REPORT

CITY OF PHOENIX
NPDES PART 2
PERMIT APPLICATION

VOLUME III -

Appendix 13

Prepared for:

City of Phoenix
125 E. Washington Street
Phoenix, Arizona 85005

November 30, 1992
Reference No. 9155039

Woodward-Clyde Consultants

426 N. 44th St., Suite 300
Phoenix, AZ 85008

REPORT

Woodward-Clyde Consultants

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Flood Control District of MC Library
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2801 W. Durango
Phoenix, AZ 85009

CITY OF PHOENIX
NPDES PART 2
PERMIT APPLICATION

VOLUME III -

Appendix 13

Prepared for:

City of Phoenix
125 E. Washington Street
Phoenix, Arizona 85005

November 10, 1992
Reference No. 9155038

Analytical **Technologies,** Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 201523

January 27, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES 03/9155038H-0013

Attention: Patricia Murray

On 01/04/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

BOD, Fecal Coliform & Fecal Streptococci analyses were performed by Aquatic Consulting and Testing.

The zinc method 289.2 could not be utilized to reach the requested detection limit of 1 ppb. Due to zinc contamination in the carrier gas lines to the graphite furnace method 200.7 had to be used which gives a detection limit of 10 ppb.

A concentration technique has been used to meet required detection limits for antimony and to lower the detection limit for selenium.

The normal ATI detection limit for total kjeldahl nitrogen is 0.1 mg/l. It was necessary to run the sample which was chosen for quality control at a dilution. This raised the detection limit to 1.0 mg/l and the value reported for quality control purposes is <1.0 mg/l, which is greater than the value reported for your sample.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Tyler for
Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 03

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

ATI I.D. : 201523

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	03	AQUEOUS	01/04/92
02	TRIP BLANK	AQUEOUS	01/04/92
03	03 (TOTALS)	AQUEOUS	01/03/92
04	03 (DISSOLVED)	AQUEOUS	01/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 201523

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 03

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	01	03	04
FECAL COLIFORM		30000	-	-
BIOLOGICAL OXYGEN DEMAND	MG/L	-	11	-
CYANIDE, TOTAL	MG/L	<0.01	-	-
CHEMICAL OXYGEN DEMAND	MG/L	-	93	-
AMMONIA AS NITROGEN	MG/L	-	0.54	-
NITRITE AS NITROGEN	MG/L	-	<0.06	-
NITRATE AS NITROGEN	MG/L	-	1.0	-
OIL AND GREASE, GRAVIMETRIC	MG/L	5	-	-
PH	UNITS	-	7.0	-
PHENOLICS, TOTAL	MG/L	0.02	-	-
TOTAL DISSOLVED SOLIDS	MG/L	-	60	-
TOTAL KJELDAHL NITROGEN	MG/L	-	0.9	-
PHOSPHOROUS,TOTAL	MG/L	-	0.43	0.18
TOTAL SUSPENDED SOLIDS	MG/L	-	100	-

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 03 ATI I.D. : 201523

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20152903	18	19	5	202	198	93
CYANIDE, TOTAL	MG/L	20199907	<0.01	<0.01	NA	0.21	0.25	84
CHEMICAL OXYGEN DEMAND	MG/L	20151901	8.4	7.9	6	85	75	102
AMMONIA AS NITROGEN	MG/L	20151901	<0.03	<0.03	NA	0.54	0.50	108
NITRITE AS NITROGEN	MG/L	20199905	<0.06	<0.06	NA	2.04	2.00	102
NITRATE AS NITROGEN	MG/L	20152903	0.84	0.89	6	1.9	1.0	106
OIL AND GREASE, GRAVIM	MG/L	20153601	3	<2	NA	NA	NA	NA
PH	UNITS	20154201	7.5	7.5	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20152901	0.02	0.02	0	0.27	0.25	100
TOTAL DISSOLVED SOLIDS	MG/L	20150201	840	850	1	NA	NA	NA
TOTAL KJELDAHL NITROGE	MG/L	11200604	<1.0	<1.0	NA	10	10	100
PHOSPHOROUS,TOTAL	MG/L	20151801	0.19	0.19	0	0.67	0.50	96
TOTAL SUSPENDED SOLIDS	MG/L	20152703	20	20	0	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 201523

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 03

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	03	04
SILVER	MG/L	<0.0002	<0.0002
ARSENIC	MG/L	0.003	0.002
BERYLLIUM	MG/L	<0.0002	<0.0002
CADMIUM	MG/L	0.0006	<0.0002
CHROMIUM	MG/L	0.004	<0.001
COPPER	MG/L	0.028	<0.010
HARDNESS	MG/L	40.4	-
MERCURY	MG/L	<0.0002	<0.0002
NICKEL	MG/L	<0.020	<0.020
LEAD	MG/L	0.029	0.002
ANTIMONY	MG/L	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001
ZINC	MG/L	0.140	0.084

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 03 ATI I.D. : 201523

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20152303	<0.0002	<0.0002	NA	MSA	CC=	.999
ARSENIC	MG/L	20152603	0.002	0.002	0	0.048	0.050	92
BERYLLIUM	MG/L	20152404	<0.0002	<0.0002	NA	0.0049	0.0050	98
CADMIUM	MG/L	20152404	<0.0002	<0.0002	NA	0.0050	0.0050	100
CHROMIUM	MG/L	20152404	<0.001	<0.001	NA	MSA	CC =	.998
COPPER	MG/L	11200602	<0.010	<0.010	NA	0.476	0.500	95
COPPER	MG/L	20150201	<0.010	<0.010	NA	0.458	0.500	92
HARDNESS	MG/L	11299001	357	356	0.3	NA	NA	NA
MERCURY	MG/L	20152604	<0.0002	<0.0002	NA	0.0050	0.0050	100
NICKEL	MG/L	20150201	0.034	0.032	6	0.893	1.00	86
LEAD	MG/L	20151401	0.108	0.111	3	0.347	0.250	96
ANTIMONY	MG/L	20152603	<0.003	<0.003	NA	MSA	CC=	.997
SELENIUM	MG/L	20152603	<0.0008	<0.0008	NA	0.0092	0.0125	74
THALLIUM	MG/L	11298501	<0.005	<0.005	NA	0.048	0.050	96
ZINC	MG/L	20150201	0.121	0.119	2	0.584	0.500	93

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152301

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 03	DATE EXTRACTED	: N/A
CLIENT I.D.	: 03	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	105
BROMOFLUOROBENZENE (%)	119
TOLUENE-D8 (%)	116

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152301

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152302

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 03	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/08/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	94
BROMOFLUOROBENZENE (%)	118
TOLUENE-D8 (%)	14

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152302

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 201523
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 01/09/92
PROJECT NAME	: COP NPDES 03	DATE ANALYZED	: 01/09/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	87
BROMOFLUOROBENZENE (%)	102
TOLUENE-D8 (%)	104

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 201523

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

		ATI I.D.	: 201523
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 01/08/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 01/08/92
PROJECT NAME	: COP NPDES 03	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	91
BROMOFLUOROBENZENE (%)	105
TOLUENE-D8 (%)	110

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 201523

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201523

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 03
REF I.D. : 20152701

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	57	114	58	116	2
TRICHLOROETHENE	<1	50	43	86	44	88	2
CHLOROBENZENE	<1	50	50	100	51	102	2
TOLUENE	<1	50	51	102	49	98	4
BENZENE	<1	50	39	78	41	82	5

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152303

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 03	DATE EXTRACTED	: 01/06/92
CLIENT I.D.	: 03 (TOTALS)	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152303

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	74
2-FLUOROBIPHENYL (%)	72
TERPHENYL (%)	61
PHENOL-D6 (%)	61
2-FLUOROPHENOL (%)	70
2,4,6-TRIBROMOPHENOL (%)	63

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20152303

COMPOUNDS	RESULTS
BUTOXY ETHOXY ETHANOL	900
BUTOXY ETHOXY ETHANOL ACETATE	200
OXYGENATED HYDROCARBONS C10	200
OXYGENATED HYDROCARBON C8	40

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 201523
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 01/06/92
PROJECT NAME	: COP NPDES 03	DATE ANALYZED	: 01/09/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 201523

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	74
2-FLUOROBIPHENYL (%)	70
TERPHENYL (%)	86
PHENOL-D6 (%)	66
2-FLUOROPHENOL (%)	71
2,4,6-TRIBROMOPHENOL (%)	73

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201523

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 03
REF I.D. : 20152403

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	50	30	60	33	66	10
ACENAPHTHENE	<10	50	28	56	28	56	0
2,4-DINITROTOLUENE	<10	50	32	64	31	62	3
PYRENE	<10	50	28	56	30	60	7
N-NITROSO-DI-N-PROPYLAMINE	<10	50	25	50	25	50	0
1,4-DICHLOROBENZENE	<10	50	23	46	28	56	20
PENTACHLOROPHENOL	<50	100	79	79	58	58	31
PHENOL	<10	100	67	67	67	67	0
2-CHLOROPHENOL	<10	100	74	74	67	67	10
4-CHLORO-3-METHYLPHENOL	<10	100	69	69	66	66	4
4-NITROPHENOL	<50	100	73	73	83	83	13

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 01-05-92
DATE OF ANALYSIS: 01-05-92 to 01-09-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
20152301	920009	30,000	50,000
20152401	920010	9,000	30,000
20152501	920011	50,000	13,000
20152601	920012	1,700	13,000
20152701	920013	170	2,400
20152801	920014	1,400	13,000
20152901	920015	2,200	24,000

Reviewed by: Frederick A Amalfi Date: 13 Jan 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc.

ACCESSION #: 201523

PARAMETER	METHOD	DATE ANALYZED
Silver	272.2	01/17/92
Arsenic	206.2	01/16/92
Beryllium	210.2	01/15/92
Cadmium	213.2	01/09/92
Chromium	218.2	01/16/92
Copper	200.7	01/12/92
Mercury	245.1	01/09/92
Nickel	200.7	01/10/92
Lead	239.2	01/13/92
Antimony	204.2	01/21/92
Selenium	270.3	01/20/92
Thallium	279.2	01/10/92
Zinc	200.7	01/10/92
Cyanide	335.3	01/16/92
COD	410.1	01/08/92
Hardness	2340B	01/09/92
Ammonia	350.2	01/13/92
Nitrite	353.2	01/09/92
Nitrate	353.2	01/20/92
pH		01/08/92
Total Phenols	420.2	01/07/92
TDS	160.1	01/06/92
TKN	351.2	01/14/92
Total Phosphorus	365.3	01/09/92
TSS	160.2	01/06/92
Dissolved Phosphorous	365.3	01/09/92
Oil and Grease	413.1	01/07/92
Fecal Coliform	9221C	01/05/92
Fecal Streptococci	9230B	01/05/92
BOD	405.1	01/06/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession # 201523

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	EPA WS 1188	2.00	2.07	1.90-2.10 mg/l
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

ACCESSION: 201523

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.482	0.446-0.546
Nickel	0.982	0.945	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.491	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

ACCESSION: 201523

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

QC

Analytical Technologies, Inc.

ACCESSION: 201523

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

ACCESSION: 201523

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 201523

March 13, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES 03/9155038H-0013

Attention: Patricia Murray

On 01/04/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

BOD, Fecal Coliform & Fecal Streptococci analyses were performed by Aquatic Consulting and Testing.

The zinc method 289.2 could not be utilized to reach the requested detection limit of 1 ppb. Due to zinc contamination in the carrier gas lines to the graphite furnace method 200.7 had to be used which gives a detection limit of 10 ppb.

A concentration technique has been used to meet required detection limits for antimony and to lower the detection limit for selenium.

The normal ATI detection limit for total kjeldahl nitrogen is 0.1 mg/l. It was necessary to run the sample which was chosen for quality control at a dilution. This raised the detection limit to 1.0 mg/l and the value reported for quality control purposes is <1.0 mg/l, which is greater than the value reported for your sample.

Enclosed is an amended report for method 624 sample I.D. Trip Blank. The surrogate toluene-d8 has been corrected. We apologize for any inconvenience this may have caused.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Bally for
Elizabeth Proffitt
Senior Project Manager

Lorraine Davis for
Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 03

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

ATI I.D. : 201523

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	03	AQUEOUS	01/04/92
02	TRIP BLANK	AQUEOUS	01/04/92
03	03 (TOTALS)	AQUEOUS	01/03/92
04	03 (DISSOLVED)	AQUEOUS	01/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152302

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 03	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/08/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	94
BROMOFLUOROBENZENE (%)	118
TOLUENE-D8 (%)	114

Analytical Technologies, Inc.

