May 2, 2014
Cambria Community Services Dist.

Lab ID : CC 1481151
Customer : 8-49

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Cyanide, Total	4500CNCE		MS	mg/L	0.05000	109 %	26-226	
		(CC 1481149-001)	MSD	mg/L	0.05000	140 %	26-226	
			MSRPD	mg/L	0.05000	24.3%	≤36	
Carbon Dioxide	4500COC	(CC 1481149-001)	Dup	mg/L		9.7%	30	
pH	4500-H B	(CC 1481142-001)	Dup	units		0.3%	4.80	
	4500HB	04/08/14:204970CJJ	CCV	units	8.000	100 %	95-105	
			CCV	units	8.000	99.8 %	95-105	
Ammonia Nitrogen	4500NH3B	04/15/14:204229CJJ	Blank	mg/L		ND	<0.2	
			LCS	mg/L	6.000	77.4 %	68-103	
			MS	mg/L	6.000	61.9 %	74-105	435
		(CC 1481130-001)	MSD	mg/L	6.000	65.3 %	74-105	435
			MSRPD	mg/L	6.000	5.3%	≤7	
	4500NH3G	04/16/14:205422AMB	ICB	mg/L		-0.050	0.2	
			ICV	mg/L	2.000	109 %	90-110	
			CCB	mg/L		-0.027	0.2	
			CCV	mg/L	2.000	108 %	90-110	
			CCB	mg/L		0.025	0.2	
			CCV	mg/L	2.000	110 %	90-110	
Oxygen, dissolved	4500-O G	(CC 1481149-001)	Dup	mg/L		0.0	0.5	
Phosphate-Phosphorus	4500-P E		MS	mg/L	0.2500	77.8 %	4-170	
		(CC 1481150-001)	MSD	mg/L	0.2500	73.6 %	4-170	
			MSRPD	mg/L	0.2500	0.011	≤0.1	
	4500PE	04/08/14:204968CJJ	CCV	mg/L	0.5000	96.3 %	90-110	
			CCB	mg/L		-0.01	0.1	
			CCV	mg/L	0.5000	98.5 %	90-110	
			CCB	mg/L		-0.01	0.1	
Sulfide, Total	4500S D	04/14/14:204206CTL	LCS	mg/L	0.6667	100 %	75-125	
		(CC 1481149-001)	Dup	mg/L		0.0023	0.1	
	4500S2	04/14/14:205321CTL	CCV	mg/L	0.6667	104 %	90-110	
			CCB	mg/L		-0.032	0.1	
			CCV	mg/L	0.6667	103 %	90-110	
			CCB	mg/L		-0.035	0.1	
Oxygen, dissolved	5210B	04/08/14:204963MCA	CCV	mg/L	1.000	102 %	80-120	
			CCV	mg/L	1.000	102 %	80-120	
Nitrogen, Total Kjeldahl	EPA351.2	04/16/14:205341AMB	CCB	mg/L		0.372	0.5	
			CCV	mg/L	1.000	103 %	90-110	
			CCB	mg/L		0.364	0.5	
			CCV	mg/L	1.000	104 %	90-110	

Definition

ICV	: Initial Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
ICB	: Initial Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
CCB	: Continuing Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
Dup	: Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.

Quality Control - Inorganic

Definition	
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.
Explanation	
435	: Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.
440	: Sample nonhomogeneity may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
TOC	5310C	04/21/14:204248AMM	Blank	mg/L		ND	<0.3	
			BS	mg/L	15.00	104 %	75-114	
			BSD	mg/L	15.00	106 %	75-114	
			BSRPD	mg/L	15.00	2.1%	≤23.0	
	5310C	04/21/14:205697AMM	CCV	ppm	15.00	110 %	67-122	
			CCV	ppm	15.00	106 %	67-122	
Chlordane	608	04/12/14:204150CCG	Blank	ug/L		ND	<2	
PCB 1016 - 1	608	04/12/14:204150CCG	Blank	ug/L		ND	<0.5	
PCB 1221 - 1	608	04/12/14:204150CCG	Blank	ug/L		ND	<0.5	
PCB 1232 - 1	608	04/12/14:204150CCG	Blank	ug/L		ND	<0.5	
PCB 1242 - 1	608	04/12/14:204150CCG	Blank	ug/L		ND	<0.5	
PCB 1248 - 1	608	04/12/14:204150CCG	Blank	ug/L		ND	<0.5	
PCB 1254 - 1	608	04/12/14:204150CCG	Blank	ug/L		ND	<0.5	
PCB 1260 - 1	608	04/12/14:204150CCG	Blank	ug/L		ND	<0.5	
Tetrachloro-m-xylene	608	04/12/14:204150CCG	Blank	ug/L	0.5005	80.5 %	45-112	
			LCS	ug/L	0.5005	87.4 %	45-112	
			BS	ug/L	0.5005	72.7 %	45-112	
			BSD	ug/L	0.5005	78.7 %	45-112	
			BSRPD	ug/L	0.5005	7.9%	≤29	
	608	04/25/14:205975VRG	CCV	ug/L	100.1	102 %	85-115	
			CCV	ug/L	50.05	89.4 %	85-115	
Toxaphene	608	04/12/14:204150CCG	Blank	ug/L		ND	<0.5	
1,2,4-Trichlorobenzene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	34.7 %	15-62	
			BS	ug/L	10.00	11.5 %	0-112	
			BSD	ug/L	10.00	37.3 %	0-112	
			BSRPD	ug/L	20.00	2.6	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	95.8 %	80-120	
1,2-Dichlorobenzene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	32.6 %	13-67	
			BS	ug/L	10.00	9.8 %	0-111	
			BSD	ug/L	10.00	33.7 %	0-111	
			BSRPD	ug/L	20.00	2.4	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	89.0 %	80-120	
1,2-Diphenylhydrazine	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	44.4 %	20-88	
			BS	ug/L	10.00	25.2 %	3-122	
			BSD	ug/L	10.00	44.5 %	3-122	
			BSRPD	ug/L	20.00	1.9	≤1	410
1,3-Dichlorobenzene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	30.0 %	12-64	
			BS	ug/L	10.00	8.8 %	0-105	
			BSD	ug/L	10.00	31.2 %	0-105	
			BSRPD	ug/L	20.00	2.2	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	85.5 %	80-120	
1,4-Dichlorobenzene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	31.7 %	13-65	
			BS	ug/L	10.00	9.0 %	0-109	
			BSD	ug/L	10.00	33.3 %	0-109	
			BSRPD	ug/L	20.00	2.4	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	90.4 %	80-120	
2,4,5-Trichlorophenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	20.00	42.6 %	20-71	
			BS	ug/L	20.00	24.1 %	0-137	
			BSD	ug/L	20.00	45.2 %	0-137	

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
2,4,5-Trichlorophenol	625	04/14/14:204202CCG	BSRPD	ug/L	20.00	4.2	≤2	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	132 %	70-130	360
2,4,6-Tribromophenol	625	04/14/14:204202CCG	Blank	ug/L	20.00	47.4 %	15-124	
			LCS	ug/L	20.00	59.4 %	15-124	
			BS	ug/L	20.00	35.3 %	0-132	
			BSD	ug/L	20.00	59.5 %	0-132	
			BSRPD	ug/L	20.00	51.1%	≤38	410
	625	04/18/14:205766VRG	CCV	mg/L	20.00	132 %	80-120	362
2,4,6-Trichlorophenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	20.00	42.3 %	17-70	
			BS	ug/L	20.00	22.6 %	0-171	
			BSD	ug/L	20.00	44.4 %	0-171	
			BSRPD	ug/L	20.00	65.0%	≤77	
	625	04/18/14:205766VRG	CCV	mg/L	10.00	118 %	80-120	
2,4-Dichlorophenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	20.00	43.6 %	20-64	
			BS	ug/L	20.00	21.6 %	0-132	
			BSD	ug/L	20.00	46.3 %	0-132	
			BSRPD	ug/L	20.00	5.0	≤2	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	122 %	80-120	360
2,4-Dimethylphenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	20.00	39.7 %	24-79	
			BS	ug/L	20.00	18.3 %	0-110	
			BSD	ug/L	20.00	41.3 %	0-110	
			BSRPD	ug/L	20.00	4.6	≤2	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	140 %	80-120	360
2,4-Dinitrophenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<5	
			LCS	ug/L	20.00	34.4 %	3-39	
			BS	ug/L	20.00	20.3 %	0-100	
			BSD	ug/L	20.00	34.3 %	0-100	
			BSRPD	ug/L	20.00	2.8	≤5	
	625	04/18/14:205766VRG	CCV	mg/L	10.00	107 %	80-120	
2,4-Dinitrotoluene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	44.4 %	15-87	
			BS	ug/L	10.00	27.5 %	0-139	
			BSD	ug/L	10.00	48.4 %	0-139	
			BSRPD	ug/L	20.00	2.1	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	101 %	80-120	
2,6-Dinitrotoluene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	42.7 %	21-78	
			BS	ug/L	10.00	24.0 %	0-131	
			BSD	ug/L	10.00	46.5 %	0-131	
			BSRPD	ug/L	20.00	2.2	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	98.8 %	80-120	
2-Chlorophenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	20.00	37.8 %	19-74	
			BS	ug/L	20.00	17.0 %	0-127	
			BSD	ug/L	20.00	40.5 %	0-127	
			BSRPD	ug/L	20.00	4.7	≤2	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	107 %	80-120	
2-Fluorobiphenyl	625	04/14/14:204202CCG	Blank	ug/L	10.00	32.3 %	16-104	
			LCS	ug/L	10.00	38.6 %	16-104	
			BS	ug/L	10.00	16.8 %	0-109	
			BSD	ug/L	10.00	40.0 %	0-109	

