Environmental Services Laboratory

Date: *31-Mar-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	103
Lab Order:	0303173	**Tag Number:**	
Project:	2708-30/NW NATURAL/GASCO	**Collection Date:**	3/18/03
Lab ID:	0303173-02B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic, Diss	ND	0.011		mg/L	1	3/24/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *31-Mar-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	104
Lab Order:	0303173	**Tag Number:**	
Project:	2708-30/NW NATURAL/GASCO	**Collection Date:**	3/18/03
Lab ID:	0303173-03A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	3/24/03
Ethylbenzene	ND	0.50		µg/L	1	3/24/03
Toluene	ND	0.50		µg/L	1	3/24/03
Xylenes, Total	ND	1.5		µg/L	1	3/24/03
Surr: Trifluorotoluene	101	70-130		%REC	1	3/24/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	ND	0.010		mg/L	1	3/20/03
Chromium	ND	0.015		mg/L	1	3/20/03
Copper	ND	0.0030		mg/L	1	3/20/03
Lead	ND	0.0060		mg/L	1	3/20/03
Nickel	ND	0.0050		mg/L	1	3/20/03
Zinc	ND	0.020		mg/L	1	3/20/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	ND	0.10		µg/L	1	3/21/03
Acenaphthylene	ND	0.10		µg/L	1	3/21/03
Anthracene	ND	0.10		µg/L	1	3/21/03
Benz(a)anthracene	ND	0.10		µg/L	1	3/21/03
Benzo(a)pyrene	ND	0.10		µg/L	1	3/21/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	3/21/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	3/21/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/21/03
Chrysene	ND	0.10		µg/L	1	3/21/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/21/03
Fluoranthene	ND	0.10		µg/L	1	3/21/03
Fluorene	ND	0.10		µg/L	1	3/21/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	3/21/03
Naphthalene	ND	0.10		µg/L	1	3/21/03
Phenanthrene	ND	0.10		µg/L	1	3/21/03
Pyrene	ND	0.10		µg/L	1	3/21/03
Surr: 2-Fluorobiphenyl	58.0	43-116		%REC	1	3/21/03
Surr: 4-Terphenyl-d14	66.0	33-141		%REC	1	3/21/03
Surr: Nitrobenzene-d5	64.0	35-114		%REC	1	3/21/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	1.3	0.16		mg/L	2	3/28/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	3/28/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *31-Mar-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	105
Lab Order:	0303173	**Tag Number:**	
Project:	2708-30/NW NATURAL/GASCO	**Collection Date:**	3/18/03
Lab ID:	0303173-04A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	3/24/03
Ethylbenzene	ND	0.50		µg/L	1	3/24/03
Toluene	ND	0.50		µg/L	1	3/24/03
Xylenes, Total	ND	1.5		µg/L	1	3/24/03
Surr: Trifluorotoluene	98.6	70-130		%REC	1	3/24/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	ND	0.010		mg/L	1	3/20/03
Chromium	ND	0.015		mg/L	1	3/20/03
Copper	ND	0.0030		mg/L	1	3/20/03
Lead	ND	0.0060		mg/L	1	3/20/03
Nickel	ND	0.0050		mg/L	1	3/20/03
Zinc	ND	0.020		mg/L	1	3/20/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	ND	0.10		µg/L	1	3/21/03
Acenaphthylene	ND	0.10		µg/L	1	3/21/03
Anthracene	ND	0.10		µg/L	1	3/21/03
Benz(a)anthracene	ND	0.10		µg/L	1	3/21/03
Benzo(a)pyrene	ND	0.10		µg/L	1	3/21/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	3/21/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	3/21/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/21/03
Chrysene	ND	0.10		µg/L	1	3/21/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/21/03
Fluoranthene	ND	0.10		µg/L	1	3/21/03
Fluorene	ND	0.10		µg/L	1	3/21/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	3/21/03
Naphthalene	ND	0.10		µg/L	1	3/21/03
Phenanthrene	ND	0.10		µg/L	1	3/21/03
Pyrene	ND	0.10		µg/L	1	3/21/03
Surr: 2-Fluorobiphenyl	66.0	43-116		%REC	1	3/21/03
Surr: 4-Terphenyl-d14	74.0	33-141		%REC	1	3/21/03
Surr: Nitrobenzene-d5	76.0	35-114		%REC	1	3/21/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	ND	0.040		mg/L	1	3/28/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	3/28/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Koppers023080

Environmental Services Laboratory

Date: *31-Mar-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	106
Lab Order:	0303173	**Tag Number:**	
Project:	2708-30/NW NATURAL/GASCO	**Collection Date:**	3/18/03
Lab ID:	0303173-05A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	3/24/03
Ethylbenzene	ND	0.50		µg/L	1	3/24/03
Toluene	ND	0.50		µg/L	1	3/24/03
Xylenes, Total	ND	1.5		µg/L	1	3/24/03
Surr: Trifluorotoluene	101	70-130		%REC	1	3/24/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	ND	0.10		µg/L	1	3/21/03
Acenaphthylene	ND	0.10		µg/L	1	3/21/03
Anthracene	ND	0.10		µg/L	1	3/21/03
Benz(a)anthracene	ND	0.10		µg/L	1	3/21/03
Benzo(a)pyrene	ND	0.10		µg/L	1	3/21/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	3/21/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	3/21/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/21/03
Chrysene	ND	0.10		µg/L	1	3/21/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/21/03
Fluoranthene	ND	0.10		µg/L	1	3/21/03
Fluorene	ND	0.10		µg/L	1	3/21/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	3/21/03
Naphthalene	ND	0.10		µg/L	1	3/21/03
Phenanthrene	ND	0.10		µg/L	1	3/21/03
Pyrene	ND	0.10		µg/L	1	3/21/03
Surr: 2-Fluorobiphenyl	65.0	43-116		%REC	1	3/21/03
Surr: 4-Terphenyl-d14	72.0	33-141		%REC	1	3/21/03
Surr: Nitrobenzene-d5	70.0	35-114		%REC	1	3/21/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *31-Mar-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	107
Lab Order:	0303173	**Tag Number:**	
Project:	2708-30/NW NATURAL/GASCO	**Collection Date:**	3/18/03
Lab ID:	0303173-06A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	3/24/03
Ethylbenzene	ND	0.50		µg/L	1	3/24/03
Toluene	ND	0.50		µg/L	1	3/24/03
Xylenes, Total	ND	1.5		µg/L	1	3/24/03
Surr: Trifluorotoluene	100	70-130		%REC	1	3/24/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	ND	0.010		mg/L	1	3/20/03
Chromium	ND	0.015		mg/L	1	3/20/03
Copper	ND	0.0030		mg/L	1	3/20/03
Lead	ND	0.0060		mg/L	1	3/20/03
Nickel	ND	0.0050		mg/L	1	3/20/03
Zinc	ND	0.020		mg/L	1	3/20/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	ND	0.10		µg/L	1	3/21/03
Acenaphthylene	ND	0.10		µg/L	1	3/21/03
Anthracene	ND	0.10		µg/L	1	3/21/03
Benz(a)anthracene	ND	0.10		µg/L	1	3/21/03
Benzo(a)pyrene	ND	0.10		µg/L	1	3/21/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	3/21/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	3/21/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/21/03
Chrysene	ND	0.10		µg/L	1	3/21/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/21/03
Fluoranthene	ND	0.10		µg/L	1	3/21/03
Fluorene	ND	0.10		µg/L	1	3/21/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	3/21/03
Naphthalene	ND	0.10		µg/L	1	3/21/03
Phenanthrene	ND	0.10		µg/L	1	3/21/03
Pyrene	0.10	0.10		µg/L	1	3/21/03
Surr: 2-Fluorobiphenyl	50.0	43-116		%REC	1	3/21/03
Surr: 4-Terphenyl-d14	55.0	33-141		%REC	1	3/21/03
Surr: Nitrobenzene-d5	53.0	35-114		%REC	1	3/21/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	ND	0.040		mg/L	1	3/28/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.080		mg/L	2	3/28/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Koppers023082

Environmental Services Laboratory

Date: *31-Mar-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	108
Lab Order:	0303173	**Tag Number:**	
Project:	2708-30/NW NATURAL/GASCO	**Collection Date:**	3/18/03
Lab ID:	0303173-07A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	3/24/03
Ethylbenzene	ND	0.50		µg/L	1	3/24/03
Toluene	ND	0.50		µg/L	1	3/24/03
Xylenes, Total	ND	1.5		µg/L	1	3/24/03
Surr: Trifluorotoluene	103	70-130		%REC	1	3/24/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	0.011	0.010		mg/L	1	3/20/03
Chromium	ND	0.015		mg/L	1	3/20/03
Copper	ND	0.0030		mg/L	1	3/20/03
Lead	ND	0.0060		mg/L	1	3/20/03
Nickel	ND	0.0050		mg/L	1	3/20/03
Zinc	ND	0.020		mg/L	1	3/20/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	ND	0.10		µg/L	1	3/21/03
Acenaphthylene	ND	0.10		µg/L	1	3/21/03
Anthracene	ND	0.10		µg/L	1	3/21/03
Benz(a)anthracene	ND	0.10		µg/L	1	3/21/03
Benzo(a)pyrene	ND	0.10		µg/L	1	3/21/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	3/21/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	3/21/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/21/03
Chrysene	ND	0.10		µg/L	1	3/21/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/21/03
Fluoranthene	ND	0.10		µg/L	1	3/21/03
Fluorene	ND	0.10		µg/L	1	3/21/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	3/21/03
Naphthalene	ND	0.10		µg/L	1	3/21/03
Phenanthrene	ND	0.10		µg/L	1	3/21/03
Pyrene	ND	0.10		µg/L	1	3/21/03
Surr: 2-Fluorobiphenyl	54.0	43-116		%REC	1	3/21/03
Surr: 4-Terphenyl-d14	66.0	33-141		%REC	1	3/21/03
Surr: Nitrobenzene-d5	69.0	35-114		%REC	1	3/21/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	ND	0.040		mg/L	1	3/28/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	3/28/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Koppers023083

Environmental Services Laboratory

Date: *31-Mar-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	108
Lab Order:	0303173	**Tag Number:**	
Project:	2708-30/NW NATURAL/GASCO	**Collection Date:**	3/18/03
Lab ID:	0303173-07B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: mal
Arsenic, Diss	0.018	0.011		mg/L	1	3/24/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *31-Mar-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	109
Lab Order:	0303173	**Tag Number:**	
Project:	2708-30/NW NATURAL/GASCO	**Collection Date:**	3/18/03
Lab ID:	0303173-08A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	120	2.5	A	µg/L	5	3/24/03
Ethylbenzene	ND	2.5	A	µg/L	5	3/24/03
Toluene	ND	2.5	A	µg/L	5	3/24/03
Xylenes, Total	ND	7.5	A	µg/L	5	3/24/03
Surr: Trifluorotoluene	96.6	70-130		%REC	5	3/24/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	0.017	0.010		mg/L	1	3/20/03
Chromium	ND	0.015		mg/L	1	3/20/03
Copper	ND	0.0030		mg/L	1	3/20/03
Lead	ND	0.0060		mg/L	1	3/20/03
Nickel	ND	0.0050		mg/L	1	3/20/03
Zinc	ND	0.020		mg/L	1	3/20/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	0.63	0.10		µg/L	1	3/21/03
Acenaphthylene	ND	0.10		µg/L	1	3/21/03
Anthracene	ND	0.10		µg/L	1	3/21/03
Benz(a)anthracene	ND	0.10		µg/L	1	3/21/03
Benzo(a)pyrene	ND	0.10		µg/L	1	3/21/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	3/21/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	3/21/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/21/03
Chrysene	ND	0.10		µg/L	1	3/21/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/21/03
Fluoranthene	ND	0.10		µg/L	1	3/21/03
Fluorene	15	0.10		µg/L	1	3/21/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	3/21/03
Naphthalene	ND	0.10		µg/L	1	3/21/03
Phenanthrene	ND	0.10		µg/L	1	3/21/03
Pyrene	ND	0.10		µg/L	1	3/21/03
Surr: 2-Fluorobiphenyl	59.0	43-116		%REC	1	3/21/03
Surr: 4-Terphenyl-d14	63.0	33-141		%REC	1	3/21/03
Surr: Nitrobenzene-d5	81.0	35-114		%REC	1	3/21/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	0.51	0.040		mg/L	1	3/28/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	3/28/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Koppers023085

Environmental Services Laboratory

Date: *31-Mar-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	109
Lab Order:	0303173	**Tag Number:**	
Project:	2708-30/NW NATURAL/GASCO	**Collection Date:**	3/18/03
Lab ID:	0303173-08B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic, Diss	0.018	0.011		mg/L	1	3/24/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Koppers023086

Environmental Services Laboratory

Date: *31-Mar-03*

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328A**
Client ID: **ZZZZZ** Batch ID: **R13420** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161324**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	ND	0.040									

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328C**
Client ID: **ZZZZZ** Batch ID: **R13423** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161349**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	ND	0.040									

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328A**
Client ID: **ZZZZZ** Batch ID: **R13420** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161325**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.183	0.040	0.2	0	91.5	79.8	111	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328C**
Client ID: **ZZZZZ** Batch ID: **R13423** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161350**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.184	0.040	0.2	0	92	79.8	111	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/20/03** Run ID: **HIT MAN_030328A**
Client ID: **ZZZZZ** Batch ID: **R13420** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161326**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.182	0.040	0.2	0	91	79.8	111	0.182	0	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023087

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN A

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/20/03** Run ID: **HIT MAN_030328C**
Client ID: **ZZZZZ** Batch ID: **R13423** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161351**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.182	0.040	0.2	0	91	79.8	111	0.184	1.09	20	

Sample ID: **0303173-02A MS** SampType: **MS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328A**
Client ID: **103** Batch ID: **R13420** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161330**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.203	0.040	0.2	0.042	80.5	64.4	125	0	0		

Sample ID: **0303187-04A MS** SampType: **MS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328C**
Client ID: **ZZZZZ** Batch ID: **R13423** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161358**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.215	0.040	0.2	0	108	64.4	125	0	0		

Sample ID: **0303172-02A DUP** SampType: **DUP** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328A**
Client ID: **ZZZZZ** Batch ID: **R13420** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161328**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.117	0.040	0	0	0	0	0	0.134	13.5	20	

Sample ID: **0303173-07A DUP** SampType: **DUP** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328C**
Client ID: **108** Batch ID: **R13423** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161353**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	ND	0.040	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023088

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328B**
Client ID: **ZZZZZ** Batch ID: **R13421** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161334**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040									

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328D**
Client ID: **ZZZZZ** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161359**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040									

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328B**
Client ID: **ZZZZZ** Batch ID: **R13421** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161335**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.183	0.040	0.2	0	91.5	81	113	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328D**
Client ID: **ZZZZZ** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161360**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.184	0.040	0.2	0	92	81	113	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/20/03** Run ID: **HIT MAN_030328B**
Client ID: **ZZZZZ** Batch ID: **R13421** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161336**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.182	0.040	0.2	0	91	81	113	0.183	0.548	20	

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/20/03** Run ID: **HIT MAN_030328D**
Client ID: **ZZZZZ** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161361**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

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CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/20/03** Run ID: **HIT MAN_030328D**
Client ID: **ZZZZZ** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161361**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.182	0.040	0.2	0	91	81	113	0.184	1.09	20	

Sample ID: **0303173-02A MS** SampType: **MS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328B**
Client ID: **103** Batch ID: **R13421** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161340**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.203	0.040	0.2	0	102	75	120	0	0		

Sample ID: **0303187-04A MS** SampType: **MS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328D**
Client ID: **ZZZZZ** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161368**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.215	0.040	0.2	0	108	75	120	0	0		

Sample ID: **0303172-02A DUP** SampType: **DUP** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328B**
Client ID: **ZZZZZ** Batch ID: **R13421** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161338**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040	0	0	0	0	0	0	0	0	

Sample ID: **0303173-07A DUP** SampType: **DUP** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328D**
Client ID: **108** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161363**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040	0	0	0	0	0	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023090

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **MB-5534** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/20/03** Run ID: **ICP_030320A**
Client ID: **ZZZZZ** Batch ID: **5534** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/20/03** SeqNo: **160434**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.010									
Arsenic	ND	0.010									
Barium	ND	0.0010									
Beryllium	ND	0.0010									
Cadmium	ND	0.0010									
Chromium	ND	0.015									
Copper	ND	0.0030									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Selenium	ND	0.015									
Silver	ND	0.0030									
Zinc	ND	0.020									

Sample ID: **MB-5545** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160765**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.010									
Chromium	ND	0.0010									
Copper	ND	0.0030									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Zinc	ND	0.020									

Sample ID: **LCS-5534** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/20/03** Run ID: **ICP_030320A**
Client ID: **ZZZZZ** Batch ID: **5534** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/20/03** SeqNo: **160435**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.486	0.010	0.5	0	97.2	80	120	0	0		
Arsenic	0.486	0.010	0.5	0	97.2	80	120	0	0		
Barium	0.496	0.0010	0.5	0	99.2	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023091

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **LCS-5534** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/20/03** Run ID: **ICP_030320A**
Client ID: **ZZZZZ** Batch ID: **5534** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/20/03** SeqNo: **160435**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	0.5	0.0010	0.5	0	100	80	120	0	0		
Cadmium	0.471	0.0010	0.5	0	94.2	80	120	0	0		
Chromium	0.498	0.015	0.5	0	99.6	80	120	0	0		
Copper	0.497	0.0030	0.5	0	99.4	80	120	0	0		
Lead	0.497	0.0060	0.5	0	99.4	80	120	0	0		
Nickel	0.499	0.0050	0.5	0	99.8	80	120	0	0		
Selenium	0.495	0.015	0.5	0	99	80	120	0	0		
Silver	0.504	0.0030	0.5	0	101	80	120	0	0		
Zinc	0.513	0.020	0.5	0	103	80	120	0	0		

Sample ID: **LCS-5545** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160766**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.489	0.010	0.5	0	97.8	80	120	0	0		
Chromium	0.48	0.0010	0.5	0	96	80	120	0	0		
Copper	0.487	0.0030	0.5	0	97.4	80	120	0	0		
Lead	0.492	0.0060	0.5	0	98.4	80	120	0	0		
Nickel	0.489	0.0050	0.5	0	97.8	80	120	0	0		
Zinc	0.506	0.020	0.5	0	101	80	120	0	0		

Sample ID: **0303168-02A MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/20/03** Run ID: **ICP_030320A**
Client ID: **ZZZZZ** Batch ID: **5534** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/20/03** SeqNo: **160437**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.625	0.010	0.5	0.0926	106	75	125	0	0		
Arsenic, TCLP	0.572	0.20	0.5	0	114	75	125	0	0		
Barium, TCLP	0.651	0.020	0.5	0.171	96	75	125	0	0		
Beryllium	0.498	0.0010	0.5	0	99.6	75	125	0	0		
Cadmium, TCLP	0.486	0.020	0.5	0	97.2	75	125	0	0		
Chromium, TCLP	0.491	0.020	0.5	0	98.2	75	125	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023092

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0303168-02A MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/20/03** Run ID: **ICP_030320A**
Client ID: **ZZZZZ** Batch ID: **5534** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/20/03** SeqNo: **160437**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper, TCLP	0.556	0.060	0.5	0	111	75	125	0	0		
Lead, TCLP	0.52	0.12	0.5	0	104	75	125	0	0		
Nickel, TCLP	0.972	0.10	0.5	0.468	101	75	125	0	0		
Selenium, TCLP	0.577	0.30	0.5	0	115	75	125	0	0		
Silver, TCLP	0.559	0.060	0.5	0	112	75	125	0	0		
Zinc, TCLP	0.781	0.40	0.5	0	156	75	125	0	0		S,MI

Sample ID: **0303203-05B MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160768**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.59	0.011	0.575	0.019	99.3	75	125	0	0		
Chromium, Diss	0.534	0.0011	0.575	0	93	75	125	0	0		
Copper, Diss	0.585	0.0034	0.575	0	102	75	125	0	0		
Lead, Diss	0.537	0.0069	0.575	0	93.4	75	125	0	0		
Nickel, Diss	0.539	0.0057	0.575	0	93.8	75	125	0	0		
Zinc, Diss	0.569	0.023	0.575	0	99	75	125	0	0		

Sample ID: **0303168-02A MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/20/03** Run ID: **ICP_030320A**
Client ID: **ZZZZZ** Batch ID: **5534** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/20/03** SeqNo: **160438**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.631	0.010	0.5	0.0926	108	75	125	0.625	0.955	20	
Arsenic, TCLP	0.57	0.20	0.5	0	114	75	125	0.572	0.350	20	
Barium, TCLP	0.653	0.020	0.5	0.171	96.4	75	125	0.651	0.307	20	
Beryllium	0.5	0.0010	0.5	0	100	75	125	0.498	0.401	20	
Cadmium, TCLP	0.488	0.020	0.5	0	97.6	75	125	0.486	0.411	20	
Chromium, TCLP	0.489	0.020	0.5	0	97.8	75	125	0.491	0.408	20	
Copper, TCLP	0.558	0.060	0.5	0	112	75	125	0.556	0.359	20	
Lead, TCLP	0.524	0.12	0.5	0	105	75	125	0.52	0.766	20	
Nickel, TCLP	0.979	0.10	0.5	0.468	102	75	125	0.972	0.718	20	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023093

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0303168-02A MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/20/03** Run ID: **ICP_030320A**
Client ID: **ZZZZZ** Batch ID: **5534** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/20/03** SeqNo: **160438**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium, TCLP	0.575	0.30	0.5	0	115	75	125	0.577	0.347	20	
Silver, TCLP	0.561	0.060	0.5	0	112	75	125	0.559	0.357	20	
Zinc, TCLP	0.784	0.40	0.5	0	157	75	125	0.781	0.383	20	S,MI

Sample ID: **0303203-05B MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160769**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.59	0.011	0.575	0.019	99.3	75	125	0.59	0	20	
Chromium, Diss	0.539	0.0011	0.575	0	93.8	75	125	0.534	0.857	20	
Copper, Diss	0.584	0.0034	0.575	0	102	75	125	0.585	0.197	20	
Lead, Diss	0.543	0.0069	0.575	0	94.4	75	125	0.537	1.06	20	
Nickel, Diss	0.543	0.0057	0.575	0	94.4	75	125	0.539	0.638	20	
Zinc, Diss	0.568	0.023	0.575	0	98.8	75	125	0.569	0.202	20	

Sample ID: **0303172-02A DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/20/03** Run ID: **ICP_030320A**
Client ID: **ZZZZZ** Batch ID: **5534** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/20/03** SeqNo: **160440**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.010	0	0	0	0	0	0	0	20	
Arsenic	0.0131	0.010	0	0	0	0	0	0	200	20	R,T
Barium	0.0713	0.0010	0	0	0	0	0	0.0727	1.94	20	
Beryllium	ND	0.0010	0	0	0	0	0	0	0	20	
Cadmium	0.0015	0.0010	0	0	0	0	0	0.0013	14.3	20	
Chromium	ND	0.015	0	0	0	0	0	0	0	20	
Copper	ND	0.0030	0	0	0	0	0	0	0	20	
Lead	ND	0.0060	0	0	0	0	0	0	0	20	
Nickel	ND	0.0050	0	0	0	0	0	0	0	20	
Selenium	ND	0.015	0	0	0	0	0	0	0	20	
Silver	ND	0.0030	0	0	0	0	0	0	0	20	
Zinc	ND	0.020	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023094

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0303187-02B DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	ND	0.011	0	0	0	0	0	0	0	20	
Chromium, Diss	ND	0.0011	0	0	0	0	0	0	0	20	
Copper, Diss	ND	0.0033	0	0	0	0	0	0.121	0	20	
Lead, Diss	ND	0.0067	0	0	0	0	0	0	0	20	
Nickel, Diss	ND	0.0056	0	0	0	0	0	0	0	20	
Zinc, Diss	ND	0.022	0	0	0	0	0	0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **12/18/02** Run ID: **ICP_030320A**
Client ID: **ZZZZZ** Batch ID: **5230** TestNo: **EPA 6010B** Analysis Date: **3/20/03** SeqNo: **160449**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.493	0.010	0.5	0	98.6	90	110	0	0		
Arsenic	0.496	0.010	0.5	0	99.2	90	110	0	0		
Barium	0.496	0.0010	0.5	0	99.2	90	110	0	0		
Beryllium	0.508	0.0010	0.5	0	102	90	110	0	0		
Cadmium	0.504	0.0010	0.5	0	101	90	110	0	0		
Chromium	0.496	0.015	0.5	0	99.2	90	110	0	0		
Copper	0.493	0.0030	0.5	0	98.6	90	110	0	0		
Lead	0.502	0.0060	0.5	0	100	90	110	0	0		
Nickel	0.506	0.0050	0.5	0	101	90	110	0	0		
Selenium	0.508	0.015	0.5	0	102	90	110	0	0		
Silver	0.506	0.0030	0.5	0	101	90	110	0	0		
Zinc	0.509	0.020	0.5	0	102	90	110	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **12/18/02** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5230** TestNo: **EPA 6010B** Analysis Date: **3/24/03** SeqNo: **160781**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.502	0.010	0.5	0	100	90	110	0	0		
Chromium	0.492	0.0010	0.5	0	98.4	90	110	0	0		
Copper	0.493	0.0030	0.5	0	98.6	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023095

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **12/18/02** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5230** TestNo: **EPA 6010B** Analysis Date: **3/24/03** SeqNo: **160781**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.5	0.0060	0.5	0	100	90	110	0	0		
Nickel	0.505	0.0050	0.5	0	101	90	110	0	0		
Zinc	0.509	0.020	0.5	0	102	90	110	0	0		

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/20/03** Run ID: **ICP_030320A**
Client ID: **ZZZZZ** Batch ID: **5534** TestNo: **EPA 6010B** Analysis Date: **3/20/03** SeqNo: **160433**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.495	0.010	0.5	0	99	90	110	0	0		
Arsenic	0.501	0.010	0.5	0	100	90	110	0	0		
Barium	0.5	0.0010	0.5	0	100	90	110	0	0		
Beryllium	0.503	0.0010	0.5	0	101	90	110	0	0		
Cadmium	0.5	0.0010	0.5	0	100	90	110	0	0		
Chromium	0.509	0.015	0.5	0	102	90	110	0	0		
Copper	0.502	0.0030	0.5	0	100	90	110	0	0		
Lead	0.502	0.0060	0.5	0	100	90	110	0	0		
Nickel	0.505	0.0050	0.5	0	101	90	110	0	0		
Selenium	0.495	0.015	0.5	0	99	90	110	0	0		
Silver	0.505	0.0030	0.5	0	101	90	110	0	0		
Zinc	0.51	0.020	0.5	0	102	90	110	0	0		

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B** Analysis Date: **3/24/03** SeqNo: **160764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.514	0.010	0.5	0	103	90	110	0	0		
Chromium	0.495	0.0010	0.5	0	99	90	110	0	0		
Copper	0.497	0.0030	0.5	0	99.4	90	110	0	0		
Lead	0.506	0.0060	0.5	0	101	90	110	0	0		
Nickel	0.502	0.0050	0.5	0	100	90	110	0	0		
Zinc	0.509	0.020	0.5	0	102	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023096

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030324A**
Client ID: **ZZZZZ** Batch ID: **R13378** TestNo: **8015/8021** Analysis Date: **3/24/03** SeqNo: **160806**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161016**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	103	0	100	0	103	70	130	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030324A**
Client ID: **ZZZZZ** Batch ID: **R13378** TestNo: **8015/8021** Analysis Date: **3/24/03** SeqNo: **160807**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.4	0.50	40	0	106	85	115	0	0		
Ethylbenzene	41.6	0.50	40	0	104	85	115	0	0		
Toluene	41.8	0.50	40	0	104	85	115	0	0		
Xylenes, Total	128	1.5	120	0	107	85	115	0	0		
Gasoline	1940	100	2000	0	97	80	120	0	0		
Surr: Trifluorotoluene	99.8	0	100	0	99.8	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023097

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **LCS** SampType: **LCS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161017**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.6	0.50	30	0	105	85	115	0	0		
Ethylbenzene	31.1	0.50	30	0	104	85	115	0	0		
Toluene	31.7	0.50	30	0	106	85	115	0	0		
Xylenes, Total	96.8	1.5	90	0	108	85	115	0	0		
Gasoline	1480	100	1500	0	98.7	80	120	0	0		
Surr: Trifluorotoluene	100	0	100	0	100	70	130	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030324A**
Client ID: **ZZZZZ** Batch ID: **R13378** TestNo: **8015/8021** Analysis Date: **3/24/03** SeqNo: **160808**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.8	0.50	40	0	104	85	115	42.4	1.43	20	
Ethylbenzene	41	0.50	40	0	103	85	115	41.6	1.45	20	
Toluene	41.2	0.50	40	0	103	85	115	41.8	1.45	20	
Xylenes, Total	126	1.5	120	0	105	85	115	128	1.57	20	
Gasoline	1960	100	2000	0	98	80	120	1940	1.03	20	
Surr: Trifluorotoluene	100	0	100	0	100	70	130	0	0	0	

Sample ID: **LCSD** SampType: **LCSD** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.4	0.50	30	0	105	85	115	31.6	0.635	20	
Ethylbenzene	30.8	0.50	30	0	103	85	115	31.1	0.969	20	
Toluene	31.4	0.50	30	0	105	85	115	31.7	0.951	20	
Xylenes, Total	95.5	1.5	90	0	106	85	115	96.8	1.35	20	
Gasoline	1460	100	1500	0	97.3	80	120	1480	1.36	20	
Surr: Trifluorotoluene	99.7	0	100	0	99.7	70	130	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023098

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **0303172-02A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030324A**
Client ID: **ZZZZZ** Batch ID: **R13378** TestNo: **8015/8021** Analysis Date: **3/24/03** SeqNo: **160813**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.2	0.50	20	0	106	85	115	0	0		
Ethylbenzene	20.8	0.50	20	0	104	85	115	0	0		
Toluene	21.1	0.50	20	0	106	85	115	0	0		
Xylenes, Total	64.9	1.5	60	0	108	85	115	0	0		
Surr: Trifluorotoluene	99.5	0	100	0	99.5	70	130	0	0		

Sample ID: **0303187-01A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161023**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.2	0.50	20	0	106	85	115	0	0		
Ethylbenzene	20.7	0.50	20	0	104	85	115	0	0		
Toluene	21.3	0.50	20	0	106	85	115	0	0		
Xylenes, Total	64.3	1.5	60	0	107	85	115	0	0		
Surr: Trifluorotoluene	99.5	0	100	0	99.5	70	130	0	0		

Sample ID: **0303172-02A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030324A**
Client ID: **ZZZZZ** Batch ID: **R13378** TestNo: **8015/8021** Analysis Date: **3/24/03** SeqNo: **160812**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	
Ethylbenzene	ND	0.50	0	0	0	0	0	0	0	20	
Toluene	ND	0.50	0	0	0	0	0	0	0	20	
Xylenes, Total	ND	1.5	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	105	0	100	0	105	50	150	0	0	20	

Sample ID: **0303187-01A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161022**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023099

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **0303187-01A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161022**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	ND	0.50	0	0	0	0	0	0	0	20	
Toluene	ND	0.50	0	0	0	0	0	0	0	20	
Xylenes, Total	ND	1.5	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	103	0	100	0	103	50	150	0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030324A**
Client ID: **ZZZZZ** Batch ID: **R13378** TestNo: **8015/8021** Analysis Date: **3/24/03** SeqNo: **160809**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.9	0.50	30	0	106	85	115	0	0		
Ethylbenzene	31.5	0.50	30	0	105	85	115	0	0		
Toluene	31.7	0.50	30	0	106	85	115	0	0		
Xylenes, Total	96.6	1.5	90	0	107	85	115	0	0		
Gasoline	1500	100	1500	0	100	80	120	0	0		
Surr: Trifluorotoluene	103	0	100	0	103	70	130	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161019**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.6	0.50	40	0	104	85	115	0	0		
Ethylbenzene	41.1	0.50	40	0	103	85	115	0	0		
Toluene	41.6	0.50	40	0	104	85	115	0	0		
Xylenes, Total	127	1.5	120	0	106	85	115	0	0		
Gasoline	2000	100	2000	0	100	80	120	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023100

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **MB-5536** SampType: **MBLK** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/20/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5536** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160627**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.10									
Acenaphthylene	ND	0.10									
Anthracene	ND	0.10									
Benz(a)anthracene	ND	0.10									
Benzo(a)pyrene	ND	0.10									
Benzo(b)fluoranthene	ND	0.10									
Benzo(g,h,I)perylene	ND	0.10									
Benzo(k)fluoranthene	ND	0.10									
Chrysene	ND	0.10									
Dibenz(a,h)anthracene	ND	0.10									
Fluoranthene	ND	0.10									
Fluorene	ND	0.10									
Indeno(1,2,3-cd)pyrene	ND	0.10									
Naphthalene	ND	0.10									
Phenanthrene	ND	0.10									
Pyrene	ND	0.10									
Surr: 2-Fluorobiphenyl	0.67	0	1	0	67	43	116	0	0		
Surr: 4-Terphenyl-d14	0.72	0	1	0	72	33	141	0	0		
Surr: Nitrobenzene-d5	0.71	0	1	0	71	35	114	0	0		

Sample ID: **LCS-5536** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/20/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5536** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160628**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.72	0.10	1	0	72	47	145	0	0		
Acenaphthylene	0.74	0.10	1	0	74	33	145	0	0		
Anthracene	0.83	0.10	1	0	83	27	133	0	0		
Benz(a)anthracene	0.82	0.10	1	0	82	33	143	0	0		
Benzo(a)pyrene	0.78	0.10	1	0	78	17	163	0	0		
Benzo(b)fluoranthene	0.76	0.10	1	0	76	24	159	0	0		
Benzo(g,h,i)perylene	0.63	0.10	1	0	63	1	219	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023101

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCS-5536** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/20/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5536** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160628**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	0.82	0.10	1	0	82	11	162	0	0		
Chrysene	0.82	0.10	1	0	82	17	168	0	0		
Dibenz(a,h)anthracene	0.65	0.10	1	0	65	1	227	0	0		
Fluoranthene	0.82	0.10	1	0	82	26	137	0	0		
Fluorene	0.74	0.10	1	0	74	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.64	0.10	1	0	64	1	171	0	0		
Naphthalene	0.77	0.10	1	0	77	21	133	0	0		
Phenanthrene	0.84	0.10	1	0	84	54	120	0	0		
Pyrene	0.84	0.10	1	0	84	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.67	0	1	0	67	43	116	0	0		
Surr: 4-Terphenyl-d14	0.71	0	1	0	71	33	141	0	0		
Surr: Nitrobenzene-d5	0.7	0	1	0	70	35	114	0	0		

Sample ID: **LCSD-5536** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/20/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5536** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160629**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.67	0.10	1	0	67	47	145	0.72	7.19	30	
Acenaphthylene	0.69	0.10	1	0	69	33	145	0.74	6.99	30	
Anthracene	0.76	0.10	1	0	76	27	133	0.83	8.81	30	
Benz(a)anthracene	0.76	0.10	1	0	76	33	143	0.82	7.59	30	
Benzo(a)pyrene	0.72	0.10	1	0	72	17	163	0.78	8.00	30	
Benzo(b)fluoranthene	0.71	0.10	1	0	71	24	159	0.76	6.80	30	
Benzo(g,h,i)perylene	0.56	0.10	1	0	56	1	219	0.63	11.8	30	
Benzo(k)fluoranthene	0.78	0.10	1	0	78	11	162	0.82	5.00	30	
Chrysene	0.77	0.10	1	0	77	17	168	0.82	6.29	30	
Dibenz(a,h)anthracene	0.57	0.10	1	0	57	1	227	0.65	13.1	30	
Fluoranthene	0.76	0.10	1	0	76	26	137	0.82	7.59	30	
Fluorene	0.73	0.10	1	0	73	59	121	0.74	1.36	30	
Indeno(1,2,3-cd)pyrene	0.56	0.10	1	0	56	1	171	0.64	13.3	30	
Naphthalene	0.67	0.10	1	0	67	21	133	0.77	13.9	30	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023102

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCSD-5536** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/20/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5536** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160629**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	0.78	0.10	1	0	78	54	120	0.84	7.41	30	
Pyrene	0.81	0.10	1	0	81	52	115	0.84	3.64	30	
Surr: 2-Fluorobiphenyl	0.61	0	1	0	61	43	116	0	0	30	
Surr: 4-Terphenyl-d14	0.68	0	1	0	68	33	141	0	0	30	
Surr: Nitrobenzene-d5	0.62	0	1	0	62	35	114	0	0	30	

Sample ID: **0303172-02A MS** SampType: **MS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/20/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5536** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160637**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.76	0.10	1	0	76	47	145	0	0		
Acenaphthylene	0.7	0.10	1	0	70	33	145	0	0		
Anthracene	0.79	0.10	1	0	79	27	133	0	0		
Benz(a)anthracene	0.77	0.10	1	0	77	33	143	0	0		
Benzo(a)pyrene	0.72	0.10	1	0	72	17	163	0	0		
Benzo(b)fluoranthene	0.7	0.10	1	0	70	24	159	0	0		
Benzo(g,h,i)perylene	0.59	0.10	1	0	59	1	219	0	0		
Benzo(k)fluoranthene	0.75	0.10	1	0	75	11	162	0	0		
Chrysene	0.76	0.10	1	0	76	17	168	0	0		
Dibenz(a,h)anthracene	0.61	0.10	1	0	61	1	227	0	0		
Fluoranthene	0.76	0.10	1	0	76	26	137	0	0		
Fluorene	0.75	0.10	1	0	75	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.59	0.10	1	0	59	1	171	0	0		
Naphthalene	0.9	0.10	1	0	90	21	133	0	0		
Phenanthrene	0.81	0.10	1	0	81	54	120	0	0		
Pyrene	0.83	0.10	1	0	83	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.6	0	1	0	60	43	116	0	0		
Surr: 4-Terphenyl-d14	0.68	0	1	0	68	33	141	0	0		
Surr: Nitrobenzene-d5	0.67	0	1	0	67	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023103

CLIENT: Hahn and Associates
Work Order: 0303173
Project: 2708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **CCV** SampType: **CCV** TestCode: **06 PAH A** Units: **µg/L** Prep Date: Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **R13363** TestNo: **8270-SIM** Analysis Date: **3/21/03** SeqNo: **160633**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.84	0.10	1	0	84	80	120	0	0		
Acenaphthylene	0.87	0.10	1	0	87	80	120	0	0		
Anthracene	0.91	0.10	1	0	91	80	120	0	0		
Benz(a)anthracene	0.91	0.10	1	0	91	80	120	0	0		
Benzo(a)pyrene	0.89	0.10	1	0	89	80	120	0	0		
Benzo(b)fluoranthene	0.89	0.10	1	0	89	80	120	0	0		
Benzo(g,h,i)perylene	0.8	0.10	1	0	80	80	120	0	0		
Benzo(k)fluoranthene	0.97	0.10	1	0	97	80	120	0	0		
Chrysene	0.94	0.10	1	0	94	80	120	0	0		
Dibenz(a,h)anthracene	0.8	0.10	1	0	80	80	120	0	0		
Fluoranthene	0.93	0.10	1	0	93	80	120	0	0		
Fluorene	0.84	0.10	1	0	84	80	120	0	0		
Indeno(1,2,3-cd)pyrene	0.8	0.10	1	0	80	80	120	0	0		
Naphthalene	0.92	0.10	1	0	92	80	120	0	0		
Phenanthrene	0.92	0.10	1	0	92	80	120	0	0		
Pyrene	0.95	0.10	1	0	95	80	120	0	0		
Surr: 2-Fluorobiphenyl	0.95	0	1	0	95	43	116	0	0		
Surr: 4-Terphenyl-d14	0.94	0	1	0	94	33	141	0	0		
Surr: Nitrobenzene-d5	0.94	0	1	0	94	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023104

ENVIRONMENTAL SERVICES LABORATORY – GLOSSARY OF FLAGS

QUALIFIER	DESCRIPTION
AA	This sample was analyzed after the holding time had expired.
AB	The hydrocarbon pattern in this sample is not typical of gasoline.
AC	The hydrocarbon pattern in this sample is not typical of diesel.
AD	The hydrocarbon pattern in this sample is not typical of oil.
AE	The hydrocarbon pattern in this sample extends into the gasoline range.
AF	The hydrocarbon pattern in this sample extends into the diesel range.
AG	The hydrocarbon pattern in this sample extends into the oil range.
A	This analysis was performed on a VOA sample containing headspace.
B	Analyte detected in the Method Blank above the reporting level.
C	The Relative Percent Difference (RPD) for the primary result and confirmation result was greater than 40%. The higher result was reported.
D	The sample was supplied in an inappropriate container according to method criteria.
E	This value is above the quantitation limit. It is considered an estimate.
H	The Matrix Spike/Matrix Spike Duplicate (MS/MSD) result was outside control limits. The Laboratory Control Standard/Duplicate (LCS/LCSD) result was in control validating the batch.
J	The result is above the Method Detection Limit (MDL) and below the Reporting level (RL). It is considered an estimate.
M	The MS/MSD recoveries are not calculable due to a high amount of analyte in sample.
MI	This indicates a high level of matrix interference affecting the spike or surrogate recovery.
N	See case narrative.
O	Detection Limits are elevated due to sample dilution. See case narrative.
Q	Further inspection of the sample confirms a non-homogenous sample matrix affecting RPD result.
R	The RPD result is outside method control limits. See other qualifiers or case narrative.
S	The spike recovery is outside method control limits. See other qualifiers or case narrative.
T	The RPD between the sample result and duplicate result was greater than 20%. The original result was less than three times the reporting level, therefore the RPD is not applicable.
X	Unable to quantitate surrogate recovery due to sample dilution.

Koppers023105

HAHN AND ASSOCIATES, INC.
Environmental Management
434 NW Sixth Avenue, Suite 203 • Portland OR 97209
(503) 796-0717 • Fax (503) 227-2209

Laboratory: ESL, Inc. Portland, OR
Lab Project No. 0303187

CHAIN OF CUSTODY

Chain of Custody No. _____

Project Manager: Rob Ede
Project No.: 2703-30
Project Name: NW Natural → Cascade
Collected by: Matt Mudge

Liquid with Sediment Sample: ____ Test Filtrate ____ Test Sediment ____ Test Both
Multi-Phase Sample: ____ Test One (which) ____ Test Separately ____ Shake

Samples Received at 4C (Y or N): _____
Appropriate Containers Used (Y or N): _____
Provide Verbal Results (Y or N): _____
Provide Preliminary Fax Results: YES

Sample Number Prefix: 2703-030319-

Lab ID	Sample #	Date	Time	Sample Description	Soil	Water	Other	Number of Containers	PAHs (EPA 8270 SIM)	BTEX (EPA 8021)	Total CN (EPA 9010)	Amenable CN (EPA 9010)	Total Metals (EPA 6010) As, Cr, Cu, Pb, Ni, Zn	FF Metals (dissolved) Arsenic, Pb, Ni	FF (diss) As only	RUSH	Remarks
01	110	3/19/03	9:20	MW7-110		X		2		X							
02	111		10:40	MW10-61-111		X		8	X	X	X	X	X	X			
03	112		12:14	MW3-56-112		X		18	X	X	X	X	X	X			
04	113		14:50	MW12-36-113		X		6	X	X	X	X					
05	114		16:33	MW5-101-114		X		8	X	X	X	X	X				
06	115		19:31	MW3-30-115		X		21	X	X	X	X	X		X		

Relinquished by	Company	Date	Time	Received by	Company
M.S. Mudge	HAHN & ASSOC	3/20/03	0950	J. Thomas	ESL
Relinquished by	Company	Date	Time	Received by	Company

Environmental Services Laboratory, Inc.

E S L

17400 SW Upper Boones Ferry Road, Suite 270 • Portland, OR 97224 • (503) 670-8520

April 02, 2003

Mr. Rob Ede
Hahn and Associates
434 NW Sixth Avenue
Suite 203
Portland, OR 97209

TEL: (503)796-0717
FAX (503) 227-2209

RE: 12708-30/NW NATURAL/GASCO

Order No.: 0303187

Dear Mr. Rob Ede:

Environmental Services Laboratory received 6 samples on 3/20/03 for the analyses presented in the following report.

There were no analytical problems encountered and all associated QC data met EPA or laboratory specifications except where noted in a Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval of the laboratory. The following checked data sections are included in this report, and numbered to indicate total pages contained within each report section.

✓ Base Sample Report ✓ Method Blank Report ✓ Sample Duplicate Report ✓ Matrix Spike/Matrix Spike Duplicate Report ✓ Laboratory Control Spike/Spike Duplicate Report ✓ Continuing Calibration Verification Report ✓ Initial Calibration Verification Report

If you have any questions regarding these tests results, please feel free to call.

Lisa Rush
Project Manager

Keith Hunter
Technical Review

ANALYTICAL SERVICES FOR THE ENVIRONMENT

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	110
Lab Order:	0303187	**Tag Number:**	
Project:	12708-30/NW NATURAL/GASCO	**Collection Date:**	3/19/03
Lab ID:	0303187-01A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	3/25/03
Ethylbenzene	ND	0.50		µg/L	1	3/25/03
Toluene	ND	0.50		µg/L	1	3/25/03
Xylenes, Total	ND	1.5		µg/L	1	3/25/03
Surr: Trifluorotoluene	101	70-130		%REC	1	3/25/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	111
Lab Order:	0303187	**Tag Number:**	
Project:	12708-30/NW NATURAL/GASCO	**Collection Date:**	3/19/03
Lab ID:	0303187-02A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	3/26/03
Ethylbenzene	ND	0.50		µg/L	1	3/26/03
Toluene	ND	0.50		µg/L	1	3/26/03
Xylenes, Total	ND	1.5		µg/L	1	3/26/03
Surr: Trifluorotoluene	101	70-130		%REC	1	3/26/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	ND	0.010		mg/L	1	3/24/03
Chromium	0.0062	0.0030		mg/L	1	3/24/03
Copper	ND	0.0030		mg/L	1	3/24/03
Lead	ND	0.0060		mg/L	1	3/24/03
Nickel	ND	0.0050		mg/L	1	3/24/03
Zinc	ND	0.020		mg/L	1	3/24/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	ND	0.10		µg/L	1	3/21/03
Acenaphthylene	ND	0.10		µg/L	1	3/21/03
Anthracene	ND	0.10		µg/L	1	3/21/03
Benz(a)anthracene	ND	0.10		µg/L	1	3/21/03
Benzo(a)pyrene	ND	0.10		µg/L	1	3/21/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	3/21/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	3/21/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/21/03
Chrysene	ND	0.10		µg/L	1	3/21/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/21/03
Fluoranthene	0.45	0.10		µg/L	1	3/21/03
Fluorene	ND	0.10		µg/L	1	3/21/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	3/21/03
Naphthalene	ND	0.10		µg/L	1	3/21/03
Phenanthrene	ND	0.10		µg/L	1	3/21/03
Pyrene	0.50	0.10		µg/L	1	3/21/03
Surr: 2-Fluorobiphenyl	59.0	43-116		%REC	1	3/21/03
Surr: 4-Terphenyl-d14	65.0	33-141		%REC	1	3/21/03
Surr: Nitrobenzene-d5	70.0	35-114		%REC	1	3/21/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	ND	0.040		mg/L	1	3/28/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	3/28/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	111
Lab Order:	0303187	**Tag Number:**	
Project:	12708-30/NW NATURAL/GASCO	**Collection Date:**	3/19/03
Lab ID:	0303187-02B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: mal
Arsenic, Diss	ND	0.011		mg/L	1	3/24/03
Lead, Diss	ND	0.0067		mg/L	1	3/24/03
Nickel, Diss	ND	0.0056		mg/L	1	3/24/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	112
Lab Order:	0303187	**Tag Number:**	
Project:	12708-30/NW NATURAL/GASCO	**Collection Date:**	3/19/03
Lab ID:	0303187-03A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	430	5.0		µg/L	10	3/26/03
Ethylbenzene	ND	5.0		µg/L	10	3/26/03
Toluene	ND	5.0		µg/L	10	3/26/03
Xylenes, Total	ND	15		µg/L	10	3/26/03
Surr: Trifluorotoluene	97.8	70-130		%REC	10	3/26/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	ND	0.010		mg/L	1	3/24/03
Chromium	ND	0.0030		mg/L	1	3/24/03
Copper	ND	0.0030		mg/L	1	3/24/03
Lead	ND	0.0060		mg/L	1	3/24/03
Nickel	0.0053	0.0050		mg/L	1	3/24/03
Zinc	ND	0.020		mg/L	1	3/24/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	38	0.10		µg/L	1	3/21/03
Acenaphthylene	0.40	0.10		µg/L	1	3/21/03
Anthracene	5.8	0.10		µg/L	1	3/21/03
Benz(a)anthracene	0.46	0.10		µg/L	1	3/21/03
Benzo(a)pyrene	0.23	0.10		µg/L	1	3/21/03
Benzo(b)fluoranthene	0.20	0.10		µg/L	1	3/21/03
Benzo(g,h,i)perylene	0.16	0.10		µg/L	1	3/21/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/21/03
Chrysene	0.52	0.10		µg/L	1	3/21/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/21/03
Fluoranthene	8.0	0.10		µg/L	1	3/21/03
Fluorene	12	0.10		µg/L	1	3/21/03
Indeno(1,2,3-cd)pyrene	0.11	0.10		µg/L	1	3/21/03
Naphthalene	2.3	0.10		µg/L	1	3/21/03
Phenanthrene	18	0.10		µg/L	1	3/21/03
Pyrene	8.2	0.10		µg/L	1	3/21/03
Surr: 2-Fluorobiphenyl	63.0	43-116		%REC	1	3/21/03
Surr: 4-Terphenyl-d14	71.0	33-141		%REC	1	3/21/03
Surr: Nitrobenzene-d5	80.0	35-114		%REC	1	3/21/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	0.10	0.040		mg/L	1	3/28/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	3/28/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	112
Lab Order:	0303187	**Tag Number:**	
Project:	12708-30/NW NATURAL/GASCO	**Collection Date:**	3/19/03
Lab ID:	0303187-03B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic, Diss	ND	0.011		mg/L	1	3/24/03
Lead, Diss	ND	0.0067		mg/L	1	3/24/03
Nickel, Diss	ND	0.0056		mg/L	1	3/24/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	113
Lab Order:	0303187	**Tag Number:**	
Project:	12708-30/NW NATURAL/GASCO	**Collection Date:**	3/19/03
Lab ID:	0303187-04A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	200	2.5		µg/L	5	3/26/03
Ethylbenzene	290	2.5		µg/L	5	3/26/03
Toluene	400	2.5		µg/L	5	3/26/03
Xylenes, Total	680	7.5		µg/L	5	3/26/03
Surr: Trifluorotoluene	97.7	70-130		%REC	5	3/26/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	35	0.10		µg/L	1	3/21/03
Acenaphthylene	0.47	0.10		µg/L	1	3/21/03
Anthracene	2.1	0.10		µg/L	1	3/21/03
Benz(a)anthracene	0.31	0.10		µg/L	1	3/21/03
Benzo(a)pyrene	ND	0.10		µg/L	1	3/21/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	3/21/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	3/21/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/21/03
Chrysene	ND	0.10		µg/L	1	3/21/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/21/03
Fluoranthene	5.9	0.10		µg/L	1	3/21/03
Fluorene	16	0.10		µg/L	1	3/21/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	3/21/03
Naphthalene	280	0.10		µg/L	1	3/21/03
Phenanthrene	24	0.10		µg/L	1	3/21/03
Pyrene	5.4	0.10		µg/L	1	3/21/03
Surr: 2-Fluorobiphenyl	62.0	43-116		%REC	1	3/21/03
Surr: 4-Terphenyl-d14	69.0	33-141		%REC	1	3/21/03
Surr: Nitrobenzene-d5	96.0	35-114		%REC	1	3/21/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	ND	0.040		mg/L	1	3/28/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	3/28/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	114
Lab Order:	0303187	**Tag Number:**	
Project:	12708-30/NW NATURAL/GASCO	**Collection Date:**	3/19/03
Lab ID:	0303187-05A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	6600	25	A	µg/L	50	3/26/03
Ethylbenzene	400	25	A	µg/L	50	3/26/03
Toluene	ND	25	A	µg/L	50	3/26/03
Xylenes, Total	250	75	A	µg/L	50	3/26/03
Surr: Trifluorotoluene	93.4	70-130		%REC	50	3/26/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	0.011	0.010		mg/L	1	3/24/03
Chromium	ND	0.0030		mg/L	1	3/24/03
Copper	ND	0.0030		mg/L	1	3/24/03
Lead	ND	0.0060		mg/L	1	3/24/03
Nickel	ND	0.0050		mg/L	1	3/24/03
Zinc	ND	0.020		mg/L	1	3/24/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	14	2.0		µg/L	20	3/21/03
Acenaphthylene	ND	2.0		µg/L	20	3/21/03
Anthracene	ND	2.0		µg/L	20	3/21/03
Benz(a)anthracene	ND	2.0		µg/L	20	3/21/03
Benzo(a)pyrene	ND	2.0		µg/L	20	3/21/03
Benzo(b)fluoranthene	ND	2.0		µg/L	20	3/21/03
Benzo(g,h,i)perylene	ND	2.0		µg/L	20	3/21/03
Benzo(k)fluoranthene	ND	2.0		µg/L	20	3/21/03
Chrysene	ND	2.0		µg/L	20	3/21/03
Dibenz(a,h)anthracene	ND	2.0		µg/L	20	3/21/03
Fluoranthene	ND	2.0		µg/L	20	3/21/03
Fluorene	ND	2.0		µg/L	20	3/21/03
Indeno(1,2,3-cd)pyrene	ND	2.0		µg/L	20	3/21/03
Naphthalene	5600	2.0		µg/L	20	3/21/03
Phenanthrene	ND	2.0		µg/L	20	3/21/03
Pyrene	ND	2.0		µg/L	20	3/21/03
Surr: 2-Fluorobiphenyl	0	43-116	S, X	%REC	20	3/21/03
Surr: 4-Terphenyl-d14	0	33-141	S, X	%REC	20	3/21/03
Surr: Nitrobenzene-d5	0	35-114	S, X	%REC	20	3/21/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	0.56	0.040		mg/L	1	4/2/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	4/2/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	115
Lab Order:	0303187	**Tag Number:**	
Project:	12708-30/NW NATURAL/GASCO	**Collection Date:**	3/19/03
Lab ID:	0303187-06A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	1400	5.0		µg/L	10	3/26/03
Ethylbenzene	330	5.0		µg/L	10	3/26/03
Toluene	9.2	5.0		µg/L	10	3/26/03
Xylenes, Total	110	15		µg/L	10	3/26/03
Surr: Trifluorotoluene	92.6	70-130		%REC	10	3/26/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	ND	0.010		mg/L	1	3/24/03
Chromium	ND	0.0030		mg/L	1	3/24/03
Copper	ND	0.0030		mg/L	1	3/24/03
Lead	ND	0.0060		mg/L	1	3/24/03
Nickel	ND	0.0050		mg/L	1	3/24/03
Zinc	ND	0.020		mg/L	1	3/24/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	160	1.0		µg/L	10	3/21/03
Acenaphthylene	1.6	1.0		µg/L	10	3/21/03
Anthracene	9.2	1.0		µg/L	10	3/21/03
Benz(a)anthracene	ND	1.0		µg/L	10	3/21/03
Benzo(a)pyrene	ND	1.0		µg/L	10	3/21/03
Benzo(b)fluoranthene	ND	1.0		µg/L	10	3/21/03
Benzo(g,h,i)perylene	ND	1.0		µg/L	10	3/21/03
Benzo(k)fluoranthene	ND	1.0		µg/L	10	3/21/03
Chrysene	ND	1.0		µg/L	10	3/21/03
Dibenz(a,h)anthracene	ND	1.0		µg/L	10	3/21/03
Fluoranthene	3.9	1.0		µg/L	10	3/21/03
Fluorene	48	1.0		µg/L	10	3/21/03
Indeno(1,2,3-cd)pyrene	ND	1.0		µg/L	10	3/21/03
Naphthalene	700	1.0		µg/L	10	3/21/03
Phenanthrene	83	1.0		µg/L	10	3/21/03
Pyrene	2.7	1.0		µg/L	10	3/21/03
Surr: 2-Fluorobiphenyl	0	43-116	S, X	%REC	10	3/21/03
Surr: 4-Terphenyl-d14	0	33-141	S, X	%REC	10	3/21/03
Surr: Nitrobenzene-d5	0	35-114	S, X	%REC	10	3/21/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	0.10	0.040		mg/L	1	4/2/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	4/2/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	115
Lab Order:	0303187	**Tag Number:**	
Project:	12708-30/NW NATURAL/GASCO	**Collection Date:**	3/19/03
Lab ID:	0303187-06B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: mal
Arsenic, Diss	0.019	0.011		mg/L	1	3/24/03

Qualifiers:

ND - Not Detected at the Reporting Limit
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* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328C**
Client ID: **ZZZZZ** Batch ID: **R13423** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161349**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	ND	0.040									

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161752**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	ND	0.040									

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328C**
Client ID: **ZZZZZ** Batch ID: **R13423** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161350**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.184	0.040	0.2	0	92	79.8	111	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161753**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.183	0.040	0.2	0	91.5	79.8	111	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/20/03** Run ID: **HIT MAN_030328C**
Client ID: **ZZZZZ** Batch ID: **R13423** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161351**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.182	0.040	0.2	0	91	79.8	111	0.184	1.09	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023117

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN A

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161754**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.179	0.040	0.2	0	89.5	79.8	111	0.183	2.21	20	

Sample ID: **0303187-04A MS** SampType: **MS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328C**
Client ID: **113** Batch ID: **R13423** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161358**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.215	0.040	0.2	0	108	64.4	125	0	0		

Sample ID: **0303228-02A MS** SampType: **MS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161761**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.274	0.040	0.2	0.07	102	64.4	125	0	0		

Sample ID: **0303173-07A DUP** SampType: **DUP** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328C**
Client ID: **ZZZZZ** Batch ID: **R13423** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161353**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	ND	0.040	0	0	0	0	0	0	0	20	

Sample ID: **0303203-03A DUP** SampType: **DUP** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	1.37	0.40	0	0	0	0	0	1.34	2.21	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023118

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328D**
Client ID: **ZZZZZ** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161359**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040									

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161762**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040									

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030328D**
Client ID: **ZZZZZ** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161360**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.184	0.040	0.2	0	92	81	113	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161763**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.183	0.040	0.2	0	91.5	81	113	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/20/03** Run ID: **HIT MAN_030328D**
Client ID: **ZZZZZ** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161361**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.182	0.040	0.2	0	91	81	113	0.184	1.09	20	

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

Koppers023119

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.179	0.040	0.2	0	89.5	81	113	0.183	2.21	20	

Sample ID: **0303187-04A MS** SampType: **MS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328D**
Client ID: **113** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161368**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.215	0.040	0.2	0	108	75	120	0	0		

Sample ID: **0303228-02A MS** SampType: **MS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.204	0.040	0.2	0	102	75	120	0	0		

Sample ID: **0303173-07A DUP** SampType: **DUP** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030328D**
Client ID: **ZZZZZ** Batch ID: **R13424** TestNo: **EPA 9014** Analysis Date: **3/28/03** SeqNo: **161363**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040	0	0	0	0	0	0	0	0	

Sample ID: **0303203-03A DUP** SampType: **DUP** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161769**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.40	0	0	0	0	0	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023120

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **MB-5541** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/21/03** Run ID: **ICP_030324A**
Client ID: **ZZZZZ** Batch ID: **5541** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160665**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.010									
Chromium	ND	0.0030									
Copper	ND	0.0030									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Zinc	ND	0.020									

Sample ID: **MB-5545** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160765**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.010									
Chromium	ND	0.0010									
Copper	ND	0.0030									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Zinc	ND	0.020									

Sample ID: **LCS-5541** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/21/03** Run ID: **ICP_030324A**
Client ID: **ZZZZZ** Batch ID: **5541** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160666**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.49	0.010	0.5	0	98	80	120	0	0		
Chromium	0.486	0.0030	0.5	0	97.2	80	120	0	0		
Copper	0.487	0.0030	0.5	0	97.4	80	120	0	0		
Lead	0.495	0.0060	0.5	0	99	80	120	0	0		
Nickel	0.482	0.0050	0.5	0	96.4	80	120	0	0		
Zinc	0.495	0.020	0.5	0	99	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023121

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **LCS-5545** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160766**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.489	0.010	0.5	0	97.8	80	120	0	0		
Chromium	0.48	0.0010	0.5	0	96	80	120	0	0		
Copper	0.487	0.0030	0.5	0	97.4	80	120	0	0		
Lead	0.492	0.0060	0.5	0	98.4	80	120	0	0		
Nickel	0.489	0.0050	0.5	0	97.8	80	120	0	0		
Zinc	0.506	0.020	0.5	0	101	80	120	0	0		

Sample ID: **0303187-02A MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/21/03** Run ID: **ICP_030324A**
Client ID: **111** Batch ID: **5541** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160668**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.501	0.010	0.5	0	100	75	125	0	0		
Chromium	0.482	0.0030	0.5	0.0062	95.2	75	125	0	0		
Copper	0.496	0.0030	0.5	0	99.2	75	125	0	0		
Lead	0.486	0.0060	0.5	0	97.2	75	125	0	0		
Nickel	0.477	0.0050	0.5	0	95.4	75	125	0	0		
Zinc	0.498	0.020	0.5	0	99.6	75	125	0	0		

Sample ID: **0303203-05B MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160768**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.59	0.011	0.575	0.019	99.3	75	125	0	0		
Chromium, Diss	0.534	0.0011	0.575	0	93	75	125	0	0		
Copper, Diss	0.585	0.0034	0.575	0	102	75	125	0	0		
Lead, Diss	0.537	0.0069	0.575	0	93.4	75	125	0	0		
Nickel, Diss	0.539	0.0057	0.575	0	93.8	75	125	0	0		
Zinc, Diss	0.569	0.023	0.575	0	99	75	125	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023122

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0303187-02A MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/21/03** Run ID: **ICP_030324A**
Client ID: **111** Batch ID: **5541** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160669**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.496	0.010	0.5	0	99.2	75	125	0.501	1.00	20	
Chromium	0.479	0.0030	0.5	0.0062	94.6	75	125	0.482	0.624	20	
Copper	0.495	0.0030	0.5	0	99	75	125	0.496	0.202	20	
Lead	0.486	0.0060	0.5	0	97.2	75	125	0.486	0	20	
Nickel	0.472	0.0050	0.5	0	94.4	75	125	0.477	1.05	20	
Zinc	0.501	0.020	0.5	0	100	75	125	0.498	0.601	20	

Sample ID: **0303203-05B MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160769**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.59	0.011	0.575	0.019	99.3	75	125	0.59	0	20	
Chromium, Diss	0.539	0.0011	0.575	0	93.8	75	125	0.534	0.857	20	
Copper, Diss	0.584	0.0034	0.575	0	102	75	125	0.585	0.197	20	
Lead, Diss	0.543	0.0069	0.575	0	94.4	75	125	0.537	1.06	20	
Nickel, Diss	0.543	0.0057	0.575	0	94.4	75	125	0.539	0.638	20	
Zinc, Diss	0.568	0.023	0.575	0	98.8	75	125	0.569	0.202	20	

Sample ID: **0303187-03A DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/21/03** Run ID: **ICP_030324A**
Client ID: **112** Batch ID: **5541** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160671**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.010	0	0	0	0	0	0	0	20	
Chromium	ND	0.0030	0	0	0	0	0	0	0	20	
Copper	ND	0.0030	0	0	0	0	0	0	0	20	
Lead	ND	0.0060	0	0	0	0	0	0	0	20	
Nickel	ND	0.0050	0	0	0	0	0	0.0053	0	20	
Zinc	ND	0.020	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

Koppers023123

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0303187-02B DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **111** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	ND	0.011	0	0	0	0	0	0	0	20	
Chromium, Diss	ND	0.0011	0	0	0	0	0	0	0	20	
Copper, Diss	ND	0.0033	0	0	0	0	0	0.121	0	20	
Lead, Diss	ND	0.0067	0	0	0	0	0	0	0	20	
Nickel, Diss	ND	0.0056	0	0	0	0	0	0	0	20	
Zinc, Diss	ND	0.022	0	0	0	0	0	0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/21/03** Run ID: **ICP_030324A**
Client ID: **ZZZZZ** Batch ID: **5230** TestNo: **EPA 6010B** Analysis Date: **3/24/03** SeqNo: **160675**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.512	0.010	0.5	0	102	90	110	0	0		
Chromium	0.501	0.0030	0.5	0	100	90	110	0	0		
Copper	0.498	0.0030	0.5	0	99.6	90	110	0	0		
Lead	0.511	0.0060	0.5	0	102	90	110	0	0		
Nickel	0.505	0.0050	0.5	0	101	90	110	0	0		
Zinc	0.517	0.020	0.5	0	103	90	110	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **12/18/02** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5230** TestNo: **EPA 6010B** Analysis Date: **3/24/03** SeqNo: **160781**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.502	0.010	0.5	0	100	90	110	0	0		
Chromium	0.492	0.0010	0.5	0	98.4	90	110	0	0		
Copper	0.493	0.0030	0.5	0	98.6	90	110	0	0		
Lead	0.5	0.0060	0.5	0	100	90	110	0	0		
Nickel	0.505	0.0050	0.5	0	101	90	110	0	0		
Zinc	0.509	0.020	0.5	0	102	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023124

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/21/03** Run ID: **ICP_030324A**
Client ID: **ZZZZZ** Batch ID: **5541** TestNo: **EPA 6010B** Analysis Date: **3/24/03** SeqNo: **160664**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.519	0.010	0.5	0	104	90	110	0	0		
Chromium	0.508	0.0030	0.5	0	102	90	110	0	0		
Copper	0.501	0.0030	0.5	0	100	90	110	0	0		
Lead	0.509	0.0060	0.5	0	102	90	110	0	0		
Nickel	0.503	0.0050	0.5	0	101	90	110	0	0		
Zinc	0.512	0.020	0.5	0	102	90	110	0	0		

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B** Analysis Date: **3/24/03** SeqNo: **160764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.514	0.010	0.5	0	103	90	110	0	0		
Chromium	0.495	0.0010	0.5	0	99	90	110	0	0		
Copper	0.497	0.0030	0.5	0	99.4	90	110	0	0		
Lead	0.506	0.0060	0.5	0	101	90	110	0	0		
Nickel	0.502	0.0050	0.5	0	100	90	110	0	0		
Zinc	0.509	0.020	0.5	0	102	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023125

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161016**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	103	0	100	0	103	70	130	0	0		

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161247**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	101	0	100	0	101	70	130	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161017**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.6	0.50	30	0	105	85	115	0	0		
Ethylbenzene	31.1	0.50	30	0	104	85	115	0	0		
Toluene	31.7	0.50	30	0	106	85	115	0	0		
Xylenes, Total	96.8	1.5	90	0	108	85	115	0	0		
Gasoline	1480	100	1500	0	98.7	80	120	0	0		
Surr: Trifluorotoluene	100	0	100	0	100	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023126

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **LCS** SampType: **LCS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161248**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.2	0.50	20	0	106	85	115	0	0		
Ethylbenzene	20.7	0.50	20	0	104	85	115	0	0		
Toluene	21	0.50	20	0	105	85	115	0	0		
Xylenes, Total	64.2	1.5	60	0	107	85	115	0	0		
Gasoline	1010	100	1000	0	101	80	120	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.4	0.50	30	0	105	85	115	31.6	0.635	20	
Ethylbenzene	30.8	0.50	30	0	103	85	115	31.1	0.969	20	
Toluene	31.4	0.50	30	0	105	85	115	31.7	0.951	20	
Xylenes, Total	95.5	1.5	90	0	106	85	115	96.8	1.35	20	
Gasoline	1460	100	1500	0	97.3	80	120	1480	1.36	20	
Surr: Trifluorotoluene	99.7	0	100	0	99.7	70	130	0	0	0	

Sample ID: **LCSD** SampType: **LCSD** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161249**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.2	0.50	20	0	106	85	115	21.2	0	20	
Ethylbenzene	20.7	0.50	20	0	104	85	115	20.7	0	20	
Toluene	20.9	0.50	20	0	104	85	115	21	0.477	20	
Xylenes, Total	63.8	1.5	60	0	106	85	115	64.2	0.625	20	
Gasoline	1010	100	1000	0	101	80	120	1010	0	20	
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023127

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **0303187-01A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **110** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161023**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.2	0.50	20	0	106	85	115	0	0		
Ethylbenzene	20.7	0.50	20	0	104	85	115	0	0		
Toluene	21.3	0.50	20	0	106	85	115	0	0		
Xylenes, Total	64.3	1.5	60	0	107	85	115	0	0		
Surr: Trifluorotoluene	99.5	0	100	0	99.5	70	130	0	0		

Sample ID: **0303187-02A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **111** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161253**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.6	0.50	30	0	105	85	115	0	0		
Ethylbenzene	31.2	0.50	30	0	104	85	115	0	0		
Toluene	31.5	0.50	30	0	105	85	115	0	0		
Xylenes, Total	96.5	1.5	90	0	107	85	115	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Sample ID: **0303187-01A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **110** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161022**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	
Ethylbenzene	ND	0.50	0	0	0	0	0	0	0	20	
Toluene	ND	0.50	0	0	0	0	0	0	0	20	
Xylenes, Total	ND	1.5	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	103	0	100	0	103	50	150	0	0	20	

Sample ID: **0303187-02A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **111** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161252**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

Koppers023128

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **0303187-02A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **111** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161252**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	ND	0.50	0	0	0	0	0	0	0	20	
Toluene	ND	0.50	0	0	0	0	0	0	0	20	
Xylenes, Total	ND	1.5	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	102	0	100	0	102	50	150	0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030325A**
Client ID: **ZZZZZ** Batch ID: **R13396** TestNo: **8015/8021** Analysis Date: **3/25/03** SeqNo: **161019**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.6	0.50	40	0	104	85	115	0	0		
Ethylbenzene	41.1	0.50	40	0	103	85	115	0	0		
Toluene	41.6	0.50	40	0	104	85	115	0	0		
Xylenes, Total	127	1.5	120	0	106	85	115	0	0		
Gasoline	2000	100	2000	0	100	80	120	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161250**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10.4	0.50	10	0	104	85	115	0	0		
Ethylbenzene	10.5	0.50	10	0	105	85	115	0	0		
Toluene	10.8	0.50	10	0	108	85	115	0	0		
Xylenes, Total	32.5	1.5	30	0	108	85	115	0	0		
Gasoline	539	100	500	0	108	80	120	0	0		
Surr: Trifluorotoluene	104	0	100	0	104	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023129

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **MB-5540** SampType: **MBLK** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/21/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5540** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160630**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.10									
Acenaphthylene	ND	0.10									
Anthracene	ND	0.10									
Benz(a)anthracene	ND	0.10									
Benzo(a)pyrene	ND	0.10									
Benzo(b)fluoranthene	ND	0.10									
Benzo(g,h,i)perylene	ND	0.10									
Benzo(k)fluoranthene	ND	0.10									
Chrysene	ND	0.10									
Dibenz(a,h)anthracene	ND	0.10									
Fluoranthene	ND	0.10									
Fluorene	ND	0.10									
Indeno(1,2,3-cd)pyrene	ND	0.10									
Naphthalene	ND	0.10									
Phenanthrene	ND	0.10									
Pyrene	ND	0.10									
Surr: 2-Fluorobiphenyl	0.71	0	1	0	71	43	116	0	0		
Surr: 4-Terphenyl-d14	0.89	0	1	0	89	33	141	0	0		
Surr: Nitrobenzene-d5	0.75	0	1	0	75	35	114	0	0		

Sample ID: **LCS-5540** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/21/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5540** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160631**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.72	0.10	1	0	72	47	145	0	0		
Acenaphthylene	0.74	0.10	1	0	74	33	145	0	0		
Anthracene	0.82	0.10	1	0	82	27	133	0	0		
Benz(a)anthracene	0.81	0.10	1	0	81	33	143	0	0		
Benzo(a)pyrene	0.77	0.10	1	0	77	17	163	0	0		
Benzo(b)fluoranthene	0.76	0.10	1	0	76	24	159	0	0		
Benzo(g,h,i)perylene	0.62	0.10	1	0	62	1	219	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023130

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCS-5540** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/21/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5540** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160631**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	0.82	0.10	1	0	82	11	162	0	0		
Chrysene	0.84	0.10	1	0	84	17	168	0	0		
Dibenz(a,h)anthracene	0.63	0.10	1	0	63	1	227	0	0		
Fluoranthene	0.82	0.10	1	0	82	26	137	0	0		
Fluorene	0.78	0.10	1	0	78	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.62	0.10	1	0	62	1	171	0	0		
Naphthalene	0.74	0.10	1	0	74	21	133	0	0		
Phenanthrene	0.83	0.10	1	0	83	54	120	0	0		
Pyrene	0.87	0.10	1	0	87	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.62	0	1	0	62	43	116	0	0		
Surr: 4-Terphenyl-d14	0.68	0	1	0	68	33	141	0	0		
Surr: Nitrobenzene-d5	0.68	0	1	0	68	35	114	0	0		

Sample ID: **LCSD-5540** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/21/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5540** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160632**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.69	0.10	1	0	69	47	145	0.72	4.26	30	
Acenaphthylene	0.69	0.10	1	0	69	33	145	0.74	6.99	30	
Anthracene	0.78	0.10	1	0	78	27	133	0.82	5.00	30	
Benz(a)anthracene	0.76	0.10	1	0	76	33	143	0.81	6.37	30	
Benzo(a)pyrene	0.73	0.10	1	0	73	17	163	0.77	5.33	30	
Benzo(b)fluoranthene	0.71	0.10	1	0	71	24	159	0.76	6.80	30	
Benzo(g,h,i)perylene	0.56	0.10	1	0	56	1	219	0.62	10.2	30	
Benzo(k)fluoranthene	0.81	0.10	1	0	81	11	162	0.82	1.23	30	
Chrysene	0.82	0.10	1	0	82	17	168	0.84	2.41	30	
Dibenz(a,h)anthracene	0.56	0.10	1	0	56	1	227	0.63	11.8	30	
Fluoranthene	0.76	0.10	1	0	76	26	137	0.82	7.59	30	
Fluorene	0.72	0.10	1	0	72	59	121	0.78	8.00	30	
Indeno(1,2,3-cd)pyrene	0.5	0.10	1	0	50	1	171	0.62	21.4	30	
Naphthalene	0.73	0.10	1	0	73	21	133	0.74	1.36	30	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023131

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCSD-5540** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/21/03** Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **5540** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160632**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	0.79	0.10	1	0	79	54	120	0.83	4.94	30	
Pyrene	0.9	0.10	1	0	90	52	115	0.87	3.39	30	
Surr: 2-Fluorobiphenyl	0.58	0	1	0	58	43	116	0	0	30	
Surr: 4-Terphenyl-d14	0.69	0	1	0	69	33	141	0	0	30	
Surr: Nitrobenzene-d5	0.63	0	1	0	63	35	114	0	0	30	

Sample ID: **0303187-02A MS** SampType: **MS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/21/03** Run ID: **HEISENBURG_030321A**
Client ID: **111** Batch ID: **5540** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160648**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.68	0.10	1	0	68	47	145	0	0		
Acenaphthylene	0.66	0.10	1	0	66	33	145	0	0		
Anthracene	0.81	0.10	1	0	81	27	133	0	0		
Benz(a)anthracene	0.85	0.10	1	0	85	33	143	0	0		
Benzo(a)pyrene	0.74	0.10	1	0	74	17	163	0	0		
Benzo(b)fluoranthene	0.71	0.10	1	0	71	24	159	0	0		
Benzo(g,h,i)perylene	0.61	0.10	1	0	61	1	219	0	0		
Benzo(k)fluoranthene	0.72	0.10	1	0	72	11	162	0	0		
Chrysene	0.83	0.10	1	0	83	17	168	0	0		
Dibenz(a,h)anthracene	0.63	0.10	1	0	63	1	227	0	0		
Fluoranthene	1.18	0.10	1	0.45	73	26	137	0	0		
Fluorene	0.69	0.10	1	0	69	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.61	0.10	1	0	61	1	171	0	0		
Naphthalene	0.67	0.10	1	0	67	21	133	0	0		
Phenanthrene	0.76	0.10	1	0	76	54	120	0	0		
Pyrene	1.27	0.10	1	0.5	77	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.53	0	1	0	53	43	116	0	0		
Surr: 4-Terphenyl-d14	0.64	0	1	0	64	33	141	0	0		
Surr: Nitrobenzene-d5	0.62	0	1	0	62	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023132

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **0303187-03A DUP** SampType: **DUP** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/21/03** Run ID: **HEISENBURG_030321A**
Client ID: **112** Batch ID: **5540** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/21/03** SeqNo: **160969**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	37.6	0.10	0	0	0	0	0	38.1	1.32	20	
Acenaphthylene	0.39	0.10	0	0	0	0	0	0.4	2.53	20	
Anthracene	5.62	0.10	0	0	0	0	0	5.83	3.67	20	
Benz(a)anthracene	0.39	0.10	0	0	0	0	0	0.46	16.5	20	
Benzo(a)pyrene	0.15	0.10	0	0	0	0	0	0.23	42.1	20	R, Q
Benzo(b)fluoranthene	0.14	0.10	0	0	0	0	0	0.2	35.3	20	R, Q
Benzo(g,h,i)perylene	ND	0.10	0	0	0	0	0	0.16	0	20	
Benzo(k)fluoranthene	ND	0.10	0	0	0	0	0	0	0	20	
Chrysene	0.39	0.10	0	0	0	0	0	0.52	28.6	20	R, Q
Dibenz(a,h)anthracene	ND	0.10	0	0	0	0	0	0	0	20	
Fluoranthene	7.62	0.10	0	0	0	0	0	8.02	5.12	20	
Fluorene	11.7	0.10	0	0	0	0	0	12.1	3.36	20	
Indeno(1,2,3-cd)pyrene	ND	0.10	0	0	0	0	0	0.11	0	20	
Naphthalene	2.37	0.10	0	0	0	0	0	2.33	1.70	20	
Phenanthrene	16.9	0.10	0	0	0	0	0	17.5	3.49	20	
Pyrene	7.8	0.10	0	0	0	0	0	8.23	5.36	20	
Surr: 2-Fluorobiphenyl	0.63	0	1	0	63	43	116	0	0	0	
Surr: 4-Terphenyl-d14	0.68	0	1	0	68	33	141	0	0	0	
Surr: Nitrobenzene-d5	0.82	0	1	0	82	35	114	0	0	0	

Sample ID: **CCV** SampType: **CCV** TestCode: **06 PAH A** Units: **µg/L** Prep Date: Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **R13363** TestNo: **8270-SIM** Analysis Date: **3/21/03** SeqNo: **160633**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.84	0.10	1	0	84	80	120	0	0		
Acenaphthylene	0.87	0.10	1	0	87	80	120	0	0		
Anthracene	0.91	0.10	1	0	91	80	120	0	0		
Benz(a)anthracene	0.91	0.10	1	0	91	80	120	0	0		
Benzo(a)pyrene	0.89	0.10	1	0	89	80	120	0	0		
Benzo(b)fluoranthene	0.89	0.10	1	0	89	80	120	0	0		
Benzo(g,h,i)perylene	0.8	0.10	1	0	80	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023133

CLIENT: Hahn and Associates
Work Order: 0303187
Project: 12708-30/NW NATURAL/GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **CCV** SampType: **CCV** TestCode: **06 PAH A** Units: **µg/L** Prep Date: Run ID: **HEISENBURG_030321A**
Client ID: **ZZZZZ** Batch ID: **R13363** TestNo: **8270-SIM** Analysis Date: **3/21/03** SeqNo: **160633**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	0.97	0.10	1	0	97	80	120	0	0		
Chrysene	0.94	0.10	1	0	94	80	120	0	0		
Dibenz(a,h)anthracene	0.8	0.10	1	0	80	80	120	0	0		
Fluoranthene	0.93	0.10	1	0	93	80	120	0	0		
Fluorene	0.84	0.10	1	0	84	80	120	0	0		
Indeno(1,2,3-cd)pyrene	0.8	0.10	1	0	80	80	120	0	0		
Naphthalene	0.92	0.10	1	0	92	80	120	0	0		
Phenanthrene	0.92	0.10	1	0	92	80	120	0	0		
Pyrene	0.95	0.10	1	0	95	80	120	0	0		
Surr: 2-Fluorobiphenyl	0.95	0	1	0	95	43	116	0	0		
Surr: 4-Terphenyl-d14	0.94	0	1	0	94	33	141	0	0		
Surr: Nitrobenzene-d5	0.94	0	1	0	94	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

Koppers023134

ENVIRONMENTAL SERVICES LABORATORY – GLOSSARY OF FLAGS

QUALIFIER	DESCRIPTION
AA	This sample was analyzed after the holding time had expired.
AB	The hydrocarbon pattern in this sample is not typical of gasoline.
AC	The hydrocarbon pattern in this sample is not typical of diesel.
AD	The hydrocarbon pattern in this sample is not typical of oil.
AE	The hydrocarbon pattern in this sample extends into the gasoline range.
AF	The hydrocarbon pattern in this sample extends into the diesel range.
AG	The hydrocarbon pattern in this sample extends into the oil range.
A	This analysis was performed on a VOA sample containing headspace.
B	Analyte detected in the Method Blank above the reporting level.
C	The Relative Percent Difference (RPD) for the primary result and confirmation result was greater than 40%. The higher result was reported.
D	The sample was supplied in an inappropriate container according to method criteria.
E	This value is above the quantitation limit. It is considered an estimate.
H	The Matrix Spike/Matrix Spike Duplicate (MS/MSD) result was outside control limits. The Laboratory Control Standard/Duplicate (LCS/LCSD) result was in control validating the batch.
J	The result is above the Method Detection Limit (MDL) and below the Reporting level (RL). It is considered an estimate.
M	The MS/MSD recoveries are not calculable due to a high amount of analyte in sample.
MI	This indicates a high level of matrix interference affecting the spike or surrogate recovery.
N	See case narrative.
O	Detection Limits are elevated due to sample dilution. See case narrative.
Q	Further inspection of the sample confirms a non-homogenous sample matrix affecting RPD result.
R	The RPD result is outside method control limits. See other qualifiers or case narrative.
S	The spike recovery is outside method control limits. See other qualifiers or case narrative.
T	The RPD between the sample result and duplicate result was greater than 20%. The original result was less than three times the reporting level, therefore the RPD is not applicable.
X	Unable to quantitate surrogate recovery due to sample dilution.

Koppers023135

0303203

HAHN AND ASSOCIATES, INC.
Environmental Management
434 NW Sixth Avenue, Suite 203 • Portland OR 97209
(503) 796-0717 • Fax (503) 227-2209

Laboratory: ESL, Inc. Portland, OR
Lab Project No.

CHAIN OF CUSTODY
Chain of Custody No.

Project Manager: Rob Ede
Project No.: 2708-30
Project Name: NW Natural → Gasco
Collected by: Matt Mudge

Liquid with Sediment Sample: ____ Test Filtrate ____ Test Sediment ____ Test Both
Multi-Phase Sample: ____ Test One (which) ____ Test Separately ____ Shake

Samples Received at 4C (Y or N):
Appropriate Containers Used (Y or N):
Provide Verbal Results (Y or N):
Provide Preliminary Fax Results: YES

Sample Number Prefix: 2708-030320-

Lab ID	Sample #	Date	Time	Sample Description	Matrix (Soil / Water / Other)	Number of Containers	BTEX (EPA 8020)	PAHs (EPA 8270SIM)	TOTAL CN EPA 9010	Amenable CN EPA 9012	TOTAL METALS As, Cr, Cu, Pb, Ni, Zn	FF metals (Dissolved)	AS FF metals (DIS.) As, Cr, Cu, Pb, Ni, Zn	RUSH	Remarks
-01	116	3/20/03	10:00	MW7-116	X	2	X								01
-02	117		11:40	MW4-57-117	X	8	X	X	X	X	X	X			02
-03	118		11:41	MW4-57-118 DUP	X		X	X	X	X	X				03
-04	119		12:48	MW7-119	X	5	X	X							04
-05	120		16:02	MW8-56-120	X	8	X	X	X	X	X		X		05

4-2-03 JL

Relinquished by	Company	Date	Time	Received by	Company
M. S. Mudge	HAHN & ASSOC	3/21/03	9:25	[signature]	ESL
Relinquished by	Company	Date	Time	Received by	Company

Koppers023136

Environmental Services Laboratory, Inc.

E S L

17400 SW Upper Boones Ferry Road, Suite 270 • Portland, OR 97224 • (503) 670-8520

April 09, 2003

Mr. Rob Ede
Hahn and Associates
434 NW Sixth Avenue
Suite 203
Portland, OR 97209

TEL: (503)796-0717
FAX (503) 227-2209

RE: 2708-30/NW NATURAL-GASCO

Order No.: 0303203

Dear Mr. Rob Ede:

Environmental Services Laboratory received 5 samples on 3/21/03 for the analyses presented in the following report.

There were no analytical problems encountered and all associated QC data met EPA or laboratory specifications except where noted in a Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval of the laboratory. The following checked data sections are included in this report, and numbered to indicate total pages contained within each report section.

✓ Base Sample Report ✓ Method Blank Report ✓ Sample Duplicate Report ✓ Matrix Spike/Matrix Spike Duplicate Report ✓ Laboratory Control Spike/Spike Duplicate Report ✓ Continuing Calibration Verification Report ✓ Initial Calibration Verification Report

If you have any questions regarding these tests results, please feel free to call.

Lisa Rush
Project Manager

Keith Hunter
Technical Review

Environmental Services Laboratory

Date: *09-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	116
Lab Order:	0303203	**Tag Number:**	
Project:	2708-30/NW NATURAL-GASCO	**Collection Date:**	3/20/03
Lab ID:	0303203-01A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	3/26/03
Ethylbenzene	ND	0.50		µg/L	1	3/26/03
Toluene	ND	0.50		µg/L	1	3/26/03
Xylenes, Total	ND	1.5		µg/L	1	3/26/03
Surr: Trifluorotoluene	102	70-130		%REC	1	3/26/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *09-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	117
Lab Order:	0303203	**Tag Number:**	
Project:	2708-30/NW NATURAL-GASCO	**Collection Date:**	3/20/03
Lab ID:	0303203-02A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	17000	100		µg/L	200	3/27/03
Ethylbenzene	770	100		µg/L	200	3/27/03
Toluene	ND	100		µg/L	200	3/27/03
Xylenes, Total	ND	300		µg/L	200	3/27/03
Surr: Trifluorotoluene	96.5	70-130		%REC	200	3/27/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	0.016	0.010		mg/L	1	3/25/03
Chromium	ND	0.0010		mg/L	1	3/25/03
Copper	ND	0.0030		mg/L	1	3/25/03
Lead	ND	0.0060		mg/L	1	3/25/03
Nickel	ND	0.0050		mg/L	1	3/25/03
Zinc	ND	0.020		mg/L	1	3/25/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	28	2.0		µg/L	20	3/25/03
Acenaphthylene	ND	2.0		µg/L	20	3/25/03
Anthracene	ND	2.0		µg/L	20	3/25/03
Benz(a)anthracene	ND	2.0		µg/L	20	3/25/03
Benzo(a)pyrene	ND	2.0		µg/L	20	3/25/03
Benzo(b)fluoranthene	ND	2.0		µg/L	20	3/25/03
Benzo(g,h,i)perylene	ND	2.0		µg/L	20	3/25/03
Benzo(k)fluoranthene	ND	2.0		µg/L	20	3/25/03
Chrysene	ND	2.0		µg/L	20	3/25/03
Dibenz(a,h)anthracene	ND	2.0		µg/L	20	3/25/03
Fluoranthene	ND	2.0		µg/L	20	3/25/03
Fluorene	ND	2.0		µg/L	20	3/25/03
Indeno(1,2,3-cd)pyrene	ND	2.0		µg/L	20	3/25/03
Naphthalene	2200	2.0		µg/L	20	3/25/03
Phenanthrene	5.4	2.0		µg/L	20	3/25/03
Pyrene	ND	2.0		µg/L	20	3/25/03
Surr: 2-Fluorobiphenyl	0	43-116	S, X	%REC	20	3/25/03
Surr: 4-Terphenyl-d14	0	33-141	S, X	%REC	20	3/25/03
Surr: Nitrobenzene-d5	0	35-114	S, X	%REC	20	3/25/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	1.3	0.40		mg/L	10	4/2/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.40		mg/L	10	4/2/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Koppers023139

Environmental Services Laboratory

Date: *09-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	117
Lab Order:	0303203	**Tag Number:**	
Project:	2708-30/NW NATURAL-GASCO	**Collection Date:**	3/20/03
Lab ID:	0303203-02B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic, Diss	0.020	0.011		mg/L	1	3/24/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *09-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	118
Lab Order:	0303203	**Tag Number:**	
Project:	2708-30/NW NATURAL-GASCO	**Collection Date:**	3/20/03
Lab ID:	0303203-03A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	16000	100		µg/L	200	3/27/03
Ethylbenzene	760	100		µg/L	200	3/27/03
Toluene	ND	100		µg/L	200	3/27/03
Xylenes, Total	ND	300		µg/L	200	3/27/03
Surr: Trifluorotoluene	94.8	70-130		%REC	200	3/27/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	0.019	0.010		mg/L	1	3/25/03
Chromium	ND	0.0010		mg/L	1	3/25/03
Copper	ND	0.0030		mg/L	1	3/25/03
Lead	ND	0.0060		mg/L	1	3/25/03
Nickel	0.0053	0.0050		mg/L	1	3/25/03
Zinc	ND	0.020		mg/L	1	3/25/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	28	2.0		µg/L	20	3/25/03
Acenaphthylene	ND	2.0		µg/L	20	3/25/03
Anthracene	ND	2.0		µg/L	20	3/25/03
Benz(a)anthracene	ND	2.0		µg/L	20	3/25/03
Benzo(a)pyrene	ND	2.0		µg/L	20	3/25/03
Benzo(b)fluoranthene	ND	2.0		µg/L	20	3/25/03
Benzo(g,h,i)perylene	ND	2.0		µg/L	20	3/25/03
Benzo(k)fluoranthene	ND	2.0		µg/L	20	3/25/03
Chrysene	ND	2.0		µg/L	20	3/25/03
Dibenz(a,h)anthracene	ND	2.0		µg/L	20	3/25/03
Fluoranthene	ND	2.0		µg/L	20	3/25/03
Fluorene	ND	2.0		µg/L	20	3/25/03
Indeno(1,2,3-cd)pyrene	ND	2.0		µg/L	20	3/25/03
Naphthalene	2300	2.0		µg/L	20	3/25/03
Phenanthrene	5.4	2.0		µg/L	20	3/25/03
Pyrene	ND	2.0		µg/L	20	3/25/03
Surr: 2-Fluorobiphenyl	0	43-116	S, X	%REC	20	3/25/03
Surr: 4-Terphenyl-d14	0	33-141	S, X	%REC	20	3/25/03
Surr: Nitrobenzene-d5	0	35-114	S, X	%REC	20	3/25/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	1.3	0.40		mg/L	10	4/2/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.40		mg/L	10	4/2/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *09-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	119
Lab Order:	0303203	**Tag Number:**	
Project:	2708-30/NW NATURAL-GASCO	**Collection Date:**	3/20/03
Lab ID:	0303203-04A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	3/27/03
Ethylbenzene	ND	0.50		µg/L	1	3/27/03
Toluene	ND	0.50		µg/L	1	3/27/03
Xylenes, Total	ND	1.5		µg/L	1	3/27/03
Surr: Trifluorotoluene	101	70-130		%REC	1	3/27/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	ND	0.10		µg/L	1	3/25/03
Acenaphthylene	ND	0.10		µg/L	1	3/25/03
Anthracene	ND	0.10		µg/L	1	3/25/03
Benz(a)anthracene	ND	0.10		µg/L	1	3/25/03
Benzo(a)pyrene	ND	0.10		µg/L	1	3/25/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	3/25/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	3/25/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/25/03
Chrysene	ND	0.10		µg/L	1	3/25/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/25/03
Fluoranthene	ND	0.10		µg/L	1	3/25/03
Fluorene	ND	0.10		µg/L	1	3/25/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	3/25/03
Naphthalene	ND	0.10		µg/L	1	3/25/03
Phenanthrene	0.14	0.10		µg/L	1	3/25/03
Pyrene	ND	0.10		µg/L	1	3/25/03
Surr: 2-Fluorobiphenyl	68.0	43-116		%REC	1	3/25/03
Surr: 4-Terphenyl-d14	60.0	33-141		%REC	1	3/25/03
Surr: Nitrobenzene-d5	52.0	35-114		%REC	1	3/25/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *09-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	120
Lab Order:	0303203	**Tag Number:**	
Project:	2708-30/NW NATURAL-GASCO	**Collection Date:**	3/20/03
Lab ID:	0303203-05A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	20000	100	A	µg/L	200	4/3/03
Ethylbenzene	940	100	A	µg/L	200	4/3/03
Toluene	260	100	A	µg/L	200	4/3/03
Xylenes, Total	930	300	A	µg/L	200	4/3/03
Surr: Trifluorotoluene	94.6	70-130		%REC	200	4/3/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	0.012	0.010		mg/L	1	3/25/03
Chromium	ND	0.0010		mg/L	1	3/25/03
Copper	ND	0.0030		mg/L	1	3/25/03
Lead	ND	0.0060		mg/L	1	3/25/03
Nickel	ND	0.0050		mg/L	1	3/25/03
Zinc	ND	0.020		mg/L	1	3/25/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	99	2.0		µg/L	20	4/3/03
Acenaphthylene	61	2.0		µg/L	20	4/3/03
Anthracene	11	2.0		µg/L	20	4/3/03
Benz(a)anthracene	2.2	2.0		µg/L	20	4/3/03
Benzo(a)pyrene	ND	2.0		µg/L	20	4/3/03
Benzo(b)fluoranthene	ND	2.0		µg/L	20	4/3/03
Benzo(g,h,i)perylene	ND	2.0		µg/L	20	4/3/03
Benzo(k)fluoranthene	ND	2.0		µg/L	20	4/3/03
Chrysene	2.0	2.0		µg/L	20	4/3/03
Dibenz(a,h)anthracene	ND	2.0		µg/L	20	4/3/03
Fluoranthene	9.2	2.0		µg/L	20	4/3/03
Fluorene	42	2.0		µg/L	20	4/3/03
Indeno(1,2,3-cd)pyrene	ND	2.0		µg/L	20	4/3/03
Naphthalene	7400	2.0		µg/L	20	4/3/03
Phenanthrene	77	2.0		µg/L	20	4/3/03
Pyrene	8.8	2.0		µg/L	20	4/3/03
Surr: 2-Fluorobiphenyl	0	43-116	S, X	%REC	20	4/3/03
Surr: 4-Terphenyl-d14	0	33-141	S, X	%REC	20	4/3/03
Surr: Nitrobenzene-d5	0	35-114	S, X	%REC	20	4/3/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	0.51	0.040		mg/L	1	4/4/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	4/4/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *09-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	120
Lab Order:	0303203	**Tag Number:**	
Project:	2708-30/NW NATURAL-GASCO	**Collection Date:**	3/20/03
Lab ID:	0303203-05B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: mal
Arsenic, Diss	0.019	0.011		mg/L	1	3/24/03
Chromium, Diss	ND	0.0011		mg/L	1	3/24/03
Copper, Diss	ND	0.0033		mg/L	1	3/24/03
Lead, Diss	ND	0.0067		mg/L	1	3/24/03
Nickel, Diss	ND	0.0056		mg/L	1	3/24/03
Zinc, Diss	ND	0.022		mg/L	1	3/24/03

Qualifiers:

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B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *09-Apr-03*

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161752**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	ND	0.040									

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN A** Units: **mg/L** Prep Date: **4/4/03** Run ID: **HIT MAN_030404B**
Client ID: **ZZZZZ** Batch ID: **R13490** TestNo: **EPA 9014** Analysis Date: **4/4/03** SeqNo: **162087**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	ND	0.040									

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161753**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.183	0.040	0.2	0	91.5	79.8	111	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **4/4/03** Run ID: **HIT MAN_030404B**
Client ID: **ZZZZZ** Batch ID: **R13490** TestNo: **EPA 9014** Analysis Date: **4/4/03** SeqNo: **162088**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.182	0.040	0.2	0	91	79.8	111	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161754**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.179	0.040	0.2	0	89.5	79.8	111	0.183	2.21	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023145

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN A

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN A** Units: **mg/L** Prep Date: **4/4/03** Run ID: **HIT MAN_030404B**
Client ID: **ZZZZZ** Batch ID: **R13490** TestNo: **EPA 9014** Analysis Date: **4/4/03** SeqNo: **162089**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.184	0.040	0.2	0	92	79.8	111	0.182	1.09	20	

Sample ID: **0303228-02A MS** SampType: **MS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161761**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.274	0.040	0.2	0.07	102	64.4	125	0	0		

Sample ID: **0303203-03A DUP** SampType: **DUP** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **118** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	1.37	0.40	0	0	0	0	0	1.34	2.21	20	

Sample ID: **0303203-05A DUP** SampType: **DUP** TestCode: **01 CN A** Units: **mg/L** Prep Date: **4/4/03** Run ID: **HIT MAN_030404B**
Client ID: **120** Batch ID: **R13490** TestNo: **EPA 9014** Analysis Date: **4/4/03** SeqNo: **162091**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.515	0.040	0	0	0	0	0	0.511	0.780	20	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023146

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161762**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040									

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **4/4/03** Run ID: **HIT MAN_030404D**
Client ID: **ZZZZZ** Batch ID: **R13492** TestNo: **EPA 9014** Analysis Date: **4/4/03** SeqNo: **162097**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040									

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161763**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.183	0.040	0.2	0	91.5	81	113	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **4/4/03** Run ID: **HIT MAN_030404D**
Client ID: **ZZZZZ** Batch ID: **R13492** TestNo: **EPA 9014** Analysis Date: **4/4/03** SeqNo: **162098**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.182	0.040	0.2	0	91	81	113	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.179	0.040	0.2	0	89.5	81	113	0.183	2.21	20	

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **4/4/03** Run ID: **HIT MAN_030404D**
Client ID: **ZZZZZ** Batch ID: **R13492** TestNo: **EPA 9014** Analysis Date: **4/4/03** SeqNo: **162099**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023147

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **4/4/03** Run ID: **HIT MAN_030404D**
Client ID: **ZZZZZ** Batch ID: **R13492** TestNo: **EPA 9014** Analysis Date: **4/4/03** SeqNo: **162099**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.184	0.040	0.2	0	92	81	113	0.182	1.09	20	

Sample ID: **0303228-02A MS** SampType: **MS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.204	0.040	0.2	0	102	75	120	0	0		

Sample ID: **0303203-03A DUP** SampType: **DUP** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **118** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161769**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.40	0	0	0	0	0	0	0	0	

Sample ID: **0303203-05A DUP** SampType: **DUP** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **4/4/03** Run ID: **HIT MAN_030404D**
Client ID: **120** Batch ID: **R13492** TestNo: **EPA 9014** Analysis Date: **4/4/03** SeqNo: **162101**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040	0	0	0	0	0	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

Koppers023148

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **MB-5545** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **3/24/03** SeqNo: **160765**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.010									
Chromium	ND	0.0010									
Copper	ND	0.0030									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Zinc	ND	0.020									

Sample ID: **MB-5553** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/25/03** Run ID: **ICP_030325A**
Client ID: **ZZZZZ** Batch ID: **5553** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **3/25/03** SeqNo: **160912**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.010									
Chromium	ND	0.0010									
Copper	ND	0.0030									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Zinc	ND	0.020									

Sample ID: **LCS-5545** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **3/24/03** SeqNo: **160766**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.489	0.010	0.5	0	97.8	80	120	0	0		
Chromium	0.48	0.0010	0.5	0	96	80	120	0	0		
Copper	0.487	0.0030	0.5	0	97.4	80	120	0	0		
Lead	0.492	0.0060	0.5	0	98.4	80	120	0	0		
Nickel	0.489	0.0050	0.5	0	97.8	80	120	0	0		
Zinc	0.506	0.020	0.5	0	101	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023149

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **LCS-5553** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/25/03** Run ID: **ICP_030325A**
Client ID: **ZZZZZ** Batch ID: **5553** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/25/03** SeqNo: **160913**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.479	0.010	0.5	0	95.8	80	120	0	0		
Chromium	0.484	0.0010	0.5	0	96.8	80	120	0	0		
Copper	0.488	0.0030	0.5	0	97.6	80	120	0	0		
Lead	0.493	0.0060	0.5	0	98.6	80	120	0	0		
Nickel	0.488	0.0050	0.5	0	97.6	80	120	0	0		
Zinc	0.488	0.020	0.5	0	97.6	80	120	0	0		

Sample ID: **0303203-05B MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **120** Batch ID: **5545** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/24/03** SeqNo: **160768**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.59	0.011	0.575	0.019	99.3	75	125	0	0		
Chromium, Diss	0.534	0.0011	0.575	0	93	75	125	0	0		
Copper, Diss	0.585	0.0034	0.575	0	102	75	125	0	0		
Lead, Diss	0.537	0.0069	0.575	0	93.4	75	125	0	0		
Nickel, Diss	0.539	0.0057	0.575	0	93.8	75	125	0	0		
Zinc, Diss	0.569	0.023	0.575	0	99	75	125	0	0		

Sample ID: **0303203-02A MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/25/03** Run ID: **ICP_030325A**
Client ID: **117** Batch ID: **5553** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/25/03** SeqNo: **160915**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.492	0.010	0.5	0.0164	95.1	75	125	0	0		
Chromium	0.468	0.0010	0.5	0	93.6	75	125	0	0		
Copper	0.505	0.0030	0.5	0	101	75	125	0	0		
Lead	0.48	0.0060	0.5	0	96	75	125	0	0		
Nickel	0.476	0.0050	0.5	0	95.2	75	125	0	0		
Zinc	0.494	0.020	0.5	0	98.8	75	125	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023150

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0303203-05B MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **120** Batch ID: **5545** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **3/24/03** SeqNo: **160769**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.59	0.011	0.575	0.019	99.3	75	125	0.59	0	20	
Chromium, Diss	0.539	0.0011	0.575	0	93.8	75	125	0.534	0.857	20	
Copper, Diss	0.584	0.0034	0.575	0	102	75	125	0.585	0.197	20	
Lead, Diss	0.543	0.0069	0.575	0	94.4	75	125	0.537	1.06	20	
Nickel, Diss	0.543	0.0057	0.575	0	94.4	75	125	0.539	0.638	20	
Zinc, Diss	0.568	0.023	0.575	0	98.8	75	125	0.569	0.202	20	

Sample ID: **0303203-02A MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/25/03** Run ID: **ICP_030325A**
Client ID: **117** Batch ID: **5553** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **3/25/03** SeqNo: **160916**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.502	0.010	0.5	0.0164	97.1	75	125	0.492	2.01	20	
Chromium	0.47	0.0010	0.5	0	94	75	125	0.468	0.426	20	
Copper	0.505	0.0030	0.5	0	101	75	125	0.505	0	20	
Lead	0.483	0.0060	0.5	0	96.6	75	125	0.48	0.623	20	
Nickel	0.48	0.0050	0.5	0	96	75	125	0.476	0.837	20	
Zinc	0.491	0.020	0.5	0	98.2	75	125	0.494	0.609	20	

Sample ID: **0303187-02B DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **3/24/03** SeqNo: **160771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	ND	0.011	0	0	0	0	0	0	0	20	
Chromium, Diss	ND	0.0011	0	0	0	0	0	0	0	20	
Copper, Diss	ND	0.0033	0	0	0	0	0	0.121	0	20	
Lead, Diss	ND	0.0067	0	0	0	0	0	0	0	20	
Nickel, Diss	ND	0.0056	0	0	0	0	0	0	0	20	
Zinc, Diss	ND	0.022	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023151

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0303203-03A DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/25/03** Run ID: **ICP_030325A**
Client ID: **118** Batch ID: **5553** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/25/03** SeqNo: **160918**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0149	0.010	0	0	0	0	0	0.0191	24.7	20	R,T
Chromium	ND	0.0010	0	0	0	0	0	0	0	20	
Copper	ND	0.0030	0	0	0	0	0	0	0	20	
Lead	ND	0.0060	0	0	0	0	0	0	0	20	
Nickel	ND	0.0050	0	0	0	0	0	0.0053	0	20	
Zinc	0.0213	0.020	0	0	0	0	0	0	200	20	R,T

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **12/18/02** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5230** TestNo: **EPA 6010B** Analysis Date: **3/24/03** SeqNo: **160781**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.502	0.010	0.5	0	100	90	110	0	0		
Chromium	0.492	0.0010	0.5	0	98.4	90	110	0	0		
Copper	0.493	0.0030	0.5	0	98.6	90	110	0	0		
Lead	0.5	0.0060	0.5	0	100	90	110	0	0		
Nickel	0.505	0.0050	0.5	0	101	90	110	0	0		
Zinc	0.509	0.020	0.5	0	102	90	110	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/25/03** Run ID: **ICP_030325A**
Client ID: **ZZZZZ** Batch ID: **5230** TestNo: **EPA 6010B** Analysis Date: **3/25/03** SeqNo: **160926**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.504	0.010	0.5	0	101	90	110	0	0		
Chromium	0.492	0.0010	0.5	0	98.4	90	110	0	0		
Copper	0.497	0.0030	0.5	0	99.4	90	110	0	0		
Lead	0.502	0.0060	0.5	0	100	90	110	0	0		
Nickel	0.505	0.0050	0.5	0	101	90	110	0	0		
Zinc	0.504	0.020	0.5	0	101	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

Koppers023152

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/24/03** Run ID: **ICP_030324C**
Client ID: **ZZZZZ** Batch ID: **5545** TestNo: **EPA 6010B** Analysis Date: **3/24/03** SeqNo: **160764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.514	0.010	0.5	0	103	90	110	0	0		
Chromium	0.495	0.0010	0.5	0	99	90	110	0	0		
Copper	0.497	0.0030	0.5	0	99.4	90	110	0	0		
Lead	0.506	0.0060	0.5	0	101	90	110	0	0		
Nickel	0.502	0.0050	0.5	0	100	90	110	0	0		
Zinc	0.509	0.020	0.5	0	102	90	110	0	0		

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/25/03** Run ID: **ICP_030325A**
Client ID: **ZZZZZ** Batch ID: **5553** TestNo: **EPA 6010B** Analysis Date: **3/25/03** SeqNo: **160911**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.512	0.010	0.5	0	102	90	110	0	0		
Chromium	0.498	0.0010	0.5	0	99.6	90	110	0	0		
Copper	0.501	0.0030	0.5	0	100	90	110	0	0		
Lead	0.499	0.0060	0.5	0	99.8	90	110	0	0		
Nickel	0.506	0.0050	0.5	0	101	90	110	0	0		
Zinc	0.502	0.020	0.5	0	100	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023153

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161247**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	101	0	100	0	101	70	130	0	0		

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161378**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	98.4	0	100	0	98.4	70	130	0	0		

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030403A**
Client ID: **ZZZZZ** Batch ID: **R13481** TestNo: **8015/8021** Analysis Date: **4/3/03** SeqNo: **161969**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	103	0	100	0	103	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023154

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **LCS** SampType: **LCS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161248**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.2	0.50	20	0	106	85	115	0	0		
Ethylbenzene	20.7	0.50	20	0	104	85	115	0	0		
Toluene	21	0.50	20	0	105	85	115	0	0		
Xylenes, Total	64.2	1.5	60	0	107	85	115	0	0		
Gasoline	1010	100	1000	0	101	80	120	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161379**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10.5	0.50	10	0	105	85	115	0	0		
Ethylbenzene	10.2	0.50	10	0	102	85	115	0	0		
Toluene	10.5	0.50	10	0	105	85	115	0	0		
Xylenes, Total	31.7	1.5	30	0	106	85	115	0	0		
Gasoline	529	100	500	0	106	80	120	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030403A**
Client ID: **ZZZZZ** Batch ID: **R13481** TestNo: **8015/8021** Analysis Date: **4/3/03** SeqNo: **161970**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.1	0.50	40	0	105	85	115	0	0		
Ethylbenzene	41.3	0.50	40	0	103	85	115	0	0		
Toluene	42	0.50	40	0	105	85	115	0	0		
Xylenes, Total	127	1.5	120	0	106	85	115	0	0		
Gasoline	1980	100	2000	0	99	80	120	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023155

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **LCSD** SampType: **LCSD** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161249**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.2	0.50	20	0	106	85	115	21.2	0	20	
Ethylbenzene	20.7	0.50	20	0	104	85	115	20.7	0	20	
Toluene	20.9	0.50	20	0	104	85	115	21	0.477	20	
Xylenes, Total	63.8	1.5	60	0	106	85	115	64.2	0.625	20	
Gasoline	1010	100	1000	0	101	80	120	1010	0	20	
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0	0	

Sample ID: **LCSD** SampType: **LCSD** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161380**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10.7	0.50	10	0	107	85	115	10.5	1.89	20	
Ethylbenzene	10.4	0.50	10	0	104	85	115	10.2	1.94	20	
Toluene	10.7	0.50	10	0	107	85	115	10.5	1.89	20	
Xylenes, Total	32.1	1.5	30	0	107	85	115	31.7	1.25	20	
Gasoline	522	100	500	0	104	80	120	529	1.33	20	
Surr: Trifluorotoluene	101	0	100	0	101	70	130	0	0	0	

Sample ID: **LCSD** SampType: **LCSD** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030403A**
Client ID: **ZZZZZ** Batch ID: **R13481** TestNo: **8015/8021** Analysis Date: **4/3/03** SeqNo: **161971**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.8	0.50	40	0	104	85	115	42.1	0.715	20	
Ethylbenzene	40.9	0.50	40	0	102	85	115	41.3	0.973	20	
Toluene	41.7	0.50	40	0	104	85	115	42	0.717	20	
Xylenes, Total	126	1.5	120	0	105	85	115	127	0.791	20	
Gasoline	2010	100	2000	0	100	80	120	1980	1.50	20	
Surr: Trifluorotoluene	99.8	0	100	0	99.8	70	130	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023156

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **0303187-02A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161253**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.6	0.50	30	0	105	85	115	0	0		
Ethylbenzene	31.2	0.50	30	0	104	85	115	0	0		
Toluene	31.5	0.50	30	0	105	85	115	0	0		
Xylenes, Total	96.5	1.5	90	0	107	85	115	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Sample ID: **0303203-04A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **119** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161386**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	32.3	0.50	30	0	108	85	115	0	0		
Ethylbenzene	31.2	0.50	30	0	104	85	115	0	0		
Toluene	32.2	0.50	30	0	107	85	115	0	0		
Xylenes, Total	96.5	1.5	90	0	107	85	115	0	0		
Surr: Trifluorotoluene	100	0	100	0	100	70	130	0	0		

Sample ID: **0304032-01A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030403A**
Client ID: **ZZZZZ** Batch ID: **R13481** TestNo: **8015/8021** Analysis Date: **4/3/03** SeqNo: **161976**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.1	0.50	20	0	106	85	115	0	0		
Ethylbenzene	20.8	0.50	20	0	104	85	115	0	0		
Toluene	21.2	0.50	20	0	106	85	115	0	0		
Xylenes, Total	64.4	1.5	60	0	107	85	115	0	0		
Surr: Trifluorotoluene	101	0	100	0	101	70	130	0	0		

Sample ID: **0303187-02A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161252**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023157

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **0303187-02A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161252**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	ND	0.50	0	0	0	0	0	0	0	20	
Toluene	ND	0.50	0	0	0	0	0	0	0	20	
Xylenes, Total	ND	1.5	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	102	0	100	0	102	50	150	0	0	20	

Sample ID: **0303203-04A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **119** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	
Ethylbenzene	ND	0.50	0	0	0	0	0	0	0	20	
Toluene	ND	0.50	0	0	0	0	0	0	0	20	
Xylenes, Total	ND	1.5	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	102	0	100	0	102	50	150	0	0	20	

Sample ID: **0304032-01A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030403A**
Client ID: **ZZZZZ** Batch ID: **R13481** TestNo: **8015/8021** Analysis Date: **4/3/03** SeqNo: **161975**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	
Ethylbenzene	ND	0.50	0	0	0	0	0	0	0	20	
Toluene	ND	0.50	0	0	0	0	0	0	0	20	
Xylenes, Total	ND	1.5	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	104	0	100	0	104	50	150	0	0	20	

Sample ID: **0304036-17A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030403A**
Client ID: **ZZZZZ** Batch ID: **R13481** TestNo: **8015/8021** Analysis Date: **4/3/03** SeqNo: **161981**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	100	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	80.2	0	100	0	80.2	50	150	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023158

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **0304036-23A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030403A**
Client ID: **ZZZZZ** Batch ID: **R13481** TestNo: **8015/8021** Analysis Date: **4/3/03** SeqNo: **161988**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	100	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	71.1	0	100	0	71.1	50	150	0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030326A**
Client ID: **ZZZZZ** Batch ID: **R13411** TestNo: **8015/8021** Analysis Date: **3/26/03** SeqNo: **161250**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10.4	0.50	10	0	104	85	115	0	0		
Ethylbenzene	10.5	0.50	10	0	105	85	115	0	0		
Toluene	10.8	0.50	10	0	108	85	115	0	0		
Xylenes, Total	32.5	1.5	30	0	108	85	115	0	0		
Gasoline	539	100	500	0	108	80	120	0	0		
Surr: Trifluorotoluene	104	0	100	0	104	70	130	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161381**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.7	0.50	20	0	104	85	115	0	0		
Ethylbenzene	20.9	0.50	20	0	104	85	115	0	0		
Toluene	21.2	0.50	20	0	106	85	115	0	0		
Xylenes, Total	64.9	1.5	60	0	108	85	115	0	0		
Gasoline	1020	100	1000	0	102	80	120	0	0		
Surr: Trifluorotoluene	103	0	100	0	103	70	130	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030403A**
Client ID: **ZZZZZ** Batch ID: **R13481** TestNo: **8015/8021** Analysis Date: **4/3/03** SeqNo: **161972**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.5	0.50	30	0	105	85	115	0	0		
Ethylbenzene	31	0.50	30	0	103	85	115	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023159

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030403A**
Client ID: **ZZZZZ** Batch ID: **R13481** TestNo: **8015/8021** Analysis Date: **4/3/03** SeqNo: **161972**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	31.6	0.50	30	0	105	85	115	0	0		
Xylenes, Total	95.8	1.5	90	0	106	85	115	0	0		
Gasoline	1500	100	1500	0	100	80	120	0	0		
Surr: Trifluorotoluene	103	0	100	0	103	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023160

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **MB-5550** SampType: **MBLK** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/24/03** Run ID: **HEISENBURG_030325B**
Client ID: **ZZZZZ** Batch ID: **5550** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160836**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.10									
Acenaphthylene	ND	0.10									
Anthracene	ND	0.10									
Benz(a)anthracene	ND	0.10									
Benzo(a)pyrene	ND	0.10									
Benzo(b)fluoranthene	ND	0.10									
Benzo(g,h,i)perylene	ND	0.10									
Benzo(k)fluoranthene	ND	0.10									
Chrysene	ND	0.10									
Dibenz(a,h)anthracene	ND	0.10									
Fluoranthene	ND	0.10									
Fluorene	ND	0.10									
Indeno(1,2,3-cd)pyrene	ND	0.10									
Naphthalene	ND	0.10									
Phenanthrene	ND	0.10									
Pyrene	ND	0.10									
Surr: 2-Fluorobiphenyl	0.65	0	1	0	65	43	116	0	0		
Surr: 4-Terphenyl-d14	0.67	0	1	0	67	33	141	0	0		
Surr: Nitrobenzene-d5	0.54	0	1	0	54	35	114	0	0		

Sample ID: **MB-5601** SampType: **MBLK** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **4/3/03** Run ID: **HEISENBURG_030403B**
Client ID: **ZZZZZ** Batch ID: **5601** TestNo: **8270-SIM** **(3510C)** Analysis Date: **4/3/03** SeqNo: **162032**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.10									
Acenaphthylene	ND	0.10									
Anthracene	ND	0.10									
Benz(a)anthracene	ND	0.10									
Benzo(a)pyrene	ND	0.10									
Benzo(b)fluoranthene	ND	0.10									
Benzo(g,h,i)perylene	ND	0.10									

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023161

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **MB-5601** SampType: **MBLK** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **4/3/03** Run ID: **HEISENBURG_030403B**
Client ID: **ZZZZZ** Batch ID: **5601** TestNo: **8270-SIM** **(3510C)** Analysis Date: **4/3/03** SeqNo: **162032**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	ND	0.10									
Chrysene	ND	0.10									
Dibenz(a,h)anthracene	ND	0.10									
Fluoranthene	ND	0.10									
Fluorene	ND	0.10									
Indeno(1,2,3-cd)pyrene	ND	0.10									
Naphthalene	ND	0.10									
Phenanthrene	ND	0.10									
Pyrene	ND	0.10									
Surr: 2-Fluorobiphenyl	0.7	0	1	0	70	43	116	0	0		
Surr: 4-Terphenyl-d14	0.76	0	1	0	76	33	141	0	0		
Surr: Nitrobenzene-d5	0.5	0	1	0	50	35	114	0	0		

Sample ID: **LCS-5550** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/24/03** Run ID: **HEISENBURG_030325B**
Client ID: **ZZZZZ** Batch ID: **5550** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160837**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.67	0.10	1	0	67	47	145	0	0		H
Acenaphthylene	0.69	0.10	1	0	69	33	145	0	0		H
Anthracene	0.78	0.10	1	0	78	27	133	0	0		H
Benz(a)anthracene	0.76	0.10	1	0	76	33	143	0	0		H
Benzo(a)pyrene	0.72	0.10	1	0	72	17	163	0	0		H
Benzo(b)fluoranthene	0.65	0.10	1	0	65	24	159	0	0		H
Benzo(g,h,i)perylene	0.86	0.10	1	0	86	1	219	0	0		H
Benzo(k)fluoranthene	0.72	0.10	1	0	72	11	162	0	0		H
Chrysene	0.78	0.10	1	0	78	17	168	0	0		H
Dibenz(a,h)anthracene	0.8	0.10	1	0	80	1	227	0	0		H
Fluoranthene	0.78	0.10	1	0	78	26	137	0	0		H
Fluorene	0.72	0.10	1	0	72	59	121	0	0		H
Indeno(1,2,3-cd)pyrene	0.81	0.10	1	0	81	1	171	0	0		H
Naphthalene	0.74	0.10	1	0	74	21	133	0	0		H

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023162

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCS-5550** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/24/03** Run ID: **HEISENBURG_030325B**
Client ID: **ZZZZZ** Batch ID: **5550** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160837**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	0.78	0.10	1	0	78	54	120	0	0		H
Pyrene	0.73	0.10	1	0	73	52	115	0	0		H
Surr: 2-Fluorobiphenyl	0.57	0	1	0	57	43	116	0	0		H
Surr: 4-Terphenyl-d14	0.57	0	1	0	57	33	141	0	0		H
Surr: Nitrobenzene-d5	0.4	0	1	0	40	35	114	0	0		H

Sample ID: **LCS-5601** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **4/3/03** Run ID: **HEISENBURG_030403B**
Client ID: **ZZZZZ** Batch ID: **5601** TestNo: **8270-SIM** **(3510C)** Analysis Date: **4/3/03** SeqNo: **162033**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.67	0.10	1	0	67	47	145	0	0		
Acenaphthylene	0.64	0.10	1	0	64	33	145	0	0		
Anthracene	0.7	0.10	1	0	70	27	133	0	0		
Benz(a)anthracene	0.74	0.10	1	0	74	33	143	0	0		
Benzo(a)pyrene	0.7	0.10	1	0	70	17	163	0	0		
Benzo(b)fluoranthene	0.72	0.10	1	0	72	24	159	0	0		
Benzo(g,h,i)perylene	0.74	0.10	1	0	74	1	219	0	0		
Benzo(k)fluoranthene	0.68	0.10	1	0	68	11	162	0	0		
Chrysene	0.72	0.10	1	0	72	17	168	0	0		
Dibenz(a,h)anthracene	0.71	0.10	1	0	71	1	227	0	0		
Fluoranthene	0.76	0.10	1	0	76	26	137	0	0		
Fluorene	0.73	0.10	1	0	73	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.71	0.10	1	0	71	1	171	0	0		
Naphthalene	0.68	0.10	1	0	68	21	133	0	0		
Phenanthrene	0.76	0.10	1	0	76	54	120	0	0		
Pyrene	0.74	0.10	1	0	74	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.72	0	1	0	72	43	116	0	0		
Surr: 4-Terphenyl-d14	0.82	0	1	0	82	33	141	0	0		
Surr: Nitrobenzene-d5	0.55	0	1	0	55	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023163

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCSD-5550** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/24/03** Run ID: **HEISENBURG_030325B**
Client ID: **ZZZZZ** Batch ID: **5550** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160838**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.79	0.10	1	0	79	47	145	0.67	16.4	30	
Acenaphthylene	0.78	0.10	1	0	78	33	145	0.69	12.2	30	
Anthracene	0.89	0.10	1	0	89	27	133	0.78	13.2	30	
Benz(a)anthracene	0.85	0.10	1	0	85	33	143	0.76	11.2	30	
Benzo(a)pyrene	0.82	0.10	1	0	82	17	163	0.72	13.0	30	
Benzo(b)fluoranthene	0.78	0.10	1	0	78	24	159	0.65	18.2	30	
Benzo(g,h,i)perylene	0.97	0.10	1	0	97	1	219	0.86	12.0	30	
Benzo(k)fluoranthene	0.82	0.10	1	0	82	11	162	0.72	13.0	30	
Chrysene	0.88	0.10	1	0	88	17	168	0.78	12.0	30	
Dibenz(a,h)anthracene	0.91	0.10	1	0	91	1	227	0.8	12.9	30	
Fluoranthene	0.87	0.10	1	0	87	26	137	0.78	10.9	30	
Fluorene	0.78	0.10	1	0	78	59	121	0.72	8.00	30	
Indeno(1,2,3-cd)pyrene	0.93	0.10	1	0	93	1	171	0.81	13.8	30	
Naphthalene	0.85	0.10	1	0	85	21	133	0.74	13.8	30	
Phenanthrene	0.89	0.10	1	0	89	54	120	0.78	13.2	30	
Pyrene	0.86	0.10	1	0	86	52	115	0.73	16.4	30	
Surr: 2-Fluorobiphenyl	0.7	0	1	0	70	43	116	0	0	30	
Surr: 4-Terphenyl-d14	0.71	0	1	0	71	33	141	0	0	30	
Surr: Nitrobenzene-d5	0.44	0	1	0	44	35	114	0	0	30	

Sample ID: **LCSD-5601** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **4/3/03** Run ID: **HEISENBURG_030403B**
Client ID: **ZZZZZ** Batch ID: **5601** TestNo: **8270-SIM** **(3510C)** Analysis Date: **4/3/03** SeqNo: **162034**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.68	0.10	1	0	68	47	145	0.67	1.48	30	
Acenaphthylene	0.64	0.10	1	0	64	33	145	0.64	0	30	
Anthracene	0.72	0.10	1	0	72	27	133	0.7	2.82	30	
Benz(a)anthracene	0.75	0.10	1	0	75	33	143	0.74	1.34	30	
Benzo(a)pyrene	0.71	0.10	1	0	71	17	163	0.7	1.42	30	
Benzo(b)fluoranthene	0.73	0.10	1	0	73	24	159	0.72	1.38	30	
Benzo(g,h,i)perylene	0.71	0.10	1	0	71	1	219	0.74	4.14	30	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023164

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCSD-5601** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **4/3/03** Run ID: **HEISENBURG_030403B**
Client ID: **ZZZZZ** Batch ID: **5601** TestNo: **8270-SIM** **(3510C)** Analysis Date: **4/3/03** SeqNo: **162034**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	0.72	0.10	1	0	72	11	162	0.68	5.71	30	
Chrysene	0.74	0.10	1	0	74	17	168	0.72	2.74	30	
Dibenz(a,h)anthracene	0.68	0.10	1	0	68	1	227	0.71	4.32	30	
Fluoranthene	0.79	0.10	1	0	79	26	137	0.76	3.87	30	
Fluorene	0.74	0.10	1	0	74	59	121	0.73	1.36	30	
Indeno(1,2,3-cd)pyrene	0.68	0.10	1	0	68	1	171	0.71	4.32	30	
Naphthalene	0.77	0.10	1	0	77	21	133	0.68	12.4	30	
Phenanthrene	0.77	0.10	1	0	77	54	120	0.76	1.31	30	
Pyrene	0.74	0.10	1	0	74	52	115	0.74	0	30	
Surr: 2-Fluorobiphenyl	0.71	0	1	0	71	43	116	0	0	30	
Surr: 4-Terphenyl-d14	0.83	0	1	0	83	33	141	0	0	30	
Surr: Nitrobenzene-d5	0.57	0	1	0	57	35	114	0	0	30	

Sample ID: **0303203-04A MS** SampType: **MS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/24/03** Run ID: **HEISENBURG_030325B**
Client ID: **119** Batch ID: **5550** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160844**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.7	0.10	1	0	70	47	145	0	0		
Acenaphthylene	0.71	0.10	1	0	71	33	145	0	0		
Anthracene	0.81	0.10	1	0	81	27	133	0	0		
Benz(a)anthracene	0.77	0.10	1	0	77	33	143	0	0		
Benzo(a)pyrene	0.74	0.10	1	0	74	17	163	0	0		
Benzo(b)fluoranthene	0.68	0.10	1	0	68	24	159	0	0		
Benzo(g,h,i)perylene	0.83	0.10	1	0	83	1	219	0	0		
Benzo(k)fluoranthene	0.72	0.10	1	0	72	11	162	0	0		
Chrysene	0.76	0.10	1	0	76	17	168	0	0		
Dibenz(a,h)anthracene	0.8	0.10	1	0	80	1	227	0	0		
Fluoranthene	0.81	0.10	1	0	81	26	137	0	0		
Fluorene	0.72	0.10	1	0	72	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.81	0.10	1	0	81	1	171	0	0		
Naphthalene	0.9	0.10	1	0	90	21	133	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023165

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **0303203-04A MS** SampType: **MS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/24/03** Run ID: **HEISENBURG_030325B**
Client ID: **119** Batch ID: **5550** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160844**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	0.82	0.10	1	0.14	68	54	120	0	0		
Pyrene	0.73	0.10	1	0	73	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.63	0	1	0	63	43	116	0	0		
Surr: 4-Terphenyl-d14	0.6	0	1	0	60	33	141	0	0		
Surr: Nitrobenzene-d5	0.45	0	1	0	45	35	114	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **06 PAH A** Units: **µg/L** Prep Date: Run ID: **HEISENBURG_030325B**
Client ID: **ZZZZZ** Batch ID: **R13380** TestNo: **8270-SIM** Analysis Date: **3/25/03** SeqNo: **160839**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.99	0.10	1	0	99	80	120	0	0		
Acenaphthylene	1.04	0.10	1	0	104	80	120	0	0		
Anthracene	1.13	0.10	1	0	113	80	120	0	0		
Benz(a)anthracene	1	0.10	1	0	100	80	120	0	0		
Benzo(a)pyrene	0.95	0.10	1	0	95	80	120	0	0		
Benzo(b)fluoranthene	0.9	0.10	1	0	90	80	120	0	0		
Benzo(g,h,i)perylene	1.15	0.10	1	0	115	80	120	0	0		
Benzo(k)fluoranthene	0.94	0.10	1	0	94	80	120	0	0		
Chrysene	0.98	0.10	1	0	98	80	120	0	0		
Dibenz(a,h)anthracene	1.08	0.10	1	0	108	80	120	0	0		
Fluoranthene	1.1	0.10	1	0	110	80	120	0	0		
Fluorene	1.04	0.10	1	0	104	80	120	0	0		
Indeno(1,2,3-cd)pyrene	1.09	0.10	1	0	109	80	120	0	0		
Naphthalene	1.07	0.10	1	0	107	80	120	0	0		
Phenanthrene	1.12	0.10	1	0	112	80	120	0	0		
Pyrene	0.95	0.10	1	0	95	80	120	0	0		
Surr: 2-Fluorobiphenyl	1.04	0	1	0	104	43	116	0	0		
Surr: 4-Terphenyl-d14	0.92	0	1	0	92	33	141	0	0		
Surr: Nitrobenzene-d5	0.85	0	1	0	85	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023166

CLIENT: Hahn and Associates
Work Order: 0303203
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **CCV** SampType: **CCV** TestCode: **06 PAH A** Units: **µg/L** Prep Date: Run ID: **HEISENBURG_030403B**
Client ID: **ZZZZZ** Batch ID: **R13486** TestNo: **8270-SIM** Analysis Date: **4/3/03** SeqNo: **162035**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.85	0.10	1	0	85	80	120	0	0		
Acenaphthylene	0.83	0.10	1	0	83	80	120	0	0		
Anthracene	0.89	0.10	1	0	89	80	120	0	0		
Benz(a)anthracene	0.8	0.10	1	0	80	80	120	0	0		
Benzo(a)pyrene	0.82	0.10	1	0	82	80	120	0	0		
Benzo(b)fluoranthene	0.8	0.10	1	0	80	80	120	0	0		
Benzo(g,h,i)perylene	0.9	0.10	1	0	90	80	120	0	0		
Benzo(k)fluoranthene	0.85	0.10	1	0	85	80	120	0	0		
Chrysene	0.92	0.10	1	0	92	80	120	0	0		
Dibenz(a,h)anthracene	0.88	0.10	1	0	88	80	120	0	0		
Fluoranthene	0.86	0.10	1	0	86	80	120	0	0		
Fluorene	0.83	0.10	1	0	83	80	120	0	0		
Indeno(1,2,3-cd)pyrene	0.87	0.10	1	0	87	80	120	0	0		
Naphthalene	1.03	0.10	1	0	103	80	120	0	0		
Phenanthrene	0.9	0.10	1	0	90	80	120	0	0		
Pyrene	0.89	0.10	1	0	89	80	120	0	0		
Surr: 2-Fluorobiphenyl	0.87	0	1	0	87	43	116	0	0		
Surr: 4-Terphenyl-d14	0.83	0	1	0	83	33	141	0	0		
Surr: Nitrobenzene-d5	0.82	0	1	0	82	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023167

ENVIRONMENTAL SERVICES LABORATORY – GLOSSARY OF FLAGS

QUALIFIER	DESCRIPTION
AA	This sample was analyzed after the holding time had expired.
AB	The hydrocarbon pattern in this sample is not typical of gasoline.
AC	The hydrocarbon pattern in this sample is not typical of diesel.
AD	The hydrocarbon pattern in this sample is not typical of oil.
AE	The hydrocarbon pattern in this sample extends into the gasoline range.
AF	The hydrocarbon pattern in this sample extends into the diesel range.
AG	The hydrocarbon pattern in this sample extends into the oil range.
A	This analysis was performed on a VOA sample containing headspace.
B	Analyte detected in the Method Blank above the reporting level.
C	The Relative Percent Difference (RPD) for the primary result and confirmation result was greater than 40%. The higher result was reported.
D	The sample was supplied in an inappropriate container according to method criteria.
E	This value is above the quantitation limit. It is considered an estimate.
H	The Matrix Spike/Matrix Spike Duplicate (MS/MSD) result was outside control limits. The Laboratory Control Standard/Duplicate (LCS/LCSD) result was in control validating the batch.
J	The result is above the Method Detection Limit (MDL) and below the Reporting level (RL). It is considered an estimate.
M	The MS/MSD recoveries are not calculable due to a high amount of analyte in sample.
MI	This indicates a high level of matrix interference affecting the spike or surrogate recovery.
N	See case narrative.
O	Detection Limits are elevated due to sample dilution. See case narrative.
Q	Further inspection of the sample confirms a non-homogenous sample matrix affecting RPD result.
R	The RPD result is outside method control limits. See other qualifiers or case narrative.
S	The spike recovery is outside method control limits. See other qualifiers or case narrative.
T	The RPD between the sample result and duplicate result was greater than 20%. The original result was less than three times the reporting level, therefore the RPD is not applicable.
X	Unable to quantitate surrogate recovery due to sample dilution.

Koppers023168

HAHN AND ASSOCIATES, INC.
Environmental Management
434 NW Sixth Avenue, Suite 203 • Portland OR 97209
(503) 796-0717 • Fax (503) 227-2209

Laboratory ESL, Inc. Portland, OR
Lab Project No.

CHAIN OF CUSTODY

Chain of Custody No.

Project Manager: Rob Ede
Project No.: 2708-30
Project Name: NW Natural -> Cascade
Collected by: Matt Mudge

Liquid with Sediment Sample
____ Test Filtrate ____ Test Sediment ____ Test Both
Multi-Phase Sample
____ Test One (which) ____ Test Separately ____ Shake

Samples Received at 4C (Y or N)
Appropriate Containers Used (Y or N)
Provide Verbal Results (Y or N)
Provide Preliminary Fax Results: YES

Sample Number Prefix: 2708-030321-

Lab ID	Sample #	Date	Time	Sample Description	Soil	Water	Other	Number of Containers	BTEX (EPA 8021)	PAHs (EPA 8270 SIM)	TOTAL CN (EPA 9010)	Amenable CN (EPA 9010)	Total Metals (EPA 6010) As, Cr, Cu, Pb, Ni, Zn	Dissolved Metals (6010) As, Cr, Cu, Pb, Ni, Zn				RUSH	Remarks
-01	121	3/21/03	8:30	MW7-121		X		2	X										
-02	122	↓	10:28	MW15-50-122		X		8	X	X	X	X	X	X					

Relinquished by	Company	Date	Time	Received by	Company
M.S. Mudge	HAHN & ASSOC	3/24/03	3:40	[signature]	ESL

Koppers023169

Environmental Services Laboratory, Inc.

E S L

17400 SW Upper Boones Ferry Road, Suite 270 • Portland, OR 97224 • (503) 670-8520

April 02, 2003

Mr. Rob Ede
Hahn and Associates
434 NW Sixth Avenue
Suite 203
Portland, OR 97209

TEL: (503)796-0717
FAX (503) 227-2209

RE: 2708-30/NW NATURAL-GASCO

Order No.: 0303228

Dear Mr. Rob Ede:

Environmental Services Laboratory received 2 samples on 3/24/03 for the analyses presented in the following report.

There were no analytical problems encountered and all associated QC data met EPA or laboratory specifications except where noted in a Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval of the laboratory. The following checked data sections are included in this report, and numbered to indicate total pages contained within each report section.

✓Base Sample Report ✓Method Blank Report ✓Sample Duplicate Report ✓Matrix Spike/Matrix Spike Duplicate Report ✓Laboratory Control Spike/Spike Duplicate Report ✓Continuing Calibration Verification Report ✓Initial Calibration Verification Report

If you have any questions regarding these tests results, please feel free to call.

Leslie Cusick
Project Manager

Keith Hunter
Technical Review

ANALYTICAL SERVICES FOR THE ENVIRONMENT

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	121
Lab Order:	0303228	**Tag Number:**	
Project:	2708-30/NW NATURAL-GASCO	**Collection Date:**	3/21/03
Lab ID:	0303228-01A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	3/27/03
Ethylbenzene	ND	0.50		µg/L	1	3/27/03
Toluene	ND	0.50		µg/L	1	3/27/03
Xylenes, Total	ND	1.5		µg/L	1	3/27/03
Surr: Trifluorotoluene	101	70-130		%REC	1	3/27/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	122
Lab Order:	0303228	**Tag Number:**	
Project:	2708-30/NW NATURAL-GASCO	**Collection Date:**	3/21/03
Lab ID:	0303228-02A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	49000	250		µg/L	500	3/28/03
Ethylbenzene	ND	250		µg/L	500	3/28/03
Toluene	310	250		µg/L	500	3/28/03
Xylenes, Total	ND	750		µg/L	500	3/28/03
Surr: Trifluorotoluene	97.2	70-130		%REC	500	3/28/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	0.012	0.010		mg/L	1	3/31/03
Chromium	0.0056	0.0010		mg/L	1	3/31/03
Copper	0.011	0.0030		mg/L	1	3/31/03
Lead	0.0095	0.0060		mg/L	1	3/31/03
Nickel	0.016	0.0050		mg/L	1	3/31/03
Zinc	0.045	0.020		mg/L	1	3/31/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **mrs**
Acenaphthene	24	10		µg/L	100	3/25/03
Acenaphthylene	36	10		µg/L	100	3/25/03
Anthracene	ND	10		µg/L	100	3/25/03
Benz(a)anthracene	ND	10		µg/L	100	3/25/03
Benzo(a)pyrene	ND	10		µg/L	100	3/25/03
Benzo(b)fluoranthene	ND	10		µg/L	100	3/25/03
Benzo(g,h,i)perylene	ND	10		µg/L	100	3/25/03
Benzo(k)fluoranthene	ND	10		µg/L	100	3/25/03
Chrysene	ND	10		µg/L	100	3/25/03
Dibenz(a,h)anthracene	ND	10		µg/L	100	3/25/03
Fluoranthene	ND	10		µg/L	100	3/25/03
Fluorene	32	10		µg/L	100	3/25/03
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	100	3/25/03
Naphthalene	4900	10		µg/L	100	3/25/03
Phenanthrene	50	10		µg/L	100	3/25/03
Pyrene	ND	10		µg/L	100	3/25/03
Surr: 2-Fluorobiphenyl	0	43-116	S, X	%REC	100	3/25/03
Surr: 4-Terphenyl-d14	0	33-141	S, X	%REC	100	3/25/03
Surr: Nitrobenzene-d5	0	35-114	S, X	%REC	100	3/25/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide	0.070	0.040		mg/L	1	4/2/03
CYANIDE		**EPA 9014**				Analyst: **jca**
Cyanide, Amenable	ND	0.040		mg/L	1	4/2/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	122
Lab Order:	0303228	**Tag Number:**	
Project:	2708-30/NW NATURAL-GASCO	**Collection Date:**	3/21/03
Lab ID:	0303228-02B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic, Diss	0.017	0.011		mg/L	1	4/1/03
Chromium, Diss	ND	0.0011		mg/L	1	4/1/03
Copper, Diss	ND	0.0033		mg/L	1	4/1/03
Lead, Diss	0.0081	0.0067		mg/L	1	4/1/03
Nickel, Diss	ND	0.0056		mg/L	1	4/1/03
Zinc, Diss	0.056	0.022		mg/L	1	4/1/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *02-Apr-03*

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161752**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	ND	0.040									

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161753**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.183	0.040	0.2	0	91.5	79.8	111	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161754**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.179	0.040	0.2	0	89.5	79.8	111	0.183	2.21	20	

Sample ID: **0303228-02A MS** SampType: **MS** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **122** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161761**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.274	0.040	0.2	0.07	102	64.4	125	0	0		

Sample ID: **0303203-03A DUP** SampType: **DUP** TestCode: **01 CN A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402A**
Client ID: **ZZZZZ** Batch ID: **R13460** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	1.37	0.40	0	0	0	0	0	1.34	2.21	20	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023174

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161762**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040									

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161763**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.183	0.040	0.2	0	91.5	81	113	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/26/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.179	0.040	0.2	0	89.5	81	113	0.183	2.21	20	

Sample ID: **0303228-02A MS** SampType: **MS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **122** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.204	0.040	0.2	0	102	75	120	0	0		

Sample ID: **0303203-03A DUP** SampType: **DUP** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **3/28/03** Run ID: **HIT MAN_030402B**
Client ID: **ZZZZZ** Batch ID: **R13461** TestNo: **EPA 9014** Analysis Date: **4/2/03** SeqNo: **161769**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.40	0	0	0	0	0	0	0	0	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023175

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **MB-5573** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/28/03** Run ID: **ICP_030331A**
Client ID: **ZZZZZ** Batch ID: **5573** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **3/31/03** SeqNo: **161499**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.010									
Barium	ND	0.0010									
Cadmium	ND	0.0010									
Chromium	ND	0.0010									
Copper	ND	0.0030									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Selenium	ND	0.015									
Silver	ND	0.0030									
Zinc	ND	0.020									

Sample ID: **MB-5590** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **4/1/03** Run ID: **ICP_030401A**
Client ID: **ZZZZZ** Batch ID: **5590** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **4/1/03** SeqNo: **161603**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.010									
Chromium	ND	0.0010									
Copper	ND	0.0030									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Zinc	ND	0.020									

Sample ID: **LCS-5573** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/28/03** Run ID: **ICP_030331A**
Client ID: **ZZZZZ** Batch ID: **5573** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **3/31/03** SeqNo: **161500**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.484	0.010	0.5	0	96.8	80	120	0	0		
Barium	0.503	0.0010	0.5	0	101	80	120	0	0		
Cadmium	0.447	0.0010	0.5	0	89.4	80	120	0	0		
Chromium	0.487	0.0010	0.5	0	97.4	80	120	0	0		
Copper	0.491	0.0030	0.5	0	98.2	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023176

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **LCS-5573** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/28/03** Run ID: **ICP_030331A**
Client ID: **ZZZZZ** Batch ID: **5573** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/31/03** SeqNo: **161500**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.494	0.0060	0.5	0	98.8	80	120	0	0		
Nickel	0.486	0.0050	0.5	0	97.2	80	120	0	0		
Selenium	0.485	0.015	0.5	0	97	80	120	0	0		
Silver	0.502	0.0030	0.5	0	100	80	120	0	0		
Zinc	0.497	0.020	0.5	0	99.4	80	120	0	0		

Sample ID: **LCS-5590** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **4/1/03** Run ID: **ICP_030401A**
Client ID: **ZZZZZ** Batch ID: **5590** TestNo: **EPA 6010B (3005A)** Analysis Date: **4/1/03** SeqNo: **161604**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.471	0.010	0.5	0	94.2	80	120	0	0		
Chromium	0.483	0.0010	0.5	0	96.6	80	120	0	0		
Copper	0.494	0.0030	0.5	0	98.8	80	120	0	0		
Lead	0.519	0.0060	0.5	0	104	80	120	0	0		
Nickel	0.48	0.0050	0.5	0	96	80	120	0	0		
Zinc	0.497	0.020	0.5	0	99.4	80	120	0	0		

Sample ID: **0303225-01A MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/28/03** Run ID: **ICP_030331A**
Client ID: **ZZZZZ** Batch ID: **5573** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/31/03** SeqNo: **161502**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.541	0.20	0.5	0	108	75	125	0	0		
Barium, TCLP	3.05	0.020	0.5	2.57	96	75	125	0	0		
Cadmium, TCLP	0.512	0.020	0.5	0.0711	88.2	75	125	0	0		
Chromium, TCLP	0.479	0.020	0.5	0	95.8	75	125	0	0		
Copper, TCLP	0.578	0.060	0.5	0	116	75	125	0	0		
Lead, TCLP	0.554	0.12	0.5	0	111	75	125	0	0		
Nickel, TCLP	0.573	0.10	0.5	0	115	75	125	0	0		
Selenium, TCLP	0.57	0.30	0.5	0	114	75	125	0	0		
Silver, TCLP	0.556	0.060	0.5	0	111	75	125	0	0		
Zinc, TCLP	7.16	2.0	0.5	6.68	96	75	125	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023177

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0303228-02B MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **4/1/03** Run ID: **ICP_030401A**
Client ID: **122** Batch ID: **5590** TestNo: **EPA 6010B (3005A)** Analysis Date: **4/1/03** SeqNo: **161606**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.592	0.012	0.581	0.017	98.9	75	125	0	0		
Chromium, Diss	0.543	0.0012	0.581	0	93.4	75	125	0	0		
Copper, Diss	0.61	0.0035	0.581	0	105	75	125	0	0		
Lead, Diss	0.558	0.0070	0.581	0.00811	94.6	75	125	0	0		
Nickel, Diss	0.53	0.0058	0.581	0	91.2	75	125	0	0		
Zinc, Diss	0.573	0.023	0.581	0.0557	89	75	125	0	0		

Sample ID: **0303225-01A MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/28/03** Run ID: **ICP_030331A**
Client ID: **ZZZZZ** Batch ID: **5573** TestNo: **EPA 6010B (3005A)** Analysis Date: **3/31/03** SeqNo: **161503**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.54	0.20	0.5	0	108	75	125	0.541	0.185	20	
Barium, TCLP	3.04	0.020	0.5	2.57	94	75	125	3.05	0.328	20	
Cadmium, TCLP	0.512	0.020	0.5	0.0711	88.2	75	125	0.512	0	20	
Chromium, TCLP	0.478	0.020	0.5	0	95.6	75	125	0.479	0.209	20	
Copper, TCLP	0.576	0.060	0.5	0	115	75	125	0.578	0.347	20	
Lead, TCLP	0.555	0.12	0.5	0	111	75	125	0.554	0.180	20	
Nickel, TCLP	0.574	0.10	0.5	0	115	75	125	0.573	0.174	20	
Selenium, TCLP	0.566	0.30	0.5	0	113	75	125	0.57	0.704	20	
Silver, TCLP	0.561	0.060	0.5	0	112	75	125	0.556	0.895	20	
Zinc, TCLP	7.26	2.0	0.5	6.68	116	75	125	7.16	1.39	20	

Sample ID: **0303228-02B MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **4/1/03** Run ID: **ICP_030401A**
Client ID: **122** Batch ID: **5590** TestNo: **EPA 6010B (3005A)** Analysis Date: **4/1/03** SeqNo: **161607**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.595	0.012	0.581	0.017	99.5	75	125	0.592	0.588	20	
Chromium, Diss	0.544	0.0012	0.581	0	93.6	75	125	0.543	0.214	20	
Copper, Diss	0.613	0.0035	0.581	0	105	75	125	0.61	0.380	20	
Lead, Diss	0.552	0.0070	0.581	0.00811	93.6	75	125	0.558	1.05	20	
Nickel, Diss	0.535	0.0058	0.581	0	92	75	125	0.53	0.873	20	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023178

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0303228-02B MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **4/1/03** Run ID: **ICP_030401A**
Client ID: **122** Batch ID: **5590** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **4/1/03** SeqNo: **161607**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc, Diss	0.578	0.023	0.581	0.0557	89.8	75	125	0.573	0.808	20	

Sample ID: **0303242-01B DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/28/03** Run ID: **ICP_030331A**
Client ID: **ZZZZZ** Batch ID: **5573** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **3/31/03** SeqNo: **161505**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	ND	0.20	0	0	0	0	0	0	0	20	
Barium, TCLP	1.34	0.020	0	0	0	0	0	1.36	1.48	20	
Cadmium, TCLP	0.408	0.020	0	0	0	0	0	0.413	1.22	20	
Chromium, TCLP	ND	0.020	0	0	0	0	0	0	0	20	
Copper, TCLP	ND	0.060	0	0	0	0	0	0	0	20	
Lead, TCLP	0.137	0.12	0	0	0	0	0	0.138	0.727	20	
Nickel, TCLP	ND	0.10	0	0	0	0	0	0.1	0	20	
Selenium, TCLP	ND	0.30	0	0	0	0	0	0	0	20	
Silver, TCLP	ND	0.060	0	0	0	0	0	0	0	20	
Zinc, TCLP	6.58	2.0	0	0	0	0	0	7.26	9.83	20	

Sample ID: **0304002-05B DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **4/1/03** Run ID: **ICP_030401A**
Client ID: **ZZZZZ** Batch ID: **5590** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **4/1/03** SeqNo: **161609**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.0123	0.011	0	0	0	0	0	0	200	20	R,T
Chromium, Diss	ND	0.0011	0	0	0	0	0	0	0	20	
Copper, Diss	ND	0.0033	0	0	0	0	0	0	0	20	
Lead, Diss	0.007	0.0067	0	0	0	0	0	0.0158	77.1	20	R,T
Nickel, Diss	ND	0.0056	0	0	0	0	0	0	0	20	
Zinc, Diss	ND	0.022	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

Koppers023179

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/28/03** Run ID: **ICP_030331A**
Client ID: **ZZZZZ** Batch ID: **5230** TestNo: **EPA 6010B** Analysis Date: **3/31/03** SeqNo: **161508**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.513	0.010	0.5	0	103	90	110	0	0		
Barium	0.502	0.0010	0.5	0	100	90	110	0	0		
Cadmium	0.489	0.0010	0.5	0	97.8	90	110	0	0		
Chromium	0.508	0.0010	0.5	0	102	90	110	0	0		
Copper	0.508	0.0030	0.5	0	102	90	110	0	0		
Lead	0.512	0.0060	0.5	0	102	90	110	0	0		
Nickel	0.507	0.0050	0.5	0	101	90	110	0	0		
Selenium	0.518	0.015	0.5	0	104	90	110	0	0		
Silver	0.504	0.0030	0.5	0	101	90	110	0	0		
Zinc	0.515	0.020	0.5	0	103	90	110	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **4/1/03** Run ID: **ICP_030401A**
Client ID: **ZZZZZ** Batch ID: **5230** TestNo: **EPA 6010B** Analysis Date: **4/1/03** SeqNo: **161613**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.5	0.010	0.5	0	100	90	110	0	0		
Chromium	0.502	0.0010	0.5	0	100	90	110	0	0		
Copper	0.501	0.0030	0.5	0	100	90	110	0	0		
Lead	0.506	0.0060	0.5	0	101	90	110	0	0		
Nickel	0.502	0.0050	0.5	0	100	90	110	0	0		
Zinc	0.51	0.020	0.5	0	102	90	110	0	0		

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/28/03** Run ID: **ICP_030331A**
Client ID: **ZZZZZ** Batch ID: **5573** TestNo: **EPA 6010B** Analysis Date: **3/31/03** SeqNo: **161498**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.516	0.010	0.5	0	103	90	110	0	0		
Barium	0.502	0.0010	0.5	0	100	90	110	0	0		
Cadmium	0.488	0.0010	0.5	0	97.6	90	110	0	0		
Chromium	0.506	0.0010	0.5	0	101	90	110	0	0		
Copper	0.505	0.0030	0.5	0	101	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023180

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **3/28/03** Run ID: **ICP_030331A**
Client ID: **ZZZZZ** Batch ID: **5573** TestNo: **EPA 6010B** Analysis Date: **3/31/03** SeqNo: **161498**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.509	0.0060	0.5	0	102	90	110	0	0		
Nickel	0.506	0.0050	0.5	0	101	90	110	0	0		
Selenium	0.516	0.015	0.5	0	103	90	110	0	0		
Silver	0.501	0.0030	0.5	0	100	90	110	0	0		
Zinc	0.512	0.020	0.5	0	102	90	110	0	0		

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **4/1/03** Run ID: **ICP_030401A**
Client ID: **ZZZZZ** Batch ID: **5590** TestNo: **EPA 6010B** Analysis Date: **4/1/03** SeqNo: **161602**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.513	0.010	0.5	0	103	90	110	0	0		
Chromium	0.5	0.0010	0.5	0	100	90	110	0	0		
Copper	0.503	0.0030	0.5	0	101	90	110	0	0		
Lead	0.502	0.0060	0.5	0	100	90	110	0	0		
Nickel	0.503	0.0050	0.5	0	101	90	110	0	0		
Zinc	0.508	0.020	0.5	0	102	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023181

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161378**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	98.4	0	100	0	98.4	70	130	0	0		

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030328A**
Client ID: **ZZZZZ** Batch ID: **R13435** TestNo: **8015/8021** Analysis Date: **3/28/03** SeqNo: **161491**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Sample ID: **LCS** SampType: **LCS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161379**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10.5	0.50	10	0	105	85	115	0	0		
Ethylbenzene	10.2	0.50	10	0	102	85	115	0	0		
Toluene	10.5	0.50	10	0	105	85	115	0	0		
Xylenes, Total	31.7	1.5	30	0	106	85	115	0	0		
Gasoline	529	100	500	0	106	80	120	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023182

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **LCS** SampType: **LCS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030328A**
Client ID: **ZZZZZ** Batch ID: **R13435** TestNo: **8015/8021** Analysis Date: **3/28/03** SeqNo: **161492**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.7	0.50	40	0	104	85	115	0	0		
Ethylbenzene	40.9	0.50	40	0	102	85	115	0	0		
Toluene	41.3	0.50	40	0	103	85	115	0	0		
Xylenes, Total	126	1.5	120	0	105	85	115	0	0		
Gasoline	1970	100	2000	0	98.5	80	120	0	0		
Surr: Trifluorotoluene	101	0	100	0	101	70	130	0	0		

Sample ID: **LCSD** SampType: **LCSD** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161380**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10.7	0.50	10	0	107	85	115	10.5	1.89	20	
Ethylbenzene	10.4	0.50	10	0	104	85	115	10.2	1.94	20	
Toluene	10.7	0.50	10	0	107	85	115	10.5	1.89	20	
Xylenes, Total	32.1	1.5	30	0	107	85	115	31.7	1.25	20	
Gasoline	522	100	500	0	104	80	120	529	1.33	20	
Surr: Trifluorotoluene	101	0	100	0	101	70	130	0	0	0	

Sample ID: **LCSD** SampType: **LCSD** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030328A**
Client ID: **ZZZZZ** Batch ID: **R13435** TestNo: **8015/8021** Analysis Date: **3/28/03** SeqNo: **161493**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.8	0.50	40	0	104	85	115	41.7	0.240	20	
Ethylbenzene	41	0.50	40	0	103	85	115	40.9	0.244	20	
Toluene	41.6	0.50	40	0	104	85	115	41.3	0.724	20	
Xylenes, Total	127	1.5	120	0	106	85	115	126	0.791	20	
Gasoline	1730	100	2000	0	86.5	80	120	1970	13.0	20	
Surr: Trifluorotoluene	99.9	0	100	0	99.9	70	130	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023183

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **0303203-04A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161386**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	32.3	0.50	30	0	108	85	115	0	0		
Ethylbenzene	31.2	0.50	30	0	104	85	115	0	0		
Toluene	32.2	0.50	30	0	107	85	115	0	0		
Xylenes, Total	96.5	1.5	90	0	107	85	115	0	0		
Surr: Trifluorotoluene	100	0	100	0	100	70	130	0	0		

Sample ID: **0303203-04A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	
Ethylbenzene	ND	0.50	0	0	0	0	0	0	0	20	
Toluene	ND	0.50	0	0	0	0	0	0	0	20	
Xylenes, Total	ND	1.5	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	102	0	100	0	102	50	150	0	0	20	

Sample ID: **0303228-02A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030328A**
Client ID: **122** Batch ID: **R13435** TestNo: **8015/8021** Analysis Date: **3/28/03** SeqNo: **161496**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48800	250	0	0	0	0	0	49400	1.43	20	
Ethylbenzene	ND	250	0	0	0	0	0	0	0	20	
Toluene	308	250	0	0	0	0	0	312	1.13	20	
Xylenes, Total	ND	750	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	49200	0	50000	0	98.4	50	150	0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161381**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.7	0.50	20	0	104	85	115	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023184

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030327A**
Client ID: **ZZZZZ** Batch ID: **R13425** TestNo: **8015/8021** Analysis Date: **3/27/03** SeqNo: **161381**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	20.9	0.50	20	0	104	85	115	0	0		
Toluene	21.2	0.50	20	0	106	85	115	0	0		
Xylenes, Total	64.9	1.5	60	0	108	85	115	0	0		
Gasoline	1020	100	1000	0	102	80	120	0	0		
Surr: Trifluorotoluene	103	0	100	0	103	70	130	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030328A**
Client ID: **ZZZZZ** Batch ID: **R13435** TestNo: **8015/8021** Analysis Date: **3/28/03** SeqNo: **161494**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.3	0.50	30	0	104	85	115	0	0		
Ethylbenzene	31.1	0.50	30	0	104	85	115	0	0		
Toluene	31.3	0.50	30	0	104	85	115	0	0		
Xylenes, Total	96	1.5	90	0	107	85	115	0	0		
Gasoline	1510	100	1500	0	101	80	120	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023185

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **MB-5554** SampType: **MBLK** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/25/03** Run ID: **HEISENBURG_030325D**
Client ID: **ZZZZZ** Batch ID: **5554** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160981**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.10									
Acenaphthylene	ND	0.10									
Anthracene	ND	0.10									
Benz(a)anthracene	ND	0.10									
Benzo(a)pyrene	ND	0.10									
Benzo(b)fluoranthene	ND	0.10									
Benzo(g,h,i)perylene	ND	0.10									
Benzo(k)fluoranthene	ND	0.10									
Chrysene	ND	0.10									
Dibenz(a,h)anthracene	ND	0.10									
Fluoranthene	ND	0.10									
Fluorene	ND	0.10									
Indeno(1,2,3-cd)pyrene	ND	0.10									
Naphthalene	ND	0.10									
Phenanthrene	ND	0.10									
Pyrene	ND	0.10									
Surr: 2-Fluorobiphenyl	0.64	0	1	0	64	43	116	0	0		
Surr: 4-Terphenyl-d14	0.65	0	1	0	65	33	141	0	0		
Surr: Nitrobenzene-d5	0.56	0	1	0	56	35	114	0	0		

Sample ID: **LCS-5554** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/25/03** Run ID: **HEISENBURG_030325D**
Client ID: **ZZZZZ** Batch ID: **5554** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.58	0.10	1	0	58	47	145	0	0		
Acenaphthylene	0.57	0.10	1	0	57	33	145	0	0		
Anthracene	0.67	0.10	1	0	67	27	133	0	0		
Benz(a)anthracene	0.67	0.10	1	0	67	33	143	0	0		
Benzo(a)pyrene	0.62	0.10	1	0	62	17	163	0	0		
Benzo(b)fluoranthene	0.58	0.10	1	0	58	24	159	0	0		
Benzo(g,h,i)perylene	0.76	0.10	1	0	76	1	219	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023186

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCS-5554** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/25/03** Run ID: **HEISENBURG_030325D**
Client ID: **ZZZZZ** Batch ID: **5554** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	0.63	0.10	1	0	63	11	162	0	0		
Chrysene	0.7	0.10	1	0	70	17	168	0	0		
Dibenz(a,h)anthracene	0.72	0.10	1	0	72	1	227	0	0		
Fluoranthene	0.66	0.10	1	0	66	26	137	0	0		
Fluorene	0.6	0.10	1	0	60	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.72	0.10	1	0	72	1	171	0	0		
Naphthalene	0.63	0.10	1	0	63	21	133	0	0		
Phenanthrene	0.68	0.10	1	0	68	54	120	0	0		
Pyrene	0.64	0.10	1	0	64	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.52	0	1	0	52	43	116	0	0		
Surr: 4-Terphenyl-d14	0.56	0	1	0	56	33	141	0	0		
Surr: Nitrobenzene-d5	0.44	0	1	0	44	35	114	0	0		

Sample ID: **LCSD-5554** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/25/03** Run ID: **HEISENBURG_030325D**
Client ID: **ZZZZZ** Batch ID: **5554** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160983**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.65	0.10	1	0	65	47	145	0.58	11.4	30	
Acenaphthylene	0.64	0.10	1	0	64	33	145	0.57	11.6	30	
Anthracene	0.74	0.10	1	0	74	27	133	0.67	9.93	30	
Benz(a)anthracene	0.72	0.10	1	0	72	33	143	0.67	7.19	30	
Benzo(a)pyrene	0.69	0.10	1	0	69	17	163	0.62	10.7	30	
Benzo(b)fluoranthene	0.64	0.10	1	0	64	24	159	0.58	9.84	30	
Benzo(g,h,i)perylene	0.84	0.10	1	0	84	1	219	0.76	10.0	30	
Benzo(k)fluoranthene	0.7	0.10	1	0	70	11	162	0.63	10.5	30	
Chrysene	0.76	0.10	1	0	76	17	168	0.7	8.22	30	
Dibenz(a,h)anthracene	0.78	0.10	1	0	78	1	227	0.72	8.00	30	
Fluoranthene	0.72	0.10	1	0	72	26	137	0.66	8.70	30	
Fluorene	0.66	0.10	1	0	66	59	121	0.6	9.52	30	
Indeno(1,2,3-cd)pyrene	0.79	0.10	1	0	79	1	171	0.72	9.27	30	
Naphthalene	0.69	0.10	1	0	69	21	133	0.63	9.09	30	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023187

CLIENT: Hahn and Associates
Work Order: 0303228
Project: 2708-30/NW NATURAL-GASCO

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCSD-5554** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **3/25/03** Run ID: **HEISENBURG_030325D**
Client ID: **ZZZZZ** Batch ID: **5554** TestNo: **8270-SIM** **(3510C)** Analysis Date: **3/25/03** SeqNo: **160983**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	0.75	0.10	1	0	75	54	120	0.68	9.79	30	
Pyrene	0.72	0.10	1	0	72	52	115	0.64	11.8	30	
Surr: 2-Fluorobiphenyl	0.62	0	1	0	62	43	116	0	0	30	
Surr: 4-Terphenyl-d14	0.63	0	1	0	63	33	141	0	0	30	
Surr: Nitrobenzene-d5	0.52	0	1	0	52	35	114	0	0	30	

Sample ID: **CCV** SampType: **CCV** TestCode: **06 PAH A** Units: **µg/L** Prep Date: Run ID: **HEISENBURG_030325D**
Client ID: **ZZZZZ** Batch ID: **R13390** TestNo: **8270-SIM** Analysis Date: **3/25/03** SeqNo: **160984**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.99	0.10	1	0	99	80	120	0	0		
Acenaphthylene	1.04	0.10	1	0	104	80	120	0	0		
Anthracene	1.14	0.10	1	0	114	80	120	0	0		
Benz(a)anthracene	1	0.10	1	0	100	80	120	0	0		
Benzo(a)pyrene	0.95	0.10	1	0	95	80	120	0	0		
Benzo(b)fluoranthene	0.89	0.10	1	0	89	80	120	0	0		
Benzo(g,h,i)perylene	1.15	0.10	1	0	115	80	120	0	0		
Benzo(k)fluoranthene	0.94	0.10	1	0	94	80	120	0	0		
Chrysene	0.97	0.10	1	0	97	80	120	0	0		
Dibenz(a,h)anthracene	1.1	0.10	1	0	110	80	120	0	0		
Fluoranthene	1.08	0.10	1	0	108	80	120	0	0		
Fluorene	1.02	0.10	1	0	102	80	120	0	0		
Indeno(1,2,3-cd)pyrene	1.1	0.10	1	0	110	80	120	0	0		
Naphthalene	1.08	0.10	1	0	108	80	120	0	0		
Phenanthrene	1.12	0.10	1	0	112	80	120	0	0		
Pyrene	0.95	0.10	1	0	95	80	120	0	0		
Surr: 2-Fluorobiphenyl	1.04	0	1	0	104	43	116	0	0		
Surr: 4-Terphenyl-d14	0.92	0	1	0	92	33	141	0	0		
Surr: Nitrobenzene-d5	0.87	0	1	0	87	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023188

ENVIRONMENTAL SERVICES LABORATORY – GLOSSARY OF FLAGS

QUALIFIER	DESCRIPTION
AA	This sample was analyzed after the holding time had expired.
AB	The hydrocarbon pattern in this sample is not typical of gasoline.
AC	The hydrocarbon pattern in this sample is not typical of diesel.
AD	The hydrocarbon pattern in this sample is not typical of oil.
AE	The hydrocarbon pattern in this sample extends into the gasoline range.
AF	The hydrocarbon pattern in this sample extends into the diesel range.
AG	The hydrocarbon pattern in this sample extends into the oil range.
A	This analysis was performed on a VOA sample containing headspace.
B	Analyte detected in the Method Blank above the reporting level.
C	The Relative Percent Difference (RPD) for the primary result and confirmation result was greater than 40%. The higher result was reported.
D	The sample was supplied in an inappropriate container according to method criteria.
E	This value is above the quantitation limit. It is considered an estimate.
H	The Matrix Spike/Matrix Spike Duplicate (MS/MSD) result was outside control limits. The Laboratory Control Standard/Duplicate (LCS/LCSD) result was in control validating the batch.
J	The result is above the Method Detection Limit (MDL) and below the Reporting level (RL). It is considered an estimate.
M	The MS/MSD recoveries are not calculable due to a high amount of analyte in sample.
MI	This indicates a high level of matrix interference affecting the spike or surrogate recovery.
N	See case narrative.
O	Detection Limits are elevated due to sample dilution. See case narrative.
Q	Further inspection of the sample confirms a non-homogenous sample matrix affecting RPD result.
R	The RPD result is outside method control limits. See other qualifiers or case narrative.
S	The spike recovery is outside method control limits. See other qualifiers or case narrative.
T	The RPD between the sample result and duplicate result was greater than 20%. The original result was less than three times the reporting level, therefore the RPD is not applicable.
X	Unable to quantitate surrogate recovery due to sample dilution.

