Appendix B

Laboratory Report of Analysis (with Chain-of-Custody Record and Well Development/Purge Records)

Pace Analytical

Pace Analytical Services, Inc.
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Huntersville, NC 28078

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Fax: 704-875-9091

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AUG 17 1999
HDR ENGINEERING, INC.
OF THE CAROLINAS

August 16, 1999

Mr. John Isham
HDR Engineering
128 South Tryon Street
Suite 1400
Charlotte, NC 28202

RE: Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Dear Mr. Isham:

Enclosed are the results of analyses for sample(s) received by the laboratory on August 2, 1999. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bonnie Hervey

Bonnie Hervey
Project Manager

Enclosures

Pace Analytical

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Tel: 704-875-9092
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August 18, 1999

RECEIVED
AUG 19 1999
HDR ENGINEERING, INC.
OF THE CAROLINAS

Mr. John Isham
HDR Engineering
128 South Tryon Street
Suite 1400
Charlotte, NC 28202

RE: Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Dear Mr. Isham:

Enclosed are the results of analyses for sample(s) received by the laboratory on August 4, 1999. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bonnie Hervey

Bonnie Hervey
Project Manager

Enclosures

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569466 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-7 Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/17/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/17/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	08/17/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	08/17/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/17/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/17/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/17/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/17/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/17/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/17/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/17/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/17/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/17/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/17/99	VFT	78-93-3	
cis-1,2-Dichloroethene	5.3	ug/l	5	08/17/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/17/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/17/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/17/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/17/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/17/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/17/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/17/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/17/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/17/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/17/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/17/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/17/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/17/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/17/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/17/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/17/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/17/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/17/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569466 | Date Collected: 08/03/99 | Matrix: Water
Client Sample ID: OW-7 | Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/17/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/17/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/17/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/17/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/17/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/17/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/17/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/17/99	VFT	96-12-8	
Dibromofluoromethane (S)	111	%		08/17/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	116	%		08/17/99	VFT	17060-07-0	
Toluene-d8 (S)	100	%		08/17/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	99	%		08/17/99	VFT	460-00-4	

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Pace Analytical

DATE: 08/16/99
PAGE: 1

JR Engineering
128 South Tryon Street
ite 1400
arlotte, NC 28202

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

tn: Mr. John Isham
one: (704)338-1800

lid results are reported on a dry weight basis

ace Sample No: 92567304 | Date Collected: 08/02/99 | Matrix: Water
ient Sample ID: OW-7M | Date Received: 08/02/99

arameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
/MS Volatiles							
GC/MS VOCs by 8260		Method: EPA 8260			Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/13/99	RPJ	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	RPJ	75-01-4	
Bromomethane	ND	ug/l	10	08/13/99	RPJ	74-83-9	
Chloroethane	ND	ug/l	10	08/13/99	RPJ	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	RPJ	75-69-4	
Acetone	ND	ug/l	100	08/13/99	RPJ	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	RPJ	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	RPJ	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	RPJ	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	RPJ	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	RPJ	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	RPJ	156-60-5	
1,1-Dichloroethane	28	ug/l	5	08/13/99	RPJ	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	RPJ	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	RPJ	78-93-3	
cis-1,2-Dichloroethene	48	ug/l	5	08/13/99	RPJ	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	RPJ	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	RPJ	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	RPJ	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	RPJ	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	RPJ	56-23-5	
Benzene	ND	ug/l	5	08/13/99	RPJ	71-43-2	
Trichloroethene	36	ug/l	5	08/13/99	RPJ	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	RPJ	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	RPJ	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	RPJ	75-27-4	

Laboratory Certification IDs
NC Wastewater 12
NC Drinking Water 37706
SC 99006

REPORT OF LABORATORY ANALYSIS

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Laboratory Certification IDs
KY Drinking Water 90090
TN UST List
VA Drinking Water 213

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567304 | Date Collected: 08/02/99 | Matrix: Water
Client Sample ID: OW-7M | Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	RPJ	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	RPJ	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	RPJ	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	RPJ	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	RPJ	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	RPJ	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	RPJ	124-48-1	
Tetrachloroethene	21	ug/l	5	08/13/99	RPJ	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	RPJ	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	RPJ	108-90-7	
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	RPJ	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	RPJ	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	RPJ	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	RPJ	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	RPJ	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	RPJ	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	RPJ	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	RPJ	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	RPJ	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	RPJ	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	RPJ	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	RPJ	96-12-8	
Dibromofluoromethane (S)	108	%		08/13/99	RPJ	1868-53-7	
1,2-Dichloroethane-d4 (S)	106	%		08/13/99	RPJ	17060-07-0	
Toluene-d8 (S)	94	%		08/13/99	RPJ	2037-26-5	
4-Bromofluorobenzene (S)	103	%		08/13/99	RPJ	460-00-4	

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Pace Analytical

DATE: 08/18/99
PAGE: 1

HDR Engineering
128 South Tryon Street
uite 1400
harlotte, NC 28202

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

ttn: Mr. John Isham
hone: (704)338-1800

olid results are reported on a dry weight basis

Pace Sample No: 92569250 Date Collected: 08/03/99 Matrix: Water
lient Sample ID: OW-8D Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
C/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/07/99	RPJ	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/07/99	RPJ	75-01-4	
Bromomethane	ND	ug/l	10	08/07/99	RPJ	74-83-9	
Chloroethane	ND	ug/l	10	08/07/99	RPJ	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/07/99	RPJ	75-69-4	
Acetone	ND	ug/l	100	08/07/99	RPJ	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/07/99	RPJ	75-35-4	
Iodomethane	ND	ug/l	5	08/07/99	RPJ	74-88-4	
Acrylonitrile	ND	ug/l	100	08/07/99	RPJ	107-13-1	
Methylene Chloride	14	ug/l	5	08/07/99	RPJ	75-09-2	1
Carbon Disulfide	ND	ug/l	5	08/07/99	RPJ	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/07/99	RPJ	156-60-5	
1,1-Dichloroethane	19	ug/l	5	08/07/99	RPJ	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/07/99	RPJ	108-05-4	
2-Butanone	ND	ug/l	100	08/07/99	RPJ	78-93-3	
cis-1,2-Dichloroethene	17	ug/l	5	08/07/99	RPJ	156-59-2	
Chloroform	ND	ug/l	5	08/07/99	RPJ	67-66-3	
Bromochloromethane	ND	ug/l	5	08/07/99	RPJ	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/07/99	RPJ	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/07/99	RPJ	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/07/99	RPJ	56-23-5	
Benzene	ND	ug/l	5	08/07/99	RPJ	71-43-2	
Trichloroethene	20	ug/l	5	08/07/99	RPJ	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/07/99	RPJ	78-87-5	
Dibromomethane	ND	ug/l	5	08/07/99	RPJ	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/07/99	RPJ	75-27-4	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569250 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-8D Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
4-Methyl-2-Pentanone	ND	ug/l	50	08/07/99	RPJ	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/07/99	RPJ	10061-01-5	
Toluene	ND	ug/l	5	08/07/99	RPJ	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/07/99	RPJ	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/07/99	RPJ	79-00-5	
2-Hexanone	ND	ug/l	50	08/07/99	RPJ	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/07/99	RPJ	124-48-1	
Tetrachloroethene	35	ug/l	5	08/07/99	RPJ	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/07/99	RPJ	106-93-4	
Chlorobenzene	ND	ug/l	5	08/07/99	RPJ	108-90-7	
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/07/99	RPJ	630-20-6	
Ethylbenzene	ND	ug/l	5	08/07/99	RPJ	100-41-4	
m&p-Xylene	ND	ug/l	10	08/07/99	RPJ	7816-60-0	
Styrene	ND	ug/l	5	08/07/99	RPJ	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/07/99	RPJ	95-47-6	
Bromoform	ND	ug/l	5	08/07/99	RPJ	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/07/99	RPJ	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/07/99	RPJ	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/07/99	RPJ	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/07/99	RPJ	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/07/99	RPJ	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/07/99	RPJ	96-12-8	
Dibromofluoromethane (S)	89	%		08/07/99	RPJ	1868-53-7	
1,2-Dichloroethane-d4 (S)	94	%		08/07/99	RPJ	17060-07-0	
Toluene-d8 (S)	95	%		08/07/99	RPJ	2037-26-5	
4-Bromofluorobenzene (S)	103	%		08/07/99	RPJ	460-00-4	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569268 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-9 Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/07/99	RPJ	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/07/99	RPJ	75-01-4	
Bromomethane	ND	ug/l	10	08/07/99	RPJ	74-83-9	
Chloroethane	ND	ug/l	10	08/07/99	RPJ	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/07/99	RPJ	75-69-4	
Acetone	ND	ug/l	100	08/07/99	RPJ	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/07/99	RPJ	75-35-4	
Iodomethane	ND	ug/l	5	08/07/99	RPJ	74-88-4	
Acrylonitrile	ND	ug/l	100	08/07/99	RPJ	107-13-1	
Methylene Chloride	ND	ug/l	5	08/07/99	RPJ	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/07/99	RPJ	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/07/99	RPJ	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/07/99	RPJ	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/07/99	RPJ	108-05-4	
2-Butanone	ND	ug/l	100	08/07/99	RPJ	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/07/99	RPJ	156-59-2	
Chloroform	ND	ug/l	5	08/07/99	RPJ	67-66-3	
Bromochloromethane	ND	ug/l	5	08/07/99	RPJ	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/07/99	RPJ	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/07/99	RPJ	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/07/99	RPJ	56-23-5	
Benzene	ND	ug/l	5	08/07/99	RPJ	71-43-2	
Trichloroethene	ND	ug/l	5	08/07/99	RPJ	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/07/99	RPJ	78-87-5	
Dibromomethane	ND	ug/l	5	08/07/99	RPJ	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/07/99	RPJ	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/07/99	RPJ	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/07/99	RPJ	10061-01-5	
Toluene	ND	ug/l	5	08/07/99	RPJ	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/07/99	RPJ	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/07/99	RPJ	79-00-5	
2-Hexanone	ND	ug/l	50	08/07/99	RPJ	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/07/99	RPJ	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/07/99	RPJ	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/07/99	RPJ	106-93-4	
Chlorobenzene	ND	ug/l	5	08/07/99	RPJ	108-90-7	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569268 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-9 Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/07/99	RPJ	630-20-6	
Ethylbenzene	ND	ug/l	5	08/07/99	RPJ	100-41-4	
m&p-Xylene	ND	ug/l	10	08/07/99	RPJ	7816-60-0	
Styrene	ND	ug/l	5	08/07/99	RPJ	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/07/99	RPJ	95-47-6	
Bromoform	ND	ug/l	5	08/07/99	RPJ	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/07/99	RPJ	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/07/99	RPJ	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/07/99	RPJ	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/07/99	RPJ	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/07/99	RPJ	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/07/99	RPJ	96-12-8	
Dibromofluoromethane (S)	90	%		08/07/99	RPJ	1868-53-7	
1,2-Dichloroethane-d4 (S)	94	%		08/07/99	RPJ	17060-07-0	
Toluene-d8 (S)	90	%		08/07/99	RPJ	2037-26-5	
4-Bromofluorobenzene (S)	102	%		08/07/99	RPJ	460-00-4	

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Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569276 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-9D Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/07/99	RPJ	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/07/99	RPJ	75-01-4	
Bromomethane	ND	ug/l	10	08/07/99	RPJ	74-83-9	
Chloroethane	ND	ug/l	10	08/07/99	RPJ	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/07/99	RPJ	75-69-4	
Acetone	ND	ug/l	100	08/07/99	RPJ	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/07/99	RPJ	75-35-4	
Iodomethane	ND	ug/l	5	08/07/99	RPJ	74-88-4	
Acrylonitrile	ND	ug/l	100	08/07/99	RPJ	107-13-1	
Methylene Chloride	15	ug/l	5	08/07/99	RPJ	75-09-2	1
Carbon Disulfide	ND	ug/l	5	08/07/99	RPJ	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/07/99	RPJ	156-60-5	
1,1-Dichloroethane	21	ug/l	5	08/07/99	RPJ	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/07/99	RPJ	108-05-4	
2-Butanone	ND	ug/l	100	08/07/99	RPJ	78-93-3	
cis-1,2-Dichloroethene	17	ug/l	5	08/07/99	RPJ	156-59-2	
Chloroform	ND	ug/l	5	08/07/99	RPJ	67-66-3	
Bromochloromethane	ND	ug/l	5	08/07/99	RPJ	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/07/99	RPJ	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/07/99	RPJ	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/07/99	RPJ	56-23-5	
Benzene	ND	ug/l	5	08/07/99	RPJ	71-43-2	
Trichloroethene	20	ug/l	5	08/07/99	RPJ	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/07/99	RPJ	78-87-5	
Dibromomethane	ND	ug/l	5	08/07/99	RPJ	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/07/99	RPJ	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/07/99	RPJ	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/07/99	RPJ	10061-01-5	
Toluene	ND	ug/l	5	08/07/99	RPJ	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/07/99	RPJ	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/07/99	RPJ	79-00-5	
2-Hexanone	ND	ug/l	50	08/07/99	RPJ	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/07/99	RPJ	124-48-1	
Tetrachloroethene	47	ug/l	5	08/07/99	RPJ	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/07/99	RPJ	106-93-4	
Chlorobenzene	ND	ug/l	5	08/07/99	RPJ	108-90-7	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569276 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-9D Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/07/99	RPJ	630-20-6	
Ethylbenzene	ND	ug/l	5	08/07/99	RPJ	100-41-4	
m&p-Xylene	ND	ug/l	10	08/07/99	RPJ	7816-60-0	
Styrene	ND	ug/l	5	08/07/99	RPJ	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/07/99	RPJ	95-47-6	
Bromoform	ND	ug/l	5	08/07/99	RPJ	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/07/99	RPJ	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/07/99	RPJ	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/07/99	RPJ	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/07/99	RPJ	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/07/99	RPJ	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/07/99	RPJ	96-12-8	
Dibromofluoromethane (S)	87	%		08/07/99	RPJ	1868-53-7	
1,2-Dichloroethane-d4 (S)	92	%		08/07/99	RPJ	17060-07-0	
Toluene-d8 (S)	93	%		08/07/99	RPJ	2037-26-5	
4-Bromofluorobenzene (S)	104	%		08/07/99	RPJ	460-00-4	

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Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569284 Date Collected: 08/03/99 Matrix: Water
lient Sample ID: OW-10 Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/17/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/17/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	08/17/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	08/17/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/17/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/17/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/17/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/17/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/17/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/17/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/17/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/17/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/17/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/17/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/17/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/17/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/17/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/17/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/17/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/17/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/17/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/17/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/17/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/17/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/17/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/17/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/17/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/17/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/17/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/17/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/17/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/17/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569284 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-10 Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/17/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/17/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/17/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/17/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/17/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/17/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/17/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/17/99	VFT	96-12-8	
Dibromofluoromethane (S)	104	%		08/17/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%		08/17/99	VFT	17060-07-0	
Toluene-d8 (S)	100	%		08/17/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	97	%		08/17/99	VFT	460-00-4	

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Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569292 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-10M Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/17/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/17/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	08/17/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	08/17/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/17/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/17/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/17/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/17/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/17/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/17/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/17/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/17/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/17/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/17/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/17/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/17/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/17/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/17/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/17/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/17/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/17/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/17/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/17/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/17/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/17/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/17/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/17/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/17/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/17/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/17/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/17/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/17/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569292 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-10M Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/17/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/17/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/17/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/17/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/17/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/17/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/17/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/17/99	VFT	96-12-8	
Dibromofluoromethane (S)	117	%		08/17/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	134	%		08/17/99	VFT	17060-07-0	2
Toluene-d8 (S)	101	%		08/17/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	101	%		08/17/99	VFT	460-00-4	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569300 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-11 Date Received: 08/04/99

GC/MS Volatiles

GC/MS VOCs by 8260 Method: EPA 8260 Prep Method: EPA 8260

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Chloromethane	ND	ug/l	10	08/17/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/17/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	08/17/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	08/17/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/17/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/17/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/17/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/17/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/17/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/17/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/17/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/17/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/17/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/17/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/17/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/17/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/17/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/17/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/17/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/17/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/17/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/17/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/17/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/17/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/17/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/17/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/17/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/17/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/17/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/17/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/17/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/17/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569300 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-11 Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/17/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/17/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/17/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/17/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/17/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/17/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/17/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/17/99	VFT	96-12-8	
Dibromofluoromethane (S)	103	%		08/17/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	99	%		08/17/99	VFT	17060-07-0	
Toluene-d8 (S)	100	%		08/17/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	99	%		08/17/99	VFT	460-00-4	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569318 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-11M Date Received: 08/04/99

GC/MS Volatiles

GC/MS VOCs by 8260 Method: EPA 8260 Prep Method: EPA 8260

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Chloromethane	ND	ug/l	10	08/17/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/17/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	08/17/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	08/17/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/17/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/17/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/17/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/17/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/17/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/17/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/17/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/17/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/17/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/17/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/17/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/17/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/17/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/17/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/17/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/17/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/17/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/17/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/17/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/17/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/17/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/17/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/17/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/17/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/17/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/17/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/17/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/17/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569318 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: OW-11M Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/17/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/17/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/17/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/17/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/17/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/17/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/17/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/17/99	VFT	96-12-8	
Dibromofluoromethane (S)	115	%		08/17/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	122	%		08/17/99	VFT	17060-07-0	2
Toluene-d8 (S)	100	%		08/17/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	102	%		08/17/99	VFT	460-00-4	

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

ace Sample No: 92567312 Date Collected: 08/02/99 Matrix: Water
ient Sample ID: OW-12 Date Received: 08/02/99

arameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
c/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/13/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	VFT	75-01-4	
Bromomethane	13	ug/l	10	08/13/99	VFT	74-83-9	1
Chloroethane	ND	ug/l	10	08/13/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/13/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/13/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/13/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/13/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/13/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567312 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: OW-12 Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	VFT	96-12-8	
Dibromofluoromethane (S)	104	%		08/13/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	102	%		08/13/99	VFT	17060-07-0	
Toluene-d8 (S)	107	%		08/13/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	108	%		08/13/99	VFT	460-00-4	

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

'ace Sample No: 92567320 Date Collected: 08/02/99 Matrix: Water
'ient Sample ID: OW-12M Date Received: 08/02/99

'arameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
c/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/13/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	VFT	75-01-4	
Bromomethane	13	ug/l	10	08/13/99	VFT	74-83-9	1
Chloroethane	ND	ug/l	10	08/13/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/13/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/13/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/13/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/13/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/13/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567320 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: OW-12M Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	VFT	96-12-8	
Dibromofluoromethane (S)	105	%		08/13/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	106	%		08/13/99	VFT	17060-07-0	
Toluene-d8 (S)	108	%		08/13/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	109	%		08/13/99	VFT	460-00-4	

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567338 Date Collected: 08/02/99 Matrix: Water
lient Sample ID: PZ-29S Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/13/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	VFT	75-01-4	
Bromomethane	13	ug/l	10	08/13/99	VFT	74-83-9	1
Chloroethane	ND	ug/l	10	08/13/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/13/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/13/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/13/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/13/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/13/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567338 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: PZ-29S Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	VFT	96-12-8	
Dibromofluoromethane (S)	105	%		08/13/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	110	%		08/13/99	VFT	17060-07-0	
Toluene-d8 (S)	108	%		08/13/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	108	%		08/13/99	VFT	460-00-4	

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567346 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: PZ-29M Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/13/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	VFT	75-01-4	
Bromomethane	12	ug/l	10	08/13/99	VFT	74-83-9	1
Chloroethane	ND	ug/l	10	08/13/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/13/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/13/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/13/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/13/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/13/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567346 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: PZ-29M Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	VFT	96-12-8	
Dibromofluoromethane (S)	110	%		08/13/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	110	%		08/13/99	VFT	17060-07-0	
Toluene-d8 (S)	107	%		08/13/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	107	%		08/13/99	VFT	460-00-4	

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

'ace Sample No: 92567353 Date Collected: 08/02/99 Matrix: Water
ient Sample ID: PZ-29D Date Received: 08/02/99

'arameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
c/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/13/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	VFT	75-01-4	
Bromomethane	13	ug/l	10	08/13/99	VFT	74-83-9	1
Chloroethane	ND	ug/l	10	08/13/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/13/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/13/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/13/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/13/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/13/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567353 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: -PZ-29D Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	VFT	96-12-8	
Dibromofluoromethane (S)	108	%		08/13/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	109	%		08/13/99	VFT	17060-07-0	
Toluene-d8 (S)	107	%		08/13/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	108	%		08/13/99	VFT	460-00-4	

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567361 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: PZ-32S Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/13/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	VFT	75-01-4	
Bromomethane	13	ug/l	10	08/13/99	VFT	74-83-9	1
Chloroethane	ND	ug/l	10	08/13/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/13/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/13/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/13/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/13/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/13/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567361 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: PZ-32S Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	VFT	96-12-8	
Dibromofluoromethane (S)	111	%		08/13/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	114	%		08/13/99	VFT	17060-07-0	
Toluene-d8 (S)	108	%		08/13/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	108	%		08/13/99	VFT	460-00-4	