SR-43

ACCESSION #: 201523

PARAMETER	METHOD	DATE ANALYZED
Silver	272.2	01/17/92
Arsenic	206.2	01/16/92
Beryllium	210.2	01/15/92
Cadmium	213.2	01/09/92
Chromium	218.2	01/16/92
Copper	200.7	01/12/92
Mercury	245.1	01/09/92
Nickel	200.7	01/10/92
Lead	239.2	01/13/92
Antimony	204.2	01/21/92
Selenium	270.3	01/20/92
Thallium	279.2	01/10/92
Zinc	200.7	01/10/92
Cyanide	335.3	01/16/92
COD	410.1	01/08/92
Hardness	2340B	01/09/92
Ammonia	350.2	01/13/92
Nitrite	353.2	01/09/92
Nitrate	353.2	01/20/92
pH		01/08/92
Total Phenols	420.2	01/07/92
TDS	160.1	01/06/92
TKN	351.2	01/14/92
Total Phosphorus	365.3	01/09/92
TSS	160.2	01/06/92
Dissolved Phosphorous	365.3	01/09/92
Oil and Grease	413.1	01/07/92
Fecal Coliform	9221C	01/05/92
Fecal Streptococci	9230B	01/05/92
BOD	405.1	01/06/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession # 201523

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	EPA WS 1188	2.00	2.07	1.90-2.10 mg/l
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

ACCESSION: 201523

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.482	0.446-0.546
Nickel	0.982	0.945	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.491	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

ACCESSION: 201523

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201523

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

ACCESSION: 201523

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 201524

March 17, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES 05/9155038H-0013

Attention: Patricia Murray

On 01/04/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report is being revised to include inorganic reagent blank information and explanations of any abbreviations.

A limited sample volume was provided for laboratory compositing. Analyses not performed are reflected on the chain of custody.

BOD, Fecal Coliform & Fecal Streptococci analyses were performed by Aquatic Consulting and Testing.

Zinc totals, which were lower than the dissolved zinc numbers, were confirmed by analyzing the undigested samples on GFAA. The zinc method 289.2 could not be utilized to reach the requested detection limit of 1 ppb. Due to zinc contamination in the carrier gas lines to the graphite furnace method 200.7 had to be used which gives a detection limit of 10 ppb.

A concentration technique has been used to meet required detection limits for antimony and to lower the detection limit for selenium.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

Lorraine Davis
QA Coordinator

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 201524

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Silver	272.2	01/17/92	<0.0002
Arsenic	206.2	01/16/92	<0.001
Beryllium	210.2	01/15/92	<0.0002
Cadmium	213.2	01/09/92	<0.0002
Chromium	218.2	01/16/92	<0.001
Copper	200.7	01/12/92	<0.010
Mercury	245.1	01/09/92	<0.0002
Nickel	200.7	01/12/92	<0.020
Lead	239.2	01/13/92	<0.001
Antimony	204.2	01/21/92	<0.003
Selenium	270.3	01/20/92	<0.0008
Thallium	279.2	01/10/92	<0.001
Zinc	200.7	01/10/92	<0.010
Cyanide	335.3	01/09/92	<0.01
COD	410.1	01/08/92	<5
Hardness	2340B	01/13/92	<0.2
Ammonia	350.2	01/13/92	<0.03
Nitrite	353.2	01/09/92	<0.06
pH		01/08/92	5.74
Total Phenols	420.2	01/07/92	<0.02
TDS	160.1	01/06/92	<10
TKN	351.2	01/14/92	<0.2
Total Phosphorus	365.3	01/09/92	<0.05
TSS	160.2	01/06/92	<10
Oil and Grease	413.1	01/09/92	<2
Fecal Coliform	9221C	01/05/92	NA
Fecal Streptococci	9230B	01/05/92	NA
BOD	405.1	01/06/92	NA

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

NA = Not Applicable

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX DATE RECEIVED : 01/04/92
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 05 REPORT DATE : 01/20/92
ATI I.D. : 201524

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	AC-05	AQUEOUS	01/04/92
02	TRIP BLANK	AQUEOUS	01/04/92
03	05 (TOTALS)	AQUEOUS	01/03/92
04	05 (DISSOLVED)	AQUEOUS	01/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 201524

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 05

DATE RECEIVED : 01/04/92
REPORT DATE : 01/20/92

PARAMETER	UNITS	01	03
FECAL COLIFORM		9000	-
BIOLOGICAL OXYGEN DEMAND	MG/L	-	9
CYANIDE, TOTAL	MG/L	<0.01	-
CHEMICAL OXYGEN DEMAND	MG/L	-	51
AMMONIA AS NITROGEN	MG/L	-	0.37
NITRITE AS NITROGEN	MG/L	-	<0.06
OIL AND GREASE, GRAVIMETRIC	MG/L	2	-
PH	UNITS	-	6.9
PHENOLICS, TOTAL	MG/L	<0.02	-
TOTAL DISSOLVED SOLIDS	MG/L	-	60
TOTAL KJELDAHL NITROGEN	MG/L	-	1.1
PHOSPHOROUS,TOTAL	MG/L	-	0.15
TOTAL SUSPENDED SOLIDS	MG/L	-	10

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 05 ATI I.D. : 201524

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20152903	18	19	5	202	198	93
CYANIDE, TOTAL	MG/L	20157201	<0.01	<0.01	NA	0.26	0.25	104
CHEMICAL OXYGEN DEMAND	MG/L	20151901	8.4	7.9	6	85	75	102
AMMONIA AS NITROGEN	MG/L	20151901	<0.03	<0.03	NA	0.54	0.50	108
NITRITE AS NITROGEN	MG/L	20199905	<0.06	<0.06	NA	2.04	2.00	102
OIL AND GREASE, GRAVIM	MG/L	20153601	3	<2	NA	NA	NA	NA
PH	UNITS	20154201	7.5	7.5	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20152901	0.02	0.02	0	0.27	0.25	100
TOTAL DISSOLVED SOLIDS	MG/L	20150201	840	850	1	NA	NA	NA
TOTAL KJELDAHL NITROGE	MG/L	20157201	<0.4	<0.4	NA	2.1	2.0	105
PHOSPHOROUS,TOTAL	MG/L	20151801	0.19	0.19	0	0.67	0.50	96
TOTAL SUSPENDED SOLIDS	MG/L	20152703	20	20	0	NA	NA	NA

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 201524

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	Not Analyzed	-	-	-
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 201524

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 05

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	03	04
SILVER	MG/L	<0.0002	<0.0002
ARSENIC	MG/L	<0.001	<0.001
BERYLLIUM	MG/L	<0.0002	<0.0002
CADMIUM	MG/L	<0.0002	<0.0002
CHROMIUM	MG/L	<0.001	<0.001
COPPER	MG/L	0.011	<0.010
HARDNESS	MG/L	30.9	-
MERCURY	MG/L	<0.0002	<0.0002
NICKEL	MG/L	<0.020	<0.020
LEAD	MG/L	0.005	0.001
ANTIMONY	MG/L	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001
ZINC	MG/L	0.038	0.069

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 05

ATI I.D. : 201524

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20152303	<0.0002	<0.0002	NA	MSA	CC=	.999
ARSENIC	MG/L	20152603	0.002	0.002	0	0.048	0.050	92
BERYLLIUM	MG/L	20152404	<0.0002	<0.0002	NA	0.0049	0.0050	98
CADMIUM	MG/L	20152404	<0.0002	<0.0002	NA	0.0050	0.0050	100
CHROMIUM	MG/L	20152404	<0.001	<0.001	NA	MSA	CC =	.998
COPPER	MG/L	20154905	0.044	0.042	5	0.471	0.500	85
HARDNESS	MG/L	20152703	21.8	21.5	1	NA	NA	NA
MERCURY	MG/L	20152604	<0.0002	<0.0002	NA	0.0050	0.0050	100
NICKEL	MG/L	20154905	0.250	0.247	1	1.05	1.00	80
LEAD	MG/L	20152603	0.005	0.005	0	0.053	0.050	96
ANTIMONY	MG/L	20152603	<0.003	<0.003	NA	MSA	CC=	.997
SELENIUM	MG/L	20152603	<0.0008	<0.0008	NA	0.0092	0.0125	74
THALLIUM	MG/L	20150301	<0.005	<0.005	NA	0.047	0.050	94
ZINC	MG/L	20152603	0.028	0.027	4	0.130	0.100	102

NA = Not Applicable

MSA = Method of Standard Additions

CC = Correlation Coefficient

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201524

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152401

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 05	DATE EXTRACTED	: N/A
CLIENT I.D.	: AC-05	DATE ANALYZED	: 01/08/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	84
BROMOFLUOROBENZENE (%)	99
TOLUENE-D8 (%)	99

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152401

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152402

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 05	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/08/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	92
BROMOFLUOROBENZENE (%)	106
TOLUENE-D8 (%)	108

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152402

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 201524
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 01/08/92
PROJECT NAME	: COP NPDES 05	DATE ANALYZED	: 01/08/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	91
BROMOFLUOROBENZENE (%)	105
TOLUENE-D8 (%)	110

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 201524

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201524

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 05
REF I.D. : 20152701

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	57	114	58	116	2
TRICHLOROETHENE	<1	50	43	86	44	88	2
CHLOROBENZENE	<1	50	50	100	51	102	2
TOLUENE	<1	50	51	102	49	98	4
BENZENE	<1	50	39	78	41	82	5

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201524

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201524

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152403

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 05	DATE EXTRACTED	: 01/06/92
CLIENT I.D.	: 05 (TOTALS)	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152403

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	65
2-FLUOROBIPHENYL (%)	71
TERPHENYL (%)	79
PHENOL-D6 (%)	57
2-FLUOROPHENOL (%)	62
2,4,6-TRIBROMOPHENOL (%)	73

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20152403

COMPOUNDS	RESULTS
BUTOXY ETHOXY ETHANOL	600
BUTOXY ETHOXY ETHANOL ACETATE	70

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 201524
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 01/06/92
PROJECT NAME	: COP NPDES 05	DATE ANALYZED	: 01/09/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 201524

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	74
2-FLUOROBIPHENYL (%)	70
TERPHENYL (%)	86
PHENOL-D6 (%)	66
2-FLUOROPHENOL (%)	71
2,4,6-TRIBROMOPHENOL (%)	73

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201524

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 05
REF I.D. : 20152403

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	50	30	60	33	66	10
ACENAPHTHENE	<10	50	28	56	28	56	0
2,4-DINITROTOLUENE	<10	50	32	64	31	62	3
PYRENE	<10	50	28	56	30	60	7
N-NITROSO-DI-N-PROPYLAMINE	<10	50	25	50	25	50	0
1,4-DICHLOROBENZENE	<10	50	23	46	28	56	20
PENTACHLOROPHENOL	<50	100	79	79	58	58	31
PHENOL	<10	100	67	67	67	67	0
2-CHLOROPHENOL	<10	100	74	74	67	67	10
4-CHLORO-3-METHYLPHENOL	<10	100	69	69	66	66	4
4-NITROPHENOL	<50	100	73	73	83	83	13

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201524

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 01-05-92
DATE OF ANALYSIS: 01-05-92 to 01-09-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
20152301	920009	30,000	50,000
20152401	920010	9,000	30,000
20152501	920011	50,000	13,000
20152601	920012	1,700	13,000
20152701	920013	170	2,400
20152801	920014	1,400	13,000
20152901	920015	2,200	24,000

Reviewed by: Frederick A Amalfi Date: 13 Jan 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc.

AC-05

ACCESSION #: 201524

PARAMETER	METHOD	DATE ANALYZED
Silver	272.2	01/17/92
Arsenic	206.2	01/16/92
Beryllium	210.2	01/15/92
Cadmium	213.2	01/09/92
Chromium	218.2	01/16/92
Copper	200.7	01/12/92
Mercury	245.1	01/09/92
Nickel	200.7	01/12/92
Lead	239.2	01/13/92
Antimony	204.2	01/21/92
Selenium	270.3	01/20/92
Thallium	279.2	01/10/92
Zinc	200.7	01/10/92
Cyanide	335.3	01/09/92
COD	410.1	01/08/92
Hardness	2340B	01/13/92
Ammonia	350.2	01/13/92
Nitrite	353.2	01/09/92
pH		01/08/92
Total Phenols	420.2	01/07/92
TDS	160.1	01/06/92
TKN	351.2	01/14/92
Total Phosphorus	365.3	01/09/92
TSS	160.2	01/06/92
Oil and Grease	413.1	01/09/92
Fecal Coliform	9221C	01/05/92
Fecal Streptococci	9230B	01/05/92
BOD	405.1	01/06/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession # 201524

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	Not Analyzed	-	-	-
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

ACCESSION: 201524

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

ACCESSION: 201524

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201524

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

ACCESSION: 201524

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 201525

March 17, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES 08/9155038H-0013

Attention: Patricia Murray

On 01/04/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report is being revised to include inorganic reagent blank information and explanations of any abbreviations.

A limited sample volume was provided for laboratory compositing. Analyses not performed are reflected on the chain of custody.

BOD, Fecal Coliform & Fecal Streptococci analyses were performed by Aquatic Consulting and Testing.

Zinc totals, which were lower than the dissolved zinc numbers, were confirmed by analyzing the undigested samples on GFAA. The zinc method 289.2 could not be utilized to reach the requested detection limit of 1 ppb. Due to zinc contamination in the carrier gas lines to the graphite furnace method 200.7 had to be used which gives a detection limit of 10 ppb.