Koppers023189

APPENDIX C

Analytical Results and Chain-of-Custody Documentation:
June 2003 Groundwater Monitoring Event

HAHN AND ASSOCIATES, INC.
Environmental Management
434 NW Sixth Avenue, Suite 203 • Portland OR 97209
(503) 796-0717 • Fax (503) 227-2209

Laboratory: ESL
503-670-8520
Lab Project No.: 03060280

CHAIN OF CUSTODY

Chain of Custody No. 2208-4083

Project Manager: Rob Ede
Project No.: 2708
Project Name: NW Natural - Gasco Facility
Collected by: Matt Mudge

Liquid with Sediment Sample
____ Test Filtrate ____ Test Sediment ____ Test Both
Multi-Phase Sample
____ Test One (which) ____ Test Separately ____ Shake

Samples Received at 4C (Y or N): ____
Appropriate Containers Used (Y or N): ____
Provide Verbal Results (Y or N): No
Provide Preliminary Fax Results: Yes

Comments

Sample Number Prefix: 2708-030602-

*metals = As, Cr, Cu, Pb, Ni, Zn

Lab ID	Sample #	Date	Time	Sample Description	Soil	Water	Other	Number of Containers	PAHs (EPA 8270 SIM)	BTEX (EPA 8021)	Metals (EPA 6010) (TOTAL)*	Amenable CN⁻ (EPA 9010)	Metals (EPA 6010) (Dissolved - FF)*					RUSH	Remarks
-01	MW7-100	6/2/03	12:00	MW7-100		X		2		X									
-02	MW14-110-101	6/2/03	13:55	MW14-110-101		X		8	X	X	X	X	X						

Relinquished by	Company	Date	Time	Received by	Company
M.S. Mudge	HAHN	6/4/03	11:15	[signature]	[signature]

Koppers023192

Environmental Services Laboratory, Inc.

E S L

17400 SW Upper Boones Ferry Road, Suite 270 • Portland, OR 97224 • (503) 670-8520

June 16, 2003

Mr. Rob Ede
Hahn and Associates
434 NW Sixth Avenue
Suite 203
Portland, OR 97209

TEL: (503)796-0717
FAX (503) 227-2209

RE: 2708/NW NATURAL-GASCO FACILITY

Order No.: 0306028

Dear Mr. Rob Ede:

Environmental Services Laboratory received 2 samples on 6/4/03 for the analyses presented in the following report.

There were no analytical problems encountered and all analytical data met requirements established under NELAC protocol or laboratory specifications except where noted in a Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval of the laboratory. The following checked data sections are included in this report, and numbered to indicate total pages contained within each report section.

✓Base Sample Report ✓Method Blank Report ✓Sample Duplicate Report ✓Matrix Spike/Matrix Spike Duplicate Report ✓Laboratory Control Spike/Spike Duplicate Report ✓Continuing Calibration Verification Report ✓Initial Calibration Verification Report

If you have any questions regarding these tests results, please feel free to call.

Leslie Rush
Project Manager

Keith Hunter
Technical Review

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	MW7-100
Lab Order:	0306028	**Tag Number:**	
Project:	2708/NW NATURAL-GASCO FACILITY	**Collection Date:**	6/2/03
Lab ID:	0306028-01A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	6/5/03
Ethylbenzene	ND	0.50		µg/L	1	6/5/03
Toluene	ND	0.50		µg/L	1	6/5/03
Xylenes, Total	ND	1.5		µg/L	1	6/5/03
Surr: Trifluorotoluene	104	70-130		%REC	1	6/5/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	MW114-110-101
Lab Order:	0306028	**Tag Number:**	
Project:	2708/NW NATURAL-GASCO FACILITY	**Collection Date:**	6/2/03
Lab ID:	0306028-02A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	ND	0.50		µg/L	1	6/5/03
Ethylbenzene	ND	0.50		µg/L	1	6/5/03
Toluene	ND	0.50		µg/L	1	6/5/03
Xylenes, Total	ND	1.5		µg/L	1	6/5/03
Surr: Trifluorotoluene	101	70-130		%REC	1	6/5/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	0.038	0.010		mg/L	1	6/9/03
Chromium	ND	0.0010		mg/L	1	6/9/03
Copper	ND	0.0030		mg/L	1	6/9/03
Lead	ND	0.0060		mg/L	1	6/9/03
Nickel	ND	0.0050		mg/L	1	6/9/03
Zinc	ND	0.020		mg/L	1	6/9/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **rlr**
Acenaphthene	ND	0.10		µg/L	1	6/9/03
Acenaphthylene	ND	0.10		µg/L	1	6/9/03
Anthracene	ND	0.10		µg/L	1	6/9/03
Benz(a)anthracene	ND	0.10		µg/L	1	6/9/03
Benzo(a)pyrene	ND	0.10		µg/L	1	6/9/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	6/9/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	6/9/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	6/9/03
Chrysene	ND	0.10		µg/L	1	6/9/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	6/9/03
Fluoranthene	ND	0.10		µg/L	1	6/9/03
Fluorene	ND	0.10		µg/L	1	6/9/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	6/9/03
Naphthalene	ND	0.10		µg/L	1	6/9/03
Phenanthrene	ND	0.10		µg/L	1	6/9/03
Pyrene	ND	0.10		µg/L	1	6/9/03
Surr: 2-Fluorobiphenyl	55.0	43-116		%REC	1	6/9/03
Surr: 4-Terphenyl-d14	73.0	33-141		%REC	1	6/9/03
Surr: Nitrobenzene-d5	51.0	35-114		%REC	1	6/9/03
CYANIDE		**EPA 9014**				Analyst: **ldg**
Cyanide, Amenable	ND	0.040		mg/L	1	6/16/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	MW114-110-101
Lab Order:	0306028	**Tag Number:**	
Project:	2708/NW NATURAL-GASCO FACILITY	**Collection Date:**	6/2/03
Lab ID:	0306028-02B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic, Diss	0.023	0.011		mg/L	1	6/13/03
Chromium, Diss	ND	0.0011		mg/L	1	6/13/03
Copper, Diss	ND	0.0033		mg/L	1	6/13/03
Lead, Diss	ND	0.0067		mg/L	1	6/13/03
Nickel, Diss	ND	0.0056		mg/L	1	6/13/03
Zinc, Diss	ND	0.022		mg/L	1	6/13/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: MBLK	SampType: MBLK	TestCode: 01 CN4 A	Units: mg/L	Prep Date: 6/13/03	Run ID: HIT MAN_030613C
Client ID: ZZZZZ	Batch ID: R14123	TestNo: EPA 9014		Analysis Date: 6/13/03	SeqNo: 170350

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040									

Sample ID: LCS	SampType: LCS	TestCode: 01 CN4 A	Units: mg/L	Prep Date: 6/15/03	Run ID: HIT MAN_030613C
Client ID: ZZZZZ	Batch ID: R14123	TestNo: EPA 9014		Analysis Date: 6/15/03	SeqNo: 170352

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.203	0.040	0.2	0	102	81	113	0	0		

Sample ID: 0306029-03A MS	SampType: MS	TestCode: 01 CN4 A	Units: mg/L	Prep Date: 6/19/03	Run ID: HIT MAN_030613C
Client ID: ZZZZZ	Batch ID: R14123	TestNo: EPA 9014		Analysis Date: 6/19/03	SeqNo: 170356

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.207	0.040	0.2	0	104	75	125	0	0		

Sample ID: 0306028-02A DUP	SampType: DUP	TestCode: 01 CN4 A	Units: mg/L	Prep Date: 6/17/03	Run ID: HIT MAN_030613C
Client ID: MW114-110-101	Batch ID: R14123	TestNo: EPA 9014		Analysis Date: 6/17/03	SeqNo: 170354

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040	0	0	0	0	0	0	0	0	

Sample ID: CCV	SampType: CCV	TestCode: 01 CN4 A	Units: mg/L	Prep Date: 6/14/03	Run ID: HIT MAN_030613C
Client ID: ZZZZZ	Batch ID: R14123	TestNo: EPA 9014		Analysis Date: 6/14/03	SeqNo: 170351

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.501	0.040	0.5	0	100	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

Koppers023197

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: **CCV** SampType: **CCV** TestCode: **01 CN4 A** Units: mg/L Prep Date: **6/22/03** Run ID: **HIT MAN_030613C**
Client ID: **ZZZZZ** Batch ID: **R14123** TestNo: **EPA 9014** Analysis Date: **6/22/03** SeqNo: **170359**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.38	0.040	0.4	0	95	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023198

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **MB-5829** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **6/9/03** SeqNo: **169546**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.010									
Arsenic	ND	0.010									
Barium	ND	0.0010									
Beryllium	ND	0.0010									
Cadmium	ND	0.0010									
Chromium	ND	0.0010									
Cobalt	ND	0.0020									
Copper	ND	0.0030									
Hardness	ND	0.33									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Selenium	ND	0.015									
Silver	ND	0.0030									
Vanadium	ND	0.0010									
Zinc	ND	0.020									

Sample ID: **MB-5861** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **6/13/03** SeqNo: **170339**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.010									
Chromium	ND	0.0010									
Copper	ND	0.0030									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Zinc	ND	0.020									

Sample ID: **LCS-5829** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **6/9/03** SeqNo: **169547**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023199

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **LCS-5829** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** (3005A) Analysis Date: **6/9/03** SeqNo: **169547**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.489	0.010	0.5	0	97.8	80	120	0	0		
Arsenic	0.487	0.010	0.5	0	97.4	80	120	0	0		
Barium	0.505	0.0010	0.5	0	101	80	120	0	0		
Beryllium	0.5	0.0010	0.5	0	100	80	120	0	0		
Cadmium	0.494	0.0010	0.5	0	98.8	80	120	0	0		
Chromium	0.476	0.0010	0.5	0	95.2	80	120	0	0		
Cobalt	0.506	0.0020	0.5	0	101	80	120	0	0		
Copper	0.499	0.0030	0.5	0	99.8	80	120	0	0		
Hardness	32.2	0.33	33.1	0	97.3	80	120	0	0		
Lead	0.495	0.0060	0.5	0	99	80	120	0	0		
Nickel	0.502	0.0050	0.5	0	100	80	120	0	0		
Selenium	0.499	0.015	0.5	0	99.8	80	120	0	0		
Silver	0.494	0.0030	0.5	0	98.8	80	120	0	0		
Vanadium	0.51	0.0010	0.5	0	102	80	120	0	0		
Zinc	0.502	0.020	0.5	0	100	80	120	0	0		

Sample ID: **LCS-5861** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B** (3005A) Analysis Date: **6/13/03** SeqNo: **170340**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.498	0.010	0.5	0	99.6	80	120	0	0		
Chromium	0.482	0.0010	0.5	0	96.4	80	120	0	0		
Copper	0.519	0.0030	0.5	0	104	80	120	0	0		
Lead	0.508	0.0060	0.5	0	102	80	120	0	0		
Nickel	0.514	0.0050	0.5	0	103	80	120	0	0		
Zinc	0.526	0.020	0.5	0	105	80	120	0	0		

Sample ID: **0306012-01A MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** (3005A) Analysis Date: **6/9/03** SeqNo: **169549**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023200

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0306012-01A MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169549**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.491	0.010	0.5	0	98.2	75	125	0	0		
Arsenic	0.484	0.010	0.5	0	96.8	75	125	0	0		
Barium	0.68	0.0010	0.5	0.176	101	75	125	0	0		
Beryllium	0.504	0.0010	0.5	0	101	75	125	0	0		
Cadmium	0.495	0.0010	0.5	0	99	75	125	0	0		
Chromium	0.475	0.0010	0.5	0	95	75	125	0	0		
Cobalt	0.526	0.0020	0.5	0.0215	101	75	125	0	0		
Copper	0.508	0.0030	0.5	0.0038	101	75	125	0	0		
Hardness	88	0.33	33.1	55.3	98.8	75	125	0	0		
Lead	0.496	0.0060	0.5	0	99.2	75	125	0	0		
Nickel	0.512	0.0050	0.5	0.0115	100	75	125	0	0		
Selenium	0.505	0.015	0.5	0	101	75	125	0	0		
Silver	0.501	0.0030	0.5	0	100	75	125	0	0		
Vanadium	0.512	0.0010	0.5	0.0011	102	75	125	0	0		
Zinc	0.526	0.020	0.5	0.028	99.6	75	125	0	0		

Sample ID: **0306028-02B MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **MW114-110-101** Batch ID: **5861** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/13/03** SeqNo: **170342**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.609	0.011	0.575	0.0227	102	75	125	0	0		
Chromium, Diss	0.541	0.0011	0.575	0	94.2	75	125	0	0		
Copper, Diss	0.621	0.0034	0.575	0	108	75	125	0	0		
Lead, Diss	0.564	0.0069	0.575	0	98.2	75	125	0	0		
Nickel, Diss	0.564	0.0057	0.575	0	98.2	75	125	0	0		
Zinc, Diss	0.618	0.023	0.575	0	108	75	125	0	0		

Sample ID: **0306012-01A MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169550**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023201

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0306012-01A MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169550**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.495	0.010	0.5	0	99	75	125	0.491	0.811	20	
Arsenic	0.494	0.010	0.5	0	98.8	75	125	0.484	2.04	20	
Barium	0.682	0.0010	0.5	0.176	101	75	125	0.68	0.294	20	
Beryllium	0.503	0.0010	0.5	0	101	75	125	0.504	0.199	20	
Cadmium	0.493	0.0010	0.5	0	98.6	75	125	0.495	0.405	20	
Chromium	0.474	0.0010	0.5	0	94.8	75	125	0.475	0.211	20	
Cobalt	0.526	0.0020	0.5	0.0215	101	75	125	0.526	0	20	
Copper	0.507	0.0030	0.5	0.0038	101	75	125	0.508	0.197	20	
Hardness	88.1	0.33	33.1	55.3	99.1	75	125	88	0.114	20	
Lead	0.492	0.0060	0.5	0	98.4	75	125	0.496	0.810	20	
Nickel	0.512	0.0050	0.5	0.0115	100	75	125	0.512	0	20	
Selenium	0.494	0.015	0.5	0	98.8	75	125	0.505	2.20	20	
Silver	0.501	0.0030	0.5	0	100	75	125	0.501	0	20	
Vanadium	0.512	0.0010	0.5	0.0011	102	75	125	0.512	0	20	
Zinc	0.523	0.020	0.5	0.028	99	75	125	0.526	0.572	20	

Sample ID: **0306028-02B MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **MW114-110-101** Batch ID: **5861** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/13/03** SeqNo: **170343**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.594	0.011	0.575	0.0227	99.5	75	125	0.609	2.48	20	
Chromium, Diss	0.538	0.0011	0.575	0	93.6	75	125	0.541	0.639	20	
Copper, Diss	0.618	0.0034	0.575	0	108	75	125	0.621	0.371	20	
Lead, Diss	0.564	0.0069	0.575	0	98.2	75	125	0.564	0	20	
Nickel, Diss	0.563	0.0057	0.575	0	98	75	125	0.564	0.204	20	
Zinc, Diss	0.606	0.023	0.575	0	105	75	125	0.618	2.07	20	

Sample ID: **0306012-02A DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169552**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023202

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0306012-02A DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169552**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.010	0	0	0	0	0	0	0	20	
Arsenic	ND	0.010	0	0	0	0	0	0	0	20	
Barium	0.147	0.0010	0	0	0	0	0	0.148	0.678	20	
Beryllium	ND	0.0010	0	0	0	0	0	0	0	20	
Cadmium	ND	0.0010	0	0	0	0	0	0	0	20	
Chromium	0.0019	0.0010	0	0	0	0	0	0.0018	5.41	20	
Cobalt	0.0075	0.0020	0	0	0	0	0	0.0076	1.32	20	
Copper	0.0074	0.0030	0	0	0	0	0	0.0076	2.67	20	
Hardness	33.6	0.33	0	0	0	0	0	33.9	0.889	20	
Lead	0.0082	0.0060	0	0	0	0	0	0.0062	27.8	20	R,T
Nickel	0.0144	0.0050	0	0	0	0	0	0.0132	8.70	20	
Selenium	ND	0.015	0	0	0	0	0	0	0	20	
Silver	ND	0.0030	0	0	0	0	0	0	0	20	
Vanadium	0.0079	0.0010	0	0	0	0	0	0.0078	1.27	20	
Zinc	0.0386	0.020	0	0	0	0	0	0.0366	5.32	20	

Sample ID: **0306029-04B DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/13/03** SeqNo: **170345**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.0331	0.011	0	0	0	0	0	0.0287	14.4	20	
Chromium, Diss	ND	0.0011	0	0	0	0	0	0	0	20	
Copper, Diss	ND	0.0033	0	0	0	0	0	0	0	20	
Lead, Diss	ND	0.0067	0	0	0	0	0	0	0	20	
Nickel, Diss	ND	0.0056	0	0	0	0	0	0	0	20	
Zinc, Diss	ND	0.022	0	0	0	0	0	0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** Analysis Date: **6/9/03** SeqNo: **169559**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023203

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** Analysis Date: **6/9/03** SeqNo: **169559**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.507	0.010	0.5	0	101	90	110	0	0		
Arsenic	0.517	0.010	0.5	0	103	90	110	0	0		
Barium	0.508	0.0010	0.5	0	102	90	110	0	0		
Beryllium	0.512	0.0010	0.5	0	102	90	110	0	0		
Cadmium	0.507	0.0010	0.5	0	101	90	110	0	0		
Chromium	0.507	0.0010	0.5	0	101	90	110	0	0		
Cobalt	0.517	0.0020	0.5	0	103	90	110	0	0		
Copper	0.507	0.0030	0.5	0	101	90	110	0	0		
Hardness	166	0.33	165	0	101	90	110	0	0		
Lead	0.51	0.0060	0.5	0	102	90	110	0	0		
Nickel	0.506	0.0050	0.5	0	101	90	110	0	0		
Selenium	0.496	0.015	0.5	0	99.2	90	110	0	0		
Silver	0.507	0.0030	0.5	0	101	90	110	0	0		
Vanadium	0.508	0.0010	0.5	0	102	90	110	0	0		
Zinc	0.51	0.020	0.5	0	102	90	110	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B** Analysis Date: **6/13/03** SeqNo: **170349**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.499	0.010	0.5	0	99.8	90	110	0	0		
Chromium	0.496	0.0010	0.5	0	99.2	90	110	0	0		
Copper	0.514	0.0030	0.5	0	103	90	110	0	0		
Lead	0.505	0.0060	0.5	0	101	90	110	0	0		
Nickel	0.501	0.0050	0.5	0	100	90	110	0	0		
Zinc	0.51	0.020	0.5	0	102	90	110	0	0		

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** Analysis Date: **6/9/03** SeqNo: **169545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023204

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** Analysis Date: **6/9/03** SeqNo: **169545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.499	0.010	0.5	0	99.8	90	110	0	0		
Arsenic	0.522	0.010	0.5	0	104	90	110	0	0		
Barium	0.506	0.0010	0.5	0	101	90	110	0	0		
Beryllium	0.509	0.0010	0.5	0	102	90	110	0	0		
Cadmium	0.507	0.0010	0.5	0	101	90	110	0	0		
Chromium	0.504	0.0010	0.5	0	101	90	110	0	0		
Cobalt	0.51	0.0020	0.5	0	102	90	110	0	0		
Copper	0.503	0.0030	0.5	0	101	90	110	0	0		
Lead	0.51	0.0060	0.5	0	102	90	110	0	0		
Nickel	0.506	0.0050	0.5	0	101	90	110	0	0		
Selenium	0.497	0.015	0.5	0	99.4	90	110	0	0		
Silver	0.504	0.0030	0.5	0	101	90	110	0	0		
Vanadium	0.507	0.0010	0.5	0	101	90	110	0	0		
Zinc	0.508	0.020	0.5	0	102	90	110	0	0		

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B** Analysis Date: **6/13/03** SeqNo: **170338**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.505	0.010	0.5	0	101	90	110	0	0		
Chromium	0.496	0.0010	0.5	0	99.2	90	110	0	0		
Copper	0.512	0.0030	0.5	0	102	90	110	0	0		
Lead	0.505	0.0060	0.5	0	101	90	110	0	0		
Nickel	0.504	0.0050	0.5	0	101	90	110	0	0		
Zinc	0.513	0.020	0.5	0	103	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023205

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030605A**
Client ID: **ZZZZZ** Batch ID: **R14044** TestNo: **8015/8021** Analysis Date: **6/5/03** SeqNo: **169066**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	104	0	100	0	104	70	130	0	0		

Sample ID: **0306004-07A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030605A**
Client ID: **ZZZZZ** Batch ID: **R14044** TestNo: **8015/8021** Analysis Date: **6/5/03** SeqNo: **169072**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21	0.50	20	0	105	85	115	0	0		
Ethylbenzene	21.5	0.50	20	0	108	85	115	0	0		
Toluene	22.8	0.50	20	1.54	106	85	115	0	0		
Xylenes, Total	62.6	1.5	60	0	104	85	115	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Sample ID: **0306004-07A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030605A**
Client ID: **ZZZZZ** Batch ID: **R14044** TestNo: **8015/8021** Analysis Date: **6/5/03** SeqNo: **169071**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	
Ethylbenzene	ND	0.50	0	0	0	0	0	0	0	20	
Toluene	1.51	0.50	0	0	0	0	0	1.54	1.97	20	
Xylenes, Total	ND	1.5	0	0	0	0	0	0	0	20	
Gasoline	ND	100	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	103	0	100	0	103	50	150	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023206

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030605A**
Client ID: **ZZZZZ** Batch ID: **R14044** TestNo: **8015/8021** Analysis Date: **6/5/03** SeqNo: **169067**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.3	0.50	40	0	106	85	115	0	0		
Ethylbenzene	43.4	0.50	40	0	108	85	115	0	0		
Toluene	41.8	0.50	40	0	104	85	115	0	0		
Xylenes, Total	125	1.5	120	0	104	85	115	0	0		
Gasoline	2350	100	2000	0	118	80	120	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023207

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **MB-5850** SampType: **MBLK** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170015**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.10									
Acenaphthylene	ND	0.10									
Anthracene	ND	0.10									
Benz(a)anthracene	ND	0.10									
Benzo(a)pyrene	ND	0.10									
Benzo(b)fluoranthene	ND	0.10									
Benzo(g,h,i)perylene	ND	0.10									
Benzo(k)fluoranthene	ND	0.10									
Chrysene	ND	0.10									
Dibenz(a,h)anthracene	ND	0.10									
Fluoranthene	ND	0.10									
Fluorene	ND	0.10									
Indeno(1,2,3-cd)pyrene	ND	0.10									
Naphthalene	ND	0.10									
Phenanthrene	ND	0.10									
Pyrene	ND	0.10									
Surr: 2-Fluorobiphenyl	0.71	0	1	0	71	43	116	0	0		
Surr: 4-Terphenyl-d14	0.87	0	1	0	87	33	141	0	0		
Surr: Nitrobenzene-d5	0.47	0	1	0	47	35	114	0	0		

Sample ID: **LCS-5850** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170016**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.86	0.10	1	0	86	47	145	0	0		
Acenaphthylene	0.96	0.10	1	0	96	33	145	0	0		
Anthracene	0.69	0.10	1	0	69	27	133	0	0		
Benz(a)anthracene	0.89	0.10	1	0	89	33	143	0	0		
Benzo(a)pyrene	0.71	0.10	1	0	71	17	163	0	0		
Benzo(b)fluoranthene	0.74	0.10	1	0	74	24	159	0	0		
Benzo(g,h,i)perylene	1.02	0.10	1	0	102	1	219	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023208

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCS-5850** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170016**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	1.04	0.10	1	0	104	11	162	0	0		
Chrysene	0.84	0.10	1	0	84	17	168	0	0		
Dibenz(a,h)anthracene	0.95	0.10	1	0	95	1	227	0	0		
Fluoranthene	1	0.10	1	0	100	26	137	0	0		
Fluorene	0.73	0.10	1	0	73	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.89	0.10	1	0	89	1	171	0	0		
Naphthalene	0.83	0.10	1	0	83	21	133	0	0		
Phenanthrene	0.83	0.10	1	0	83	54	120	0	0		
Pyrene	1.1	0.10	1	0	110	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.75	0	1	0	75	43	116	0	0		
Surr: 4-Terphenyl-d14	0.79	0	1	0	79	33	141	0	0		
Surr: Nitrobenzene-d5	0.52	0	1	0	52	35	114	0	0		

Sample ID: **LCSD-5850** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170017**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.73	0.10	1	0	73	47	145	0.86	16.4	30	
Acenaphthylene	0.79	0.10	1	0	79	33	145	0.96	19.4	30	
Anthracene	0.61	0.10	1	0	61	27	133	0.69	12.3	30	
Benz(a)anthracene	0.84	0.10	1	0	84	33	143	0.89	5.78	30	
Benzo(a)pyrene	0.7	0.10	1	0	70	17	163	0.71	1.42	30	
Benzo(b)fluoranthene	0.69	0.10	1	0	69	24	159	0.74	6.99	30	
Benzo(g,h,i)perylene	0.94	0.10	1	0	94	1	219	1.02	8.16	30	
Benzo(k)fluoranthene	0.85	0.10	1	0	85	11	162	1.04	20.1	30	
Chrysene	0.91	0.10	1	0	91	17	168	0.84	8.00	30	
Dibenz(a,h)anthracene	0.98	0.10	1	0	98	1	227	0.95	3.11	30	
Fluoranthene	0.99	0.10	1	0	99	26	137	1	1.01	30	
Fluorene	0.65	0.10	1	0	65	59	121	0.73	11.6	30	
Indeno(1,2,3-cd)pyrene	0.92	0.10	1	0	92	1	171	0.89	3.31	30	
Naphthalene	0.72	0.10	1	0	72	21	133	0.83	14.2	30	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023209

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCSD-5850** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170017**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	0.71	0.10	1	0	71	54	120	0.83	15.6	30	
Pyrene	0.85	0.10	1	0	85	52	115	1.1	25.6	30	
Surr: 2-Fluorobiphenyl	0.63	0	1	0	63	43	116	0	0	30	
Surr: 4-Terphenyl-d14	0.68	0	1	0	68	33	141	0	0	30	
Surr: Nitrobenzene-d5	0.36	0	1	0	36	35	114	0	0	30	

Sample ID: **0306029-02A MS** SampType: **MS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170020**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.78	0.10	1	0	78	47	145	0	0		
Acenaphthylene	0.93	0.10	1	0	93	33	145	0	0		
Anthracene	0.67	0.10	1	0	67	27	133	0	0		
Benz(a)anthracene	0.84	0.10	1	0	84	33	143	0	0		
Benzo(a)pyrene	0.97	0.10	1	0	97	17	163	0	0		
Benzo(b)fluoranthene	0.66	0.10	1	0	66	24	159	0	0		
Benzo(g,h,i)perylene	0.89	0.10	1	0	89	1	219	0	0		
Benzo(k)fluoranthene	0.92	0.10	1	0	92	11	162	0	0		
Chrysene	0.8	0.10	1	0	80	17	168	0	0		
Dibenz(a,h)anthracene	0.84	0.10	1	0	84	1	227	0	0		
Fluoranthene	0.9	0.10	1	0	90	26	137	0	0		
Fluorene	0.7	0.10	1	0	70	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.8	0.10	1	0	80	1	171	0	0		
Naphthalene	0.8	0.10	1	0.25	55	21	133	0	0		
Phenanthrene	0.79	0.10	1	0	79	54	120	0	0		
Pyrene	1.03	0.10	1	0	103	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.7	0	1	0	70	43	116	0	0		
Surr: 4-Terphenyl-d14	0.8	0	1	0	80	33	141	0	0		
Surr: Nitrobenzene-d5	0.41	0	1	0	41	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023210

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **0306029-03A DUP** SampType: **DUP** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170023**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.10	0	0	0	0	0	0	0	20	
Acenaphthylene	ND	0.10	0	0	0	0	0	0	0	20	
Anthracene	ND	0.10	0	0	0	0	0	0	0	20	
Benz(a)anthracene	0.55	0.10	0	0	0	0	0	0.6	8.70	20	
Benzo(a)pyrene	0.75	0.10	0	0	0	0	0	0.85	12.5	20	
Benzo(b)fluoranthene	0.52	0.10	0	0	0	0	0	0.64	20.7	20	R, Q
Benzo(g,h,i)perylene	0.76	0.10	0	0	0	0	0	0.77	1.31	20	
Benzo(k)fluoranthene	0.72	0.10	0	0	0	0	0	0.77	6.71	20	
Chrysene	0.64	0.10	0	0	0	0	0	0.69	7.52	20	
Dibenz(a,h)anthracene	ND	0.10	0	0	0	0	0	0	0	20	
Fluoranthene	1.09	0.10	0	0	0	0	0	1.2	9.61	20	
Fluorene	ND	0.10	0	0	0	0	0	0	0	20	
Indeno(1,2,3-cd)pyrene	0.44	0.10	0	0	0	0	0	0.45	2.25	20	
Naphthalene	ND	0.10	0	0	0	0	0	0	0	20	
Phenanthrene	0.29	0.10	0	0	0	0	0	0.34	15.9	20	
Pyrene	1.02	0.10	0	0	0	0	0	1.12	9.35	20	
Surr: 2-Fluorobiphenyl	0.71	0	1	0	71	43	116	0	0	0	
Surr: 4-Terphenyl-d14	0.86	0	1	0	86	33	141	0	0	0	
Surr: Nitrobenzene-d5	0.41	0	1	0	41	35	114	0	0	0	

Sample ID: **CCV** SampType: **CCV** TestCode: **06 PAH A** Units: **µg/L** Prep Date: Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **R14096** TestNo: **8270-SIM** Analysis Date: **6/9/03** SeqNo: **170018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.9	0.10	1	0	90	80	120	0	0		
Acenaphthylene	0.95	0.10	1	0	95	80	120	0	0		
Anthracene	0.9	0.10	1	0	90	80	120	0	0		
Benz(a)anthracene	0.89	0.10	1	0	89	80	120	0	0		
Benzo(a)pyrene	1.14	0.10	1	0	114	80	120	0	0		
Benzo(b)fluoranthene	0.83	0.10	1	0	83	80	120	0	0		
Benzo(g,h,i)perylene	0.99	0.10	1	0	99	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023211

CLIENT: Hahn and Associates
Work Order: 0306028
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **CCV** SampType: **CCV** TestCode: **06 PAH A** Units: **µg/L** Prep Date: Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **R14096** TestNo: **8270-SIM** Analysis Date: **6/9/03** SeqNo: **170018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	0.93	0.10	1	0	93	80	120	0	0		
Chrysene	0.86	0.10	1	0	86	80	120	0	0		
Dibenz(a,h)anthracene	0.88	0.10	1	0	88	80	120	0	0		
Fluoranthene	1	0.10	1	0	100	80	120	0	0		
Fluorene	0.82	0.10	1	0	82	80	120	0	0		
Indeno(1,2,3-cd)pyrene	0.98	0.10	1	0	98	80	120	0	0		
Naphthalene	0.82	0.10	1	0	82	80	120	0	0		
Phenanthrene	0.85	0.10	1	0	85	80	120	0	0		
Pyrene	1.07	0.10	1	0	107	80	120	0	0		
Surr: 2-Fluorobiphenyl	0.96	0	1	0	96	43	116	0	0		
Surr: 4-Terphenyl-d14	1.12	0	1	0	112	33	141	0	0		
Surr: Nitrobenzene-d5	0.81	0	1	0	81	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023212

ENVIRONMENTAL SERVICES LABORATORY – GLOSSARY OF FLAGS

QUALIFIER	DESCRIPTION
AA	This sample was analyzed after the holding time had expired.
AB	The hydrocarbon pattern in this sample is not typical of gasoline.
AC	The hydrocarbon pattern in this sample is not typical of diesel.
AD	The hydrocarbon pattern in this sample is not typical of oil.
AE	The hydrocarbon pattern in this sample extends into the gasoline range.
AF	The hydrocarbon pattern in this sample extends into the diesel range.
AG	The hydrocarbon pattern in this sample extends into the oil range.
A	This analysis was performed on a VOA sample containing headspace.
B	Analyte detected in the Method Blank above the reporting level.
C	The Relative Percent Difference (RPD) for the primary result and confirmation result was greater than 40%. The higher result was reported.
D	The sample was supplied in an inappropriate container according to method criteria.
E	This value is above the quantitation limit. It is considered an estimate.
H	The Matrix Spike/Matrix Spike Duplicate (MS/MSD) result was outside control limits. The Laboratory Control Standard/Duplicate (LCS/LCSD) result was in control validating the batch.
J	The result is above the Method Detection Limit (MDL) and below the Reporting level (RL). It is considered an estimate.
M	The MS/MSD recoveries are not calculable due to a high amount of analyte in sample.
MI	This indicates a high level of matrix interference affecting the spike or surrogate recovery.
N	See case narrative.
O	Detection Limits are elevated due to sample dilution. See case narrative.
Q	Further inspection of the sample confirms a non-homogenous sample matrix affecting RPD result.
R	The RPD result is outside method control limits. See other qualifiers or case narrative.
S	The spike recovery is outside method control limits. See other qualifiers or case narrative.
T	The RPD between the sample result and duplicate result was greater than 20%. The original result was less than three times the reporting level, therefore the RPD is not applicable.
X	Unable to quantitate surrogate recovery due to sample dilution.

Koppers023213

HAHN AND ASSOCIATES, INC.
Environmental Management
434 NW Sixth Avenue, Suite 203 • Portland OR 97209
(503) 796-0717 • Fax (503) 227-2209

Laboratory: ESL 503-670-8520
Lab Project No.: 03060029

CHAIN OF CUSTODY

Chain of Custody No. 2708-W084

Project Manager: Rob Ede
Project No.: 2708
Project Name: NW Natural - Gasco Facility
Collected by: Matt Mudge

Liquid with Sediment Sample
____ Test Filtrate ____ Test Sediment ____ Test Both
Multi-Phase Sample
____ Test One (which) ____ Test Separately ____ Shake

Samples Received at 4C (Y or N): ____
Appropriate Containers Used (Y or N): ____
Provide Verbal Results (Y or N): No
Provide Preliminary Fax Results: Yes

Comments
Sample Number Prefix: - 2708-030603-
* metals = As, Cr, Cu, Pb, Ni, Zn

Lab ID	Sample #	Date	Time	Sample Description	Soil	Water	Other	Number of Containers	PAHs (EPA 8270 SIM)	BTEX (EPA 8021)	Metals (EPA 6010)* (TOTAL)	Amenable CN⁻ (EPA 9010)	Metals (EPA 6010) (Dissolved - FF)					RUSH	Remarks
-01	MW7-102	6/3/03	7:00	MW7-102		X		2		X									
-02	MW7-103		7:40	MW7-103		X		5	X	X									
-03	MW15-66-104		8:48	MW15-66-104		X		7	X	X	X	X							
-04	MW15-50-105		11:34	MW15-50-105		X		8	X	X	X	X	X						
-05	MW15-50-106		11:35	MW15-50-106		X		8	X	X	X	X	X						

Relinquished by	Company	Date	Time	Received by	Company
M. S. Mudge	Hahn	6/4/03	11:15	[signature]	ESL

Koppers023214

Environmental Services Laboratory, Inc.

E S L

17400 SW Upper Boones Ferry Road, Suite 270 • Portland, OR 97224 • (503) 670-8520

June 16, 2003

Mr. Rob Ede
Hahn and Associates
434 NW Sixth Avenue
Suite 203
Portland, OR 97209

TEL: (503)796-0717
FAX (503) 227-2209

RE: 2708/NW NATURAL-GASCO FACILITY

Order No.: 0306029

Dear Mr. Rob Ede:

Environmental Services Laboratory received 5 samples on 6/4/03 for the analyses presented in the following report.

There were no analytical problems encountered and all analytical data met requirements established under NELAC protocol or laboratory specifications except where noted in a Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval of the laboratory. The following checked data sections are included in this report, and numbered to indicate total pages contained within each report section.

✓Base Sample Report ✓Method Blank Report ✓Sample Duplicate Report ✓Matrix Spike/Matrix Spike Duplicate Report ✓Laboratory Control Spike/Spike Duplicate Report ✓Continuing Calibration Verification Report __Initial Calibration Verification Report

If you have any questions regarding these tests results, please feel free to call.

Leslie Rush
Project Manager

Keith Hunter
Technical Review

ANALYTICAL SERVICES FOR THE ENVIRONMENT

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	MW7-102
Lab Order:	0306029	**Tag Number:**	
Project:	2708/NW NATURAL-GASCO FACILITY	**Collection Date:**	6/3/03
Lab ID:	0306029-01A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: tln
Benzene	ND	0.50		µg/L	1	6/5/03
Ethylbenzene	ND	0.50		µg/L	1	6/5/03
Toluene	ND	0.50		µg/L	1	6/5/03
Xylenes, Total	ND	1.5		µg/L	1	6/5/03
Surr: Trifluorotoluene	104	70-130		%REC	1	6/5/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	MW7-103
Lab Order:	0306029	**Tag Number:**	
Project:	2708/NW NATURAL-GASCO FACILITY	**Collection Date:**	6/3/03
Lab ID:	0306029-02A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	1.2	0.50		µg/L	1	6/5/03
Ethylbenzene	ND	0.50		µg/L	1	6/5/03
Toluene	3.9	0.50		µg/L	1	6/5/03
Xylenes, Total	ND	1.5		µg/L	1	6/5/03
Surr: Trifluorotoluene	103	70-130		%REC	1	6/5/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **rlr**
Acenaphthene	ND	0.10		µg/L	1	6/9/03
Acenaphthylene	ND	0.10		µg/L	1	6/9/03
Anthracene	ND	0.10		µg/L	1	6/9/03
Benz(a)anthracene	ND	0.10		µg/L	1	6/9/03
Benzo(a)pyrene	ND	0.10		µg/L	1	6/9/03
Benzo(b)fluoranthene	ND	0.10		µg/L	1	6/9/03
Benzo(g,h,i)perylene	ND	0.10		µg/L	1	6/9/03
Benzo(k)fluoranthene	ND	0.10		µg/L	1	6/9/03
Chrysene	ND	0.10		µg/L	1	6/9/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	6/9/03
Fluoranthene	ND	0.10		µg/L	1	6/9/03
Fluorene	ND	0.10		µg/L	1	6/9/03
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	6/9/03
Naphthalene	0.25	0.10		µg/L	1	6/9/03
Phenanthrene	ND	0.10		µg/L	1	6/9/03
Pyrene	ND	0.10		µg/L	1	6/9/03
Surr: 2-Fluorobiphenyl	68.0	43-116		%REC	1	6/9/03
Surr: 4-Terphenyl-d14	68.0	33-141		%REC	1	6/9/03
Surr: Nitrobenzene-d5	47.0	35-114		%REC	1	6/9/03

Qualifiers:

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B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Koppers023217

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	MW15-66-104
Lab Order:	0306029	**Tag Number:**	
Project:	2708/NW NATURAL-GASCO FACILITY	**Collection Date:**	6/3/03
Lab ID:	0306029-03A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	31	0.50		µg/L	1	6/5/03
Ethylbenzene	ND	0.50		µg/L	1	6/5/03
Toluene	ND	0.50		µg/L	1	6/5/03
Xylenes, Total	ND	1.5		µg/L	1	6/5/03
Surr: Trifluorotoluene	99.3	70-130		%REC	1	6/5/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	ND	0.010		mg/L	1	6/9/03
Chromium	ND	0.0010		mg/L	1	6/9/03
Copper	ND	0.0030		mg/L	1	6/9/03
Lead	ND	0.0060		mg/L	1	6/9/03
Nickel	ND	0.0050		mg/L	1	6/9/03
Zinc	ND	0.020		mg/L	1	6/9/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **rlr**
Acenaphthene	ND	0.10		µg/L	1	6/9/03
Acenaphthylene	ND	0.10		µg/L	1	6/9/03
Anthracene	ND	0.10		µg/L	1	6/9/03
Benz(a)anthracene	0.60	0.10		µg/L	1	6/9/03
Benzo(a)pyrene	0.85	0.10		µg/L	1	6/9/03
Benzo(b)fluoranthene	0.64	0.10		µg/L	1	6/9/03
Benzo(g,h,i)perylene	0.77	0.10		µg/L	1	6/9/03
Benzo(k)fluoranthene	0.77	0.10		µg/L	1	6/9/03
Chrysene	0.69	0.10		µg/L	1	6/9/03
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	6/9/03
Fluoranthene	1.2	0.10		µg/L	1	6/9/03
Fluorene	ND	0.10		µg/L	1	6/9/03
Indeno(1,2,3-cd)pyrene	0.45	0.10		µg/L	1	6/9/03
Naphthalene	ND	0.10		µg/L	1	6/9/03
Phenanthrene	0.34	0.10		µg/L	1	6/9/03
Pyrene	1.1	0.10		µg/L	1	6/9/03
Surr: 2-Fluorobiphenyl	72.0	43-116		%REC	1	6/9/03
Surr: 4-Terphenyl-d14	78.0	33-141		%REC	1	6/9/03
Surr: Nitrobenzene-d5	40.0	35-114		%REC	1	6/9/03
CYANIDE		**EPA 9014**				Analyst: **ldg**
Cyanide, Amenable	ND	0.040		mg/L	1	6/18/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	MW15-50-105
Lab Order:	0306029	**Tag Number:**	
Project:	2708/NW NATURAL-GASCO FACILITY	**Collection Date:**	6/3/03
Lab ID:	0306029-04A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	47000	10		µg/L	20	6/6/03
Ethylbenzene	260	10		µg/L	20	6/6/03
Toluene	300	10		µg/L	20	6/6/03
Xylenes, Total	1300	30		µg/L	20	6/6/03
Surr: Trifluorotoluene	86.9	70-130		%REC	20	6/6/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	0.018	0.010		mg/L	1	6/9/03
Chromium	ND	0.0010		mg/L	1	6/9/03
Copper	ND	0.0030		mg/L	1	6/9/03
Lead	ND	0.0060		mg/L	1	6/9/03
Nickel	ND	0.0050		mg/L	1	6/9/03
Zinc	ND	0.020		mg/L	1	6/9/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **rlr**
Acenaphthene	18	1.0		µg/L	10	6/12/03
Acenaphthylene	32	1.0		µg/L	10	6/12/03
Anthracene	ND	1.0		µg/L	10	6/12/03
Benz(a)anthracene	ND	1.0		µg/L	10	6/12/03
Benzo(a)pyrene	ND	1.0		µg/L	10	6/12/03
Benzo(b)fluoranthene	ND	1.0		µg/L	10	6/12/03
Benzo(g,h,i)perylene	ND	1.0		µg/L	10	6/12/03
Benzo(k)fluoranthene	ND	1.0		µg/L	10	6/12/03
Chrysene	ND	1.0		µg/L	10	6/12/03
Dibenz(a,h)anthracene	ND	1.0		µg/L	10	6/12/03
Fluoranthene	1.9	1.0		µg/L	10	6/12/03
Fluorene	22	1.0		µg/L	10	6/12/03
Indeno(1,2,3-cd)pyrene	ND	1.0		µg/L	10	6/12/03
Naphthalene	3300	1.0		µg/L	10	6/12/03
Phenanthrene	29	1.0		µg/L	10	6/12/03
Pyrene	2.1	1.0		µg/L	10	6/12/03
Surr: 2-Fluorobiphenyl	0	43-116	S, X	%REC	10	6/12/03
Surr: 4-Terphenyl-d14	0	33-141	S, X	%REC	10	6/12/03
Surr: Nitrobenzene-d5	0	35-114	S, X	%REC	10	6/12/03
CYANIDE		**EPA 9014**				Analyst: **ldg**
Cyanide, Amenable	0.15	0.040		mg/L	1	6/20/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	MW15-50-105
Lab Order:	0306029	**Tag Number:**	
Project:	2708/NW NATURAL-GASCO FACILITY	**Collection Date:**	6/3/03
Lab ID:	0306029-04B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: mal
Arsenic, Diss	0.029	0.011		mg/L	1	6/13/03
Chromium, Diss	ND	0.0011		mg/L	1	6/13/03
Copper, Diss	ND	0.0033		mg/L	1	6/13/03
Lead, Diss	ND	0.0067		mg/L	1	6/13/03
Nickel, Diss	ND	0.0056		mg/L	1	6/13/03
Zinc, Diss	ND	0.022		mg/L	1	6/13/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	MW15-50-106
Lab Order:	0306029	**Tag Number:**	
Project:	2708/NW NATURAL-GASCO FACILITY	**Collection Date:**	6/3/03
Lab ID:	0306029-05A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
GAS/BTEX, AQUEOUS		**8015/8021**				Analyst: **tln**
Benzene	46000	10		µg/L	20	6/6/03
Ethylbenzene	240	10		µg/L	20	6/6/03
Toluene	290	10		µg/L	20	6/6/03
Xylenes, Total	1200	30		µg/L	20	6/6/03
Surr: Trifluorotoluene	84.8	70-130		%REC	20	6/6/03
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: **mal**
Arsenic	0.018	0.010		mg/L	1	6/9/03
Chromium	ND	0.0010		mg/L	1	6/9/03
Copper	ND	0.0030		mg/L	1	6/9/03
Lead	ND	0.0060		mg/L	1	6/9/03
Nickel	ND	0.0050		mg/L	1	6/9/03
Zinc	ND	0.020		mg/L	1	6/9/03
PAH BY SIM, AQUEOUS		**8270-SIM**		**(3510C)**		Analyst: **rlr**
Acenaphthene	28	1.0		µg/L	10	6/12/03
Acenaphthylene	50	1.0		µg/L	10	6/12/03
Anthracene	3.5	1.0		µg/L	10	6/12/03
Benz(a)anthracene	ND	1.0		µg/L	10	6/12/03
Benzo(a)pyrene	ND	1.0		µg/L	10	6/12/03
Benzo(b)fluoranthene	ND	1.0		µg/L	10	6/12/03
Benzo(g,h,i)perylene	ND	1.0		µg/L	10	6/12/03
Benzo(k)fluoranthene	ND	1.0		µg/L	10	6/12/03
Chrysene	ND	1.0		µg/L	10	6/12/03
Dibenz(a,h)anthracene	ND	1.0		µg/L	10	6/12/03
Fluoranthene	2.9	1.0		µg/L	10	6/12/03
Fluorene	33	1.0		µg/L	10	6/12/03
Indeno(1,2,3-cd)pyrene	ND	1.0		µg/L	10	6/12/03
Naphthalene	4900	1.0		µg/L	10	6/12/03
Phenanthrene	43	1.0		µg/L	10	6/12/03
Pyrene	2.2	1.0		µg/L	10	6/12/03
Surr: 2-Fluorobiphenyl	0	43-116	S, X	%REC	10	6/12/03
Surr: 4-Terphenyl-d14	0	33-141	S, X	%REC	10	6/12/03
Surr: Nitrobenzene-d5	0	35-114	S, X	%REC	10	6/12/03
CYANIDE		**EPA 9014**				Analyst: **ldg**
Cyanide, Amenable	ND	0.040		mg/L	1	6/21/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Koppers023221

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT:	Hahn and Associates	**Client Sample ID:**	MW15-50-106
Lab Order:	0306029	**Tag Number:**	
Project:	2708/NW NATURAL-GASCO FACILITY	**Collection Date:**	6/3/03
Lab ID:	0306029-05B	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**EPA 6010B**		**(3005A)**		Analyst: mal
Arsenic, Diss	0.033	0.011		mg/L	1	6/13/03
Chromium, Diss	ND	0.0011		mg/L	1	6/13/03
Copper, Diss	ND	0.0033		mg/L	1	6/13/03
Lead, Diss	ND	0.0067		mg/L	1	6/13/03
Nickel, Diss	ND	0.0056		mg/L	1	6/13/03
Zinc, Diss	ND	0.022		mg/L	1	6/13/03

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Koppers023222

Environmental Services Laboratory

Date: *16-Jun-03*

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **6/13/03** Run ID: **HIT MAN_030613C**
Client ID: **ZZZZZ** Batch ID: **R14123** TestNo: **EPA 9014** Analysis Date: **6/13/03** SeqNo: **170350**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040									

Sample ID: **LCS** SampType: **LCS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **6/15/03** Run ID: **HIT MAN_030613C**
Client ID: **ZZZZZ** Batch ID: **R14123** TestNo: **EPA 9014** Analysis Date: **6/15/03** SeqNo: **170352**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.203	0.040	0.2	0	102	81	113	0	0		

Sample ID: **0306029-03A MS** SampType: **MS** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **6/19/03** Run ID: **HIT MAN_030613C**
Client ID: **MW15-66-104** Batch ID: **R14123** TestNo: **EPA 9014** Analysis Date: **6/19/03** SeqNo: **170356**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.207	0.040	0.2	0	104	75	125	0	0		

Sample ID: **0306028-02A DUP** SampType: **DUP** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **6/17/03** Run ID: **HIT MAN_030613C**
Client ID: **ZZZZZ** Batch ID: **R14123** TestNo: **EPA 9014** Analysis Date: **6/17/03** SeqNo: **170354**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	ND	0.040	0	0	0	0	0	0	0	0	

Sample ID: **CCV** SampType: **CCV** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **6/14/03** Run ID: **HIT MAN_030613C**
Client ID: **ZZZZZ** Batch ID: **R14123** TestNo: **EPA 9014** Analysis Date: **6/14/03** SeqNo: **170351**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.501	0.040	0.5	0	100	90	110	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023223

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 01 CN4 A

Sample ID: **CCV** SampType: **CCV** TestCode: **01 CN4 A** Units: **mg/L** Prep Date: **6/22/03** Run ID: **HIT MAN_030613C**
Client ID: **ZZZZZ** Batch ID: **R14123** TestNo: **EPA 9014** Analysis Date: **6/22/03** SeqNo: **170359**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable	0.38	0.040	0.4	0	95	90	110	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023224

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **MB-5829** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **6/9/03** SeqNo: **169546**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.010									
Arsenic	ND	0.010									
Barium	ND	0.0010									
Beryllium	ND	0.0010									
Cadmium	ND	0.0010									
Chromium	ND	0.0010									
Cobalt	ND	0.0020									
Copper	ND	0.0030									
Hardness	ND	0.33									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Selenium	ND	0.015									
Silver	ND	0.0030									
Vanadium	ND	0.0010									
Zinc	ND	0.020									

Sample ID: **MB-5861** SampType: **MBLK** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **6/13/03** SeqNo: **170339**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.010									
Chromium	ND	0.0010									
Copper	ND	0.0030									
Lead	ND	0.0060									
Nickel	ND	0.0050									
Zinc	ND	0.020									

Sample ID: **LCS-5829** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** **(3005A)** Analysis Date: **6/9/03** SeqNo: **169547**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023225

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **LCS-5829** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169547**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.489	0.010	0.5	0	97.8	80	120	0	0		
Arsenic	0.487	0.010	0.5	0	97.4	80	120	0	0		
Barium	0.505	0.0010	0.5	0	101	80	120	0	0		
Beryllium	0.5	0.0010	0.5	0	100	80	120	0	0		
Cadmium	0.494	0.0010	0.5	0	98.8	80	120	0	0		
Chromium	0.476	0.0010	0.5	0	95.2	80	120	0	0		
Cobalt	0.506	0.0020	0.5	0	101	80	120	0	0		
Copper	0.499	0.0030	0.5	0	99.8	80	120	0	0		
Hardness	32.2	0.33	33.1	0	97.3	80	120	0	0		
Lead	0.495	0.0060	0.5	0	99	80	120	0	0		
Nickel	0.502	0.0050	0.5	0	100	80	120	0	0		
Selenium	0.499	0.015	0.5	0	99.8	80	120	0	0		
Silver	0.494	0.0030	0.5	0	98.8	80	120	0	0		
Vanadium	0.51	0.0010	0.5	0	102	80	120	0	0		
Zinc	0.502	0.020	0.5	0	100	80	120	0	0		

Sample ID: **LCS-5861** SampType: **LCS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/13/03** SeqNo: **170340**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.498	0.010	0.5	0	99.6	80	120	0	0		
Chromium	0.482	0.0010	0.5	0	96.4	80	120	0	0		
Copper	0.519	0.0030	0.5	0	104	80	120	0	0		
Lead	0.508	0.0060	0.5	0	102	80	120	0	0		
Nickel	0.514	0.0050	0.5	0	103	80	120	0	0		
Zinc	0.526	0.020	0.5	0	105	80	120	0	0		

Sample ID: **0306012-01A MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169549**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023226

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0306012-01A MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169549**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.491	0.010	0.5	0	98.2	75	125	0	0		
Arsenic	0.484	0.010	0.5	0	96.8	75	125	0	0		
Barium	0.68	0.0010	0.5	0.176	101	75	125	0	0		
Beryllium	0.504	0.0010	0.5	0	101	75	125	0	0		
Cadmium	0.495	0.0010	0.5	0	99	75	125	0	0		
Chromium	0.475	0.0010	0.5	0	95	75	125	0	0		
Cobalt	0.526	0.0020	0.5	0.0215	101	75	125	0	0		
Copper	0.508	0.0030	0.5	0.0038	101	75	125	0	0		
Hardness	88	0.33	33.1	55.3	98.8	75	125	0	0		
Lead	0.496	0.0060	0.5	0	99.2	75	125	0	0		
Nickel	0.512	0.0050	0.5	0.0115	100	75	125	0	0		
Selenium	0.505	0.015	0.5	0	101	75	125	0	0		
Silver	0.501	0.0030	0.5	0	100	75	125	0	0		
Vanadium	0.512	0.0010	0.5	0.0011	102	75	125	0	0		
Zinc	0.526	0.020	0.5	0.028	99.6	75	125	0	0		

Sample ID: **0306028-02B MS** SampType: **MS** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/13/03** SeqNo: **170342**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.609	0.011	0.575	0.0227	102	75	125	0	0		
Chromium, Diss	0.541	0.0011	0.575	0	94.2	75	125	0	0		
Copper, Diss	0.621	0.0034	0.575	0	108	75	125	0	0		
Lead, Diss	0.564	0.0069	0.575	0	98.2	75	125	0	0		
Nickel, Diss	0.564	0.0057	0.575	0	98.2	75	125	0	0		
Zinc, Diss	0.618	0.023	0.575	0	108	75	125	0	0		

Sample ID: **0306012-01A MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169550**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023227

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0306012-01A MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169550**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.495	0.010	0.5	0	99	75	125	0.491	0.811	20	
Arsenic	0.494	0.010	0.5	0	98.8	75	125	0.484	2.04	20	
Barium	0.682	0.0010	0.5	0.176	101	75	125	0.68	0.294	20	
Beryllium	0.503	0.0010	0.5	0	101	75	125	0.504	0.199	20	
Cadmium	0.493	0.0010	0.5	0	98.6	75	125	0.495	0.405	20	
Chromium	0.474	0.0010	0.5	0	94.8	75	125	0.475	0.211	20	
Cobalt	0.526	0.0020	0.5	0.0215	101	75	125	0.526	0	20	
Copper	0.507	0.0030	0.5	0.0038	101	75	125	0.508	0.197	20	
Hardness	88.1	0.33	33.1	55.3	99.1	75	125	88	0.114	20	
Lead	0.492	0.0060	0.5	0	98.4	75	125	0.496	0.810	20	
Nickel	0.512	0.0050	0.5	0.0115	100	75	125	0.512	0	20	
Selenium	0.494	0.015	0.5	0	98.8	75	125	0.505	2.20	20	
Silver	0.501	0.0030	0.5	0	100	75	125	0.501	0	20	
Vanadium	0.512	0.0010	0.5	0.0011	102	75	125	0.512	0	20	
Zinc	0.523	0.020	0.5	0.028	99	75	125	0.526	0.572	20	

Sample ID: **0306028-02B MSD** SampType: **MSD** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/13/03** SeqNo: **170343**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.594	0.011	0.575	0.0227	99.5	75	125	0.609	2.48	20	
Chromium, Diss	0.538	0.0011	0.575	0	93.6	75	125	0.541	0.639	20	
Copper, Diss	0.618	0.0034	0.575	0	108	75	125	0.621	0.371	20	
Lead, Diss	0.564	0.0069	0.575	0	98.2	75	125	0.564	0	20	
Nickel, Diss	0.563	0.0057	0.575	0	98	75	125	0.564	0.204	20	
Zinc, Diss	0.606	0.023	0.575	0	105	75	125	0.618	2.07	20	

Sample ID: **0306012-02A DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169552**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023228

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **0306012-02A DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/9/03** SeqNo: **169552**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.010	0	0	0	0	0	0	0	20	
Arsenic	ND	0.010	0	0	0	0	0	0	0	20	
Barium	0.147	0.0010	0	0	0	0	0	0.148	0.678	20	
Beryllium	ND	0.0010	0	0	0	0	0	0	0	20	
Cadmium	ND	0.0010	0	0	0	0	0	0	0	20	
Chromium	0.0019	0.0010	0	0	0	0	0	0.0018	5.41	20	
Cobalt	0.0075	0.0020	0	0	0	0	0	0.0076	1.32	20	
Copper	0.0074	0.0030	0	0	0	0	0	0.0076	2.67	20	
Hardness	33.6	0.33	0	0	0	0	0	33.9	0.889	20	
Lead	0.0082	0.0060	0	0	0	0	0	0.0062	27.8	20	R,T
Nickel	0.0144	0.0050	0	0	0	0	0	0.0132	8.70	20	
Selenium	ND	0.015	0	0	0	0	0	0	0	20	
Silver	ND	0.0030	0	0	0	0	0	0	0	20	
Vanadium	0.0079	0.0010	0	0	0	0	0	0.0078	1.27	20	
Zinc	0.0386	0.020	0	0	0	0	0	0.0366	5.32	20	

Sample ID: **0306029-04B DUP** SampType: **DUP** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **MW15-50-105** Batch ID: **5861** TestNo: **EPA 6010B (3005A)** Analysis Date: **6/13/03** SeqNo: **170345**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, Diss	0.0331	0.011	0	0	0	0	0	0.0287	14.4	20	
Chromium, Diss	ND	0.0011	0	0	0	0	0	0	0	20	
Copper, Diss	ND	0.0033	0	0	0	0	0	0	0	20	
Lead, Diss	ND	0.0067	0	0	0	0	0	0	0	20	
Nickel, Diss	ND	0.0056	0	0	0	0	0	0	0	20	
Zinc, Diss	ND	0.022	0	0	0	0	0	0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** Analysis Date: **6/9/03** SeqNo: **169559**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023229

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** Analysis Date: **6/9/03** SeqNo: **169559**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.507	0.010	0.5	0	101	90	110	0	0		
Arsenic	0.517	0.010	0.5	0	103	90	110	0	0		
Barium	0.508	0.0010	0.5	0	102	90	110	0	0		
Beryllium	0.512	0.0010	0.5	0	102	90	110	0	0		
Cadmium	0.507	0.0010	0.5	0	101	90	110	0	0		
Chromium	0.507	0.0010	0.5	0	101	90	110	0	0		
Cobalt	0.517	0.0020	0.5	0	103	90	110	0	0		
Copper	0.507	0.0030	0.5	0	101	90	110	0	0		
Hardness	166	0.33	165	0	101	90	110	0	0		
Lead	0.51	0.0060	0.5	0	102	90	110	0	0		
Nickel	0.506	0.0050	0.5	0	101	90	110	0	0		
Selenium	0.496	0.015	0.5	0	99.2	90	110	0	0		
Silver	0.507	0.0030	0.5	0	101	90	110	0	0		
Vanadium	0.508	0.0010	0.5	0	102	90	110	0	0		
Zinc	0.51	0.020	0.5	0	102	90	110	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B** Analysis Date: **6/13/03** SeqNo: **170349**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.499	0.010	0.5	0	99.8	90	110	0	0		
Chromium	0.496	0.0010	0.5	0	99.2	90	110	0	0		
Copper	0.514	0.0030	0.5	0	103	90	110	0	0		
Lead	0.505	0.0060	0.5	0	101	90	110	0	0		
Nickel	0.501	0.0050	0.5	0	100	90	110	0	0		
Zinc	0.51	0.020	0.5	0	102	90	110	0	0		

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** Analysis Date: **6/9/03** SeqNo: **169545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023230

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 02 ICPA

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/5/03** Run ID: **ICP_030609B**
Client ID: **ZZZZZ** Batch ID: **5829** TestNo: **EPA 6010B** Analysis Date: **6/9/03** SeqNo: **169545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.499	0.010	0.5	0	99.8	90	110	0	0		
Arsenic	0.522	0.010	0.5	0	104	90	110	0	0		
Barium	0.506	0.0010	0.5	0	101	90	110	0	0		
Beryllium	0.509	0.0010	0.5	0	102	90	110	0	0		
Cadmium	0.507	0.0010	0.5	0	101	90	110	0	0		
Chromium	0.504	0.0010	0.5	0	101	90	110	0	0		
Cobalt	0.51	0.0020	0.5	0	102	90	110	0	0		
Copper	0.503	0.0030	0.5	0	101	90	110	0	0		
Lead	0.51	0.0060	0.5	0	102	90	110	0	0		
Nickel	0.506	0.0050	0.5	0	101	90	110	0	0		
Selenium	0.497	0.015	0.5	0	99.4	90	110	0	0		
Silver	0.504	0.0030	0.5	0	101	90	110	0	0		
Vanadium	0.507	0.0010	0.5	0	101	90	110	0	0		
Zinc	0.508	0.020	0.5	0	102	90	110	0	0		

Sample ID: **ICVLOW** SampType: **ICV** TestCode: **02 ICPA** Units: **mg/L** Prep Date: **6/12/03** Run ID: **ICP_030612B**
Client ID: **ZZZZZ** Batch ID: **5861** TestNo: **EPA 6010B** Analysis Date: **6/13/03** SeqNo: **170338**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.505	0.010	0.5	0	101	90	110	0	0		
Chromium	0.496	0.0010	0.5	0	99.2	90	110	0	0		
Copper	0.512	0.0030	0.5	0	102	90	110	0	0		
Lead	0.505	0.0060	0.5	0	101	90	110	0	0		
Nickel	0.504	0.0050	0.5	0	101	90	110	0	0		
Zinc	0.513	0.020	0.5	0	103	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023231

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030605A**
Client ID: **ZZZZZ** Batch ID: **R14044** TestNo: **8015/8021** Analysis Date: **6/5/03** SeqNo: **169066**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	104	0	100	0	104	70	130	0	0		

Sample ID: **MBLK** SampType: **MBLK** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030606A**
Client ID: **ZZZZZ** Batch ID: **R14060** TestNo: **8015/8021** Analysis Date: **6/6/03** SeqNo: **169355**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Ethylbenzene	ND	0.50									
Toluene	ND	0.50									
Xylenes, Total	ND	1.5									
Gasoline	ND	100									
Surr: Trifluorotoluene	104	0	100	0	104	70	130	0	0		

Sample ID: **0306004-07A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030605A**
Client ID: **ZZZZZ** Batch ID: **R14044** TestNo: **8015/8021** Analysis Date: **6/5/03** SeqNo: **169072**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21	0.50	20	0	105	85	115	0	0		
Ethylbenzene	21.5	0.50	20	0	108	85	115	0	0		
Toluene	22.8	0.50	20	1.54	106	85	115	0	0		
Xylenes, Total	62.6	1.5	60	0	104	85	115	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023232

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **0306004-06A MS** SampType: **MS** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030606A**
Client ID: **ZZZZZ** Batch ID: **R14060** TestNo: **8015/8021** Analysis Date: **6/6/03** SeqNo: **169359**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	34.4	0.50	30	0	115	85	115	0	0		
Ethylbenzene	36.3	0.50	30	4.21	107	85	115	0	0		
Toluene	33.8	0.50	30	1.38	108	85	115	0	0		
Xylenes, Total	104	1.5	90	12.5	102	85	115	0	0		
Surr: Trifluorotoluene	105	0	100	0	105	70	130	0	0		

Sample ID: **0306004-07A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030605A**
Client ID: **ZZZZZ** Batch ID: **R14044** TestNo: **8015/8021** Analysis Date: **6/5/03** SeqNo: **169071**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	
Ethylbenzene	ND	0.50	0	0	0	0	0	0	0	20	
Toluene	1.51	0.50	0	0	0	0	0	1.54	1.97	20	
Xylenes, Total	ND	1.5	0	0	0	0	0	0	0	20	
Gasoline	ND	100	0	0	0	0	0	0	0	20	
Surr: Trifluorotoluene	103	0	100	0	103	50	150	0	0	20	

Sample ID: **0306004-06A DUP** SampType: **DUP** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030606A**
Client ID: **ZZZZZ** Batch ID: **R14060** TestNo: **8015/8021** Analysis Date: **6/6/03** SeqNo: **169358**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0	0	0	0	0	0	0	20	
Ethylbenzene	6.48	0.50	0	0	0	0	0	4.21	42.5	20	R, Q
Toluene	2.01	0.50	0	0	0	0	0	1.38	37.2	20	R, Q
Xylenes, Total	24.5	1.5	0	0	0	0	0	12.5	64.9	20	R, Q
Surr: Trifluorotoluene	106	0	100	0	106	50	150	0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030605A**
Client ID: **ZZZZZ** Batch ID: **R14044** TestNo: **8015/8021** Analysis Date: **6/5/03** SeqNo: **169067**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023233

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 04 BG A

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030605A**
Client ID: **ZZZZZ** Batch ID: **R14044** TestNo: **8015/8021** Analysis Date: **6/5/03** SeqNo: **169067**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.3	0.50	40	0	106	85	115	0	0		
Ethylbenzene	43.4	0.50	40	0	108	85	115	0	0		
Toluene	41.8	0.50	40	0	104	85	115	0	0		
Xylenes, Total	125	1.5	120	0	104	85	115	0	0		
Gasoline	2350	100	2000	0	118	80	120	0	0		
Surr: Trifluorotoluene	102	0	100	0	102	70	130	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **04 BG A** Units: **µg/L** Prep Date: Run ID: **CRICK_030606A**
Client ID: **ZZZZZ** Batch ID: **R14060** TestNo: **8015/8021** Analysis Date: **6/6/03** SeqNo: **169356**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10.6	0.50	10	0	106	85	115	0	0		
Ethylbenzene	10.8	0.50	10	0	108	85	115	0	0		
Toluene	10.6	0.50	10	0	106	85	115	0	0		
Xylenes, Total	31.1	1.5	30	0	104	85	115	0	0		
Gasoline	572	100	500	0	114	80	120	0	0		
Surr: Trifluorotoluene	104	0	100	0	104	70	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023234

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **MB-5850** SampType: **MBLK** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170015**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.10									
Acenaphthylene	ND	0.10									
Anthracene	ND	0.10									
Benz(a)anthracene	ND	0.10									
Benzo(a)pyrene	ND	0.10									
Benzo(b)fluoranthene	ND	0.10									
Benzo(g,h,i)perylene	ND	0.10									
Benzo(k)fluoranthene	ND	0.10									
Chrysene	ND	0.10									
Dibenz(a,h)anthracene	ND	0.10									
Fluoranthene	ND	0.10									
Fluorene	ND	0.10									
Indeno(1,2,3-cd)pyrene	ND	0.10									
Naphthalene	ND	0.10									
Phenanthrene	ND	0.10									
Pyrene	ND	0.10									
Surr: 2-Fluorobiphenyl	0.71	0	1	0	71	43	116	0	0		
Surr: 4-Terphenyl-d14	0.87	0	1	0	87	33	141	0	0		
Surr: Nitrobenzene-d5	0.47	0	1	0	47	35	114	0	0		

Sample ID: **LCS-5850** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170016**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.86	0.10	1	0	86	47	145	0	0		
Acenaphthylene	0.96	0.10	1	0	96	33	145	0	0		
Anthracene	0.69	0.10	1	0	69	27	133	0	0		
Benz(a)anthracene	0.89	0.10	1	0	89	33	143	0	0		
Benzo(a)pyrene	0.71	0.10	1	0	71	17	163	0	0		
Benzo(b)fluoranthene	0.74	0.10	1	0	74	24	159	0	0		
Benzo(g,h,i)perylene	1.02	0.10	1	0	102	1	219	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023235

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCS-5850** SampType: **LCS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170016**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	1.04	0.10	1	0	104	11	162	0	0		
Chrysene	0.84	0.10	1	0	84	17	168	0	0		
Dibenz(a,h)anthracene	0.95	0.10	1	0	95	1	227	0	0		
Fluoranthene	1	0.10	1	0	100	26	137	0	0		
Fluorene	0.73	0.10	1	0	73	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.89	0.10	1	0	89	1	171	0	0		
Naphthalene	0.83	0.10	1	0	83	21	133	0	0		
Phenanthrene	0.83	0.10	1	0	83	54	120	0	0		
Pyrene	1.1	0.10	1	0	110	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.75	0	1	0	75	43	116	0	0		
Surr: 4-Terphenyl-d14	0.79	0	1	0	79	33	141	0	0		
Surr: Nitrobenzene-d5	0.52	0	1	0	52	35	114	0	0		

Sample ID: **LCSD-5850** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170017**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.73	0.10	1	0	73	47	145	0.86	16.4	30	
Acenaphthylene	0.79	0.10	1	0	79	33	145	0.96	19.4	30	
Anthracene	0.61	0.10	1	0	61	27	133	0.69	12.3	30	
Benz(a)anthracene	0.84	0.10	1	0	84	33	143	0.89	5.78	30	
Benzo(a)pyrene	0.7	0.10	1	0	70	17	163	0.71	1.42	30	
Benzo(b)fluoranthene	0.69	0.10	1	0	69	24	159	0.74	6.99	30	
Benzo(g,h,i)perylene	0.94	0.10	1	0	94	1	219	1.02	8.16	30	
Benzo(k)fluoranthene	0.85	0.10	1	0	85	11	162	1.04	20.1	30	
Chrysene	0.91	0.10	1	0	91	17	168	0.84	8.00	30	
Dibenz(a,h)anthracene	0.98	0.10	1	0	98	1	227	0.95	3.11	30	
Fluoranthene	0.99	0.10	1	0	99	26	137	1	1.01	30	
Fluorene	0.65	0.10	1	0	65	59	121	0.73	11.6	30	
Indeno(1,2,3-cd)pyrene	0.92	0.10	1	0	92	1	171	0.89	3.31	30	
Naphthalene	0.72	0.10	1	0	72	21	133	0.83	14.2	30	

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023236

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **LCSD-5850** SampType: **LCSD** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **5850** TestNo: **8270-SIM** (3510C) Analysis Date: **6/9/03** SeqNo: **170017**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	0.71	0.10	1	0	71	54	120	0.83	15.6	30	
Pyrene	0.85	0.10	1	0	85	52	115	1.1	25.6	30	
Surr: 2-Fluorobiphenyl	0.63	0	1	0	63	43	116	0	0	30	
Surr: 4-Terphenyl-d14	0.68	0	1	0	68	33	141	0	0	30	
Surr: Nitrobenzene-d5	0.36	0	1	0	36	35	114	0	0	30	

Sample ID: **0306029-02A MS** SampType: **MS** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **MW7-103** Batch ID: **5850** TestNo: **8270-SIM** (3510C) Analysis Date: **6/9/03** SeqNo: **170020**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.78	0.10	1	0	78	47	145	0	0		
Acenaphthylene	0.93	0.10	1	0	93	33	145	0	0		
Anthracene	0.67	0.10	1	0	67	27	133	0	0		
Benz(a)anthracene	0.84	0.10	1	0	84	33	143	0	0		
Benzo(a)pyrene	0.97	0.10	1	0	97	17	163	0	0		
Benzo(b)fluoranthene	0.66	0.10	1	0	66	24	159	0	0		
Benzo(g,h,i)perylene	0.89	0.10	1	0	89	1	219	0	0		
Benzo(k)fluoranthene	0.92	0.10	1	0	92	11	162	0	0		
Chrysene	0.8	0.10	1	0	80	17	168	0	0		
Dibenz(a,h)anthracene	0.84	0.10	1	0	84	1	227	0	0		
Fluoranthene	0.9	0.10	1	0	90	26	137	0	0		
Fluorene	0.7	0.10	1	0	70	59	121	0	0		
Indeno(1,2,3-cd)pyrene	0.8	0.10	1	0	80	1	171	0	0		
Naphthalene	0.8	0.10	1	0.25	55	21	133	0	0		
Phenanthrene	0.79	0.10	1	0	79	54	120	0	0		
Pyrene	1.03	0.10	1	0	103	52	115	0	0		
Surr: 2-Fluorobiphenyl	0.7	0	1	0	70	43	116	0	0		
Surr: 4-Terphenyl-d14	0.8	0	1	0	80	33	141	0	0		
Surr: Nitrobenzene-d5	0.41	0	1	0	41	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023237

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **0306029-03A DUP** SampType: **DUP** TestCode: **06 PAH A** Units: **µg/L** Prep Date: **6/9/03** Run ID: **HEISENBURG_030609C**
Client ID: **MW15-66-104** Batch ID: **5850** TestNo: **8270-SIM** **(3510C)** Analysis Date: **6/9/03** SeqNo: **170023**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.10	0	0	0	0	0	0	0	20	
Acenaphthylene	ND	0.10	0	0	0	0	0	0	0	20	
Anthracene	ND	0.10	0	0	0	0	0	0	0	20	
Benz(a)anthracene	0.55	0.10	0	0	0	0	0	0.6	8.70	20	
Benzo(a)pyrene	0.75	0.10	0	0	0	0	0	0.85	12.5	20	
Benzo(b)fluoranthene	0.52	0.10	0	0	0	0	0	0.64	20.7	20	R, Q
Benzo(g,h,i)perylene	0.76	0.10	0	0	0	0	0	0.77	1.31	20	
Benzo(k)fluoranthene	0.72	0.10	0	0	0	0	0	0.77	6.71	20	
Chrysene	0.64	0.10	0	0	0	0	0	0.69	7.52	20	
Dibenz(a,h)anthracene	ND	0.10	0	0	0	0	0	0	0	20	
Fluoranthene	1.09	0.10	0	0	0	0	0	1.2	9.61	20	
Fluorene	ND	0.10	0	0	0	0	0	0	0	20	
Indeno(1,2,3-cd)pyrene	0.44	0.10	0	0	0	0	0	0.45	2.25	20	
Naphthalene	ND	0.10	0	0	0	0	0	0	0	20	
Phenanthrene	0.29	0.10	0	0	0	0	0	0.34	15.9	20	
Pyrene	1.02	0.10	0	0	0	0	0	1.12	9.35	20	
Surr: 2-Fluorobiphenyl	0.71	0	1	0	71	43	116	0	0	0	
Surr: 4-Terphenyl-d14	0.86	0	1	0	86	33	141	0	0	0	
Surr: Nitrobenzene-d5	0.41	0	1	0	41	35	114	0	0	0	

Sample ID: **CCV** SampType: **CCV** TestCode: **06 PAH A** Units: **µg/L** Prep Date: Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **R14096** TestNo: **8270-SIM** Analysis Date: **6/9/03** SeqNo: **170018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.9	0.10	1	0	90	80	120	0	0		
Acenaphthylene	0.95	0.10	1	0	95	80	120	0	0		
Anthracene	0.9	0.10	1	0	90	80	120	0	0		
Benz(a)anthracene	0.89	0.10	1	0	89	80	120	0	0		
Benzo(a)pyrene	1.14	0.10	1	0	114	80	120	0	0		
Benzo(b)fluoranthene	0.83	0.10	1	0	83	80	120	0	0		
Benzo(g,h,i)perylene	0.99	0.10	1	0	99	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

Koppers023238

CLIENT: Hahn and Associates
Work Order: 0306029
Project: 2708/NW NATURAL-GASCO FACILITY

ANALYTICAL QC SUMMARY REPORT

TestCode: 06 PAH A

Sample ID: **CCV** SampType: **CCV** TestCode: **06 PAH A** Units: **µg/L** Prep Date: Run ID: **HEISENBURG_030609C**
Client ID: **ZZZZZ** Batch ID: **R14096** TestNo: **8270-SIM** Analysis Date: **6/9/03** SeqNo: **170018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	0.93	0.10	1	0	93	80	120	0	0		
Chrysene	0.86	0.10	1	0	86	80	120	0	0		
Dibenz(a,h)anthracene	0.88	0.10	1	0	88	80	120	0	0		
Fluoranthene	1	0.10	1	0	100	80	120	0	0		
Fluorene	0.82	0.10	1	0	82	80	120	0	0		
Indeno(1,2,3-cd)pyrene	0.98	0.10	1	0	98	80	120	0	0		
Naphthalene	0.82	0.10	1	0	82	80	120	0	0		
Phenanthrene	0.85	0.10	1	0	85	80	120	0	0		
Pyrene	1.07	0.10	1	0	107	80	120	0	0		
Surr: 2-Fluorobiphenyl	0.96	0	1	0	96	43	116	0	0		
Surr: 4-Terphenyl-d14	1.12	0	1	0	112	33	141	0	0		
Surr: Nitrobenzene-d5	0.81	0	1	0	81	35	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Koppers023239

ENVIRONMENTAL SERVICES LABORATORY – GLOSSARY OF FLAGS

QUALIFIER	DESCRIPTION
AA	This sample was analyzed after the holding time had expired.
AB	The hydrocarbon pattern in this sample is not typical of gasoline.
AC	The hydrocarbon pattern in this sample is not typical of diesel.
AD	The hydrocarbon pattern in this sample is not typical of oil.
AE	The hydrocarbon pattern in this sample extends into the gasoline range.
AF	The hydrocarbon pattern in this sample extends into the diesel range.
AG	The hydrocarbon pattern in this sample extends into the oil range.
A	This analysis was performed on a VOA sample containing headspace.
B	Analyte detected in the Method Blank above the reporting level.
C	The Relative Percent Difference (RPD) for the primary result and confirmation result was greater than 40%. The higher result was reported.
D	The sample was supplied in an inappropriate container according to method criteria.
E	This value is above the quantitation limit. It is considered an estimate.
H	The Matrix Spike/Matrix Spike Duplicate (MS/MSD) result was outside control limits. The Laboratory Control Standard/Duplicate (LCS/LCSD) result was in control validating the batch.
J	The result is above the Method Detection Limit (MDL) and below the Reporting level (RL). It is considered an estimate.
M	The MS/MSD recoveries are not calculable due to a high amount of analyte in sample.
MI	This indicates a high level of matrix interference affecting the spike or surrogate recovery.
N	See case narrative.
O	Detection Limits are elevated due to sample dilution. See case narrative.
Q	Further inspection of the sample confirms a non-homogenous sample matrix affecting RPD result.
R	The RPD result is outside method control limits. See other qualifiers or case narrative.
S	The spike recovery is outside method control limits. See other qualifiers or case narrative.
T	The RPD between the sample result and duplicate result was greater than 20%. The original result was less than three times the reporting level, therefore the RPD is not applicable.
X	Unable to quantitate surrogate recovery due to sample dilution.

Koppers023240

D

APPENDIX D

Monitoring Well Field
Sampling Summary Sheets – March 2003

Monitoring Well Sampling Summary Sheet

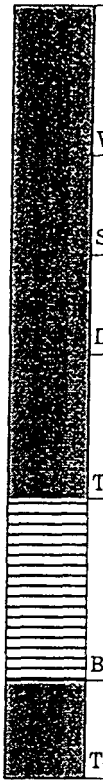
WELL NUMBER MW-2-61

General Information	
Project Name	NNGGRI
Monitoring Well Location	PNO Area / River
HAI Project Number	2708-30
Date	3/18/03
Sampling Personnel	Matt Mudge & Mike O'Connor
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Ground Surface (ft btc)

Top of Well Casing



Well Diameter (in)	2"
Static Water Level (ft btc)	24.96'
Depth of Packer (ft btc)	N/A
Top of Screen (ft btc)	50
Base of Screen (ft btc)	60
Total Well Depth (ft btc)	61

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	35.04	0.17	5.96	17.87

Factors: 2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information	
Date	3/18/03
Time	10:40
Sample Number	2708-030318-MW2-61-104

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
2	1 L Amber	None	PAHs	N
3	40 mL VOA	HCL	BTEX	N
1	1 L Plastic	NaOH	CN, Total and Amenable	N
1	250 mL Plastic	HNO3	Total Metals	N
7				

Koppers023243

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-2-61

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
10:24		0	7.22	406	17.6	—	Clear
10:28		6	6.92	399	19.1	—	Clear
10:32		12	6.91	391	19.3	—	Clear
10:37		18	6.89	388	19.5	1.39	Clear
					DO=	3.31	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

*pump @ ~42' bgs

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Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-3-56

General Information	
Project Name	NNGGRI
Monitoring Well Location	PNO Tank Farm / River
HAI Project Number	2708-30
Date	3/19/03
Sampling Personnel	Matt Mudge
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data	
Top of Well Casing	0.0 ft btc
Ground Surface (ft btc)	3
Well Diameter (in)	2"
Static Water Level (ft btc)	24.35
Depth of Packer (ft btc)	N/A
Top of Screen (ft btc)	48
Base of Screen (ft btc)	58
Total Well Depth (ft btc)	59

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	33.65	0.17	5.72	17.16

Factors: 2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information	
Date	3/19/03
Time	12:14
Sample Number	2708-030319-MW3-56-112

Sample Containers (Extra Containers are for MS and MS Dup - all same sample ID)

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
6 ✓	L Amber	None	PAHs	N
6 ✓	40 mL VOA	HCL	BTEX	N
3 ✓	1 L Plastic	NaOH	CN, Total and Amenable	N
3 ✓	250 mL Plastic	HNO3	Metals, Total	N
18				

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-3-56

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
11:54		0	7.41	181.0	15.4	/	slightly turbid - grey
11:58		6	7.14	193.3	16.3	/	slightly turbid - grey
12:02		12	7.12	196.3	16.1	/	slightly turbid - grey
12:06		18	7.10	193.1	16.3	33.0	slightly cloudy - grey
					DO=	4.1	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

pump intake @ 42' btc

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Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-4-57

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
10:51		0	6.63	217	15.5	/	clear, odor
11:01		6	6.92	223	16.3	/	clear, odor
11:12		12	6.96	219	16.5	/	clear, odor
11:24		18	6.97	198.4	16.7	0.75	clear, odor
					DO=	4.44	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

* pump intake @ ~42' btc

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-4-101

General Information

Project Name	NNGGRI
Monitoring Well Location	MW4-101
HAI Project Number	2708-30
Date	3/18/03
Sampling Personnel	Matt Mudge & Mike Clouner
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Top of Well Casing

Ground Surface (3 ft btc)	
Well Diameter (in)	2"
Static Water Level (ft btc)	24.91
Depth of Packer (ft btc)	N/A
Top of Screen (ft btc)	93
Base of Screen (ft btc)	103
Total Well Depth (ft btc)	104

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	78.84	0.17	13.25	39.85

Factors: 2' well = 0.17 gallons/linear ft

4" well = 0.66 gallons/linear ft

6" well = 1.5 gallons/linear ft

Sample Information

Date	3/18/03
Time	17:04
Sample Number	2708-030318-MW4-101-109

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
2	1 L Amber	None	PAHs	N
3	40 mL VOA	HCL	BTEX	N
1	250 mL Plastic	HNO_3	Metals Total	N
1	250 mL Plastic	HNO_3	Metals FF	YES
1	1 L Plastic	NaOH	CN, Total and Amenable	N
8				

Koppers023248

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-4-101

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
16:40		0	7.19	278	15.2	/	clear, odor
16:46		13.5	7.03	272	15.6	/	clear, odor
16:52		27	7.05	267	15.6	/	clear, odor
16:55		40.5	7.04	261	15.7	0.65	clear, odor
					DO =	3.04	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

*pump intake @ ~60 btc

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Koppers023249

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-5-100

General Information	
Project Name	NNGGRI
Monitoring Well Location	MW5-100
HAI Project Number	2708-30
Date	3/19/03
Sampling Personnel	Matt Mudge
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Top of Well Casing

Ground Surface (3 ft btc)

Well Diameter (in) 2"

Static Water Level (ft btc) 17.87

Depth of Packer (ft btc) N/A

Top of Screen (ft btc) 92

Base of Screen (ft btc) 102

Total Well Depth (ft btc) 103

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	84.12	0.17	14.30	42.91

Factors: 2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information	
Date	3/19/03
Time	16:33
Sample Number	2708-030319-MW5-100-114

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
2	1 L Amber	None	PAHs	N
3	40 mL VOA	HCL	BTEX	N
1	250 mL Plastic	HNO_3	Metals Total	N
1	250 mL Plastic	HNO_3	Metals FF	YES
1	1 1L Plastic	NaOH	CN, Total and Amenable	N
8				

Koppers023250

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-5-100

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
16:05		0	6.81	198.2	14.5	/	clear, odor
16:11		14.5	6.87	197.1	15.2	/	clear, odor
16:17		29	6.88	191.5	15.5	/	clear, odor
16:24		43.5	6.91	182.1	15.5	0.47	clear, odor
					DO=	3.90	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

* pump intake @ ~54' btc

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Koppers023251

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-5-175

General Information	
Project Name	NNGGRI
Monitoring Well Location	MW5-175
HAI Project Number	2708-30
Date	3/18/03
Sampling Personnel	Matt Hindge & Mike O'Connor
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Top of Well Casing

Ground Surface (3 ft btc)	
Well Diameter (in)	2"
Static Water Level (ft btc)	17 67
Depth of Packer (ft btc)	N/A
Top of Screen (ft btc)	167
Base of Screen (ft btc)	177
Total Well Depth (ft btc)	178

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	159 33	0.17	27 03	81 26

Factors:
2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information	
Date	3/18/03
Time	12:07
Sample Number	2708-030318-MW5-175-105

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
2	1 L Amber	None	PAHs	N
3	40 mL VOA	HCL	BTEX	N
1	250 mL Plastic	HNO_3	Metals Total	N
1	1 L Plastic	NaOH	CN, Total and Amenable	N
7				

Koppers023252

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-5-175

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
11:31		0	7.40	332	15.2	/	Clear
11:40		27	7.31	300	15.3	/	Clear
11:51		54	7.19	285	15.0	/	Clear
12:05		81	7.13	277	15.1	0.84	Clear
					DO =	4.62	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

*pump intake @ ~60' btc

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Koppers023253

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-8-56

General Information	
Project Name	NNGGRI
Monitoring Well Location	NWNG / Former Settling Pond
HAI Project Number	2708-30
Date	3/20/03
Sampling Personnel	Matt, Hardge
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Top of Well Casing

Ground Surface (ft btc)	3
Well Diameter (in)	2"
Static Water Level (ft btc)	29.51
Depth of Packer (ft btc)	N/A
Top of Screen (ft btc)	48
Base of Screen (ft btc)	58
Total Well Depth (ft btc)	59

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	28.49	0.17	4.84	14.53

Factors:
2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information	
Date	3/20/03
Time	16:02
Sample Number	2708-030320-MW8-56-120

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
2	L Amber	None	PAHs	N
3	40 mL VOA	HCL	BTEX	N
1	1 L Plastic	NaOH	CN, Total and Amenable	N
1	250 mL	HNO3	Metals (total)	N
1	250 mL	HNO3	Metals (Dissolved)	YES
5				

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Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-8-56

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees F)	Turbidity (NTU)	Comments
14:36 *		0	6.91	1733	17.0	—	clear, color
15:11		5	7.11	1933	17.6	—	clear, color
15:30		10	7.05	1896	18.1	—	clear, color
15:51		15	7.07	1817	17.7	3.44	clear, color
* @ 14:48 water level reached pump intake? / VFD #2 blew							
fuse. Switched out VFD's							
					DO =	1.06	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

* pump intake @ ~42' btc, dropped to ~45' btc @ 14:59

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Monitoring Well Sampling Summary Sheet

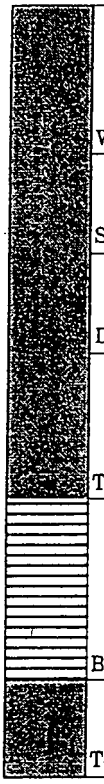
WELL NUMBER MW-9-29

General Information	
Project Name	NNGGRI
Monitoring Well Location	NWNG /Fenced Area
HAI Project Number	2708-30
Date	3/18/03
Sampling Personnel	Matt Mudge & Mike O'Connor
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Ground Surface (ft btc)

Top of Well Casing 0 ft btc



Well Diameter (in)	2"
Static Water Level (ft btc)	6.81
Depth of Packer (ft btc)	N/A
Top of Screen (ft btc)	18
Base of Screen (ft btc)	28
Total Well Depth (ft btc)	29

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	21.13	0.17	3.59	10.78

Factors:
2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information	
Date	3/18/03
Time	9:23
Sample Number	2708-030313-MW9-29-103

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
2	L Amber	None	PAHs	N
3	40 mL VOA	HCL	BTEX	N
1	250 mL Plastic	HNO_3	Metals Total	N
1	250 mL Plastic	HNO_3	Metals FF	YES
1	1 L Plastic	NaOH	CN, Total and Amenable	N
8				

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Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-9-29

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
8:47		0	7.10	199.3	12.7	/	Almost Clear.
8:53 *		4	7.10	175.6	14.6	/	Slightly Turbid - brown
9:04 *		8	7.12	170.2	16.2	/	Clear.
9:16 *		12	7.03	165.1	16.7	7.4	Clear
					DO =	3.52	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

* pump intake @ approx. 22' bgs.

* water level dropped to pump intake, slowed purge rate.

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Koppers023257

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-10-61

General Information	
Project Name	NNGGRI
Monitoring Well Location	NWNG /LNG Containment
HAI Project Number	2708-30
Date	3/19/03
Sampling Personnel	Matt/Andye
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Top of Well Casing	0.0 ft btc
Ground Surface (ft btc)	3
Well Diameter (in)	2"
Static Water Level (ft btc)	17.05
Depth of Packer (ft btc)	N/A
Top of Screen (ft btc)	53
Base of Screen (ft btc)	63
Total Well Depth (ft btc)	64

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	45.92	0.17	7.81	23.43

Factors: 2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information	
Date	3/19/03
Time	10:40
Sample Number	2708-030319-MW10-61-111

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
2	1 L Amber	None	PAHs	N
3	40 mL VOA	HCL	BTEX	N
1	250 mL Plastic	HNO_3	Metals Total	N
1	250 mL Plastic	HNO_3	Metals FF	YES
1	1 L Plastic	NaOH	CN, Total and Amenable	N
3				

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-10-61

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
10:05		0	7.20	245	14.0	/	clear, odor
10:13 *		8	7.20	225	15.5	/	clear, odor
10:22		16	7.23	220	16.6	/	slightly turbid-grey, odor
10:32		24	7.17	217	16.4	12.60	clear, odor
					DO =	4.90	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

* pump intake @ ~36' btc.

* water level in MW dropped to pump intake @ 10:24, slowed pump rate, cont. purging.

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Koppers023259

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-12-36

General Information	
Project Name	NNGGRI
Monitoring Well Location	NWNG / Koppers
HAI Project Number	2708-30
Date	3/19/03
Sampling Personnel	Matt/Mudge
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Top of Well Casing	0.0 ft btc
Ground Surface (ft btc)	3
Well Diameter (in)	2"
Static Water Level (ft btc)	17.47
Depth of Packer (ft btc)	N/A
Top of Screen (ft btc)	28
Base of Screen (ft btc)	38
Total Well Depth (ft btc)	39

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	20.53	0.17	3.49	10.47

Factors: 2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information	
Date	3/19/03
Time	14:50
Sample Number	2708-030319-MW12-36-113

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
2	L Amber	None	PAHs	N
3	40 mL VOA	HCL	BTEX	N
1	1 L Plastic	NaOH	CN, Total and Amenable	N
6				

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-12-36

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
14:30		0	7.16	141.1	14.0	/	clear, odor
14:34		3.5	7.11	160.5	14.9	/	clear, odor
14:39		7	7.15	146.0	15.3	/	clear, odor
14:46		10.5	7.14	135.4	15.4	0.75	clear, odor
					DO=	3.62	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

*pump intake @ ~30' btc.

Monitoring Well Sampling Summary Sheet

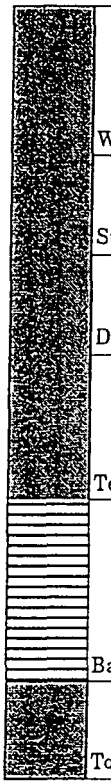
WELL NUMBER MW-13-30

General Information	
Project Name	NNGGRI
Monitoring Well Location	MW13-30
HAI Project Number	2708-30
Date	3/19/03
Sampling Personnel	Matt Mudge
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Ground Surface (ft btc)

Top of Well Casing 0 ft btc



Well Diameter (in)	2"
Static Water Level (ft btc)	15.92
Depth of Packer (ft btc)	N/A
Top of Screen (ft btc)	19
Base of Screen (ft btc)	29
Total Well Depth (ft btc)	30

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	13.52	0.17	2.22	6.61

Factors: 2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information

Date	3/19/03
Time	19:31
Sample Number	2708-030319-MW13-30-115

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
3	1 L Amber	None	PAHs	N
9	40 mL VOA	HCL	BTEX	N
3	250 mL Plastic	HNO_3	Metals Total	N
3	250 mL Plastic	HNO_3	Metals FF	YES
3	1 L Plastic	NaOH	CN, Total and Amenable	N
22				

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Koppers023262

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-13-30

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
19:12		0	6.71	156.1	15.3	—	clear, odor
19:14		2.5	6.73	157.3	16.4	—	clear, odor
19:17		5	6.79	155.2	16.8	—	clear, odor
19:20		7.5	6.80	154.0	17.0	2.23	clear, odor
					DO =	3.21	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

* pump intake @ ~24' bgs.

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Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-15-66

General Information	
Project Name	NNGGRI
Monitoring Well Location	NWNG /LNG Containment
HAI Project Number	2708-30
Date	3/18/03
Sampling Personnel	Matt Mudge & Mike O'Connor
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Top of Well Casing	0.0 ft btc
Ground Surface (ft btc)	0
Well Diameter (in)	2"
Static Water Level (ft btc)	14.31
Depth of Packer (ft btc)	N/A
Top of Screen (ft btc)	60.5
Base of Screen (ft btc)	65.5
Total Well Depth (ft btc)	66

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	51.19	0.17	8.70	26.11

Factors: 2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information	
Date	3/18/03
Time	14:22
Sample Number	2708-030318-MW15-66-107

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
2	1 L Amber	None	PAHs	N
3	40 mL VOA	HCL	BTEX	N
1	250 mL Plastic	HNO_3	Metals Total	N
1	1 L Plastic	NaOH	CN, Total and Amenable	N
7				

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-15-66

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
1355		0	7.35	131.0	18.4	/	clear
1402		9	7.28	128.7	17.9	/	clear
1409		18	7.27	125.3	17.5	/	clear
1418		27	7.24	123.7	17.0	11 16	clear
					DO =	3.97	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

* pump intake @ ~ 40' bgs.

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Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-14-110

General Information	
Project Name	NNGGRI
Monitoring Well Location	MW14-110
HAI Project Number	2708-30
Date	3/18/03
Sampling Personnel	Matt Mudge & Mike O'Connor
Purge Method	Submersible Pump
Sampling Method	Submersible Pump

Well Data

Top of Well Casing

Ground Surface (3 ft btc)

Well Diameter (in) 2"

Static Water Level (ft btc) 22.22

Depth of Packer (ft btc) N/A

Top of Screen (ft btc) 102

Base of Screen (ft btc) 112

Total Well Depth (ft btc) 113

btc = below top of well casing

Purge Volume Calculation

Casing Diameter (in)	Water Column (ft)	Factor (gallons/ foot)	One Well Volume (gallons)	Three Well Volumes (gallons)
2"	89.78	0.17	15.26	45.79

Factors: 2' well = 0.17 gallons/linear ft
4" well = 0.66 gallons/linear ft
6" well = 1.5 gallons/linear ft

Sample Information	
Date	3/18/03
Time	15:53
Sample Number	2703-030318-MW14-110-108

Sample Containers

Number	Type	Preservative	Analytical Parameters	Field Filtered (Y or N)
2	1 L Amber	None	PAHs	N
3	40 mL VOA	HCL	BTEX	N
1	250 mL Plastic	HNO_3	Metals, Total	N
1	250 mL Plastic	HNO_3	Metals, Dissolved	YES
1	1 L Plastic	NaOH	CN, Total and Amenable	N
8				

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Koppers023266

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-14-110

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
15:23		0	7.10	351	15.1	—	Clear, Foamy
15:31		15.5	7.14	387	15.9	—	clear foamy H_2S smell
15:39		31	7.16	382	16.1	—	clear, foamy
15:48		46.5	7.25	380	15.9	~~2.86~~	clear, slight sulfur smell
					DO=	5.00	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

* pump intake @ ~60' btc.

Koppers023267

Monitoring Well Sampling Summary Sheet

WELL NUMBER MW-15-50

Well Purge Data

Time	Static Water Level (feet btc)	Volume Purged (gallons)	pH	Conductivity (uS/cm)	Temperature (degrees ~~F~~ C)	Turbidity (NTU)	Comments
9:53		0	7.30	271	16.7	—	Almost Clear-grey, odor
10:02		6	7.09	215	18.2	—	Clear, odor
10:10		12	7.00	178.1	18.2	—	slightly turbid-grey, od
10:18		18	6.95	172.6	18.1	91.5	slightly turbid-grey, odor
						44.3 @	10:33
					DC=	2.30	mg/L

Purge Water Disposition

Drum Nos.	Storage Tank No.	On Ground	Other AST

Comments

*pump intake @ ~35' bgs.

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Koppers023268

E

APPENDIX E

Monitoring Well Field
Sampling Summary Sheets – June 2003

Monitoring Well Sampling Field Log

Well Number: MW-15-66

Date: 6/3/03

Page 1 of 1

Project Information	
Project Name: NW Natural - Gasco	
HAI Project Number: 2708	
Sampling Information	
Field Team:	Matt Mudge
Purge Method:	Stainless Steel Submersible
Pump Intake Depth (ft btc):	~32
Flow-Through Cell:	/
Sampling Method:	Stainless Steel Submersible
Decontamination Method: 1) soap; 2) hexane; 3) potable 4) nitric; 5) potable; 6) isoprop; 7) potable; 8) DI	
Purge Water Disposition:	AST
Field Conditions:	sunny, 50s
Comments:	

Well Information — Stick-up or Flush (circle one)

Well Diameter (in)	Drilled Well Depth (ft bgs)	Drilled Well Depth (ft btc)	Top of Screen (ft bgs)	Top of Screen (ft btc)	Screen Interval (ft bgs)
2.00	66.00	66.00	60.50	65.50	60.5-65.5

Well Volume Calculation

Well Depth (ft btc)	DTW (ft btc)	Water Column (ft)	Convert Factor (gal/ft)	One Well Volume (gal)	Three Well Volumes (gal)
66.00	13^{92}	52^{08}	0.17	8^{85}	26^{56}

3/4"=0.023 gal/ft 2"=0.17 gal/ft 4"=0.66 gal/ft 6"=1.5 gal/ft

Sample Containers → 7 total

Number	Type	Preservative	Analytical Parameters	Filtered?
3	40ml,gl	HCl	BTEX	N
2	1l,pl	None	PAHs	N
1		NaOH	Amenable Cyanide	N
1		HNO3	Metals, Total	N

Well Purge Data Total Volume to Purge (gal) = 27

Time	Volume Purged (gallons)	Purge Rate (gpm)	DTW (ft btc)	Conductivity (uS/cm)	Temp. (°C)	pH	ORP (mV)	D.O. (mg/L)	Turbidity (NTUs)	Clarity/Color/ Remarks
	Pump On		Initial							
8:19	0		13^{92}	91^{3}	16^{4}	7^{24}	/	/	2^{50}	clear
8:26	9		28^{67}	88^{1}	16^{5}	7^{03}	/	/	1^{40}	clear
8:34	18		29^{67}	87^{6}	15^{3}	6^{94}	/	/	4^{93}	clear
8:41	27		29^{88}	87^{6}	14^{8}	6^{90}	/	/	4^{94}	clear
	Start Sampling		8:43							
	End Sampling		8:48	Sample Number: 2708-030603-MW15-66-104						
			Final							

Note: bgs= below ground surface btc=below top of casing DTW=depth to water gpm=gallons per minute
Clarity: VC=very cloudy Cl=cloudy SC=slightly cloudy AC=almost clear C=clear CC=crystal clear

Monitoring Well Sampling Field Log

Well Number: MW-15-66

Date: _____

HAI Project Number: _____

Well Purge Data (continued from Page 1)

Time	Volume Purged (gallons)	Purge Rate (gpm)	DTW (ft btc)	Conductivity (uS/cm)	Temp. (°C)	pH	ORP (mV)	D.O. (mg/L)	Turbidity (NTUs)	Clarity/Color/ Remarks
	Start Sampling									
	End Sampling			Sample Number:						
			Final							

Comments

Note: bgs= below ground surface btc=below top of casing DTW=depth to water gpm=gallons per minute
Clarity: VC=very cloudy Cl=cloudy SC=slightly cloudy AC=almost clear C=clear CC=crystal clear

Monitoring Well Sampling Field Log

Well Number: MW-15-50

Page 1 of 1

Date: 6/3/03

Project Information	
Project Name: NW Natural - Gasco	
HAI Project Number: 2708	
Sampling Information	
Field Team:	Matt Mudge
Purge Method:	Peristaltic Pump
Pump Intake Depth (ft btc):	~21
Flow-Through Cell:	/
Sampling Method:	Peristaltic Pump & Disposable Bailer
Decontamination Method: 1) soap; 2) hexane; 3) potable 4) nitric; 5) potable; 6) isoprop; 7) potable; 8) DI	
Purge Water Disposition:	AST
Field Conditions:	sunny, 50s
Comments:	

Well Information — Stick-up or (Flush) (circle one)

Well Diameter (in)	Drilled Well Depth (ft bgs)	Drilled Well Depth (ft btc)	Top of Screen (ft bgs)	Top of Screen (ft btc)	Screen Interval (ft bgs)
2.00	50.00	50.00	39.00	39.00	39-49

Well Volume Calculation

Well Depth (ft btc)	DTW (ft btc)	Water Column (ft)	Convert Factor (gal/ft)	One Well Volume (gal)	Three Well Volumes (gal)
50.00	13.57	36.43	0.17	6.19	18.58

3/4"=0.023 gal/ft 2"=0.17 gal/ft 4"=0.66 gal/ft 6"=1.5 gal/ft

Sample Containers → 8 total + DUP

Number	Type	Preservative	Analytical Parameters	Filtered?
3	40ml,gl	HCl	BTEX	N
2	1l,pl	None	PAHs	N
1		NaOH	Amenable Cyanide	N
1		HNO3	Metals, Total	N
1		HNO3	Metals, Dissolved	Y

Well Purge Data — Total Volume to Purge (gal) = 18.75

Time	Volume Purged (gallons)	Purge Rate (gpm)	DTW (ft btc)	Conductivity (uS/cm)	Temp. (°C)	pH	ORP (mV)	D.O. (mg/L)	Turbidity (NTUs)	Clarity/Color/ Remarks
	Pump On		Initial							
9:26	0		13.57	543	18.3	6.41	/	/	5.45	clear, odor
9:51	6.25		18.35	191.1	17.1	6.75	/	/	1.17	clear, odor, slightly
10:22	12.50 *		19.35	178.0	16.3	7.01	/	/	2.90	clear, odor, slightly
10:58	18.75		17.96	162.2	21.0	6.95	/	/	1.60	clear, odor, slightly
	Start Sampling		10:59							
	End Sampling		11:34 & 11:35	Sample Number: 2708-030603-MW15-50-105 & 106						
			Final							

* water level reached pump intake, skimmed surface of water column, cont. purging w/ pump intake @ ~20' btc.

Note: bgs= below ground surface btc=below top of casing DTW=depth to water gpm=gallons per minute
Clarity: VC=very cloudy Cl=cloudy SC=slightly cloudy AC=almost clear C=clear CC=crystal clear

Monitoring Well Sampling Field Log

Well Number: MW-15-50

Date: _____

HAI Project Number: _____

Well Purge Data (continued from Page 1)

Time	Volume Purged (gallons)	Purge Rate (gpm)	DTW (ft btc)	Conductivity (uS/cm)	Temp. (°C)	pH	ORP (mV)	D.O. (mg/L)	Turbidity (NTUs)	Clarity/Color/ Remarks
	Start Sampling									
	End Sampling			**Sample Number:**						
			Final							

Comments

Note: bgs= below ground surface btc=below top of casing DTW=depth to water gpm=gallons per minute
Clarity: VC=very cloudy Cl=cloudy SC=slightly cloudy AC=almost clear C=clear CC=crystal clear

Monitoring Well Sampling Field Log

Well Number: MW-14-110

Page 1 of 1

Date: 6/2/03

Project Information	
Project Name: NW Natural - Gasco	
HAI Project Number: 2708	
Sampling Information	
Field Team: Matt Mudge	
Purge Method: Stainless Steel Submersible	
Pump Intake Depth (ft btc): ~48	
Flow-Through Cell: /	
Sampling Method: Stainless Steel Submersible	
Decontamination Method: 1) soap; 2) hexane; 3) potable 4) nitric; 5) potable; 6) isoprop; 7) potable; 8) DI	
Purge Water Disposition: AST	
Field Conditions: Sunny, 70s	
Comments:	

Well Information — Stick-up or Flush (circle one)

Well Diameter (in)	Drilled Well Depth (ft bgs)	Drilled Well Depth (ft btc)	Top of Screen (ft bgs)	Top of Screen (ft btc)	Screen Interval (ft bgs)
2.00	110.00	113.00	99.00	102.00	99-109

Well Volume Calculation

Well Depth (ft btc)	DTW (ft btc)	Water Column (ft)	Convert Factor (gal/ft)	One Well Volume (gal)	Three Well Volumes (gal)
113.00	20.55	92.45	0.17	15.72	47.15

3/4"=0.023 gal/ft 2"=0.17 gal/ft 4"=0.66 gal/ft 6"=1.5 gal/ft

Sample Containers -> 8 total

Number	Type	Preservative	Analytical Parameters	Filtered?
3	40ml,gl	HCl	BTEX	N
2	1l,pl	None	PAHs	N
1		NaOH	Amenable Cyanide	N
1		HNO3	Metals, Total	N
1		HN03	Metals, Dissolved	Y

Well Purge Data Total Volume to Purge (gal) = 48

Time	Volume Purged (gallons)	Purge Rate (gpm)	DTW (ft btc)	Conductivity (uS/cm)	Temp. (°C)	pH	ORP (mV)	D.O. (mg/L)	Turbidity (NTUs)	Clarity/Color/ Remarks
	Pump On		Initial 20.55							
13:18	0		"	589	18.5	6.72	/	/	3.62	clear, foamy
13:30	16		25.85	639	16.7	6.87	/	/	0.41	" "
13:41	32		26.09	582	16.7	6.93	/	/	0.17	" "
13:51	48		26.25	586	16.3	6.95	/	/	0.14	" "
	Start Sampling		13:52							
	End Sampling		13:55 Final	Sample Number: 2708-030602-MW14-110-101						

Note: bgs= below ground surface btc=below top of casing DTW=depth to water gpm=gallons per minute
Clarity: VC=very cloudy Cl=cloudy SC=slightly cloudy AC=almost clear C=clear CC=crystal clear

Monitoring Well Sampling Field Log

Well Number: MW-14-110

Date: _____

HAI Project Number: _____

Well Purge Data (continued from Page 1)

Time	Volume Purged (gallons)	Purge Rate (gpm)	DTW (ft btc)	Conductivity (uS/cm)	Temp. (°C)	pH	ORP (mV)	D.O. (mg/L)	Turbidity (NTUs)	Clarity/Color/ Remarks
	Start Sampling									
	End Sampling			Sample Number:						
			Final							

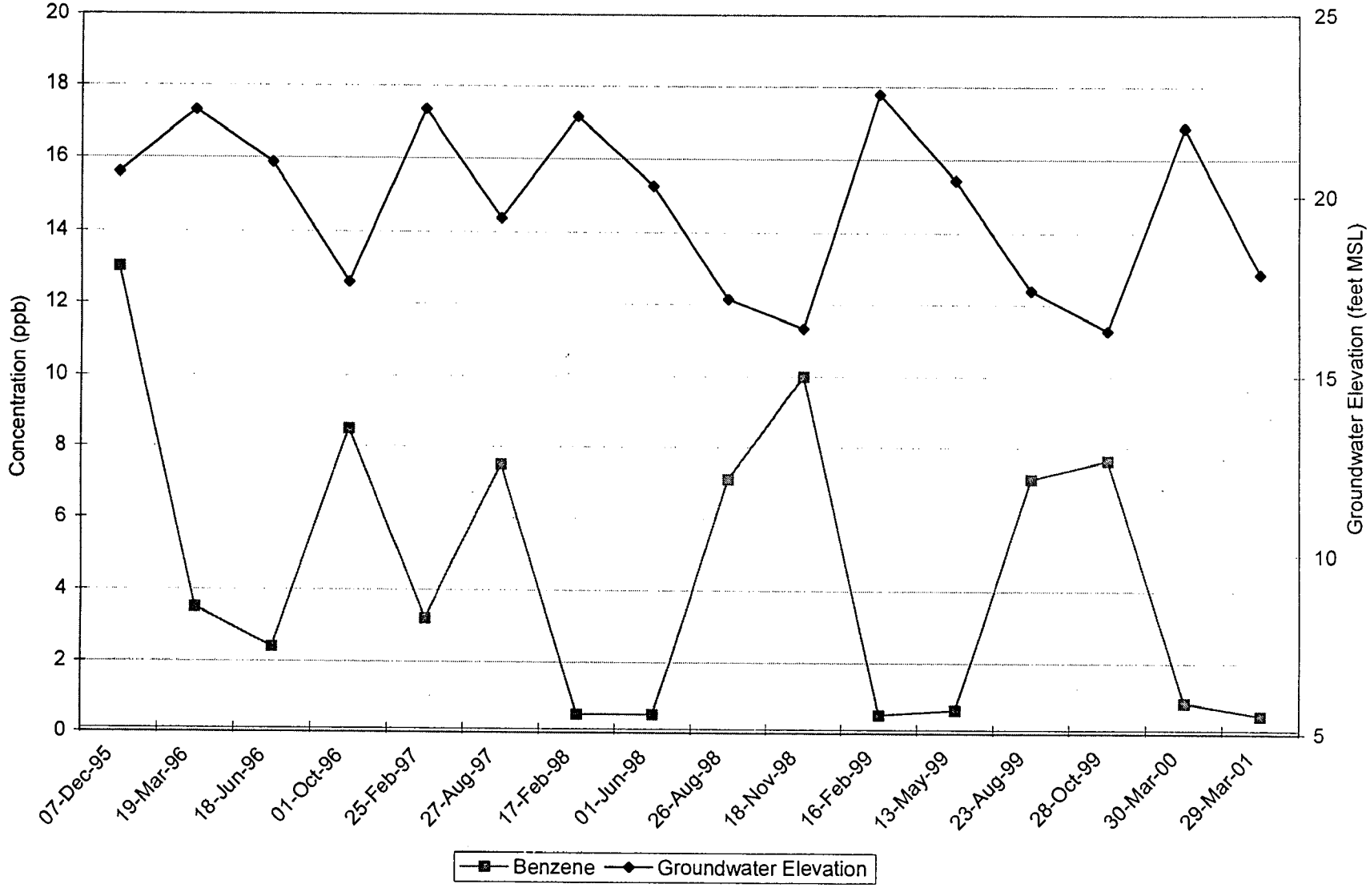
Comments

Note: bgs= below ground surface btc=below top of casing DTW=depth to water gpm=gallons per minute
Clarity: VC=very cloudy Cl=cloudy SC=slightly cloudy AC=almost clear C=clear CC=crystal clear

APPENDIX F

Time-Concentration Graphs:
Benzene Concentration in Groundwater

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-1-22
NW Natural - Gasco Facility

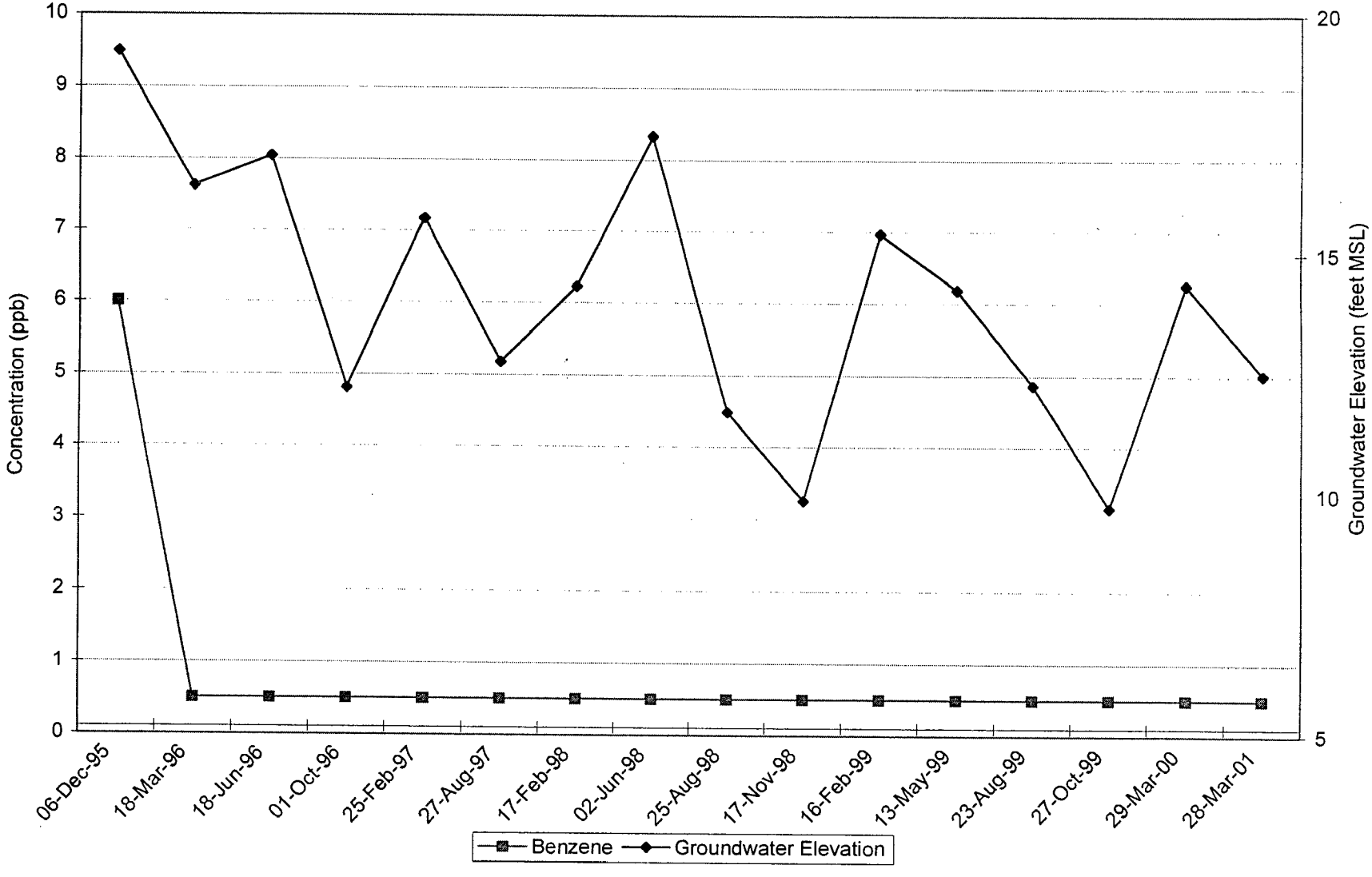


Updated: 9/30/03 RBE
File: 2708 GW conc graphs (to Jun_03)

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers023279

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-2-32
NW Natural - Gasco Facility

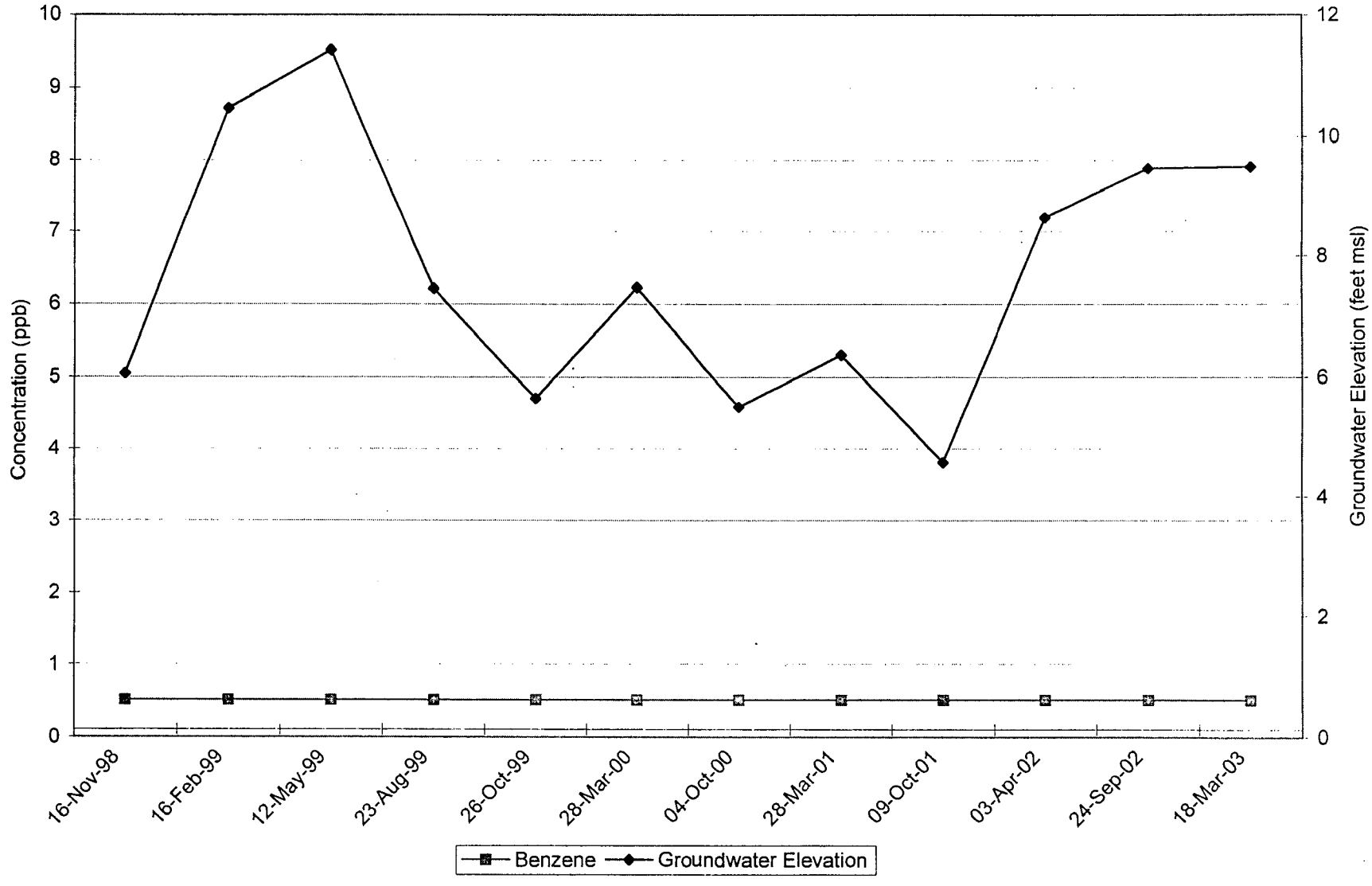


Koppers023280

Updated: 9/30/03 RBE
File: 2708 GW conc graphs (to Jun_03)

HAHN AND ASSOCIATES, INC.
Project No. 2708

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-2-61
NW Natural - Gasco Facility

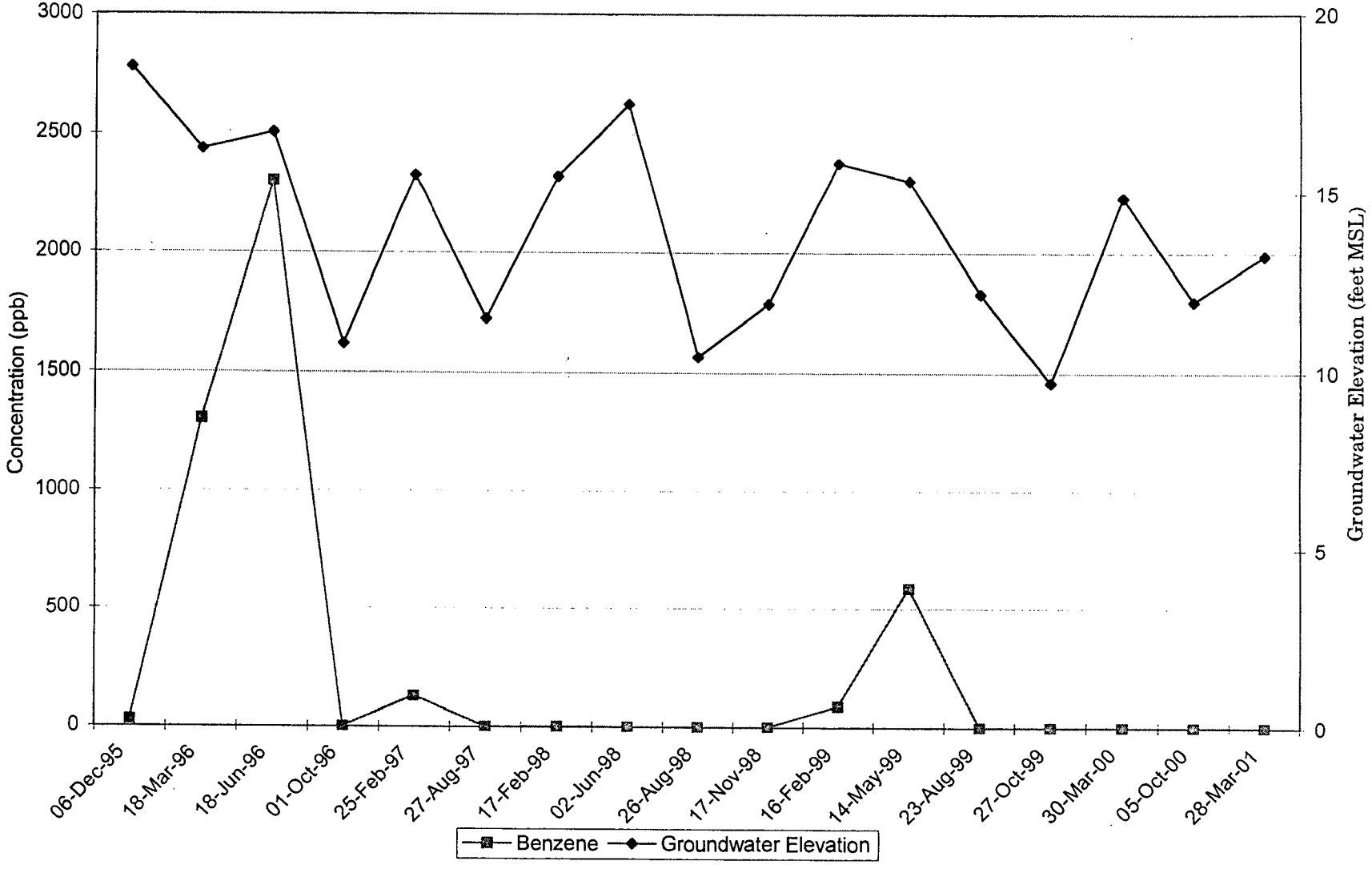


Updated: 9/30/03 MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC

Koppers023281

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-3-26
NW Natural - Gasco Facility

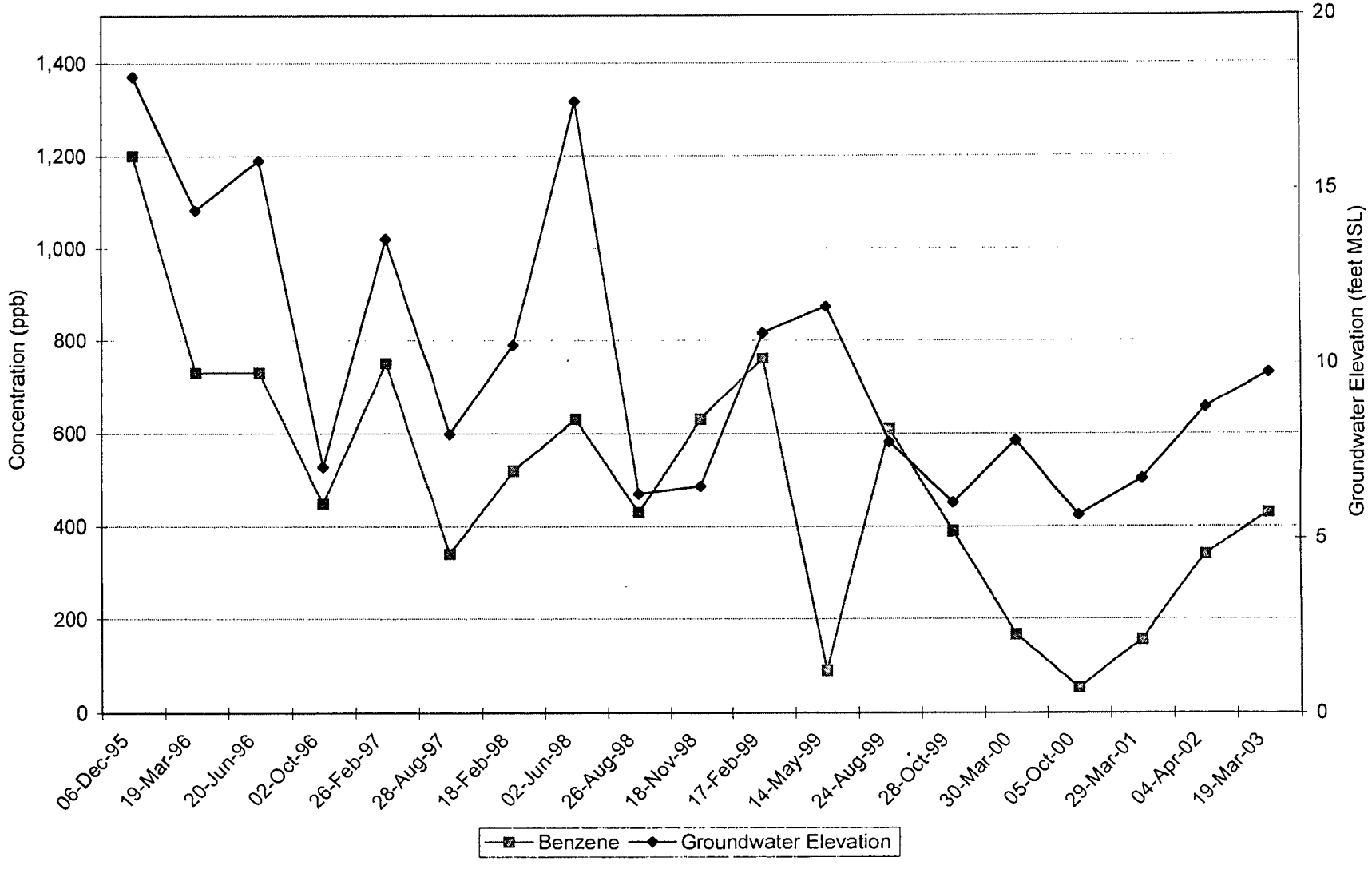


Updated: 9/30/03 RBE
File: 2708 GW conc graphs (to Jun_03)

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers023282

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-3-56
NW Natural - Gasco Facility

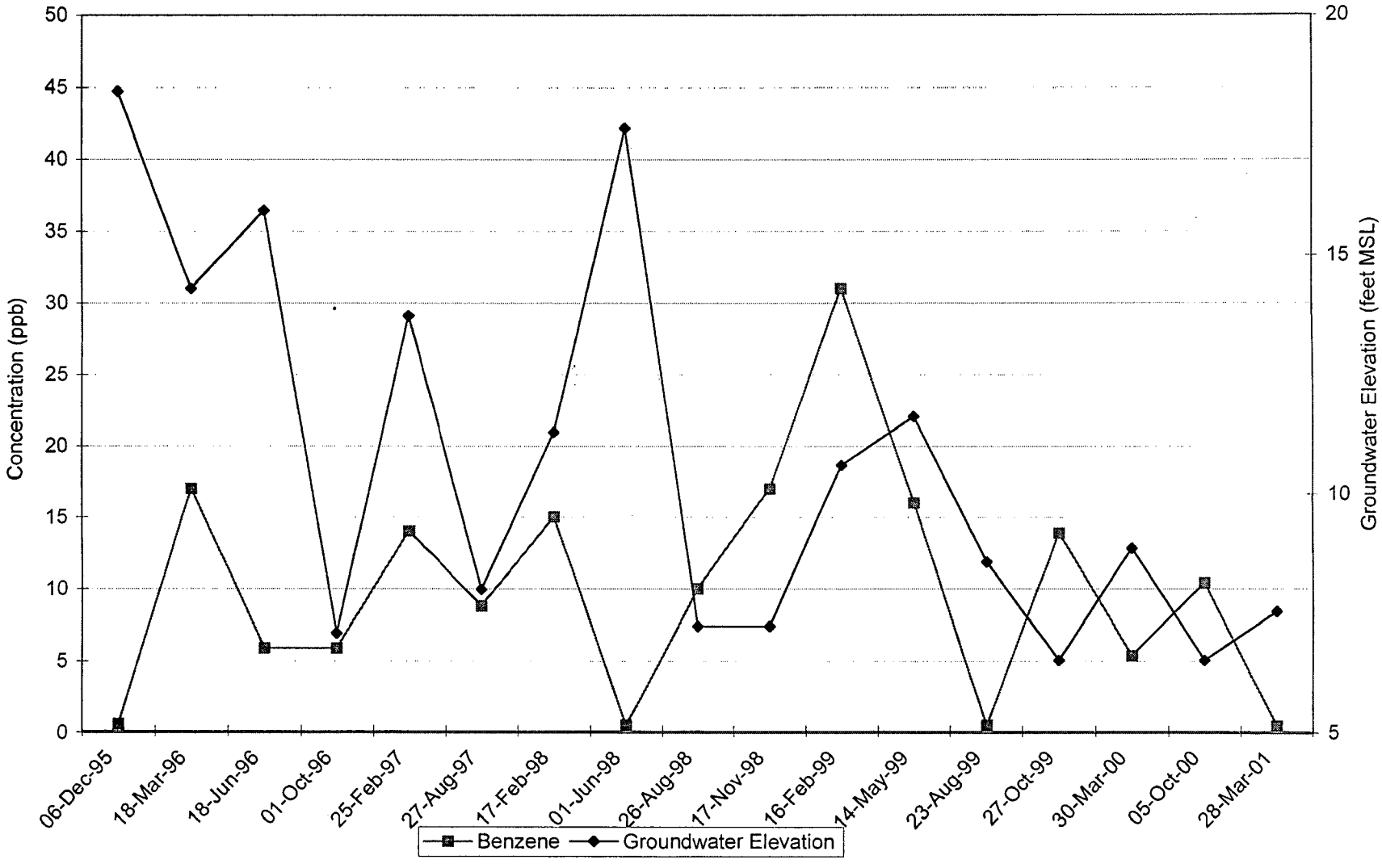


Updated: 9/30/03 MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC

Koppers023283

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-35
NW Natural - Gasco Facility

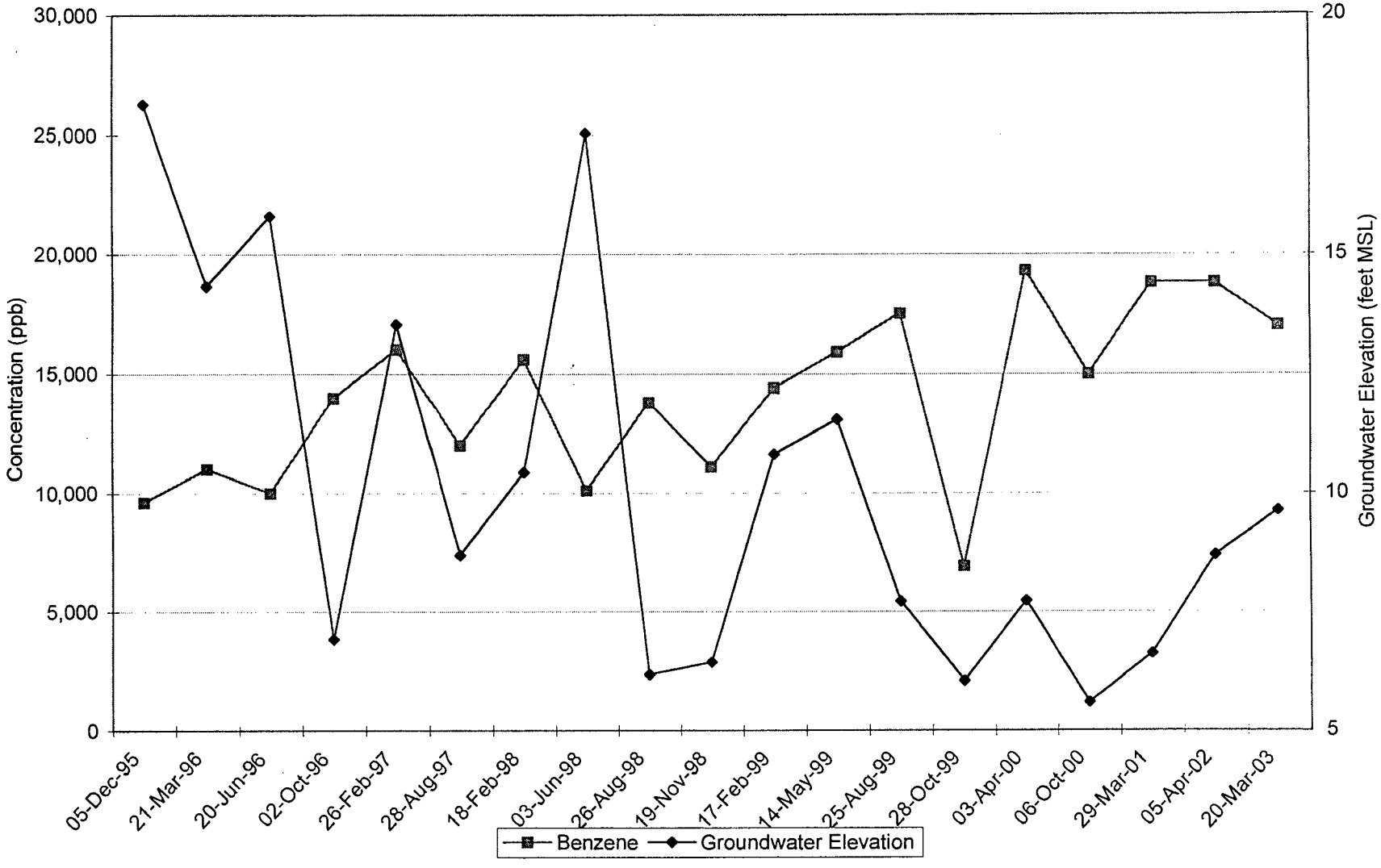


Updated: 9/30/03 RBE
File: 2708 GW conc graphs (to Jun_03)

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers023284

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-57
NW Natural - Gasco Facility

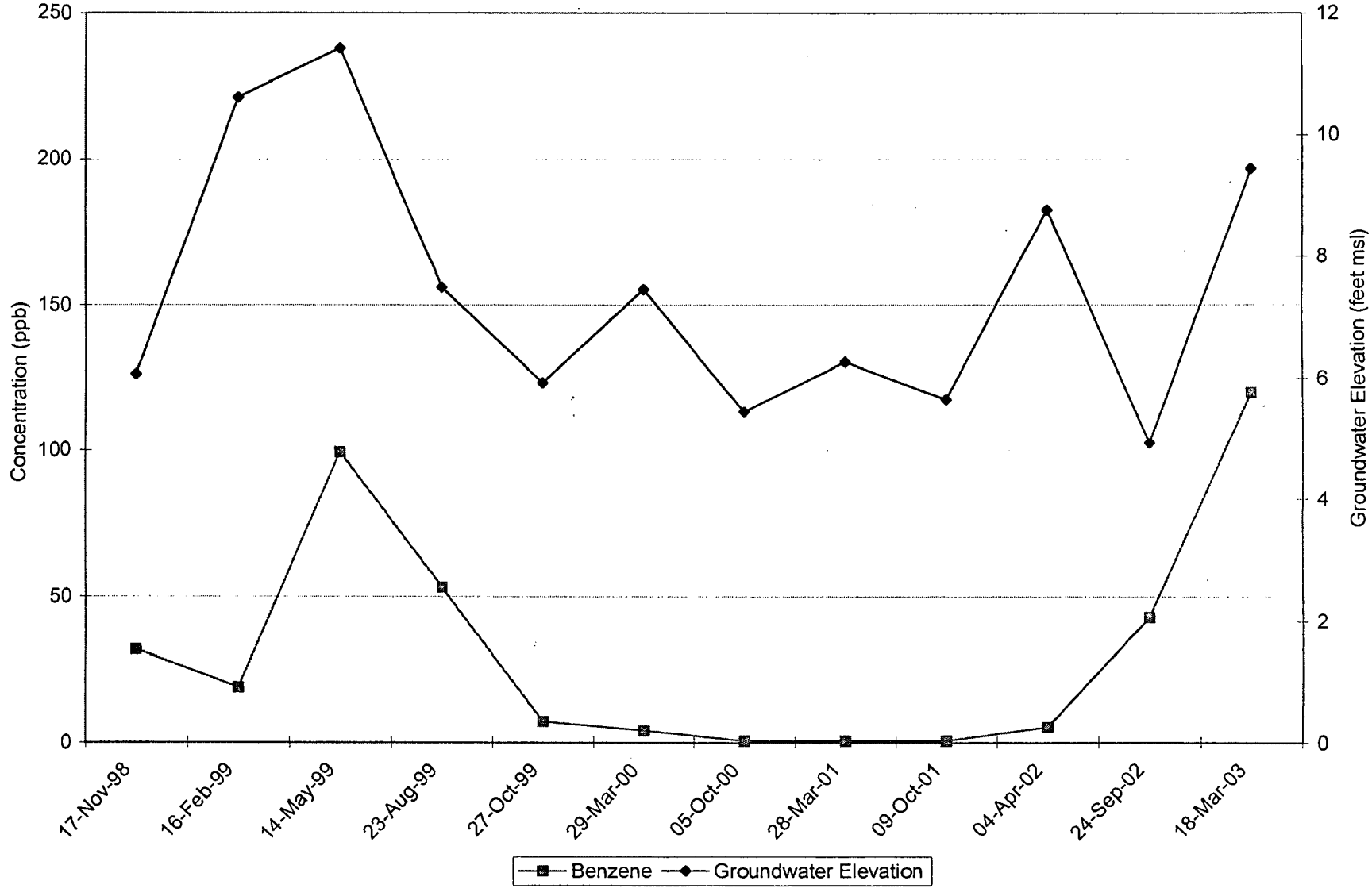


Updated: 9/30/03 MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023285

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-101
NW Natural - Gasco Facility

