42	100	DIL ESD
Pentachlorophenol	10	0.89	42	19	45	25	59.5	ALL ESA
Pyridine	NA	7.8	1	NA	NA	1	100	Less than 10 total records Site-wide
Thallium	2.5 5	0.51	30	V 4	13	27	90	ALL ESD

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(1) Values are the current EPA Contract Laboratory Program "Medium Soil" Contract Required Quantitation Limits (CRQL).

(2) Values are November 2010 Residential RSLs; RSLs for non-carcinogens were adjusted to a HQ of 0.1.

Yellow shaded rows indentify chemicals with fewer than 10 analytical records in the Sitewide dataset.

Red text indentifies chemicals with less than 10% of the detection limits (DLs) exceeding the relevant Medium Soil CRQLs.

Blue text identifies chemicals with less than 5% of the DLs exceeding residential RSLs.

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Exhibit 3
Comparisons of Detection Limits to CRQLs and RSLs - Quad 2 Data Set

	CRQL Medium Soil ⁽¹⁾ (ppm)	Residential RSL ⁽²⁾ (ppm)	<=10 # of records	# DL above CRQL	<10% Above % DL above CRQL	# DL above RSL	<5% Above % DL above RSL	Comments
2,4-Dinitrotoluene	V 5	1.6	19	0	0	0	0	and the co
4,6-Dinitro-2-methylphenol	V 10	0.49	19	0	0	0	0	
Aldrin	0.0017 /	0.069	21,19	2 10	0	O B	100	ALL ESD
Aroclor-1016	0.033 0.0017	0.029	6021	35 20	95	35 A	5	ALL GAL 6 ESD
Aroclor-1232	V 0.033	0.39	60	/ 35	58	V 13	22	ALL QAL SESD
Aroclor-1242	V 0.033	0.14	60	V 35	58	V 15	25	ORL 6ESD
Aroclor-1248	V 0.033	0.22	60	V 35	58	V 14	23	OAL & ESA
bis(2-Chloroethyl) ether	V 5	0.21	19	0	0	19	100	9
Dieldrin	V 0.0033	0.03	21	V 21	100	1	5	
Hexachlorobenzene	V 5	0.21	19	. 0	0	19	100	
N-Nitroso-di-n-propylamine	V 5	0.3	19	0	0	19	100	
Thallium	A 4.5 B	0.51	20	0	0	18	90	
Toxaphene	V Ó.17	0.44	V 21	21	100	V 2	V 10	ALL ESD
Vinyl chloride	V 0.25	0.06	34	0	~ _0	2	6	ALL ESD

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Notes:

(1) Values are the current EPA Contract Laboratory Program "Medium Soil" Contract Required Quantitation Limits (CRQL).

(2) Values are November 2010 Residential RSLs; RSLs for non-carcinogens were adjusted to a HQ of 0.1.

Yellow shaded rows indentify chemicals with fewer than 10 analytical records in the Sitewide dataset.

Red text indentifies chemicals with less than 10% of the detection limits (DLs) exceeding the relevant Medium Soil CRQLs.