A concentration technique has been used to meet required detection limits for antimony and to lower the detection limit for selenium.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

Lorraine Davis
QA Coordinator

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 201525

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Silver	272.2	01/16/92	<0.0002
Arsenic	206.2	01/16/92	<0.001
Beryllium	210.2	01/15/92	<0.0002
Cadmium	213.2	01/09/92	<0.0002
Chromium	218.2	01/16/92	<0.001
Copper	200.7	01/12/92	<0.010
Mercury	245.1	01/09/92	<0.0002
Nickel	200.7	01/12/92	<0.020
Lead	239.2	01/13/92	<0.001
Antimony	204.2	01/21/92	<0.003
Selenium	270.3	01/20/92	<0.0008
Thallium	279.2	01/10/92	<0.001
Zinc	200.7	01/15/92	<0.010
Cyanide	335.3	01/09/92	<0.01
Hardness	2340B	01/13/92	<0.2
Ammonia	350.2	01/13/92	<0.03
pH		01/08/92	5.74
Total Phenols	420.2	01/07/92	<0.02
TDS	160.1	01/06/92	<10
TSS	160.2	01/06/92	<10
Oil and Grease	413.1	01/09/92	<2
Fecal Coliform	9221C	01/05/92	NA
Fecal Streptococci	9230B	01/05/92	NA
BOD	405.1	01/06/92	NA

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

NA = Not Applicable

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 08

DATE RECEIVED : 01/04/92
REPORT DATE : 01/20/92

ATI I.D. : 201525

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	IB-08	AQUEOUS	01/04/92
02	TRIP BLANK	AQUEOUS	01/04/92
03	08 (TOTALS)	AQUEOUS	01/03/92
04	08 (DISSOLVED)	AQUEOUS	01/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 201525

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 08

DATE RECEIVED : 01/04/92
REPORT DATE : 01/20/92

PARAMETER	UNITS	01	03
FECAL COLIFORM		50000	-
BIOLOGICAL OXYGEN DEMAND	MG/L	-	7
CYANIDE, TOTAL	MG/L	<0.01	-
OIL AND GREASE, GRAVIMETRIC	MG/L	3	-
PH	UNITS	-	7.1
PHENOLICS, TOTAL	MG/L	<0.02	-
TOTAL DISSOLVED SOLIDS	MG/L	-	60
TOTAL SUSPENDED SOLIDS	MG/L	-	70

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 08 ATI I.D. : 201525

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20152903	18	19	5	202	198	93
CYANIDE, TOTAL	MG/L	20157201	<0.01	<0.01	NA	0.26	0.25	104
OIL AND GREASE, GRAVIM	MG/L	20153601	3	<2	NA	NA	NA	NA
PH	UNITS	20154201	7.5	7.5	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20152901	0.02	0.02	0	0.27	0.25	100
TOTAL DISSOLVED SOLIDS	MG/L	20150201	840	850	1	NA	NA	NA
TOTAL SUSPENDED SOLIDS	MG/L	20152703	20	20	0	NA	NA	NA

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 201525

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	Not Analyzed	-	-	-
Ammonia	Not Analyzed	-	-	-
Nitrite	Not Analyzed	-	-	-
Nitrate	Not Analyzed	-	-	-
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	Not Analyzed	-	-	-
Total Phosphorous	Not Analyzed	-	-	-
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 201525

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 08

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	03	04
SILVER	MG/L	<0.0002	<0.0002
ARSENIC	MG/L	0.002	<0.001
BERYLLIUM	MG/L	<0.0002	<0.0002
CADMIUM	MG/L	0.0003	<0.0002
CHROMIUM	MG/L	0.002	<0.001
COPPER	MG/L	0.027	<0.010
HARDNESS	MG/L	37.5	-
MERCURY	MG/L	<0.0002	<0.0002
NICKEL	MG/L	<0.020	<0.020
LEAD	MG/L	0.015	0.002
ANTIMONY	MG/L	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001
ZINC	MG/L	0.074	0.076

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 08 ATI I.D. : 201525

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20152704	<0.0002	<0.0002	NA	0.0944	0.1000	94
ARSENIC	MG/L	20152603	0.002	0.002	0	0.048	0.050	92
BERYLLIUM	MG/L	20152404	<0.0002	<0.0002	NA	0.0049	0.0050	98
CADMIUM	MG/L	20152404	<0.0002	<0.0002	NA	0.0050	0.0050	100
CHROMIUM	MG/L	20152404	<0.001	<0.001	NA	MSA	CC =	.998
COPPER	MG/L	20154905	0.044	0.042	5	0.471	0.500	85
HARDNESS	MG/L	20152703	21.8	21.5	1	NA	NA	NA
MERCURY	MG/L	20154003	<0.0002	<0.0002	NA	0.0050	0.0050	100
NICKEL	MG/L	20154905	0.250	0.247	1	1.05	1.00	80
LEAD	MG/L	20152603	0.005	0.005	0	0.053	0.050	96
ANTIMONY	MG/L	20152603	<0.003	<0.003	NA	MSA	CC=	.997
SELENIUM	MG/L	20152603	<0.0008	<0.0008	NA	0.0092	0.0125	74
THALLIUM	MG/L	20152603	<0.001	<0.001	NA	MSA	CC =	.999
ZINC	MG/L	20152603	0.028	0.027	4	0.130	0.100	102

NA = Not Applicable

MSA = Method of Standard Additions

CC = Correlation Coefficient

$$\%\ \text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201525

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152501

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 08	DATE EXTRACTED	: N/A
CLIENT I.D.	: IB-08	DATE ANALYZED	: 01/08/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	90
BROMOFLUOROBENZENE (%)	101
TOLUENE-D8 (%)	108

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152501

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152502

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 08	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/08/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	90
BROMOFLUOROBENZENE (%)	103
TOLUENE-D8 (%)	106

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152502

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 201525
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 01/08/92
PROJECT NAME	: COP NPDES 08	DATE ANALYZED	: 01/08/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	91
BROMOFLUOROBENZENE (%)	105
TOLUENE-D8 (%)	110

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 201525

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201525

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 08
REF I.D. : 20152701

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	57	114	58	116	2
TRICHLOROETHENE	<1	50	43	86	44	88	2
CHLOROBENZENE	<1	50	50	100	51	102	2
TOLUENE	<1	50	51	102	49	98	4
BENZENE	<1	50	39	78	41	82	5

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201525

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201525

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 01-05-92
DATE OF ANALYSIS: 01-05-92 to 01-09-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
20152301	920009	30,000	50,000
20152401	920010	9,000	30,000
20152501	920011	50,000	13,000
20152601	920012	1,700	13,000
20152701	920013	170	2,400
20152801	920014	1,400	13,000
20152901	920015	2,200	24,000

Reviewed by: Frederick A Amalfi Date: 13 Jan 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc.

TB-08

ACCESSION #: 201525

PARAMETER	METHOD	DATE ANALYZED
Silver	272.2	01/16/92
Arsenic	206.2	01/16/92
Beryllium	210.2	01/15/92
Cadmium	213.2	01/09/92
Chromium	218.2	01/16/92
Copper	200.7	01/12/92
Mercury	245.1	01/09/92
Nickel	200.7	01/12/92
Lead	239.2	01/13/92
Antimony	204.2	01/21/92
Selenium	270.3	01/20/92
Thallium	279.2	01/10/92
Zinc	200.7	01/15/92
Cyanide	335.3	01/09/92
Hardness	2340B	01/13/92
Ammonia	350.2	01/13/92
pH		01/08/92
Total Phenols	420.2	01/07/92
TDS	160.1	01/06/92
TSS	160.2	01/06/92
Oil and Grease	413.1	01/09/92
Fecal Coliform	9221C	01/05/92
Fecal Streptococci	9230B	01/05/92
BOD	405.1	01/06/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession # 201525

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	Not Analyzed	-	-	-
Ammonia	Not Analyzed	-	-	-
Nitrite	Not Analyzed	-	-	-
Nitrate	Not Analyzed	-	-	-
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	Not Analyzed	-	-	-
Total Phosphorous	Not Analyzed	-	-	-
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

ACCESSION: 201525

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

ACCESSION: 201525

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201525

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 201526

March 17, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES 11/9155038H-0013

Attention: Patricia Murray

On 01/04/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report is being revised to include inorganic reagent blank information and explanations of any abbreviations.

BOD, Fecal Coliform & Fecal Streptococci analyses were performed by Aquatic Consulting and Testing.

Zinc totals, which were lower than the dissolved zinc numbers, were confirmed by analyzing the undigested samples on GFAA. The zinc method 289.2 could not be utilized to reach the requested detection limit of 1 ppb. Due to zinc contamination in the carrier gas lines to the graphite furnace method 200.7 had to be used which gives a detection limit of 10 ppb.

A concentration technique has been used to meet required detection limits for antimony and to lower the detection limit for selenium.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 201526

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Silver	272.2	01/16/92	<0.0002
Arsenic	206.2	01/16/92	<0.001
Beryllium	210.2	01/15/92	<0.0002
Cadmium	213.2	01/09/92	<0.0002
Chromium	218.2	01/16/92	<0.001
Copper	200.7	01/12/92	<0.010
Mercury	245.1	01/09/92	<0.0002
Nickel	200.7	01/12/92	<0.020
Lead	239.2	01/13/92	<0.001
Antimony	204.2	01/21/92	<0.003
Selenium	270.3	01/20/92	<0.0008
Thallium	279.2	01/10/92	<0.001
Zinc	200.7	01/15/92	<0.010
Cyanide	335.3	01/09/92	<0.01
COD	410.1	01/08/92	<5
Hardness	2340B	01/13/92	<0.2
Ammonia	350.2	01/13/92	<0.03
Nitrite	353.2	01/09/92	<0.06
Nitrate	353.2	01/20/92	<0.06
pH		01/08/92	5.74
Total Phenols	420.2	01/07/92	<0.02
TDS	160.1	01/06/92	<10
TKN	351.2	01/14/92	<0.2
Total Phosphorus	365.3	01/09/92	<0.05
TSS	160.2	01/06/92	<10
Dissolved Phosphorous	365.3	01/09/92	<0.05
Oil and Grease	413.1	01/09/92	<2
Fecal Coliform	9221C	01/05/92	NA
Fecal Streptococci	9230B	01/05/92	NA
BOD	405.1	01/06/92	NA

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

NA = Not Applicable

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 11

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

ATI I.D. : 201526

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	IB-11	AQUEOUS	01/04/92
02	TRIP BLANK	AQUEOUS	01/04/92
03	11 (TOTALS)	AQUEOUS	01/03/92
04	11 (DISSOLVED)	AQUEOUS	01/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 201526

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 11

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	01	03	04
FECAL COLIFORM		1700	-	-
BIOLOGICAL OXYGEN DEMAND	MG/L	-	4	-
CYANIDE, TOTAL	MG/L	<0.01	-	-
CHEMICAL OXYGEN DEMAND	MG/L	-	30	-
AMMONIA AS NITROGEN	MG/L	-	0.23	-
NITRITE AS NITROGEN	MG/L	-	<0.06	-
NITRATE AS NITROGEN	MG/L	-	0.46	-
OIL AND GREASE, GRAVIMETRIC	MG/L	4	-	-
PH	UNITS	-	7.1	-
PHENOLICS, TOTAL	MG/L	<0.02	-	-
TOTAL DISSOLVED SOLIDS	MG/L	-	60	-
TOTAL KJELDAHL NITROGEN	MG/L	-	0.9	-
PHOSPHOROUS,TOTAL	MG/L	-	0.23	0.12
TOTAL SUSPENDED SOLIDS	MG/L	-	70	-

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 11 ATI I.D. : 201526

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20152903	18	19	5	202	198	93
CYANIDE, TOTAL	MG/L	20157201	<0.01	<0.01	NA	0.26	0.25	104
CHEMICAL OXYGEN DEMAND	MG/L	20151901	8.4	7.9	6	85	75	102
AMMONIA AS NITROGEN	MG/L	20151901	<0.03	<0.03	NA	0.54	0.50	108
NITRITE AS NITROGEN	MG/L	20199905	<0.06	<0.06	NA	2.04	2.00	102
NITRATE AS NITROGEN	MG/L	20152903	0.84	0.89	6	1.9	1.0	106
OIL AND GREASE, GRAVIM	MG/L	20153601	3	<2	NA	NA	NA	NA
PH	UNITS	20154201	7.5	7.5	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20152901	0.02	0.02	0	0.27	0.25	100
TOTAL DISSOLVED SOLIDS	MG/L	20150201	840	850	1	NA	NA	NA
TOTAL KJELDAHL NITROGE	MG/L	20157201	<0.4	<0.4	NA	2.1	2.0	105
PHOSPHOROUS,TOTAL	MG/L	20151801	0.19	0.19	0	0.67	0.50	96
TOTAL SUSPENDED SOLIDS	MG/L	20152703	20	20	0	NA	NA	NA

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 201526

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	EPA WS 1188	2.00	2.07	1.90-2.10 mg/l
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 201526

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 11

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	03	04
SILVER	MG/L	<0.0002	<0.0002
ARSENIC	MG/L	0.002	0.001
BERYLLIUM	MG/L	<0.0002	<0.0002
CADMIUM	MG/L	<0.0002	<0.0002
CHROMIUM	MG/L	0.002	<0.001
COPPER	MG/L	0.012	<0.010
HARDNESS	MG/L	28.1	-
MERCURY	MG/L	<0.0002	<0.0002
NICKEL	MG/L	<0.020	<0.020
LEAD	MG/L	0.005	<0.001
ANTIMONY	MG/L	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001
ZINC	MG/L	0.028	0.040