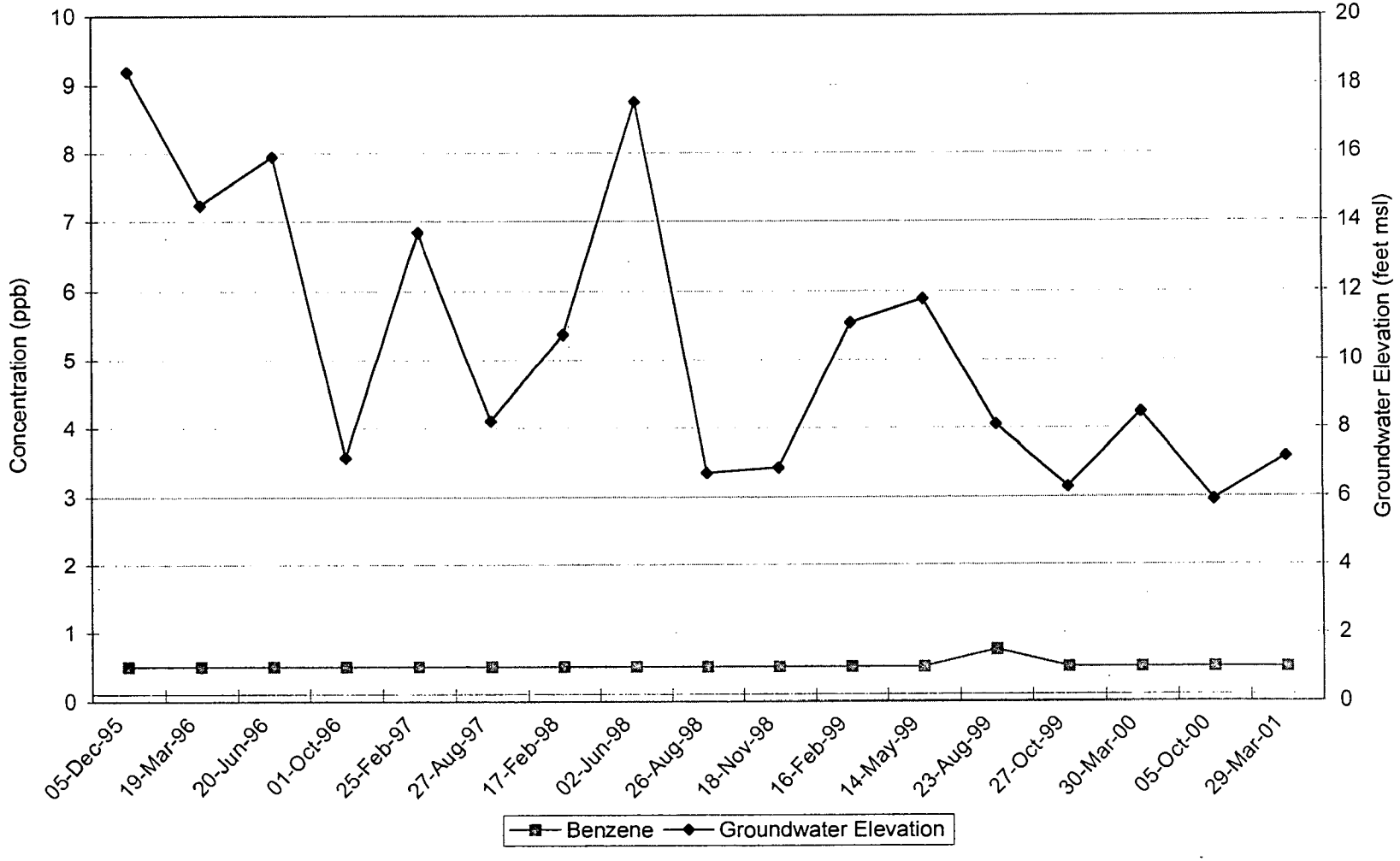


Updated: 9/30/03 MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023286

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-32
NW Natural - Gasco Facility

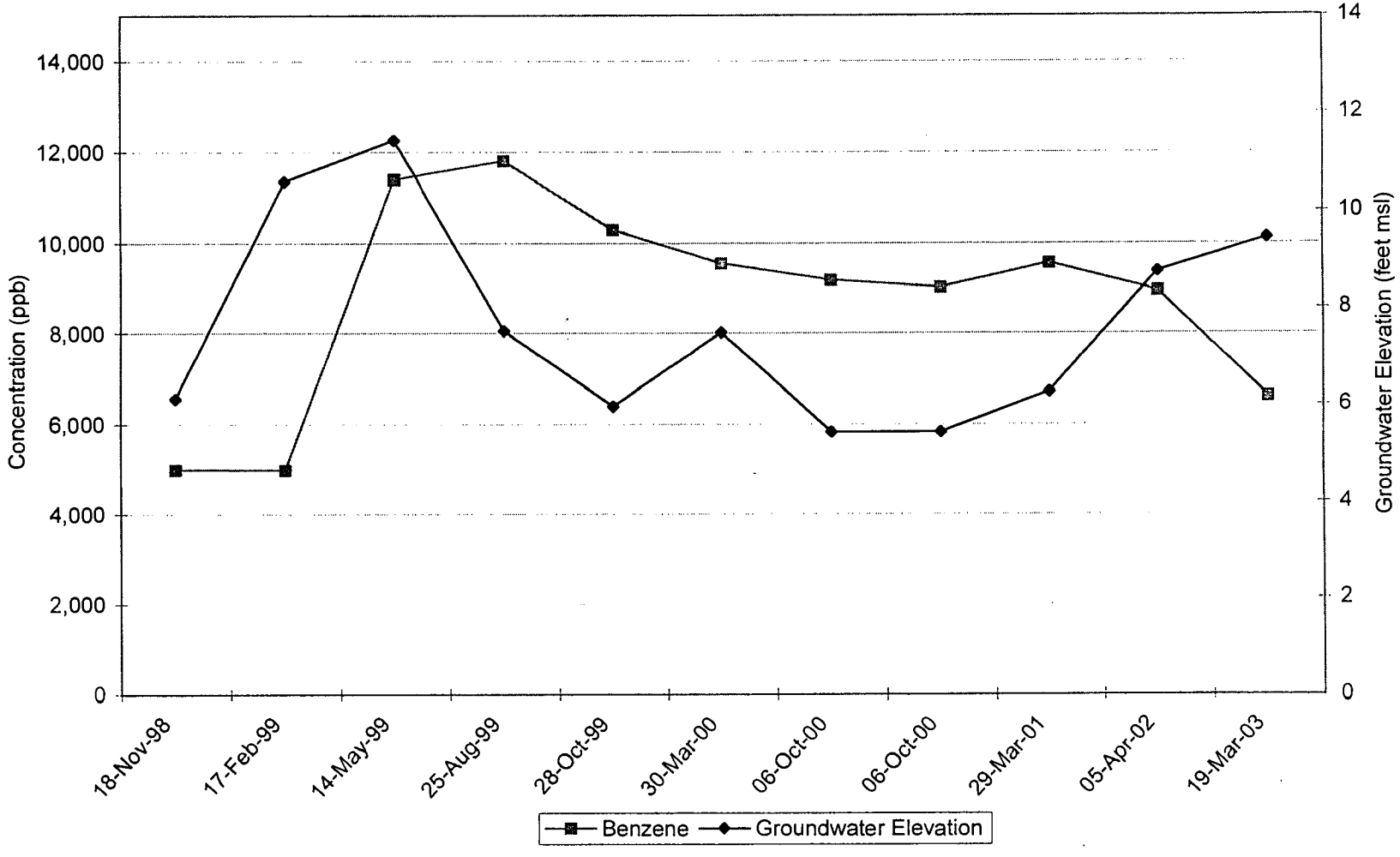


Updated: 9/30/03: RBE
File: 2708 GW conc graphs (to Jun_03)

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers023287

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-100
NW Natural - Gasco Facility

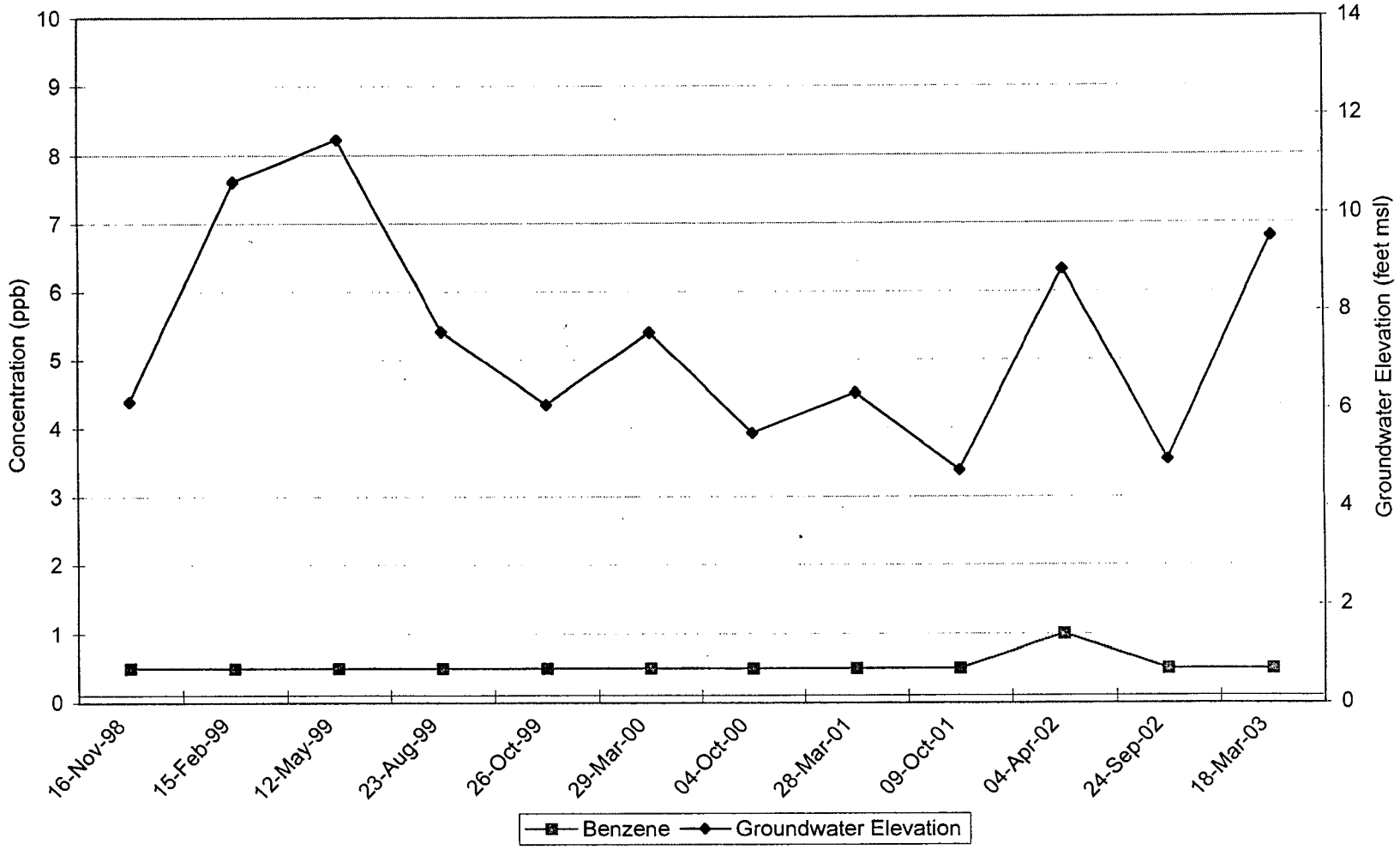


Updated: 9/30/03: MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023288

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-175
NW Natural - Gasco Facility

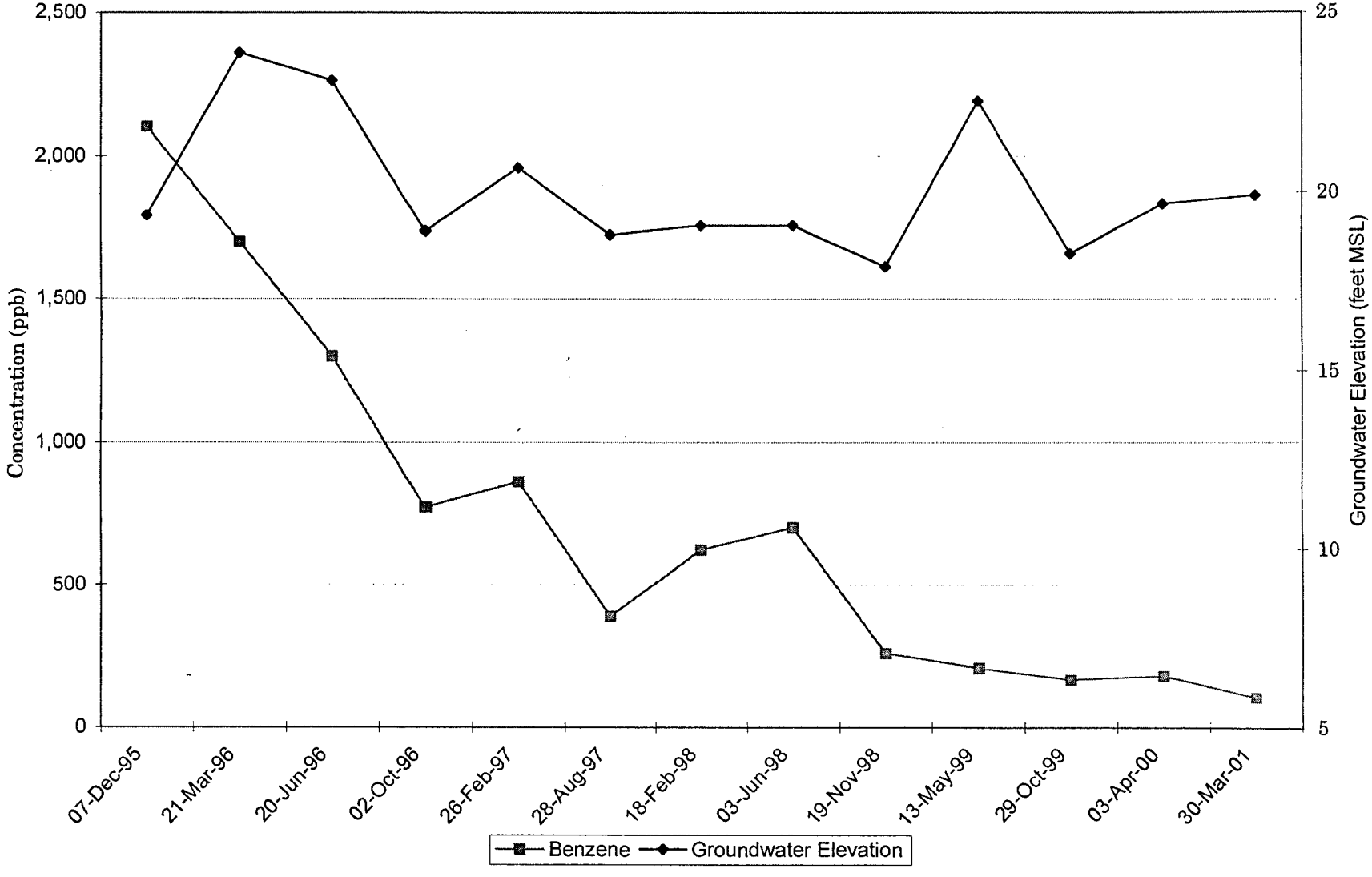


Updated: 9/30/03: MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023289

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-8-29
NW Natural - Gasco Facility

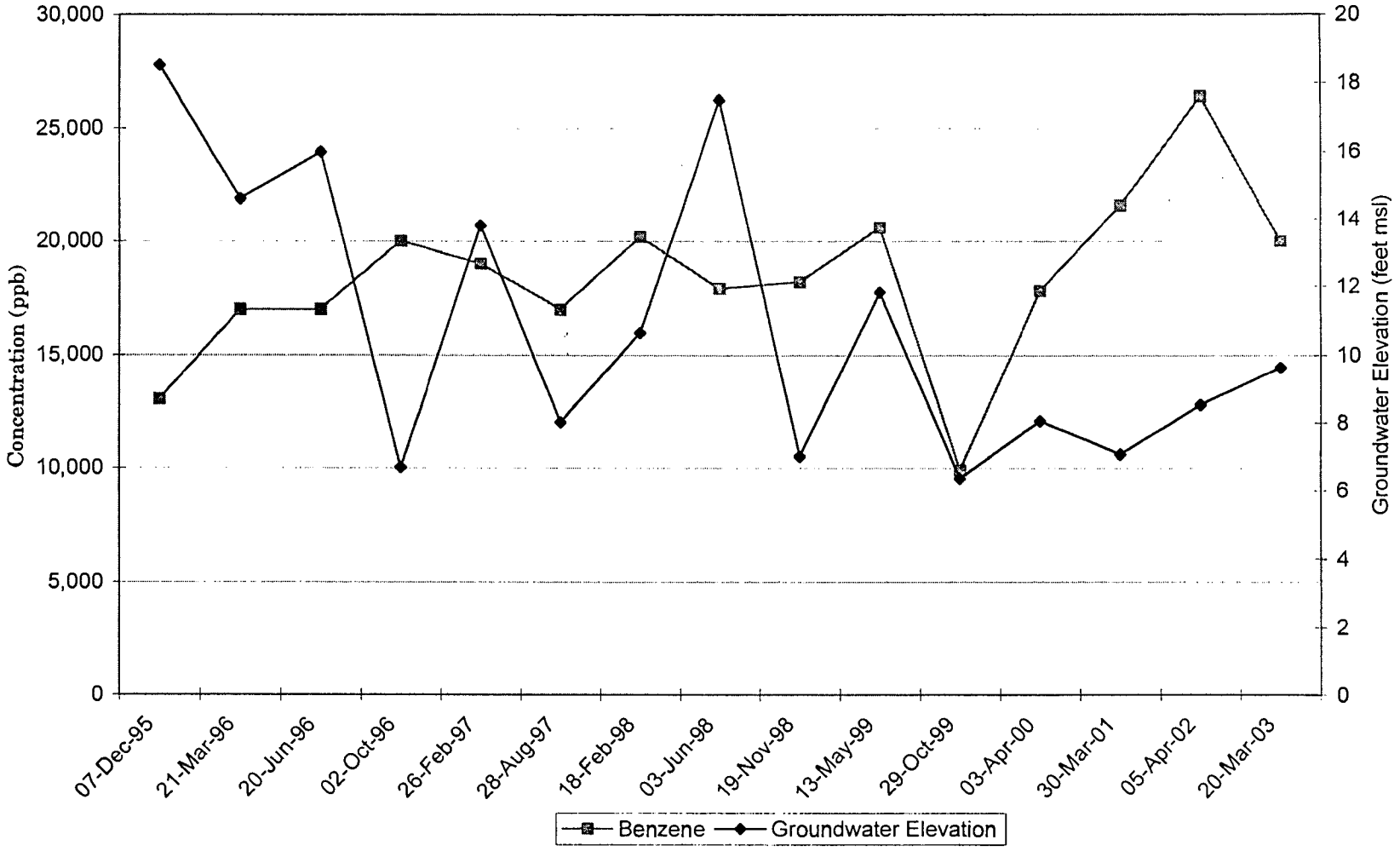


Updated: 9/30/03 RBE
File: 2708 GW conc graphs (to Jun_03)

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers023290

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-8-56
NW Natural - Gasco Facility

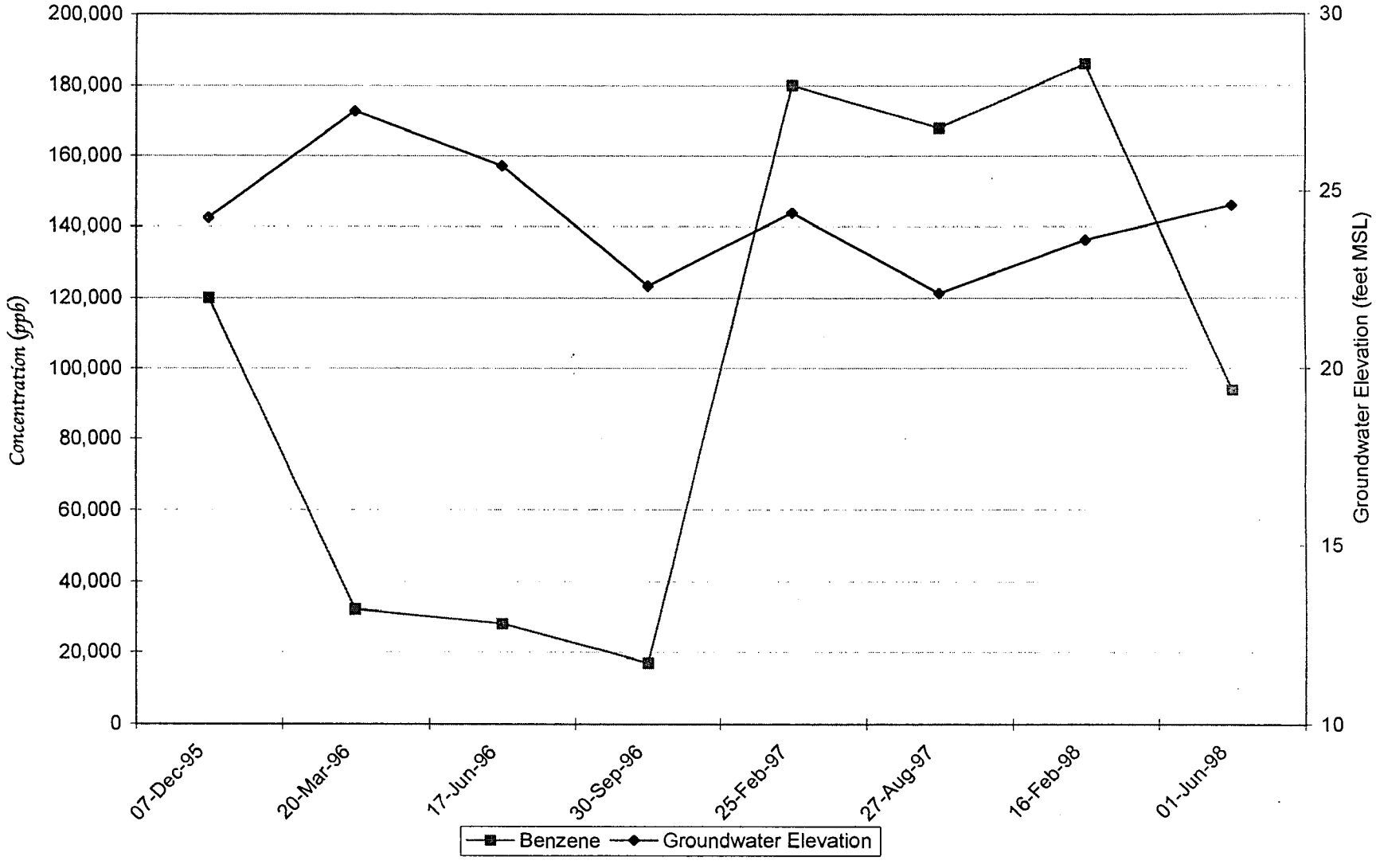


Updated: 9/30/03: MSM
File:2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023291

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-10-25
NW Natural - Gasco Facility

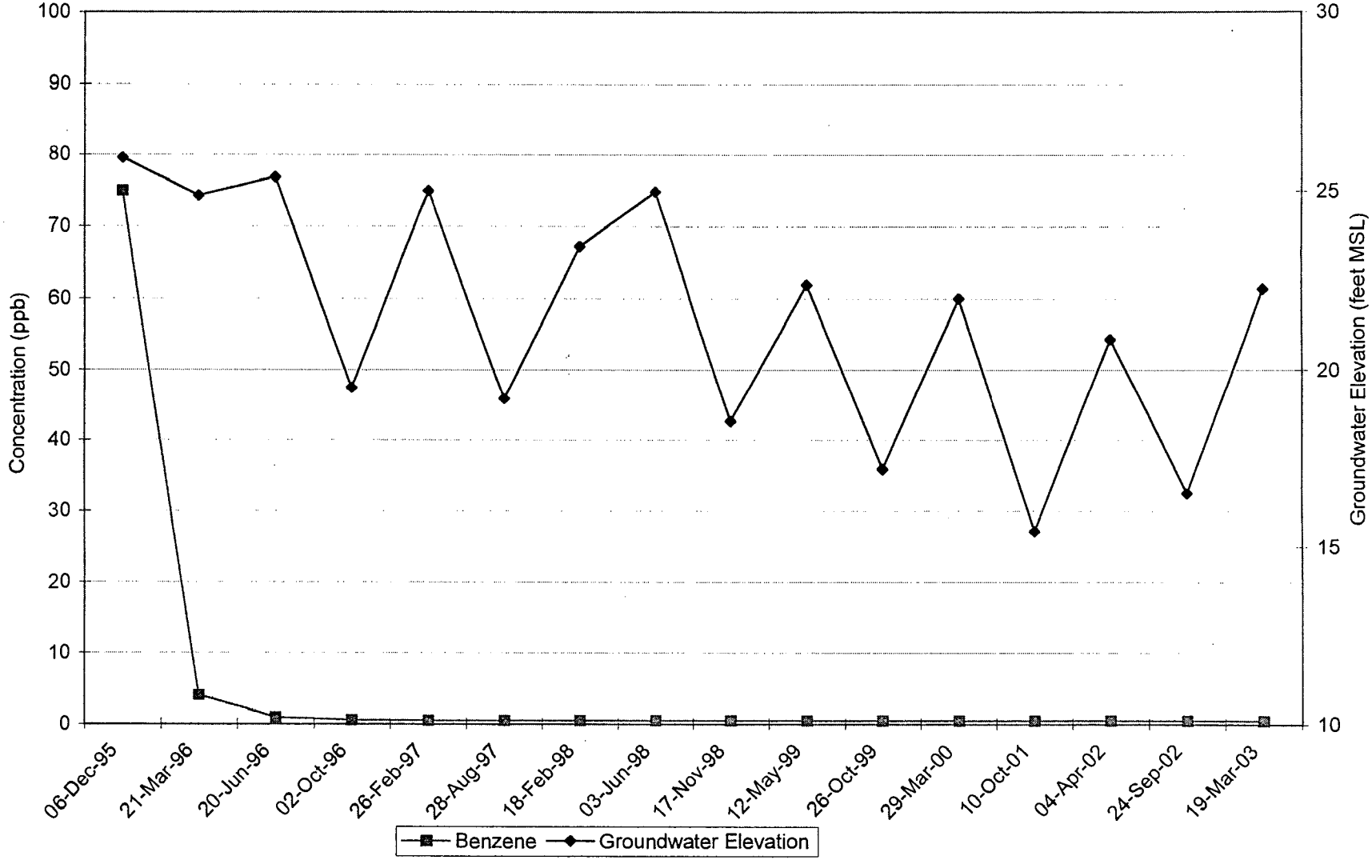


Updated: 9/30/03 RBE
File: 2708 GW conc graphs (to Jun_03)

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers023292

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-10-61
NW Natural - Gasco Facility

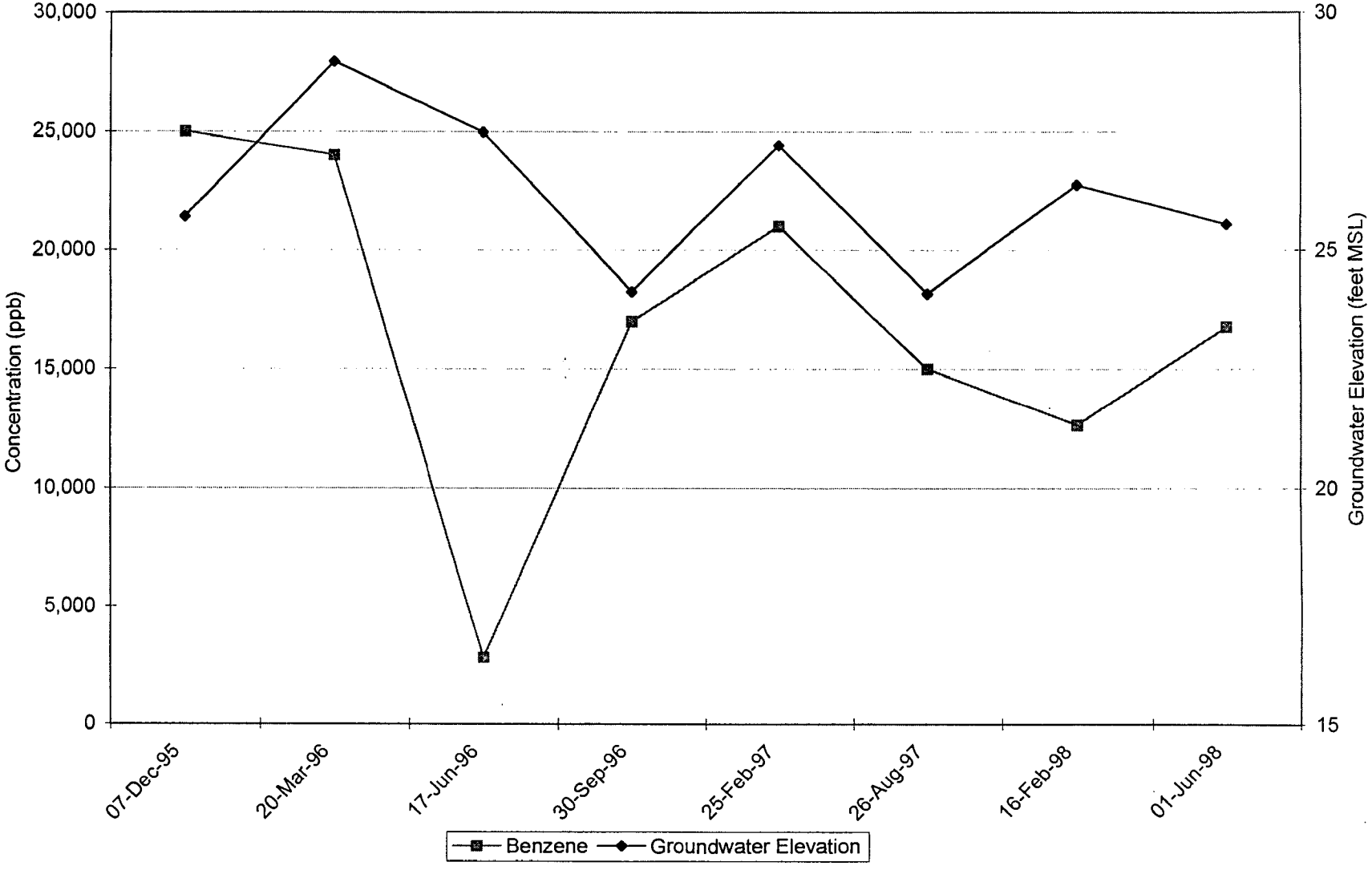


Updated: 9/30/03 MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023293

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-11-32
NW Natural - Gasco Facility

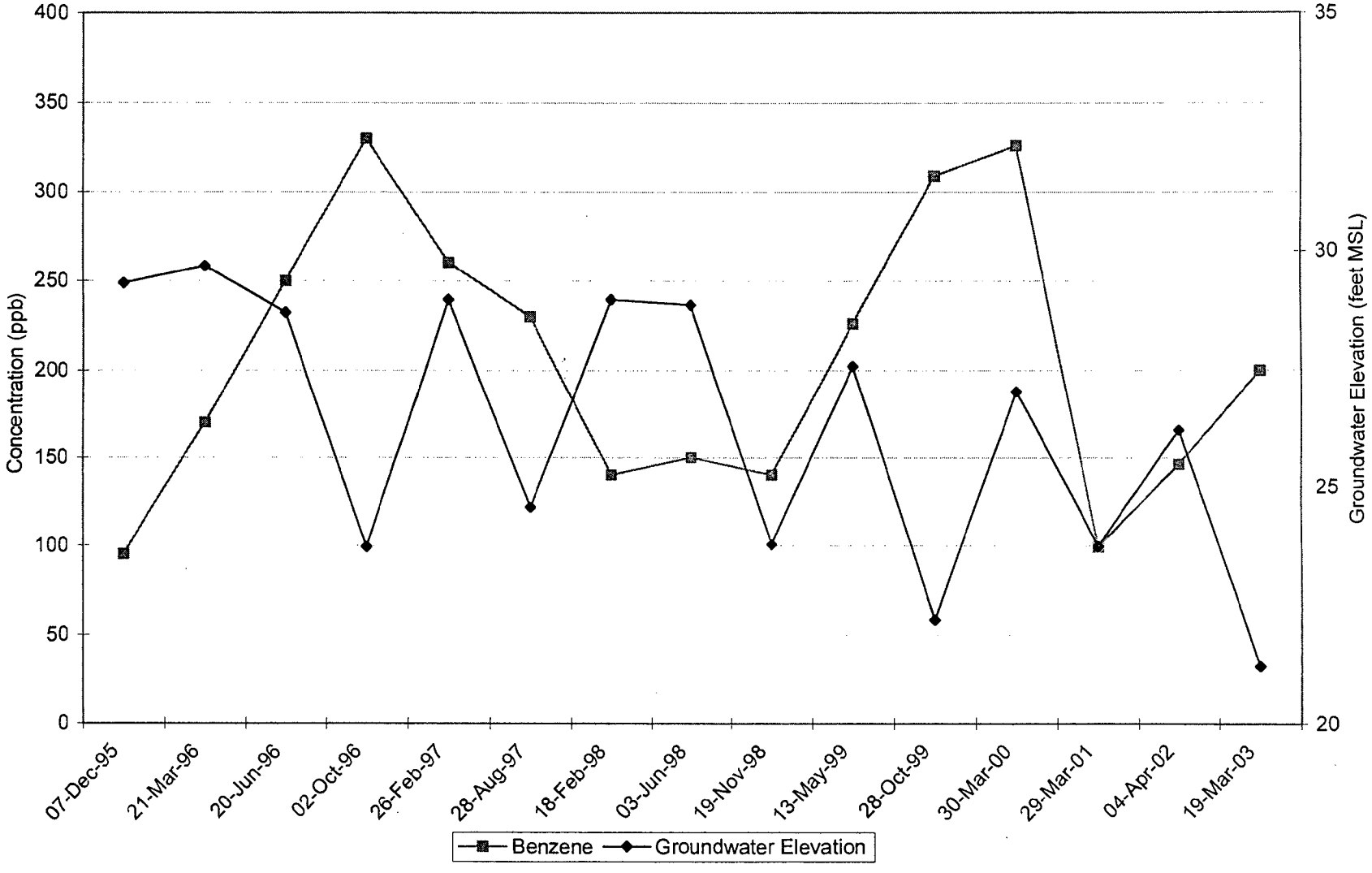


Updated: 9/30/03 RBE
File: 2708 GW conc graphs (to Jun_03)

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers023294

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-12-36
NW Natural - Gasco Facility

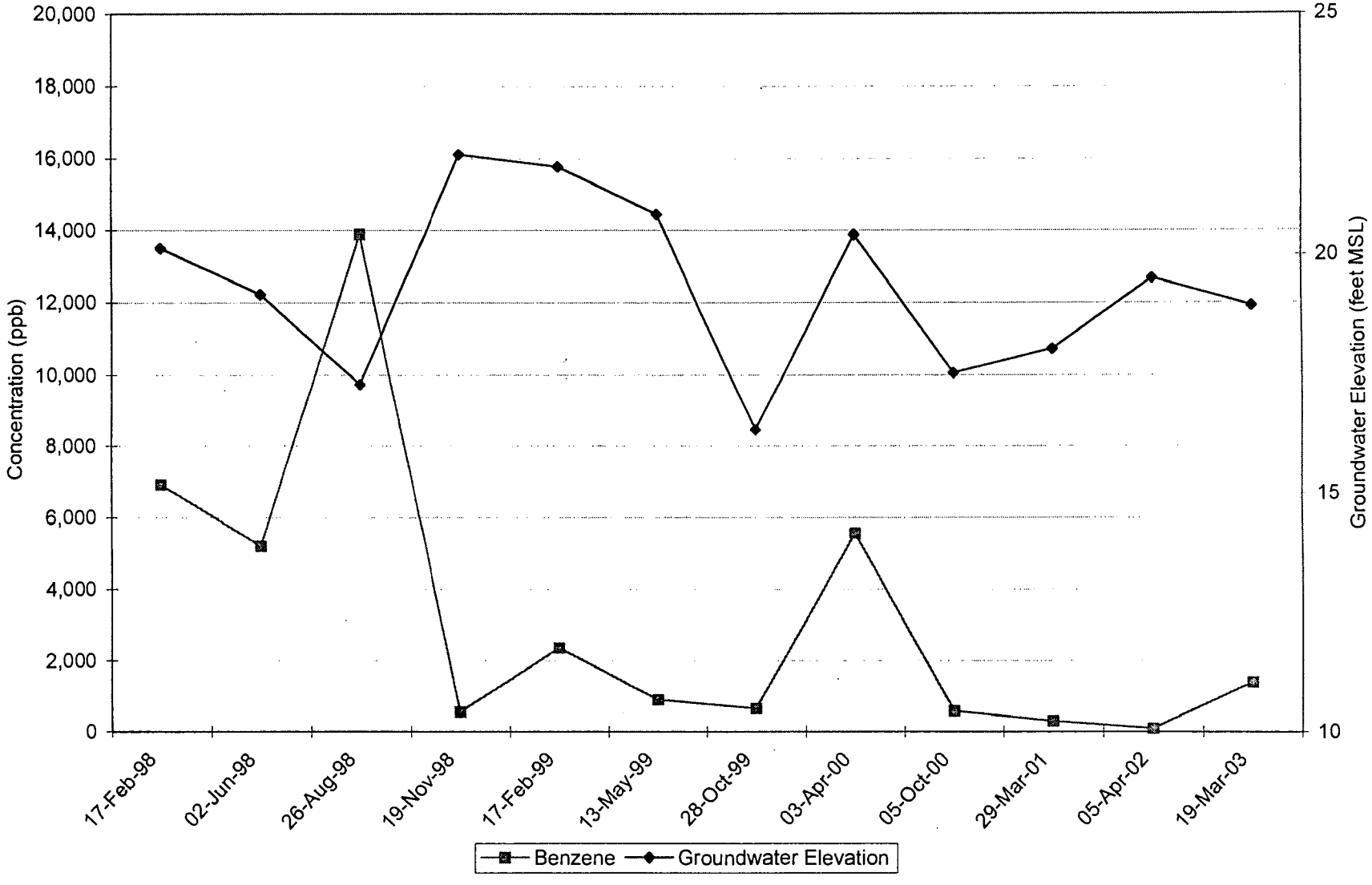


Updated: 9/30/03 MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023295

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-13-30
NW Natural - Gasco Facility

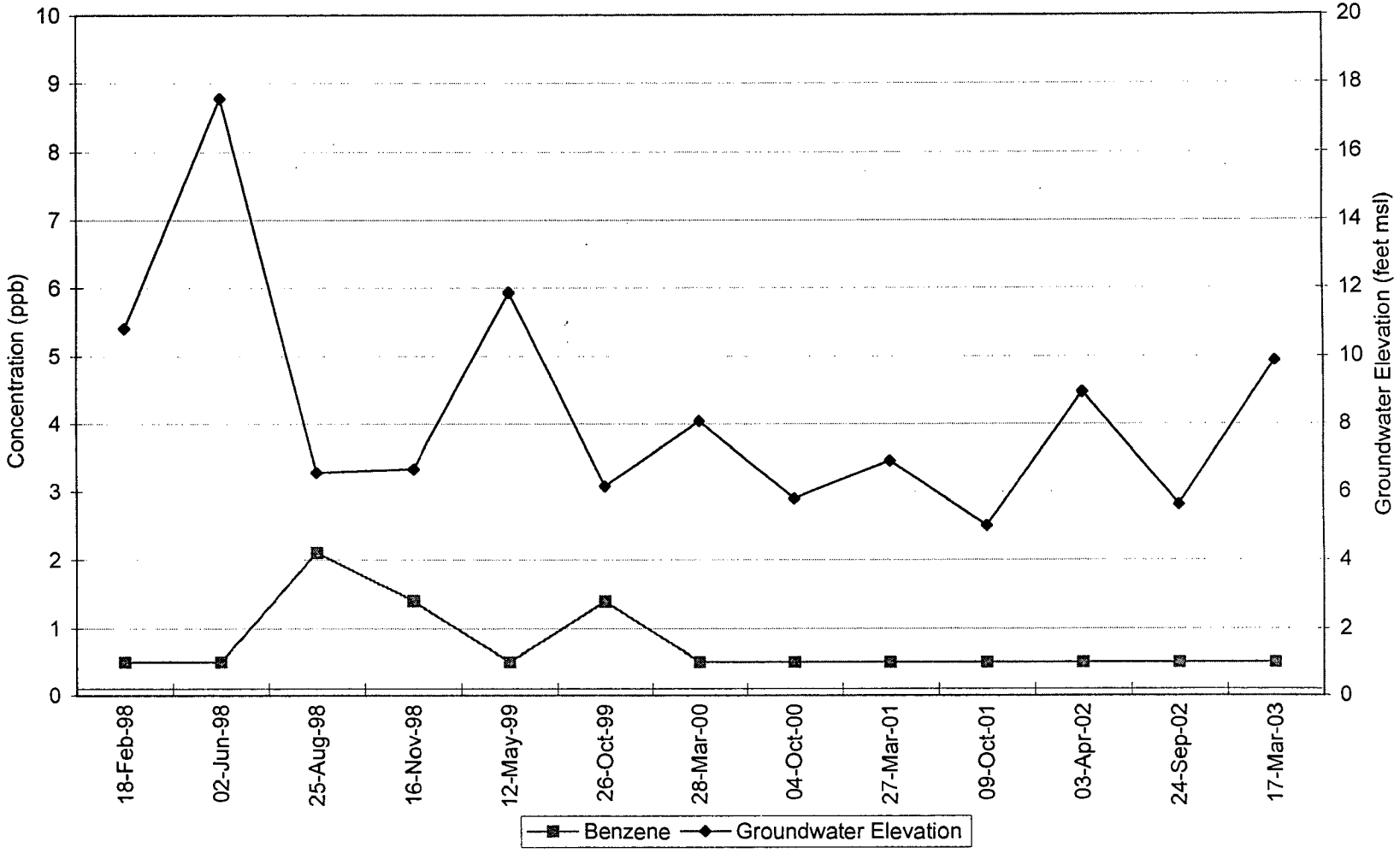


Updated: 9/30/03 MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023296

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-13-61
NW Natural - Gasco Facility

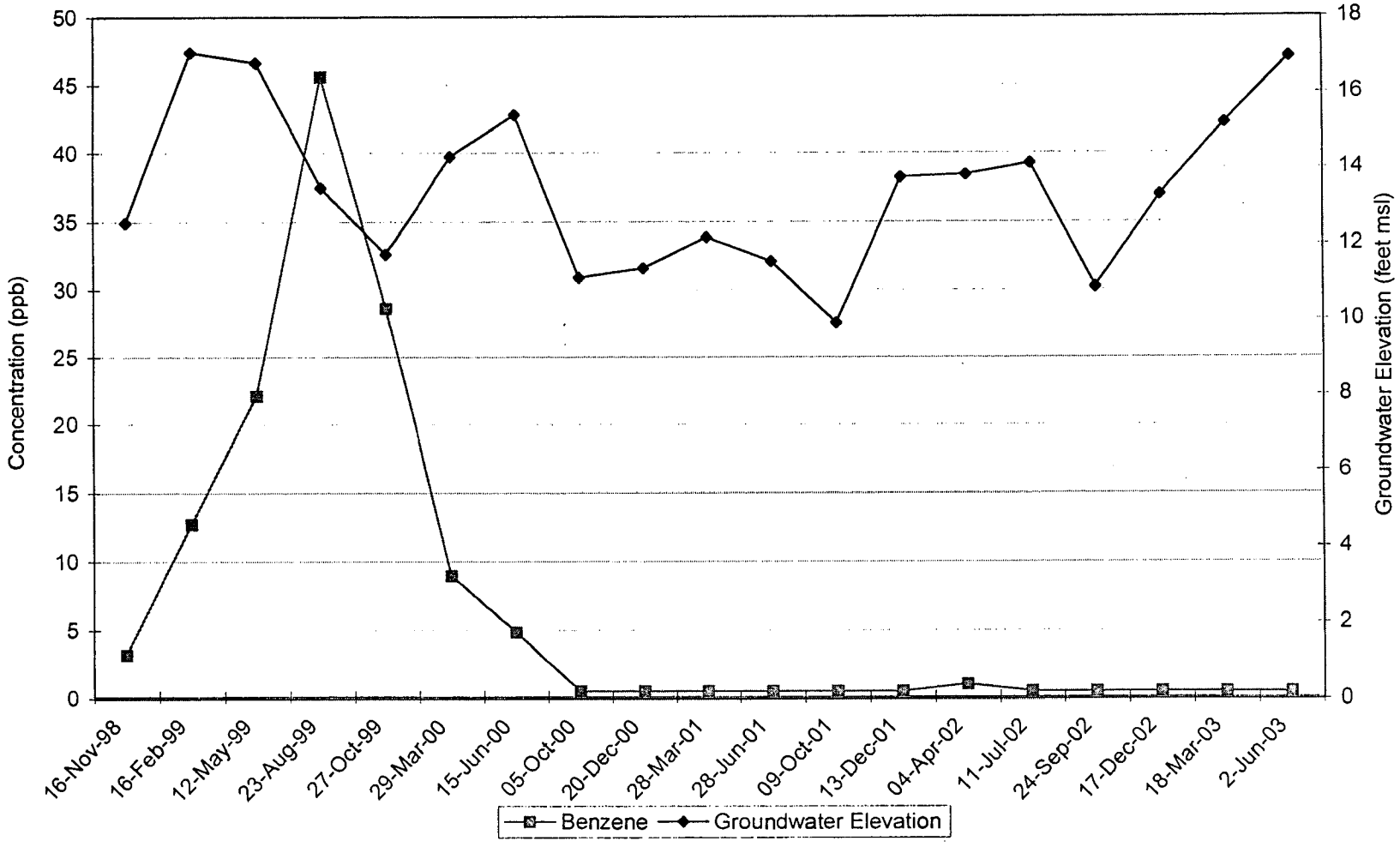


Updated: 9/30/03: MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023297

Benzene Concentation and Groundwater Elevation through Time
Monitoring Well MW-14-110
NW Natural - Gasco Facility

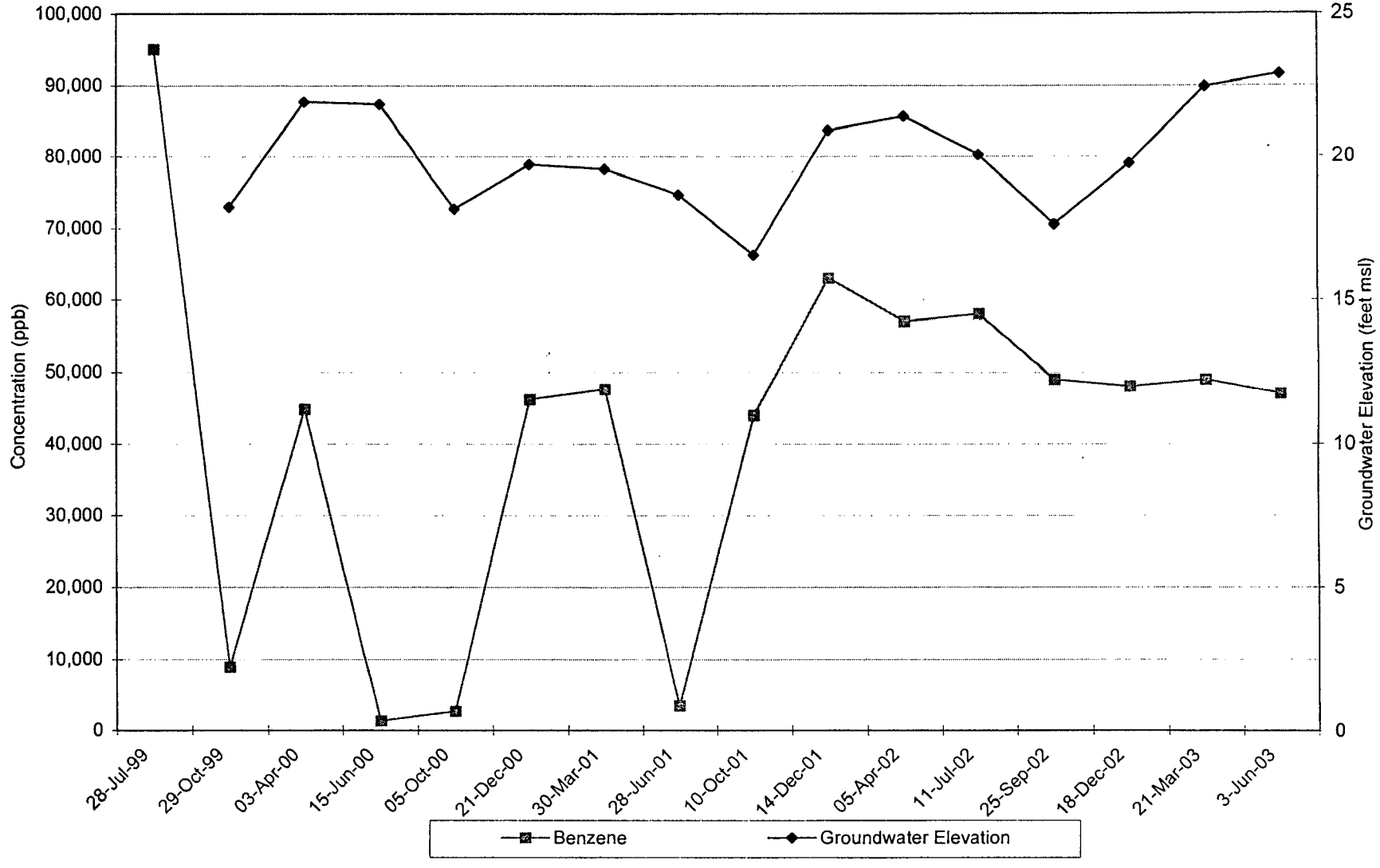


Koppers023298

Updated: 9/30/03: MSM
File: 2708 GW conc graphs (to Jun_03)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentation and Groundwater Elevation through Time
Monitoring Well MW-15-50
NW Natural - Gasco Facility

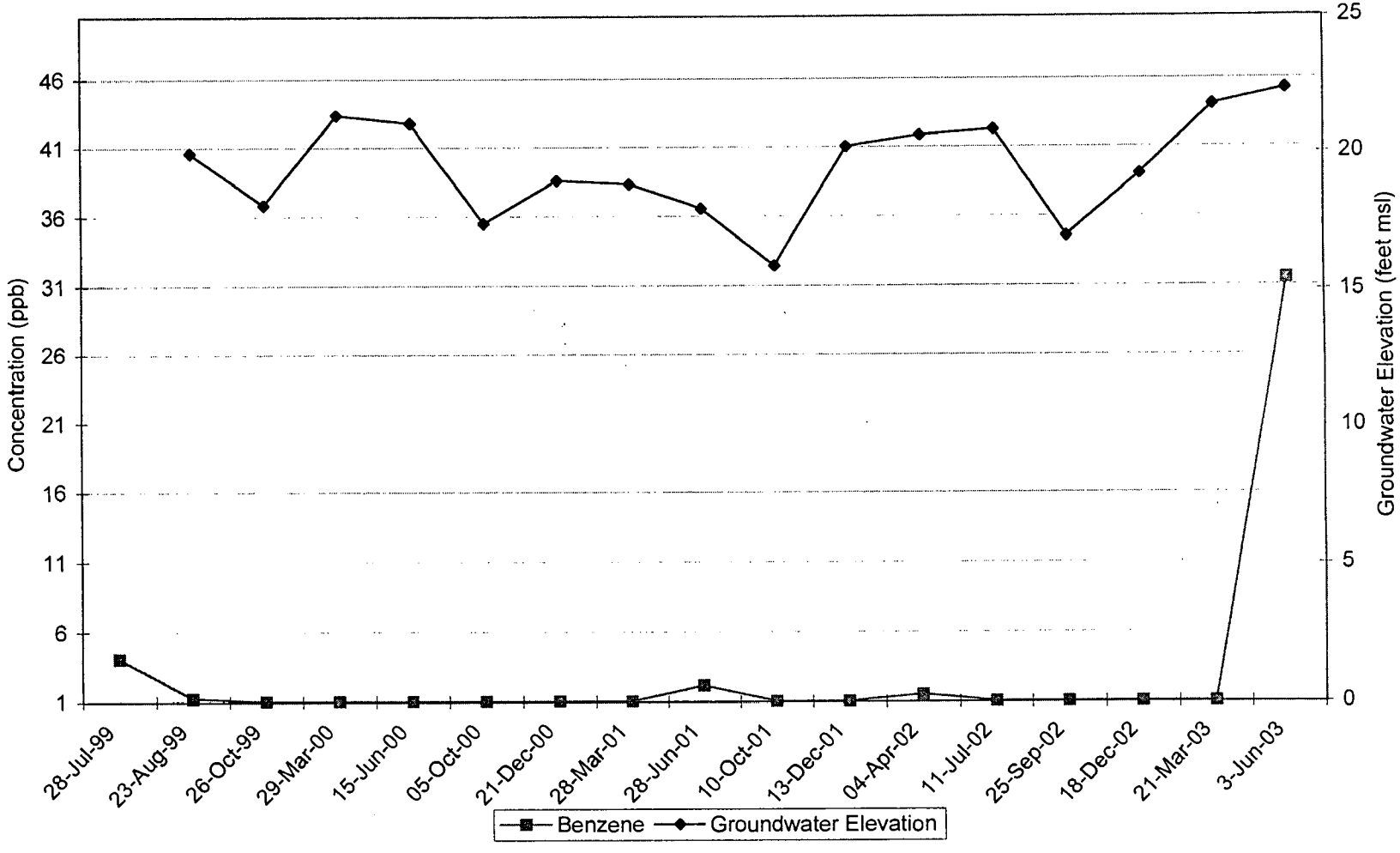


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW-15-50 bnz

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023299

Benzene Concentation and Groundwater Elevation through Time
Monitoring Well MW-15-66
NW Natural - Gasco Facility



Koppers023300

Updated: 9/30/03: MSM
File: 2708 GW conc graphs (to Jun_03)

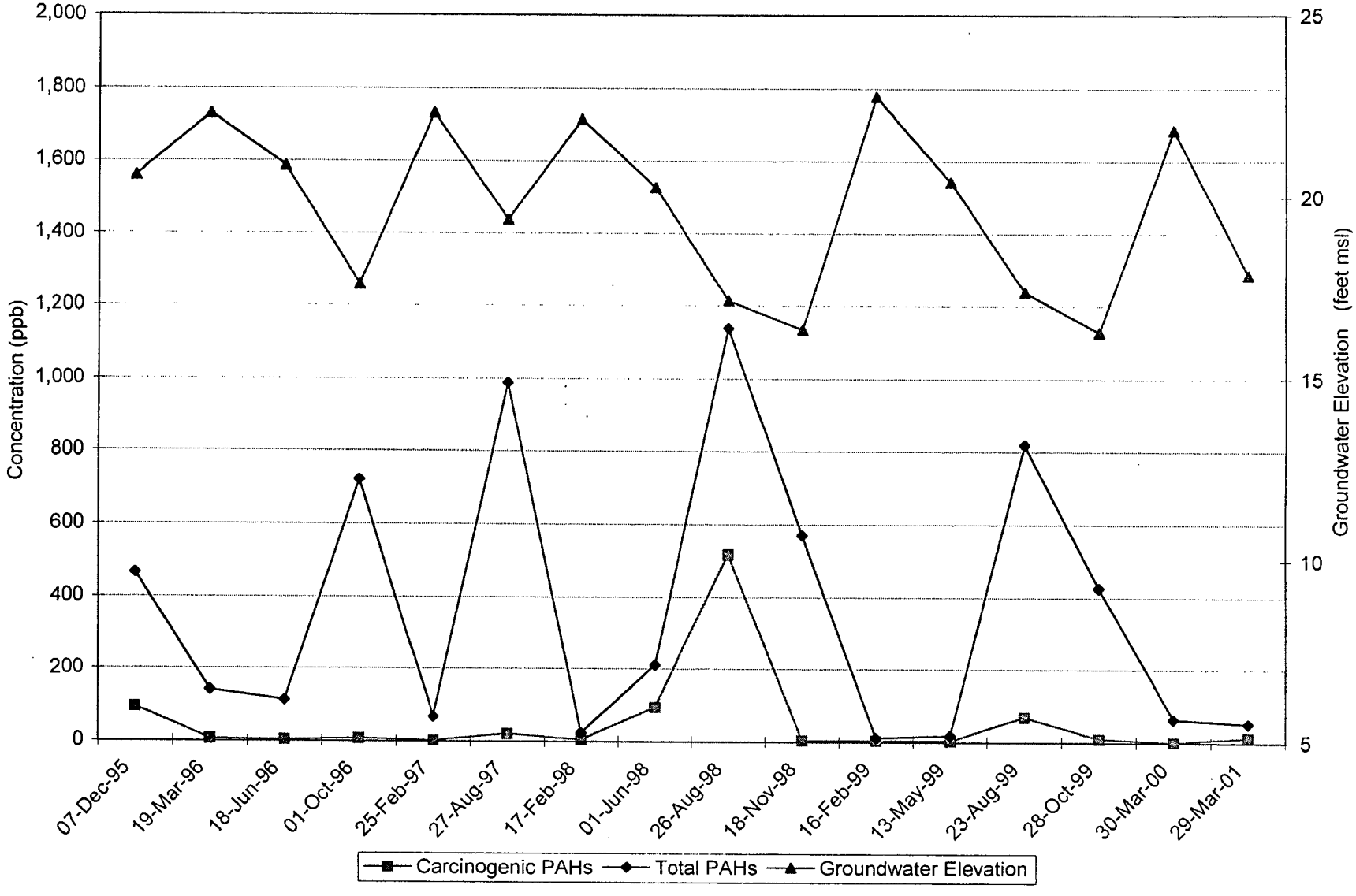
Project No. 2708
HAHN AND ASSOCIATES, INC.

G

APPENDIX G

Time-Concentration Graphs:
Total PAH and Total Carcinogenic PAH Concentrations in Groundwater

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-1-22
NW Natural - Gasco Facility

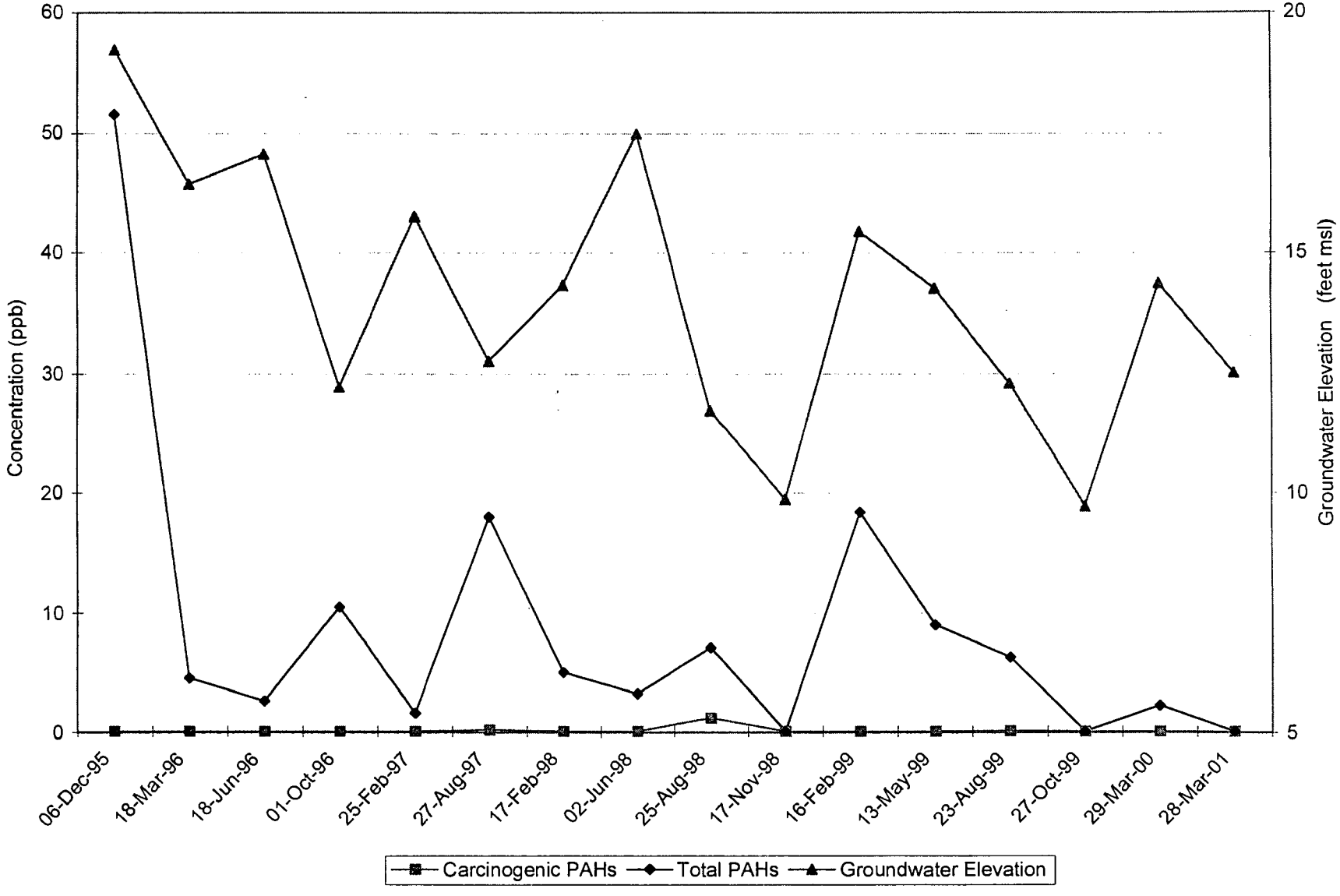


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW-1 (PAH)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023303

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-2-32
NW Natural - Gasco Facility

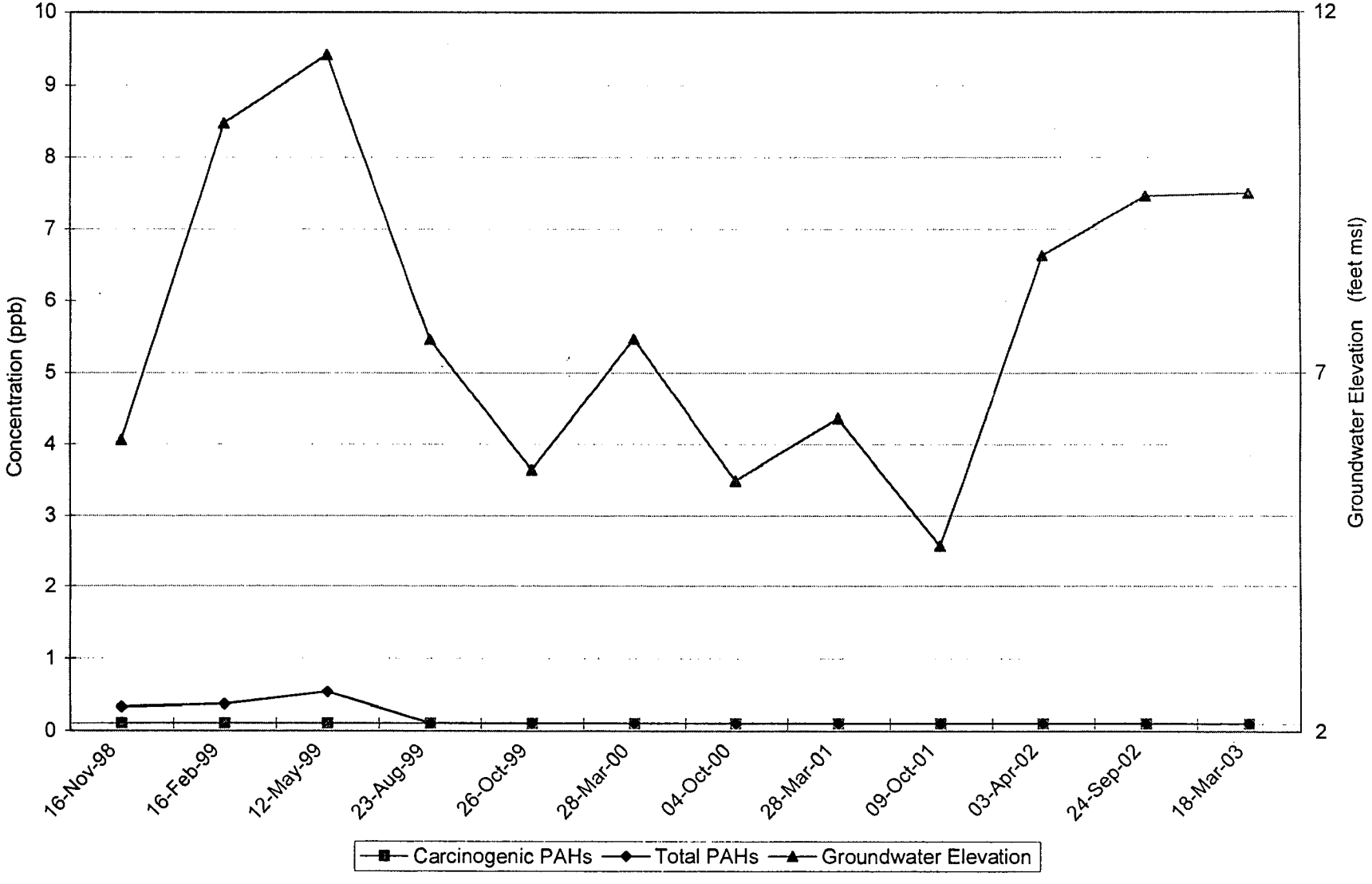


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW2-32 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023304

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-2-61
NW Natural - Gasco Facility

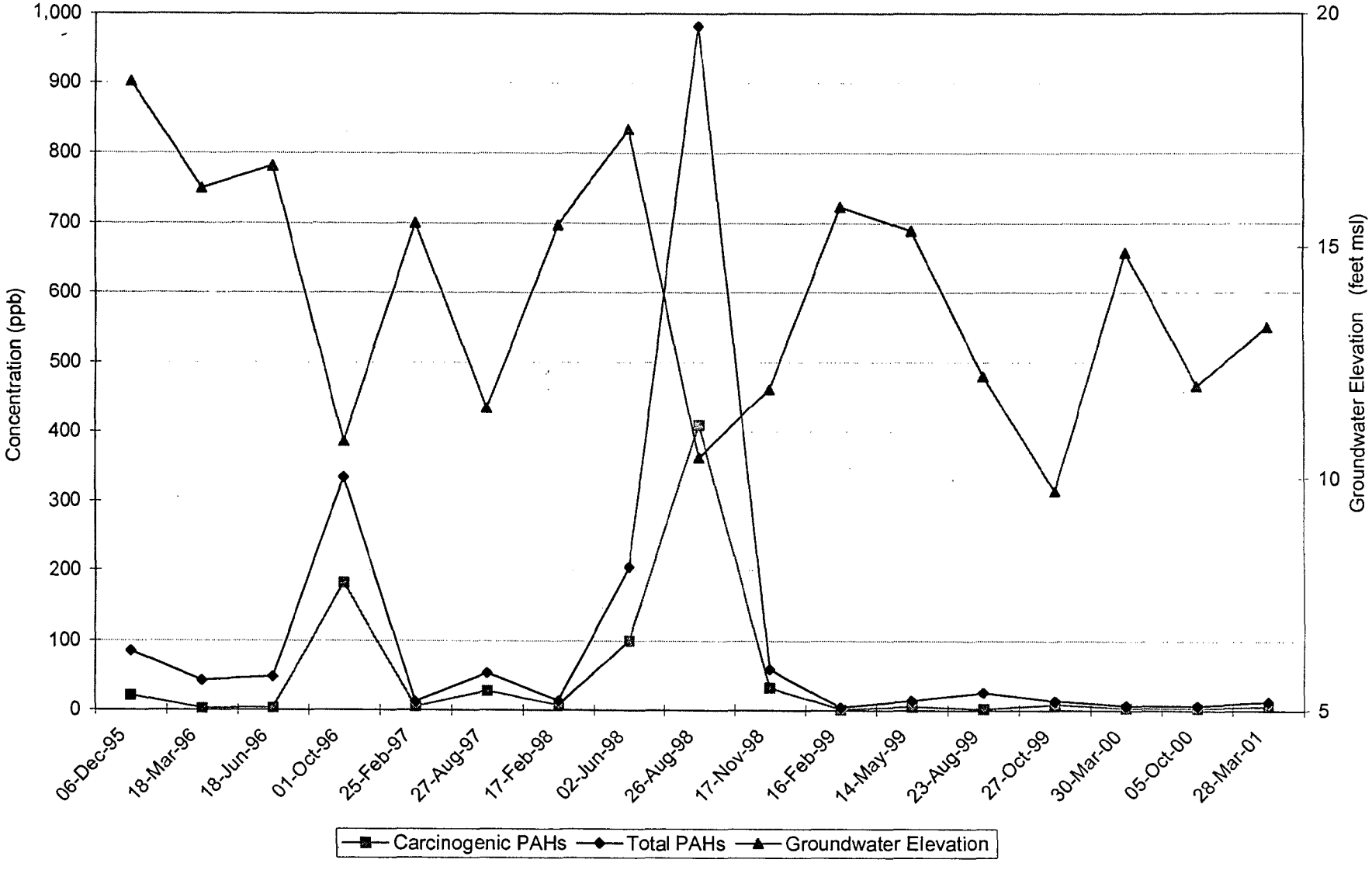


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW-02-61 PAHs

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023305

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-3-26
NW Natural - Gasco Facility

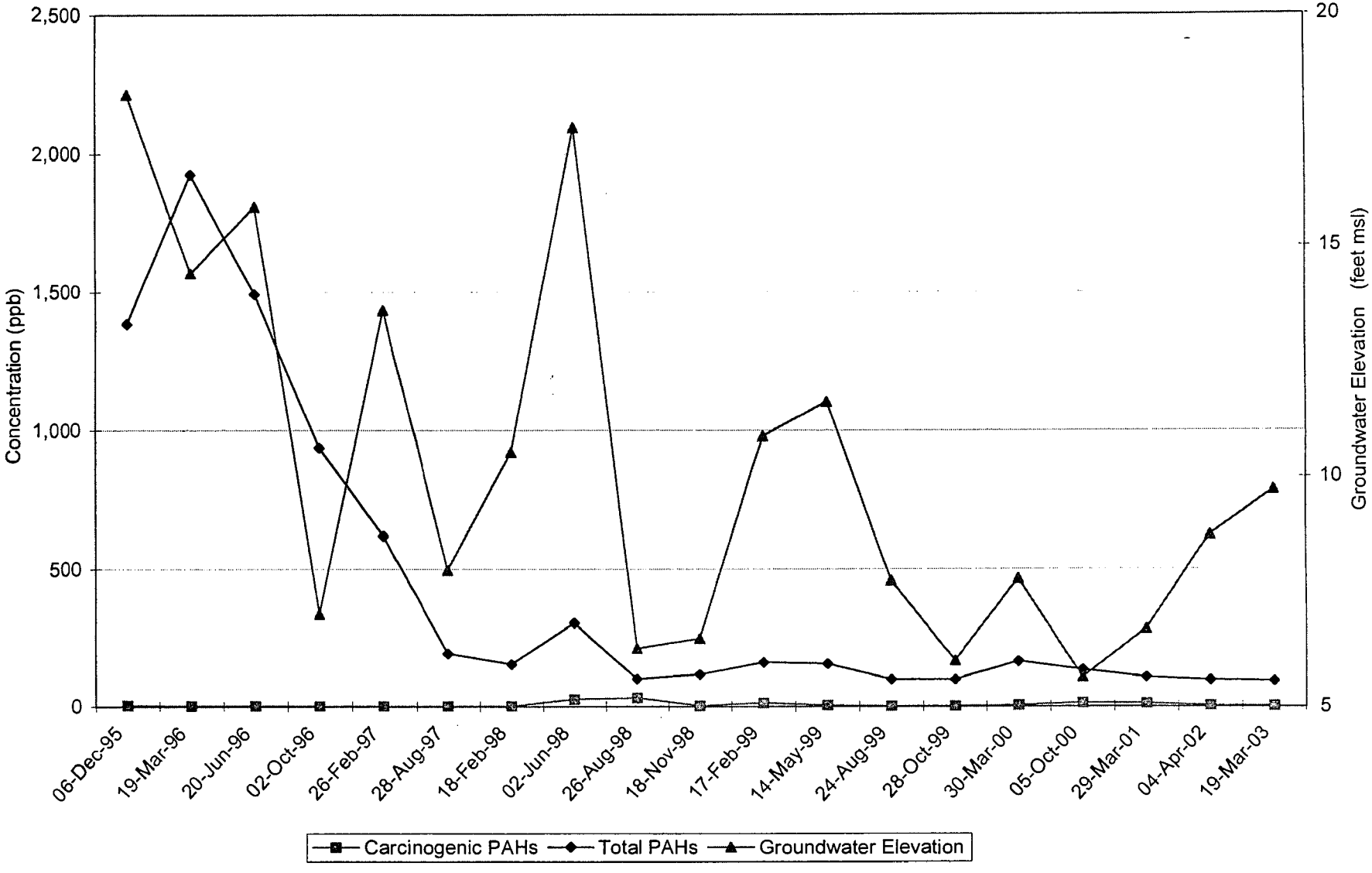


Updated: 9/30/03MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW3-26 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023306

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-3-56
NW Natural - Gasco Facility

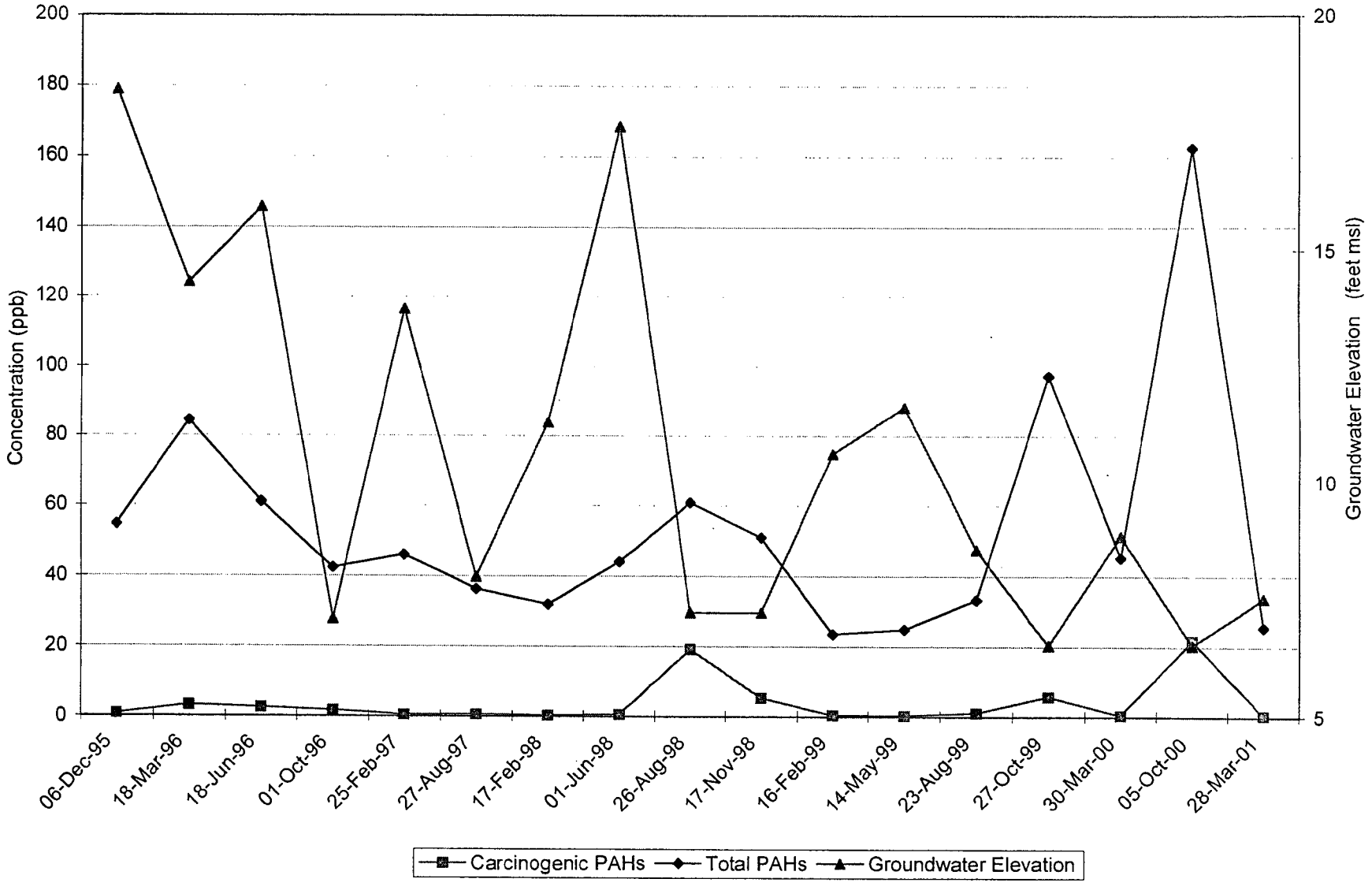


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW3-56 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023307

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-35
NW Natural - Gasco Facility

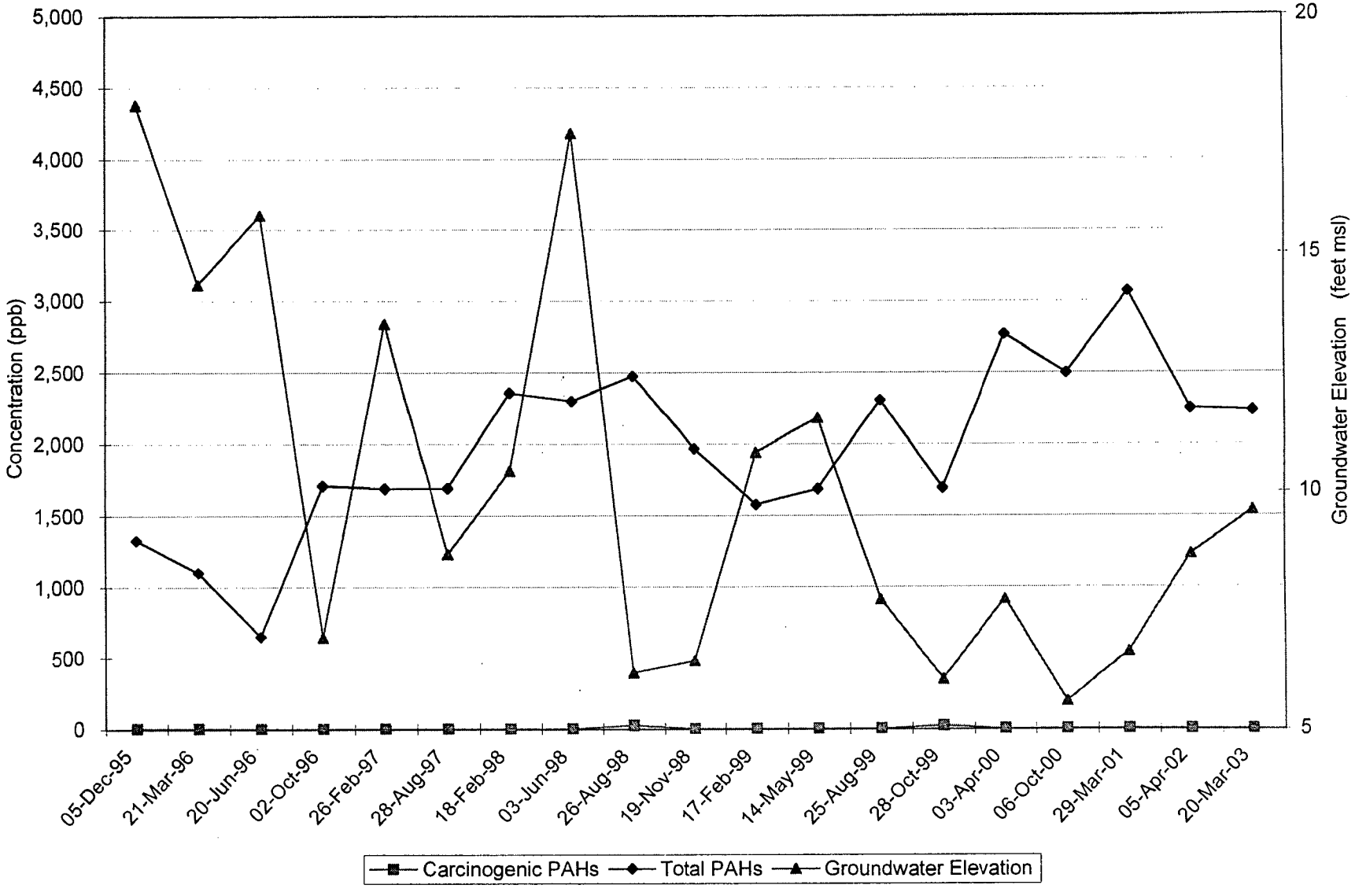


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW4-35 (PAHs)

Priject No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023308

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-57
NW Natural - Gasco Facility

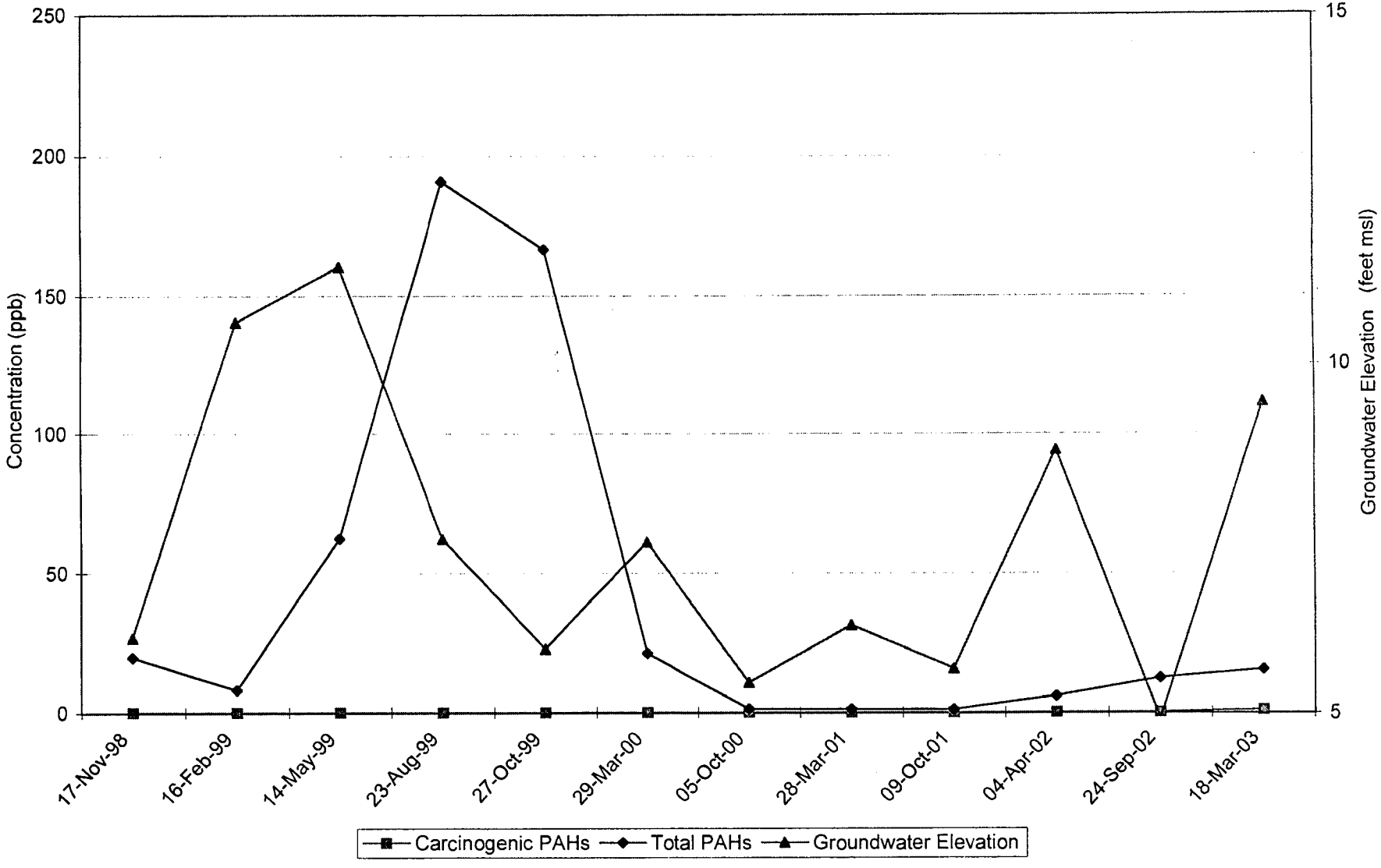


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW4-57 (PAH)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023309

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-101
NW Natural - Gasco Facility

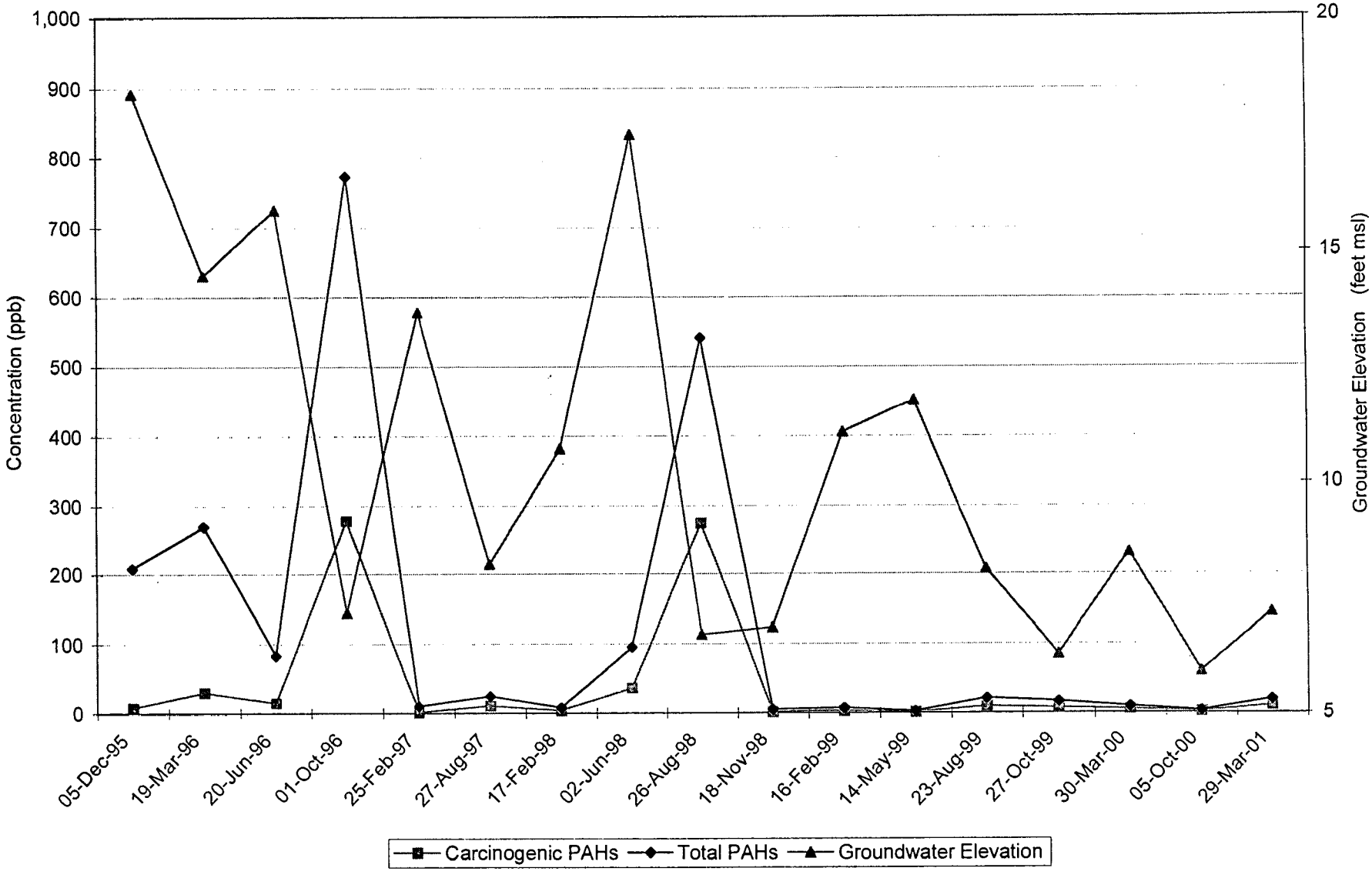


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW4-101 (PAH)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023310

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-32
NW Natural - Gasco Facility

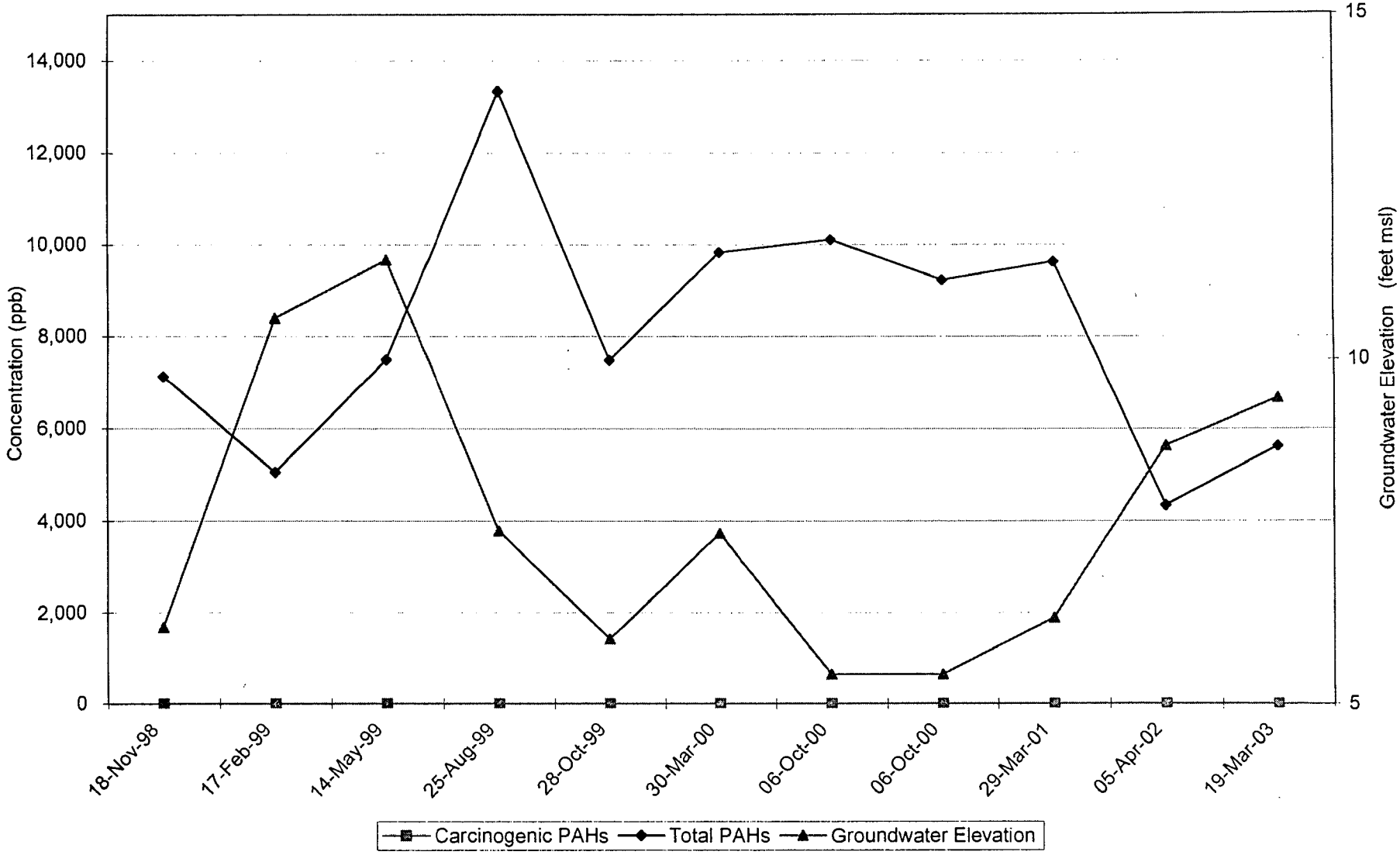


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW5-32 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023311

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-100
NW Natural - Gasco Facility

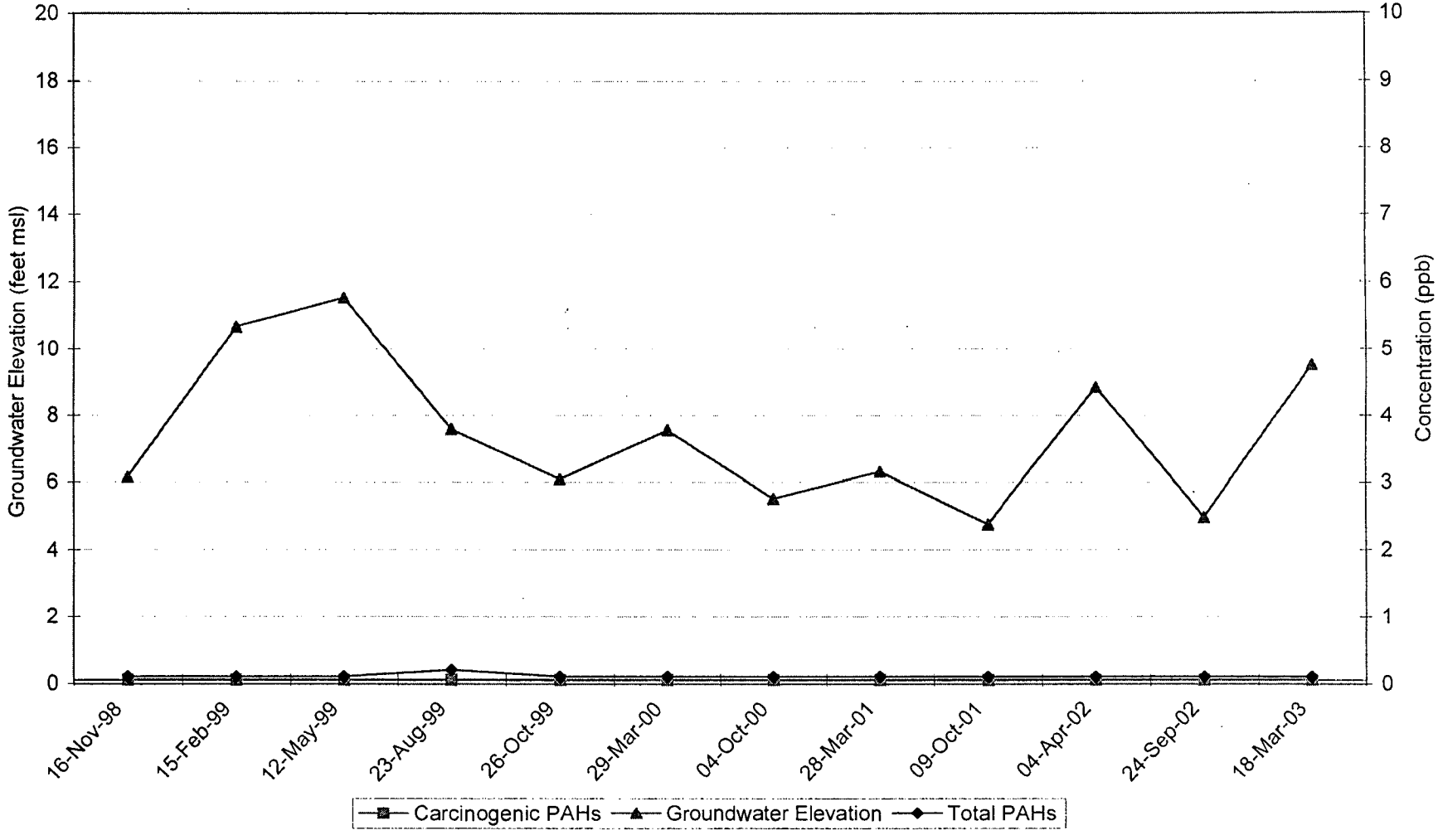


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW-5-100 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023312

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-175
NW Natural - Gasco Facility

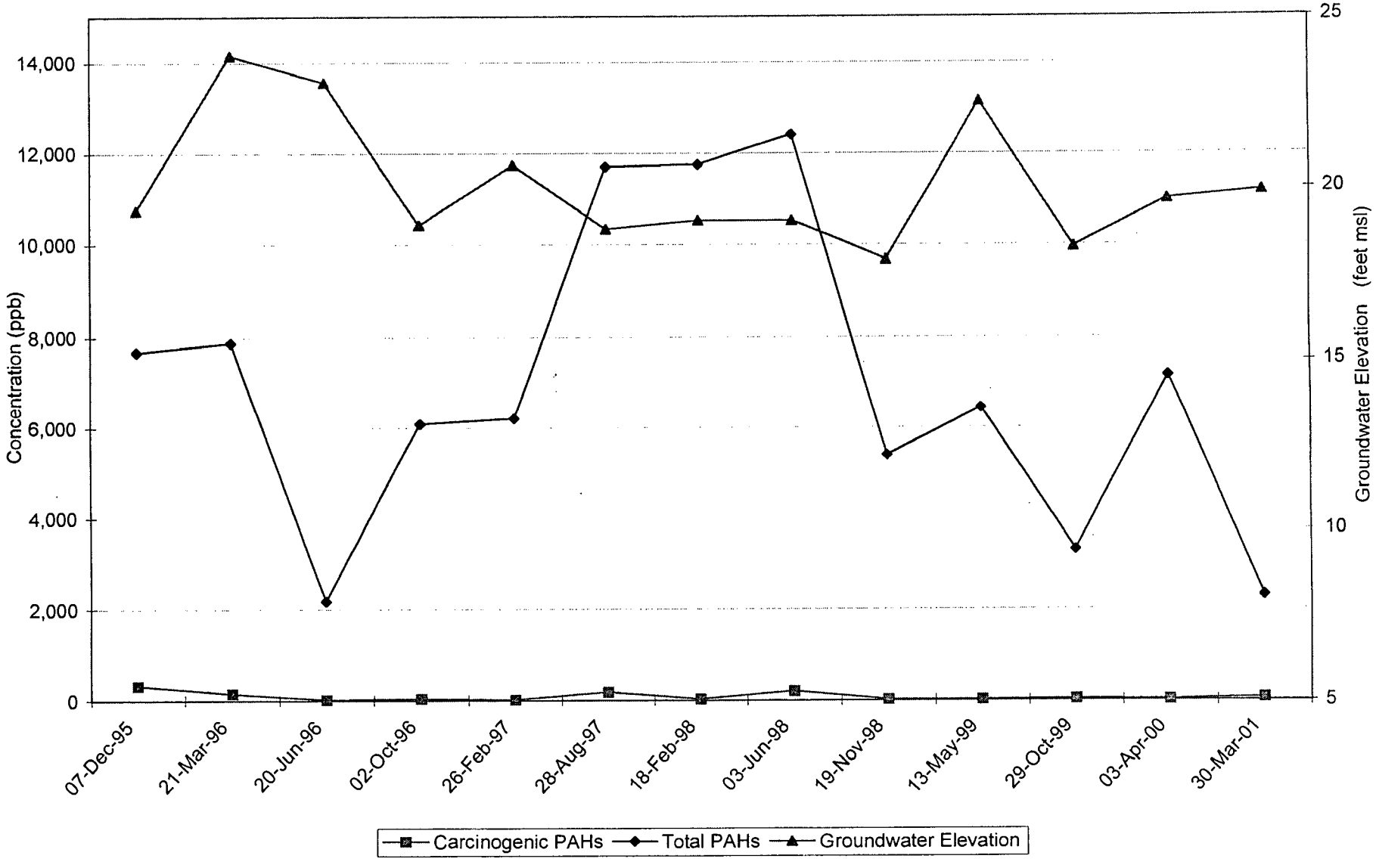


Updated: 9/30/03: MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW5-175 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023313

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-8-29
NW Natural - Gasco Facility

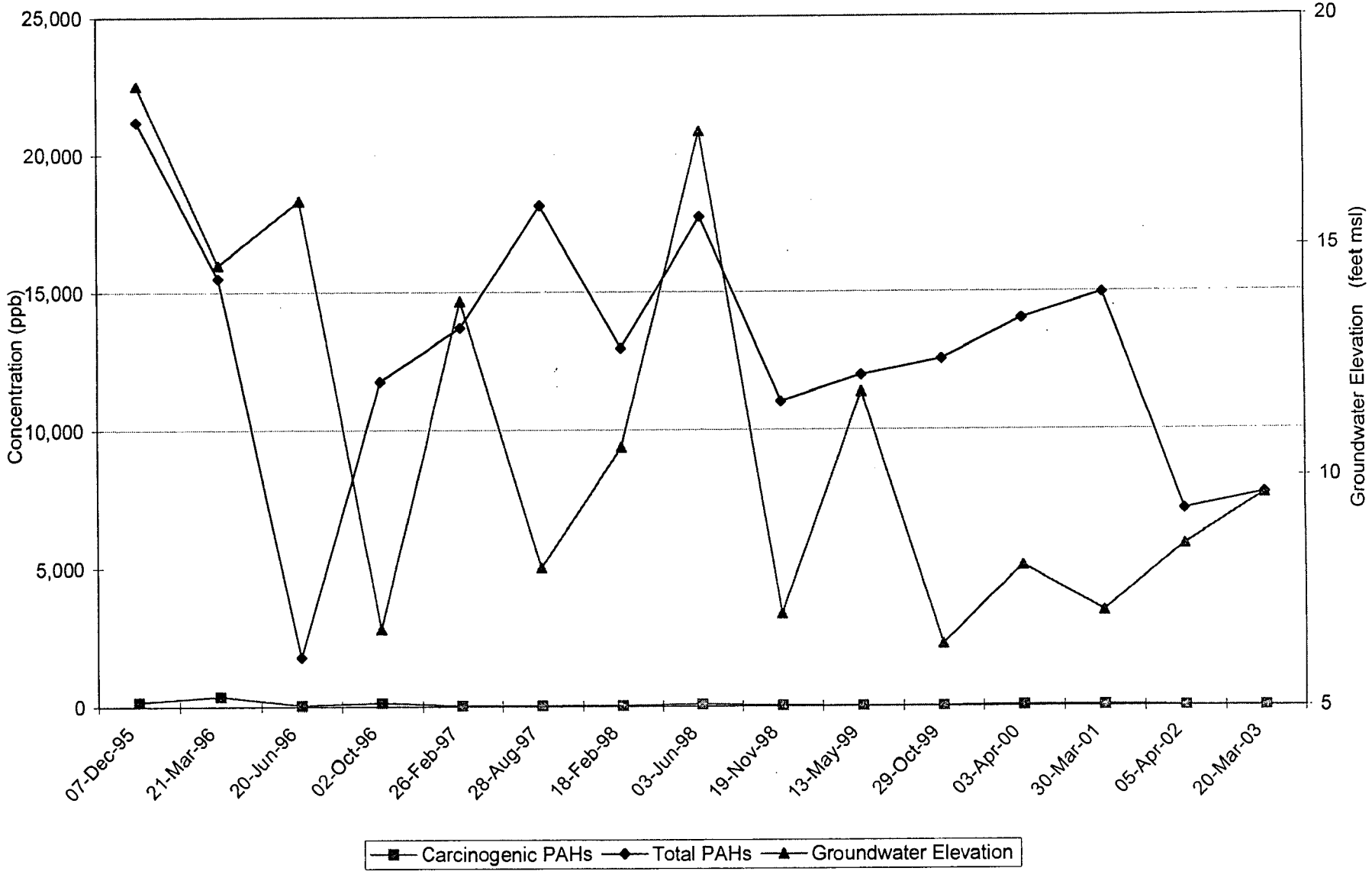


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW8-29 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023314

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-8-56
NW Natural - Gasco Facility

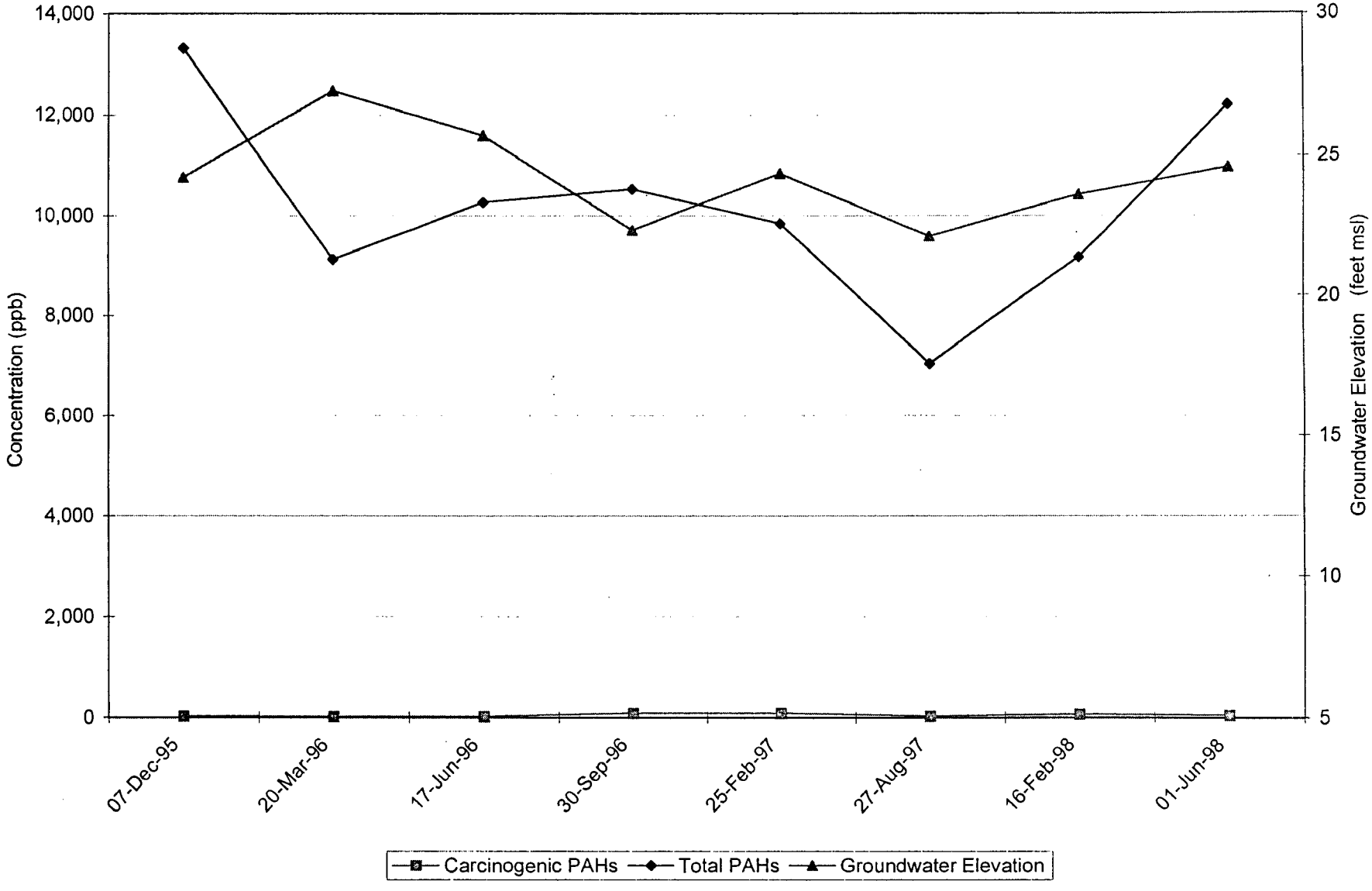


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW8-56 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023315

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-10-25
Northwest Natural - Gasco Facility

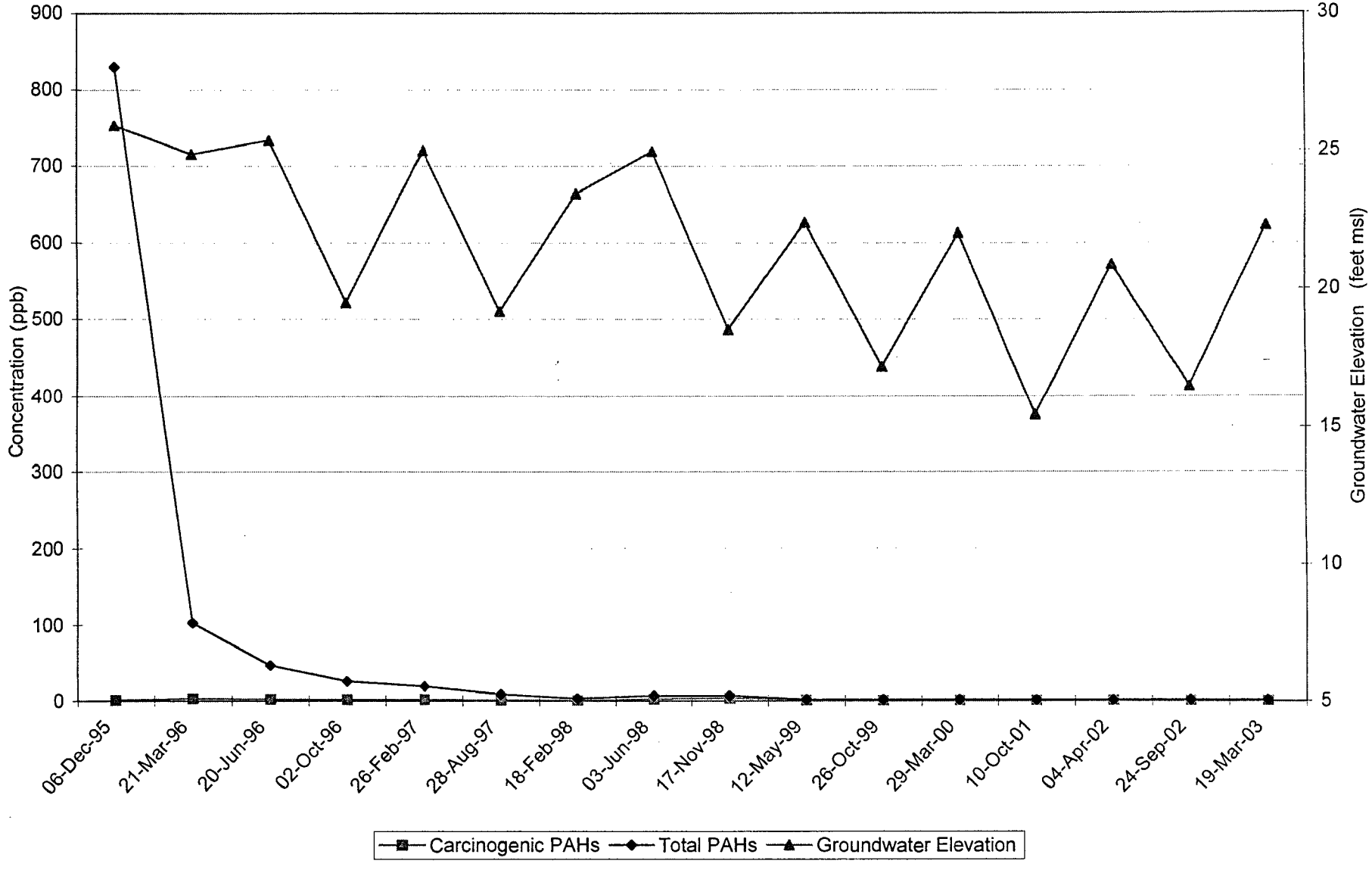


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW10-25 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023316

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-10-61
NW Natural - Gasco Facility

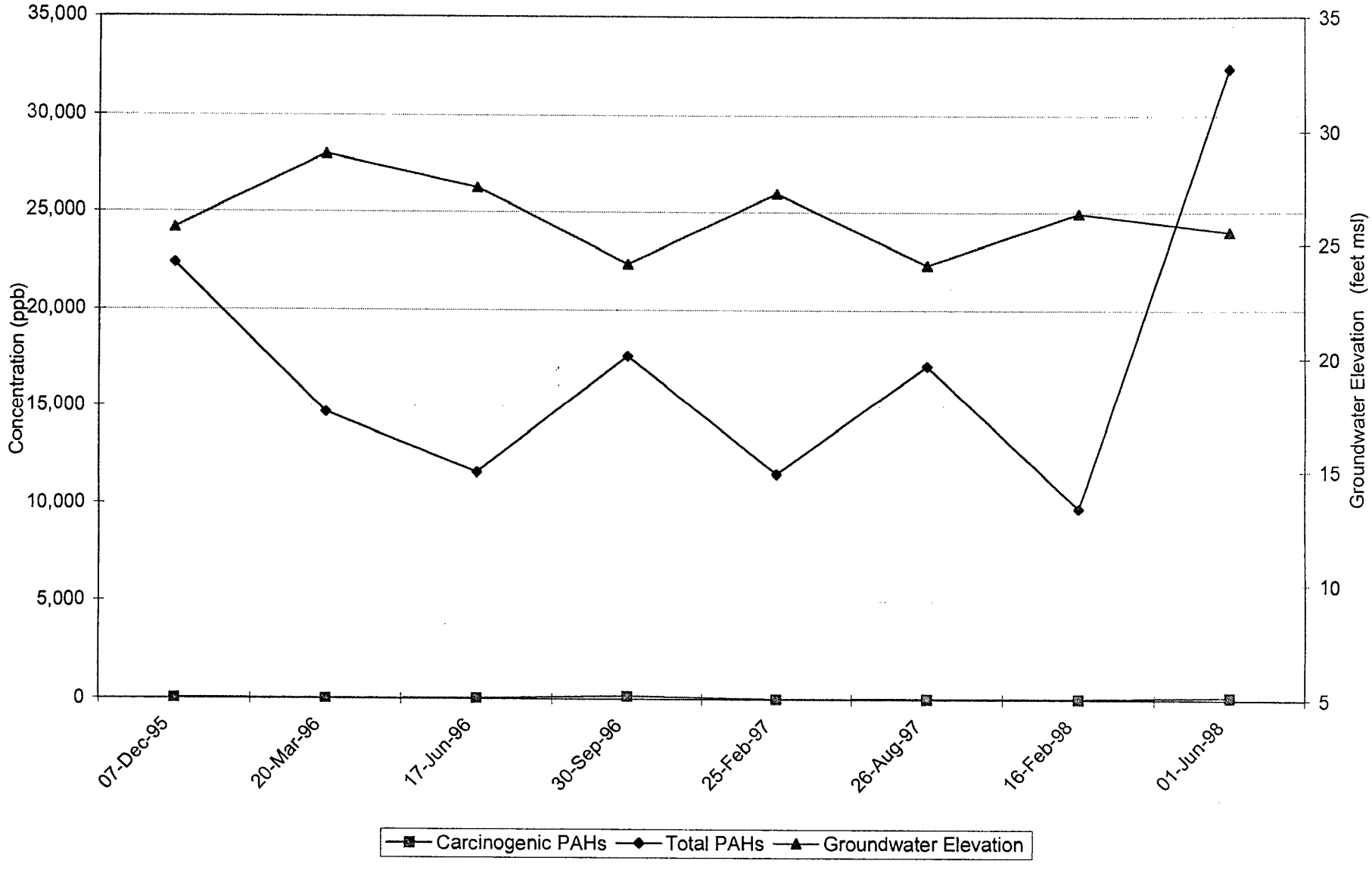


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW10-61 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023317

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-11-32
Northwest Natural - Gasco Facility

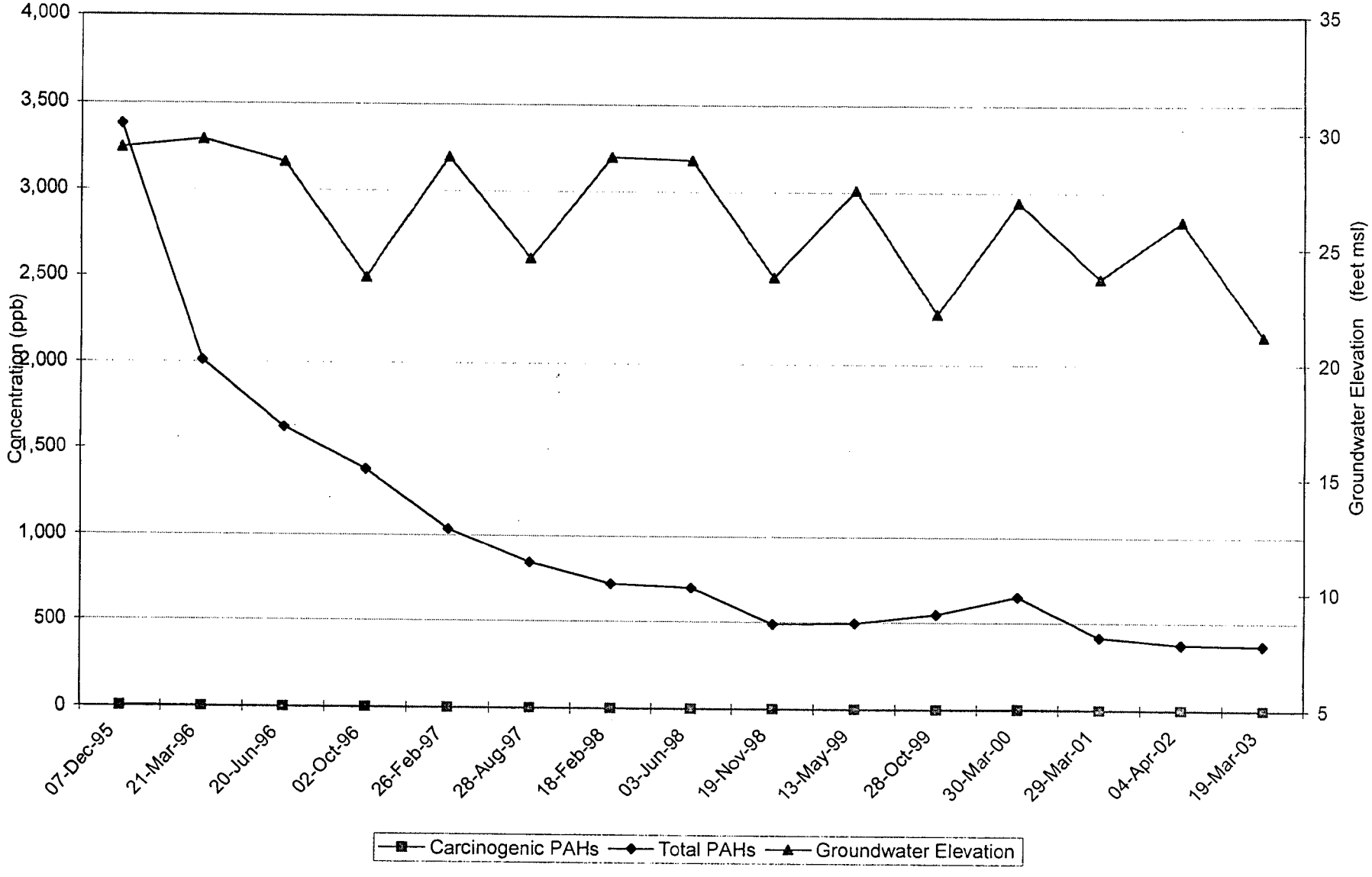


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW11-32 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023318

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-12-36
NW Natural - Gasco Facility

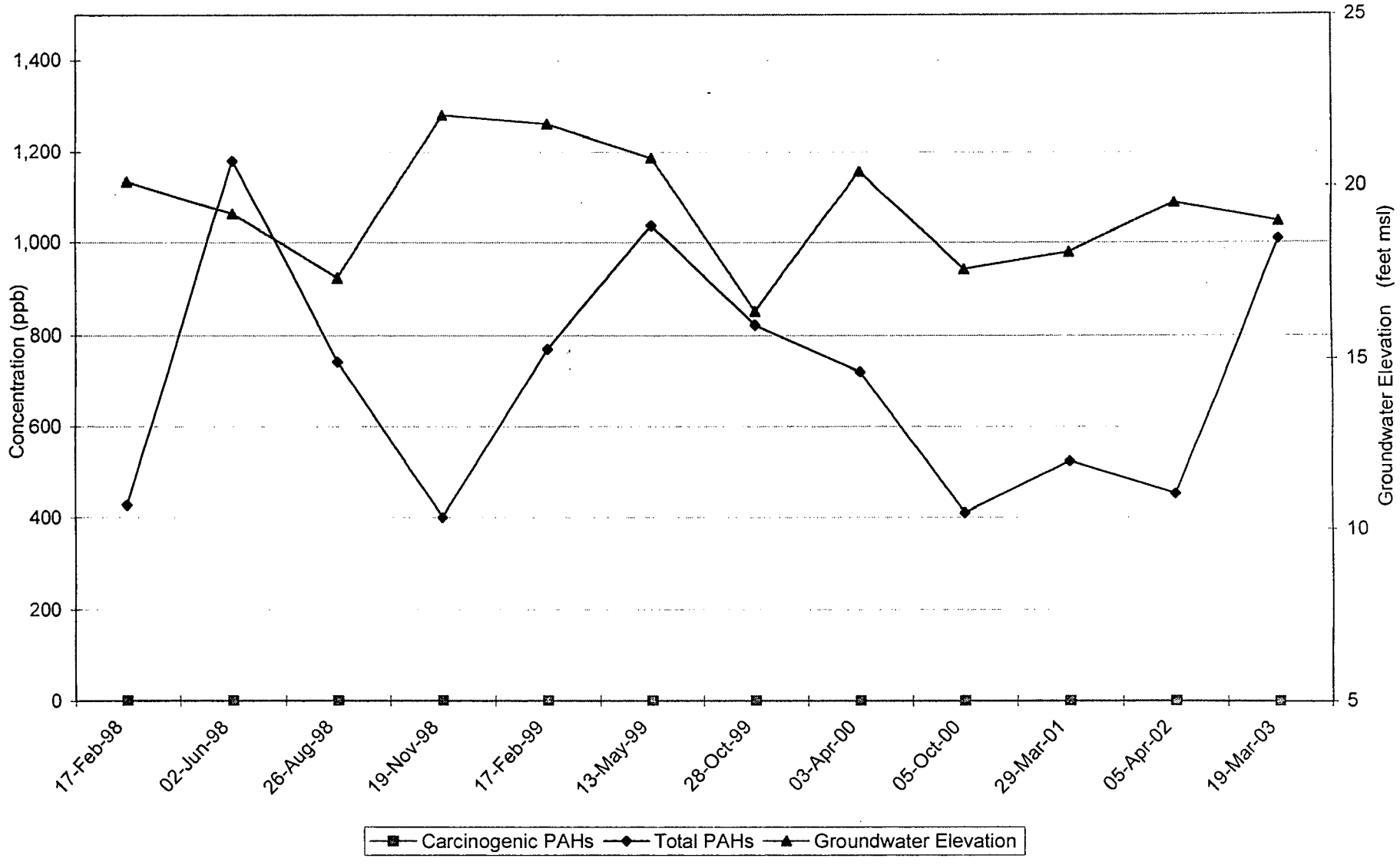


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW12-36 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023319

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-13-30
NW Natural - Gasco Facility

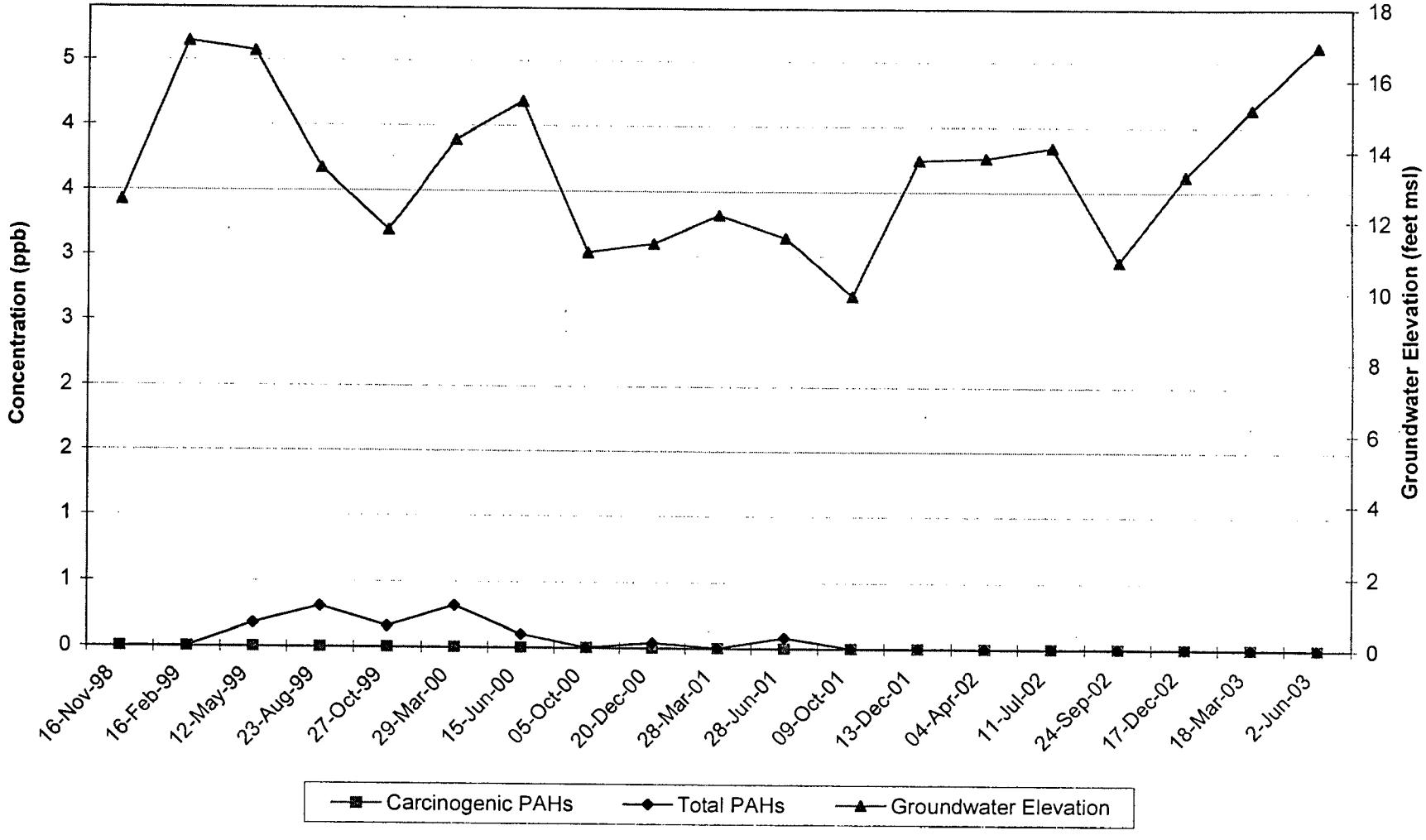


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW13-30 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023320

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-14-110
Northwest Natural - Gasco Facility

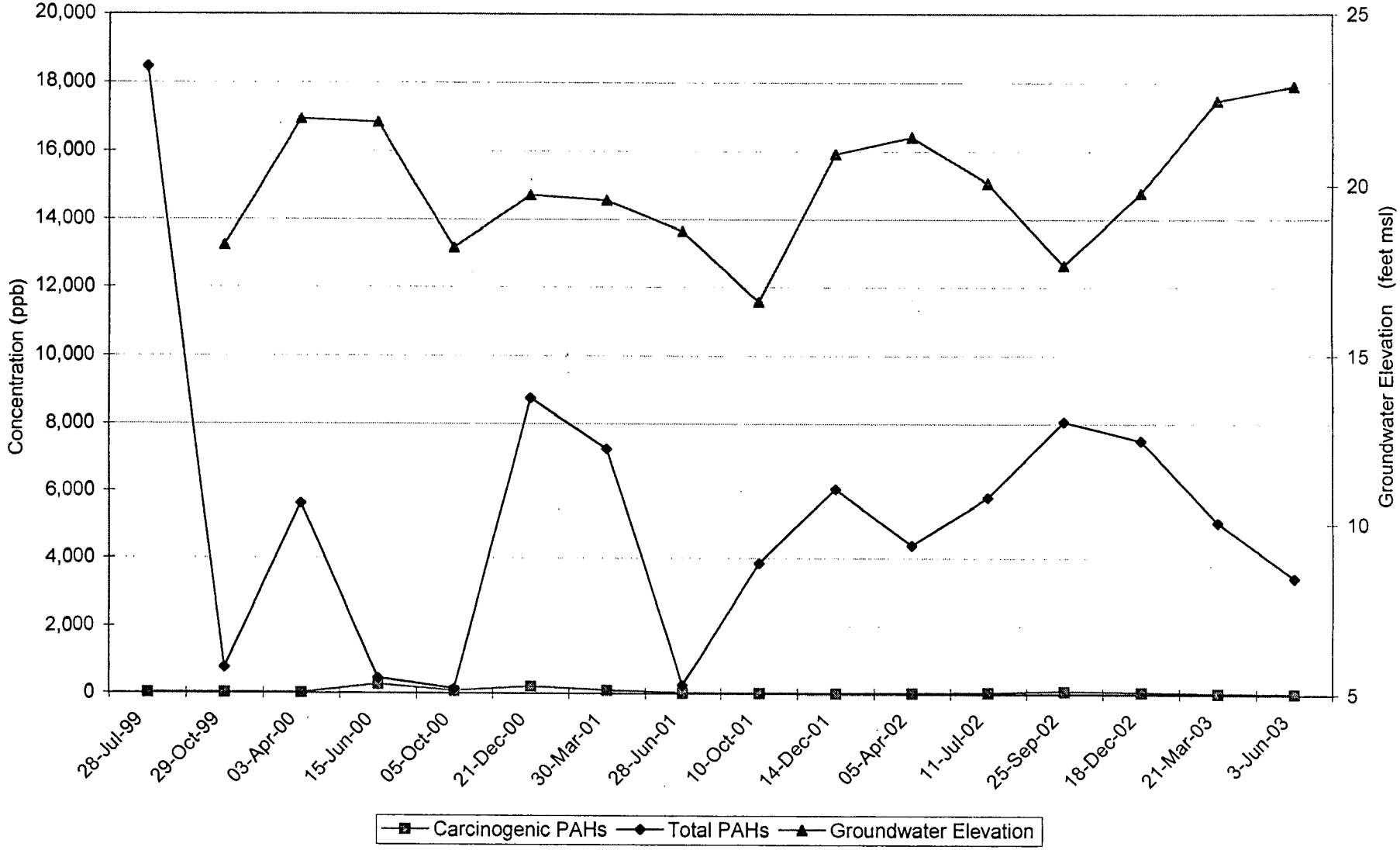


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW14-110 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023321

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-15-50
NW Natural - Gasco Facility

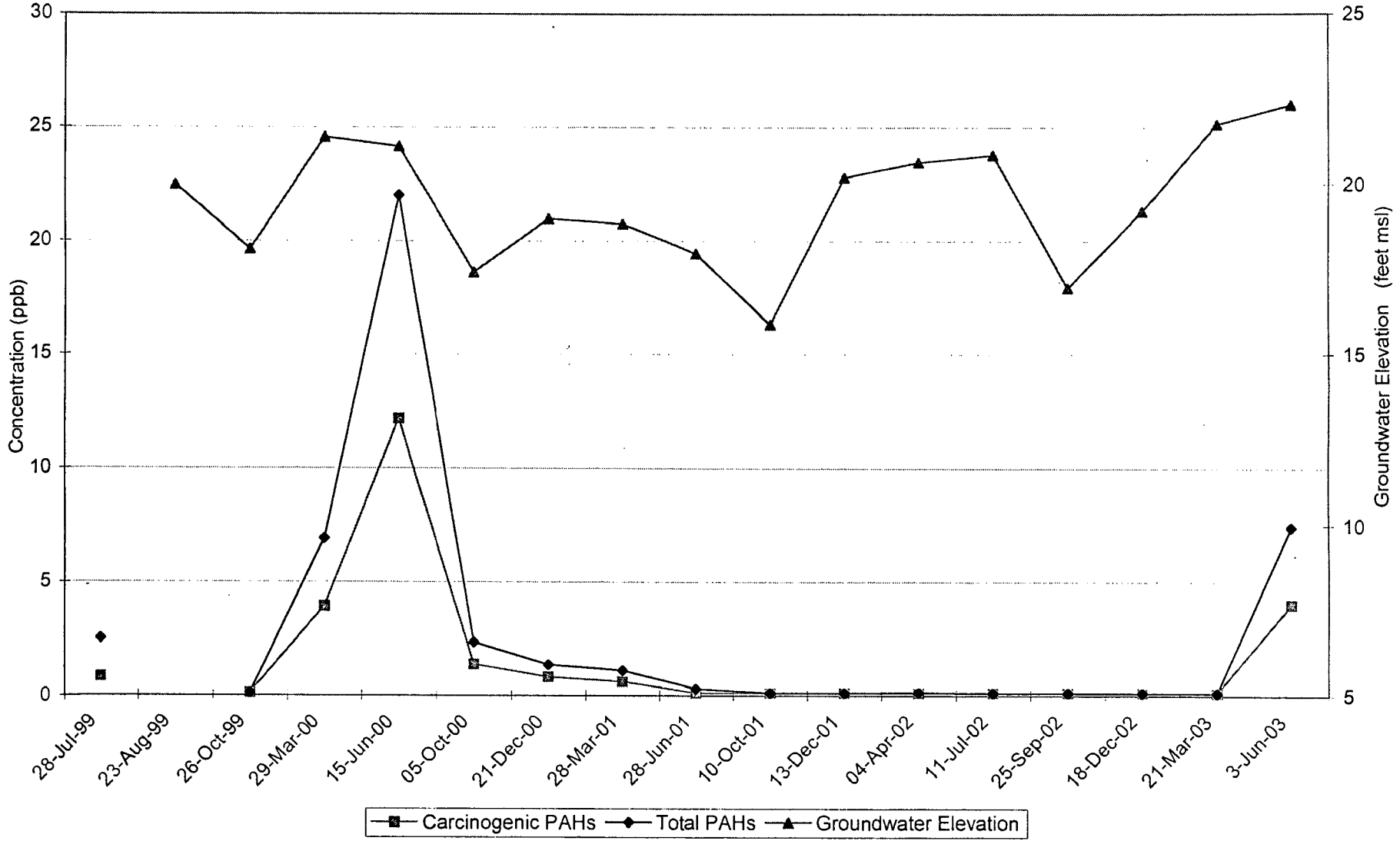


Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW-15-50 PAHs

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023322

Total PAH Concentration through Time
Monitoring Well MW-15-66
NW Natural - Gasco Facility



Updated: 9/30/03 MSM
File Name: 2708 GW conc graphs (to Jun_03) ; MW-15-66 PAHs

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023323

H

APPENDIX H

DNAPL Recovery System Oil Re-Refining Documentation: January 2003

SPENCER ENVIRONMENTAL

Protecting the Environment

6400 SE 101st Ave., Portland, OR 97266, 503-788-4612 1517 Pease Ave., Sumner, WA 98390, 253-863-3310

CERTIFICATE OF TREATMENT/DISPOSAL

Customer Name:	NW GASCO	**Certification Number:**	1093
Customer Address:	7900 NW ST. HELENS RD	**Invoice Number:**	95026
Customer City, State, Zip:	PORTLAND, OR	**Work Order Number:**	135538

Spencer Environmental certifies that the items associated with the shipment identified on this form received from the above stated customer have been processed as described below:

Profile #	Waste Description	Treatment Date(s)	Treatment/Disposal Method
23056	WASTE OIL	1/29/2003	Oil Recycling

If you have any questions regarding this Certification of Treatment/Disposal, please contact your Spencer Environmental Customer Representative.

Name:	Jason kendall
Title:	
Date:	02/01/2003

Spencer Environmental

SPENCER ENVIRONMENTAL

Protecting the Environment

6400 SE 101st Ave. Portland, Oregon 97266
(503) 788-4612 Fax: (503) 788-4629

Page 1/1
Date 1/30/2003
Invoice 095026

* * I N V O I C E * *

RECEIVED JAN 31 2003

Bill To:
HAHN & ASSOCIATES
434 NW 6TH STE #203
PORTLAND, OR 97209

Location:
HA0100 - HAHN & ASSOCIATES
7900 NW ST HELENS RD
PORTLAND, OREGON,

Cust #	Emp ID	PO #	Job Date	Terms	Due Date	Job #
HA0100	JASON	2708-50	01/28/2003	NET 30 DAYS	03/01/2003	135538

RECYCLING

INVOICE FOR THE TRANSPORT AND DISPOSAL OF 467
GALLONS NON-HAZARDOUS LIQUID. WORK DONE 1/28/03

001-00NT-0020-0SH	TRK TRANSPORT INDUSTRIAL STANDARD (INDU	1.00	140.00	HR	140.00
0006-0NLQ-SE4 -0SU	NON-HAZ LIQUID DISPOSAL (INDUSTRIAL SV	467.00	0.50	GALL	233.50

INVOICE APPROVAL
Job # 2708-50
Today's Date 2/6/03
Project
GL Number 832

Ordered by: ROB EDE (503) 796-0717

Please remit payment to:
6400 SE 101st Avenue
Portland, OR 97266-5142

DID YOU KNOW THAT SPENCER ENVIRONMENTAL, INC. HAS A PARTS WASHER PROGRAM IN YOUR AREA AND CAN MANAGE ALL OF YOUR HAZARDOUS AND NON-HAZARDOUS WASTE DISPOSAL NEEDS? CALL SPENCER ENVIRONMENTAL FOR DETAILS OR A QUOTE AT 800-733-0896.

Items	373.50
Plus Tax	0.00
Total Due	*373.50*

A FINANCIAL CHARGE of 1 1/2% er month may be applied to any Past Due Amount.
Past Due Accounts may be placed on C.O.D. without notification. If outside collection action is necessary, purchaser shall pay all costs of collection including reasonable attorney fees.

I

APPENDIX I

2003 Site Weather Data

2708-31_01-03
MONTHLY CLIMATOLOGICAL SUMMARY for JAN. 2003

NAME: Gasco CITY: Portland STATE: Oregon
ELEV: LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13	46.7	48.2	5:00p	43.9	6:00p	0.0	0.0	0.24	1.8	9.0	12:00m	N
14	44.1	49.5	2:00p	38.7	7:00p	20.9	0.0	0.00	1.3	8.0	1:00p	S
15	43.7	51.9	2:00p	38.0	5:00a	20.0	0.0	0.00	3.0	14.0	6:00p	N
16	44.1	57.1	3:00p	37.8	12:00m	17.6	0.0	0.00	2.2	10.0	1:00a	N
17	43.6	55.2	2:00p	34.9	12:00m	19.9	0.0	0.00	4.1	18.0	5:00p	NNW
18	44.0	53.5	3:00p	23.0	10:00p	26.8	0.0	0.00	5.4	15.0	2:00a	N
19	40.3	55.9	3:00p	31.6	8:00a	21.3	0.0	0.00	1.2	9.0	4:00a	ESE
20	42.4	49.8	11:00a	29.1	9:00p	25.5	0.0	0.00	1.1	7.0	6:00a	S
21	42.3	47.9	2:00p	18.8	2:00p	31.6	0.0	0.07	2.8	13.0	7:00a	N
22	44.7	52.5	10:00p	42.1	4:00a	17.7	0.0	0.61	4.1	15.0	8:00a	N
23	50.2	63.8	3:00p	31.5	7:00p	17.4	0.0	0.02	1.8	13.0	1:00a	N
24	50.3	54.9	10:00p	46.8	1:00a	14.1	0.0	0.28	1.4	9.0	10:00p	N
25	53.5	58.6	6:00p	48.7	5:00a	11.4	0.0	0.32	1.6	11.0	5:00p	SE
26	57.3	64.4	1:00p	49.1	12:00m	8.3	0.0	0.47	3.3	16.0	7:00a	NNW
27	49.3	55.8	11:00a	45.8	4:00a	14.2	0.0	0.03	1.7	11.0	2:00p	N
28	45.2	55.9	3:00p	35.3	10:00a	19.4	0.0	0.00	1.5	7.0	12:00m	S
29	48.4	51.9	10:00p	44.7	4:00a	16.7	0.0	1.01	3.2	20.0	4:00p	N
30	53.1	58.9	11:00p	48.8	7:00a	11.1	0.0	0.66	2.7	22.0	11:00p	SSE
31	53.2	58.1	1:00a	47.3	6:00p	12.3	0.0	2.59	3.2	14.0	3:00a	WNW
-	47.2	64.4	26	18.8	21	326.2	0.0	6.30	2.5	22.0	30	N

Max >= 90.0: 0
Max <= 32.0: 0
Min <= 32.0: 5
Min <= 0.0: 0
Max Rain: 2.59 ON 1/31/03
Days of Rain: 11 (>.01 in) 8 (>.1 in) 2 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

Koppers023330

2708-31_02-03
MONTHLY CLIMATOLOGICAL SUMMARY for FEB. 2003

NAME: Gasco CITY: Portland STATE: Oregon
ELEV: LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	48.8	55.6	3:00p	45.5	8:00a	14.5	0.0	0.02	3.3	14.0	2:00p	N
2	47.7	54.0	3:00p	42.7	12:00m	16.6	0.0	0.03	2.3	13.0	3:00p	NE
3	45.9	54.3	2:00p	39.4	12:00m	18.1	0.0	0.02	2.6	16.0	10:00a	N
4	40.9	56.1	4:00p	35.5	12:00m	19.2	0.0	0.00	1.7	10.0	9:00a	ESE
5	41.5	56.1	4:00p	32.7	8:00a	20.6	0.0	0.00	3.1	12.0	9:00p	SE
6	43.3	61.2	3:00p	34.4	12:00m	17.2	0.0	0.00	4.0	16.0	7:00a	SE
7	41.1	58.5	4:00p	31.0	6:00a	20.3	0.0	0.00	1.6	10.0	12:00m	SSE
8	40.2	57.8	4:00p	30.6	8:00a	20.8	0.0	0.00	1.8	11.0	1:00p	E
9	39.8	52.4	3:00p	33.4	7:00a	22.1	0.0	0.00	1.5	10.0	12:00m	ESE
10	44.6	55.9	4:00p	38.3	12:00m	17.9	0.0	0.01	2.8	9.0	2:00a	SSE
11	46.6	68.0	4:00p	34.5	7:00a	13.8	0.0	0.00	3.1	12.0	10:00a	N
12	48.1	66.2	4:00p	34.5	7:00a	14.7	0.0	0.00	2.5	11.0	3:00p	N
13	50.9	61.1	12:00p	45.9	6:00a	11.5	0.0	0.00	2.7	13.0	11:00a	N
14	50.2	62.1	4:00p	44.2	9:00p	11.9	0.0	0.00	1.4	12.0	11:00a	ESE
15	48.4	53.4	4:00p	44.6	1:00a	16.0	0.0	0.53	2.6	14.0	10:00a	N
16	46.9	53.8	12:00p	41.7	6:00a	17.3	0.0	0.66	5.0	22.0	12:00p	NNW
17	45.3	47.7	3:00p	43.2	2:00a	19.5	0.0	1.34	3.0	14.0	3:00a	N
18	47.0	56.9	1:00p	42.5	4:00a	15.3	0.0	0.03	1.4	11.0	12:00p	NNW
19	46.5	51.5	4:00p	43.7	8:00p	17.4	0.0	0.18	1.6	10.0	12:00m	N
20	47.3	50.2	11:00p	44.5	1:00a	17.6	0.0	0.08	5.0	20.0	11:00a	NW
21	51.0	57.7	1:00p	42.4	11:00p	14.9	0.0	0.03	3.8	21.0	6:00p	N
22	47.8	58.6	1:00p	41.9	11:00p	14.8	0.0	0.01	3.6	17.0	3:00p	NNE
23	43.0	52.7	3:00p	36.4	6:00a	20.4	0.0	0.00	3.8	21.0	1:00p	WNW
24	39.3	49.8	3:00p	32.4	8:00a	23.9	0.0	0.00	4.7	24.0	11:00a	WNW
25	41.4	58.8	4:00p	27.8	7:00a	21.7	0.0	0.00	2.8	10.0	10:00a	N
26	42.3	58.4	4:00p	31.1	7:00a	20.3	0.0	0.00	1.5	10.0	1:00a	N
27	46.6	62.7	4:00p	39.7	6:00a	13.8	0.0	0.00	1.0	7.0	1:00a	SSE
28	43.8	49.5	2:00p	40.6	7:00a	20.0	0.0	0.04	2.0	13.0	3:00p	N
-	45.2	68.0	11	27.8	25	491.9	0.0	2.98	2.7	24.0	24	N

Max >= 90.0: 0
Max <= 32.0: 0
Min <= 32.0: 4
Min <= 0.0: 0
Max Rain: 1.34 ON 2/17/03
Days of Rain: 11 (>.01 in) 4 (>.1 in) 1 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

Koppers023331

2708-31_03-03
MONTHLY CLIMATOLOGICAL SUMMARY for MAR. 2003

NAME: Gasco CITY: Portland STATE: Oregon
ELEV: LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	47.5	62.8	4:00p	39.4	12:00m	13.9	0.0	0.02	1.0	7.0	12:00p	NNW
2	41.7	48.6	1:00p	34.0	7:00a	23.7	0.0	0.11	1.0	10.0	12:00m	ESE
3	44.0	51.8	5:00p	36.9	12:00m	20.6	0.0	0.00	1.5	13.0	2:00a	SSE
4	44.4	48.6	3:00p	38.2	1:00a	21.6	0.0	0.04	1.4	14.0	10:00p	N
5	48.7	53.2	4:00p	45.3	8:00a	15.8	0.0	0.09	3.1	19.0	2:00p	N
6	46.2	54.4	3:00p	42.4	6:00a	16.6	0.0	0.40	1.8	18.0	3:00p	N
7	44.3	49.8	2:00p	40.7	7:00a	19.8	0.0	1.09	2.2	13.0	4:00p	SE
8	43.9	48.0	12:00m	40.5	6:00a	20.8	0.0	0.39	1.4	6.0	9:00a	N
9	51.7	60.1	3:00p	47.2	3:00a	11.4	0.0	0.48	3.5	19.0	5:00a	NNW
10	54.5	65.9	2:00p	47.8	12:00m	8.1	0.0	0.00	2.3	19.0	4:00p	N
11	52.3	60.3	11:00a	47.7	1:00a	11.0	0.0	0.00	3.1	18.0	11:00a	NNW
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
-	47.2	65.9	10	34.0	2	183.2	0.0	2.62	2.0	19.0	5	N

Max >= 90.0: 0
Max <= 32.0: 0
Min <= 32.0: 0
Min <= 0.0: 0
Max Rain: 1.09 ON 3/07/03
Days of Rain: 8 (>.01 in) 5 (>.1 in) 1 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

Koppers023332

2708-31_05-03
MONTHLY CLIMATOLOGICAL SUMMARY for MAY. 2003

NAME: Gasco CITY: Portland STATE: Oregon
ELEV: LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12	61.3	71.3	6:00p	51.6	11:00p	0.0	0.0	0.00	1.2	7.0	4:00p	NE
13	62.9	86.2	6:00p	45.1	5:00a	0.0	0.6	0.00	1.5	10.0	2:00p	SSE
14	58.4	73.4	7:00a	48.6	7:00a	4.0	0.0	0.00	3.0	17.0	5:00p	N
15	51.1	62.0	12:00p	44.2	12:00m	11.9	0.0	0.15	2.8	20.0	1:00p	N
16	47.6	59.6	2:00p	42.9	6:00a	13.8	0.0	0.38	2.5	15.0	3:00p	N
17	47.3	59.2	2:00p	40.8	12:00m	15.0	0.0	0.27	2.7	22.0	2:00p	N
18	53.0	67.8	6:00p	37.7	5:00a	12.2	0.0	0.00	2.4	14.0	1:00a	N
19	60.9	80.4	5:00p	43.8	5:00a	2.9	0.0	0.00	2.4	11.0	6:00p	SSE
20	60.8	73.0	1:00p	50.8	3:00a	3.1	0.0	0.00	1.8	9.0	9:00p	SSE
21	65.6	81.8	5:00p	53.1	6:00a	0.0	2.5	0.00	2.0	10.0	4:00p	ESE
22	68.0	81.4	3:00p	56.7	5:00a	0.0	4.1	0.00	2.1	12.0	4:00p	SSE
23	72.6	95.1	5:00p	54.8	5:00a	0.0	9.9	0.00	2.0	10.0	2:00p	SE
24	67.9	78.6	7:00a	59.2	6:00a	0.0	3.9	0.01	2.0	11.0	4:00p	SE
25	61.4	75.2	3:00p	53.9	12:00m	0.5	0.0	0.01	1.9	10.0	4:00a	ESE
26	61.8	76.4	4:00p	51.3	6:00a	1.1	0.0	0.01	2.0	14.0	1:00p	ENE
27	70.8	93.9	5:00p	51.7	5:00a	0.0	7.8	0.00	2.1	10.0	10:00a	ESE
28	69.3	83.6	4:00p	60.8	6:00a	0.0	7.2	0.00	3.3	18.0	5:00p	S
29	68.8	85.6	5:00p	55.2	6:00a	0.0	5.4	0.00	6.8	21.0	8:00p	S
30	61.9	69.3	3:00p	55.8	12:00m	2.4	0.0	0.04	3.0	14.0	10:00a	N
31	64.3	81.2	5:00p	54.0	3:00a	0.0	2.6	0.00	2.0	13.0	8:00p	ESE
-	61.8	95.1	23	37.7	18	66.9	44.0	0.87	2.5	22.0	17	S

Max >= 90.0: 2
Max <= 32.0: 0
Min <= 32.0: 0
Min <= 0.0: 0
Max Rain: 0.38 ON 5/16/03
Days of Rain: 4 (>.01 in) 3 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

Koppers023333

2708-31_06-03
MONTHLY CLIMATOLOGICAL SUMMARY for JUN. 2003

NAME: Gasco CITY: Portland STATE: Oregon
ELEV: LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	64.8	77.7	5:00p	54.8	12:00m	0.0	1.2	0.00	3.9	17.0	6:00p	S
2	63.0	76.7	3:00p	49.3	6:00a	2.0	0.0	0.00	4.1	23.0	5:00p	S
3	68.4	82.6	4:00p	54.9	6:00a	0.0	3.8	0.00	6.3	19.0	5:00p	S
4	75.0	91.8	5:00p	58.2	5:00a	0.0	10.0	0.00	5.0	18.0	6:00p	SE
5	80.8	103.0	4:00p	58.3	6:00a	0.0	15.6	0.00	3.4	13.0	11:00a	SE
6	82.3	103.1	5:00p	61.2	6:00a	0.0	17.1	0.00	3.1	12.0	4:00p	SSE
7	77.1	97.7	4:00p	62.8	6:00a	0.0	15.2	0.00	2.5	11.0	9:00p	S
8	67.7	86.1	4:00p	56.2	12:00m	0.0	6.1	0.00	3.1	17.0	7:00p	S
9	61.3	69.8	3:00p	52.1	4:00a	4.0	0.0	0.00	2.0	11.0	7:00p	E
10	63.0	75.3	4:00p	57.3	6:00a	0.0	1.3	0.00	3.5	17.0	7:00p	S
11	65.8	80.3	4:00p	57.2	3:00a	0.0	3.8	0.00	2.5	13.0	11:00p	S
12	61.5	71.2	5:00p	52.4	6:00a	3.2	0.0	0.00	1.5	11.0	12:00m	N
13	61.5	74.6	3:00p	55.8	4:00a	0.0	0.2	0.05	3.5	16.0	5:00p	N
14	64.2	78.8	4:00p	53.9	3:00a	0.0	1.4	0.00	3.2	14.0	9:00p	S
15	67.6	83.1	5:00p	51.0	6:00a	0.0	2.0	0.00	2.9	14.0	4:00p	S
16	72.4	90.0	5:00p	53.1	6:00a	0.0	6.5	0.00	3.9	14.0	3:00p	SE
17	74.4	96.6	4:00p	57.5	6:00a	0.0	12.0	0.00	3.3	19.0	5:00p	S
18	63.8	71.6	3:00p	55.6	12:00m	1.4	0.0	0.00	3.3	16.0	4:00p	SSE
19	58.4	67.6	5:00p	48.4	6:00a	7.0	0.0	0.00	1.7	10.0	5:00p	ESE
20	59.5	67.9	3:00p	54.1	6:00a	4.0	0.0	0.05	2.6	16.0	12:00p	ENE
21	58.4	69.0	12:00p	52.2	12:00m	4.4	0.0	0.01	3.3	17.0	5:00p	N
22	58.3	67.8	2:00p	51.4	7:00a	5.4	0.0	0.02	2.5	17.0	3:00p	N
23	60.0	67.7	12:00p	52.9	4:00a	4.7	0.0	0.00	2.5	11.0	4:00p	S
24	63.8	79.0	5:00p	47.2	6:00a	1.9	0.0	0.00	2.8	19.0	4:00p	S
25	70.0	87.2	5:00p	50.4	6:00a	0.0	3.8	0.00	4.1	20.0	5:00p	S
26	75.0	90.6	5:00p	57.5	5:00a	0.0	9.0	0.00	5.3	20.0	4:00p	S
27	76.8	94.5	5:00p	58.9	6:00a	0.0	11.7	0.00	3.5	18.0	7:00p	S
28	79.6	97.9	5:00p	57.5	6:00a	0.0	12.7	0.00	4.4	17.0	6:00p	SE
29	78.0	97.2	3:00p	64.7	12:00m	0.0	15.9	0.00	3.0	26.0	6:00p	N
30	66.5	78.6	2:00p	56.5	12:00m	0.0	2.5	0.00	4.3	20.0	1:00p	N
-	68.0	103.1	6	47.2	24	38.1	152.2	0.13	3.4	26.0	29	S

Max >= 90.0: 10
Max <= 32.0: 0
Min <= 32.0: 0
Min <= 0.0: 0
Max Rain: 0.05 ON 6/13/03
Days of Rain: 3 (>.01 in) 0 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

Koppers023334

APPENDIX J

Shoreline Inspection Reports:
First and Second Quarters 2003

QUARTERLY RIVERBANK INSPECTION FORM

NW Natural
Gasco Facility
7900 NW St. Helens Road
Portland, Oregon

DATE: 5/22/03

DATE INSPECTED: 5/19/03
TIME: 4:00 PM

NAME OF INSPECTOR: Robert Ede **SIGNATURE:** Rob B. Ede

WEATHER CONDITIONS: Clear and warm

RIVER LEVEL (feet above / below datum): 22.93 (9.19 msl)

RIVER DATUM USED: PNO Pier Survey Station (north end)

IS THE SHORELINE ACCESSIBLE BY FOOT?. Yes

- Can you maintain a 10-foot minimum lateral clearance from ground slopes steeper than 45 degrees? **Yes** ☒ **No** ☐
- Can you traverse shoreline without entering the river and without climbing over large obstacles? **Yes** ☒ **No** ☐

If you answered "No" to either of the above, then the riverbank is not adequately accessible and the shoreline inspection **may not proceed**.