May 2, 2014 Lab ID : CC 1481151
Cambria Community Services Dist. Customer : 8-49

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
2-Fluorobiphenyl	625	04/14/14:204202CCG	BSRPD	ug/L	20.00	2.3	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	98.9 %	80-120	
2-Fluorophenol	625	04/14/14:204202CCG	Blank	ug/L	20.00	29.0 %	20-98	
			LCS	ug/L	20.00	34.0 %	20-98	
			BS	ug/L	20.00	14.0 %	0-126	
			BSD	ug/L	20.00	36.1 %	0-126	
			BSRPD	ug/L	20.00	88.2%	≤79	410
	625	04/18/14:205766VRG	CCV	mg/L	20.00	91.8 %	80-120	
2-Nitrophenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	20.00	46.4 %	20-72	
			BS	ug/L	20.00	21.4 %	0-142	
			BSD	ug/L	20.00	47.7 %	0-142	
			BSRPD	ug/L	20.00	5.3	≤2	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	130 %	80-120	360
3,3-Dichlorobenzidine	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	20.00	24.2 %	10-45	
			BS	ug/L	20.00	19.1 %	0-56	
			BSD	ug/L	20.00	25.9 %	0-56	
			BSRPD	ug/L	20.00	1.4	≤2	
	625	04/18/14:205766VRG	CCV	mg/L	20.00	85.8 %	80-120	
4,6-Dinitro-2-methylphenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	20.00	52.4 %	4-58	
			BS	ug/L	20.00	35.0 %	0-169	
			BSD	ug/L	20.00	51.8 %	0-169	
			BSRPD	ug/L	20.00	38.7%	≤270	
4,6-Dinitro-o-cresol	625	04/18/14:205766VRG	CCV	mg/L	10.00	127 %	80-120	360
4-Bromophenylphenylether	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	44.0 %	19-68	
			BS	ug/L	10.00	25.2 %	0-123	
			BSD	ug/L	10.00	45.1 %	0-123	
			BSRPD	ug/L	20.00	2.0	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	105 %	80-120	
4-Nitrophenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	20.00	55.7 %	4-75	
			BS	ug/L	20.00	35.0 %	0-206	
			BSD	ug/L	20.00	62.2 %	0-206	
			BSRPD	ug/L	20.00	5.4	≤2	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	153 %	80-120	360
Acenaphthene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	38.8 %	19-76	
			BS	ug/L	10.00	18.2 %	0-125	
			BSD	ug/L	10.00	41.9 %	0-125	
			BSRPD	ug/L	20.00	2.4	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	92.7 %	80-120	
Acenaphthylene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	38.4 %	11-76	
			BS	ug/L	10.00	17.7 %	0-103	
			BSD	ug/L	10.00	41.1 %	0-103	
			BSRPD	ug/L	20.00	2.3	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	100 %	80-120	
Anthracene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	42.4 %	20-77	
			BS	ug/L	10.00	25.3 %	0-131	
			BSD	ug/L	10.00	43.9 %	0-131	

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
Anthracene	625	04/14/14:204202CCG	BSRPD	ug/L	20.00	1.9	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	97.1 %	80-120	
Azobenzene	625	04/18/14:205766VRG	CCV	mg/L	10.00	90.9 %	80-120	
Benzidine	625	04/14/14:204202CCG	Blank	ug/L		ND	<10	
			LCS	ug/L	20.00	17.5 %	0-97	
			BS	ug/L	20.00	17.5 %	0-97	
			BSD	ug/L	20.00	17.5 %	0-97	
			BSRPD	ug/L	20.00	0.0018	≤10	
	625	04/18/14:205766VRG	CCV	mg/L	20.00	97.2 %	70-130	
Benzo(a)anthracene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	45.5 %	19-75	
			BS	ug/L	10.00	35.1 %	4-131	
			BSD	ug/L	10.00	52.0 %	4-131	
			BSRPD	ug/L	20.00	1.7	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	96.4 %	80-120	
Benzo(a)pyrene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	35.8 %	8-65	
			BS	ug/L	10.00	27.4 %	2-122	
			BSD	ug/L	10.00	38.5 %	2-122	
			BSRPD	ug/L	20.00	1.1	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	94.2 %	80-120	
Benzo(b)fluoranthene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	54.0 %	12-70	
			BS	ug/L	10.00	37.9 %	7-121	
			BSD	ug/L	10.00	54.5 %	7-121	
			BSRPD	ug/L	20.00	1.7	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	112 %	80-120	
Benzo(g,h,i)perylene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	43.9 %	9-67	
			BS	ug/L	10.00	32.6 %	0-141	
			BSD	ug/L	10.00	45.0 %	0-141	
			BSRPD	ug/L	20.00	1.2	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	91.7 %	80-120	
Benzo(k)fluoranthene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	27.4 %	16-62	
			BS	ug/L	10.00	24.1 %	0-161	
			BSD	ug/L	10.00	32.3 %	0-161	
			BSRPD	ug/L	20.00	0.82	≤1	
	625	04/18/14:205766VRG	CCV	mg/L	10.00	80.7 %	80-120	
bis(2-Chloroethoxy)methane	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	36.5 %	8-89	
			BS	ug/L	10.00	16.4 %	0-120	
			BSD	ug/L	10.00	38.7 %	0-120	
			BSRPD	ug/L	20.00	2.2	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	93.4 %	80-120	
bis(2-Chloroethyl)ether	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	45.2 %	22-109	
			BS	ug/L	10.00	16.2 %	0-165	
			BSD	ug/L	10.00	49.2 %	0-165	
			BSRPD	ug/L	20.00	3.3	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	89.7 %	80-120	
bis(2-Chloroisopropyl)ether	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	28.1 %	27-105	
			BS	ug/L	10.00	11.3 %	0-117	

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
bis(2-Chloroisopropyl)ether	625	04/14/14:204202CCG	BSD	ug/L	10.00	30.6 %	0-117	
			BSRPD	ug/L	20.00	1.9	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	80.4 %	80-120	
bis(2-Ethylhexyl)phthalate	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	10.00	45.7 %	12-78	
			BS	ug/L	10.00	35.4 %	0-133	
			BSD	ug/L	10.00	56.8 %	0-133	
			BSRPD	ug/L	20.00	2.1	≤2	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	111 %	80-120	
Butylbenzylphthalate	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	10.00	26.3 %	1-53	
			BS	ug/L	10.00	23.7 %	0-97	
			BSD	ug/L	10.00	31.3 %	0-97	
			BSRPD	ug/L	20.00	0.76	≤2	
	625	04/18/14:205766VRG	CCV	mg/L	10.00	108 %	80-120	
Chloronaphthalene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	38.7 %	18-78	
			BS	ug/L	10.00	16.4 %	0-204	
			BSD	ug/L	10.00	41.3 %	0-204	
			BSRPD	ug/L	20.00	2.5	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	93.2 %	80-120	
Chlorophenylphenylether	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	40.2 %	20-74	
			BS	ug/L	10.00	21.9 %	0-128	
			BSD	ug/L	10.00	43.3 %	0-128	
			BSRPD	ug/L	20.00	2.1	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	100 %	80-120	
Chrysene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	34.2 %	20-71	
			BS	ug/L	10.00	24.2 %	0-141	
			BSD	ug/L	10.00	34.7 %	0-141	
			BSRPD	ug/L	20.00	1.1	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	82.0 %	80-120	
Dibenzo(a,h)anthracene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	45.0 %	13-66	
			BS	ug/L	10.00	33.3 %	0-141	
			BSD	ug/L	10.00	45.3 %	0-141	
			BSRPD	ug/L	20.00	1.2	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	94.7 %	80-120	
Diethylphthalate	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	28.4 %	11-63	
			BS	ug/L	10.00	22.6 %	0-115	
			BSD	ug/L	10.00	33.6 %	0-115	
			BSRPD	ug/L	20.00	1.1	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	111 %	80-120	
Dimethylphthalate	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	22.6 %	4-37	
			BS	ug/L	10.00	17.2 %	0-102	
			BSD	ug/L	10.00	27.7 %	0-102	
			BSRPD	ug/L	20.00	1.1	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	106 %	80-120	
Di-n-butylphthalate	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	10.00	38.9 %	9-54	
			BS	ug/L	10.00	30.7 %	0-102	

May 2, 2014 Lab ID : CC 1481151
Cambria Community Services Dist. Customer : 8-49

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
Di-n-butylphthalate	625	04/14/14:204202CCG	BSD	ug/L	10.00	41.7 %	0-102	
			BSRPD	ug/L	20.00	1.1	≤2	
	625	04/18/14:205766VRG	CCV	mg/L	10.00	125 %	80-120	360
Di-n-octylphthalate	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	52.0 %	0-50	310
			BS	ug/L	10.00	41.5 %	12-122	
			BSD	ug/L	10.00	59.8 %	12-122	
			BSRPD	ug/L	20.00	36.1%	≤90	
	625	04/18/14:205766VRG	CCV	mg/L	10.00	131 %	80-120	360
Fluoranthene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	46.6 %	20-72	
			BS	ug/L	10.00	31.1 %	0-140	
			BSD	ug/L	10.00	47.7 %	0-140	
			BSRPD	ug/L	20.00	1.7	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	98.4 %	80-120	
Fluorene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	42.1 %	24-89	
			BS	ug/L	10.00	22.3 %	0-136	
			BSD	ug/L	10.00	45.1 %	0-136	
			BSRPD	ug/L	20.00	2.3	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	94.7 %	80-120	
Hexachlorobenzene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	45.2 %	19-65	
			BS	ug/L	10.00	24.8 %	0-126	
			BSD	ug/L	10.00	47.1 %	0-126	
			BSRPD	ug/L	20.00	2.2	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	103 %	80-120	
Hexachlorobutadiene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	35.6 %	12-60	
			BS	ug/L	10.00	10.9 %	0-110	
			BSD	ug/L	10.00	37.0 %	0-110	
			BSRPD	ug/L	20.00	2.6	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	105 %	80-120	
Hexachlorocyclopentadiene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	17.0 %	8-28	
			BS	ug/L	10.00	3.0 %	0-284	
			BSD	ug/L	10.00	15.8 %	0-284	
			BSRPD	ug/L	20.00	1.3	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	94.5 %	80-120	
Hexachloroethane	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	31.2 %	13-74	
			BS	ug/L	10.00	8.6 %	0-108	
			BSD	ug/L	10.00	32.2 %	0-108	
			BSRPD	ug/L	20.00	2.4	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	95.1 %	80-120	
Indeno(1,2,3-c,d)pyrene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	45.0 %	10-66	
			BS	ug/L	10.00	32.8 %	0-141	
			BSD	ug/L	10.00	45.4 %	0-141	
			BSRPD	ug/L	20.00	1.3	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	95.1 %	80-120	
Isophorone	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	35.7 %	20-76	
			BS	ug/L	10.00	17.7 %	0-116	