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 11 ATI I.D. : 201526

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20152704	<0.0002	<0.0002	NA	0.0944	0.1000	94
ARSENIC	MG/L	20152603	0.002	0.002	0	0.048	0.050	92
BERYLLIUM	MG/L	20152603	<0.0002	<0.0002	NA	0.47	0.50	94
CADMIUM	MG/L	20152603	<0.0002	<0.0002	NA	0.49	0.50	98
CHROMIUM	MG/L	20152603	0.002	0.002	0	1.00	1.00	100
COPPER	MG/L	20154905	0.044	0.042	5	0.471	0.500	85
COPPER	MG/L	20152604	<0.010	<0.010	NA	0.103	0.100	103
HARDNESS	MG/L	20152703	21.8	21.5	1	NA	NA	NA
MERCURY	MG/L	20152604	<0.0002	<0.0002	NA	0.0050	0.0050	100
NICKEL	MG/L	20152604	<0.020	<0.020	NA	0.103	0.100	103
LEAD	MG/L	20152603	0.005	0.005	0	0.053	0.050	96
ANTIMONY	MG/L	20152603	<0.003	<0.003	NA	MSA	CC=	.997
ANTIMONY	MG/L	20152604	<0.003	<0.003	NA	0.014	0.013	108
SELENIUM	MG/L	20152603	<0.0008	<0.0008	NA	0.0092	0.0125	74
SELENIUM	MG/L	20152604	<0.0008	<0.0008	NA	0.0111	0.0125	89
THALLIUM	MG/L	20152603	<0.001	<0.001	NA	MSA	CC =	.999
ZINC	MG/L	20152603	0.028	0.027	4	0.130	0.100	102

NA = Not Applicable

MSA = Method of Standard Additions

CC = Correlation Coefficient

$$\%\ \text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201526

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152601

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 11	DATE EXTRACTED	: N/A
CLIENT I.D.	: IB-11	DATE ANALYZED	: 01/08/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	93
BROMOFLUOROBENZENE (%)	105
TOLUENE-D8 (%)	106

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152601

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152602

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 11	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	99
BROMOFLUOROBENZENE (%)	111
TOLUENE-D8 (%)	117

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152602

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

		ATI I.D.	: 201526
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 01/08/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 01/08/92
PROJECT NAME	: COP NPDES 11	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	91
BROMOFLUOROBENZENE (%)	105
TOLUENE-D8 (%)	110

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 201526

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 201526
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 01/09/92
PROJECT NAME	: COP NPDES 11	DATE ANALYZED	: 01/09/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	87
BROMOFLUOROBENZENE (%)	102
TOLUENE-D8 (%)	104

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 201526

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201526

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 11
REF I.D. : 20152701

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	57	114	58	116	2
TRICHLOROETHENE	<1	50	43	86	44	88	2
CHLOROBENZENE	<1	50	50	100	51	102	2
TOLUENE	<1	50	51	102	49	98	4
BENZENE	<1	50	39	78	41	82	5

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201526

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201526

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152603

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 11	DATE EXTRACTED	: 01/06/92
CLIENT I.D.	: 11 (TOTALS)	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152603

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	77
2-FLUOROBIPHENYL (%)	83
TERPHENYL (%)	72
PHENOL-D6 (%)	58
2-FLUOROPHENOL (%)	62
2,4,6-TRIBROMOPHENOL (%)	77

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20152603

COMPOUNDS	RESULTS
BUTOXY ETHOXY ETHANOL ACETATE	100

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 201526
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 01/06/92
PROJECT NAME	: COP NPDES 11	DATE ANALYZED	: 01/09/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 201526

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	74
2-FLUOROBIPHENYL (%)	70
TERPHENYL (%)	86
PHENOL-D6 (%)	66
2-FLUOROPHENOL (%)	71
2,4,6-TRIBROMOPHENOL (%)	73

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201526

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 11
REF I.D. : 20152403

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	50	30	60	33	66	10
ACENAPHTHENE	<10	50	28	56	28	56	0
2,4-DINITROTOLUENE	<10	50	32	64	31	62	3
PYRENE	<10	50	28	56	30	60	7
N-NITROSO-DI-N-PROPYLAMINE	<10	50	25	50	25	50	0
1,4-DICHLOROBENZENE	<10	50	23	46	28	56	20
PENTACHLOROPHENOL	<50	100	79	79	58	58	31
PHENOL	<10	100	67	67	67	67	0
2-CHLOROPHENOL	<10	100	74	74	67	67	10
4-CHLORO-3-METHYLPHENOL	<10	100	69	69	66	66	4
4-NITROPHENOL	<50	100	73	73	83	83	13

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201526

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 01-05-92
DATE OF ANALYSIS: 01-05-92 to 01-09-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
20152301	920009	30,000	50,000
20152401	920010	9,000	30,000
20152501	920011	50,000	13,000
20152601	920012	1,700	13,000
20152701	920013	170	2,400
20152801	920014	1,400	13,000
20152901	920015	2,200	24,000

Reviewed by: Frederick A Amalfi Date: 13 Jan 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc.

TB-11

ACCESSION #: 201526

PARAMETER	METHOD	DATE ANALYZED
Silver	272.2	01/16/92
Arsenic	206.2	01/16/92
Beryllium	210.2	01/15/92
Cadmium	213.2	01/09/92
Chromium	218.2	01/16/92
Copper	200.7	01/12/92
Mercury	245.1	01/09/92
Nickel	200.7	01/12/92
Lead	239.2	01/13/92
Antimony	204.2	01/21/92
Selenium	270.3	01/20/92
Thallium	279.2	01/10/92
Zinc	200.7	01/15/92
Cyanide	335.3	01/09/92
COD	410.1	01/08/92
Hardness	2340B	01/13/92
Ammonia	350.2	01/13/92
Nitrite	353.2	01/09/92
Nitrate	353.2	01/20/92
pH		01/08/92
Total Phenols	420.2	01/07/92
TDS	160.1	01/06/92
TKN	351.2	01/14/92
Total Phosphorus	365.3	01/09/92
TSS	160.2	01/06/92
Dissolved Phosphorous	365.3	01/09/92
Oil and Grease	413.1	01/09/92
Fecal Coliform	9221C	01/05/92
Fecal Streptococci	9230B	01/05/92
BOD	405.1	01/06/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession # 201526

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	EPA WS 1188	2.00	2.07	1.90-2.10 mg/l
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

ACCESSION: 201526

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

ACCESSION: 201526

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201526

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

ACCESSION: 201526

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 201527

January 27, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES 21/9155038H-0013

Attention: Patricia Murray

On 01/04/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

A limited sample volume was provided for laboratory compositing. Analyses not performed are reflected on the chain of custody.

BOD, Fecal Coliform & Fecal Streptococci analyses were performed by Aquatic Consulting and Testing.

The zinc method 289.2 could not be utilized to reach the requested detection limit of 1 ppb. Due to zinc contamination in the carrier gas lines to the graphite furnace method 200.7 had to be used which gives a detection limit of 10 ppb.

A concentration technique has been used to meet required detection limits for antimony and to lower the detection limit for selenium.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Tyer for
Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 21

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

ATI I.D. : 201527

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	21	AQUEOUS	01/04/92
02	TRIP BLANK	AQUEOUS	01/04/92
03	21 (TOTALS)	AQUEOUS	01/03/92
04	21 (DISSOLVED)	AQUEOUS	01/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 201527

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 21

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	01	03
FECAL COLIFORM		170	-
BIOLOGICAL OXYGEN DEMAND	MG/L	-	10
CYANIDE, TOTAL	MG/L	<0.01	-
CHEMICAL OXYGEN DEMAND	MG/L	-	60
AMMONIA AS NITROGEN	MG/L	-	0.52
NITRITE AS NITROGEN	MG/L	-	<0.06
OIL AND GREASE, GRAVIMETRIC	MG/L	3	-
PH	UNITS	-	6.8
PHENOLICS, TOTAL	MG/L	0.02	-
TOTAL DISSOLVED SOLIDS	MG/L	-	40
TOTAL KJELDAHL NITROGEN	MG/L	-	1.3
PHOSPHOROUS,TOTAL	MG/L	-	0.18
TOTAL SUSPENDED SOLIDS	MG/L	-	20

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 21 ATI I.D. : 201527

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20152903	18	19	5	202	198	93
CYANIDE, TOTAL	MG/L	20157201	<0.01	<0.01	NA	0.26	0.25	104
CHEMICAL OXYGEN DEMAND	MG/L	20151901	8.4	7.9	6	85	75	102
AMMONIA AS NITROGEN	MG/L	20151901	<0.03	<0.03	NA	0.54	0.50	108
NITRITE AS NITROGEN	MG/L	20199905	<0.06	<0.06	NA	2.04	2.00	102
OIL AND GREASE, GRAVIM	MG/L	20153601	3	<2	NA	NA	NA	NA
PH	UNITS	20154201	7.5	7.5	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20152901	0.02	0.02	0	0.27	0.25	100
TOTAL DISSOLVED SOLIDS	MG/L	20152703	40	40	0	NA	NA	NA
TOTAL KJELDAHL NITROGE	MG/L	11200604	<1.0	<1.0	NA	10	10	100
PHOSPHOROUS,TOTAL	MG/L	20151801	0.19	0.19	0	0.67	0.50	96
TOTAL SUSPENDED SOLIDS	MG/L	20152703	20	20	0	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 201527

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 21

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	03	04
SILVER	MG/L	<0.0002	<0.0002
ARSENIC	MG/L	0.001	<0.001
BERYLLIUM	MG/L	<0.0002	<0.0002
CADMIUM	MG/L	0.0007	0.0004
CHROMIUM	MG/L	0.001	<0.001
COPPER	MG/L	0.026	0.014
HARDNESS	MG/L	21.8	-
MERCURY	MG/L	<0.0002	<0.0002
NICKEL	MG/L	<0.020	<0.020
LEAD	MG/L	0.015	0.002
ANTIMONY	MG/L	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001
ZINC	MG/L	0.062	0.058

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 21 ATI I.D. : 201527

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20152704	<0.0002	<0.0002	NA	0.0944	0.1000	94
ARSENIC	MG/L	20152603	0.002	0.002	0	0.048	0.050	92
BERYLLIUM	MG/L	20152603	<0.0002	<0.0002	NA	0.47	0.50	94
CADMIUM	MG/L	20152603	<0.0002	<0.0002	NA	0.49	0.50	98
CHROMIUM	MG/L	20152603	0.002	0.002	0	1.00	1.00	100
COPPER	MG/L	20154905	0.044	0.042	5	0.471	0.500	85
HARDNESS	MG/L	20152703	21.8	21.5	1	NA	NA	NA
MERCURY	MG/L	20154003	<0.0002	<0.0002	NA	0.0050	0.0050	100
NICKEL	MG/L	20154905	0.250	0.247	1	1.05	1.00	80
LEAD	MG/L	20152603	0.005	0.005	0	0.053	0.050	96
ANTIMONY	MG/L	20152604	<0.003	<0.003	NA	0.014	0.013	108
SELENIUM	MG/L	20152604	<0.0008	<0.0008	NA	0.0111	0.0125	89
THALLIUM	MG/L	20152803	<0.001	<0.001	NA	0.046	0.050	92
ZINC	MG/L	20153203	0.020	0.020	0	0.524	0.500	101

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152701

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 21	DATE EXTRACTED	: N/A
CLIENT I.D.	: 21	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	81
BROMOFLUOROBENZENE (%)	95
TOLUENE-D8 (%)	96

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152701

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152702

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 21	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	93
BROMOFLUOROBENZENE (%)	109
TOLUENE-D8 (%)	108

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152702

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 524)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 201527

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

		ATI I.D.	: 201527
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 01/09/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 01/09/92
PROJECT NAME	: COP NPDES 21	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	87
BROMOFLUOROBENZENE (%)	102
TOLUENE-D8 (%)	104

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 201527

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201527

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 21
REF I.D. : 20152701

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	57	114	58	116	2
TRICHLOROETHENE	<1	50	43	86	44	88	2
CHLOROBENZENE	<1	50	50	100	51	102	2
TOLUENE	<1	50	51	102	49	98	4
BENZENE	<1	50	39	78	41	82	5

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152703

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 21	DATE EXTRACTED	: 01/06/92
CLIENT I.D.	: 21 (TOTALS)	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	11
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152703

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	71
2-FLUOROBIPHENYL (%)	73
TERPHENYL (%)	72
PHENOL-D6 (%)	66
2-FLUOROPHENOL (%)	72
2,4,6-TRIBROMOPHENOL (%)	84

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20152703

COMPOUNDS	RESULTS
BUTOXY ETHOXY ETHANOL	1000
BUTOXY ETHOXY ETHANOL ACETATE	400
TRIBUTYL PHOSPHORIC ACID	200

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

		ATI I.D.	: 201527
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 01/06/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 01/09/92
PROJECT NAME	: COP NPDES 21	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 201527

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	74
2-FLUOROBIPHENYL (%)	70
TERPHENYL (%)	86
PHENOL-D6 (%)	66
2-FLUOROPHENOL (%)	71
2,4,6-TRIBROMOPHENOL (%)	73

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201527

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 21
REF I.D. : 20152403

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	50	30	60	33	66	10
ACENAPHTHENE	<10	50	28	56	28	56	0
2,4-DINITROTOLUENE	<10	50	32	64	31	62	3
PYRENE	<10	50	28	56	30	60	7
N-NITROSO-DI-N-PROPYLAMINE	<10	50	25	50	25	50	0
1,4-DICHLOROBENZENE	<10	50	23	46	28	56	20
PENTACHLOROPHENOL	<50	100	79	79	58	58	31
PHENOL	<10	100	67	67	67	67	0
2-CHLOROPHENOL	<10	100	74	74	67	67	10
4-CHLORO-3-METHYLPHENOL	<10	100	69	69	66	66	4
4-NITROPHENOL	<50	100	73	73	83	83	13

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 01-05-92
DATE OF ANALYSIS: 01-05-92 to 01-09-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
20152301	920009	30,000	50,000
20152401	920010	9,000	30,000
20152501	920011	50,000	13,000
20152601	920012	1,700	13,000
20152701	920013	170	2,400
20152801	920014	1,400	13,000
20152901	920015	2,200	24,000

Reviewed by: Frederick A Amalfi Date: 13 Jan 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc.