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

'ace Sample No: 92567379 Date Collected: 08/02/99 Matrix: Water
ient Sample ID: PZ-32M Date Received: 08/02/99

'arameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
C/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/13/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	VFT	75-01-4	
Bromomethane	12	ug/l	10	08/13/99	VFT	74-83-9	1
Chloroethane	ND	ug/l	10	08/13/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/13/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/13/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/13/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/13/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/13/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	VFT	108-90-7	

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567379 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: PZ-32M Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	VFT	96-12-8	
Dibromofluoromethane (S)	105	%		08/13/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	104	%		08/13/99	VFT	17060-07-0	
Toluene-d8 (S)	108	%		08/13/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	105	%		08/13/99	VFT	460-00-4	

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

ace Sample No: 92567387 Date Collected: 08/02/99 Matrix: Water
ient Sample ID: PZ-33S Date Received: 08/02/99

arameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
c/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/13/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	VFT	75-01-4	
Bromomethane	13	ug/l	10	08/13/99	VFT	74-83-9	1
Chloroethane	ND	ug/l	10	08/13/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/13/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/13/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/13/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/13/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/13/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	VFT	108-90-7	

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567387 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: RZ-33S Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	VFT	96-12-8	
Dibromofluoromethane (S)	109	%		08/13/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	113	%		08/13/99	VFT	17060-07-0	
Toluene-d8 (S)	107	%		08/13/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	109	%		08/13/99	VFT	460-00-4	

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567395 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: PZ-33M Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/13/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	VFT	75-01-4	
Bromomethane	13	ug/l	10	08/13/99	VFT	74-83-9	1
Chloroethane	ND	ug/l	10	08/13/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/13/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/13/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/13/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/13/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/13/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/13/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	VFT	108-90-7	

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567395 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: PZ-33M Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	VFT	96-12-8	
Dibromofluoromethane (S)	112	%		08/13/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	119	%		08/13/99	VFT	17060-07-0	
Toluene-d8 (S)	109	%		08/13/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	107	%		08/13/99	VFT	460-00-4	

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Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569326 Date Collected: 08/03/99 Matrix: Water
lient Sample ID: TW-15 Date Received: 08/04/99

GC/MS Volatiles

GC/MS VOCs by 8260 Method: EPA 8260 Prep Method: EPA 8260

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Chloromethane	ND	ug/l	10	08/17/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/17/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	08/17/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	08/17/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/17/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/17/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/17/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/17/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/17/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/17/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/17/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/17/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/17/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/17/99	VFT	78-93-3	
cis-1,2-Dichloroethene	12	ug/l	5	08/17/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/17/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/17/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/17/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/17/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/17/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/17/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/17/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/17/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/17/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/17/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/17/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/17/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/17/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/17/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/17/99	VFT	124-48-1	
Tetrachloroethene	5.6	ug/l	5	08/17/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/17/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/17/99	VFT	108-90-7	

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Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569326 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: TW-15 Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/17/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/17/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/17/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/17/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/17/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/17/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/17/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/17/99	VFT	96-12-8	
Dibromofluoromethane (S)	109	%		08/17/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	111	%		08/17/99	VFT	17060-07-0	
Toluene-d8 (S)	98	%		08/17/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	99	%		08/17/99	VFT	460-00-4	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569375 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: TW-25 Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/17/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/17/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	08/17/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	08/17/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/17/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/17/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/17/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/17/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/17/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/17/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/17/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/17/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/17/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/17/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/17/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/17/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/17/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/17/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/17/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/17/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/17/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/17/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/17/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/17/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/17/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/17/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/17/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/17/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/17/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/17/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/17/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/17/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569375 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: TW-25 Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/17/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/17/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/17/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/17/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/17/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/17/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/17/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/17/99	VFT	96-12-8	
Dibromofluoromethane (S)	107	%		08/17/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	108	%		08/17/99	VFT	17060-07-0	
Toluene-d8 (S)	100	%		08/17/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	99	%		08/17/99	VFT	460-00-4	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569383 | Date Collected: 08/03/99 | Matrix: Water
Client Sample ID: TW-2D | Date Received: 08/04/99

GC/MS Volatiles

GC/MS VOCs by 8260 — Method: EPA 8260 — Prep Method: EPA 8260

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Chloromethane	ND	ug/l	10	08/17/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/17/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	08/17/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	08/17/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/17/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/17/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/17/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/17/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/17/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/17/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/17/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/17/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/17/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/17/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/17/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/17/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/17/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/17/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/17/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/17/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/17/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/17/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/17/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/17/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/17/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/17/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/17/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/17/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/17/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/17/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/17/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/17/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569383 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: TW-2D Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/17/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/17/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/17/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/17/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/17/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/17/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/17/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/17/99	VFT	96-12-8	
Dibromofluoromethane (S)	107	%		08/17/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	108	%		08/17/99	VFT	17060-07-0	
Toluene-d8 (S)	99	%		08/17/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	99	%		08/17/99	VFT	460-00-4	

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Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569391 Date Collected: 08/03/99 Matrix: Water
lient Sample ID: EQUIPMENT BLANK Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC/MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	08/17/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/17/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	08/17/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	08/17/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/17/99	VFT	75-69-4	
Acetone	ND	ug/l	100	08/17/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/17/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	08/17/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	08/17/99	VFT	107-13-1	
Methylene Chloride	ND	ug/l	5	08/17/99	VFT	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/17/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/17/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/17/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	08/17/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/17/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	08/17/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	08/17/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/17/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/17/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/17/99	VFT	56-23-5	
Benzene	ND	ug/l	5	08/17/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	08/17/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/17/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	08/17/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/17/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/17/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	08/17/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/17/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/17/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	08/17/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/17/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/17/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/17/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	08/17/99	VFT	108-90-7	

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Pace Analytical

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

Pace Sample No: 92569391 Date Collected: 08/03/99 Matrix: Water
Client Sample ID: EQUIPMENT BLANK Date Received: 08/04/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	08/17/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	08/17/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	08/17/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/17/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	08/17/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/17/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/17/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/17/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/17/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/17/99	VFT	96-12-8	
Dibromofluoromethane (S)	112	%		08/17/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	115	%		08/17/99	VFT	17060-07-0	
Toluene-d8 (S)	100	%		08/17/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	98	%		08/17/99	VFT	460-00-4	

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Pace Project Number: 927833
Client Project ID: W-S Corrective Action

PARAMETER FOOTNOTES

ND	Not Detected
NC	Not Calculable
PRL	Pace Reporting Limit
S)	Surrogate
[1]	Possible laboratory contaminant.
[2]	The surrogate and/or spike recovery was outside acceptance limits.

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567510 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: TRIP BLANK Date Received: 08/02/99

GC/MS Volatiles

GC/MS VOCs by 8260 Method: EPA 8260 Prep Method: EPA 8260

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Chloromethane	ND	ug/l	10	08/13/99	JRS	74-87-3	
Vinyl Chloride	ND	ug/l	10	08/13/99	JRS	75-01-4	
Bromomethane	ND	ug/l	10	08/13/99	JRS	74-83-9	
Chloroethane	ND	ug/l	10	08/13/99	JRS	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	08/13/99	JRS	75-69-4	
Acetone	ND	ug/l	100	08/13/99	JRS	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	08/13/99	JRS	75-35-4	
Iodomethane	ND	ug/l	5	08/13/99	JRS	74-88-4	
Acrylonitrile	ND	ug/l	100	08/13/99	JRS	107-13-1	
Methylene Chloride	ND	ug/l	5	08/13/99	JRS	75-09-2	
Carbon Disulfide	ND	ug/l	5	08/13/99	JRS	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	08/13/99	JRS	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	08/13/99	JRS	75-34-3	
Vinyl Acetate	ND	ug/l	50	08/13/99	JRS	108-05-4	
2-Butanone	ND	ug/l	100	08/13/99	JRS	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	08/13/99	JRS	156-59-2	
Chloroform	ND	ug/l	5	08/13/99	JRS	67-66-3	
Bromochloromethane	ND	ug/l	5	08/13/99	JRS	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	08/13/99	JRS	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	08/13/99	JRS	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	08/13/99	JRS	56-23-5	
Benzene	ND	ug/l	5	08/13/99	JRS	71-43-2	
Trichloroethene	ND	ug/l	5	08/13/99	JRS	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	08/13/99	JRS	78-87-5	
Dibromomethane	ND	ug/l	5	08/13/99	JRS	74-95-3	
Bromodichloromethane	ND	ug/l	5	08/13/99	JRS	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	08/13/99	JRS	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	08/13/99	JRS	10061-01-5	
Toluene	ND	ug/l	5	08/13/99	JRS	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	08/13/99	JRS	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	08/13/99	JRS	79-00-5	
2-Hexanone	ND	ug/l	50	08/13/99	JRS	591-78-6	
Dibromochloromethane	ND	ug/l	5	08/13/99	JRS	124-48-1	
Tetrachloroethene	ND	ug/l	5	08/13/99	JRS	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	08/13/99	JRS	106-93-4	
Chlorobenzene	ND	ug/l	5	08/13/99	JRS	108-90-7	

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Pace Analytical

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Pace Sample No: 92567510 Date Collected: 08/02/99 Matrix: Water
Client Sample ID: TRIP BLANK Date Received: 08/02/99

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,1,1,2-Tetrachloroethane	ND	ug/l	5	08/13/99	JRS	630-20-6	
Ethylbenzene	ND	ug/l	5	08/13/99	JRS	100-41-4	
m&p-Xylene	ND	ug/l	10	08/13/99	JRS	7816-60-0	
Styrene	ND	ug/l	5	08/13/99	JRS	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	08/13/99	JRS	95-47-6	
Bromoform	ND	ug/l	5	08/13/99	JRS	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	08/13/99	JRS	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	08/13/99	JRS	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	08/13/99	JRS	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	08/13/99	JRS	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	08/13/99	JRS	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	08/13/99	JRS	96-12-8	
Dibromofluoromethane (S)	64	%		08/13/99	JRS	1868-53-7	2,3
1,2-Dichloroethane-d4 (S)	40	%		08/13/99	JRS	17060-07-0	2
Toluene-d8 (S)	89	%		08/13/99	JRS	2037-26-5	
4-Bromofluorobenzene (S)	83	%		08/13/99	JRS	460-00-4	

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

PARAMETER FOOTNOTES

ND	Not Detected
NC	Not Calculable
PRL	Pace Reporting Limit
(S)	Surrogate
[1]	The analyte was found in an associated blank, as well as in the sample.
[2]	The surrogate and/or spike recovery was outside acceptance limits.
[3]	Insufficient sample volume received for reanalysis.

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Pace Analytical

QUALITY CONTROL DATA

DATE: 08/18/99

ᴍDR Engineering
128 South Tryon Street
ıite 1400
ıarlotte, NC 28202

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

:tn: Mr. John Isham
Phone: (704)338-1800

: Batch ID: 15942
ıalysis Method: EPA 8260
Associated Pace Samples: 92569250 92569268 92569276

QC Batch Method: EPA 8260
Analysis Description: GC/MS VOCs by 8260

METHOD BLANK: 92574862
Associated Pace Samples:
92569250 92569268 92569276

ırameter	Units	Method Blank Result	PRL	Footnotes
Chloromethane	ug/l	ND	10	
'inyl Chloride	ug/l	ND	10	
'omomethane	ug/l	ND	10	
Chloroethane	ug/l	ND	10	
Trichlorofluoromethane	ug/l	ND	10	
:etone	ug/l	ND	100	
,1-Dichloroethene	ug/l	ND	5	
Iodomethane	ug/l	ND	5	
:rylonitrile	ug/l	ND	100	
ethylene Chloride	ug/l	ND	5	
Carbon Disulfide	ug/l	ND	5	
trans-1,2-Dichloroethene	ug/l	ND	5	
1-Dichloroethane	ug/l	ND	5	
inyl Acetate	ug/l	ND	50	
2-Butanone	ug/l	ND	100	
is-1,2-Dichloroethene	ug/l	ND	5	
ıloroform	ug/l	ND	5	
Bromochloromethane	ug/l	ND	5	
',1,1-Trichloroethane	ug/l	ND	5	
.2-Dichloroethane	ug/l	ND	5	
Carbon Tetrachloride	ug/l	ND	5	
Benzene	ug/l	ND	5	
ichloroethene	ug/l	ND	5	
,2-Dichloropropane	ug/l	ND	5	
Dibromomethane	ug/l	ND	5	

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QUALITY CONTROL DATA

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

METHOD BLANK: 92574862
Associated Pace Samples:
92569250 92569268 92569276

Parameter	Units	Method Blank Result	PRL	Footnotes
Bromodichloromethane	ug/l	ND	5	
4-Methyl-2-Pentanone	ug/l	ND	50	
cis-1,3-Dichloropropene	ug/l	ND	5	
Toluene	ug/l	ND	5	
trans-1,3-Dichloropropene	ug/l	ND	5	
1,1,2-Trichloroethane	ug/l	ND	5	
2-Hexanone	ug/l	ND	50	
Dibromochloromethane	ug/l	ND	5	
Tetrachloroethene	ug/l	ND	5	
1,2-Dibromoethane	ug/l	ND	5	
Chlorobenzene	ug/l	ND	5	
1,1,1,2-Tetrachloroethane	ug/l	ND	5	
Ethylbenzene	ug/l	ND	5	
m&p-Xylene	ug/l	ND	10	
Styrene	ug/l	ND	5	
o-Xylene (1,2-Dimethylbenzene)	ug/l	ND	5	
Bromoform	ug/l	ND	5	
1,1,2,2-Tetrachloroethane	ug/l	ND	5	
1,2,3-Trichloropropane	ug/l	ND	5	
trans-1,4-Dichloro-2-Butene	ug/l	ND	5	
1,4-Dichlorobenzene	ug/l	ND	5	
1,2-Dichlorobenzene	ug/l	ND	5	
1,2-Dibromo-3-Chloropropane	ug/l	ND	5	
Dibromofluoromethane (S)	%	101		
1,2-Dichloroethane-d4 (S)	%	102		
Toluene-d8 (S)	%	100		
4-Bromofluorobenzene (S)	%	97		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 92574870 92574888

Parameter	Units	92564889	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
1,1-Dichloroethene	ug/l	0	50	35.60	71.2	36.40	72.8	2	
Benzene	ug/l	0	50	43.95	87.9	42.78	85.6	3	
Trichloroethene	ug/l	0	50	46.99	94.0	45.44	90.9	3	
Toluene	ug/l	0	50	44.62	89.2	42.86	85.7	4	
Chlorobenzene	ug/l	0	50	44.83	89.7	42.74	85.5	5	

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QUALITY CONTROL DATA

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

ATRIX SPIKE & MATRIX SPIKE DUPLICATE: 92574870 92574888

arameter	Units	92564889	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
ibromofluoromethane (S)					103		102		
.2-Dichloroethane-d4 (S)					101		100		
oluene-d8 (S)					99		99		
-Bromofluorobenzene (S)					101		104		

ABORATORY CONTROL SAMPLE: 92574896

arameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
hloromethane	ug/l	50	41.01	82.0	
inyl Chloride	ug/l	50	46.76	93.5	
romomethane	ug/l	50	51.83	104	
hloroethane	ug/l	50	46.34	92.7	
richlorofluoromethane	ug/l	50	52.49	105	
etone	ug/l	100	105.8	106	
.1-Dichloroethene	ug/l	50	37.34	74.7	
odomethane	ug/l	100	83.07	83.1	
rylonitrile	ug/l	500	359.7	71.9	
ethylene Chloride	ug/l	50	32.82	65.6	1
arbon Disulfide	ug/l	100	82.87	82.9	
ans-1,2-Dichloroethene	ug/l	50	38.51	77.0	
.1-Dichloroethane	ug/l	50	36.71	73.4	
inyl Acetate	ug/l	100	78.45	78.4	
Butanone	ug/l	100	97.25	97.3	
s-1,2-Dichloroethene	ug/l	50	39.26	78.5	
hloroform	ug/l	50	39.90	79.8	
romochloromethane	ug/l	50	38.38	76.8	
1,1-Trichloroethane	ug/l	50	40.95	81.9	
2-Dichloroethane	ug/l	50	39.29	78.6	
arbon Tetrachloride	ug/l	50	41.99	84.0	
enzene	ug/l	50	37.29	74.6	
richloroethene	ug/l	50	40.34	80.7	
.2-Dichloropropane	ug/l	50	37.90	75.8	
ibromomethane	ug/l	50	38.72	77.4	
romodichloromethane	ug/l	50	38.15	76.3	
-Methyl-2-Pentanone	ug/l	100	77.92	77.9	
is-1,3-Dichloropropene	ug/l	50	35.43	70.9	
oluene	ug/l	50	37.89	75.8	
ans-1,3-Dichloropropene	ug/l	50	36.95	73.9	
.1,2-Trichloroethane	ug/l	50	36.52	73.0	

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QUALITY CONTROL DATA

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

LABORATORY CONTROL SAMPLE: 92574896

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
2-Hexanone	ug/l	100	90.21	90.2	
Dibromochloromethane	ug/l	50	38.65	77.3	
Tetrachloroethene	ug/l	50	38.67	77.3	
1,2-Dibromoethane	ug/l	50	39.97	79.9	
Chlorobenzene	ug/l	50	38.45	76.9	
1,1,1,2-Tetrachloroethane	ug/l	50	40.43	80.9	
Ethylbenzene	ug/l	50	38.04	76.1	
m&p-Xylene	ug/l	100	77.89	77.9	
Styrene	ug/l	50	38.09	76.2	
o-Xylene (1,2-Dimethylbenzene)	ug/l	50	39.06	78.1	
Bromoform	ug/l	50	39.07	78.1	
1,1,2,2-Tetrachloroethane	ug/l	50	38.65	77.3	
1,2,3-Trichloropropane	ug/l	50	38.89	77.8	
trans-1,4-Dichloro-2-Butene	ug/l	50	37.69	75.4	
1,4-Dichlorobenzene	ug/l	50	37.97	75.9	
1,2-Dichlorobenzene	ug/l	50	37.51	75.0	
1,2-Dibromo-3-Chloropropane	ug/l	50	39.57	79.1	
Dibromofluoromethane (S)				102	
1,2-Dichloroethane-d4 (S)				102	
Toluene-d8 (S)				98	
4-Bromofluorobenzene (S)				100	

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QUALITY CONTROL DATA

DATE: 08/18/99

DR Engineering
128 South Tryon Street
uite 1400
harlotte, NC 28202

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

ttn: Mr. John Isham
Phone: (704)338-1800

C Batch ID: 16266
nalysis Method: EPA 8260
Associated Pace Samples: 92569284 92569292 92569300 92569318 92569326 92569375 92569383 92569391 92569466

QC Batch Method: EPA 8260
Analysis Description: GC/MS VOCs by 8260

METHOD BLANK: 92586627
ssociated Pace Samples: 92569284 92569292 92569300 92569318 92569326 92569375 92569383 92569391 92569466

Parameter	Units	Method Blank Result	PRL	Footnotes
hloromethane	ug/l	ND	10	
Vinyl Chloride	ug/l	ND	10	
Bromomethane	ug/l	15	10	2
hloroethane	ug/l	ND	10	
richlorofluoromethane	ug/l	ND	10	
Acetone	ug/l	200	100	3
,1-Dichloroethene	ug/l	ND	5	
odomethane	ug/l	6.8	5	
Acrylonitrile	ug/l	ND	100	
Methylene Chloride	ug/l	ND	5	
arbon Disulfide	ug/l	ND	5	
rans-1,2-Dichloroethene	ug/l	ND	5	
1,1-Dichloroethane	ug/l	ND	5	
inyl Acetate	ug/l	ND	50	
-Butanone	ug/l	ND	100	
cis-1,2-Dichloroethene	ug/l	ND	5	
hloroform	ug/l	ND	5	
romochloromethane	ug/l	ND	5	
1,1,1-Trichloroethane	ug/l	ND	5	
1,2-Dichloroethane	ug/l	ND	5	
arbon Tetrachloride	ug/l	ND	5	
enzene	ug/l	ND	5	
Trichloroethene	ug/l	ND	5	

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QUALITY CONTROL DATA

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

METHOD BLANK: 92586627
Associated Pace Samples:
92569284 92569292 92569300 92569318 92569326 92569375 92569383
92569391 92569466