1. Is a sheen noted on the river surface? **Yes** ☐ **No** ☒

If yes, then photograph and describe (origination, size, persistence, location, other):

2. Are tar balls / pebbles noted along the shoreline? **Yes** ☒ **No** ☐

If yes, then photograph and describe (size, consistency, location, abundance, lateral extent of occurrence):

Tar balls were observed near the waterline in an area extending approximately 50 feet to the north of, and 50 feet to the south of the Koppers Industries, Inc. (KII) pencil pitch transfer dock. The size of the tar balls ranged from less than one-half inch to approximately 4 inches long. The majority of the tar balls were pebble sized, rounded, and hard.

3. Are groundwater seeps noted along the shoreline embankment? Yes ☐ No ☒

If yes, then photograph and describe (color, odor, sheen, clarity, associated staining or algal growth):

4. Is staining noted on embankment or shoreline? Yes ☒ No ☐

If yes, then photograph and describe (location, color, odor, extent, type of material, origin of stain):

Orange / rust-colored staining was noted on the rocks below the Gasco outfall.

5. Are there significant areas of erosion or slumping? Yes ☐ No ☒

If yes, then photograph and describe (location, magnitude, type of material, staining, tar, oil, or other facility by-products within eroding material):

No evidence of recent erosion was identified.

6. Note wildlife (species and number) or evidence of wildlife (tracks, burrows, scat, nests, etc.) on the shoreline and within 100 feet of the shoreline. Include description of any distressed wildlife.

Nutria trails were noted within 100 feet of the shoreline above high water between the MW-3 and MW-5 locations (upstream of the KII transfer dock). Two ducks (Mallards) were resting on a piling support structure for the KII transfer dock. No nests, burrows or other tracks were noted.

7. Note any evidence of recent human uses along the shoreline (i.e., campfires, anchorages, footprints).

None.

8. Attach up-river and down-river photographs of shoreline.

A total of 10 photographs were taken of the shoreline from all accessible docks and during the shoreline inspection (attached).

10. Other Comments:

Photograph Log

Summary Sheet

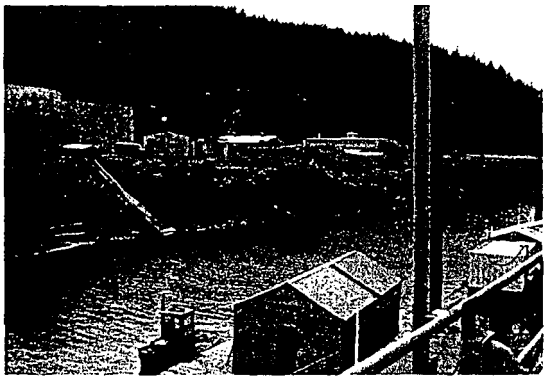
Photographer: Robert Ede

Time 5/19/2003	Photo Number	Location	Direction Faced	Comments
4:00/4:30	1	Shoreline from north end of FAMM/KII dock	NW	downstream
4:00/4:30	2	Shoreline from central portion of FAMM/KII dock	SW	
4:00/4:30	3	Shoreline from central portion of FAMM/KII dock	SW	
4:00/4:30	4	Mallard duck on FAMM/KII dock	NE	
4:00/4:30	5	Shoreline from southern end of FAMM/KII dock	SE	upstream
4:00/4:30	6	Shoreline from southern end of FAMM/KII dock	NW	downstream
4:00/4:30	7	Shoreline from southern dolphin	NW	downstream
4:00/4:30	8	Shoreline from southern dolphin	SE	upstream
4:00/4:30	9	On bank near FAMM/KII dock	down	Tar balls
4:00/4:30	10	Shoreline from northern dolphin	NW	downstream

Photographs

May 19, 2003

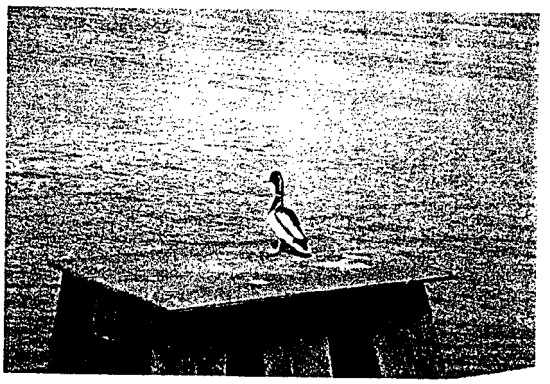
Photograph 1



Photograph 2

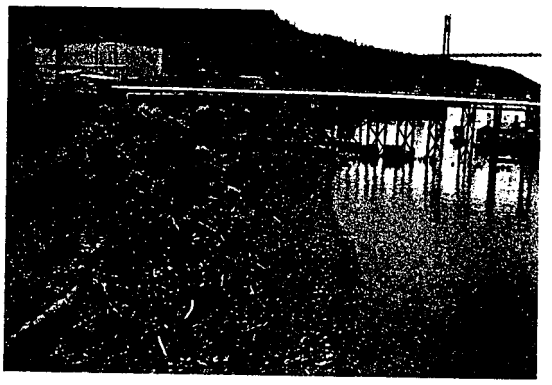
Photograph 3

Photograph 4

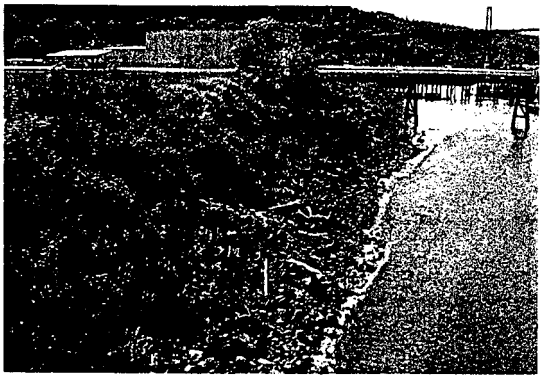


Photograph 5

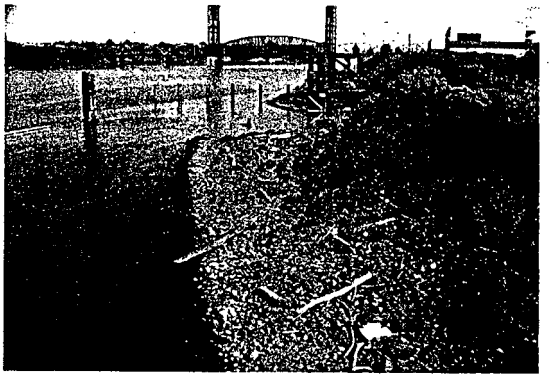
Photograph 6



Photograph 7



Photograph 8



Photograph 9

Photograph 10

APPENDIX C

Analytical Results and Chain-of-Custody Documentation:

September 2005 Groundwater Monitoring Event

HAHN AND ASSOCIATES, INC.

Environmental Consultants

434 NW Sixth Avenue, Suite 203 • Portland OR 97209

(503) 796-0717 • Fax (503) 227-2209

Laboratory North Creek Analytical, Beaverton, Oregon

Lab Project No.

CHAIN OF CUSTODY

Chain of Custody No.

Project Manager	Rob Ede, HAI
Project No.	2708-30 (Cell Monitoring)
Project Name	NNGGRI
Collected by	Matt Graves, Ben Uhl

Liquid with Sediment Sample: ____ Test Filtrate ____ Test Sediment ____ Test Both

Multi-Phase Sample: ____ Test One (which) ____ Test Separately ____ Shake

Samples Received at 4C (Y or N)	
Appropriate Containers Used (Y or N)	
Provide Verbal Results (Y or N)	No
Provide Preliminary Fax Results	Yes

Comments

Sample Number Prefix: 2708-050922-MW-

Pricing and reporting limits as per:
Phillip Nernberg, NCA

* As, Cr, Cu, Ni, Pb, Zn

Lab ID	Sample #	Date	Time	Sample Description	Matrix: Soil	Matrix: Water	Matrix: Other	Number of Containers	EPA Method 8270 SIM, PAH's	EPA Method 8021, BTEX	EPA Method 9010, Amen. Cyn. And Total Cyanide	EPA Method 6010, Total Metals *					RUSH	Remarks
	1003	9/22/05	11:00	TB		X		1		X								
	14-110-104		1225	MW-14-110		X		7	X	X	X	X						
	3-26-105		1430	MW-3-26		X		7	X	X	X	X						
	3-56-105		1545	MW-3-56		X		7	X	X	X	X						

Relinquished by	Company	Date	Time	Received by	Company
Matt Graves	HAI	09-23-05	1155	[illegible]	NCA
[illegible]	NCA	09-23-05	1225	[illegible]	NCA

3.8°C

Koppers023346

NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: [illegible] & Associates

1. **Please sign for receipt and opening of** 1 **cooler or** _____ **other** _____

   By (print) Peter Frauzer (sign) _____

2. Date samples received 9/23/05 Date opened: Same X or ___/___/___

3. Delivered by: X NCA courier ___ FedEx ___ UPS ___ Courier ___ Client ___ Other _____

   Airbill # if applicable _____ (Put copy of shipping papers in file)

4. There were 1 custody seals present, signed by [illegible] date 9/23/05.

5. Were the custody seals unbroken and intact at the date and time of arrival? X Yes ___ No

6. Was ice used? X yes ___ no Type of ice: ___ blue ice ___ gel ice X real ice

   Temperature (degrees C) 2.3°C Raytek thermometer _____ Digi-Therm (probe temperature blank)

7. Are custody papers sealed in a plastic bag and taped inside to lid? X Yes ___ No

8. Were custody papers filled out properly (ink, signed, etc.)? X Yes ___ No

   If "no" please specify: _____

9. Was project identifiable from custody papers? X Yes ___ No

   Name of project NNGGRI (if applicable)

10. **Initial and date for unpacking:** CE/CE **(initials)** **date** 9/26/05

11. Packing material: ___ bubble wrap/bag X styrofoam ___ cardboard _____ other

12. Were samples in bags? ___ Yes X No

13. Did all containers indicated on the COC arrive? X Yes ___ No

    If "no" please indicate which containers were absent _____

14. Were all containers unbroken and labels in good condition? X Yes ___ No

    If "no" please indicate which containers _____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? X Yes ___ No

    Do the IDs, times, etc. agree with the COC? X Yes ___ No

    If "no" please indicate which containers _____

16. Are containers properly preserved for indicated analysis? X Yes ___ No

17. Is there adequate volume for the test(s) requested? X Yes ___ No

18. If voa vials were submitted, are they free of bubbles? ___ N/A X Yes ___ No

19. **Log-in phase: Date samples were logged in:** 9/26/05 **Elm Project #** PSI0935

20. Logged in by (print) Carrie Farnsworth (sign) [illegible]

21. Was the project manager notified of status? (Use back of form as a record) ___ Yes X No

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907.563.9200 fax 907.563.9210

October 11, 2005

Rob Ede
Hahn and Associates, Inc.
434 NW Sixth Ave., Suite 203
Portland, OR 97209

RE: NNGGRI

Enclosed are the results of analyses for samples received by the laboratory on 09/22/05 15:06.
The following list is a summary of the NCA Work Orders contained in this report.
If you have any questions concerning this report, please feel free to contact me.

Work	Project	ProjectNumber
P5I0831	NNGGRI	2708-30

Thank You,

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

North Creek Analytical, Inc.
Environmental Laboratory Network

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 18:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-050921-MW-100	P5I0831-01	Water	09/21/05 14:00	09/22/05 15:06
2708-050921-MW-5-175-101	P5I0831-02	Water	09/21/05 14:05	09/22/05 15:06
2708-050921-MW-5-100-102	P5I0831-03	Water	09/21/05 15:55	09/22/05 15:06

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Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:52

BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I0831-01	**Water**	**2708-050921-MW-100**			**Sampled: 09/21/05 14:00**						
Benzene		EPA 8021B	ND	-----	0.500	ug/l	1x	5090977	09/23/05	09/23/05 16:57	
Toluene		"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 91.6%*		*Limits: 70 - 130 %*		"			"	
P5I0831-02	**Water**	**2708-050921-MW-5-175-101**			**Sampled: 09/21/05 14:05**						
Benzene		EPA 8021B	ND	-----	0.500	ug/l	1x	5090977	09/23/05	09/23/05 17:25	
Toluene		"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 93.0%*		*Limits: 70 - 130 %*		"			"	
P5I0831-03	**Water**	**2708-050921-MW-5-100-102**			**Sampled: 09/21/05 15:55**						
Benzene		EPA 8021B	12300	-----	50.0	ug/l	100x	5090977	09/23/05	09/23/05 14:10	
Toluene		"	ND	-----	50.0	"	"	"	"	"	
Ethylbenzene		"	690	-----	50.0	"	"	"	"	"	
Xylenes (total)		"	393	-----	100	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 97.0%*		*Limits: 70 - 130 %*		*1x*			"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:52

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I0831-02	**Water**	**2708-050921-MW-5-175-101**			**Sampled: 09/21/05 14:05**						
Arsenic		EPA 6020	**0.00494**	-----	0.00100	mg/l	1x	5091241	09/29/05	10/05/05 19:36	
Chromium		"	ND	-----	0.00500	"	5x	"	"	10/11/05 01:31	**R-03**
Copper		"	ND	-----	0.00200	"	1x	"	"	10/05/05 19:36	
Lead		"	ND	-----	0.00100	"	"	"	"	"	
Nickel		"	**0.00374**	-----	0.00200	"	"	"	"	"	
Zinc		"	ND	-----	0.0250	"	5x	"	"	10/11/05 01:31	
P5I0831-03	**Water**	**2708-050921-MW-5-100-102**			**Sampled: 09/21/05 15:55**						
Arsenic		EPA 6020	**0.00944**	-----	0.00100	mg/l	1x	5091241	09/29/05	10/05/05 19:43	
Chromium		"	ND	-----	0.00500	"	5x	"	"	10/11/05 01:39	**R-03**
Copper		"	ND	-----	0.00200	"	1x	"	"	10/05/05 19:43	
Lead		"	ND	-----	0.00100	"	"	"	"	"	
Nickel		"	**0.00224**	-----	0.00200	"	"	"	"	"	
Zinc		"	ND	-----	0.0250	"	5x	"	"	10/11/05 01:39	**R-03**

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 18:52

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I0831-02 Water	**2708-050921-MW-5-175-101**			**Sampled: 09/21/05 14:05**						
Acenaphthene	EPA 8270m	ND	*0.00980*	0.0196	ug/l	1x	5090983	09/23/05	09/30/05 13:16	
Acenaphthylene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Anthracene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Chrysene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Fluoranthene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Fluorene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Naphthalene	"	0.0894	*0.0196*	0.0196	"	"	"	"	"	
Phenanthrene	"	ND	*0.00980*	0.0196	"	"	"	"	"	
Pyrene	"	ND	*0.0196*	0.0196	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 36.1%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*68.6%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*66.9%*		*10 - 125 %*		"			"	
P5I0831-03 Water	**2708-050921-MW-5-100-102**			**Sampled: 09/21/05 15:55**						
Acenaphthene	EPA 8270m	18.5	*0.962*	1.92	ug/l	100x	5090983	09/23/05	09/30/05 20:47	
Acenaphthylene	"	ND	*0.962*	1.92	"	"	"	"	"	R-03
Anthracene	"	0.0888	*0.00962*	0.0192	"	1x	"	"	09/30/05 13:44	
Benzo (a) anthracene	"	0.0178	*0.00962*	0.0192	"	"	"	"	"	J
Benzo (a) pyrene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Chrysene	"	0.0191	*0.00962*	0.0192	"	"	"	"	"	J
Dibenzo (a,h) anthracene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Fluoranthene	"	0.126	*0.00962*	0.0192	"	"	"	"	"	
Fluorene	"	ND	*0.962*	1.92	"	100x	"	"	09/30/05 20:47	R-03
Indeno (1,2,3-cd) pyrene	"	ND	*0.00962*	0.0192	"	1x	"	"	09/30/05 13:44	
Naphthalene	"	6530	*96.2*	96.2	"	5000x	"	"	10/04/05 22:59	
Phenanthrene	"	0.314	*0.00962*	0.0192	"	1x	"	"	09/30/05 13:44	
Pyrene	"	0.164	*0.0192*	0.0192	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 55.8%*		*Limits: 25 - 125 %*		*100x*			*09/30/05 20:47*	
Pyrene-d10		*66.7%*		*23 - 150 %*		*1x*			*09/30/05 13:44*	
Benzo (a) pyrene-d12		*73.3%*		*10 - 125 %*		"			"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:52

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I0831-02 Water	**2708-050921-MW-5-175-101**			**Sampled: 09/21/05 14:05**						
Cyanide (amenable)	EPA 9010A	0.00520	----	0.00500	mg/l	1x	5091300	09/30/05	09/30/05 14:49	
Cyanide (total)	EPA 9012A	0.0156	----	0.00500	"	"	"	"	"	
P5I0831-03 Water	**2708-050921-MW-5-100-102**			**Sampled: 09/21/05 15:55**						
Cyanide (amenable)	EPA 9010A	0.248	----	0.0500	mg/l	10x	5091300	09/30/05	09/30/05 14:49	
Cyanide (total)	EPA 9012A	0.869	----	0.0500	"	"	"	"	"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 18:52

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5090977 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5090977-BLK1)								Extracted: 09/23/05 11:32						
Benzene	EPA 8021B	ND	---	0.500	ug/l	1x	--	--	--	--	--	--	09/23/05 15:16	
Toluene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*93.6%*	*Limits:*	*70-130%*	"							*09/23/05 15:16*	
LCS (5090977-BS1)								Extracted: 09/23/05 11:32						
Benzene	EPA 8021B	21.5	---	0.500	ug/l	1x	--	20.0	108%	(70-130)	--	--	09/23/05 13:07	
Toluene	"	21.2	---	0.500	"	"	--	"	106%	(76-129)	--	--	"	
Ethylbenzene	"	21.1	---	0.500	"	"	--	"	106%	(82-130)	--	--	"	
Xylenes (total)	"	63.4	---	1.00	"	"	--	60.0	106%	(76-130)	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*101%*	*Limits:*	*70-130%*	"							*09/23/05 13:07*	
LCS Dup (5090977-BSD1)								Extracted: 09/23/05 11:32						
Benzene	EPA 8021B	21.9	---	0.500	ug/l	1x	--	20.0	110%	(70-130)	1.84%	(20)	09/23/05 13:35	
Toluene	"	21.5	---	0.500	"	"	--	"	108%	(76-129)	1.41%	"	"	
Ethylbenzene	"	21.4	---	0.500	"	"	--	"	107%	(82-130)	1.41%	"	"	
Xylenes (total)	"	64.4	---	1.00	"	"	--	60.0	107%	(76-130)	1.56%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*96.2%*	*Limits:*	*70-130%*	"							*09/23/05 13:35*	
Matrix Spike (5090977-MS1)				QC Source:	P5I0831-03			Extracted: 09/23/05 11:32						
Benzene	EPA 8021B	11200	---	50.0	ug/l	100x	12300	2000	NR	(65-144)	--	--	09/23/05 19:42	Q-03
Toluene	"	2040	---	50.0	"	"	ND	"	102%	(68-139)	--	--	"	
Ethylbenzene	"	2570	---	50.0	"	"	690	"	94.0%	(69-144)	--	--	"	
Xylenes (total)	"	6430	---	100	"	"	393	6000	101%	(60-144)	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*96.8%*	*Limits:*	*70-130%*	*1x*							*09/23/05 19:42*	
Matrix Spike Dup (5090977-MSD1)				QC Source:	P5I0831-03			Extracted: 09/23/05 11:32						
Benzene	EPA 8021B	11700	---	50.0	ug/l	100x	12300	2000	NR	(65-144)	4.37%	(20)	09/23/05 20:09	Q-03
Toluene	"	2010	---	50.0	"	"	ND	"	100%	(68-139)	1.48%	"	"	
Ethylbenzene	"	2580	---	50.0	"	"	690	"	94.5%	(69-144)	0.388%	"	"	
Xylenes (total)	"	6400	---	100	"	"	393	6000	100%	(60-144)	0.468%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*95.6%*	*Limits:*	*70-130%*	*1x*							*09/23/05 20:09*	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 18:52

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091241 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5091241-BLK1)								Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	ND	—	0.00100	mg/l	1x	—	—	—	—	—	—	10/05/05 17:24	
Chromium	"	ND	—	0.00100	"	"	—	—	—	—	—	—	10/10/05 23:52	
Copper	"	ND	—	0.00200	"	"	—	—	—	—	—	—	10/05/05 17:24	
Lead	"	ND	—	0.00100	"	"	—	—	—	—	—	—	"	
Nickel	"	ND	—	0.00200	"	"	—	—	—	—	—	—	"	
Zinc	"	ND	—	0.00500	"	"	—	—	—	—	—	—	10/10/05 23:52	
LCS (5091241-BS1)								Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	0.0998	—	0.00100	mg/l	1x	—	0.100	99.8%	(80-120)	—	—	10/05/05 17:24	
Chromium	"	0.0936	—	0.00100	"	"	—	"	93.6%	"	—	—	10/11/05 00:00	
Copper	"	0.104	—	0.00200	"	"	—	"	104%	"	—	—	10/05/05 17:24	
Lead	"	0.0937	—	0.00100	"	"	—	"	93.7%	"	—	—	10/05/05 17:32	
Nickel	"	0.103	—	0.00200	"	"	—	"	103%	"	—	—	10/05/05 17:24	
Zinc	"	0.0963	—	0.00500	"	"	—	"	96.3%	"	—	—	10/11/05 00:00	
Duplicate (5091241-DUP1)				QC Source: P510775-05				Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	0.0122	—	0.00100	mg/l	1x	0.0121	—	—	—	0.823%	(20)	10/05/05 18:18	
Chromium	"	0.0237	—	0.00500	"	5x	0.0230	—	—	—	3.00%	"	10/11/05 00:30	
Copper	"	0.0133	—	0.00200	"	1x	0.0137	—	—	—	2.96%	"	10/05/05 18:18	
Lead	"	0.00861	—	0.00100	"	"	0.00883	—	—	—	2.52%	"	"	
Nickel	"	0.0316	—	0.00200	"	"	0.0322	—	—	—	1.88%	"	"	
Zinc	"	0.0820	—	0.0250	"	5x	0.0819	—	—	—	0.122%	"	10/11/05 00:30	
Matrix Spike (5091241-MS1)				QC Source: P510775-05				Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	0.110	—	0.00100	mg/l	1x	0.0121	0.100	97.9%	(75-125)	—	—	10/05/05 18:35	
Chromium	"	0.114	—	0.00500	"	5x	0.0230	"	91.0%	"	—	—	10/11/05 00:46	
Copper	"	0.117	—	0.00200	"	1x	0.0137	"	103%	"	—	—	10/05/05 18:35	
Lead	"	0.0964	—	0.00100	"	"	0.00883	"	87.6%	"	—	—	"	
Nickel	"	0.135	—	0.00200	"	"	0.0322	"	103%	"	—	—	"	
Zinc	"	0.172	—	0.0250	"	5x	0.0819	"	90.1%	"	—	—	10/11/05 00:46	
Matrix Spike (5091241-MS2)				QC Source: P510775-19				Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	0.105	—	0.00100	mg/l	1x	0.00809	0.100	96.9%	(75-125)	—	—	10/05/05 19:05	
Chromium	"	0.116	—	0.00500	"	5x	0.0180	"	98.0%	"	—	—	10/11/05 01:01	
Copper	"	0.110	—	0.00200	"	1x	0.0106	"	99.4%	"	—	—	10/05/05 19:05	
Lead	"	0.0912	—	0.00100	"	"	0.00642	"	84.8%	"	—	—	"	
Nickel	"	0.124	—	0.00200	"	"	0.0258	"	98.2%	"	—	—	"	
Zinc	"	0.164	—	0.0250	"	5x	0.0616	"	102%	"	—	—	10/11/05 01:01	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:52

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091241 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Post Spike (5091241-PS1)					QC Source: P510775-19				Extracted: 09/29/05 11:05					
Arsenic	EPA 6020	0.112	—		ug/ml	1x	0.00809	0.100	104%	(75-125)	—	—	10/05/05 19:13	
Chromium	"	0.116	—		"	5x	0.0180	"	98.0%	"	—	—	10/11/05 01:08	
Copper	"	0.114	—		"	1x	0.0106	"	103%	"	—	—	10/05/05 19:13	
Lead	"	0.0943	—		"	"	0.00642	"	87.9%	"	—	—	"	
Nickel	"	0.129	—		"	"	0.0258	"	103%	"	—	—	"	
Zinc	"	0.165	—		"	5x	0.0616	"	103%	"	—	—	10/11/05 01:08	

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:52

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5090983 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5090983-BLK1)								Extracted: 09/23/05 12:42						
Acenaphthene	EPA 8270m	ND	0.0100	0.0200	ug/l	1x	--	--	--	--	--	--	09/28/05 23:01	
Acenaphthylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*54.4%*		*Limits:*	*25-125%*	"						*09/28/05 23:01*	
Pyrene-d10			*77.2%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*76.8%*			*10-125%*	"						"	
LCS (5090983-BS1)								Extracted: 09/23/05 12:42						
Acenaphthene	EPA 8270m	2.04	0.0100	0.0200	ug/l	1x	--	2.50	81.6%	(35-120)	--	--	09/28/05 23:28	
Acenaphthylene	"	1.98	0.0100	0.0200	"	"	--	"	79.2%	(34-116)	--	--	"	
Anthracene	"	1.77	0.0100	0.0200	"	"	--	"	70.8%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.84	0.0100	0.0200	"	"	--	"	73.6%	(36-128)	--	--	"	
Benzo (a) pyrene	"	1.87	0.0100	0.0200	"	"	--	"	74.8%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.19	0.0100	0.0200	"	"	--	"	87.6%	(37-131)	--	--	"	
Benzo (ghi) perylene	"	1.94	0.0100	0.0200	"	"	--	"	77.6%	(26-126)	--	--	"	
Benzo (k) fluoranthene	"	1.84	0.0100	0.0200	"	"	--	"	73.6%	(18-145)	--	--	"	
Chrysene	"	1.70	0.0100	0.0200	"	"	--	"	68.0%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.05	0.0100	0.0200	"	"	--	"	82.0%	(20-141)	--	--	"	
Fluoranthene	"	1.92	0.0100	0.0200	"	"	--	"	76.8%	(31-125)	--	--	"	
Fluorene	"	1.91	0.0100	0.0200	"	"	--	"	76.4%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.01	0.0100	0.0200	"	"	--	"	80.4%	(30-135)	--	--	"	
Naphthalene	"	1.78	0.0200	0.0200	"	"	--	"	71.2%	(30-113)	--	--	"	
Phenanthrene	"	1.83	0.0100	0.0200	"	"	--	"	73.2%	(34-126)	--	--	"	
Pyrene	"	1.78	0.0200	0.0200	"	"	--	"	71.2%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*67.6%*		*Limits:*	*25-125%*	"						*09/28/05 23:28*	
Pyrene-d10			*73.2%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*79.2%*			*10-125%*	"						"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:52

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5090983 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (5090983-BSD1)								Extracted: 09/23/05 12:42						
Acenaphthene	EPA 8270m	1.98	0.0100	0.0200	ug/l	1x	–	2.50	79.2%	(35-120)	2.99%	(50)	09/28/05 23:55	
Acenaphthylene	"	1.94	0.0100	0.0200	"	"	–	"	77.6%	(34-116)	2.04%	"	"	
Anthracene	"	1.52	0.0100	0.0200	"	"	–	"	60.8%	(24-119)	15.2%	"	"	
Benzo (a) anthracene	"	1.72	0.0100	0.0200	"	"	–	"	68.8%	(36-128)	6.74%	"	"	
Benzo (a) pyrene	"	1.46	0.0100	0.0200	"	"	–	"	58.4%	(17-128)	24.6%	"	"	
Benzo (b) fluoranthene	"	2.10	0.0100	0.0200	"	"	–	"	84.0%	(37-131)	4.20%	"	"	
Benzo (ghi) perylene	"	1.83	0.0100	0.0200	"	"	–	"	73.2%	(26-126)	5.84%	"	"	
Benzo (k) fluoranthene	"	1.90	0.0100	0.0200	"	"	–	"	76.0%	(18-145)	3.21%	"	"	
Chrysene	"	1.68	0.0100	0.0200	"	"	–	"	67.2%	(16-137)	1.18%	"	"	
Dibenzo (a,h) anthracene	"	1.93	0.0100	0.0200	"	"	–	"	77.2%	(20-141)	6.03%	"	"	
Fluoranthene	"	1.84	0.0100	0.0200	"	"	–	"	73.6%	(31-125)	4.26%	"	"	
Fluorene	"	1.86	0.0100	0.0200	"	"	–	"	74.4%	(27-124)	2.65%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.89	0.0100	0.0200	"	"	–	"	75.6%	(30-135)	6.15%	"	"	
Naphthalene	"	1.80	0.0200	0.0200	"	"	–	"	72.0%	(30-113)	1.12%	"	"	
Phenanthrene	"	1.79	0.0100	0.0200	"	"	–	"	71.6%	(34-126)	2.21%	"	"	
Pyrene	"	1.74	0.0200	0.0200	"	"	–	"	69.6%	(21-141)	2.27%	"	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*64.4%*		*Limits:*	*25-125%*	"						*09/28/05 23:55*	
Pyrene-d10			*68.0%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*66.8%*			*10-125%*	"						"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:52

Conventional Chemistry Parameters per APHA/EPA Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091300 **Water Preparation Method: Wet Chem**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5091300-BLK1)								Extracted: 09/30/05 08:39						
Cyanide (amenable)	EPA 9010A	ND	—	0.00500	mg/l	1x	--	--	--	--	--	--	09/30/05 14:49	R-15
Cyanide (total)	EPA 9012A	ND	—	0.00500	"	"	--	--	--	--	--	--	"	R-15
LCS (5091300-BS1)								Extracted: 09/30/05 08:39						
Cyanide (amenable)	EPA 9010A	0.442	—	0.00500	mg/l	1x	--	0.400	110%	(75-125)	--	--	09/30/05 14:49	R-15
Cyanide (total)	EPA 9012A	0.442	—	0.00500	"	"	--	"	110%	"	--	--	"	R-15
Duplicate (5091300-DUP1)				QC Source: P5I0918-01RE1				Extracted: 09/30/05 08:39						
Cyanide (total)	EPA 9012A	ND	—	0.00500	mg/l	1x	ND	--	--	--	NR	(20)	09/30/05 14:49	R-15
Cyanide (amenable)	EPA 9010A	ND	—	0.00500	"	"	ND	--	--	--	NR	"	"	R-15
Matrix Spike (5091300-MS1)				QC Source: P5I0918-01RE1				Extracted: 09/30/05 08:39						
Cyanide (total)	EPA 9012A	0.468	—	0.00500	mg/l	1x	0.00250	0.400	116%	(75-125)	--	--	09/30/05 14:49	R-15
Cyanide (amenable)	EPA 9010A	0.468	—	0.00500	"	"	0.00250	"	116%	"	--	--	"	R-15

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 18:52

Notes and Definitions

Report Specific Notes:

J - Estimated value.

Q-03 - The matrix spike recovery, and/or RPD, for this QC sample cannot be accurately calculated due to the high concentration of analyte already present in the source sample.

R-03 - The reporting limit for this analyte was raised due to matrix interference.

R-15 - Results entered for QC calculations only.

Laboratory Reporting Conventions:

DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR / NA - Not Reported / Not Available

dry - Sample results reported on a dry weight basis. Reporting Limits have been corrected for %Solids.

wet - Sample results and reporting limits reported on a wet weight basis (as received).

RPD - Relative Percent Difference. (RPDs calculated using Results, not Percent Recoveries).

MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.

MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated results.

Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.

Reporting limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

HAHN AND ASSOCIATES, INC.

Environmental Consultants

434 NW Sixth Avenue, Suite 203 • Portland OR 97209

(503) 796-0717 • Fax (503) 227-2209

Laboratory North Creek Analytical, Beaverton, Oregon

Lab Project No.

CHAIN OF CUSTODY

Chain of Custody No.

Project Manager: Rob Ede, HAI

Project No.: 2708-30 Gw Monitoring

Project Name: NNGGRI

Collected by: Matt Graves, Ben Uhl

Liquid with Sediment Sample

____ Test Filtrate ____ Test Sediment ____ Test Both

Multi-Phase Sample

____ Test One (which) ____ Test Separately ____ Shake

Samples Received at 4C (Y or N)

Appropriate Containers Used (Y or N)

Provide Verbal Results (Y or N): No

Provide Preliminary Fax Results: Yes

Comments

Sample Number Prefix: 2708-050921-MW

Pricing and reporting limits as per:
Phillip Nernberg, NCA

+ As, Cr, Cu, Ni, Pb Zn

Lab ID	Sample #	Date	Time	Sample Description	Soil	Water	Other	Number of Containers	EPA Method 8270 SIM, PAH's	EPA Method 8021, BTEX	EPA Method 9010, Amen. Cyn. Acid Total Cyanide	EPA Method 6010, Total Metals					RUSH	Remarks
	~~5-175~~ 100	9/21/05	1400	~~FB~~ MW-TB		X		1		X								
	5-175-101	↓	1405	MW-5-175		X		7	X	X	X	X						
	5-100-102	↓	1555	MW 5-100		X		7	X	X	X	X						

Relinquished by	Company	Date	Time	Received by	Company
Matt Graves	HAI	9/22/05	1340	SENWCY #029 RJB	SENWCY
SENWCY #029 RJB	SENWCY	9/22/05	1500	[illegible]	NCA 9/22/05 1500

1.6

Koppers023361

NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: Hulin

1. **Please sign for receipt and opening of** 1 **cooler or** ____ **other** ____

   By (print) Peter Franzen (sign) [signature]

2. Date samples received 9/22/05 Date opened: Same X or ___/___/___

3. Delivered by: ___NCA courier ___ FedEx ___UPS ✓ Courier ___Client ___Other ____

   Airbill # if applicable ____ (Put copy of shipping papers in file)

4. There were 0 custody seals present, signed by taped shut date ___/___/___.

5. Were the custody seals unbroken and intact at the date and time of arrival? ____Yes ____No

6. Was ice used? ✓ yes ____no Type of ice: ____ blue ice ✓ gel ice ____real ice

   Temperature (degrees C) ____ Raytek thermometer 6.4 Digi-Therm (probe temperature blank)

7. Are custody papers sealed in a plastic bag and taped inside to lid? ____Yes X No

8. Were custody papers filled out properly (ink, signed, etc.)? ✓ Yes ____No

   If "no" please specify: ____

9. Was project identifiable from custody papers? X Yes ____No

   Name of project NNGGRI (if applicable)

10. **Initial and date for unpacking:** PD/PP **(initials)** **date** 9/22/05

11. Packing material: ✓ bubble wrap/bag ____styrofoam ____cardboard ____other

12. Were samples in bags? ____Yes ✓ No

13. Did all containers indicated on the COC arrive? ✓ Yes ____No

    If "no" please indicate which containers were absent ____

14. Were all containers unbroken and labels in good condition? ✓ Yes ____No

    If "no" please indicate which containers ____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? ✓ Yes ____No

    Do the IDs, times, etc. agree with the COC? ✓ Yes ____No

    If "no" please indicate which containers ____

16. Are containers properly preserved for indicated analysis? ✓ Yes ____No

17. Is there adequate volume for the test(s) requested? ✓ Yes ____No

18. If voa vials were submitted, are they free of bubbles? ____N/A ✓ Yes ____No

19. **Log-in phase: Date samples were logged in:** 9/22/05 **Elm Project # P** ST0831

20. Logged in by (print) Peter Franzen (sign) [signature]

21. Was the project manager notified of status? (Use back of form as a record) ____Yes X No

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October 11, 2005

Rob Ede
Hahn and Associates, Inc.
434 NW Sixth Ave., Suite 203
Portland, OR 97209

RE: NNGGRI

Enclosed are the results of analyses for samples received by the laboratory on 09/23/05 12:25.
The following list is a summary of the NCA Work Orders contained in this report.
If you have any questions concerning this report, please feel free to contact me.

Work	Project	ProjectNumber
P5I0935	NNGGRI	2708-30

Thank You,

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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North Creek Analytical, Inc.
Environmental Laboratory Network

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Hahn and Associates, Inc.	Project Name:	**NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 18:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-050922-MW-103	P5I0935-01	Water	09/22/05 11:00	09/23/05 12:25
2708-050922-MW-14-110-104	P5I0935-02	Water	09/22/05 12:25	09/23/05 12:25
2708-050922-MW-3-26-105	P5I0935-03	Water	09/22/05 14:30	09/23/05 12:25
2708-050922-MW-3-56-106	P5I0935-04	Water	09/22/05 15:45	09/23/05 12:25

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Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:46

BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I0935-01	**Water**	**2708-050922-MW-103**			**Sampled: 09/22/05 11:00**						
Benzene		EPA 8021B	ND	-----	0.500	ug/l	1x	5091112	09/27/05	09/27/05 23:18	
Toluene		"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 84.2%*		*Limits: 70 - 130 %*		"			"	
P5I0935-02	**Water**	**2708-050922-MW-14-110-104**			**Sampled: 09/22/05 12:25**						
Benzene		EPA 8021B	ND	-----	0.500	ug/l	1x	5091112	09/27/05	09/27/05 23:45	
Toluene		"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 82.0%*		*Limits: 70 - 130 %*		"			"	
P5I0935-03	**Water**	**2708-050922-MW-3-26-105**			**Sampled: 09/22/05 14:30**						
Benzene		EPA 8021B	ND	-----	0.500	ug/l	1x	5091112	09/27/05	09/28/05 00:12	
Toluene		"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 84.6%*		*Limits: 70 - 130 %*		"			"	
P5I0935-04	**Water**	**2708-050922-MW-3-56-106**			**Sampled: 09/22/05 15:45**						
Benzene		EPA 8021B	17.2	-----	0.500	ug/l	1x	5091112	09/27/05	09/28/05 00:40	
Toluene		"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)		"	3.00	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 86.2%*		*Limits: 70 - 130 %*		"			"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:46

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I0935-02	**Water**	**2708-050922-MW-14-110-104**			**Sampled: 09/22/05 12:25**						
Arsenic		EPA 6020	0.0134	----	0.00100	mg/l	1x	5091241	09/29/05	10/05/05 19:51	
Chromium		"	ND	----	0.00500	"	5x	"	"	10/11/05 02:02	R-03
Copper		"	ND	----	0.00200	"	1x	"	"	10/05/05 19:51	
Lead		"	ND	----	0.00100	"	"	"	"	"	
Nickel		"	0.00410	----	0.00200	"	"	"	"	"	
Zinc		"	ND	----	0.0250	"	5x	"	"	10/11/05 02:02	R-03
P5I0935-03	**Water**	**2708-050922-MW-3-26-105**			**Sampled: 09/22/05 14:30**						
Arsenic		EPA 6020	0.00369	----	0.00100	mg/l	1x	5091241	09/29/05	10/05/05 19:59	
Chromium		"	ND	----	0.00500	"	5x	"	"	10/11/05 02:09	R-03
Copper		"	0.00742	----	0.00200	"	1x	"	"	10/05/05 19:59	
Lead		"	0.00388	----	0.00100	"	"	"	"	"	
Nickel		"	0.131	----	0.00200	"	"	"	"	"	
Zinc		"	0.0290	----	0.0250	"	5x	"	"	10/11/05 02:09	R-03
P5I0935-04	**Water**	**2708-050922-MW-3-56-106**			**Sampled: 09/22/05 15:45**						
Arsenic		EPA 6020	0.00400	----	0.00100	mg/l	1x	5091241	09/29/05	10/05/05 20:06	
Chromium		"	ND	----	0.00500	"	5x	"	"	10/11/05 02:17	R-03
Copper		"	ND	----	0.00200	"	1x	"	"	10/05/05 20:06	
Lead		"	ND	----	0.00100	"	"	"	"	"	
Nickel		"	0.00386	----	0.00200	"	"	"	"	"	
Zinc		"	ND	----	0.0250	"	5x	"	"	10/11/05 02:17	

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Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:46

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I0935-02 Water	**2708-050922-MW-14-110-104**			**Sampled: 09/22/05 12:25**						
Acenaphthene	EPA 8270m	0.0658	*0.00962*	0.0192	ug/l	1x	5091252	09/29/05	10/07/05 14:38	
Acenaphthylene	"	ND	*0.0192*	0.0192	"	"	"	"	"	
Anthracene	"	ND	*0.0192*	0.0192	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Chrysene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Fluoranthene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Fluorene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Naphthalene	"	0.135	*0.0192*	0.0192	"	"	"	"	"	
Phenanthrene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Pyrene	"	ND	*0.0192*	0.0192	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 48.3%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*56.2%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*71.2%*		*10 - 125 %*		"			"	
P5I0935-03 Water	**2708-050922-MW-3-26-105**			**Sampled: 09/22/05 14:30**						**R-05**
Acenaphthene	EPA 8270m	0.0736	*0.0495*	0.0990	ug/l	5x	5091252	09/29/05	10/05/05 18:58	**J**
Acenaphthylene	"	0.266	*0.0495*	0.0990	"	"	"	"	"	
Anthracene	"	0.291	*0.0495*	0.0990	"	"	"	"	"	
Benzo (a) anthracene	"	0.403	*0.0495*	0.0990	"	"	"	"	"	
Benzo (a) pyrene	"	0.843	*0.0495*	0.0990	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.472	*0.0495*	0.0990	"	"	"	"	"	
Benzo (ghi) perylene	"	0.955	*0.0495*	0.0990	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.425	*0.0495*	0.0990	"	"	"	"	"	
Chrysene	"	0.565	*0.0495*	0.0990	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	0.116	*0.0495*	0.0990	"	"	"	"	"	
Fluoranthene	"	0.663	*0.0495*	0.0990	"	"	"	"	"	
Fluorene	"	ND	*0.0495*	0.0990	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.588	*0.0495*	0.0990	"	"	"	"	"	
Naphthalene	"	0.578	*0.0990*	0.0990	"	"	"	"	"	
Phenanthrene	"	0.230	*0.0495*	0.0990	"	"	"	"	"	
Pyrene	"	1.63	*0.0990*	0.0990	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 55.2%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*62.1%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*59.7%*		*10 - 125 %*		"			"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 18:46

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I0935-04	**Water**	**2708-050922-MW-3-56-106**			**Sampled: 09/22/05 15:45**						**R-05**
Acenaphthene		EPA 8270m	**23.1**	*0.243*	0.485	ug/l	25x	5091252	09/29/05	10/05/05 19:25	
Acenaphthylene		"	ND	*0.243*	0.485	"	"	"	"	"	
Anthracene		"	**2.16**	*0.243*	0.485	"	"	"	"	"	
Benzo (a) anthracene		"	**0.275**	*0.243*	0.485	"	"	"	"	"	J
Benzo (a) pyrene		"	ND	*0.243*	0.485	"	"	"	"	"	
Benzo (b) fluoranthene		"	ND	*0.243*	0.485	"	"	"	"	"	
Benzo (ghi) perylene		"	ND	*0.243*	0.485	"	"	"	"	"	
Benzo (k) fluoranthene		"	ND	*0.243*	0.485	"	"	"	"	"	
Chrysene		"	**0.357**	*0.243*	0.485	"	"	"	"	"	J
Dibenzo (a,h) anthracene		"	ND	*0.243*	0.485	"	"	"	"	"	
Fluoranthene		"	**4.50**	*0.243*	0.485	"	"	"	"	"	
Fluorene		"	**7.45**	*0.243*	0.485	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene		"	ND	*0.243*	0.485	"	"	"	"	"	
Naphthalene		"	**0.920**	*0.485*	0.485	"	"	"	"	"	
Phenanthrene		"	**8.23**	*0.243*	0.485	"	"	"	"	"	
Pyrene		"	**5.22**	*0.485*	0.485	"	"	"	"	"	
Surrogate(s):	*Fluorene-d10*		*Recovery: 64.6%*		*Limits: 25 - 125 %*	"				"	
	Pyrene-d10		*68.3%*		*23 - 150 %*	"				"	
	Benzo (a) pyrene-d12		*65.0%*		*10 - 125 %*	"				"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:46

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I0935-02	**Water**	**2708-050922-MW-14-110-104**			**Sampled: 09/22/05 12:25**						
Cyanide (amenable)		EPA 9010A	ND	-----	0.00500	mg/l	1x	5091300	09/30/05	09/30/05 14:49	
Cyanide (total)		EPA 9012A	0.0208	-----	0.00500	"	"	"	"	"	
P5I0935-03	**Water**	**2708-050922-MW-3-26-105**			**Sampled: 09/22/05 14:30**						
Cyanide (amenable)		EPA 9010A	0.295	-----	0.00500	mg/l	1x	5091300	09/30/05	09/30/05 14:49	
Cyanide (total)		EPA 9012A	0.502	-----	0.00500	"	"	"	"	"	
P5I0935-04	**Water**	**2708-050922-MW-3-56-106**			**Sampled: 09/22/05 15:45**						
Cyanide (amenable)		EPA 9010A	0.0175	-----	0.00500	mg/l	1x	5091300	09/30/05	09/30/05 14:49	
Cyanide (total)		EPA 9012A	0.0418	-----	0.00500	"	"	"	"	"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 18:46

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091112 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5091112-BLK1)								Extracted: 09/27/05 09:14						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	--	--	--	--	--	--	09/27/05 17:21	
Toluene	"	ND	—	0.500	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	—	0.500	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	—	1.00	"	"	--	--	--	--	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 84.6%*		*Limits: 70-130%*		"							*09/27/05 17:21*	
LCS (5091112-BS1)								Extracted: 09/27/05 09:14						
Benzene	EPA 8021B	21.0	—	0.500	ug/l	1x	--	20.0	105%	(70-130)	--	--	09/27/05 16:26	
Toluene	"	20.6	—	0.500	"	"	--	"	103%	(76-129)	--	--	"	
Ethylbenzene	"	20.4	—	0.500	"	"	--	"	102%	(82-130)	--	--	"	
Xylenes (total)	"	61.7	—	1.00	"	"	--	60.0	103%	(76-130)	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 86.4%*		*Limits: 70-130%*		"							*09/27/05 16:26*	
LCS Dup (5091112-BSD1)								Extracted: 09/27/05 09:14						
Benzene	EPA 8021B	21.1	—	0.500	ug/l	1x	--	20.0	106%	(70-130)	0.475%	(20)	09/27/05 16:54	
Toluene	"	20.7	—	0.500	"	"	--	"	104%	(76-129)	0.484%	"	"	
Ethylbenzene	"	20.6	—	0.500	"	"	--	"	103%	(82-130)	0.976%	"	"	
Xylenes (total)	"	61.8	—	1.00	"	"	--	60.0	103%	(76-130)	0.162%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 90.4%*		*Limits: 70-130%*		"							*09/27/05 16:54*	
Matrix Spike (5091112-MS1)				QC Source: P510753-01				Extracted: 09/27/05 09:14						
Benzene	EPA 8021B	21.2	—	0.500	ug/l	1x	ND	20.0	106%	(65-144)	--	--	09/27/05 15:31	
Toluene	"	20.9	—	0.500	"	"	ND	"	104%	(68-139)	--	--	"	
Ethylbenzene	"	20.5	—	0.500	"	"	ND	"	102%	(69-144)	--	--	"	
Xylenes (total)	"	62.0	—	1.00	"	"	ND	60.0	103%	(60-144)	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 88.8%*		*Limits: 70-130%*		"							*09/27/05 15:31*	
Matrix Spike Dup (5091112-MSD1)				QC Source: P510753-01				Extracted: 09/27/05 09:14						
Benzene	EPA 8021B	20.4	—	0.500	ug/l	1x	ND	20.0	102%	(65-144)	3.85%	(20)	09/27/05 15:59	
Toluene	"	19.9	—	0.500	"	"	ND	"	99.5%	(68-139)	4.90%	"	"	
Ethylbenzene	"	19.5	—	0.500	"	"	ND	"	97.5%	(69-144)	5.00%	"	"	
Xylenes (total)	"	59.3	—	1.00	"	"	ND	60.0	98.8%	(60-144)	4.45%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 89.3%*		*Limits: 70-130%*		"							*09/27/05 15:59*	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:46

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091241 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5091241-BLK1)								Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	ND	—	0.00100	mg/l	1x	—	—	—	—	—	—	10/05/05 17:24	
Chromium	"	ND	—	0.00100	"	"	—	—	—	—	—	—	10/10/05 23:52	
Copper	"	ND	—	0.00200	"	"	—	—	—	—	—	—	10/05/05 17:24	
Lead	"	ND	—	0.00100	"	"	—	—	—	—	—	—	"	
Nickel	"	ND	—	0.00200	"	"	—	—	—	—	—	—	"	
Zinc	"	ND	—	0.00500	"	"	—	—	—	—	—	—	10/10/05 23:52	
LCS (5091241-BS1)								Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	0.0998	—	0.00100	mg/l	1x	—	0.100	99.8%	(80-120)	—	—	10/05/05 17:24	
Chromium	"	0.0936	—	0.00100	"	"	—	"	93.6%	"	—	—	10/11/05 00:00	
Copper	"	0.104	—	0.00200	"	"	—	"	104%	"	—	—	10/05/05 17:24	
Lead	"	0.0937	—	0.00100	"	"	—	"	93.7%	"	—	—	10/05/05 17:32	
Nickel	"	0.103	—	0.00200	"	"	—	"	103%	"	—	—	10/05/05 17:24	
Zinc	"	0.0963	—	0.00500	"	"	—	"	96.3%	"	—	—	10/11/05 00:00	
Duplicate (5091241-DUP1)				QC Source: P510775-05				Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	0.0122	—	0.00100	mg/l	1x	0.0121	—	—	—	0.823%	(20)	10/05/05 18:18	
Chromium	"	0.0237	—	0.00500	"	5x	0.0230	—	—	—	3.00%	"	10/11/05 00:30	
Copper	"	0.0133	—	0.00200	"	1x	0.0137	—	—	—	2.96%	"	10/05/05 18:18	
Lead	"	0.00861	—	0.00100	"	"	0.00883	—	—	—	2.52%	"	"	
Nickel	"	0.0316	—	0.00200	"	"	0.0322	—	—	—	1.88%	"	"	
Zinc	"	0.0820	—	0.0250	"	5x	0.0819	—	—	—	0.122%	"	10/11/05 00:30	
Matrix Spike (5091241-MS1)				QC Source: P510775-05				Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	0.110	—	0.00100	mg/l	1x	0.0121	0.100	97.9%	(75-125)	—	—	10/05/05 18:35	
Chromium	"	0.114	—	0.00500	"	5x	0.0230	"	91.0%	"	—	—	10/11/05 00:46	
Copper	"	0.117	—	0.00200	"	1x	0.0137	"	103%	"	—	—	10/05/05 18:35	
Lead	"	0.0964	—	0.00100	"	"	0.00883	"	87.6%	"	—	—	"	
Nickel	"	0.135	—	0.00200	"	"	0.0322	"	103%	"	—	—	"	
Zinc	"	0.172	—	0.0250	"	5x	0.0819	"	90.1%	"	—	—	10/11/05 00:46	
Matrix Spike (5091241-MS2)				QC Source: P510775-19				Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	0.105	—	0.00100	mg/l	1x	0.00809	0.100	96.9%	(75-125)	—	—	10/05/05 19:05	
Chromium	"	0.116	—	0.00500	"	5x	0.0180	"	98.0%	"	—	—	10/11/05 01:01	
Copper	"	0.110	—	0.00200	"	1x	0.0106	"	99.4%	"	—	—	10/05/05 19:05	
Lead	"	0.0912	—	0.00100	"	"	0.00642	"	84.8%	"	—	—	"	
Nickel	"	0.124	—	0.00200	"	"	0.0258	"	98.2%	"	—	—	"	
Zinc	"	0.164	—	0.0250	"	5x	0.0616	"	102%	"	—	—	10/11/05 01:01	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:46

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091241 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Post Spike (5091241-PS1)				QC Source: P510775-19				Extracted: 09/29/05 11:05						
Arsenic	EPA 6020	0.112	—		ug/ml	1x	0.00809	0.100	104%	(75-125)	--	--	10/05/05 19:13	
Chromium	"	0.116	—		"	5x	0.0180	"	98.0%	"	—	—	10/11/05 01:08	
Copper	"	0.114	—		"	1x	0.0106	"	103%	"	--	--	10/05/05 19:13	
Lead	"	0.0943	---		"	"	0.00642	"	87.9%	"	—	—	"	
Nickel	"	0.129	—		"	"	0.0258	"	103%	"	--	--	"	
Zinc	"	0.165	—		"	5x	0.0616	"	103%	"	--	--	10/11/05 01:08	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 18:46

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091252 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5091252-BLK1)								Extracted: 09/29/05 15:15						
Acenaphthene	EPA 8270m	ND	0.0100	0.0200	ug/l	1x	--	--	--	--	--	--	10/04/05 17:30	
Acenaphthylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*53.2%*		*Limits:*	*25-125%*	"						*10/04/05 17:30*	
Pyrene-d10			*51.2%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*53.2%*			*10-125%*	"						"	
LCS (5091252-BS1)								Extracted: 09/29/05 15:15						
Acenaphthene	EPA 8270m	1.77	0.0100	0.0200	ug/l	1x	--	2.50	70.8%	(35-120)	--	--	10/04/05 18:53	
Acenaphthylene	"	1.66	0.0100	0.0200	"	"	--	"	66.4%	(34-116)	--	--	"	
Anthracene	"	1.56	0.0100	0.0200	"	"	--	"	62.4%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.62	0.0100	0.0200	"	"	--	"	64.8%	(36-128)	--	--	"	
Benzo (a) pyrene	"	1.65	0.0100	0.0200	"	"	--	"	66.0%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	1.66	0.0100	0.0200	"	"	--	"	66.4%	(37-131)	--	--	"	
Benzo (ghi) perylene	"	1.81	0.0100	0.0200	"	"	--	"	72.4%	(26-126)	--	--	"	
Benzo (k) fluoranthene	"	1.85	0.0100	0.0200	"	"	--	"	74.0%	(18-145)	--	--	"	
Chrysene	"	1.59	0.0100	0.0200	"	"	--	"	63.6%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	1.89	0.0100	0.0200	"	"	--	"	75.6%	(20-141)	--	--	"	
Fluoranthene	"	1.55	0.0100	0.0200	"	"	--	"	62.0%	(31-125)	--	--	"	
Fluorene	"	1.69	0.0100	0.0200	"	"	--	"	67.6%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	1.86	0.0100	0.0200	"	"	--	"	74.4%	(30-135)	--	--	"	
Naphthalene	"	1.60	0.0200	0.0200	"	"	--	"	64.0%	(30-113)	--	--	"	
Phenanthrene	"	1.55	0.0100	0.0200	"	"	--	"	62.0%	(34-126)	--	--	"	
Pyrene	"	1.54	0.0200	0.0200	"	"	--	"	61.6%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*54.4%*		*Limits:*	*25-125%*	"						*10/04/05 18:53*	
Pyrene-d10			*63.2%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*72.4%*			*10-125%*	"						"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:46

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091252 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (5091252-BSD1)								Extracted: 09/29/05 15:15						
Acenaphthene	EPA 8270m	1.65	0.0100	0.0200	ug/l	1x	--	2.50	66.0%	(35-120)	7.02%	(50)	10/04/05 19:20	
Acenaphthylene	"	1.60	0.0100	0.0200	"	"	--	"	64.0%	(34-116)	3.68%	"	"	
Anthracene	"	1.56	0.0100	0.0200	"	"	--	"	62.4%	(24-119)	0.00%	"	"	
Benzo (a) anthracene	"	1.59	0.0100	0.0200	"	"	--	"	63.6%	(36-128)	1.87%	"	"	
Benzo (a) pyrene	"	1.63	0.0100	0.0200	"	"	--	"	65.2%	(17-128)	1.22%	"	"	
Benzo (b) fluoranthene	"	1.62	0.0100	0.0200	"	"	--	"	64.8%	(37-131)	2.44%	"	"	
Benzo (ghi) perylene	"	1.69	0.0100	0.0200	"	"	--	"	67.6%	(26-126)	6.86%	"	"	
Benzo (k) fluoranthene	"	1.80	0.0100	0.0200	"	"	--	"	72.0%	(18-145)	2.74%	"	"	
Chrysene	"	1.54	0.0100	0.0200	"	"	--	"	61.6%	(16-137)	3.19%	"	"	
Dibenzo (a,h) anthracene	"	1.76	0.0100	0.0200	"	"	--	"	70.4%	(20-141)	7.12%	"	"	
Fluoranthene	"	1.56	0.0100	0.0200	"	"	--	"	62.4%	(31-125)	0.643%	"	"	
Fluorene	"	1.59	0.0100	0.0200	"	"	--	"	63.6%	(27-124)	6.10%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.74	0.0100	0.0200	"	"	--	"	69.6%	(30-135)	6.67%	"	"	
Naphthalene	"	1.51	0.0200	0.0200	"	"	--	"	60.4%	(30-113)	5.79%	"	"	
Phenanthrene	"	1.55	0.0100	0.0200	"	"	--	"	62.0%	(34-126)	0.00%	"	"	
Pyrene	"	1.51	0.0200	0.0200	"	"	--	"	60.4%	(21-141)	1.97%	"	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*66.0%*		*Limits:*	*25-125%*	"						*10/04/05 19:20*	
Pyrene-d10			*63.6%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*72.8%*			*10-125%*	"						"	

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Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 18:46

Conventional Chemistry Parameters per APHA/EPA Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091300 **Water Preparation Method: Wet Chem**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5091300-BLK1)								Extracted: 09/30/05 08:39						
Cyanide (amenable)	EPA 9010A	ND	---	0.00500	mg/l	1x	--	--	--	--	--	--	09/30/05 14:49	R-15
Cyanide (total)	EPA 9012A	ND	---	0.00500	"	"	--	--	--	--	--	--	"	R-15
LCS (5091300-BS1)								Extracted: 09/30/05 08:39						
Cyanide (total)	EPA 9012A	0.442	---	0.00500	mg/l	1x	--	0.400	110%	(75-125)	--	--	09/30/05 14:49	R-15
Cyanide (amenable)	EPA 9010A	0.442	---	0.00500	"	"	--	"	110%	"	--	--	"	R-15
Duplicate (5091300-DUP1)				QC Source: P5I0918-01RE1				Extracted: 09/30/05 08:39						
Cyanide (amenable)	EPA 9010A	ND	---	0.00500	mg/l	1x	ND	--	--	--	NR	(20)	09/30/05 14:49	R-15
Cyanide (total)	EPA 9012A	ND	---	0.00500	"	"	ND	--	--	--	NR	"	"	R-15
Matrix Spike (5091300-MS1)				QC Source: P5I0918-01RE1				Extracted: 09/30/05 08:39						
Cyanide (amenable)	EPA 9010A	0.468	---	0.00500	mg/l	1x	0.00250	0.400	116%	(75-125)	--	--	09/30/05 14:49	R-15
Cyanide (total)	EPA 9012A	0.468	---	0.00500	"	"	0.00250	"	116%	"	--	--	"	R-15

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Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 18:46

Notes and Definitions

Report Specific Notes:

J - Estimated value.

R-03 - The reporting limit for this analyte was raised due to matrix interference.

R-05 - Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.

R-15 - Results entered for QC calculations only.

Laboratory Reporting Conventions:

DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR / NA - Not Reported / Not Available

dry - Sample results reported on a dry weight basis. Reporting Limits have been corrected for %Solids.

wet - Sample results and reporting limits reported on a wet weight basis (as received).

RPD - Relative Percent Difference. (RPDs calculated using Results, not Percent Recoveries).

MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.

MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated results.

Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.

Reporting limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

HAHN AND ASSOCIATES, INC.
Environmental Consultants
434 NW Sixth Avenue, Suite 203 • Portland OR 97209
(503) 796-0717 • Fax (503) 227-2209

Laboratory North Creek Analytical
Beaverton, Oregon
Lab Project No.

CHAIN OF CUSTODY

Chain of Custody No. 25T1148

Project Manager	Rob Ede, HAI
Project No.	2708-30
Project Name	NNGGRI (GW Monitoring)
Collected by	Matt Graves, Ben Uhl

Liquid with Sediment Sample
___ Test Filtrate ___ Test Sediment ___ Test Both
Multi-Phase Sample
___ Test One (which) ___ Test Separately ___ Shake

Samples Received at 4C (Y or N)	
Appropriate Containers Used (Y or N)	
Provide Verbal Results (Y or N)	No
Provide Preliminary Fax Results	Yes

Comments

Sample Number Prefix: 2708-050926-

Pricing and reporting limits as per:
Phillip Nernberg, NCA
* As, Cr, Cu, Ni Pb, Zn

Lab ID	Sample #	Date	Time	Sample Description	Soil	Water	Other	Number of Containers	EPA Method 8270 SIM, PAH's	EPA Method 8021, BTEX	EPA Method 9010, Amen. Cyn. As Total Cyanide	EPA Method 6010, Total Metals *					RUSH	Remarks
	TB	9/26/05	8:00	T.B.		X		1		X								
	MW-9-29-101		1010	MW-9-29		X		7	X	X	X	X						
	MW-17-79-110		1230	MW-17-79		X		7	X	X	X	X						
	MW-2-61-111		1500	MW-2-61		X		7	X	X	X	X						
	MW-7-112		1530	MW-7		X		2	X									

Relinquished by	Company	Date	Time	Received by	Company
[signature]		9/27/05	12:35	[signature]	N/A
[signature]	N/A	9/27/05	15:00	[signature] 1500 9/27/05	N/A

Koppers023377

NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: Hayden & Assoc.

1. **Please sign for receipt and opening of** 1 **cooler or** ____ **other** ____

   By (print) McKayla Hansen (sign) [signature]

2. Date samples received 9/27/05 Date opened: Same X or ___/___/___

3. Delivered by: X (Bob) NCA courier ___ FedEx ___ UPS ___ Courier ___ Client ___ Other ____

   Airbill # if applicable ____ (Put copy of shipping papers in file)

4. There were 1 custody seals present, signed by Bob date 9/27/05.

5. Were the custody seals unbroken and intact at the date and time of arrival? X Yes ___ No

6. Was ice used? X yes ___ no Type of ice: ___ blue ice (MP) ___ gel ice X real ice

   Temperature (degrees C) ____ Raytek thermometer 1.7 Digi-Therm (probe temperature blank)

7. Are custody papers sealed in a plastic bag and taped inside to lid? ___ Yes Y No

8. Were custody papers filled out properly (ink, signed, etc.)? Y Yes ___ No

   If "no" please specify: ____

9. Was project identifiable from custody papers? X Yes ___ No

   Name of project NNGGRI (GW Monitoring) (if applicable)

10. **Initial and date for unpacking:** MP MP **(initials)** **date** 9/27/05

11. Packing material: N/A bubble wrap/bag ___ styrofoam ___ cardboard ____ other

12. Were samples in bags? ___ Yes X No

13. Did all containers indicated on the COC arrive? X Yes ___ No

    If "no" please indicate which containers were absent ____

14. Were all containers unbroken and labels in good condition? Y Yes ___ No

    If "no" please indicate which containers ____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? Y Yes ___ No

    Do the IDs, times, etc. agree with the COC? X Yes ___ No

    If "no" please indicate which containers ____

16. Are containers properly preserved for indicated analysis? Y Yes ___ No

17. Is there adequate volume for the test(s) requested? Y Yes ___ No

18. If voa vials were submitted, are they free of bubbles? ___ N/A X Yes ___ No

19. **Log-in phase: Date samples were logged in:** 9/27/05 **Elm Project #** PSI1011

20. Logged in by (print) Vanessa Bran (sign) Vanessa Bran

21. Was the project manager notified of status? (Use back of form as a record) ___ Yes X No

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October 11, 2005

Rob Ede
Hahn and Associates, Inc.
434 NW Sixth Ave., Suite 203
Portland, OR 97209

RE: NNGGRI

Enclosed are the results of analyses for samples received by the laboratory on 09/27/05 15:00.
The following list is a summary of the NCA Work Orders contained in this report.
If you have any questions concerning this report, please feel free to contact me.

Work	Project	ProjectNumber
P5I1040	NNGGRI	2708-050926

Thank You,

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Environmental Laboratory Network

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-050926	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 16:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-050926-108	P5I1040-01	Water	09/26/05 08:30	09/27/05 15:00
2708-050926-MW-9-29-109	P5I1040-02	Water	09/26/05 10:10	09/27/05 15:00
2708-050926-MW-17-79-110	P5I1040-03	Water	09/26/05 12:30	09/27/05 15:00
2708-050926-MW-2-61-111	P5I1040-04	Water	09/26/05 15:00	09/27/05 15:00
2708-050926-MW-7-112	P5I1040-05	Water	09/26/05 15:30	09/27/05 15:00

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1040-01	**Water**	**2708-050926-108**		**Sampled: 09/26/05 08:30**							
Benzene		EPA 8021B	ND	----	0.500	ug/l	1x	5091264	09/29/05	09/30/05 06:11	
Toluene		"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 96.2%*		*Limits: 70 - 130 %*		"			"	
P5I1040-02	**Water**	**2708-050926-MW-9-29-109**		**Sampled: 09/26/05 10:10**							
Benzene		EPA 8021B	ND	----	0.500	ug/l	1x	5091264	09/29/05	09/30/05 06:43	
Toluene		"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 93.8%*		*Limits: 70 - 130 %*		"			"	
P5I1040-04	**Water**	**2708-050926-MW-2-61-111**		**Sampled: 09/26/05 15:00**							
Benzene		EPA 8021B	ND	----	0.500	ug/l	1x	5091264	09/29/05	09/30/05 07:47	
Toluene		"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 92.8%*		*Limits: 70 - 130 %*		"			"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1040-02	**Water**	**2708-050926-MW-9-29-109**			**Sampled: 09/26/05 10:10**						
Arsenic		EPA 6020	0.00368	----	0.00100	mg/l	1x	5100059	10/03/05	10/07/05 17:43	
Chromium		"	ND	----	0.00100	"	"	"	"	10/11/05 09:00	
Copper		"	0.00224	----	0.00200	"	"	"	"	10/07/05 17:43	
Lead		"	ND	----	0.00100	"	"	"	"	10/11/05 09:00	
Nickel		"	0.00216	----	0.00200	"	"	"	"	10/07/05 17:43	
Zinc		"	0.00515	----	0.00500	"	"	"	"	"	
P5I1040-03	**Water**	**2708-050926-MW-17-79-110**			**Sampled: 09/26/05 12:30**						
Arsenic		EPA 6020	0.00234	----	0.00100	mg/l	1x	5100059	10/03/05	10/07/05 18:06	
Chromium		"	ND	----	0.00100	"	"	"	"	10/11/05 09:38	
Copper		"	ND	----	0.00200	"	"	"	"	10/07/05 18:06	
Lead		"	ND	----	0.00100	"	"	"	"	10/11/05 09:38	
Nickel		"	0.00424	----	0.00200	"	"	"	"	10/07/05 18:06	
Zinc		"	ND	----	0.00500	"	"	"	"	"	
P5I1040-04	**Water**	**2708-050926-MW-2-61-111**			**Sampled: 09/26/05 15:00**						
Arsenic		EPA 6020	0.00324	----	0.00100	mg/l	1x	5100059	10/03/05	10/07/05 18:53	
Chromium		"	ND	----	0.00100	"	"	"	"	10/11/05 10:24	
Copper		"	0.00311	----	0.00200	"	"	"	"	10/07/05 18:53	
Lead		"	ND	----	0.00100	"	"	"	"	10/11/05 10:24	
Nickel		"	0.00257	----	0.00200	"	"	"	"	10/07/05 18:53	
Zinc		"	ND	----	0.00500	"	"	"	"	"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1040-03 Water	**2708-050926-MW-17-79-110**			**Sampled: 09/26/05 12:30**						
Acetone	EPA 8260B	ND	-----	25.0	ug/l	1x	5100228	10/06/05	10/06/05 15:13	
Benzene	"	**2.82**	-----	1.00	"	"	"	"	"	
Bromobenzene	"	ND	-----	1.00	"	"	"	"	"	
Bromochloromethane	"	ND	-----	1.00	"	"	"	"	"	
Bromodichloromethane	"	ND	-----	1.00	"	"	"	"	"	
Bromoform	"	ND	-----	1.00	"	"	"	"	"	
Bromomethane	"	ND	-----	5.00	"	"	"	"	"	
2-Butanone	"	ND	-----	10.0	"	"	"	"	"	
n-Butylbenzene	"	ND	-----	5.00	"	"	"	"	"	
sec-Butylbenzene	"	ND	-----	1.00	"	"	"	"	"	
tert-Butylbenzene	"	ND	-----	1.00	"	"	"	"	"	
Carbon disulfide	"	ND	-----	10.0	"	"	"	"	"	
Carbon tetrachloride	"	ND	-----	1.00	"	"	"	"	"	
Chlorobenzene	"	ND	-----	1.00	"	"	"	"	"	
Chloroethane	"	ND	-----	1.00	"	"	"	"	"	
Chloroform	"	ND	-----	1.00	"	"	"	"	"	
Chloromethane	"	ND	-----	5.00	"	"	"	"	"	
2-Chlorotoluene	"	ND	-----	1.00	"	"	"	"	"	
4-Chlorotoluene	"	ND	-----	1.00	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	"	ND	-----	5.00	"	"	"	"	"	
Dibromochloromethane	"	ND	-----	1.00	"	"	"	"	"	
1,2-Dibromoethane	"	ND	-----	1.00	"	"	"	"	"	
Dibromomethane	"	ND	-----	1.00	"	"	"	"	"	
1,2-Dichlorobenzene	"	ND	-----	1.00	"	"	"	"	"	
1,3-Dichlorobenzene	"	ND	-----	1.00	"	"	"	"	"	
1,4-Dichlorobenzene	"	ND	-----	1.00	"	"	"	"	"	
Dichlorodifluoromethane	"	ND	-----	5.00	"	"	"	"	"	
1,1-Dichloroethane	"	ND	-----	1.00	"	"	"	"	"	
1,2-Dichloroethane	"	ND	-----	1.00	"	"	"	"	"	
1,1-Dichloroethene	"	ND	-----	1.00	"	"	"	"	"	
cis-1,2-Dichloroethene	"	ND	-----	1.00	"	"	"	"	"	
trans-1,2-Dichloroethene	"	ND	-----	1.00	"	"	"	"	"	
1,2-Dichloropropane	"	ND	-----	1.00	"	"	"	"	"	
1,3-Dichloropropane	"	ND	-----	1.00	"	"	"	"	"	
2,2-Dichloropropane	"	ND	-----	1.00	"	"	"	"	"	
1,1-Dichloropropene	"	ND	-----	1.00	"	"	"	"	"	
cis-1,3-Dichloropropene	"	ND	-----	1.00	"	"	"	"	"	
trans-1,3-Dichloropropene	"	ND	-----	1.00	"	"	"	"	"	
Ethylbenzene	"	**8.80**	-----	1.00	"	"	"	"	"	
Hexachlorobutadiene	"	ND	-----	4.00	"	"	"	"	"	
2-Hexanone	"	ND	-----	10.0	"	"	"	"	"	
Isopropylbenzene	"	ND	-----	2.00	"	"	"	"	"	

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1040-03 Water	**2708-050926-MW-17-79-110**			**Sampled: 09/26/05 12:30**						
p-Isopropyltoluene	EPA 8260B	ND	-----	2.00	ug/l	1x	5100228	10/06/05	10/06/05 15:13	
4-Methyl-2-pentanone	"	ND	-----	5.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	-----	1.00	"	"	"	"	"	
Methylene chloride	"	ND	-----	5.00	"	"	"	"	"	
Naphthalene	"	**82.4**	-----	2.00	"	"	"	"	"	
n-Propylbenzene	"	ND	-----	1.00	"	"	"	"	"	
Styrene	"	ND	-----	1.00	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	"	ND	-----	1.00	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	"	ND	-----	1.00	"	"	"	"	"	
Tetrachloroethene	"	ND	-----	1.00	"	"	"	"	"	
Toluene	"	ND	-----	1.00	"	"	"	"	"	
1,2,3-Trichlorobenzene	"	ND	-----	1.00	"	"	"	"	"	
1,2,4-Trichlorobenzene	"	ND	-----	1.00	"	"	"	"	"	
1,1,1-Trichloroethane	"	ND	-----	1.00	"	"	"	"	"	
1,1,2-Trichloroethane	"	ND	-----	1.00	"	"	"	"	"	
Trichloroethene	"	ND	-----	1.00	"	"	"	"	"	
Trichlorofluoromethane	"	ND	-----	1.00	"	"	"	"	"	
1,2,3-Trichloropropane	"	ND	-----	1.00	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	**1.00**	-----	1.00	"	"	"	"	"	
1,3,5-Trimethylbenzene	"	ND	-----	1.00	"	"	"	"	"	
Vinyl chloride	"	ND	-----	1.00	"	"	"	"	"	
o-Xylene	"	**1.72**	-----	1.00	"	"	"	"	"	
m,p-Xylene	"	ND	-----	2.00	"	"	"	"	"	

Surrogate(s):	*4-BFB*	*Recovery: 97.0%*	*Limits: 75 - 120 %*	"	"
	1,2-DCA-d4	*112%*	*77 - 129 %*	"	"
	Dibromofluoromethane	*96.5%*	*80 - 121 %*	"	"
	Toluene-d8	*91.0%*	*80 - 120 %*	"	"

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1040-02 Water	**2708-050926-MW-9-29-109**			**Sampled: 09/26/05 10:10**						
Acenaphthene	EPA 8270m	ND	*0.0100*	0.0200	ug/l	1x	5091315	09/30/05	10/05/05 20:20	
Acenaphthylene	"	ND	*0.0100*	0.0200	"	"	"	"	"	
Anthracene	"	**0.0308**	*0.0100*	0.0200	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.0100*	0.0200	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.0100*	0.0200	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.0100*	0.0200	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.0100*	0.0200	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.0100*	0.0200	"	"	"	"	"	
Chrysene	"	ND	*0.0100*	0.0200	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.0100*	0.0200	"	"	"	"	"	
Fluoranthene	"	**0.0360**	*0.0100*	0.0200	"	"	"	"	"	
Fluorene	"	ND	*0.0100*	0.0200	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.0100*	0.0200	"	"	"	"	"	
Naphthalene	"	ND	*0.0200*	0.0200	"	"	"	"	"	
Phenanthrene	"	**0.0179**	*0.0100*	0.0200	"	"	"	"	"	J
Pyrene	"	**0.0346**	*0.0200*	0.0200	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 61.2%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*67.2%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*70.8%*		*10 - 125 %*		"			"	
P5I1040-03 Water	**2708-050926-MW-17-79-110**			**Sampled: 09/26/05 12:30**						**R-05**
Acenaphthene	EPA 8270m	**5.51**	*0.100*	0.200	ug/l	10x	5091315	09/30/05	10/05/05 20:48	
Acenaphthylene	"	**0.662**	*0.100*	0.200	"	"	"	"	"	
Anthracene	"	**0.879**	*0.100*	0.200	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.100*	0.200	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.100*	0.200	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.100*	0.200	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.100*	0.200	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.100*	0.200	"	"	"	"	"	
Chrysene	"	ND	*0.100*	0.200	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.100*	0.200	"	"	"	"	"	
Fluoranthene	"	**1.23**	*0.100*	0.200	"	"	"	"	"	
Fluorene	"	**1.88**	*0.100*	0.200	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.100*	0.200	"	"	"	"	"	
Naphthalene	"	**32.4**	*0.200*	0.200	"	"	"	"	"	
Phenanthrene	"	**5.48**	*0.100*	0.200	"	"	"	"	"	
Pyrene	"	**1.49**	*0.200*	0.200	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 58.8%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*72.0%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*71.2%*		*10 - 125 %*		"			"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1040-04 Water	2708-050926-MW-2-61-111			Sampled: 09/26/05 15:00						
Acenaphthene	EPA 8270m	ND	*0.0283*	0.0283	ug/l	1x	5091315	09/30/05	10/05/05 21:16	R-03
Acenaphthylene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Anthracene	"	**0.0124**	*0.00943*	0.0189	"	"	"	"	"	J
Benzo (a) anthracene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Chrysene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Fluoranthene	"	**0.0111**	*0.00943*	0.0189	"	"	"	"	"	J
Fluorene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Naphthalene	"	**0.0189**	*0.0189*	0.0189	"	"	"	"	"	
Phenanthrene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Pyrene	"	ND	*0.0189*	0.0189	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 50.4%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*69.1%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*72.5%*		*10 - 125 %*	"				"	
P5I1040-05 Water	2708-050926-MW-7-112			Sampled: 09/26/05 15:30						
Acenaphthene	EPA 8270m	ND	*0.00943*	0.0189	ug/l	1x	5091315	09/30/05	10/05/05 21:44	
Acenaphthylene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Anthracene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Chrysene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Fluoranthene	"	**0.0135**	*0.00943*	0.0189	"	"	"	"	"	J
Fluorene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.00943*	0.0189	"	"	"	"	"	
Naphthalene	"	**0.0593**	*0.0189*	0.0189	"	"	"	"	"	
Phenanthrene	"	**0.00993**	*0.00943*	0.0189	"	"	"	"	"	J
Pyrene	"	ND	*0.0189*	0.0189	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 47.9%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*72.0%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*76.3%*		*10 - 125 %*	"				"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1040-02	**Water**	**2708-050926-MW-9-29-109**			**Sampled: 09/26/05 10:10**						
Cyanide (amenable)		EPA 9010B Mod	ND	-----	0.0100	mg/l	1x	5J06062	10/06/05	10/07/05 21:30	
Cyanide (total)		"	0.0170	-----	0.0100	"	"	"	"	"	
P5I1040-03	**Water**	**2708-050926-MW-17-79-110**			**Sampled: 09/26/05 12:30**						
Cyanide (amenable)		EPA 9010B Mod	0.0450	-----	0.0100	mg/l	1x	5J06062	10/06/05	10/07/05 21:30	
Cyanide (total)		"	0.814	-----	0.0100	"	"	"	"	"	
P5I1040-04	**Water**	**2708-050926-MW-2-61-111**			**Sampled: 09/26/05 15:00**						
Cyanide (amenable)		EPA 9010B Mod	0.0170	-----	0.0100	mg/l	1x	5J06062	10/06/05	10/07/05 21:30	
Cyanide (total)		"	0.803	-----	0.0100	"	"	"	"	"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

BTEX per EPA Method 8021B - Laboratory Quality Control Results
North Creek Analytical - Portland

QC Batch: 5091264 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5091264-BLK1)								Extracted: 09/29/05 14:41						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	09/29/05 17:59	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 92.8%*		*Limits: 70-130%*		"							*09/29/05 17:59*	
LCS (5091264-BS1)								Extracted: 09/29/05 14:41						
Benzene	EPA 8021B	19.5	—	0.500	ug/l	1x	—	20.0	97.5%	(70-130)	—	—	09/29/05 16:56	
Toluene	"	20.2	—	0.500	"	"	—	"	101%	(76-129)	—	—	"	
Ethylbenzene	"	20.9	—	0.500	"	"	—	"	104%	(82-130)	—	—	"	
Xylenes (total)	"	62.2	—	1.00	"	"	—	60.0	104%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 98.8%*		*Limits: 70-130%*		"							*09/29/05 16:56*	
LCS Dup (5091264-BSD1)								Extracted: 09/29/05 14:41						
Benzene	EPA 8021B	19.7	—	0.500	ug/l	1x	—	20.0	98.5%	(70-130)	1.02%	(20)	09/29/05 17:27	
Toluene	"	20.2	—	0.500	"	"	—	"	101%	(76-129)	0.00%	"	"	
Ethylbenzene	"	21.1	—	0.500	"	"	—	"	106%	(82-130)	0.952%	"	"	
Xylenes (total)	"	62.6	—	1.00	"	"	—	60.0	104%	(76-130)	0.641%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 95.8%*		*Limits: 70-130%*		"							*09/29/05 17:27*	
Matrix Spike (5091264-MS1)					QC Source: P511055-01			Extracted: 09/29/05 14:41						
Benzene	EPA 8021B	19.8	—	0.500	ug/l	1x	ND	20.0	99.0%	(65-144)	—	—	09/30/05 08:51	
Toluene	"	20.1	—	0.500	"	"	ND	"	100%	(68-139)	—	—	"	
Ethylbenzene	"	21.3	—	0.500	"	"	0.185	"	106%	(69-144)	—	—	"	
Xylenes (total)	"	63.5	—	1.00	"	"	0.796	60.0	105%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 93.2%*		*Limits: 70-130%*		"							*09/30/05 08:51*	
Matrix Spike Dup (5091264-MSD1)					QC Source: P511055-01			Extracted: 09/29/05 14:41						
Benzene	EPA 8021B	18.4	—	0.500	ug/l	1x	ND	20.0	92.0%	(65-144)	7.33%	(20)	09/30/05 09:23	
Toluene	"	18.6	—	0.500	"	"	ND	"	93.0%	(68-139)	7.75%	"	"	
Ethylbenzene	"	19.6	—	0.500	"	"	0.185	"	97.1%	(69-144)	8.31%	"	"	
Xylenes (total)	"	59.0	—	1.00	"	"	0.796	60.0	97.0%	(60-144)	7.35%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 89.4%*		*Limits: 70-130%*		"							*09/30/05 09:23*	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-050926	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 16:47

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100059 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100059-BLK1)								Extracted: 10/03/05 12:58						
Arsenic	EPA 6020	ND	—	0.00100	mg/l	1x	—	—	—	—	—	—	10/07/05 15:57	
Chromium	"	ND	—	0.00100	"	"	—	—	—	—	—	—	10/11/05 07:06	
Copper	"	ND	—	0.00200	"	"	—	—	—	—	—	—	10/07/05 15:57	
Lead	"	ND	—	0.00100	"	"	—	—	—	—	—	—	10/11/05 07:06	
Nickel	"	ND	—	0.00200	"	"	—	—	—	—	—	—	10/07/05 15:57	
Zinc	"	ND	—	0.00500	"	"	—	—	—	—	—	—	"	
LCS (5100059-BS1)								Extracted: 10/03/05 12:58						
Arsenic	EPA 6020	0.102	—	0.00100	mg/l	1x	—	0.100	102%	(80-120)	—	—	10/07/05 16:04	
Chromium	"	0.106	—	0.00100	"	"	—	"	106%	"	—	—	10/11/05 07:13	
Copper	"	0.101	—	0.00200	"	"	—	"	101%	"	—	—	10/07/05 16:04	
Lead	"	0.0976	—	0.00100	"	"	—	"	97.6%	"	—	—	10/11/05 07:13	
Nickel	"	0.101	—	0.00200	"	"	—	"	101%	"	—	—	10/07/05 16:04	
Zinc	"	0.101	—	0.00500	"	"	—	"	101%	"	—	—	"	
Duplicate (5100059-DUP1)				QC Source: P5I1040-03				Extracted: 10/03/05 12:58						
Arsenic	EPA 6020	0.00214	—	0.00100	mg/l	1x	0.00234	—	—	—	8.93%	(20)	10/07/05 18:29	
Chromium	"	ND	—	0.00100	"	"	ND	—	—	—	NR	"	10/11/05 09:45	
Copper	"	ND	—	0.00200	"	"	ND	—	—	—	36.4%	"	10/07/05 18:29	Q-06
Lead	"	ND	—	0.00100	"	"	ND	—	—	—	NR	"	10/11/05 09:45	
Nickel	"	0.00419	—	0.00200	"	"	0.00424	—	—	—	1.19%	"	10/07/05 18:29	
Zinc	"	ND	—	0.00500	"	"	ND	—	—	—	0.908%	"	"	
Matrix Spike (5100059-MS1)				QC Source: P5I1040-03				Extracted: 10/03/05 12:58						
Arsenic	EPA 6020	0.113	—	0.00100	mg/l	1x	0.00234	0.100	111%	(75-125)	—	—	10/07/05 18:46	
Chromium	"	0.108	—	0.00100	"	"	ND	"	108%	"	—	—	10/11/05 10:16	
Copper	"	0.102	—	0.00200	"	"	0.00128	"	101%	"	—	—	10/07/05 18:46	
Lead	"	0.0897	—	0.00100	"	"	ND	"	89.7%	"	—	—	10/11/05 10:16	
Nickel	"	0.106	—	0.00200	"	"	0.00424	"	102%	"	—	—	10/07/05 18:46	
Zinc	"	0.107	—	0.00500	"	"	0.00329	"	104%	"	—	—	"	
Matrix Spike (5100059-MS2)				QC Source: P5I1040-02				Extracted: 10/03/05 12:58						
Arsenic	EPA 6020	0.110	—	0.00100	mg/l	1x	0.00368	0.100	106%	(75-125)	—	—	10/07/05 17:51	
Chromium	"	0.102	—	0.00100	"	"	ND	"	102%	"	—	—	10/11/05 09:08	
Copper	"	0.105	—	0.00200	"	"	0.00224	"	103%	"	—	—	10/07/05 17:51	
Lead	"	0.0922	—	0.00100	"	"	0.000614	"	91.6%	"	—	—	10/11/05 09:08	
Nickel	"	0.105	—	0.00200	"	"	0.00216	"	103%	"	—	—	10/07/05 17:51	
Zinc	"	0.110	—	0.00500	"	"	0.00515	"	105%	"	—	—	"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100059 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Post Spike (5100059-PS1)				QC Source: P511040-02				Extracted: 10/03/05 12:58						
Arsenic	EPA 6020	0.110	—		ug/ml	1x	0.00368	0.100	106%	(75-125)	—	—	10/07/05 17:59	
Chromium	"	0.108	—		"	"	0.000622	"	107%	"	—	—	10/11/05 09:15	
Copper	"	0.104	—		"	"	0.00224	"	102%	"	—	—	10/07/05 17:59	
Lead	"	0.0946	—		"	"	0.000614	"	94.0%	"	—	—	10/11/05 09:15	
Nickel	"	0.103	—		"	"	0.00216	"	101%	"	—	—	10/07/05 17:59	
Zinc	"	0.109	—		"	"	0.00515	"	104%	"	—	—	"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-050926	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 16:47

Volatile Organic Compounds per EPA Method 8260B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100228 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100228-BLK1)								Extracted: 10/06/05 08:38						
Acetone	EPA 8260B	ND	—	25.0	ug/l	1x	—	—	—	—	—	—	10/06/05 12:02	
Benzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Bromobenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Bromochloromethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Bromodichloromethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Bromoform	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Bromomethane	"	ND	—	5.00	"	"	—	—	—	—	—	—	"	
2-Butanone	"	ND	—	10.0	"	"	—	—	—	—	—	—	"	
n-Butylbenzene	"	ND	—	5.00	"	"	—	—	—	—	—	—	"	
sec-Butylbenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
tert-Butylbenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Carbon disulfide	"	ND	—	10.0	"	"	—	—	—	—	—	—	"	
Carbon tetrachloride	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Chlorobenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Chloroethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Chloroform	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Chloromethane	"	ND	—	5.00	"	"	—	—	—	—	—	—	"	
2-Chlorotoluene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
4-Chlorotoluene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,2-Dibromo-3-chloropropane	"	ND	—	5.00	"	"	—	—	—	—	—	—	"	
Dibromochloromethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,2-Dibromoethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Dibromomethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,2-Dichlorobenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,3-Dichlorobenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,4-Dichlorobenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Dichlorodifluoromethane	"	ND	—	5.00	"	"	—	—	—	—	—	—	"	
1,1-Dichloroethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,2-Dichloroethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,1-Dichloroethene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
cis-1,2-Dichloroethene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
trans-1,2-Dichloroethene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,2-Dichloropropane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,3-Dichloropropane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
2,2-Dichloropropane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,1-Dichloropropene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
cis-1,3-Dichloropropene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
trans-1,3-Dichloropropene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Hexachlorobutadiene	"	ND	—	4.00	"	"	—	—	—	—	—	—	"	
2-Hexanone	"	ND	—	10.0	"	"	—	—	—	—	—	—	"	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Volatile Organic Compounds per EPA Method 8260B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100228 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100228-BLK1)								Extracted: 10/06/05 08:38						
Isopropylbenzene	EPA 8260B	ND	—	2.00	ug/l	1x	—	—	—	—	—	—	10/06/05 12:02	
p-Isopropyltoluene	"	ND	—	2.00	"	"	—	—	—	—	—	—	"	
4-Methyl-2-pentanone	"	ND	—	5.00	"	"	—	—	—	—	—	—	"	
Methyl tert-butyl ether	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Methylene chloride	"	ND	—	5.00	"	"	—	—	—	—	—	—	"	
Naphthalene	"	ND	—	2.00	"	"	—	—	—	—	—	—	"	
n-Propylbenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Styrene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,1,1,2-Tetrachloroethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,1,2,2-Tetrachloroethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Tetrachloroethene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Toluene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,2,3-Trichlorobenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,2,4-Trichlorobenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,1,1-Trichloroethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,1,2-Trichloroethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Trichloroethene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Trichlorofluoromethane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,2,3-Trichloropropane	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,2,4-Trimethylbenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
1,3,5-Trimethylbenzene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Vinyl chloride	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
o-Xylene	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
m,p-Xylene	"	ND	—	2.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB		*Recovery: 97.0%*			*Limits: 75-120%*	"							*10/06/05 12:02*	
1,2-DCA-d4		*107%*			*77-129%*	"							"	
Dibromofluoromethane		*93.0%*			*80-121%*	"							"	
Toluene-d8		*89.0%*			*80-120%*	"							"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Volatile Organic Compounds per EPA Method 8260B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100228 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (5100228-BS1)								Extracted: 10/06/05 08:38						
Benzene	EPA 8260B	19.0	—	1.00	ug/l	1x	—	20.0	95.0%	(80-120)	—	—	10/06/05 09:46	
Chlorobenzene	"	20.8	—	1.00	"	"	—	"	104%	(80-124)	—	—	"	
1,1-Dichloroethene	"	18.0	—	1.00	"	"	—	"	90.0%	(78-120)	—	—	"	
Toluene	"	19.5	—	1.00	"	"	—	"	97.5%	(80-124)	—	—	"	
Trichloroethene	"	19.9	—	1.00	"	"	—	"	99.5%	(80-132)	—	—	"	
Surrogate(s): 4-BFB		*Recovery:*	*99.0%*		*Limits:*	*75-120%*	"						*10/06/05 09:46*	
1,2-DCA-d4			*91.0%*			*77-129%*	"						"	
Dibromofluoromethane			*100%*			*80-121%*	"						"	
Toluene-d8			*100%*			*80-120%*	"						"	
Matrix Spike (5100228-MS1)				QC Source: P5J0049-01				Extracted: 10/06/05 08:38						
Benzene	EPA 8260B	19.3	—	1.00	ug/l	1x	ND	20.0	96.5%	(80-124)	—	—	10/06/05 10:13	
Chlorobenzene	"	20.6	—	1.00	"	"	ND	"	103%	(72.9-134)	—	—	"	
1,1-Dichloroethene	"	16.8	—	1.00	"	"	ND	"	84.0%	(79.3-127)	—	—	"	
Toluene	"	19.6	—	1.00	"	"	ND	"	98.0%	(79.7-131)	—	—	"	
Trichloroethene	"	19.5	—	1.00	"	"	ND	"	97.5%	(68.4-130)	—	—	"	
Surrogate(s): 4-BFB		*Recovery:*	*95.0%*		*Limits:*	*75-120%*	"						*10/06/05 10:13*	
1,2-DCA-d4			*90.0%*			*77-129%*	"						"	
Dibromofluoromethane			*98.5%*			*80-121%*	"						"	
Toluene-d8			*97.5%*			*80-120%*	"						"	
Matrix Spike Dup (5100228-MSD1)				QC Source: P5J0049-01				Extracted: 10/06/05 08:38						
Benzene	EPA 8260B	18.8	—	1.00	ug/l	1x	ND	20.0	94.0%	(80-124)	2.62%	(25)	10/06/05 10:40	
Chlorobenzene	"	20.6	—	1.00	"	"	ND	"	103%	(72.9-134)	0.00%	"	"	
1,1-Dichloroethene	"	17.2	—	1.00	"	"	ND	"	86.0%	(79.3-127)	2.35%	"	"	
Toluene	"	19.5	—	1.00	"	"	ND	"	97.5%	(79.7-131)	0.512%	"	"	
Trichloroethene	"	19.4	—	1.00	"	"	ND	"	97.0%	(68.4-130)	0.514%	"	"	
Surrogate(s): 4-BFB		*Recovery:*	*94.5%*		*Limits:*	*75-120%*	"						*10/06/05 10:40*	
1,2-DCA-d4			*93.0%*			*77-129%*	"						"	
Dibromofluoromethane			*98.0%*			*80-121%*	"						"	
Toluene-d8			*99.5%*			*80-120%*	"						"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091315 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5091315-BLK1)								Extracted: 09/30/05 13:00						
Acenaphthene	EPA 8270m	ND	0.0100	0.0200	ug/l	1x	--	--	--	--	--	--	10/05/05 15:13	
Acenaphthylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*70.8%*		*Limits:*	*25-125%*	"						*10/05/05 15:13*	
Pyrene-d10			*74.8%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*79.6%*			*10-125%*	"						"	
LCS (5091315-BS1)								Extracted: 09/30/05 13:00						
Acenaphthene	EPA 8270m	1.04	0.0100	0.0200	ug/l	1x	--	2.50	41.6%	(35-120)	--	--	10/07/05 17:23	
Acenaphthylene	"	1.09	0.0100	0.0200	"	"	--	"	43.6%	(34-116)	--	--	"	
Anthracene	"	0.986	0.0100	0.0200	"	"	--	"	39.4%	(24-119)	--	--	"	
Benzo (a) anthracene	"	0.983	0.0100	0.0200	"	"	--	"	39.3%	(36-128)	--	--	"	
Benzo (a) pyrene	"	0.971	0.0100	0.0200	"	"	--	"	38.8%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	0.932	0.0100	0.0200	"	"	--	"	37.3%	(37-131)	--	--	"	
Benzo (ghi) perylene	"	1.08	0.0100	0.0200	"	"	--	"	43.2%	(26-126)	--	--	"	
Benzo (k) fluoranthene	"	1.13	0.0100	0.0200	"	"	--	"	45.2%	(18-145)	--	--	"	
Chrysene	"	0.941	0.0100	0.0200	"	"	--	"	37.6%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	1.12	0.0100	0.0200	"	"	--	"	44.8%	(20-141)	--	--	"	
Fluoranthene	"	1.03	0.0100	0.0200	"	"	--	"	41.2%	(31-125)	--	--	"	
Fluorene	"	0.986	0.0100	0.0200	"	"	--	"	39.4%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	1.09	0.0100	0.0200	"	"	--	"	43.6%	(30-135)	--	--	"	
Naphthalene	"	1.03	0.0200	0.0200	"	"	--	"	41.2%	(30-113)	--	--	"	
Phenanthrene	"	1.04	0.0100	0.0200	"	"	--	"	41.6%	(34-126)	--	--	"	
Pyrene	"	1.01	0.0200	0.0200	"	"	--	"	40.4%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*40.0%*		*Limits:*	*25-125%*	"						*10/07/05 17:23*	
Pyrene-d10			*40.0%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*44.8%*			*10-125%*	"						"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-050926	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/11/05 16:47

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091315 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (5091315-BSD1)								Extracted: 09/30/05 13:00						
Acenaphthene	EPA 8270m	1.70	0.0100	0.0200	ug/l	1x	--	2.50	68.0%	(35-120)	48.2%	(50)	10/05/05 16:12	
Acenaphthylene	"	1.70	0.0100	0.0200	"	"	--	"	68.0%	(34-116)	43.7%	"	"	
Anthracene	"	1.55	0.0100	0.0200	"	"	--	"	62.0%	(24-119)	44.6%	"	"	
Benzo (a) anthracene	"	1.57	0.0100	0.0200	"	"	--	"	62.8%	(36-128)	46.0%	"	"	
Benzo (a) pyrene	"	1.61	0.0100	0.0200	"	"	--	"	64.4%	(17-128)	49.6%	"	"	
Benzo (b) fluoranthene	"	1.63	0.0100	0.0200	"	"	--	"	65.2%	(37-131)	54.4%	"	"	Q-33
Benzo (ghi) perylene	"	1.79	0.0100	0.0200	"	"	--	"	71.6%	(26-126)	49.5%	"	"	
Benzo (k) fluoranthene	"	1.79	0.0100	0.0200	"	"	--	"	71.6%	(18-145)	45.2%	"	"	
Chrysene	"	1.51	0.0100	0.0200	"	"	--	"	60.4%	(16-137)	46.5%	"	"	
Dibenzo (a,h) anthracene	"	1.87	0.0100	0.0200	"	"	--	"	74.8%	(20-141)	50.2%	"	"	Q-33
Fluoranthene	"	1.55	0.0100	0.0200	"	"	--	"	62.0%	(31-125)	40.3%	"	"	
Fluorene	"	1.60	0.0100	0.0200	"	"	--	"	64.0%	(27-124)	47.6%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.80	0.0100	0.0200	"	"	--	"	72.0%	(30-135)	49.1%	"	"	
Naphthalene	"	1.58	0.0200	0.0200	"	"	--	"	63.2%	(30-113)	42.1%	"	"	
Phenanthrene	"	1.58	0.0100	0.0200	"	"	--	"	63.2%	(34-126)	41.2%	"	"	
Pyrene	"	1.53	0.0200	0.0200	"	"	--	"	61.2%	(21-141)	40.9%	"	"	

Surrogate(s): Fluorene-d10	*Recovery:*	*60.4%*	*Limits: 25-125%*	"	*10/05/05 16:12*
Pyrene-d10		*60.0%*	*23-150%*	"	"
Benzo (a) pyrene-d12		*69.6%*	*10-125%*	"	"

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-050926	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/11/05 16:47

Conventional Chemistry Parameters by APHA/EPA Methods - Laboratory Quality Control Results

North Creek Analytical - Bothell

QC Batch: 5J06062 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5J06062-BLK1)								Extracted: 10/06/05 14:23						
Cyanide (amenable)	EPA 9010B Mod	ND	—	0.0100	mg/l	1x	—	—	—	—	—	—	10/07/05 21:30	
Cyanide (total)	"	ND	—	0.0100	"	"	—	—	—	—	—	—	"	
LCS (5J06062-BS1)								Extracted: 10/06/05 14:23						
Cyanide (total)	EPA 9010B Mod	0.0940	—	0.0100	mg/l	1x	—	0.102	92.2%	(85-115)	—	—	10/07/05 21:30	
Cyanide (amenable)	"	0.0440	—	0.0100	"	"	—	0.0496	88.7%	"	—	—	"	
LCS Dup (5J06062-BSD1)								Extracted: 10/06/05 14:23						
Cyanide (total)	EPA 9010B Mod	0.0930	—	0.0100	mg/l	1x	—	0.102	91.2%	(85-115)	1.07%	(20)	10/07/05 21:30	
Cyanide (amenable)	"	0.0440	—	0.0100	"	"	—	0.0496	88.7%	"	0.00%	(25)	"	
Duplicate (5J06062-DUP1)				QC Source:	B5J0024-01			Extracted: 10/06/05 14:23						
Cyanide (amenable)	EPA 9010B Mod	ND	—	0.0100	mg/l	1x	ND	—	—	—	NR	(30)	10/07/05 21:30	
Cyanide (total)	"	0.0820	—	0.0100	"	"	0.0890	—	—	—	8.19%	(27)	"	
Matrix Spike (5J06062-MS1)				QC Source:	B5J0024-01			Extracted: 10/06/05 14:23						
Cyanide (total)	EPA 9010B Mod	0.187	—	0.0100	mg/l	1x	0.0890	0.102	96.1%	(36-133)	—	—	10/07/05 21:30	
Cyanide (amenable)	"	0.0450	—	0.0100	"	"	ND	0.0496	90.7%	(40-140)	—	—	"	

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Hahn and Associates, Inc. 434 NW Sixth Ave., Suite 203 Portland, OR 97209	Project Name: **NNGGRI** Project Number: 2708-050926 Project Manager: Rob Ede	Report Created: 10/11/05 16:47

Notes and Definitions

Report Specific Notes:

J - Estimated value.

Q-06 - RPD is not applicable for analyte concentrations less than 5 times the MRL.

Q-33 - %RPD for the LCS/LCS Duplicate QC samples are outside of specified criteria. Recoveries for these QC control samples are within acceptable limits.

R-03 - The reporting limit for this analyte was raised due to matrix interference.

R-05 - Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.

Laboratory Reporting Conventions:

DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR / NA - Not Reported / Not Available

dry - Sample results reported on a dry weight basis. Reporting Limits have been corrected for %Solids.

wet - Sample results and reporting limits reported on a wet weight basis (as received).

RPD - Relative Percent Difference. (RPDs calculated using Results, not Percent Recoveries).

MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.

MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated results.

Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.

Reporting limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

P21115

HAHN AND ASSOCIATES, INC.

Environmental Consultants

434 NW Sixth Avenue, Suite 203 • Portland OR 97209

(503) 796-0717 • Fax (503) 227-2209

Laboratory: North Creek Analytical, Beaverton, Oregon

Lab Project No.:

CHAIN OF CUSTODY

Chain of Custody No.:

Project Manager: Rob Ede, HAI

Project No.: 2708-30 < GW Monitoring

Project Name: NNGGRI

Collected by: Matt Graves, Ben Uhl

Liquid with Sediment Sample: ___ Test Filtrate ___ Test Sediment ___ Test Both

Multi-Phase Sample: ___ Test One (which) ___ Test Separately ___ Shake

Samples Received at 4C (Y or N):

Appropriate Containers Used (Y or N):

Provide Verbal Results (Y or N): No

Provide Preliminary Fax Results: Yes

Comments

Sample Number Prefix: 2708-050927-

Pricing and reporting limits as per:
Phillip Nernberg, NCA
* = Low PAHs RCS
= Normal Metals RCS
As, Cr, Cu, Ni, Pb, Zn

Lab ID	Sample #	Date	Time	Sample Description	Soil	Water	Other	Number of Containers	EPA Method 8270 SIM, PAH's	EPA Method 8021, BTEX	EPA Method 9010, Amen. Cyn. + Total Cyanide	EPA Method 6010, Total Metals *	RUSH	Remarks
	TB	9/27/05	[illegible]	TB		X		1		X				
	MW-13-61-119		740	MW-13-61		X		7	X	X	X	X		
	MW-7-115		1000	MW-7-115		X		5	X	X				
	MW-12-36-119		1230	MW-12-36		X		7	X	X	X	X		
	MW-5-32-119		1405	MW-5-32		X		7	X	X	X	X		
	MW-2-32-119		1515	MW-2-32		X		7	X	X	X	X		

Relinquished by	Company	Date	Time	Received by	Company
[signature]	HAI	9/28/05	13:38	[signature]	NCA
[signature]	NCA	9/28/05	16:00	[signature] NCA 9/28/05	NCA

2.3

Koppers023398

NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: Hahn & Assoc.

1. **Please sign for receipt and opening of** 1 **cooler or** ____ **other** ____

   By (print) McKayla Hansen (sign) [signature]

2. Date samples received 9/28/05 Date opened: Same ✓ or ___/___/___

3. Delivered by: ✓ NCA courier ___ FedEx ___ UPS ___ Courier ___ Client ___ Other ____

   Airbill # if applicable ____ (Put copy of shipping papers in file)

4. There were 1 custody seals present, signed by Bob. F. date 9/28/05.

5. Were the custody seals unbroken and intact at the date and time of arrival? ✓ Yes ___ No

6. Was ice used? ✓ yes ___ no Type of ice: ___ blue ice ✓ gel ice ___ real ice

   Temperature (degrees C) 2.3 Raytek thermometer 9.1 Digi-Therm (probe temperature blank)

   (-0.8)

7. Are custody papers sealed in a plastic bag and taped inside to lid? ✓ Yes ___ No

8. Were custody papers filled out properly (ink, signed, etc.)? ✓ Yes ___ No

   If "no" please specify: ____

9. Was project identifiable from custody papers? ✓ Yes ___ No

   Name of project NW GGRT (if applicable)

10. **Initial and date for unpacking:** [illegible] **(initials)** **date** 9/29/05

11. Packing material: N/A bubble wrap/bag ___ styrofoam ___ cardboard ___ other

12. Were samples in bags? ___ Yes ✓ No

13. Did all containers indicated on the COC arrive? ✓ Yes ___ No

    If "no" please indicate which containers were absent ____

14. Were all containers unbroken and labels in good condition? ✓ Yes ___ No

    If "no" please indicate which containers ____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? ✓ Yes ___ No

    Do the IDs, times, etc. agree with the COC? ✓ Yes ___ No

    If "no" please indicate which containers ____

16. Are containers properly preserved for indicated analysis? ✓ Yes ___ No

17. Is there adequate volume for the test(s) requested? ✓ Yes ___ No

18. If voa vials were submitted, are they free of bubbles? ___ N/A ✓ Yes ___ No

19. **Log-in phase: Date samples were logged in:** 9/29/05 **Elm Project # P** 51113

20. Logged in by (print) Peter Franzen (sign) [signature]

21. Was the project manager notified of status? (Use back of form as a record) ___ Yes ✓ No

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October 26, 2005

Rob Ede
Hahn and Associates, Inc.
434 NW Sixth Ave., Suite 203
Portland, OR 97209

RE: NNGGRI

Enclosed are the results of analyses for samples received by the laboratory on 09/28/05 16:00.
The following list is a summary of the NCA Work Orders contained in this report.
If you have any questions concerning this report, please feel free to contact me.

Work	Project	ProjectNumber
P5I1113	NNGGRI	2708-30

Thank You,

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Environmental Laboratory Network

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/26/05 10:35

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-050927-110	P5I1113-01	Water	09/27/05 09:00	09/28/05 16:00
2708-050927-MW-13-61-114	P5I1113-02	Water	09/27/05 09:40	09/28/05 16:00
2708-050927-MW-7-115	P5I1113-03	Water	09/27/05 10:00	09/28/05 16:00
2708-050927-MW-12-36-116	P5I1113-04	Water	09/27/05 12:30	09/28/05 16:00
2708-050927-MW-5-32-117	P5I1113-05	Water	09/27/05 14:05	09/28/05 16:00
2708-050927-MW-2-32-118	P5I1113-06	Water	09/27/05 15:15	09/28/05 16:00

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/26/05 10:35

BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1113-01 Water	**2708-050927-110**		**Sampled: 09/27/05 09:00**							
Benzene	EPA 8021B	ND	----	0.500	ug/l	1x	5100099	10/04/05	10/05/05 00:35	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 91.0%*		*Limits: 70 - 130 %*		"			"	
P5I1113-02 Water	**2708-050927-MW-13-61-114**		**Sampled: 09/27/05 09:40**							
Benzene	EPA 8021B	161	----	0.500	ug/l	1x	5100099	10/04/05	10/05/05 01:03	
Toluene	"	0.571	----	0.500	"	"	"	"	"	
Ethylbenzene	"	9.00	----	0.500	"	"	"	"	"	
Xylenes (total)	"	9.68	----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 96.6%*		*Limits: 70 - 130 %*		"			"	
P5I1113-03 Water	**2708-050927-MW-7-115**		**Sampled: 09/27/05 10:00**							
Benzene	EPA 8021B	ND	----	0.500	ug/l	1x	5100099	10/04/05	10/05/05 01:30	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 92.4%*		*Limits: 70 - 130 %*		"			"	
P5I1113-04RE1 Water	**2708-050927-MW-12-36-116**		**Sampled: 09/27/05 12:30**							
Benzene	EPA 8021B	118	----	2.50	ug/l	5x	5100183	10/05/05	10/06/05 03:30	
Toluene	"	219	----	2.50	"	"	"	"	"	
Ethylbenzene	"	305	----	2.50	"	"	"	"	"	
Xylenes (total)	"	605	----	5.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 87.4%*		*Limits: 70 - 130 %*		*1x*			"	
P5I1113-05 Water	**2708-050927-MW-5-32-117**		**Sampled: 09/27/05 14:05**							
Benzene	EPA 8021B	ND	----	0.500	ug/l	1x	5100099	10/04/05	10/05/05 01:58	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 94.4%*		*Limits: 70 - 130 %*		"			"	

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Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/26/05 10:35

BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1113-06	**Water**	**2708-050927-MW-2-32-118**			**Sampled: 09/27/05 15:15**						
Benzene		EPA 8021B	ND	—	0.500	ug/l	1x	5100099	10/04/05	10/05/05 03:20	
Toluene		"	ND	—	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	—	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	—	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 93.4%*		*Limits: 70 - 130 %*	"				"	

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Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1113-02	**Water**	**2708-050927-MW-13-61-114**			**Sampled: 09/27/05 09:40**						
Arsenic		EPA 6020	0.00993	----	0.00100	mg/l	1x	5100197	10/05/05	10/13/05 17:08	
Chromium		"	0.00294	----	0.00100	"	"	"	"	"	
Copper		"	0.00749	----	0.00200	"	"	"	"	"	
Lead		"	0.00231	----	0.00100	"	"	"	"	10/24/05 19:19	
Nickel		"	0.00594	----	0.00200	"	"	"	"	10/22/05 10:44	
Zinc		"	0.0290	----	0.00500	"	"	"	"	10/13/05 17:08	
P5I1113-04	**Water**	**2708-050927-MW-12-36-116**			**Sampled: 09/27/05 12:30**						
Arsenic		EPA 6020	0.00213	----	0.00100	mg/l	1x	5100197	10/05/05	10/13/05 17:16	
Chromium		"	ND	----	0.00100	"	"	"	"	"	
Copper		"	ND	----	0.00200	"	"	"	"	"	
Lead		"	ND	----	0.00100	"	"	"	"	10/24/05 19:34	
Nickel		"	ND	----	0.00200	"	"	"	"	10/22/05 11:06	
Zinc		"	ND	----	0.00500	"	"	"	"	10/13/05 17:16	
P5I1113-05	**Water**	**2708-050927-MW-5-32-117**			**Sampled: 09/27/05 14:05**						
Arsenic		EPA 6020	ND	----	0.00100	mg/l	1x	5100197	10/05/05	10/13/05 17:23	
Chromium		"	0.00411	----	0.00100	"	"	"	"	"	
Copper		"	0.0107	----	0.00200	"	"	"	"	"	
Lead		"	0.00172	----	0.00100	"	"	"	"	10/24/05 19:41	
Nickel		"	0.00782	----	0.00200	"	"	"	"	10/22/05 11:14	
Zinc		"	0.0131	----	0.00500	"	"	"	"	10/13/05 17:23	
P5I1113-06	**Water**	**2708-050927-MW-2-32-118**			**Sampled: 09/27/05 15:15**						
Arsenic		EPA 6020	0.00486	----	0.00100	mg/l	1x	5100197	10/05/05	10/13/05 17:31	
Chromium		"	0.00886	----	0.00100	"	"	"	"	"	
Copper		"	0.0218	----	0.00200	"	"	"	"	"	
Lead		"	ND	----	0.00100	"	"	"	"	10/24/05 19:49	
Nickel		"	0.00650	----	0.00200	"	"	"	"	10/22/05 11:22	
Zinc		"	0.0577	----	0.00500	"	"	"	"	10/13/05 17:31	

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Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1113-02 Water	**2708-050927-MW-13-61-114**			**Sampled: 09/27/05 09:40**						**R-05**
Acenaphthene	EPA 8270m	**6.61**	*0.102*	0.204	ug/l	10x	5091315	09/30/05	10/07/05 18:18	
Acenaphthylene	"	ND	*0.204*	0.204	"	"	"	"	"	
Anthracene	"	**0.478**	*0.102*	0.204	"	"	"	"	"	
Benzo (a) anthracene	"	**0.187**	*0.102*	0.204	"	"	"	"	"	J
Benzo (a) pyrene	"	**0.244**	*0.102*	0.204	"	"	"	"	"	
Benzo (b) fluoranthene	"	**0.235**	*0.102*	0.204	"	"	"	"	"	
Benzo (ghi) perylene	"	**0.225**	*0.102*	0.204	"	"	"	"	"	
Benzo (k) fluoranthene	"	**0.192**	*0.102*	0.204	"	"	"	"	"	J
Chrysene	"	**0.240**	*0.102*	0.204	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.102*	0.204	"	"	"	"	"	
Fluoranthene	"	**0.685**	*0.102*	0.204	"	"	"	"	"	
Fluorene	"	**2.17**	*0.102*	0.204	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**0.165**	*0.102*	0.204	"	"	"	"	"	J
Naphthalene	"	ND	*0.204*	0.204	"	"	"	"	"	
Phenanthrene	"	**2.79**	*0.102*	0.204	"	"	"	"	"	
Pyrene	"	**0.706**	*0.204*	0.204	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 62.0%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*63.9%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*67.5%*		*10 - 125 %*	"				"	
P5I1113-03 Water	**2708-050927-MW-7-115**			**Sampled: 09/27/05 10:00**						
Acenaphthene	EPA 8270m	**0.0129**	*0.0102*	0.0204	ug/l	1x	5091315	09/30/05	10/05/05 22:39	J
Acenaphthylene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Anthracene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Chrysene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Fluoranthene	"	**0.0104**	*0.0102*	0.0204	"	"	"	"	"	J
Fluorene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Naphthalene	"	**0.0480**	*0.0204*	0.0204	"	"	"	"	"	
Phenanthrene	"	**0.0218**	*0.0102*	0.0204	"	"	"	"	"	
Pyrene	"	ND	*0.0204*	0.0204	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 49.4%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*66.7%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*69.8%*		*10 - 125 %*	"				"	

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North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1113-04 Water	**2708-050927-MW-12-36-116**			**Sampled: 09/27/05 12:30**						
Acenaphthene	EPA 8270m	37.4	1.02	2.04	ug/l	100x	5091315	09/30/05	10/07/05 16:28	
Acenaphthylene	"	0.212	0.0102	0.0204	"	1x	"	"	10/05/05 23:07	
Anthracene	"	1.13	0.0102	0.0204	"	"	"	"	"	
Benzo (a) anthracene	"	0.111	0.0102	0.0204	"	"	"	"	"	
Benzo (a) pyrene	"	0.0197	0.0102	0.0204	"	"	"	"	"	J
Benzo (b) fluoranthene	"	0.0167	0.0102	0.0204	"	"	"	"	"	J
Benzo (ghi) perylene	"	0.0103	0.0102	0.0204	"	"	"	"	"	J
Benzo (k) fluoranthene	"	0.0176	0.0102	0.0204	"	"	"	"	"	J
Chrysene	"	0.0879	0.0102	0.0204	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.0102	0.0204	"	"	"	"	"	
Fluoranthene	"	2.90	0.0102	0.0204	"	"	"	"	"	
Fluorene	"	15.3	1.02	2.04	"	100x	"	"	10/07/05 16:28	
Indeno (1,2,3-cd) pyrene	"	ND	0.0102	0.0204	"	1x	"	"	10/05/05 23:07	
Naphthalene	"	293	2.04	2.04	"	100x	"	"	10/07/05 16:28	
Phenanthrene	"	19.1	1.02	2.04	"	"	"	"	"	
Pyrene	"	2.69	0.0204	0.0204	"	1x	"	"	10/05/05 23:07	
Surrogate(s): Fluorene-d10		*Recovery: 41.6%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*63.5%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*70.2%*		*10 - 125 %*	"				"	
P5I1113-05 Water	**2708-050927-MW-5-32-117**			**Sampled: 09/27/05 14:05**						**R-05**
Acenaphthene	EPA 8270m	ND	0.100	0.200	ug/l	10x	5091315	09/30/05	10/07/05 16:00	
Acenaphthylene	"	0.310	0.100	0.200	"	"	"	"	"	
Anthracene	"	0.587	0.100	0.200	"	"	"	"	"	
Benzo (a) anthracene	"	2.06	0.100	0.200	"	"	"	"	"	
Benzo (a) pyrene	"	2.10	0.100	0.200	"	"	"	"	"	
Benzo (b) fluoranthene	"	1.31	0.100	0.200	"	"	"	"	"	
Benzo (ghi) perylene	"	1.82	0.100	0.200	"	"	"	"	"	
Benzo (k) fluoranthene	"	1.35	0.100	0.200	"	"	"	"	"	
Chrysene	"	2.86	0.100	0.200	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	0.263	0.100	0.200	"	"	"	"	"	
Fluoranthene	"	4.05	0.100	0.200	"	"	"	"	"	
Fluorene	"	0.103	0.100	0.200	"	"	"	"	"	J
Indeno (1,2,3-cd) pyrene	"	1.17	0.100	0.200	"	"	"	"	"	
Naphthalene	"	0.999	0.200	0.200	"	"	"	"	"	
Phenanthrene	"	0.863	0.100	0.200	"	"	"	"	"	
Pyrene	"	7.01	0.200	0.200	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 56.8%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*62.8%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*64.0%*		*10 - 125 %*	"				"	

North Creek Analytical - Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

Koppers023406

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/26/05 10:35

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1113-06 Water	**2708-050927-MW-2-32-118**			**Sampled: 09/27/05 15:15**						
Acenaphthene	EPA 8270m	**0.0147**	*0.00962*	0.0192	ug/l	1x	5091315	09/30/05	10/06/05 00:02	J
Acenaphthylene	"	**0.0521**	*0.00962*	0.0192	"	"	"	"	"	
Anthracene	"	**0.0361**	*0.00962*	0.0192	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Chrysene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Fluoranthene	"	**0.0135**	*0.00962*	0.0192	"	"	"	"	"	J
Fluorene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.00962*	0.0192	"	"	"	"	"	
Naphthalene	"	**0.0785**	*0.0192*	0.0192	"	"	"	"	"	
Phenanthrene	"	**0.0179**	*0.00962*	0.0192	"	"	"	"	"	J
Pyrene	"	ND	*0.0192*	0.0192	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 59.6%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*65.4%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*71.7%*		*10 - 125 %*	"				"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/26/05 10:35

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1113-02	**Water**	**2708-050927-MW-13-61-114**			**Sampled: 09/27/05 09:40**						
Cyanide (amenable)		EPA 9010B Mod	ND	-----	0.0100	mg/l	1x	5J06062	10/06/05	10/07/05 21:30	
Cyanide (total)		"	**0.0890**	-----	0.0100	"	"	"	"	"	
P5I1113-04	**Water**	**2708-050927-MW-12-36-116**			**Sampled: 09/27/05 12:30**						
Cyanide (amenable)		EPA 9010B Mod	ND	-----	0.0100	mg/l	1x	5J06062	10/06/05	10/07/05 21:30	
Cyanide (total)		"	ND	-----	0.0100	"	"	"	"	"	
P5I1113-05	**Water**	**2708-050927-MW-5-32-117**			**Sampled: 09/27/05 14:05**						
Cyanide (amenable)		EPA 9010B Mod	ND	-----	0.0100	mg/l	1x	5J06062	10/06/05	10/07/05 21:30	
Cyanide (total)		"	**0.0900**	-----	0.0100	"	"	"	"	"	
P5I1113-06	**Water**	**2708-050927-MW-2-32-118**			**Sampled: 09/27/05 15:15**						
Cyanide (amenable)		EPA 9010B Mod	ND	-----	0.0100	mg/l	1x	5J06062	10/06/05	10/07/05 21:30	
Cyanide (total)		"	**0.0820**	-----	0.0100	"	"	"	"	"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/26/05 10:35

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100099 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100099-BLK1)								Extracted: 10/04/05 10:00						
Benzene	EPA 8021B	ND	---	0.500	ug/l	1x	--	--	--	--	--	--	10/04/05 19:04	
Toluene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 99.0%*		*Limits: 70-130%*		"							*10/04/05 19:04*	
LCS (5100099-BS1)								Extracted: 10/04/05 10:00						
Benzene	EPA 8021B	21.6	---	0.500	ug/l	1x	--	20.0	108%	(70-130)	--	--	10/04/05 17:40	
Toluene	"	22.2	---	0.500	"	"	--	"	111%	(76-129)	--	--	"	
Ethylbenzene	"	23.0	---	0.500	"	"	--	"	115%	(82-130)	--	--	"	
Xylenes (total)	"	69.0	---	1.00	"	"	--	60.0	115%	(76-130)	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 96.6%*		*Limits: 70-130%*		"							*10/04/05 17:40*	
Matrix Spike (5100099-MS1)				QC Source: P5I1101-01RE1				Extracted: 10/04/05 10:00						
Benzene	EPA 8021B	22.0	---	0.500	ug/l	1x	0.207	20.0	109%	(65-144)	--	--	10/04/05 20:00	
Toluene	"	23.2	---	0.500	"	"	0.616	"	113%	(68-139)	--	--	"	
Ethylbenzene	"	23.1	---	0.500	"	"	0.132	"	115%	(69-144)	--	--	"	
Xylenes (total)	"	69.2	---	1.00	"	"	0.553	60.0	114%	(60-144)	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 94.8%*		*Limits: 70-130%*		"							*10/04/05 20:00*	
Matrix Spike Dup (5100099-MSD1)				QC Source: P5I1101-01RE1				Extracted: 10/04/05 10:00						
Benzene	EPA 8021B	22.5	---	0.500	ug/l	1x	0.207	20.0	111%	(65-144)	2.25%	(20)	10/04/05 20:27	
Toluene	"	23.6	---	0.500	"	"	0.616	"	115%	(68-139)	1.71%	"	"	
Ethylbenzene	"	23.9	---	0.500	"	"	0.132	"	119%	(69-144)	3.40%	"	"	
Xylenes (total)	"	71.2	---	1.00	"	"	0.553	60.0	118%	(60-144)	2.85%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 93.8%*		*Limits: 70-130%*		"							*10/04/05 20:27*	

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Hahn and Associates, Inc.	Project Name:	**NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/26/05 10:35

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100183 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100183-BLK1)								Extracted: 10/05/05 12:29						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	10/06/05 13:06	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 92.6%*		*Limits: 70-130%*		"							*10/06/05 13:06*	
LCS (5100183-BS1)								Extracted: 10/05/05 12:29						
Benzene	EPA 8021B	19.6	—	0.500	ug/l	1x	—	20.0	98.0%	(70-130)	—	—	10/06/05 12:03	
Toluene	"	20.3	—	0.500	"	"	—	"	102%	(76-129)	—	—	"	
Ethylbenzene	"	21.2	—	0.500	"	"	—	"	106%	(82-130)	—	—	"	
Xylenes (total)	"	63.7	—	1.00	"	"	—	60.0	106%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 98.8%*		*Limits: 70-130%*		"							*10/06/05 12:03*	
LCS Dup (5100183-BSD1)								Extracted: 10/05/05 13:10						
Benzene	EPA 8021B	19.1	—	0.500	ug/l	1x	—	20.0	95.5%	(70-130)	2.58%	(20)	10/06/05 12:35	
Toluene	"	19.7	—	0.500	"	"	—	"	98.5%	(76-129)	3.00%	"	"	
Ethylbenzene	"	20.6	—	0.500	"	"	—	"	103%	(82-130)	2.87%	"	"	
Xylenes (total)	"	61.5	—	1.00	"	"	—	60.0	102%	(76-130)	3.51%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 93.6%*		*Limits: 70-130%*		"							*10/06/05 12:35*	
Matrix Spike (5100183-MS1)					QC Source: P5I1124-04			Extracted: 10/05/05 12:29						
Benzene	EPA 8021B	189	—	5.00	ug/l	10x	ND	200	94.5%	(65-144)	—	—	10/06/05 14:10	
Toluene	"	193	—	5.00	"	"	ND	"	96.5%	(68-139)	—	—	"	
Ethylbenzene	"	484	—	5.00	"	"	264	"	110%	(69-144)	—	—	"	
Xylenes (total)	"	1050	—	10.0	"	"	432	600	103%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 86.4%*		*Limits: 70-130%*		*1x*							*10/06/05 14:10*	
Matrix Spike Dup (5100183-MSD1)					QC Source: P5I1124-04			Extracted: 10/05/05 12:29						
Benzene	EPA 8021B	185	—	5.00	ug/l	10x	ND	200	92.5%	(65-144)	2.14%	(20)	10/06/05 14:41	
Toluene	"	187	—	5.00	"	"	ND	"	93.5%	(68-139)	3.16%	"	"	
Ethylbenzene	"	466	—	5.00	"	"	264	"	101%	(69-144)	3.79%	"	"	
Xylenes (total)	"	1000	—	10.0	"	"	432	600	94.7%	(60-144)	4.88%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 92.2%*		*Limits: 70-130%*		*1x*							*10/06/05 14:41*	

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Hahn and Associates, Inc.	Project Name:	**NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/26/05 10:35

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100197 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100197-BLK1)								Extracted: 10/05/05 15:11						
Arsenic	EPA 6020	ND	—	0.00100	mg/l	1x	—	—	—	—	—	—	10/13/05 14:28	
Chromium	"	ND	—	0.00100	"	"	—	—	—	—	—	—	10/12/05 17:49	
Copper	"	ND	—	0.00200	"	"	—	—	—	—	—	—	"	
Lead	"	ND	—	0.00100	"	"	—	—	—	—	—	—	"	
Nickel	"	ND	—	0.00200	"	"	—	—	—	—	—	—	"	
Zinc	"	ND	—	0.00500	"	"	—	—	—	—	—	—	"	
LCS (5100197-BS1)								Extracted: 10/05/05 15:11						
Arsenic	EPA 6020	0.104	—	0.00100	mg/l	1x	—	0.100	104%	(80-120)	—	—	10/22/05 08:50	
Chromium	"	0.0965	—	0.00100	"	"	—	"	96.5%	"	—	—	10/12/05 17:57	
Copper	"	0.0935	—	0.00200	"	"	—	"	93.5%	"	—	—	"	
Lead	"	0.0942	—	0.00100	"	"	—	"	94.2%	"	—	—	"	
Nickel	"	0.0939	—	0.00200	"	"	—	"	93.9%	"	—	—	"	
Zinc	"	0.0886	—	0.00500	"	"	—	"	88.6%	"	—	—	"	
Duplicate (5100197-DUP1)				QC Source: P5I1112-03				Extracted: 10/05/05 15:11						
Arsenic	EPA 6020	0.00344	—	0.00100	mg/l	1x	0.00380	—	—	—	9.94%	(20)	10/13/05 14:35	
Chromium	"	0.00279	—	0.00100	"	"	0.00287	—	—	—	2.83%	"	"	
Copper	"	0.0219	—	0.00200	"	"	0.00875	—	—	—	85.8%	"	10/12/05 18:42	Q-14
Lead	"	0.00319	—	0.00100	"	"	0.00300	—	—	—	6.14%	"	"	
Nickel	"	0.00865	—	0.00200	"	"	0.00831	—	—	—	4.01%	"	"	
Zinc	"	0.0416	—	0.00500	"	"	0.0345	—	—	—	18.7%	"	"	
Matrix Spike (5100197-MS1)				QC Source: P5I1112-03				Extracted: 10/05/05 15:11						
Arsenic	EPA 6020	0.110	—	0.00100	mg/l	1x	0.00380	0.100	106%	(75-125)	—	—	10/13/05 14:43	
Chromium	"	0.0964	—	0.00100	"	"	0.00287	"	93.5%	"	—	—	"	
Copper	"	0.110	—	0.00200	"	"	0.00875	"	101%	"	—	—	10/12/05 18:57	
Lead	"	0.0951	—	0.00100	"	"	0.00300	"	92.1%	"	—	—	"	
Nickel	"	0.111	—	0.00200	"	"	0.00831	"	103%	"	—	—	"	
Zinc	"	0.136	—	0.00500	"	"	0.0345	"	102%	"	—	—	"	
Matrix Spike (5100197-MS2)				QC Source: P5I1113-02				Extracted: 10/05/05 15:11						
Arsenic	EPA 6020	0.115	—	0.00100	mg/l	1x	0.00993	0.100	105%	(75-125)	—	—	10/13/05 14:50	
Chromium	"	0.100	—	0.00100	"	"	0.00294	"	97.1%	"	—	—	"	
Copper	"	0.100	—	0.00200	"	"	0.00749	"	92.5%	"	—	—	"	
Lead	"	0.0936	—	0.00100	"	"	0.00231	"	91.3%	"	—	—	10/24/05 19:26	
Nickel	"	0.100	—	0.00200	"	"	0.00594	"	94.1%	"	—	—	10/13/05 14:50	
Zinc	"	0.122	—	0.00500	"	"	0.0290	"	93.0%	"	—	—	"	

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/26/05 10:35

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100197 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Post Spike (5100197-PS1)					QC Source: P5I1113-02				Extracted: 10/05/05 15:11					
Arsenic	EPA 6020	0.118	—		ug/ml	1x	0.00993	0.100	108%	(75-125)	—	—	10/13/05 15:52	
Chromium	"	0.104	—		"	"	0.00294	"	101%	"	—	—	"	
Copper	"	0.104	—		"	"	0.00749	"	96.5%	"	—	—	"	
Lead	"	0.0916	—		"	"	0.00231	"	89.3%	"	—	—	"	
Nickel	"	0.104	—		"	"	0.00594	"	98.1%	"	—	—	"	
Zinc	"	0.125	—		"	"	0.0290	"	96.0%	"	—	—	"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/26/05 10:35

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091315 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5091315-BLK1)								Extracted: 09/30/05 13:00						
Acenaphthene	EPA 8270m	ND	0.0100	0.0200	ug/l	1x	--	--	--	--	--	--	10/05/05 15:13	
Acenaphthylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*70.8%*		*Limits:*	*25-125%*	"						*10/05/05 15:13*	
Pyrene-d10			*74.8%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*79.6%*			*10-125%*	"						"	
LCS (5091315-BS1)								Extracted: 09/30/05 13:00						
Acenaphthene	EPA 8270m	1.04	0.0100	0.0200	ug/l	1x	--	2.50	41.6%	(35-120)	--	--	10/07/05 17:23	
Acenaphthylene	"	1.09	0.0100	0.0200	"	"	--	"	43.6%	(34-116)	--	--	"	
Anthracene	"	0.986	0.0100	0.0200	"	"	--	"	39.4%	(24-119)	--	--	"	
Benzo (a) anthracene	"	0.983	0.0100	0.0200	"	"	--	"	39.3%	(36-128)	--	--	"	
Benzo (a) pyrene	"	0.971	0.0100	0.0200	"	"	--	"	38.8%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	0.932	0.0100	0.0200	"	"	--	"	37.3%	(37-131)	--	--	"	
Benzo (ghi) perylene	"	1.08	0.0100	0.0200	"	"	--	"	43.2%	(26-126)	--	--	"	
Benzo (k) fluoranthene	"	1.13	0.0100	0.0200	"	"	--	"	45.2%	(18-145)	--	--	"	
Chrysene	"	0.941	0.0100	0.0200	"	"	--	"	37.6%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	1.12	0.0100	0.0200	"	"	--	"	44.8%	(20-141)	--	--	"	
Fluoranthene	"	1.03	0.0100	0.0200	"	"	--	"	41.2%	(31-125)	--	--	"	
Fluorene	"	0.986	0.0100	0.0200	"	"	--	"	39.4%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	1.09	0.0100	0.0200	"	"	--	"	43.6%	(30-135)	--	--	"	
Naphthalene	"	1.03	0.0200	0.0200	"	"	--	"	41.2%	(30-113)	--	--	"	
Phenanthrene	"	1.04	0.0100	0.0200	"	"	--	"	41.6%	(34-126)	--	--	"	
Pyrene	"	1.01	0.0200	0.0200	"	"	--	"	40.4%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*40.0%*		*Limits:*	*25-125%*	"						*10/07/05 17:23*	
Pyrene-d10			*40.0%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*44.8%*			*10-125%*	"						"	

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Hahn and Associates, Inc.	Project Name:	**NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/26/05 10:35

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5091315 . **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (5091315-BSD1)								Extracted: 09/30/05 13:00						
Acenaphthene	EPA 8270m	1.70	0.0100	0.0200	ug/l	1x	--	2.50	68.0%	(35-120)	48.2%	(50)	10/05/05 16:12	
Acenaphthylene	"	1.70	0.0100	0.0200	"	"	--	"	68.0%	(34-116)	43.7%	"	"	
Anthracene	"	1.55	0.0100	0.0200	"	"	--	"	62.0%	(24-119)	44.6%	"	"	
Benzo (a) anthracene	"	1.57	0.0100	0.0200	"	"	--	"	62.8%	(36-128)	46.0%	"	"	
Benzo (a) pyrene	"	1.61	0.0100	0.0200	"	"	--	"	64.4%	(17-128)	49.6%	"	"	
Benzo (b) fluoranthene	"	1.63	0.0100	0.0200	"	"	--	"	65.2%	(37-131)	54.4%	"	"	Q-33
Benzo (ghi) perylene	"	1.79	0.0100	0.0200	"	"	--	"	71.6%	(26-126)	49.5%	"	"	
Benzo (k) fluoranthene	"	1.79	0.0100	0.0200	"	"	--	"	71.6%	(18-145)	45.2%	"	"	
Chrysene	"	1.51	0.0100	0.0200	"	"	--	"	60.4%	(16-137)	46.5%	"	"	
Dibenzo (a,h) anthracene	"	1.87	0.0100	0.0200	"	"	--	"	74.8%	(20-141)	50.2%	"	"	Q-33
Fluoranthene	"	1.55	0.0100	0.0200	"	"	--	"	62.0%	(31-125)	40.3%	"	"	
Fluorene	"	1.60	0.0100	0.0200	"	"	--	"	64.0%	(27-124)	47.6%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.80	0.0100	0.0200	"	"	--	"	72.0%	(30-135)	49.1%	"	"	
Naphthalene	"	1.58	0.0200	0.0200	"	"	--	"	63.2%	(30-113)	42.1%	"	"	
Phenanthrene	"	1.58	0.0100	0.0200	"	"	--	"	63.2%	(34-126)	41.2%	"	"	
Pyrene	"	1.53	0.0200	0.0200	"	"	--	"	61.2%	(21-141)	40.9%	"	"	

Surrogate(s): Fluorene-d10	*Recovery:*	*60.4%*	*Limits: 25-125%*	"	*10/05/05 16:12*
Pyrene-d10		*60.0%*	*23-150%*	"	"
Benzo (a) pyrene-d12		*69.6%*	*10-125%*	"	"

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/26/05 10:35

Conventional Chemistry Parameters by APHA/EPA Methods - Laboratory Quality Control Results

North Creek Analytical - Bothell

QC Batch: 5J06062 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5J06062-BLK1)								Extracted: 10/06/05 14:23						
Cyanide (amenable)	EPA 9010B Mod	ND	—	0.0100	mg/l	1x	–	–	–	–	–	–	10/07/05 21:30	
Cyanide (total)	"	ND	—	0.0100	"	"	–	–	–	–	–	–	"	
LCS (5J06062-BS1)								Extracted: 10/06/05 14:23						
Cyanide (amenable)	EPA 9010B Mod	0.0440	—	0.0100	mg/l	1x	–	0.0496	88.7%	(85-115)	–	–	10/07/05 21:30	
Cyanide (total)	"	0.0940	—	0.0100	"	"	–	0.102	92.2%	"	–	–	"	
LCS Dup (5J06062-BSD1)								Extracted: 10/06/05 14:23						
Cyanide (amenable)	EPA 9010B Mod	0.0440	—	0.0100	mg/l	1x	–	0.0496	88.7%	(85-115)	0.00%	(25)	10/07/05 21:30	
Cyanide (total)	"	0.0930	—	0.0100	"	"	–	0.102	91.2%	"	1.07%	(20)	"	
Duplicate (5J06062-DUP1)				QC Source: P511113-02				Extracted: 10/06/05 14:23						
Cyanide (total)	EPA 9010B Mod	0.0820	—	0.0100	mg/l	1x	0.0890	–	–	–	8.19%	(27)	10/07/05 21:30	
Cyanide (amenable)	"	ND	—	0.0100	"	"	ND	–	–	–	NR	(30)	"	
Matrix Spike (5J06062-MS1)				QC Source: P511113-02				Extracted: 10/06/05 14:23						
Cyanide (total)	EPA 9010B Mod	0.187	—	0.0100	mg/l	1x	0.0890	0.102	96.1%	(36-133)	–	–	10/07/05 21:30	
Cyanide (amenable)	"	0.0450	—	0.0100	"	"	ND	0.0496	90.7%	(40-140)	–	–	"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/26/05 10:35

Notes and Definitions

Report Specific Notes:

J - Estimated value.

Q-14 - The matrix spike recovery, and/or RPD, for this QC sample is outside of control limits due to a non-homogeneous sample matrix.

Q-33 - %RPD for the LCS/LCS Duplicate QC samples are outside of specified criteria. Recoveries for these QC control samples are within acceptable limits.

R-05 - Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.

Laboratory Reporting Conventions:

DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR / NA - Not Reported / Not Available

dry - Sample results reported on a dry weight basis. Reporting Limits have been corrected for %Solids.

wet - Sample results and reporting limits reported on a wet weight basis (as received).

RPD - Relative Percent Difference. (RPDs calculated using Results, not Percent Recoveries).

MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.

MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated results.

Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.

Reporting limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

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434 NW Sixth Avenue, Suite 203 • Portland OR 97209
(503) 796-0717 • Fax (503) 227-2209

Laboratory: NCA Beaverton OR
Lab Project No.:

CHAIN OF CUSTODY

Chain of Custody No. PSI 1161

Project Manager: Rob Ede, HAI
Project No.: 2708-30
Project Name: ~~NNGSRRI~~ NNGGRI <GW Monitoring>
Collected by: Matt Graves

Liquid with Sediment Sample: ____ Test Filtrate ____ Test Sediment ____ Test Both
Multi-Phase Sample: ____ Test One (which) ____ Test Separately ____ Shake

Samples Received at 4C (Y or N):
Appropriate Containers Used (Y or N):
Provide Verbal Results (Y or N): No
Provide Preliminary Fax Results: Yes

Comments
Sample Number Prefix: 2708-0509ZB -
- Low level PAH
- Non-[illegible] 15
Pricing and reporting Levels As Per:
Philip Nernberg, NCA
* As, Cr, Cu, Ni, Pb, Zn

Lab ID	Sample #	Date	Time	Sample Description	Matrix: Soil	Matrix: Water	Matrix: Other	Number of Containers	EPA Method 8270 SIM, PAH's	EPA Method 8021, BTEX	EPA Method 9010, Amen/Tot Cyn.	EPA Method 6010, Total Metals *	RUSH	Remarks
	119	9/28/05		T.B.		X		1		X				
	MW1-22-126		915	MW-1-22		X		7	X	X	X	X		
	MW-10-61-121		1115	MW-10-61		X		7	X	X	X	X		
	MW-4-101-122		1310	MW-4-101		X		7	X	X	X	X		
	MW-4-35-123		1425	MW-4-35		X		7	X	X	X	X		

Relinquished by	Company	Date	Time	Received by	Company
Matt [illegible]	HAI	9/28/05	11:23	[illegible]	NCA
[illegible]	NCA	9/29/05	13:30	[illegible]	NCA 9/29 1330

5.3

Koppers023417

NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: Hallin

1. **Please sign for receipt and opening of** 1 **cooler or** ____ **other** ____

   By (print) Carrie Fahsnold (sign) [signature]

2. Date samples received 9/29/05 Date opened: Same ✓ or ___/___/___

3. Delivered by: ✓ BOB NCA courier ___ FedEx ___ UPS ___ Courier ___ Client ___ Other ____

   Airbill # if applicable ____ (Put copy of shipping papers in file)

4. There were 1 custody seals present, signed by BOB date 9/29/05

5. Were the custody seals unbroken and intact at the date and time of arrival? ✓ Yes ___ No

6. Was ice used? ✓ yes ___ no Type of ice: ___ blue ice ✓ gel ice ___ real ice

   Temperature (degrees C) 5.3 Raytek thermometer 6.5 Digi-Therm (probe temperature blank)

7. Are custody papers sealed in a plastic bag and taped inside to lid? ___ Yes ✓ No

   Plastic bag

8. Were custody papers filled out properly (ink, signed, etc.)? ✓ Yes ___ No

   If "no" please specify: ____

9. Was project identifiable from custody papers? ✓ Yes ___ No

   Name of project NNGGRI (if applicable)

10. **Initial and date for unpacking:** VE/VE **(initials)** **date** 9/29/05

11. Packing material: NO bubble wrap/bag X styrofoam ___ cardboard ____ other

12. Were samples in bags? ___ Yes X No

13. Did all containers indicated on the COC arrive? X Yes ___ No

    If "no" please indicate which containers were absent ____

14. Were all containers unbroken and labels in good condition? X Yes ___ No

    If "no" please indicate which containers ____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? X Yes ___ No

    Do the IDs, times, etc. agree with the COC? X Yes ___ No

    If "no" please indicate which containers ____

16. Are containers properly preserved for indicated analysis? X Yes ___ No

17. Is there adequate volume for the test(s) requested? X Yes ___ No

18. If voa vials were submitted, are they free of bubbles? ___ N/A X Yes ___ No

19. **Log-in phase: Date samples were logged in:** 9/29/05 **Elm Project # P** SI1161

20. Logged in by (print) Vanessa Eron (sign) [signature]

21. Was the project manager notified of status? (Use back of form as a record) ___ Yes X No

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October 31, 2005

Rob Ede
Hahn and Associates, Inc.
434 NW Sixth Ave., Suite 203
Portland, OR 97209

RE: NNGGRI

Enclosed are the results of analyses for samples received by the laboratory on 09/29/05 13:30.
The following list is a summary of the NCA Work Orders contained in this report.
If you have any questions concerning this report, please feel free to contact me.

Work	Project	ProjectNumber
P5I1161	NNGGRI	2708-30

Thank You,

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Environmental Laboratory Network

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/31/05 16:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-050928-119	P5I1161-01	Water	09/28/05 09:15	09/29/05 13:30
2708-050928-MW1-22-120	P5I1161-02	Water	09/28/05 09:15	09/29/05 13:30
2708-050928-MW10-61-121	P5I1161-03	Water	09/28/05 11:15	09/29/05 13:30
2708-050928-MW4-101-122	P5I1161-04	Water	09/28/05 13:10	09/29/05 13:30
2708-050928-MW4-35-123	P5I1161-05	Water	09/28/05 14:25	09/29/05 13:30

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Analytical Case Narrative

North Creek Analytical - Portland

P5I1161

For 8270 SIM PAH analysis, surrogate apparently was not added to the Blank Spike. All relevant spike recoveries are within laboratory control limits for the Blank Spike. Because surrogate recovery in the Blank and matrix spikes meet laboratory control criteria, the data is flagged accordingly and reported.