ACCESSION #: 201527

PARAMETER	METHOD	DATE ANALYZED
Silver	272.2	01/16/92
Arsenic	206.2	01/16/92
Beryllium	210.2	01/15/92
Cadmium	213.2	01/09/92
Chromium	218.2	01/16/92
Copper	200.7	01/12/92
Mercury	245.1	01/09/92
Nickel	200.7	01/12/92
Lead	239.2	01/13/92
Antimony	204.2	01/21/92
Selenium	270.3	01/20/92
Thallium	279.2	01/17/92
Zinc	200.7	01/12/92
Cyanide	335.3	01/09/92
COD	410.1	01/08/92
Hardness	2340B	01/13/92
Ammonia	350.2	01/13/92
Nitrite	353.2	01/09/92
pH		01/08/92
Total Phenols	420.2	01/07/92
TDS	160.1	01/06/92
TKN	351.2	01/14/92
Total Phosphorus	365.3	01/09/92
TSS	160.2	01/06/92
Oil and Grease	413.1	01/09/92
Fecal Coliform	9221C	01/05/92
Fecal Streptococci	9230B	01/05/92
BOD	405.1	01/06/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession # 201527

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	Not Analyzed	-	-	-
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

ACCESSION: 201527

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

ACCESSION: 201527

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201527

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

ACCESSION: 201527

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

Analytical Technologies, Inc.

SR-21

ACCESSION #: 201527

PARAMETER	METHOD	DATE ANALYZED
Silver	272.2	01/16/92
Arsenic	206.2	01/16/92
Beryllium	210.2	01/15/92
Cadmium	213.2	01/09/92
Chromium	218.2	01/16/92
Copper	200.7	01/12/92
Mercury	245.1	01/09/92
Nickel	200.7	01/12/92
Lead	239.2	01/13/92
Antimony	204.2	01/21/92
Selenium	270.3	01/20/92
Thallium	279.2	01/17/92
Zinc	200.7	01/12/92
Cyanide	335.3	01/09/92
COD	410.1	01/08/92
Hardness	2340B	01/13/92
Ammonia	350.2	01/13/92
Nitrite	353.2	01/09/92
pH		01/08/92
Total Phenols	420.2	01/07/92
TDS	160.1	01/06/92
TKN	351.2	01/14/92
Total Phosphorus	365.3	01/09/92
TSS	160.2	01/06/92
Oil and Grease	413.1	01/09/92
Fecal Coliform	9221C	01/05/92
Fecal Streptococci	9230B	01/05/92
BOD	405.1	01/06/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession # 201527

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	Not Analyzed	-	-	-
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

ACCESSION: 201527

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

ACCESSION: 201527

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201527

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

ACCESSION: 201527

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

Analytical Technologies, Inc.

SR-21

ACCESSION #: 201527

PARAMETER	METHOD	DATE ANALYZED
Silver	272.2	01/16/92
Arsenic	206.2	01/16/92
Beryllium	210.2	01/15/92
Cadmium	213.2	01/09/92
Chromium	218.2	01/16/92
Copper	200.7	01/12/92
Mercury	245.1	01/09/92
Nickel	200.7	01/12/92
Lead	239.2	01/13/92
Antimony	204.2	01/21/92
Selenium	270.3	01/20/92
Thallium	279.2	01/17/92
Zinc	200.7	01/12/92
Cyanide	335.3	01/09/92
COD	410.1	01/08/92
Hardness	2340B	01/13/92
Ammonia	350.2	01/13/92
Nitrite	353.2	01/09/92
pH		01/08/92
Total Phenols	420.2	01/07/92
TDS	160.1	01/06/92
TKN	351.2	01/14/92
Total Phosphorus	365.3	01/09/92
TSS	160.2	01/06/92
Oil and Grease	413.1	01/09/92
Fecal Coliform	9221C	01/05/92
Fecal Streptococci	9230B	01/05/92
BOD	405.1	01/06/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession # 201527

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	Not Analyzed	-	-	-
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

ACCESSION: 201527

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

ACCESSION: 201527

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201527

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

ACCESSION: 201527

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 201528

March 17, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES 33/9155038H-0013

Attention: Patricia Murray

On 01/04/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report is being revised to include inorganic reagent blank information and explanations of any abbreviations.

BOD, Fecal Coliform & Fecal Streptococci analyses were performed by Aquatic Consulting and Testing.

The zinc method 289.2 could not be utilized to reach the requested detection limit of 1 ppb. Due to zinc contamination in the carrier gas lines to the graphite furnace Method 200.7 had to be used which gives a detection limit of 10 ppb.

A concentration technique has been used to meet required detection limits for antimony and to lower the detection limit for selenium.

Surrogate recoveries for Method 625 compounds nitrobenzene-D5, 2-fluorobiphenyl and terphenyl are outside of ATI acceptance criteria for sample "33". The sample was re-extracted after the holding time had expired. Surrogate recoveries for the re-extract were acceptable. This indicates a spiking error rather than matrix interferences. The results of the re-analysis confirmed the original analytical results and the original run, which was within holding time, has been reported.

Analytical Technologies, Inc.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 201528

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Silver	272.2	01/16/92	<0.0002
Arsenic	206.2	01/16/92	<0.001
Beryllium	210.2	01/15/92	<0.0002
Cadmium	213.2	01/09/92	<0.0002
Chromium	218.2	01/16/92	<0.001
Copper	200.7	01/12/92	<0.010
Mercury	245.1	01/09/92	<0.0002
Nickel	200.7	01/12/92	<0.020
Lead	239.2	01/13/92	<0.001
Antimony	204.2	01/21/92	<0.003
Selenium	270.3	01/20/92	<0.0008
Thallium	279.2	01/17/92	<0.001
Zinc	200.7	01/12/92	<0.010
Cyanide	335.3	01/16/92	<0.01
COD	410.1	01/08/92	<5
Hardness	2340B	01/13/92	<0.2
Ammonia	350.2	01/13/92	<0.03
Nitrite	353.2	01/09/92	<0.06
Nitrate	353.2	01/20/92	<0.06
pH		01/08/92	5.74
Total Phenols	420.2	01/07/92	<0.02
TDS	160.1	01/06/92	<10
TKN	351.2	01/14/92	<0.2
Total Phosphorus	365.3	01/09/92	<0.05
TSS	160.2	01/06/92	<10
Dissolved Phosphorous	365.3	01/09/92	<0.05
Oil and Grease	413.1	01/13/92	<2
Fecal Coliform	9221C	01/05/92	NA
Fecal Streptococci	9230B	01/05/92	NA
BOD	405.1	01/06/92	NA

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

NA = Not Applicable

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 33

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

ATI I.D. : 201528

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	33	AQUEOUS	01/03/92
02	TRIP BLANK	AQUEOUS	01/03/92
03	33 (TOTALS)	AQUEOUS	01/03/92
04	33 (DISSOLVED)	AQUEOUS	01/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 201528

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 33

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	01	03	04
FECAL COLIFORM		1400	-	-
BIOLOGICAL OXYGEN DEMAND	MG/L	-	10	-
CYANIDE, TOTAL	MG/L	<0.01	-	-
CHEMICAL OXYGEN DEMAND	MG/L	-	76	-
AMMONIA AS NITROGEN	MG/L	-	0.56	-
NITRITE AS NITROGEN	MG/L	-	<0.06	-
NITRATE AS NITROGEN	MG/L	-	0.91	-
OIL AND GREASE, GRAVIMETRIC	MG/L	8	-	-
PH	UNITS	-	6.9	-
PHENOLICS, TOTAL	MG/L	<0.02	-	-
TOTAL DISSOLVED SOLIDS	MG/L	-	80	-
TOTAL KJELDAHL NITROGEN	MG/L	-	1.7	-
PHOSPHOROUS,TOTAL	MG/L	-	0.28	0.10
TOTAL SUSPENDED SOLIDS	MG/L	-	70	-

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 33 ATI I.D. : 201528

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20152903	18	19	5	202	198	93
CYANIDE, TOTAL	MG/L	20199907	<0.01	<0.01	NA	0.21	0.25	84
CHEMICAL OXYGEN DEMAND	MG/L	20151901	8.4	7.9	6	85	75	102
AMMONIA AS NITROGEN	MG/L	20151901	<0.03	<0.03	NA	0.54	0.50	108
NITRITE AS NITROGEN	MG/L	20199905	<0.06	<0.06	NA	2.04	2.00	102
NITRATE AS NITROGEN	MG/L	20152903	0.84	0.89	6	1.9	1.0	106
OIL AND GREASE, GRAVIM	MG/L	20153601	3	<2	NA	NA	NA	NA
PH	UNITS	20154201	7.5	7.5	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20152901	0.02	0.02	0	0.27	0.25	100
TOTAL DISSOLVED SOLIDS	MG/L	20152703	40	40	0	NA	NA	NA
TOTAL KJELDAHL NITROGE	MG/L	11200604	<1.0	<1.0	NA	10	10	100
PHOSPHOROUS,TOTAL	MG/L	20151801	0.19	0.19	0	0.67	0.50	96
TOTAL SUSPENDED SOLIDS	MG/L	20152703	20	20	0	NA	NA	NA

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 201528

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 33

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	03	04
SILVER	MG/L	<0.0002	<0.0002
ARSENIC	MG/L	0.003	0.001
BERYLLIUM	MG/L	<0.0002	<0.0002
CADMIUM	MG/L	0.0004	<0.0002
CHROMIUM	MG/L	0.002	<0.001
COPPER	MG/L	0.017	<0.010
HARDNESS	MG/L	44.2	-
MERCURY	MG/L	<0.0002	<0.0002
NICKEL	MG/L	<0.020	<0.020
LEAD	MG/L	0.022	0.002
ANTIMONY	MG/L	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001
ZINC	MG/L	0.093	0.092

Analytical Technologies, Inc.

Accession # 201528

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	EPA WS 1188	2.00	2.07	1.90-2.10 mg/l
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 33 ATI I.D. : 201528

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20152704	<0.0002	<0.0002	NA	0.0944	0.1000	94
ARSENIC	MG/L	20153204	<0.005	<0.005	NA	0.051	0.050	102
BERYLLIUM	MG/L	20152603	<0.0002	<0.0002	NA	0.47	0.50	94
CADMIUM	MG/L	20152603	<0.0002	<0.0002	NA	0.49	0.50	98
CHROMIUM	MG/L	20152603	0.002	0.002	0	1.00	1.00	100
COPPER	MG/L	20154905	0.044	0.042	5	0.471	0.500	85
HARDNESS	MG/L	20152703	21.8	21.5	1	NA	NA	NA
MERCURY	MG/L	20154003	<0.0002	<0.0002	NA	0.0050	0.0050	100
NICKEL	MG/L	20154905	0.250	0.247	1	1.05	1.00	80
LEAD	MG/L	20152803	0.022	0.022	0	0.077	0.050	110
ANTIMONY	MG/L	20152604	<0.003	<0.003	NA	0.014	0.013	108
SELENIUM	MG/L	20152604	<0.0008	<0.0008	NA	0.0111	0.0125	89
THALLIUM	MG/L	20152803	<0.001	<0.001	NA	0.046	0.050	92
ZINC	MG/L	20153203	0.020	0.020	0	0.524	0.500	101

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201528

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152801

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 33	DATE EXTRACTED	: N/A
CLIENT I.D.	: 33	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	82
BROMOFLUOROBENZENE (%)	94
TOLUENE-D8 (%)	94

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152801

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152802

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 33	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	90
BROMOFLUOROBENZENE (%)	103
TOLUENE-D8 (%)	103

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152802

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

		ATI I.D.	: 201528
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 01/09/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 01/09/92
PROJECT NAME	: COP NPDES 33	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	87
BROMOFLUOROBENZENE (%)	102
TOLUENE-D8 (%)	104

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 201528

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201528

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 33
REF I.D. : 20152801

DATE ANALYZED : 01/11/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	62	124	62	124	0
TRICHLOROETHENE	<1	50	46	92	46	92	0
CHLOROBENZENE	<1	50	54	108	54	108	0
TOLUENE	<1	50	53	106	53	106	0
BENZENE	<1	50	44	88	44	88	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201528