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
Isophorone	625	04/14/14:204202CCG	BSD	ug/L	10.00	39.0 %	0-116	
			BSRPD	ug/L	20.00	2.1	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	86.8 %	80-120	
Naphthalene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	41.6 %	17-76	
			BS	ug/L	10.00	15.1 %	0-121	
			BSD	ug/L	10.00	44.6 %	0-121	
			BSRPD	ug/L	20.00	2.9	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	99.4 %	80-120	
Nitrobenzene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	67.3 %	32-127	
			BS	ug/L	10.00	28.8 %	0-176	
			BSD	ug/L	10.00	71.2 %	0-176	
			BSRPD	ug/L	20.00	84.7%	≤50	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	136 %	80-120	360
Nitrobenzene-d5	625	04/14/14:204202CCG	Blank	ug/L	10.00	33.3 %	21-99	
			LCS	ug/L	10.00	41.2 %	21-99	
			BS	ug/L	10.00	15.6 %	0-115	
			BSD	ug/L	10.00	42.1 %	0-115	
			BSRPD	ug/L	20.00	2.6	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	102 %	80-120	
N-Nitrosodimethylamine	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	10.00	28.0 %	22-85	
			BS	ug/L	10.00	9.7 %	0-114	
			BSD	ug/L	10.00	31.1 %	0-114	
			BSRPD	ug/L	20.00	2.1	≤2	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	81.5 %	80-120	
N-Nitrosodi-N-propylamine	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	38.3 %	28-98	
			BS	ug/L	10.00	17.5 %	0-140	
			BSD	ug/L	10.00	41.5 %	0-140	
			BSRPD	ug/L	20.00	2.4	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	92.8 %	80-120	
N-Nitrosodiphenylamine	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	46.7 %	24-100	
			BS	ug/L	10.00	27.5 %	4-132	
			BSD	ug/L	10.00	47.8 %	4-132	
			BSRPD	ug/L	20.00	2.0	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	103 %	80-120	
p-Chloro-m-cresol	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	20.00	47.3 %	19-87	
			BS	ug/L	20.00	25.8 %	0-144	
			BSD	ug/L	20.00	51.0 %	0-144	
			BSRPD	ug/L	20.00	5.0	≤2	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	136 %	80-120	360
Pentachlorophenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<2	
			LCS	ug/L	20.00	36.1 %	0-66	
			BS	ug/L	20.00	22.0 %	0-128	
			BSD	ug/L	20.00	37.9 %	0-128	
			BSRPD	ug/L	20.00	3.2	≤2	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	92.6 %	80-120	
Phenanthrene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	46.6 %	20-70	
			BS	ug/L	10.00	27.4 %	0-131	

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
Phenanthrene	625	04/14/14:204202CCG	BSD	ug/L	10.00	49.3 %	0-131	
			BSRPD	ug/L	20.00	2.2	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	99.8 %	80-120	
Phenol	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	20.00	31.3 %	20-80	
			BS	ug/L	20.00	14.1 %	0-120	
			BSD	ug/L	20.00	34.6 %	0-120	
			BSRPD	ug/L	20.00	4.1	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	102 %	80-120	
Phenol-d6	625	04/14/14:204202CCG	Blank	ug/L	20.00	25.9 %	18-103	
			LCS	ug/L	20.00	34.5 %	18-103	
			BS	ug/L	20.00	14.7 %	0-125	
			BSD	ug/L	20.00	37.1 %	0-125	
			BSRPD	ug/L	20.00	86.5%	≤99	
	625	04/18/14:205766VRG	CCV	mg/L	20.00	90.3 %	80-120	
p-Terphenyl-d14	625	04/14/14:204202CCG	Blank	ug/L	10.00	41.0 %	13-142	
			LCS	ug/L	10.00	40.2 %	13-142	
			BS	ug/L	10.00	29.6 %	2-135	
			BSD	ug/L	10.00	44.1 %	2-135	
			BSRPD	ug/L	20.00	1.4	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	97.9 %	80-120	
Pyrene	625	04/14/14:204202CCG	Blank	ug/L		ND	<1	
			LCS	ug/L	10.00	42.6 %	15-78	
			BS	ug/L	10.00	30.5 %	1-133	
			BSD	ug/L	10.00	47.3 %	1-133	
			BSRPD	ug/L	20.00	1.7	≤1	410
	625	04/18/14:205766VRG	CCV	mg/L	10.00	98.0 %	80-120	
Pyridine	625	04/14/14:204202CCG	Blank	ug/L		ND	<10	
			LCS	ug/L	10.00	2.4 %	0-34	
			BS	ug/L	10.00	0.0 %	0-92	
			BSD	ug/L	10.00	6.1 %	0-92	
			BSRPD	ug/L	20.00	0.61	≤10	
	625	04/18/14:205766VRG	CCV	mg/L	10.00	87.1 %	80-120	
2,4`-DDD	625P	04/14/14:205423SG	CCV	ug/L	100.0	80.9 %	70-130	
2,4`-DDE	625P	04/14/14:205423SG	CCV	ug/L	100.0	95.8 %	70-130	
2,4`-DDT	625P	04/14/14:205423SG	CCV	ug/L	100.0	119 %	70-130	
Aldrin	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	85.6 %	0-123	
			BS	ng/L	100.0	78.2 %	0-127	
			BSD	ng/L	100.0	61.4 %	0-127	
			BSRPD	ng/L	100.0	24.0%	≤206	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	129 %	70-130	
Alpha BHC	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	58.5 %	28-112	
			BS	ng/L	100.0	82.3 %	22-131	
			BSD	ng/L	100.0	69.1 %	22-131	
			BSRPD	ng/L	100.0	17.6%	≤55	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	90.4 %	70-130	
alpha-Chlordane	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	94.1 %	16-109	
			BS	ng/L	100.0	99.2 %	0-135	
			BSD	ng/L	100.0	74.3 %	0-135	
			BSRPD	ng/L	100.0	28.7%	≤77	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	107 %	70-130	

May 2, 2014 Lab ID : CC 1481151

Cambria Community Services Dist. Customer : 8-49

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
Beta BHC	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	46.4 %	22-127	
			BS	ng/L	100.0	69.1 %	0-202	
			BSD	ng/L	100.0	58.4 %	0-202	
			BSRPD	ng/L	100.0	16.7%	≤44	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	73.4 %	70-130	
cis_Nonachlor	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	75.3 %	0-137	
			BS	ng/L	100.0	83.1 %	0-134	
			BSD	ng/L	100.0	53.6 %	0-134	
			BSRPD	ng/L	100.0	43.1%	≤85	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	95.8 %	70-130	
Delta BHC	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	20.7 %	1-140	
			BS	ng/L	100.0	33.0 %	16-151	
			BSD	ng/L	100.0	27.2 %	16-151	
			BSRPD	ng/L	100.0	19.2%	≤62	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	99.6 %	70-130	
Dieldrin	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	79.2 %	2-113	
			BS	ng/L	100.0	89.4 %	0-179	
			BSD	ng/L	100.0	65.5 %	0-179	
			BSRPD	ng/L	100.0	30.8%	≤226	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	107 %	70-130	
Endosulfan I	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	82.8 %	3-123	
			BS	ng/L	100.0	92.4 %	0-174	
			BSD	ng/L	100.0	75.4 %	0-174	
			BSRPD	ng/L	100.0	20.3%	≤238	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	124 %	70-130	
Endosulfan II	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	111 %	0-129	
			BS	ng/L	100.0	86.9 %	0-186	
			BSD	ng/L	100.0	87.5 %	0-186	
			BSRPD	ng/L	100.0	0.7%	≤116	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	114 %	70-130	
Endosulfan Sulfate	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	62.1 %	2-104	
			BS	ng/L	100.0	78.6 %	0-119	
			BSD	ng/L	100.0	53.3 %	0-119	
			BSRPD	ng/L	100.0	38.4%	≤98	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	101 %	70-130	
Endrin	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	40.8 %	0-97	
			BS	ng/L	100.0	99.6 %	0-140	
			BSD	ng/L	100.0	35.5 %	0-140	
			BSRPD	ng/L	100.0	94.9%	≤140	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	123 %	70-130	
Endrin Aldehyde	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	67.5 %	10-144	
			BS	ng/L	100.0	87.1 %	0-113	
			BSD	ng/L	100.0	88.6 %	0-113	
			BSRPD	ng/L	100.0	1.7%	≤120	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	104 %	70-130	

May 2, 2014 Lab ID : CC 1481151
Cambria Community Services Dist. Customer : 8-49

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
Endrin Ketone	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	89.5 %	19-154	
			BS	ng/L	100.0	66.8 %	0-142	
			BSD	ng/L	100.0	94.1 %	0-142	
			BSRPD	ng/L	100.0	34.0%	≤133	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	95.1 %	70-130	
gamma-Chlordane	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	101 %	0-121	
			BS	ng/L	100.0	100 %	0-125	
			BSD	ng/L	100.0	78.6 %	0-125	
			BSRPD	ng/L	100.0	24.4%	≤110	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	107 %	70-130	
Heptachlor	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	108 %	0-119	
			BS	ng/L	100.0	80.3 %	0-119	
			BSD	ng/L	100.0	71.4 %	0-119	
			BSRPD	ng/L	100.0	11.7%	≤72	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	112 %	70-130	
Heptachlor Epoxide	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	97.5 %	18-105	
			BS	ng/L	100.0	94.9 %	0-117	
			BSD	ng/L	100.0	84.4 %	0-117	
			BSRPD	ng/L	100.0	11.7%	≤72	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	87.1 %	70-130	
Lindane	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	124 %	40-132	
			BS	ng/L	100.0	148 %	16-127	436
			BSD	ng/L	100.0	135 %	16-127	436
			BSRPD	ng/L	100.0	8.7%	≤116	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	87.0 %	70-130	
Methoxychlor	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	57.6 %	0-113	
			BS	ng/L	100.0	66.5 %	0-138	
			BSD	ng/L	100.0	69.5 %	0-138	
			BSRPD	ng/L	100.0	4.4%	≤55	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	88.2 %	70-130	
o,p - DDD	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	81.8 %	11-117	
			BS	ng/L	100.0	95.9 %	2-119	
			BSD	ng/L	100.0	72.0 %	2-119	
			BSRPD	ng/L	100.0	28.5%	≤45	
o,p - DDE	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	87.6 %	12-119	
			BS	ng/L	100.0	97.6 %	0-115	
			BSD	ng/L	100.0	71.7 %	0-115	
			BSRPD	ng/L	100.0	30.5%	≤39	
o,p - DDT	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	81.7 %	1-117	
			BS	ng/L	100.0	90.1 %	0-121	
			BSD	ng/L	100.0	80.8 %	0-121	
			BSRPD	ng/L	100.0	10.9%	≤66	
p,p - DDD	625P	04/14/14:205423SG	CCV	ug/L	100.0	73.6 %	70-130	
p,p - DDE	625P	04/14/14:205423SG	CCV	ug/L	100.0	91.1 %	70-130	
p,p - DDT	625P	04/14/14:205423SG	CCV	ug/L	100.0	93.4 %	70-130	

May 2, 2014 — Lab ID : CC 1481151
Cambria Community Services Dist. — Customer : 8-49