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1161-01 Water	**2708-050928-119**		**Sampled: 09/28/05 09:15**							
Benzene	EPA 8021B	ND	-----	0.500	ug/l	1x	5100183	10/05/05	10/06/05 04:02	
Toluene	"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 87.6%*		*Limits: 70 - 130 %*		"			"	
P5I1161-02RE1 Water	**2708-050928-MW1-22-120**		**Sampled: 09/28/05 09:15**							
Benzene	EPA 8021B	**5.29**	-----	0.500	ug/l	1x	5100252	10/06/05	10/06/05 16:40	
Toluene	"	**6.67**	-----	0.500	"	"	"	"	"	
Ethylbenzene	"	**8.01**	-----	0.500	"	"	"	"	"	
Xylenes (total)	"	**52.3**	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 107%*		*Limits: 70 - 130 %*		"			"	
P5I1161-03 Water	**2708-050928-MW10-61-121**		**Sampled: 09/28/05 11:15**							
Benzene	EPA 8021B	ND	-----	0.500	ug/l	1x	5100183	10/05/05	10/06/05 05:06	
Toluene	"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 85.4%*		*Limits: 70 - 130 %*		"			"	
P5I1161-04RE1 Water	**2708-050928-MW4-101-122**		**Sampled: 09/28/05 13:10**							
Benzene	EPA 8021B	**216**	-----	1.00	ug/l	2x	5100252	10/06/05	10/07/05 01:52	
Toluene	"	**1.22**	-----	1.00	"	"	"	"	"	
Ethylbenzene	"	ND	-----	1.00	"	"	"	"	"	
Xylenes (total)	"	**5.09**	-----	2.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 102%*		*Limits: 70 - 130 %*		*1x*			"	
P5I1161-05 Water	**2708-050928-MW4-35-123**		**Sampled: 09/28/05 14:25**							
Benzene	EPA 8021B	**1.90**	-----	0.500	ug/l	1x	5100183	10/05/05	10/06/05 06:09	
Toluene	"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)	"	**1.81**	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 86.0%*		*Limits: 70 - 130 %*		"			"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1161-02	**Water**	**2708-050928-MW1-22-120**			**Sampled: 09/28/05 09:15**						
Arsenic		EPA 6020	0.00438	----	0.00100	mg/l	1x	5100407	10/10/05	10/12/05 12:21	
Chromium		"	0.0126	----	0.00100	"	"	"	"	"	
Copper		"	0.00230	----	0.00200	"	"	"	"	"	
Lead		"	ND	----	0.00100	"	"	"	"	"	
Nickel		"	0.0820	----	0.00200	"	"	"	"	"	
Zinc		"	0.0183	----	0.00500	"	"	"	"	"	
P5I1161-03	**Water**	**2708-050928-MW10-61-121**			**Sampled: 09/28/05 11:15**						
Arsenic		EPA 6020	0.00664	----	0.00100	mg/l	1x	5100407	10/10/05	10/12/05 12:51	
Chromium		"	0.00844	----	0.00100	"	"	"	"	"	
Copper		"	0.0166	----	0.00200	"	"	"	"	"	
Lead		"	0.00272	----	0.00100	"	"	"	"	"	
Nickel		"	0.0108	----	0.00200	"	"	"	"	"	
Zinc		"	0.0447	----	0.00500	"	"	"	"	"	
P5I1161-04	**Water**	**2708-050928-MW4-101-122**			**Sampled: 09/28/05 13:10**						
Arsenic		EPA 6020	0.0139	----	0.00100	mg/l	1x	5100407	10/10/05	10/12/05 13:14	
Chromium		"	ND	----	0.00100	"	"	"	"	"	
Copper		"	ND	----	0.00200	"	"	"	"	"	
Lead		"	ND	----	0.00100	"	"	"	"	"	
Nickel		"	0.00334	----	0.00200	"	"	"	"	"	
Zinc		"	ND	----	0.00500	"	"	"	"	"	
P5I1161-05	**Water**	**2708-050928-MW4-35-123**			**Sampled: 09/28/05 14:25**						
Arsenic		EPA 6020	0.00619	----	0.00100	mg/l	1x	5100407	10/10/05	10/12/05 13:21	
Chromium		"	ND	----	0.00100	"	"	"	"	"	
Copper		"	ND	----	0.00200	"	"	"	"	"	
Lead		"	ND	----	0.00100	"	"	"	"	"	
Nickel		"	0.00670	----	0.00200	"	"	"	"	"	
Zinc		"	ND	----	0.00500	"	"	"	"	"	

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Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1161-02 Water	2708-050928-MW1-22-120			Sampled: 09/28/05 09:15						R-05, X
Acenaphthene	EPA 8270m	46.9	0.258	0.515	ug/l	25x	5100184	10/05/05	10/11/05 15:43	
Acenaphthylene	"	ND	0.515	0.515	"	"	"	"	"	
Anthracene	"	4.56	0.258	0.515	"	"	"	"	"	
Benzo (a) anthracene	"	ND	0.258	0.515	"	"	"	"	"	
Benzo (a) pyrene	"	ND	0.258	0.515	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.258	0.515	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.258	0.515	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.258	0.515	"	"	"	"	"	
Chrysene	"	0.327	0.258	0.515	"	"	"	"	"	J
Dibenzo (a,h) anthracene	"	ND	0.258	0.515	"	"	"	"	"	
Fluoranthene	"	2.95	0.258	0.515	"	"	"	"	"	
Fluorene	"	37.1	0.258	0.515	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.258	0.515	"	"	"	"	"	
Naphthalene	"	302	5.15	5.15	"	250x	"	"	10/11/05 18:56	
Phenanthrene	"	74.4	0.258	0.515	"	25x	"	"	10/11/05 15:43	
Pyrene	"	2.85	0.515	0.515	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 64.3%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*64.7%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*70.9%*		*10 - 125 %*	"				"	
P5I1161-03 Water	2708-050928-MW10-61-121			Sampled: 09/28/05 11:15						X
Acenaphthene	EPA 8270m	0.0182	0.0100	0.0200	ug/l	1x	5100184	10/05/05	10/11/05 17:34	J
Acenaphthylene	"	0.103	0.0100	0.0200	"	"	"	"	"	
Anthracene	"	0.0517	0.0100	0.0200	"	"	"	"	"	
Benzo (a) anthracene	"	0.184	0.0100	0.0200	"	"	"	"	"	
Benzo (a) pyrene	"	0.358	0.0100	0.0200	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.228	0.0100	0.0200	"	"	"	"	"	
Benzo (ghi) perylene	"	0.362	0.0100	0.0200	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.162	0.0100	0.0200	"	"	"	"	"	
Chrysene	"	0.220	0.0100	0.0200	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	0.0490	0.0100	0.0200	"	"	"	"	"	
Fluoranthene	"	0.168	0.0100	0.0200	"	"	"	"	"	
Fluorene	"	0.0118	0.0100	0.0200	"	"	"	"	"	J
Indeno (1,2,3-cd) pyrene	"	0.229	0.0100	0.0200	"	"	"	"	"	
Naphthalene	"	0.0803	0.0200	0.0200	"	"	"	"	"	
Phenanthrene	"	0.0382	0.0100	0.0200	"	"	"	"	"	
Pyrene	"	0.306	0.0200	0.0200	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 107%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*126%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*150%*		*10 - 125 %*	"				"	*S-10*

North Creek Analytical - Portland

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Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1161-04 Water	**2708-050928-MW4-101-122**			**Sampled: 09/28/05 13:10**						**R-05, X**
Acenaphthene	EPA 8270m	0.539	*0.0204*	0.0408	ug/l	2x	5100184	10/05/05	10/11/05 19:24	
Acenaphthylene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Anthracene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Chrysene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Fluoranthene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Fluorene	"	0.0208	*0.0204*	0.0408	"	"	"	"	"	J
Indeno (1,2,3-cd) pyrene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Naphthalene	"	6.77	*0.0408*	0.0408	"	"	"	"	"	
Phenanthrene	"	ND	*0.0204*	0.0408	"	"	"	"	"	
Pyrene	"	ND	*0.0408*	0.0408	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 52.2%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*62.4%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*66.3%*		*10 - 125 %*	"				"	
P5I1161-05 Water	**2708-050928-MW4-35-123**			**Sampled: 09/28/05 14:25**						**R-05, X**
Acenaphthene	EPA 8270m	24.3	*0.0510*	0.102	ug/l	5x	5100184	10/05/05	10/11/05 16:39	
Acenaphthylene	"	0.778	*0.0510*	0.102	"	"	"	"	"	
Anthracene	"	0.634	*0.0510*	0.102	"	"	"	"	"	
Benzo (a) anthracene	"	0.115	*0.0510*	0.102	"	"	"	"	"	
Benzo (a) pyrene	"	0.0570	*0.0510*	0.102	"	"	"	"	"	J
Benzo (b) fluoranthene	"	ND	*0.0510*	0.102	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.0510*	0.102	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.0510*	0.102	"	"	"	"	"	
Chrysene	"	0.129	*0.0510*	0.102	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.0510*	0.102	"	"	"	"	"	
Fluoranthene	"	2.71	*0.0510*	0.102	"	"	"	"	"	
Fluorene	"	5.36	*0.0510*	0.102	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.0510*	0.102	"	"	"	"	"	
Naphthalene	"	0.786	*0.102*	0.102	"	"	"	"	"	
Phenanthrene	"	0.357	*0.0510*	0.102	"	"	"	"	"	
Pyrene	"	2.71	*0.102*	0.102	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 52.9%*		*Limits: 25 - 125 %*	"				"	
Pyrene-d10		*63.1%*		*23 - 150 %*	"				"	
Benzo (a) pyrene-d12		*70.2%*		*10 - 125 %*	"				"	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
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Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5I1161-02	**Water**	**2708-050928-MW1-22-120**			**Sampled: 09/28/05 09:15**						
Cyanide (amenable)		EPA 9010B Mod	1.54	-----	0.0100	mg/l	1x	5J07062	10/07/05	10/08/05 15:51	
Cyanide (total)		"	17.8	-----	0.0100	"	"	"	"	"	
P5I1161-03	**Water**	**2708-050928-MW10-61-121**			**Sampled: 09/28/05 11:15**						
Cyanide (amenable)		EPA 9010B Mod	ND	-----	0.0100	mg/l	1x	5J07062	10/07/05	10/08/05 15:51	
Cyanide (total)		"	ND	-----	0.0100	"	"	"	"	"	
P5I1161-04	**Water**	**2708-050928-MW4-10I-122**			**Sampled: 09/28/05 13:10**						
Cyanide (amenable)		EPA 9010B Mod	0.0220	-----	0.0100	mg/l	1x	5J07062	10/07/05	10/08/05 15:51	
Cyanide (total)		"	0.587	-----	0.0100	"	"	"	"	"	
P5I1161-05	**Water**	**2708-050928-MW4-35-123**			**Sampled: 09/28/05 14:25**						
Cyanide (amenable)		EPA 9010B Mod	ND	-----	0.0100	mg/l	1x	5J07062	10/07/05	10/08/05 15:51	
Cyanide (total)		"	0.247	-----	0.0100	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

BTEX per EPA Method 8021B - Laboratory Quality Control Results
North Creek Analytical - Portland

QC Batch: 5100183 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100183-BLK1)								Extracted: 10/05/05 12:29						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	10/06/05 13:06	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 92.6%*		*Limits: 70-130%*		"							*10/06/05 13:06*	
LCS (5100183-BS1)								Extracted: 10/05/05 12:29						
Benzene	EPA 8021B	19.6	—	0.500	ug/l	1x	—	20.0	98.0%	(70-130)	—	—	10/06/05 12:03	
Toluene	"	20.3	—	0.500	"	"	—	"	102%	(76-129)	—	—	"	
Ethylbenzene	"	21.2	—	0.500	"	"	—	"	106%	(82-130)	—	—	"	
Xylenes (total)	"	63.7	—	1.00	"	"	—	60.0	106%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 98.8%*		*Limits: 70-130%*		"							*10/06/05 12:03*	
LCS Dup (5100183-BSD1)								Extracted: 10/05/05 13:10						
Benzene	EPA 8021B	19.1	—	0.500	ug/l	1x	—	20.0	95.5%	(70-130)	2.58%	(20)	10/06/05 12:35	
Toluene	"	19.7	—	0.500	"	"	—	"	98.5%	(76-129)	3.00%	"	"	
Ethylbenzene	"	20.6	—	0.500	"	"	—	"	103%	(82-130)	2.87%	"	"	
Xylenes (total)	"	61.5	—	1.00	"	"	—	60.0	102%	(76-130)	3.51%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 93.6%*		*Limits: 70-130%*		"							*10/06/05 12:35*	
Matrix Spike (5100183-MS1)					QC Source: P5I1124-04			Extracted: 10/05/05 12:29						
Benzene	EPA 8021B	189	—	5.00	ug/l	10x	ND	200	94.5%	(65-144)	—	—	10/06/05 14:10	
Toluene	"	193	—	5.00	"	"	ND	"	96.5%	(68-139)	—	—	"	
Ethylbenzene	"	484	—	5.00	"	"	264	"	110%	(69-144)	—	—	"	
Xylenes (total)	"	1050	—	10.0	"	"	432	600	103%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 86.4%*		*Limits: 70-130%*		*1x*							*10/06/05 14:10*	
Matrix Spike Dup (5100183-MSD1)					QC Source: P5I1124-04			Extracted: 10/05/05 12:29						
Benzene	EPA 8021B	185	—	5.00	ug/l	10x	ND	200	92.5%	(65-144)	2.14%	(20)	10/06/05 14:41	
Toluene	"	187	—	5.00	"	"	ND	"	93.5%	(68-139)	3.16%	"	"	
Ethylbenzene	"	466	—	5.00	"	"	264	"	101%	(69-144)	3.79%	"	"	
Xylenes (total)	"	1000	—	10.0	"	"	432	600	94.7%	(60-144)	4.88%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 92.2%*		*Limits: 70-130%*		*1x*							*10/06/05 14:41*	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100252 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100252-BLK1)								Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	10/06/05 12:38	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 108%*		*Limits: 70-130%*		"							*10/06/05 12:38*	
LCS (5100252-BS1)								Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	20.1	—	0.500	ug/l	1x	—	20.0	100%	(70-130)	—	—	10/06/05 11:29	
Toluene	"	20.6	—	0.500	"	"	—	"	103%	(76-129)	—	—	"	
Ethylbenzene	"	21.4	—	0.500	"	"	—	"	107%	(82-130)	—	—	"	
Xylenes (total)	"	65.2	—	1.00	"	"	—	60.0	109%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 110%*		*Limits: 70-130%*		"							*10/06/05 11:29*	
Matrix Spike (5100252-MS1)					QC Source: P5J0060-01			Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	21.2	—	0.500	ug/l	1x	2.95	20.0	91.2%	(65-144)	—	—	10/06/05 13:47	
Toluene	"	21.1	—	0.500	"	"	0.530	"	103%	(68-139)	—	—	"	
Ethylbenzene	"	21.7	—	0.500	"	"	0.406	"	106%	(69-144)	—	—	"	
Xylenes (total)	"	65.2	—	1.00	"	"	0.885	60.0	107%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 109%*		*Limits: 70-130%*		"							*10/06/05 13:47*	
Matrix Spike Dup (5100252-MSD1)					QC Source: P5J0060-01			Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	15.8	—	0.500	ug/l	1x	2.95	20.0	64.2%	(65-144)	29.2%	(20)	10/06/05 14:22	Q-01
Toluene	"	16.2	—	0.500	"	"	0.530	"	78.4%	(68-139)	26.3%	"	"	Q-01
Ethylbenzene	"	17.5	—	0.500	"	"	0.406	"	85.5%	(69-144)	21.4%	"	"	Q-01
Xylenes (total)	"	50.6	—	1.00	"	"	0.885	60.0	82.9%	(60-144)	25.2%	"	"	Q-01
Surrogate(s): 4-BFB (PID)		*Recovery: 63.8%*		*Limits: 70-130%*		"							*10/06/05 14:22*	*S-03*

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

BTEX per EPA Method 8021B - Laboratory Quality Control Results
North Creek Analytical - Portland

QC Batch: 5100269 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100269-BLK1)								Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	--	--	--	--	--	--	10/07/05 13:26	
Toluene	"	ND	—	0.500	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	—	0.500	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	—	1.00	"	"	--	--	--	--	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 104%*		*Limits: 70-130%*		"							*10/07/05 13:26*	
LCS (5100269-BS1)								Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	20.1	—	0.500	ug/l	1x	--	20.0	100%	(70-130)	--	--	10/07/05 11:42	
Toluene	"	20.3	—	0.500	"	"	--	"	102%	(76-129)	--	--	"	
Ethylbenzene	"	21.2	—	0.500	"	"	--	"	106%	(82-130)	--	--	"	
Xylenes (total)	"	65.3	—	1.00	"	"	--	60.0	109%	(76-130)	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 108%*		*Limits: 70-130%*		"							*10/07/05 11:42*	
Matrix Spike (5100269-MS1)							QC Source: P5J0135-01	Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	2910	—	25.0	ug/l	50x	1940	1000	97.0%	(65-144)	--	--	10/07/05 23:09	
Toluene	"	969	—	25.0	"	"	ND	"	96.9%	(68-139)	--	--	"	
Ethylbenzene	"	1130	—	25.0	"	"	121	"	101%	(69-144)	--	--	"	
Xylenes (total)	"	3170	—	50.0	"	"	62.2	3000	104%	(60-144)	--	--	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 103%*		*Limits: 70-130%*		*1x*							*10/07/05 23:09*	
Matrix Spike Dup (5100269-MSD1)							QC Source: P5J0135-01	Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	3090	—	25.0	ug/l	50x	1940	1000	115%	(65-144)	6.00%	(20)	10/07/05 23:43	
Toluene	"	998	—	25.0	"	"	ND	"	99.8%	(68-139)	2.95%	"	"	
Ethylbenzene	"	1160	—	25.0	"	"	121	"	104%	(69-144)	2.62%	"	"	
Xylenes (total)	"	3300	—	50.0	"	"	62.2	3000	108%	(60-144)	4.02%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 105%*		*Limits: 70-130%*		*1x*							*10/07/05 23:43*	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100407 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100407-BLK1)								Extracted: 10/10/05 13:04						
Arsenic	EPA 6020	ND	—	0.00100	mg/l	1x	—	—	—	—	—	—	10/12/05 11:12	
Chromium	"	ND	—	0.00100	"	"	—	—	—	—	—	—	"	
Copper	"	ND	—	0.00200	"	"	—	—	—	—	—	—	"	
Lead	"	ND	—	0.00100	"	"	—	—	—	—	—	—	"	
Nickel	"	ND	—	0.00200	"	"	—	—	—	—	—	—	"	
Zinc	"	ND	—	0.00500	"	"	—	—	—	—	—	—	"	
LCS (5100407-BS1)								Extracted: 10/10/05 13:04						
Arsenic	EPA 6020	0.101	—	0.00100	mg/l	1x	—	0.100	101%	(80-120)	—	—	10/12/05 11:20	
Chromium	"	0.100	—	0.00100	"	"	—	"	100%	"	—	—	"	
Copper	"	0.0990	—	0.00200	"	"	—	"	99.0%	"	—	—	"	
Lead	"	0.0957	—	0.00100	"	"	—	"	95.7%	"	—	—	"	
Nickel	"	0.102	—	0.00200	"	"	—	"	102%	"	—	—	"	
Zinc	"	0.0959	—	0.00500	"	"	—	"	95.9%	"	—	—	"	
Duplicate (5100407-DUP1)				QC Source: P511161-02				Extracted: 10/10/05 13:04						
Arsenic	EPA 6020	0.00444	—	0.00100	mg/l	1x	0.00438	—	—	—	1.36%	(20)	10/12/05 12:28	
Chromium	"	0.0128	—	0.00100	"	"	0.0126	—	—	—	1.57%	"	"	
Copper	"	0.00224	—	0.00200	"	"	0.00230	—	—	—	2.64%	"	"	
Lead	"	ND	—	0.00100	"	"	ND	—	—	—	3.15%	"	"	
Nickel	"	0.0818	—	0.00200	"	"	0.0820	—	—	—	0.244%	"	"	
Zinc	"	0.0185	—	0.00500	"	"	0.0183	—	—	—	1.09%	"	"	
Matrix Spike (5100407-MS1)				QC Source: P511161-02				Extracted: 10/10/05 13:04						
Arsenic	EPA 6020	0.122	—	0.00100	mg/l	1x	0.00438	0.100	118%	(75-125)	—	—	10/12/05 12:44	
Chromium	"	0.108	—	0.00100	"	"	0.0126	"	95.4%	"	—	—	"	
Copper	"	0.0983	—	0.00200	"	"	0.00230	"	96.0%	"	—	—	"	
Lead	"	0.0878	—	0.00100	"	"	0.000687	"	87.1%	"	—	—	"	
Nickel	"	0.184	—	0.00200	"	"	0.0820	"	102%	"	—	—	"	
Zinc	"	0.115	—	0.00500	"	"	0.0183	"	96.7%	"	—	—	"	
Matrix Spike (5100407-MS2)				QC Source: P511161-03				Extracted: 10/10/05 13:04						
Arsenic	EPA 6020	0.112	—	0.00100	mg/l	1x	0.00664	0.100	105%	(75-125)	—	—	10/12/05 12:59	
Chromium	"	0.106	—	0.00100	"	"	0.00844	"	97.6%	"	—	—	"	
Copper	"	0.109	—	0.00200	"	"	0.0166	"	92.4%	"	—	—	"	
Lead	"	0.0926	—	0.00100	"	"	0.00272	"	89.9%	"	—	—	"	
Nickel	"	0.109	—	0.00200	"	"	0.0108	"	98.2%	"	—	—	"	
Zinc	"	0.137	—	0.00500	"	"	0.0447	"	92.3%	"	—	—	"	

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Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100407 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Post Spike (5100407-PS1)					QC Source: P5I1161-03				Extracted: 10/10/05 13:04					
Arsenic	EPA 6020	0.118	—		ug/ml	1x	0.00664	0.100	111%	(75-125)	—	—	10/12/05 13:06	
Chromium	"	0.104	—		"	"	0.00844	"	95.6%	"	—	—	"	
Copper	"	0.111	—		"	"	0.0166	"	94.4%	"	—	—	"	
Lead	"	0.0930	—		"	"	0.00272	"	90.3%	"	—	—	"	
Nickel	"	0.110	—		"	"	0.0108	"	99.2%	"	—	—	"	
Zinc	"	0.140	—		"	"	0.0447	"	95.3%	"	—	—	"	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100184 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100184-BLK1)								Extracted: 10/05/05 15:10						
2-Methylnaphthalene	EPA 8270m	ND	0.0100	0.0200	ug/l	1x	--	--	--	--	--	--	10/11/05 12:31	J
Acenaphthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Acenaphthylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*56.4%*		*Limits:*	*25-125%*	"						*10/11/05 12:31*	
Pyrene-d10			*62.4%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*67.2%*			*10-125%*	"						"	
LCS (5100184-BS1)								Extracted: 10/05/05 15:10						X
Acenaphthene	EPA 8270m	1.56	0.0100	0.0200	ug/l	1x	--	2.50	62.4%	(35-120)	--	--	10/11/05 13:53	
Benzo (a) pyrene	"	1.35	0.0100	0.0200	"	"	--	"	54.0%	(17-128)	--	--	"	
Pyrene	"	1.43	0.0200	0.0200	"	"	--	"	57.2%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*NR*		*Limits:*	*25-125%*	"						*10/11/05 13:53*	*S-10*
Pyrene-d10			*NR*			*23-150%*	"						"	*S-10*
Benzo (a) pyrene-d12			*NR*			*10-125%*	"						"	*S-10*
Matrix Spike (5100184-MS1)				QC Source: P5I1172-01				Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	1.59	0.00943	0.0189	ug/l	1x	ND	2.36	67.4%	(35-120)	--	--	10/11/05 14:20	
Acenaphthylene	"	1.57	0.00943	0.0189	"	"	ND	"	66.5%	(34-116)	--	--	"	
Anthracene	"	1.05	0.00943	0.0189	"	"	ND	"	44.5%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.29	0.00943	0.0189	"	"	ND	"	54.7%	(22-129)	--	--	"	
Benzo (a) pyrene	"	0.919	0.00943	0.0189	"	"	ND	"	38.9%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	1.28	0.00943	0.0189	"	"	ND	"	54.2%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	0.887	0.00943	0.0189	"	"	ND	"	37.6%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	1.35	0.00943	0.0189	"	"	ND	"	57.2%	(0-145)	--	--	"	
Chrysene	"	1.34	0.00943	0.0189	"	"	ND	"	56.8%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	0.809	0.00943	0.0189	"	"	ND	"	34.3%	(0-141)	--	--	"	
Fluoranthene	"	1.42	0.00943	0.0189	"	"	ND	"	60.2%	(30-125)	--	--	"	
Fluorene	"	1.38	0.00943	0.0189	"	"	ND	"	58.5%	(27-124)	--	--	"	

North Creek Analytical - Portland

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Roxanne L. Clifton

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/31/05 16:17

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100184 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike (5100184-MS1)				QC Source: P5I1172-01				Extracted: 10/05/05 15:10						
Indeno (1,2,3-cd) pyrene	EPA 8270m	1.15	0.00943	0.0189	ug/l	1x	ND	2.36	48.7%	(0-135)	--	--	10/11/05 14:20	
Naphthalene	"	1.54	0.0189	0.0189	"	"	0.0427	"	63.4%	(30-126)	--	--	"	
Phenanthrene	"	1.44	0.00943	0.0189	"	"	0.0109	"	60.6%	(34-126)	--	--	"	
Pyrene	"	1.45	0.0189	0.0189	"	"	ND	"	61.4%	(14-168)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*60.2%*		*Limits:*	*25-125%*	"						*10/11/05 14:20*	
Pyrene-d10			*61.9%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*69.5%*			*10-125%*	"						"	
Matrix Spike (5100184-MS2)				QC Source: P5J0060-01				Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	1.98	0.0408	0.0816	ug/l	4x	0.545	2.55	56.3%	(35-120)	--	--	10/11/05 18:02	
Acenaphthylene	"	1.49	0.0408	0.0816	"	"	ND	"	58.4%	(34-116)	--	--	"	
Anthracene	"	1.40	0.0408	0.0816	"	"	0.272	"	44.2%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.23	0.0408	0.0816	"	"	0.0328	"	46.9%	(22-129)	--	--	"	
Benzo (a) pyrene	"	1.01	0.0408	0.0816	"	"	ND	"	39.6%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	1.24	0.0408	0.0816	"	"	ND	"	48.6%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	0.914	0.0408	0.0816	"	"	ND	"	35.8%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	0.892	0.0408	0.0816	"	"	ND	"	35.0%	(0-145)	--	--	"	
Chrysene	"	1.27	0.0408	0.0816	"	"	0.0163	"	49.2%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	0.797	0.0408	0.0816	"	"	ND	"	31.3%	(0-141)	--	--	"	
Fluoranthene	"	1.74	0.0408	0.0816	"	"	0.466	"	50.0%	(30-125)	--	--	"	
Fluorene	"	1.53	0.0408	0.0816	"	"	0.403	"	44.2%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	0.934	0.0408	0.0816	"	"	ND	"	36.6%	(0-135)	--	--	"	
Naphthalene	"	1.91	0.0816	0.0816	"	"	0.577	"	52.3%	(30-126)	--	--	"	
Phenanthrene	"	3.44	0.0408	0.0816	"	"	2.21	"	48.2%	(34-126)	--	--	"	
Pyrene	"	1.92	0.0816	0.0816	"	"	0.537	"	54.2%	(14-168)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*47.1%*		*Limits:*	*25-125%*	"						*10/11/05 18:02*	
Pyrene-d10			*58.0%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*64.7%*			*10-125%*	"						"	
Matrix Spike Dup (5100184-MSD1)				QC Source: P5I1172-01				Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	1.44	0.00943	0.0189	ug/l	1x	ND	2.36	61.0%	(35-120)	9.97%	(50)	10/11/05 14:48	
Acenaphthylene	"	1.46	0.00943	0.0189	"	"	ND	"	61.9%	(34-116)	7.17%	"	"	
Anthracene	"	1.14	0.00943	0.0189	"	"	ND	"	48.3%	(24-119)	8.19%	"	"	
Benzo (a) anthracene	"	1.42	0.00943	0.0189	"	"	ND	"	60.2%	(22-129)	9.57%	"	"	
Benzo (a) pyrene	"	1.12	0.00943	0.0189	"	"	ND	"	47.5%	(4-112)	19.9%	"	"	
Benzo (b) fluoranthene	"	1.69	0.00943	0.0189	"	"	ND	"	71.6%	(0-136)	27.7%	"	"	
Benzo (ghi) perylene	"	1.25	0.00943	0.0189	"	"	ND	"	53.0%	(0-126)	34.0%	"	"	
Benzo (k) fluoranthene	"	1.32	0.00943	0.0189	"	"	ND	"	55.9%	(0-145)	2.30%	"	"	
Chrysene	"	1.42	0.00943	0.0189	"	"	ND	"	60.2%	(7-137)	5.81%	"	"	
Dibenzo (a,h) anthracene	"	1.17	0.00943	0.0189	"	"	ND	"	49.6%	(0-141)	36.5%	"	"	
Fluoranthene	"	1.56	0.00943	0.0189	"	"	ND	"	66.1%	(30-125)	9.34%	"	"	
Fluorene	"	1.29	0.00943	0.0189	"	"	ND	"	54.7%	(27-124)	6.71%	"	"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/31/05 16:17

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100184 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (5100184-MSD1)					QC Source: P5I1172-01				Extracted: 10/05/05 15:10					
Indeno (1,2,3-cd) pyrene	EPA 8270m	1.47	0.00943	0.0189	ug/l	1x	ND	2.36	62.3%	(0-135)	24.5%	(50)	10/11/05 14:48	
Naphthalene	"	1.43	0.0189	0.0189	"	"	0.0427	"	58.8%	(30-126)	7.53%	"	"	
Phenanthrene	"	1.51	0.00943	0.0189	"	"	0.0109	"	63.5%	(34-126)	4.67%	"	"	
Pyrene	"	1.52	0.0189	0.0189	"	"	ND	"	64.4%	(14-168)	4.77%	"	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*56.4%*		*Limits:*	*25-125%*	"						*10/11/05 14:48*	
Pyrene-d10			*66.1%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*75.0%*			*10-125%*	"						"	
Matrix Spike Dup (5100184-MSD2)					QC Source: P5J0060-01				Extracted: 10/05/05 15:10					
Acenaphthene	EPA 8270m	2.26	0.0408	0.0816	ug/l	4x	0.545	2.55	67.3%	(35-120)	17.8%	(50)	10/11/05 18:29	
Acenaphthylene	"	1.71	0.0408	0.0816	"	"	ND	"	67.1%	(34-116)	13.9%	"	"	
Anthracene	"	1.73	0.0408	0.0816	"	"	0.272	"	57.2%	(24-119)	25.6%	"	"	
Benzo (a) anthracene	"	1.50	0.0408	0.0816	"	"	0.0328	"	57.5%	(22-129)	20.3%	"	"	
Benzo (a) pyrene	"	1.29	0.0408	0.0816	"	"	ND	"	50.6%	(4-112)	24.4%	"	"	
Benzo (b) fluoranthene	"	1.55	0.0408	0.0816	"	"	ND	"	60.8%	(0-136)	22.3%	"	"	
Benzo (ghi) perylene	"	1.21	0.0408	0.0816	"	"	ND	"	47.5%	(0-126)	28.1%	"	"	
Benzo (k) fluoranthene	"	1.21	0.0408	0.0816	"	"	ND	"	47.5%	(0-145)	30.3%	"	"	
Chrysene	"	1.50	0.0408	0.0816	"	"	0.0163	"	58.2%	(7-137)	16.8%	"	"	
Dibenzo (a,h) anthracene	"	1.06	0.0408	0.0816	"	"	ND	"	41.6%	(0-141)	28.3%	"	"	
Fluoranthene	"	2.10	0.0408	0.0816	"	"	0.466	"	64.1%	(30-125)	24.7%	"	"	
Fluorene	"	1.80	0.0408	0.0816	"	"	0.403	"	54.8%	(27-124)	21.4%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.31	0.0408	0.0816	"	"	ND	"	51.4%	(0-135)	33.6%	"	"	
Naphthalene	"	2.19	0.0816	0.0816	"	"	0.577	"	63.3%	(30-126)	19.0%	"	"	
Phenanthrene	"	4.08	0.0408	0.0816	"	"	2.21	"	73.3%	(34-126)	41.3%	"	"	
Pyrene	"	2.23	0.0816	0.0816	"	"	0.537	"	66.4%	(14-168)	20.2%	"	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*56.5%*		*Limits:*	*25-125%*	"						*10/11/05 18:29*	
Pyrene-d10			*63.5%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*66.7%*			*10-125%*	"						"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/31/05 16:17

Conventional Chemistry Parameters by APHA/EPA Methods - Laboratory Quality Control Results

North Creek Analytical - Bothell

QC Batch: 5J07062 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5J07062-BLK1)								Extracted: 10/07/05 13:32						
Cyanide (amenable)	EPA 9010B Mod	ND	—	0.0100	mg/l	1x	–	–	–	–	–	–	10/08/05 15:51	
Cyanide (total)	"	ND	—	0.0100	"	"	–	–	–	–	–	–	"	
LCS (5J07062-BS1)								Extracted: 10/07/05 13:32						
Cyanide (amenable)	EPA 9010B Mod	0.0470	—	0.0100	mg/l	1x	–	0.0496	94.8%	(85-115)	–	–	10/08/05 15:51	
Cyanide (total)	"	0.0940	—	0.0100	"	"	–	0.102	92.2%	"	–	–	"	
LCS Dup (5J07062-BSD1)								Extracted: 10/07/05 13:32						
Cyanide (total)	EPA 9010B Mod	0.0960	—	0.0100	mg/l	1x	–	0.102	94.1%	(85-115)	2.11%	(20)	10/08/05 15:51	
Cyanide (amenable)	"	0.0440	—	0.0100	"	"	–	0.0496	88.7%	"	6.59%	(25)	"	
Duplicate (5J07062-DUP1)				QC Source: P5I1161-02				Extracted: 10/07/05 13:32						
Cyanide (amenable)	EPA 9010B Mod	1.37	—	0.0100	mg/l	1x	1.54	–	–	–	11.7%	(30)	10/08/05 15:51	
Cyanide (total)	"	17.6	—	0.0100	"	"	17.8	–	–	–	1.13%	(27)	"	
Matrix Spike (5J07062-MS1)				QC Source: P5I1161-02				Extracted: 10/07/05 13:32						
Cyanide (amenable)	EPA 9010B Mod	1.64	—	0.0100	mg/l	1x	1.54	0.0496	202%	(40-140)	–	–	10/08/05 15:51	Q-03
Cyanide (total)	"	17.8	—	0.0100	"	"	17.8	0.102	NR	(36-133)	–	–	"	Q-03

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/31/05 16:17

Notes and Definitions

Report Specific Notes:

J	-	Estimated value.
Q-01	-	The matrix spike recovery, and/or RPD, for this QC sample is outside of established control limits. Failure of a matrix spike QC sample does not represent an out-of-control condition for the batch.
Q-03	-	The percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte already present in the sample.
R-05	-	Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.
S-03	-	Surrogate recovery is outside of NCA established control limits.
S-10	-	The recovery for this parameter is outside acceptance limits. See case narrative.
X	-	See case narrative.

Laboratory Reporting Conventions:

DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR / NA	-	Not Reported / Not Available
dry	-	Sample results reported on a dry weight basis. Reporting Limits have been corrected for %Solids.
wet	-	Sample results and reporting limits reported on a wet weight basis (as received).
RPD	-	Relative Percent Difference. (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

HAHN AND ASSOCIATES, INC.

Environmental Consultants

434 NW Sixth Avenue, Suite 203 • Portland OR 97209

(503) 796-0717 • Fax (503) 227-2209

Laboratory North Creek Analytical, Beaverton, Oregon

Lab Project No

CHAIN OF CUSTODY

Chain of Custody No.

Project Manager: Rob Ede, HAI

Project No.: 2708-30

Project Name: NNGGRI < GW Monitoring >

Collected by: Matt Graves, Ben Uhl

Liquid with Sediment Sample: ____ Test Filtrate ____ Test Sediment ____ Test Both

Multi-Phase Sample: ____ Test One (which) ____ Test Separately ____ Shake

Samples Received at 4C (Y or N)

Appropriate Containers Used (Y or N)

Provide Verbal Results (Y or N): No

Provide Preliminary Fax Results: Yes

Comments

Sample Number Prefix: 2708-05

Pricing and reporting limits as per:
Phillip Nernberg, NCA -Low level PAHs -Normal Metals

& As, Cr, Cu, Ni, Pb, Zn

Lab ID	Sample #	Date	Time	Sample Description	Soil	Water	Other	Number of Containers	EPA Method 8270 SIM, PAH's	EPA Method 8021, BTEX	EPA Method 9010, Amen. Cyn.	EPA Method 6010, Total Metals & Total Cyanide	RUSH	Remarks
[illegible]				[illegible]		X		1	[illegible]	X	[illegible]	[illegible]		
	2708-050929-MW-8-28		1525	Groundwater		X		7	X	X	X	X		
	2708-050929-MW-8-29-127		1325	Groundwater		X		7	X	X	X	X		
	2708-050929-MW-15-[illegible]-125		1135	Groundwater		X		7	X	X	X	X		
	2708-050929-MW-15-50-126		1125	Groundwater		X		7	X	X	X	X		

Relinquished by	Company	Date	Time	Received by	Company
Ben Uhl	HAI Inc.	9/30/05	11:30	[illegible]	NCA
[illegible]	NCA	9/30/05	12:18	Vanessa Brann	NCA

5.5

Koppers023437

NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: Hulvin & Associates

1. **Please sign for receipt and opening of** 1 **cooler or** ____ **other** ____

   By (print) Vanessa Eran (sign) Vanessa Eran

2. Date samples received 9/30/05 Date opened: Same X or ___/___/___

3. Delivered by: X NCA courier (BOB) ___ FedEx ___ UPS ___ Courier ___ Client ___ Other ____

   Airbill # if applicable ____ (Put copy of shipping papers in file)

4. There were 1 custody seals present, signed by Bob date 9/30/05

5. Were the custody seals unbroken and intact at the date and time of arrival? X Yes ___ No

6. Was ice used? X yes ___ no Type of ice: ___ blue ice X gel ice ___ real ice

   Temperature (degrees C) 5.5 Raytek thermometer ___ Digi-Therm (probe temperature blank)

7. Are custody papers sealed in a plastic bag and taped inside to lid? ___ Yes X No

8. Were custody papers filled out properly (ink, signed, etc.)? X Yes ___ No

   If "no" please specify: ____

9. Was project identifiable from custody papers? X Yes ___ No

   Name of project NNGGRI (if applicable)

10. **Initial and date for unpacking:** TLD **(initials)** **date** 10/3/05

11. Packing material: ___ bubble wrap/bag X styrofoam ___ cardboard ____ other

12. Were samples in bags? ___ Yes X No

13. Did all containers indicated on the COC arrive? ✓ Yes ___ No

    If "no" please indicate which containers were absent ____

14. Were all containers unbroken and labels in good condition? ✓ Yes ___ No

    If "no" please indicate which containers ____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? ✓ Yes ___ No

    Do the IDs, times, etc. agree with the COC? ✓ Yes ___ No

    If "no" please indicate which containers ____

16. Are containers properly preserved for indicated analysis? ✓ Yes ___ No

17. Is there adequate volume for the test(s) requested? ✓ Yes ___ No

18. If voa vials were submitted, are they free of bubbles? ___ N/A ✓ Yes ___ No

19. **Log-in phase: Date samples were logged in:** 10/3/05 **Elm Project #** PSJ0003

20. Logged in by (print) Peter Franzen (sign) [signature]

21. Was the project manager notified of status? (Use back of form as a record) ___ Yes ✓ No

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November 09, 2005

Rob Ede
Hahn and Associates, Inc.
434 NW Sixth Ave., Suite 203
Portland, OR 97209

RE: NNGGRI

Enclosed are the results of analyses for samples received by the laboratory on 09/30/05 16:18.
The following list is a summary of the NCA Work Orders contained in this report.
If you have any questions concerning this report, please feel free to contact me.

Work	Project	ProjectNumber
P5J0007	NNGGRI	2708-30

Thank You,

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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North Creek Analytical, Inc.
Environmental Laboratory Network

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Hahn and Associates, Inc.	Project Name:	**NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:56

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-05-0929-124	P5J0007-01	Water	09/29/05 08:00	09/30/05 16:18
2708-05-0929-MW-8-56-128	P5J0007-02	Water	09/29/05 15:25	09/30/05 16:18
2708-05-0929-MW-8-29-127	P5J0007-03	Water	09/29/05 13:25	09/30/05 16:18
2708-05-0929-MW-15-66-125	P5J0007-04	Water	09/29/05 10:35	09/30/05 16:18
2708-05-0929-MW-15-50-126	P5J0007-05	Water	09/29/05 11:25	09/30/05 16:18

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Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:56

Analytical Case Narrative

North Creek Analytical - Portland

P5J0007

For 8270 SIM PAH analysis, surrogate apparently was not added to the Blank Spike. All relevant spike recoveries are within laboratory control limits for the Blank Spike. Because surrogate recovery in the Blank and matrix spikes meet laboratory control criteria, the data is flagged accordingly and reported.

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:56

BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0007-01 Water	**2708-05-0929-124**		**Sampled: 09/29/05 08:00**							
Benzene	EPA 8021B	ND	----	0.500	ug/l	1x	5100252	10/06/05	10/06/05 18:24	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 102%*		*Limits: 70 - 130 %*		"			"	
P5J0007-02RE2 Water	**2708-05-0929-MW-8-56-128**		**Sampled: 09/29/05 15:25**							
Benzene	EPA 8021B	**15300**	----	50.0	ug/l	100x	5100320	10/07/05	10/11/05 12:29	
Toluene	"	**232**	----	50.0	"	"	"	"	"	
Ethylbenzene	"	**706**	----	50.0	"	"	"	"	"	
Xylenes (total)	"	**791**	----	100	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 92.4%*		*Limits: 70 - 130 %*		*1x*			"	
P5J0007-03RE1 Water	**2708-05-0929-MW-8-29-127**		**Sampled: 09/29/05 13:25**							
Benzene	EPA 8021B	**724**	----	5.00	ug/l	10x	5100269	10/07/05	10/07/05 22:00	
Toluene	"	**207**	----	5.00	"	"	"	"	"	
Ethylbenzene	"	**137**	----	5.00	"	"	"	"	"	
Xylenes (total)	"	**177**	----	10.0	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 97.6%*		*Limits: 70 - 130 %*		*1x*			"	
P5J0007-04 Water	**2708-05-0929-MW-15-66-125**		**Sampled: 09/29/05 10:35**							
Benzene	EPA 8021B	ND	----	0.500	ug/l	1x	5100252	10/06/05	10/06/05 20:08	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	**1.36**	----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 98.2%*		*Limits: 70 - 130 %*		"			"	
P5J0007-05RE2 Water	**2708-05-0929-MW-15-50-126**		**Sampled: 09/29/05 11:25**							
Benzene	EPA 8021B	**20700**	----	100	ug/l	200x	5100320	10/07/05	10/11/05 13:00	
Toluene	"	**156**	----	100	"	"	"	"	"	
Ethylbenzene	"	**164**	----	100	"	"	"	"	"	
Xylenes (total)	"	**519**	----	200	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 96.6%*		*Limits: 70 - 130 %*		*1x*			"	

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Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:56

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0007-02	**Water**	**2708-05-0929-MW-8-56-128**			**Sampled: 09/29/05 15:25**						
Arsenic		EPA 6020	0.00957	----	0.00100	mg/l	1x	5100407	10/10/05	10/12/05 13:59	
Chromium		"	0.0126	----	0.00100	"	"	"	"	"	
Copper		"	0.00419	----	0.00200	"	"	"	"	"	
Lead		"	ND	----	0.00100	"	"	"	"	"	
Nickel		"	0.0121	----	0.00200	"	"	"	"	"	
Zinc		"	0.00778	----	0.00500	"	"	"	"	"	
P5J0007-03	**Water**	**2708-05-0929-MW-8-29-127**			**Sampled: 09/29/05 13:25**						
Arsenic		EPA 6020	0.00765	----	0.00100	mg/l	1x	5100407	10/10/05	10/12/05 14:07	
Chromium		"	0.0118	----	0.00100	"	"	"	"	"	
Copper		"	0.00294	----	0.00200	"	"	"	"	"	
Lead		"	0.00240	----	0.00100	"	"	"	"	"	
Nickel		"	0.278	----	0.00200	"	"	"	"	"	
Zinc		"	0.0126	----	0.00500	"	"	"	"	"	
P5J0007-04	**Water**	**2708-05-0929-MW-15-66-125**			**Sampled: 09/29/05 10:35**						
Arsenic		EPA 6020	0.0191	----	0.00100	mg/l	1x	5100407	10/10/05	10/12/05 14:23	
Chromium		"	0.0242	----	0.00100	"	"	"	"	"	
Copper		"	0.0581	----	0.00200	"	"	"	"	"	
Lead		"	0.0228	----	0.00100	"	"	"	"	"	
Nickel		"	0.0406	----	0.00200	"	"	"	"	"	
Zinc		"	0.146	----	0.00500	"	"	"	"	"	
P5J0007-05	**Water**	**2708-05-0929-MW-15-50-126**			**Sampled: 09/29/05 11:25**						
Arsenic		EPA 6020	0.0285	----	0.00100	mg/l	1x	5100407	10/10/05	10/12/05 14:30	
Chromium		"	0.0156	----	0.00100	"	"	"	"	"	
Copper		"	0.00512	----	0.00200	"	"	"	"	"	
Lead		"	0.00229	----	0.00100	"	"	"	"	"	
Nickel		"	0.0174	----	0.00200	"	"	"	"	"	
Zinc		"	0.0123	----	0.00500	"	"	"	"	"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:56

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0007-02 Water	**2708-05-0929-MW-8-56-128**			**Sampled: 09/29/05 15:25**						**R-05, X**
Acenaphthene	EPA 8270m	152	*1.03*	2.06	ug/l	100x	5100184	10/05/05	10/11/05 19:51	
Acenaphthylene	"	44.4	*1.03*	2.06	"	"	"	"	"	
Anthracene	"	15.3	*1.03*	2.06	"	"	"	"	"	
Benzo (a) anthracene	"	4.81	*1.03*	2.06	"	"	"	"	"	
Benzo (a) pyrene	"	5.74	*1.03*	2.06	"	"	"	"	"	
Benzo (b) fluoranthene	"	3.23	*1.03*	2.06	"	"	"	"	"	
Benzo (ghi) perylene	"	4.91	*1.03*	2.06	"	"	"	"	"	
Benzo (k) fluoranthene	"	3.58	*1.03*	2.06	"	"	"	"	"	
Chrysene	"	6.37	*1.03*	2.06	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*1.03*	2.06	"	"	"	"	"	
Fluoranthene	"	25.9	*1.03*	2.06	"	"	"	"	"	
Fluorene	"	49.3	*1.03*	2.06	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	3.24	*1.03*	2.06	"	"	"	"	"	
Naphthalene	"	8290	*103*	103	"	5000x	"	"	10/12/05 13:31	
Phenanthrene	"	120	*1.03*	2.06	"	100x	"	"	10/11/05 19:51	
Pyrene	"	31.1	*2.06*	2.06	"	"	"	"	"	
Surrogate(s): Fluorene-d10	*Recovery: 61.2%*			*Limits: 25 - 125 %*	"				"	
Pyrene-d10	*72.1%*			*23 - 150 %*	"				"	
Benzo (a) pyrene-d12	*71.7%*			*10 - 125 %*	"				"	
P5J0007-03 Water	**2708-05-0929-MW-8-29-127**			**Sampled: 09/29/05 13:25**						**X**
Acenaphthene	EPA 8270m	331	*23.6*	47.2	ug/l	2500x	5100184	10/05/05	10/12/05 13:58	
Acenaphthylene	"	3.61	*0.236*	0.472	"	25x	"	"	10/11/05 20:18	
Anthracene	"	25.1	*0.236*	0.472	"	"	"	"	"	
Benzo (a) anthracene	"	5.32	*0.236*	0.472	"	"	"	"	"	
Benzo (a) pyrene	"	5.16	*0.236*	0.472	"	"	"	"	"	
Benzo (b) fluoranthene	"	2.54	*0.236*	0.472	"	"	"	"	"	
Benzo (ghi) perylene	"	4.11	*0.236*	0.472	"	"	"	"	"	
Benzo (k) fluoranthene	"	2.46	*0.236*	0.472	"	"	"	"	"	
Chrysene	"	9.96	*0.236*	0.472	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	0.563	*0.236*	0.472	"	"	"	"	"	
Fluoranthene	"	28.7	*0.236*	0.472	"	"	"	"	"	
Fluorene	"	54.8	*0.236*	0.472	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	2.64	*0.236*	0.472	"	"	"	"	"	
Naphthalene	"	4960	*47.2*	47.2	"	2500x	"	"	10/12/05 13:58	
Phenanthrene	"	117	*0.236*	0.472	"	25x	"	"	10/11/05 20:18	
Pyrene	"	39.9	*0.472*	0.472	"	"	"	"	"	
Surrogate(s): Fluorene-d10	*Recovery: 82.6%*			*Limits: 25 - 125 %*	"				"	
Pyrene-d10	*177%*			*23 - 150 %*	"				"	*S-09*
Benzo (a) pyrene-d12	*80.1%*			*10 - 125 %*	"				"	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:56

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0007-04 Water	**2708-05-0929-MW-15-66-125**			**Sampled: 09/29/05 10:35**						**X**
Acenaphthene	EPA 8270m	ND	*0.0103*	0.0206	ug/l	ix	5100184	10/05/05	10/12/05 14:53	
Acenaphthylene	"	ND	*0.0103*	0.0206	"	"	"	"	"	
Anthracene	"	ND	*0.0103*	0.0206	"	"	"	"	"	
Benzo (a) anthracene	"	0.0274	*0.0103*	0.0206	"	"	"	"	"	
Benzo (a) pyrene	"	0.0417	*0.0103*	0.0206	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0332	*0.0103*	0.0206	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0383	*0.0103*	0.0206	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0370	*0.0103*	0.0206	"	"	"	"	"	
Chrysene	"	0.0348	*0.0103*	0.0206	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.0103*	0.0206	"	"	"	"	"	
Fluoranthene	"	0.0555	*0.0103*	0.0206	"	"	"	"	"	
Fluorene	"	ND	*0.0103*	0.0206	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0291	*0.0103*	0.0206	"	"	"	"	"	
Naphthalene	"	0.0732	*0.0206*	0.0206	"	"	"	"	"	
Phenanthrene	"	0.0180	*0.0103*	0.0206	"	"	"	"	"	J
Pyrene	"	0.0600	*0.0206*	0.0206	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 63.6%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*68.2%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*72.9%*		*10 - 125 %*		"			"	
P5J0007-05 Water	**2708-05-0929-MW-15-50-126**			**Sampled: 09/29/05 11:25**						**R-05, X**
Acenaphthene	EPA 8270m	15.2	*2.00*	4.00	ug/l	200x	5100184	10/05/05	10/11/05 21:13	
Acenaphthylene	"	19.3	*2.00*	4.00	"	"	"	"	"	
Anthracene	"	3.12	*2.00*	4.00	"	"	"	"	"	J
Benzo (a) anthracene	"	6.21	*2.00*	4.00	"	"	"	"	"	
Benzo (a) pyrene	"	9.13	*2.00*	4.00	"	"	"	"	"	
Benzo (b) fluoranthene	"	7.48	*2.00*	4.00	"	"	"	"	"	
Benzo (ghi) perylene	"	8.31	*2.00*	4.00	"	"	"	"	"	
Benzo (k) fluoranthene	"	7.40	*2.00*	4.00	"	"	"	"	"	
Chrysene	"	7.49	*2.00*	4.00	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	2.19	*2.00*	4.00	"	"	"	"	"	J
Fluoranthene	"	9.62	*2.00*	4.00	"	"	"	"	"	
Fluorene	"	18.2	*2.00*	4.00	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	6.33	*2.00*	4.00	"	"	"	"	"	
Naphthalene	"	2130	*40.0*	40.0	"	2000x	"	"	10/12/05 14:25	
Phenanthrene	"	40.1	*2.00*	4.00	"	200x	"	"	10/11/05 21:13	
Pyrene	"	10.0	*4.00*	4.00	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 80.4%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*83.2%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*81.6%*		*10 - 125 %*		"			"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:56

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0007-02	**Water**	**2708-05-0929-MW-8-56-128**			**Sampled: 09/29/05 15:25**						
Cyanide (amenable)		EPA 9010B Mod	0.0170	----	0.0100	mg/l	1x	5J07062	10/07/05	10/08/05 15:51	
Cyanide (total)		"	0.538	----	0.0100	"	"	"	"	"	
P5J0007-03	**Water**	**2708-05-0929-MW-8-29-127**			**Sampled: 09/29/05 13:25**						
Cyanide (amenable)		EPA 9010B Mod	ND	----	0.0100	mg/l	1x	5J07062	10/07/05	10/08/05 15:51	
Cyanide (total)		"	5.92	----	0.0100	"	"	"	"	"	
P5J0007-04	**Water**	**2708-05-0929-MW-15-66-125**			**Sampled: 09/29/05 10:35**						
Cyanide (amenable)		EPA 9010B Mod	ND	----	0.0100	mg/l	1x	5J07062	10/07/05	10/08/05 15:51	
Cyanide (total)		"	ND	----	0.0100	"	"	"	"	"	
P5J0007-05	**Water**	**2708-05-0929-MW-15-50-126**			**Sampled: 09/29/05 11:25**						
Cyanide (amenable)		EPA 9010B Mod	0.390	----	0.0100	mg/l	1x	5J07062	10/07/05	10/08/05 15:51	
Cyanide (total)		"	0.488	----	0.0100	"	"	"	"	"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:56

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100252 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100252-BLK1)								Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	10/06/05 12:38	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 108%*		*Limits: 70-130%*		"							*10/06/05 12:38*	
LCS (5100252-BS1)								Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	20.1	—	0.500	ug/l	1x	—	20.0	100%	(70-130)	—	—	10/06/05 11:29	
Toluene	"	20.6	—	0.500	"	"	—	"	103%	(76-129)	—	—	"	
Ethylbenzene	"	21.4	—	0.500	"	"	—	"	107%	(82-130)	—	—	"	
Xylenes (total)	"	65.2	—	1.00	"	"	—	60.0	109%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 110%*		*Limits: 70-130%*		"							*10/06/05 11:29*	
Matrix Spike (5100252-MS1)				QC Source: P5J0060-01				Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	21.2	—	0.500	ug/l	1x	2.95	20.0	91.2%	(65-144)	—	—	10/06/05 13:47	
Toluene	"	21.1	—	0.500	"	"	0.530	"	103%	(68-139)	—	—	"	
Ethylbenzene	"	21.7	—	0.500	"	"	0.406	"	106%	(69-144)	—	—	"	
Xylenes (total)	"	65.2	—	1.00	"	"	0.885	60.0	107%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 109%*		*Limits: 70-130%*		"							*10/06/05 13:47*	
Matrix Spike Dup (5100252-MSD1)				QC Source: P5J0060-01				Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	15.8	—	0.500	ug/l	1x	2.95	20.0	64.2%	(65-144)	29.2%	(20)	10/06/05 14:22	Q-01
Toluene	"	16.2	—	0.500	"	"	0.530	"	78.4%	(68-139)	26.3%	"	"	Q-01
Ethylbenzene	"	17.5	—	0.500	"	"	0.406	"	85.5%	(69-144)	21.4%	"	"	Q-01
Xylenes (total)	"	50.6	—	1.00	"	"	0.885	60.0	82.9%	(60-144)	25.2%	"	"	Q-01
Surrogate(s): 4-BFB (PID)		*Recovery: 63.8%*		*Limits: 70-130%*		"							*10/06/05 14:22*	*S-03*

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:56

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100269 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100269-BLK1)								Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	10/07/05 13:26	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*104%*	*Limits:*	*70-130%*	"							*10/07/05 13:26*	
LCS (5100269-BS1)								Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	20.1	—	0.500	ug/l	1x	—	20.0	100%	(70-130)	—	—	10/07/05 11:42	
Toluene	"	20.3	—	0.500	"	"	—	"	102%	(76-129)	—	—	"	
Ethylbenzene	"	21.2	—	0.500	"	"	—	"	106%	(82-130)	—	—	"	
Xylenes (total)	"	65.3	—	1.00	"	"	—	60.0	109%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*108%*	*Limits:*	*70-130%*	"							*10/07/05 11:42*	
Matrix Spike (5100269-MS1)					QC Source: P5J0135-01			Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	2910	—	25.0	ug/l	50x	1940	1000	97.0%	(65-144)	—	—	10/07/05 23:09	
Toluene	"	969	—	25.0	"	"	ND	"	96.9%	(68-139)	—	—	"	
Ethylbenzene	"	1130	—	25.0	"	"	121	"	101%	(69-144)	—	—	"	
Xylenes (total)	"	3170	—	50.0	"	"	62.2	3000	104%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*103%*	*Limits:*	*70-130%*	*1x*							*10/07/05 23:09*	
Matrix Spike Dup (5100269-MSD1)					QC Source: P5J0135-01			Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	3090	—	25.0	ug/l	50x	1940	1000	115%	(65-144)	6.00%	(20)	10/07/05 23:43	
Toluene	"	998	—	25.0	"	"	ND	"	99.8%	(68-139)	2.95%	"	"	
Ethylbenzene	"	1160	—	25.0	"	"	121	"	104%	(69-144)	2.62%	"	"	
Xylenes (total)	"	3300	—	50.0	"	"	62.2	3000	108%	(60-144)	4.02%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*105%*	*Limits:*	*70-130%*	*1x*							*10/07/05 23:43*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:56

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100320 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100320-BLK1)								Extracted: 10/07/05 11:33						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	10/10/05 15:09	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 90.2%*		*Limits: 70-130%*		"							*10/10/05 15:09*	
LCS (5100320-BS1)								Extracted: 10/07/05 11:33						
Benzene	EPA 8021B	19.6	—	0.500	ug/l	1x	—	20.0	98.0%	(70-130)	—	—	10/10/05 14:05	
Toluene	"	20.2	—	0.500	"	"	—	"	101%	(76-129)	—	—	"	
Ethylbenzene	"	20.9	—	0.500	"	"	—	"	104%	(82-130)	—	—	"	
Xylenes (total)	"	62.4	—	1.00	"	"	—	60.0	104%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 103%*		*Limits: 70-130%*		"							*10/10/05 14:05*	
LCS Dup (5100320-BSD1)								Extracted: 10/07/05 11:33						
Benzene	EPA 8021B	19.3	—	0.500	ug/l	1x	—	20.0	96.5%	(70-130)	1.54%	(20)	10/10/05 14:37	
Toluene	"	19.8	—	0.500	"	"	—	"	99.0%	(76-129)	2.00%	"	"	
Ethylbenzene	"	20.6	—	0.500	"	"	—	"	103%	(82-130)	1.45%	"	"	
Xylenes (total)	"	61.4	—	1.00	"	"	—	60.0	102%	(76-130)	1.62%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 95.0%*		*Limits: 70-130%*		"							*10/10/05 14:37*	
Matrix Spike (5100320-MS1)				QC Source: P5J0176-03				Extracted: 10/07/05 11:33						
Benzene	EPA 8021B	18.5	—	0.500	ug/l	1x	2.43	20.0	80.4%	(65-144)	—	—	10/10/05 21:48	
Toluene	"	18.9	—	0.500	"	"	4.01	"	74.4%	(68-139)	—	—	"	
Ethylbenzene	"	19.7	—	0.500	"	"	1.29	"	92.0%	(69-144)	—	—	"	
Xylenes (total)	"	58.7	—	1.00	"	"	5.25	60.0	89.1%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 83.8%*		*Limits: 70-130%*		"							*10/10/05 21:48*	
Matrix Spike Dup (5100320-MSD1)				QC Source: P5J0176-03				Extracted: 10/07/05 11:33						
Benzene	EPA 8021B	17.3	—	0.500	ug/l	1x	2.43	20.0	74.4%	(65-144)	6.70%	(20)	10/10/05 22:20	
Toluene	"	17.6	—	0.500	"	"	4.01	"	68.0%	(68-139)	7.12%	"	"	
Ethylbenzene	"	18.4	—	0.500	"	"	1.29	"	85.6%	(69-144)	6.82%	"	"	
Xylenes (total)	"	55.0	—	1.00	"	"	5.25	60.0	82.9%	(60-144)	6.51%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 80.2%*		*Limits: 70-130%*		"							*10/10/05 22:20*	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:56

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100407 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100407-BLK1)								Extracted: 10/10/05 13:04						
Arsenic	EPA 6020	ND	—	0.00100	mg/l	1x	--	--	--	--	--	--	10/12/05 11:12	
Chromium	"	ND	—	0.00100	"	"	--	--	--	--	--	--	"	
Copper	"	ND	—	0.00200	"	"	--	--	--	--	--	--	"	
Lead	"	ND	—	0.00100	"	"	--	--	--	--	--	--	"	
Nickel	"	ND	—	0.00200	"	"	--	--	--	--	--	--	"	
Zinc	"	ND	—	0.00500	"	"	--	--	--	--	--	--	"	
LCS (5100407-BS1)								Extracted: 10/10/05 13:04						
Arsenic	EPA 6020	0.101	—	0.00100	mg/l	1x	--	0.100	101%	(80-120)	--	--	10/12/05 11:20	
Chromium	"	0.100	—	0.00100	"	"	--	"	100%	"	--	--	"	
Copper	"	0.0990	—	0.00200	"	"	--	"	99.0%	"	--	--	"	
Lead	"	0.0957	—	0.00100	"	"	--	"	95.7%	"	--	--	"	
Nickel	"	0.102	—	0.00200	"	"	--	"	102%	"	--	--	"	
Zinc	"	0.0959	—	0.00500	"	"	--	"	95.9%	"	--	--	"	
Duplicate (5100407-DUP1)				QC Source: P511161-02				Extracted: 10/10/05 13:04						
Arsenic	EPA 6020	0.00444	—	0.00100	mg/l	1x	0.00438	--	--	--	1.36%	(20)	10/12/05 12:28	
Chromium	"	0.0128	—	0.00100	"	"	0.0126	--	--	--	1.57%	"	"	
Copper	"	0.00224	—	0.00200	"	"	0.00230	--	--	--	2.64%	"	"	
Lead	"	ND	—	0.00100	"	"	ND	--	--	--	3.15%	"	"	
Nickel	"	0.0818	—	0.00200	"	"	0.0820	--	--	--	0.244%	"	"	
Zinc	"	0.0185	—	0.00500	"	"	0.0183	--	--	--	1.09%	"	"	
Matrix Spike (5100407-MS1)				QC Source: P511161-02				Extracted: 10/10/05 13:04						
Arsenic	EPA 6020	0.122	—	0.00100	mg/l	1x	0.00438	0.100	118%	(75-125)	--	--	10/12/05 12:44	
Chromium	"	0.108	—	0.00100	"	"	0.0126	"	95.4%	"	--	--	"	
Copper	"	0.0983	—	0.00200	"	"	0.00230	"	96.0%	"	--	--	"	
Lead	"	0.0878	—	0.00100	"	"	0.000687	"	87.1%	"	--	--	"	
Nickel	"	0.184	—	0.00200	"	"	0.0820	"	102%	"	--	--	"	
Zinc	"	0.115	—	0.00500	"	"	0.0183	"	96.7%	"	--	--	"	
Matrix Spike (5100407-MS2)				QC Source: P511161-03				Extracted: 10/10/05 13:04						
Arsenic	EPA 6020	0.112	—	0.00100	mg/l	1x	0.00664	0.100	105%	(75-125)	--	--	10/12/05 12:59	
Chromium	"	0.106	—	0.00100	"	"	0.00844	"	97.6%	"	--	--	"	
Copper	"	0.109	—	0.00200	"	"	0.0166	"	92.4%	"	--	--	"	
Lead	"	0.0926	—	0.00100	"	"	0.00272	"	89.9%	"	--	--	"	
Nickel	"	0.109	—	0.00200	"	"	0.0108	"	98.2%	"	--	--	"	
Zinc	"	0.137	—	0.00500	"	"	0.0447	"	92.3%	"	--	--	"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:56

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100407 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Post Spike (5100407-PS1)					QC Source: P511161-03				Extracted: 10/10/05 13:04					
Arsenic	EPA 6020	0.118	—		ug/ml	1x	0.00664	0.100	111%	(75-125)	--	--	10/12/05 13:06	
Chromium	"	0.104	—		"	"	0.00844	"	95.6%	"	--	--	"	
Copper	"	0.111	—		"	"	0.0166	"	94.4%	"	--	--	"	
Lead	"	0.0930	—		"	"	0.00272	"	90.3%	"	--	--	"	
Nickel	"	0.110	—		"	"	0.0108	"	99.2%	"	--	--	"	
Zinc	"	0.140	—		"	"	0.0447	"	95.3%	"	--	--	"	

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Hahn and Associates, Inc.	Project Name:	**NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:56

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100184 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100184-BLK1)								Extracted: 10/05/05 15:10						
2-Methylnaphthalene	EPA 8270m	ND	0.0100	0.0200	ug/l	1x	--	--	--	--	--	--	10/11/05 12:31	J
Acenaphthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Acenaphthylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*56.4%*		*Limits:*	*25-125%*	"						*10/11/05 12:31*	
Pyrene-d10			*62.4%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*67.2%*			*10-125%*	"						"	
LCS (5100184-BS1)								Extracted: 10/05/05 15:10						X
Acenaphthene	EPA 8270m	1.56	0.0100	0.0200	ug/l	1x	--	2.50	62.4%	(35-120)	--	--	10/11/05 13:53	
Benzo (a) pyrene	"	1.35	0.0100	0.0200	"	"	--	"	54.0%	(17-128)	--	--	"	
Pyrene	"	1.43	0.0200	0.0200	"	"	--	"	57.2%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*NR*		*Limits:*	*25-125%*	"						*10/11/05 13:53*	*S-10*
Pyrene-d10			*NR*			*23-150%*	"						"	*S-10*
Benzo (a) pyrene-d12			*NR*			*10-125%*	"						"	*S-10*
Matrix Spike (5100184-MS1)					QC Source: P511172-01			Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	1.59	0.00943	0.0189	ug/l	1x	ND	2.36	67.4%	(35-120)	--	--	10/11/05 14:20	
Acenaphthylene	"	1.57	0.00943	0.0189	"	"	ND	"	66.5%	(34-116)	--	--	"	
Anthracene	"	1.05	0.00943	0.0189	"	"	ND	"	44.5%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.29	0.00943	0.0189	"	"	ND	"	54.7%	(22-129)	--	--	"	
Benzo (a) pyrene	"	0.919	0.00943	0.0189	"	"	ND	"	38.9%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	1.28	0.00943	0.0189	"	"	ND	"	54.2%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	0.887	0.00943	0.0189	"	"	ND	"	37.6%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	1.35	0.00943	0.0189	"	"	ND	"	57.2%	(0-145)	--	--	"	
Chrysene	"	1.34	0.00943	0.0189	"	"	ND	"	56.8%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	0.809	0.00943	0.0189	"	"	ND	"	34.3%	(0-141)	--	--	"	
Fluoranthene	"	1.42	0.00943	0.0189	"	"	ND	"	60.2%	(30-125)	--	--	"	
Fluorene	"	1.38	0.00943	0.0189	"	"	ND	"	58.5%	(27-124)	--	--	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:56

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100184 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike (5100184-MS1)				QC Source: P5I1172-01				Extracted: 10/05/05 15:10						
Indeno (1,2,3-cd) pyrene	EPA 8270m	1.15	0.00943	0.0189	ug/l	1x	ND	2.36	48.7%	(0-135)	--	--	10/11/05 14:20	
Naphthalene	"	1.54	0.0189	0.0189	"	"	0.0427	"	63.4%	(30-126)	--	--	"	
Phenanthrene	"	1.44	0.00943	0.0189	"	"	0.0109	"	60.6%	(34-126)	--	--	"	
Pyrene	"	1.45	0.0189	0.0189	"	"	ND	"	61.4%	(14-168)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*60.2%*	*Limits:*	*25-125%*	"							*10/11/05 14:20*	
Pyrene-d10			*61.9%*		*23-150%*	"							"	
Benzo (a) pyrene-d12			*69.5%*		*10-125%*	"							"	
Matrix Spike (5100184-MS2)				QC Source: P5J0060-01				Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	1.98	0.0408	0.0816	ug/l	4x	0.545	2.55	56.3%	(35-120)	--	--	10/11/05 18:02	
Acenaphthylene	"	1.49	0.0408	0.0816	"	"	ND	"	58.4%	(34-116)	--	--	"	
Anthracene	"	1.40	0.0408	0.0816	"	"	0.272	"	44.2%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.23	0.0408	0.0816	"	"	0.0328	"	46.9%	(22-129)	--	--	"	
Benzo (a) pyrene	"	1.01	0.0408	0.0816	"	"	ND	"	39.6%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	1.24	0.0408	0.0816	"	"	ND	"	48.6%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	0.914	0.0408	0.0816	"	"	ND	"	35.8%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	0.892	0.0408	0.0816	"	"	ND	"	35.0%	(0-145)	--	--	"	
Chrysene	"	1.27	0.0408	0.0816	"	"	0.0163	"	49.2%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	0.797	0.0408	0.0816	"	"	ND	"	31.3%	(0-141)	--	--	"	
Fluoranthene	"	1.74	0.0408	0.0816	"	"	0.466	"	50.0%	(30-125)	--	--	"	
Fluorene	"	1.53	0.0408	0.0816	"	"	0.403	"	44.2%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	0.934	0.0408	0.0816	"	"	ND	"	36.6%	(0-135)	--	--	"	
Naphthalene	"	1.91	0.0816	0.0816	"	"	0.577	"	52.3%	(30-126)	--	--	"	
Phenanthrene	"	3.44	0.0408	0.0816	"	"	2.21	"	48.2%	(34-126)	--	--	"	
Pyrene	"	1.92	0.0816	0.0816	"	"	0.537	"	54.2%	(14-168)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*47.1%*	*Limits:*	*25-125%*	"							*10/11/05 18:02*	
Pyrene-d10			*58.0%*		*23-150%*	"							"	
Benzo (a) pyrene-d12			*64.7%*		*10-125%*	"							"	
Matrix Spike Dup (5100184-MSD1)				QC Source: P5I1172-01				Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	1.44	0.00943	0.0189	ug/l	1x	ND	2.36	61.0%	(35-120)	9.97%	(50)	10/11/05 14:48	
Acenaphthylene	"	1.46	0.00943	0.0189	"	"	ND	"	61.9%	(34-116)	7.17%	"	"	
Anthracene	"	1.14	0.00943	0.0189	"	"	ND	"	48.3%	(24-119)	8.19%	"	"	
Benzo (a) anthracene	"	1.42	0.00943	0.0189	"	"	ND	"	60.2%	(22-129)	9.57%	"	"	
Benzo (a) pyrene	"	1.12	0.00943	0.0189	"	"	ND	"	47.5%	(4-112)	19.9%	"	"	
Benzo (b) fluoranthene	"	1.69	0.00943	0.0189	"	"	ND	"	71.6%	(0-136)	27.7%	"	"	
Benzo (ghi) perylene	"	1.25	0.00943	0.0189	"	"	ND	"	53.0%	(0-126)	34.0%	"	"	
Benzo (k) fluoranthene	"	1.32	0.00943	0.0189	"	"	ND	"	55.9%	(0-145)	2.30%	"	"	
Chrysene	"	1.42	0.00943	0.0189	"	"	ND	"	60.2%	(7-137)	5.81%	"	"	
Dibenzo (a,h) anthracene	"	1.17	0.00943	0.0189	"	"	ND	"	49.6%	(0-141)	36.5%	"	"	
Fluoranthene	"	1.56	0.00943	0.0189	"	"	ND	"	66.1%	(30-125)	9.34%	"	"	
Fluorene	"	1.29	0.00943	0.0189	"	"	ND	"	54.7%	(27-124)	6.71%	"	"	

North Creek Analytical - Portland

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:56

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100184 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (5100184-MSD1)				QC Source: P511172-01				Extracted: 10/05/05 15:10						
Indeno (1,2,3-cd) pyrene	EPA 8270m	1.47	0.00943	0.0189	ug/l	1x	ND	2.36	62.3%	(0-135)	24.5%	(50)	10/11/05 14:48	
Naphthalene	"	1.43	0.0189	0.0189	"	"	0.0427	"	58.8%	(30-126)	7.53%	"	"	
Phenanthrene	"	1.51	0.00943	0.0189	"	"	0.0109	"	63.5%	(34-126)	4.67%	"	"	
Pyrene	"	1.52	0.0189	0.0189	"	"	ND	"	64.4%	(14-168)	4.77%	"	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*56.4%*	*Limits:*	*25-125%*	"							*10/11/05 14:48*	
Pyrene-d10			*66.1%*		*23-150%*	"							"	
Benzo (a) pyrene-d12			*75.0%*		*10-125%*	"							"	
Matrix Spike Dup (5100184-MSD2)				QC Source: P5J0060-01				Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	2.26	0.0408	0.0816	ug/l	4x	0.545	2.55	67.3%	(35-120)	17.8%	(50)	10/11/05 18:29	
Acenaphthylene	"	1.71	0.0408	0.0816	"	"	ND	"	67.1%	(34-116)	13.9%	"	"	
Anthracene	"	1.73	0.0408	0.0816	"	"	0.272	"	57.2%	(24-119)	25.6%	"	"	
Benzo (a) anthracene	"	1.50	0.0408	0.0816	"	"	0.0328	"	57.5%	(22-129)	20.3%	"	"	
Benzo (a) pyrene	"	1.29	0.0408	0.0816	"	"	ND	"	50.6%	(4-112)	24.4%	"	"	
Benzo (b) fluoranthene	"	1.55	0.0408	0.0816	"	"	ND	"	60.8%	(0-136)	22.3%	"	"	
Benzo (ghi) perylene	"	1.21	0.0408	0.0816	"	"	ND	"	47.5%	(0-126)	28.1%	"	"	
Benzo (k) fluoranthene	"	1.21	0.0408	0.0816	"	"	ND	"	47.5%	(0-145)	30.3%	"	"	
Chrysene	"	1.50	0.0408	0.0816	"	"	0.0163	"	58.2%	(7-137)	16.8%	"	"	
Dibenzo (a,h) anthracene	"	1.06	0.0408	0.0816	"	"	ND	"	41.6%	(0-141)	28.3%	"	"	
Fluoranthene	"	2.10	0.0408	0.0816	"	"	0.466	"	64.1%	(30-125)	24.7%	"	"	
Fluorene	"	1.80	0.0408	0.0816	"	"	0.403	"	54.8%	(27-124)	21.4%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.31	0.0408	0.0816	"	"	ND	"	51.4%	(0-135)	33.6%	"	"	
Naphthalene	"	2.19	0.0816	0.0816	"	"	0.577	"	63.3%	(30-126)	19.0%	"	"	
Phenanthrene	"	4.08	0.0408	0.0816	"	"	2.21	"	73.3%	(34-126)	41.3%	"	"	
Pyrene	"	2.23	0.0816	0.0816	"	"	0.537	"	66.4%	(14-168)	20.2%	"	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*56.5%*	*Limits:*	*25-125%*	"							*10/11/05 18:29*	
Pyrene-d10			*63.5%*		*23-150%*	"							"	
Benzo (a) pyrene-d12			*66.7%*		*10-125%*	"							"	

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Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:56

Conventional Chemistry Parameters by APHA/EPA Methods - Laboratory Quality Control Results

North Creek Analytical - Bothell

QC Batch: 5J07062 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5J07062-BLK1)								Extracted: 10/07/05 13:32						
Cyanide (amenable)	EPA 9010B Mod	ND	---	0.0100	mg/l	1x	--	--	--	--	--	--	10/08/05 15:51	
Cyanide (total)	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
LCS (5J07062-BS1)								Extracted: 10/07/05 13:32						
Cyanide (amenable)	EPA 9010B Mod	0.0470	---	0.0100	mg/l	1x	--	0.0496	94.8%	(85-115)	--	--	10/08/05 15:51	
Cyanide (total)	"	0.0940	---	0.0100	"	"	--	0.102	92.2%	"	--	--	"	
LCS Dup (5J07062-BSD1)								Extracted: 10/07/05 13:32						
Cyanide (total)	EPA 9010B Mod	0.0960	---	0.0100	mg/l	1x	--	0.102	94.1%	(85-115)	2.11%	(20)	10/08/05 15:51	
Cyanide (amenable)	"	0.0440	---	0.0100	"	"	--	0.0496	88.7%	"	6.59%	(25)	"	
Duplicate (5J07062-DUP1)				QC Source:	B5J0029-01			Extracted: 10/07/05 13:32						
Cyanide (amenable)	EPA 9010B Mod	1.37	---	0.0100	mg/l	1x	1.54	--	--	--	11.7%	(30)	10/08/05 15:51	
Cyanide (total)	"	17.6	---	0.0100	"	"	17.8	--	--	--	1.13%	(27)	"	
Matrix Spike (5J07062-MS1)				QC Source:	B5J0029-01			Extracted: 10/07/05 13:32						
Cyanide (amenable)	EPA 9010B Mod	1.64	---	0.0100	mg/l	1x	1.54	0.0496	202%	(40-140)	--	--	10/08/05 15:51	Q-03
Cyanide (total)	"	17.8	---	0.0100	"	"	17.8	0.102	NR	(36-133)	--	--	"	Q-03

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:56

Notes and Definitions

Report Specific Notes:

J	-	Estimated value.
Q-01	-	The matrix spike recovery, and/or RPD, for this QC sample is outside of established control limits. Failure of a matrix spike QC sample does not represent an out-of-control condition for the batch.
Q-03	-	The percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte already present in the sample.
R-05	-	Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.
S-03	-	Surrogate recovery is outside of NCA established control limits.
S-09	-	Surrogate recovery is outside control limits due to matrix interference.
S-10	-	The recovery for this parameter is outside acceptance limits. See case narrative.
X	-	See case narrative.

Laboratory Reporting Conventions:

DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR / NA	-	Not Reported / Not Available
dry	-	Sample results reported on a dry weight basis. Reporting Limits have been corrected for %Solids.
wet	-	Sample results and reporting limits reported on a wet weight basis (as received).
RPD	-	Relative Percent Difference. (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

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Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

HAHN AND ASSOCIATES, INC.
Environmental Consultants
434 NW Sixth Avenue, Suite 203 • Portland OR 97209
(503) 796-0717 • Fax (503) 227-2209

Laboratory: North Creek Analytical Beaverton OR
Lab Project No.:

CHAIN OF CUSTODY

Chain of Custody No. PSJ0060

Project Manager	Rob Ede, HAI
Project No.	2708-30
Project Name	NNGGRRI <GW Monitoring>
Collected by	Matt Graves

Liquid with Sediment Sample
___ Test Filtrate ___ Test Sediment ___ Test Both
Multi-Phase Sample
___ Test One (which) ___ Test Separately ___ Shake

Samples Received at 4C (Y or N)	
Appropriate Containers Used (Y or N)	
Provide Verbal Results (Y or N)	No
Provide Preliminary Fax Results	Yes

Comments

Sample Number Prefix: ~~2708~~
low level PAHs
Normal MTLS
Pricing and reporting Levels As Per:
Philip Nernberg, NCA
* As, Cr, Cu, Ni, Pb, Zn
** EXTRA CONTAINERS FOR MATRIX SPIKE & MATRIX SPIKE DUP

Lab ID	Sample #	Date	Time	Sample Description	Soil	Water	Other	Number of Containers	EPA Method 8270 SIM, PAH's	EPA Method 8021, BTEX	EPA Method 9010, Amen/Tot Cyn.	EPA Method 6010, Total Metals					RUSH	Remarks
2708-050930-MW-16	25-130	9/30/05	0935	GW **		X		21	X	X	X	X						
2708-050930-129		9/30/05	0800	trip blank		X		1		X								

Relinquished by	Company	Date	Time	Received by	Company
[illegible]	HAI	10/3/05	12:35 ~~0800~~	[illegible]	NCA
[illegible]	NCA	10/3/05	14:40	[illegible] on -0.3	NCA

Koppers023457

NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: Hahn & Assoc.

1. **Please sign for receipt and opening of** 1 **cooler or** ____ **other** ____

   By (print) Melanie Hansen (sign) [signature]

2. Date samples received 10/3/05 Date opened: Same 7 or ___/___/___

3. Delivered by: X NCA courier ___ FedEx ___ UPS ___ Courier ___ Client ___ Other ____

   Airbill # if applicable ____ (Put copy of shipping papers in file)

4. There were 1 custody seals present, signed by Bob date 10/3/05.

5. Were the custody seals unbroken and intact at the date and time of arrival? ___ Yes ___ No

6. Was ice used? X yes ___ no Type of ice: ___ blue ice X gel ice ___ real ice

   Temperature (degrees C) -0.3 Raytek thermometer ____ Digi-Therm (probe temperature blank)

   E=0.95

7. Are custody papers sealed in a plastic bag and taped inside to lid? ___ Yes X No

8. Were custody papers filled out properly (ink, signed, etc.)? X Yes ___ No

   If "no" please specify: ____

9. Was project identifiable from custody papers? X Yes ___ No

   Name of project NNG GRR I (GW Monitoring) (if applicable)

10. **Initial and date for unpacking:** MD **(initials)** **date** 10/3/05

11. Packing material: N/A bubble wrap/bag ___ styrofoam ___ cardboard ____ other

12. Were samples in bags? ___ Yes X No

13. Did all containers indicated on the COC arrive? ✓ Yes ___ No

    If "no" please indicate which containers were absent ____

14. Were all containers unbroken and labels in good condition? ✓ Yes ___ No

    If "no" please indicate which containers ____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? ✓ Yes ___ No

    Do the IDs, times, etc. agree with the COC? ✓ Yes ___ No

    If "no" please indicate which containers ____

16. Are containers properly preserved for indicated analysis? ✓ Yes ___ No

17. Is there adequate volume for the test(s) requested? ✓ Yes ___ No

18. If voa vials were submitted, are they free of bubbles? ___ N/A ✓ Yes ___ No

19. **Log-in phase: Date samples were logged in:** 10/3/05 **Elm Project #** P5J0060

20. Logged in by (print) Vanessa Evan (sign) Vanessa Evan

21. Was the project manager notified of status? (Use back of form as a record) ___ Yes ___ No

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November 09, 2005

Rob Ede
Hahn and Associates, Inc.
434 NW Sixth Ave., Suite 203
Portland, OR 97209

RE: NNGGRI

Enclosed are the results of analyses for samples received by the laboratory on 10/03/05 14:40.
The following list is a summary of the NCA Work Orders contained in this report.
If you have any questions concerning this report, please feel free to contact me.

Work	Project	ProjectNumber
P5J0060	NNGGRI	2708-10

Thank You,

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Environmental Laboratory Network

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-10	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-050930-MW-16-125-130	P5J0060-01	Water	09/30/05 09:35	10/03/05 14:40
2708-050930-129	P5J0060-02	Water	09/30/05 08:00	10/03/05 14:40

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-10	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:40

Analytical Case Narrative

North Creek Analytical - Portland

P5J0060

For 8270 SIM PAH analysis, surrogate apparently was not added to the Blank Spike. All relevant spike recoveries are within laboratory control limits for the Blank Spike. Because surrogate recovery in the Blank and matrix spikes meet laboratory control criteria, the data is flagged accordingly and reported.

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434 NW Sixth Ave., Suite 203	Project Number: 2708-10	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:40

BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0060-01	**Water**	**2708-050930-MW-16-125-130**			**Sampled: 09/30/05 09:35**						
Benzene		EPA 8021B	**2.95**	-----	0.500	ug/l	1x	5100252	10/06/05	10/06/05 17:15	
Toluene		"	**0.530**	-----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 107%*		*Limits: 70 - 130 %*		"			"	
P5J0060-02	**Water**	**2708-050930-129**			**Sampled: 09/30/05 08:00**						
Benzene		EPA 8021B	ND	-----	0.500	ug/l	1x	5100252	10/06/05	10/06/05 17:49	
Toluene		"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 104%*		*Limits: 70 - 130 %*		"			"	

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-10	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:40

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0060-01 Water	**2708-050930-MW-16-125-130**			**Sampled: 09/30/05 09:35**						**X**
Acenaphthene	EPA 8270m	0.545	*0.0102*	0.0204	ug/l	1x	5100184	10/05/05	10/11/05 13:25	
Acenaphthylene	"	ND	*0.0306*	0.0306	"	"	"	"	"	R-03
Anthracene	"	0.272	*0.0102*	0.0204	"	"	"	"	"	
Benzo (a) anthracene	"	0.0328	*0.0102*	0.0204	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Chrysene	"	0.0163	*0.0102*	0.0204	"	"	"	"	"	J
Dibenzo (a,h) anthracene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Fluoranthene	"	0.466	*0.0102*	0.0204	"	"	"	"	"	
Fluorene	"	0.403	*0.0102*	0.0204	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.0102*	0.0204	"	"	"	"	"	
Naphthalene	"	0.577	*0.0204*	0.0204	"	"	"	"	"	
Phenanthrene	"	2.21	*0.0102*	0.0204	"	"	"	"	"	
Pyrene	"	0.537	*0.0204*	0.0204	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 54.5%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*58.8%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*72.2%*		*10 - 125 %*		"			"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-10	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:40

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0060-01	**Water**	**2708-050930-MW-16-125-130**			**Sampled: 09/30/05 09:35**						
Cyanide (amenable)		EPA 9010A	0.0702	----	0.00500	mg/l	1x	5100367	10/10/05	10/12/05 11:36	
Cyanide (total)		EPA 9012A	0.0775	----	0.00500	"	"	"	"	"	

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Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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434 NW Sixth Ave., Suite 203	Project Number: 2708-10	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:40

METALS

Del Mar Analytical, Irvine

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0060-01	**Water**	**2708-050930-MW-16-125-130**			**Sampled: 09/30/05 09:35**						
Arsenic		EPA 6020	6.5	—	1.0	ug/l	1x	5J19100	10/19/05	10/19/05 20:51	
Chromium		"	8.4	—	2.0	"	"	"	"	"	
Copper		"	4.3	—	2.0	"	"	"	"	"	
Lead		"	ND	—	1.0	"	"	"	"	10/20/05 11:24	
Nickel		"	6.4	—	2.0	"	"	"	"	10/19/05 20:51	
Zinc		"	ND	—	20	"	"	"	"	"	

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Roxanne L. Clifton

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-10	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:40

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100252 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100252-BLK1)								Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	10/06/05 12:38	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*108%*		*Limits:*	*70-130%*	"						*10/06/05 12:38*	
LCS (5100252-BS1)								Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	20.1	—	0.500	ug/l	1x	—	20.0	100%	(70-130)	—	—	10/06/05 11:29	
Toluene	"	20.6	—	0.500	"	"	—	"	103%	(76-129)	—	—	"	
Ethylbenzene	"	21.4	—	0.500	"	"	—	"	107%	(82-130)	—	—	"	
Xylenes (total)	"	65.2	—	1.00	"	"	—	60.0	109%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*110%*		*Limits:*	*70-130%*	"						*10/06/05 11:29*	
Matrix Spike (5100252-MS1)				QC Source:	P5J0060-01			Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	21.2	—	0.500	ug/l	1x	2.95	20.0	91.2%	(65-144)	—	—	10/06/05 13:47	
Toluene	"	21.1	—	0.500	"	"	0.530	"	103%	(68-139)	—	—	"	
Ethylbenzene	"	21.7	—	0.500	"	"	0.406	"	106%	(69-144)	—	—	"	
Xylenes (total)	"	65.2	—	1.00	"	"	0.885	60.0	107%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*109%*		*Limits:*	*70-130%*	"						*10/06/05 13:47*	
Matrix Spike Dup (5100252-MSD1)				QC Source:	P5J0060-01			Extracted: 10/06/05 11:14						
Benzene	EPA 8021B	15.8	—	0.500	ug/l	1x	2.95	20.0	64.2%	(65-144)	29.2%	(20)	10/06/05 14:22	Q-01
Toluene	"	16.2	—	0.500	"	"	0.530	"	78.4%	(68-139)	26.3%	"	"	Q-01
Ethylbenzene	"	17.5	—	0.500	"	"	0.406	"	85.5%	(69-144)	21.4%	"	"	Q-01
Xylenes (total)	"	50.6	—	1.00	"	"	0.885	60.0	82.9%	(60-144)	25.2%	"	"	Q-01
Surrogate(s): 4-BFB (PID)		*Recovery:*	*63.8%*		*Limits:*	*70-130%*	"						*10/06/05 14:22*	*S-03*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-10	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:40

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100536 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100536-BLK1)								Extracted: 10/12/05 13:02						
Arsenic	EPA 6020	ND	—	0.00100	mg/l	1x	—	—	—	—	—	—	10/19/05 20:29	
Chromium	"	ND	—	0.00100	"	"	—	—	—	—	—	—	"	
Copper	"	ND	—	0.00200	"	"	—	—	—	—	—	—	"	
Lead	"	ND	—	0.00100	"	"	—	—	—	—	—	—	"	
Nickel	"	ND	—	0.00200	"	"	—	—	—	—	—	—	"	
Zinc	"	ND	—	0.00500	"	"	—	—	—	—	—	—	"	
LCS (5100536-BS1)								Extracted: 10/12/05 13:02						
Arsenic	EPA 6020	0.0975	—	0.00100	mg/l	1x	—	0.100	97.5%	(80-120)	—	—	10/19/05 20:42	
Chromium	"	0.100	—	0.00100	"	"	—	"	100%	"	—	—	"	
Copper	"	0.0973	—	0.00200	"	"	—	"	97.3%	"	—	—	"	
Lead	"	0.101	—	0.00100	"	"	—	"	101%	"	—	—	"	
Nickel	"	0.0970	—	0.00200	"	"	—	"	97.0%	"	—	—	"	
Zinc	"	0.0938	—	0.00500	"	"	—	"	93.8%	"	—	—	"	
Duplicate (5100536-DUP1)				QC Source: P511137-01				Extracted: 10/12/05 13:02						
Arsenic	EPA 6020	ND	—	0.00100	mg/l	1x	ND	—	—	—	NR	(20)	10/19/05 21:31	
Chromium	"	0.00269	—	0.00100	"	"	0.00217	—	—	—	21.4%	"	"	Q-06
Copper	"	0.0124	—	0.00200	"	"	0.0126	—	—	—	1.60%	"	"	
Lead	"	0.0548	—	0.00100	"	"	0.0520	—	—	—	5.24%	"	"	
Nickel	"	0.00289	—	0.00200	"	"	0.00239	—	—	—	18.9%	"	"	
Zinc	"	0.0224	—	0.00500	"	"	0.0232	—	—	—	3.51%	"	"	
Matrix Spike (5100536-MS1)				QC Source: P5J0060-01				Extracted: 10/12/05 13:02						
Arsenic	EPA 6020	0.108	—	0.00100	mg/l	1x	0.00614	0.100	102%	(75-125)	—	—	10/21/05 02:36	
Chromium	"	0.0988	—	0.00100	"	"	0.00642	"	92.4%	"	—	—	10/20/05 01:00	
Copper	"	0.0945	—	0.00200	"	"	0.00369	"	90.8%	"	—	—	"	
Lead	"	0.0976	—	0.00100	"	"	0.000534	"	97.1%	"	—	—	"	
Nickel	"	0.0949	—	0.00200	"	"	0.00606	"	88.8%	"	—	—	"	
Zinc	"	0.100	—	0.00500	"	"	0.00908	"	90.9%	"	—	—	"	
Matrix Spike (5100536-MS2)				QC Source: P511137-02				Extracted: 10/12/05 13:02						
Arsenic	EPA 6020	0.102	—	0.00100	mg/l	1x	ND	0.100	102%	(75-125)	—	—	10/21/05 01:02	
Chromium	"	0.0966	—	0.00500	"	5x	ND	"	96.6%	"	—	—	10/19/05 22:07	
Copper	"	0.127	—	0.0100	"	"	0.0258	"	101%	"	—	—	"	
Lead	"	0.471	—	0.00500	"	"	0.369	"	102%	"	—	—	"	
Nickel	"	0.0993	—	0.0100	"	"	0.000716	"	98.6%	"	—	—	"	
Zinc	"	0.124	—	0.0250	"	"	0.0251	"	98.9%	"	—	—	"	

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-10	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:40

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100536 **Water Preparation Method: EPA 200/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (5100536-MSD1)				QC Source: P5J0060-01				Extracted: 10/12/05 13:02						
Arsenic	EPA 6020	0.104	---	0.00100	mg/l	1x	0.00614	0.100	97.9%	(75-125)	3.77%	(20)	10/21/05 02:46	
Chromium	"	0.0961	—	0.00100	"	"	0.00642	"	89.7%	"	2.77%	"	10/20/05 01:12	
Copper	"	0.0924	—	0.00200	"	"	0.00369	"	88.7%	"	2.25%	"	"	
Lead	"	0.0943	—	0.00100	"	"	0.000534	"	93.8%	"	3.44%	"	"	
Nickel	"	0.0940	---	0.00200	"	"	0.00606	"	87.9%	"	0.953%	"	"	
Zinc	"	0.0960	—	0.00500	"	"	0.00908	"	86.9%	"	4.08%	"	"	
Post Spike (5100536-PS1)				QC Source: P5J0033-01				Extracted: 10/12/05 13:02						
Arsenic	EPA 6020	0.103	—		ug/ml	1x	0.000686	0.100	102%	(75-125)	--	--	10/21/05 02:57	
Chromium	"	0.134	---		"	"	0.0390	"	95.0%	"	--	--	10/20/05 00:10	
Copper	"	0.100	—		"	"	0.00394	"	96.1%	"	--	--	"	
Lead	"	1.15	---		"	10x	1.00	"	150%	"	--	--	10/21/05 01:51	Q-07
Nickel	"	0.126	---		"	1x	0.0318	"	94.2%	"	--	--	10/20/05 00:10	
Zinc	"	0.117	---		"	"	0.0247	"	92.3%	"	--	--	"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-10	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:40

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100184 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100184-BLK1)								Extracted: 10/05/05 15:10						
2-Methylnaphthalene	EPA 8270m	ND	0.0100	0.0200	ug/l	1x	--	--	--	--	--	--	10/11/05 12:31	J
Acenaphthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Acenaphthylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*56.4%*		*Limits:*	*25-125%*	"						*10/11/05 12:31*	
Pyrene-d10			*62.4%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*67.2%*			*10-125%*	"						"	
LCS (5100184-BS1)								Extracted: 10/05/05 15:10						X
Acenaphthene	EPA 8270m	1.56	0.0100	0.0200	ug/l	1x	--	2.50	62.4%	(35-120)	--	--	10/11/05 13:53	
Benzo (a) pyrene	"	1.35	0.0100	0.0200	"	"	--	"	54.0%	(17-128)	--	--	"	
Pyrene	"	1.43	0.0200	0.0200	"	"	--	"	57.2%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*NR*		*Limits:*	*25-125%*	"						*10/11/05 13:53*	*S-10*
Pyrene-d10			*NR*			*23-150%*	"						"	*S-10*
Benzo (a) pyrene-d12			*NR*			*10-125%*	"						"	*S-10*
Matrix Spike (5100184-MS1)				QC Source: P511172-01				Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	1.59	0.00943	0.0189	ug/l	1x	ND	2.36	67.4%	(35-120)	--	--	10/11/05 14:20	
Acenaphthylene	"	1.57	0.00943	0.0189	"	"	ND	"	66.5%	(34-116)	--	--	"	
Anthracene	"	1.05	0.00943	0.0189	"	"	ND	"	44.5%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.29	0.00943	0.0189	"	"	ND	"	54.7%	(22-129)	--	--	"	
Benzo (a) pyrene	"	0.919	0.00943	0.0189	"	"	ND	"	38.9%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	1.28	0.00943	0.0189	"	"	ND	"	54.2%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	0.887	0.00943	0.0189	"	"	ND	"	37.6%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	1.35	0.00943	0.0189	"	"	ND	"	57.2%	(0-145)	--	--	"	
Chrysene	"	1.34	0.00943	0.0189	"	"	ND	"	56.8%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	0.809	0.00943	0.0189	"	"	ND	"	34.3%	(0-141)	--	--	"	
Fluoranthene	"	1.42	0.00943	0.0189	"	"	ND	"	60.2%	(30-125)	--	--	"	
Fluorene	"	1.38	0.00943	0.0189	"	"	ND	"	58.5%	(27-124)	--	--	"	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-10	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:40

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100184 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike (5100184-MS1)				QC Source: P511172-01				Extracted: 10/05/05 15:10						
Indeno (1,2,3-cd) pyrene	EPA 8270m	1.15	0.00943	0.0189	ug/l	1x	ND	2.36	48.7%	(0-135)	--	--	10/11/05 14:20	
Naphthalene	"	1.54	0.0189	0.0189	"	"	0.0427	"	63.4%	(30-126)	--	--	"	
Phenanthrene	"	1.44	0.00943	0.0189	"	"	0.0109	"	60.6%	(34-126)	--	--	"	
Pyrene	"	1.45	0.0189	0.0189	"	"	ND	"	61.4%	(14-168)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*60.2%*		*Limits:*	*25-125%*	"						*10/11/05 14:20*	
Pyrene-d10			*61.9%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*69.5%*			*10-125%*	"						"	
Matrix Spike (5100184-MS2)				QC Source: P5J0060-01				Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	1.98	0.0408	0.0816	ug/l	4x	0.545	2.55	56.3%	(35-120)	--	--	10/11/05 18:02	
Acenaphthylene	"	1.49	0.0408	0.0816	"	"	ND	"	58.4%	(34-116)	--	--	"	
Anthracene	"	1.40	0.0408	0.0816	"	"	0.272	"	44.2%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.23	0.0408	0.0816	"	"	0.0328	"	46.9%	(22-129)	--	--	"	
Benzo (a) pyrene	"	1.01	0.0408	0.0816	"	"	ND	"	39.6%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	1.24	0.0408	0.0816	"	"	ND	"	48.6%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	0.914	0.0408	0.0816	"	"	ND	"	35.8%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	0.892	0.0408	0.0816	"	"	ND	"	35.0%	(0-145)	--	--	"	
Chrysene	"	1.27	0.0408	0.0816	"	"	0.0163	"	49.2%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	0.797	0.0408	0.0816	"	"	ND	"	31.3%	(0-141)	--	--	"	
Fluoranthene	"	1.74	0.0408	0.0816	"	"	0.466	"	50.0%	(30-125)	--	--	"	
Fluorene	"	1.53	0.0408	0.0816	"	"	0.403	"	44.2%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	0.934	0.0408	0.0816	"	"	ND	"	36.6%	(0-135)	--	--	"	
Naphthalene	"	1.91	0.0816	0.0816	"	"	0.577	"	52.3%	(30-126)	--	--	"	
Phenanthrene	"	3.44	0.0408	0.0816	"	"	2.21	"	48.2%	(34-126)	--	--	"	
Pyrene	"	1.92	0.0816	0.0816	"	"	0.537	"	54.2%	(14-168)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*47.1%*		*Limits:*	*25-125%*	"						*10/11/05 18:02*	
Pyrene-d10			*58.0%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*64.7%*			*10-125%*	"						"	
Matrix Spike Dup (5100184-MSD1)				QC Source: P511172-01				Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	1.44	0.00943	0.0189	ug/l	1x	ND	2.36	61.0%	(35-120)	9.97%	(50)	10/11/05 14:48	
Acenaphthylene	"	1.46	0.00943	0.0189	"	"	ND	"	61.9%	(34-116)	7.17%	"	"	
Anthracene	"	1.14	0.00943	0.0189	"	"	ND	"	48.3%	(24-119)	8.19%	"	"	
Benzo (a) anthracene	"	1.42	0.00943	0.0189	"	"	ND	"	60.2%	(22-129)	9.57%	"	"	
Benzo (a) pyrene	"	1.12	0.00943	0.0189	"	"	ND	"	47.5%	(4-112)	19.9%	"	"	
Benzo (b) fluoranthene	"	1.69	0.00943	0.0189	"	"	ND	"	71.6%	(0-136)	27.7%	"	"	
Benzo (ghi) perylene	"	1.25	0.00943	0.0189	"	"	ND	"	53.0%	(0-126)	34.0%	"	"	
Benzo (k) fluoranthene	"	1.32	0.00943	0.0189	"	"	ND	"	55.9%	(0-145)	2.30%	"	"	
Chrysene	"	1.42	0.00943	0.0189	"	"	ND	"	60.2%	(7-137)	5.81%	"	"	
Dibenzo (a,h) anthracene	"	1.17	0.00943	0.0189	"	"	ND	"	49.6%	(0-141)	36.5%	"	"	
Fluoranthene	"	1.56	0.00943	0.0189	"	"	ND	"	66.1%	(30-125)	9.34%	"	"	
Fluorene	"	1.29	0.00943	0.0189	"	"	ND	"	54.7%	(27-124)	6.71%	"	"	

North Creek Analytical - Portland

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Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
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Koppers023470

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-10	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:40

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100184 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (5100184-MSD1)				QC Source: P511172-01				Extracted: 10/05/05 15:10						
Indeno (1,2,3-cd) pyrene	EPA 8270m	1.47	0.00943	0.0189	ug/l	1x	ND	2.36	62.3%	(0-135)	24.5%	(50)	10/11/05 14:48	
Naphthalene	"	1.43	0.0189	0.0189	"	"	0.0427	"	58.8%	(30-126)	7.53%	"	"	
Phenanthrene	"	1.51	0.00943	0.0189	"	"	0.0109	"	63.5%	(34-126)	4.67%	"	"	
Pyrene	"	1.52	0.0189	0.0189	"	"	ND	"	64.4%	(14-168)	4.77%	"	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*56.4%*	*Limits:*	*25-125%*	"							*10/11/05 14:48*	
Pyrene-d10			*66.1%*		*23-150%*	"							"	
Benzo (a) pyrene-d12			*75.0%*		*10-125%*	"							"	
Matrix Spike Dup (5100184-MSD2)				QC Source: P5J0060-01				Extracted: 10/05/05 15:10						
Acenaphthene	EPA 8270m	2.26	0.0408	0.0816	ug/l	4x	0.545	2.55	67.3%	(35-120)	17.8%	(50)	10/11/05 18:29	
Acenaphthylene	"	1.71	0.0408	0.0816	"	"	ND	"	67.1%	(34-116)	13.9%	"	"	
Anthracene	"	1.73	0.0408	0.0816	"	"	0.272	"	57.2%	(24-119)	25.6%	"	"	
Benzo (a) anthracene	"	1.50	0.0408	0.0816	"	"	0.0328	"	57.5%	(22-129)	20.3%	"	"	
Benzo (a) pyrene	"	1.29	0.0408	0.0816	"	"	ND	"	50.6%	(4-112)	24.4%	"	"	
Benzo (b) fluoranthene	"	1.55	0.0408	0.0816	"	"	ND	"	60.8%	(0-136)	22.3%	"	"	
Benzo (ghi) perylene	"	1.21	0.0408	0.0816	"	"	ND	"	47.5%	(0-126)	28.1%	"	"	
Benzo (k) fluoranthene	"	1.21	0.0408	0.0816	"	"	ND	"	47.5%	(0-145)	30.3%	"	"	
Chrysene	"	1.50	0.0408	0.0816	"	"	0.0163	"	58.2%	(7-137)	16.8%	"	"	
Dibenzo (a,h) anthracene	"	1.06	0.0408	0.0816	"	"	ND	"	41.6%	(0-141)	28.3%	"	"	
Fluoranthene	"	2.10	0.0408	0.0816	"	"	0.466	"	64.1%	(30-125)	24.7%	"	"	
Fluorene	"	1.80	0.0408	0.0816	"	"	0.403	"	54.8%	(27-124)	21.4%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.31	0.0408	0.0816	"	"	ND	"	51.4%	(0-135)	33.6%	"	"	
Naphthalene	"	2.19	0.0816	0.0816	"	"	0.577	"	63.3%	(30-126)	19.0%	"	"	
Phenanthrene	"	4.08	0.0408	0.0816	"	"	2.21	"	73.3%	(34-126)	41.3%	"	"	
Pyrene	"	2.23	0.0816	0.0816	"	"	0.537	"	66.4%	(14-168)	20.2%	"	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*56.5%*	*Limits:*	*25-125%*	"							*10/11/05 18:29*	
Pyrene-d10			*63.5%*		*23-150%*	"							"	
Benzo (a) pyrene-d12			*66.7%*		*10-125%*	"							"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-10	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:40

Conventional Chemistry Parameters per APHA/EPA Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100367 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100367-BLK1)								Extracted: 10/10/05 08:40						
Cyanide (total)	EPA 9012A	ND	—	0.00500	mg/l	1x	–	–	–	–	–	–	10/12/05 11:36	
LCS (5100367-BS1)								Extracted: 10/10/05 08:40						
Cyanide (total)	EPA 9012A	0.442	—	0.00500	mg/l	1x	–	0.400	110%	(75-125)	–	–	10/12/05 11:36	
Duplicate (5100367-DUP1)				QC Source: P5J0060-01				Extracted: 10/10/05 08:40						
Cyanide (total)	EPA 9012A	0.0805	—	0.00500	mg/l	1x	0.0775	–	–	–	3.80%	(20)	10/12/05 11:36	
Matrix Spike (5100367-MS1)				QC Source: P5J0060-01				Extracted: 10/10/05 08:40						
Cyanide (total)	EPA 9012A	0.533	—	0.00500	mg/l	1x	0.0775	0.400	114%	(75-125)	–	–	10/12/05 11:36	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-10	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	11/09/05 16:40

METALS - Laboratory Quality Control Results

Del Mar Analytical, Irvine

QC Batch: 5J19100 **Water Preparation Method: EPA 3005A ICPMS**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5J19100-BLK1)								Extracted: 10/19/05 15:33						
Arsenic	EPA 6020	ND	—	1.0	ug/l	1x	—	—	—	—	—	—	10/19/05 20:43	
Chromium	"	ND	—	2.0	"	"	—	—	—	—	—	—	"	
Copper	"	ND	—	2.0	"	"	—	—	—	—	—	—	"	
Lead	"	ND	—	1.0	"	"	—	—	—	—	—	—	10/20/05 11:16	
Nickel	"	ND	—	2.0	"	"	—	—	—	—	—	—	10/19/05 20:43	
Zinc	"	ND	—	20	"	"	—	—	—	—	—	—	"	
LCS (5J19100-BS1)								Extracted: 10/19/05 15:33						
Arsenic	EPA 6020	83.1	—	1.0	ug/l	1x	—	80.0	104%	(80-120)	—	—	10/19/05 20:47	
Chromium	"	81.1	—	2.0	"	"	—	"	101%	"	—	—	"	
Copper	"	86.7	—	2.0	"	"	—	"	108%	"	—	—	"	
Lead	"	83.3	—	1.0	"	"	—	"	104%	"	—	—	10/20/05 11:20	
Nickel	"	86.2	—	2.0	"	"	—	"	108%	"	—	—	10/19/05 20:47	
Zinc	"	86.3	—	20	"	"	—	"	108%	"	—	—	"	
Matrix Spike (5J19100-MS1)				QC Source: P5J0060-01				Extracted: 10/19/05 15:33						
Arsenic	EPA 6020	81.1	—	1.0	ug/l	1x	6.5	80.0	93%	(75-125)	—	—	10/19/05 20:55	
Chromium	"	79.7	—	2.0	"	"	8.4	"	89%	"	—	—	"	
Copper	"	80.3	—	2.0	"	"	4.3	"	95%	"	—	—	"	
Lead	"	82.3	—	1.0	"	"	0.47	"	102%	"	—	—	10/20/05 11:28	
Nickel	"	82.0	—	2.0	"	"	6.4	"	94%	"	—	—	10/19/05 20:55	
Zinc	"	77.0	—	20	"	"	7.0	"	88%	"	—	—	"	
Matrix Spike Dup (5J19100-MSD1)				QC Source: P5J0060-01				Extracted: 10/19/05 15:33						
Arsenic	EPA 6020	81.6	—	1.0	ug/l	1x	6.5	80.0	94%	(75-125)	0.6%	(20)	10/19/05 20:59	
Chromium	"	80.0	—	2.0	"	"	8.4	"	90%	"	0.4%	"	"	
Copper	"	79.3	—	2.0	"	"	4.3	"	94%	"	1%	"	"	
Lead	"	81.7	—	1.0	"	"	0.47	"	102%	"	0.7%	"	10/20/05 11:32	
Nickel	"	81.5	—	2.0	"	"	6.4	"	94%	"	0.6%	"	10/19/05 20:59	
Zinc	"	76.5	—	20	"	"	7.0	"	87%	"	0.7%	"	"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-10	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	11/09/05 16:40

Notes and Definitions

Report Specific Notes:

J	-	Estimated value.
Q-01	-	The matrix spike recovery, and/or RPD, for this QC sample is outside of established control limits. Failure of a matrix spike QC sample does not represent an out-of-control condition for the batch.
Q-06	-	RPD is not applicable for analyte concentrations less than 5 times the MRL.
Q-07	-	The matrix spike recovery, and/or RPD, for this QC sample is outside control limits due to sample dilution required from high analyte concentration and/or matrix interferences.
R-03	-	The reporting limit for this analyte was raised due to matrix interference.
S-03	-	Surrogate recovery is outside of NCA established control limits.
S-10	-	The recovery for this parameter is outside acceptance limits. See case narrative.
X	-	See case narrative.

Laboratory Reporting Conventions:

DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR / NA	-	Not Reported / Not Available
dry	-	Sample results reported on a dry weight basis. Reporting Limits have been corrected for %Solids.
wet	-	Sample results and reporting limits reported on a wet weight basis (as received).
RPD	-	Relative Percent Difference. (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

D5J0135

HAHN AND ASSOCIATES, INC.
Environmental Consultants

434 NW Sixth Avenue, Suite 203 • Portland OR 97209
(503) 796-0717 • Fax (503) 227-2209

Laboratory: North Creek Analytical Portland OR

Lab Project No.:

CHAIN OF CUSTODY

Chain of Custody No.:

Project Manager	Rob Ede, HAI
Project No.	2708-30
Project Name	NNGGRRI <GW Monitoring>
Collected by	Matt Graves / Ben Uhl

Liquid with Sediment Sample: ____ Test Filtrate ____ Test Sediment ____ Test Both

Multi-Phase Sample: ____ Test One (which) ____ Test Separately ____ Shake

Samples Received at 4C (Y or N)	
Appropriate Containers Used (Y or N)	
Provide Verbal Results (Y or N)	No
Provide Preliminary Fax Results	Yes

Comments

Sample Number Prefix: 2708-051003

Pricing and reporting Levels As Per:
Philip Nemberg, NCA
& As, Cr, Cu, Ni, Pb, Zn

Lab ID	Sample #	Date	Time	Sample Description	Soil	Water	Other	Number of Containers	EPA Method 8270 SIM, PAH's - low level	EPA Method 8021, BTEX	EPA Method 9010, Amen. Cyn. + CN	EPA Method 6010, Total Metals						RUSH	Remarks
	MW-13-30-132	10/3/05	1055	Groundwater		X		7	X	X	X	X							
	MW-4-57-133	10/3/05	1155	Groundwater		X		7	X	X	X	X							
	MW-16-65-134	10/3/05	1340	Groundwater		X		7	X	X	X	X							
	MW-16-95-136	10/3/05	1455	Groundwater		X		7	X	X	X	X							
	MW7-137	10/3/05	1500	Equipment Blank		X		5	X	X									
	MW-16-65-135	10/3/05	1340	Groundwater		X		7	X	X	X	X							
	131	10/3/05	0800	Trip blank		X		1		X									

Relinquished by	Company	Date	Time	Received by	Company
Ben Uhl	HAI	10/4/05	13:50	[illegible]	NCA
[illegible]	NCA	10/4/05	15:30	[illegible]	NCA 3:50 10-4-05

Koppers023475

NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: HAHN + ASSOC.

1. **Please sign for receipt and opening of** 1 **cooler or** ___ **other** ___

   By (print) ALLISON GIRLNER (sign) [illegible]

2. Date samples received 10/4/05 Date opened: Same ✓ or ___/___/___

3. Delivered by: ✓ NCA BOB courier ___ FedEx ___ UPS ___ Courier ___ Client ___ Other ___

   Airbill # if applicable ___ (Put copy of shipping papers in file)

4. There were 1 custody seals present, signed by BOB date 10/4/05

5. Were the custody seals unbroken and intact at the date and time of arrival? X Yes ___ No

6. Was ice used? ___ yes X no Type of ice: ___ blue ice ___ gel ice ___ real ice

   Temperature (degrees C) 7.2 Raytek thermometer ___ Digi-Therm (probe temperature blank)

   Glass 0.95

7. Are custody papers sealed in a plastic bag and taped inside to lid? ___ Yes ✓ No

8. Were custody papers filled out properly (ink, signed, etc.)? ✓ Yes ___ No

   If "no" please specify: ___

9. Was project identifiable from custody papers? X Yes ___ No

   Name of project NNGRRI GW Monitoring (if applicable)

10. **Initial and date for unpacking:** CFLCF **(initials)** **date** 10/5/05

11. Packing material: ___ bubble wrap/bag X styrofoam ___ cardboard ___ other

12. Were samples in bags? ___ Yes X No

13. Did all containers indicated on the COC arrive? ✓ Yes ___ No

    If "no" please indicate which containers were absent ___

14. Were all containers unbroken and labels in good condition? ✓ Yes ___ No

    If "no" please indicate which containers ___

15. Were all bottle labels complete (ID, date, time, signature, etc.)? ✓ Yes ___ No

    Do the IDs, times, etc. agree with the COC? ___ Yes ___ No

    If "no" please indicate which containers ___

16. Are containers properly preserved for indicated analysis? ___ Yes ___ No

17. Is there adequate volume for the test(s) requested? ✓ Yes ___ No

18. If voa vials were submitted, are they free of bubbles? ___ N/A ___ Yes ___ No

19. **Log-in phase: Date samples were logged in:** 10/5/05 **Elm Project # P** [illegible]

20. Logged in by (print) CALLIE FRANSLICH (sign) [illegible]

21. Was the project manager notified of status? (Use back of form as a record) ___ Yes ___ No

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October 24, 2005

Rob Ede
Hahn and Associates, Inc.
434 NW Sixth Ave., Suite 203
Portland, OR 97209

RE: NNGGRI

Enclosed are the results of analyses for samples received by the laboratory on 10/04/05 15:50.
The following list is a summary of the NCA Work Orders contained in this report.
If you have any questions concerning this report, please feel free to contact me.

Work	Project	ProjectNumber
P5J0135	NNGGRI	2708-30

Thank You,

Roxanne L. Clifton

Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/24/05 16:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2708-051003-MW-13-30-132	P5J0135-01	Water	10/03/05 10:55	10/04/05 15:50
2708-051003-MW-4-57-133	P5J0135-02	Water	10/03/05 11:55	10/04/05 15:50
2708-051003-MW-16-65-134	P5J0135-03	Water	10/03/05 13:40	10/04/05 15:50
2708-051003-MW-16-45-136	P5J0135-04	Water	10/03/05 14:55	10/04/05 15:50
2708-051003-MW7-137	P5J0135-05	Water	10/03/05 15:00	10/04/05 15:50
2708-051003-MW-16-65-135	P5J0135-06	Water	10/03/05 13:40	10/04/05 15:50
2708-051003-131	P5J0135-07	Water	10/03/05 08:00	10/04/05 15:50

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0135-01 Water	**2708-051003-MW-13-30-132**			**Sampled: 10/03/05 10:55**						
Benzene	EPA 8021B	**1940**	-----	25.0	ug/l	50x	5100269	10/07/05	10/07/05 14:01	
Toluene	"	ND	-----	25.0	"	"	"	"	"	
Ethylbenzene	"	**121**	-----	25.0	"	"	"	"	"	
Xylenes (total)	"	**62.2**	-----	50.0	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 106%*		*Limits: 70 - 130 %*		*1x*			"	
P5J0135-02RE1 Water	**2708-051003-MW-4-57-133**			**Sampled: 10/03/05 11:55**						
Benzene	EPA 8021B	**622**	-----	5.00	ug/l	10x	5100320	10/07/05	10/11/05 06:51	
Toluene	"	ND	-----	5.00	"	"	"	"	"	
Ethylbenzene	"	**231**	-----	5.00	"	"	"	"	"	
Xylenes (total)	"	**65.1**	-----	10.0	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 85.0%*		*Limits: 70 - 130 %*		*1x*			"	
P5J0135-03 Water	**2708-051003-MW-16-65-134**			**Sampled: 10/03/05 13:40**						
Benzene	EPA 8021B	**991**	-----	25.0	ug/l	50x	5100269	10/07/05	10/07/05 14:36	
Toluene	"	ND	-----	25.0	"	"	"	"	"	
Ethylbenzene	"	**216**	-----	25.0	"	"	"	"	"	
Xylenes (total)	"	**182**	-----	50.0	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 106%*		*Limits: 70 - 130 %*		*1x*			"	
P5J0135-04 Water	**2708-051003-MW-16-45-136**			**Sampled: 10/03/05 14:55**						
Benzene	EPA 8021B	**3710**	-----	50.0	ug/l	100x	5100269	10/07/05	10/07/05 15:11	
Toluene	"	**1670**	-----	50.0	"	"	"	"	"	
Ethylbenzene	"	**559**	-----	50.0	"	"	"	"	"	
Xylenes (total)	"	**1050**	-----	100	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 104%*		*Limits: 70 - 130 %*		*1x*			"	
P5J0135-05RE2 Water	**2708-051003-MW7-137**			**Sampled: 10/03/05 15:00**						**R-16**
Benzene	EPA 8021B	ND	-----	0.500	ug/l	1x	5100538	10/12/05	10/12/05 15:54	
Toluene	"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 67.5%*		*Limits: 70 - 130 %*		"			"	*S-03*

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Roxanne L. Clifton For Philip Nerenberg, Laboratory Manager

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0135-06	**Water**	**2708-051003-MW-16-65-135**			**Sampled: 10/03/05 13:40**						
Benzene		EPA 8021B	1030	-----	25.0	ug/l	50x	5100269	10/07/05	10/07/05 15:45	
Toluene		"	ND	-----	25.0	"	"	"	"	"	
Ethylbenzene		"	223	-----	25.0	"	"	"	"	"	
Xylenes (total)		"	186	-----	50.0	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 104%*		*Limits: 70 - 130 %*		*1x*			"	
P5J0135-07	**Water**	**2708-051003-131**			**Sampled: 10/03/05 08:00**						
Benzene		EPA 8021B	ND	-----	0.500	ug/l	1x	5100269	10/07/05	10/07/05 19:42	
Toluene		"	ND	-----	0.500	"	"	"	"	"	
Ethylbenzene		"	ND	-----	0.500	"	"	"	"	"	
Xylenes (total)		"	ND	-----	1.00	"	"	"	"	"	
Surrogate(s): 4-BFB (PID)			*Recovery: 105%*		*Limits: 70 - 130 %*		"			"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/24/05 16:09

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0135-01 Water	**2708-051003-MW-13-30-132**			**Sampled: 10/03/05 10:55**						**R-05**
Acenaphthene	EPA 8270m	204	*1.00*	2.00	ug/l	100x	5100289	10/07/05	10/12/05 23:07	
Acenaphthylene	"	ND	*2.00*	2.00	"	"	"	"	"	
Anthracene	"	7.48	*1.00*	2.00	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*1.00*	2.00	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*1.00*	2.00	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*1.00*	2.00	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*1.00*	2.00	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*1.00*	2.00	"	"	"	"	"	
Chrysene	"	ND	*1.00*	2.00	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*1.00*	2.00	"	"	"	"	"	
Fluoranthene	"	3.30	*1.00*	2.00	"	"	"	"	"	
Fluorene	"	45.4	*1.00*	2.00	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*1.00*	2.00	"	"	"	"	"	
Naphthalene	"	238	*2.00*	2.00	"	"	"	"	"	
Phenanthrene	"	67.3	*1.00*	2.00	"	"	"	"	"	
Pyrene	"	2.99	*2.00*	2.00	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 97.6%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*76.0%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*62.4%*		*10 - 125 %*		"			"	
P5J0135-02 Water	**2708-051003-MW-4-57-133**			**Sampled: 10/03/05 11:55**						**R-05**
Acenaphthene	EPA 8270m	74.7	*0.500*	1.00	ug/l	50x	5100289	10/07/05	10/13/05 17:40	
Acenaphthylene	"	1.23	*0.500*	1.00	"	"	"	"	"	
Anthracene	"	1.61	*0.500*	1.00	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.500*	1.00	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.500*	1.00	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.500*	1.00	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.500*	1.00	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.500*	1.00	"	"	"	"	"	
Chrysene	"	ND	*0.500*	1.00	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.500*	1.00	"	"	"	"	"	
Fluoranthene	"	2.06	*0.500*	1.00	"	"	"	"	"	
Fluorene	"	4.06	*0.500*	1.00	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.500*	1.00	"	"	"	"	"	
Naphthalene	"	178	*1.00*	1.00	"	"	"	"	"	
Phenanthrene	"	7.46	*0.500*	1.00	"	"	"	"	"	
Pyrene	"	2.51	*1.00*	1.00	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 68.4%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*76.8%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*56.8%*		*10 - 125 %*		"			"	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0135-03 Water	**2708-051003-MW-16-65-134**			**Sampled: 10/03/05 13:40**						**R-05**
Acenaphthene	EPA 8270m	**68.7**	*2.06*	4.12	ug/l	200x	5100289	10/07/05	10/12/05 17:10	
Acenaphthylene	"	**6.18**	*2.06*	4.12	"	"	"	"	"	
Anthracene	"	**5.65**	*2.06*	4.12	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*2.06*	4.12	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*2.06*	4.12	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*2.06*	4.12	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*2.06*	4.12	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*2.06*	4.12	"	"	"	"	"	
Chrysene	"	ND	*2.06*	4.12	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*2.06*	4.12	"	"	"	"	"	
Fluoranthene	"	**3.09**	*2.06*	4.12	"	"	"	"	"	J
Fluorene	"	**27.7**	*2.06*	4.12	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*2.06*	4.12	"	"	"	"	"	
Naphthalene	"	**2900**	*41.2*	41.2	"	2000x	"	"	10/13/05 16:17	
Phenanthrene	"	**49.6**	*2.06*	4.12	"	200x	"	"	10/12/05 17:10	
Pyrene	"	ND	*4.12*	4.12	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 74.0%*		*Limits: 25 - 125 %*		"			"	J
Pyrene-d10		*82.6%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*64.3%*		*10 - 125 %*		"			"	J
P5J0135-04 Water	**2708-051003-MW-16-45-136**			**Sampled: 10/03/05 14:55**						**R-05**
Acenaphthene	EPA 8270m	**278**	*2.50*	5.00	ug/l	250x	5100289	10/07/05	10/12/05 17:38	
Acenaphthylene	"	**32.6**	*2.50*	5.00	"	"	"	"	"	
Anthracene	"	**120**	*2.50*	5.00	"	"	"	"	"	
Benzo (a) anthracene	"	**51.7**	*2.50*	5.00	"	"	"	"	"	
Benzo (a) pyrene	"	**44.7**	*2.50*	5.00	"	"	"	"	"	
Benzo (b) fluoranthene	"	**22.0**	*2.50*	5.00	"	"	"	"	"	
Benzo (ghi) perylene	"	**32.5**	*2.50*	5.00	"	"	"	"	"	
Benzo (k) fluoranthene	"	**28.6**	*2.50*	5.00	"	"	"	"	"	
Chrysene	"	**61.9**	*2.50*	5.00	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	**5.80**	*2.50*	5.00	"	"	"	"	"	
Fluoranthene	"	**177**	*2.50*	5.00	"	"	"	"	"	
Fluorene	"	**154**	*2.50*	5.00	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**22.1**	*2.50*	5.00	"	"	"	"	"	
Naphthalene	"	**7820**	*125*	125	"	6250x	"	"	10/13/05 15:50	
Phenanthrene	"	**687**	*2.50*	5.00	"	250x	"	"	10/12/05 17:38	
Pyrene	"	**237**	*5.00*	5.00	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: NR*		*Limits: 25 - 125 %*		"			"	S-01
Pyrene-d10		*NR*		*23 - 150 %*		"			"	S-01
Benzo (a) pyrene-d12		*NR*		*10 - 125 %*		"			"	S-01

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Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0135-05 Water	**2708-051003-MW7-137**		**Sampled: 10/03/05 15:00**							
Acenaphthene	EPA 8270m	**0.0852**	*0.0111*	0.0222	ug/l	1x	5100289	10/07/05	10/12/05 18:33	
Acenaphthylene	"	ND	*0.0111*	0.0222	"	"	"	"	"	
Anthracene	"	**0.0308**	*0.0111*	0.0222	"	"	"	"	"	
Benzo (a) anthracene	"	**0.0112**	*0.0111*	0.0222	"	"	"	"	"	J
Benzo (a) pyrene	"	**0.0143**	*0.0111*	0.0222	"	"	"	"	"	J
Benzo (b) fluoranthene	"	**0.0136**	*0.0111*	0.0222	"	"	"	"	"	J
Benzo (ghi) perylene	"	**0.0141**	*0.0111*	0.0222	"	"	"	"	"	J
Benzo (k) fluoranthene	"	ND	*0.0111*	0.0222	"	"	"	"	"	
Chrysene	"	**0.0154**	*0.0111*	0.0222	"	"	"	"	"	J
Dibenzo (a,h) anthracene	"	ND	*0.0111*	0.0222	"	"	"	"	"	
Fluoranthene	"	**0.0492**	*0.0111*	0.0222	"	"	"	"	"	
Fluorene	"	**0.0603**	*0.0111*	0.0222	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.0111*	0.0222	"	"	"	"	"	
Naphthalene	"	**2.36**	*0.0222*	0.0222	"	"	"	"	"	
Phenanthrene	"	**0.257**	*0.0111*	0.0222	"	"	"	"	"	
Pyrene	"	**0.0563**	*0.0222*	0.0222	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 55.4%*		*Limits: 25 - 125 %*		"			"	
Pyrene-d10		*72.7%*		*23 - 150 %*		"			"	
Benzo (a) pyrene-d12		*80.2%*		*10 - 125 %*		"			"	
P5J0135-06 Water	**2708-051003-MW-16-65-135**		**Sampled: 10/03/05 13:40**							**R-05**
Acenaphthene	EPA 8270m	**68.4**	*2.20*	4.40	ug/l	200x	5100289	10/07/05	10/12/05 18:05	
Acenaphthylene	"	**6.04**	*2.20*	4.40	"	"	"	"	"	
Anthracene	"	**5.75**	*2.20*	4.40	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*2.20*	4.40	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*2.20*	4.40	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*2.20*	4.40	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*2.20*	4.40	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*2.20*	4.40	"	"	"	"	"	
Chrysene	"	ND	*2.20*	4.40	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*2.20*	4.40	"	"	"	"	"	
Fluoranthene	"	**3.09**	*2.20*	4.40	"	"	"	"	"	J
Fluorene	"	**26.9**	*2.20*	4.40	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*2.20*	4.40	"	"	"	"	"	
Naphthalene	"	**3020**	*44.0*	44.0	"	2000x	"	"	10/13/05 16:45	
Phenanthrene	"	**49.3**	*2.20*	4.40	"	200x	"	"	10/12/05 18:05	
Pyrene	"	ND	*4.40*	4.40	"	"	"	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 65.5%*		*Limits: 25 - 125 %*		"			"	*J*
Pyrene-d10		*75.6%*		*23 - 150 %*		"			"	*J*
Benzo (a) pyrene-d12		*67.6%*		*10 - 125 %*		"			"	*J*

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0135-01	**Water**	**2708-051003-MW-13-30-132**			**Sampled: 10/03/05 10:55**						
Cyanide (amenable)		EPA 9010A	0.0703	----	0.00500	mg/l	1x	5100367	10/10/05	10/12/05 11:36	
Cyanide (total)		EPA 9012A	0.0889	----	0.00500	"	"	"	"	"	
P5J0135-02	**Water**	**2708-051003-MW-4-57-133**			**Sampled: 10/03/05 11:55**						
Cyanide (amenable)		EPA 9010A	0.550	----	0.500	mg/l	100x	5100367	10/10/05	10/12/05 11:36	
Cyanide (total)		EPA 9012A	2.70	----	0.500	"	"	"	"	"	
P5J0135-03	**Water**	**2708-051003-MW-16-65-134**			**Sampled: 10/03/05 13:40**						
Cyanide (amenable)		EPA 9010A	0.0854	----	0.00500	mg/l	1x	5100566	10/13/05	10/13/05 15:36	
Cyanide (total)		EPA 9012A	0.250	----	0.00500	"	"	"	"	"	
P5J0135-04	**Water**	**2708-051003-MW-16-45-136**			**Sampled: 10/03/05 14:55**						
Cyanide (amenable)		EPA 9010A	0.0528	----	0.00500	mg/l	1x	5100566	10/13/05	10/13/05 15:36	
Cyanide (total)		EPA 9012A	0.131	----	0.00500	"	"	"	"	"	
P5J0135-06	**Water**	**2708-051003-MW-16-65-135**			**Sampled: 10/03/05 13:40**						
Cyanide (amenable)		EPA 9010A	0.184	----	0.00500	mg/l	1x	5100367	10/10/05	10/12/05 11:36	
Cyanide (total)		EPA 9012A	0.282	----	0.00500	"	"	"	"	"	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

METALS

Del Mar Analytical, Irvine

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0135-01	**Water**	**2708-051003-MW-13-30-132**			**Sampled: 10/03/05 10:55**						
Arsenic		EPA 6020	11	-----	1.0	ug/l	1x	5J19100	10/19/05	10/19/05 21:03	
Chromium		"	ND	-----	2.0	"	"	"	"	"	
Copper		"	ND	-----	2.0	"	"	"	"	"	
Lead		"	ND	-----	1.0	"	"	"	"	10/20/05 11:36	
Nickel		"	ND	-----	2.0	"	"	"	"	10/19/05 21:03	
Zinc		"	ND	-----	20	"	"	"	"	"	
P5J0135-02	**Water**	**2708-051003-MW-4-57-133**			**Sampled: 10/03/05 11:55**						
Arsenic		EPA 6020	11	-----	1.0	ug/l	1x	5J19100	10/19/05	10/19/05 21:07	
Chromium		"	ND	-----	2.0	"	"	"	"	"	
Copper		"	ND	-----	2.0	"	"	"	"	"	
Lead		"	ND	-----	1.0	"	"	"	"	10/20/05 11:40	
Nickel		"	5.8	-----	2.0	"	"	"	"	10/19/05 21:07	
Zinc		"	ND	-----	20	"	"	"	"	"	
P5J0135-03	**Water**	**2708-051003-MW-16-65-134**			**Sampled: 10/03/05 13:40**						
Arsenic		EPA 6020	2.2	-----	1.0	ug/l	1x	5J19100	10/19/05	10/19/05 21:11	
Chromium		"	ND	-----	2.0	"	"	"	"	"	
Copper		"	ND	-----	2.0	"	"	"	"	"	
Lead		"	ND	-----	1.0	"	"	"	"	10/20/05 11:44	
Nickel		"	2.5	-----	2.0	"	"	"	"	10/19/05 21:11	
Zinc		"	ND	-----	20	"	"	"	"	"	
P5J0135-04	**Water**	**2708-051003-MW-16-45-136**			**Sampled: 10/03/05 14:55**						
Arsenic		EPA 6020	8.2	-----	1.0	ug/l	1x	5J19100	10/19/05	10/19/05 21:15	
Chromium		"	23	-----	2.0	"	"	"	"	"	
Copper		"	30	-----	2.0	"	"	"	"	"	
Lead		"	19	-----	1.0	"	"	"	"	10/20/05 11:48	
Nickel		"	34	-----	2.0	"	"	"	"	10/19/05 21:15	
Zinc		"	49	-----	20	"	"	"	"	"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

METALS

Del Mar Analytical, Irvine

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
P5J0135-06	**Water**	**2708-051003-MW-16-65-135**			**Sampled: 10/03/05 13:40**						
Arsenic		EPA 6020	2.0	—	1.0	ug/l	1x	5J19100	10/19/05	10/19/05 21:19	
Chromium		"	4.4	—	2.0	"	"	"	"	"	
Copper		"	11	—	2.0	"	"	"	"	"	
Lead		"	ND	—	1.0	"	"	"	"	10/20/05 11:52	
Nickel		"	5.4	—	2.0	"	"	"	"	10/19/05 21:19	
Zinc		"	94	—	20	"	"	"	"	"	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Edc	10/24/05 16:09

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100269 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100269-BLK1)								Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	10/07/05 13:26	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*104%*		*Limits:*	*70-130%*	"						*10/07/05 13:26*	
LCS (5100269-BS1)								Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	20.1	—	0.500	ug/l	1x	—	20.0	100%	(70-130)	—	—	10/07/05 11:42	
Toluene	"	20.3	—	0.500	"	"	—	"	102%	(76-129)	—	—	"	
Ethylbenzene	"	21.2	—	0.500	"	"	—	"	106%	(82-130)	—	—	"	
Xylenes (total)	"	65.3	—	1.00	"	"	—	60.0	109%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*108%*		*Limits:*	*70-130%*	"						*10/07/05 11:42*	
Matrix Spike (5100269-MS1)					QC Source:	P5J0135-01		Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	2910	—	25.0	ug/l	50x	1940	1000	97.0%	(65-144)	—	—	10/07/05 23:09	
Toluene	"	969	—	25.0	"	"	ND	"	96.9%	(68-139)	—	—	"	
Ethylbenzene	"	1130	—	25.0	"	"	121	"	101%	(69-144)	—	—	"	
Xylenes (total)	"	3170	—	50.0	"	"	62.2	3000	104%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*103%*		*Limits:*	*70-130%*	*1x*						*10/07/05 23:09*	
Matrix Spike Dup (5100269-MSD1)					QC Source:	P5J0135-01		Extracted: 10/07/05 11:36						
Benzene	EPA 8021B	3090	—	25.0	ug/l	50x	1940	1000	115%	(65-144)	6.00%	(20)	10/07/05 23:43	
Toluene	"	998	—	25.0	"	"	ND	"	99.8%	(68-139)	2.95%	"	"	
Ethylbenzene	"	1160	—	25.0	"	"	121	"	104%	(69-144)	2.62%	"	"	
Xylenes (total)	"	3300	—	50.0	"	"	62.2	3000	108%	(60-144)	4.02%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery:*	*105%*		*Limits:*	*70-130%*	*1x*						*10/07/05 23:43*	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100320 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100320-BLK1)								Extracted: 10/07/05 11:33						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	10/10/05 15:09	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 90.2%*		*Limits: 70-130%*		"							*10/10/05 15:09*	
LCS (5100320-BS1)								Extracted: 10/07/05 11:33						
Benzene	EPA 8021B	19.6	—	0.500	ug/l	1x	—	20.0	98.0%	(70-130)	—	—	10/10/05 14:05	
Toluene	"	20.2	—	0.500	"	"	—	"	101%	(76-129)	—	—	"	
Ethylbenzene	"	20.9	—	0.500	"	"	—	"	104%	(82-130)	—	—	"	
Xylenes (total)	"	62.4	—	1.00	"	"	—	60.0	104%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 103%*		*Limits: 70-130%*		"							*10/10/05 14:05*	
LCS Dup (5100320-BSD1)								Extracted: 10/07/05 11:33						
Benzene	EPA 8021B	19.3	—	0.500	ug/l	1x	—	20.0	96.5%	(70-130)	1.54%	(20)	10/10/05 14:37	
Toluene	"	19.8	—	0.500	"	"	—	"	99.0%	(76-129)	2.00%	"	"	
Ethylbenzene	"	20.6	—	0.500	"	"	—	"	103%	(82-130)	1.45%	"	"	
Xylenes (total)	"	61.4	—	1.00	"	"	—	60.0	102%	(76-130)	1.62%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 95.0%*		*Limits: 70-130%*		"							*10/10/05 14:37*	
Matrix Spike (5100320-MS1)				QC Source: P5J0176-03				Extracted: 10/07/05 11:33						
Benzene	EPA 8021B	18.5	—	0.500	ug/l	1x	2.43	20.0	80.4%	(65-144)	—	—	10/10/05 21:48	
Toluene	"	18.9	—	0.500	"	"	4.01	"	74.4%	(68-139)	—	—	"	
Ethylbenzene	"	19.7	—	0.500	"	"	1.29	"	92.0%	(69-144)	—	—	"	
Xylenes (total)	"	58.7	—	1.00	"	"	5.25	60.0	89.1%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 83.8%*		*Limits: 70-130%*		"							*10/10/05 21:48*	
Matrix Spike Dup (5100320-MSD1)				QC Source: P5J0176-03				Extracted: 10/07/05 11:33						
Benzene	EPA 8021B	17.3	—	0.500	ug/l	1x	2.43	20.0	74.4%	(65-144)	6.70%	(20)	10/10/05 22:20	
Toluene	"	17.6	—	0.500	"	"	4.01	"	68.0%	(68-139)	7.12%	"	"	
Ethylbenzene	"	18.4	—	0.500	"	"	1.29	"	85.6%	(69-144)	6.82%	"	"	
Xylenes (total)	"	55.0	—	1.00	"	"	5.25	60.0	82.9%	(60-144)	6.51%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 80.2%*		*Limits: 70-130%*		"							*10/10/05 22:20*	

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434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

BTEX per EPA Method 8021B - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100538 **Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100538-BLK1)								Extracted: 10/12/05 13:13						
Benzene	EPA 8021B	ND	—	0.500	ug/l	1x	—	—	—	—	—	—	10/12/05 14:37	
Toluene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Ethylbenzene	"	ND	—	0.500	"	"	—	—	—	—	—	—	"	
Xylenes (total)	"	ND	—	1.00	"	"	—	—	—	—	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 102%*		*Limits: 70-130%*		"							*10/12/05 14:37*	
LCS (5100538-BS1)								Extracted: 10/12/05 13:13						
Benzene	EPA 8021B	18.9	—	0.500	ug/l	1x	—	20.0	94.5%	(70-130)	—	—	10/12/05 14:05	
Toluene	"	19.5	—	0.500	"	"	—	"	97.5%	(76-129)	—	—	"	
Ethylbenzene	"	20.2	—	0.500	"	"	—	"	101%	(82-130)	—	—	"	
Xylenes (total)	"	60.3	—	1.00	"	"	—	60.0	100%	(76-130)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 103%*		*Limits: 70-130%*		"							*10/12/05 14:05*	
Matrix Spike (5100538-MS1)				QC Source: P5J0340-02				Extracted: 10/12/05 13:13						
Benzene	EPA 8021B	168	—	5.00	ug/l	10x	3.01	200	82.5%	(65-144)	—	—	10/13/05 00:23	
Toluene	"	176	—	5.00	"	"	4.96	"	85.5%	(68-139)	—	—	"	
Ethylbenzene	"	190	—	5.00	"	"	2.35	"	93.8%	(69-144)	—	—	"	
Xylenes (total)	"	569	—	10.0	"	"	8.24	600	93.5%	(60-144)	—	—	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 86.4%*		*Limits: 70-130%*		*1x*							*10/13/05 00:23*	
Matrix Spike Dup (5100538-MSD1)				QC Source: P5J0340-02				Extracted: 10/12/05 13:13						
Benzene	EPA 8021B	181	—	5.00	ug/l	10x	3.01	200	89.0%	(65-144)	7.45%	(20)	10/13/05 00:55	
Toluene	"	186	—	5.00	"	"	4.96	"	90.5%	(68-139)	5.52%	"	"	
Ethylbenzene	"	199	—	5.00	"	"	2.35	"	98.3%	(69-144)	4.63%	"	"	
Xylenes (total)	"	597	—	10.0	"	"	8.24	600	98.1%	(60-144)	4.80%	"	"	
Surrogate(s): 4-BFB (PID)		*Recovery: 95.2%*		*Limits: 70-130%*		*1x*							*10/13/05 00:55*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100289 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100289-BLK1)								Extracted: 10/07/05 06:51						
Acenaphthene	EPA 8270m	ND	0.0100	0.0200	ug/l	1x	--	--	--	--	--	--	10/12/05 12:09	
Acenaphthylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0100	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*64.8%*		*Limits:*	*25-125%*	"						*10/12/05 12:09*	
Pyrene-d10			*74.4%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*78.4%*			*10-125%*	"						"	
LCS (5100289-BS1)								Extracted: 10/07/05 06:51						
Acenaphthene	EPA 8270m	1.85	0.0100	0.0200	ug/l	1x	--	2.50	74.0%	(35-120)	--	--	10/12/05 12:36	
Acenaphthylene	"	1.94	0.0100	0.0200	"	"	--	"	77.6%	(34-116)	--	--	"	
Anthracene	"	1.74	0.0100	0.0200	"	"	--	"	69.6%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.70	0.0100	0.0200	"	"	--	"	68.0%	(36-128)	--	--	"	
Benzo (a) pyrene	"	1.72	0.0100	0.0200	"	"	--	"	68.8%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.04	0.0100	0.0200	"	"	--	"	81.6%	(37-131)	--	--	"	
Benzo (ghi) perylene	"	1.91	0.0100	0.0200	"	"	--	"	76.4%	(26-126)	--	--	"	
Benzo (k) fluoranthene	"	1.57	0.0100	0.0200	"	"	--	"	62.8%	(18-145)	--	--	"	
Chrysene	"	1.61	0.0100	0.0200	"	"	--	"	64.4%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.00	0.0100	0.0200	"	"	--	"	80.0%	(20-141)	--	--	"	
Fluoranthene	"	1.77	0.0100	0.0200	"	"	--	"	70.8%	(31-125)	--	--	"	
Fluorene	"	1.62	0.0100	0.0200	"	"	--	"	64.8%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	1.93	0.0100	0.0200	"	"	--	"	77.2%	(30-135)	--	--	"	
Naphthalene	"	1.77	0.0200	0.0200	"	"	--	"	70.8%	(30-113)	--	--	"	
Phenanthrene	"	1.75	0.0100	0.0200	"	"	--	"	70.0%	(34-126)	--	--	"	
Pyrene	"	1.70	0.0200	0.0200	"	"	--	"	68.0%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery:*	*67.2%*		*Limits:*	*25-125%*	"						*10/12/05 12:36*	
Pyrene-d10			*68.8%*			*23-150%*	"						"	
Benzo (a) pyrene-d12			*80.8%*			*10-125%*	"						"	

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100289 **Water Preparation Method: EPA 3520/600 Series**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (5100289-BSD1)								Extracted: 10/07/05 06:51						
Acenaphthene	EPA 8270m	1.90	0.0100	0.0200	ug/l	1x	--	2.50	76.0%	(35-120)	2.67%	(50)	10/12/05 13:03	
Acenaphthylene	"	2.03	0.0100	0.0200	"	"	--	"	81.2%	(34-116)	4.53%	"	"	
Anthracene	"	1.79	0.0100	0.0200	"	"	--	"	71.6%	(24-119)	2.83%	"	"	
Benzo (a) anthracene	"	1.69	0.0100	0.0200	"	"	--	"	67.6%	(36-128)	0.590%	"	"	
Benzo (a) pyrene	"	1.72	0.0100	0.0200	"	"	--	"	68.8%	(17-128)	0.00%	"	"	
Benzo (b) fluoranthene	"	1.90	0.0100	0.0200	"	"	--	"	76.0%	(37-131)	7.11%	"	"	
Benzo (ghi) perylene	"	1.87	0.0100	0.0200	"	"	--	"	74.8%	(26-126)	2.12%	"	"	
Benzo (k) fluoranthene	"	1.73	0.0100	0.0200	"	"	--	"	69.2%	(18-145)	9.70%	"	"	
Chrysene	"	1.61	0.0100	0.0200	"	"	--	"	64.4%	(16-137)	0.00%	"	"	
Dibenzo (a,h) anthracene	"	1.97	0.0100	0.0200	"	"	--	"	78.8%	(20-141)	1.51%	"	"	
Fluoranthene	"	1.81	0.0100	0.0200	"	"	--	"	72.4%	(31-125)	2.23%	"	"	
Fluorene	"	1.70	0.0100	0.0200	"	"	--	"	68.0%	(27-124)	4.82%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.90	0.0100	0.0200	"	"	--	"	76.0%	(30-135)	1.57%	"	"	
Naphthalene	"	1.80	0.0200	0.0200	"	"	--	"	72.0%	(30-113)	1.68%	"	"	
Phenanthrene	"	1.80	0.0100	0.0200	"	"	--	"	72.0%	(34-126)	2.82%	"	"	
Pyrene	"	1.68	0.0200	0.0200	"	"	--	"	67.2%	(21-141)	1.18%	"	"	

Surrogate(s): Fluorene-d10	*Recovery: 72.4%*	*Limits: 25-125%*	"		*10/12/05 13:03*
Pyrene-d10	*69.2%*	*23-150%*	"		"
Benzo (a) pyrene-d12	*82.4%*	*10-125%*	"		"

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Hahn and Associates, Inc.	Project Name: **NNGGRI**	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

Conventional Chemistry Parameters per APHA/EPA Methods - Laboratory Quality Control Results

North Creek Analytical - Portland

QC Batch: 5100367 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100367-BLK1)								Extracted:	10/10/05 08:40					
Cyanide (total)	EPA 9012A	ND	—	0.00500	mg/l	1x	–	–	–	–	–	–	10/12/05 11:36	
LCS (5100367-BS1)								Extracted:	10/10/05 08:40					
Cyanide (total)	EPA 9012A	0.442	—	0.00500	mg/l	1x	–	0.400	110%	(75-125)	–	–	10/12/05 11:36	
Duplicate (5100367-DUP1)				QC Source:	P5J0060-01			Extracted:	10/10/05 08:40					
Cyanide (total)	EPA 9012A	0.0805	—	0.00500	mg/l	1x	0.0775	–	–	–	3.80%	(20)	10/12/05 11:36	
Matrix Spike (5100367-MS1)				QC Source:	P5J0060-01			Extracted:	10/10/05 08:40					
Cyanide (total)	EPA 9012A	0.533	—	0.00500	mg/l	1x	0.0775	0.400	114%	(75-125)	–	–	10/12/05 11:36	

QC Batch: 5100566 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5100566-BLK1)								Extracted:	10/13/05 09:26					
Cyanide (total)	EPA 9012A	ND	—	0.00500	mg/l	1x	–	–	–	–	–	–	10/13/05 15:36	
LCS (5100566-BS1)								Extracted:	10/13/05 09:26					
Cyanide (total)	EPA 9012A	0.105	—	0.00500	mg/l	1x	–	0.100	105%	(75-125)	–	–	10/13/05 15:36	
Duplicate (5100566-DUP1)				QC Source:	P5J0223-02			Extracted:	10/13/05 09:26					
Cyanide (total)	EPA 9012A	0.0131	—	0.00500	mg/l	1x	0.0107	–	–	–	20.2%	(20)	10/13/05 15:36	Q-17
Matrix Spike (5100566-MS1)				QC Source:	P5J0223-02			Extracted:	10/13/05 09:26					
Cyanide (total)	EPA 9012A	0.114	—	0.00500	mg/l	1x	0.0107	0.100	103%	(75-125)	–	–	10/13/05 15:36	

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Hahn and Associates, Inc.	Project Name: NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number: 2708-30	Report Created:
Portland, OR 97209	Project Manager: Rob Ede	10/24/05 16:09

METALS - Laboratory Quality Control Results

Del Mar Analytical, Irvine

QC Batch: 5J19100 **Water Preparation Method: EPA 3005A ICPMS**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5J19100-BLK1)								Extracted: 10/19/05 15:33						
Arsenic	EPA 6020	ND	—	1.0	ug/l	1x	—	—	—	—	—	—	10/19/05 20:43	
Chromium	"	ND	—	2.0	"	"	—	—	—	—	—	—	"	
Copper	"	ND	—	2.0	"	"	—	—	—	—	—	—	"	
Lead	"	ND	—	1.0	"	"	—	—	—	—	—	—	10/20/05 11:16	
Nickel	"	ND	—	2.0	"	"	—	—	—	—	—	—	10/19/05 20:43	
Zinc	"	ND	—	20	"	"	—	—	—	—	—	—	"	
LCS (5J19100-BS1)								Extracted: 10/19/05 15:33						
Arsenic	EPA 6020	83.1	—	1.0	ug/l	1x	—	80.0	104%	(80-120)	—	—	10/19/05 20:47	
Chromium	"	81.1	—	2.0	"	"	—	"	101%	"	—	—	"	
Copper	"	86.7	—	2.0	"	"	—	"	108%	"	—	—	"	
Lead	"	83.3	—	1.0	"	"	—	"	104%	"	—	—	10/20/05 11:20	
Nickel	"	86.2	—	2.0	"	"	—	"	108%	"	—	—	10/19/05 20:47	
Zinc	"	86.3	—	20	"	"	—	"	108%	"	—	—	"	
Matrix Spike (5J19100-MS1)				QC Source: IOJ1297-01				Extracted: 10/19/05 15:33						
Arsenic	EPA 6020	81.1	—	1.0	ug/l	1x	6.5	80.0	93%	(75-125)	—	—	10/19/05 20:55	
Chromium	"	79.7	—	2.0	"	"	8.4	"	89%	"	—	—	"	
Copper	"	80.3	—	2.0	"	"	4.3	"	95%	"	—	—	"	
Lead	"	82.3	—	1.0	"	"	0.47	"	102%	"	—	—	10/20/05 11:28	
Nickel	"	82.0	—	2.0	"	"	6.4	"	94%	"	—	—	10/19/05 20:55	
Zinc	"	77.0	—	20	"	"	7.0	"	88%	"	—	—	"	
Matrix Spike Dup (5J19100-MSD1)				QC Source: IOJ1297-01				Extracted: 10/19/05 15:33						
Arsenic	EPA 6020	81.6	—	1.0	ug/l	1x	6.5	80.0	94%	(75-125)	0.6%	(20)	10/19/05 20:59	
Chromium	"	80.0	—	2.0	"	"	8.4	"	90%	"	0.4%	"	"	
Copper	"	79.3	—	2.0	"	"	4.3	"	94%	"	1%	"	"	
Lead	"	81.7	—	1.0	"	"	0.47	"	102%	"	0.7%	"	10/20/05 11:32	
Nickel	"	81.5	—	2.0	"	"	6.4	"	94%	"	0.6%	"	10/19/05 20:59	
Zinc	"	76.5	—	20	"	"	7.0	"	87%	"	0.7%	"	"	

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Hahn and Associates, Inc.	Project Name:	NNGGRI	
434 NW Sixth Ave., Suite 203	Project Number:	2708-30	Report Created:
Portland, OR 97209	Project Manager:	Rob Ede	10/24/05 16:09

Notes and Definitions

Report Specific Notes:

J	-	Estimated value.
Q-17	-	The RPD is outside of control limits.
R-05	-	Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.
R-16	-	Estimated Value. Sample reported from a vial with headspace.
S-01	-	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
S-03	-	Surrogate recovery is outside of NCA established control limits.