Parameter	Units	Method Blank Result	PRL	Footnotes
1,2-Dichloropropane	ug/l	ND	5	
Dibromomethane	ug/l	ND	5	
Bromodichloromethane	ug/l	ND	5	
4-Methyl-2-Pentanone	ug/l	ND	50	
cis-1,3-Dichloropropene	ug/l	ND	5	
Toluene	ug/l	ND	5	
trans-1,3-Dichloropropene	ug/l	ND	5	
1,1,2-Trichloroethane	ug/l	ND	5	
2-Hexanone	ug/l	ND	50	
Dibromochloromethane	ug/l	ND	5	
Tetrachloroethene	ug/l	ND	5	
1,2-Dibromoethane	ug/l	ND	5	
Chlorobenzene	ug/l	ND	5	
1,1,1,2-Tetrachloroethane	ug/l	ND	5	
Ethylbenzene	ug/l	ND	5	
m&p-Xylene	ug/l	ND	10	
Styrene	ug/l	ND	5	
o-Xylene (1,2-Dimethylbenzene)	ug/l	ND	5	
Bromoform	ug/l	ND	5	
1,1,2,2-Tetrachloroethane	ug/l	ND	5	
1,2,3-Trichloropropane	ug/l	ND	5	
trans-1,4-Dichloro-2-Butene	ug/l	ND	5	
1,4-Dichlorobenzene	ug/l	ND	5	
1,2-Dichlorobenzene	ug/l	ND	5	
1,2-Dibromo-3-Chloropropane	ug/l	ND	5	
Dibromofluoromethane (S)	%	112		
1,2-Dichloroethane-d4 (S)	%	123		1
Toluene-d8 (S)	%	110		
4-Bromofluorobenzene (S)	%	112		

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QUALITY CONTROL DATA

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

LABORATORY CONTROL SAMPLE: 92586635

arameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
hloromethane	ug/l	50	52.82	106	
inyl Chloride	ug/l	50	44.11	88.2	
Bromomethane	ug/l	50	158.2	316	1
Chloroethane	ug/l	50	48.81	97.6	
richlorofluoromethane	ug/l	50	45.51	91.0	
cetone	ug/l	100	110.9	111	
1,1-Dichloroethene	ug/l	50	46.00	92.0	
odomethane	ug/l	100	43.90	43.9	4
crylonitrile	ug/l	500	524.3	105	
Methylene Chloride	ug/l	50	48.44	96.9	
arbon Disulfide	ug/l	100	107.5	108	
ans-1,2-Dichloroethene	ug/l	50	48.43	96.9	
1,1-Dichloroethane	ug/l	50	46.58	93.2	
Vinyl Acetate	ug/l	100	76.10	76.1	
-Butanone	ug/l	100	102.1	102	
is-1,2-Dichloroethene	ug/l	50	48.79	97.6	
Chloroform	ug/l	50	49.12	98.2	
romochloromethane	ug/l	50	53.38	107	
,1,1-Trichloroethane	ug/l	50	49.32	98.6	
1,2-Dichloroethane	ug/l	50	47.76	95.5	
Carbon Tetrachloride	ug/l	50	50.66	101	
enzene	ug/l	50	48.06	96.1	
richloroethene	ug/l	50	50.68	101	
1,2-Dichloropropane	ug/l	50	50.41	101	
ibromomethane	ug/l	50	54.30	109	
romodichloromethane	ug/l	50	50.13	100	
4-Methyl-2-Pentanone	ug/l	100	102.4	102	
cis-1,3-Dichloropropene	ug/l	50	43.81	87.6	
oluene	ug/l	50	45.86	91.7	
trans-1,3-Dichloropropene	ug/l	50	47.75	95.5	
1,1,2-Trichloroethane	ug/l	50	49.64	99.3	
-Hexanone	ug/l	100	102.8	103	
ibromochloromethane	ug/l	50	52.30	105	
Tetrachloroethene	ug/l	50	50.85	102	
1,2-Dibromoethane	ug/l	50	55.28	111	
hlorobenzene	ug/l	50	47.92	95.8	
1,1,1,2-Tetrachloroethane	ug/l	50	55.41	111	
Ethylbenzene	ug/l	50	46.93	93.9	
&p-Xylene	ug/l	100	95.40	95.4	
tyrene	ug/l	50	53.06	106	
o-Xylene (1,2-Dimethylbenzene)	ug/l	50	47.99	96.0	

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Pace Analytical

QUALITY CONTROL DATA

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

LABORATORY CONTROL SAMPLE: 92586635

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
Bromoform	ug/l	50	54.05	108	
1,1,2,2-Tetrachloroethane	ug/l	50	54.90	110	
1,2,3-Trichloropropane	ug/l	50	52.79	106	
trans-1,4-Dichloro-2-Butene	ug/l	50	46.99	94.0	
1,4-Dichlorobenzene	ug/l	50	48.92	97.8	
1,2-Dichlorobenzene	ug/l	50	48.00	96.0	
1,2-Dibromo-3-Chloropropane	ug/l	50	59.57	119	
Dibromofluoromethane (S)				112	
1,2-Dichloroethane-d4 (S)				116	
Toluene-d8 (S)				109	
4-Bromofluorobenzene (S)				113	

SAMPLE DUPLICATE: 92586643

Parameter	Units	92569284	Dup. Result	RPD	Footnotes
Chloromethane	ug/l	ND	ND	NC	
Vinyl Chloride	ug/l	ND	ND	NC	
Bromomethane	ug/l	ND	ND	NC	
Chloroethane	ug/l	ND	ND	NC	
Trichlorofluoromethane	ug/l	ND	ND	NC	
Acetone	ug/l	ND	ND	NC	
1,1-Dichloroethene	ug/l	ND	ND	NC	
Iodomethane	ug/l	ND	ND	NC	
Acrylonitrile	ug/l	ND	ND	NC	
Methylene Chloride	ug/l	ND	ND	NC	
Carbon Disulfide	ug/l	ND	ND	NC	
trans-1,2-Dichloroethene	ug/l	ND	ND	NC	
1,1-Dichloroethane	ug/l	ND	ND	NC	
Vinyl Acetate	ug/l	ND	ND	NC	
2-Butanone	ug/l	ND	ND	NC	
cis-1,2-Dichloroethene	ug/l	ND	ND	NC	
Chloroform	ug/l	ND	ND	NC	
Bromochloromethane	ug/l	ND	ND	NC	
1,1,1-Trichloroethane	ug/l	ND	ND	NC	
1,2-Dichloroethane	ug/l	ND	ND	NC	
Carbon Tetrachloride	ug/l	ND	ND	NC	
Benzene	ug/l	ND	ND	NC	
Trichloroethene	ug/l	ND	ND	NC	
1,2-Dichloropropane	ug/l	ND	ND	NC	

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QUALITY CONTROL DATA

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

SAMPLE DUPLICATE: 92586643

arameter	Units	92569284	Dup. Result	RPD	Footnotes
ibromomethane	ug/l	ND	ND	NC	
romodichloromethane	ug/l	ND	ND	NC	
-Methyl-2-Pentanone	ug/l	ND	ND	NC	
cis-1,3-Dichloropropene	ug/l	ND	ND	NC	
oluene	ug/l	ND	ND	NC	
rans-1,3-Dichloropropene	ug/l	ND	ND	NC	
1,1,2-Trichloroethane	ug/l	ND	ND	NC	
-Hexanone	ug/l	ND	ND	NC	
ibromochloromethane	ug/l	ND	ND	NC	
etrachloroethene	ug/l	ND	ND	NC	
1,2-Dibromoethane	ug/l	ND	ND	NC	
hlorobenzene	ug/l	ND	ND	NC	
,1,1,2-Tetrachloroethane	ug/l	ND	ND	NC	
Ethylbenzene	ug/l	ND	ND	NC	
&p-Xylene	ug/l	ND	ND	NC	
tyrene	ug/l	ND	ND	NC	
o-Xylene (1,2-Dimethylbenzene)	ug/l	ND	ND	NC	
romoform	ug/l	ND	ND	NC	
,1,2,2-Tetrachloroethane	ug/l	ND	ND	NC	
,2,3-Trichloropropane	ug/l	ND	ND	NC	
trans-1,4-Dichloro-2-Butene	ug/l	ND	ND	NC	
,4-Dichlorobenzene	ug/l	ND	ND	NC	
,2-Dichlorobenzene	ug/l	ND	ND	NC	
1,2-Dibromo-3-Chloropropane	ug/l	ND	ND	NC	
ibromofluoromethane (S)	%	104	112	0	
,2-Dichloroethane-d4 (S)	%	100	122	0	1
oluene-d8 (S)	%	100	101	0	
4-Bromofluorobenzene (S)	%	97	101	0	

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Pace Analytical

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Huntersville, NC 28078
Tel: 704-875-9092
Fax: 704-875-9091

Pace Project Number: 927833
Client Project ID: W-S Corrective Action

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

ND	Not Detected
NC	Not Calculable
PRL	Pace Reporting Limit
RPD	Relative Percent Difference
(S)	Surrogate
[1]	The surrogate and/or spike recovery was outside acceptance limits.
[2]	System contamination.
[3]	Possible laboratory contaminant.
[4]	Recovery falls outside of QC limits, however, this compound is not found in the associated samples.

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HDR
Suite 1400
128 S. Tryon Street
Charlotte, NC 28202-5001
704 338-6700

HDR Engineering, Inc.

Chain of Custody Record

92783

Project No.: 00162-106-018
Project Name: WINSTON-SALEM CF CORRECTIVE ACTION
Parameters
☐ Environmental
Hazardous: ☒ Low ☐ Med ☐ High
Samplers: (Signature) John R. Isham
(Printed) JOHN R. ISHAM
Lab: Address: FACE ANALYTICAL

Field Sample Number	Date	Time	Comp.	GRAB	Station Location	No. of Containers	8260	RES CL					Remarks
OW-7	8/3	0855		X	MONITORING WELL	5	4	1	92569166				
OW-8D	8/3	1005		X	"	5	4	1	92569200				
OW-9	8/3	1115		X	"	5	4	1	92569268				TRIP BLANK - 2 VOAS
OW-9D	8/3	1039		X	"	5	4	1	92569276				EQUIP BLANK - 2 VOAS
OW-10	8/3	1305		X	"	5	4	1	92569284				492569311
OW-10M	8/3	1348		X	"	5	4	1	92569292				
OW-11	8/3	1425		X	"	5	4	1	92569300				
OW-11M	8/3	1505		X	"	5	4	1	92569318				
~~OW-15~~ TW	8/3	1545		X	"	5	4	1	92569326				
TW-25	8/3	1625		X	"	5	4	1	92569315				
TW-30		1650		X	"	5	4	1	92569342				

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
John R. Isham	8/4	0800	[illegible]				
(Printed) JOHN R. ISHAM			(Printed) [illegible]	(Printed)			(Printed)

Relinquished By: (Signature)	Date	Time	Received for Laboratory By: (Signature)	Date	Time	Results to:
(Printed)			(Printed)			SAME AS ABOVE

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).

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QUALITY CONTROL DATA

HDR Engineering
128 South Tryon Street
Suite 1400
Charlotte, NC 28202

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Attn: Mr. John Isham
Phone: (704)338-1800

QC Batch ID: 15942
Analysis Method: EPA 8260
Associated Pace Samples: 92567304

QC Batch Method: EPA 8260
Analysis Description: GC/MS VOCs by 8260

METHOD BLANK: 92574862
Associated Pace Samples:
92567304

Parameter	Units	Method Blank Result	PRL	Footnotes
Chloromethane	ug/l	ND	10	
Vinyl Chloride	ug/l	ND	10	
Bromomethane	ug/l	ND	10	
Chloroethane	ug/l	ND	10	
Trichlorofluoromethane	ug/l	ND	10	
Acetone	ug/l	ND	100	
1,1-Dichloroethene	ug/l	ND	5	
Iodomethane	ug/l	ND	5	
Acrylonitrile	ug/l	ND	100	
Methylene Chloride	ug/l	ND	5	
Carbon Disulfide	ug/l	ND	5	
trans-1,2-Dichloroethene	ug/l	ND	5	
1,1-Dichloroethane	ug/l	ND	5	
Vinyl Acetate	ug/l	ND	50	
2-Butanone	ug/l	ND	100	
cis-1,2-Dichloroethene	ug/l	ND	5	
Chloroform	ug/l	ND	5	
Bromochloromethane	ug/l	ND	5	
1,1,1-Trichloroethane	ug/l	ND	5	
1,2-Dichloroethane	ug/l	ND	5	
Carbon Tetrachloride	ug/l	ND	5	
Benzene	ug/l	ND	5	
Trichloroethene	ug/l	ND	5	
1,2-Dichloropropane	ug/l	ND	5	
Dibromomethane	ug/l	ND	5	

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QUALITY CONTROL DATA

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

METHOD BLANK: 92574862
ssociated Pace Samples:
92567304

arameter	Units	Method Blank Result	PRL	Footnotes
Bromodichloromethane	ug/l	ND	5	
-Methyl-2-Pentanone	ug/l	ND	50	
is-1,3-Dichloropropene	ug/l	ND	5	
Toluene	ug/l	ND	5	
ans-1,3-Dichloropropene	ug/l	ND	5	
,1,2-Trichloroethane	ug/l	ND	5	
2-Hexanone	ug/l	ND	50	
Dibromochloromethane	ug/l	ND	5	
etrachloroethene	ug/l	ND	5	
,2-Dibromoethane	ug/l	ND	5	
Chlorobenzene	ug/l	ND	5	
,1,1,2-Tetrachloroethane	ug/l	ND	5	
hylbenzene	ug/l	ND	5	
m&p-Xylene	ug/l	ND	10	
tyrene	ug/l	ND	5	
-Xylene (1,2-Dimethylbenzene)	ug/l	ND	5	
Bromoform	ug/l	ND	5	
1,1,2,2-Tetrachloroethane	ug/l	ND	5	
,2,3-Trichloropropane	ug/l	ND	5	
ans-1,4-Dichloro-2-Butene	ug/l	ND	5	
1,4-Dichlorobenzene	ug/l	ND	5	
,2-Dichlorobenzene	ug/l	ND	5	
,2-Dibromo-3-Chloropropane	ug/l	ND	5	
Dibromofluoromethane (S)	%	101		
1,2-Dichloroethane-d4 (S)	%	102		
oluene-d8 (S)	%	100		
-Bromofluorobenzene (S)	%	97		

TRIX SPIKE & MATRIX SPIKE DUPLICATE: 92574870 92574888

arameter	Units	92564889	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
1,1-Dichloroethene	ug/l	0	50	35.60	71.2	36.40	72.8	2	
Benzene	ug/l	0	50	43.95	87.9	42.78	85.6	3	
richloroethene	ug/l	0	50	46.99	94.0	45.44	90.9	3	
oluene	ug/l	0	50	44.62	89.2	42.86	85.7	4	
Chlorobenzene	ug/l	0	50	44.83	89.7	42.74	85.5	5	

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Pace Analytical

QUALITY CONTROL DATA

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 92574870 92574888

Parameter	Units	92564889	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
Dibromofluoromethane (S)					103		102		
1,2-Dichloroethane-d4 (S)					101		100		
Toluene-d8 (S)					99		99		
4-Bromofluorobenzene (S)					101		104		

LABORATORY CONTROL SAMPLE: 92574896

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
Chloromethane	ug/l	50	41.01	82.0	
Vinyl Chloride	ug/l	50	46.76	93.5	
Bromomethane	ug/l	50	51.83	104	
Chloroethane	ug/l	50	46.34	92.7	
Trichlorofluoromethane	ug/l	50	52.49	105	
Acetone	ug/l	100	105.8	106	
1,1-Dichloroethene	ug/l	50	37.34	74.7	
Iodomethane	ug/l	100	83.07	83.1	
Acrylonitrile	ug/l	500	359.7	71.9	
Methylene Chloride	ug/l	50	32.82	65.6	1
Carbon Disulfide	ug/l	100	82.87	82.9	
trans-1,2-Dichloroethene	ug/l	50	38.51	77.0	
1,1-Dichloroethane	ug/l	50	36.71	73.4	
Vinyl Acetate	ug/l	100	78.45	78.4	
2-Butanone	ug/l	100	97.25	97.3	
cis-1,2-Dichloroethene	ug/l	50	39.26	78.5	
Chloroform	ug/l	50	39.90	79.8	
Bromochloromethane	ug/l	50	38.38	76.8	
1,1,1-Trichloroethane	ug/l	50	40.95	81.9	
1,2-Dichloroethane	ug/l	50	39.29	78.6	
Carbon Tetrachloride	ug/l	50	41.99	84.0	
Benzene	ug/l	50	37.29	74.6	
Trichloroethene	ug/l	50	40.34	80.7	
1,2-Dichloropropane	ug/l	50	37.90	75.8	
Dibromomethane	ug/l	50	38.72	77.4	
Bromodichloromethane	ug/l	50	38.15	76.3	
4-Methyl-2-Pentanone	ug/l	100	77.92	77.9	
cis-1,3-Dichloropropene	ug/l	50	35.43	70.9	
Toluene	ug/l	50	37.89	75.8	
trans-1,3-Dichloropropene	ug/l	50	36.95	73.9	
1,1,2-Trichloroethane	ug/l	50	36.52	73.0	

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QUALITY CONTROL DATA

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

LABORATORY CONTROL SAMPLE: 92574896

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
2-Hexanone	ug/l	100	90.21	90.2	
bromochloromethane	ug/l	50	38.65	77.3	
Tetrachloroethene	ug/l	50	38.67	77.3	
1,2-Dibromoethane	ug/l	50	39.97	79.9	
chlorobenzene	ug/l	50	38.45	76.9	
1,1,2-Tetrachloroethane	ug/l	50	40.43	80.9	
Ethylbenzene	ug/l	50	38.04	76.1	
p-Xylene	ug/l	100	77.89	77.9	
yrene	ug/l	50	38.09	76.2	
o-Xylene (1,2-Dimethylbenzene)	ug/l	50	39.06	78.1	
Bromoform	ug/l	50	39.07	78.1	
1,2,2-Tetrachloroethane	ug/l	50	38.65	77.3	
1,2,3-Trichloropropane	ug/l	50	38.89	77.8	
trans-1,4-Dichloro-2-Butene	ug/l	50	37.69	75.4	
4-Dichlorobenzene	ug/l	50	37.97	75.9	
2-Dichlorobenzene	ug/l	50	37.51	75.0	
1,2-Dibromo-3-Chloropropane	ug/l	50	39.57	79.1	
bromofluoromethane (S)				102	
2-Dichloroethane-d4 (S)				102	
Toluene-d8 (S)				98	
4-Bromofluorobenzene (S)				100	

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QUALITY CONTROL DATA

HDR Engineering
128 South Tryon Street
Suite 1400
Charlotte, NC 28202

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Attn: Mr. John Isham
Phone: (704)338-1800

QC Batch ID: 16196
Analysis Method: EPA 8260
Associated Pace Samples: 92567312 92567320 92567338 92567346 92567353 92567361 92567379 92567387 92567395

QC Batch Method: EPA 8260
Analysis Description: GC/MS VOCs by 8260

METHOD BLANK: 92584689
Associated Pace Samples:
92567312 92567320 92567338 92567346 92567353 92567361 92567379 92567387 92567395

Parameter	Units	Method Blank Result	PRL	Footnotes
Chloromethane	ug/l	ND	10	
Vinyl Chloride	ug/l	ND	10	
Bromomethane	ug/l	14	10	2
Chloroethane	ug/l	ND	10	
Trichlorofluoromethane	ug/l	ND	10	
Acetone	ug/l	ND	100	
1,1-Dichloroethene	ug/l	ND	5	
Iodomethane	ug/l	ND	5	
Acrylonitrile	ug/l	ND	100	
Methylene Chloride	ug/l	ND	5	
Carbon Disulfide	ug/l	ND	5	
trans-1,2-Dichloroethene	ug/l	ND	5	
1,1-Dichloroethane	ug/l	ND	5	
Vinyl Acetate	ug/l	ND	50	
2-Butanone	ug/l	ND	100	
cis-1,2-Dichloroethene	ug/l	ND	5	
Chloroform	ug/l	ND	5	
Bromochloromethane	ug/l	ND	5	
1,1,1-Trichloroethane	ug/l	ND	5	
1,2-Dichloroethane	ug/l	ND	5	
Carbon Tetrachloride	ug/l	ND	5	
Benzene	ug/l	ND	5	
Trichloroethene	ug/l	ND	5	

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QUALITY CONTROL DATA

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

METHOD BLANK: 92584689
:sociated Pace Samples:

92567312 92567320 92567338 92567346 92567353 92567361 92567379
92567387 92567395

Parameter	Units	Method Blank Result	PRL	Footnotes
2-Dichloropropane	ug/l	ND	5	
bromomethane	ug/l	ND	5	
Bromodichloromethane	ug/l	ND	5	
Methyl-2-Pentanone	ug/l	ND	50	
s-1,3-Dichloropropene	ug/l	ND	5	
Toluene	ug/l	ND	5	
trans-1,3-Dichloropropene	ug/l	ND	5	
1,2-Trichloroethane	ug/l	ND	5	
Hexanone	ug/l	ND	50	
Dibromochloromethane	ug/l	ND	5	
trachloroethene	ug/l	ND	5	
2-Dibromoethane	ug/l	ND	5	
Chlorobenzene	ug/l	ND	5	
1,1,2-Tetrachloroethane	ug/l	ND	5	
ylbenzene	ug/l	ND	5	
p-Xylene	ug/l	ND	10	
Styrene	ug/l	ND	5	
(ylene (1,2-Dimethylbenzene)	ug/l	ND	5	
omoform	ug/l	ND	5	
1,1,2,2-Tetrachloroethane	ug/l	ND	5	
2,3-Trichloropropane	ug/l	ND	5	
ans-1,4-Dichloro-2-Butene	ug/l	ND	5	
1,4-Dichlorobenzene	ug/l	ND	5	
1,2-Dichlorobenzene	ug/l	ND	5	
2-Dibromo-3-Chloropropane	ug/l	ND	5	
romofluoromethane (S)	%	106		
1,2-Dichloroethane-d4 (S)	%	110		
uene-d8 (S)	%	106		
romofluorobenzene (S)	%	110		

RIX SPIKE & MATRIX SPIKE DUPLICATE: 92584705 92584713

Parameter	Units	92567379	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
-Dichloroethene	ug/l	0	50	42.99	86.0	49.41	98.8	14	
Benzene	ug/l	0	50	46.93	93.9	51.48	103	9	

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QUALITY CONTROL DATA

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 92584705 92584713

Parameter	Units	92567379	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
Trichloroethene	ug/l	0	50	48.99	98.0	54.09	108	10	
Toluene	ug/l	0.2190	50	46.31	92.2	51.33	102	10	
Chlorobenzene	ug/l	0	50	46.00	92.0	50.66	101	10	
Dibromofluoromethane (S)					110		106		
1,2-Dichloroethane-d4 (S)					112		105		
Toluene-d8 (S)					108		109		
4-Bromofluorobenzene (S)					110		109		

LABORATORY CONTROL SAMPLE: 92584697

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
Chloromethane	ug/l	50	42.22	84.4	
Vinyl Chloride	ug/l	50	47.43	94.9	
Bromomethane	ug/l	50	95.17	190	1
Chloroethane	ug/l	50	48.92	97.8	
Trichlorofluoromethane	ug/l	50	48.31	96.6	
Acetone	ug/l	100	208.4	208	3
1,1-Dichloroethene	ug/l	50	35.63	71.3	
Iodomethane	ug/l	100	79.06	79.1	
Acrylonitrile	ug/l	500	455.6	91.1	
Methylene Chloride	ug/l	50	38.10	76.2	
Carbon Disulfide	ug/l	100	86.57	86.6	
trans-1,2-Dichloroethene	ug/l	50	39.93	79.9	
1,1-Dichloroethane	ug/l	50	38.39	76.8	
Vinyl Acetate	ug/l	100	89.77	89.8	
2-Butanone	ug/l	100	151.4	151	3
cis-1,2-Dichloroethene	ug/l	50	41.10	82.2	
Chloroform	ug/l	50	41.64	83.3	
Bromochloromethane	ug/l	50	44.30	88.6	
1,1,1-Trichloroethane	ug/l	50	40.32	80.6	
1,2-Dichloroethane	ug/l	50	40.38	80.8	
Carbon Tetrachloride	ug/l	50	42.02	84.0	
Benzene	ug/l	50	41.40	82.8	
Trichloroethene	ug/l	50	44.13	88.3	
1,2-Dichloropropane	ug/l	50	43.13	86.3	
Dibromomethane	ug/l	50	45.86	91.7	
Bromodichloromethane	ug/l	50	43.11	86.2	
4-Methyl-2-Pentanone	ug/l	100	99.38	99.4	
cis-1,3-Dichloropropene	ug/l	50	41.08	82.2	

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Pace Analytical

QUALITY CONTROL DATA

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

LABORATORY CONTROL SAMPLE: 92584697

rameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
Toluene	ug/l	50	41.62	83.2	
ans-1,3-Dichloropropene	ug/l	50	42.99	86.0	
1,2-Trichloroethane	ug/l	50	42.55	85.1	
2-Hexanone	ug/l	100	129.2	129	
bromochloromethane	ug/l	50	45.61	91.2	
trachloroethene	ug/l	50	44.71	89.4	
1,2-Dibromoethane	ug/l	50	46.84	93.7	
lorobenzene	ug/l	50	43.28	86.6	
1,1,2-Tetrachloroethane	ug/l	50	46.10	92.2	
Ethylbenzene	ug/l	50	41.99	84.0	
m&p-Xylene	ug/l	100	86.39	86.4	
yrene	ug/l	50	44.25	88.5	
Xylene (1,2-Dimethylbenzene)	ug/l	50	43.85	87.7	
Bromoform	ug/l	50	42.88	85.8	
1,2,2-Tetrachloroethane	ug/l	50	47.04	94.1	
2,3-Trichloropropane	ug/l	50	46.25	92.5	
trans-1,4-Dichloro-2-Butene	ug/l	50	47.75	95.5	
4-Dichlorobenzene	ug/l	50	41.86	83.7	
2-Dichlorobenzene	ug/l	50	41.80	83.6	
2-Dibromo-3-Chloropropane	ug/l	50	50.00	100	
Dibromofluoromethane (S)				106	
2-Dichloroethane-d4 (S)				108	
luene-d8 (S)				108	
4-Bromofluorobenzene (S)				112	

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QUALITY CONTROL DATA

HDR Engineering
128 South Tryon Street
Suite 1400
Charlotte, NC 28202

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

Attn: Mr. John Isham
Phone: (704)338-1800

QC Batch ID: 16250
Analysis Method: EPA 8260
Associated Pace Samples: 92567510

QC Batch Method: EPA 8260
Analysis Description: GC/MS VOCs by 8260

METHOD BLANK: 92585959
Associated Pace Samples:
92567510

Parameter	Units	Method Blank Result	PRL	Footnotes
Chloromethane	ug/l	ND	10	
Vinyl Chloride	ug/l	ND	10	
Bromomethane	ug/l	ND	10	
Chloroethane	ug/l	ND	10	
Trichlorofluoromethane	ug/l	ND	10	
Acetone	ug/l	ND	100	
1,1-Dichloroethene	ug/l	ND	5	
Iodomethane	ug/l	ND	5	
Acrylonitrile	ug/l	ND	100	
Methylene Chloride	ug/l	ND	5	
Carbon Disulfide	ug/l	ND	5	
trans-1,2-Dichloroethene	ug/l	ND	5	
1,1-Dichloroethane	ug/l	ND	5	
Vinyl Acetate	ug/l	ND	50	
2-Butanone	ug/l	ND	100	
cis-1,2-Dichloroethene	ug/l	ND	5	
Chloroform	ug/l	ND	5	
Bromochloromethane	ug/l	ND	5	
1,1,1-Trichloroethane	ug/l	ND	5	
1,2-Dichloroethane	ug/l	ND	5	
Carbon Tetrachloride	ug/l	ND	5	
Benzene	ug/l	ND	5	
Trichloroethene	ug/l	ND	5	
1,2-Dichloropropane	ug/l	ND	5	
Dibromomethane	ug/l	ND	5	

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Huntersville, NC 28078
Tel: 704-875-9092
Fax: 704-875-9091

Pace Analytical

QUALITY CONTROL DATA

Pace Project Number: 927804
Client Project ID: W-S Corrective Action

METHOD BLANK: 92585959
sociated Pace Samples:
92567510

rameter	Units	Method Blank Result	PRL	Footnotes
3romodichloromethane	ug/l	ND	5	
Methyl-2-Pentanone	ug/l	ND	50	
s-1,3-Dichloropropene	ug/l	ND	5	
Toluene	ug/l	ND	5	
ans-1,3-Dichloropropene	ug/l	ND	5	
1,2-Trichloroethane	ug/l	ND	5	
2-Hexanone	ug/l	ND	50	
Dibromochloromethane	ug/l	ND	5	
trachloroethene	ug/l	ND	5	
2-Dibromoethane	ug/l	ND	5	
Chlorobenzene	ug/l	ND	5	
1,1,2-Tetrachloroethane	ug/l	ND	5	
ylbenzene	ug/l	ND	5	
m&p-Xylene	ug/l	ND	10	
Styrene	ug/l	ND	5	
Xylene (1,2-Dimethylbenzene)	ug/l	ND	5	
Bromoform	ug/l	ND	5	
1,1,2,2-Tetrachloroethane	ug/l	ND	5	
2,3-Trichloropropane	ug/l	ND	5	
ans-1,4-Dichloro-2-Butene	ug/l	ND	5	
1,4-Dichlorobenzene	ug/l	ND	5	
2-Dichlorobenzene	ug/l	ND	5	
2-Dibromo-3-Chloropropane	ug/l	ND	5	
Dibromofluoromethane (S)	%	90		
1,2-Dichloroethane-d4 (S)	%	72		1
uene-d8 (S)	%	93		
Bromofluorobenzene (S)	%	84		

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Pace Project Number: 927804
Client Project ID: W-S Corrective Action

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

ND	Not Detected
NC	Not Calculable
PRL	Pace Reporting Limit
RPD	Relative Percent Difference
(S)	Surrogate
[1]	The surrogate and/or spike recovery was outside acceptance limits.
[2]	System contaiminant.
[3]	Recovery falls outside of QC limits, however, this compound is not found in the associated samples.

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Huntersville, NC 28078

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RECEIVED
BY
ENGINEERING, INC.
THE CAROLINAS

October 28, 1999

Mr. John Isham
HDR Engineering
128 South Tryon Street
Suite 1400
Charlotte, NC 28202

RE: Pace Project Number: 929441
Client Project ID: W-S Landfill

Dear Mr. Isham:

Enclosed are the results of analyses for sample(s) received by the laboratory on October 20, 1999. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bonnie Hervey

Bonnie Hervey
Project Manager

Enclosures

Laboratory Certification IDs	
NC Wastewater	12
NC Drinking Water	37706
SC	99006

REPORT OF LABORATORY ANALYSIS

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Laboratory Certification IDs	
KY Drinking Water	90090
TN UST List	
VA Drinking Water	213

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Pace Analytical

DATE: 10/28/99
PAGE: 1

ℓ Engineering
3 South Tryon Street
ite 1400
arlotte, NC 28202

Pace Project Number: 929441
Client Project ID: W-S Landfill

tn: Mr. John Isham
one: (704)338-1800

lid results are reported on a dry weight basis

ce Sample No: 92679455 Date Collected: 10/20/99 Matrix: Water
ient Sample ID: DW-9D Date Received: 10/20/99

ameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
MS Volatiles							
GC/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	10/22/99	RPJ	74-87-3	
Vinyl Chloride	ND	ug/l	10	10/22/99	RPJ	75-01-4	
Bromomethane	ND	ug/l	10	10/22/99	RPJ	74-83-9	
Chloroethane	ND	ug/l	10	10/22/99	RPJ	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	10/22/99	RPJ	75-69-4	
Acetone	ND	ug/l	100	10/22/99	RPJ	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	10/22/99	RPJ	75-35-4	
Iodomethane	ND	ug/l	5	10/22/99	RPJ	74-88-4	
Acrylonitrile	ND	ug/l	100	10/22/99	RPJ	107-13-1	
Methylene Chloride	43	ug/l	5	10/22/99	RPJ	75-09-2	1
Carbon Disulfide	ND	ug/l	5	10/22/99	RPJ	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	10/22/99	RPJ	156-60-5	
1,1-Dichloroethane	30	ug/l	5	10/22/99	RPJ	75-34-3	
Vinyl Acetate	ND	ug/l	50	10/22/99	RPJ	108-05-4	
2-Butanone	ND	ug/l	100	10/22/99	RPJ	78-93-3	
cis-1,2-Dichloroethene	27	ug/l	5	10/22/99	RPJ	156-59-2	
Chloroform	ND	ug/l	5	10/22/99	RPJ	67-66-3	
Bromochloromethane	ND	ug/l	5	10/22/99	RPJ	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	10/22/99	RPJ	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	10/22/99	RPJ	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	10/22/99	RPJ	56-23-5	
Benzene	ND	ug/l	5	10/22/99	RPJ	71-43-2	
Trichloroethene	28	ug/l	5	10/22/99	RPJ	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	10/22/99	RPJ	78-87-5	
Dibromomethane	ND	ug/l	5	10/22/99	RPJ	74-95-3	
Bromodichloromethane	ND	ug/l	5	10/22/99	RPJ	75-27-4	

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Tel: 704-875-9092
Fax: 704-875-9091

Pace Project Number: 929441
Client Project ID: W-S Landfill

:e Sample No: 92679455 Date Collected: 10/20/99 Matrix: Water
ient Sample ID: DW-9D Date Received: 10/20/99

·ameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
4-Methyl-2-Pentanone	ND	ug/l	50	10/22/99	RPJ	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	10/22/99	RPJ	10061-01-5	
Toluene	ND	ug/l	5	10/22/99	RPJ	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	10/22/99	RPJ	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	10/22/99	RPJ	79-00-5	
2-Hexanone	ND	ug/l	50	10/22/99	RPJ	591-78-6	
Dibromochloromethane	ND	ug/l	5	10/22/99	RPJ	124-48-1	
Tetrachloroethene	64	ug/l	5	10/22/99	RPJ	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	10/22/99	RPJ	106-93-4	
Chlorobenzene	ND	ug/l	5	10/22/99	RPJ	108-90-7	
1,1,1,2-Tetrachloroethane	ND	ug/l	5	10/22/99	RPJ	630-20-6	
Ethylbenzene	ND	ug/l	5	10/22/99	RPJ	100-41-4	
m&p-Xylene	ND	ug/l	10	10/22/99	RPJ	7816-60-0	
Styrene	ND	ug/l	5	10/22/99	RPJ	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	10/22/99	RPJ	95-47-6	
Bromoform	ND	ug/l	5	10/22/99	RPJ	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	10/22/99	RPJ	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	10/22/99	RPJ	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	10/22/99	RPJ	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	10/22/99	RPJ	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	10/22/99	RPJ	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	10/22/99	RPJ	96-12-8	
Dibromofluoromethane (S)	94	%		10/22/99	RPJ	1868-53-7	
1,2-Dichloroethane-d4 (S)	94	%		10/22/99	RPJ	17060-07-0	
Toluene-d8 (S)	98	%		10/22/99	RPJ	2037-26-5	
4-Bromofluorobenzene (S)	90	%		10/22/99	RPJ	460-00-4	

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Tel: 704-875-9092
Fax: 704-875-9091

Pace Project Number: 929441
Client Project ID: W-S Landfill

RAMETER FOOTNOTES

	Not Detected
	Not Calculable
PRL	Pace Reporting Limit
(S)	Surrogate
]	Possible laboratory contaminant.

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QUALITY CONTROL DATA

DATE: 10/28/99

Engineering
South Tryon Street
e 1400
lotte, NC 28202

Pace Project Number: 929441
Client Project ID: W-S Landfill

: Mr. John Isham
e: (704)338-1800

atch ID: 18454
ysis Method: EPA 8260
ciated Pace Samples: 92679455

QC Batch Method: EPA 8260
Analysis Description: GC/MS VOCs by 8260

IX SPIKE & MATRIX SPIKE DUPLICATE: 92680545 92680552

meter	Units	92675651	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
Dichloroethene	ug/l	0	50	49.28	98.6	52.36	105	6	
ene	ug/l	0	50	47.81	95.6	52.09	104	9	
chloroethene	ug/l	0	50	49.61	99.2	53.52	107	8	
ene	ug/l	0	50	46.47	92.9	51.17	102	10	
robenzene	ug/l	0	50	45.88	91.8	50.77	102	10	
omofluoromethane (S)					102		100		
Dichloroethane-d4 (S)					100		100		
ene-d8 (S)					103		102		
omofluorobenzene (S)					96		100		

RATORY CONTROL SAMPLE: 92677053

meter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
romethane	ug/l	50	27.29	54.6	
yl Chloride	ug/l	50	33.58	67.2	
nomethane	ug/l	50	38.69	77.4	
roethane	ug/l	50	34.24	68.5	
chlorofluoromethane	ug/l	50	32.50	65.0	
tone	ug/l	100	125.9	126	
-Dichloroethene	ug/l	50	43.99	88.0	
omethane	ug/l	100	103.7	104	
ylonitrile	ug/l	500	454.5	90.9	
hylene Chloride	ug/l	50	46.82	93.6	
bon Disulfide	ug/l	100	94.01	94.0	
ns-1,2-Dichloroethene	ug/l	50	46.74	93.5	
-Dichloroethane	ug/l	50	45.51	91.0	

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Pace Analytical

QUALITY CONTROL DATA

DATE: 10/28/99

Pace Project Number: 929441
Client Project ID: W-S Landfill

ORATORY CONTROL SAMPLE: 92677053

ameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
yl Acetate	ug/l	100	64.02	64.0	
utanone	ug/l	100	106.6	107	
-1,2-Dichloroethene	ug/l	50	47.73	95.5	
oroform	ug/l	50	48.85	97.7	
mochloromethane	ug/l	50	51.18	102	
,1-Trichloroethane	ug/l	50	43.96	87.9	
-Dichloroethane	ug/l	50	48.50	97.0	
bon Tetrachloride	ug/l	50	44.44	88.9	
zene	ug/l	50	47.54	95.1	
chloroethene	ug/l	50	47.01	94.0	
-Dichloropropane	ug/l	50	50.23	100	
romomethane	ug/l	50	50.81	102	
modichloromethane	ug/l	50	50.81	102	
ethyl-2-Pentanone	ug/l	100	94.01	94.0	
-1,3-Dichloropropene	ug/l	50	47.52	95.0	
uene	ug/l	50	45.48	91.0	
ns-1,3-Dichloropropene	ug/l	50	49.84	99.7	
,2-Trichloroethane	ug/l	50	48.51	97.0	
lexanone	ug/l	100	98.90	98.9	
romochloromethane	ug/l	50	53.77	108	
rachloroethene	ug/l	50	45.91	91.8	
-Dibromoethane	ug/l	50	53.69	107	
orobenzene	ug/l	50	45.29	90.6	
,1,2-Tetrachloroethane	ug/l	50	53.46	107	
ylbenzene	ug/l	50	41.12	82.2	
-Xylene	ug/l	100	78.45	78.4	
rene	ug/l	50	44.21	88.4	
(ylene (1,2-Dimethylbenzene)	ug/l	50	39.09	78.2	
omoform	ug/l	50	52.31	105	
1,2,2-Tetrachloroethane	ug/l	50	41.30	82.6	
2,3-Trichloropropane	ug/l	50	41.55	83.1	
ans-1,4-Dichloro-2-Butene	ug/l	50	40.54	81.1	
4-Dichlorobenzene	ug/l	50	43.68	87.4	
2-Dichlorobenzene	ug/l	50	43.66	87.3	
2-Dibromo-3-Chloropropane	ug/l	50	45.92	91.8	
bromofluoromethane (S)				98	
2-Dichloroethane-d4 (S)				95	
luene-d8 (S)				100	
Bromofluorobenzene (S)				86	

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QUALITY CONTROL DATA

Pace Project Number: 929441
Client Project ID: W-S Landfill

'LE DUPLICATE: 92680560

ımeter	Units	92675669	Dup. Result	RPD	Footnotes
›romethane	ug/l	ND	ND	NC	
/l Chloride	ug/l	ND	ND	NC	
ıomethane	ug/l	ND	ND	NC	
›roethane	ug/l	ND	ND	NC	
:hlorofluoromethane	ug/l	ND	ND	NC	
·Dichloroethene	ug/l	ND	ND	NC	
ıylene Chloride	ug/l	ND	ND	NC	
ıs-1,2-Dichloroethene	ug/l	ND	ND	NC	
·Dichloroethane	ug/l	ND	ND	NC	
·1,2-Dichloroethene	ug/l	ND	ND	NC	
›roform	ug/l	ND	ND	NC	
ıochloromethane	ug/l	ND	ND	NC	
,1-Trichloroethane	ug/l	ND	ND	NC	
·Dichloroethane	ug/l	ND	ND	NC	
›on Tetrachloride	ug/l	ND	ND	NC	
zene	ug/l	19.00	17.00	10	
:hloroethene	ug/l	ND	ND	NC	
·Dichloropropane	ug/l	ND	ND	NC	
·omomethane	ug/l	ND	ND	NC	
ıodichloromethane	ug/l	ND	ND	NC	
ıene	ug/l	32.00	29.00	10	
,2-Trichloroethane	ug/l	ND	ND	NC	
·omochloromethane	ug/l	ND	ND	NC	
·achloroethene	ug/l	ND	ND	NC	
-Dibromoethane	ug/l	ND	ND	NC	
›robenzene	ug/l	ND	ND	NC	
,1,2-Tetrachloroethane	ug/l	ND	ND	NC	
ylbenzene	ug/l	5.500	ND	NC	
-Xylene	ug/l	20.00	17.00	12	
rene	ug/l	ND	ND	NC	
ylene (1,2-Dimethylbenzene)	ug/l	7.900	6.900	13	
ıoform	ug/l	ND	ND	NC	
,2,2-Tetrachloroethane	ug/l	ND	ND	NC	
,3-Trichloropropane	ug/l	ND	ND	NC	
-Dichlorobenzene	ug/l	ND	ND	NC	
-Dichlorobenzene	ug/l	ND	ND	NC	
-Dibromo-3-Chloropropane	ug/l	ND	ND	NC	
romofluoromethane (S)	%	101	103	0	
-Dichloroethane-d4 (S)	%	103	103	0	
uene-d8 (S)	%	100	104	0	
romofluorobenzene (S)	%	95	96	0	

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Huntersville, NC 28078

Tel: 704-875-9092
Fax: 704-875-9091

Pace Project Number: 929441
Client Project ID: W-S Landfill

.ITY CONTROL DATA PARAMETER FOOTNOTES

sistent with EPA guidelines unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

Not Detected
Not Calculable
Pace Reporting Limit
Relative Percent Difference
Surrogate

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Pace Analytical

397813

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: HDR	Report To: JOHN R. KHAM	Turn around Time	Pace Client No.
Address: 128 S. TRYON ST. STE 1400	Bill To: SAME AS LEFT	☐ 24 Hours	Pace Project Manager: [illegible]
CHARLOTTE, NC 28202	P.O. # / Billing Reference	☐ 48 Hours	Pace Project No.: 1241411
Phone: (704) 338-1800	Project Name / No.: WINSTON SALEM	☐ 3-5 Days	*Requested Due Date: NORMAL
		☐ 1 Week 2 Weeks	
		☒ Normal 14 Days	

Sampled By (PRINT): CURTIS WELTY

Sampler Signature: [illegible]

Date Sampled: 11/24/99

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA (HCL)	NaOH	ANALYSES REQUEST: Air TOC (8260)	REMARKS
1	DW-9D		GW	2679455	1				X			
2												
3												
4												
5												
6												
7												
8												

SHIPMENT METHOD	AIR BILL NO.	SHIPPING DATE	NUMBER OF COOLERS
Hand			1

Additional Comments

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	[illegible]	11/24/99	[illegible]	[illegible]		

SAMPLE CONDITION

Temp: _____ °C	Received on Ice: Y / N	Sealed Cooler: Y / N	Samples Intact: Y / N

SEE REVERSE SIDE FOR INSTRUCTIONS

8/97

HDR
Suite 1400
128 S. Tryon Street
Charlotte, NC 28202-5001
704 338-6700

Chain of Custody Record

HDR Engineering, Inc.