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201528

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152803

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 33	DATE EXTRACTED	: 01/06/92
CLIENT I.D.	: 33 (TOTALS)	DATE ANALYZED	: 01/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152803

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	9 *
2-FLUOROBIPHENYL (%)	12 *
TERPHENYL (%)	20 *
PHENOL-D6 (%)	58
2-FLUOROPHENOL (%)	60
2,4,6-TRIBROMOPHENOL (%)	87

* Result out of limits

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20152803

COMPOUNDS	RESULTS
BUTOXYETHOXYETHANOL ACETATE	30

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

		ATI I.D.	: 201528
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 01/06/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 01/09/92
PROJECT NAME	: COP NPDES 33	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 201528

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	74
2-FLUOROBIPHENYL (%)	70
TERPHENYL (%)	86
PHENOL-D6 (%)	66
2-FLUOROPHENOL (%)	71
2,4,6-TRIBROMOPHENOL (%)	73

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201528

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 33
REF I.D. : 20152403

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	50	30	60	33	66	10
ACENAPHTHENE	<10	50	28	56	28	56	0
2,4-DINITROTOLUENE	<10	50	32	64	31	62	3
PYRENE	<10	50	28	56	30	60	7
N-NITROSO-DI-N-PROPYLAMINE	<10	50	25	50	25	50	0
1,4-DICHLOROBENZENE	<10	50	23	46	28	56	20
PENTACHLOROPHENOL	<50	100	79	79	58	58	31
PHENOL	<10	100	67	67	67	67	0
2-CHLOROPHENOL	<10	100	74	74	67	67	10
4-CHLORO-3-METHYLPHENOL	<10	100	69	69	66	66	4
4-NITROPHENOL	<50	100	73	73	83	83	13

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201528

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 01-05-92
DATE OF ANALYSIS: 01-05-92 to 01-09-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
20152301	920009	30,000	50,000
20152401	920010	9,000	30,000
20152501	920011	50,000	13,000
20152601	920012	1,700	13,000
20152701	920013	170	2,400
20152801	920014	1,400	13,000
20152901	920015	2,200	24,000

Reviewed by: Frederick A Amalfi Date: 13 Jan 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc.

SR-33

ACCESSION #: 201528

PARAMETER	METHOD	DATE ANALYZED
Silver	272.2	01/16/92
Arsenic	206.2	01/16/92
Beryllium	210.2	01/15/92
Cadmium	213.2	01/09/92
Chromium	218.2	01/16/92
Copper	200.7	01/12/92
Mercury	245.1	01/09/92
Nickel	200.7	01/12/92
Lead	239.2	01/13/92
Antimony	204.2	01/21/92
Selenium	270.3	01/20/92
Thallium	279.2	01/17/92
Zinc	200.7	01/12/92
Cyanide	335.3	01/16/92
COD	410.1	01/08/92
Hardness	2340B	01/13/92
Ammonia	350.2	01/13/92
Nitrite	353.2	01/09/92
Nitrate	353.2	01/20/92
pH		01/08/92
Total Phenols	420.2	01/07/92
TDS	160.1	01/06/92
TKN	351.2	01/14/92
Total Phosphorus	365.3	01/09/92
TSS	160.2	01/06/92
Dissolved Phosphorous	365.3	01/09/92
Oil and Grease	413.1	01/13/92
Fecal Coliform	9221C	01/05/92
Fecal Streptococci	9230B	01/05/92
BOD	405.1	01/06/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession # 201528

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	EPA WS 1188	2.00	2.07	1.90-2.10 mg/l
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

ACCESSION: 201528

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

ACCESSION: 201528

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201528

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

ACCESSION: 201528

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

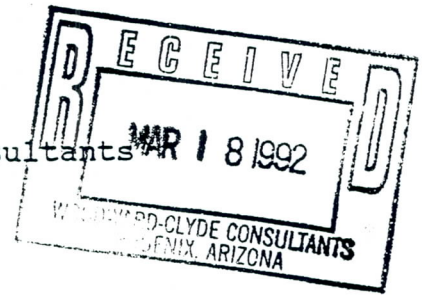
CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

Analytical **Technologies,** Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 201529

March 17, 1992



Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES 45/9155038H-0013

Attention: Patricia Murray

On 01/04/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report is being revised to include inorganic reagent blank information and explanations of any abbreviations.

BOD, Fecal Coliform & Fecal Streptococci analyses were performed by Aquatic Consulting and Testing.

The zinc method 289.2 could not be utilized to reach the requested detection limit of 1 ppb. Due to zinc contamination in the carrier gas lines to the graphite furnace Method 200.7 had to be used which gives a detection limit of 10 ppb.

A concentration technique has been used to meet required detection limits for antimony and to lower the detection limit for selenium.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Lorraine Davis for
Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 201529

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Silver	272.2	01/16/92	<0.0002
Arsenic	206.2	01/16/92	<0.001
Beryllium	210.2	01/15/92	<0.0002
Cadmium	213.2	01/09/92	<0.0002
Chromium	218.2	01/16/92	<0.001
Copper	200.7	01/12/92	<0.010
Mercury	245.1	01/09/92	<0.0002
Nickel	200.7	01/12/92	<0.020
Lead	239.2	01/13/92	<0.001
Antimony	204.2	01/21/92	<0.003
Selenium	270.3	01/20/92	<0.0008
Thallium	279.2	01/17/92	<0.001
Zinc	200.7	01/12/92	<0.010
Cyanide	335.3	01/09/92	<0.01
COD	410.1	01/08/92	<5
Hardness	2340B	01/13/92	<0.2
Ammonia	350.2	01/13/92	<0.03
Nitrite	353.2	01/09/92	<0.06
Nitrate	353.2	01/20/92	<0.06
pH		01/08/92	5.74
Total Phenols	420.2	01/07/92	<0.02
TDS	160.1	01/06/92	<10
TKN	351.2	01/14/92	<0.2
Total Phosphorus	365.3	01/09/92	<0.05
TSS	160.2	01/06/92	<10
Dissolved Phosphorous	365.3	01/09/92	<0.05
Oil and Grease	413.1	01/09/92	NA
Fecal Coliform	9221C	01/05/92	NA
Fecal Streptococci	9230B	01/05/92	NA
BOD	405.1	01/06/92	NA

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 45
ATI I.D. : 201529

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	45	AQUEOUS	01/04/92
02	TRIP BLANK	AQUEOUS	01/04/92
03	45 (TOTALS)	AQUEOUS	01/03/92
04	45 (DISSOLVED)	AQUEOUS	01/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 201529

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 45

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	01	03	04
FECAL COLIFORM		2200	-	-
BIOLOGICAL OXYGEN DEMAND	MG/L	-	18	-
CYANIDE, TOTAL	MG/L	<0.01	-	-
CHEMICAL OXYGEN DEMAND	MG/L	-	130	-
AMMONIA AS NITROGEN	MG/L	-	0.58	-
NITRITE AS NITROGEN	MG/L	-	<0.06	-
NITRATE AS NITROGEN	MG/L	-	0.84	-
OIL AND GREASE, GRAVIMETRIC	MG/L	3	-	-
PH	UNITS	-	6.7	-
PHENOLICS, TOTAL	MG/L	0.02	-	-
TOTAL DISSOLVED SOLIDS	MG/L	-	90	-
TOTAL KJELDAHL NITROGEN	MG/L	-	1.9	-
PHOSPHOROUS,TOTAL	MG/L	-	0.32	0.10
TOTAL SUSPENDED SOLIDS	MG/L	-	90	-

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 45 ATI I.D. : 201529

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20152903	18	19	5	202	198	93
CYANIDE, TOTAL	MG/L	20157201	<0.01	<0.01	NA	0.26	0.25	104
CHEMICAL OXYGEN DEMAND	MG/L	20151901	8.4	7.9	6	85	75	102
AMMONIA AS NITROGEN	MG/L	20151901	<0.03	<0.03	NA	0.54	0.50	108
NITRITE AS NITROGEN	MG/L	20199905	<0.06	<0.06	NA	2.04	2.00	102
NITRATE AS NITROGEN	MG/L	20152903	0.84	0.89	6	1.9	1.0	106
OIL AND GREASE, GRAVIM	MG/L	20153601	3	<2	NA	NA	NA	NA
PH	UNITS	20154201	7.5	7.5	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20152901	0.02	0.02	0	0.27	0.25	100
TOTAL DISSOLVED SOLIDS	MG/L	20152703	40	40	0	NA	NA	NA
TOTAL KJELDAHL NITROGE	MG/L	11200604	<1.0	<1.0	NA	10	10	100
PHOSPHOROUS,TOTAL	MG/L	20157201	<0.05	<0.05	NA	0.48	0.50	96
TOTAL SUSPENDED SOLIDS	MG/L	20152703	20	20	0	NA	NA	NA

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 201529

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	EPA WS 1188	2.00	2.07	1.90-2.10 mg/l
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 201529

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 45

DATE RECEIVED : 01/04/92
REPORT DATE : 01/22/92

PARAMETER	UNITS	03	04
SILVER	MG/L	<0.0002	<0.0002
ARSENIC	MG/L	0.004	0.002
BERYLLIUM	MG/L	<0.0002	<0.0002
CADMIUM	MG/L	0.0009	0.0003
CHROMIUM	MG/L	0.003	<0.001
COPPER	MG/L	0.057	<0.010
HARDNESS	MG/L	45.6	-
MERCURY	MG/L	<0.0002	<0.0002
NICKEL	MG/L	<0.020	0.029
LEAD	MG/L	0.031	0.003
ANTIMONY	MG/L	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001
ZINC	MG/L	0.139	0.138

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 45 ATI I.D. : 201529

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20152704	<0.0002	<0.0002	NA	0.0944	0.1000	94
ARSENIC	MG/L	20151901	0.005	0.005	0	0.054	0.050	98
BERYLLIUM	MG/L	20152603	<0.0002	<0.0002	NA	0.47	0.50	94
CADMIUM	MG/L	20152603	<0.0002	<0.0002	NA	0.49	0.50	98
CHROMIUM	MG/L	20152603	0.002	0.002	0	1.00	1.00	100
COPPER	MG/L	20152903	0.057	0.055	4	0.537	0.500	96
COPPER	MG/L	20156701	1.40	1.41	0.7	1.87	0.500	94
HARDNESS	MG/L	20152703	21.8	21.5	1	NA	NA	NA
MERCURY	MG/L	20155101	<0.0002	<0.0002	NA	0.0050	0.0050	100
NICKEL	MG/L	20152903	<0.020	<0.020	NA	0.976	1.00	98
NICKEL	MG/L	20156701	0.147	0.146	0.7	1.01	1.00	86
LEAD	MG/L	20152803	0.022	0.022	0	0.077	0.050	110
ANTIMONY	MG/L	20152604	<0.003	<0.003	NA	0.014	0.013	108
SELENIUM	MG/L	20152604	<0.0008	<0.0008	NA	0.0111	0.0125	89
THALLIUM	MG/L	20152803	<0.001	<0.001	NA	0.046	0.050	92
ZINC	MG/L	20153203	0.020	0.020	0	0.524	0.500	101

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201529

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152901

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 45	DATE EXTRACTED	: N/A
CLIENT I.D.	: 45	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	TR
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	85
BROMOFLUOROBENZENE (%)	96
TOLUENE-D8 (%)	95

TR - Compound detected at an unquantifiable trace level

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152901

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152902

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/04/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 45	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	100
BROMOFLUOROBENZENE (%)	119
TOLUENE-D8 (%)	119

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20152902

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 201529
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 01/09/92
PROJECT NAME	: COP NPDES 45	DATE ANALYZED	: 01/09/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	TR
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	87
BROMOFLUOROBENZENE (%)	102
TOLUENE-D8 (%)	104

TR - Compound detected at an unquantifiable trace level

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 201529

COMPOUNDS	RESULTS
ACROLEIN	<10
ACRYLONITRILE	<5

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201529

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 45
REF I.D. : 20152801

DATE ANALYZED : 01/11/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	62	124	62	124	0
TRICHLOROETHENE	<1	50	46	92	46	92	0
CHLOROBENZENE	<1	50	54	108	54	108	0
TOLUENE	<1	50	53	106	53	106	0
BENZENE	<1	50	44	88	44	88	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201529

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201529

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152903

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 01/04/92
PROJECT NAME	: COP NPDES 45	DATE EXTRACTED	: 01/06/92
CLIENT I.D.	: 45 (TOTALS)	DATE ANALYZED	: 01/09/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20152903

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	72
2-FLUOROBIPHENYL (%)	76
TERPHENYL (%)	75
PHENOL-D6 (%)	63
2-FLUOROPHENOL (%)	65
2,4,6-TRIBROMOPHENOL (%)	83

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20152903

COMPOUNDS	RESULTS
BUTOXY ETHOXY ETHANOL	700
BUTOXY ETHOXY ETHANOL ACETATE	100

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 201529
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 01/06/92
PROJECT NAME	: COP NPDES 45	DATE ANALYZED	: 01/09/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 201529

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	74
2-FLUOROBIPHENYL (%)	70
TERPHENYL (%)	86
PHENOL-D6 (%)	66
2-FLUOROPHENOL (%)	71
2,4,6-TRIBROMOPHENOL (%)	73

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 201529

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES 45
REF I.D. : 20152403

DATE ANALYZED : 01/09/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	50	30	60	33	66	10
ACENAPHTHENE	<10	50	28	56	28	56	0
2,4-DINITROTOLUENE	<10	50	32	64	31	62	3
PYRENE	<10	50	28	56	30	60	7
N-NITROSO-DI-N-PROPYLAMINE	<10	50	25	50	25	50	0
1,4-DICHLOROBENZENE	<10	50	23	46	28	56	20
PENTACHLOROPHENOL	<50	100	79	79	58	58	31
PHENOL	<10	100	67	67	67	67	0
2-CHLOROPHENOL	<10	100	74	74	67	67	10
4-CHLORO-3-METHYLPHENOL	<10	100	69	69	66	66	4
4-NITROPHENOL	<50	100	73	73	83	83	13

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 201529

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 01-05-92
DATE OF ANALYSIS: 01-05-92 to 01-09-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
20152301	920009	30,000	50,000
20152401	920010	9,000	30,000
20152501	920011	50,000	13,000
20152601	920012	1,700	13,000
20152701	920013	170	2,400
20152801	920014	1,400	13,000
20152901	920015	2,200	24,000

Reviewed by: Frederick A Amalfi Date: 13 Jan 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc.