		CRQL	Residential	<=10		<10% Above		<5% Above	
		Medium Soil ⁽¹⁾	RSL ⁽²⁾		# DL above	% DL above		% DL above	
		(ppm)	(ppm)	# of records	CRQL	CRQL	# DL above RSL	RSL	Comments
	1,1,1,2-Tetrachloroethane	NA	1.9	13	V NA	NA	V 2	15	ALL OAL SESD
	1,1,2,2-Tetrachloroethane	V 0.25	0.56	y 287	V 52	18	40	14	MINCO LABS
	1,1,2-Trichloroethane	0.25	1.1	V 287	V 52	18	25	9	11 11
	1,2-Dibromoethane	0.25	0.034	20	V ⁰	0	V 2	10	
	1,2-Dibromo-3-chloropropane	V 0.25	0.0056	20	V 0	0	V 8	40	
	1,2-Dichloroethane	V 0.25	0.45	287	V 52	18	v 40	14	
	1,2-Dichloropropane	V 0.25	0.89	287	レ 52	18	25	9	
	1,2,3-Trichloropropane	NA	0.005	13	NA	NA	5	38	
200	1,2,4-Trichlorobenzene	0.25	22	74	64	86	V 2	3	616 ESD
	2,4-Dinitrophenol	10	12	64	V 9	14	5	V 8	
	2.4-Dinitrotoluene	√ 5	1.6	64	V 5	8	11	1.7	· · · · · · · · · · · · · · · · · · ·
	2,4,6-Trichlorophenol	V 5	44	64	V 5	8	1 2	3	
	2.6-Dinitrotoluene	5	6.1	64	1 5	8	V 5	8	
	3-Nitroaniline	10	61	64	V 5	8	V O	0	
	3.3'-Dichlorobenzidine	5	1.1	64	V 5	8	V 12	19	
	4-Chloroaniline	5	2.4	64	5	8	V 7	11	an a
	4,6-Dinitro-2-methylphenol	V 10	0.49	59	V 8	14	57 20	17	
	Aldrin	¥ 0.0017	0.029	38	/ 27	71		3	· · · · · · · · · · · · · · · · · · ·
l xi	alpha-BHC	V 0.0017	0.077	38	V 28	74	V 1	3	
	Aroclor-1016	v 0.033	0.39	399	V 384	96	V 323	81	
	Aroclor-1221	V 0.033	0.14	399	🖌 <u>3</u> 87	97	339 386	85 84	
	Aroclor-1232	0.033	0.14	399	V 386	97	335	84	
	Aroclor-1242	9.033 🖌	0.22	399	V 386	97	1/ 334	84	
	Aroclor-1248	V 0.033	0.22	399	V 385	96	334	84	
	Benzo(b/k)fluoranthene	S.O NA	0.15	3	3 NA	100 NA	3	100	
	bis(2-Chloroethyl) ether	1 1 1 1	0.21	64	✓ 5	8	63	98	
	bis(2-Ethylhexyl) phthalate	V 5	35	64	V 5	8	V 2	3	
2.20	Bromobenzene	NA	30	13	NA	NA	0	0	
	Bromodichloromethane	0.25	0.27	287	1/ 52	18	48	17	······································
	Bromomethane	0.25	0.73	285	🖌 51	18	24 1	6 A	
	Cadmium	5.07 NA	7	39	NA	NA	V 2	5	
	Carbon tetrachloride	0.25	0.61	287	🖌 51	18	V 35	12	
	Chloroform	0.25	0.29	287	V 52	18	4-7 KS	16 ل	and an
	Chrysene	5	15	312	8	3	V 2	1	······································
	Cobalt	15.0 NA	2.3	34	13 MA	38 MÁ	14	41	
	Dibenzo(a,h)anthracene	5	0.015	312	¥ 9	3	1/298	96	

Exhibit 4 Comparisons of Detection Limits to CRQLs and RSLs - Quad 3 Data Set

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	CRQL Medium S	ioil ⁽¹⁾	Residential RSL ⁽²⁾	<=10	# DL above	<10% Above % DL above		<5% Above % DL above	_
	(ppm))	(ppm)	# of records	CRQL	CRQL	# DL above RSL	RSL	Comments
Dieldrin	6).0033	0.03	38	V 28	74	13	34	
Heptachlor epoxide	V 0).0017	0.053	38	V 30	79	1	3	0.0
Hexachlorobenzene	V	5	0.3	64	V 5	8	V 63	98	
Hexachlorobutadiene	V	5	6.2	72	V 5	7	V 5	7	
N-Nitroso-di-n-propylamine	V	5	0.069	64	V S	8	V 64	100	
Pentachlorophenol	V	10	0.89	64	10 0	0	V 61	95	
Selenium	3.5	MA	39	39	2 NA	50 NA	V 1	3	
Tetrachloroethene	K	0.25	0.55	287	V 52	18	V 40	14	
Trichloroethene	V	0.25	2.8	287	V 52	18	V 8	3	
Vinyl chloride	V	0.25	0.06	285	V 52	18	V 88	31	

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(1) Values are the current EPA Contract Laboratory Program "Medium Soil" Contract Required Quantitation Limits (CRQL).

(2) Values are November 2010 Residential RSLs; RSLs for non-carcinogens were adjusted to a HQ of 0.1.

Yellow shaded rows indentify chemicals with fewer than 10 analytical records in the Sitewide dataset.

Red text indentifies chemicals with less than 10% of the detection limits (DLs) exceeding the relevant Medium Soil CRQLs.