927304

Project No.	Project Name	Parameters	Environmental	Hazardous
00162-106-018	ACTION WINSTON-SALEM CORRECTIVE		☐	☒ Low ☐ Med ☐ High

Samplers: (Signature) John R. Isham (Printed) JOHN R. ISHAM

Lab: Address: PACE ANALYTICAL

Field Sample Number	Date	Time	Comp.	GRAB	Station Location	No. of Containers	8260	RFS CL					Remarks
OW-7m	8/2	1600		X	WELL 92567304	5	4	1					BAD VOA LID
OW-12	8/2	1525		X	" 92567312	5	4	1					2 BAD VOA LIDS
OW-12M	8/2	1450		X	" 92567320	5	4	1					BAD VOA LID
PZ-29s	8/2	1020		X	" 92567338	5	4	1					
PZ-29m	8/2	1110		X	" 92567346	5	4	1					
PZ-29D	8/2	1220		X	" 92567353	5	4	1					2 TRIP BLK VOAs
PZ-32s	8/2	0955		X	" 92567361	5	4	1					92567310
PZ-32m	8/2	0915		X	" 92567377	5	4	1					
PZ-33s	8/2	1415		X	" 92567387	5	4	1					
PZ-33m	8/2	1340		X	" 92567395	5	4	1					BAD VOA LID

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
John R. Isham	8/2	1645	[illegible]				
(Printed) JOHN R. ISHAM	HDR		(Printed) [illegible]	(Printed)			(Printed)

Relinquished By: (Signature)	Date	Time	Received for Laboratory By: (Signature)	Date	Time	Results to:
(Printed)			(Printed)			SAME AS ABOVE

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER OW-7
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 18.83 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/3/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 72
WEATHER CONDITIONS SUNNY, WARM
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	7.15				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	0838				
TIME END FLUSHING	0852				
ESTIMATED VOLUME FLUSHING (gal)	0	2	4	6	7
WELL VOLUMES REMOVED	0	1.05	2.10	3.16	3.68
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	17.3	16.3	15.4	15.3	15.4
SAMPLE (pH)	5.13	5.10	5.23	5.22	5.21
SAMPLE CONDUCTIVITY (umhos/cm)	150	150	150	150	150
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	MOD	FAINT	SAME	SAME	SAME
COLOR	GRAY	BROWN	SAME	SAME	SAME
OTHER		TURBID	SAME	SAME	SAME

COMMENTS

SAMPLED: 0855

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 18.83 (WELL DEPTH) − 7.15 (DEPTH TO WATER) = 11.68 FT = h
3.14 × 0.0833 (r^2) × h = 0.254 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 1.90

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER OW-7M
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 29.25 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 85
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
FLUSHING					
WATER LEVEL BEFORE	16.75				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1545				
TIME END FLUSHING	1552				
ESTIMATED VOLUME FLUSHING (gal)	0	2	4	7	
WELL VOLUMES REMOVED	0	0.98	1.96	3.43	
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	20.6	15.5	15.3		
SAMPLE (pH)	6.40	6.61	6.67		
SAMPLE CONDUCTIVITY (umhos/cm)	550	540	600		
BUFFER BEFORE	4	4	4		
BUFFER AFTER	4	4	4		
ODOR	V. FAINT	SAME	SAME		
COLOR	CLEAR	CLEAR	Yellow		
OTHER			SL. TURBID		

COMMENTS

SAMPLED: 1600 Day

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 29.25 (WELL DEPTH) − 16.75 (DEPTH TO WATER) = 12.50 FT = h
3.14 X 0.0833 (r^2) X h = 0.272 FT^3 X 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 2.04

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER OW-8D
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 51.25 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/3/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 82
WEATHER CONDITIONS SUNNY, WARM
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	9.45				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1125				
TIME END FLUSHING	1157				
ESTIMATED VOLUME FLUSHING (gal)	0	5	10	15	21
WELL VOLUMES REMOVED	0	0.73	1.47	2.20	3.08
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	16.8	14.9	15.2	15.1	15.0
SAMPLE (pH)	6.02	6.11	6.06	6.05	6.07
SAMPLE CONDUCTIVITY (umhos/cm)	300	300	310	310	310
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	FAINT	FAINT	SAME	SAME	SAME
COLOR	CLEAR	CLEAR	CLEAR	SAME	SAME
OTHER					

COMMENTS

SAMPLED: 1205

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 51.25 (WELL DEPTH) − 9.45 (DEPTH TO WATER) = 41.80 FT = h
3.14 × 0.0833 (r^2) × h = 0.911 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 6.81

WELLPURG.DWG

1054
1124

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER OW-9
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 18.25 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/3/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 78
WEATHER CONDITIONS SUNNY, WARM
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
FLUSHING					
WATER LEVEL BEFORE	9.09				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1645				
TIME END FLUSHING	1110				
ESTIMATED VOLUME FLUSHING (gal)	0	2	4	6	
WELL VOLUMES REMOVED	0	1.34	2.68	4.02	
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	16.2	15.8	15.5	15.5	
SAMPLE (pH)	6.65	6.47	6.23	6.24	
SAMPLE CONDUCTIVITY (umhos/cm)	84	60	60	60	
BUFFER BEFORE	4	4	4	4	
BUFFER AFTER	4	4	4	4	
ODOR	FAINT	NONE	NONE	NONE	
COLOR	CLOUDY	ORANGE	SAME	SAME	
OTHER		TURBID	SAME	SAME	
			GOING DRY	DRY	

COMMENTS

SAMPLED: 1115

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 18.25 (WELL DEPTH) − 9.09 (DEPTH TO WATER) = 9.16 FT = h
3.14 X 0.0833 (r^2) X h = 0.199 FT^3 X 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 1.49

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER OW-9D
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 66.71 FEET
LENGTH OF GRAVEL PACK – FEET
DIAMETER OF GRAVEL PACK – INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/3/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 72
WEATHER CONDITIONS SUNNY, WARM
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	6.76				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	0923				
TIME END FLUSHING	1030				
ESTIMATED VOLUME FLUSHING (gal)	0	10	15	25	30
WELL VOLUMES REMOVED	0	1.02	1.54	2.56	3.07

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	16.4	15.1	14.8	14.6	14.8
SAMPLE (pH)	5.76	5.91	6.04	6.10	6.08
SAMPLE CONDUCTIVITY (umhos/cm)	420	420	440	440	440
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	NONE	NONE	NONE	NONE	NONE
COLOR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
OTHER					

COMMENTS

SAMPLED: 1039

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 66.71 (WELL DEPTH) – 6.76 (DEPTH TO WATER) = 59.95 FT = h
3.14 x 0.0833(r^2) x h = 1.306 FT^3 x 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 9.77

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER OW-10
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 26.75 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-D18-03
DATE 8/3/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 85
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	19.53				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1250				
TIME END FLUSHING	1257				
ESTIMATED VOLUME FLUSHING (gal)	0	1	2	3	4
WELL VOLUMES REMOVED	0	0.85	1.69	2.54	3.39

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	15.3	13.9	14.1		
SAMPLE (pH)	6.51	6.24	6.14		
SAMPLE CONDUCTIVITY (umhos/cm)	48	42	42		
BUFFER BEFORE	4	4	4		
BUFFER AFTER	4	4	4		
ODOR	NONE	NONE	NONE		
COLOR	ORANGE	SAME	SAME		
OTHER	TURBID	SAME	SAME		
		GOING DRY	DRY		

COMMENTS

SAMPLED: 1305

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 26.75 (WELL DEPTH) − 19.53 (DEPTH TO WATER) = 7.22 FT = h
3.14 X 0.0833(r^2) X h = 0.157 FT^3 X 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 1.18

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER OW-10M
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 42.29 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/ 2 /99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 86
WEATHER CONDITIONS SUNNY, WARM
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	20.00				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1315				
TIME END FLUSHING	1342				
ESTIMATED VOLUME FLUSHING (gal)	0	4	8	10	12
WELL VOLUMES REMOVED	0	1.10	2.20	2.75	3.31
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	14.8	14.4	14.5	14.5	14.4
SAMPLE (pH)	5.98	5.95	5.97	5.96	5.95
SAMPLE CONDUCTIVITY (umhos/cm)	74	81	81	81	81
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	NONE	NONE	NONE	NONE	SAME
COLOR	CLEAR	YELLOW	LT YELLOW	LT YELLOW	SAME
OTHER		SL. TURBID	SAME		

COMMENTS

SAMPLED: 1348

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 42.29 (WELL DEPTH) − 20.00 (DEPTH TO WATER) = 22.29 FT = h
3.14 x 0.0833 (r^2) x h = 0.486 FT^3 x 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 3.63

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER DW-11
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 18.93 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/3/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 85
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
FLUSHING					
WATER LEVEL BEFORE	5.88				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1407				
TIME END FLUSHING	1420				
ESTIMATED VOLUME FLUSHING (gal)	0	2	4	7	
WELL VOLUMES REMOVED	0	0.94	1.88	3.29	
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	19.3	16.8	16.1	16.0	
SAMPLE (pH)	5.87	5.83	5.85	5.86	
SAMPLE CONDUCTIVITY (umhos/cm)	200	300	300	300	
BUFFER BEFORE	4	4	4	4	
BUFFER AFTER	4	4	4	4	
ODOR	NONE	NONE	NONE	NONE	
COLOR	CLEAR	BROWN	BROWN	BROWN	
OTHER		TURBID	TURBID	TURBID GOING DRY	

COMMENTS

SAMPLED: 1425

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 18.93 (WELL DEPTH) - 5.88 (DEPTH TO WATER) = 13.05 FT = h
3.14 X 0.0833 (r^2) X h = 0.284 FT^3 X 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 2.13

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER OW-11M
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 39.19 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/3/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 88
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	5.50				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1437				
TIME END FLUSHING	1500				
ESTIMATED VOLUME FLUSHING (gal)	0	5	10	14	17
WELL VOLUMES REMOVED	0	1.10	1.82	2.55	3.10

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	21.1	15.4	15.1	14.9	14.9
SAMPLE (pH)	6.38	6.51	6.51	6.51	6.50
SAMPLE CONDUCTIVITY (umhos/cm)	160	130	120	120	120
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	NONE	NONE	NONE	NONE	SAME
COLOR	CLEAR	LT BROWN	SAME	SAME	SAME
OTHER		CLOUDY	SAME	SAME	SAME

COMMENTS

SAMPLED: 1505

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
$\pi = 3.14$

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 39.19 (WELL DEPTH) − 5.50 (DEPTH TO WATER) = 33.69 FT = h
3.14 × 0.0833 (r^2) × h = 0.734 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 5.49

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER OW-12
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 17.55 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 82
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
FLUSHING					
WATER LEVEL BEFORE	7.20				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1508				
TIME END FLUSHING	1520				
ESTIMATED VOLUME FLUSHING (gal)	0	2	4	6	
WELL VOLUMES REMOVED	0	1.18	2.37	3.55	
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	21.2	16.4	17.1	17.1	
SAMPLE (pH)	6.47	6.47	6.41	6.43	
SAMPLE CONDUCTIVITY (umhos/cm)	140	120	120	120	
BUFFER BEFORE	4	4	4	4	
BUFFER AFTER	4	4	4	4	
ODOR	NONE	NONE	NONE	NONE	
COLOR	CLEAR	LT yellow	BROWN	BROWN	
OTHER		TURBID	SAME	SAME	

COMMENTS

SAMPLED: 1525
2 BAD VOA (ID)

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 17.55 (WELL DEPTH) − 7.20 (DEPTH TO WATER) = 10.35 FT = h
3.14 x 0.0833 (r^2) x h = 0.226 FT^3 x 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 1.69

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER OW-12M
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 30.17 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 82
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	7.00				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1425				
TIME END FLUSHING	1445				
ESTIMATED VOLUME FLUSHING (gal)	0	5	8	12	
WELL VOLUMES REMOVED	0	1.32	2.12	3.17	

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	18.7	16.2	15.6	15.5	
SAMPLE (pH)	6.38	6.39	6.41	6.41	
SAMPLE CONDUCTIVITY (umhos/cm)	120	120	120	120	
BUFFER BEFORE	4	4	4	4	
BUFFER AFTER	4	4	4	4	
ODOR	NONE	NONE	NONE	NONE	
COLOR	LT YELLOW	BROWN	BROWN	SAME	
OTHER		SL. TURBID	TURBID	SAME	

COMMENTS

SAMPLED: 1450
BAD VOA VID

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 30.17 (WELL DEPTH) − 7.00 (DEPTH TO WATER) = 23.17 FT = h
3.14 x 0.0833 (r^2) x h = 0.504 FT^3 x 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 3.78

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER PZ-29S
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 32.89 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162106-018-03
DATE 8/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 78
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED BAILER

WITHDRAWAL OF WELL VOLUMES

	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
FLUSHING					
WATER LEVEL BEFORE	23.70				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1012				
TIME END FLUSHING	1018				
ESTIMATED VOLUME FLUSHING (gal)	0	2	3	5	
WELL VOLUMES REMOVED	0	1.33	2.0	3.33	
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	15.3	14.5			
SAMPLE (pH)	6.03	5.93			
SAMPLE CONDUCTIVITY (umhos/cm)	76	170			
BUFFER BEFORE	4	4			
BUFFER AFTER	4	4			
ODOR	NONE	NONE			
COLOR	CLEAR	BROWN			
OTHER		TURBID DRY			

COMMENTS

SAMPLED: 1020

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 32.89 (WELL DEPTH) − 23.70 (DEPTH TO WATER) = 9.19 FT = h
3.14 x 0.0833 (r^2) x h = 0.200 FT^3 x 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 1.50

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER PZ-29M
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 51.32 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 80
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	23.55				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1035				
TIME END FLUSHING	1102				
ESTIMATED VOLUME FLUSHING (gal)	0	4	8	12	14
WELL VOLUMES REMOVED	0	0.88	1.77	2.65	3.09

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	14.5	14.3	14.2	14.4	14.6
SAMPLE (pH)	6.40	6.40	6.41	6.41	6.41
SAMPLE CONDUCTIVITY (umhos/cm)	98	91	93	93	93
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	NONE	NONE	NONE	NONE	NONE
COLOR	CLEAR	CLEAR	CLEAR	LT YELLOW	SAME
OTHER					

COMMENTS

SAMPLED: 1110

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 51.32 (WELL DEPTH) − 23.55 (DEPTH TO WATER) = 27.77 FT = h
3.14 × 0.0833 (r^2) × h = 0.605 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 4.53

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER PZ-29D
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 74.36 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 80
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
FLUSHING					
WATER LEVEL BEFORE	23.90				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1123				
TIME END FLUSHING	1215				
ESTIMATED VOLUME FLUSHING (gal)	0	5	10	18	25
WELL VOLUMES REMOVED	0	0.61	1.22	2.19	3.04
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	14.8	14.6	14.7	14.7	14.6
SAMPLE (pH)	6.48	6.56	6.63	6.64	6.64
SAMPLE CONDUCTIVITY (umhos/cm)	160	160	140	140	140
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	NONE	SAME	SAME	SAME	SAME
COLOR	CLEAR	SAME	SAME	SAME	SAME
OTHER					

COMMENTS

SAMPLED: 1220

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 74.36 (WELL DEPTH) − 23.90 (DEPTH TO WATER) = 50.46 FT = h
3.14 × 0.0833 (r^2) × h = 1.10 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 8.22

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER PZ-325
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 11.59 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 86
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	7.75				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1400				
TIME END FLUSHING	1405				
ESTIMATED VOLUME FLUSHING (gal)	0	0.5	1.0	1.5	2.0
WELL VOLUMES REMOVED	0	0.80	1.60	2.40	3.19

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	19.1	18.3			
SAMPLE (pH)	6.80	6.45			
SAMPLE CONDUCTIVITY (umhos/cm)	120	110			
BUFFER BEFORE	4	4			
BUFFER AFTER	4	4			
ODOR	NONE	NONE			
COLOR	BROWN	BROWN			
OTHER	TURBID	TURBID DRY			

COMMENTS

SAMPLED: 1415

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 11.59 (WELL DEPTH) − 7.75 (DEPTH TO WATER) = 3.84 FT = h
3.14 x 0.0833 (r^2) x h = 0.084 FT^3 x 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 0.626

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER PZ-38M
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 41.18 FEET
LENGTH OF GRAVEL PACK – FEET
DIAMETER OF GRAVEL PACK – INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 87
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
FLUSHING					
WATER LEVEL BEFORE	5.75				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1320				
TIME END FLUSHING	1332				
ESTIMATED VOLUME FLUSHING (gal)	0	5	10	15	17.5
WELL VOLUMES REMOVED	0	0.87	1.73	2.60	3.03
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	20.7	15.7	14.8		
SAMPLE (pH)	6.82	6.92	6.97		
SAMPLE CONDUCTIVITY (umhos/cm)	180	160	180		
BUFFER BEFORE	4	4	4		
BUFFER AFTER	4	4	4		
ODOR	NONE	NONE	NONE		
COLOR	LT YELLOW	BROWN	BROWN		
OTHER		TURBID	TURBID		

DRY @ 6 GAL

COMMENTS

SAMPLED: 1340
BAD VOA VIAL

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 41.18 (WELL DEPTH) – 5.75 (DEPTH TO WATER) = 35.43 FT = h
3.14 x 0.0833 (r^2) x h = 0.772 FT^3 x 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 5.77

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER PZ-33S
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 15.78 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 78
WEATHER CONDITIONS SUNNY, WARM
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	12.28				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	0935				
TIME END FLUSHING	0946				
ESTIMATED VOLUME FLUSHING (gal)	0	0.5	1.0	1.5	2.0
WELL VOLUMES REMOVED	0	0.88	1.75	2.63	3.51

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	16.9	15.6	15.4	15.4	15.4
SAMPLE (pH)	6.26	6.26	6.24	6.23	6.25
SAMPLE CONDUCTIVITY (umhos/cm)	53	53	40	41	41
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	NONE	NONE	NONE	NONE	NONE
COLOR	SL. CLOUDY	BROWN	BROWN	BROWN	BROWN
OTHER		TURBID	TURBID	TURBID	TURBID