Quality Control - Organic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Organic								
p,p`-DDD	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	76.1 %	9-130	
			BS	ng/L	100.0	89.1 %	4-131	
			BSD	ng/L	100.0	34.7 %	4-131	
			BSRPD	ng/L	100.0	87.8%	≤84	410
p,p`-DDE	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	88.0 %	6-127	
			BS	ng/L	100.0	106 %	0-125	
			BSD	ng/L	100.0	83.1 %	0-125	
			BSRPD	ng/L	100.0	23.9%	≤80	
p,p`-DDT	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	61.1 %	0-124	
			BS	ng/L	100.0	67.6 %	0-121	
			BSD	ng/L	100.0	76.7 %	0-121	
			BSRPD	ng/L	100.0	12.6%	≤24	
Tetrachloro-m-xylene	625P	04/11/14:204133CCG	Blank	ng/L	100.0	17.0 %	9-53	
			LCS	ng/L	100.0	44.0 %	9-53	
			BS	ng/L	100.0	43.3 %	9-53	
			BSD	ng/L	100.0	51.5 %	9-53	
			BSRPD	ng/L	100.0	17.3%	≤30	
trans-Nonachlor	625P	04/11/14:204133CCG	Blank	ng/L		ND	<5	
			LCS	ng/L	100.0	86.1 %	11-98	
			BS	ng/L	100.0	83.1 %	0-116	
			BSD	ng/L	100.0	65.9 %	0-116	
			BSRPD	ng/L	100.0	23.1%	≤61	
	625P	04/14/14:205423SG	CCV	ug/L	100.0	109 %	70-130	

Definition

CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
BS	: Blank Spikes - A blank is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
BSD	: Blank Spike Duplicate of BS/BSD pair - A blank duplicate is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
BSRPD	: BS/BSD Relative Percent Difference (RPD) - The BS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

Explanation

310	: LCS above Acceptance Range (AR). Samples which were non detect for this analyte were accepted.
360	: CCV above Acceptance Range (AR). Samples which were non detect for this analyte were accepted.
362	: Surrogates are qualified on Control Chart Limits, these are CCV limits. See individual sample reports.
410	: Relative Percent Difference (RPD) not within Maximum Allowable Value (MAV). Data was accepted based on the LCS or CCV recovery.
436	: Blank Spike (BS) not within Acceptance Range (AR). Data was accepted based on the LCS or CCV recovery.

May 2, 2014 Lab ID : CC 1481151
Cambria Community Services Dist. Customer : 8-49

Quality Control - Radio

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Radio								
Alpha	900.0	04/23/14:205882caa	CCV	cpm	9246	39.2 %	36 - 44	
			CCB	cpm		0.100	0.14	
	900.0	04/23/14:205883caa	CCV	cpm	9246	39.5 %	36 - 44	
			CCB	cpm		0.1200	0.18	
Gross Alpha	900.0	04/22/14:204487caa	Blank	pCi/L		-0.07	3	
			LCS	pCi/L	180.6	93.6 %	75-125	
			MS	pCi/L	180.6	90.6 %	60-140	
		(SP 1404189-001)	MSD	pCi/L	180.6	101 %	60-140	
			MSRPD	pCi/L	180.6	10.7%	≤30	
Alpha	903.0	04/22/14:205794caa	CCV	cpm	9248	39.0 %	36 - 44	
			CCB	cpm		0.0600	0.16	
Total Alpha Radium (226)	903.0	04/21/14:204469mmf	RgBlk	pCi/L		0.07	2	
			LCS	pCi/L	22.38	70.8 %	52-107	
			BS	pCi/L	22.38	87.3 %	43-111	
			BSD	pCi/L	22.38	74.1 %	43-111	
			BSRPD	pCi/L	22.38	16.4%	≤35.5	
Beta	Ra - 05	04/26/14:206060emv	CCV	cpm	9659	91.0 %	82 - 100	
			CCB	cpm		0.4000	0.55	
	Ra - 05	04/26/14:206061emv	CCV	cpm	9659	91.4 %	82 - 101	
			CCB	cpm		0.4200	0.49	
Ra 228	Ra - 05	04/22/14:204537emv	RgBlk	pCi/L		0.06	3	
			LRS	pCi/L	83.82	51.5 %	27-59	
			BS	pCi/L	83.82	99.8 %	75-125	
			BSD	pCi/L	83.82	108 %	75-125	
			BSRPD	pCi/L	83.82	8.2%	≤25	

Definition

CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
CCB	: Continuing Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
RgBlk	: Method Reagent Blank - Prepared to correct for any reagent contributions to sample result.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
LRS	: Laboratory Recovery Standard - Prepared to establish the batch recovery factor used in result calculations.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
BS	: Blank Spikes - A blank is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
BSD	: Blank Spike Duplicate of BS/BSD pair - A blank duplicate is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
BSRPD	: BS/BSD Relative Percent Difference (RPD) - The BS relative percent difference is an indication of precision for the preparation and analysis.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

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Special

CHAIN OF CUSTODY

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Laboratory Copy (1 of 3)

80904:04/07/2014

Client: Cambria CSD-DW
Address: Cambria Community Services Dist.
P.O. Box 65
Cambria, CA 93428

Phone: (805)927-6227 ext 29 Fax: (805)927-6226
Contact Person: Justin Smith
Project Name: Special Well Testing
Purchase Order Number:
Quote Number:

Sampler(s) B. Pfeifle

Sampling Fee: ______ Pickup Fee: ______
Compositor Setup Date: __/__/__ Time: __/__

Lab Number: CC 1451151 8-49

TEST DESCRIPTION - See Reverse side for Container, Preservative and Sampling information

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite(C) Grab(G)	Type of Sample **SEE REVERSE SIDE**	Potable(P) Non-Potable(NP) Ag Water(AgW)	Bacti Type: Other(O) System(SYS) Source(SR) Waste(W)	Bacti Reason: Routine(ROUT) Repeat(RPT) Replace(RPL) Other(O) Special(SPL)	Field Test-Field Temp.	Field Test-Field pH !!pH = 15 MINUTE HOLD TIME!!	Field - pH Date	Field - pH Time	Field Test-ORP	Field Test-Field E.C. mS/cm	Field Test-Field O2 Diss. mg/L	Wet Chemistry-H2S,SO4,TDS,TSS,PO4,pH,O2 Diss., ~~ORP~~,TKN,NO2,NO3,F,Cl,CO2,Br,Alk. (CaCO3), NH3-N,Conductivity 16oz(P)-NaOH + Zinc Acetate, 16oz(P)-H2SO4, 128oz(P), 300ml(DO), 16oz(P)-H2SO4, 128oz(P)	Metals, Diss-Fe,Mn,Silica Field Filtered by Sampler 250ml(P)-HNO3	Metals, Total-Al,Ba,B,Ca,Fe,Mg,Mn,K,Na,Sr,Zn 1000ml(P)-HNO3	
1	9P7	4/7/2014	~~11:14~~ 11:57	G	DW				16.41°C	7.14	4/7	11:57	-302		0.13	1,1,1,4,1,1	1	1	
2	Lab Duplicate			G	DW														

Remarks: Multiple Chains
unable to run ORP in lab using ROT

Relinquished	Date	Time	Relinquished	Date	Time	Relinquished	Date	Time
B. Pfeifle	4/7/14	1555	9kostra	4/7/14	1700	Eddie Lopez		
Received By:	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**
9kosh	↓	↓	OnTrac	↓	↓	[illegible]	4/8/14	1045

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853 Corporation Street
Santa Paula, CA 93060
Phone: (805) 392-2000
Env Fax: (805) 525-4172 / Ag Fax: (805) 392-2063

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Special

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80904:04/07/2014

Client: Cambria CSD-DW
Address: Cambria Community Services Dist.
P.O. Box 65
Cambria, CA 93428

Phone: (805)927-6227 ext 29 Fax: (805)927-6226
Contact Person: Justin Smith
Project Name: **Special Well Testing**
Purchase Order Number:
Quote Number:

Sampler(s) B. Pfeifle

Sampling Fee: ______ Pickup Fee: ______
Compositor Setup Date: ___/___/___ Time: ___/___

Lab Number: CC 1gg1151 8-49

TEST DESCRIPTION - See Reverse side for Container, Preservative and Sampling information

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite(C) Grab(G)	Type of Sample **SEE REVERSE SIDE**	Potable(P) Non-Potable(NP) Ag Water(AgW)	Bacti Type: Other(O) System(SYS) Source(SR) Waste(W)	Bacti Reason: Routine(ROUT) Repeat(RPT) Replace(RPL) Other(O) Special(SPL)	TOC 40ml(AVT)-H2SO4	~~Sub Contracted Caffeine & Sucralose 1000ml(AGT)~~ S8 4/15/14 Cancelled *	~~Sub Organic-NDMA 1000ml(AGT)~~ S8 4/15/14 Cancelled *	Laboratory Directive: Run sample 2 as a Lab Duplicate for all parameters EXCEPT Field Tests and Subcontract using volume from native sample 1 LOGIN: Tie Sample 2 "Lab Duplicate" to all parameters EXCEPT Field Tests and Subcontract		* Cancelled - Broke in	Shipment to sub lab	S8 4/15/14	Vicki J. notified Janna	
1	9P7	4/7/2014	~~11:14~~ 11:59	G	DW				4	~~Sub-1~~	Sub-1							
2	Lab Duplicate			G	DW							X						

Remarks: Multiple Chains

Relinquished	Date:	Time:	Relinquished	Date:	Time:	Relinquished	Date:	Time:
B. Pfeifle	4/7/14	1555	9kosd	4/7/14	1700	Eddie Lopez		
Received By:	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**
9kosh	↓	↓	OnTrac	↓	↓	[illegible]	4/8/14	1045

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CHAIN OF CUSTODY
AND ANALYSIS REQUEST DOCUMENT

Lab Number: CC1481151

TEST DESCRIPTION AND ANALYSES REQUESTED

Client: Cambria CSD-DW
Customer Number: 8000049
Address: P.O. Box 65
Cambria, CA 93428

Phone: (805)927-6227 ext 2! Fax: (805)927-6226
Email Address: ismithl@cambriacsd.org
Contact Person: Justin Smith
Project Name: Special Well Testing
Purchase Order Number:
Quote Number:
Sampler(s): B. Pfeifle

Sampling Fee: ____________ Pickup Fee: ____________
Compositor Setup Date: ____________ Time: ____________

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite (C) Grab (G)	Number of Containers	Type of Containers: Glass (G) Plastic (P) VOA (V) Metal Tube (MT)	Potable (P) Non-Potable (NP) Ag Water (AgW)	Surface Water (SW) Monitoring Well (MW) Ground Water (GW) Travel Blank (TB) Waste Water (WW) Drinking Water (DW)	Soil (S) Sludge (SLG) Solid (SLD) Oil (O)	Bact: System (Sys) Source (SRC) Waste (W)	Bact: Routine (ROUT) Repeat (RPT) Other (OTH) Replace (RPL) Special (SPL)	Leaf Tissue (LT) Petiole Tissue (PET) Produce (PRD)	Preservative: (1) NaOH + ZnAc, (2) NaOH, (3) HCl (4) H2SO4, (5) HNO3, (6) Na2S2O3, (7) Other	Hexavalent Chromium Field filtered	Cyanide	Total Residual Chlorine	EPA 625	EPA 625 Pest	EPA 608 Chlordane, Toxaphene & PCBs	Gross alpha (Uranium if needed)	Radium 226 and 228
1	9P7	4/7	~~11:14~~ 11:59	G	18	P/G		DW						X	X	X	X	X	X	X	X
2	Lab Duplicate			G	18	P/G		DW						X	X	X	X	X	X	X	X
																			X		

Remarks
multiple chains

Relinquished	Date:	Time:	Relinquished	Date:	Time:	Relinquished	Date:	Time:
B Pfeifle	4/7/14	1555	G Kosdra	4/7/14	1700	Eddie Lopez		
Received By:	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**
G Kosdra	↓	↓	OnTrac	↓	↓	[illegible]	4/8/14	1045

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CA ELAP Certification
Phone: (805) 783-2940
Fax: (805) 783-2912

Office & Laboratory
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Visalia, CA 93291
TEL: (559)734-9473
FAX: (559)734-8435
CA ELAP Certification No. 2810
Phone: (559) 734-9473
Fax: (559) 734-8435

Subcontract to
Weck Laboratories, Inc.