	CRQL Medium Soil ⁽¹⁾ (ppm)	Residential RSL ⁽²⁾ (ppm)	<=10 # of records	# DL above CROL	<10% Above % DL above CROL	# DL above RSI	<5% Above % DL above RSI	Comments
1,2-Dibromoethane	0.25	0.034	25		0	N/ 8	37	connients
1.2-Dibromo-3-chloropropane	1, 0.25	0.0056	25		0		32	· · · · · · · · · · · · · · · · · · ·
2,4-Dinitrotoluene	5	1.6	26	V 1	4	1/1	4	
3-Nitroaniline	L 10	61	26	L 0	0	0	0	
3,3 ⁻ Dichlorobenzidine	L 5	1.1	26	V 1	4	1 2	8	
4,6-Dinitro-2-methylphenol	V 10	0.49	23	L 1	4	23 2	100	
4,4'-DDT	0.0033	1.7	37	19	51	1	3	
Aldrin	v 0.0017	0.029	37	v 20	54	レ 2	5	
alpha-BHC	0.0017	0.077	37	21	57	V 1	3	
Aroclor-1016	V 0.033	0.39	364	V 333	91	1259	71	
Aroclor-1221	V 0.033	0.14	364	V 333	91	275 213	76 15	
Aroclor-1232	V 0.033	0.14	364	V 333	91	270269	74	
Aroclor-1242	V 0.033	0.22	364	لا 🖌 332	91	V 265	73	
Aroclor-1248	V 0.033	0.22	364	V 332	91	V 264	73	
Aroclor-1262	V 0.033	0.14	17	V 2	12	V 1	6	
Benzidine	レ 5	0.0005	7	v 1	14	V 7	100	Less than 10 total records Site-wide
Benzo(b/k)fluoranthene	S.O MA	0.15	10	1 NA	10 NA	V 9	90	
beta-BHC	0.0017	0.27	37	V 22	59	V 1	3	
bis(2-Chloroethyl) ether	V 5	0.21	2.6	L 1	3.8	1/ 26	100	
Chlordane	0.0017 15	1.6	1	1	100		100	abre 2000001. ESI)
Dieldrin	0.0033	0.03	37	/ 22	59	× 5	14	the company
Endrin	V 0.0033	1.8	37	1/21	57	ν 1	3	<u> </u>
Heptachlor	V 0.0017	0.11	37	23	62	1 1	3	
Heptachlor epoxide	V 0.0017	0.053	37	22	59	1	3	
Hexachlorobenzene	v 5	0.3	26	1	4	1/ 24	92	
Nitrobenzene	V 5	4,8	26	6 1	4	1 1		
N-Nitrosodimethylamine		0.0023	7	LNA	NA	1 7	100	Less than 10 total records Site-wide
N-Nitroso-di-n-propylamine	υ 5	0.069	26	1/ 1	4	V 26	100	
Pentachlorophenol	10	0.89	26	v 1	4	1/ 23	200	
Thallium	V 2.5 5	0.51	35	6 1	17 11	V 18	51	

Exhibit 5 Comparisons of Detection Limits to CRQLs and RSLs - Quad 4 Data Set

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	CRQL Medium So (ppm)	oil ⁽¹⁾	Residential RSL ⁽²⁾ (ppm)	<=10 # of records	# DL above CRQL	<10% Above % DL above CRQL	# DL above RSL	<5% Above % DL above RSL	Comments
Toxaphene	V	0.17	0.44	37	V 25	68	V 13	35	
Vinyl chloride	V	0.25	0.06	179	V 3	2	V 19	11	

(1) Values are the current EPA Contract Laboratory Program "Medium Soil" Contract Required Quantitation Limits (CRQL).

(2) Values are November 2010 Residential RSLs; RSLs for non-carcinogens were adjusted to a HQ of 0.1.

Yellow shaded rows indentify chemicals with fewer than 10 analytical records in the Sitewide dataset.

Red text indentifies chemicals with less than 10% of the detection limits (DLs) exceeding the relevant Medium Soil CRQLs.