COMMENTS

SAMPLED: 0955

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
$\pi = 3.14$

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 15.78 (WELL DEPTH) − 12.28 (DEPTH TO WATER) = 3.50 FT = h
3.14 × 0.0833 (r^2) × h = 0.0762 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 0.57

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM
WELL NUMBER PZ-33M
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 42.45 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 77
WEATHER CONDITIONS SUNNY, WARM
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
FLUSHING					
WATER LEVEL BEFORE	11.60				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	0855				
TIME END FLUSHING	0907				
ESTIMATED VOLUME FLUSHING (gal)	0	5	10	16	
WELL VOLUMES REMOVED	0	0.99	1.99	3.18	
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	15.5	15.1			
SAMPLE (pH)	5.44	5.88			
SAMPLE CONDUCTIVITY (umhos/cm)	200	220			
BUFFER BEFORE	4	4			
BUFFER AFTER	4	4			
ODOR	NONE	NONE			
COLOR	CLEAR	TURBID LT BROWN			
OTHER		DRY			

COMMENTS

SAMPLED: 0915

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 42.45 (WELL DEPTH) − 11.60 (DEPTH TO WATER) = 30.85 FT = h
3.14 × 0.0833 (r^2) × h = 0.672 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 5.03

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER TW-1S
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 32.28 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/3/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 88
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	15.20				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1528				
TIME END FLUSHING	1544				
ESTIMATED VOLUME FLUSHING (gal)	0	2	4	6	9
WELL VOLUMES REMOVED	0	0.72	1.44	2.16	3.24
FIELD ANALYSIS					
WATER TEMPERATURE (°C)	15.2	14.0	13.8	13.8	13.8
SAMPLE (pH)	6.27	6.00	5.70	5.71	5.72
SAMPLE CONDUCTIVITY (umhos/cm)	84	94	92	92	92
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	NONE	NONE	NONE	SAME	SAME
COLOR	CLEAR	BROWN	BROWN	SAME	SAME
OTHER		TURBID	TURBID	TURBID	SAME

COMMENTS

SAMPLED: 1545

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 32.28 (WELL DEPTH) − 15.20 (DEPTH TO WATER) = 17.08 FT = h
3.14 × 0.0833 (r^2) × h = 0.372 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 2.78

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER TW-25
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 32.22 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/3/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 88
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	22.09				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1605				
TIME END FLUSHING	1618				
ESTIMATED VOLUME FLUSHING (gal)	0	2	3	5	
WELL VOLUMES REMOVED	0	1.21	1.81	3.03	

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	16.9	15.4	15.2	15.2	
SAMPLE (pH)	5.65	5.64	5.65	5.66	
SAMPLE CONDUCTIVITY (umhos/cm)	140	130	130	130	
BUFFER BEFORE	4	4	4	4	
BUFFER AFTER	4	4	4	4	
ODOR	NONE	NONE	NONE	NONE	
COLOR	BROWN	SAME	SAME	SAME	
OTHER	TURBID	SAME	SAME	SAME	

COMMENTS

SAMPLED: 1625

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 32.22 (WELL DEPTH) − 22.09 (DEPTH TO WATER) = 10.13 FT = h
3.14 × 0.0833 (r^2) × h = 0.221 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 1.65

WELLPURG.DWG

HDR
HDR Engineering, Inc.

PRE-SAMPLING WELL PURGING

PROJECT WINSTON-SALEM LF
WELL NUMBER TW-2D
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 46.30 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK — INCHES

PROJECT NUMBER 00162-106-018-03
DATE 8/3/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 88
WEATHER CONDITIONS SUNNY, HOT
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	22.20				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1603				
TIME END FLUSHING	1650				
ESTIMATED VOLUME FLUSHING (gal)	0	3	6	9	12
WELL VOLUMES REMOVED	0	0.76	1.27		

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	15.8	15.2	15.0	15.1	15.1
SAMPLE (pH)	5.75	5.70	5.72	5.73	5.73
SAMPLE CONDUCTIVITY (umhos/cm)	140	140	120	120	120
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	NONE	SAME	SAME	SAME	SAME
COLOR	BROWN	SAME	SAME	SAME	SAME
OTHER					

DRY @ 5

COMMENTS

SAMPLED: 1650

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 46.30 (WELL DEPTH) − 22.20 (DEPTH TO WATER) = 24.10 FT = h
3.14 × 0.0833 (r^2) × h = 0.525 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 3.93

WELLPURG.DWG

HDR Engineering, Inc. of the Carolinas

Client:	City of Winston-Salem, NC.	**Project No.:**	00162-106-018
		Sheet:	1/1
Project:	Rising Head Tests	**Date:**	8/20/99
	Ground-Water Assessment	**Well:**	OW-8D
		Reference:	Bouwer, 1989

Hydraulic Conductivity, K = ((Req^2)ln(Re/Rw)/2Le)*(1/T)*ln(Yo/Yt)

Where: **Req = [(1-n)(Rc^2) + n(Rw^2)]exp^1/2 (Correction for sand pack)**

ln(Re/Rw)=[1.1/ln(Lw/Rw)+(A+Bln[(H-Lw)/Rw])/Le/Rw]exp^-1

Lw = Ht. of Water Column in Well =	41.39	(water in
Le = Screen Interval Open to Aquifer =	5	casing)
Rw = Radius of Well Including Sand Pack =	0.33	
Rc = Radius of Casing =	0.083	
H = Aquifer Thickness to First Aquitard =	49	
Yo = Relative Ht. of Water at Time Zero =	18	
Yt = Relative Ht. of Water at Time t =	1.34	
n = Porosity =	0.2	
T = Time (in minutes) =	3	

A & B are Constants to be Determined

Correction for Sand Pack (not necessary)

Req = 0.1652005

Evaluation of A & B

Le/Rw = 15.151515

from attached graph of A & B

A =

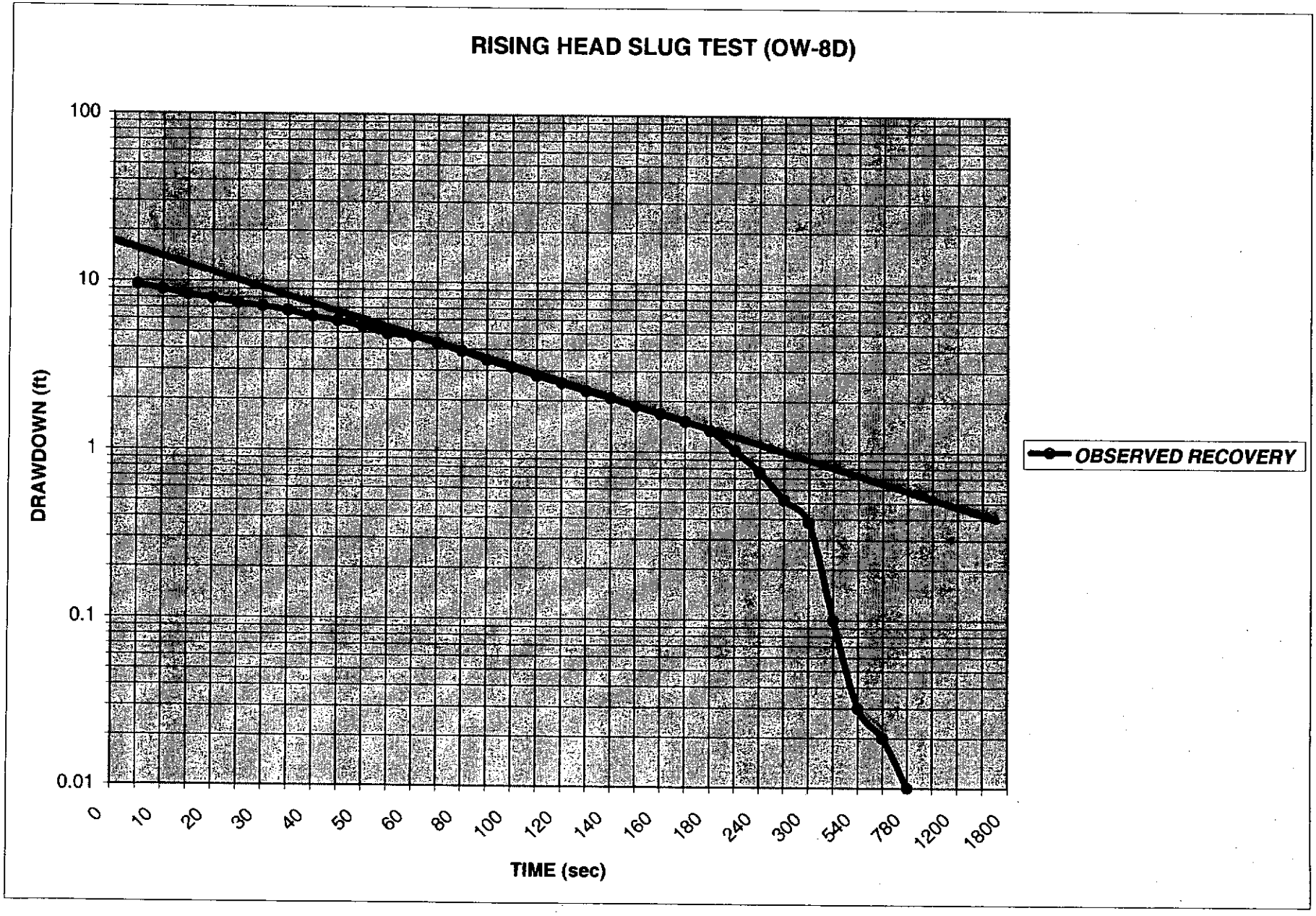
B =

Determination of ln Term

ln Re/Rw = 4.3924563

Determination of Hydraulic Conductivity

K = 0.0026202 feet/min
3.7730645 feet/day
1.33E-03 cm/sec


RISING HEAD SLUG TEST (OW-8D)
DRAWDOWN (ft)
100
10
1
0.1
0.01
0
10
20
30
40
50
60
80
100
120
140
160
180
240
300
540
780
1200
1800
TIME (sec)
OBSERVED RECOVERY

HDR

Piezometer No.: OW-8D
Initial Depth to Ground Water: 9.86' BTOC
Start Test:
Stop Test:

Time (sec)	Depth to Water Table (feet below TOC)	Drawdown
5	19.40	9.54
10	18.80	8.94
15	18.20	8.34
20	17.80	7.94
25	17.30	7.44
30	17.00	7.14
35	16.60	6.74
40	16.05	6.19
45	15.70	5.84
50	15.30	5.44
55	14.80	4.94
60 (1 min)	14.62	4.76
70	14.20	4.34
80	13.76	3.90
90	13.32	3.46
100	13.00	3.14
110	12.66	2.80
120 (2 min)	12.40	2.54
130	12.14	2.28
140	11.94	2.08
150	11.72	1.86

HDR

Piezometer No.: OW-8D
Initial Depth to Ground Water: 9.86' BTOC
Start Test:
Stop Test:

Time (sec)	Depth to Water Table	Drawdown
160	11.54	1.68
170	11.38	1.52
180 (3 min)	11.20	1.34
210	10.88	1.02
240 (4 min)	10.62	0.76
270	10.38	0.52
300 (5 min)	10.24	0.38
420 (7 min)	9.96	0.10
540 (9 min)	9.89	0.03
660 (11 min)	9.88	0.02
780 (13 min)	9.87	0.01
900 (15 min)	9.86	0.00
1200 (20 min)		
1500 (25 min)		
1800 (30 min)		
2100 (35 min)		
2400 (40 min)		
2700 (45 min)		
3000 (50 min)		
3300 (55 min)		
3600 (1 hr)		

HDR Engineering, Inc. of the Carolinas

Client:	City of Winston-Salem, NC.	**Project No.:**	00162-106-018
		Sheet:	1/1
Project:	Rising Head Tests	**Date:**	8/20/99
	Ground-Water Assessment	**Well:**	OW-9D
		Reference:	Bouwer, 1989

Hydraulic Conductivity, K = ((Req^2)ln(Re/Rw)/2Le)*(1/T)*ln(Yo/Yt)

Where: **Req = [(1-n)(Rc^2) + n(Rw^2)]exp^1/2 (Correction for sand pack)**

ln(Re/Rw)=[1.1/ln(Lw/Rw)+(A+Bln[(H-Lw)/Rw])/Le/Rw]exp^-1

Lw = Ht. of Water Column in Well =	57.79	(water in
Le = Screen Interval Open to Aquifer =	5	casing)
Rw = Radius of Well Including Sand Pack =	0.33	
Rc = Radius of Casing =	0.083	
H = Aquifer Thickness to First Aquitard =	65	
Yo = Relative Ht. of Water at Time Zero =	20.5	
Yt = Relative Ht. of Water at Time t =	3.28	
n = Porosity =	0.03	
T = Time (in minutes) =	2.5	

A & B are Constants to be Determined

Correction for Sand Pack (not necessary)

Req = 0.0997463

Evaluation of A & B

Le/Rw = 15.151515

from attached graph of A & B

A =

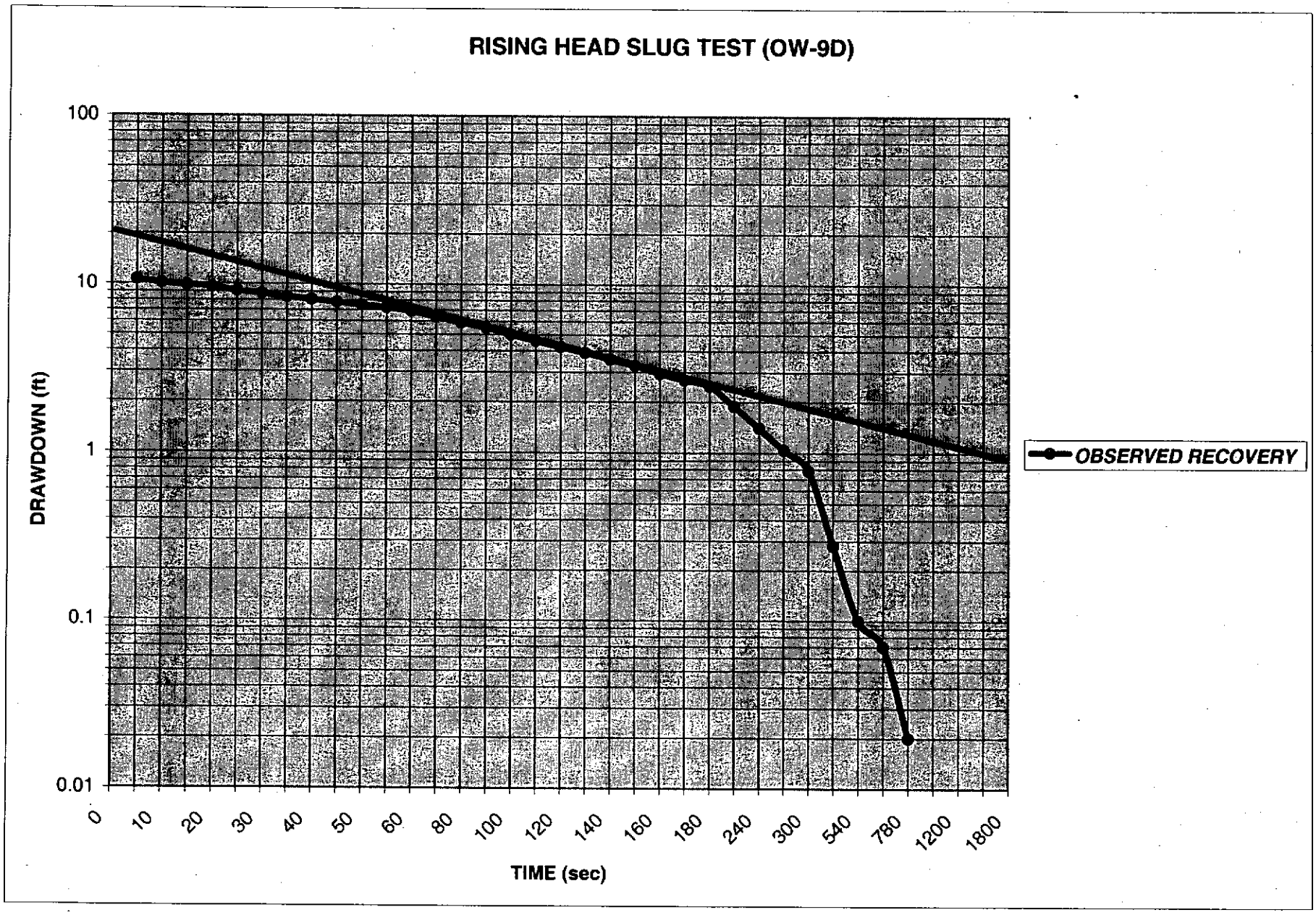
B =

Determination of ln Term

ln Re/Rw = 4.6958894

Determination of Hydraulic Conductivity

K = 0.0023714 feet/min
3.4147571 feet/day
1.20E-03 cm/sec


RISING HEAD SLUG TEST (OW-9D)
DRAWDOWN (ft)
100
10
1
0.1
0.01
0
10
20
30
40
50
60
80
100
120
140
160
180
240
300
540
780
1200
1800
TIME (sec)
OBSERVED RECOVERY

HDR

Piezometer No.: OW-9D
Initial Depth to Ground Water: 8.92' BTOC
Start Test:
Stop Test:

Time (sec)	Depth to Water Table (feet below TOC)	Drawdown
5	19.50	10.58
10	19.06	10.14
15	18.80	9.88
20	18.50	9.58
25	18.00	9.08
30	17.70	8.78
35	17.28	8.36
40	17.00	8.08
45	16.70	7.78
50	16.40	7.48
55	16.18	7.26
60 (1 min)	15.84	6.92
70	15.30	6.38
80	14.80	5.88
90	14.40	5.48
100	13.92	5.0
110	13.50	4.58
120 (2 min)	13.14	4.22
130	12.82	3.90
140	12.50	3.58
150	12.20	3.28

HDR

Piezometer No.: OW-9D
Initial Depth to Ground Water: 8.92
Start Test:
Stop Test:

Time (sec)	Depth to Water Table	Drawdown
160	11.86	2.94
170	11.62	2.70
180 (3 min)	11.40	2.48
210	10.80	1.88
240 (4 min)	10.32	1.40
270	9.96	1.04
300 (5 min)	9.70	0.78
420 (7 min)	9.20	0.28
540 (9 min)	9.02	0.10
660 (11 min)	8.99	0.07
780 (13 min)	8.94	0.02
900 (15 min)	8.92	0.0
1200 (20 min)		
1500 (25 min)		
1800 (30 min)		
2100 (35 min)		
2400 (40 min)		
2700 (45 min)		
3000 (50 min)		
3300 (55 min)		
3600 (1 hr)		

HDR Engineering, Inc. of the Carolinas

Client:	City of Winston-Salem, NC.	**Project No.:**	00162-106-018
		Sheet:	1/1
Project:	Rising Head Tests	**Date:**	8/20/99
	Ground-Water Assessment	**Well:**	OW-11M
		Reference:	Bouwer, 1989

Hydraulic Conductivity, K = ((Req^2)ln(Re/Rw)/2Le)*(1/T)*ln(Yo/Yt)

Where: **Req = [(1-n)(Rc^2) + n(Rw^2)]exp^1/2 (Correction for sand pack)**

ln(Re/Rw)=[1.1/ln(Lw/Rw)+(A+Bln[(H-Lw)/Rw])/Le/Rw]exp^-1

Lw = Ht. of Water Column in Well =	33.58	(water in
Le = Screen Interval Open to Aquifer =	5	casing)
Rw = Radius of Well Including Sand Pack =	0.33	
Rc = Radius of Casing =	0.083	
H = Aquifer Thickness to First Aquitard =	37	
Yo = Relative Ht. of Water at Time Zero =	2.3	
Yt = Relative Ht. of Water at Time t =	0.09	
n = Porosity =	0.2	
T = Time (in minutes) =	4	

A & B are Constants to be Determined

Correction for Sand Pack (not necessary)