Map Ref.

Client: **Fruit Growers Laboratory, Inc.**

Address: FGL Environmental, Inc.
853 Corporation St.
Santa Paula, CA 93060-3005

Phone: (805)392-2039 Fax: (805)525-6264

Contact Person:

Project Name: **CC 1481151 - (8-49)**

Purchase Order Number:

Sampler(s) B. Pfeifle

Compositor Setup Date: ___/___/___ Time: ___/___

Lab Number:

CANCELLED

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite(C) Grab(G)	Type of Sample **SEE REVERSE SIDE**	Potable(P) Non-Potable(NP) Ag Water(AgW)	Bacti Type: Other(O) System(SYS) Source(SR) Waste(W)	Bacti Reason: Routine(ROUT) Repeat(RPT) Replace(RPL) Other(O) Special(SPL)	Sub Contracted-Caffeine & Sucralose 1000ml(AGT)	Sub Organic-NDMA 1000ml(AGT)								
1	9P7	04/07/14	11:59	G	DW				1	1								

CANCELLED

Remarks:	Relinquished Date: Time:	Relinquished Date: Time:	Relinquished Date: Time:
	Received By: Date: Time:	Received By: Date: Time:	Received By: Date: Time:

Inter-Laboratory Condition Upon Receipt (Attach to COC) CC1481151

Sample Receipt at: STK CC CH VI

1. Number of ice chests/packages received: 1 Shipping tracking # OTC
2. Were samples received in a chilled condition? Temps: ROT / / / /
   Surface water SWTR bact samples: A sample that has a temperature upon receipt of >10° C, whether iced or not, should be flagged unless the time since sample collection has been less than two hours.
3. Do the number of bottles received agree with the COC? Yes No N/A
4. Were samples received intact? (i.e. no broken bottles, leaks etc.) Yes No
5. VOAs checked for Headspace? Yes No N/A
6. Were sample custody seals intact? Yes No N/A
7. If required, was sample split for pH analysis? Yes No N/A
8. Were all analyses within holding times at time of receipt? Yes No
9. Verify sample date, time sampler Yes No

Sign and date the COC, place in a ziplock and put in the same ice chest as the samples.
Sample Receipt Review completed by (initials): JK

Sample Receipt at SP:

1. Were samples received in a chilled condition? Temps: Rel / / / / /
   Acceptable is above freezing to 6° C. If many packages are received at one time check for tests/H.T.'s/rushes/
2. Shipping tracking numbers:
3. Do the number of bottles received agree with the COC? Yes No N/A
4. Were samples received intact? (i.e. no broken bottles, leaks etc.) Yes ~~No~~
5. Were sample custody seals intact? ~~Yes~~ No N/A

Sign and date the COC, obtain LIMS sample numbers, select methods/tests and print labels.

Sample Verification, Labeling and Distribution:

1. Were all requested analyses understood and acceptable? Yes No
2. Did bottle labels correspond with the client's ID's? Yes No
3. Were all bottles requiring sample preservation properly preserved? Yes No N/A FGL
4. VOAs checked for Headspace? Yes No N/A
5. Have rush or project due dates been checked and accepted? Yes No N/A

Attach labels to the containers and include a copy of the COC for lab delivery.
Sample Receipt, Login and Verification completed by (initials): 2Ll

Discrepancy Documentation:

Any items above which are "No" or do not meet specifications (i.e. temps) must be resolved.

1. Person Contacted: Jayne Kostun Phone Number: 805 603-2171
   Initiated By: Inez Quarntbias Date: 4/8/14
   Problem: 125 ml bottle labeled
   Resolution: Process of Illimination (Jayna Kostun aware
2. Person Contacted: Phone Number:
   Initiated By:
   Problem:
   Resolution:

(8-49)
Cambria CSD-DW
CC 1481151
IV-04/08/2014-12:02:28

(Please use the back of this sheet for additional comm[ents] contacts)

Appendix E
Groundwater Modeling Report

CDM Smith

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Cambria Community Services District

Cambria Emergency Water Supply Project
San Simeon Creek Basin Groundwater Modeling Report

Cambria, California

May 2014

CDM Smith

The information contained in the document titled "Cambria Emergency Water Supply Project San Simeon Creek Basin Groundwater Modeling Report" dated May 2014 has received appropriate technical review and approval. The conclusions and recommendations presented represent professional judgments and are based upon findings from the investigations and sampling identified in the report and the interpretation of such data based on our experience and background. This acknowledgement is made in lieu of all warranties, either expressed or implied. The activities outlined in this report were performed under the supervision of a California Registered Professional Engineer.

Prepared by:

Michael Smith, P.G.
Technical Director

Reviewed and Approved by:

Sava Nedic, PE, PMP, BCEE
Project Manager

Sava Nedic, PE, PMP, BCEE
Project Manager

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Mike Hoffman
Mark McCluskey
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Table of Contents

List of Figures

List of Tables

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Acronyms/Abbreviations

AF	acre-feet
CCSD	Cambria Community Services District
MGD	million gallons per day
MSL	mean sea level
NAVD 1988	North American Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
TDS	total dissolved solids
USGS	Unites States Geological Survey
VDF	Variable-Density Flow Process
WRIR	Water Resources investigation Report

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Section 1
Introduction

1.1 General Setting

This investigation is being conducted for the Cambria Community Services District (CCSD), which provides water, and collects and treats wastewater for the town of Cambria and adjacent service areas. The area of specific interest in this investigation is the lower portion of the San Simeon Creek valley, extending about 3.5 miles upstream from the Pacific Ocean. The study area and major features are shown on **Figure 1-1**.

The study area includes areas underlain by a significant alluvial aquifer along San Simeon Creek, including the Van Gordon Creek tributary. Near the headwaters, the creek valley forms a steep, narrow canyon. Along the final three to five miles before reaching the ocean, the valley widens to a floodplain that is up to approximately one thousand feet wide. The floodplain is underlain by the groundwater basin and is flanked by steep hillsides that rise 200 to 800 feet above the valley floor. A fresh water lagoon is present in the lower portion of the valley that serves as an important ecological resource. This lagoon forms behind an ocean beach berm and is supported by groundwater discharge and surface water inflows.

CCSD and agricultural water users along San Simeon Creek use wells in the alluvial aquifer. Groundwater occurs in the alluvial deposits beneath the creek, which drains the western flanks of the Santa Lucia Range in San Luis Obispo County and discharges into the Pacific Ocean. The alluvial deposits form flat valley floors, which are used for irrigated agriculture. The alluvial aquifer is recharged primarily by seepage from San Simeon Creek, which typically flows during the winter and spring rainy season.

The CCSD has a well field consisting of four potable water supply wells located approximately one mile inland from the ocean. They also utilize a series of percolation ponds between the well field and the ocean where secondary treated waste water is recharged back to the aquifer. Pumping during the dry season results in seasonal declines in groundwater levels since production is supported by removal of water from storage in the aquifer when the stream is not flowing.

Numerous private wells are present that irrigate farmlands on flat areas adjacent to the creek bottoms. Native vegetation consists of trees, grass, and shrubs that grow along the creeks and field borders. Grassy hillsides along the sides of the valleys are used for grazing. San Simeon State Park occupies the western extent of the basin and includes a large campground, which obtains its water supply from the CCSD.

1.2 Study Objectives

Extended drought conditions in the central coastal area of California have persisted over the past year, which have resulted in a limited water supply for the CCSD well field. Studies have been ongoing to identify additional water sources for the CCSD including indirect potable reuse of the percolated secondary effluent. However, the persistent drought conditions have elevated concern on availability of a reliable water supply since water levels continue to decline as aquifer storage is depleted. This groundwater modeling study has been developed to support evaluation of the basin water management alternatives to develop additional water supplies for CCSD to meet the emergency conditions. The specific objectives of this San Simeon Basin Groundwater Modeling study are provided below.