Laboratory Reporting Conventions:

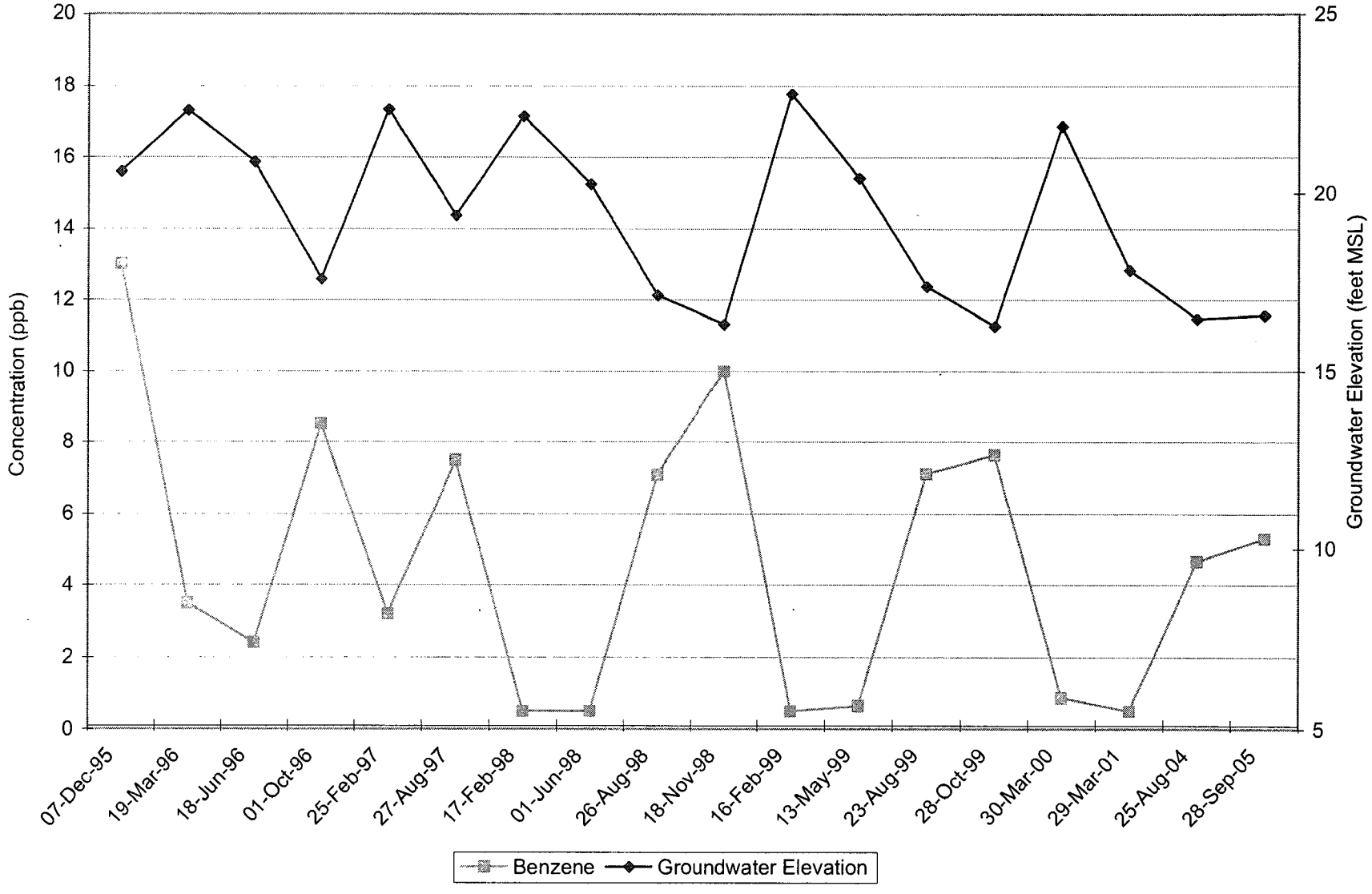
DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR / NA	-	Not Reported / Not Available
dry	-	Sample results reported on a dry weight basis. Reporting Limits have been corrected for %Solids.
wet	-	Sample results and reporting limits reported on a wet weight basis (as received).
RPD	-	Relative Percent Difference. (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

APPENDIX D

Time-Concentration Graphs: Benzene Concentrations

and Groundwater Elevations Through Time

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-1-22 (surficial fill WBZ)
NW Natural - Gasco Facility

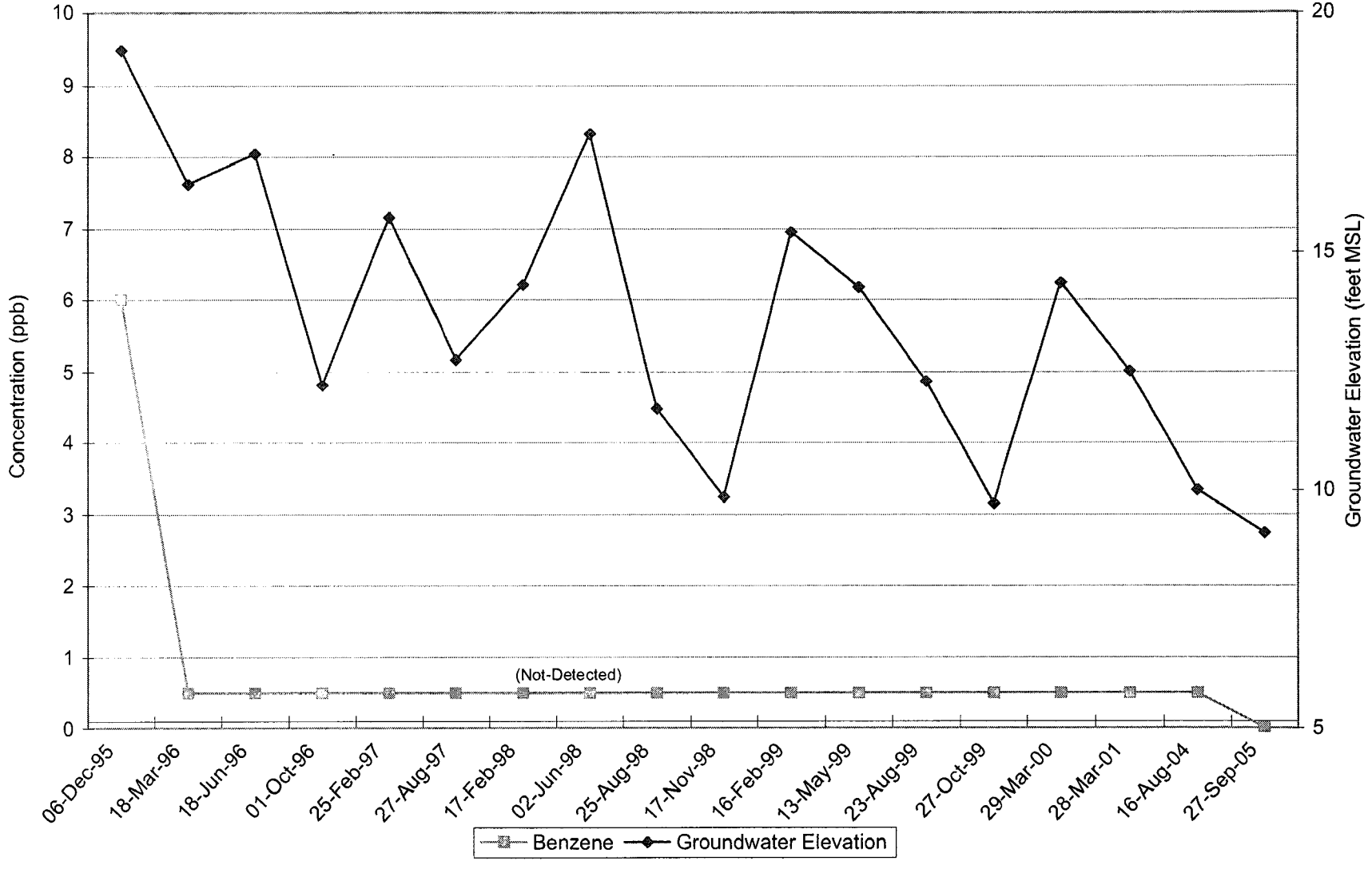


Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023496

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-2-32 (surficial fill WBZ)
NW Natural - Gasco Facility

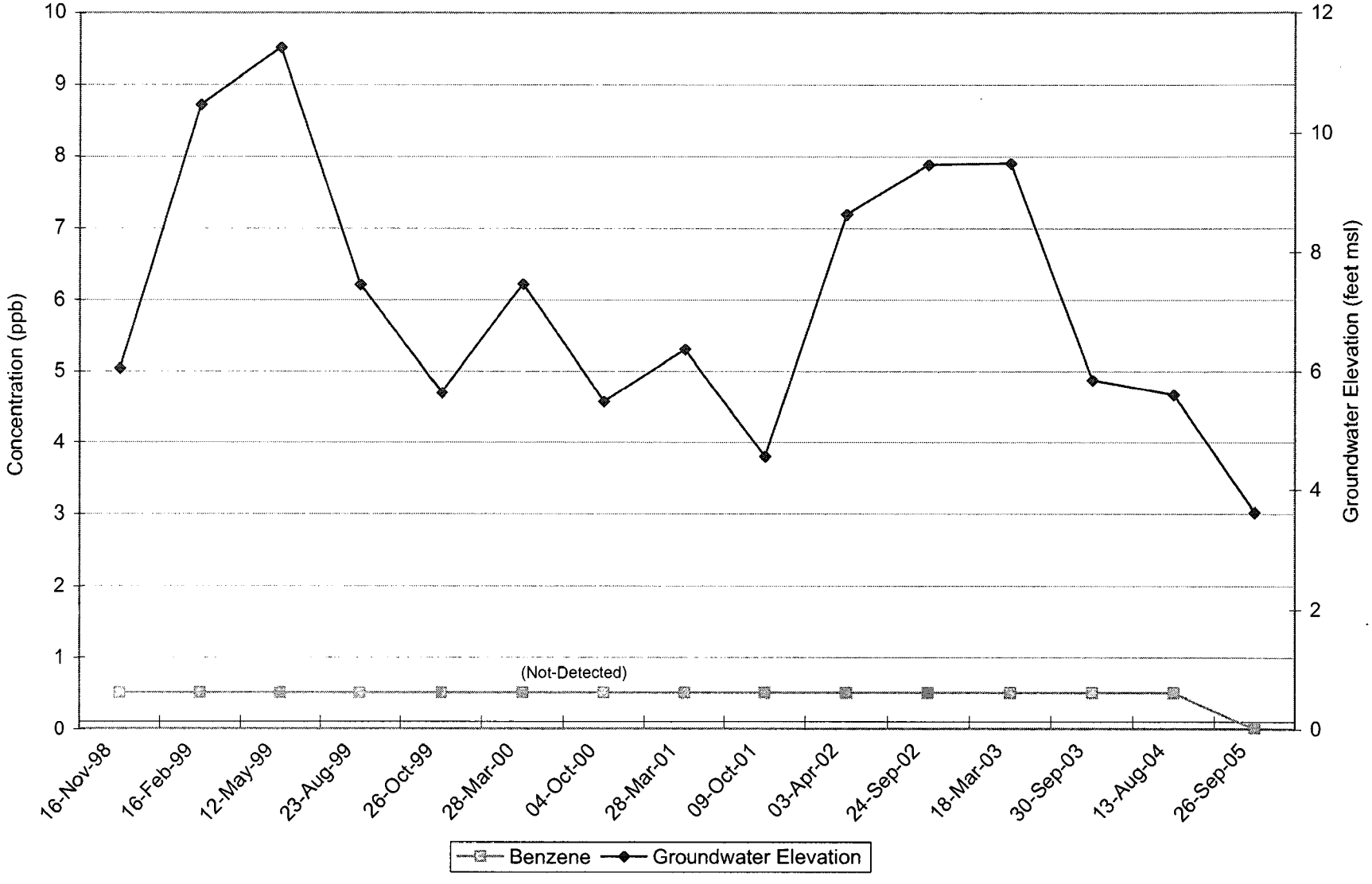


Koppers023497

Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-2-61 (upper alluvial WBZ)
NW Natural - Gasco Facility

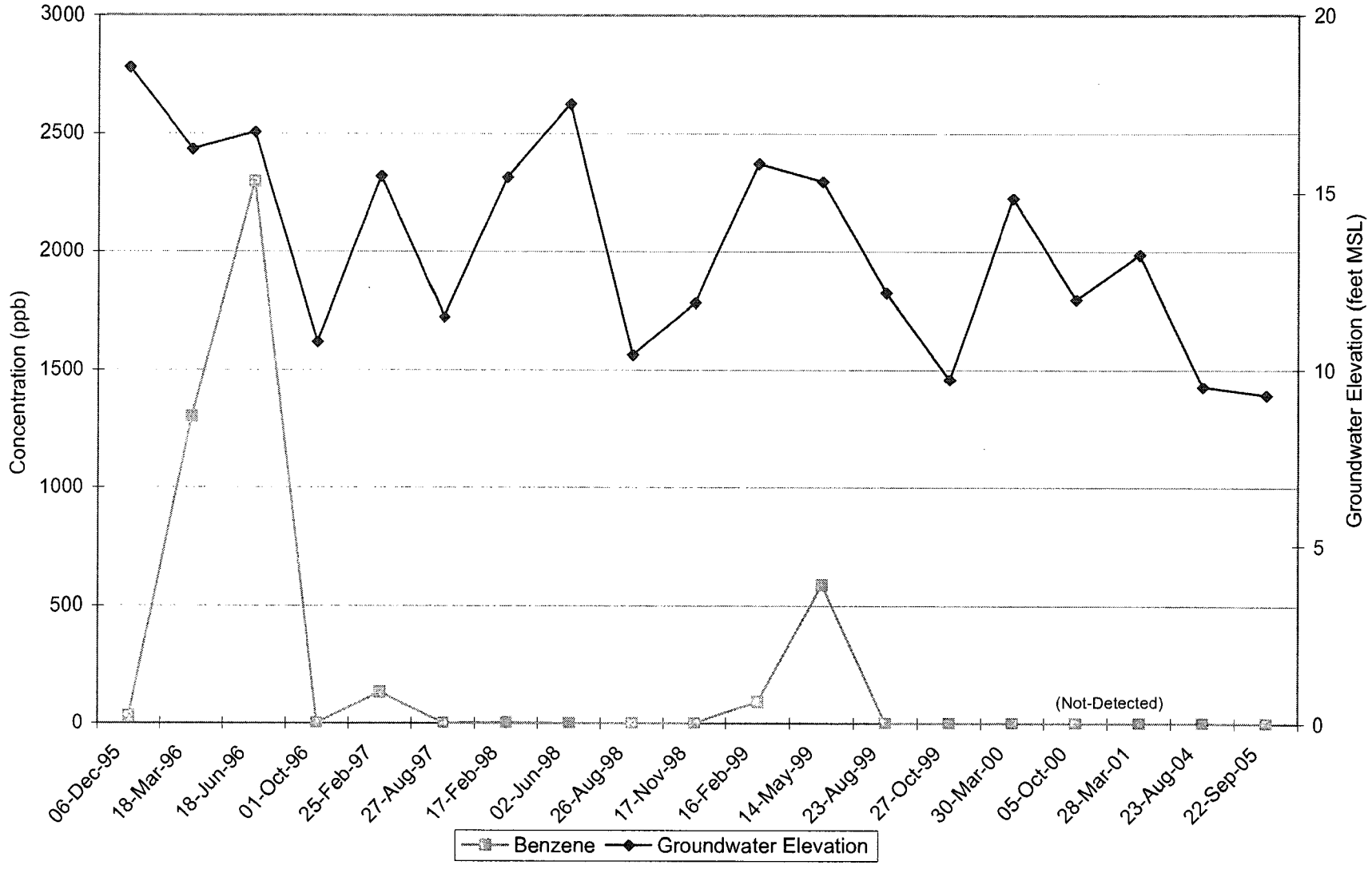


Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023498

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-3-26 (surficial fill WBZ)
NW Natural - Gasco Facility

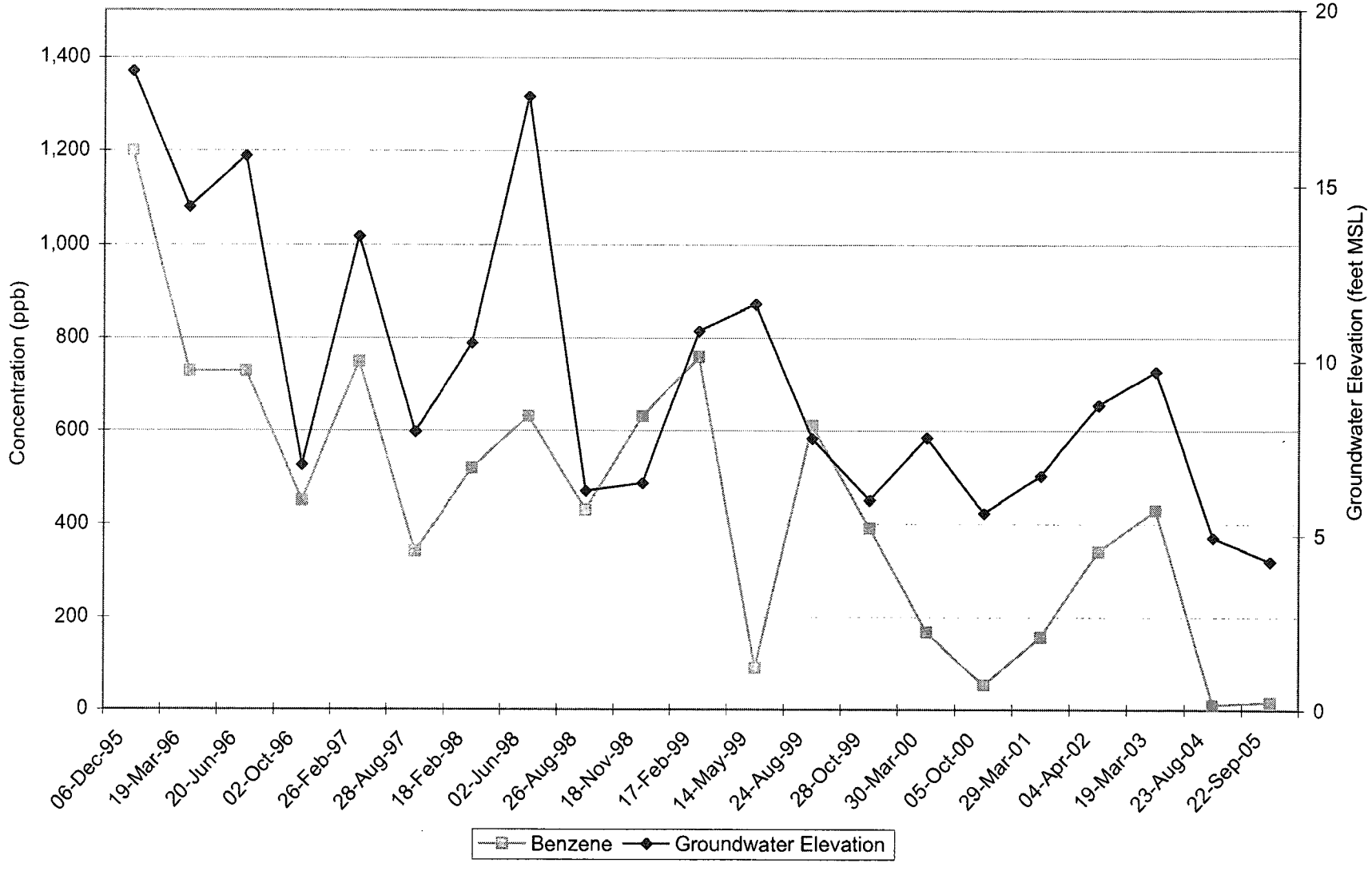


Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023499

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-3-56 (upper alluvial WBZ)
NW Natural - Gasco Facility

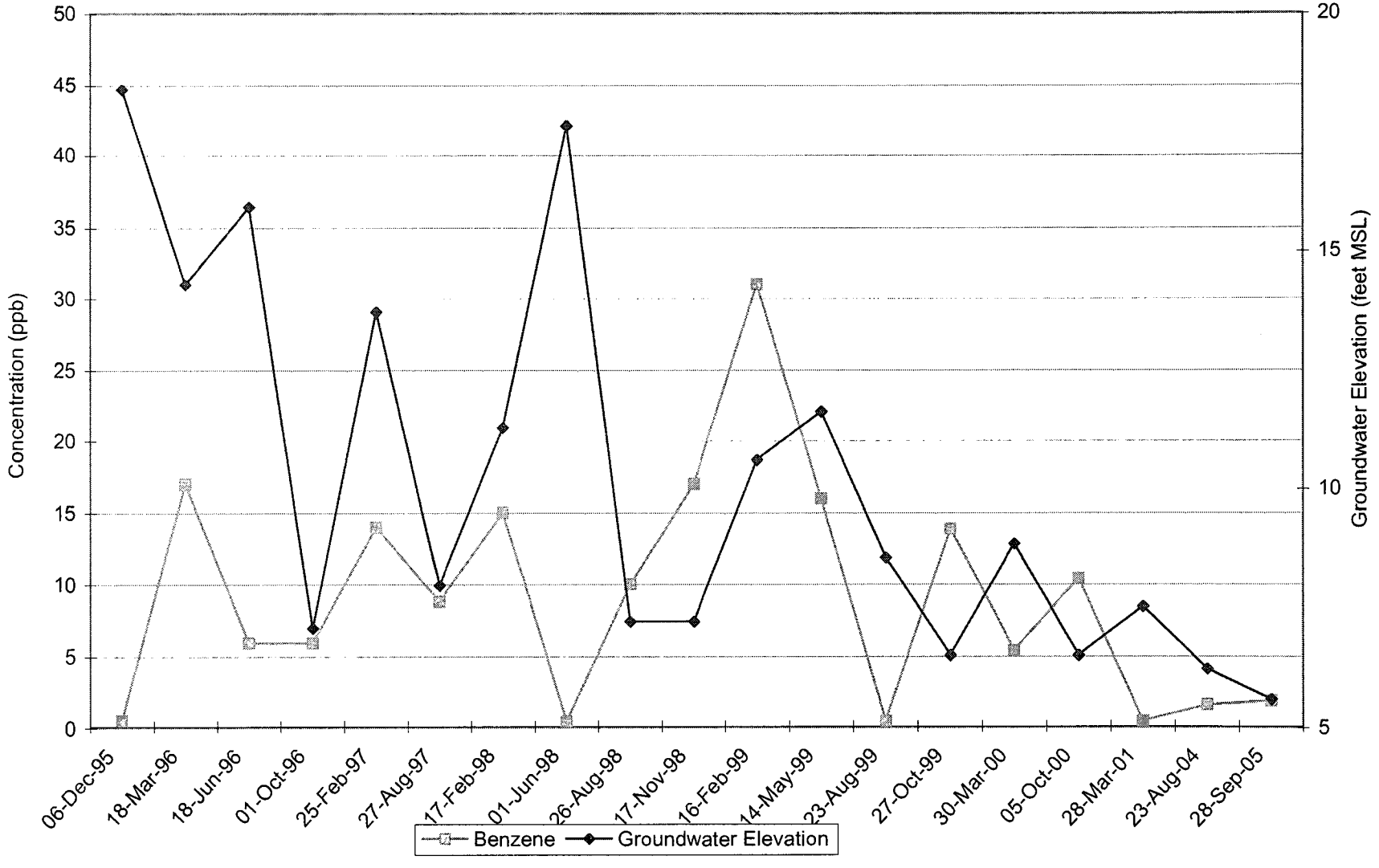


Koppers023500

Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-35 (surficial fill WBZ)
NW Natural - Gasco Facility

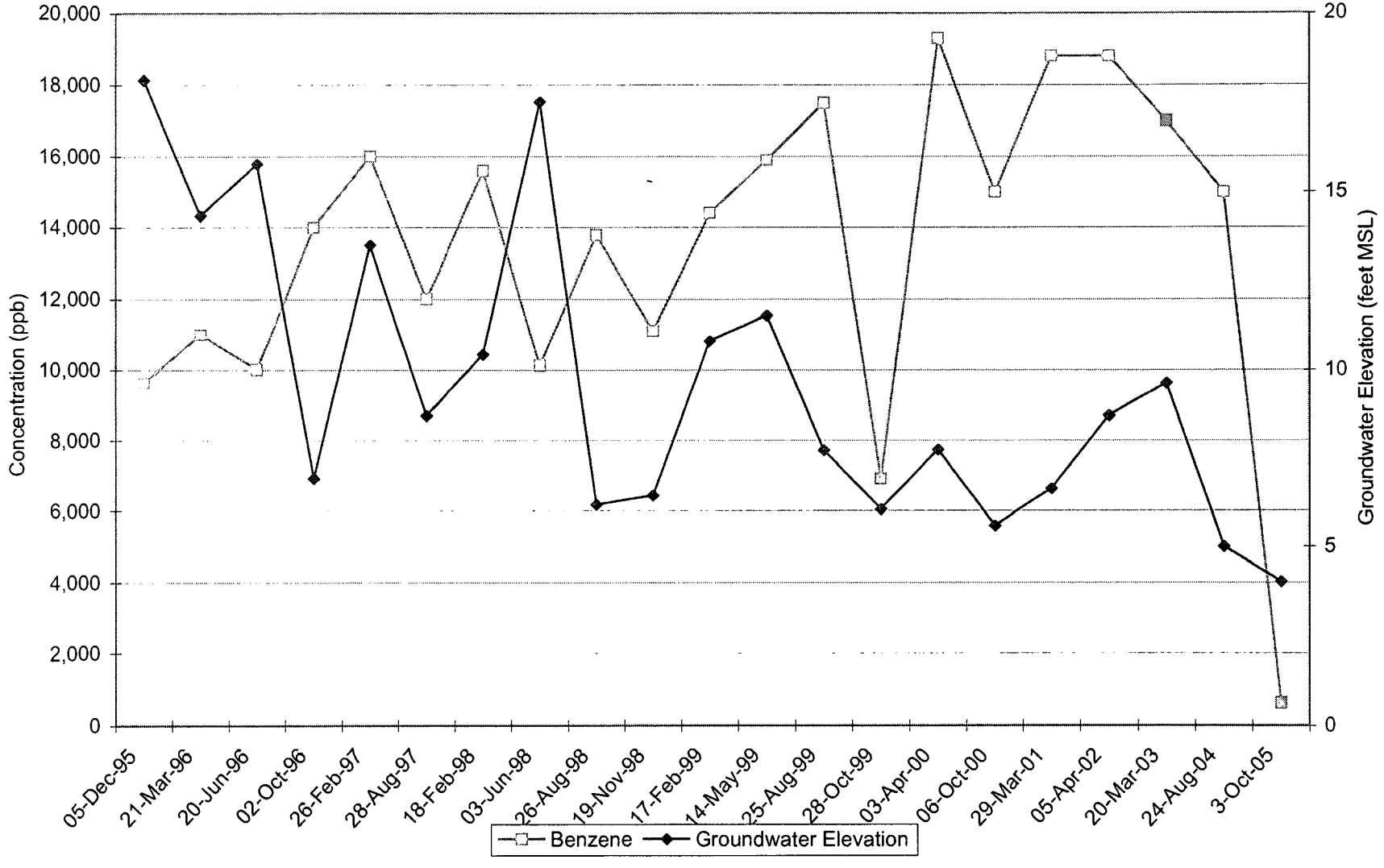


Koppers023501

Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-57 (upper alluvial WBZ)
NW Natural - Gasco Facility

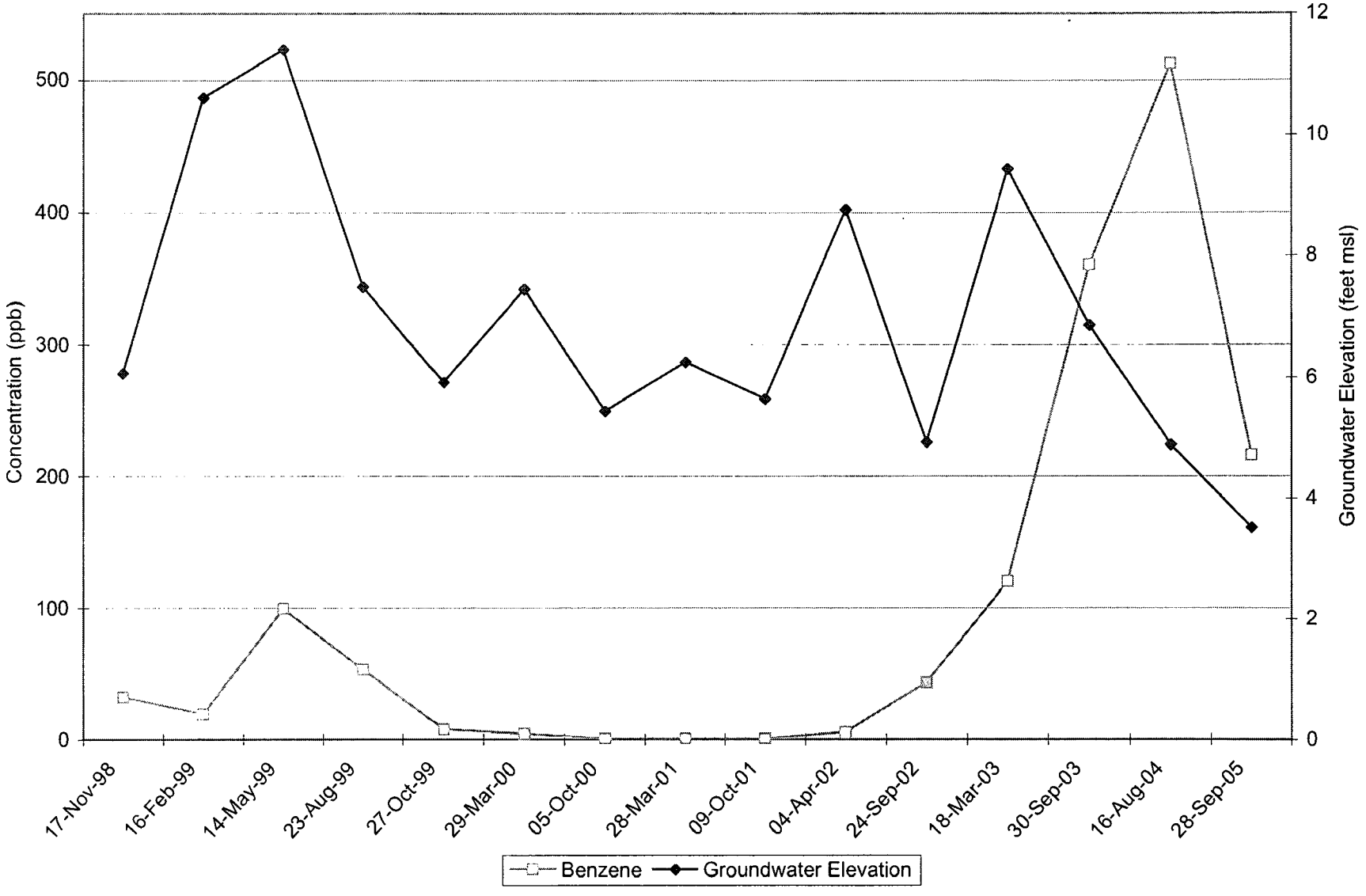


Koppers023502

Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-101 (intermediate-depth alluvial WBZ)
NW Natural - Gasco Facility

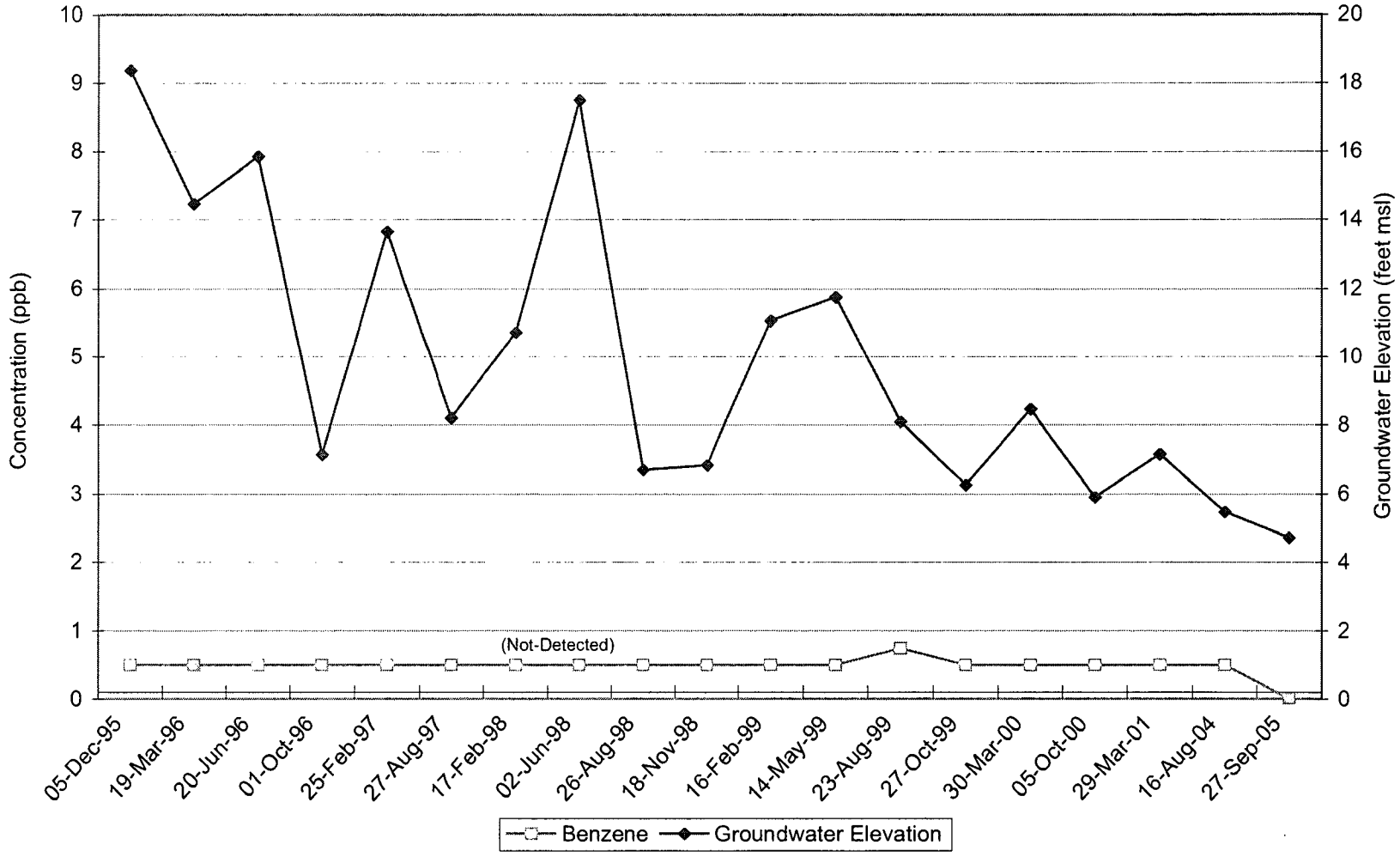


Koppers023503

Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-32 (surficial fill WBZ / upper alluvial WBZ)
NW Natural - Gasco Facility

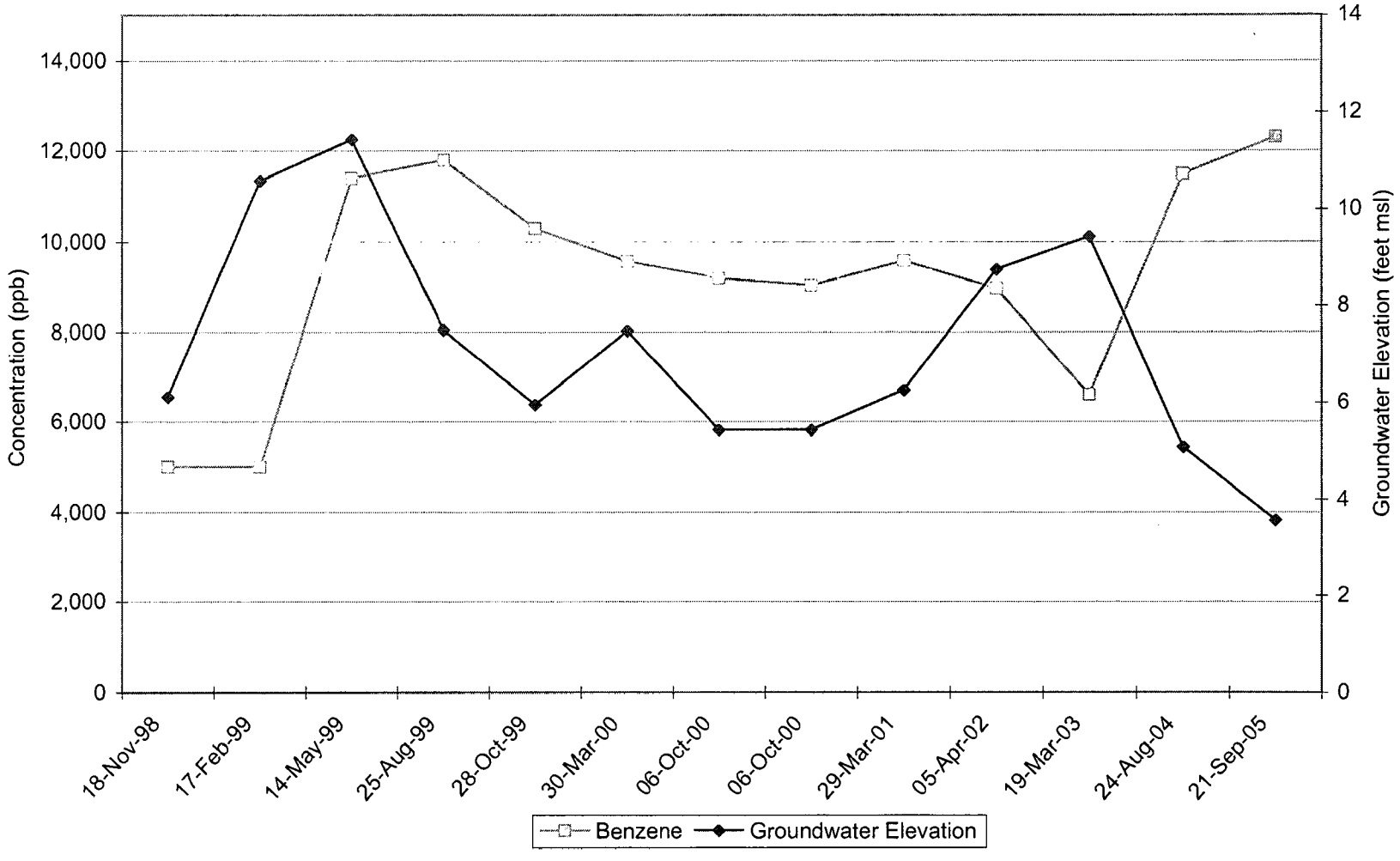


Koppers023504

Updated: 5/2/06: APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-100 (intermediate-depth alluvial WBZ)
NW Natural - Gasco Facility

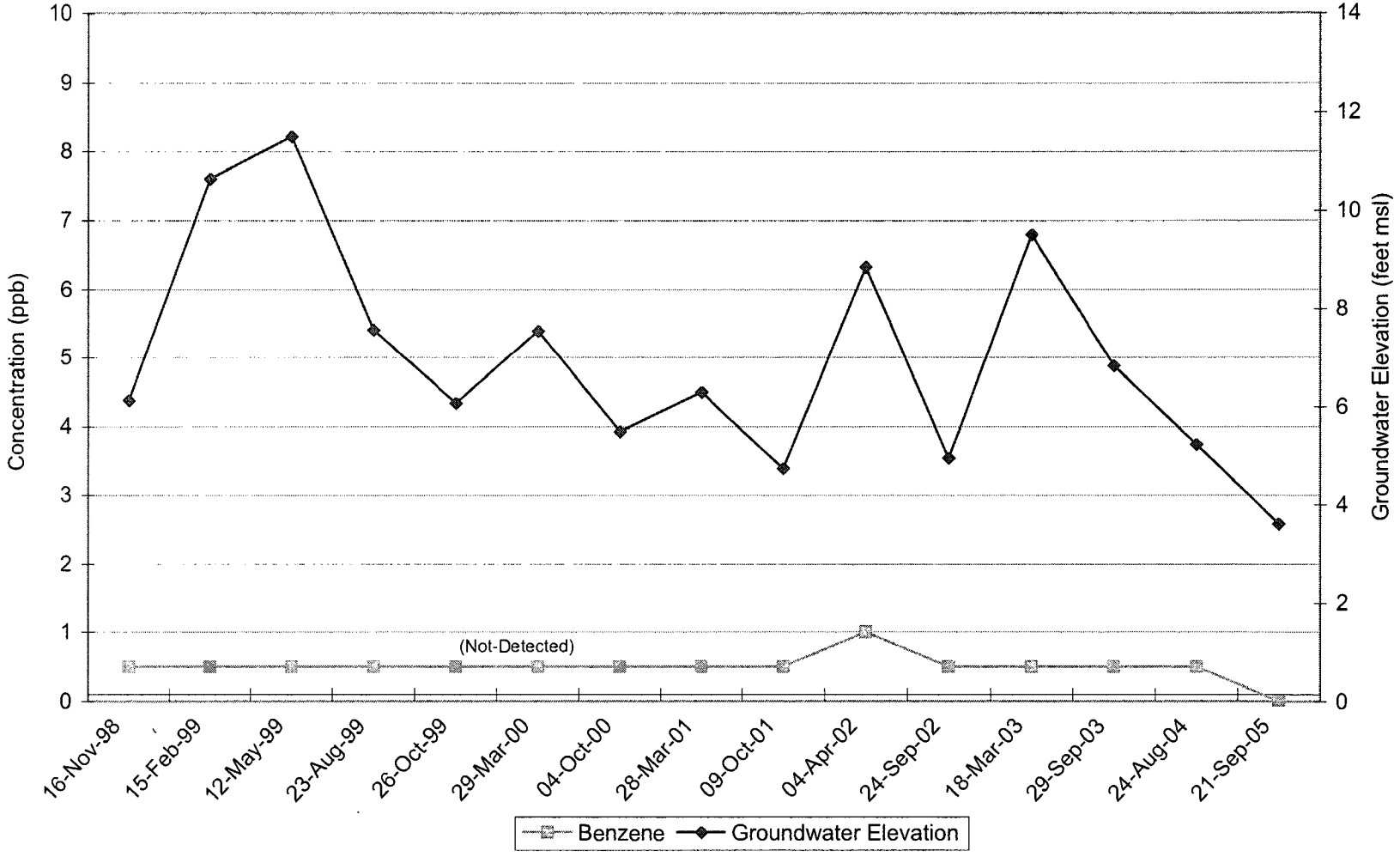


Koppers023505

Updated: 5/2/06: APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-175 (lower alluvial WBZ)
NW Natural - Gasco Facility

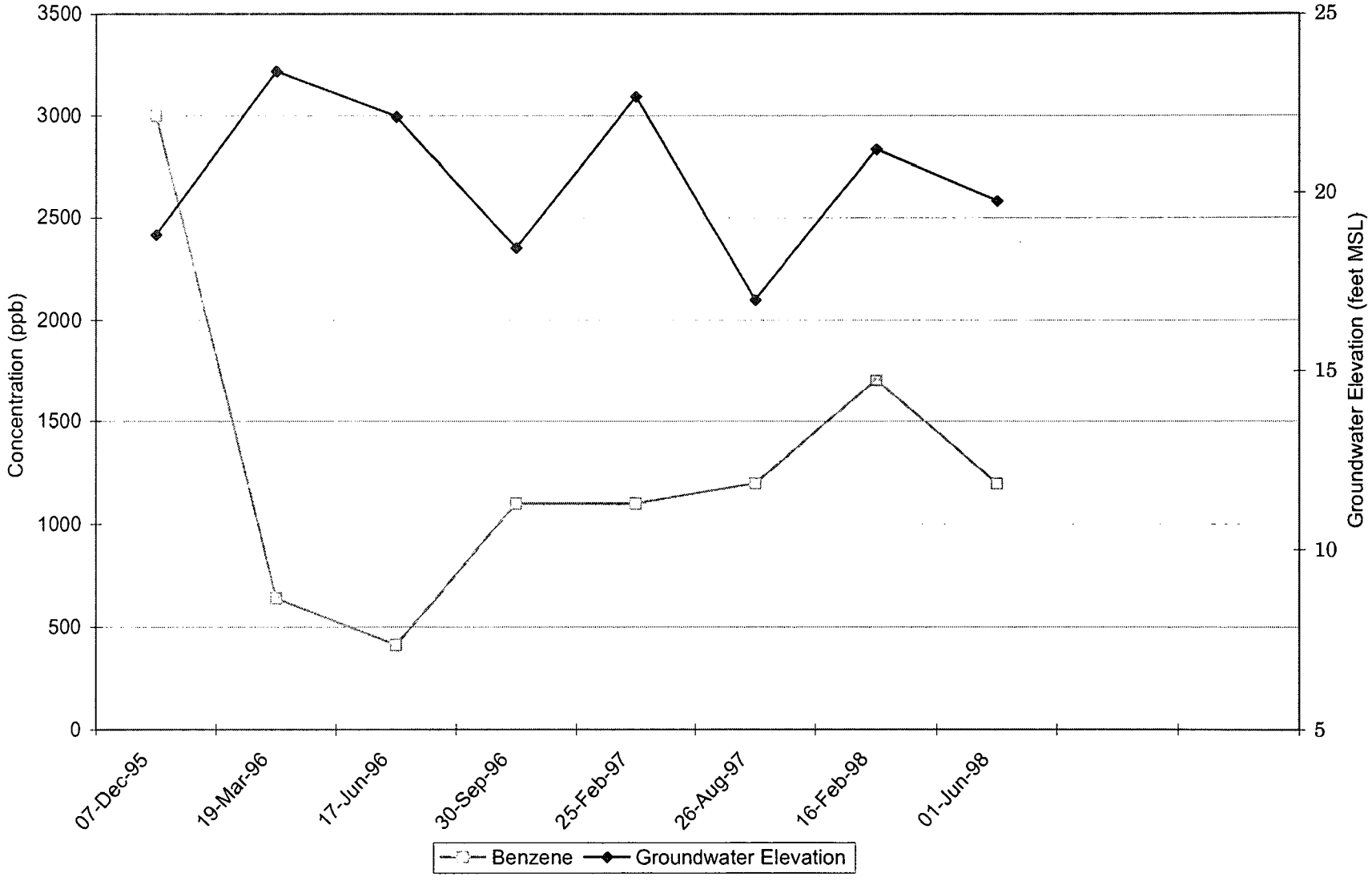


Koppers023506

Updated: 5/2/06: APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-6-32 (surficial fill WBZ) - Current DNAPL Recovery Location
NW Natural - Gasco Facility

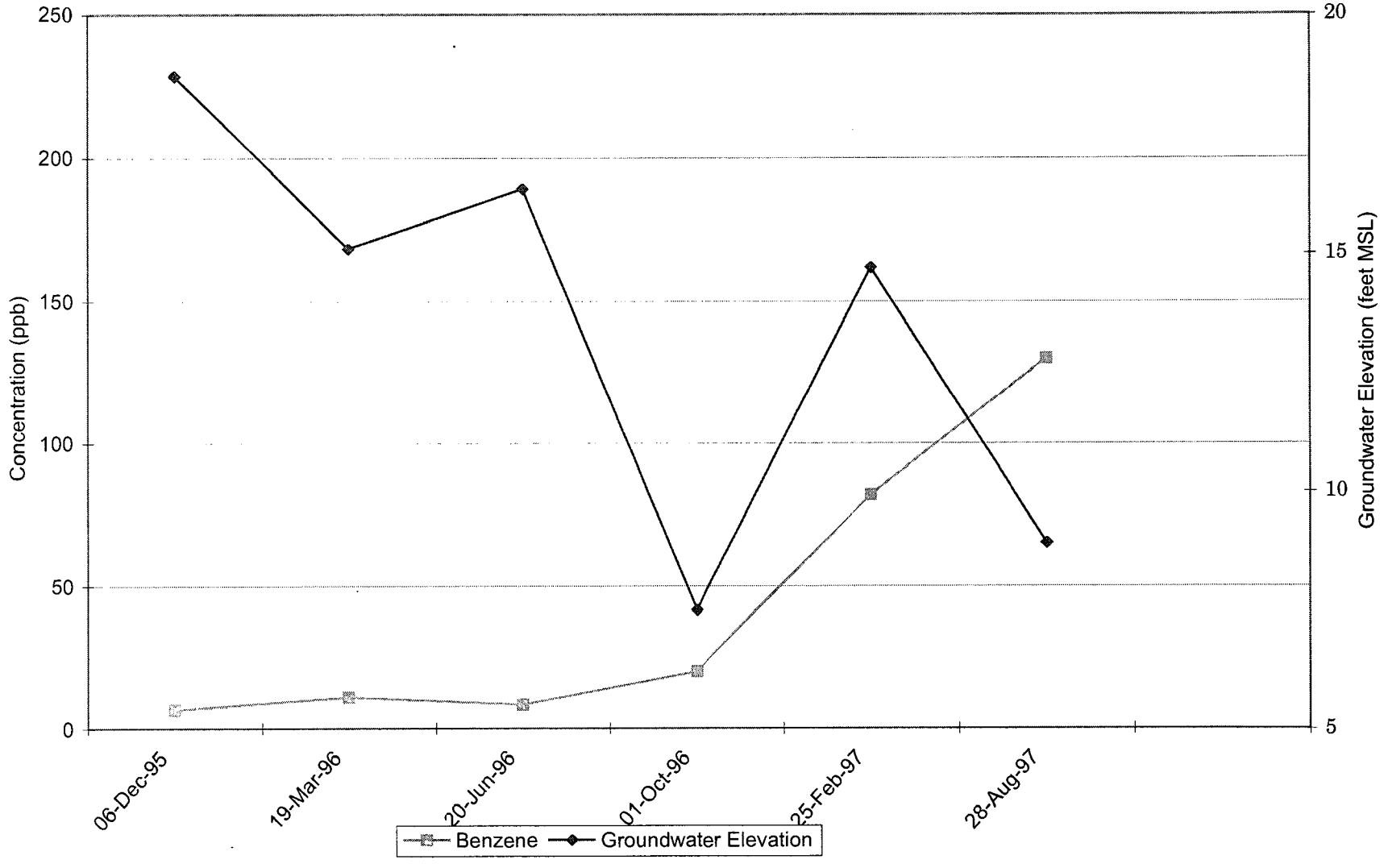


Koppers023507

Updated: 5/2/06 RBE
File: 2708 022406 GW conc graphs RBE.xls

HAHN AND ASSOCIATES, INC.
Project No. 2708

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-6-61 (upper alluvial WBZ) - abandoned
NW Natural - Gasco Facility

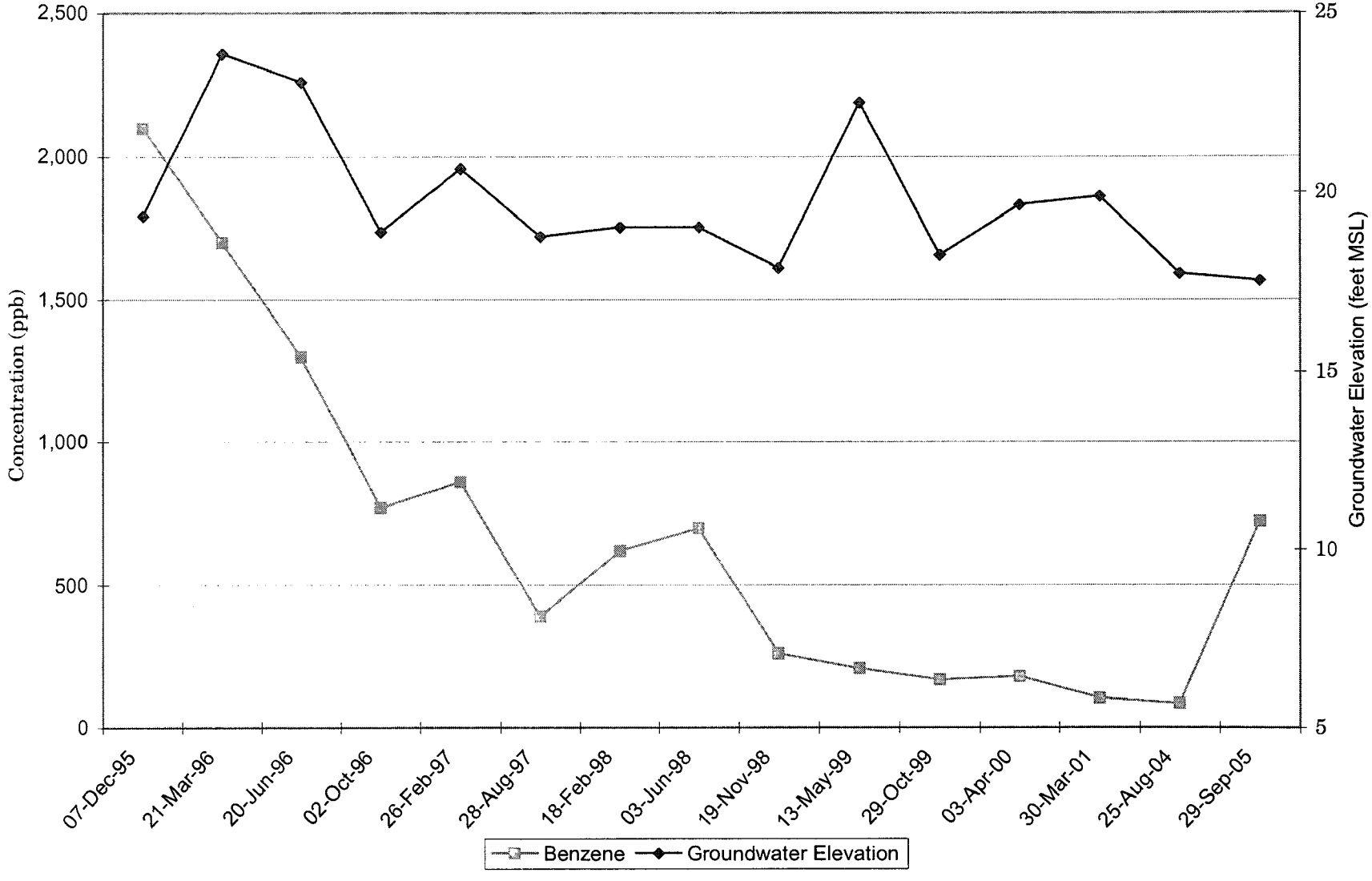


Koppers023508

Updated: 5/2/06 RBE
File: 2708 022406 GW conc graphs RBE.xls

HAHN AND ASSOCIATES, INC.
Project No. 2708

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-8-29 (surficial fill WBZ)
NW Natural - Gasco Facility

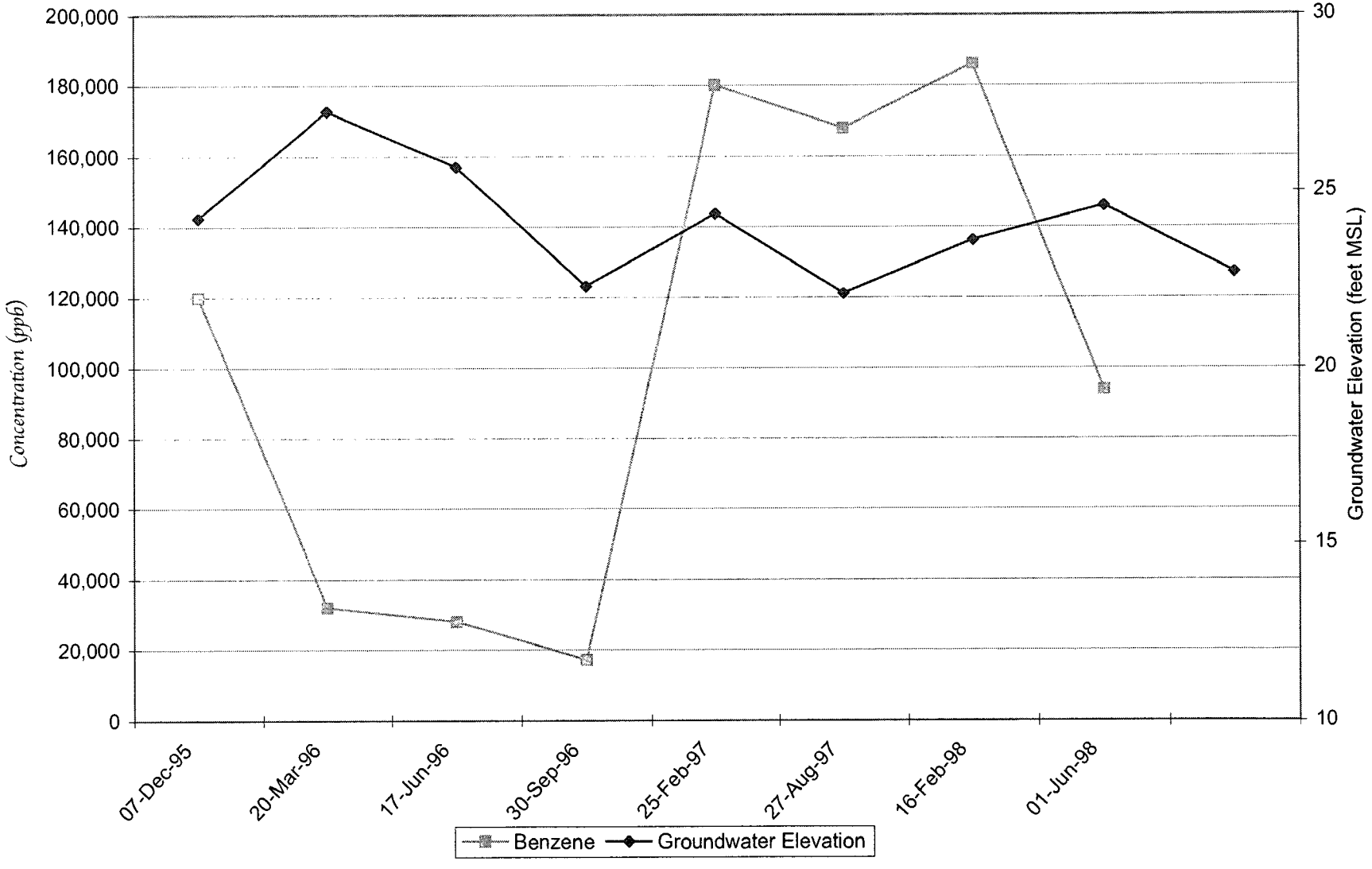


Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023509

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-10-25 (surficial fill WBZ) - Well Contains DNAPL
NW Natural - Gasco Facility

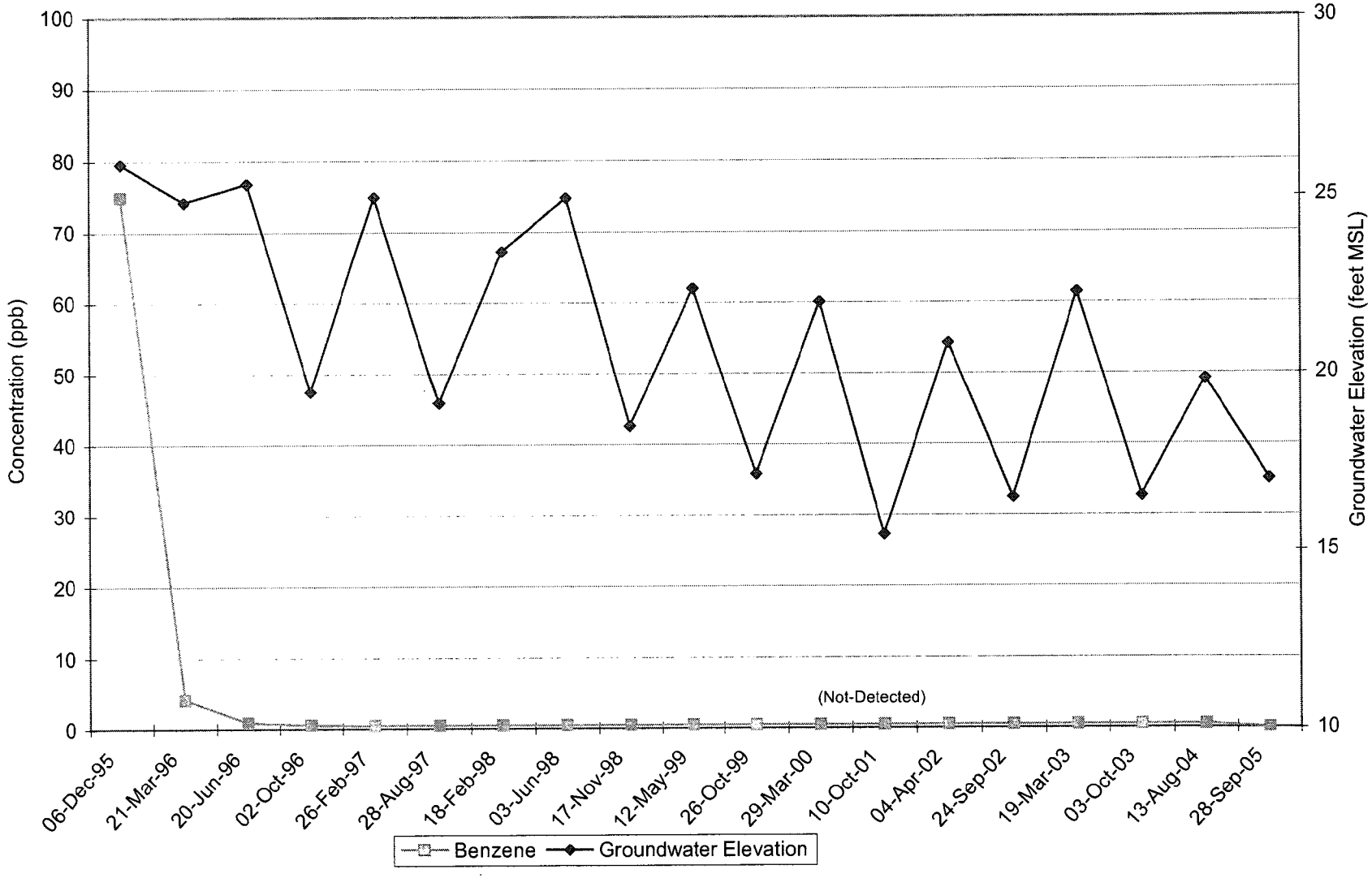


Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023510

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-10-61 (upper alluvial WBZ)
NW Natural - Gasco Facility

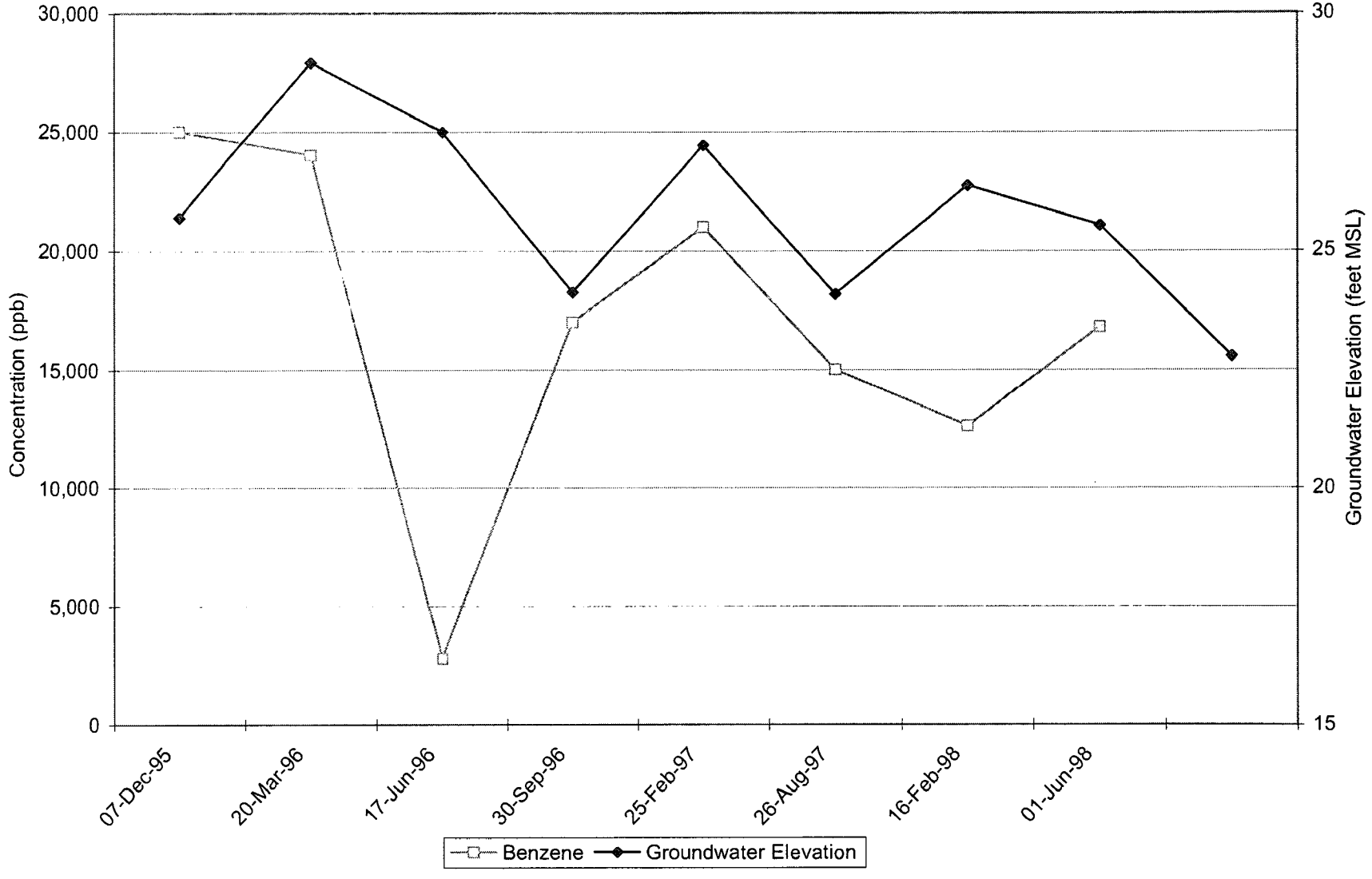


Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023511

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-11-32 (surficial fill WBZ) - Well Contains DNAPL
NW Natural - Gasco Facility

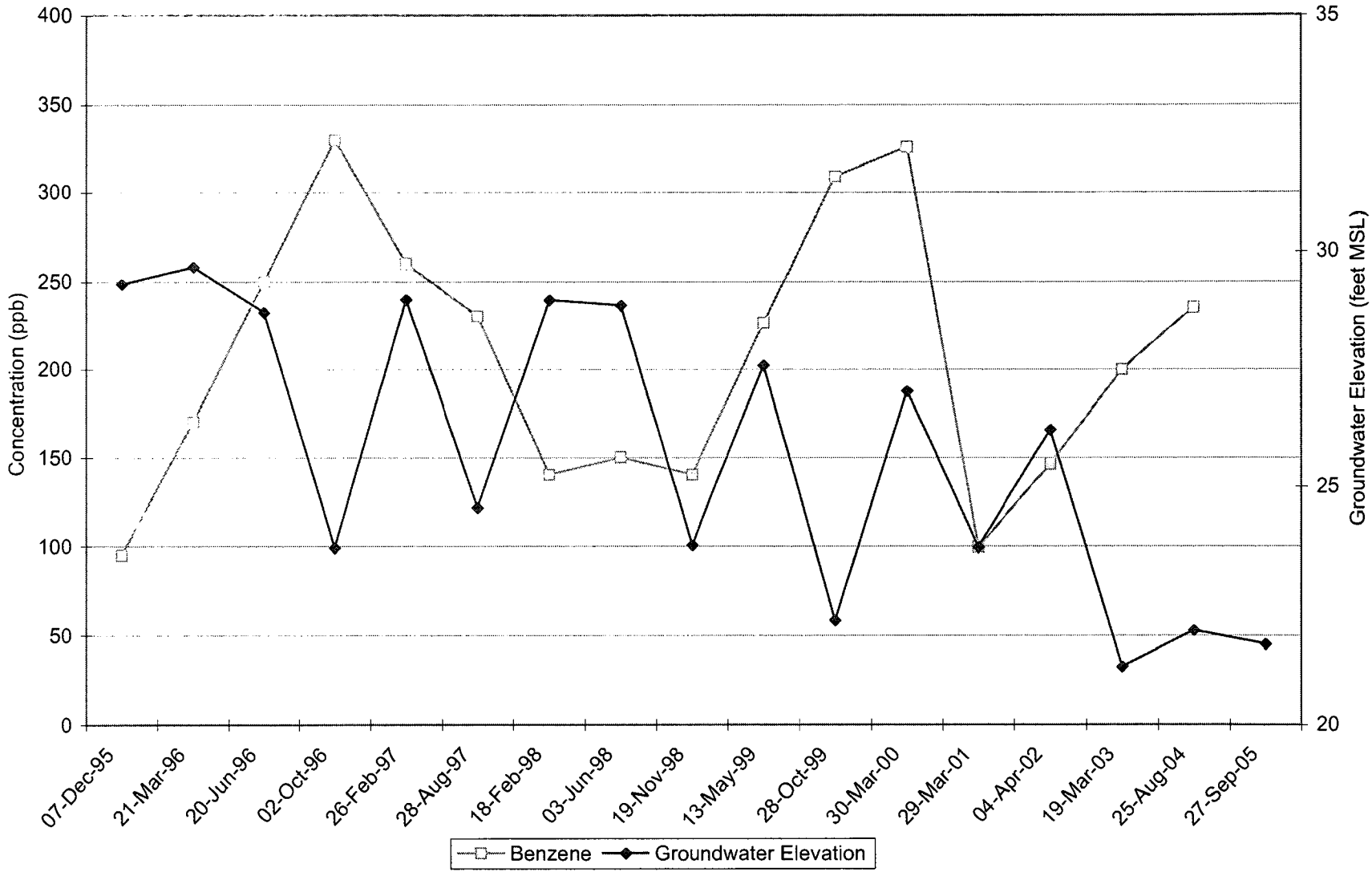


Koppers023512

Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-12-36 (surficial fill WBZ / upper alluvial WBZ)
NW Natural - Gasco Facility

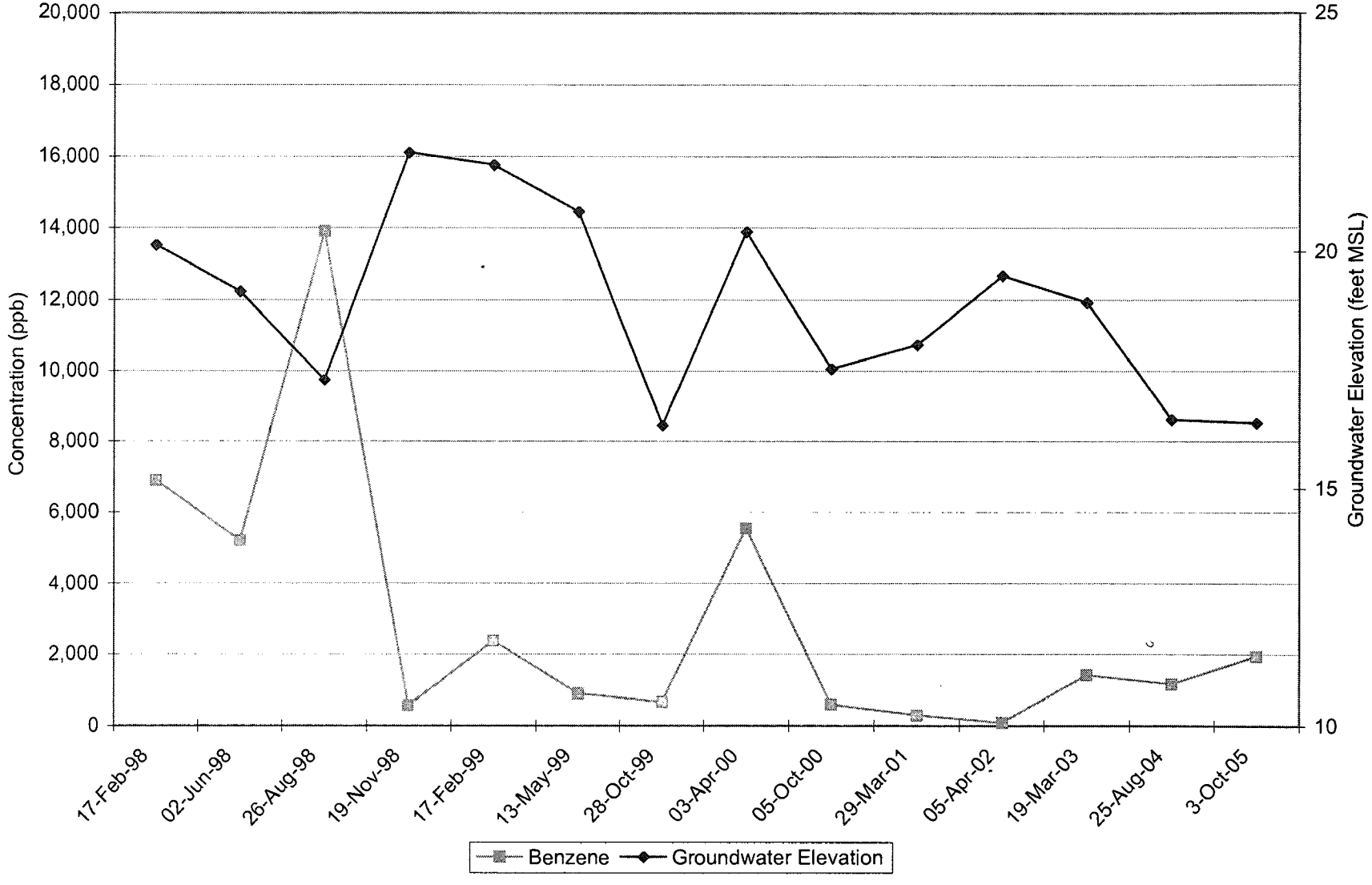


Koppers023513

Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-13-30 (surficial fill WBZ)
NW Natural - Gasco Facility

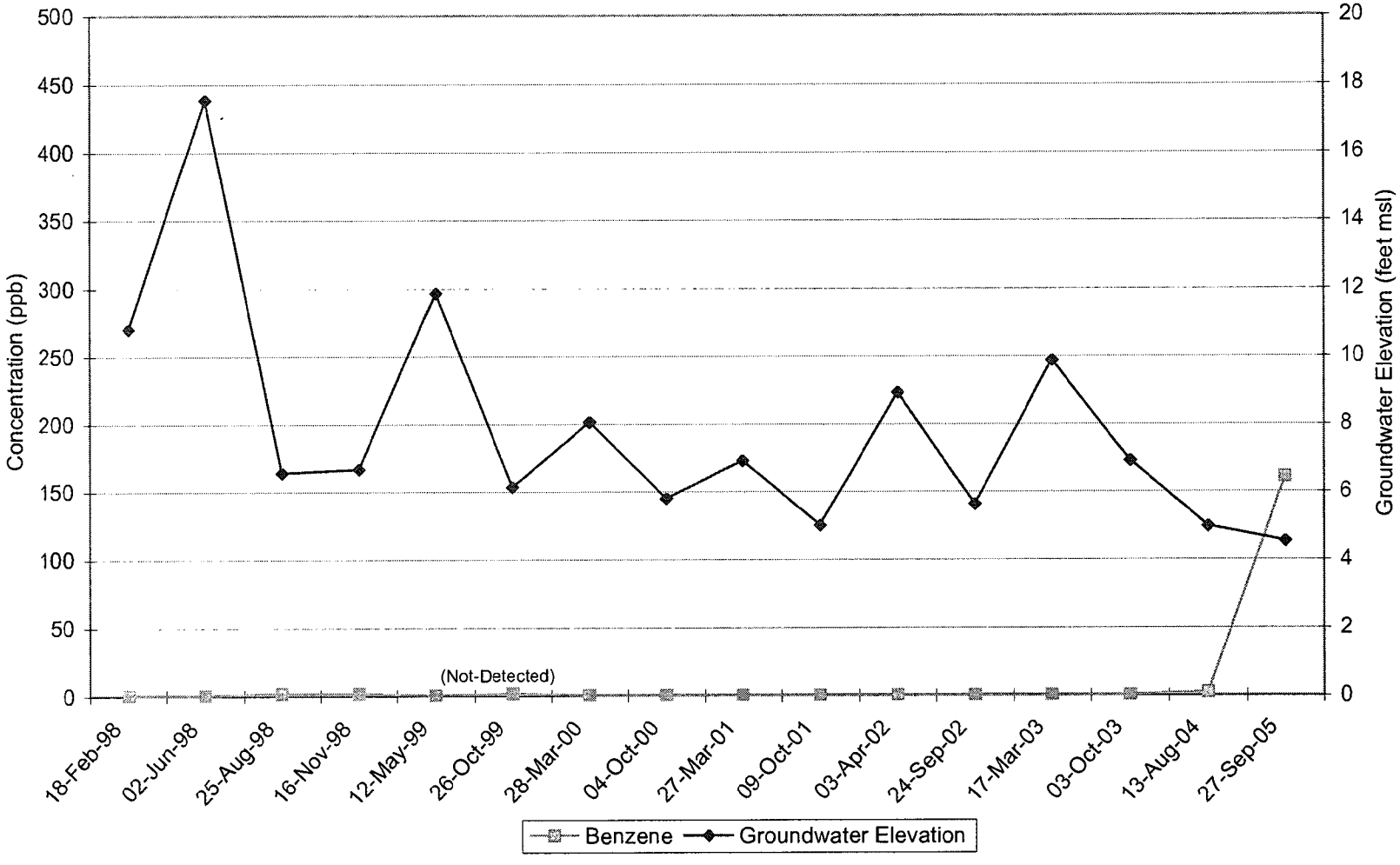


Updated: 5/2/06 APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023514

Benzene Concentration and Groundwater Elevation through Time
Monitoring Well MW-13-61 (upper alluvial WBZ)
NW Natural - Gasco Facility

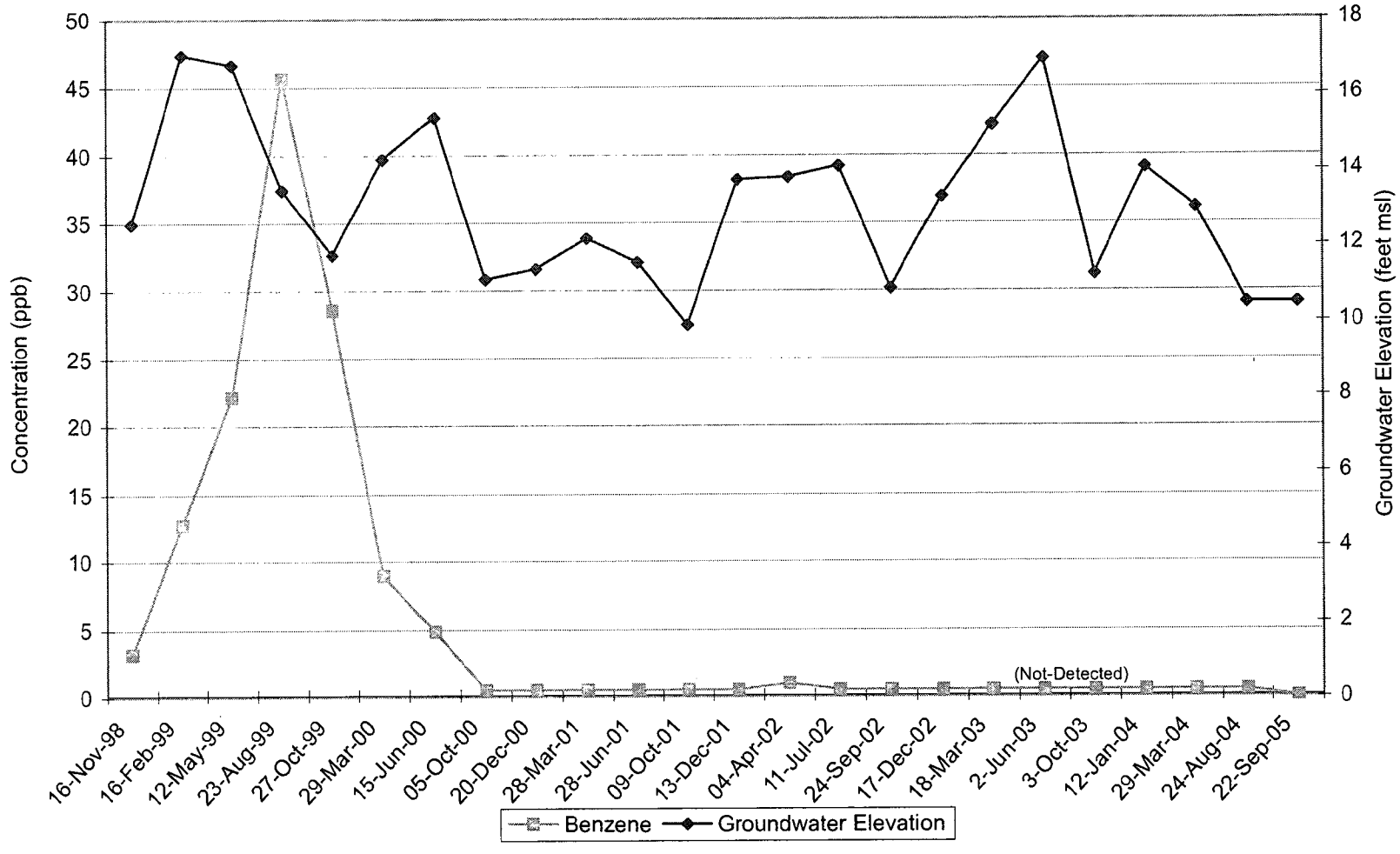


Updated: 5/2/06: APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023515

Benzene Concentation and Groundwater Elevation through Time
Monitoring Well MW-14-110 (intermediate-depth alluvial WBZ)
NW Natural - Gasco Facility

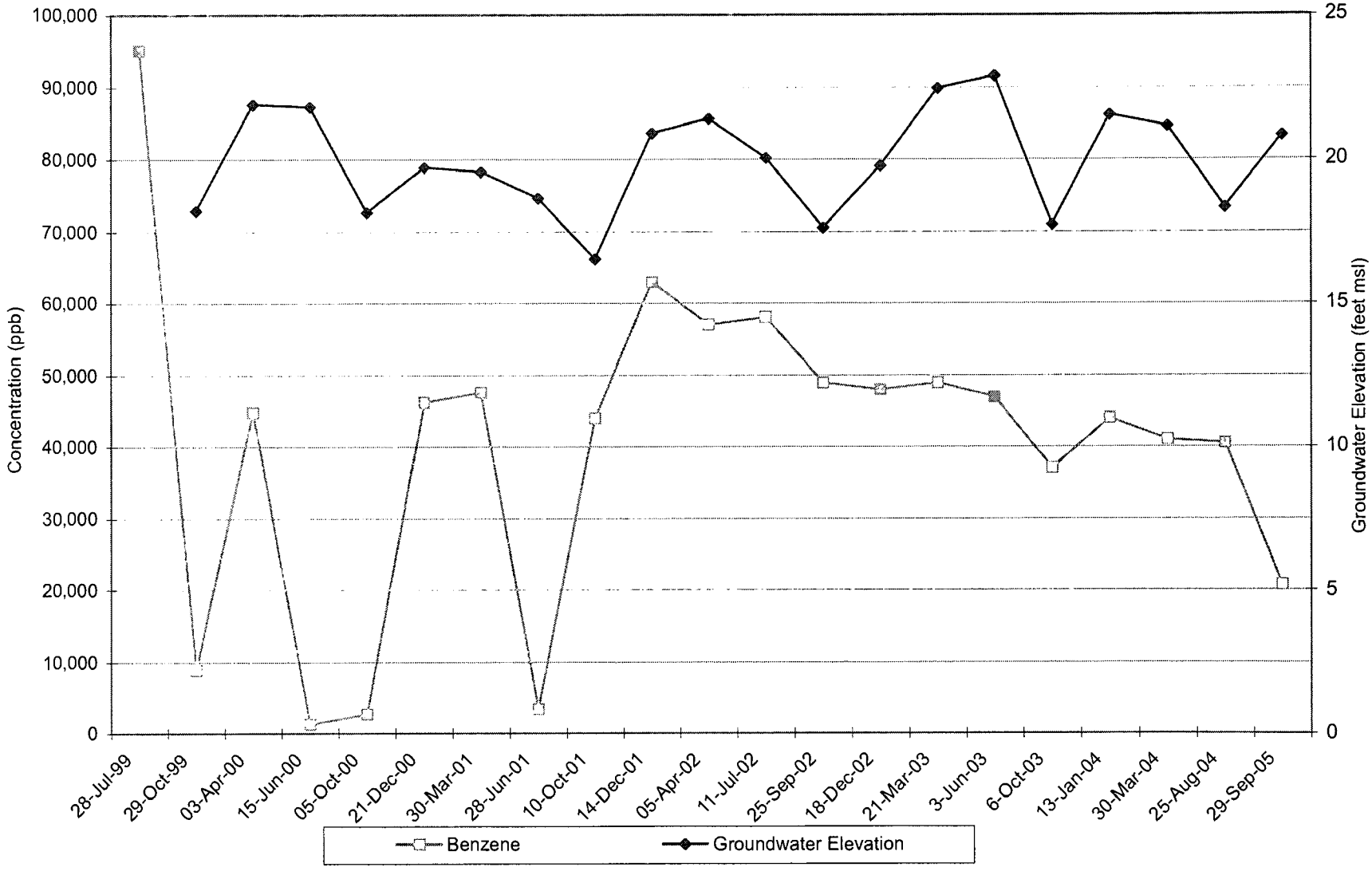


Updated: 5/2/06: APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023516

Benzene Concentation and Groundwater Elevation through Time
Monitoring Well MW-15-50 (silt unit / upper alluvial WBZ)
NW Natural - Gasco Facility

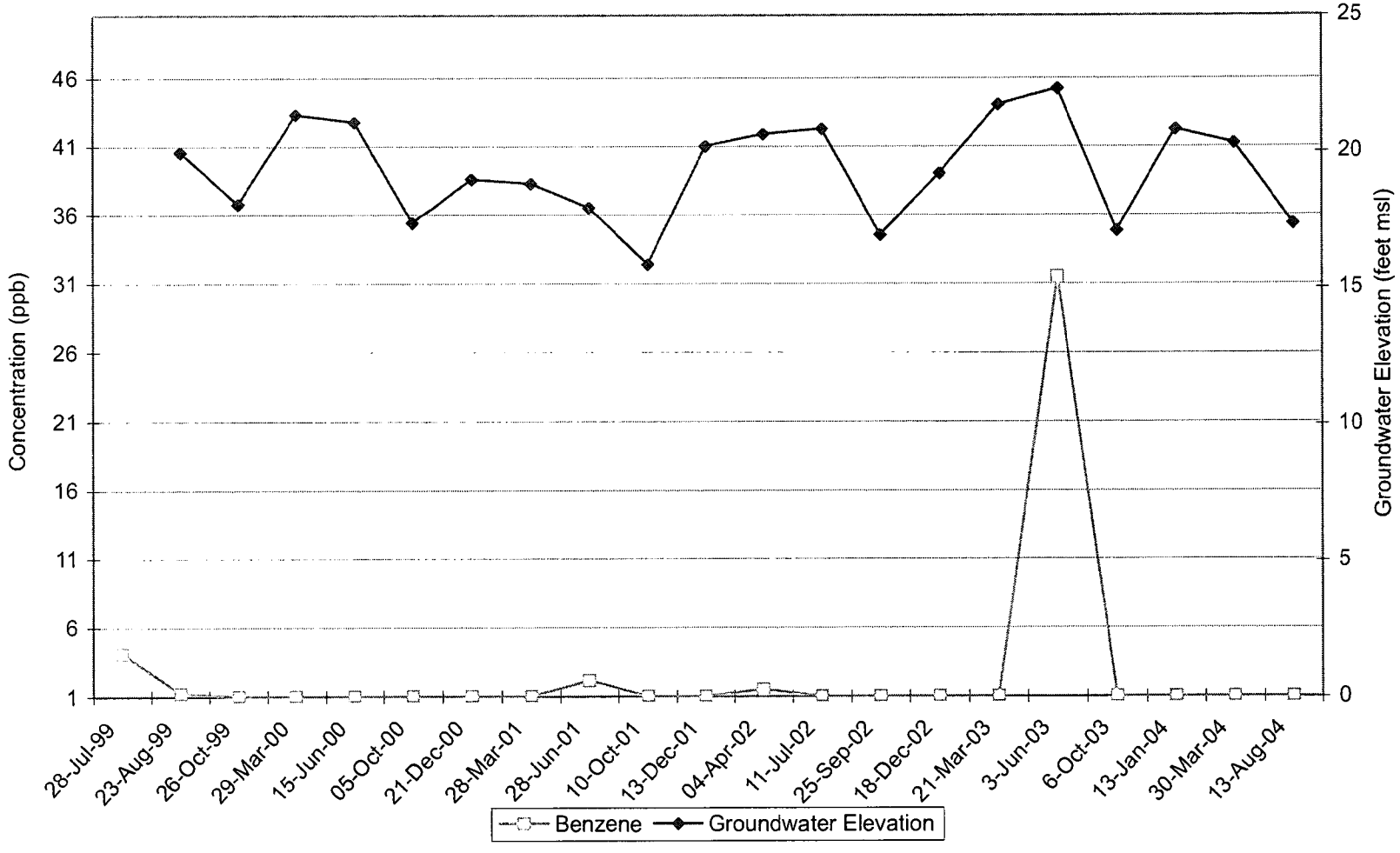


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW-15-50 bnz

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023517

Benzene Concentation and Groundwater Elevation through Time
Monitoring Well MW-15-66 (upper alluvial WBZ)
NW Natural - Gasco Facility

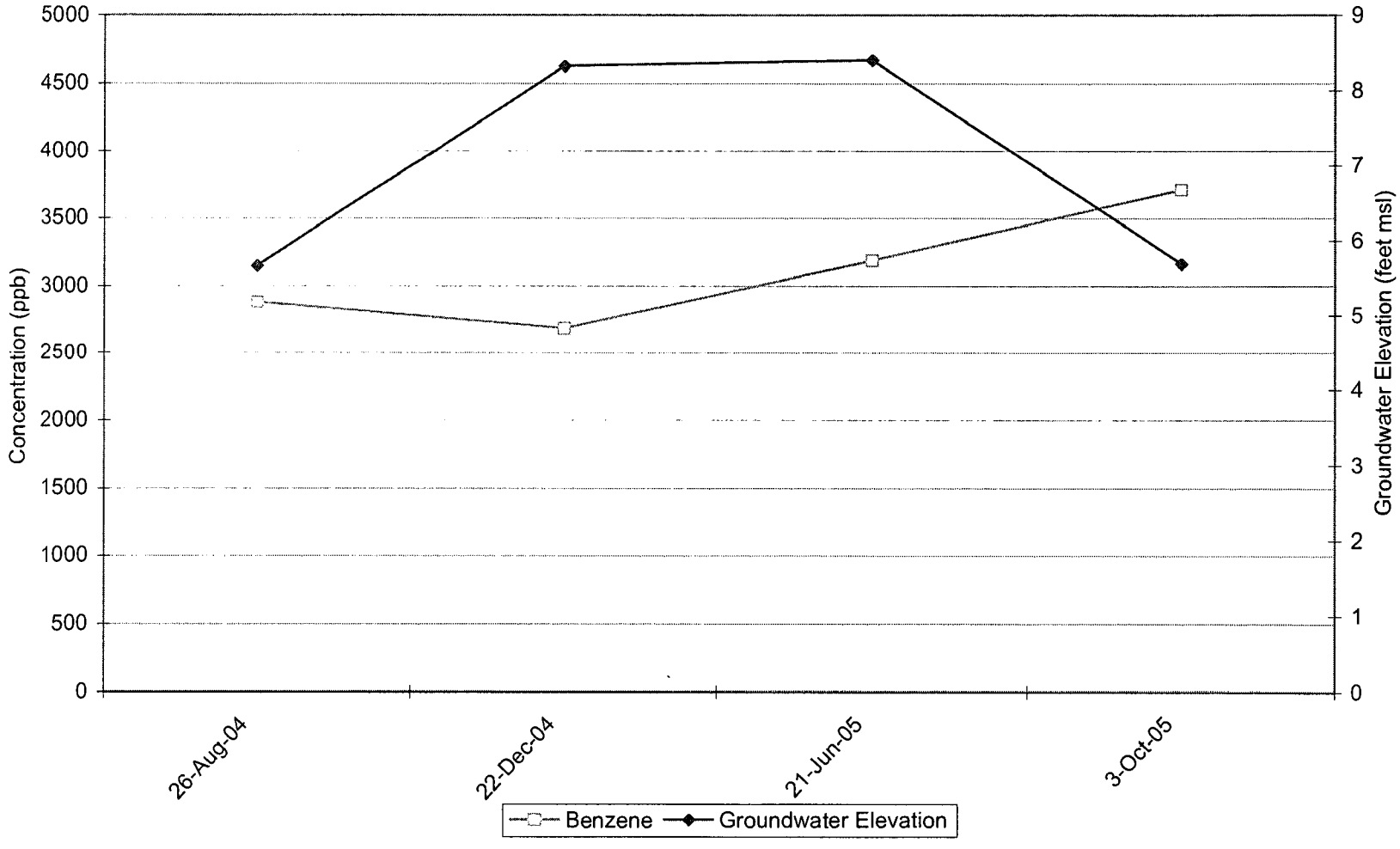


Updated: 5/2/06: APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023518

Benzene Concentation and Groundwater Elevation through Time
Monitoring Well MW-16-45 (upper alluvial WBZ) - Well Contains DNAPL
NW Natural - Gasco Facility

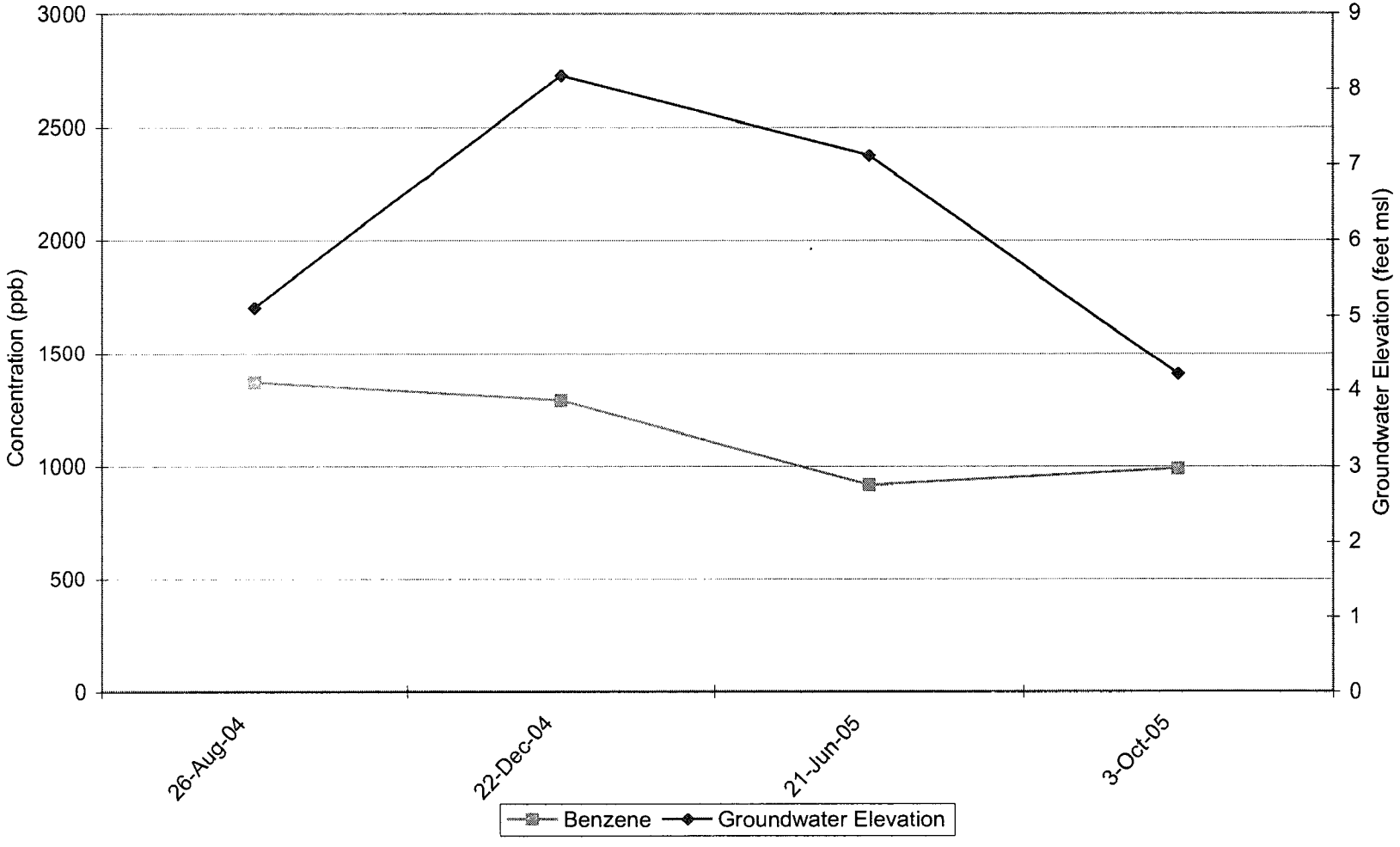


Updated: 5/2/06: APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023519

Benzene Concentation and Groundwater Elevation through Time
Monitoring Well MW-16-65 (upper alluvial WBZ)
NW Natural - Gasco Facility

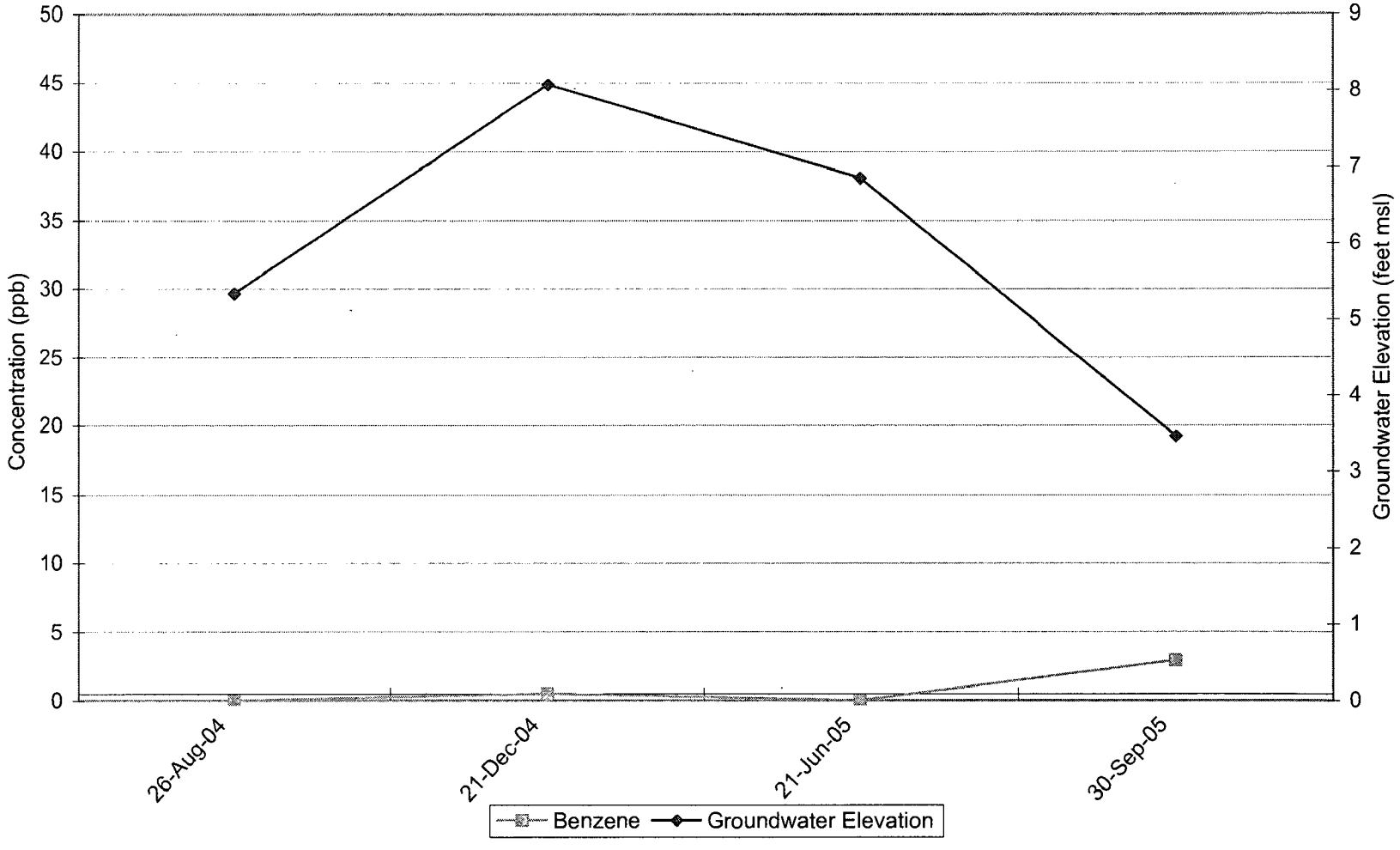


Koppers023520

Updated: 5/2/06: APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

Benzene Concentation and Groundwater Elevation through Time
Monitoring Well MW-16-125 (intermediate-depth alluvial WBZ)
NW Natural - Gasco Facility



Koppers023521

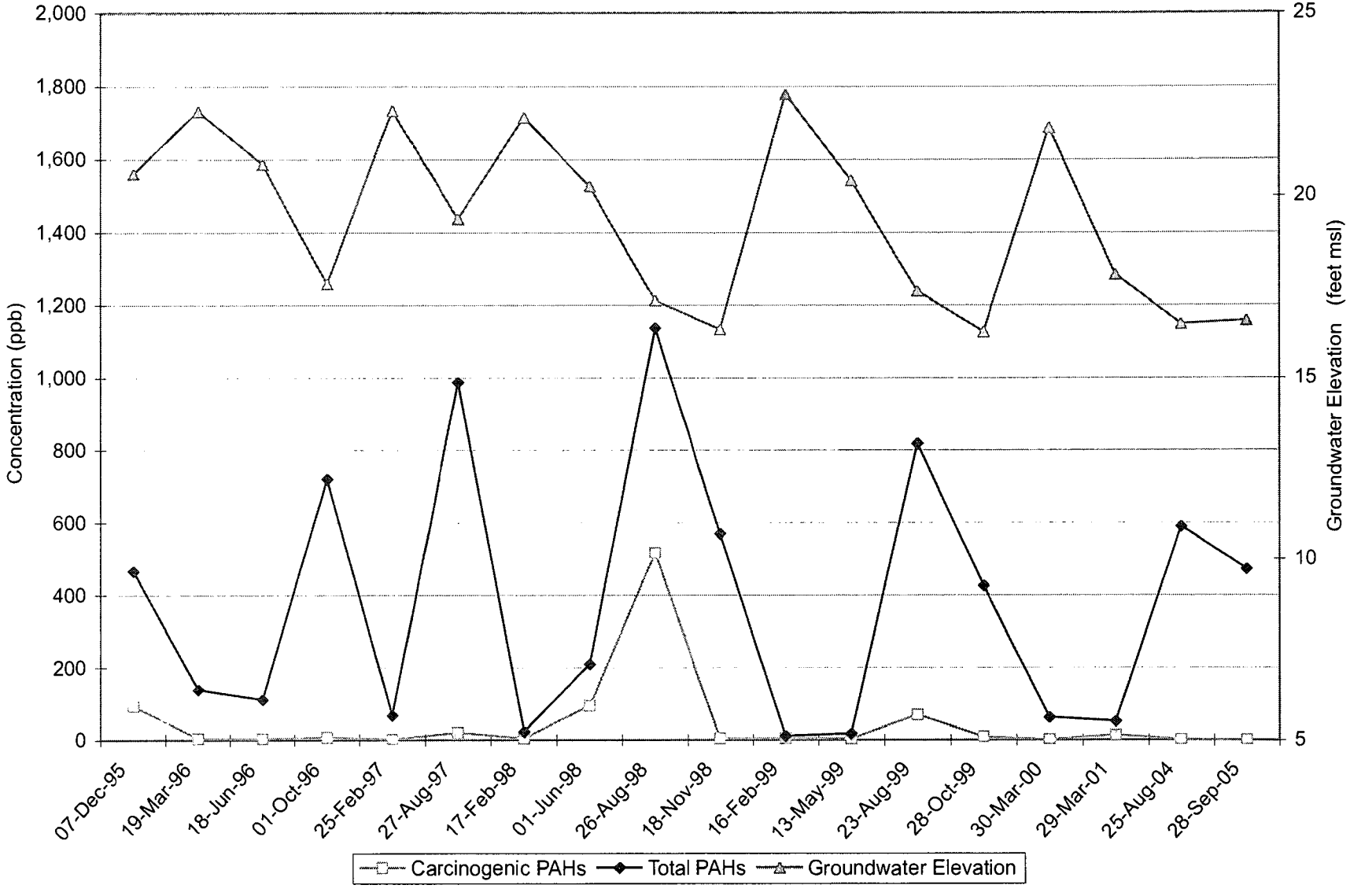
Updated: 5/2/06: APR
File: 2708 022406 GW conc graphs RBE.xls

Project No. 2708
HAHN AND ASSOCIATES, INC.

APPENDIX E

Time-Concentration Graphs: Total PAH and Total Carcinogenic PAH Concentrations and Groundwater Elevations Through Time

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-1-22 (surficial fill WBZ)
NW Natural - Gasco Facility

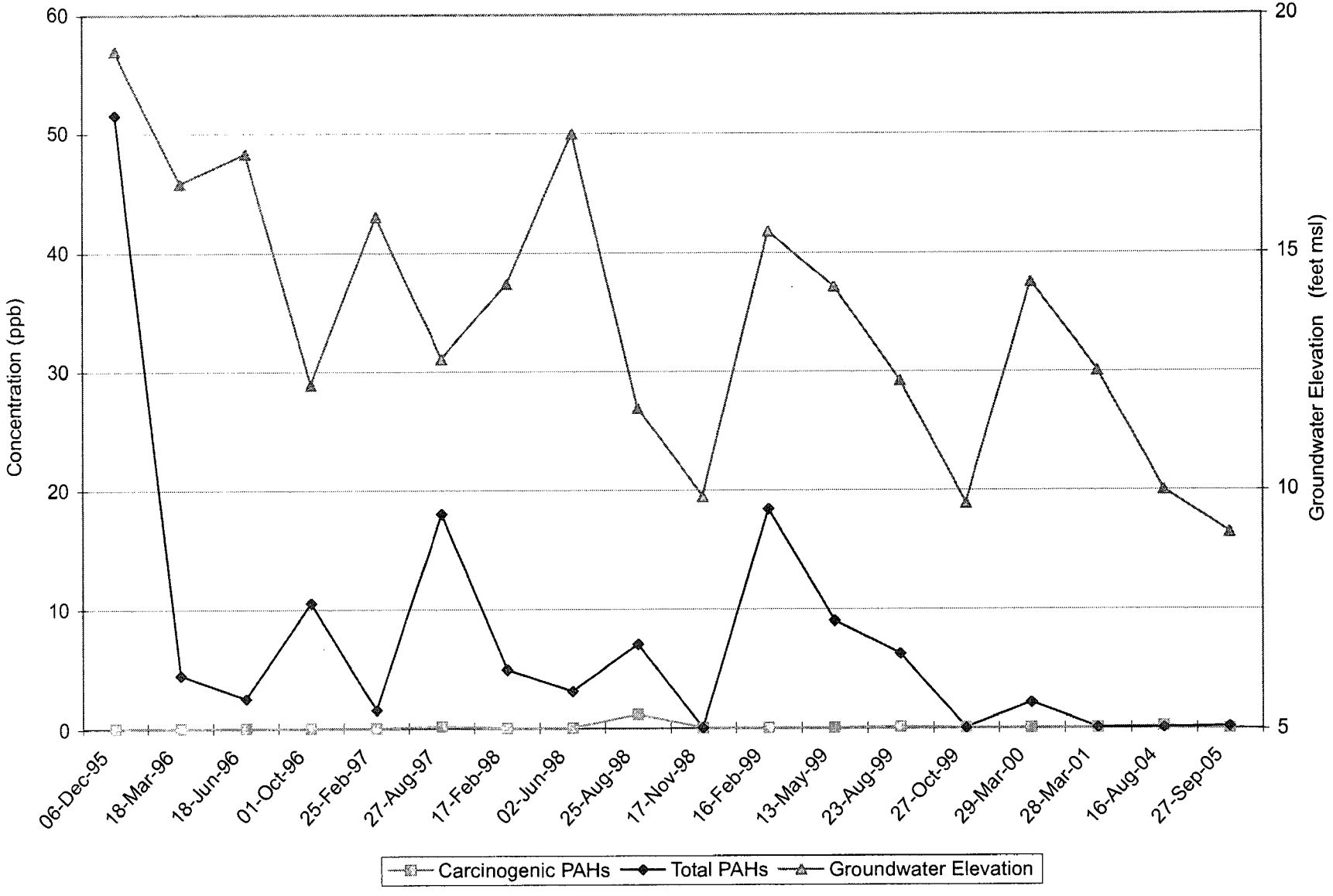


Koppers023523

Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW-1 (PAH)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-2-32 (surficial fill WBZ)
NW Natural - Gasco Facility

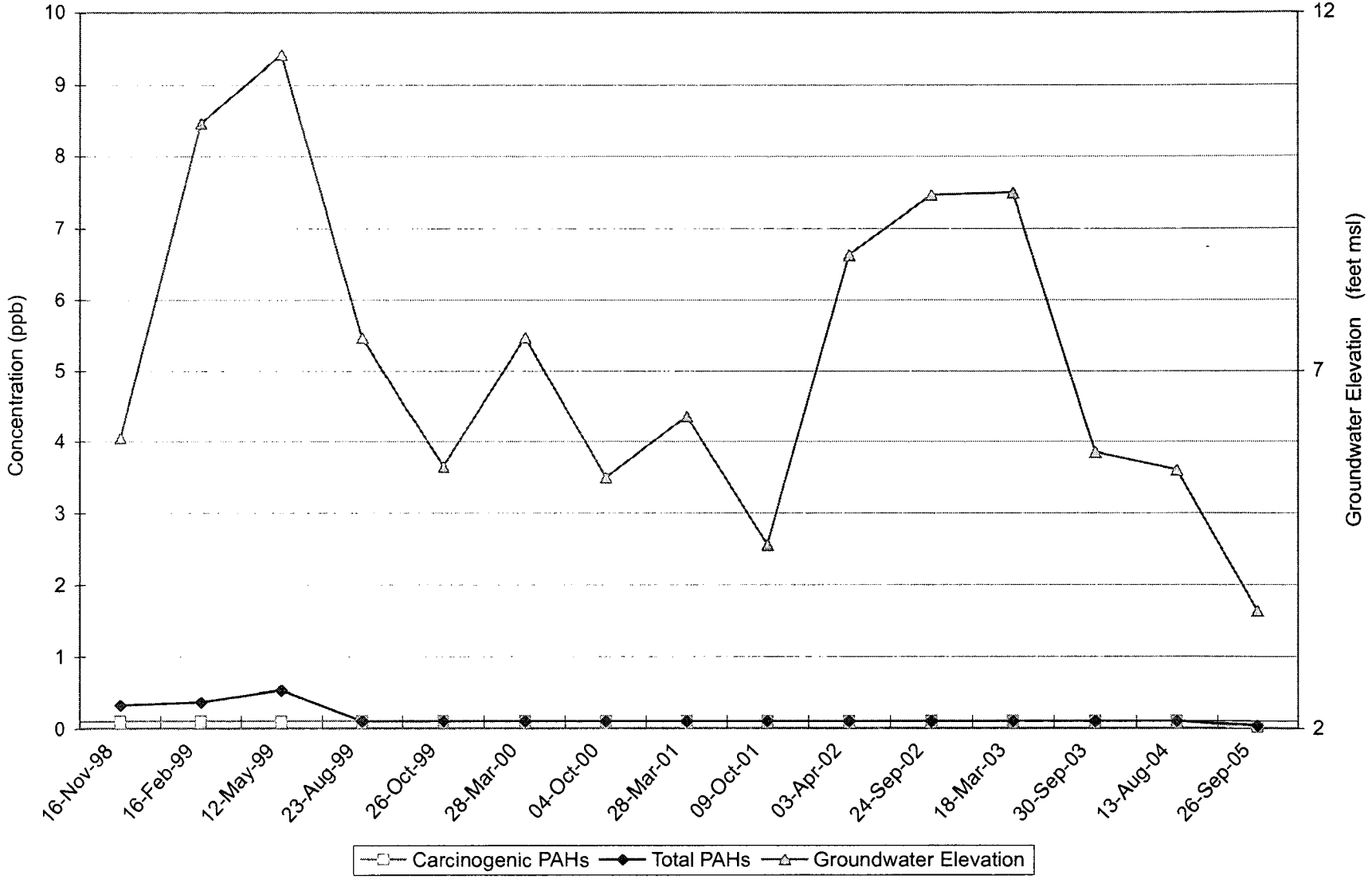


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW2-32 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023524

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-2-61 (surficial fill WBZ)
NW Natural - Gasco Facility

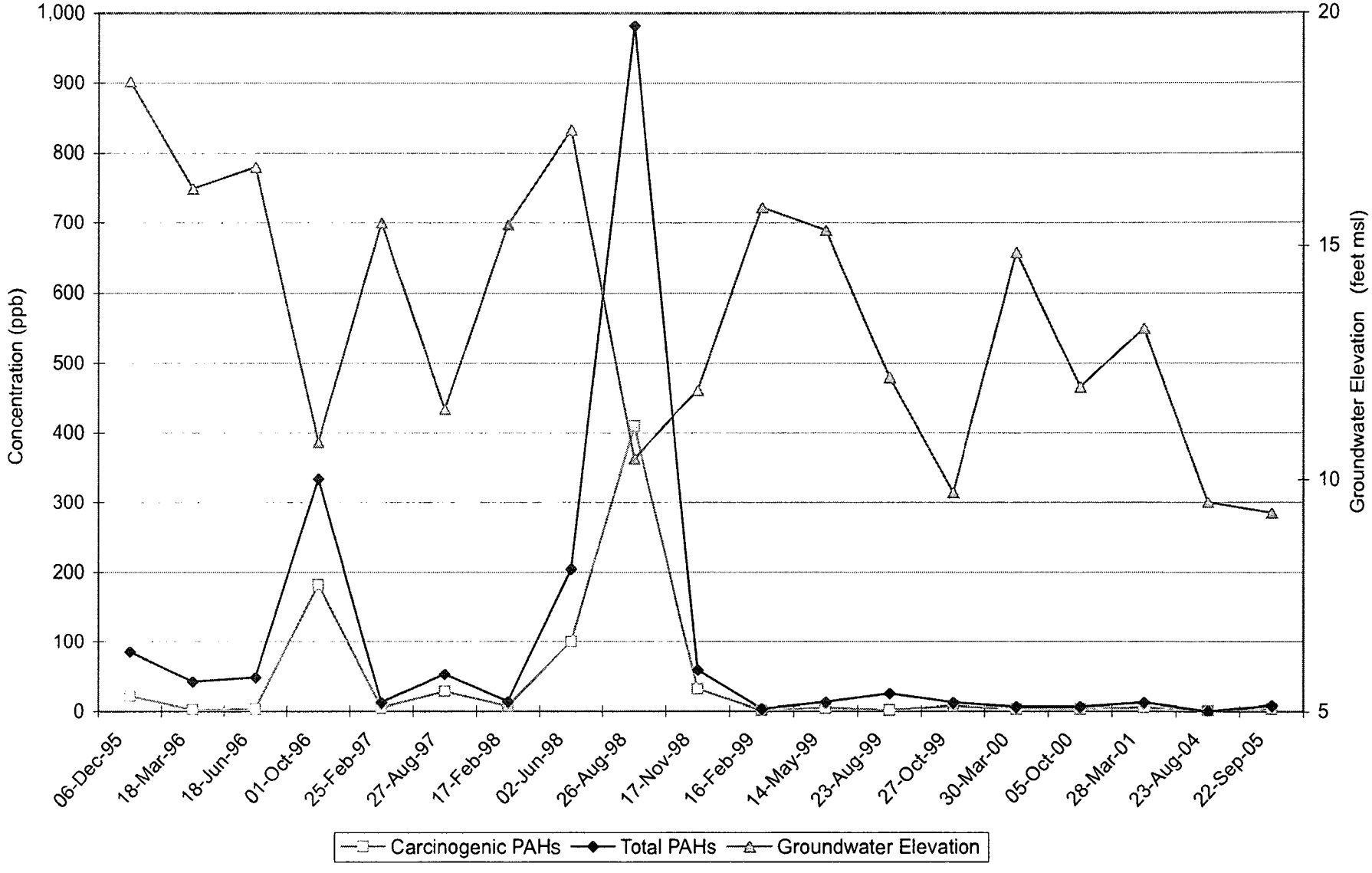


Koppers023525

Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW-02-61 PAHs

Project No. 2708
HAHN AND ASSOCIATES, INC.

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-3-26 (surficial fill WBZ)
NW Natural - Gasco Facility

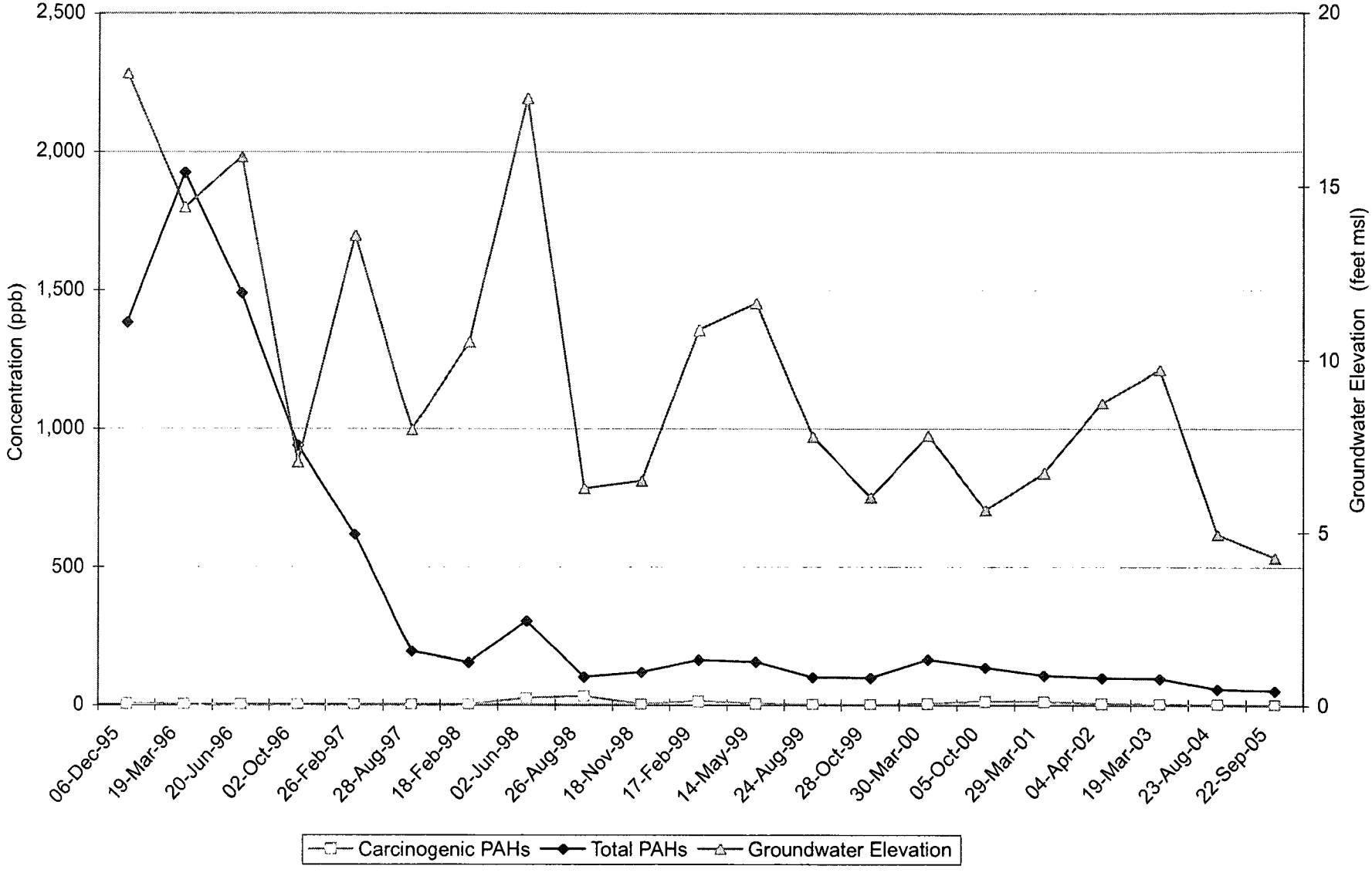


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW3-26 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023526

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-3-56 (upper alluvial WBZ)
NW Natural - Gasco Facility

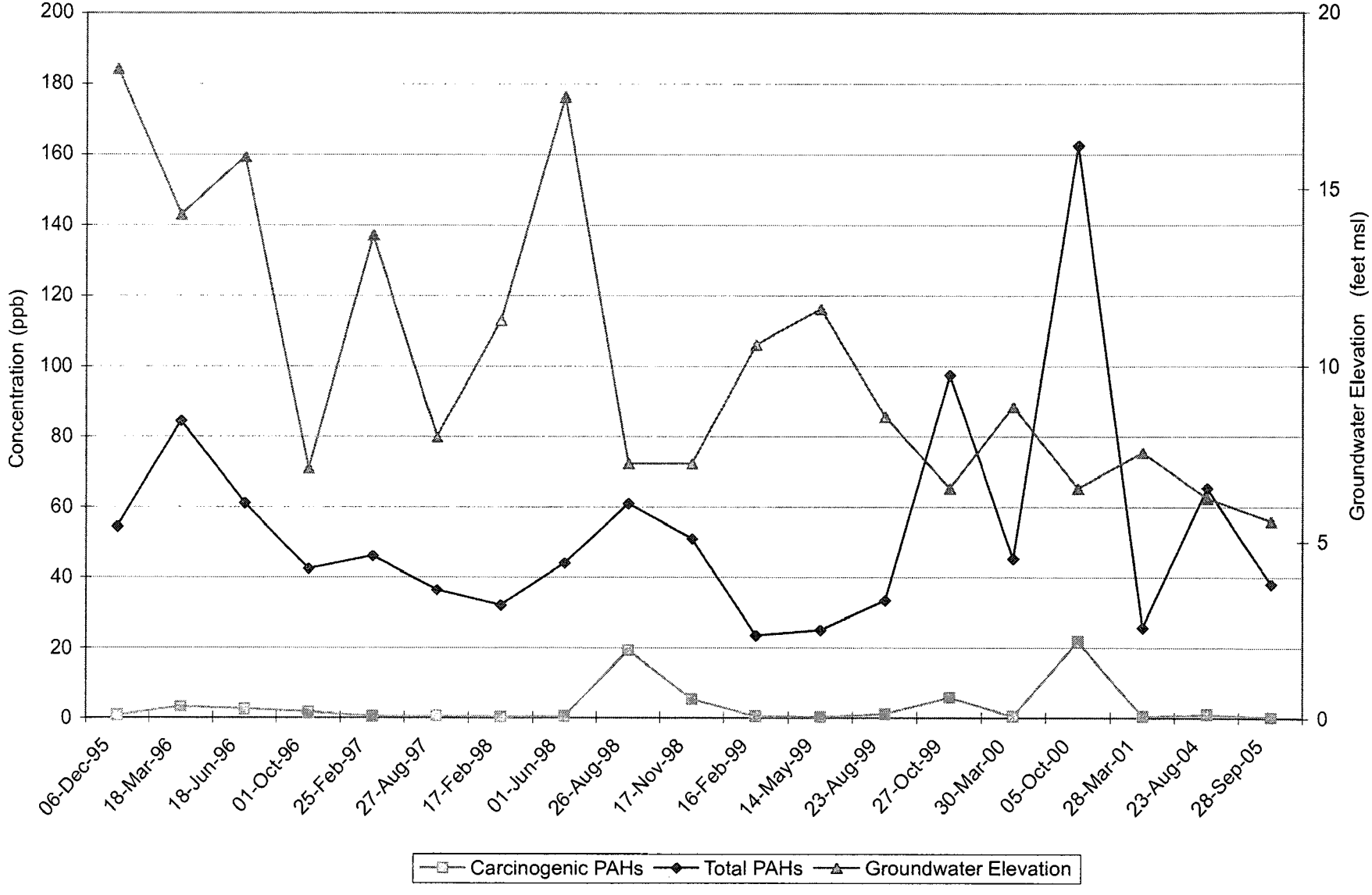


Koppers023527

Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW3-56 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-35 (surficial fill WBZ)
NW Natural - Gasco Facility

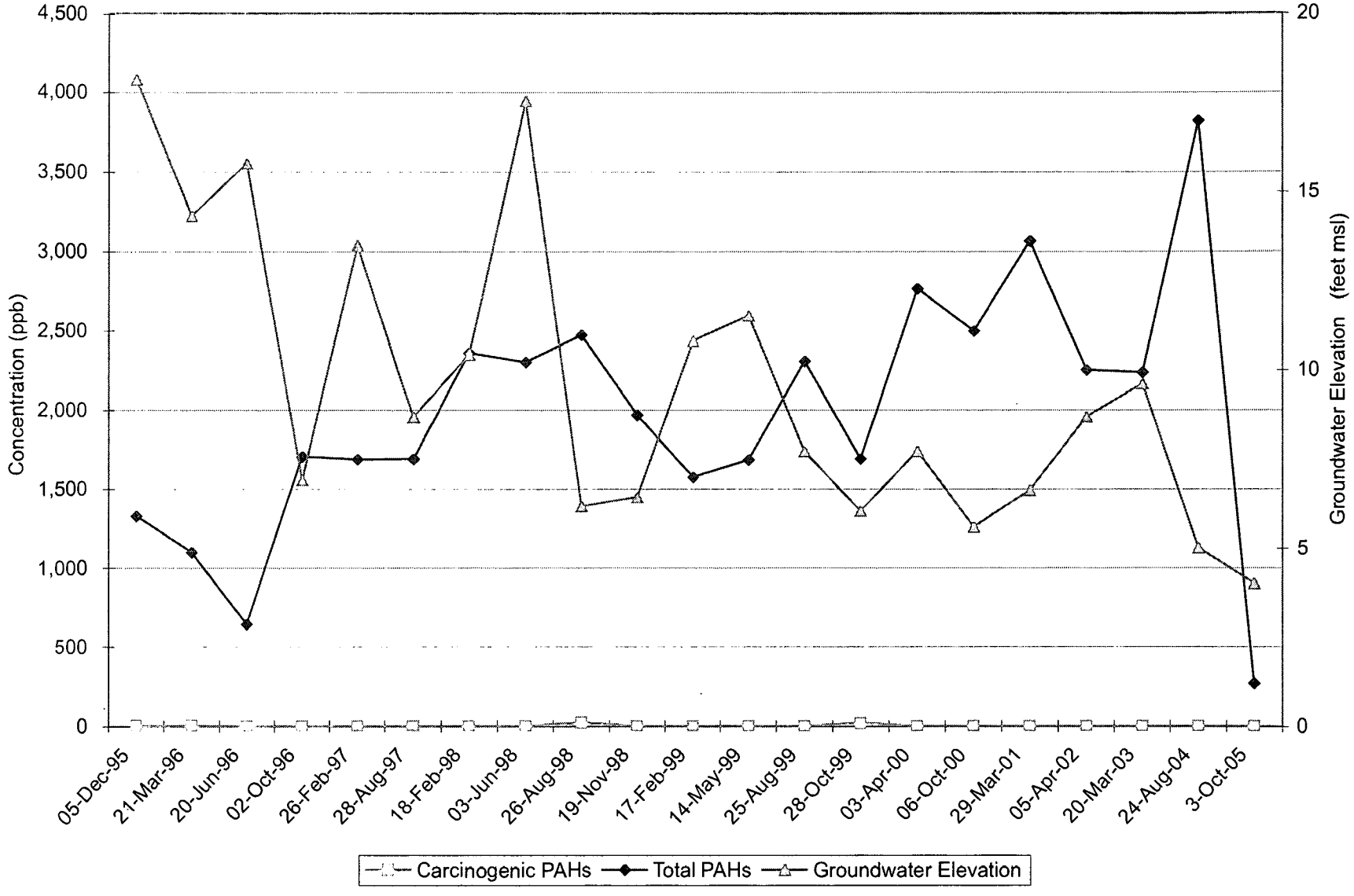


Koppers023528

Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW4-35 (PAHs)

Priject No. 2708
HAHN AND ASSOCIATES, INC.

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-57 (upper alluvial WBZ)
NW Natural - Gasco Facility

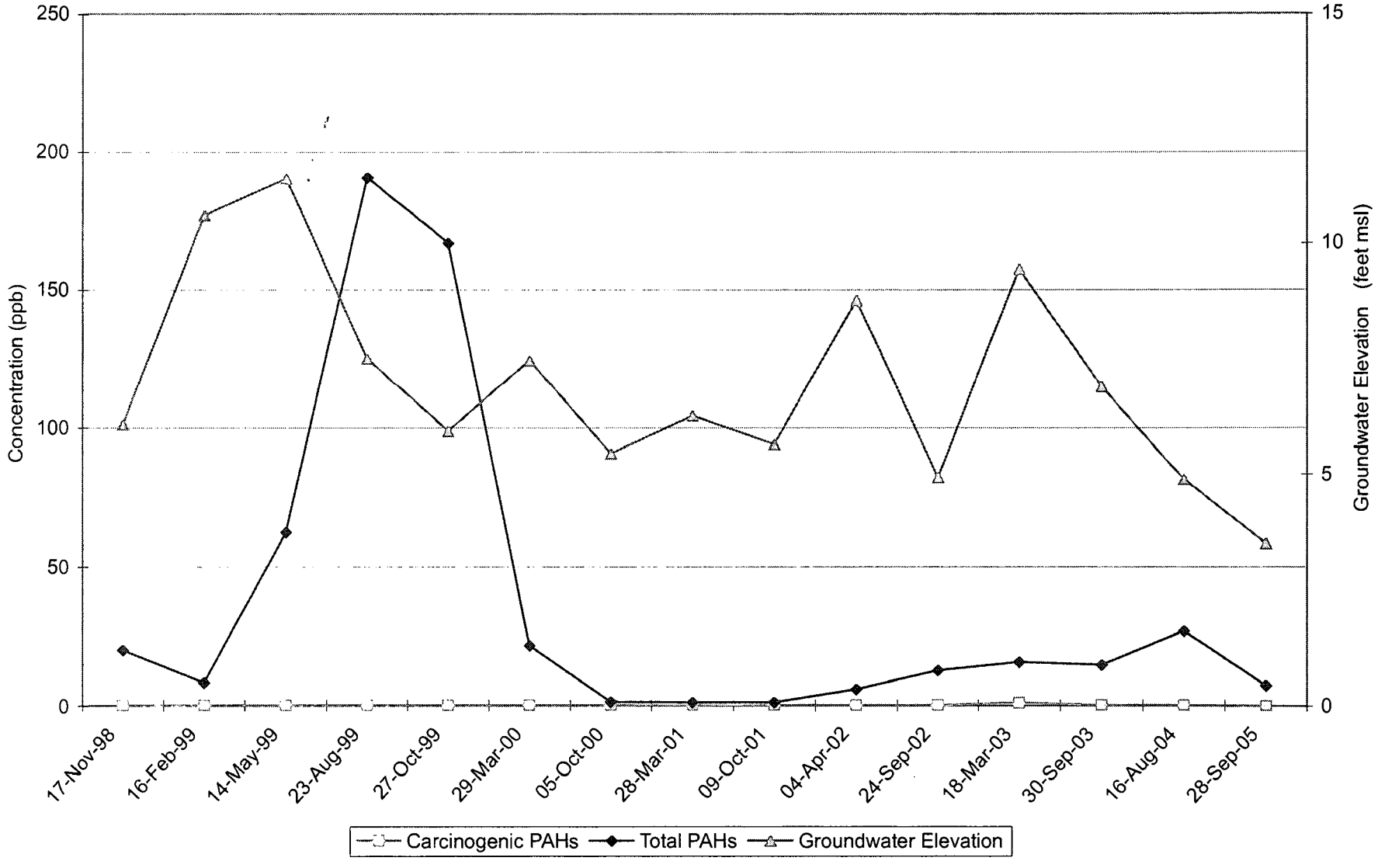


Koppers023529

Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW4-57 (PAH)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-4-101 (intermediate-depth alluvial WBZ)
NW Natural - Gasco Facility

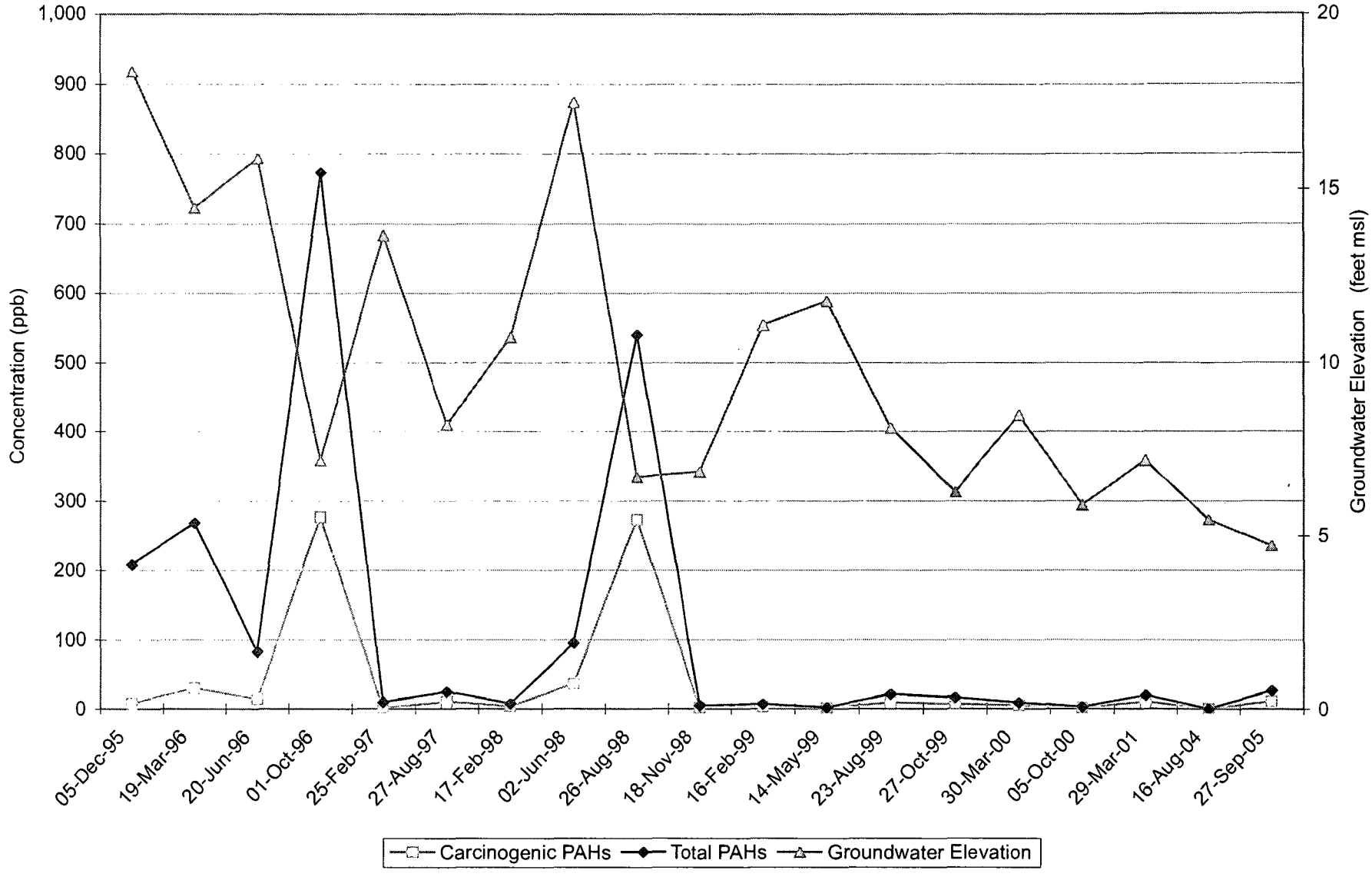


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW4-101 (PAH)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023530

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-32 (surficial fill WBZ / upper alluvial WBZ)
NW Natural - Gasco Facility

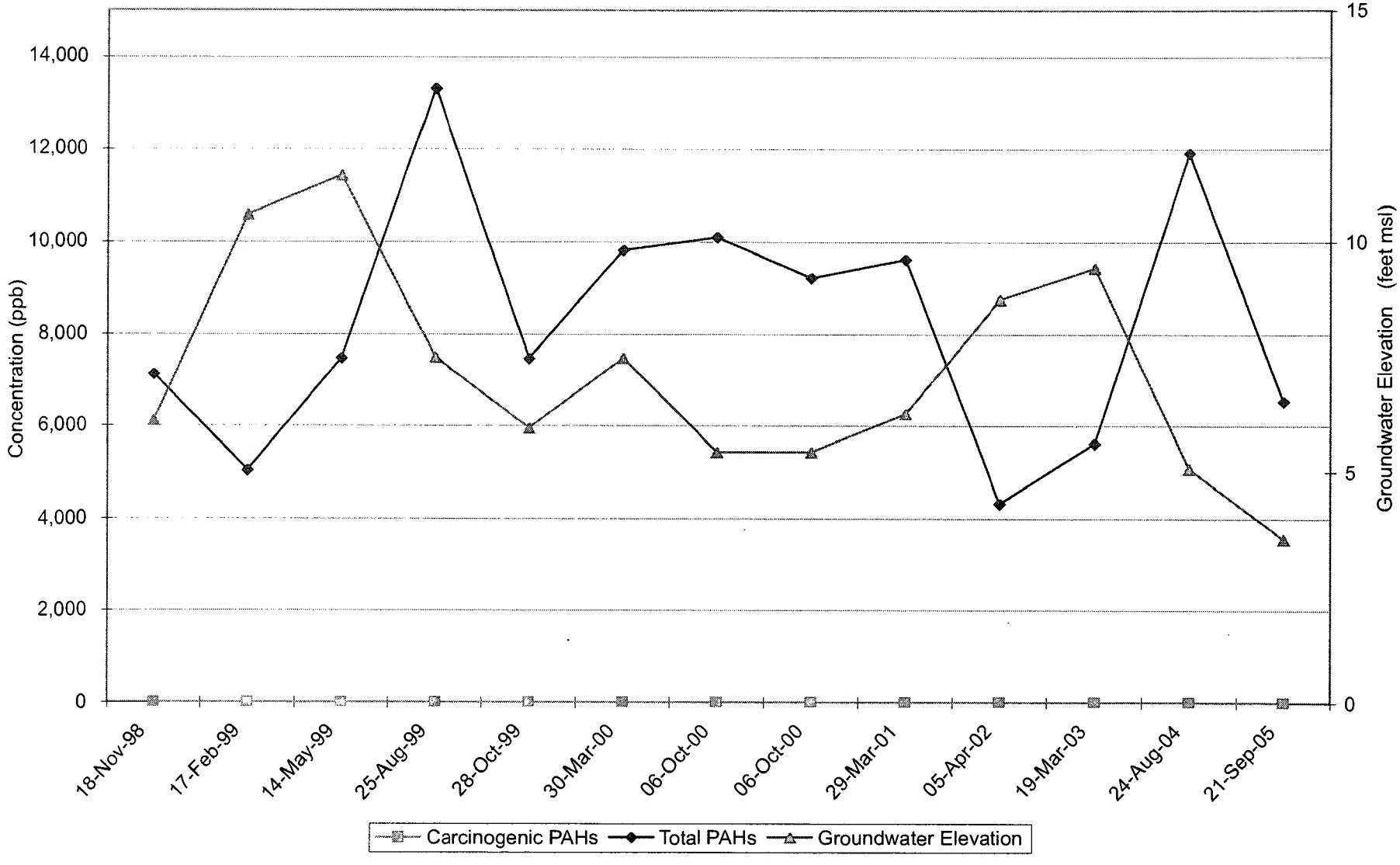


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW5-32 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023531

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-100 (intermediate-depth alluvial WBZ)
NW Natural - Gasco Facility

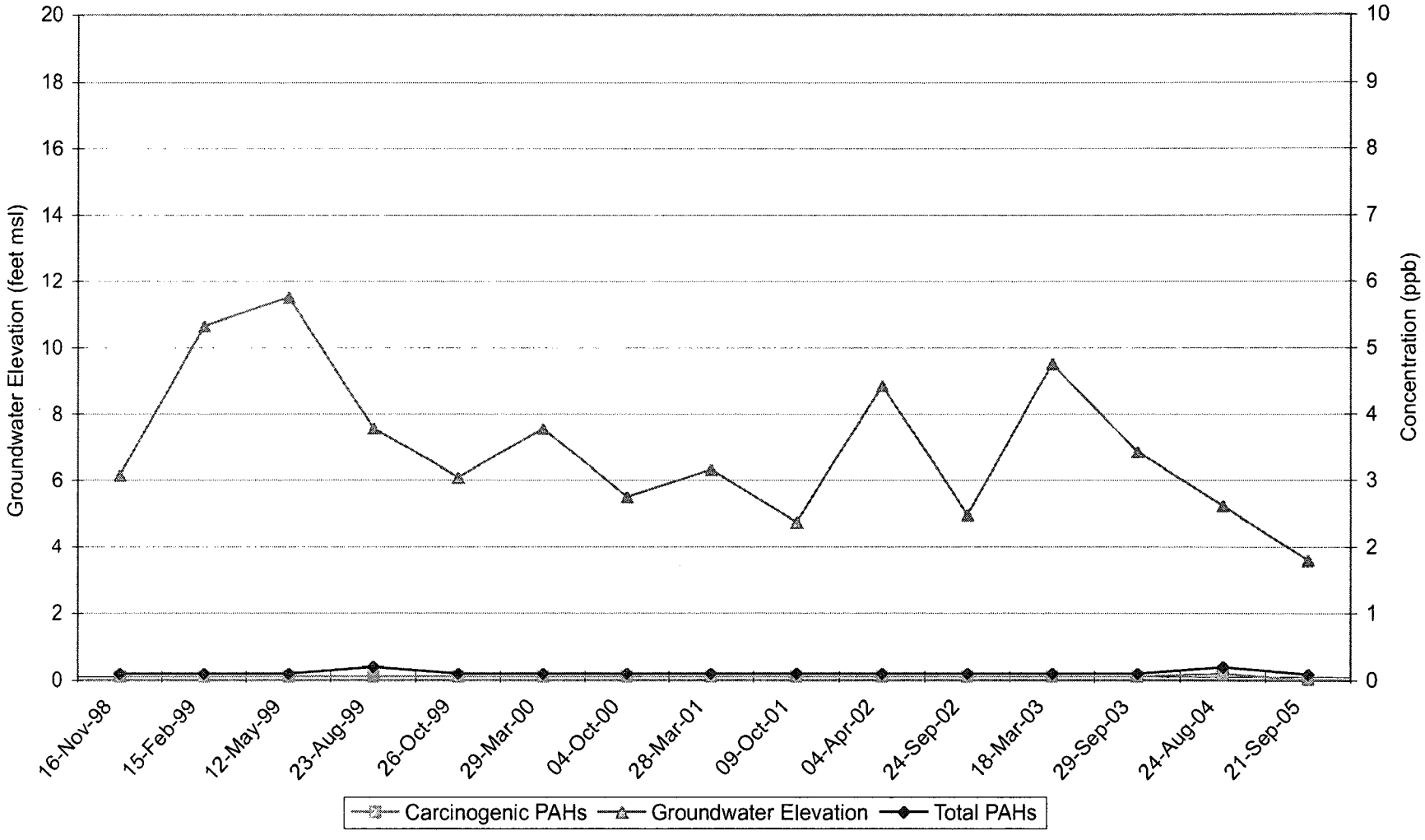


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW-5-100 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023532

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-5-175 (lower alluvial WBZ)
NW Natural - Gasco Facility

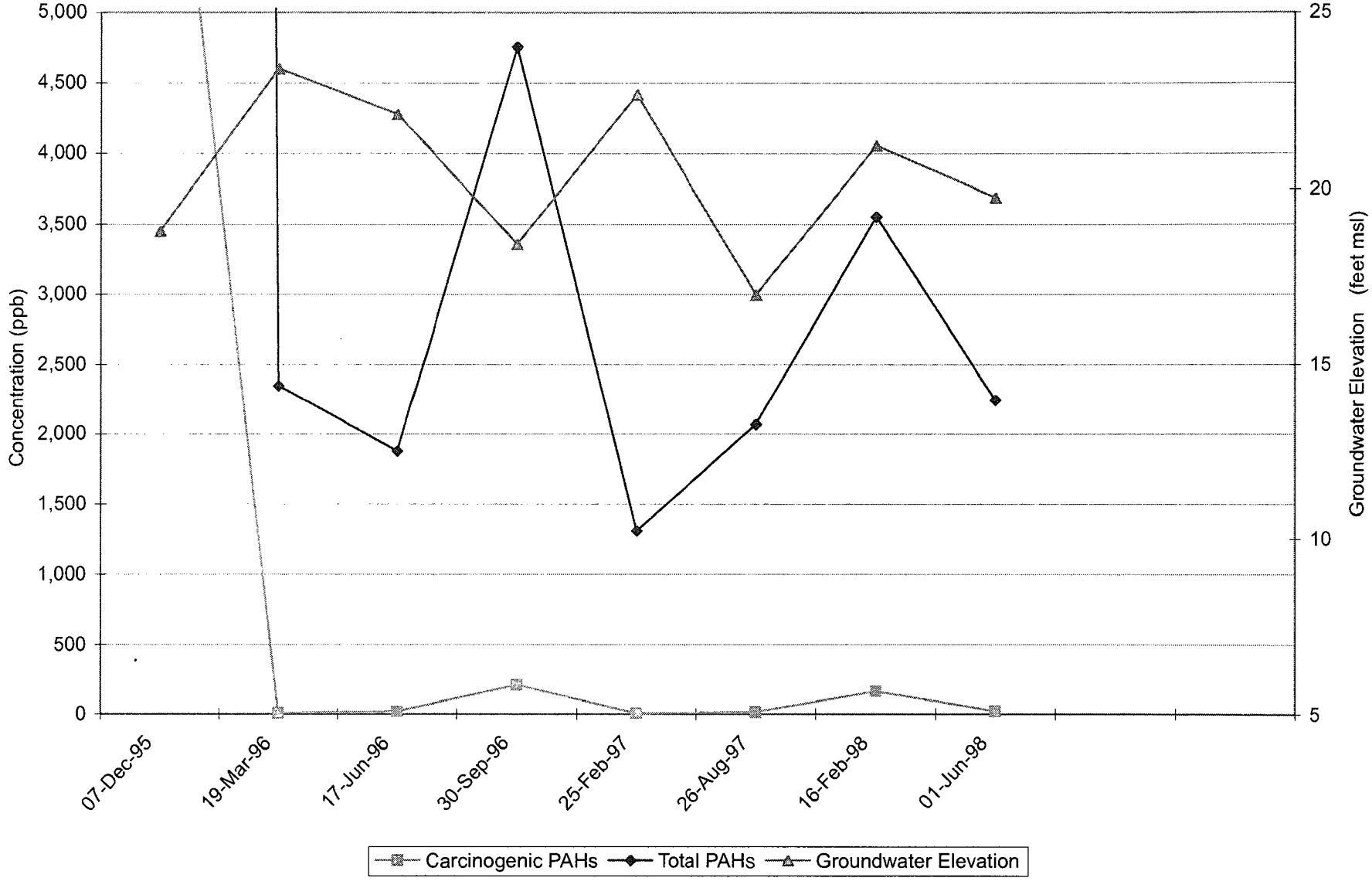


Koppers023533

Updated: 5/2/06: APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW5-175 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-6-32 (surficial fill WBZ) Current DNAPL Recovery Well
Northwest Natural - Gasco Facility

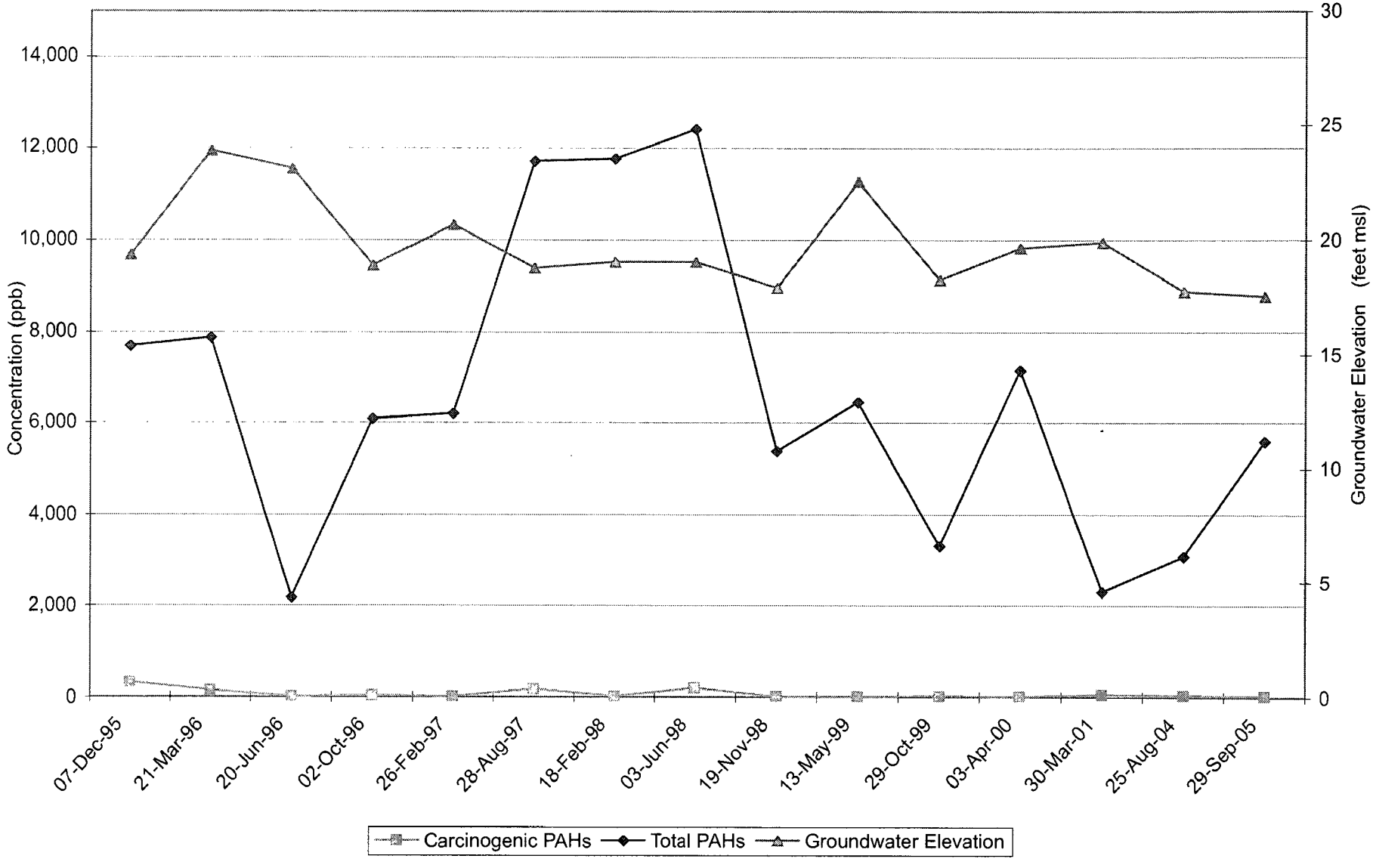


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW6-32 (PAHS)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023534

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-8-29 (surficial fill WBZ)
NW Natural - Gasco Facility

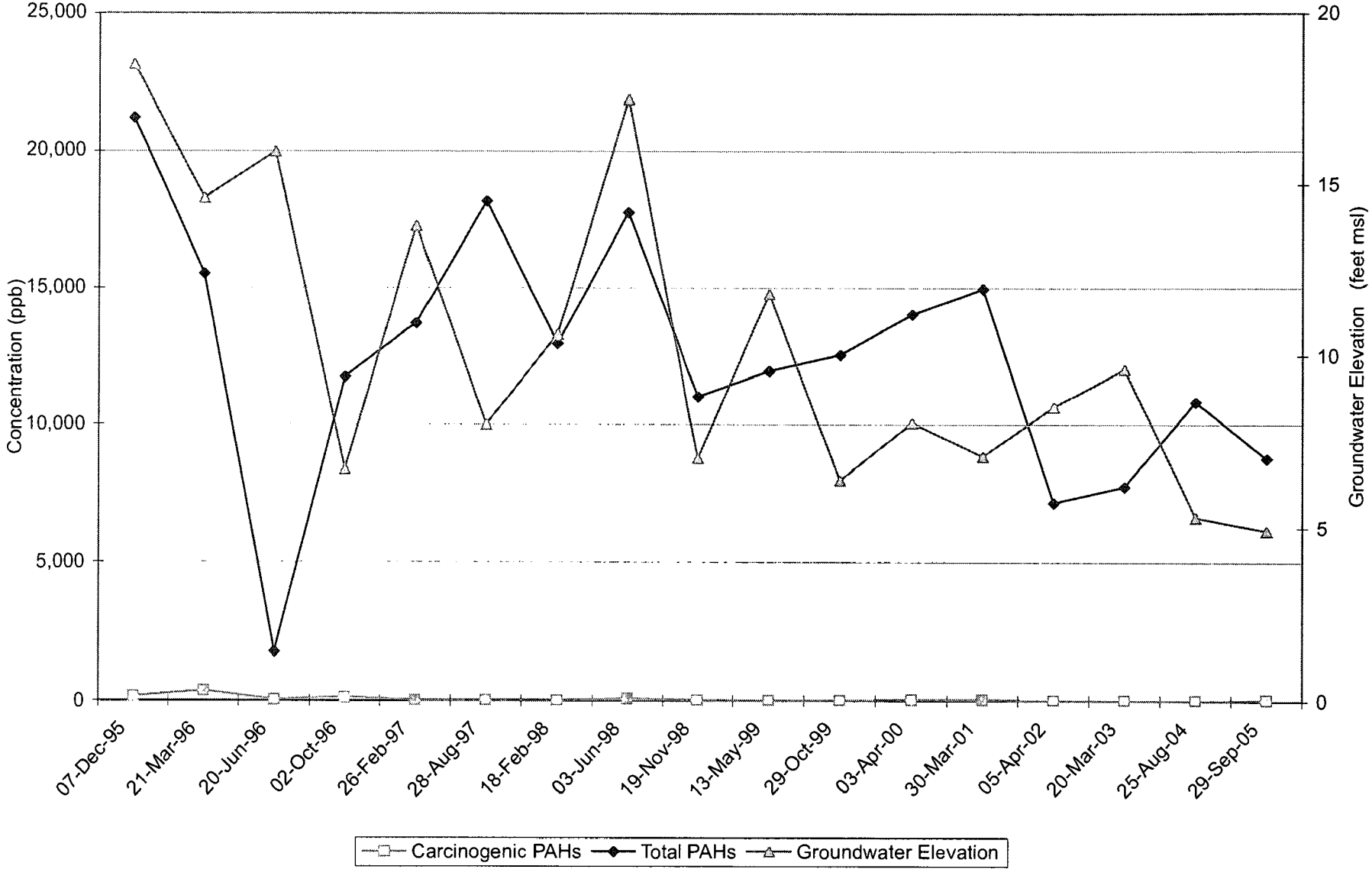


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW8-29 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023535