SR-45

ACCESSION #: 201529

PARAMETER	METHOD	DATE ANALYZED
Silver	272.2	01/16/92
Arsenic	206.2	01/16/92
Beryllium	210.2	01/15/92
Cadmium	213.2	01/09/92
Chromium	218.2	01/16/92
Copper	200.7	01/12/92
Mercury	245.1	01/09/92
Nickel	200.7	01/12/92
Lead	239.2	01/13/92
Antimony	204.2	01/21/92
Selenium	270.3	01/20/92
Thallium	279.2	01/17/92
Zinc	200.7	01/12/92
Cyanide	335.3	01/09/92
COD	410.1	01/08/92
Hardness	2340B	01/13/92
Ammonia	350.2	01/13/92
Nitrite	353.2	01/09/92
Nitrate	353.2	01/20/92
pH		01/08/92
Total Phenols	420.2	01/07/92
TDS	160.1	01/06/92
TKN	351.2	01/14/92
Total Phosphorus	365.3	01/09/92
TSS	160.2	01/06/92
Dissolved Phosphorous	365.3	01/09/92
Oil and Grease	413.1	01/09/92
Fecal Coliform	9221C	01/05/92
Fecal Streptococci	9230B	01/05/92
BOD	405.1	01/06/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession # 201529

PARAMETER	LCS	TRUE VALUE	FOUND	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.25	0.24/0.26	0.21-0.29 mg/l
Oil & Grease	ERA 8033	49	44	37-61 mg/bottle
Phenols	Solutions Plus Lot #910919	0.25	0.25	0.23-0.27 mg/l
COD	ERA 9920	118	107	96-132 mg/l
Ammonia	ERA 9936	0.39	0.41/0.40	0.33-0.43 mg/l
Nitrite	ERA 6505	1.50	1.60	1.43-1.63 mg/l
Nitrate	EPA WS 1188	2.00	2.07	1.90-2.10 mg/l
pH	Fisher Buffer Salt Lot# 884658	6.86	6.86	6.84-6.88 pH Units
TDS	ATI 122091-1	293	256	250-327 mg/l
TKN	ERA 9925	5.2	4.9/5.0	4.2-6.2 mg/l
Total Phosphorous	ERA 9929	5.0	5.1	4.1-5.9 mg/l
TSS	ERA 9940	47.1	38	35-54 mg/l

Analytical Technologies, Inc.

ACCESSION: 201529

LCS VALUES FOR WOODWARD CLYDE CONSULTANTS

UNITS: MG/L

	TRUE VALUE	FOUND	CONTROL LIMITS
Silver	0.050	0.046	0.042-0.058
Arsenic	0.0474	0.044	0.0396-0.0551
Beryllium	0.469	0.492	0.415-0.523
Cadmium	0.494	0.450	0.445-0.543
Chromium	0.978	1.06	0.880-1.08
Copper	0.496	0.481	0.446-0.546
Nickel	0.982	0.971	0.884-1.08
Lead	0.0476	0.049	0.0405-0.0548
Antimony	0.0125	0.011	0.0106-0.0143
Selenium	0.0496	0.040	0.0348-0.0644
Thallium	0.0445	0.033	0.0312-0.0577
Zinc	0.524	0.542	0.400-0.648
Mercury	NA	NA	NA

Note: There is no LCS for Mercury analysis

Analytical Technologies, Inc.

ACCESSION: 201529

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/02/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	64	61-145
TRICHLOROMETHANE	50	54	80-120
1,1,1-TRICHLOROETHANE	50	56	80-120
BROMODICHLOROMETHANE	50	58	80-120
TRICHLOROETHENE	50	54	71-120
TETRACHLOROETHENE	50	52	80-120
CHLOROBENZENE	50	58	75-130
BENZENE	50	42	76-127
METHYLBENZENE	50	56	76-125

Analytical Technologies, Inc.

ACCESSION: 201529

QUALITY CONTROL DATA: 589
METHOD 624 and 8240

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/09/92

	ACTUAL	FOUND	CONTROL LIMITS
1,1-DICHLOROETHENE	50	56	61-145
TRICHLOROMETHANE	50	50	80-120
1,1,1-TRICHLOROETHANE	50	50	80-120
BROMODICHLOROMETHANE	50	49	80-120
TRICHLOROETHENE	50	47	71-120
TETRACHLOROETHENE	50	48	80-120
CHLOROBENZENE	50	51	75-130
BENZENE	50	39	76-127
METHYLBENZENE	50	51	76-125

Analytical Technologies, Inc.

ACCESSION: 201529

QUALITY CONTROL DATA: ERA LOT #524
METHOD 625/8270 Aqueous

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 01/11/92

COMPOUND NAME	ACTUAL	FOUND	CONTROL LIMITS
BENZO(b)FLUORANTHENE	46.8	24	11-74
BIS(2-CHLOROETHYL)ETHER	175	88	21-270
DI-N-BUTYLPHTHALATE	31.5	7	4.8-37
1,2-DICHLOROBENZENE	31.3	15	10-40
FLUORENE	21.2	9	9-26
2-METHYLNAPHTHALENE	60.4	28	27-88
1,2,4-TRICHLOROBENZENE	26.8	16	12-38
2-METHYLPHENOL	51.4	31	15-67
2,4,6-TRICHLOROPHENOL	85.2	52	31-120
PHENOL	122	83	18-140
PENTACHLOROPHENOL	93.9	15	14-170

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 202600

March 17, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038 H 0013

Attention: Patricia Murray

On 02/07/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report has been amended to include acrolein and acrylonitrile by Method 624 analysis and the Laboratory Control Standards for organic and inorganic parameters. Inorganic reagent blank information and abbreviation explanations are included.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Labs. J indicates the value is estimated and below the detection limit.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

Lorraine Davis
QA Coordinator

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 202600

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Fecal Coliform	9221C	02/07/92	NA
Fecal Streptococci	9230B	02/07/92	NA
Cyanide	335.3	02/19/92	<0.01
Oil & Grease	413.1	02/12/92	<2
Phenols	420.2	02/18/92	<0.02

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Methods for Determination of Inorganic Substances in Water and Fluvial Sediments USGS Book 5, 1979

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/25/92

ATI I.D. : 202600

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	21	AQUEOUS	02/07/92
02	TRIP BLANK	AQUEOUS	01/20/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 202600

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/25/92

PARAMETER	UNITS	01
FECAL COLIFORM		800
CYANIDE, TOTAL	MG/L	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	4
PHENOLICS, TOTAL	MG/L	0.02

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES ATI I.D. : 202600

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20299902	<0.01	<0.01	NA	0.24	0.25	96
OIL AND GREASE, GRAVIM	MG/L	20258902	2	2	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20260001	0.02	0.02	0	0.24	0.25	88

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 202600

PARAMETER	QC ID	RESULT	TRUE VALUE	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.26	0.25	0.18-0.27
Total Phenol	Solutions Plus Lot #910919	0.25	0.25	0.22-0.30
Oil & Grease	ERA 8033	41	49	37-61

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260001

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 21	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	30 J
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	105
BROMOFLUOROBENZENE (%)	102
TOLUENE-D8 (%)	109

J = Estimated Value

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260001

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260002

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/20/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	101
BROMOFLUOROBENZENE (%)	114
TOLUENE-D8 (%)	104

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260002

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 202600
PROJECT #	: 9155038 H 0013	DATE EXTRACTED	: 02/10/92
PROJECT NAME	: COP NPDES	DATE ANALYZED	: 02/10/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	88
BROMOFLUOROBENZENE (%)	109
TOLUENE-D8 (%)	99

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 202600

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202600

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20299906

DATE ANALYZED : 02/10/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	53	106	53	106	0
TRICHLOROETHENE	<1	50	47	94	46	92	2
CHLOROBENZENE	<1	50	55	110	55	110	0
TOLUENE	<1	50	53	106	54	108	2
BENZENE	<1	50	51	102	52	104	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 202600

QUALITY CONTROL DATA: 589
METHOD 624

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 02/10/92

	FOUND	ACTUAL	% REC	CONTROL LIMITS
1,1-DICHLOROETHENE	53	50	106	61-145
CHLOROFORM	50	50	100	80-120
1,1,1-TRICHLOROETHANE	48	50	96	80-120
BROMODICHLOROMETHANE	49	50	98	80-120
TRICHLOROETHENE	46	50	92	71-120
TETRACHLOROETHENE	48	50	96	80-120
CHLOROBENZENE	52	50	104	75-130
BENZENE	38	50	76	76-127
TOLUENE	50	50	100	76-125

% SURROGATE RECOVERY
90 % 1,2-DICHLOROETHANE-D4
105 % BROMOFLUOROBENZENE (BFB)
100 % TOLUENE - D8

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 02-07-92
DATE OF ANALYSIS: 02-07-92 to 02-10-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
202600-1	920496	800	9,000
202601-1	920497	3,000	3,000
202602-1	920498	3,000	> 160,000
202603-1	920499	2,200	13,000
202604-1	920500	700	3,000
202605-1	920501	2,400	13,000
202606-1	920502	< 2	< 2

Reviewed by: Frederick A Amalfi Date: 12/16/92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc.
9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 202600

April 1, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038 H 0013

Attention: Patricia Murray

On 02/07/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Enclosed is an amended report for Method 624 Sample ID 21. Acetone is now reported at less than the method detection limit.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Labs. J indicates the value is estimated and below the detection limit.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry for

Elizabeth Proffitt
Senior Project Manager

M. Ryu for

Robert V. Woods
Laboratory Manager

Lorraine Davis

Lorraine Davis
QA Coordinator

RVW:clf
Enclosure

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260001

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 21	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	105
BROMOFLUOROBENZENE (%)	102
TOLUENE-D8 (%)	109

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 202601

March 17, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038 H 0013

Attention: Patricia Murray

On 02/07/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report has been amended to include acrolein and acrylonitrile by Method 624 analysis and the Laboratory Control Standards for organic and organic parameters. Inorganic reagent blank information and abbreviation explanations also are enclosed. The sample had to be diluted 1:2 for the analysis of phenols, due to sediments in the bottle.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Labs.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 202601

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Fecal Coliform	9221C	02/07/92	NA
Fecal Streptococci	9230B	02/07/92	NA
Cyanide	335.3	02/19/92	<0.01
Oil & Grease	413.1	02/12/92	<2
Phenols	420.2	02/18/92	<0.02

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Methods for Determination of Inorganic Substances in Water and Fluvial Sediments USGS Book 5, 1979

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/25/92

ATI I.D. : 202601

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	05	AQUEOUS	02/07/92
02	TRIP BLANK	AQUEOUS	01/20/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 202601

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/25/92

PARAMETER	UNITS	01
FECAL COLIFORM		3000
CYANIDE, TOTAL	MG/L	0.04
OIL AND GREASE, GRAVIMETRIC	MG/L	5
PHENOLICS, TOTAL	MG/L	<0.04

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

ATI I.D. : 202601

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20299902	<0.01	<0.01	NA	0.24	0.25	96
OIL AND GREASE, GRAVIM	MG/L	20258902	2	2	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20260501	0.03	0.03	0	0.28	0.25	100

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 202601

PARAMETER	QC ID	RESULT	TRUE VALUE	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.26	0.25	0.18-0.27
Total Phenol	Solutions Plus Lot #910919	0.25	0.25	0.22-0.30
Oil & Grease	ERA 8033	41	49	37-61

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260101

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 05	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	103
BROMOFLUOROBENZENE (%)	116
TOLUENE-D8 (%)	105

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260101

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260102

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/20/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	104
BROMOFLUOROBENZENE (%)	116
TOLUENE-D8 (%)	106

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260102

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 202601
PROJECT #	: 9155038 H 0013	DATE EXTRACTED	: 02/10/92
PROJECT NAME	: COP NPDES	DATE ANALYZED	: 02/10/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	88
BROMOFLUOROBENZENE (%)	109
TOLUENE-D8 (%)	99