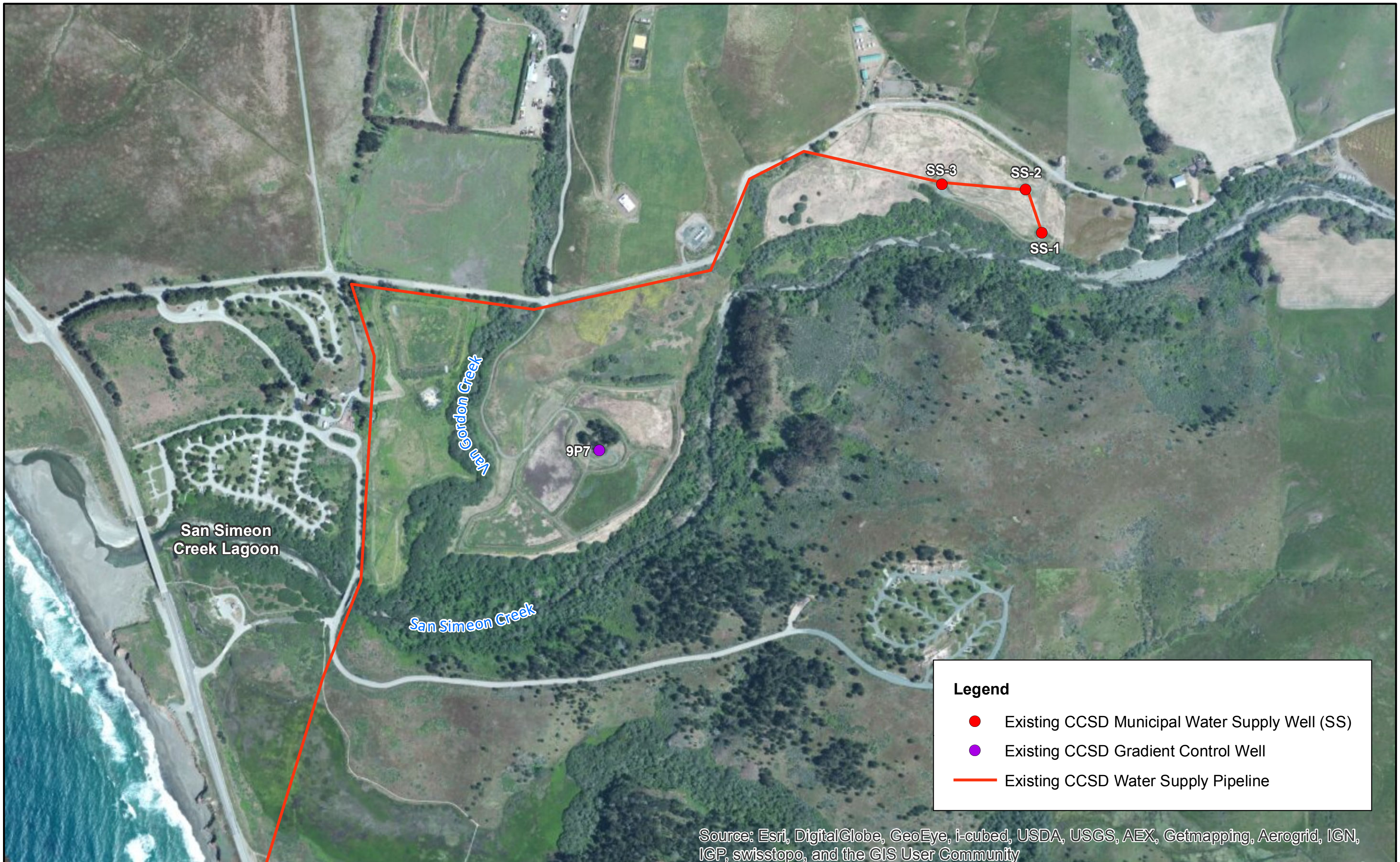
1. Develop a groundwater model that is consistent with data from the United States Geological Survey (USGS) WRIR 98-4061 model (Yates and Van Konyenburg, 1998) and the 2007 modeling analysis (Yates, 2007) to allow assessment of potential emergency water supply alternatives focusing on recovery of brackish basin water near the current percolation ponds.

2. The evaluation will consider the impacts of vertical flow and density driven flow in the evaluation of alternatives.

3. The evaluation will assess residence times prior to recovery of treated wastewater effluent as part of the alternatives evaluation.

4. The model will evaluate impacts of emergency water supply alternatives on San Simeon Creek, and the fresh water lagoon area.

The evaluation will be based on available existing data, as supplemented by stream elevation survey and select water quality data that are currently being collected.



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Cambria Emergency Water Supply Project
TO1: Geo-Hydrological Model

Figure 1-1
Location of Study Area with Significant Site Features

ramirezjj O:\51115_USACE-KansasCity\102849\Figure1-1_Location of Study Area with Significant Site Features.mxd 4/28/2014

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Section 2
Conceptual Model

The basin conceptual model documents the current understanding of the aquifer system at the site and includes the data that are available to support this interpretation. This site conceptual model is based on the 1998 USGS report (Yates and Van Konynenburg, 1998), supplemented by additional data that have been collected since the late 1980s. This conceptual model is used to support development of the groundwater model that will be used for assessment of emergency water supply alternatives. Subsequent sections describe the nature and extent of the aquifer system, sources of recharge and discharge, current aquifer use and a water budget.

2.1 Aquifer System Framework

The aquifer system framework describes the physical configuration of the alluvial aquifer, including its areal extent, thickness and the lithology of the aquifer materials. The alluvial aquifer in the San Simeon valley consists of sands and gravels with interbedded finer grain lithologies filling the bedrock valley of San Simeon Creek and the lower portion of Van Gordon Creek. This alluvial aquifer extends to approximately elevation -120 feet or deeper in its western extent, and likely extends to the off-shore area, since the extent of the bedrock valley was influenced by lower sea level elevations in the geologic past.

Figure 2-1 shows the location of wells and borings for which geologic information is available, with the path of the cross-section provided on **Figure 2-2**, which show information based on boring logs, with generalized interpretation of lithology between the boring locations. The alluvium west of the confluence with Van Gordon Creek contains a larger percentage of fine grain material interbedded with more permeable zones and may act as a confining to semi-confining unit for the deeper zones.

Figure 2-3 provides a geologic map produced by the US Geological Survey (Hall, et. al., 1979). This map shows the extent of alluvial deposits in the San Simeon valley and adjacent areas, along with the bedrock geology. Several faults have been mapped or inferred in the bedrock units, however, the USGS concluded that they do not impact the alluvial deposits, so they are not expected to impact the hydrogeology of the alluvial aquifer (Yates and Van Konynenburg, 1998).

The Hosgri fault zone is located sub-parallel to the coastline is this area and is about two miles off-shore. This zone was identified as seismically active (Yates and Van Konynenburg, 1998). However, due to its distance from the San Simeon valley alluvial aquifer, it is not anticipated to impact the hydrology of the basin.

Bedrock units consist of highly fractured Franciscan rocks that are hydraulically connected to the alluvial basin, however, their permeability is much lower than the alluvial aquifer and the bedrock has a limited role in the hydrology of the basin, providing a limited amount of recharge to the alluvium that is described in a later section.

Figure 2-4 shows the elevation of the bedrock surface that was interpreted from borings in the basin in the 1998 USGS report (Yates and Van Konynenburg, 1998). This bedrock surface forms the lower boundary of the alluvial groundwater system.

2.2 Groundwater Occurance and Flow

The alluvium in the San Simeon basin is saturated, with groundwater near the ground surface at its western extent. During the periods when water is present in San Simeon Creek, groundwater levels are similar to those observed in the creek. The depth to groundwater increases away from the creek, since in many areas of the valley the creek is incised below the adjacent terrace areas.

Groundwater levels decline during the dry periods of the year and in response to pumping. Water levels are mounded in the vicinity of the percolation ponds that are operated by the CCSD. A generalized water table configuration for the winter of 1989 is provided on **Figure 2-5**, showing the down valley flow direction.

The average hydraulic gradient down the valley is about 0.006 ft/ft, with increased gradients in areas where the width of the bedrock valley narrows (Yates and Van Konynenburg, 1998). Water level elevations monitored at wells range from about 52 feet (NAVD 1988) to slightly above sea level at the western extent. Vertical head differences can be observed at two locations, near the shoreline at well 8R3, and at adjacent shallow and deep piezometers at 9N2 and 9N3.

The 8R3 well has one interval screened in bedrock at depth of 130 to 140 feet, and a shallower zone screened in the deep portion of the alluvial aquifer from 92 to 102 feet. Water levels in the two intervals at 8R3 were very similar and do not suggest the presence of a significant gradient between the fractured bedrock and the alluvial aquifer.

Water levels at the 9N2/9N3 location showed a significant downward gradient present, with the shallow well showing an elevation of 18.37 feet, while the deep well had a water level elevation of 8.29 feet (NAVD 1988). The water table elevation at the shallow well is considerably higher than other wells, suggesting that this is a perched interval that is affected by the nearby percolation pond or Van Gordon Creek and not representative of the principal aquifer system. This is consistent with the inter-bedded lithology logged in the adjacent well in the upper 20 feet, where well 9N3 is screened.

A fresh water lagoon is present at the western extent of the valley that appears to be in hydraulic communication with groundwater, since it has water present through most years and has a water level similar to the adjacent well 8R3.

2.3 Hydraulic Properties

Hydraulic characteristics of interest include the hydraulic conductivity, storage coefficient, specific yield and effective porosity. Limited characterization has been conducted in past studies, primarily quantifying hydraulic conductivity using pumping tests at seven wells located along the length of the valley. **Figure 2-6** shows the location of aquifer tests and the hydraulic conductivity that was reported in the 1998 USGS report (Yates and Van Konynenburg, 1998).

Responses of water levels in wells to stream stage changes were also used to estimate hydraulic properties, however, these estimates yield a composite of storage coefficient and transmissivity, so it is difficult to estimate hydraulic conductivity due to the highly variable storage coefficient, which could range from the specific yield to a confined or semi-confined range.

The results of the stream interaction estimates did indicate that the aquifer is highly permeable. The horizontal hydraulic conductivity estimated from pumping tests ranged from 99 to 413 ft/day. The geometric mean of the hydraulic conductivity is 220 ft/day. **Figure 2-7** shows the statistical distribution of hydraulic conductivity values.

The reported storage coefficients in the USGS Study were low compared to typical estimates for an unconfined sand and gravel aquifer. This is likely due to the short term nature of the aquifer tests, use of the pumping well response for analysis and the presence of finer grain interbeds, which would lead to a confined to semi-confined response rather than physical drainage of pore space in the aquifer. Based on the lithology of the aquifer, an estimate of 0.1 to 0.2 is estimated for the specific yield and the effective porosity of the aquifer at the site, based on typical values estimated for this type of aquifer.

Estimating the effective porosity from the specific yield is a conservative approach, since the effective porosity is likely to be higher than specific yield, which is the drainable portion of the pore space. Some moisture will be retained under gravity drainage that will contribute to groundwater flow. A lower effective porosity will result in a higher groundwater velocity, which is conservative for this analysis.

2.4 Boundary Conditions

Boundary conditions describe sources of water inflow and outflow to the basin, and include recharge, subsurface inflow from surrounding bedrock areas, pumping, stream inflows, outflows and seepage, evapotranspiration from groundwater, interaction with the ocean and percolation from wastewater treatment plant effluent disposal ponds. This section describes each of these elements, while the following section presents estimates of each of the water budget components.

2.4.1 Recharge

2.4.1.1 Recharge from Precipitation

Precipitation is estimated using the data from the San Luis Obispo–Poly Station, which was selected for use in the 1998 USGS report (Yates and Van Konynenburg, 1998). Mean annual precipitation for the period 1870–2013 was 21.93 inches. Rainfall increases with distance from the shoreline in this area, estimates increasing to 40 to 50 inches in headwater areas east of the basin of interest.

Figure 2-8 shows the long term precipitation trend near the site, indicating that precipitation has been significantly lower than the long term average for the last decade. The majority of the annual rainfall occurs between November and April. Deep percolation of precipitation past the root zone will recharge the aquifer and only occurs during significant precipitation events when soil moisture is above field capacity and available moisture exceeds evapotranspiration demands.

Most recharge from precipitation occurs in irrigated areas, since the native vegetation areas only meet these conditions during periods of average or greater precipitation. Evaluations during the USGS study period for the 1998 report, using data from 1988 and 1989, indicated no significant recharge occurred in the native vegetation areas (Yates and Van Konynenburg, 1998). This report estimated that the quantity of recharge under average conditions originating from precipitation within the basin at 50 acre-feet (AF)/year, which corresponds to 0.75 inches of recharge, or 3.4 percent of the precipitation.