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-8-56 (upper alluvial WBZ)
NW Natural - Gasco Facility

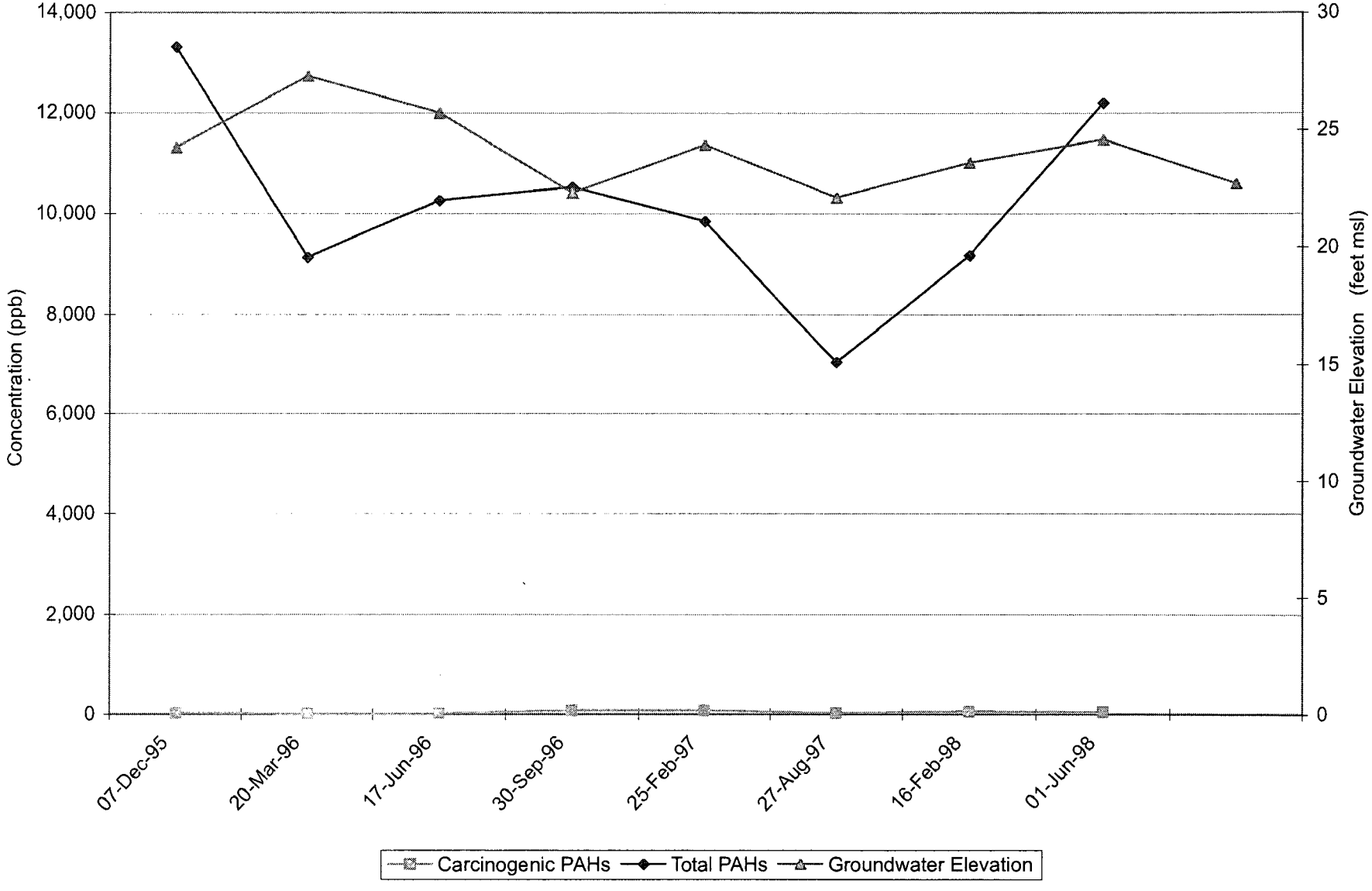


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW8-56 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023536

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-10-25 (surficial fill WBZ) - Well Contains DNAPL
Northwest Natural - Gasco Facility

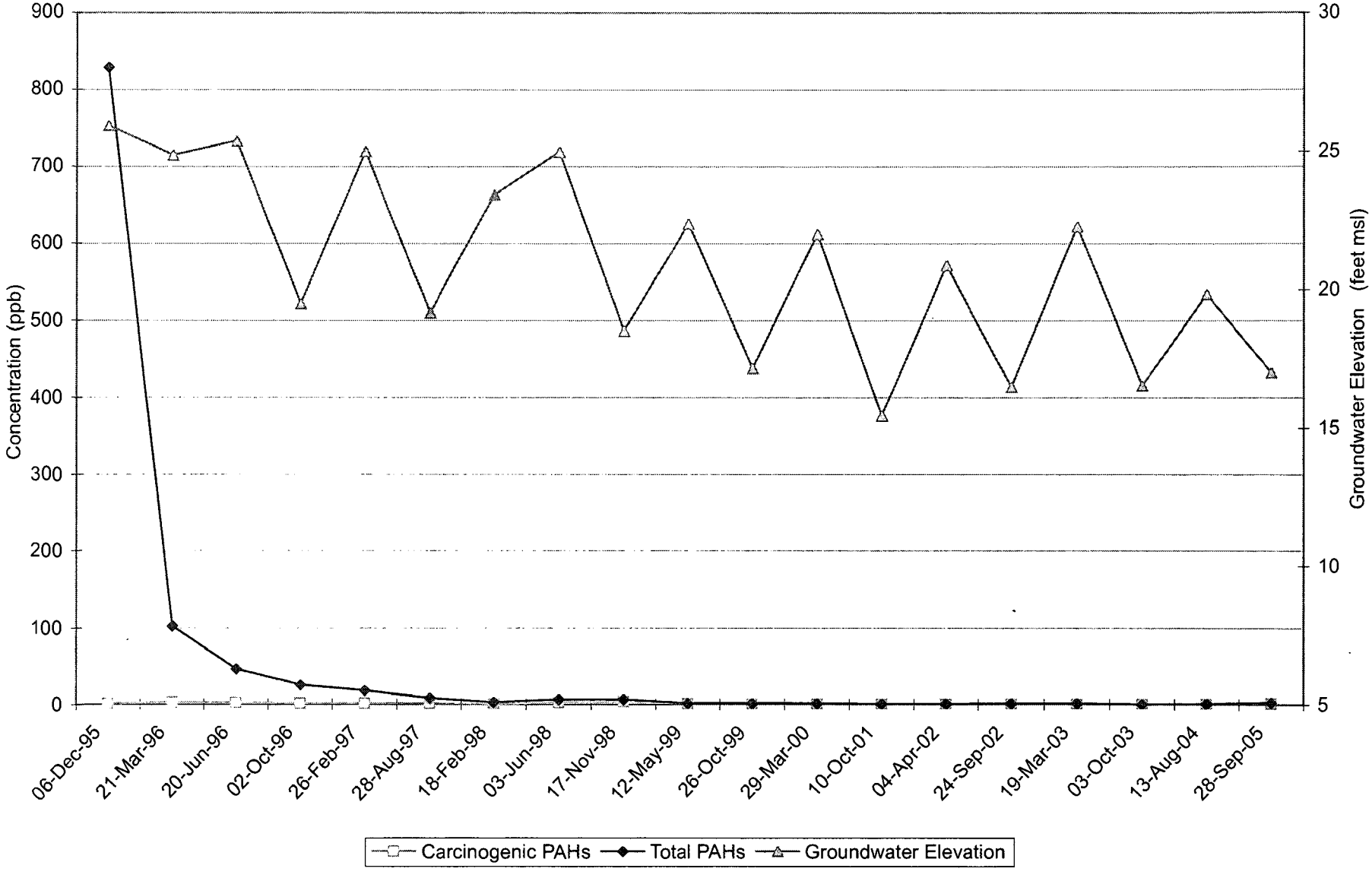


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW10-25 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023537

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-10-61 (upper alluvial WBZ)
NW Natural - Gasco Facility

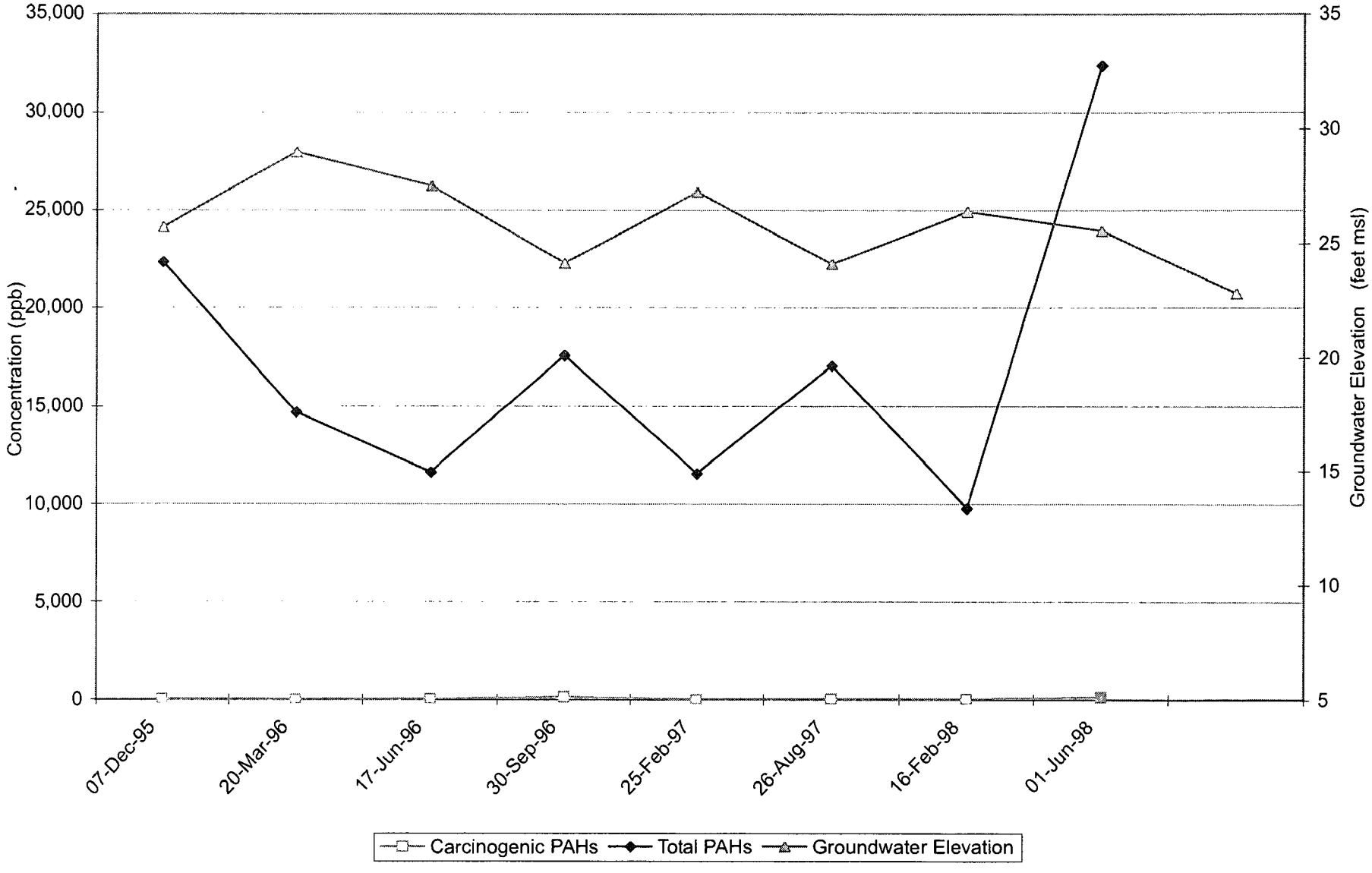


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW10-61 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023538

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-11-32 (surficial fill WBZ) - Well Contains DNAPL
NW Natural - Gasco Facility

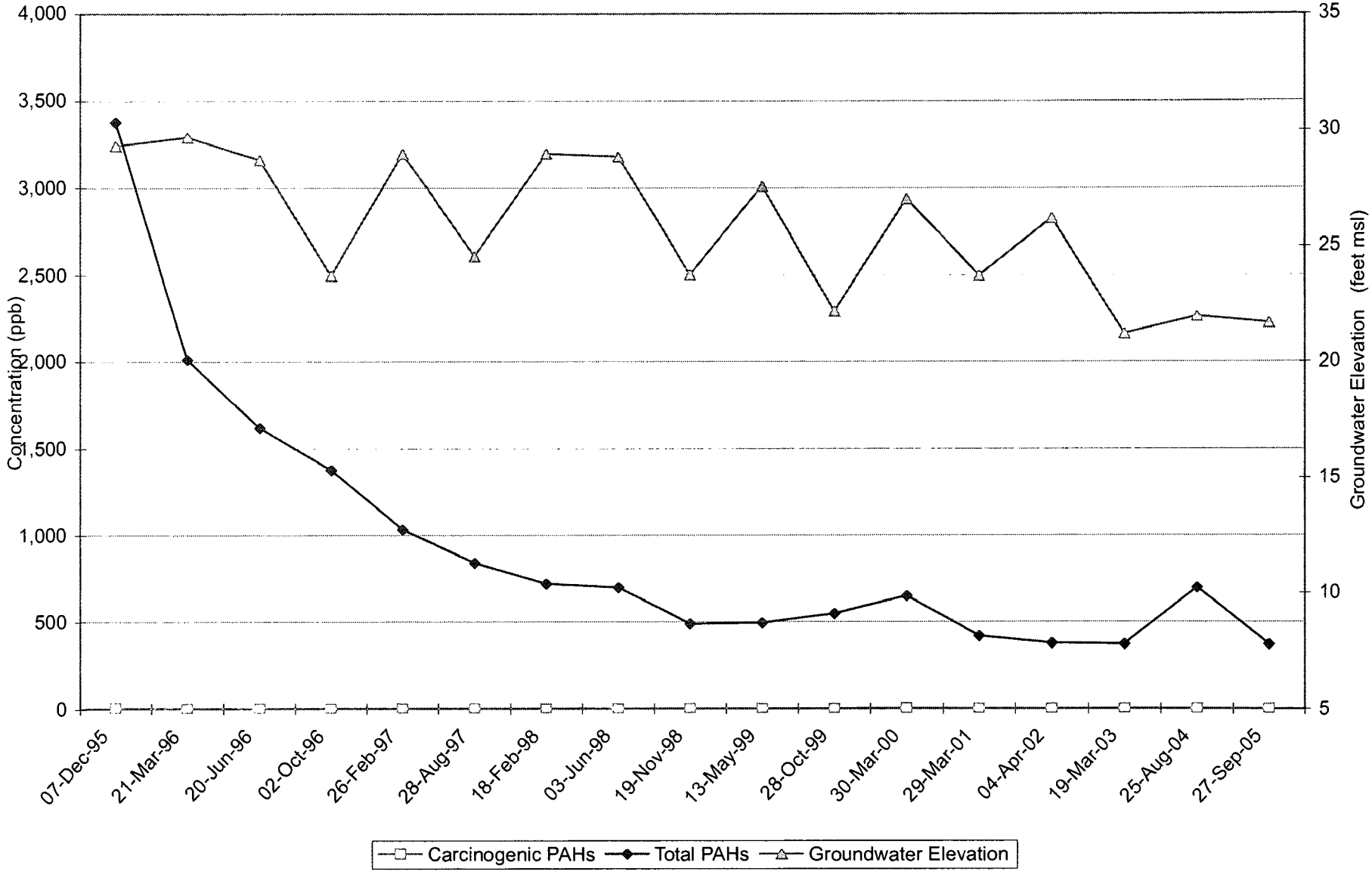


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW11-32 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023539

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-12-36 (surficial fill WBZ / upper alluvial WBZ)
NW Natural - Gasco Facility

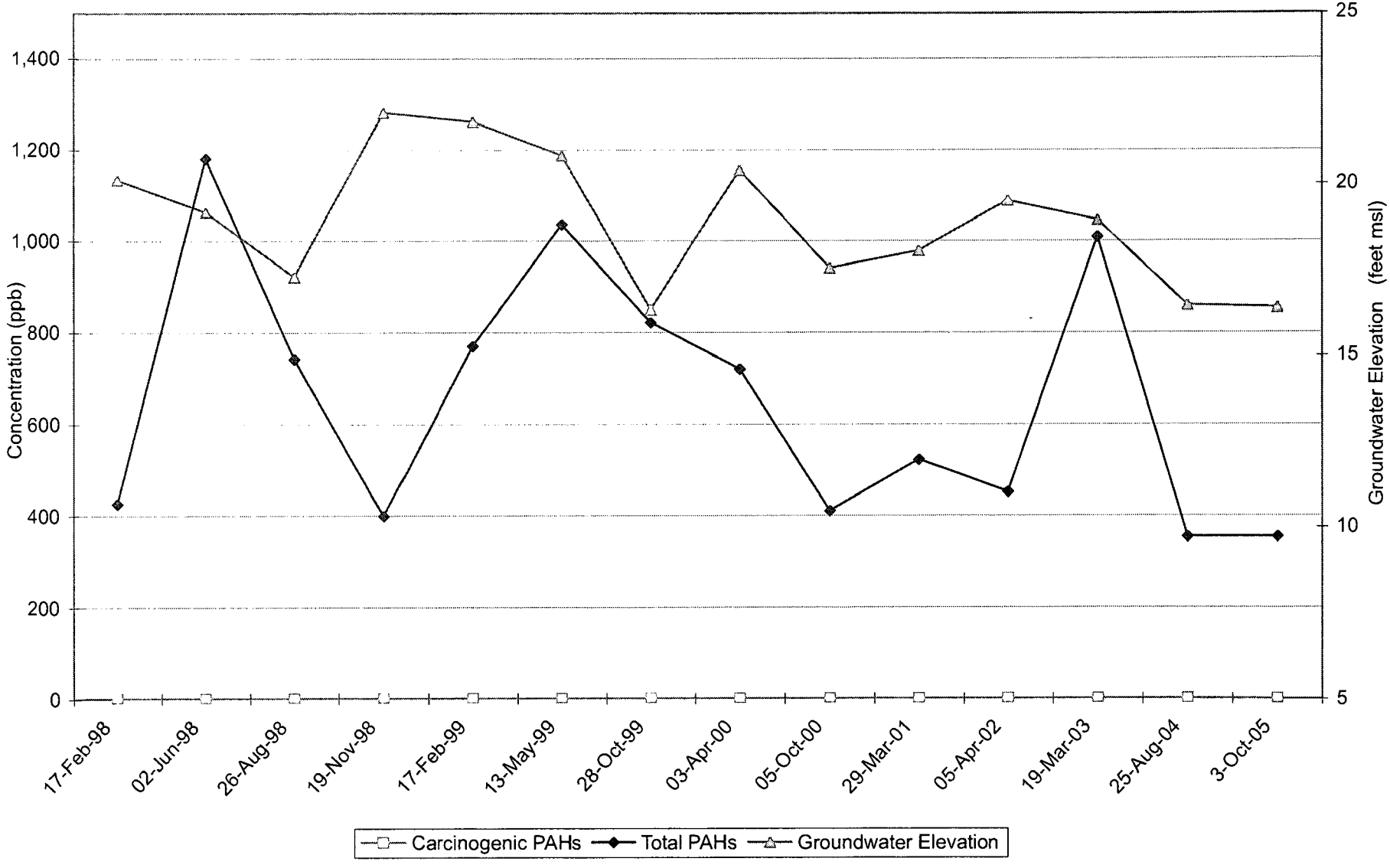


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW12-36 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023540

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-13-30 (surficial fill WBZ)
NW Natural - Gasco Facility

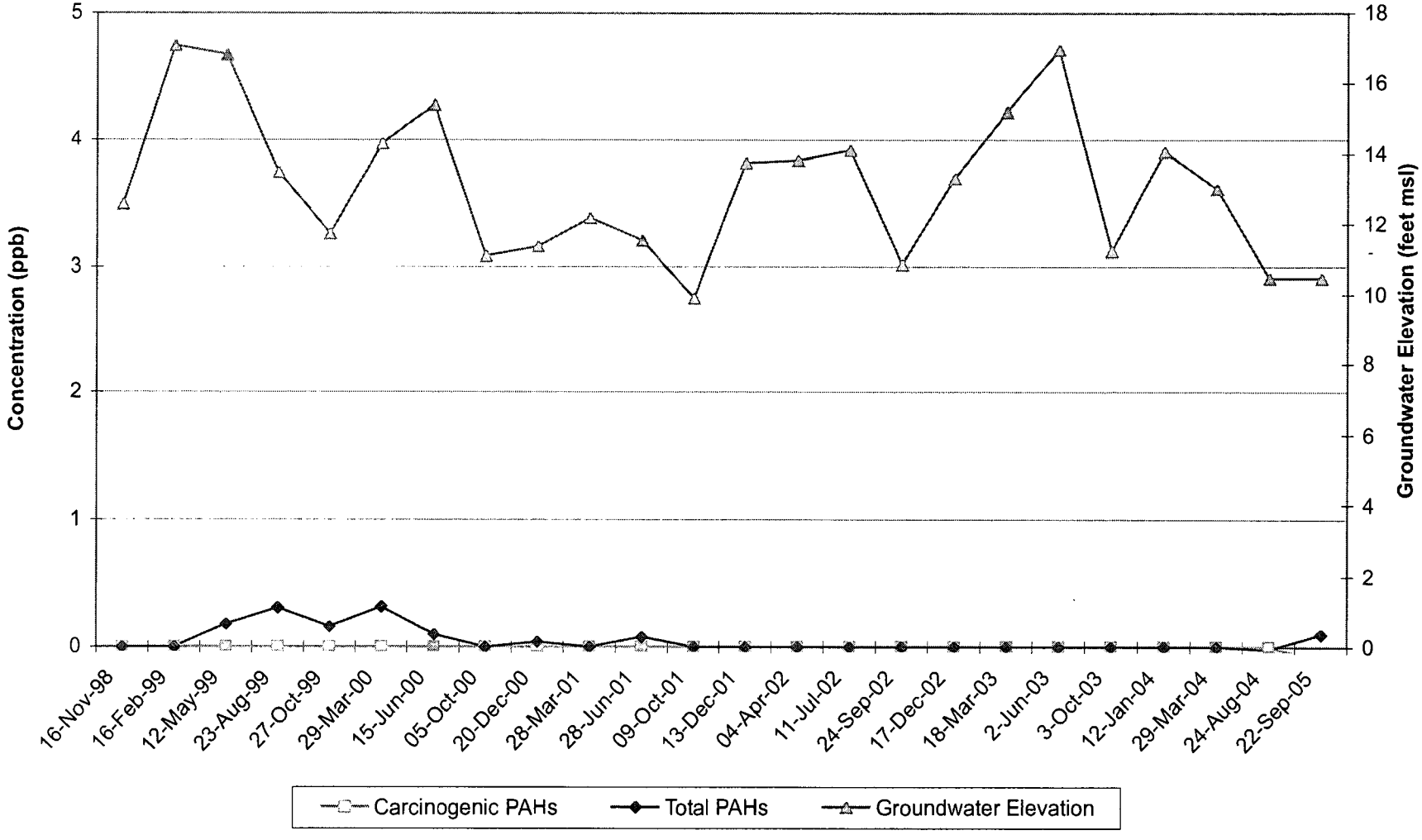


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW13-30 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023541

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-14-110 (intermediate-depth alluvial WBZ)
NW Natural - Gasco Facility

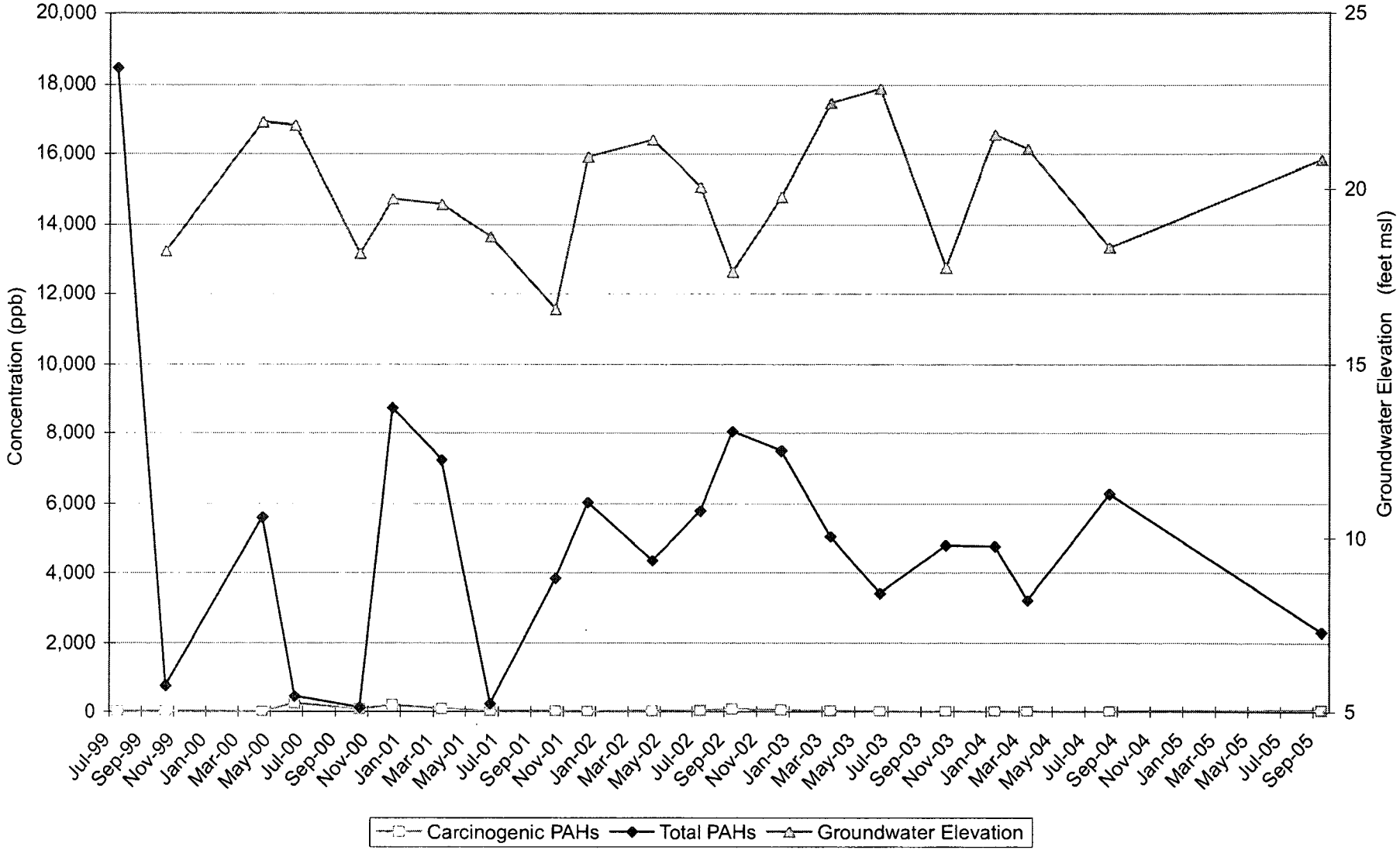


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW14-110 (PAHs)

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023542

Total PAH Concentration and Groundwater Elevation through Time
Monitoring Well MW-15-50 (silt unit / upper alluvial WBZ)
NW Natural - Gasco Facility

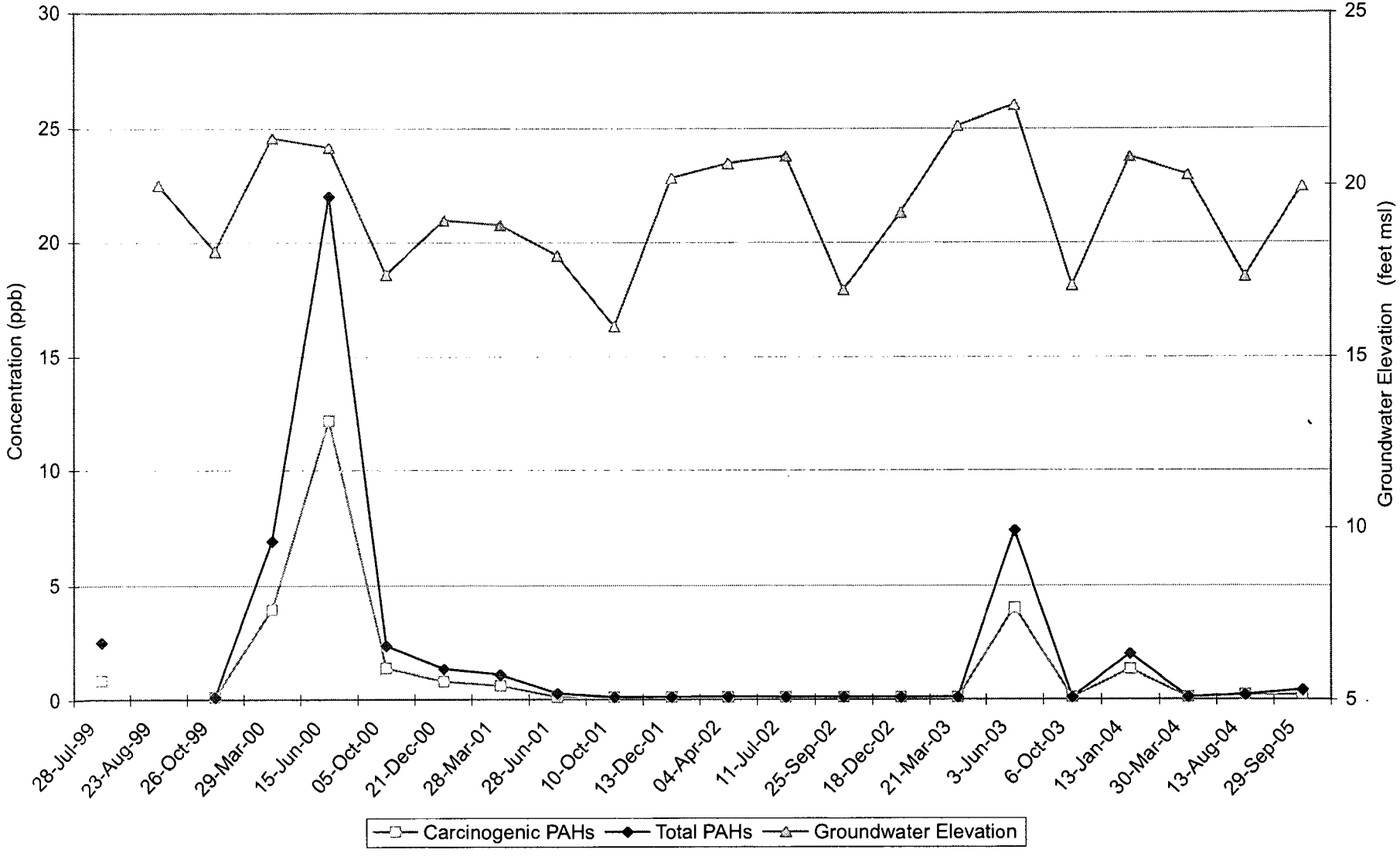


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW-15-50 PAHs

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023543

Total PAH Concentration through Time
Monitoring Well MW-15-66 (upper alluvial WBZ)
NW Natural - Gasco Facility

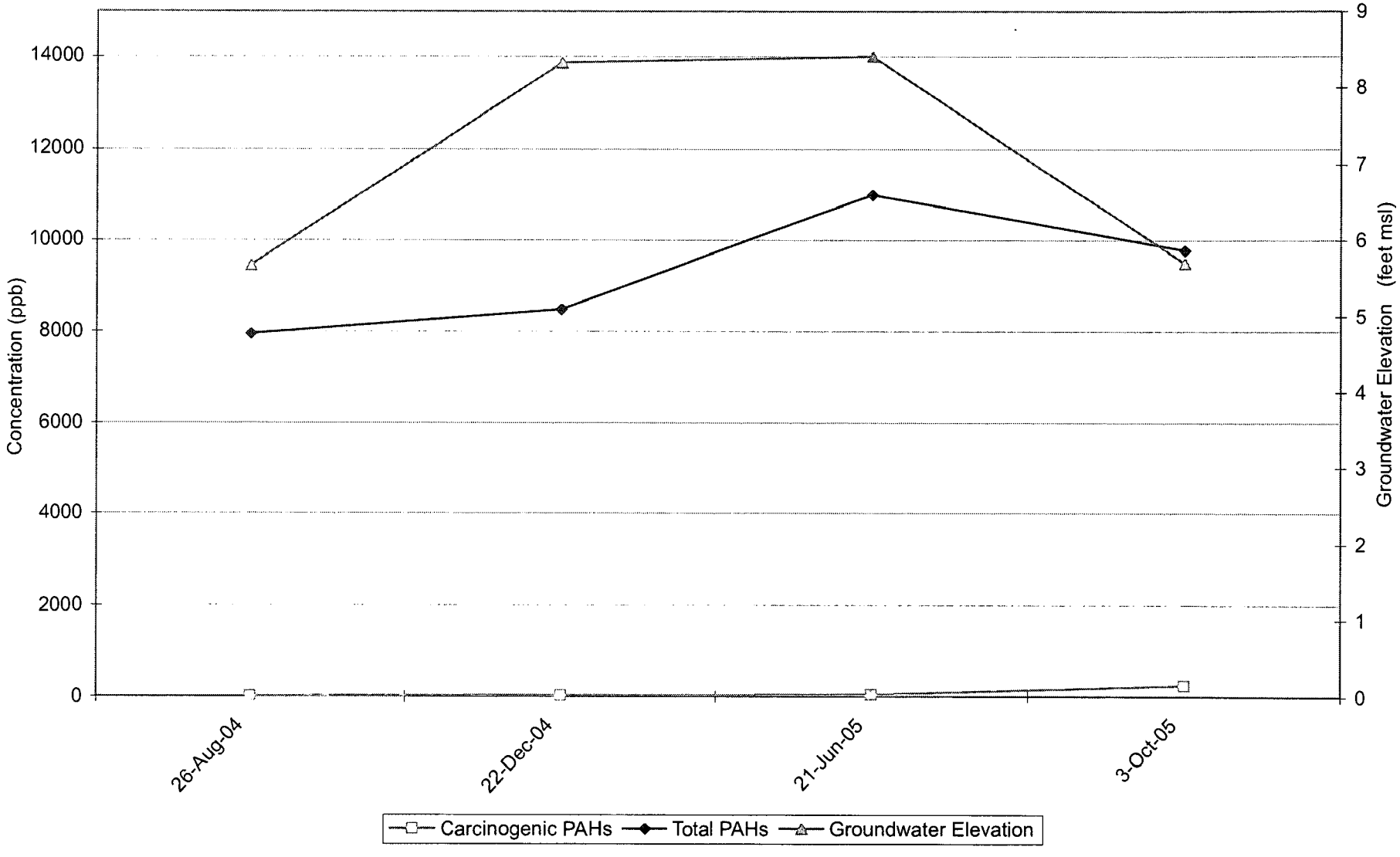


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW-15-66 PAHs

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023544

Total PAH Concentration through Time
Monitoring Well MW-16-45 (upper alluvial WBZ) - Well Contains DNAPL
NW Natural - Gasco Facility

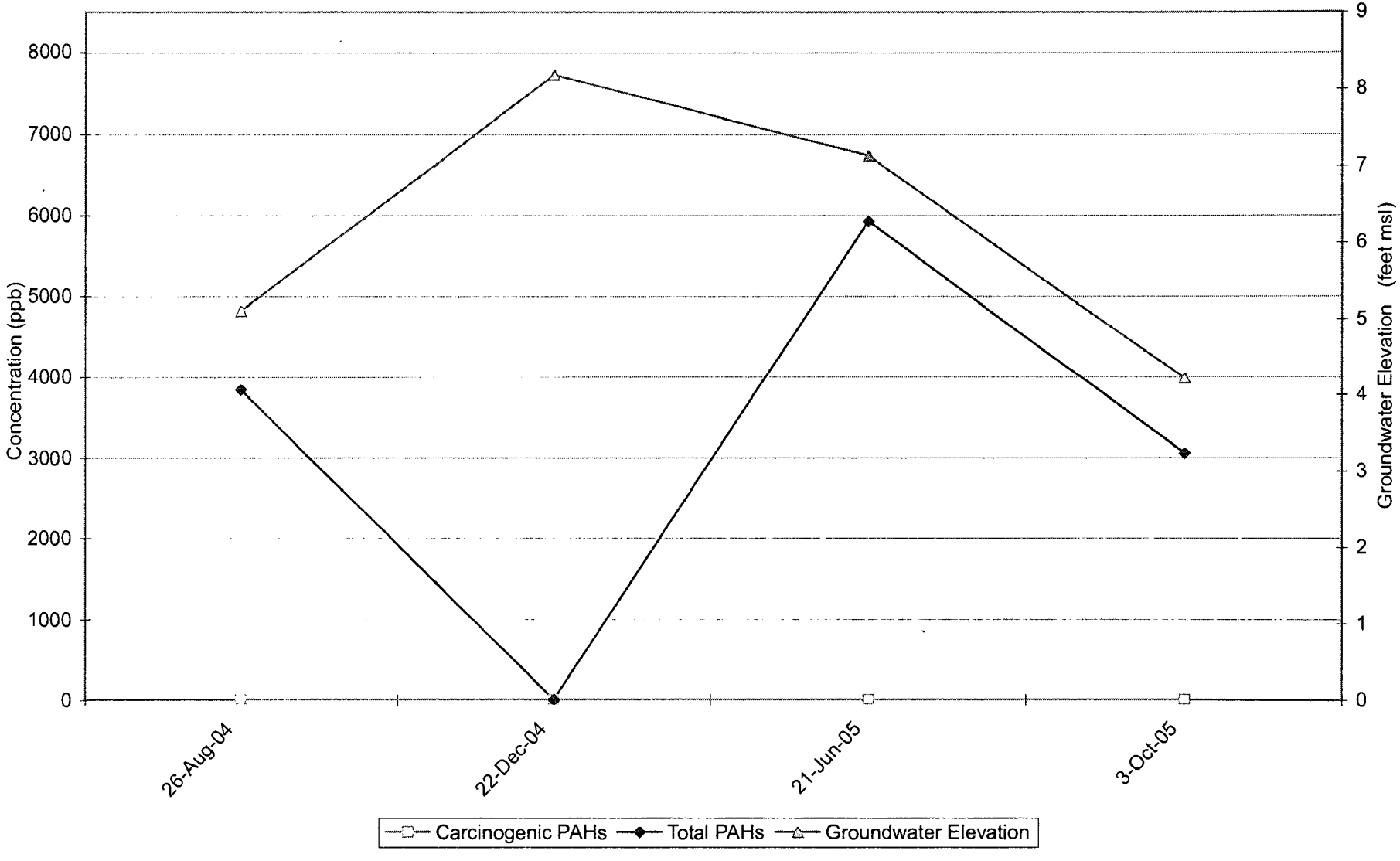


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW-16-45 PAHs

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023545

Total PAH Concentration through Time
Monitoring Well MW-16-65 (upper alluvial WBZ)
NW Natural - Gasco Facility

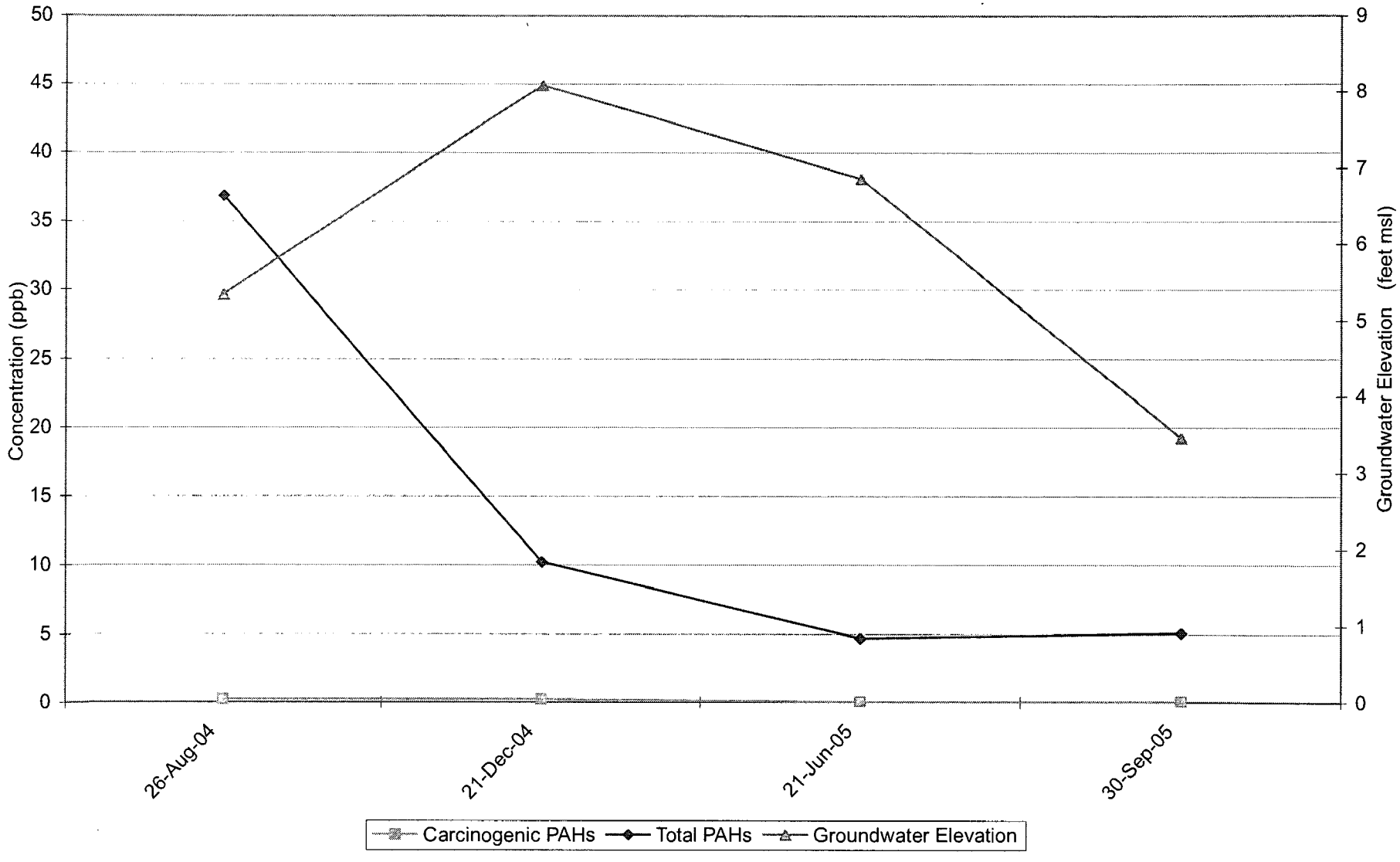


Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW-16-65 PAHs

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023546

Total PAH Concentration through Time
Monitoring Well MW-16-125 (intermediate-depth alluvial WBZ)
NW Natural - Gasco Facility



Updated: 5/2/06 APR
File Name: 2708 022406 GW conc graphs RBE.xls ; MW-16-125 PAHs

Project No. 2708
HAHN AND ASSOCIATES, INC.

Koppers023547

APPENDIX F

Groundwater Chemical Plume Maps, September 2005 Data Updates

Benzene Concentrations in Groundwater

Notes
Groundwater concentrations used for contouring are most recent available at time of map preparation, or as available from temporary well point data
-NW Natural Gasco Data (MW-Series)
September 2005 Full Monitoring Event (except MW-10 and MW-11 NAPL zones - June 1998 monitoring event), and boring (TWP) data from 1995 and 2004
-Siltronic Property Data
1) HAI boring (TWP) data from August 2001
2) LTI boring (TWP) data from March 2002
3) MFA boring (TWP) data: GP-4 through GP-7 data from Sep./Oct. 2002
4) MFA boring (TWP) data: GP-8 through GP-24 data from July 2004
5) MFA boring (TWP) data: GP-25 through GP-32 data from Sep./Oct. 2004
6) MFA boring (TWP) data: GP-33 through GP-84 data from May/June 2005
7) CH2M Hill boring (TWP) data from October 1990 (GW-Series)
8) Monitoring well data WS-1 through WS-7 from August 1985
9) Monitoring well data WS-8 and WS-9 from July 2002
10) Monitoring well data WS-10 through WS-13 (15 foot screen) from November 2004; exploratory data (2 foot screen) from Sept. 2003
11) Monitoring well data WS-14 through WS-17 (15 foot screen) from November 2004; exploratory data (2 foot screen) from June/July/Aug. 2004

Notes-Siltronic Property Borings and Wells:

Boring or Well ID	Installer (year installed)	P-1 through P-11	HAI (2001)
B-1 through B-8	CH2M Hill (1977)	GP-2-01 through GP-2-03	LTI (2002)
B-XX-8 Series	CH2M Hill (1978)	GP-4 through GP-7	MFA (2002)
B-101 through B-108	CH2M Hill (1982)	GP-8 through GP-11	MFA (2003)
WS-1 through WS-7	CH2M Hill (1985)	GP-12 through GP-32	MFA (2004)
GW-1 through GW-29	CH2M Hill (1990)	GP-33 through GP-84	MFA (2005)
WS-8 and WS-9	HAI (2001)	HAI = Hahn and Associates, Inc	
WS-10 through WS-13	MFA (2003)	MFA = Maul, Foster, Alongi, Inc	
WS-14 through WS-17	MFA (2004)	LTI = Limno-Tech, Inc	
RP-7	AMEC (2002)	AMEC = AMEC Earth and Environment, Inc	

LEGEND

- Monitoring Well
- Soil Boring
- Sediment Sample (Anchor)
- Property Line (Approximate)
- Estimated Isoconcentration of chemical in groundwater

0.02 Chemical concentration in groundwater in parts per billion (µg/L)

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434 NW 6th AVENUE, SUITE 203
PORTLAND, OREGON 97209
503-796-0717

1"=200' 0 100' 200' 400' Scale in Feet

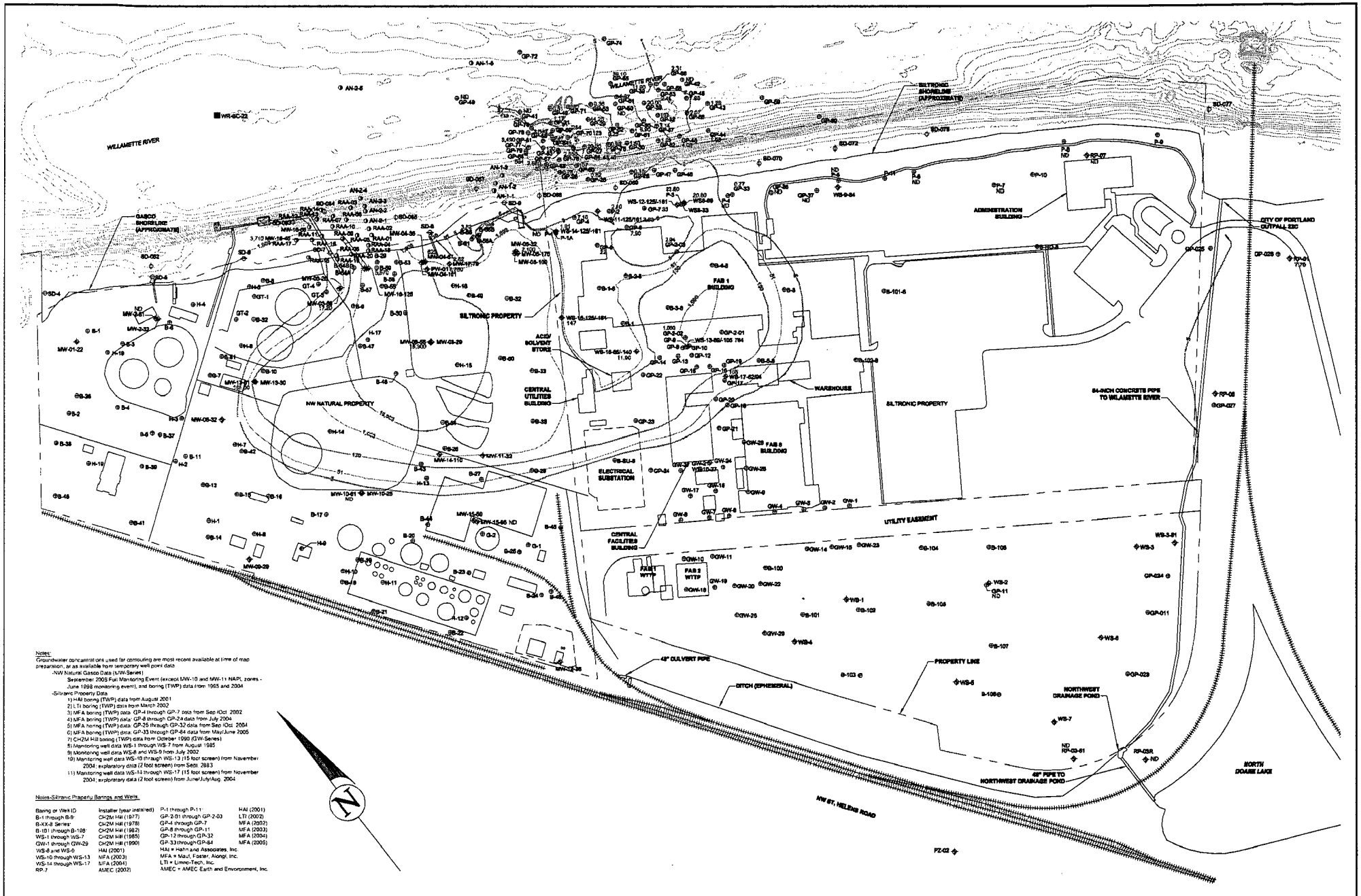
Project No. 2708-5237 REV. FEB. 2006

Benzene Concentrations in Groundwater:
Surficial Fill Water-Bearing Zone

NW NATURAL & SILTRONIC PROPERTIES
PORTLAND OREGON

NOTES:
Willamette River bathymetry based on May 2003 survey provided by the Lower Willamette Group.

Koppers023550



Notes:
Groundwater concentrations used for contouring are most recent available at time of map preparation, or as available from temporary well point data
-NW Natural Gasco Data (MW-Series)
September 2005 Full Monitoring Event (except MW-10 and MW-11 NAPL zones - June 1998 monitoring event), and boring (TWP) data from 1995 and 2004
-Siltronic Property Data
1) HAI boring (TWP) data from August 2001
2) LTI boring (TWP) data from March 2002
3) MFA boring (TWP) data: GP-4 through GP-7 data from Sep /Oct 2002
4) MFA boring (TWP) data: GP-8 through GP-24 data from July 2004
5) MFA boring (TWP) data: GP-25 through GP-32 data from Sep /Oct 2004
6) MFA boring (TWP) data: GP-33 through GP-84 data from May/June 2005
7) CH2M Hill boring (TWP) data from October 1990 (GW-Series)
8) Monitoring well data WS-1 through WS-7 from August 1985
9) Monitoring well data WS-8 and WS-9 from July 2002
10) Monitoring well data WS-10 through WS-13 (15 foot screen) from November 2004; exploratory data (2 foot screen) from Sept. 2883
11) Monitoring well data WS-14 through WS-17 (15 foot screen) from November 2004; exploratory data (2 foot screen) from June/July/Aug. 2004

Notes-Siltronic Property Borings and Wells

Boring or Well ID	Installer (year installed)		
B-1 through B-9	CH2M Hill (1977)	P-1 through P-11	HAI (2001)
B-XX-8 Series	CH2M Hill (1978)	GP-2-01 through GP-2-03	LTI (2002)
B-101 through B-108	CH2M Hill (1982)	GP-4 through GP-7	MFA (2002)
WS-1 through WS-7	CH2M Hill (1985)	GP-8 through GP-11	MFA (2003)
GW-1 through GW-29	CH2M Hill (1990)	GP-12 through GP-32	MFA (2004)
WS-8 and WS-9	HAI (2001)	GP-33 through GP-84	MFA (2005)
WS-10 through WS-13	MFA (2003)	HAI = Hahn and Associates, Inc.	
WS-14 through WS-17	MFA (2004)	MFA = Maul, Foster, Alongi, Inc.	
RP-7	AMEC (2002)	LTI = Limno-Tech, Inc.	
		AMEC = AMEC Earth and Environment, Inc.	

LEGEND
- Monitoring Well
- Soil Boring
- Sediment Sample (Anchor)
- Property Line (Approximate)
- Estimated Isoconcentration of chemical in groundwater
- 0.02 Chemical concentration in groundwater in parts per billion (µg/L)

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434 NW 6th AVENUE, SUITE 203
PORTLAND, OREGON 97209
503-796-0717

1"=200' 0 100' 200' 400' Scale in Feet

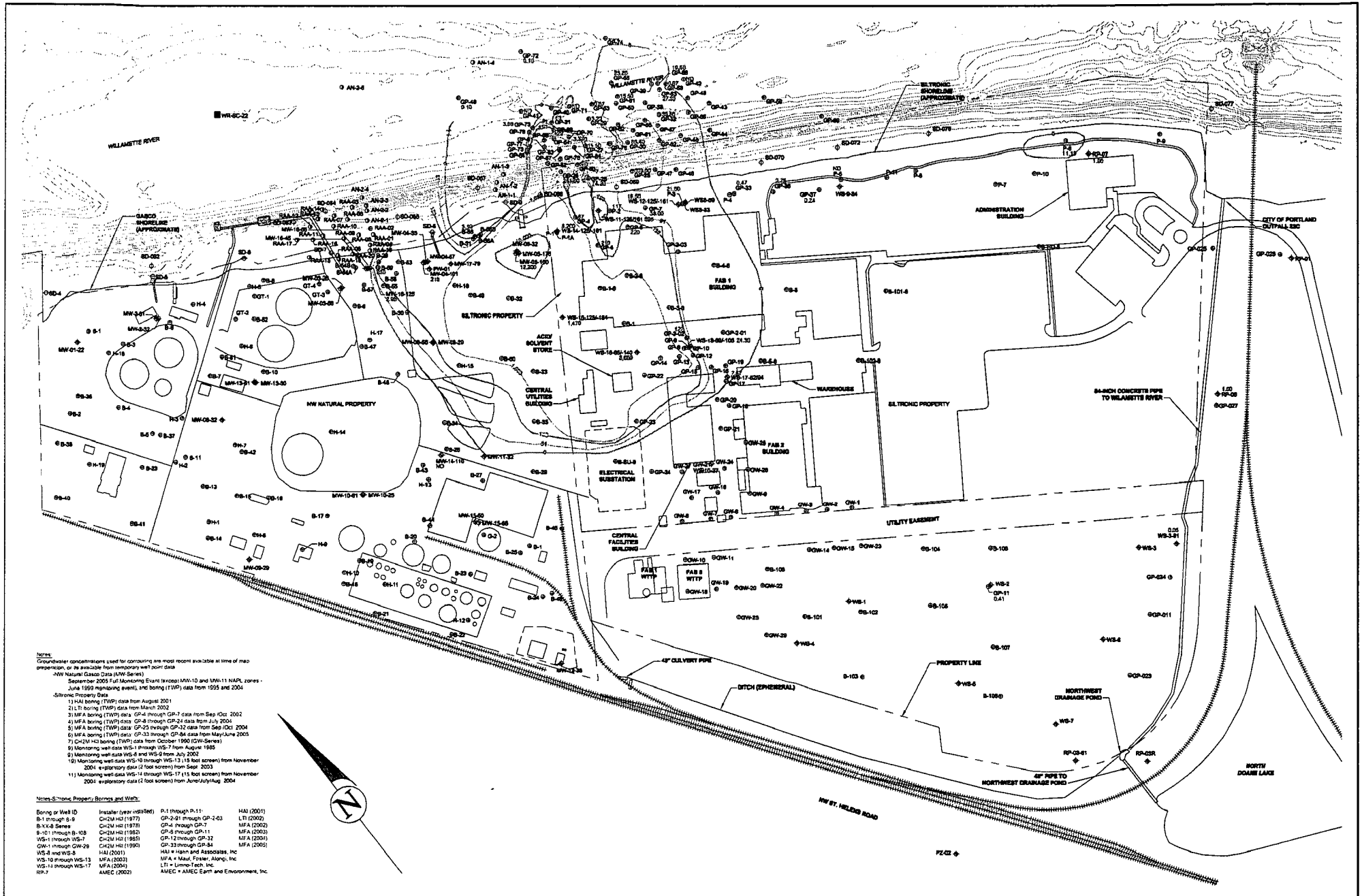
Project No. 2708-5237 REV. FEB. 2006

Benzene Concentrations in Groundwater:
Alluvial Water-Bearing Zone
Shallower than -40 feet elevation msl

NW NATURAL & SILTRONIC PROPERTIES
PORTLAND OREGON

NOTES:
Willamette River bathymetry based on May 2003 survey provided by the Lower Willamette Group.

Koppers023551



Notes:
Groundwater concentrations used for contouring are most recent available at time of map preparation, or as available from temporary well point data
-NW Natural Gasco Data (MW-Series)
September 2005 Full Monitoring Event (except MW-10 and MW-11 NAPL zones - June 1999 monitoring event), and boring (TWP) data from 1995 and 2004
-Siltronic Property Data
1) HAI boring (TWP) data from August 2001
2) LTI boring (TWP) data from March 2002
3) MFA boring (TWP) data GP-4 through GP-7 data from Sep /Oct 2002
4) MFA boring (TWP) data GP-8 through GP-24 data from July 2004
5) MFA boring (TWP) data GP-25 through GP-32 data from Sep /Oct 2004
6) MFA boring (TWP) data GP-33 through GP-84 data from May/June 2005
7) CH2M Hill boring (TWP) data from October 1990 (GW-Series)
8) Monitoring well data WS-1 through WS-7 from August 1985
9) Monitoring well data WS-8 and WS-9 from July 2002
10) Monitoring well data WS-10 through WS-13 (15 foot screen) from November 2004 exploratory data (2 foot screen) from Sept 2003
11) Monitoring well data WS-14 through WS-17 (15 foot screen) from November 2004 exploratory data (2 foot screen) from June/July/Aug 2004

Notes-Siltronic Property Borings and Wells

Boring or Well ID	Installer (year installed)	P-1 through P-11	HAI (2001)
B-1 through B-9	CH2M Hill (1977)	GP-2-01 through GP-2-03	LTI (2002)
B-XX-8 Series	CH2M Hill (1978)	GP-4 through GP-7	MFA (2002)
B-101 through B-108	CH2M Hill (1982)	GP-8 through GP-11	MFA (2003)
WS-1 through WS-7	CH2M Hill (1985)	GP-12 through GP-32	MFA (2004)
GW-1 through GW-29	CH2M Hill (1990)	GP-33 through GP-84	MFA (2005)
WS-8 and WS-9	HAI (2001)	HAI = Hahn and Associates, Inc	
WS-10 through WS-13	MFA (2003)	MFA = Maul, Foster, Alongi, Inc	
WS-14 through WS-17	MFA (2004)	LTI = Limno-Tech, Inc	
RP-7	AMEC (2002)	AMEC = AMEC Earth and Environment, Inc.	

LEGEND

- Monitoring Well
- Soil Boring
- Sediment Sample (Anchor)
- Property Line (Approximate)
- Estimated Isoconcentration of chemical in groundwater
- 0.02 Chemical concentration in groundwater in parts per billion (µg/L)

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434 NW 6th AVENUE, SUITE 203
PORTLAND, OREGON 97209
503-796-0717

1"=200' 0 100' 200' 400' Scale in Feet

Project No. 2708-5237 REV. FEB. 2006

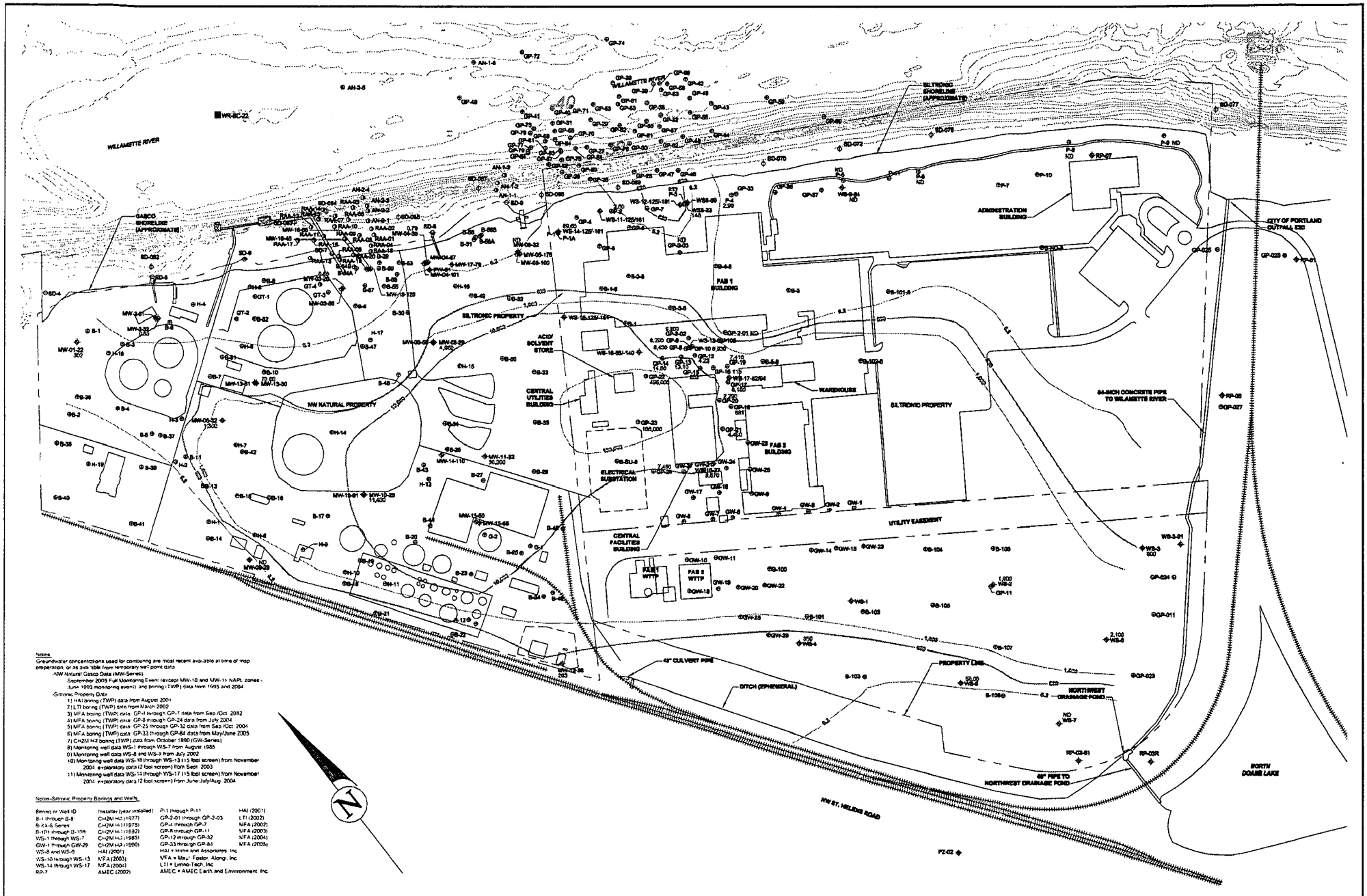
Benzene Concentrations in Groundwater:
Alluvial Water-Bearing Zone
Deeper than -40 feet elevation msl

NW NATURAL & SILTRONIC PROPERTIES
PORTLAND OREGON

NOTES:
Willamette River bathymetry based on May 2003 survey provided by the Lower Willamette Group.

Koppers023552

Naphthalene Concentrations in Groundwater



Notes:
Groundwater concentrations used for contouring are most recent available at time of map preparation, or as available from temporary well point data
-NW Natural Gasco Data (MW-Series)
September 2005 Full Monitoring Event (except MW-10 and MW-11 NAPL zones - June 1995 monitoring event) and boring (TWP) data from 1995 and 2004
-Siltronic Property Data
1) HAI boring (TWP) data from August 2001
2) LTI boring (TWP) data from March 2002
3) MFA boring (TWP) data: GP-1 through GP-7 data from Sep./Oct. 2002
4) MFA boring (TWP) data: GP-8 through GP-24 data from July 2004
5) MFA boring (TWP) data: GP-25 through GP-32 data from Sep./Oct. 2004
6) MFA boring (TWP) data: GP-33 through GP-84 data from May/June 2005
7) CH2M Hill boring (TWP) data from October 1990 (GW-Series)
8) Monitoring well data WS-1 through WS-7 from August 1985
9) Monitoring well data WS-8 and WS-9 from July 2002
10) Monitoring well data WS-10 through WS-13 (15 foot screen) from November 2004 exploratory data (2 foot screen) from Sept. 2003
11) Monitoring well data WS-14 through WS-17 (15 foot screen) from November 2004 exploratory data (2 foot screen) from June/July/Aug. 2004

Notes-Siltronic Property Borings and Wells

Boring or Well ID	Installer (year installed)		
B-1 through B-8	CH2M Hill (1977)	P-1 through P-11	HAI (2001)
B-XX-6 Series	CH2M Hill (1978)	GP-2-01 through GP-2-03	LTI (2002)
B-101 through B-108	CH2M Hill (1982)	GP-4 through GP-7	MFA (2002)
WS-1 through WS-7	CH2M Hill (1985)	GP-8 through GP-11	MFA (2003)
GW-1 through GW-29	CH2M Hill (1990)	GP-12 through GP-32	MFA (2004)
WS-8 and WS-9	HAI (2001)	GP-33 through GP-84	MFA (2005)
WS-10 through WS-13	MFA (2003)	HAI = Hahn and Associates, Inc	
WS-14 through WS-17	MFA (2004)	MFA = Maul, Foster, Alongi, Inc	
RP-7	AMEC (2002)	LTI = Lemo-Tech, Inc	
		AMEC = AMEC Earth and Environment, Inc	

LEGEND

- Monitoring Well
- Soil Boring
- Sediment Sample (Anchor)
- Property Line (Approximate)
- 0.2 Estimated isoconcentration of chemical in groundwater
- 0.02 Chemical concentration in groundwater in parts per billion (µg/L)

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434 NW 6th AVENUE, SUITE 203
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503-796-0717

1"=200' 0 100' 200' 400' Scale in Feet

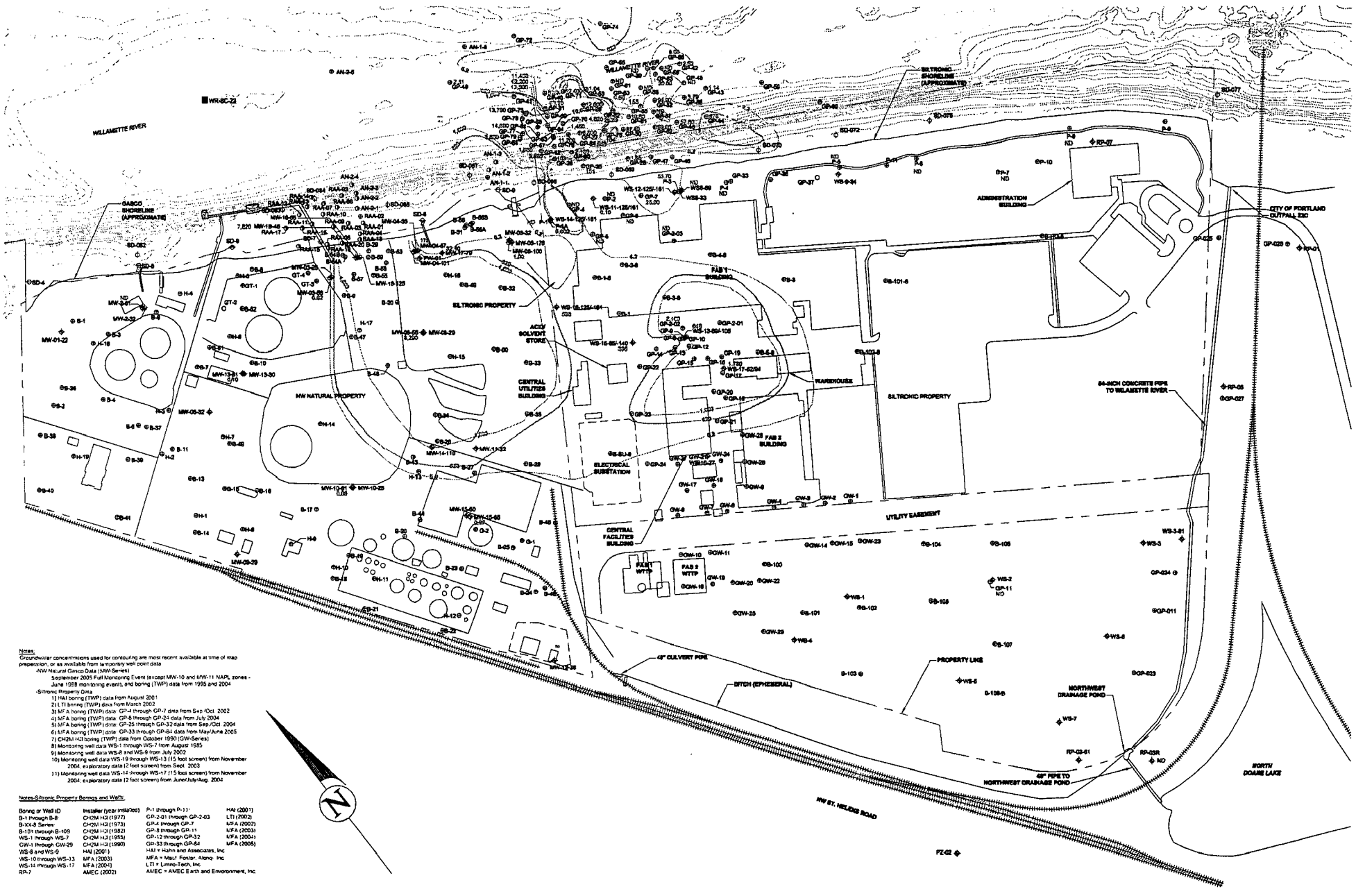
Project No. 2708-5237 REV. FEB. 2006

Naphthalene Concentrations in Groundwater:
Surficial Fill Water-Bearing Zone

NW NATURAL & SILTRONIC PROPERTIES
PORTLAND OREGON

NOTES:
Willamette River bathymetry based on May 2003 survey provided by the Lower Willamette Group.

Koppers023554



Notes:
Groundwater concentrations used for contouring are most recent available at time of map preparation, or as available from temporary well point data
-NW Natural Gasco Data (MW-Series)
September 2005 Full Monitoring Event (except MW-10 and MW-11 NAPL zones - June 1998 monitoring event), and boring (TWP) data from 1995 and 2004
-Siltronic Property Data
1) HAI boring (TWP) data from August 2001
2) LTI boring (TWP) data from March 2002
3) MFA boring (TWP) data GP-1 through GP-7 data from Sep /Oct 2002
4) MFA boring (TWP) data: GP-8 through GP-24 data from July 2004
5) MFA boring (TWP) data: GP-25 through GP-32 data from Sep./Oct. 2004
6) MFA boring (TWP) data GP-33 through GP-84 data from May/June 2005
7) CH2M HJ boring (TWP) data from October 1990 (GW-Series)
8) Monitoring well data WS-1 through WS-7 from August 1985
9) Monitoring well data WS-8 and WS-9 from July 2002
10) Monitoring well data WS-19 through WS-13 (15 foot screen) from November 2004, exploratory data (2 foot screen) from Sept. 2003
11) Monitoring well data WS-14 through WS-17 (15 foot screen) from November 2004; exploratory data (2 foot screen) from June/July/Aug. 2004

Notes-Siltronic Property Borings and Wells:

Boring or Well ID	Installer (year installed)		
B-1 through B-8	CH2M HJ (1977)	P-1 through P-11	HAI (2001)
B-XX-8 Series	CH2M HJ (1973)	GP-2-01 through GP-2-03	LTI (2002)
B-101 through B-109	CH2M HJ (1982)	GP-4 through GP-7	MFA (2002)
WS-1 through WS-7	CH2M HJ (1985)	GP-8 through GP-11	MFA (2003)
GW-1 through GW-29	CH2M HJ (1990)	GP-12 through GP-32	MFA (2004)
WS-8 and WS-9	HAI (2001)	GP-33 through GP-84	MFA (2005)
WS-10 through WS-13	MFA (2003)	HAI = Hahn and Associates, Inc	
WS-14 through WS-17	MFA (2004)	MFA = Maul, Foster, Alonq. Inc	
RP-7	AMEC (2002)	LTI = Limno-Tech, Inc.	
		AMEC = AMEC Earth and Environment, Inc.	

LEGEND

- Monitoring Well
- Soil Boring
- Sediment Sample (Anchor)
- Property Line (Approximate)
- Estimated Isoconcentration of chemical in groundwater
- 0.02 — Chemical concentration in groundwater in parts per billion (µg/L)

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503-796-0717

1"=200' 0 100' 200' 400' Scale in Feet

Project No. 2708-5237 REV. FEB. 2006

Naphthalene Concentrations in Groundwater:
Alluvial Water-Bearing Zone
Shallower than -40 feet elevation msl

NW NATURAL & SILTRONIC PROPERTIES
PORTLAND OREGON

NOTES:
Willamette River bathymetry based on May 2003 survey provided by the Lower Willamette Group.

Koppers023555

Notes:
Groundwater concentrations used for contouring are most recent available at time of map preparation, or are available from temporary well point data

-NW Natural Gasco Data (MW-Series)
September 2005 Full Monitoring Event (except MW-10 and MW-11 NAPL zones - June 1998 monitoring event), and boring (TWP) data from 1995 and 2004

-Siltronic Property Data
1) HAI boring (TWP) data from August 2001
2) LTI boring (TWP) data from March 2002
3) MFA boring (TWP) data: GP-4 through GP-7 data from Sep./Oct. 2002
4) MFA boring (TWP) data: GP-8 through GP-24 data from July 2004
5) MFA boring (TWP) data: GP-25 through GP-32 data from Sep./Oct. 2004
6) MFA boring (TWP) data: GP-33 through GP-84 data from May/June 2005
7) CH2M Hill boring (TWP) data from October 1990 (GW-Series)
8) Monitoring well data WS-1 through WS-7 from August 1995
9) Monitoring well data WS-8 and WS-9 from July 2002
10) Monitoring well data WS-10 through WS-13 (15 foot screen) from November 2004, exploratory data (2 foot screen) from Sept. 2003
11) Monitoring well data WS-14 through WS-17 (15 foot screen) from November 2004, exploratory data (2 foot screen) from June/July/Aug. 2004

Notes-Siltronic Property Borings and Wells:

Boring or Well ID	Installer (year installed)		
B-1 through B-8	CH2M Hill (1977)	P-1 through P-11:	HAI (2001)
B-XX-8 Series	CH2M Hill (1978)	GP-2-01 through GP-2-03	LTI (2002)
B-101 through B-108	CH2M Hill (1982)	GP-4 through GP-7	MFA (2002)
WS-1 through WS-7	CH2M Hill (1985)	GP-8 through GP-11	MFA (2003)
GW-1 through GW-29	CH2M Hill (1990)	GP-12 through GP-32	MFA (2004)
WS-8 and WS-9	HAI (2001)	GP-33 through GP-84	MFA (2005)
WS-10 through WS-13	MFA (2003)	HAI = Hahn and Associates, Inc.	
WS-14 through WS-17	MFA (2004)	MFA = Maul, Foster, Alongi, Inc.	
RP-7	AMEC (2002)	LTI = Limno-Tech, Inc.	
		AMEC = AMEC Earth and Environment, Inc.	

LEGEND
- Monitoring Well
- Soil Boring
- Sediment Sample (Anchor)
- Property Line (Approximate)
- Estimated Isoconcentration of chemical in groundwater
- 0.02 Chemical concentration in groundwater in parts per billion (µg/L)

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
434 NW 6th AVENUE, SUITE 203
PORTLAND, OREGON 97209
503-796-0717

0 100' 200' 400'
1"=200' Scale in Feet

Project No. 2708-5237 REV. FEB. 2006

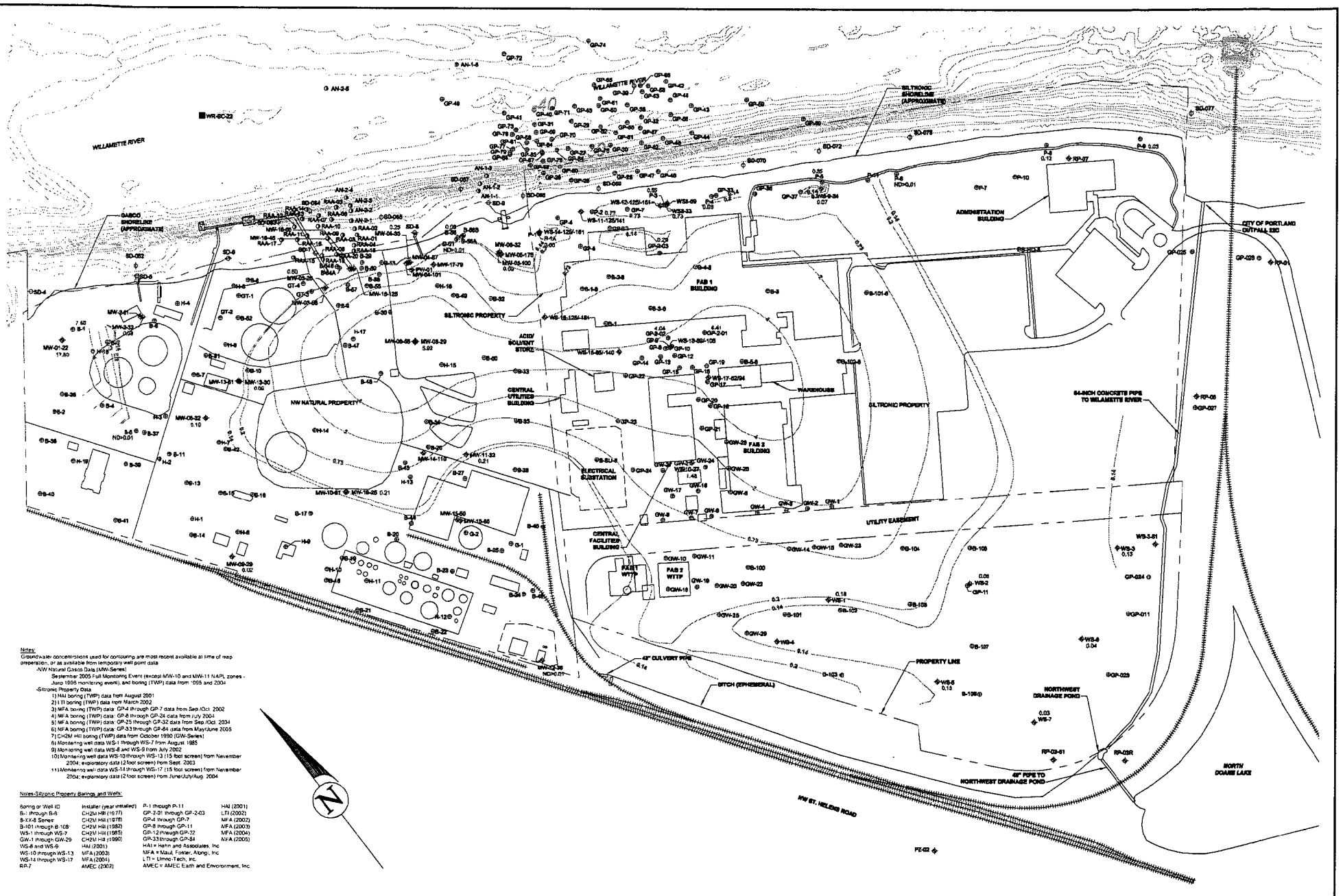
Naphthalene Concentrations in Groundwater:
Alluvial Water-Bearing Zone
Deeper than -40 feet elevation msl

NW NATURAL & SILTRONIC PROPERTIES
PORTLAND OREGON

NOTES:
Willamette River bathymetry based on May 2003 survey provided by the Lower Willamette Group.

Koppers023556

Total Cyanide Concentrations in Groundwater



Notes:
Groundwater concentrations used for contouring are most recent available at time of map preparation, or as available from temporary well point data

-NW Natural Gasco Data (MW-Series)
September 2005 Full Monitoring Event (except MW-10 and MW-11 NAPL zones - June 1996 monitoring event), and boring (TWP) data from 1995 and 2004

-Siltronic Property Data
1) HAI boring (TWP) data from August 2001
2) LTI boring (TWP) data from March 2002
3) MFA boring (TWP) data: GP-4 through GP-7 data from Sep./Oct. 2002
4) MFA boring (TWP) data: GP-8 through GP-24 data from July 2004
5) MFA boring (TWP) data: GP-25 through GP-32 data from Sep./Oct. 2004
6) MFA boring (TWP) data: GP-33 through GP-84 data from May/June 2005
7) CH2M Hill boring (TWP) data from October 1980 (GW-Series)
8) Monitoring well data WS-1 through WS-7 from August 1985
9) Monitoring well data WS-8 and WS-9 from July 2002
10) Monitoring well data WS-10 through WS-13 (15 foot screen) from November 2004; exploratory data (2 foot screen) from Sept. 2003
11) Monitoring well data WS-14 through WS-17 (15 foot screen) from November 2004; exploratory data (2 foot screen) from June/July/Aug. 2004

Notes-Siltronic Property Borings and Wells:

Boring or Well ID	Installer (year installed)		
B-1 through B-8	CH2M Hill (1977)	P-1 through P-11	HAI (2001)
B-XX-8 Series	CH2M Hill (1978)	GP-2-01 through GP-2-03	LTI (2002)
B-101 through B-108	CH2M Hill (1982)	GP-4 through GP-7	MFA (2002)
WS-1 through WS-7	CH2M Hill (1985)	GP-8 through GP-11	MFA (2003)
GW-1 through GW-29	CH2M Hill (1990)	GP-12 through GP-32	MFA (2004)
WS-8 and WS-9	HAI (2001)	GP-33 through GP-84	MFA (2005)
WS-10 through WS-13	MFA (2003)	HAI = Hahn and Associates, Inc	
WS-14 through WS-17	MFA (2004)	MFA = Maul, Foster, Alongi, Inc	
RP-7	AMEC (2002)	LTI = Limno-Tech, Inc.	
		AMEC = AMEC Earth and Environment, Inc.	

LEGEND
- Monitoring Well
- Soil Boring
- Sediment Sample (Anchor)
- Property Line (Approximate)
- 0.02 Cyanide concentration in groundwater in parts per million (mg/L)
- Estimated isoconcentration of chemical in groundwater

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
434 NW 6th AVENUE, SUITE 203
PORTLAND, OREGON 97209
503-796-0717

1"=200' 0 100' 200' 400' Scale in Feet

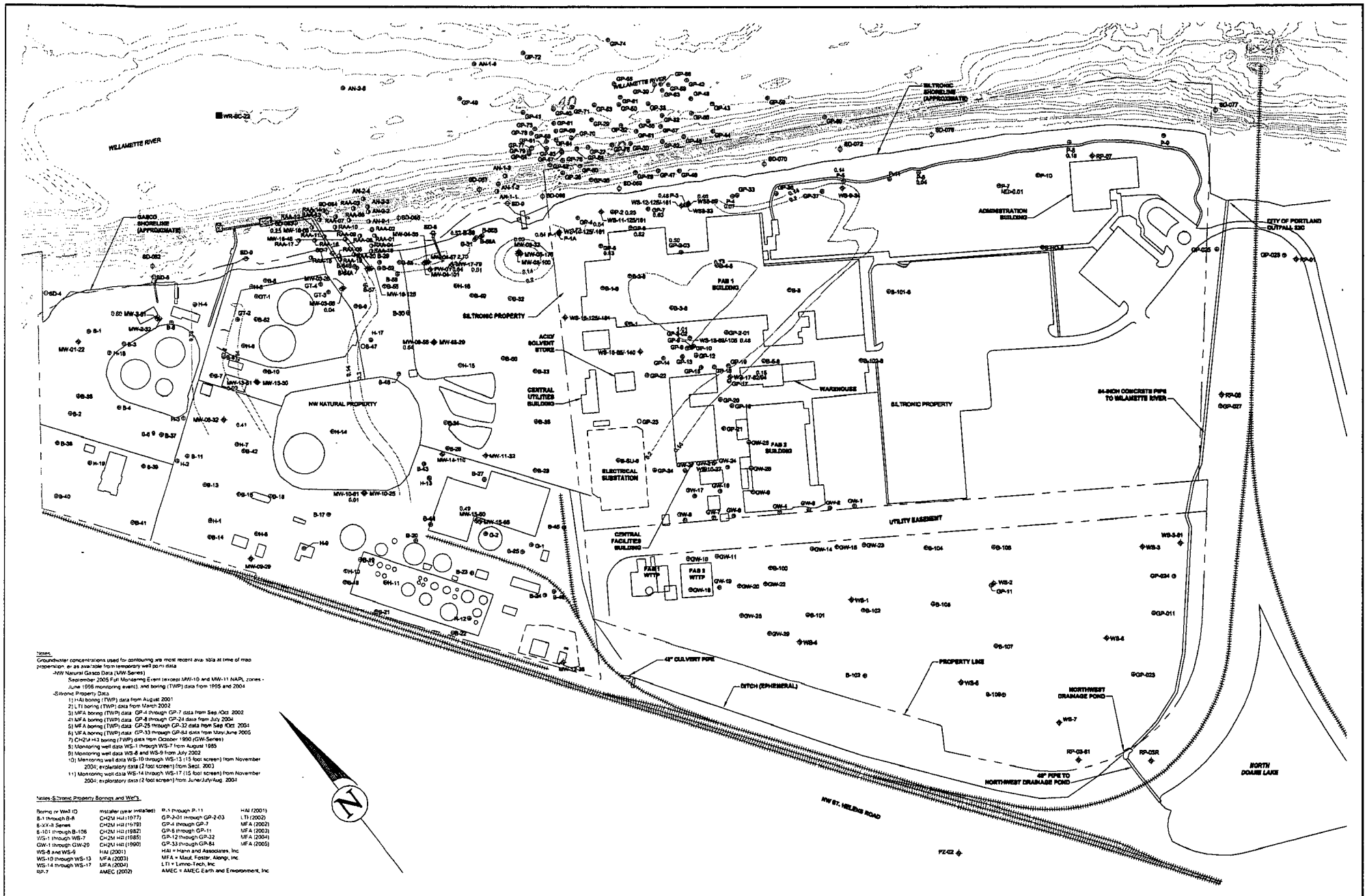
Project No. 2708-5237 REV. FEB. 2006

Total Cyanide Concentrations in Groundwater:
Surficial Fill Water-Bearing Zone

NW NATURAL & SILTRONIC PROPERTIES
PORTLAND OREGON

NOTES:
Willamette River bathymetry based on May 2003 survey provided by the Lower Willamette Group.

Koppers023558



Notes:
Groundwater concentrations used for contouring are most recent available at time of map preparation, or as available from temporary well point data
-NW Natural Gasco Data (MW Series)
September 2005 Full Monitoring Event (except MW-10 and MW-11 NAPL zones - June 1998 monitoring event), and boring (TWP) data from 1995 and 2004
-Siltronic Property Data
1) HAI boring (TWP) data from August 2001
2) LTI boring (TWP) data from March 2002
3) MFA boring (TWP) data GP-4 through GP-7 data from Sep./Oct. 2002
4) MFA boring (TWP) data GP-8 through GP-24 data from July 2004
5) MFA boring (TWP) data GP-25 through GP-32 data from Sep./Oct. 2004
6) MFA boring (TWP) data GP-33 through GP-84 data from May/June 2005
7) CH2M HILL boring (TWP) data from October 1990 (GW-Series)
8) Monitoring well data WS-1 through WS-7 from August 1985
9) Monitoring well data WS-8 and WS-9 from July 2002
10) Monitoring well data WS-10 through WS-13 (15 foot screen) from November 2004; exploratory data (2 foot screen) from Sept. 2003
11) Monitoring well data WS-14 through WS-17 (15 foot screen) from November 2004; exploratory data (2 foot screen) from June/July/Aug. 2003

Notes-Siltronic Property Borings and Wells

Boring or Well ID	Installer (year installed)	P-1 through P-11	HAI (2001)
B-1 through B-8	CH2M Hill (1977)	GP-2-01 through GP-2-03	LTI (2002)
B-XX-II Series	CH2M Hill (1979)	GP-4 through GP-7	MFA (2002)
B-101 through B-106	CH2M Hill (1982)	GP-8 through GP-11	MFA (2003)
WS-1 through WS-7	CH2M Hill (1985)	GP-12 through GP-32	MFA (2004)
GW-1 through GW-29	CH2M Hill (1990)	GP-33 through GP-84	MFA (2005)
WS-8 and WS-9	HAI (2001)	HAI = Hahn and Associates, Inc	
WS-10 through WS-13	MFA (2003)	MFA = Maul, Foster, Alongi, Inc.	
WS-14 through WS-17	MFA (2004)	LTI = Lumino-Tech, Inc	
RP-7	AMEC (2002)	AMEC = AMEC Earth and Environment, Inc	

LEGEND

- Monitoring Well
- Soil Boring
- Sediment Sample (Anchor)
- Property Line (Approximate)
- 0.02 Cyanide concentration in groundwater in parts per million (mg/L)
- Estimated isoconcentration of chemical in groundwater

HAHN AND ASSOCIATES, INC.

ENVIRONMENTAL CONSULTANTS
434 NW 6th AVENUE, SUITE 203
PORTLAND, OREGON 97209
503-796-0717

0 100' 200' 400'
1"=200' Scale in Feet

Project No. 2708-5237 REV. FEB. 2006

Total Cyanide Concentrations in Groundwater:
Alluvial Water-Bearing Zone
Shallower than -40 feet elevation msl

NW NATURAL & SILTRONIC PROPERTIES
PORTLAND OREGON

NOTES:
Willamette River bathymetry based on May 2003 survey provided by the Lower Willamette Group.

Koppers023559

APPENDIX G

2005 Site Weather Data

MONTHLY CLIMATOLOGICAL SUMMARY for MAY. 2005

NAME: Gasco CITY: Portland STATE: Oregon
ELEV: 0 ft LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1												
2	61.4	71.8	2:30p	50.9	12:00m	3.6	0.0	0.00	1.7	14.0	3:00p	SE
3	64.8	82.1	5:00p	47.4	4:30a	0.3	0.0	0.10	1.6	16.0	10:30p	E
4	66.3	77.4	3:00p	55.1	12:00m	0.0	1.3	0.15	1.7	13.0	1:30p	N
5	60.0	66.4	2:30p	53.5	2:30a	5.0	0.0	0.00	4.3	15.0	11:00a	SSE
6	63.5	73.0	9:00a	54.1	6:00a	1.5	0.0	0.00	2.1	11.0	7:30p	S
7	62.5	73.7	4:30p	51.4	6:00a	2.5	0.0	0.01	1.6	10.0	4:30a	N
8	65.3	78.0	4:00p	52.6	12:00m	0.0	0.3	0.15	1.6	17.0	6:30p	SE
9	52.6	57.0	3:30p	48.2	10:00p	12.4	0.0	0.74	4.2	24.0	7:30p	NNE
10	49.8	51.5	10:00a	48.2	12:30a	15.2	0.0	0.43	7.7	25.0	12:30a	NNE
11												
12												
13												
14												
15	64.8	74.3	2:00p	55.3	11:30p	0.2	0.0	0.37	2.1	15.0	2:30p	N
16	58.3	72.6	2:00p	43.9	8:00p	6.8	0.0	0.27	2.4	15.0	11:00a	N
17	50.7	67.5	2:00p	33.9	2:00a	14.3	0.0	0.12	2.4	13.0	2:30p	N
18	65.2	78.3	2:30p	52.0	12:00m	0.0	0.2	0.53	3.0	17.0	3:00p	N
19	60.7	71.9	9:30a	49.5	3:30a	4.3	0.0	0.18	2.5	18.0	1:00p	N
20	58.9	74.1	2:30p	43.8	3:00a	6.1	0.0	0.30	1.9	13.0	1:00p	N
21	53.9	64.0	1:30p	43.8	5:00a	11.1	0.0	0.19	1.4	10.0	3:00p	N
22	58.8	71.9	2:30p	45.8	2:00a	6.2	0.0	0.15	2.6	19.0	12:30p	N
23	57.3	71.8	2:30p	42.7	5:30a	7.8	0.0	0.00	3.0	16.0	7:30p	SSE
24	50.4	72.9	2:30p	27.9	3:00a	14.6	0.0	0.00	5.1	21.0	6:30p	S
25	73.9	94.6	3:00p	53.2	5:30a	0.0	8.9	0.00	3.4	16.0	4:00p	SW
26	69.6	100.6	4:00p	38.5	4:30a	0.0	4.6	0.00	1.5	16.0	2:30p	SE
27	80.1	103.7	2:30p	56.4	5:00a	0.0	15.1	0.00	1.9	9.0	3:30p	SE
28	72.3	86.3	6:00p	58.2	5:30a	0.0	7.3	0.00	3.3	23.0	8:30p	SSE
29	63.2	69.3	10:30a	57.1	5:30a	1.8	0.0	0.00	3.1	15.0	5:00a	N
30	69.8	82.2	5:30p	57.5	12:00m	0.0	4.8	0.00	2.4	17.0	8:00p	SE
31	62.8	70.6	4:30p	55.0	12:00m	2.2	0.0	0.50	2.1	19.0	9:00p	ENE
	62.2	103.7	27	27.9	24	115.6	42.3	4.19	2.7	25.0	10	N

Max >= 90.0: 3
Max <= 32.0: 0
Min <= 32.0: 1
Min <= 0.0: 0
Max Rain: 0.74 ON 05/09/05
Days of Rain: 14 (>.01 in) 13 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

MONTHLY CLIMATOLOGICAL SUMMARY for JUN. 2005

NAME: Gasco CITY: Portland STATE: Oregon
ELEV: 0 ft LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	54.4	74.9	10:30a	33.9	4:00a	10.6	0.0	0.08	3.6	18.0	3:30p	NE
2	58.6	66.9	4:00p	50.2	12:00m	6.4	0.0	0.00	2.2	11.0	1:30a	S
3	61.4	72.6	5:30p	50.2	12:30a	3.6	0.0	0.00	3.0	13.0	9:00a	SSE
4	59.0	71.2	10:00a	46.8	3:00a	6.0	0.0	0.00	2.2	14.0	6:30p	ESE
5	58.5	67.4	1:30p	49.5	7:30a	6.5	0.0	0.27	3.2	16.0	11:00a	N
6	58.0	68.3	4:30p	47.6	5:00a	7.0	0.0	0.11	3.7	19.0	8:30a	N
7	49.5	70.4	3:00p	28.6	5:30a	15.5	0.0	0.26	2.6	18.0	6:00p	NNW
8	64.0	76.4	8:30a	51.5	5:00a	1.0	0.0	0.00	2.5	13.0	4:30p	N
9	62.5	85.1	3:30p	39.9	8:00a	2.5	0.0	0.00	2.3	13.0	4:00p	SE
10	63.2	76.3	7:30a	50.1	5:30a	1.8	0.0	0.05	1.3	9.0	6:00p	E
11	60.3	68.9	4:30p	51.6	10:30p	4.8	0.0	0.07	3.1	18.0	5:30p	SSE
12	62.8	75.5	3:00p	50.2	3:30a	2.2	0.0	0.00	2.8	12.0	12:30a	N
13	66.8	79.1	3:00p	54.5	3:00a	0.0	1.8	0.02	3.4	15.0	7:30p	N
14	64.1	75.1	3:30p	53.0	6:00a	0.9	0.0	0.01	4.0	16.0	3:00p	SE
15	61.4	76.8	3:30p	46.0	5:30a	3.6	0.0	0.00	2.1	10.0	12:00p	ESE
16	66.8	78.2	12:30p	55.3	4:30a	0.0	1.8	0.00	1.1	10.0	11:00a	N
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
	60.7	85.1	9	28.6	7	72.5	3.6	0.87	2.7	19.0	6	N

Max >= 90.0: 0
Max <= 32.0: 0
Min <= 32.0: 1
Min <= 0.0: 0
Max Rain: 0.27 ON 06/05/05
Days of Rain: 7 (>.01 in) 3 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

MONTHLY CLIMATOLOGICAL SUMMARY for JUL. 2005

NAME: Gasco CITY: Portland STATE: Oregon
ELEV: 0 ft LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28	74.8	90.1	3:30p	59.6	6:30a	0.0	9.8	0.00	3.1	17.0	7:00p	SE
29	72.6	90.3	5:30p	54.8	6:00a	0.0	7.6	0.00	2.6	15.0	6:00p	ESE
30	76.6	95.8	6:00p	57.3	6:30a	0.0	11.6	0.00	2.5	13.0	6:30p	ESE
31	78.5	97.1	4:00p	59.9	4:00a	0.0	13.5	0.00	3.1	16.0	7:30p	SSE
	75.6	97.1	31	54.8	29	0.0	42.5	0.00	2.8	17.0	28	S

Max >= 90.0: 4
Max <= 32.0: 0
Min <= 32.0: 0
Min <= 0.0: 0
Max Rain: 0.00 ON 07/01/05
Days of Rain: 0 (>.01 in) 0 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

MONTHLY CLIMATOLOGICAL SUMMARY for AUG. 2005

NAME: Gasco CITY: Portland STATE: Oregon
ELEV: 0 ft LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	73.0	84.7	8:30a	61.3	6:00a	0.0	8.0	0.00	3.5	14.0	3:00p	SSE
2	68.4	84.4	5:30p	52.5	6:00a	0.0	3.4	0.00	4.2	17.0	2:00p	S
3	76.8	93.1	3:30p	60.5	6:30a	0.0	11.8	0.00	5.5	20.0	6:00p	SE
4	80.8	102.1	5:00p	59.6	6:30a	0.0	15.8	0.00	2.3	11.0	6:30p	ESE
5	76.6	94.5	3:30p	58.7	6:00a	0.0	11.6	0.00	3.3	17.0	5:30p	ESE
6	69.0	88.2	4:00p	49.8	5:00a	0.0	4.0	0.00	3.8	15.0	6:30p	S
7	74.7	90.3	4:00p	59.0	3:00a	0.0	9.7	0.00	4.4	17.0	6:30p	S
8	73.4	91.6	4:30p	55.3	6:00a	0.0	8.4	0.00	2.7	13.0	7:00p	SE
9	60.7	86.7	4:30p	34.7	5:00a	4.3	0.0	0.00	3.2	14.0	7:30p	SSE
10	70.6	83.2	4:30p	57.9	1:00a	0.0	5.6	0.00	3.2	13.0	8:00p	SSE
11	69.4	81.5	5:00p	57.3	6:00a	0.0	4.4	0.00	4.4	13.0	3:30a	S
12	72.9	89.5	4:30p	56.3	3:30a	0.0	7.9	0.00	3.4	18.0	6:00p	S
13	79.7	98.0	4:00p	61.4	6:30a	0.0	14.7	0.00	2.8	10.0	12:00p	S
14	80.5	99.7	5:30p	61.3	5:30a	0.0	15.5	0.00	3.0	13.0	4:30p	SSE
15	78.0	94.1	4:00p	61.9	4:30a	0.0	13.0	0.00	3.3	13.0	5:30p	SE
16	68.8	80.6	3:00p	57.0	3:00a	0.0	3.8	0.00	2.8	13.0	5:30p	S
17	70.2	84.5	3:30p	55.9	2:30a	0.0	5.2	0.00	2.9	14.0	7:30p	SSE
18	72.4	87.6	4:00p	57.2	3:30a	0.0	7.4	0.00	3.9	16.0	6:30p	SE
19	77.6	94.9	5:30p	60.3	4:00a	0.0	12.6	0.00	2.3	9.0	9:00a	ESE
20	73.9	91.3	5:30p	56.6	6:00a	0.0	8.9	0.00	2.5	9.0	8:00a	SE
21	72.3	87.5	5:00p	57.0	7:00a	0.0	7.3	0.00	2.6	11.0	7:30a	S
22	70.3	83.3	4:30p	57.3	12:00m	0.0	5.3	0.00	2.9	17.0	6:30p	SE
23	64.9	78.5	2:00p	51.3	1:30a	0.1	0.0	0.00	1.9	12.0	5:30p	ESE
24	69.4	86.6	3:00p	52.3	3:30a	0.0	4.4	0.00	5.0	20.0	6:00p	S
25	78.8	99.8	3:30p	57.8	4:00a	0.0	13.8	0.00	2.6	11.0	9:30a	SE
26	74.6	91.2	4:30p	58.1	7:00a	0.0	9.6	0.00	2.7	14.0	7:00p	SSE
27	72.2	90.5	4:30p	53.9	6:30a	0.0	7.2	0.00	1.5	9.0	9:30a	E
28	72.8	89.4	3:30p	56.2	6:00a	0.0	7.8	0.00	2.5	18.0	5:30p	ESE
29	66.1	74.2	12:30p	58.0	6:00a	0.0	1.1	0.00	2.4	15.0	12:30p	N
30												
31												
	72.7	102.1	4	34.7	9	4.4	228.4	0.00	3.2	20.0	3	SSE

Max >= 90.0: 13
Max <= 32.0: 0
Min <= 32.0: 0
Min <= 0.0: 0
Max Rain: 0.00 ON 08/01/05
Days of Rain: 0 (>.01 in) 0 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

MONTHLY CLIMATOLOGICAL SUMMARY for SEP. 2005

NAME: Gasco2 CITY: STATE:
ELEV: 0 ft LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1												
2												
3												
4	59.2	63.4	9:30p	54.9	12:00m	5.8	0.0	0.00	2.3	8.0	9:30p	E
5	65.3	80.7	5:00p	50.0	6:00a	0.0	0.3	0.00	2.7	15.0	5:30p	SE
6	71.1	86.4	4:30p	55.7	5:00a	0.0	6.1	0.00	4.1	16.0	6:00p	SE
7	72.1	84.7	4:00p	59.5	7:00a	0.0	7.1	0.00	6.7	21.0	2:30p	SSE
8	71.4	85.8	3:30p	56.9	5:00a	0.0	6.4	0.00	5.3	20.0	1:30p	S
9	65.3	75.2	2:30p	55.5	7:00a	0.0	0.3	0.02	3.6	18.0	1:00p	NNE
10	62.1	75.2	3:00p	49.1	12:00m	2.9	0.0	0.02	2.6	14.0	2:30a	N
11	63.0	76.1	3:30p	50.0	12:30a	2.0	0.0	0.00	2.0	11.0	12:30p	SE
12	66.4	82.1	4:00p	50.8	6:00a	0.0	1.4	0.00	2.0	14.0	7:00p	ESE
13	66.3	82.2	3:30p	50.5	5:30a	0.0	1.3	0.00	2.1	10.0	8:30a	ESE
14	64.4	77.3	2:30p	51.4	6:30a	0.6	0.0	0.00	2.3	15.0	5:00p	ESE
15	64.4	76.1	11:00a	52.7	12:00m	0.6	0.0	0.00	1.8	12.0	12:00p	ESE
16	59.7	68.0	2:00p	51.4	1:00a	5.3	0.0	0.04	1.1	11.0	3:30p	SSE
17	62.6	75.7	5:00p	49.5	3:00a	2.4	0.0	0.00	0.9	6.0	1:30p	SSE
18	63.8	79.9	4:30p	47.6	3:30a	1.3	0.0	0.01	1.5	9.0	3:30p	ENE
19	64.5	80.4	3:30p	48.6	6:30a	0.5	0.0	0.00	2.3	13.0	5:30p	ESE
20	62.2	75.0	3:00p	49.3	7:00a	2.8	0.0	0.00	3.9	19.0	2:30p	SE
21	64.1	77.7	3:00p	50.4	6:30a	0.9	0.0	0.00	5.4	20.0	5:30p	SSE
22	58.2	73.1	2:00p	43.2	7:30a	6.8	0.0	0.00	3.0	16.0	4:30p	SE
23	61.6	73.4	4:00p	49.8	7:30a	3.4	0.0	0.00	5.2	23.0	5:00p	SE
24	60.5	77.6	4:30p	43.5	6:00a	4.5	0.0	0.00	2.0	12.0	5:00p	SE
25	62.7	80.8	4:30p	44.5	6:00a	2.3	0.0	0.00	1.6	10.0	1:30p	ESE
26	66.2	84.8	3:30p	47.6	7:30a	0.0	1.2	0.00	1.5	8.0	3:00p	ESE
27	64.1	75.9	3:30p	52.3	12:00m	0.9	0.0	0.00	2.6	13.0	5:00a	SSE
28	66.4	83.5	4:00p	49.3	5:00a	0.0	1.4	0.00	1.5	7.0	9:00p	ESE
29	64.5	78.0	12:30p	51.0	2:00a	0.5	0.0	0.00	2.1	12.0	9:30p	N
30	62.3	71.1	12:00p	53.5	12:00m	2.7	0.0	1.56	2.8	16.0	2:00p	N
	64.2	86.4	6	43.2	22	46.3	25.6	1.65	2.8	23.0	23	SSE

Max >= 90.0: 0
Max <= 32.0: 0
Min <= 32.0: 0
Min <= 0.0: 0
Max Rain: 1.56 ON 09/30/05
Days of Rain: 4 (>.01 in) 1 (>.1 in) 1 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

MONTHLY CLIMATOLOGICAL SUMMARY for OCT. 2005

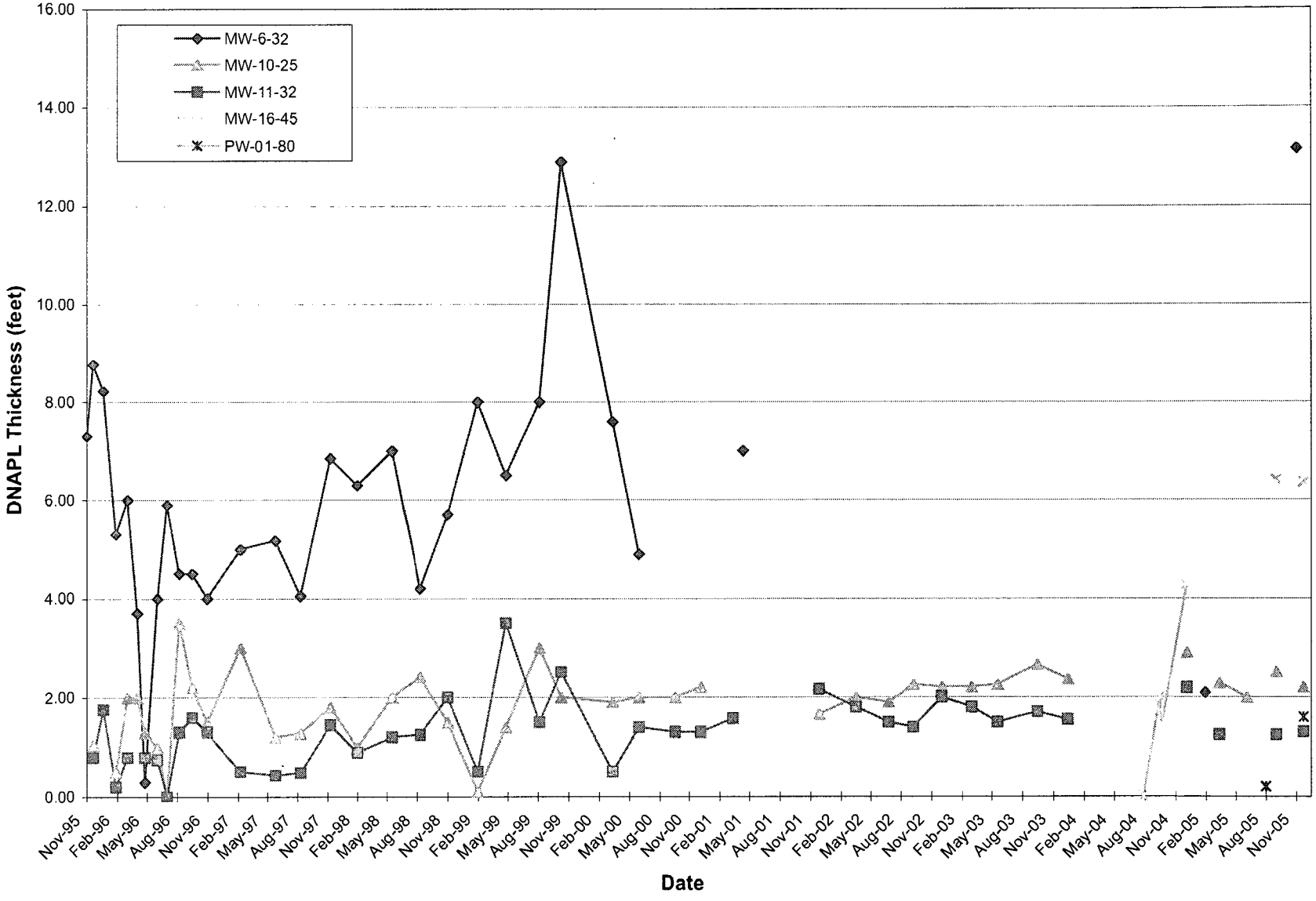
NAME: Gasco2 CITY: STATE:
ELEV: 0 ft LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	52.1	70.4	2:30p	33.8	10:30p	12.9	0.0	0.05	1.8	27.0	4:30p	N
2	53.3	60.7	12:30p	46.0	2:30a	11.7	0.0	0.42	2.0	14.0	9:00p	N
3	55.7	65.1	11:30a	46.2	7:00a	9.3	0.0	0.03	2.4	20.0	9:30p	N
4	58.6	70.1	2:00p	47.1	8:00a	6.4	0.0	0.00	1.1	10.0	2:30p	S
5	63.6	75.9	2:30p	51.2	12:30a	1.4	0.0	0.00	0.9	11.0	2:00p	WSW
6	59.0	66.8	12:00p	51.2	3:30a	6.0	0.0	0.06	1.2	18.0	12:00m	SSW
7	55.4	57.5	12:30a	53.3	8:00a	9.6	0.0	0.07	2.6	15.0	6:00a	NE
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
	56.8	75.9	5	33.8	1	57.3	0.0	0.63	1.7	27.0	1	N

Max >= 90.0: 0
Max <= 32.0: 0
Min <= 32.0: 0
Min <= 0.0: 0
Max Rain: 0.42 ON 10/02/05
Days of Rain: 5 (>.01 in) 1 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: (High + Low) / 2

FIGURE 10
Thickness of Dense Non-Aqueous Phase Liquid (DNAPL) in Groundwater Monitoring Wells



Remedial Investigation
Northwest Natural - Gasco Facility
Portland, Oregon
File: Table 1&2 GW Elevations and DNAPL Thickness_FINAL.xls ; DNAPL Thickness

Updated: 2/27/06 MSM
HAHN AND ASSOCIATES, INC.

Koppers023567

TABLE 1 - Summary of Water Level Measurements and Groundwater Elevations

Elevation of Top of Casing

Date of Elevation Survey	Elevation of Top of Casing (feet msl)*																																	River Benchmark (feet msl)**
	MW-1-22	MW-2-32	MW-2-61	MW-3-26	MW-3-56	MW-4-35	MW-4-57	MW-4-101	MW-5-32	MW-5-100	MW-5-175	MW-6-32	MW-6-61	MW-8-29	MW-8-58	MW-9-29	MW-10-25	MW-10-61	MW-11-32	MW-12-36	MW-13-30	MW-13-61	MW-14-110	MW-15-50	MW-15-66	MW-16-45	MW-16-65	MW-16-125	MW-17-79	PW-01	
7-Dec-95	34.75	34.46	34.41	34.11	34.07	34.54	34.53	34.36	27.83	27.31	27.19	35.51	34.50	39.09	39.13	37.65	39.22	39.33	38.39	38.69	34.86	34.78	37.41	35.97[1]	36.06[1]	33.12	33.11	32.89	34.83	31.80	32.12

Measured Water Level

Date Measured	Measured Water Level (feet btc)																																	River Level (feet pbm)
	MW-1-22	MW-2-32	MW-2-61	MW-3-26	MW-3-56	MW-4-35	MW-4-57	MW-4-101	MW-5-32	MW-5-100	MW-5-175	MW-6-32	MW-6-61	MW-8-29	MW-8-58	MW-9-29	MW-10-25	MW-10-61	MW-11-32	MW-12-36	MW-13-30	MW-13-61	MW-14-110	MW-15-50	MW-15-66	MW-16-45	MW-16-65	MW-16-125	MW-17-79	PW-01	
5-Dec-95	14.15	15.23	-	15.58	15.79	16.12	16.39	-	9.46	-	-	16.71	15.77	19.75	20.61	6.20	14.98	13.42	12.69	9.37	-	-	-	-	-	-	-	-	-		-
5-Jan-96	14.47	20.04	-	19.47	21.85	22.47	22.38	-	15.57	-	-	14.84	21.58	19.01	26.74	7.33	15.20	18.32	12.19	10.82	-	-	-	-	-	-	-	-	-		-
12-Feb-96	7.74	8.61	-	8.52	8.63	9.09	9.10	-	2.41	-	-	9.55	8.87	16.99	13.56	3.32	11.11	8.92	8.95	5.27	-	-	-	-	-	-	-	-	-		-
18-Mar-96	12.44	18.03	-	17.87	19.66	20.24	20.21	-	13.37	-	-	12.10	19.39	15.22	24.54	6.13	11.95	14.47	8.42	9.01	-	-	-	-	-	-	-	-	-		-
16-Apr-96	13.65	18.83	-	18.13	19.47	20.26	20.07	-	13.36	-	-	13.42	19.51	15.58	24.44	6.83	12.63	15.07	10.12	9.89	-	-	-	-	-	-	-	-	-		-
10-May-96	13.75	19.47	-	18.98	22.01	22.58	22.60	-	15.78	-	-	13.30	21.55	15.77	26.93	6.94	12.88	15.90	10.40	10.24	-	-	-	-	-	-	-	-	-		-
17-Jun-96	13.88	17.40	-	17.40	18.21	19.61	18.73	-	11.98	-	-	13.40	18.13	16.00	23.15	5.03	13.51	13.96	10.90	9.98	-	-	-	-	-	-	-	-	-		-
16-Jul-96	15.51	20.71	-	20.07	24.41	24.30	24.93	-	17.91	-	-	14.60	23.55	17.26	29.05	6.65	15.90	17.21	11.93	12.43	-	-	-	-	-	-	-	-	-		-
21-Aug-96	16.51	21.80	-	22.24	26.99	26.77	27.51	-	20.46	-	-	16.17	26.27	19.16	31.93	8.47	16.58	19.43	13.40	14.53	-	-	-	-	-	-	-	-	-		-
17-Sep-96	17.06	22.06	-	20.61	28.02	27.15	28.53	-	21.27	-	-	16.94	26.81	20.13	32.63	7.52	16.80	19.30	14.02	14.86	-	-	-	-	-	-	-	-	-		-
30-Sep-96	17.17	22.24	-	23.32	27.04	27.46	27.61	-	20.69	-	-	17.06	27.01	20.19	32.45	8.70	16.89	19.84	14.28	14.97	-	-	-	-	-	-	-	-	-		-
15-Nov-96	16.38	22.02	-	20.76	26.48	26.85	27.00	-	19.84	-	-	17.00	25.71	20.63	31.37	6.61	16.42	18.38	14.20	13.85	-	-	-	-	-	-	-	-	-		-
24-Feb-97	12.41	18.71	-	18.61	20.48	20.92	21.02	-	14.17	-	-	12.83	19.79	18.43	25.33	4.35	14.85	14.33	11.18	9.71	-	-	-	-	-	-	-	-	-		-
10-Jun-97	12.99	14.23	-	13.80	14.20	14.70	14.56	-	7.97	-	-	13.91	14.61	18.58	19.25	4.84	16.01	12.20	12.50	8.49	-	-	-	-	-	-	-	-	-		-
26-Aug-97	15.38	21.70	-	22.61	26.10	26.56	25.84	-	19.63	-	-	18.53	25.58	20.31	31.13	11.71	17.10	20.18	14.30	14.13	-	-	-	-	-	-	-	-	-		-
25-Nov-97	14.42	21.50	-	19.25	24.64	25.14	24.80	-	18.23	-	-	16.29	24.33	20.85	29.85	7.85	16.36	17.89	13.86	11.79	-	-	-	-	-	-	-	-	-		-
19-Dec-97	-	-	-	-	22.75	-	23.28	-	-	-	-	-	22.62	-	27.90	-	-	16.90	-	-	-	23.71	-	-	-	-	-	-	-		-
16-Feb-98	12.60	20.13	-	18.85	23.55	23.25	24.10	-	17.09	-	-	14.29	-	20.05	28.50	5.33	15.60	15.89	12.02	9.72	14.73	23.98	-	-	-	-	-	-	-		21.91
1-Jun-98	14.49	16.97	-	16.61	16.51	16.90	17.00	-	10.33	-	-	15.75	-	20.05	21.63	7.25	14.63	14.36	12.85	9.83	15.69	17.11	-	-	-	-	-	-	-		14.57
25-Aug-98	17.62	22.74	-	23.68	27.79	27.32	28.36	-	21.14	-	-	17.73	-	20.89	32.46	12.67	14.32	21.19	14.28	14.97	17.56	28.22	-	-	-	-	-	-	-		25.72
16-Nov-98	18.42	24.56	28.36	22.20	27.57	27.32	28.10	28.29	20.98	21.19	21.05	18.23	-	21.19	32.13	12.10	14.30	20.81	14.45	14.92	17.78	28.11	24.84	-	-	-	-	-	-		26.32
15-Feb-99	11.97	19.02	23.94	18.27	23.20	23.94	23.71	23.75	16.75	16.72	16.54	12.35	-	17.66	27.97	5.11	12.41	15.34	10.03	9.51	13.04	23.62	20.35	-	-	-	-	-	-		21.94
11-May-99	14.32	20.19	22.99	18.76	22.44	22.92	22.89	22.94	16.06	15.87	15.68	13.41	-	16.56	27.31	8.50	15.82	16.94	10.82	11.11	14.03	22.91	20.62	-	-	-	-	-	-		21.21
20-Aug-99	17.37	22.16	26.95	21.92	26.31	25.98	26.81	26.97	19.73	19.80	19.62	19.80	-	19.65	31.04	12.04	15.00	20.46	14.25	14.40	17.18	26.61	23.93	15.05	15.37	-	-	-			25.80
25-Oct-99	18.48	24.73	28.77	24.40	28.05	28.02	28.49	28.44	21.56	21.36	21.11	19.00	-	20.83	32.78	13.86	16.40	22.15	15.60	16.51	19.52	28.63	25.66	16.92	17.28	-	-	-			26.49
27-Mar-00	12.88	20.09	26.84	19.24	26.27	25.69	26.80	26.91	19.36	19.83	19.64	14.05	-	19.43	31.08	6.25	17.70	17.32	12.90	11.65	14.45	26.71	23.11	14.05	14.68	-	-	-			25.30
15-Jun-00	16.26	21.18	24.08	20.01	23.58	24.42	24.14	24.10	17.40	17.07	16.96	18.05	-	19.53	28.42	10.15	14.74	16.55	13.36	13.11	15.82	24.10	22.02	14.14	14.96	-	-	-			21.70
4-Oct-00	18.15	23.24	28.92	22.12	28.42	28.02	28.95	28.92	21.93	21.88	21.89	-	-	20.31	33.46	13.67	14.09	22.31	14.15	16.85	17.32	28.98	26.31	17.81	18.66	-	-	-			28.00
20-Dec-00	17.98	22.73	27.13	19.50	26.89	26.13	27.27	26.76	20.33	19.63	19.31	-	-	19.24	32.12	12.22	13.02	20.20	13.09	15.17	16.70	27.70	26.05	16.25	17.08	-	-	-			25.00
27-Mar-01	16.91	21.94	28.05	20.86	27.35	27.01	27.91	28.10	20.66	21.05	20.88	-	-	19.19	32.07	11.91	13.74	20.85	13.63	14.96	16.81	27.86	25.24	16.40	17.23	-	-	-			26.70
29-Jun-01	18.02	23.49	28.58	24.14	29.11	27.51	28.52	29.25	21.59	21.23	20.97	-	-	21.14	33.24	13.31	17.27	22.92	15.25	18.06	18.06	28.72	25.88	17.32	18.11	-	-	-			27.01
8-Oct-01	19.24	26.16	29.85	25.45	29.10	28.05	29.68	28.72	22.67	22.60	22.45	-	-	21.99	34.11	15.50	18.28	23.89	17.10	18.45	19.41	29.78	27.51	19.41	20.19	-	-	-			28.15
12-Dec-01	16.73	22.68	26.54	20.49	25.81	24.12	26.33	26.46	19.01	19.41	19.21	-	-	21.56	30.43	9.71	16.50	19.00	16.00	13.67	17.89	26.34	23.66	15.05	15.86	-	-	-			24.44
2-Apr-02	14.98	20.47	25.78	20.61	25.33	26.38	25.84	25.59	18.71	18.56	18.34	-	-	20.24	30.91	7.99	16.77	18.46	13.16	12.48	15.35	25.65	23.59	14.56	15.42	-	-	-			23.80
10-Jul-02	17.18	21.78	25.31	21.42	24.69	25.12	25.22	25.13	19.28	18.10	17.92	-	-	20.43	29.73	11.61	16.20	19.92	14.00	13.98	17.09	25.31	23.29	15.91	15.22	-	-	-			23.18
23-Sep-02	18.44	24.95	29.44	24.73	28.65	28.25	29.27	29.44	22.14	22.41	22.23	-	-	21.41	33.35	14.27	-	22.83	-	17.42	18.63	29.15	26.55	18.34	19.11	-	-	-			27.52
17-Dec-02	19.34	24.41	24.61	20.25	25.05	23.61	25.42	25.06	18.92	19.02	17.99	-	-	21.79	31.16	12.93	16.20	20.80	17.30	18.05	19.02	25.75	24.11	16.20	16.86	-	-	-			22.30
17-Mar-03	14.90	20.71	24.92	19.79	24.35	24.38	24.91	24.91	17.82	17.87	17.67	-	-	20.69	29.51	6.87	16.40	17.05	13.50	17.47	15.92	24.92	22.22	13.50	14.31	-	-	-			22.79
7-Jun-03	15.17	20.02	21.63	20.25	21.19	21.82	21.75	21.50	15.04	14.50	14.29	-	-	20.15	26.30	9.45	16.60	17.39	13.60	12.22	15.71	21.80	20.47	13.08	13.72	-	-	-			19.45
29-Sep-03	18.45	25.09	28.56	24.63	27.36	28.24	27.88	27.49	21.03	20.55	20.35	-	-	21.43	32.82	14.66	16.10	22.78	16.60	17.62	18.58	27.86	26.18	16.22	18.97	-	-	-			26.45
29-Dec-03	16.52	23.03	25.72	19.41	24.96	22.64	25.46	25.43	18.32	18.39	18.21	-	-	21.08	30.12	8.38	16.50	18.35	14.90	12.60	17.72	25.56	23.34	14.41	15.23	-	-	-			23.81
29-Mar-04	15.33	21.25	27.30	20.45	26.83	26.38	27.34	27.25	19.95	20.19	19.99	-	-	20.28	31.91	9.10	-	19.21	-	12.76	15.93	27.45	24.41	14.62	15.75	-	-	-			24.51
11-Aug-04	18.27	24.45	28.81	24.61	29.13	28.30	29.52	29.48	22.36	22.24	21.95	-	-	21.34	33.84	13.90	16.50	19.50	15.80	16.72	18.40	29.80	26.94	17.64	18.70	27.45	28.00	27.55			26.45
20-Dec-04	18.21	24.40	25.95	22.20	25.80	25.69	26.31	26.12	19.10	19.03	18.80	-	-	21.56	31.11	9.55	17.23	19.26	15.52	14.31	18.42	26.45	24.21	15.57	16.76	24.80	24.93	24.81			25.09
28-Mar-05	16.96	23.17	24.86	19.85	24.72	23.94	25.19	25.00	18.39	17.97	17.17	-	-	21.40	28.75	8.02	17.15	18.45	15.45	13.46	17.92	25.21	23.29	14.84	15.60	23.65	23.86	23.84			23.33
20-Jun-05	16.68	21.90	27.59	22.27	26.85	26.56	27.33	27.40	20.25	20.39	20.20	-	-	20.90	31.41	9.42	16.92	19.21	14.50	13.68	17.79	27.41	24.19	15.26	16.51	24.72	25.98	26.03			26.48
19-Sep-05	18.17	25.34	30.78	24.85	28.91	28.94	30.51	30.85	23.12	23.74	23.58	-	-	21.56	34.22	13.04	17.63	22.31	16.02	17.00	18.47	30.25	26.94	16.12	19.03	27.42	28.89	29.43	30.25		28.90
7-Dec-05	16.31	22.31	27.12	20.61	26.63	26.06	27.20	27.24	19.67	20.08	19.88	-	-	20.90	31.53	8.44	16.07	18.78	14.33	13.68	17.44	27.08	24.34	15.15	16.10	25.89	25.22	25.79	27.36	24.38	24.49

Note abm = below bench mark btc = below top of casing msl = mean sea level

* = City of Portland Datum

**Willamette River, Portland Harbor Stage, obtained from National Weather Service and adjusted to feet msl - City of Portland datum: December 1995 to December 1997 Post December 1997 River Stage data measured directly from surveyed bench mark located on north end of FAMM Dock

1 = Well casing raised in January 2000 Pre-2000 top of casing elevations are MW-15-50 (35.15 feet), MW-15-66 (35.36 feet)

Koppers023568

TABLE 1 - Summary of Water Level Measurements and Groundwater Elevations

Groundwater Elevation

Date Measured	Groundwater Elevation (feet msl)*																																River Stage (feet msl)**
	MW-1-22	MW-2-32	MW-2-61	MW-3-26	MW-3-56	MW-4-35	MW-4-57	MW-4-101	MW-5-32	MW-5-100	MW-5-175	MW-6-32	MW-6-61	MW-8-29	MW-8-56	MW-9-29	MW-10-25	MW-10-61	MW-11-32	MW-12-36	MW-13-30	MW-13-61	MW-14-110	MW-15-50	MW-15-66	MW-16-45	MW-16-65	MW-16-125	MW-17-79	PW-01	
5-Dec-95	20.80	19.23	-	18.53	18.28	18.42	18.14	-	18.37	-	-	18.80	18.73	19.34	18.52	31.45	24.24	25.91	25.70	29.32	-	-	-	-	-							18.90
5-Jan-96	20.28	14.42	-	14.84	12.22	12.07	12.15	-	12.26	-	-	20.67	12.92	20.08	12.39	30.32	24.02	23.01	26.20	27.87	-	-	-	-	-							12.43
12-Feb-96	27.01	25.85	-	25.59	25.44	25.45	25.43	-	25.42	-	-	25.96	25.53	22.10	25.57	34.33	28.11	30.41	29.44	33.42	-	-	-	-	-							26.43
18-Mar-96	22.31	16.43	-	16.24	14.41	14.30	14.32	-	14.46	-	-	23.41	15.11	23.87	14.59	31.52	27.27	24.86	28.97	29.68	-	-	-	-	-							14.41
16-Apr-96	21.10	15.63	-	15.98	14.60	14.28	14.48	-	14.47	-	-	22.09	14.99	23.51	14.69	30.72	26.59	24.26	28.27	29.00	-	-	-	-	-							14.53
10-May-96	21.00	14.99	-	15.13	12.06	11.96	11.93	-	12.05	-	-	22.21	12.95	23.32	12.20	30.71	26.24	23.43	27.99	28.45	-	-	-	-	-							11.63
17-Jun-96	20.87	17.06	-	16.71	15.86	15.93	15.80	-	15.87	-	-	22.11	16.37	23.09	15.98	32.62	25.71	25.37	27.49	28.71	-	-	-	-	-							15.73
16-Jul-96	19.24	13.75	-	14.04	9.66	10.24	9.60	-	9.92	-	-	20.91	10.95	21.83	10.08	31.00	23.32	22.12	26.48	26.26	-	-	-	-	-							-
21-Aug-96	18.24	12.66	-	11.87	7.08	7.77	7.02	-	7.37	-	-	19.34	8.23	19.91	7.20	29.18	22.64	19.90	24.99	24.16	-	-	-	-	-							6.63
17-Sep-96	17.69	12.40	-	13.50	6.05	7.39	6.00	-	6.56	-	-	16.57	7.69	18.96	6.50	30.13	22.42	20.03	24.37	23.83	-	-	-	-	-							5.80
30-Sep-96	17.58	12.22	-	10.79	7.03	7.08	6.92	-	7.15	-	-	18.43	7.49	18.90	6.68	28.95	22.33	19.49	24.13	23.72	-	-	-	-	-							5.40
15-Nov-96	18.37	12.44	-	13.35	7.59	7.69	7.53	-	7.99	-	-	18.51	8.79	18.46	7.76	31.04	22.80	20.95	24.19	24.84	-	-	-	-	-							7.20
24-Feb-97	22.34	15.75	-	15.50	13.59	13.72	13.51	-	13.66	-	-	22.58	14.71	20.66	13.80	33.30	24.37	25.00	27.21	28.98	-	-	-	-	-							13.60
10-Jun-97	21.85	20.23	-	20.31	19.87	19.84	19.97	-	19.86	-	-	21.70	19.99	20.53	19.88	32.81	23.21	27.13	25.89	30.20	-	-	-	-	-							19.83
26-Aug-97	19.37	12.76	-	11.50	7.97	7.98	8.69	-	8.20	-	-	16.98	8.92	18.78	8.00	25.94	22.12	19.17	24.09	24.56	-	-	-	-	-							7.90
25-Nov-97	20.33	12.98	-	14.86	9.43	9.40	9.73	-	9.60	-	-	19.22	10.17	18.24	9.28	29.80	22.86	21.44	24.51	26.90	-	-	-	-	-							8.72
19-Dec-97	-	-	-	-	11.32	-	11.25	-	-	-	-	-	11.98	-	11.23	-	-	22.43	-	-	-	11.07	-	-	-							-
16-Feb-98	22.15	14.33	-	15.46	10.52	11.29	10.43	-	10.74	-	-	21.22	-	19.04	10.83	32.32	23.62	23.44	26.37	28.97	20.13	10.80	-	-	-							10.21
1-Jun-98	20.26	17.49	-	17.50	17.56	17.64	17.53	-	17.50	-	-	19.76	-	19.04	17.50	30.40	24.59	24.97	25.54	28.86	19.17	17.67	-	-	-							17.55
25-Aug-98	17.13	11.72	-	10.43	6.28	7.22	6.17	-	6.69	-	-	17.78	-	18.20	6.67	24.98	24.90	19.14	24.10	23.72	17.30	6.56	-	-	-							6.40
16-Nov-98	16.33	9.67	6.05	11.91	6.50	7.22	8.43	6.07	6.64	6.12	6.14	17.29	-	17.90	7.00	25.55	24.92	18.52	23.94	23.77	17.08	6.67	12.57	-	-							5.80
15-Feb-99	22.78	15.44	10.47	16.84	10.67	10.60	10.82	10.61	11.08	10.59	10.65	23.16	-	21.43	11.16	32.54	26.81	23.99	28.36	29.18	21.82	11.16	17.06	-	-							10.18
11-May-99	20.43	14.27	11.42	15.35	11.63	11.62	11.54	11.42	11.77	11.44	11.51	22.10	-	22.53	11.82	29.15	23.40	22.39	27.57	27.58	20.83	11.87	16.79	-	-							10.91
20-Aug-99	17.38	12.30	7.46	12.19	7.76	8.56	7.72	7.49	8.10	7.51	7.57	15.71	-	19.44	9.09	25.61	24.22	18.87	24.14	24.29	17.68	7.97	13.48	20.10	18.99							6.32
26-Oct-99	16.27	9.73	5.64	9.71	6.02	6.52	6.04	5.92	6.27	5.95	6.08	18.51	-	18.26	6.35	23.79	22.82	17.18	22.79	22.18	16.34	8.15	11.73	16.23	18.08							5.63
27-Mar-00	21.87	14.37	7.47	14.87	7.80	8.85	7.73	7.45	8.47	7.48	7.55	21.46	-	19.66	8.05	31.40	21.52	22.01	25.49	27.04	20.41	8.07	14.30	21.92	21.38							6.82
15-Jun-00	18.49	13.28	10.33	14.10	10.51	10.12	10.39	10.26	10.43	10.24	10.33	19.46	-	19.56	10.71	27.50	24.48	20.78	25.03	25.58	19.04	10.66	15.38	21.83	21.10							10.42
4-Oct-00	16.60	11.22	5.49	11.99	5.65	6.52	5.58	5.44	5.90	5.43	5.50	-	-	18.78	5.67	23.98	25.13	17.02	24.24	21.84	17.54	5.80	11.10	18.16	17.40							8.12
20-Dec-00	16.77	11.73	7.28	14.61	7.18	8.41	7.26	7.60	7.50	7.68	7.88	-	-	19.85	7.01	25.43	26.20	19.13	25.30	23.52	18.18	7.08	11.36	19.72	18.98							7.12
27-Mar-01	17.84	12.52	6.36	13.25	6.72	7.53	6.62	6.26	7.17	6.26	6.31	-	-	19.90	7.06	25.74	25.48	18.48	24.76	23.73	18.05	6.92	12.17	19.57	16.83							6.42
28-Jun-01	16.73	10.97	5.83	9.97	5.96	7.03	6.01	5.11	6.24	6.08	6.22	-	-	17.95	6.09	24.34	21.95	18.41	23.14	22.63	18.80	6.06	11.53	18.65	17.95							5.11
8-Oct-01	15.51	8.30	4.56	8.66	4.97	5.49	4.85	5.64	5.16	4.71	4.74	-	-	17.10	5.02	22.15	20.94	15.44	21.29	20.24	15.45	5.00	9.90	16.56	15.87							3.97
12-Dec-01	18.02	11.78	7.87	13.62	8.26	10.42	8.20	7.90	8.82	7.90	7.98	-	-	17.51	8.70	27.94	22.72	20.33	22.39	25.02	16.97	8.44	13.75	20.92	20.20							7.89
2-Apr-02	19.77	13.99	8.63	13.50	8.74	8.16	8.69	8.77	9.12	9.75	8.85	-	-	18.85	8.52	29.66	22.45	20.87	25.23	26.21	19.51	8.93	13.92	21.41	20.64							8.52
10-Jul-02	17.57	12.59	9.10	12.69	9.38	9.42	9.31	9.23	9.55	9.21	9.27	-	-	16.66	9.40	28.04	23.02	18.41	24.39	24.71	17.77	8.47	14.12	20.06	20.84							8.98
23-Sep-02	16.31	9.51	4.97	9.38	5.42	6.29	5.26	4.92	5.69	4.90	4.96	-	-	17.66	5.78	23.38	-	16.50	-	21.27	16.23	5.63	10.86	17.63	16.95							4.60
17-Dec-02	15.41	10.05	9.80	13.86	9.02	10.93	9.11	9.30	8.91	9.29	9.20	-	-	17.30	7.97	24.72	23.02	18.53	21.09	22.84	15.84	9.03	13.30	18.77	19.20							9.82
17-Mar-03	19.85	13.75	9.49	14.32	9.72	10.16	9.62	9.45	10.01	9.44	9.52	-	-	18.40	9.62	30.78	22.82	22.28	24.89	21.22	16.94	9.86	15.19	22.47	21.75							9.33
2-Jun-03	19.58	14.44	12.78	13.86	12.89	12.72	12.78	12.86	12.79	12.81	12.90	-	-	18.94	12.83	26.20	22.62	21.94	24.79	26.47	19.15	12.98	16.94	22.69	22.34							12.67
29-Sep-03	16.30	9.37	5.85	9.48	6.71	6.30	5.67	6.87	6.80	6.78	6.84	-	-	17.66	6.31	22.99	23.12	16.55	21.79	21.07	16.28	6.92	11.23	17.75	17.09							5.87
29-Dec-03	18.23	11.43	8.69	14.79	9.11	11.90	9.07	8.93	9.51	9.92	8.98	-	-	18.01	9.01	29.27	22.72	20.98	23.49	26.09	17.14	9.22	14.07	21.56	20.83							8.31
29-Mar-04	19.42	13.21	7.11	13.66	7.24	8.16	7.19	7.11	7.89	7.12	7.20	-	-	18.81	7.22	28.55	-	20.12	-	25.83	18.93	7.33	13.00	21.15	20.31							7.61
11-Aug-04	16.48	10.91	5.60	9.50	4.94	6.24	5.01	4.88	5.47	5.07	5.24	-	-	17.75	5.29	23.75	22.72	18.83	22.79	21.97	16.46	4.98	10.47	18.33	17.36	5.67	5.11	5.34				5.67
20-Dec-04	16.54	10.96	8.46	11.91	8.27	8.85	8.22	8.24	8.73	8.28	8.39	-	-	17.53	8.02	28.10	21.99	20.07	22.87	24.38	16.44	8.33	13.20	20.40	19.30	6.32	8.18	8.08				7.03
28-Mar-05	17.79	11.29	9.55	14.26	9.35	10.60	9.34	9.36	9.44	9.34	10.02	-	-	17.69	9.38	28.63	22.07	20.88	22.94	25.21	16.94	9.57	14.12	21.13	20.46	9.47	9.25	9.05				8.79
20-Jun-05	18.07	12.56	6.82	11.84	7.22	7.98	7.20	6.96	7.59	6.92	6.99	-	-	18.19	7.72	28.23	22.30	20.12	23.89	25.01	17.07	7.37	13.22	29.71	19.55	6.40	7.13	8.68				6.64
16-Sep-05	16.56	9.12	3.63	9.26	4.26	5.60	4.02	3.51	4.71	3.57	3.61	-	-	17.53	4.91	24.61	21.59	17.02	22.37	21.69	16.39	4.53	10.47	17.65	17.03	5.70	4.22	3.46	4.58			3.22
7-Dec-05	18.44	12.15	7.29	13.50	7.44	8.48	7.33	7.12	8.16	7.23	7.31	-	-	18.19	7.60	29.21	23.15	20.57	24.06	25.01	17.42	7.70	13.07	20.62	19.96	7.23	7.89	7.10	7.47	7.42		7.63

Note: bbm = below bench mark; btc = below top of casing; msl = mean sea level

* = City of Portland Datum

**Willamette River, Portland Harbor Stage obtained from National Weather Service and adjusted to feet msl - City of Portland datum. December 1995 to December 1997. Post December 1997 River Stage data measured directly from surveyed bench mark located on north end of FAMM Dock.