Req = 0.1652005

Evaluation of A & B

Le/Rw = 15.151515

from attached graph of A & B

A =

B =

Determination of ln Term

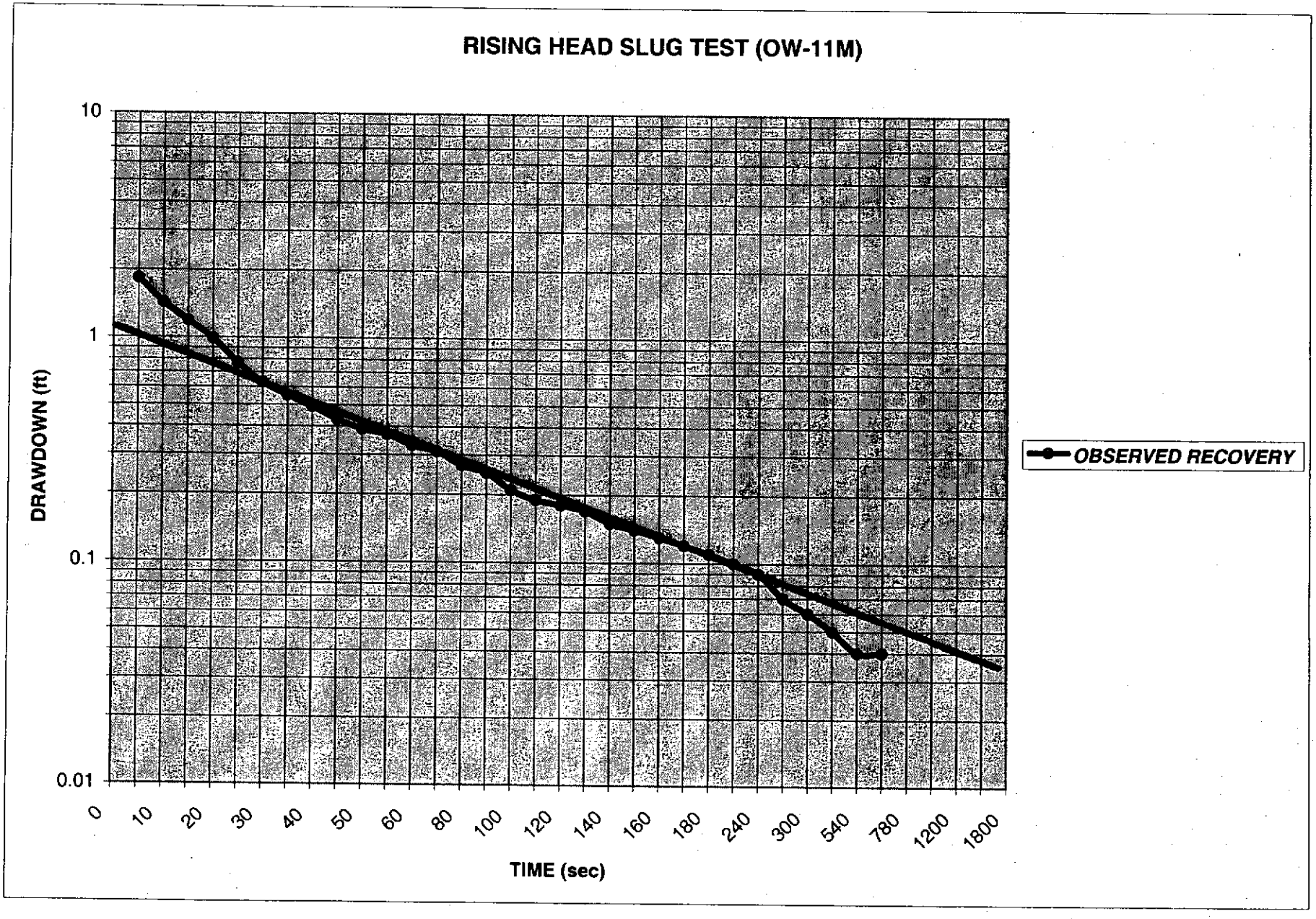
ln Re/Rw = 4.2023575

Determination of Hydraulic Conductivity

K = 0.0023456 feet/min

3.3776236 feet/day

1.19E-03 cm/sec


RISING HEAD SLUG TEST (OW-11M)
DRAWDOWN (ft)
10
1
0.1
0.01
0
10
20
30
40
50
60
80
100
120
140
160
180
240
300
540
780
1200
1800
TIME (sec)
OBSERVED RECOVERY

HDR

Piezometer No.: OW - 1Lm 5.61'
Initial Depth to Ground Water: ~~7.38~~' BTOC
Start Test:
Stop Test:

8.52' 2.91

Time (sec)	Depth to Water Table (feet below TOC)	Drawdown
5	7.45	1.84
10	7.05	1.44
15	6.80	1.19
20	6.60	0.99
25	6.38	0.77
30	6.24	0.63
35	6.16	0.55
40	6.10	0.49
45	6.04	0.43
50	6.00	0.39
55	5.98	0.37
60 (1 min)	5.94	0.33
70	5.92	0.31
80	5.88	0.27
90	5.86	0.25
100	5.82	0.21
110	5.80	0.19
120 (2 min)	5.79	0.18
130	5.78	0.17
140	5.76	0.15
150	5.75	0.14

HDR

Piezometer No.: OW-1tm
Initial Depth to Ground Water: 5.61'
Start Test:
Stop Test:

Time (sec)	Depth to Water Table	Drawdown
160	5.74	0.13
170	5.73	0.12
180 (3 min)	5.72	0.11
210	5.71	0.10
240 (4 min)	5.70	0.09
270	5.68	0.07
300 (5 min)	5.67	0.06
420 (7 min)	5.65	0.05
540 (9 min)	5.64	0.04
660 (11 min)	5.64	0.04
780 (13 min)		
900 (15 min)		
1200 (20 min)		
1500 (25 min)		
1800 (30 min)		
2100 (35 min)		
2400 (40 min)		
2700 (45 min)		
3000 (50 min)		
3300 (55 min)		
3600 (1 hr)		

HDR Engineering, Inc. of the Carolinas

Client:	City of Winston-Salem, NC.	**Project No.:**	00162-106-018
		Sheet:	1/1
Project:	Rising Head Tests	**Date:**	8/20/99
	Ground-Water Assessment	**Well:**	OW-12M
		Reference:	Bouwer, 1989

Hydraulic Conductivity, K = ((Req^2)ln(Re/Rw)/2Le)*(1/T)*ln(Yo/Yt)

Where: **Req = [(1-n)(Rc^2) + n(Rw^2)]exp^1/2 (Correction for sand pack)**

ln(Re/Rw)=[1.1/ln(Lw/Rw)+(A+Bln[(H-Lw)/Rw])/Le/Rw]exp^-1

Lw = Ht. of Water Column in Well =	22.79	(water in
Le = Screen Interval Open to Aquifer =	5	casing)
Rw = Radius of Well Including Sand Pack =	0.33	
Rc = Radius of Casing =	0.083	
H = Aquifer Thickness to First Aquitard =	28	
Yo = Relative Ht. of Water at Time Zero =	28	
Yt = Relative Ht. of Water at Time t =	5.76	
n = Porosity =	0.2	
T = Time (in minutes) =	4.5	

A & B are Constants to be Determined

Correction for Sand Pack

Req = 0.1652005

Evaluation of A & B

Le/Rw = 15.151515

from attached graph of A & B

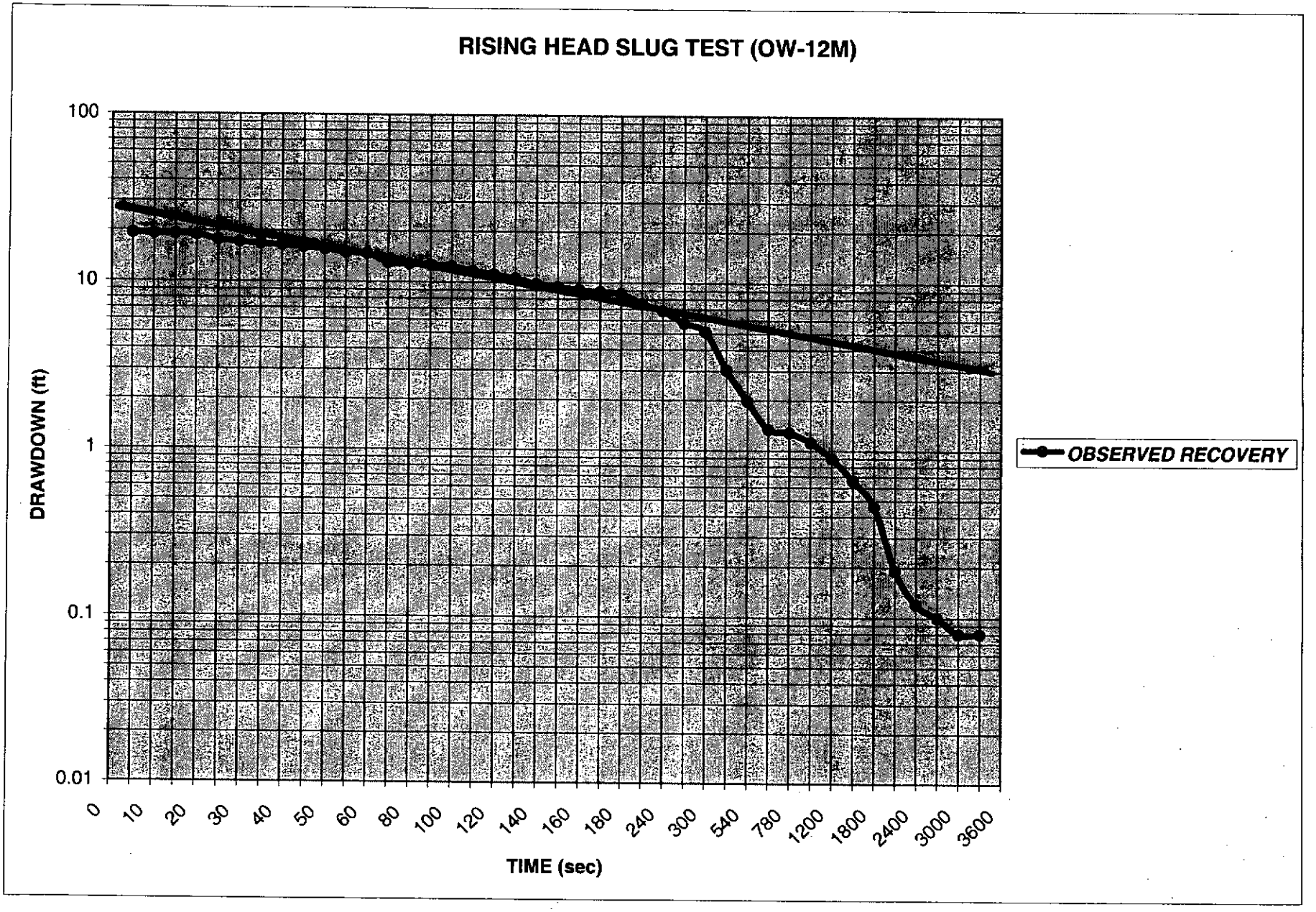
A =	2
B =	0.3

Determination of ln Term

ln Re/Rw = 2.2402728

Determination of Hydraulic Conductivity

K = 0.0005423 feet/min
0.7809303 feet/day
2.75E-04 cm/sec


RISING HEAD SLUG TEST (OW-12M)
DRAWDOWN (ft)
100
10
1
0.1
0.01
0
10
20
30
40
50
60
80
100
120
140
160
180
240
300
540
780
1200
1800
2400
3000
3600
TIME (sec)
OBSERVED RECOVERY

HDR

Piezometer No.: OW-~~4~~12M
Initial Depth to Ground Water: 7.38' BTOC
Start Test:
Stop Test:

Time (sec)	Depth to Water Table (feet below TOC)	Drawdown
5	26.62	19.24
10	26.52	19.14
15	26.40	19.02
20	26.22	18.84
25	25.00	17.62
30	24.50	17.12
35	24.10	16.72
40	23.80	16.42
45	23.42	16.04
50	23.00	15.62
55	22.30	14.92
60 (1 min)	22.10	14.72
70	20.40	13.02
80		12.80
90	~~20.50~~	12.64
100	19.80	12.42
110	19.00	11.62
120 (2 min)	18.50	11.12
130	17.90	10.52
140	17.20	9.82
150	16.80	9.42

HDR

Piezometer No.: OW-12M
Initial Depth to Ground Water: 7.38
Start Test:
Stop Test:

Time (sec)	Depth to Water Table	Drawdown
160	16.44	9.06
170	16.20	8.82
180 (3 min)	16.00	8.62
210	14.90	7.52
240 (4 min)	14.20	6.82
270	13.14	5.76
300 (5 min)	12.50	5.12
420 (7 min)	10.42	3.04
540 (9 min)	9.36	1.98
660 (11 min)	8.72	1.34
780 (13 min)	8.66	1.28
900 (15 min)	8.50	1.12
1200 (20 min)	8.28	0.90
1500 (25 min)	8.04	0.66
1800 (30 min)	7.84	0.46
2100 (35 min)	7.57	0.19
2400 (40 min)	7.50	0.12
2700 (45 min)	7.48	0.10
3000 (50 min)	7.46	0.08
3300 (55 min)	7.46	0.08
3600 (1 hr)		

HDR Engineering, Inc. of the Carolinas

Client:	City of Winston-Salem, NC.	**Project No.:**	00162-097-018
		Sheet:	1/1
Project:	Rising Head Tests	**Date:**	4/7/99
	Siting Study	**Well:**	PZ-29s
		Reference:	Bouwer, 1989

Hydraulic Conductivity, K = ((Req^2)ln(Re/Rw)/2Le)*(1/T)*ln(Yo/Yt)

Where: **Req = [(1-n)(Rc^2) + n(Rw^2)]exp^1/2 (Correction for sand pack)**

ln(Re/Rw)=[1.1/ln(Lw/Rw)+(A+Bln[(H-Lw)/Rw])/Le/Rw]exp^-1

Lw = Ht. of Water Column in Well =	10	(water in
Le = Screen Interval Open to Aquifer =	5	casing)
Rw = Radius of Well Including Sand Pack =	0.33	
Rc = Radius of Casing =	0.083	
H = Aquifer Thickness to First Aquitard =	30	
Yo = Relative Ht. of Water at Time Zero =	9	
Yt = Relative Ht. of Water at Time t =	1.83	
n = Porosity =	0.2	
T = Time (in minutes) =	1.833	

A & B are Constants to be Determined

Correction for Sand Pack

Req = 0.1652005

Evaluation of A & B

Le/Rw = 15.151515

from attached graph of A & B

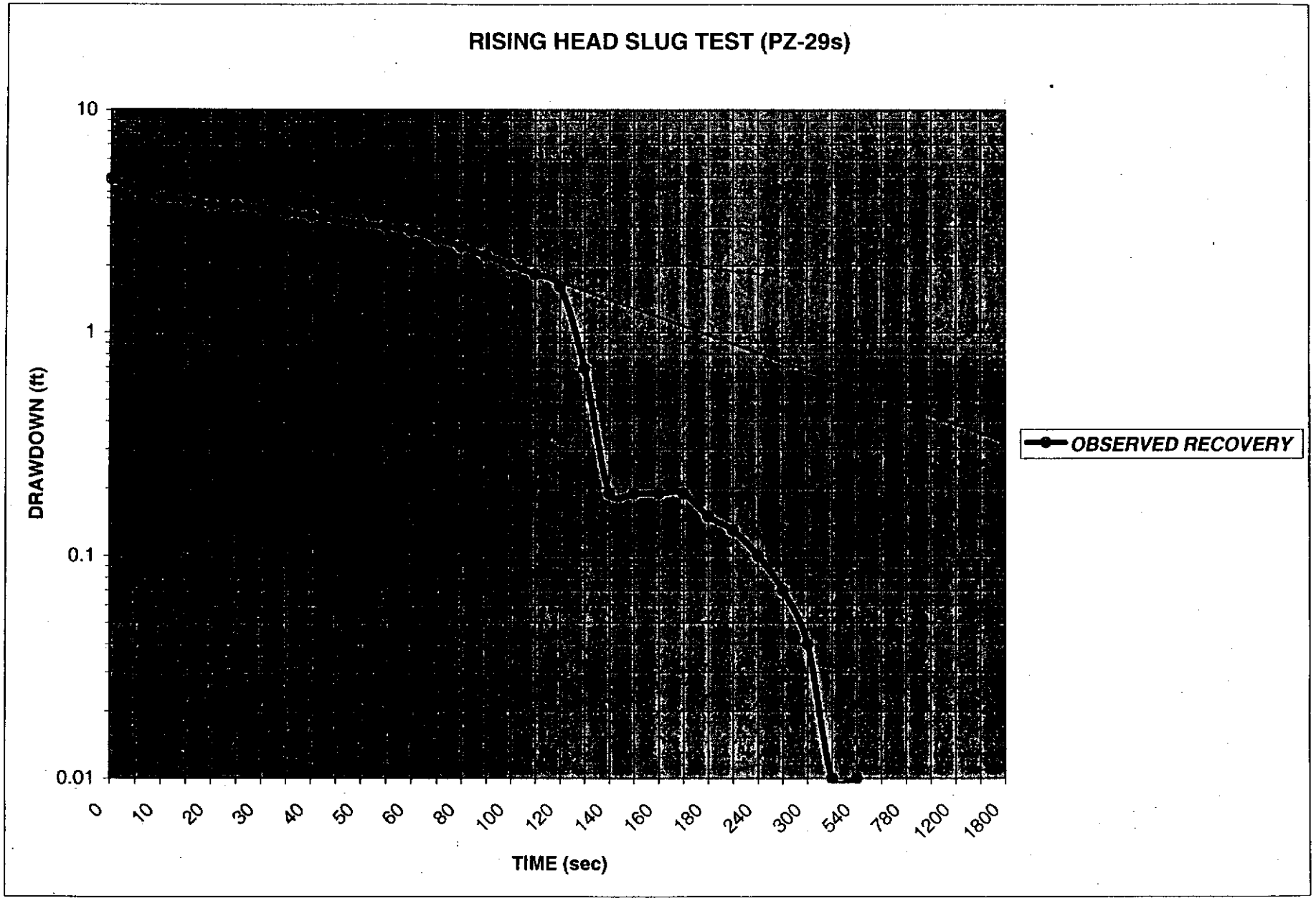
A =	2
B =	0.3

Determination of ln Term

ln Re/Rw = 1.866613

Determination of Hydraulic Conductivity

K = 0.0011175 feet/min
1.6091679 feet/day
5.68E-04 cm/sec


RISING HEAD SLUG TEST (PZ-29s)
DRAWDOWN (ft)
10
1
0.1
0.01
0
10
20
30
40
50
60
80
100
120
140
160
180
240
300
540
780
1200
1800
TIME (sec)
OBSERVED RECOVERY

HDR

Piezometer No.: PZ -29s
Initial Depth to Ground Water: 22.79' (22.81)
Start Test: 11:48 am
Stop Test: 11:59 am

27.70

4.89

Time (sec)	Depth to Water Table (feet below TOC)	Drawdown
5	27.2	4.39
10	26.8	3.99
15	26.75	3.94
20	26.50	3.69
25	26.55	3.74
30	26.40	3.59
35	26.26	3.45
40	26.15	3.34
45	26.00	3.19
50	25.9	3.09
55	25.8	2.99
60 (1 min)	25.68	2.87
70 1:10	25.45	2.64
80 1:20	25.25	2.44
90 1:30	25.03	2.22
100 1:40	24.83	2.02
110 1:50	24.64	1.93
120 (2 min) 1:60	24.42	1.61
130 2:10	23.50	0.69
140 2:20	23.00	0.19
150 2:30	23.00	0.19

HDR

Piezometer No.: PZ-29s
Initial Depth to Ground Water:
Start Test: 11:48 am
Stop Test: 11:59 am

Time (sec)	Depth to Water Table	Drawdown
160 2:40	23.00	0.19
170 2:50	23.00	0.19
180 (3 min)	23.00	0.19
210 3:30	22.96	0.15
240 (4 min)	22.94	0.13
270 4:30	22.91	0.10
300 (5 min)	22.88	0.07
420 (7 min)	22.85	0.04
540 (9 min)	22.80	0.01
660 (11 min)	22.80	0.01
780 (13 min)		
900 (15 min)		
1200 (20 min)		
1500 (25 min)		
1800 (30 min)		
2100 (35 min)		
2400 (40 min)		
2700 (45 min)		
3000 (50 min)		
3300 (55 min)		
3600 (1 hr)		

HDR Engineering, Inc. of the Carolinas

Client: City of Winston-Salem, NC.