Exhibit 6 Comparisons of Detection Limits to CRQLs and RSLs - Site Wide Data Set

	CRQL	Residential	<=10		<10% Above		<5% Above	
	Medium Soil ⁽¹⁾	RSL ⁽²⁾		# DL above	% DL above	# DL above	% DL above	
	(ppm)	(ppm)	# of records	CRQL	CRQL	RSL	RSL	Comments
1,1,1,2-Tetrachloroethane	NA	2	45	NA	NA	2	4	
1,1,2,2-Tetrachloroethane	0.25	0.59	585	55	9	. 42	7	
1,1,2-Trichloroethane	0.25	1.1	585	55	9	27	5	
1,2-Dibromoethane	0.25	0.034	50	0	0	10	20	
1,2-Dibromo-3-chloropropane	0.25	0.0056	50	0	0	16	32	
1,2-Dichloroethane	0.25	0.45	585	55	9	42	7	
1,2-Dichloropropane	0.25	0.89	585	55	9	27	5	
1,2,3-Trichloropropane	NA	0.005	51	NA	NA	21	41	
1,2,4-Trichlorobenzene	0.25	22	194	154	79	2	1	
2-Nitroanilíne	10	NA	154	6	4	NA	NA	
2,4-Dinitrophenol	10	12	154	29	19	23	15	
2,4-Dinitrotoluene	5	1.6	154	25	16	31	20	
2,4,6-Trichlorophenol	5	44	154	25	16	2	1	
2,6-Dinitrotoluene	5	6.1	154	25	16	23	15	
3-Nitroaniline	10	61	154	6	4	0	C	
3,3'-Dichlorobenzidine	5	1.1	154	25	16	33	21	
4-Chloroaniline	5	2.4	154	25	16	27	18	
4,4'-DDT	0.0033	1.7	125	87	70	1	1	
4,6-Dinitro-2-methylphenol	10	0.49	146	28	19	31	21	
Aldrin	0.0017	0.029	125	93	74	4	3	
alpha-BHC	0.0017	0.077	125	95	76	2	2	
Aroclor-1016	0.033	0.39	910	827	91	643	71	
Aroclor-1221	0.033	0.17	910	830	91	672	74	
Aroclor-1232	0.033	0.17	910	829	91	667	73	
Aroclor-1242	0.033	0.22	910	828	91	661	73	
Aroclor-1248	0.033	0.22	910	827	91	660	73	· · · · · · · · · · · · · · · · · · ·
Aroclor-1254	0.033	0.22	910	790	87	659	72	······································
Aroclor-1260	0.033	0.22	910	811	89	658	72	
Aroclor-1262	0.033	0.14	30	3	10	2	7	
Aroclor-1268	0.033	0.22	860	744	87	655	76	
Benzidine	5	0.0005	7	0	0	7	100	Less than 10 total records Site-wide
Benzo(b/k)fluoranthene	NA	0.15	72	NA	NA	56	78	<u> </u>
beta-BHC	0.0017	0.27	125	97	78	1	1	
bis(2-Chloroethyl) ether	5	0.21	154	25	16	153	99)
bis(2-Ethylhexyl) phthalate	5	35	154	25	16	2	1	
Bromobenzene	NA	30	51	NA	NA	0		

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	CRQL Medium Soil ⁽¹⁾ (ppm)	Residential RSL ⁽²⁾ (ppm)	<=10 # of records	# DL above CRQL	<10% Above % DL above CRQL	# DL above RSL	<5% Above % DL above RSL	Comments
Bromodichloromethane	0.25	0.28	585	55	9	51		connents
Bromomethane	0.25	0.73	575	54	9	2	0.35	
Cadmium	0.5 NA	7	130	NA	NA	2	2	
Carbon tetrachloride	0.25	0.61	585	54	9	37	6	
Chlordane	5	1.6	11	0	0	1	9	
Chloroform	0.25	0.3	585	55	9	47	8	
Chrysene	5	15	649	29	4	2	0	
Cobalt	5.0 NA	2.3	122	NA	NA	21	17	
Dibenzo(a,h)anthracene	5	0.015	648	31	5	599	92	
Dieldrin	0.0033	0.03	125	97	78	19	15	
Endrin	0.0033	1.8	125	96	77	1	1	
Heptachlor	0.0017	0.11	125	96	77	1	1	
Heptachlor epoxide	0.0017	0.053	125	99	79	2	2	
Hexachlorobenzene	5	0.3	154	25	16	151	98	
Hexachlorobutadiene	5	6.2	184	25	14	23	13	
Indeno(1,2,3-cd)pyrene	5	0.15	649	31	5	578	89	
Naphthalene	5	3.6	649	29	4	31	5	A AND
Nitrobenzene	5	4.8	154	25	16	25	16	
N-Nitrosodimethylamine	NA	0.0023	7	NA	NA	7	100	Less than 10 total records Site-wide
N-Nitroso-di-n-propylamine	5	0.069	154	25	16	154	100	Less than 10 total records site wide
Pentachlorophenol	10	0.89	154	30	19	128	83	
Pyridine	NA	7.8	1	NA	NA	1	100	Less than 10 total records Site-wide
Selenium	3.5 MA	39	130	NA	NA	1	1	
Tetrachloroethene	0.25	0.55	585	55	9	42	7	
Thallium	2.5 1	0.51	122	0	0	92	75	the second se
Toxaphene	0.17	0.44	125	105	84	30	24	
Trichloroethene	0.25	2.8	585	55	9	8	1	
Vinyl chloride	0.25	0.06	575	55	10	112	19	

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(1) Values are the current EPA Contract Laboratory Program "Medium Soil" Contract Required Quantitation Limits (CRQL).

(2) Values are November 2010 Residential RSLs; RSLs for non-carcinogens were adjusted to a HQ of 0.1.

Yellow shaded rows indentify chemicals with fewer than 10 analytical records in the Sitewide dataset.

Red text indentifies chemicals with less than 10% of the detection limits (DLs) exceeding the relevant Medium Soil CRQLs.

Exhibit 7

GIS Figures for "Black Font" Chemicals

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