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TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-2						
Date	Location	Water-Bearing Zone	Water Level Elevation (feet MSL)	Base of Screen Elevation (feet MSL)	Vertical Gradient	Direction
17-Mar-03	MW-2-32	Fill	13.75	4.3	0.1439	down
	MW-2-61	Alluvial	9.49	-25.3		
	River		9.33			
2-Jun-03	MW-2-32	Fill	14.44	4.3	0.0561	down
	MW-2-61	Alluvial	12.78	-25.3		
	River		12.67			
29-Sep-03	MW-2-32	Fill	9.37	4.3	0.1189	down
	MW-2-61	Alluvial	5.85	-25.3		
	River		5.67			
29-Dec-03	MW-2-32	Fill	11.43	4.3	0.0926	down
	MW-2-61	Alluvial	8.69	-25.3		
	River		8.31			
29-Mar-04	MW-2-32	Fill	13.21	4.3	0.2061	down
	MW-2-61	Alluvial	7.11	-25.3		
	River		7.61			
11-Aug-04	MW-2-32	Fill	10.01	4.3	0.1490	down
	MW-2-61	Alluvial	5.60	-25.3		
	River		5.67			
20-Dec-04	MW-2-32	Fill	10.06	4.3	0.0541	down
	MW-2-61	Alluvial	8.46	-25.3		
	River		7.03			
28-Mar-05	MW-2-32	Fill	11.29	4.3	0.0588	down
	MW-2-61	Alluvial	9.55	-25.3		
	River		8.79			
20-Jun-05	MW-2-32	Fill	12.56	4.3	0.194	down
	MW-2-61	Alluvial	6.82	-25.3		
	River		6.64			
16-Sep-05	MW-2-32	Fill	9.12	4.3	0.185	down
	MW-2-61	Alluvial	3.63	-25.3		
	River		3.22			
7-Dec-05	MW-2-32	Fill	12.15	4.3	0.164	down
	MW-2-61	Alluvial	7.29	-25.3		
	River		7.63			

Note: MSL = mean sea level, City of Portland datum

TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-3						
Date	Location	Water-Bearing Zone	Water Level Elevation (feet MSL)	Base of Screen Elevation (feet MSL)	Vertical Gradient	Direction
12-Feb-96	MW-3-26	Fill	25.59	6.2	0.0050	down
	MW-3-56	Alluvial	25.44	-23.8		
	River		26.43			
17-Mar-03	MW-3-26	Fill	14.32	6.2	0.1533	down
	MW-3-56	Alluvial	9.72	-23.8		
	River		9.33			
2-Jun-03	MW-3-26	Fill	13.86	6.2	0.0327	down
	MW-3-56	Alluvial	12.88	-23.8		
	River		12.67			
29-Sep-03	MW-3-26	Fill	9.48	6.2	0.0923	down
	MW-3-56	Alluvial	6.71	-23.8		
	River		5.67			
29-Dec-03	MW-3-26	Fill	14.70	6.2	0.1863	down
	MW-3-56	Alluvial	9.11	-23.8		
	River		8.31			
29-Mar-04	MW-3-26	Fill	13.66	6.2	0.2140	down
	MW-3-56	Alluvial	7.24	-23.8		
	River		7.61			
11-Aug-04	MW-3-26	Fill	9.50	6.2	0.1520	down
	MW-3-56	Alluvial	4.94	-23.8		
	River		5.67			
20-Dec-04	MW-3-26	Fill	11.91	6.2	0.1213	down
	MW-3-56	Alluvial	8.27	-23.8		
	River		8.79			
28-Mar-05	MW-3-26	Fill	14.26	6.2	0.1637	down
	MW-3-56	Alluvial	9.35	-23.8		
	River		8.79			
20-Jun-05	MW-3-26	Fill	11.84	6.2	0.1540	down
	MW-3-56	Alluvial	7.22	-23.8		
	River		6.64			
16-Sep-05	MW-3-26	Fill	9.26	6.2	0.1667	down
	MW-3-56	Alluvial	4.26	-23.8		
	River		3.22			
7-Dec-05	MW-3-26	Fill	13.50	6.2	0.2020	down
	MW-3-56	Alluvial	7.44	-23.8		
	River		7.63			

Note: MSL = mean sea level, City of Portland datum

TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-4						
Date	**Location**	**Water-Bearing Zone**	**Water Level Elevation (feet MSL)**	**Base of Screen Elevation (feet MSL)**	**Vertical Gradient**	**Direction**
12-Feb-96	MW-4-35	Fill	25.45	-2.3	0.0009	down
	MW-4-57	Alluvial	25.43	-24.3		
	River		26.43			
17-Mar-03	MW-4-35	Fill	10.16	-2.3	0.0245	down
	MW-4-57	Alluvial	9.62	-24.3		
	River		9.33			
	MW-4-57	Alluvial	9.62	-24.3	0.0039	down
	MW-4-101	Alluvial	9.45	-67.7		
2-Jun-03	MW-4-35	Fill	12.72	-2.3	-0.0027	up
	MW-4-57	Alluvial	12.78	-24.3		
	River		12.67			
	MW-4-57	Alluvial	12.78	-24.3	-0.0018	up
	MW-4-101	Alluvial	12.86	-67.7		
29-Sep-03	MW-4-35	Fill	6.30	-2.3	-0.0168	up
	MW-4-57	Alluvial	6.67	-24.3		
	River		5.67			
	MW-4-57	Alluvial	6.67	-24.3	-0.0046	up
	MW-4-101	Alluvial	6.87	-67.7		
29-Dec-03	MW-4-35	Fill	11.90	-2.3	0.1286	down
	MW-4-57	Alluvial	9.07	-24.3		
	River		8.31			
	MW-4-57	Alluvial	9.07	-24.3	0.0032	down
	MW-4-101	Alluvial	8.93	-67.7		
29-Mar-04	MW-4-35	Fill	8.16	-2.3	0.0441	down
	MW-4-57	Alluvial	7.19	-24.3		
	River		7.61			
	MW-4-57	Alluvial	7.19	-24.3	0.0018	down
	MW-4-101	Alluvial	7.11	-67.7		

TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-4 (continued)						
Date	**Location**	**Water-Bearing Zone**	**Water Level Elevation (feet MSL)**	**Base of Screen Elevation (feet MSL)**	**Vertical Gradient**	**Direction**
11-Aug-04	MW-4-35	Fill	6.24	-2.3	0.0559	down
	MW-4-57	Alluvial	5.01	-24.3		
	River		5.67			
	MW-4-57	Alluvial	5.01	-24.3	0.0030	down
	MW-4-101	Alluvial	4.88	-67.7		
20-Dec-04	MW-4-35	Fill	8.85	-2.3	0.0286	down
	MW-4-57	Alluvial	8.22	-24.3		
	River		7.03			
	MW-4-57	Alluvial	8.22	-24.3	-0.0005	up
	MW-4-101	Alluvial	8.24	-67.7		
28-Mar-05	MW-4-35	Fill	10.60	-2.3	0.0573	down
	MW-4-57	Alluvial	9.34	-24.3		
	River		8.79			
	MW-4-57	Alluvial	9.34	-24.3	-0.0005	up
	MW-4-101	Alluvial	9.36	-67.7		
20-Jun-05	MW-4-35	Fill	7.98	-2.3	0.0355	down
	MW-4-57	Alluvial	7.20	-24.3		
	River		6.64			
	MW-4-57	Alluvial	7.20	-24.3	0.0055	down
	MW-4-101	Alluvial	6.96	-67.7		
16-Sep-05	MW-4-35	Fill	5.60	-2.3	0.0718	down
	MW-4-57	Alluvial	4.02	-24.3		
	River		3.22			
	MW-4-57	Alluvial	4.02	-24.3	0.0118	down
	MW-4-101	Alluvial	3.51	-67.7		
7-Dec-05	MW-4-35	Fill	8.48	-2.3	0.0523	down
	MW-4-57	Alluvial	7.33	-24.3		
	River		7.63			
	MW-4-57	Alluvial	7.33	-24.3	0.0048	down
	MW-4-101	Alluvial	7.12	-67.7		

Note: MSL = mean sea level, City of Portland datum

TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-5						
Date	**Location**	**Water-Bearing Zone**	**Water Level Elevation (feet MSL)**	**Base of Screen Elevation (feet MSL)**	**Vertical Gradient**	**Direction**
17-Mar-03	MW-5-32	Fill/Alluvial	10.01	-5.9	0.0085	down
	MW-5-100	Alluvial	9.44	-72.6		
	River		9.33			
	MW-5-100	Alluvial	9.44	-72.6	-0.0011	up
	MW-5-175	Alluvial	9.52	-147.8		
2-Jun-03	MW-5-32	Fill/Alluvial	12.79	-5.9	-0.0003	up
	MW-5-100	Alluvial	12.81	-72.6		
	River		12.67			
	MW-5-100	Alluvial	12.81	-72.6	-0.0012	up
	MW-5-175	Alluvial	12.90	-147.8		
29-Sep-03	MW-5-32	Fill/Alluvial	6.80	-5.9	0.0006	down
	MW-5-100	Alluvial	6.76	-72.6		
	River		5.67			
	MW-5-100	Alluvial	6.76	-72.6	-0.0011	up
	MW-5-175	Alluvial	6.84	-147.8		
29-Dec-03	MW-5-32	Fill/Alluvial	9.51	-5.9	0.0088	down
	MW-5-100	Alluvial	8.92	-72.6		
	River		8.31			
	MW-5-100	Alluvial	8.92	-72.6	-0.0008	up
	MW-5-175	Alluvial	8.98	-147.8		
29-Mar-04	MW-5-32	Fill/Alluvial	7.88	-5.9	0.0114	down
	MW-5-100	Alluvial	7.12	-72.6		
	River		7.61			
	MW-5-100	Alluvial	7.12	-72.6	-0.0011	up
	MW-5-175	Alluvial	7.20	-147.8		

Note: MSL = mean sea level, City of Portland datum

TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-5 (continued)						
Date	**Location**	**Water-Bearing Zone**	**Water Level Elevation (feet MSL)**	**Base of Screen Elevation (feet MSL)**	**Vertical Gradient**	**Direction**
11-Aug-04	MW-5-32	Fill/Alluvial	5.47	-5.9	0.0060	down
	MW-5-100	Alluvial	5.07	-72.6		
	River		5.67			
	MW-5-100	Alluvial	5.07	-72.6	-0.0023	up
	MW-5-175	Alluvial	5.24	-147.8		
20-Dec-04	MW-5-32	Fill/Alluvial	8.73	-5.9	0.0067	down
	MW-5-100	Alluvial	8.28	-72.6		
	River		7.03			
	MW-5-100	Alluvial	8.28	-72.6	-0.0015	up
	MW-5-175	Alluvial	8.39	-147.8		
28-Mar-05	MW-5-32	Fill/Alluvial	9.44	-5.9	0.0015	down
	MW-5-100	Alluvial	9.34	-72.6		
	River		8.79			
	MW-5-100	Alluvial	9.34	-72.6	-0.0090	up
	MW-5-175	Alluvial	10.02	-147.8		
20-Jun-05	MW-5-32	Fill/Alluvial	7.58	-5.9	0.0099	down
	MW-5-100	Alluvial	6.92	-72.6		
	River		6.64			
	MW-5-100	Alluvial	6.92	-72.6	-0.0009	up
	MW-5-175	Alluvial	6.99	-147.8		
16-Sep-05	MW-5-32	Fill/Alluvial	4.71	-5.9	0.0171	down
	MW-5-100	Alluvial	3.57	-72.6		
	River		3.22			
	MW-5-100	Alluvial	3.57	-72.6	-0.0005	up
	MW-5-175	Alluvial	3.61	-147.8		
7-Dec-05	MW-5-32	Fill/Alluvial	8.16	-5.9	0.0139	down
	MW-5-100	Alluvial	7.23	-72.6		
	River		7.63			
	MW-5-100	Alluvial	7.23	-72.6	-0.0011	up
	MW-5-175	Alluvial	7.31	-147.8		

Note: MSL = mean sea level, City of Portland datum

TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-8						
Date	**Location**	**Water-Bearing Zone**	**Water Level Elevation (feet MSL)**	**Base of Screen Elevation (feet MSL)**	**Vertical Gradient**	**Direction**
12-Feb-96	MW-8-29	Fill	22.10	8.5	-0.1285	up
	MW-8-56	Alluvial	25.57	-18.5		
	River		26.43			
17-Mar-03	MW-8-29	Fill	18.40	8.5	0.3252	down
	MW-8-56	Alluvial	9.62	-18.5		
	River		9.33			
2-Jun-03	MW-8-29	Fill	18.94	8.5	0.2263	down
	MW-8-56	Alluvial	12.83	-18.5		
	River		12.67			
29-Sep-03	MW-8-29	Fill	17.66	8.5	0.4204	down
	MW-8-56	Alluvial	6.31	-18.5		
	River		5.67			
29-Dec-03	MW-8-29	Fill	18.01	8.5	0.3333	down
	MW-8-56	Alluvial	9.01	-18.5		
	River		8.31			
29-Mar-04	MW-8-29	Fill	18.81	8.5	0.4293	down
	MW-8-56	Alluvial	7.22	-18.5		
	River		7.61			
11-Aug-04	MW-8-29	Fill	17.75	8.5	0.4615	down
	MW-8-56	Alluvial	5.29	-18.5		
	River		5.67			
20-Dec-04	MW-8-29	Fill	17.53	8.5	0.3522	down
	MW-8-56	Alluvial	8.02	-18.5		
	River		7.03			
28-Mar-05	MW-8-29	Fill	17.69	8.5	0.3078	down
	MW-8-56	Alluvial	9.38	-18.5		
	River		8.79			
20-Jun-05	MW-8-29	Fill	18.19	8.5	0.3878	down
	MW-8-56	Alluvial	7.72	-18.5		
	River		6.64			
16-Sep-05	MW-8-29	Fill	17.53	8.5	0.4674	down
	MW-8-56	Alluvial	4.91	-18.5		
	River		3.22			
7-Dec-05	MW-8-29	Fill	18.19	8.5	0.3922	down
	MW-8-56	Alluvial	7.60	-18.5		
	River		7.63			

Note: MSL = mean sea level, City of Portland datum

TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-10						
Date	**Location**	**Water-Bearing Zone**	**Water Level Elevation (feet MSL)**	**Base of Screen Elevation (feet MSL)**	**Vertical Gradient**	**Direction**
12-Feb-96	MW-10-25	Fill	28.11	12.5	-0.0639	up
	MW-10-61	Alluvial	30.41	-23.5		
	River		26.43			
17-Mar-03	MW-10-25	Fill	22.82	12.5	0.0150	down
	MW-10-61	Alluvial	22.28	-23.5		
	River		9.03			
2-Jun-03	MW-10-25	Fill	22.62	12.5	0.0189	down
	MW-10-61	Alluvial	21.94	-23.5		
	River		12.67			
29-Sep-03	MW-10-25	Fill	23.12	12.5	0.1825	down
	MW-10-61	Alluvial	16.55	-23.5		
	River		5.67			
29-Dec-03	MW-10-25	Fill	22.72	12.5	0.0483	down
	MW-10-61	Alluvial	20.98	-23.5		
	River		8.31			
29-Mar-04	MW-10-25	Fill	-	12.5	-	-
	MW-10-61	Alluvial	20.12	-23.5		
	River		7.61			
11-Aug-04	MW-10-25	Fill	22.72	12.5	0.0803	down
	MW-10-61	Alluvial	19.83	-23.5		
	River		5.67			
20-Dec-04	MW-10-25	Fill	21.99	12.5	0.0533	down
	MW-10-61	Alluvial	20.07	-23.5		
	River		7.03			
28-Mar-05	MW-10-25	Fill	22.07	12.5	0.0331	down
	MW-10-61	Alluvial	20.88	-23.5		
	River		8.79			
20-Jun-05	MW-10-25	Fill	22.30	12.5	0.0606	down
	MW-10-61	Alluvial	20.12	-23.5		
	River		6.64			
16-Sep-05	MW-10-25	Fill	21.59	12.5	0.1269	down
	MW-10-61	Alluvial	17.02	-23.5		
	River		3.22			
7-Dec-05	MW-10-25	Fill	23.15	12.5	0.0717	down
	MW-10-61	Alluvial	20.57	-23.5		
	River		7.63			

Note: MSL = mean sea level, City of Portland datum

TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-13						
Date	**Location**	**Water-Bearing Zone**	**Water Level Elevation (feet MSL)**	**Base of Screen Elevation (feet MSL)**	**Vertical Gradient**	**Direction**
17-Mar-03	MW-13-30	Fill	18.94	6.2	0.2929	down
	MW-13-61	Alluvial	9.86	-24.8		
	River		9.33			
2-Jun-03	MW-13-30	Fill	19.15	6.2	0.1990	down
	MW-13-61	Alluvial	12.98	-24.8		
	River		12.67			
29-Sep-03	MW-13-30	Fill	16.28	6.2	0.3019	down
	MW-13-61	Alluvial	6.92	-24.8		
	River		5.67			
29-Dec-03	MW-13-30	Fill	17.14	6.2	0.2555	down
	MW-13-61	Alluvial	9.22	-24.8		
	River		8.31			
29-Mar-04	MW-13-30	Fill	18.93	6.2	0.3742	down
	MW-13-61	Alluvial	7.33	-24.8		
	River		7.61			
11-Aug-04	MW-13-30	Fill	16.46	6.2	0.3703	down
	MW-13-61	Alluvial	4.98	-24.8		
	River		5.67			
20-Dec-04	MW-13-30	Fill	16.44	6.2	0.2616	down
	MW-13-61	Alluvial	8.33	-24.8		
	River		7.03			
28-Mar-05	MW-13-30	Fill	16.94	6.2	0.2377	down
	MW-13-61	Alluvial	9.57	-24.8		
	River		8.79			
20-Jun-05	MW-13-30	Fill	17.07	6.2	0.3129	down
	MW-13-61	Alluvial	7.37	-24.8		
	River		6.64			
16-Sep-05	MW-13-30	Fill	16.39	6.2	0.3826	down
	MW-13-61	Alluvial	4.53	-24.8		
	River		3.22			
7-Dec-05	MW-13-30	Fill	17.42	6.2	0.3135	down
	MW-13-61	Alluvial	7.70	-24.8		
	River		7.63			

Note: MSL = mean sea level, City of Portland datum

TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-15						
Date	**Location**	**Water-Bearing Zone**	**Water Level Elevation (feet MSL)**	**Base of Screen Elevation (feet MSL)**	**Vertical Gradient**	**Direction**
17-Mar-03	MW-15-50	Alluvial	22.47	-13.7	0.0465	down
	MW-15-66	Alluvial	21.75	-29.2		
	River		9.33			
2-Jun-03	MW-15-50	Alluvial	22.89	-13.7	0.0355	down
	MW-15-66	Alluvial	22.34	-29.2		
	River		12.67			
29-Sep-03	MW-15-50	Alluvial	17.75	-13.7	0.0426	down
	MW-15-66	Alluvial	17.09	-29.2		
	River		5.67			
29-Dec-03	MW-15-50	Alluvial	21.56	-13.7	0.0471	down
	MW-15-66	Alluvial	20.83	-29.2		
	River		8.31			
29-Mar-04	MW-15-50	Alluvial	21.15	-13.7	0.0542	down
	MW-15-66	Alluvial	20.31	-29.2		
	River		7.61			
11-Aug-04	MW-15-50	Alluvial	18.33	-13.7	0.0626	down
	MW-15-66	Alluvial	17.36	-29.2		
	River		5.67			
20-Dec-04	MW-15-50	Alluvial	20.40	-13.7	0.0710	down
	MW-15-66	Alluvial	19.30	-29.2		
	River		7.03			
28-Mar-05	MW-15-50	Alluvial	21.13	-13.7	0.0432	down
	MW-15-66	Alluvial	20.46	-29.2		
	River		8.79			
20-Jun-05	MW-15-50	Alluvial	20.71	-13.7	0.0432	down
	MW-15-66	Alluvial	19.55	-29.2		
	River		6.64			
16-Sep-05	MW-15-50	Alluvial	17.85	-13.7	0.0529	down
	MW-15-66	Alluvial	17.03	-29.2		
	River		3.22			
7-Dec-05	MW-15-50	Alluvial	20.82	-13.7	0.0555	down
	MW-15-66	Alluvial	19.96	-29.2		
	River		7.63			

Note: MSL = mean sea level, City of Portland datum

TABLE 2 - Groundwater Vertical Gradient Calculations: Well Clusters

Well Cluster MW-16						
Date	**Location**	**Water-Bearing Zone**	**Water Level Elevation (feet MSL)**	**Base of Screen Elevation (feet MSL)**	**Vertical Gradient**	**Direction**
11-Aug-04	MW-16-45	Alluvial	5.44	-14.2	0.0163	down
	MW-16-65	Alluvial	5.11	-34.4		
	River		5.67			
	MW-16-65	Alluvial	5.11	-34.4	-0.0077	up
	MW-16-125	Alluvial	5.57	-94.5		
20-Dec-04	MW-16-45	Alluvial	8.32	-14.2	0.0069	down
	MW-16-65	Alluvial	8.18	-34.4		
	River		7.03			
	MW-16-65	Alluvial	8.18	-34.4	0.0017	down
	MW-16-125	Alluvial	8.08	-94.5		
28-Mar-05	MW-16-45	Alluvial	9.47	-14.2	0.0109	down
	MW-16-65	Alluvial	9.25	-34.4		
	River		8.79			
	MW-16-65	Alluvial	9.25	-34.4	0.0033	down
	MW-16-125	Alluvial	9.05	-94.5		
20-Jun-05	MW-16-45	Alluvial	8.40	-14.2	0.0629	down
	MW-16-65	Alluvial	7.13	-34.4		
	River		6.64			
	MW-16-65	Alluvial	7.13	-34.4	0.0045	down
	MW-16-125	Alluvial	6.86	-94.5		
16-Sep-05	MW-16-45	Alluvial	5.70	-14.2	0.0733	down
	MW-16-65	Alluvial	4.22	-34.4		
	River		3.22			
	MW-16-65	Alluvial	4.22	-34.4	0.0126	down
	MW-16-125	Alluvial	3.46	-94.5		
7-Dec-05	MW-16-45	Alluvial	7.23	-14.2	0.0733	down
	MW-16-65	Alluvial	7.89	-34.4		
	River		7.63			
	MW-16-65	Alluvial	7.89	-34.4	0.0126	down
	MW-16-125	Alluvial	7.10	-94.5		

Note: MSL = mean sea level, City of Portland datum

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW1-22	951207-MW1-22-01	7-Dec-95	11 - 21	13.	2.	1.8	3.2	20.	93.4	465.3	1.08	-
	960319-MW1-22-01	19-Mar-96	(fill WBZ)	3.5	3.5	2.3	23.	32.3	4.71	140.45	0.86	-
	960618-MW1-22-01	18-Jun-96		2.4	9.5	3.2	15.	30.1	2.2	112.	1.91	-
	961001-MW1-22-01	1-Oct-96		8.5	9.	7.7	72.	97.2	6.2	720.17	5.7	-
	970225-MW1-22-01	25-Feb-97		3.2	1.7	ND>0.5	8.5	13.4	0.91	67.	1.24	-
	970225-MW1-22-02	25-Feb-97		1.5	1.6	0.7	11.	14.8	2.2	64.	-	-
	970827-MW1-22-01	27-Aug-97		7.5	8.2	6.9	62.	84.6	20.	988.2	11.	-
	970827-MW1-22-02	27-Aug-97		6.7	7.4	6.2	55.	75.3	28.1	737.5	10.	-
	980217-MW1-22-01	17-Feb-98		ND>0.5	ND>0.5	ND>0.5	1.6	1.6	4.45	23.23	0.34	ND>0.01
	980602-MW1-32-11	2-Jun-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	93.	209.	0.46	0.045
	980826-MW1-22-10	26-Aug-98		7.1	8.2	6.8	60.	82.1	517.	1,137.5	6.7	0.6
	981118-MW1-22-15	18-Nov-98		ND>10	ND>10	ND>10	ND>30	ND	3.4	569.	3.4	-
	990216-MW1-22-012	16-Feb-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	3.53	11.27	0.22	ND>0.02
	990513-MW1-22-11	13-May-99		0.643	0.704	ND>0.5	2.04	3.387	3.17	17.33	-	-
	990824-MW1-22-15	24-Aug-99		7.12	8.42	5.89	50.4	71.83	68.19	816.91	6.5	ND>0.02
	991028-MW1-22-16	28-Oct-99		7.64	10.6	7.24	40.8	66.28	8.69	424.98	6.7	ND>0.02
	000330-MW1-22-116	30-Mar-00		0.859	1.43	0.616	7.02	9.925	0.42	62.35	1.7	ND>0.02
	010329-MW1-22-115	29-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	13.36	51.06	0.192	0.186
	040825-MW1-22-019 [7]	25-Aug-04		4.66	5.87	6.59	46.3	63.42	0.261	589.51	4.31	1.89
	050401-014	1-Apr-05		0.987	ND>0.500	ND>0.500	ND>1.00	0.987	0.95	11.47	-	0.0844
	050928-MW1-22-120	28-Sep-05		5.29	6.67	8.01	52.3	72.27	0.33	471.09	17.8	1.54

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW2-32	951206-MW2-32-01	6-Dec-95	21.5 - 31.5	6.	ND>0.5	4.2	2.4	12.6	ND	51.55	0.353	-
	960318-MW2-32-01	18-Mar-96	(fill WBZ)	ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	ND	4.54	0.26	-
	960618-MW2-32-01	18-Jun-96		ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	ND	2.6	0.44	-
	961001-MW2-32-01	1-Oct-96		ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	ND	10.53	0.22	-
	970225-MW2-32-01	25-Feb-97		ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	ND	1.6	0.16	-
	970827-MW2-32-01	27-Aug-97		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.2	18.04	0.28	-
	980217-MW2-32-01	17-Feb-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	5.02	0.16	ND>0.01
	980601-MW2-32-05	1-Jun-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	3.2	0.26	ND>0.01
	980825-MW2-32-04	25-Aug-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	1.21	7.1	0.28	0.09
	981117-MW2-32-10	17-Nov-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	0.08	0.02
	990216-MW2-32-008	16-Feb-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	18.45	0.12	0.03
	990513-MW2-32-10	13-May-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	9.02	0.11	-
	990824-MW2-32-10	24-Aug-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.11	6.29	0.16	ND>0.02
	991027-MW2-32-12	27-Oct-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	0.13	ND>0.02
	000329-MW2-32-112	29-Mar-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	2.23	0.08	ND>0.02
	010328-MW2-32-111	28-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	0.039	ND>0.02
	040816-MW2-32-009 [7]	16-Aug-04		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	ND	0.0835	0.0285
	050331-009	31-Mar-05		3.2	ND>0.500	0.711	ND>1.00	3.911	ND	2.99	-	0.3
	050927-MW-2-32-118	27-Sep-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	0.2128	0.082	ND>0.01

Koppers023582

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW2-61	981116-MW2-61-04	16-Nov-98	50 - 60 (alluvial WBZ)	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	0.33	1.3	1.3
	990216-MW2-61-006	16-Feb-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	0.37	1.6	ND>0.04
	990512-MW2-61-05	12-May-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	0.54	1.1	ND>0.02
	990823-MW2-61-07	23-Aug-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	1.4	0.2
	991026-MW2-61-04	26-Oct-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	1.3	0.34
	000328-MW2-61-104	28-Mar-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	1.2	0.58
	001004-MW2-61-04	4-Oct-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	-	0.43
	010328-MW2-61-104	28-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	0.251	ND>0.02
	011009-MW2-61-104	9-Oct-01		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	0.83	-
	020403-MW2-61-103	3-Apr-02		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	2.38	ND>0.400
	020924-MW2-61-103	24-Sep-02		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	0.97	-
	030318-MW2-61-104	18-Mar-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	1.3	ND>0.040
	030930-MW2-61-103 [7]	30-Sep-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	ND>0.020
	040813-MW2-61-002 [7]	13-Aug-04		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	ND	0.819	0.085
	050926-MW-2-61-111	26-Sep-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	0.0424	0.803	0.017

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Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW3-26	951206-MW3-26-01	6-Dec-95	15 - 25	30.	0.98	0.65	1.4	33.03	21.04	85.24	-	-
	960318-MW3-26-02	18-Mar-96	(fill WBZ)	1,300.	5.	2.2	5.6	1,312.8	1.71	42.39	0.27	-
	960618-MW3-26-01	18-Jun-96		2,300.	22.	ND>10	27.	2,349.	2.6	48.	0.25	-
	961001-MW3-26-01	1-Oct-96		0.55	0.95	ND>0.5	2.4	3.9	182.	334.	0.34	-
	970225-MW3-26-01	25-Feb-97		130.	ND>0.5	ND>0.5	ND>0.5	130.	4.9	11.9	0.28	-
	970827-MW3-26-01	27-Aug-97		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	27.6	53.2	2.3	-
	980217-MW3-26-01	17-Feb-98		2.	ND>0.5	ND>0.5	ND>1.5	2.	7.07	13.45	0.5	ND>0.01
	980602-MW3-26-09	2-Jun-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	100.	204.	0.76	ND>0.01
	980826-MW3-26-08	26-Aug-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	409.	982.	1.3	0.72
	981117-MW3-26-12	17-Nov-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	32.2	59.	2.1	0.1
	990216-MW3-26-010	16-Feb-99		89.9	ND>0.5	ND>0.5	ND>1.5	89.9	0.97	3.56	0.33	ND>0.02
	990514-MW3-26-23	14-May-99		587.	1.11	ND>0.5	ND>1.5	588.11	4.42	13.21	0.3	-
	990824-MW3-26-12	24-Aug-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	1.67	25.12	0.57	ND>0.02
	991027-MW3-26-14	27-Oct-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	7.23	12.56	0.79	ND>0.02
	000330-MW3-26-113	30-Mar-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	2.44	6.32	0.36	0.21
	001005-MW3-26-11	5-Oct-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	2.96	6.15	-	0.04
	010328-MW3-26-113	28-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	5.42	11.9	0.221	0.209
	048023-MW3-26-010 [7]	23-Aug-04		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	0.2121	0.184	0.184
	050330-004	30-Mar-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	0.54	1.21	-	0.384
	050922-MW-3-26-105	22-Sep-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	3.412	8.0986	0.502	0.295

Koppers023584

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW3-56	951206-MW3-56-01	6-Dec-95	45 - 55	1,200.	24.	34.	90.	1,348.	2.69	1,384.75	-	-
	960319-MW3-56-01	19-Mar-96	(alluvial WBZ)	730.	16.	27.	66.	839.	2.34	1,926.62	0.19	-
	960620-MW3-56-01	20-Jun-96		730.	7.1	26.	73.	836.1	1.6	1,491.	0.08	-
	961002-MW3-56-01	2-Oct-96		450.	ND>5	11.	27.	488.	0.54	938.	0.094	-
	970226-MW3-56-01	26-Feb-97		750.	ND>5	ND>5	ND>5	750.	0.62	618.	0.13	-
	970828-MW3-56-01	28-Aug-97		340.	0.9	2.5	11.	354.4	0.82	195.52	0.11	-
	980218-MW3-56-01	18-Feb-98		520.	0.89	2.9	15.	538.79	0.58	129.58	0.16	ND>0.01
	980218-MW3-56-02	18-Feb-98		520.	1.1	4.	19.	544.1	0.46	155.56	-	-
	980602-MW3-56-14	2-Jun-98		580.	25.	ND>10	ND>30	605.	25.	316.	0.15	ND>0.01
	980602-MW3-56-15	2-Jun-98		630.	ND>10	ND>10	ND>30	630.	24.	306.	-	-
	980826-MW3-56-12	26-Aug-98		430.	0.96	2.8	13.	446.76	30.3	101.58	0.15	0.04
	981118-MW3-56-16	18-Nov-98		630.	ND>0.5	ND>0.5	ND>1.5	630.	0.97	119.	0.13	ND>0.01
	981118-MW3-56-17	18-Nov-98		610.	ND>0.5	ND>0.5	ND>1.5	610.	0.77	121.	-	-
	990217-MW3-56-015	17-Feb-99		760.	ND>5	ND>5	ND>15	760.	12.53	163.45	0.076	ND>0.02
	990514-MW3-56-24	14-May-99		90.2	ND>0.5	ND>0.5	2.32	92.52	2.65	157.21	0.11	-
	990824-MW3-56-16	24-Aug-99		610.	5.03	ND>5	20.8	635.83	0.6	99.66	0.12	0.022
	991028-MW3-56-17	28-Oct-99		390.	63.4	60.4	192.	705.8	0.59	98.98	0.1	ND>0.02
	000330-MW3-56-117	30-Mar-00		167.	ND>0.5	0.993	7.36	175.353	3.84	166.08	0.07	ND>0.02
	001005-MW3-56-13	5-Oct-00		53.2	ND>0.5	ND>0.5	2.09	55.29	12.63	136.	-	ND>0.02
	010329-MW3-56-116	29-Mar-01		157.	ND>50	115.	913.	1,185.	10.35	107.75	0.055	0.047
	020404-MW3-56-111	4-Apr-02		340.	ND>0.500	ND>0.500	7.8	347.8	2.62	98.13	0.146	0.046
	030319-MW3-56-112	19-Mar-03		430.	ND>5.0	ND>5.0	ND>15	430.	1.52	94.38	0.1	ND>0.040
	040823-MW3-56-011 [7]	23-Aug-04		10.6	ND>1.00	ND>1.00	ND>2.00	10.6	ND	55.61	0.0324	0.0324
	050330-003	30-Mar-05		0.958	ND>0.500	ND>0.500	2.06	3.018	0.6	52.21	-	0.0198
	050922-MW-3-56-106	22-Sep-05		17.2	ND>0.500	ND>0.500	3.	20.2	0.63	52.21	0.0418	0.0175

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Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW4-35	951206-MW4-35-01	6-Dec-95	24 - 34	0.54	ND>0.5	ND>0.5	ND>0.5	0.54	0.69	54.49	0.079	-
	960318-MW4-35-01	18-Mar-96	(fill WBZ)	17.	0.96	ND>0.5	1.3	19.26	3.18	84.4	0.35	-
	960318-MW4-35-02	18-Mar-96		18.	0.82	ND>0.5	2.1	20.92	2.41	79.1	-	-
	960618-MW4-35-01	18-Jun-96		5.9	ND>0.5	ND>0.5	0.61	6.51	2.5	61.	0.46	-
	961001-MW4-35-01	1-Oct-96		5.9	ND>0.5	ND>0.5	1.4	7.3	1.7	42.33	0.75	-
	970225-MW4-35-01	25-Feb-97		14.	ND>0.5	ND>0.5	ND>0.5	14.	0.41	46.	0.39	-
	980827-MW4-57-01 [4]	27-Aug-97		8.8	ND>0.5	ND>0.5	1.7	10.5	0.53	36.26	0.8	-
	980217-MW4-35-01	17-Feb-98		15.	ND>0.5	ND>0.5	ND>1.5	15.	0.25	31.85	0.36	ND>0.01
	980601-MW4-35-06	1-Jun-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.48	44.	0.29	0.017
	980826-MW4-35-06	26-Aug-98		10.	ND>0.5	ND>0.5	ND>1.5	10.	19.26	60.85	0.63	0.03
	980826-MW4-35-07	26-Aug-98		10.	ND>0.5	ND>0.5	ND>1.5	10.	20.23	64.65	0.81	0.17
	981117-MW4-35-11	17-Nov-98		17.	ND>0.5	0.99	ND>1.5	17.99	5.3	51.	0.83	0.53
	990216-MW4-35-009	16-Feb-99		31.	ND>0.5	ND>0.5	ND>1.5	31.	0.4	23.41	0.22	ND>0.02
	990514-MW4-35-21	14-May-99		16.	ND>0.5	ND>0.5	ND>1.5	16.	0.32	24.83	0.26	-
	990824-MW4-35-11	24-Aug-99		ND>5	ND>0.5	ND>5	ND>1.5	ND	1.101	33.261	0.86	0.1
	991027-MW4-35-13	27-Oct-99		13.9	1.16	ND>0.5	2.45	17.51	5.75	97.39	0.98	ND>0.02
	000330-MW4-35-114	30-Mar-00		5.39	ND>0.5	ND>0.5	ND>1.5	5.39	0.42	45.26	0.61	0.04
	001005-MW4-35-10	5-Oct-00		10.4	ND>0.5	ND>0.5	ND>1.5	10.4	21.72	162.5	-	ND>0.02
	010328-MW4-35-112	28-Mar-01		-	0.0055	-	-	-	-	ND>0.005	-	ND>0.005
	040823-MW4-35-012 [4]	23-Aug-04		1.61	ND>0.500	ND>0.500	1.65	3.26	ND	65.33	0.178	0.098
	050331-005	31-Mar-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	0.21	11.86	-	0.0499
	050928-MW4-35-123	28-Sep-05		1.9	ND>0.500	ND>0.500	1.81	3.71	0.301	37.94	0.247	ND>0.01

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Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW4-57	951205-MW4-57-01	5-Dec-95	46 - 56	9,600.	72.	590.	290.	10,552.	1.73	1,328.27	1.18	-
	960321-MW4-57-01	21-Mar-96	(alluvial WBZ)	11,000.	ND>50	520.	270.	11,790.	2.29	1,097.76	0.03	-
	960620-MW4-57-01	20-Jun-96		10,000.	ND>200	480.	ND>200	10,480.	1.4	646.	0.88	-
	961002-MW4-57-01	2-Oct-96		14,000.	ND>100	580.	400.	14,980.	0.64	1,707.	1.	-
	970226-MW4-57-01	26-Feb-97		16,000.	34.	630.	130.	16,794.	0.52	1,688.	1.52	-
	970828-MW4-35-01 [4]	28-Aug-97		12,000.	ND>50	360.	ND>150	12,360.	0.44	1,691.74	2.	-
	980218-MW4-57-01	18-Feb-98		15,600.	35.	530.	240.	16,405.	0.28	2,357.88	2.	ND>0.05
	980603-MW4-57-18	3-Jun-98		10,100.	58.	540.	170.	10,868.	0.77	2,299.	1.9	0.008 [6]
	980826-MW4-57-13	26-Aug-98		13,800.	37.	560.	280.	14,677.	22.34	2,471.34	1.4	0.1
	981119-MW4-57-20	19-Nov-98		11,100.	ND>25	470.	110.	11,680.	0.34	1,968.	1.8	0.5
	990217-MW4-57-016	17-Feb-99		14,400.	10.6	639.	220.	15,269.6	0.32	1,575.28	1.4	ND>0.02
	990514-MW4-57-22	14-May-99		15,900.	ND>50	750.	ND>150	16,650.	0.39	1,684.32	1.8	-
	990825-MW4-57-17	25-Aug-99		17,500.	54.8	493.	ND>150	18,047.8	0.4	2,305.4	1.7	ND>0.02
	991028-MW4-57-21	28-Oct-99		6,900.	12.	461.	144.	7,517.	ND	1,692.	0.65	ND>0.02
	000403-MW4-57-121	3-Apr-00		19,300.	8.64	452.	137.	19,897.64	0.47	2,765.74	0.74	0.17
	001006-MW4-57-19	6-Oct-00		15,000.	ND>100	574.	ND>300	15,574.	0.38	2,498.	-	ND>0.02
	010329-MW4-57-120	29-Mar-01		18,800.	ND>50	730.	ND>150	19,530.	0.43	3,063.35	0.696	ND>0.08
	020405-MW4-57-117	5-Apr-02		18,800.	ND>500	805.	ND>1,000	19,605.	0.21	2,249.96	3.43	ND>0.400
	030320-MW4-57-117	20-Mar-03		17,000.	ND>100	770.	ND>300	17,770.	ND	2,233.4	1.3	ND>0.040
	040824-MW4-57-016 [5]	24-Aug-04		15,000.	ND>100	748.	122.	15,870.	1.205	3,822.86	1.76	0.261
	050331-008	31-Mar-05		13,000.	12.8	645.	180.	13,837.8	0.45	2,908.12	-	0.175
	051003-MW-4-57-133	3-Oct-05		622.	ND>5.0	231.	65.1	918.1	ND	271.63	2.7	0.55

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Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW4-101	981117-MW4-101-09	17-Nov-98	89.5 -99.5	32.	ND>0.5	3.3	2.1	37.4	ND	20.	0.62	0.2
	990216-MW4-101-007	16-Feb-99	(alluvial WBZ)	18.9	ND>0.5	1.9	ND>1.5	20.8	ND	8.3	0.64	0.03
	990514-MW4-101-19	14-May-99		95.	ND>0.5	10.4	2.05	107.45	ND	68.31	0.47	0.12
	990514-MW4-101-20	14-May-99		99.4	ND>0.5	13.	ND>1.5	112.4	ND	62.5	0.48	-
	990824-MW4-101-09	24-Aug-99		53.1	3.	4.76	ND>7.5	60.86	ND	190.64	0.56	0.03
	991027-MW4-101-11	27-Dct-99		7.25	ND>0.5	4.17	ND>1.5	11.42	ND	166.65	0.36	ND>0.02
	000329-MW4-101-111	29-Mar-00		3.96	ND>0.5	1.33	ND>1.5	5.29	ND	21.57	0.52	0.11
	001005-MW4-101-09	5-Oct-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	1.36	-	0.08
	010328-MW4-101-110	28-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	1.14	0.203	ND>0.02
	011009-MW4-101-103	9-Oct-01		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	1.18	0.66	-
	020404-MW4-101-110	4-Apr-02		5.17	ND>0.500	ND>0.500	ND>1.50	5.17	ND	5.97	0.432	ND>0.040
	020924-MW4-101-102	24-Sep-02		43.	ND>0.50	ND>0.50	ND>1.5	43.	ND	12.63	0.49	-
	030318-MW4-101-109	18-Mar-03		120. [A]	ND>2.5 [A]	ND>2.5 [A]	ND>7.5 [A]	120.	ND	15.63	0.51	ND>0.040
	030930-MW4-101-105 [7]	30-Sep-03		360.	ND>2.5	ND>2.5	ND>7.5	360.	ND	14.59	-	0.28
	040816-MW4-101-007 [7]	16-Aug-04		**513.**	ND>2.50	3.14	ND>5.00	516.14	ND	26.74	ND>0.00500	ND>0.00500
	050330-002	30-Mar-05		**366.**	1.23	1.1	4.33	372.66	ND	16.68	-	0.131
	050928-MW4-101-122	28-Sep-05		**216.**	1.22	ND>1.00	5.09	222.31	ND	7.31	0.587	0.022

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW5-32	951205-MW5-32-01	5-Dec-95	21 - 31	ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	7.59	207.69	0.101	-
	960319-MW5-32-01	19-Mar-96	(fill / alluvial WBZ)	ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	29.81	268.91	0.11	-
	960319-MW5-32-01 (dissolved)	19-Mar-96		-	-	-	-	-	ND	45.	-	-
	960620-MW5-32-01	20-Jun-96		ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	14.	83.	0.05	-
	961001-MW5-32-01	1-Oct-96		ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	277.	773.	0.14	-
	970225-MW5-32-01	25-Feb-97		ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	1.	9.7	0.11	-
	970827-MW5-32-01	27-Aug-97		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	10.4	24.3	0.14	-
	980217-MW5-32-01	17-Feb-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	3.23	7.57	0.17	ND>0.01
	980602-MW5-32-10	2-Jun-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	36.	95.	0.18	0.038
	980826-MW5-32-09	26-Aug-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	273.7	540.4	0.23	0.01
	981118-MW5-32-13	18-Nov-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	1.4	4.7	0.25	0.05
	990216-MW5-32-011	16-Feb-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	2.57	6.89	0.13	ND>0.02
	990514-MW5-32-17	14-May-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.8	2.4	0.15	-
	990824-MW5-32-13	24-Aug-99		0.749	0.742	0.68	1.74	3.911	8.82	21.15	0.18	0.028
	991027-MW5-32-15	27-Oct-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	6.68	16.16	0.19	ND>0.02
	000330-MW5-32-115	30-Mar-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	4.45	8.97	ND>0.02	ND>0.02
	001005-MW5-32-12	5-Oct-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	1.66	3.	-	0.04
	010329-MW5-32-114	29-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	10.12	19.65	0.178	0.17
	040816-MW5-32-008 [7]	16-Aug-04		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	0.27	0.521	0.175
	050401-011	1-Apr-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	1.59	4.17	-	0.0281
	050937-MW-5-32-117	27-Sep-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	11.113	26.855	0.09	ND>0.01

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Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW5-100	981118-MW5-100-14	18-Nov-98	88 - 98	5,000.	ND>5.0	330.	320.	5,650.	ND	7,127.	0.66	ND>0.01
	990217-MW5-100-018	17-Feb-99	(alluvial WBZ)	6,650.	ND>25	244.	242.	7,136.	ND	5,032.73	0.66	0.06
	990514-MW5-100-18	14-May-99		11,400.	6.75	613.	611.	12,630.75	ND	7,482.13	0.44	ND>0.02
	990825-MW5-100-18	25-Aug-99		11,800.	ND>250	534.	ND>750	12,334.	ND	13,330.3	0.84	ND>0.02
	991028-MW5-100-19	28-Oct-99		10,300.	ND>50	644.	552.	11,496.	ND	7,471.79	0.69	ND>0.02
	000330-MW5-100-119	30-Mar-00		9,550.	ND>25	575.	525.	10,650.	0.1	9,825.06	0.56	ND>0.02
	001006-MW5-100-15	6-Oct-00		9,180.	ND>50	513.	472.	10,165.	ND	10,104.	-	0.08
	001006-MW5-100-16	6-Oct-00		9,020.	ND>100	468.	412.	9,900.	ND	9,218.	-	0.09
	010329-MW5-100-118	29-Mar-01		9,560.	ND>100	436.	ND>300	9,996.	ND	9,619.8	0.142	0.135
	020405-MW5-100-114	5-Apr-02		8,750.	ND>500	ND>500	ND>1,000	8,750.	1.1	82,319.6	1.8	ND>0.400
	020405-MW5-100-115	5-Apr-02		8,950.	ND>500	ND>500	ND>1,000	8,950.	0.25	4,321.28	1.54	ND>0.080
	030319-MW5-100-114	19-Mar-03		6,600.	ND>25 [A]	400. [A]	250. [A]	7,250.	ND	5,614.	0.56	ND>0.040
	040824-MW5-100-015 [7]	24-Aug-04		11,500.	ND>100	683.	253.	12,436.	ND	11,921.9	0.816	0.298
	050401-012	1-Apr-05		19,800.	11.5	542.	290.	20,643.5	ND	ND	-	0.109
	050921-MW-5-100-102	21-Sep-05		12,300.	ND>50	690.	393.	13,383.	0.0369	6,549.2297	0.869	0.248
MW5-175	981116-MW5-175-07	16-Nov-98	163 - 173	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	ND>0.01
	990215-MW5-175-003	15-Feb-99	(alluvial WBZ)	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	ND>0.02
	990512-MW5-175-07	12-May-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	ND>0.02
	990823-MW5-175-03	23-Aug-99		ND>0.5	1.16	ND>0.5	ND>1.5	1.16	ND	0.2	ND>0.02	ND>0.02
	991026-MW5-175-06	26-Oct-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	ND>0.02
	000329-MW5-175-106	29-Mar-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	ND>0.02
	001004-MW5-175-05	4-Oct-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	-	ND>0.02
	010328-MW5-175-105	28-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	ND>0.02
	011009-MW5-175-102	9-Oct-01		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	ND>0.02	-
	020404-MW5-175-105	4-Apr-02		ND>1.00	ND>1.00	ND>1.00	ND>2.00	ND	ND	ND	ND>0.040	ND>0.040

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Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,5]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,5]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW5-175	020924-MW5-175-101	24-Sep-02	163 - 173	ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	-
	030318-MW5-175-105	18-Mar-03	(alluvial WBZ)	ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	ND>0.040	ND>0.040
	030929-MW5-175-101	29-Sep-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	ND>0.020
	040824-MW5-175-013	24-Aug-04		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	0.0883	0.0069	0.0069
	050921-MW5-175-101	21-Sep-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	0.0894	0.0156	0.0052
MW6-32	951207-MW6-32-01	7-Dec-95	21 - 31	3,000.	150.	960.	740.	4,850.	7,470.	199,570.	0.091	-
	960319-MW6-32-01	19-Mar-96	(fill WBZ)	640.	22.	400.	270.	1,332.	6.56	2,346.46	0.21	-
	960319-MW6-32-01 (dissolved)	19-Mar-96		-	-	-	-	-	ND	1,940.	-	-
	960617-MW6-32-01	17-Jun-96		410.	40.	280.	410.	1,140.	16.	1,878.	0.23	-
	960930-MW6-32-01	30-Sep-96		1,100.	34.	470.	320.	1,924.	203.5	4,757.7	0.02	-
	970225-MW6-32-01	25-Feb-97		1,100.	22.	370.	80.	1,572.	ND	1,308.	0.22	-
	970826-MW6-32-01	26-Aug-97		1,200.	27.	420.	280.	1,927.	15.	2,069.65	0.15	-
	980216-MW6-32-01	16-Feb-98		1,700.	ND>250	650.	ND>750	2,350.	161.9	3,554.2	0.18	ND>0.01
	980601-MW6-32-04	1-Jun-98		1,200.	32.	300.	190.	1,722.	20.	2,245.	0.1	ND>0.01
MW6-61	951206-MW6-61-01	6-Dec-95	50 - 60	6.7	0.71	8.9	5.8	22.11	8.17	744.89	0.228	-
	960319-MW6-61-01	19-Mar-96	(alluvial WBZ)	11.	0.68	9.2	5.3	26.18	3.29	196.96	0.28	-
	960620-MW6-61-01	20-Jun-96		8.4	ND>0.5	6.	3.3	17.7	4.3	139.	0.27	-
	961001-MW6-61-01	1-Oct-96		20.	0.93	16.	8.	44.93	3.8	152.9	0.3	-
	970225-MW6-61-01	25-Feb-97		82.	6.1	79.	41.	208.1	ND	365.	0.35	-
	970828-MW6-61-01	28-Aug-97		130.	11.	180.	120.	441.	4.88	1,451.5	0.41	-

Koppers023591

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW08-29	951207-MW8-29-01	7-Dec-95	18 - 28	2,100.	510.	200.	320.	3,130.	315.	7,688.	3.11	-
	960321-MW8-29-01	21-Mar-96	(fill WBZ)	1,700.	380.	170.	400.	2,650.	143.7	7,879.7	2.4	-
	960620-MW8-29-01	20-Jun-96		-	-	-	-	-	5.4	2,087.	-	-
	960620-MW8-29-02	20-Jun-96		1,300.	310.	170.	380.	2,160.	13.	2,166.	-	-
	961002-MW8-29-01	2-Oct-96		770.	210.	130.	270.	1,380.	25.9	6,086.4	0.524	-
	970226-MW8-29-01	26-Feb-97		860.	200.	150.	250.	1,460.	10.	6,204.	1.46	-
	970828-MW8-29-01	28-Aug-97		390.	130.	110.	190.	820.	171.7	11,712.7	3.4	-
	980218-MW8-29-01	18-Feb-98		620.	220.	170.	250.	1,260.	22.19	11,760.19	2.6	ND>0.01
	980603-MW8-29-19	3-Jun-98		700.	320.	250.	310.	1,580.	196.	12,407.	4.9	0.022 [6]
	981119-MW8-29-22	19-Nov-98		260.	80.	93.	130.	563.	11.1	5,377.	2.5	-
	990513-MW8-29-14	13-May-99		209.	64.7	58.6	92.5	424.8	10.73	6,444.82	2.6	-
	991029-MW8-29-23	29-Oct-99		168.	50.3	51.4	70.8	340.5	ND	3,302.	60.	2.
	000403-MW8-29-123	3-Apr-00		181.	49.5	46.2	ND>75	276.7	7.42	7,158.23	0.61	0.03
	010330-MW8-29-123	30-Mar-01		104.	17.4	19.	33.5	173.9	49.12	2,291.24	0.92	0.042
	040825-MW8-29-022 [4]	25-Aug-04		85.9	13.4	14.3	29.1	142.7	38.52	3,072.45	2.69	0.138
	05-0929-MW-29-27	29-Sep-05		724.	207.	137.	177.	1,245.	28.64	5,592.86	5.92	ND>0.01

Koppers023592

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW8-56	951207-MW8-56-01	7-Dec-95	45 - 55	13,000.	1,700.	850.	1,300.	16,850.	156.	21,200.	0.582	-
	960321-MW8-56-01	21-Mar-96	(alluvial WBZ)	17,000.	820.	730.	1,600.	20,150.	361.1	15,501.1	0.54	-
	960620-MW8-56-01 [6]	20-Jun-96		17,000.	650.	740.	1,100.	19,490.	35.	1,769.	0.31	-
	961002-MW8-56-01	2-Oct-96		20,000.	690.	900.	1,800.	23,390.	114.	11,742.	-	-
	970226-MW8-56-01	26-Feb-97		19,000.	630.	820.	1,100.	21,550.	ND	13,692.	0.7	-
	970828-MW8-56-01	28-Aug-97		17,000.	350.	510.	810.	18,670.	20.	18,141.	0.66	-
	980218-MW8-56-01	18-Feb-98		20,200.	410.	740.	1,100.	22,450.	11.18	12,944.88	0.74	ND>0.01
	980603-MW8-56-21	3-Jun-98		17,900.	470.	940.	1,300.	20,610.	68.	17,720.	0.77	0.018 [6]
	981119-MW8-56-23	19-Nov-98		18,200.	350.	730.	890.	20,170.	ND	11,024.	0.36	-
	990513-MW8-56-15	13-May-99		20,600.	254.	663.	763.	22,280.	ND	11,960.	0.57	-
	991029-MW8-56-24	29-Oct-99		9,890.	352.	990.	1,100.	12,332.	4.23	12,537.17	2.1	ND>0.08
	000403-MW8-56-124	3-Apr-00		17,800.	228.	828.	830.	19,686.	31.1	14,016.8	0.58	ND>0.02
	010330-MW8-56-122	30-Mar-01		21,600.	ND>125	820.	458.	22,878.	40.42	14,953.54	0.272	ND>0.02
	020405-MW8-56-118	5-Apr-02		26,400.	ND>1.00	1,000.	ND>2.00	27,400.	1.94	7,143.	1.13	ND>0.080
	030320-MW8-56-120	20-Mar-03		20,000.	260. [A]	940. [A]	930. [A]	22,130.	4.2	7,712.2	0.51	ND>0.040
	040825-MW8-56-021 [5]	25-Aug-04		20,300.	248.	795.	831.	22,174.	ND	10,832.7	0.474	0.153
	05-0929-MW-8-56-128	29-Sep-05		15,300.	232.	706.	791.	17,029.	26.97	8,759.88	0.538	0.017

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW9-29	951205-MW9-29-01	5-Dec-95	18 - 28	ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	ND	1.29		-
	960318-MW9-29-01	18-Mar-96	(fill WBZ)	ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	ND	1.6	ND>0.01	-
	960618-MW9-29-01	18-Jun-96		ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	ND	0.15	ND>0.01	-
	961001-MW9-29-01	1-Oct-96		ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	ND	0.4	0.018	-
	970225-MW9-29-01	25-Feb-97		ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	ND	ND	0.01	-
	970827-MW9-29-01	27-Aug-97		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	-
	980217-MW9-29-01	17-Feb-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	-
	980602-MW9-29-07	2-Jun-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	-
	981116-MW9-29-02	16-Nov-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	0.03	-
	990511-MW9-29-03	11-May-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	-
	991026-MW9-29-02	26-Oct-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	ND>0.02
	000328-MW9-29-102	28-Mar-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	ND>0.02
	010327-MW9-29-102	27-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	0.026	ND>0.02
	020403-MW9-29-101	3-Apr-02		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	ND>0.040	ND>0.040
	030318-MW9-29-103	18-Mar-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	0.042	ND>0.040
	040812-MW9-29-001 [7]	12-Aug-04		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	ND	0.01	0.01
	05096-MW-9-29-109	26-Sep-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	0.1193	0.017	ND>0.01
MW10-25	951207-MW10-25-01	7-Dec-95	14 - 24	120,000.	42,000.	2,000.	9,200.	173,200.	18.	13,316.5	-	-
	960320-MW10-25-01	20-Mar-96	(fill WBZ)	32,000.	38,000.	3,100.	13,000.	86,100.	5.9	9,126.31	0.07	-
	960617-MW10-25-01	17-Jun-96		28,000.	32,000.	2,500.	8,600.	71,100.	6.8	10,266.	ND>0.01	-
	960930-MW10-25-01	30-Sep-96		17,000.	5,000.	ND>200	4,500.	26,500.	78.6	10,529.5	0.204	-
	970225-MW10-25-01	25-Feb-97		180,000.	54,000.	1,300.	6,800.	242,100.	74.	9,841.	0.01	-
	970827-MW10-25-01	27-Aug-97		168,000.	54,000.	850.	6,000.	228,850.	19.6	7,047.1	-	-
	980216-MW10-25-01	16-Feb-98		186,000.	51,100.	880.	6,500.	244,480.	58.1	9,165.2	ND>0.02	-
	980601-MW10-25-02	1-Jun-98		93,800.	30,900.	670.	3,900.	129,270.	35.1	12,162.	0.21	-

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Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW10-61	951206-MW10-61-01	6-Dec-95	50 - 60	75.	130.	26.	110.	341.	0.72	829.72	-	-
	960321-MW10-61-01	21-Mar-96	(alluvial WBZ)	4.1	1.6	2.9	8.5	17.1	2.55	102.43	ND>0.01	-
	960620-MW10-61-01	20-Jun-96		0.9	ND>0.5	1.1	1.7	3.7	2.	46.	ND>0.01	-
	961002-MW10-61-01	2-Oct-96		0.56	ND>0.5	0.69	1.1	2.35	1.5	25.15	ND>0.01	-
	970226-MW10-61-01	26-Feb-97		ND>0.5	ND>0.5	ND>0.5	ND>0.5	ND	1.	18.	ND>0.01	-
	970828-MW10-61-01	28-Aug-97		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.39	7.76	ND>0.02	-
	980218-MW10-61-01	18-Feb-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.4	3.8	ND>0.02	-
	980603-MW10-61-16	3-Jun-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	1.6	6.2	ND>0.02	-
	981117-MW10-61-08	17-Nov-98		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	3.1	6.	ND>0.02	-
	990512-MW10-61-06	12-May-99		ND>0.5	0.692	ND>0.5	ND>1.5	0.692	0.57	1.3	ND>0.02	-
	991026-MW10-61-05	26-Oct-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.24	1.36	ND>0.02	ND>0.02
	000329-MW10-61-105	29-Mar-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.24	1.09	ND>0.02	ND>0.02
	011010-MW10-61-109	10-Oct-01		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	0.61	ND>0.02	-
	020404-MW10-61-109	4-Apr-02		ND>1.00	ND>1.00	ND>1.00	ND>2.00	ND	0.11	0.84	ND>0.0400	ND>0.0400
	020924-MW10-61-104	24-Sep-02		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	0.25	1.38	ND>0.040	-
	030319-MW10-61-111	19-Mar-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	0.95	ND>0.040	ND>0.040
	031003-MW10-61-108 [7]	3-Oct-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	ND>0.020
	040813-MW10-61-005 [7]	13-Aug-04		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	0.1	0.53	0.0614	0.0321
	050928-MW10-61-121	28-Sep-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	1.43	2.57	ND>0.01	ND>0.01

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW11-32	951207-MW11-32-01	7-Dec-95	21 - 31 (fill WBZ)	25,000.	5,400.	480.	2,800.	33,680.	20.	22,365.2	-	-
	960320-MW11-32-01	20-Mar-96		24,000.	4,300.	970.	2,400.	31,670.	6.33	14,676.08	0.24	-
	960617-MW11-32-01	17-Jun-96		2,800.	2,000.	1,000.	1,940.	7,740.	14.	11,608.	0.19	-
	960930-MW11-32-01	30-Sep-96		17,000.	3,300.	900.	1,760.	22,960.	131.9	17,603.9	0.249	-
	960930-MW11-32-02	30-Sep-96		-	-	-	-	-	189.	18,894.	-	-
	970225-MW11-32-01	25-Feb-97		21,000.	4,100.	750.	1,800.	27,650.	11.	11,536.	0.22	-
	970826-MW11-32-01	26-Aug-97		15,000.	4,400.	1,100.	2,500.	23,000.	20.5	17,075.8	0.17	-
	980216-MW11-32-01	16-Feb-98		12,600.	3,800.	930.	2,100.	19,430.	15.9	9,769.2	0.2	ND>0.01
	980601-MW11-32-03	1-Jun-98		16,800.	4,000.	810.	1,800.	23,410.	112.	32,376.	0.21	ND>0.01
MW12-36	951207-MW12-36-01	7-Dec-95		95.	410.	170.	590.	1,265.	3.65	3,377.55	-	-
	960321-MW12-36-01	21-Mar-96		170.	180.	110.	550.	1,010.	0.38	2,010.03	ND>0.01	-
	960620-MW12-36-01	20-Jun-96		250.	250.	120.	440.	1,060.	0.8	1,621.	ND>0.01	-
	961002-MW12-36-01	2-Oct-96			390.	130.	510.	1,030.	0.8	1,375.	ND>0.01	-
	970226-MW12-36-01	26-Feb-97		260.	310.	120.	470.	1,160.	0.94	1,033.	ND>0.01	-
	970828-MW12-36-01	28-Aug-97		230.	430.	110.	430.	1,200.	0.67	839.77	ND>0.02	-
	980218-MW12-36-01	18-Feb-98		140.	370.	82.	280.	872.	0.69	708.	ND>0.02	-
	980603-MW12-36-17	3-Jun-98		150.	350.	74.	340.	914.	ND	697.	ND>0.02	-
	981119-MW12-36-18	19-Nov-98		140.	370.	99.	360.	969.	0.8	487.	ND>0.02	-
	990513-MW12-36-12	13-May-99		226.	621.	171.	554.	1,572.	0.53	491.4	1.1	-
	991028-MW12-36-18	28-Oct-99		309.	802.	293.	797.	2,201.	0.6	545.93	ND>0.02	ND>0.02
	000330-MW12-36-118	30-Mar-00		326.	675.	296.	700.	1,997.	1.74	648.98	ND>0.02	ND>0.02
	010329-MW12-36-117	29-Mar-01		99.3	380.	168.	307.	954.3	0.69	415.04	ND>0.02	ND>0.02
	020404-MW12-36-112	4-Apr-02		146.	351.	235.	501.	1,233.	0.5	375.88	ND>0.0400	ND>0.0400
	030319-MW12-36-113	19-Mar-03		200.	400.	290.	680.	1,570.	0.31	369.18	ND>0.040	ND>0.040
	040825-MW12-36-017 [7]	25-Aug-04		235.	584.	488.	991.	2,298.	ND	696.31	ND>0.00500	ND>0.00500
	050927-MW-12-36-116	27-Sep-05		118.	219.	305.	605.	1,247.	0.2529	371.9952	ND>0.01	ND>0.01

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Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW13-30	980217-MW13-30-01	17-Feb-98	19 - 29	6,900.	ND>50	370.	ND>150	7,270.	ND	426.1	0.28	ND>0.01
	980602-MW13-30-12	2-Jun-98	(fill WBZ)	5,200.	13.	380.	120.	5,713.	ND	1,181.	0.28	ND>0.01
	980826-MW13-30-11	26-Aug-98		13,900.	20.	550.	220.	14,690.	ND	742.3	0.42	0.42
	981119-MW13-30-19	19-Nov-98		550.	4.3	110.	53.	717.3	ND	399.	0.28	0.02
	990217-MW13-30-014	17-Feb-99		2,360.	11.1	407.	229.	3,007.1	ND	770.59	0.095	ND>0.02
	990513-MW13-30-13	13-May-99		896.	8.9	261.	175.	1,340.9	ND	1,035.62	0.12	-
	991028-MW13-30-20	28-Oct-99		650.	ND>10	147.	56.5	853.5	ND	822.	0.02	ND>0.02
	000403-MW13-30-120	3-Apr-00		5,550.	5.67	175.	77.4	5,808.07	ND	720.84	0.14	ND>0.02
	001005-MW13-30-18	5-Oct-00		577.	ND>50	344.	302.	1,223.	ND	410.	-	ND>0.02
	010329-MW13-30-119	29-Mar-01		290.	ND>10	122.	ND>30	412.	ND	522.96	0.046	0.037
	020405-MW13-30-116	5-Apr-02		79.9	309.	227.	295.	910.9	ND	451.65	ND>0.0400	ND>0.0400
	030319-MW13-30-115	19-Mar-03		1,400.	9.2	330.	110.	1,849.2	ND	1,008.4	0.1	ND>0.040
	040825-MW13-30-018 [7]	25-Aug-04		1,150.	8.25	120.	75.6	1,353.85	ND	354.41	0.1	0.0552
	051003-MW-13-30-132	3-Oct-05		1,940.	ND>25	121.	62.2	2,123.2	ND	354.41	0.0889	0.0703

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Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW13-61	980218-MW13-61-01	18-Feb-98	50 - 60	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	0.14	ND>0.01
	980602-MW13-61-13	2-Jun-98	(alluvial WBZ)	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	0.13	ND>0.01
	980825-MW13-61-03	25-Aug-98		2.1	ND>0.5	ND>0.5	ND>1.5	2.1	ND	ND	0.15	0.09
	981116-MW13-61-03	16-Nov-98		1.4	ND>0.5	ND>0.5	ND>1.5	1.4	ND	0.2	0.15	0.15
	990512-MW13-61-04	12-May-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	0.26	0.069	-
	991026-MW13-61-03	26-Oct-99		1.39	ND>0.5	ND>0.5	ND>1.5	1.39	ND	0.62	0.11	ND>0.02
	000328-MW13-61-104	28-Mar-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	0.087	0.04
	001004-MW13-61-03	4-Oct-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	0.68	-	ND>0.02
	010327-MW13-61-103	27-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	0.088	ND>0.02
	011009-MW13-61-106	9-Oct-01		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	0.28	0.19	-
	020403-MW13-61-102	3-Apr-02		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	0.206	ND>0.0400
	020924-MW13-61-106	24-Sep-02		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	-
	030317-MW13-61-101	17-Mar-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	0.13	ND>0.040
	031003-MW13-61-109 [7]	3-Oct-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	ND>0.020
	040813-MW13-61-003 [7]	13-Aug-04		2.19	ND>0.500	ND>0.500	ND>1.00	2.19	ND	0.28	0.125	0.0423
	050927-MW-13-61-114	27-Sep-05		161.	0.571	9.	9.68	180.251	1.263	14.927	0.089	ND>0.01

Koppers023598

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,6]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,6]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW14-110	981116-MW14-110-06	16-Nov-98	98 - 108	3.2	ND>0.5	ND>0.5	ND>1.5	3.2	ND	ND	0.05	-
	990216-MW14-110-005	16-Feb-99	(alluvial WBZ)	12.7	ND>0.5	0.604	ND>1.5	13.304	ND	0.11	0.04	ND>0.02
	990512-MW14-110-09	12-May-99		22.1	ND>0.5	1.88	2.4	26.38	ND	0.28	0.029	0.029
	990823-MW14-110-06	23-Aug-99		45.6	0.752	1.85	2.09	50.292	ND	0.41	0.045	ND>0.02
	991027-MW14-110-09	27-Oct-99		28.6	0.814	1.45	ND>1.5	30.864	ND	0.26	0.035	ND>0.02
	991027-MW14-110-10	27-Oct-99		29.7	0.569	1.52	ND>1.5	31.789	ND	0.27	0.028	ND>0.02
	000329-MW14-110-109	29-Mar-00		7.84	ND>0.5	0.733	ND>1.5	8.573	ND	0.42	0.03	ND>0.02
	000329-MW14-110-110	29-Mar-00		8.9	0.502	0.825	ND>1.5	10.227	ND	0.42	0.034	ND>0.02
	000615-MW14-110-102	15-Jun-00		4.85	ND>0.5	ND>0.5	ND>1.5	4.85	ND	0.2	-	ND>0.02
	001005-MW14-110-06	5-Oct-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	-	ND>0.02
	001220-MW14-110-102	20-Dec-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	0.14	-	ND>0.02
	010328-MW14-110-108	28-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	0.23	ND>0.02	ND>0.02
	010628-MW14-110-102	28-Jun-01		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	0.18	-	0.025
	011009-MW14-110-105	9-Oct-01		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	0.05	-
	011213-MW14-110-101	13-Dec-01		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	-	ND>0.0200
	020404-MW14-110-108	4-Apr-02		ND>1.00	ND>1.00	ND>1.00	ND>2.00	ND	ND	0.1	ND>0.0400	ND>0.0400
	020711MW14-110-101	11-Jul-02		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	ND>0.0400	ND>0.0400
	020924-MW14-110-105	24-Sep-02		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	0.1	-	-
	021217-MW14-110-102	17-Dec-02		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	ND>0.040
	030318-MW14-110-108	18-Mar-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	ND>0.040	ND>0.040
	030602-MW14-110-101	2-Jun-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	ND>0.040
	031003-MW14-110-110 [7]	3-Oct-03		ND>0.50	0.6	ND>0.50	ND>1.5	0.6	ND	ND	-	ND>0.020
	030112-MW-14-110-101 [7]	12-Jan-04		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	ND>0.020
	040824-MW14-110-014 [7]	24-Aug-04		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	0.0828	0.0154	0.0154
	050922-MW-14-110-104	22-Sep-05		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	0.2	0.0208	ND>0.0050

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Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW15-50	990728-MW15-50-04	28-Jul-99	40 - 50	95,100.	863.	223.	2,420.	98,606.	ND	18,460.	ND>0.020	ND>0.02
	991029-MW15-50-25	29-Oct-99	(silt unit/alluvial WBZ)	8,910.	134.	59.2	500.	9,603.2	ND	762.	0.15	ND>0.02
	000403-MW15-50-125	3-Apr-00		44,800.	620.	222.	2,300.	47,942.	3.31	5,610.74	0.065	ND>0.02
	000615-MW15-50-105	15-Jun-00		1,490.	14.3	6.62	42.	1,552.92	267.65	475.	-	ND>0.02
	000615-MW15-50-106	15-Jun-00		1,270.	10.	5.16	28.4	1,313.56	253.67	451.	-	ND>0.02
	001005-MW15-50-14	5-Oct-00		2,700.	5.65	3.83	15.2	2,724.68	74.38	128.96	-	ND>0.02
	001221-MW15-50-105	21-Dec-00		40,200.	356.	176.	1,620.	42,352.	158.93	9,661.17	-	0.028
	001221-MW15-50-106	21-Dec-00		46,200.	ND>125	ND>125	1,070.	47,270.	199.16	8,730.64	-	0.062
	010330-MW15-50-124	30-Mar-01		47,600.	270.	133.	1,250.	49,253.	87.5	7,233.48	0.151	0.089
	010628-MW15-50-105	28-Jun-01		2,580.	ND>25	ND>25	ND>75	2,580.	2.61	189.	-	0.089
	010628-MW15-50-106	28-Jun-01		3,420.	ND>25	ND>25	ND>75	3,420.	8.33	231.	-	0.105
	011010-MW15-50-111	10-Oct-01		44,000.	110.	208.	960.	45,278.	14.52	3,839.07	0.11	-
	011010-MW15-50-112	10-Oct-01		44,700.	109.	210.	970.	45,989.	48.2	59,423.3	0.07	-
	011214-MW15-50-104	14-Dec-01		64,000.	ND>500	ND>500	ND>1,500	64,000.	0.98	4,666.89	-	ND>0.0200
	011214-MW15-50-105	14-Dec-01		63,000.	ND>500	ND>500	ND>1,500	63,000.	1.27	6,034.96	-	ND>0.0200
	020405-MW15-50-119	5-Apr-02		57,000.	ND>1.00	ND>1.00	ND>2.00	57,000.	9.76	4,353.97	0.102	ND>0.0400
	020711-MW15-50-104	11-Jul-02		53,500.	ND>250	ND>250	ND>750	53,500.	15.5	3,796.	ND>0.0400	ND>0.0400
	020711-MW15-50-105	11-Jul-02		58,000.	ND>250	ND>250	ND>750	58,000.	24.8	5,788.	ND>0.0400	ND>0.0400
	020925-MW15-50-110	25-Sep-02		49,000.	320.	230.	1,300.	50,850.	65.3	8,044.4	0.072	-
	020925-MW15-50-111	25-Sep-02		50,000.	340.	250.	1,400.	51,990.	17.2	7,971.3	0.076	-
	021218-MW15-50-107	18-Dec-02		48,000.	450.	260.	1,600.	50,310.	42.	7,494.	-	ND>0.040
	030321-MW15-50-122	21-Mar-03		49,000.	310.	ND>250	ND>750	49,310.	ND	5,042.	0.07	ND>0.040
	030603-MW15-50-105	3-Jun-03		47,000.	300.	260.	1,300.	48,860.	ND	3,405.	-	0.15
	031006-MW15-50-113 [7]	6-Oct-03		37,000.	260.	200.	1,000.	38,460.	ND	4,804.3	-	0.02
	030113-MW-15-50-105 [7]	13-Jan-04		44,000.	270.	220.	1,000.	45,490.	ND	4,765.	-	ND>0.020
	030113-MW-15-50-106 [7]	13-Jan-04		44,000.	270.	220.	990.	45,480.	ND	3,650.	-	ND>0.020

Koppers023600

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW-15-50	040825-MW15-50-020 [7]	25-Aug-04	40 - 50	40,500.	ND>250	288.	764.	41,552.	ND	6,359.5	0.46	0.418
	050929-MW-15-50-126	29-Sep-05	(silt unit/alluvial WBZ)	20,700.	156.	164.	519.	21,539.	46.23	2,300.08	0.488	0.39
MW15-66	990728-MW15-66-03	28-Jul-99	60.5 - 66.5	3.61	ND>0.5	ND>0.5	ND>1.5	3.61	0.83	2.5	ND>0.020	ND>0.02
	990823-MW15-66-04	23-Aug-99	(alluvial WBZ)	0.72	ND>0.5	ND>0.5	ND>1.5	0.72	-	-	-	-
	991026-MW15-66-07	26-Oct-99		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.020	ND>0.02
	000329-MW15-66-108	29-Mar-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	3.91	6.93	ND>0.02	ND>0.02
	000615-MW15-66-104	15-Jun-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	12.17	22.1	-	ND>0.02
	001005-MW15-66-08	5-Oct-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	1.36	2.34	-	ND>0.02
	001221-MW15-66-104	21-Dec-00		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.8	1.34	-	ND>0.02
	010328-MW15-66-107	28-Mar-01		ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.61	1.1	ND>0.02	ND>0.02
	010628-MW15-66-104	28-Jun-01		1.65	ND>0.500	ND>0.500	ND>1.50	1.65	ND	0.28	-	ND>0.02
	011010-MW15-66-110	10-Oct-01		ND>0.500	ND>0.500	ND>0.500	ND>1.51	ND	ND	ND	ND>0.02	-
	011213-MW15-66-103	13-Dec-01		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	-	ND>0.0200
	020404-MW15-66-107	4-Apr-02		ND>1.00	ND>1.00	ND>1.00	ND>2.00	ND	ND	0.12	ND>0.0400	ND>0.0400
	020711-MW15-66-103	11-Jul-02		ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	ND>0.0400	ND>0.0400
	020925-MW15-66-109	25-Sep-02		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	ND>0.040	-
	021218-MW15-66-105	18-Dec-02		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	ND>0.040
	021218-MW15-66-106	18-Dec-02		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	ND>0.040
	030318-MW15-66-107	18-Mar-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	0.1	ND>0.040	ND>0.080
	030603-MW15-66-104	3-Jun-03		31.	ND>0.50	ND>0.50	ND>1.5	31.	4.	7.41	-	ND>0.040
	031006-MW15-66-112 [7]	6-Oct-03		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	ND	ND	-	ND>0.020
	030113-MW-15-66-104 [7]	13-Jan-04		ND>0.50	ND>0.50	ND>0.50	ND>1.5	ND	1.33	2.	-	ND>0.020
	040813-MW15-66-006 [7]	13-Aug-04		ND>0.500	ND>0.500	ND>0.500	ND>1.00	ND	ND	ND	ND>0.00500	ND>0.00500
	050929-MW-15-66-125	29-Sep-05		ND>0.500	ND>0.500	ND>0.500	1.36	1.36	0.2032	0.4482	ND>0.01	ND>0.01

Koppers023601

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb) Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	EPA Method 8270 SIM ug/l (ppb) Carcinogenic PAHs	Total PAHs	EPA 9010 mg/l (ppm) Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
MW-16-45	040826-MW16-45-028 [7]	26-Aug-04	30 - 45	2,880.	959.	460.	867.	5,166.	10.77	7,946.17	0.138	0.0725
	041222-MW16-45-103 [7]	22-Dec-04	(alluvial WBZ)	2,680.	1,020.	619.	1,100.	5,419.	16.08	8,492.	-	0.154
	050401-013	1-Apr-05		2,970.	1,200.	552.	990.	5,712.	8.51	132.31		0.0663
	0506-22-05	21-Jun-05		3,190.	1,810.	817.	1,450.	7,267.	44.95	10,997.45	-	0.1
	051003-MW-16-45-136	3-Oct-05		3,710.	1,670.	559.	1,050.	6,989.	236.8	9,774.9	0.131	0.0528
MW-16-65	040826-MW16-65-026 [7]	26-Aug-04	55 - 65	1,370.	388.	236.	552.	2,546.	0.541	3,838.12	0.402	0.186
	040826-MW16-65-027 [7]	26-Aug-04	(alluvial WBZ)	1,250.	339.	223.	486.	2,298.	0.756	4,098.68	-	-
	041222-MW16-65-102 [7]	22-Dec-04		1,290.	54.9	366.	618.	2,328.9	ND	ND	-	0.201
	050331-006	31-Mar-05		1,240.	7.72	338.	294.	1,879.72	ND	5,070.23	-	0.175
	0506-21-04	21-Jun-05		917.	8.39	282.	256.	1,463.39	ND	5,928.06	-	0.219
	051003-MW-16-65-134	3-Oct-05		991.	ND>25	216.	182.	1,389.	ND	3,060.92	0.25	0.0854
MW-16-125	040826-MW16-125-025 [7]	26-Aug-04	115-125	ND>1.00	ND>1.00	ND>1.00	ND>2.00	ND	ND	36.88	0.0943	0.0747
	041221-MW16-125-100 [7]	21-Dec-04	(alluvial WBZ)	0.513	ND>0.50	ND>0.50	ND>1.00	0.51	ND	10.22	-	0.0598
	050330-001	30-Mar-05		ND>0.50	ND>0.50	ND>0.50	ND>1.00	ND	ND	12.14	-	0.0554
	0506-21-03	21-Jun-05		ND>0.5	ND>0.5	ND>0.5	ND>1.00	ND	ND	4.67	-	0.0455
	050930-MW-16-125-130	30-Sep-05		2.95	0.53	ND>0.5	ND>1.00	3.48	0.0463	5.0563	0.0775	0.0702
MW-17-79	050926-MW-17-79-110	26-Sep-05	38.5 - 78.5 (alluvial WBZ)	2.82	ND>1.00	8.8	1.72	13.34	ND	49.531	0.814	0.045
Temporary Well Point Samples 1995 (surficial fill WBZ)												
B-01	950921-BW1-01	21-Sep-95	20 - 23	6.9	2.5	3.1	56.	68.5	0.09	175.71	7.8	-
B-05	950929-BW05-01	29-Sep-95	25 - 28	ND>0.5	0.97	ND>0.5	1.4	2.37	ND	34.78	ND>0.02	-
B-08	950918-BW8-01	18-Sep-95	20.5 - 23.5	ND>0.5	0.85	ND>0.5	0.86	1.71	-	-	-	-
B-19	950920-BW19-01	20-Sep-95	10 - 13	-	-	-	-	-	-	-	-	-
B-19	950920-BW19-02	20-Sep-95	25 - 28	100,000.	39,000.	1,600.	11,000.	151,600.	0.7	6,610.2	-	-
B-21	951003-BW21-01	3-Oct-95	15.5 - 19.5	ND>0.5	1.2	1.9	3.3	6.4	2.93	726.25	-	-
B-31	950925-BW31-01	25-Sep-95	26 - 29	3.	1.6	10.	13.	27.6	13.28	694.58	ND>0.02	-

Koppers023602

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
HydroPunch Samples 1998 (alluvial WBZ)												
MW-4-101	981014-BW4-01	14-Oct-98	86 - 86.5	12.	ND>0.5	ND>0.5	ND>1.5	12.	-	-	-	-
	981015-BW4-02	15-Oct-98	110.5 - 111	1.5	ND>0.5	ND>0.5	1.9	3.4	-	-	-	-
MW-5-175	981020-BW5-03	20-Oct-98	52.5 - 53	2,100.	3.7	39.	440.	2,582.7	-	-	-	-
	981020-BW5-04	20-Oct-98	52.5 - 53	2,000.	ND>5.0	37.	470.	2,507.	-	-	-	-
	981020-BW5-05	20-Oct-98	72.5 - 73	8.5	ND>0.5	1.1	6.2	15.8	-	-	-	-
	981020-BW5-06	20-Oct-98	94.5 - 95	2,000.	3.2	150.	270.	2,423.2	-	-	-	-
	981021-BW5-07	21-Oct-98	122 - 122.5	5.3	ND>0.5	ND>0.5	ND>1.5	5.3	-	-	-	-
	981021-BW5-08	21-Oct-98	152 - 152.5	18.	ND>0.5	1.8	ND>1.5	19.8	-	-	-	-
Temporary Well Point Samples 2004												
B-56	040602-101	2-Jun-04	18 - 22	8.	ND>5.	ND>5.	ND>10.	8.		317.6	0.08	0.0343
	040603-102	3-Jun-04	40 - 44	ND> 1.	ND>1.	ND>1.	ND>2.	ND		4.9419	0.517	0.105
	040603-103	3-Jun-04	60 - 64	3.62	ND>1.	70.	18.64	88.64		63.903	0.406	0.0842
	040603-104	3-Jun-04	80 - 84	ND>5.	ND>5.	ND>5.	10.6	10.6		358.961	0.506	0.107
	040603-105	3-Jun-04	80 - 84	3.1	ND>2.	2.02	6.96	12.08		405.53	-	-
	040604-106	4-Jun-04	100 - 104	ND>1.	ND>1.	ND>1.	ND>2.	ND		0.939	0.533	0.156
	040614-115	14-Jun-04	136 - 140	ND>1.	ND>1.	ND>1.	ND>2.	ND		9.56	0.006	ND>0.005
	040614-116	14-Jun-04	174 - 178	ND>1.	ND>1.	ND>1.	ND>2.	ND		1.17	0.0557	0.0319

Koppers023603

Table 3a - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
December 1995 to Present

Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Analytical Results: EPA Method 8020/8021B or 8260 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
HUMAN HEALTH SCREENING LEVEL VALUES [3,8]												
Fish Consumption												
	EPA 2004 NRWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
	Portland Harbor specific fish consumption rate			5.1	1,500.	210.	#	#	#	#	#	0.014
	DEQ 2004 AWQC (organism only)			51.	15,000.	2,100.	#	#	#	#	#	0.14
Drinking Water												
	MCL			5.	1,000.	700.	10,000.	#	#	#	#	0.2
	Tap Water PRGs			0.35	720.	1,300.	#	#	#	#	#	0.73
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [3,8]												
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	0.0052
	Oak Ridge National Laboratory (Tier II SCV) [2]			130.	9.8	7.3	13.	#	#	#	#	#
B-59	040611-108	11-Jun-04	46-50	5,570.	ND>50.	317.	85.5	5,972.5	-	-	-	-
	040611-109	11-Jun-04	76-80	230.	12.4	25.8	26.	294.2	-	-	-	-
	040611-110	11-Jun-04	96-100	113.	6.16	9.78	11.28	140.22	-	-	-	-
	040611-112	11-Jun-04	116-120	166.	2.16	3.02	7.05	178.23	-	-	-	-
	040611-113	11-Jun-04	144-148	19.3	1.43	2.58	3.58	26.89	-	-	-	-
	040614-114	14-Jun-04	171-175	2.29	ND>1.0	ND>1.0	ND>2.0	2.29	-	-	-	-

Note:
'-' = not analyzed
# = Reference Level not established
A = this analysis was performed on a VOA sample containing headspace
AWQC = Ambient Water Quality Criteria
BTEX = benzene, toluene, ethylbenzene, and xylenes
DEQ = Oregon Department of Environmental Quality
EPA = U.S. Environmental Protection Agency
MCL = Maximum Contaminant Level
mg/l = milligrams per liter
ND = not detected above detection limit indicated
NRWQC = National Recommended Water Quality Criteria
PRG = Potential Remediation Goal
PAHs = polynuclear aromatic hydrocarbons
ppb = parts per billion
ppm = parts per million
SCV = Secondary Chronic Value
ug/l = micrograms per liter

Note: Reference Level is lowest of EPA AWQC for aquatic life protection, AWQC for human consumption of organisms only, or DEQ SLV for aquatic receptors
1 = Sample number prefix: 2708-
2 = Tier II values were taken from Suter II, G.W. and Tasco, C.L., 1996. Toxilogical Benchmarks for Screening Potential Contaminants of Concem for Effects on Aquatic Biota: 1996 Revision. ORNL publication ES/ER/TM-96/R2
3 = Screening Level Values are from *Portland Harbor Joint Source Control Strategy*, Final, December 2005
4 = Due to mislabeling in the field or due to laboratory misidentification, the laboratory report transposed results for MW4-35 and MW-4-57 in August 1997. Tables attribute data to the correct well.
5 = Sample Numbers (980603-) MW4-57-18 & MW8-56-21 were analyzed for Amenable Cyanide outside of recommended holding time.
6 = PAH results for sample 960620-MW8-56-01 should be considered qualitative due to an apparent error concerning sample identity.
7 = Monitoring well purged & sampled with low-flow protocol as per EPA/540/S-95/504 (April 1996)
8 = EPA, under CERCLA authority, has identified the Safe Drinking Water Acts MCLs and AWQCs (federal and state once approved) as potential ARARs under CERCLA. The final determination will be made in the EPA Portland Harbor Record of Decision (ROD). Decisions to implement source control, prior to The EPA Portland Harbor ROD, due to an exceedance of an SLV in upland stormwater will be evaluated and prioritized on a case by c

Table 3b - Summary of Historical Analytical Results for Groundwater Samples: PAHs by EPA Method 8270
December 1995 to Present

PAHs by EPA Method 8270 (SIM)				Analytical Results ug/l (ppb)																	
				Carcinogenic PAHs							Non-carcinogenic PAHs										
Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Benzo (a) anthracene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Chrysene	Dibenzo (a,h) anthracene	Indeno (1,2,3-cd) pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo (g,h,i) perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Total Carcinogenic PAHs	Total PAHs
HUMAN HEALTH SCREENING LEVEL VALUES [a,g]																					
Fish Consumption																					
	EPA 2004 NRWQC (organism only)			0.018	0.018	0.018	0.018	0.018	0.018	0.018	990	#	40,000	#	140	5,300	#	#	4,000	#	#
	Portland Harbor specific fish consumption rate			0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	99	#	4,000	#	14	530	#	#	400	#	#
	DEQ 2004 AWQC (organism only)			0.018	0.018	0.018	0.018	0.018	0.018	0.018	990	#	40,000	#	140	5,300	#	#	4,000	#	#
Drinking Water																					
	MCL [3]			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	#	#
	Tap Water PRGs			0.092	0.092	0.92	0.0092	9.2	0.0092	0.092	370	#	1,800	#	1,500	240	6.2	#	180	#	#
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [a,g]																					
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	520 [4]	#	#	#	#	620 [4]	#	#	#	#
	Oak Ridge National Laboratory (Tier II SCV) [2]			0.027	#	#	0.014	#	#	#	#	#	0.73	#	#	3.9	12	#	#	#	#
MW1-22	951207-MW1-22-01	7-Dec-95	11 - 21	24.	13.	4.8	12.	32.	1.3	6.3	11.	2.6	52.	9.3	74.	16.	39.	100.	68.	93.4	465.3
	960319-MW1-22-01	19-Mar-96	(fill W8Z)	1.2	0.7	0.28	0.64	1.6	ND [a]	0.29	9.6	0.33	4.1	0.41	4.4	7.3	90.	15.	4.6	4.71	140.45
	960618-MW1-22-01	18-Jun-96		0.59	0.33	0.14	0.34	0.68	ND [a]	0.15	7.6	0.26	3.3	0.21	2.5	6.2	75.	12.	2.9	2.23	112.2
	961001-MW1-22-01	1-Oct-96		1.7	1.4	ND [b]	1.3	1.9	ND [b]	ND [b]	55.	0.98	15.	0.99	7.	59.	440.	130.	6.	6.2	720.17
	970225-MW1-22-01	25-Feb-97		0.36	0.13	ND [a]	0.12	0.3	ND [a]	ND [a]	3.7	ND [a]	1.6	ND [a]	1.8	3.1	47.	6.5	1.9	0.91	66.51
	970225-MW1-22-02	25-Feb-97		0.72	0.34	0.12	0.31	0.64	ND [a]	0.1	3.2	ND [a]	1.6	0.13	2.1	2.9	44.	5.5	2.5	2.23	64.16
	970827-MW1-22-01	27-Aug-97		3.8	4.	1.4	3.9	4.8	ND [b]	2.1	70.	1.6	16.	2.6	12.	75.	550.	230.	11.	20.	988.2
	970827-MW1-22-02	27-Aug-97		5.2	5.4	2.	5.6	6.7	ND [b]	3.2	66.	ND [a]	19.	3.8	14.	73.	350.	170.	12.	28.1	735.9
	980217-MW1-22-01	17-Feb-98		1.1	0.8	0.26	0.76	0.98	0.1	0.48	1.2	ND [a]	1.5	0.56	2.7	1.4	4.7	3.5	3.2	4.48	23.26
	980602-MW1-32-11	2-Jun-98		15.	21.	6.7	18.	21.	1.8	9.6	3.3	0.89	14.	13.	25.	4.9	3.3	23.	29.	93.1	209.49
	980826-MW1-22-10	26-Aug-98		24.	37.	12.	32.	37.	3.6	16.	75.	2.9	51.	22.	55.	78.	390.	240.	62.	161.6	1,137.5
	981118-MW1-22-15	18-Nov-98		0.61	0.7	0.29	0.72	0.78	ND [a]	0.32	58.	ND [a]	9.1	0.41	3.6	51.	340.	100.	3.2	3.42	568.73
	990216-MW1-22-012	16-Feb-99		0.72	0.85	ND [a]	0.76	0.88	ND [a]	0.32	0.33	ND [a]	1.21	0.52	1.91	0.49	0.11	0.89	2.28	3.53	11.27
	990513-MW1-22-11	13-May-99		0.66	0.65	0.25	0.55	0.75	ND [a]	0.31	2.31	ND [a]	1.67	0.45	2.12	3.26	0.64	1.37	2.34	3.17	17.33
	990824-MW1-22-15	24-Aug-99		10.6	9.2	7.97	12.1	17.3	2.08	8.94	62.3	1.42	16.2	11.3	24.6	64.1	340.	204.	24.8	68.19	816.91
	991028-MW1-22-16	28-Oct-99		1.48	1.19	1.02	1.58	2.27	0.2	0.95	48.5	0.56	6.58	1.21	6.51	51.5	186.	109.	6.43	8.69	424.98
	000330-MW1-22-116	30-Mar-00		0.21	ND [a]	ND [a]	ND [a]	0.21	ND [a]	ND [a]	4.52	ND [a]	2.22	ND [a]	2.84	4.63	42.4	3.03	2.29	0.42	62.35
	010329-MW1-22-115	29-Mar-01		2.31	1.95	1.42	2.22	3.03	0.66	1.77	2.32	0.18	4.14	2.	6.73	3.35	3.97	6.78	8.23	13.36	51.06
	040825-MW1-22-019[7]	25-Aug-04		0.130 J	ND [a]	ND [a]	ND [a]	0.131 J	ND>0.200	ND [a]	50.	ND>0.500	7.	ND>0.500	2.61	46.9	403.	77.4	2.34	0.262	589.25
	050401-014[7]	1-Apr-05		0.24	0.0902 J	0.0868 J	0.119	0.326	ND [a]	ND>0.0500	1.79	0.0529	3.02	ND>0.0500	2.62	2.61	2.44 B	2.34 B	2.53	0.862	18.2649
	050928-MW1-22-120	28-Sep-05		ND>0.258	ND>0.258	ND>0.258	ND>0.258	0.327	ND>0.258	ND>0.258	46.9	ND>515	4.56	ND>0.258	2.95	37.1	302.	74.4	2.85	0.327	471.087

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Table 3b - Summary of Historical Analytical Results for Groundwater Samples: PAHs by EPA Method 8270
December 1995 to Present

PAHs by EPA Method 8270 (SIM)				Analytical Results ug/l (ppb)																	
				Carcinogenic PAHs							Non-carcinogenic PAHs										
Well Number	HAI Sample Number[1]	Sample Date	Screen Interval (feet bgs)	Benzo (a) anthracene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Chrysene	Dibenzo (a,h) anthracene	Indeno (1,2,3-cd) pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo (g,h,i) perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Total Carcinogenic PAHs	Total PAHs
HUMAN HEALTH SCREENING LEVEL VALUES [2,3]																					
Fish Consumption																					
	EPA 2004 NRWQC (organism only)			0.018	0.018	0.018	0.018	0.018	0.018	0.018	990	#	40,000	#	140	5,300	#	#	4,000	#	#
	Portland Harbor specific fish consumption rate			0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	99	#	4,000	#	14	530	#	#	400	#	#
	DEQ 2004 AWQC (organism only)			0.018	0.018	0.018	0.018	0.018	0.018	0.018	990	#	40,000	#	140	5,300	#	#	4,000	#	#
Drinking Water																					
	MCL [3]			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	#	#
	Tap Water PRGs			0.092	0.092	0.92	0.0092	9.2	0.0092	0.092	370	#	1,800	#	1,500	240	6.2	#	180	#	#
ECOLOGICAL RECEPTOR SCREENING LEVEL VALUES [4,5]																					
	EPA 2004 NRWQC (chronic)			#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
	DEQ 2004 AWQC (chronic)			#	#	#	#	#	#	#	#	520[4]	#	#	#	#	620[4]	#	#	#	#
	Oak Ridge National Laboratory (Tier II SCV) [2]			0.027	#	#	0.014	#	#	#	#	#	0.73	#	#	3.9	12	#	#	#	#
MW2-32	951206-MW2-32-01	6-Dec-95	21.5 - 31.5	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	4.	0.29	0.28	ND [a]	0.48	0.32	45.	0.51	0.67	ND	51.55
	960318-MW2-32-01	18-Mar-96	(fill WBZ)	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	4.	0.16	0.1	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.28	ND	4.54
	960618-MW2-32-01	18-Jun-96		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	1.5	0.23	0.15	ND [a]	ND [a]	0.22	0.09	ND [a]	0.41	ND	2.6
	961001-MW2-32-01	1-Oct-96		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	8.4	0.14	0.16	0.1	0.12	0.23	0.22	0.23	0.93	ND	10.53
	970225-MW2-32-01	25-Feb-97		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	1.1	ND [a]	ND [a]	ND [a]	ND [a]	0.15	ND [a]	ND [a]	0.37	ND	1.62
	970827-MW2-32-01	27-Aug-97		ND [a]	ND [a]	ND [a]	0.1	ND [a]	ND [a]	0.1	16.	0.17	0.19	0.14	ND [a]	0.21	0.17	ND [a]	0.96	0.2	18.04
	980217-MW2-32-01	17-Feb-98		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	4.2	0.11	ND [a]	ND [a]	ND [a]	0.19	ND [a]	ND [a]	0.52	ND	5.02
	980601-MW2-32-05	1-Jun-98		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	2.2	ND [a]	ND [a]	ND [a]	ND [a]	0.19	ND [a]	ND [a]	0.82	ND	3.21
	980825-MW2-32-04	25-Aug-98		0.17	0.37	ND [a]	0.35	0.2	ND [a]	0.3	4.	0.11	ND [a]	0.47	0.26	0.12	ND [a]	0.11	0.64	1.39	7.1
	981117-MW2-32-10	17-Nov-98		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	ND
	990216-MW2-32-008	16-Feb-99		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	17.9	0.45	ND [a]	ND [a]	ND [a]	ND [a]	0.1	ND [a]	ND [a]	ND	18.45
	990513-MW2-32-10	13-May-99		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	8.08	0.1	ND [a]	ND [a]	ND [a]	0.26	ND [a]	ND [a]	0.58	ND	9.02
	990824-MW2-32-10	24-Aug-99		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.11	5.08	ND [a]	0.12	0.18	ND [a]	0.15	ND [a]	0.11	0.54	0.11	6.29
	991027-MW2-32-12	27-Oct-99		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	ND
	000329-MW2-32-112	29-Mar-00		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	1.55	ND [a]	ND [a]	ND [a]	ND [a]	0.26	ND [a]	ND [a]	0.42	ND	2.23
	010328-MW2-32-111	28-Mar-01		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	ND
	040816-MW2-32-009[7]	16-Aug-04		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND>0.200	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	ND
	050331-009[7]	31-Mar-05		ND>0.0500	ND>0.0500	ND>0.0500	ND>0.5000	ND>0.5000	ND*	ND>0.0500	0.103	ND>0.0500	ND>0.0500	ND>0.0500	ND>0.0500	ND>0.0500	2.89	0.0858 J	0.0545 J	ND	3.1333
	050927-MW-2-32-118	27-Sep-05		ND>0.00962	ND>0.00962	ND>0.00962	ND>0.00962	ND>0.00962	ND>0.00962	ND>0.00982	0.0147	0.0521	0.0361	ND>0.00962	0.0135	ND>0.00962	0.0785	0.0179	ND>0.00962	ND	0.2128
MW2-61	981116-MW2-61-04	16-Nov-98	50 60	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.33	ND [a]	ND [a]	ND	0.33
	990216-MW2-61-006	16-Feb-99	(alluvial WBZ)	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.37	ND [a]	ND [a]	ND	0.37
	990512-MW2-61-05	12-May-99		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.54	ND [a]	ND [a]	ND	0.54
	990823-MW2-61-07	23-Aug-99		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	ND
	991026-MW2-61-04	26-Oct-99		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	ND
	000328-MW2-61-104	28-Mar-00		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	ND
	001004-MW2-61-04	4-Oct-00		ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	ND

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS

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NORTHWEST REGION

AUG 5 2005

April 14, 2005

Mr. Matt McClincy
Oregon Department of Environmental Quality
Northwest Region, Portland Office
Portland Harbor Section
2020 SW Fourth Avenue, Suite 400
Portland Oregon 97201-4987

HAI Project No. 5237

SUBJECT: March 2005 Progress Report for Remedial Investigation (RI) Activities, Siltronic Corporation Property, 7200 NW Front Avenue, Portland, Oregon

Dear Mr. McClincy:

Hahn and Associates, Inc. (HAI) has prepared this Progress Report summarizing RI work activities conducted by NW Natural that have occurred relating to the Siltronic Corporation (Siltronic) property during the month of March 2005. RI field activities for the site have been conducted as per the approved Final Focused Remedial Investigation (RI) Work Plan[1] (RI Work Plan), as well as the approved Supplemental RI Work Plan[2]. This Progress Report has been prepared as per an Order (DEQ No. ECVC-NWR-00-27) issued jointly to both NW Natural and Siltronic by the Oregon Department of Environmental Quality (DEQ), dated October 4, 2000. As per the referenced Order, monthly progress reports are to be prepared by the 15th day of each month, with the reporting to continue for the duration of the project.

Phase I Site Characterization and Source Control Evaluation Reporting

Results of data submittals related to the most recent investigatory activities completed at the Siltronic property, prepared by Maul, Foster, and Alongi, Inc. (MFA) for Siltronic, were incorporated into revisions of the HAI report entitled *Phase I Site Characterization Report*, dated November 7, 2003 during March 2005.

As requested by DEQ, the locations of hydrogeological cross-sections proposed for inclusion within the updated Site Characterization Report were provided to DEQ in e-mail correspondence dated March 18, 2005 (Rob Ede to Matt McClincy). DEQ forwarded MFA comments on the proposed cross-sections in correspondence dated March 14, 2005 (Matt McClincy to Bob Wyatt and Tom McCue). As per a telephone conversation on March 15, 2005 (Rob Ede to Matt McClincy), modifications to proposed cross-sections were agreed to as follows:

[1] Hahn and Associates, Inc. (2001). *Final Focused Remedial Investigation Work Plan, Wacker Siltronic Corporation Property, 7200 NW Front Avenue, Portland, Oregon.* June 1, 2001.

[2] Hahn and Associates, Inc. (2002). *Supplemental Remedial Investigation Work Plan, Wacker Siltronic Corporation,, 7200 NW Front Avenue, Portland, Oregon.* March 7, 2002.

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- Section A-A' will be extended to the southwest to incorporate data from borings B-33, B-35, B-28, B-45, B-46, and MW-12.
- Section D-D' will be extended to the southwest to include borings B-100, B-101, and WS-4.
- Section F-F' will be extended to the east to incorporate data from borings B-5-8, and B-102-8.
- Section G-G' will be extended to the east to the RP-06/GP-27 location, with a break in section between the WS-27 location and the RP-06/GP-27 location.
- A new east/west cross-section, including boring locations B-101, WS-1, B-102, B-105, GP-11, WS-2, B-106, WS-3, and W-3-81, will be prepared..

Off-Site Ditch / City of Portland Outfall 22C Evaluation

Laboratory data were received during March 2005 from surface water and sediment sampling activities completed by HAI on February 24, 2005. These sampling activities comprised the "wet season / dry period" sampling event and were conducted on February 24, 2005 in accordance with the March 15, 2004 *Work Plan for Conducting an Off-Site Ditch / City of Portland Outfall 22C*. Data from the February 2005 sampling event were summarized and tabulated in March 2005, with summary tables and a figure depicting sampling locations attached.

Indoor Air Monitoring

Indoor air monitoring activities were conducted at the Siltronic property on January 25, 2005 by representatives of NW Natural in accordance with the revised *Work Plan for Ambient Indoor Air Evaluation, Rev. 1*, dated November 30, 2004. Data validation and report preparation related to these activities were conducted during March 2005.

Anticipated Activities in April and May 2005

With regard to the off-site ditch (North Doane Creek) / City of Portland Outfall 22C evaluation, HAI anticipates completion of the remaining wet season sampling activities (wet period event) during April or early May 2005, with these activities to be conducted as soon as weather trigger conditions as specified in the work plan are satisfied. Data summary tables from the February 2005 sampling event are attached.

With regard to indoor air monitoring for volatile organic compounds, data summary tables from the January 25, 2005 sampling activities were provided to representatives of

Siltronic in e-mail correspondence dated April 5, 2005 (Mark Whitson to Tom McCue), and to DEQ in e-mail correspondence dated April 6, 2005 (Rob Ede to Matt McClincy). A report, describing the sampling activities and discussing the results, is anticipated to be available for submittal to DEQ the week of April 18, 2005.

NW Natural will continue with revisions to the *Phase I Site Characterization Report* during March and April 2005, to include recently obtained results of Siltronic's investigatory activities obtained in February 2005. The updated Phase I Site Characterization Report is anticipated to be available for submittal to DEQ by May 16, 2005.

Should you have any questions, please contact the undersigned.

Sincerely,

Robert Ede, R.G.
Sr. Associate

robe@hahnasoc.com

c: Mr. Bob Wyatt, NW Natural
Ms. Patty Dost, Schwabe, Williamson & Wyatt
Mr. Carl Stivers, Anchor Environmental, L.L.C.
Mr. Tom McCue, Siltronic Corporation

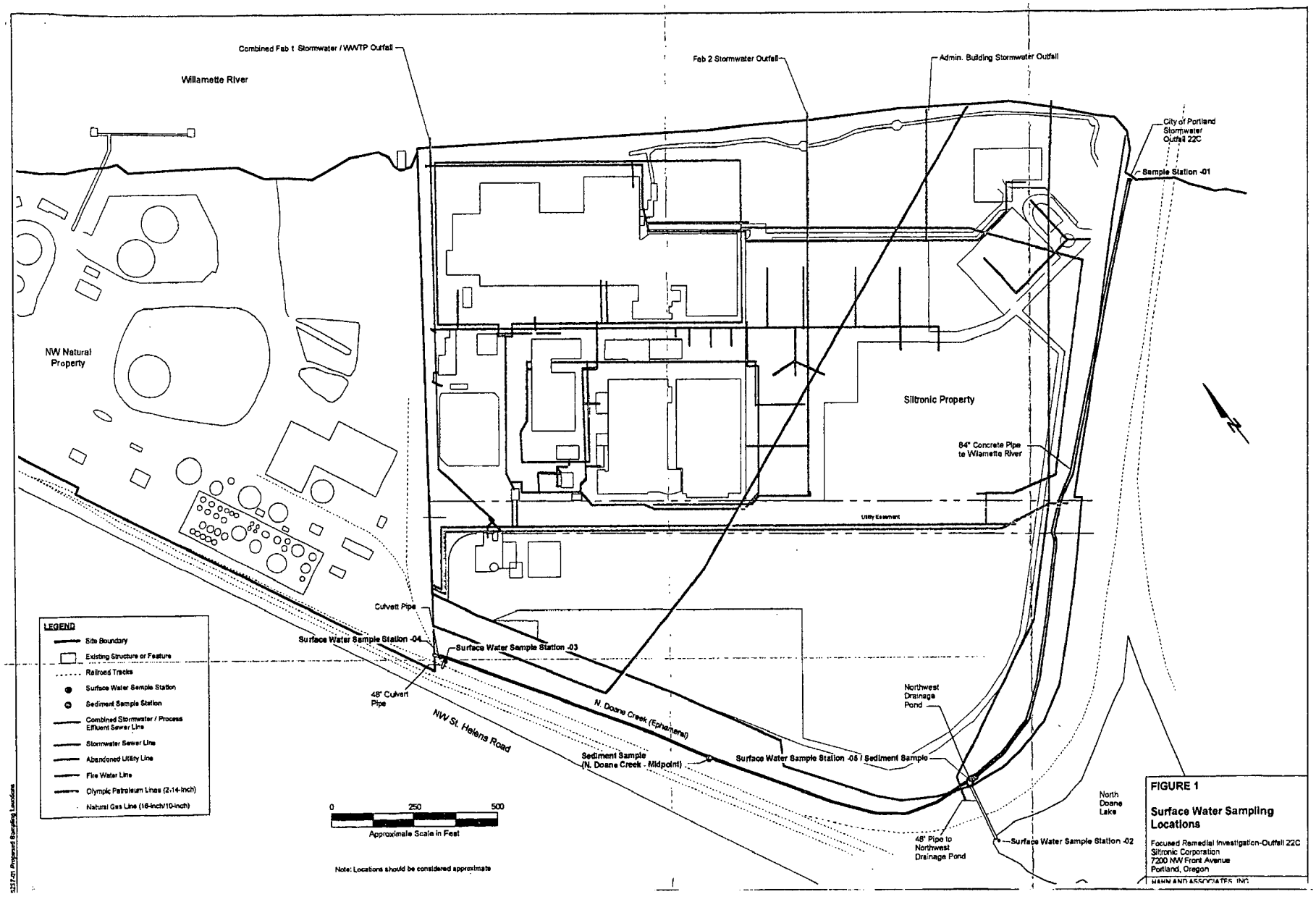

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TABLE 1 – Summary of Surface Water Testing Results

Analytical Parameters	Laboratory Analytical Testing Results in ug/L (ppb)								Screening Levels[4] in ug/L		
Sample Location ==>	City Outfall 22C (Station -01)			Northwest Drainage Pond (Station-05)		North Doane Lake Outlet (Station-02)	Forest Park Culvert (Station - 03)	Koppers Inc. Culvert (Station - 04)	Ambient Water Quality Criteria[2] (Human)	Ambient Water Quality Criteria[2] (Aquatic-CCC)	DEQ Level II Screening Level[3] Values
Sample Number ==>	CO-22C-01	5237-05224-100	-05224-101 (DUP)	NDP-101-W	5327-05224-102	5237-05224-103	5237-05224-104	5237-05224-106			
Sampled By [1] ==>	AMEC	HAI	HAI	AMEC	HAI	HAI	HAI	HAI			
Sample Date ==>	13-Aug-02	24-Feb-05	24-Feb-05	13-Aug-02	24-Feb-05	24-Feb-05	24-Feb-05	24-Feb-05			
General Chemistry by EPA 160.2, 2340B, 300,											
Total Suspended Solids	47,000	-	-	93,000	-	-	-	-	#	#	#
Hardness	290,000	-	-	110,000	-	-	-	-	#	#	#
Chloride	30,800	-	-	14,000	-	-	-	-	#	230,000	#
Cyanide-Total	-	8.5	8.4	-	5. U	5. U	5. U	11.5	220,000	5.2	52
Cyanide-Amenable	-	6.	6.3	-	5. U	5. U	5. U	10.7	220,000	5.2	52
Sulfate	4,710	-	-	1,560	-	-	-	-	#	#	#
Alkalinity	360,000	-	-	160,000	-	-	-	-	#	20,000	#
Volatile Organic Compounds (VOCs) by EPA 8260B											
Acetone	3.56	25.0 U	-	2.95	25.0 U	25.00 U	25.0 U	25.0 U	#	#	1,500
Benzene	3.15	1.00 U	-	1.47	1.00 U	1.00 U	1.00 U	1.00 U	51	#	130
Chlorobenzene	0.605	1.00 U	-	0.5 U	1.00 U	1.09	1.00 U	1.00 U	21,000	#	50
iso-Propylbenzene	0.577	2.00 U	-	0.5 U	2.00 U	2.00 U	2.00 U	2.00 U	#	#	#
Naphthalene	13.4	2.00 U	-	5.89	2.00 U	2.00 U	2.00 U	2.00 U	#	#	620
Toluene	0.5 U	1.00 U	-	0.563	1.00 U	1.00 U	1.00 U	1.00 U	200,000	#	9.80
All others	U	U	-	U	U	U	U	U	#	#	#
Semi-Volatile Organic Compounds (SVOCs) by EPA 8270C or by EPA 8270M-SIM											
Acenaphthene	32.5	4.15	4.51	9.53	0.109	0.167	0.0100 U	0.0325	990	#	520
Acenapthylene	0.182	0.0296	0.0277	0.0144 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	#	#	#
Anthracene	0.456	0.0552	0.0514	0.184	0.0348	0.0109 J	0.0100 U	0.0542	40,000	#	13
Benz(a)anthracene	0.042 U	8.8195 J	0.0209	0.141	0.0124 J	0.0109 J	0.0100 U	0.213	0.018	#	0.03
Benzo(a)pyrene	U	0.0145 J	0.0192 J	U	0.0117 J	0.0125 J	0.0100 U	0.282	0.018		0.014
Benzo(ghi)perylene	0.033 U	0.0138 J	0.0180 J	0.163	0.0109 J	0.0114 J	0.0100 U	0.231	#	#	#
Benzo(k)flouranthene	U	0.0125 J	0.0157 J	U	0.0100 U	0.0100 U	0.0100 U	0.210	0.018		#
Benzo(b)fluoranthene	0.037 U	0.0167 J	0.0195 J	0.453	0.0130 J	0.0130 J	0.0100 U	0.278	0.018	#	#
Chrysene	0.024 U	0.0209	0.0227	0.25	0.0155 J	0.0139 J	0.0100 U	0.232	0.018	#	#
Dibenzofuran	1.72	3.00 U	-	1.01	3.00 U	3.00 U	3.00 U	3.00 U	#	#	3.70
Dibenzo(a, h) anthracene	U	0.0100 U	0.0100 U	U	0.0100 U	0.0100 U	0.0100 U	0.0726	0.018		#
Fluoranthene	2.05	0.314	0.2640	1.59	0.0282	0.0318	0.0100 U	0.346	140	#	6.16
Fluorene	6.26	0.812	0.7410	1.16	0.0359	0.0654	0.0100 U	0.0198 J	5,300	#	3.90
Indeno(1,2,3-cd)pyrene	0.029 U	0.0122 J	0.0159 J	0.136	0.0100 U	0.0100 U	0.0100 U	0.201	0.018	#	#
Naphthalene	0.688	0.281	0.2590	0.0211 U	0.0964	0.688	0.0200 U	0.0200 U	#	#	620
Phenanthrene	0.243	0.0476	0.0458	0.0211 U	0.0336	0.0447	0.0100 U	0.135	#	#	6.30
Pyrene	2.03	0.265	0.2720	1.57	0.0269	0.0293	0.0200 U	0.299	4,000	#	#
All others	U	U	U	U	U	U	U	U	#	#	#

Koppers023611

TABLE 1 – Summary of Surface Water Testing Results

Analytical Parameters	Laboratory Analytical Testing Results in ug/L (ppb)														Screening Levels[5] in ug/L		
Sample Location ==>	City Outfall 22C (Station -01)					Northwest Drainage Pond (Station-05)			North Doane Lake Outlet (Station-02)		Forest Park Culvert (Station - 03)		Koppers Inc. Culvert (Station - 04)		Ambient Water Quality Criteria[2] (Human)	Ambient Water Quality Criteria[2] (Aquatic-CCC)	DEQ Level II Screening Level[3] Values
Sample Number ==>	CO-22C-01	5237-05224-100		-05224-101 (DUP)		NDP-101-W	5327-05224-102		5237-05224-103		5237-05224-104		5237-05224-106				
Sampled By [1] ==>	AMEC	HAI		HAI		AMEC	HAI		HAI		HAI		HAI				
Sample Date ==>	13-Aug-02	24-Feb-05		24-Feb-05		13-Aug-02	24-Feb-05		24-Feb-05		24-Feb-05		24-Feb-05				
Total Metals by EPA 6010 or 6020																	
Antimony	-	1.00	U	1.00	U	-	1.00	U	1.00	U	1.00	U	1.00	U	640	#	1,600
Arsenic	1.14	J 1.00	U	1.00	U	11.60	J 1.00	U	1.02		1.00	U	1.00	U	0.14	150	150
Aluminum	9.00	U -		-		1,780	-		-		-		-		#	#	87
Barium	56.90	20.8		20.3		96.40	12.3		21.40		7.42		28.20		1,000	#	4.00
Boron	73.70	-		-		121	-		-		-		-		#	#	1.60
Cadmium[4]	0.01	U 1.00	U	1.00	U	0.016	1.00	U	1.00	U	1.00	U	1.00	U	#	0.09	2.20
Calcium	70,600	-		-		27,200	-		-		-		-		#	#	116,000
Chromium	0.04	U 1.00		1.00	U	4.04	1.00	U	1.00	U	1.00	U	1.00	U	#	11.00	11
Cobalt	2.74	-		-		9.52	-		-		-		-		#	#	23.0
Copper[4]	45.00	2.00	U	2.00	U	11.10	2.00	U	2.00	U	2.00	U	2.00	U	1,300	2.70	9.0
Iron	19,100	3,230		3,180		22,300	648		1,180		458		653		300	1,000	1,000
Lead[4]	0.082	U 1.00	U	1.00	U	5.20	1.00	U	1.19		1.00	U	1.00	U	#	0.54	2.50
Magnesium	26,700	-		-		9,380	-		-		-		-		#	#	82,000
Manganese	3,470	341		340		2,660	82.6		192		4.31		675		100	#	120
Mercury	-	0.200	U	0.200	U	-	0.200	U	0.200	U	0.200	U	0.200	U	#	0.77	0.012
Molybdenum	13.60	-		-		44.10	-		-		-		-		#	#	370
Nickel[4]	2.23	2.00	U	-		4.41	2.00	U	2.00	U	2.00	U	2.00	U	4,600	16.10	52
Potassium	4,770	-		-		2,270	-		-		-		-		#	#	53,000
Selenium	-	2.00	U	2.00	U	-	2.00	U	2.00	U	2.00	U	2.00	U	4,200	5.0	35
Silicon Dioxide	42,600	-		-		35,400	-		-		-		-		#	#	#
Silver	1.18	1.00	U	1.00	U	0.80	U 1.00	U	1.00	U	1.00	U	1.00	U	#	3.20	0.12
Sodium	36,100	-		-		25,300	-		-		-		-		#	#	680,000
Thallium	-	1.00	U	1.00	U	-	1.00	U	1.00	U	1.00	U	1.00	U	6.30	#	40
Vanadium	0.73	U 5.00	U	5.00	U	21	J 5.00	U	5.00	U	5.00	U	5.00	U	#	#	20
Zinc[4]	7.64	U -		-		345	-		-		-		-		26,000	36.50	120

Note: 1 = AMEC Earth & Environmental, Inc., *Remaining Remedial Investigation Technical Memorandum, RPAC-Portland Site*, February 4, 2003.
2 = Lowest value provided in the Ambient Water Quality Criteria (EPA 822-R-02-047, November 2002) based on Fresh Acute, Fresh Cronic (Aquatic Life Protection) and Fish Consumption Only (Human Health) Pathway.
3 = Where no AWQC are available, DEQ Level II Screening Level Values for Ecological Risk Assessment were used, Revised December 2001.
4 = AWQC adjusted based on a hardness of 25 parts per million.
5 = Screening levels are used for comparative purposes only.

Bold = Concentration exceeds Reference Level
AWQC = Ambient Water Quality Criteria
DEQ = Oregon Department of Environmental Quality
EPA = U.S. Environmental Protection Agency
J = estimated concentration
ppb = parts per billion
U = not detected above concentration indicated
ug/l = micrograms/liter
= Reference Level not established

Koppers023612

TABLE 2 – Summary of Surface Sediment Testing Results

Analytical Parameters	Laboratory Analytical Testing Results				Screening Levels[2]
Sample Location ==>	Northwest Drainage Pond		North Doane Creek - Midpoint		DEQ Level II Screening Level[1] Values
Sample Number ==>	5327-05224-01		5327-05224-02		
Sampled By ==>	HAI		HAI		
Sample Date ==>	24-Feb-05		24-Feb-05		
Cyanide by EPA 9010A or 9010B in mg/kg					
Cyanide (amenable)	0.227	U	0.227	U	#
Cyanide (total)	0.227	U	0.227	U	#
Total Mercury by EPA 7471A in mg/kg					
Semivolatile Organic Compounds (SVOCs) by EPA 8270M-SIM or 8270C in Mg/kg					
Acenaphthene	1.85		0.134	U	0.33
Acenapthylene	0.268	U	0.134	U	0.33
Anthracene	2.78		0.134	U	0.032
Benz(a)anthracene	1.66		0.168		0.26
Benzo(a)pyrene	1.29		0.243		0.35
Benzo(ghi)perylene	0.814		0.197		0.29
Benzo(b)fluoranthene	1.31		0.243		#
Benzo(k)floranthene	1.12		0.189		0.24
Carbazole	0.668	J	0.139	U	0.14
Chrysene	1.94		0.207		0.5
Dibenzofuran	0.981	J	0.139	U	0.42
Dibenzo(a, h) anthracene	0.268	U	0.134	U	0.23
Fluoranthene	4.43		0.244		0.064
Fluorene	2.64		0.134	U	0.034
Indeno(1,2,3-cd)pyrene	0.714		0.167		0.078
Naphthalene	0.268	U	0.134	U	0.032
Phenanthrene	6.05		0.134	U	0.56
Pyrene	3.66		0.249		0.57
All Others		U		U	#
Total Metals by EPA 6010 or 6020 or 7471A in mg/kg					
Antimony	1.53		0.500	U	3.
Arsenic	5.45		0.500	U	12.
Barium	126		84.8		#
Cadmium	2.45	U	0.500	U	0.6
Chromium	21.1		4.10		56.
Copper	27.6		8.12		28.
Iron	26,400		20,200		#
Lead	34.7		7.39		34.
Manganese	452		578		1,600.
Mercury	0.0481	U	0.0532	U	0.56
Nickel	14.2		3.89		39.6
Selenium	0.500	U	0.500	U	#
Silver	0.500	U	0.500	U	4.5
Thallium	0.500	U	0.500	U	#
Vanadium	84.0		42.9		#

Note:

1 = DEQ Level II Screening Level Values for Ecological Risk Assessment, Revised December 2001.
2 = Screening levels are used for comparative purposes only.

Bold = Concentration exceeds Reference Level
DEQ = Oregon Department of Environmental Quality
EPA = U.S. Environmental Protection Agency
J = estimated concentration
ppm = parts per million
U = not detected above concentration indicated
mg/kg = milligram per kilogram
= Reference Level not established

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL MANAGEMENT

June 2, 1999

Ms. Traci Self
Koppers Industries, Inc.
436 Seventh Avenue, Suite K1800
Pittsburgh, PA 15219

Project No. 2708

Subject: Phase I Remedial Investigation Summary Report; Northwest Natural Gasco Site, 7900 NW St. Helens Road, Portland, Oregon

Dear Ms. Self:

At your request, enclosed please find one copy of the Phase I Remedial Investigation (RI) Summary Report for the Northwest Natural Gasco site, dated October 9, 1998. This report summarizes and interprets all available data generated as part of RI activities at the subject site, including the Koppers Industries lease area, as of the date of the report.

Should you have any questions concerning the enclosed, please give me a call.

Sincerely,

Robert Ede
Sr. Project Manager

enclosure

c: Ms. Sandra Hart, Northwest Natural, w/out enclosure
Mr. Amos Kamerer, Koppers Industries, Inc., w/out enclosure

RECEIVED
JUN - 3 1999
KOPPERS INDS, INC.
PORTLAND OR

434 NW SIXTH AVENUE, SUITE 203 • PORTLAND, OREGON 97209-3600
503/796-0717 OFFICE • 503/227-2209 FAX

Recycled Recyclable

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL MANAGEMENT

May 13, 1999

Mr. Eric Blischke
Oregon Department of Environmental Quality
Voluntary Cleanup and Site Assessment Section
811 SW 6th Avenue
Portland, Oregon 97204

HAI Project No. 2708

SUBJECT: Proposed Monitoring Well Installation Activities, Northwest Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon

Dear Mr. Blischke:

1.0 INTRODUCTION

At the request of Northwest Natural and Kopper's, Inc., Hahn and Associates, Inc. (HAI) has prepared this proposal for the installation of two groundwater monitoring wells at the above-referenced site. This proposal results from discussions that were held during a May 5, 1999 meeting with the Oregon Department of Environmental Quality (DEQ) and representatives of Koppers, Inc. and Northwest Natural. Specifically, the DEQ requested that two wells, one to monitor the upper Alluvial Sand Water Bearing Zone (WBZ), and the other to monitor the Bedrock WBZ, be installed at a location down-gradient from a soon to be constructed 2-million gallon coal tar tank at the Kopper's, Inc. portion of the site. A third well, MW-14-110, already exists at a favorable location for monitoring groundwater quality within the lower Alluvial Sand WBZ, immediately above the bedrock surface and down-gradient of the tank location.

2.0 BACKGROUND

As the foundation for the aforementioned tank is to be installed through a location of residual oil tar contamination (with possible DNAPL) at the site, the primary objective of the proposed wells will be to provide adequate coverage for monitoring groundwater quality down-gradient of the tank such that any significant exacerbation / spread of existing contamination that may result from the installation of tank footings (driven pilings to the top of bedrock), may be identified. Such an occurrence would require additional evaluation to determine if predicted exposure points and/or exposure concentrations (components of the site risk assessment) would require updating.

Once installed, both wells will be incorporated into the routine groundwater monitoring program for the Gasco site, and as such they will undergo one-year of quarterly monitoring prior to evaluating them with regard to the possible incorporation into a less frequent sampling schedule. Constituents of analysis would be the same as those for samples collected from existing well MW-14-110, which include Polynuclear aromatic hydrocarbons, aromatic hydrocarbons, cyanide, and select metals. Details of the proposed well installations are provided below.

cc: Dieter
Kifer
Self
Meisinger
Stephenson

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503/796-0717 OFFICE • 503/227-2209 FAX

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3.0 PROPOSED MONITORING WELLS MW-15i AND MW-15br

The final designation for the proposed intermediate depth well (MW-15i) and the bedrock zone well (MW-15br) will be designated by a prefix "MW", followed by the monitoring well number, followed by a number representing the depth of the well in feet below ground surface, such as MW-15-65. The proposed location for wells MW-15i and MW-15br is approximately 75 feet to the southwest of the existing well MW-11-32 (Figure 1). This location will put the wells approximately 100 to 150 feet down-gradient from the location of the new coal tar tank, a location that is as close to the tank location as possible due to the presence of a pencil pitch storage facility immediately adjacent to the tank location.

Monitoring well MW-15i will be installed such that it will monitor the upper Alluvial Sand WBZ, to target a similar zone as is monitored by other intermediate-depth wells at the site. Based on the preceding, it is anticipated that well MW-15i will have a total depth of approximately 65 feet below ground surface (bgs). However, the actual depth interval monitored may be modified in the field based on the hydrogeological conditions encountered at the targeted depth interval (i.e., if a silt or clay occupies the target interval).

The bedrock surface is anticipated to be encountered at a depth of between 90 and 110 feet bgs at the proposed MW-15 well location. Monitoring well MW-15br will be installed to a depth corresponding to the shallowest measurable water bearing zone within bedrock. Due to the uncertainties associated with the depth at which groundwater will be encountered within bedrock, only an estimate of the final depth of this well can be provided herein. As such, it is estimated that well MW-15-br will be installed to a total depth of between 125 and 175 feet bgs.

Installation Procedures

All monitoring well installation work will be performed by an Oregon-bonded and licensed monitoring well constructor. The monitoring well installations will be completed in accordance with the Oregon Groundwater Law (Oregon Revised Statute (ORS) Chapter 537) and the Rules for Construction and Maintenance of Monitoring Wells and Other Holes in Oregon (Oregon Administrative Rules (OAR) Chapter 690, Division 240).

Borehole drilling and well installation activities will be conducted via air rotary drilling methodology. Soil quality screening and sampling methodologies will be as specified within the HAI document entitled *Final Remedial Investigation / Feasibility Study Work Plan, Northwest Natural Gas Company*, dated August 4, 1995.

Above bedrock, soil samples will be collected within MW-15br at approximate 5-foot intervals below a depth of 25 feet. No sampling will be conducted above a depth of 25 feet since sufficient data at this location exists from the B-27 boring. No soil sampling will be conducted at the MW-15i location (to be installed second), other than to confirm surface casing and screen placement. Soil samples will be collected for lithologic descriptive purposes only unless field screening results indicate the presence of contamination at locations that do not correlate with the site conceptual model. Below bedrock, soil cuttings will be collected from the drill rig cyclone for lithological description and contaminant screening purposes.

Monitoring Well Design

Wells will be constructed with 10 feet of 0.020-inch slotted stainless-steel screen, a stainless steel sump installed below the screen, and a PVC riser pipe above the screen. Because drilling for both wells MW-15i and MW-15br will be conducted through a zone of residual soil contamination and possible DNAPL occurrence, as well as through the underlying Silt Unit, an 8-inch (MW-15i) and a 12-inch (MW-15br) steel permanent protective surface casing will be installed through the potential DNAPL zone, and will be set approximately 10 feet into the Silt Unit at a depth of approximately 34 feet bgs prior to the continuation of drilling through the Silt Unit. A split spoon soil sample will be collected prior to setting the casing for the first well to be installed in order to ensure appropriate placement. The proposed depth of completion for the protective casing is based on the lithologic and contaminant conditions identified at boring B-27, located adjacent to the proposed MW-15 well location. The casing will be grouted in-place by tremie pipe methods. The grout will be allowed to set for 12 hours prior to the continuation of drilling.

With regard to MW-15br, a 6-inch diameter steel permanent casing will be installed through the upper 12-inch surface casing and will be set and grouted into a 5-foot socket to be drilled into the top of competent bedrock. This casing will act to seal off the bedrock zone from possible current or future contamination that may be present within the Alluvial Sand WBZ. The remainder of the borehole for well MW-15br will be drilled as a 6-inch diameter open hole. Upon encountering the first isolated zone of groundwater within the bedrock zone, well MW-15br will be completed with a 3.25-inch diameter pre-packed stainless steel well screen and 2-inch diameter Schedule 80 PVC riser. Additional filter pack material will be placed in the annulus adjacent to the well screen, a bentonite plug will be placed, and the remainder of the annulus will be grouted.

Monitoring Well Development

Following installation of well MW-15i and MW-15br, each well will be surged with a surge block and further developed by purging with a submersible pump in an attempt to remove the fine sediment from around the well bore. To prevent grout intrusion into the sand pack, development activities will occur no sooner than within 48 hours of the completion of monitoring well installation activities. Development will continue until a minimum of 10 well volumes of water have been removed from the well, relatively sediment-free water is produced, and the indicator parameters of temperature, pH and specific conductance have stabilized to within 10 percent. Sampling will take place no sooner than 72 hours following development.

Investigative-Derived Waste Management

Soil cuttings, as well as decontamination and development water will be generated during the proposed monitoring well installation activities. All investigative-derived waste (IDW) will be containerized within a water-tight roll-off container, and left on-site. As provided in correspondence dated May 20, 1996 (Blischke to Hart), all liquid IDW will be treated within Northwest Natural's existing water treatment system and will be discharged via a National Pollution Prevention Discharge Elimination System (NPDES) permitted discharge point. Soil cuttings will remain on-site pending a determination of an appropriate disposition.

Anticipated Schedule

Drilling has been tentatively scheduled to commence on Wednesday, May 19, 1999, with installation activities anticipated to be completed on Wednesday May 26, 1999. Well development and the first round of groundwater monitoring activities will likely occur the following week.

If there are any comments or questions, please contact either the undersigned.

Sincerely,

Robert Ede
Project Manager

c: Ms. Sandra Hart, Northwest Natural
✓Mr. Amos Kamerer, Koppers Industries
Mr. Richard Bach, Stoel Rives, LLP
Mr. Frank Selker, Decision Focus, LLC
Mr. Tom Schadt, Anchor Environmental, LLC
Ms. Karla Urbanowicz, Oregon Department of Environmental Quality

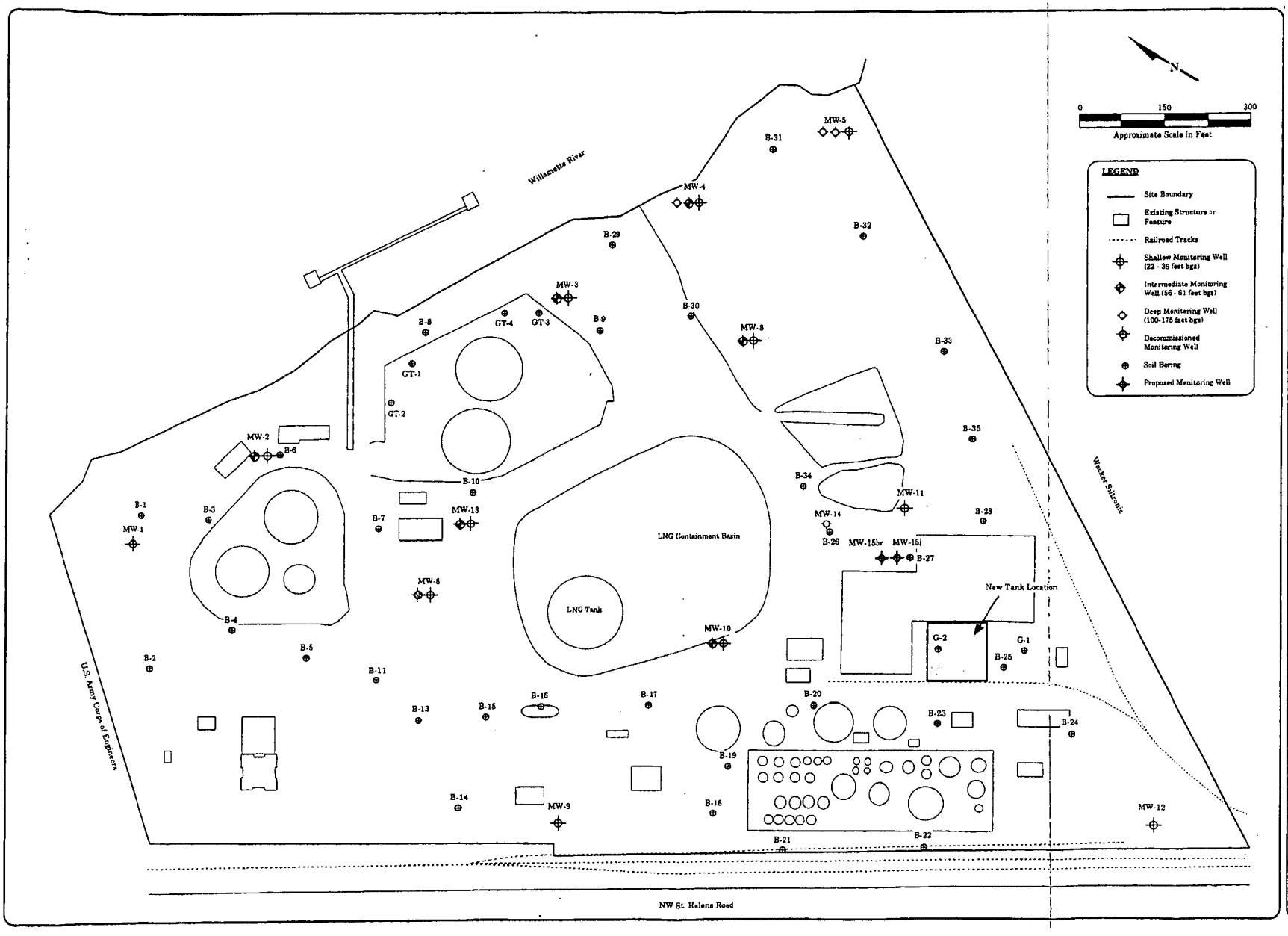

Figure 1

Proposed Koppper's Area Well Location Map

Remedial Investigation
Northwest Natural - Gasco Facility
7900 NW St. Helens Road
Portland, Oregon

HAHN & ASSOCIATES, INC.
ENVIRONMENTAL MANAGEMENT
434 NW SIXTH AVENUE, SUITE 203
PORTLAND, OREGON 97209
503/796-0717

May 1999

Project No. 2708

Koppers023619

RECEIVED

MAY 1 4 1999

KOPPERS INDS, INC.
PORTLAND OR

Koppers023620

NW Natural
220 NW 2ND AVENUE
PORTLAND, OR 97209
TEL 503.226.4211
www.nwnatural.com

May 11, 1999

Mr. Amos Kamerer
Koppers Industries, Inc.
7540 NW Saint Helens Road
Portland, OR 97210-3663

Re: N W Natural/Koppers Industries, Inc Lease Agreement – October 1,1998
Leasehold Improvements

Dear Amos,

This is in regard to my letter dated 4-16-99 stating that N W Natural did not have an objection to your installation of a liquid or solid coal tar processing plant on the property as long as the Oregon Department of Enviromental Quality (DEQ) approved the tank installation.

On May 7, 1999, N W Natural received a letter from the DEQ which approved of the tank installation with several conditions.

- Two monitoring wells will be installed to monitor potential impacts from the installation. One well will be installed in the alluvial zone and one to into bedrock. N W Natural will install the bedrock well as part of the remedial investigation on the site. However, the company was not planning on the installation of an additional alluvial well. It is my understanding from our telephone conversation, May 7, 1999, that Koppers Industries, Inc. will be responsible for the installation of the alluvial well.

- Hahn and Associates is preparing for the installation of the wells. They are sending the well location plan to the DEQ for approval, and will install the wells hopefully by next week. Regular monitoring activities on the site are being conducted today and will baseline the condition in the existing Monitoring Well No. 14.

- N W Natural will work with the DEQ to develop a monitoring program for the wells.

- Approval for future tank installation will depend on the results of the groundwater-monitoring program.

- If the tank installation exacerbates the contamination Koppers Industries Inc. and N W Natural will address clean-up options.

N W Natural agreed to the above in a letter to the DEQ dated May 10, 1999. (Copied to Koppers Industries, Inc.).

These agreements allow Koppers Industries Inc. to proceed with the tank installation. Hopefully everything will go well for you. Please let me know if you need anything further.

Sincerely,

Sandra K. Hart

Sandra K. Hart, Manager
Risk Enviroment and Land

CC Mark Dodson

RECEIVED

MAY 1 3 1999

KOPPERS INDS, INC.
PORTLAND OR

To Amos

Date 5·11·99 Time 1:47 ☐AM ☒PM

WHILE YOU WERE OUT

M Rob Edi

of Hahn & Assc.

Phone Numbers

Office (Area Code) (Number) (Ext.)

Voicemail

FAX

Pager

Mobile

e-mail

☒ Telephoned

☒ Please call

☐ Returned your call

☐ Called to see you

☐ Wants to see you

☐ Will call again

☐ URGENT

Message

Re: (The) Wells he will be putting in here. Est. $7,000

scheduled for Wed.

About 1 week for both wells

EP

Operator

AMPAD EFFICIENCY®

Reorder #23-000

Dial Dependability... Koppers Creosote

5 0 3 2 8 6 3 6 8 1

Sandy - NWN

3/7/99
10:15 AM

Mike then called Eric —
Eric - better done, being based now.
- Same basic points from Wed.'s meeting
1) Pile method - OK
2) New wells
(A) • Olympia well (KII) cost $12,000
• Basalt " (NWN) " $20-25,000
(NWN probably would have had to do at some point in future)
3) Piles produce a problem, could effect future tests

(A) NWN already has more of these wells than they need this KII pay. Their quarterly cost for well monitoring runs about $15,000

Sandy's boss has oked this, she will respond to ODEQ and then send us a new approval letter.

Author: AMOS KAMERER at PITT
Date: 6/11/98 9:54 AM
Priority: Normal
TO: JIM DIETZ at TECHCTR
CC: Kevin Fitzgerald at PITT
Subject: Liquid pitch porject

---------- Message Contents ----------

Jim:

Sandy Hart, NW Natural, called to say that she had talked to their consultant, Hahn and Assoc., who is working with them on the site assessment of this property, with the Oregon DEQ, about our project.

Hahn said that they were only required to advise the DEQ of any new or additional remediation or investigation work. That normal maintenance or construction work on the site was not of the DEQ's concern. So, we should proceed and keep them posted on our plans and schedules, as we have been.

Amos

KOPPERS INDUSTRIES

Koppers Industries, Inc.
436 Seventh Avenue
Pittsburgh, PA 15219-1800

Telephone: (412) 227-2001

April 4, 1989

Ms. Melinda R. Early
O. H. Materials Corporation
16406 US Route 224 East
Post Office Box 551
Findlay, Ohio 45839-0551

Re: Corporate Environmental
Services Agreement

Dear Ms. Early:

In reference to the "Corporate Environmental Services Agreement" previously put into effect between O. H. Materials Corporation and Koppers Company, Inc., please change all references from Koppers Company, Inc. to Koppers Industries, Inc. Effective December 29, 1988, our new organization was formed. A listing of current operating plant sites follows:

Woodward, Alabama (2)	Port Newark, New Jersey
Follansbee, West Virginia	Carbondale, Illinois
Chicago, Illinois	Tie Plant, Mississippi
Houston, Texas	Galesburg, Illinois
Portland, Oregon	Guthrie, Kentucky
Oroville, California	Green Spring, West Virginia
Denver, Colorado	North Little Rock, Arkansas
Florence, South Carolina	Salem, Virginia
Gainesville, Florida	Superior, Wisconsin
Montgomery, Alabama	Montgomery, Pennsylvania

Should there be any problems or questions concerning the above, please call me at 412/227-2718.

Sincerely yours,

Jack L. Stephenson

JLS/mjg

APR 10

KOPPERS INDUSTRIES

Koppers Industries, Inc.
436 Seventh Avenue
Pittsburgh, PA 15219-1800

James R. Batchelder
Vice President and Manager
Environmental and Technical

Telephone: (412) 227-2612
FAX: (412) 227-2022

August 10, 1990

LC: JCY
NES
STS
KSK (DMC)
LPP
RSD
DNS

R. G. Hamilton
BEAZER EAST, INC.
1450 Koppers Building
Pittsburgh, PA 15219

Dear Bob:

This letter is to confirm our agreement today for B.E.I. to fulfill its' responsibility and indemnification covered in the Asset Purchase Agreement for Environmental Compliance Costs (Section 7.02 (a)(i) and related portions of Section 7.02(a)(iv)).

B.E.I. agrees to pay KII $6 million in four equal payments of $1.5 million as scheduled below:

1. October 1, 1990
2. July 1, 1991
3. July 1, 1992
4. July 1, 1993

Upon execution of this letter agreement KII will release B.E.I. and the Koppers Indemnified Parties from all Environmental Compliance Costs alleged, known, or unknown. No further claims will be submitted after the date of this agreement; all invoices submitted prior to this agreement remain as B.E.I. responsibility. KII will indemnify B.E.I. and the Koppers Indemnified Parties against future Environmental Compliance Costs claims by other Purchaser Indemnified Parties. KII will also indemnify B.E.I. and the Koppers Indemnified Parties for all fines and penalties for violations arising out of Environmental Compliance Costs after the date of this letter agreement. With respect to fines and penalties for violations arising out of Environmental Compliance Costs prior to the date of this agreement, KII will attempt to have the issues severed. If that is not possible, B.E.I. retains the right to participate with strategy and negotiations. If B.E.I. is not satisfied with the final settlement and the difference cannot be resolved between B.E.I. and KII, the parties agree to seek resolution through arbitration as provided for in the Asset Purchase Agreement.

Please sign and return the attached copy of this letter to acknowledge your agreement. By entering into this agreement, neither party admits any liability with respect to the matters herein.

In addition to the above, but not to affect the payment, KII agrees to lend support to B.E.I. efforts in the environmental related construction business by providing opportunities to bid and participate in environmental compliance projects where experience and qualifications are established.

Further on the issue of the Woodward Lake, KII agrees to provide B.E.I. with an affirmative plan and schedule no later than October 1, 1990 for ceasing discharge to the lake. However, a final date for ceasing the discharge is not possible due to the uncertainty of agency response and actions required to provide an alternate outfall.

We appreciate your efforts to bring these potentially troubling issues to an acceptable conclusion.

Yours truly,

J. R. Batchelder

JRB:avd

cc: R. K. Wagner

Accepted RG Hamilton

R. G. Hamilton, Vice President
Beazer East, Inc.

CERTIFICATE

State of Oregon

OFFICE OF THE SECRETARY OF STATE
Corporation Division

I, BILL BRADBURY, Secretary of State of Oregon, and Custodian of the Seal of said State, do hereby certify:

That the attached Document File for:

KOPPERS INC.

is a true copy of the original documents that have been filed with this office.

In Testimony Whereof, I have hereunto set my hand and affixed hereto the Seal of the State of Oregon.

BILL BRADBURY, Secretary of State

By Debra L. Virag

Debra L. Virag
December 11, 2008

Come visit us on the internet at http://www.filinginoregon.com
FAX (503) 378-4381

1105

Koppers023630

Fax: (503) 378-4381

Application for Amendment/Withdrawal — Foreign Corporation

Secretary of State
Corporation Division
255 Capitol St. NE, Suite 151
Salem, OR 97310-1327
FilingInOregon.com

Check the appropriate box below:

☒ AMENDMENT TO APPLICATION FOR AUTHORITY
(Complete only 1, 2, 8, 9)

☐ WITHDRAWAL OF AUTHORITY TO TRANSACT
(Complete only 3, 4, 5, 6, 7, 8, 9)

FILED
MAR 20 2003
OREGON
SECRETARY OF STATE
For office use only

REGISTRY NUMBER: 139836-89

In keeping with Oregon Statute 192.410-192.505, the information on the application is public record. We must release this information to all parties upon request and it may be posted on our website.

Please Type or Print Legibly in Black Ink. Attach Additional Sheet if Necessary.

AMENDMENT TO APPLICATION ONLY

1) NAME PRIOR TO AMENDMENT Koppers Industries, Inc.

2) AMENDMENT (The amendment is as follows.)
NAME OF THE CORPORATION IS CHANGED TO: Koppers Inc..

WITHDRAWAL OF AUTHORITY TO TRANSACT BUSINESS ONLY

3) NAME

4) STATE OR COUNTRY OF INCORPORATION

5) THIS CORPORATION IS NOT TRANSACTING BUSINESS IN OREGON, AND SURRENDERS ITS AUTHORITY TO TRANSACT BUSINESS IN OREGON.

6) THIS CORPORATION REVOKES THE AUTHORITY OF ITS REGISTERED AGENT TO ACCEPT SERVICE ON ITS BEHALF AND APPOINTS THE SECRETARY OF STATE AS ITS AGENT FOR SERVICE OF PROCESS IN ANY PROCEEDING BASED ON A CAUSE OF ACTION ARISING DURING THE TIME IT WAS AUTHORIZED TO TRANSACT BUSINESS IN OREGON.

7) MAILING ADDRESS (The address to which the person initiating any proceeding may mail to this Corporation a copy of any process served on the Secretary of State. The Corporation will notify the Corporation Division, Business Registry of any change in this mailing address for a period of five years from the date of this withdrawal.)

8) EXECUTION

Printed Name	Signature	Title
Steven R. Lacy		V.P., Law/Human Resources/Secretary

H 03/20/03

9) CONTACT NAME (To resolve questions with this filing.) Steven R. Lacy

DAYTIME PHONE NUMBER (Include area code.) 412-227-2889

FEES

Required Processing Fee $20
Processing Fees are nonrefundable.
Please make check payable to "Corporation Division."
NOTE:
Fees may be paid with VISA or MasterCard. The card number and expiration date should be submitted on a separate sheet for your protection.

123 (Rev. 8/02)
Oline - 10/12/02 CT Filing Manager Online

MAR-20-2003 13:04 CT CORPORATION SYSTEM 412 281 5212 P.02/02

VOID WITHOUT WATERMARK OR IF ALTERED OR ERASED

Submit the Original and One True Copy with an Original Certificate of Existence (831.115) $440.00

STATE OF OREGON
CORPORATION DIVISION
158 12th Street NE
Salem, OR 97310

Oregon Registry Number: 179836-89
(Office Use Only)

FOREIGN BUSINESS CORPORATION
APPLICATION FOR AUTHORITY TO TRANSACT BUSINESS

DEC 21 1988
CORPORATION DIVISION

PLEASE TYPE OR PRINT LEGIBLY IN BLACK INK

1. Name of the corporation: Pittsburgh Acquisition Corporation, Inc.

   Note: The name must contain the word "Corporation," "Company," "Incorporated," or "Limited" or an abbreviation of one of such words.

2. State or country of incorporation: Pennsylvania

3. Date of incorporation: October 21, 1988 Duration, if not perpetual: _____

4. Name of Oregon registered agent: C T CORPORATION SYSTEM

   Address of Oregon registered office (This must be a street address in Oregon which is identical to the registered agent's business office):

   800 Pacific Building, Portland, OREGON 97204
   Street and Number / City / Zip Code

5. Address of the principal office of the business: (C/O:) (Attn:) Robert K. Wagner

   Koppers Bldg., 436 Seventh Ave. Pittsburgh, PA 15219
   Street and Number / City / State / Zip Code

6. Mailing address Corporation Division may use for notices (If different from the principal office address):

   Koppers Bldg., 436 Seventh Ave., Pittsburgh, PA 15219
   Street and Number or PO Box / City / State / Zip Code

7. Name and address of president and secretary:

   Robert K. Wagner — President — Koppers Bldg., 436 Seventh Ave., Pittsburgh, PA 15219 (Address)

   Clayton A. Sweeney — Secretary — Suite 400, Two PPG Place, Pittsburgh, PA 15222 (Address)

Execution: R K Wagner — Signature; Robert K. Wagner — Printed Name; President — Title

Person to contact about this filing: David J. Minesky, c/o CT Corporation System — Name; 800-245-1900 — Daytime Phone Number

Submit the original and a true copy to the Corporation Division, 158 12th Street NE, Salem, OR 97310, with the fee of $400.00 and the surcharge of $40.00 — Total $440.00. Include an ORIGINAL CERTIFICATE OF EXISTENCE, current within 60 days of delivery to this division, authenticated by the official having custody of the corporate records in the jurisdiction of incorporation. PLEASE DO NOT SEND CASH. If you have questions, call (503) 378-4166.

FBC-1 (3/88) 831.115 ($440.00)

Tw 12/21/88 AW

VOID WITHOUT WATERMARK OR IF ALTERED OR ERASED

1375356 8

Commonwealth of Pennsylvania

December 15, 1988

To All to Whom These Presents Shall Come: Greeting:

I DO HEREBY CERTIFY, That from an examination of the indices and corporate records of this department, it appears that on October 21, 1988 *a Certificate of Incorporation was issued to a Pennsylvania corporation entitled*

"PITTSBURGH ACQUISITION CORPORATION, INC."

I DO FURTHER CERTIFY, That no proceedings in dissolution adversely affecting the corporate existence of the foregoing have subsequently been filed.

WHEREFORE, it appears that this corporation remains a presently subsisting corporation as of the date hereof.

IN TESTIMONY WHEREOF, I have hereunto set my hand and caused the Great Seal of the Commonwealth to be affixed, the day and year above written.

(mc)

Secretary of the Commonwealth

DSCB-[illegible] (REV.8-75)

VOID IF ALTERED OR ERASED
VOID IF ALTERED OR ERASED
VOID WITHOUT WATERMARK OR IF ALTERED OR ERASED

And One True Copy
No Fee Required

CORPORATION DIVISION
158 12th Street NE
Salem, OR 97310

FILED
IN THE OFFICE OF THE SECRETARY OF STATE OF THE STATE OF OREGON
FEB 07 1989
CORPORATION DIVISION

Oregon Registry Number: 13983689
(If known)

FOREIGN CORPORATION
AMENDMENT TO APPLICATION FOR
AUTHORITY TO TRANSACT BUSINESS

PLEASE TYPE OR PRINT LEGIBLY IN BLACK INK

1. The name of the corporation prior to the amendment:

   Pittsburgh Acquisition Corporation, Inc.

2. The corporate name has been changed to:

   Koppers Industries, Inc.

3. The duration of the corporation has been changed to:

   N/A

   ☐ Perpetual

   OR

   ☐ _____ , _____

   (Please give a specific date.)

Execution: RK Wagner — Robert K. Wagner, President
Signature — Printed Name — Title

Person to contact about this filing: David J. Minesky — 800-245-1900
Name — Daytime Phone Number

Submit the original and a true copy to the Corporation Division, 158 12th Street NE, Salem, Oregon 97310. There is no fee required. If you have questions, please call (503) 378-4166.

FBC-2 (6/87) (ORE - 1236 - 6/23/87)

DJ 2 A

VOID IF ALTERED OR ERASED
VOID IF ALTERED OR ERASED
VOID WITHOUT WATERMARK OR IF ALTERED OR ERASED

Purpose:

Koppers Inc.'s ("Koppers") records are important assets. Corporate records include essentially everything you produce as an employee. The law requires Koppers to maintain certain types of corporate records, usually for a specified period of time. Failure to retain records for those minimum periods could subject you and Koppers to penalties and fines, cause the loss of rights, obstruct justice, spoil potential evidence in a lawsuit, place Koppers in contempt of court, or seriously disadvantage Koppers in litigation.

Accordingly, Koppers has established guidelines to assure retention for required periods and timely destruction of retrievable records, such as hard copies and records on computers.

Scope:

This Records Management and Retention Policy ("Policy") applies to all employees, officers, directors and other personnel of Koppers Holdings Inc., Koppers Inc. and all U.S. subsidiaries of Koppers Inc. The terms "employee" or "personnel" as used in the Policy, are intended to encompass all employees, officers, directors and other personnel of Koppers.

Policy Summary:

Employees should create, maintain and destroy records in accordance with the law and the retention periods relating to document retention contained within the Koppers Retention Schedules (the "Retention Schedules") attached to this Policy and in accordance with any instructions provided to employees from time to time which supplement or vary these Retention Schedules. This may occur in situations where the rules governing the conduct of litigation requires Koppers to implement special safeguards to assure that potentially relevant records are not destroyed prematurely (see Part V below).

Koppers expects all employees to fully comply with this Policy.

In this regard, employees should know that it can be a crime to destroy records relevant to pending or threatened claims against Koppers.

If an employee becomes aware of a threatened claim against Koppers, he or she should immediately notify a member of the Koppers Legal Department so that appropriate steps may be taken to safeguard Koppers' records. **If you believe, or Koppers informs you, that Koppers' records are relevant to anticipated or pending litigation and/or are subject to a Litigation Hold, then you must preserve those records until a determination has been made that such records are no longer needed and you are so advised (see Part V below). When in doubt, it is Koppers' policy that employees seek guidance and clarification (where necessary) about the need to retain a document prior to its destruction or modification.**

If it is discovered that a Koppers employee has willfully violated this Policy or the attached Retention Schedules, he or she may be subject to disciplinary action up to and including dismissal. Inadvertent non-compliance may also result in disciplinary action up to and including dismissal.

The Retention Schedules set forth detailed guidelines for handling, retaining and destroying Koppers records.

Policy:

Information vital to Koppers' business is contained in its records and should be properly managed. Koppers, however, generates enormous quantities of information with either questionable or rapidly fading significance. The expense of storing and maintaining unnecessary records is compounded by the difficulties in finding and utilizing useful and important information from among the insignificant.

This Policy provides guidance to Koppers employees in the management, retention, and destruction of Koppers' records in order to meet their business and legal obligations while reducing the expense and burdens associated with the retention of unneeded records.

I. Application

This Policy applies to Koppers divisions, departments, and all locations in the U.S.

II. Definition of "Record"

The term "record" is used with the broad meaning commonly applied for legal purposes and refers to paper as well as electronic. Electronic documents include ***all*** e-mails and attachments, word processing documents, spreadsheets, databases, calendar entries, computer drawings, and PowerPoint slides created or received by Koppers employees in the ordinary course of its business. Records include drafts, handwritten notes, charts, drawings or other renderings created or received by Koppers employees in the ordinary course of its business.

III. Retention of Koppers Records

The law requires Koppers to maintain certain types of corporate records, usually for a specified period of time. Failure to retain records for those minimum periods could subject you and Koppers to penalties and fines, cause the loss of rights, obstruct justice, spoil potential evidence in a lawsuit, place Koppers in contempt of court, or seriously disadvantage Koppers in litigation.

Koppers expects all employees to fully comply with any records retention or destruction policies and schedules contained in the attached Retention Schedules. Note, however, an important exception to the retention or destruction policies discussed therein. **If you believe, or Koppers informs you, that Koppers records are relevant to anticipated or pending litigation and/or are subject to a Litigation Hold, then you must preserve those records until a determination has been made that such records are no longer needed and the Litigation Hold has been lifted (see Part V below).**

A. Retention Schedules

The attached Retention Schedules are intended to assist Koppers employees in determining how long records should be retained. If you have any questions about the

appropriate retention period for a document not identified on the Retention Schedules, you should contact the Koppers Legal Department for advice. The retention periods set forth in the Retention Schedules apply to all records, whether in electronic or paper form.

The guidelines set out in the Retention Schedules generally apply to the final "official" or "original" record and not to drafts and copies. Further, if a record type is not identified in the Retention Schedules then the record is not subject to any specific retention period, but should be kept only so long as it is required for business use. If your files contain identical paper and electronic records, retain the electronic version and destroy the paper version, except for those original paper records required by law to be retained.

Absent a Litigation Hold, the retention periods indicated in the Retention Schedules are believed to be generally sufficient. However, if you believe a longer period may be required for a particular record, perhaps due to a specialized statute being overlooked or a change in law, you should promptly notify a member of the Koppers Legal Department so that appropriate changes in the Retention Schedules can be made and distributed.

When records with varying retention periods are held as a unit, the retention period for the entire unit is determined by the record having the longest requirement.

B. Record Storage

Stored paper records, whether kept in Koppers facilities or at offsite or third-party storage facilities, should be stored in suitable boxes or containers, and indexed and labeled in an appropriate manner.

Generally speaking, absent a Litigation Hold, the retention periods set forth in the Retention Schedules are designed for the retention of "official" original documents. Drafts and copies of documents should not be retained unless subject to a Litigation Hold.

C. Attorney-Client Privileged Records/Other Restricted Records

Documents subject to the attorney-client privilege must be maintained and stored in a way that does not result in an unintended waiver of that privilege, e.g., through breach of confidentiality. You should contact the Koppers Legal Department with any questions in this regard.

Also, certain records, such as private medical information may be subject to certain access restrictions, and such records should be stored in accordance with those requirements.

D. Record Destruction

Absent a governing Litigation Hold, records subject to this Policy should be discarded upon the expiration of the relevant retention period. For sensitive or confidential documents, destruction shall be effected by reformatting storage media in the case of electronic records or by non-recoverable shredding in the case of non-electronic records. The Koppers Records Administrator should be contacted regarding destruction procedures and documentation protocol.

IV. Electronic Storage Media

As discussed above, electronic versions of records are Koppers records and are subject to applicable retention periods and Litigation Holds. Koppers' records targeted for retention by a Litigation Hold are potentially subject to production in litigation, and will be required to meet evidentiary requirements. Electronic records are easily modified and changed; simply opening certain records will alter hidden characteristics. As such, great care should be taken to preserve the original nature of electronic documents subject to Litigation Holds. For additional information concerning the safeguarding of electronic records, please refer to the applicable Litigation Hold Notice.

A. IT Computer "Back Up" Storage

All electronic records are subject to this Policy. Records stored on the Koppers central servers, individual personal computers ("PCs"), laptop disk drives, and other types of removable media, are also subject to this Policy and applicable Litigation Holds.

Files stored on the Koppers network and servers are backed-up on an incremental basis Monday through Thursday and are subject to a full backup on Friday. A 5 week history of Koppers' records is retained. Data Backup policies are contained in the Koppers IT Security Policy. Generally speaking, however, Koppers employees should not rely on "backup" tapes or other backup storage devices on the Koppers computer system for long-term storage of records, as such backup systems are designed for catastrophic failures and not as long-term archives of Koppers records.

As part of Koppers' PC standard software "image," each PC and laptop is provided with hardware and software to facilitate backup of the entire hard drive, selected folders or individual files. Each person is responsible for the backup and storage of files on their personal computers. At locations remote to Pittsburgh, all PC's or laptops must be backed up daily (this can vary based upon activity), and the media taken offsite or stored in a fireproof container. PC users in Pittsburgh have the choice of saving files to the U:drive or backing up to removable media. The procedures for storing removable media in Pittsburgh would be the same as that used by remote locations.

B. Legal Requirements

You should contact a member of the Koppers Legal Department if you have any questions about whether any original paper records, required by law to be retained, may be destroyed after copying in an electronic format. With respect to any records subject to a Litigation Hold, you may not substitute electronic records for the original paper records and then destroy the paper records without the prior approval of the Koppers Legal Department.

C. Migration of Records

Whenever consideration is given to the replacement of existing systems with new computer software or hardware, the Koppers IT Department must be consulted beforehand regarding the migration of existing electronic records to the new system in order to ensure the continued retention and accessibility of the records. Deferring such consultations until after acquisition of the new systems can result in enormous costs to Koppers.

V. Suspension of Document Destruction Via Litigation Hold

A. Litigation Hold

Records pertaining to any matter which is the subject of ongoing or reasonably anticipated litigation or a government investigation must not be destroyed or altered without the prior approval of the Koppers Legal Department and will be the subject of a Litigation Hold.

"Litigation Hold" is the mandatory process by which Koppers advises its employees not only of pending or anticipated litigation but also of their continuing obligation to preserve potentially relevant records.

Destruction or alteration of documents subject to a Litigation Hold may constitute "spoliation" of evidence and can subject Koppers (and even individual employees) to sanctions, including criminal penalties in certain situations, and undermine Koppers' ability to defend or assert its position in such litigation or investigation. Again, records not subject to any Litigation Hold should continue to be retained and/or destroyed pursuant to this Policy.

B. Litigation Hold Notice

Koppers employees will be alerted to Litigation Holds via notices (the "Litigation Hold Notice") issued by the Koppers Legal Department for each specific legal matter. The case-specific Litigation Hold Notices will identify the types, sources and subject matter of records that may be potentially relevant to a particular case or governmental investigation. Individual employees will receive each Notice and those persons identified as having particular relevance to the litigated issues will be approached separately by members of the Koppers Legal Department. The Notices are available on KopNet.

C. Retention of Records Subject to "Litigation Hold"

All potentially relevant records must be preserved as they existed when the applicable Litigation Hold was issued, for the duration of the Litigation Hold, regardless of their retention period. Further, a Litigation Hold applies to **drafts** and all **versions** of records. Copies of records containing handwritten notations are not "identical" to the original. Ordinarily, these types of copies are not retained, absent a business necessity. However, if responsive to a Litigation Hold Notice, copies of records with handwritten notations should be preserved for the duration of the Litigation Hold. Furthermore, draft documents subject to a Litigation Hold must not be modified. Rather, new versions should be created following the issuance of a Litigation Hold and modified as necessary.

Indeed, the types and categories of records subject to a Litigation Hold are often more inclusive than the types and categories of records to be maintained in accordance with the Retention Schedules, and a Litigation Hold typically suspends destruction of **all** relevant records, even those records that are not subject to any particular retention period in the Retention Schedules.

D. Automatic Destruction Programs

Any automatic electronic records destruction program shall be disabled or suspended in order to preserve electronic records subject to a Litigation Hold.

E. Knowledge of Anticipated Investigation or Claim

Where an employee is in possession of records that the employee knows may pertain to a pending or reasonably anticipated lawsuit or investigation, the employee must take reasonable steps to preserve such documents, even though the employee may not have actually received the Litigation Hold Notice or court order or subpoena. In this situation, the employee should contact a member of the Koppers Legal Department for guidance and preserve such records, without any alterations or changes, pending further direction from Koppers' Legal Department. It is the responsibility of all employees to report to the Koppers Legal Department when a lawsuit or investigation is commenced or is reasonably anticipated, so that an appropriate response, including possible suspension of this Policy (via issuance of a Litigation Hold) may be considered.

F. Questions

Litigation Hold Notices will be issued by the Koppers Legal Department, and will describe the general categories of documents that are to be preserved. If you have any questions concerning Litigation Holds, their nature and scope or a document's potential relevance to a Litigation Hold, please contact a member of the Koppers Legal Department. **When in doubt, it is Koppers' policy that employees seek guidance and clarification (where necessary) about the need to retain a document prior to its destruction or modification.**

VI. Release from Audit/Legal and Environmental Reviews

This Policy requires that, prior to the destruction of certain records, the Koppers Tax Department confirm that the records are no longer necessary for any tax audit. In certain other cases, review of certain records by the Koppers Legal Department or site environmental project manager may be required prior to destruction. Employees must comply with these requirements.

Records that pre-date the formation of Koppers, i.e. December 29, 1988, are subject to a special agreement between Koppers and Beazer East, Inc. (formerly Koppers Company, Inc.). Such documents shall not be destroyed without prior written authorization from the Koppers Legal Department.

VII. Records Upon Employee Termination

Upon or prior to termination of employment, the terminated employee shall deliver to Koppers all Koppers records in his or her possession and the immediate supervisor of such employee shall secure such records. Koppers employees may not retain Koppers information, Koppers computers (including laptop computers), or Koppers storage media after termination of employment.

The IT Department shall secure any computer used by a terminated employee (including laptops) and shall not destroy any records stored on the computer (including reformatting or "wiping" the hard drive) or on the employee's "home" directory on a Koppers server or assign the computer for use by another employee without first receiving written approval from the Koppers Legal Department.

VIII. Accountability

A. Employee Accountability

Each employee is responsible for compliance with this Policy any and all Litigation Holds. Included among these responsibilities is the retention, preservation or destruction of Koppers records in his or her possession or custody in accordance with these policies, procedures and plans.

If it is discovered that a Koppers employee has willfully violated this Policy, he or she may be subject to disciplinary action up to and including dismissal. Inadvertent non-compliance may also result in disciplinary action up to and including dismissal.