Project: Rising Head Tests
Siting Study

Project No.: 00162-097-018
Sheet: 1/1
Date: 4/7/99
Well: PZ-29m
Reference: Bouwer, 1989

Hydraulic Conductivity, K = ((Req^2)ln(Re/Rw)/2Le)*(1/T)*ln(Yo/Yt)

Where: **Req = [(1-n)(Rc^2) + n(Rw^2)]exp^1/2 (Correction for sand pack)**

ln(Re/Rw)=[1.1/ln(Lw/Rw)+(A+Bln[(H-Lw)/Rw])/Le/Rw]exp^-1

Lw = Ht. of Water Column in Well =	28.5	(water in casing)
Le = Screen Interval Open to Aquifer =	5	
Rw = Radius of Well Including Sand Pack =	0.33	
Rc = Radius of Casing =	0.083	
H = Aquifer Thickness to First Aquitard =	48.5	
Yo = Relative Ht. of Water at Time Zero =	3.3	
Yt = Relative Ht. of Water at Time t =	0.62	
n = Porosity =	0.2	
T = Time (in minutes) =	1.166	

A & B are Constants to be Determined

Correction for Sand Pack (not necessary)

Req = 0.1652005

Evaluation of A & B

Le/Rw = 15.151515

from attached graph of A & B

A =

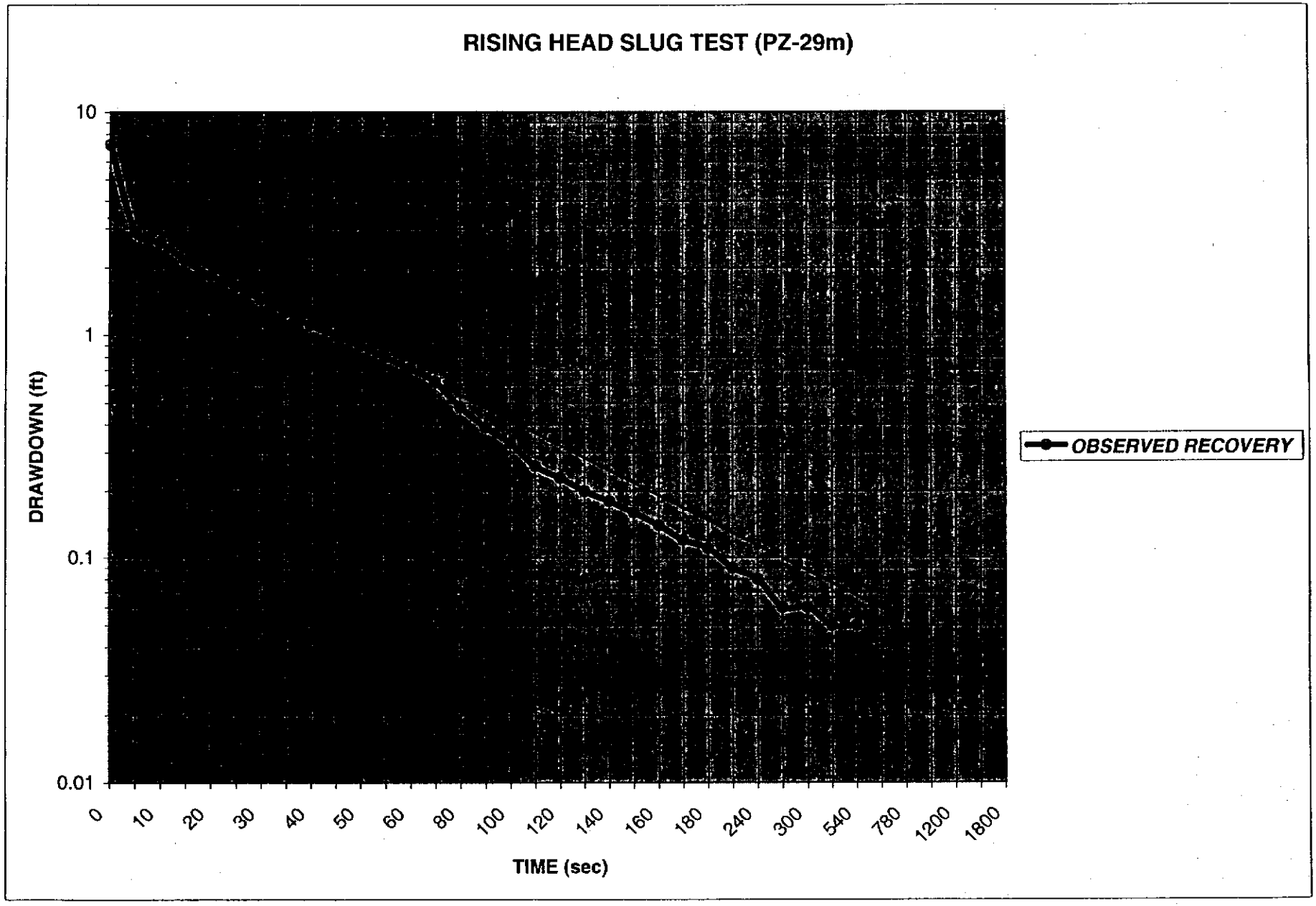
B =

Determination of ln Term

ln Re/Rw = 4.0532425

Determination of Hydraulic Conductivity

K = 0.0040039 feet/min
5.7656483 feet/day
2.03E-03 cm/sec


RISING HEAD SLUG TEST (PZ-29m)
DRAWDOWN (ft)
10
1
0.1
0.01
0
10
20
30
40
50
60
80
100
120
140
160
180
240
300
540
780
1200
1800
TIME (sec)
OBSERVED RECOVERY

HDR

Piezometer No.: PZ-29m
Initial Depth to Ground Water: 22.66' (22.65')
Start Test: 1:40 pm
Stop Test: 1:49 pm

29.8' -stopped pump

7.15

Time (sec)	Depth to Water Table (feet below TOC)	Drawdown
5	25.56	2.91
10	25.25	2.60
15	24.8	2.15
20	24.50	1.85
25	24.30	1.65
30	24.10	1.45
35	23.92	1.27
40	23.76	1.11
45	23.65	1.00
50	23.55	0.90
55	23.45	0.80
60 (1 min)	23.36	0.71
70	23.27	0.62
80	23.13	0.48
90	23.04	0.39
100 140	22.98	0.33
110	22.91	0.26
120 (2 min)	22.88	0.23
130	22.85	0.20
140	22.83	0.18
150	22.81	0.16

HDR

Piezometer No.: PZ-29m
Initial Depth to Ground Water:
Start Test: 1:40 pm
Stop Test: 1:49 pm

Time (sec)	Depth to Water Table	Drawdown
160	22.79	0.14
170	22.77	0.12
180 (3 min)	22.76	0.11
210 3:30	22.74	0.09
240 (4 min)	22.73	0.08
270 4:30	22.71	0.06
300 (5 min)	22.71	0.06
420 (7 min)	22.70	0.05
540 (9 min)	22.70	0.05
660 (11 min)		
780 (13 min)		
900 (15 min)		
1200 (20 min)		
1500 (25 min)		
1800 (30 min)		
2100 (35 min)		
2400 (40 min)		
2700 (45 min)		
3000 (50 min)		
3300 (55 min)		
3600 (1 hr)		

HDR Engineering, Inc. of the Carolinas

Client: City of Winston-Salem, NC.

Project: Rising Head Tests
Siting Study

Project No.: 00162-097-018
Sheet: 1/1
Date: 4/7/99
Well: PZ-29d
Reference: Bouwer, 1989

Hydraulic Conductivity, K = ((Req^2)ln(Re/Rw)/2Le)*(1/T)*ln(Yo/Yt)

Where: **Req = [(1-n)(Rc^2) + n(Rw^2)]exp^1/2 (Correction for sand pack)**

ln(Re/Rw)=[1.1/ln(Lw/Rw)+(A+Bln[(H-Lw)/Rw])/Le/Rw]exp^-1

Lw = Ht. of Water Column in Well =	52	(water in
Le = Screen Interval Open to Aquifer =	5	casing)
Rw = Radius of Well Including Sand Pack =	0.33	
Rc = Radius of Casing =	0.083	
H = Aquifer Thickness to First Aquitard =	72	
Yo = Relative Ht. of Water at Time Zero =	13	
Yt = Relative Ht. of Water at Time t =	5.44	
n = Porosity =	0.05	
T = Time (in minutes) =	2.83	

A & B are Constants to be Determined

Correction for Sand Pack (not necessary)

Req = 0.1094968

Evaluation of A & B

Le/Rw = 15.151515

from attached graph of A & B

A =

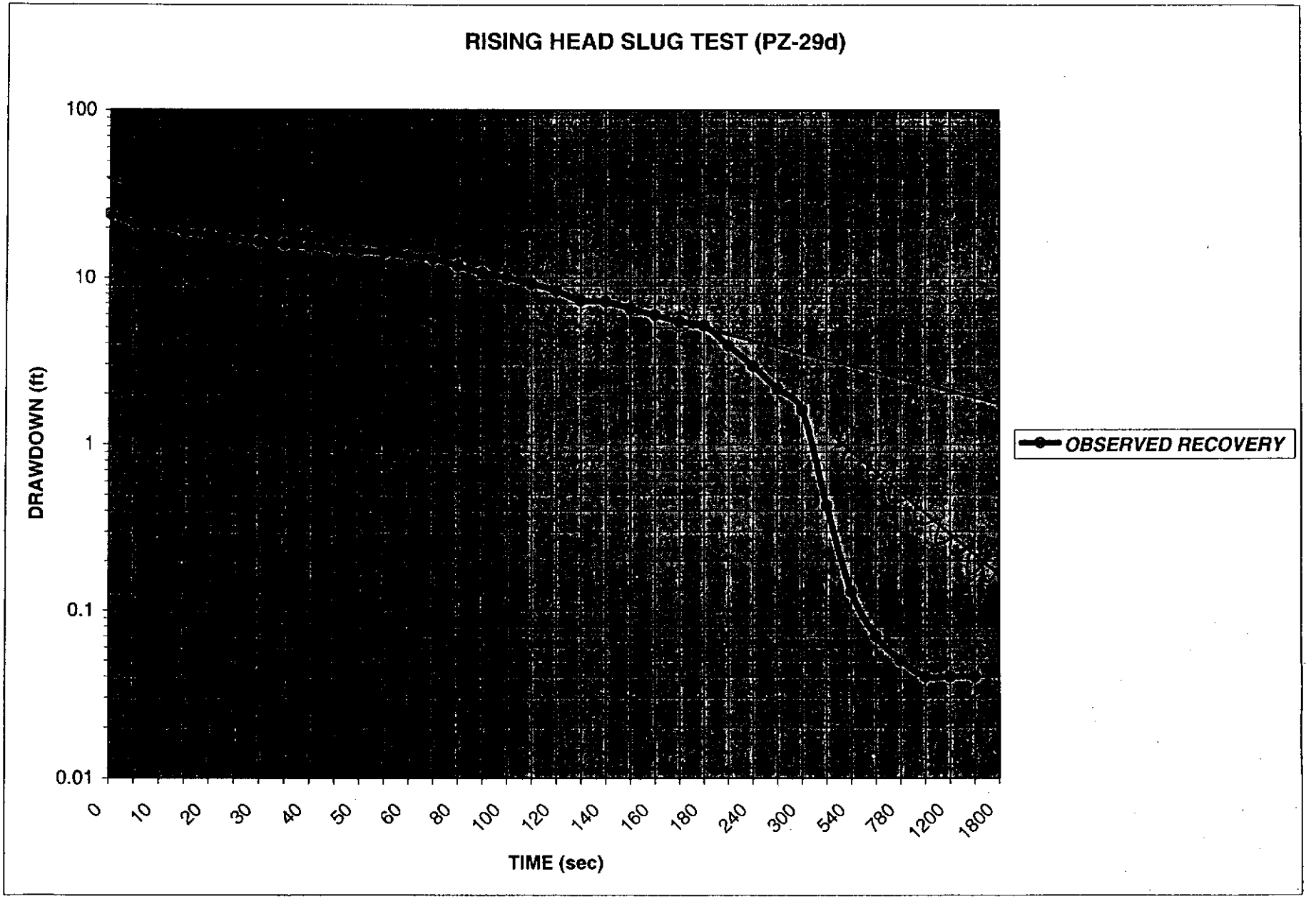
B =

Determination of ln Term

ln Re/Rw = 4.5999149

Determination of Hydraulic Conductivity

K = 0.0009755 feet/min
1.4047049 feet/day
4.96E-04 cm/sec


RISING HEAD SLUG TEST (PZ-29d)
DRAWDOWN (ft)
100
10
1
0.1
0.01
0
10
20
30
40
50
60
80
100
120
140
160
180
240
300
540
780
1200
1800
TIME (sec)
OBSERVED RECOVERY

HDR

Piezometer No.: PZ-29d
Initial Depth to Ground Water: 22.76'
Start Test: 2:07 pm
Stop Test: 2:32 pm

47.00' start

Time (sec)	Depth to Water Table (feet below TOC)	Drawdown
5	42.1	20.34
10	43.42	20.66
15	41.65	18.89
20	41.02	18.26
25	40.04	17.28
30	39.30	16.54
35	38.7	15.94
40	38.17	15.41
45	37.7 ?	14.94
50	37.3	14.54
55	37.0	14.24
60 (1 min)	36.3	13.54
70	35.8	13.04
80	34.6	11.84
90	33.5	10.74
100	32.8	10.04
110	32.0	9.24
120 (2 min)	31.15	8.39
130	30.55	7.79
140	29.96	7.20
150	29.30	6.54

24.24

HDR

Piezometer No.: PZ-29d
Initial Depth to Ground Water:
Start Test: 2:07 pm
Stop Test: 2:32 pm

Time (sec)	Depth to Water Table	Drawdown
160	28.72	5.96
170	28.20	5.44
180 (3 min)	27.9	5.14
210	26.65	3.89
240 (4 min)	25.7	2.94
270	24.91	2.15
300 (5 min)	24.36	1.60
420 (7 min)	23.19	0.43
540 (9 min)	22.89	0.13
660 (11 min)	22.83	0.07
780 (13 min)	22.81	0.05
900 (15 min)	22.80	0.04
1200 (20 min)	22.80	0.04
1500 (25 min)	22.80	0.04
1800 (30 min)		
2100 (35 min)		
2400 (40 min)		
2700 (45 min)		
3000 (50 min)		
3300 (55 min)		
3600 (1 hr)		

HDR Engineering, Inc. of the Carolinas

Client:	City of Winston-Salem, NC.	**Project No.:**	00162-106-018
		Sheet:	1/1
Project:	Rising Head Tests	**Date:**	8/20/99
	Ground-Water Assessment	**Well:**	PZ-32M
		Reference:	Bouwer, 1989

Hydraulic Conductivity, K = ((Req^2)ln(Re/Rw)/2Le)*(1/T)*ln(Yo/Yt)

Where: **Req = [(1-n)(Rc^2) + n(Rw^2)]exp^1/2 (Correction for sand pack)**

ln(Re/Rw)=[1.1/ln(Lw/Rw)+(A+Bln[(H-Lw)/Rw])/Le/Rw]exp^-1

Lw = Ht. of Water Column in Well =	33.58	(water in
Le = Screen Interval Open to Aquifer =	5	casing)
Rw = Radius of Well Including Sand Pack =	0.33	
Rc = Radius of Casing =	0.083	
H = Aquifer Thickness to First Aquitard =	40	
Yo = Relative Ht. of Water at Time Zero =	19.5	
Yt = Relative Ht. of Water at Time t =	10.81	
n = Porosity =	0.2	
T = Time (in minutes) =	13	

A & B are Constants to be Determined

Correction for Sand Pack (not necessary)

Req = 0.1652005

Evaluation of A & B

Le/Rw = 15.151515

from attached graph of A & B

A =

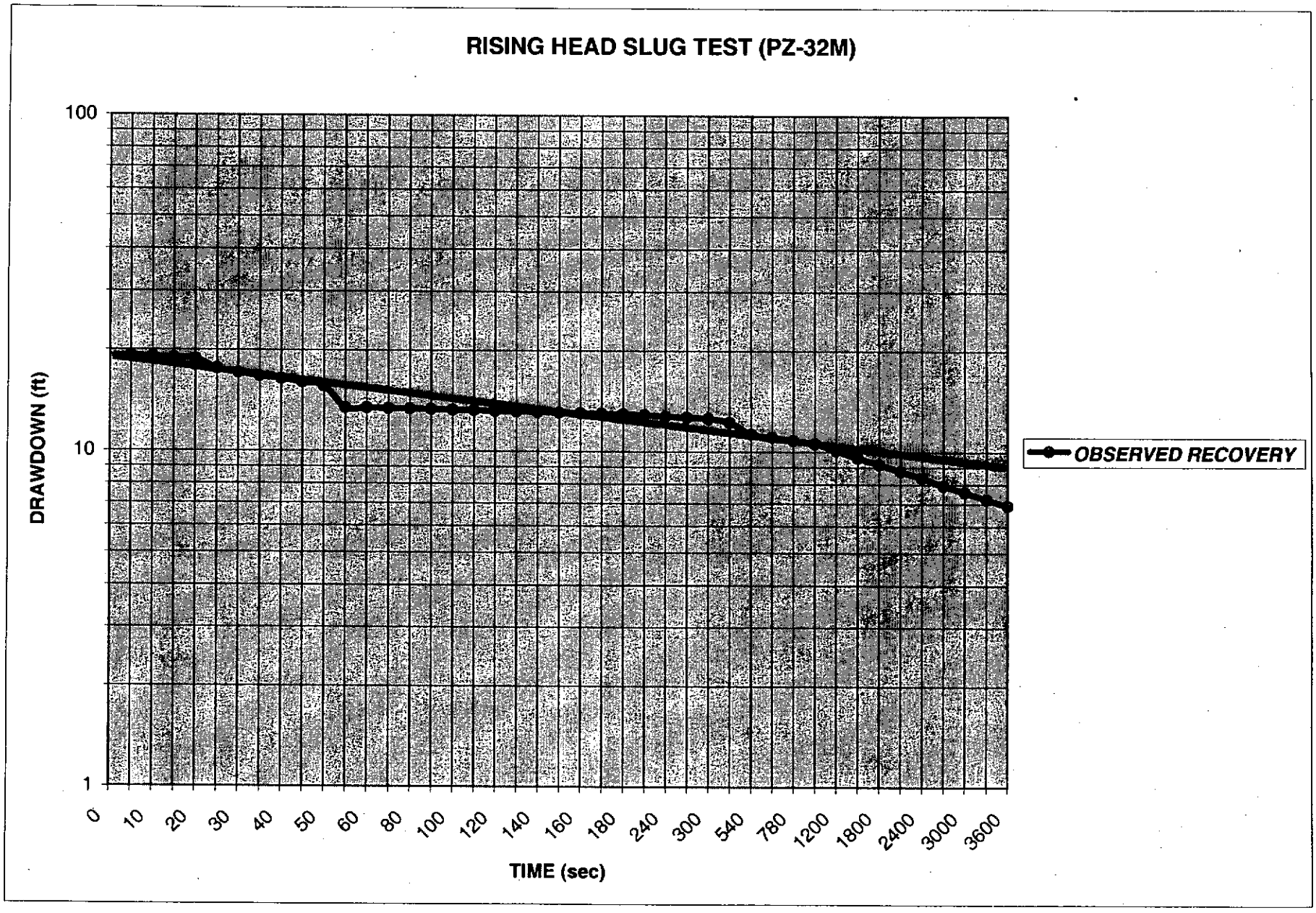
B =

Determination of ln Term

ln Re/Rw = 4.2023575

Determination of Hydraulic Conductivity

K = 0.0001314 feet/min
0.1891813 feet/day
6.67E-05 cm/sec


RISING HEAD SLUG TEST (PZ-32M)
DRAWDOWN (ft)
100
10
1
0
10
20
30
40
50
60
80
100
120
140
160
180
240
300
540
780
1200
1800
2400
3000
3600
TIME (sec)
OBSERVED RECOVERY

HDR

Piezometer No.: PZ-32m
Initial Depth to Ground Water: ~~5.61~~ 11.09
Start Test:
Stop Test:

Time (sec)	Depth to Water Table (feet below TOC)	Drawdown
5	~~18.80~~ 25.00	13.91
10	~~18.02~~ 24.86	13.77
15	~~17.90~~ 24.80	13.71
20	24.78	13.69
25	24.73	13.64
30	24.70	13.61
35	24.68	13.59
40	24.64	13.55
45	24.63	13.54
50	24.60	13.51
55	24.58	13.49
60 (1 min)	24.56	13.47
70	24.51	13.42
80	24.48	13.39
90	24.45	13.36
100	24.40	13.31
110	24.36	13.27
120 (2 min)	24.30	13.21
130	24.24	13.15
140	24.20	13.11
150	24.16	13.07

HDR

Piezometer No.: P2-32m
Initial Depth to Ground Water: 11.09
Start Test:
Stop Test:

Time (sec)	Depth to Water Table	Drawdown
160	24.12	13.03
170	24.09	13.0
180 (3 min)	24.05	12.96
210	23.98	12.89
240 (4 min)	23.86	12.77
270	23.76	12.67
300 (5 min)	23.68	12.59
420 (7 min)	23.33	12.24
540 (9 min)	22.38	11.29
660 (11 min)	22.14	11.05
780 (13 min)	21.90	10.81
900 (15 min)	21.66	10.57
1200 (20 min)	21.18	10.09
1500 (25 min)	20.70	9.61
1800 (30 min)	20.27	9.18
2100 (35 min)	19.86	8.77
2400 (40 min)	19.46	8.37
2700 (45 min)	19.02	7.93
3000 (50 min)	18.68	7.59
3300 (55 min)	18.32	7.23
3600 (1 hr)	18.00	6.91