2.4.1.2 Recharge from Irrigation Return Flows

Irrigated agriculture is practiced within a significant portion of the basin. The 1998 USGS report estimated that 37 percent of the applied water returned to the groundwater system as deep percolation, which is reasonable for the flood irrigation practices in the late 1980s. Since that period, irrigation practices have changed and more efficient sprinkler and drip systems are now used. A return flow percentage of 15 percent of the applied water for current irrigation practices is estimated, based on professional judgment.

2.4.1.3 Lateral Boundary Inflow

An additional source of water entering the system originates as discharge from surrounding fractured bedrock. This term is difficult to determine from field measurements, but was estimated in the 1998 USGS report at 150 AF/year (Yates and Van Konynenburg, 1998). This term was estimated from the contributing tributary areas of bedrock adjacent to the study area and modified downward based on the calibration conducted by the USGS.

2.4.1.4 Stream Channel Seepage

The most significant source of recharge to the aquifer system is seepage from the San Simeon Creek channel during runoff periods. Water levels in the basin recover rapidly with the onset of stream flow in the fall and winter and decline when stream flow ceases in the spring. Stream flows during the 2009 to 2013 time period are shown on **Figure 2-9.** The quantity of recharge from the stream is a function of the period of time that the stream is flowing and the amount of pumping that is occurring in the aquifer.

2.4.1.5 Waste Water Percolation Pond Recharge

Much of the water that is produced by the CCSD is returned after receiving secondary treatment to the lower part of the basin by discharging to a series of four percolation ponds. The quantity of water discharged to the percolation ponds during the period 2009–2013 is shown on **Figure 2-10**. This water infiltrates to the alluvial aquifer except for a small percentage that is lost to evaporation. The average discharge during the 2009 to 2013 period was 0.56 million gallons per day (MGD).

2.4.2 Discharge

2.4.2.1 Municipal Pumping

The CCSD maintains a potable water supply well field in the San Simeon basin that provides a significant portion of the water to the Cambria community. Additional water for the CCSD system is obtained from the Santa Rosa basin. In addition to the water supply pumping, a gradient control well is periodically pumped as needed to maintain an adequate westerly gradient from the CCSD well field toward the percolation ponds to avoid inducing flow of treated wastewater back toward the well field. **Figure 2-11** shows the average monthly pumping rates from the CCSD well field during 2009–2013. The average production rate from the San Simeon well field over this period was 0.51 MGD.

2.4.2.2 Agricultural Pumping

The alluvial aquifer is used for irrigation within the valley. The agricultural pumping during the late 1980s was estimated in the USGS report at 450 AF/year (Yates and Van Konynenburg, 1998). During an update to this analysis in 2007, this production was estimated at 180 AF/year, based on changes in irrigation practices and interviews with water users. (Yates, 2007)

2.4.2.3 Evapotranspiration from Groundwater

Limited evapotranspiration from groundwater occurs in areas where groundwater levels are near the surface in riparian areas near the channel of San Simeon Creek. This term was estimated at 30 AF/year in the USGS report (Yates and Van Konynenburg, 1998).

2.4.2.4 Discharge to Surface Water

Water in the aquifer will discharge to the surface water system during periods when the groundwater levels are higher than adjacent stream levels. This occurs primarily in the lower extent of the basin extending from the location of the percolation ponds to the ocean. **Figure 2-12** shows the locations where water was present in the San Simeon Creek channel during February 2014, indicating that groundwater discharge was occurring in these reaches. Elevations of the water surface (NAVD 1988) are shown on the figure.

These observations were made during a period when there had been no precipitation for multiple months. In addition, there is significant subsurface outflow to the ocean that occurs from the basin. This quantity was estimated by the USGS at 320 AF/year by calibration of their model (Yates and Van Konynenburg, 1998). Mean sea level in this area is 2.82 feet referenced to the NAVD 1988 datum used in this report. Mean seawater level was interpolated between the primary NOAA tidal stations at Port San Luis and Monterey (Yates, 2014 personal communication).

2.5 Water Budget

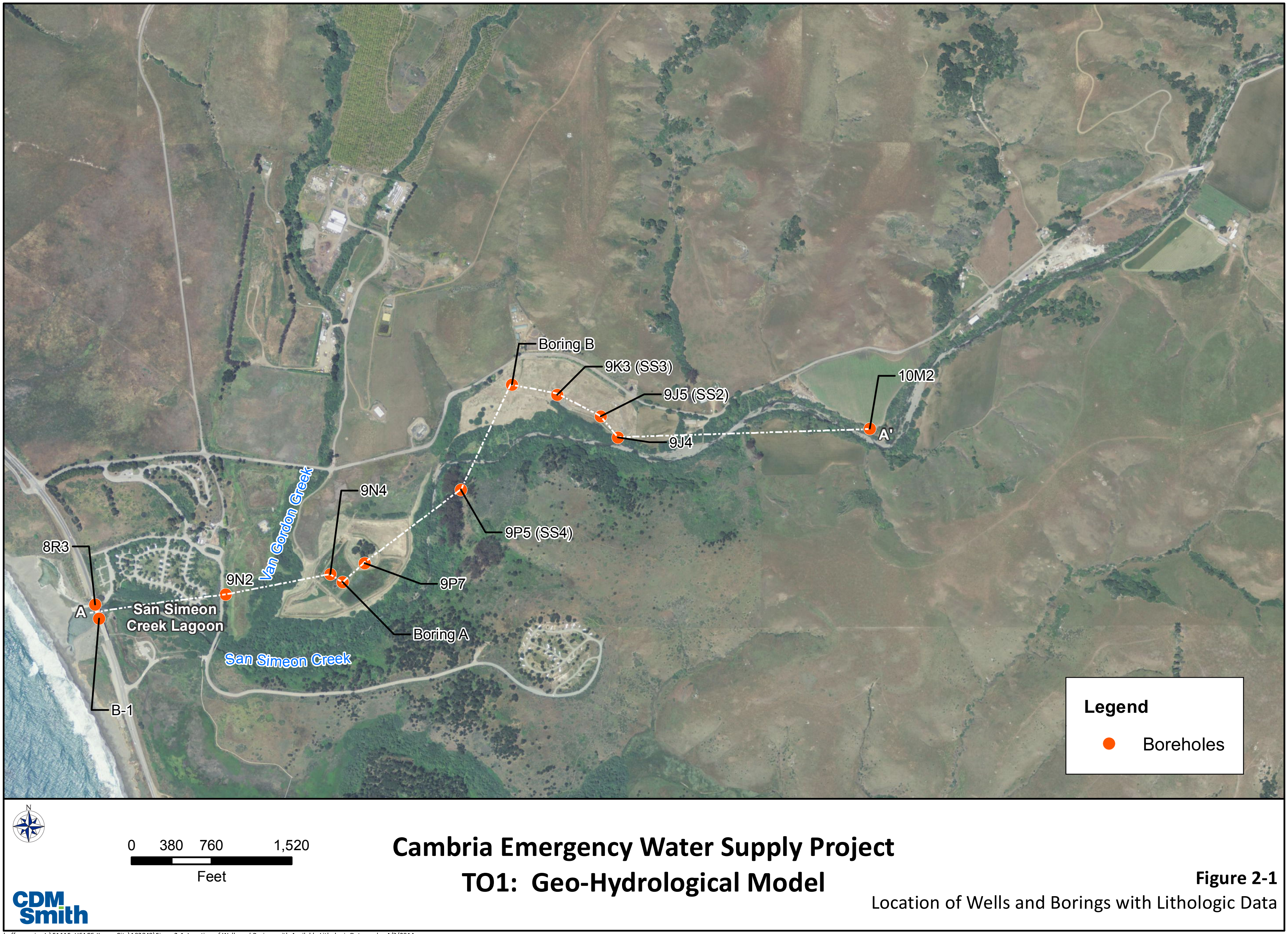
A basin water budget summarizes the components of inflow and outflow to the aquifer at the project site. The water budget from the 1998 WRIR report is summarized on **Table 2-1** and represents averages for the late 1980s period that was used in the USGS analysis.

Current practices have decreased agricultural pumping and return flows, and the CCSD now uses percolation ponds rather than the spray irrigation that was used in the late 1980s. The net inflows and outflows were balanced using estimates of the uncertain terms, primarily ocean outflow, resulting in an overall net inflow to the basin of 1760 AF/year with an equivalent outflow of the same quantity. The USGS estimates of areal recharge and lateral boundary inflow were retained for the current study, the remaining components were based on updates from the 2007 study (Yates, 2007), and flow records maintained by the CCSD. Components that cannot be measured with available field data, such as the ocean outflow and stream gains and losses were calculated in the model.

Table 2-1 Alluvial Aquifer Annual Water Budget Estimates from 1988 USGS Study

Budget Item	Inflow (AF)	Outflow (AF)	Net flow (AF)
Rainfall recharge	50		50
Stream Seepage	950	-410	540
Subsurface Inflow and Outflow			
Lateral Boundary Inflow	150		150
Ocean Boundary Outflow		-320	-320
Agricultural Water Use			
Pumping		-450	-450
Irrigation Return Flow	170		170
Nonagricultural Water Use			
CCSD Pumping		-550	-550
Rural Pumping		<-10	<-10
CCSD Percolation	440		440
Septic Tanks	<10		<10
Evapotranspiration		-30	-30
Change in Storage			0
Totals:	**1760**	**-1760**	**0**

Note: From Yates(1998)



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TO1: Geo-Hydrological Model

Figure 2-1

Location of Wells and Borings with Lithologic Data

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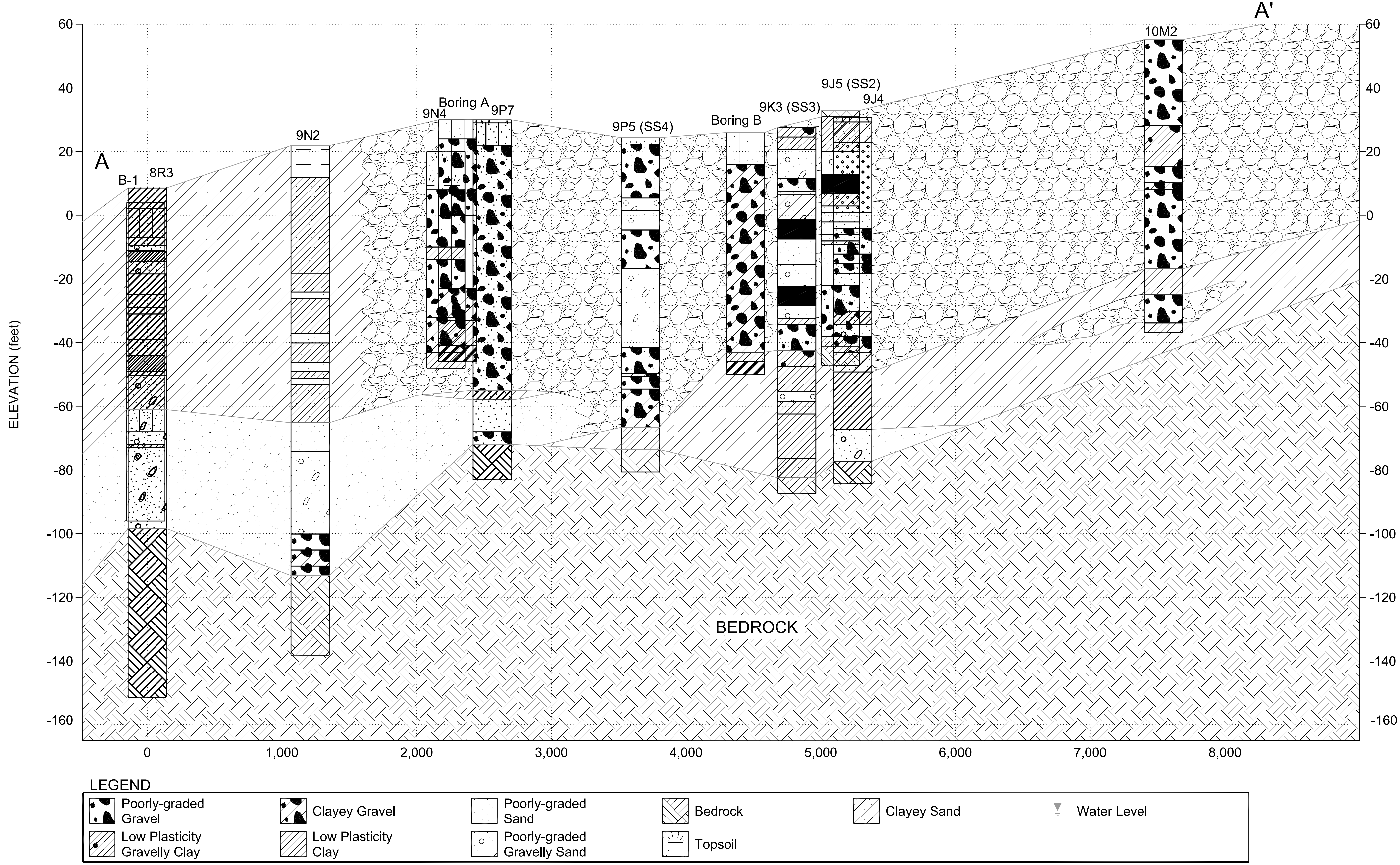

Note: Geologic interpretation based on boring logs developed by the USGS and from Drillers logs.

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Figure 2-2
Geologic Cross-Section of San Simeon Valley Alluvium

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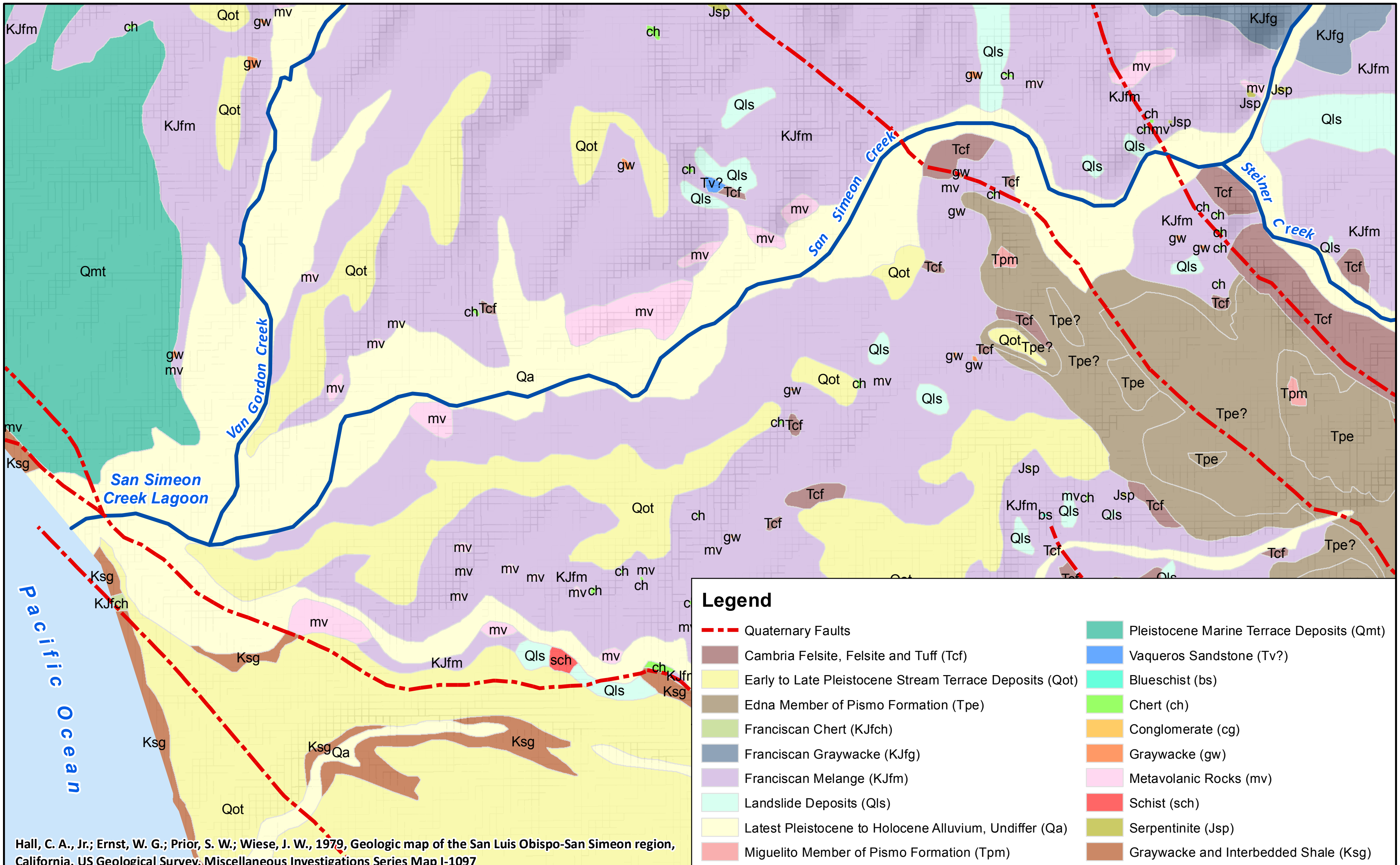

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Figure 2-3
Geologic Map of the San Simeon Creek Area

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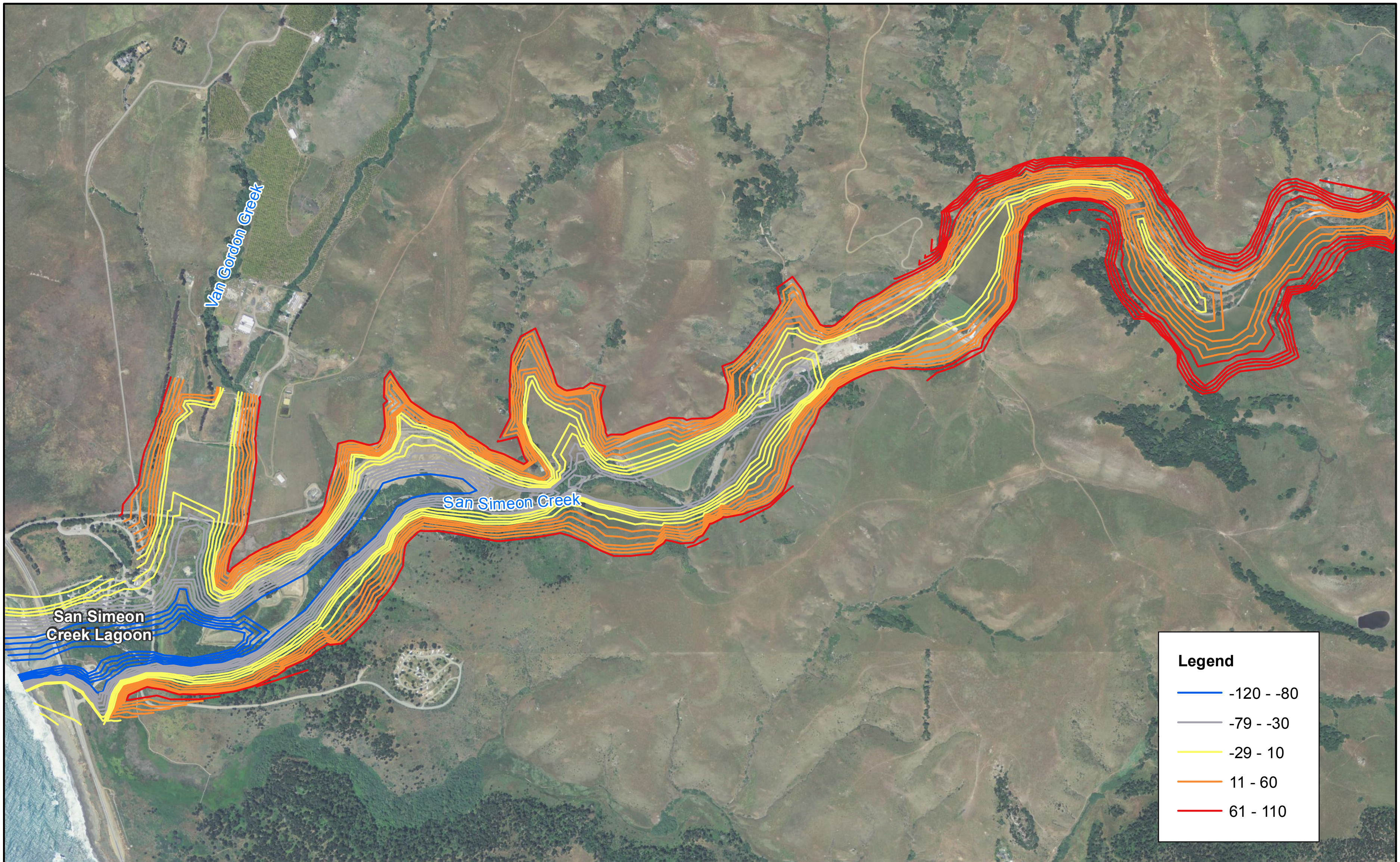

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Figure 2-4
Interpreted Bedrock Surface Elevation
below the San Simeon Basin Alluvial Aquifer

ramirezjj C:\Users\ramirezjj\Desktop\Figure 2-4_Interpreted Bedrock Surface Elevation.mxd 3/21/2014

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