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 202601

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202601

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20299906

DATE ANALYZED : 02/10/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	53	106	53	106	0
TRICHLOROETHENE	<1	50	47	94	46	92	2
CHLOROBENZENE	<1	50	55	110	55	110	0
TOLUENE	<1	50	53	106	54	108	2
BENZENE	<1	50	51	102	52	104	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 202601

QUALITY CONTROL DATA: 589
METHOD 624

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 02/10/92

	FOUND	ACTUAL	% REC	CONTROL LIMITS
1,1-DICHLOROETHENE	53	50	106	61-145
CHLOROFORM	50	50	100	80-120
1,1,1-TRICHLOROETHANE	48	50	96	80-120
BROMODICHLOROMETHANE	49	50	98	80-120
TRICHLOROETHENE	46	50	92	71-120
TETRACHLOROETHENE	48	50	96	80-120
CHLOROBENZENE	52	50	104	75-130
BENZENE	38	50	76	76-127
TOLUENE	50	50	100	76-125

% SURROGATE RECOVERY
90 % 1,2-DICHLOROETHANE-D4
105 % BROMOFLUOROBENZENE (BFB)
100 % TOLUENE - D8

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 02-07-92
DATE OF ANALYSIS: 02-07-92 to 02-10-92
SAMPLE TYPE: Water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
202600-1	920496	800	9,000
202601-1	920497	3,000	3,000
202602-1	920498	3,000	> 160,000
202603-1	920499	2,200	13,000
202604-1	920500	700	3,000
202605-1	920501	2,400	13,000
202606-1	920502	< 2	< 2

Reviewed by: Frederick A Amalfi Date: 12/6/92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical **Technologies,** Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 202602

March 17, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038 H 0013

Attention: Patricia Murray

On 02/07/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report is being revised to include inorganic reagent blank information and explanations of any abbreviations.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Consulting and Testing.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 202602

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Fecal Coliform	9221C	02/07/92	NA
Fecal Streptococci	9230B	02/07/92	NA
Cyanide	335.3	02/19/92	<0.01
Oil & Grease	413.1	02/12/92	<2
Phenols	420.2	02/18/92	<0.02

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Methods for Determination of Inorganic Substances in Water and Fluvial Sediments USGS Book 5, 1979

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/24/92

ATI I.D. : 202602

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	03	AQUEOUS	02/07/92
02	TRIP BLANK	AQUEOUS	01/20/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 202602

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/24/92

PARAMETER	UNITS	01
FECAL COLIFORM		3000
CYANIDE, TOTAL	MG/L	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	7
PHENOLICS, TOTAL	MG/L	<0.04

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES ATI I.D. : 202602

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20299904	<0.01	<0.01	NA	0.25	0.25	100
OIL AND GREASE, GRAVIM	MG/L	20258902	2	2	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20260501	0.03	0.03	0	0.28	0.25	100

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 202602

PARAMETER	QC ID	RESULT	TRUE VALUE	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.22	0.25	0.18-0.27
Total Phenol	Solutions Plus Lot #910919	0.25	0.25	0.22-0.30
Oil & Grease	ERA 8033	41	49	37-61

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260201

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 03	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	70
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	113
BROMOFLUOROBENZENE (%)	106
TOLUENE-D8 (%)	112

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260201

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260202

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/20/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	111
BROMOFLUOROBENZENE (%)	107
TOLUENE-D8 (%)	113

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260202

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 202602
PROJECT #	: 9155038 H 0013	DATE EXTRACTED	: 02/10/92
PROJECT NAME	: COP NPDES	DATE ANALYZED	: 02/10/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	88
BROMOFLUOROBENZENE (%)	109
TOLUENE-D8 (%)	99

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 202602

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202602

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20299906

DATE ANALYZED : 02/10/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	53	106	53	106	0
TRICHLOROETHENE	<1	50	47	94	46	92	2
CHLOROBENZENE	<1	50	55	110	55	110	0
TOLUENE	<1	50	53	106	54	108	2
BENZENE	<1	50	51	102	52	104	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 202602

QUALITY CONTROL DATA: 589
METHOD 624

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 02/10/92

	FOUND	ACTUAL	% REC	CONTROL LIMITS
1,1-DICHLOROETHENE	53	50	106	61-145
CHLOROFORM	50	50	100	80-120
1,1,1-TRICHLOROETHANE	48	50	96	80-120
BROMODICHLOROMETHANE	49	50	98	80-120
TRICHLOROETHENE	46	50	92	71-120
TETRACHLOROETHENE	48	50	96	80-120
CHLOROBENZENE	52	50	104	75-130
BENZENE	38	50	76	76-127
TOLUENE	50	50	100	76-125

% SURROGATE RECOVERY
90 % 1,2-DICHLOROETHANE-D4
105 % BROMOFLUOROBENZENE (BFB)
100 % TOLUENE - D8

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 02-07-92
DATE OF ANALYSIS: 02-07-92 to 02-10-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
202600-1	920496	800	9,000
202601-1	920497	3,000	3,000
202602-1	920498	3,000	> 160,000
202603-1	920499	2,200	13,000
202604-1	920500	700	3,000
202605-1	920501	2,400	13,000
202606-1	920502	< 2	< 2

Reviewed by: Frederick A Amalfi Date: 12/16/92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical **Technologies,** Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 202603

March 17, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038 H 0013

Attention: Patricia Murray

On 02/07/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report is being revised to include inorganic reagent blank information and explanations of any abbreviations.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Consulting and Testing.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 202603

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Fecal Coliform	9221C	02/07/92	NA
Fecal Streptococci	9230B	02/07/92	NA
Cyanide	335.3	02/19/92	<0.01
Oil & Grease	413.1	02/12/92	<2
Phenols	420.2	02/18/92	<0.02

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Methods for Determination of Inorganic Substances in Water and Fluvial Sediments USGS Book 5, 1979

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/24/92

ATI I.D. : 202603

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	IB-8	AQUEOUS	02/07/92
02	TRIP BLANK	AQUEOUS	01/20/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 202603

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/24/92

PARAMETER	UNITS	01
FECAL COLIFORM		2200
CYANIDE, TOTAL	MG/L	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	4
PHENOLICS, TOTAL	MG/L	<0.02

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES ATI I.D. : 202603

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20299904	<0.01	<0.01	NA	0.25	0.25	100
OIL AND GREASE, GRAVIM	MG/L	20258902	2	2	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20260501	0.03	0.03	0	0.28	0.25	100

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 202603

PARAMETER	QC ID	RESULT	TRUE VALUE	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.22	0.25	0.18-0.27
Total Phenol	Solutions Plus Lot #910919	0.25	0.25	0.22-0.30
Oil & Grease	ERA 8033	41	49	37-61

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260301

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: IB-8	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	103
BROMOFLUOROBENZENE (%)	106
TOLUENE-D8 (%)	106

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260301

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260302

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/20/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	104
BROMOFLUOROBENZENE (%)	109
TOLUENE-D8 (%)	103

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260302

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 202603
PROJECT #	: 9155038 H 0013	DATE EXTRACTED	: 02/10/92
PROJECT NAME	: COP NPDES	DATE ANALYZED	: 02/10/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	94
BROMOFLUOROBENZENE (%)	95
TOLUENE-D8 (%)	98

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 202603

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202603

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20260601

DATE ANALYZED : 02/10/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	47	94	49	98	4
TRICHLOROETHENE	<1	50	45	90	45	90	0
CHLOROBENZENE	<1	50	49	98	49	98	0
TOLUENE	<1	50	48	96	50	100	4
BENZENE	<1	50	43	86	42	84	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 202603

QUALITY CONTROL DATA: 589
METHOD 624

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 02/10/92

	FOUND	ACTUAL	% REC	CONTROL LIMITS
1,1-DICHLOROETHENE	53	50	106	61-145
CHLOROFORM	50	50	100	80-120
1,1,1-TRICHLOROETHANE	48	50	96	80-120
BROMODICHLOROMETHANE	49	50	98	80-120
TRICHLOROETHENE	46	50	92	71-120
TETRACHLOROETHENE	48	50	96	80-120
CHLOROBENZENE	52	50	104	75-130
BENZENE	38	50	76	76-127
TOLUENE	50	50	100	76-125

% SURROGATE RECOVERY
90 % 1,2-DICHLOROETHANE-D4
105 % BROMOFLUOROBENZENE (BFB)
100 % TOLUENE - D8

AQUATIC CONSULTING & TESTING, INC.

Analytical Technologies, Inc.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 02-07-92
DATE OF ANALYSIS: 02-07-92 to 02-10-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
202600-1	920496	800	9,000
202601-1	920497	3,000	3,000
202602-1	920498	3,000	> 160,000
202603-1	920499	2,200	13,000
202604-1	920500	700	3,000
202605-1	920501	2,400	13,000
202606-1	920502	< 2	< 2

Reviewed by: Frederick A Amalfi Date: 12/16/92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 202606

March 17, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038 H 0013

Attention: Patricia Murray

On 02/07/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report has been amended to include acrolein and acrylonitrile by Method 624 analysis and the Laboratory Control Standards for organic and inorganic parameters. Inorganic reagent blank information and abbreviation explanations are included.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Labs.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 202606

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Fecal Coliform	9221C	02/07/92	NA
Fecal Streptococci	9230B	02/07/92	NA
Cyanide	335.3	02/19/92	<0.01
Oil & Grease	413.1	02/12/92	<2
Phenols	420.2	02/18/92	<0.02

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Methods for Determination of Inorganic Substances in Water and Fluvial Sediments USGS Book 5, 1979

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/25/92

ATI I.D. : 202606

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	145	AQUEOUS	02/07/92
02	TRIP BLANK	AQUEOUS	01/20/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 202606

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/25/92

PARAMETER	UNITS	01
FECAL COLIFORM		<2
CYANIDE, TOTAL	MG/L	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	<2
PHENOLICS, TOTAL	MG/L	<0.02

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES ATI I.D. : 202606

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20264701	<0.01	<0.01	NA	0.25	0.25	100
OIL AND GREASE, GRAVIM	MG/L	20258902	2	2	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20270501	<0.02	<0.02	NA	0.25	0.25	100

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 202606

PARAMETER	QC ID	RESULT	TRUE VALUE	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.22	0.25	0.18-0.27
Total Phenol	Solutions Plus Lot #910919	0.25	0.25	0.22-0.30
Oil & Grease	ERA 8033	41	49	37-61

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260601

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 145	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	113
BROMOFLUOROBENZENE (%)	111
TOLUENE-D8 (%)	113

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260601

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260602

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/20/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	108
BROMOFLUOROBENZENE (%)	104
TOLUENE-D8 (%)	107

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260602

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 202606
PROJECT #	: 9155038 H 0013	DATE EXTRACTED	: 02/10/92
PROJECT NAME	: COP NPDES	DATE ANALYZED	: 02/10/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	94
BROMOFLUOROBENZENE (%)	95
TOLUENE-D8 (%)	98

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 202606

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202606

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20260601

DATE ANALYZED : 02/10/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	47	94	49	98	4
TRICHLOROETHENE	<1	50	45	90	45	90	0
CHLOROBENZENE	<1	50	49	98	49	98	0
TOLUENE	<1	50	48	96	50	100	4
BENZENE	<1	50	43	86	42	84	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 202606

QUALITY CONTROL DATA: 589
METHOD 624

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 02/10/92

	FOUND	ACTUAL	% REC	CONTROL LIMITS
1,1-DICHLOROETHENE	53	50	106	61-145
CHLOROFORM	50	50	100	80-120
1,1,1-TRICHLOROETHANE	48	50	96	80-120
BROMODICHLOROMETHANE	49	50	98	80-120
TRICHLOROETHENE	46	50	92	71-120
TETRACHLOROETHENE	48	50	96	80-120
CHLOROBENZENE	52	50	104	75-130
BENZENE	38	50	76	76-127
TOLUENE	50	50	100	76-125

% SURROGATE RECOVERY
90 % 1,2-DICHLOROETHANE-D4
105 % BROMOFLUOROBENZENE (BFB)
100 % TOLUENE - D8

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 02-07-92
DATE OF ANALYSIS: 02-07-92 to 02-10-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
202600-1	920496	800	9,000
202601-1	920497	3,000	3,000
202602-1	920498	3,000	> 160,000
202603-1	920499	2,200	13,000
202604-1	920500	700	3,000
202605-1	920501	2,400	13,000
202606-1	920502	< 2	< 2

Reviewed by: Frederick A Amalfi Date: 12/16/92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 202605

February 26, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038 H 0013

Attention: Patricia Murray

On 02/07/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Consulting and Testing. J indicates the value is estimated and below the detection limit.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Tyer for
Elizabeth Proffitt
Senior Project Manager

Lorraine Davis for
Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 202605

PARAMETER	METHOD	DATE ANALYZED
Fecal Coliform	9221C	02/07/92
Fecal Streptococci	9230B	02/07/92
Cyanide	335.3	02/19/92
Oil & Grease	413.1	02/12/92
Phenols	420.2	02/18/92

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Methods for Determination of Inorganic Substances in Water and Fluvial Sediments USGS Book 5, 1979

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/24/92

ATI I.D. : 202605

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	45	AQUEOUS	02/07/92
02	TRIP BLANK	AQUEOUS	01/20/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 202605

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/24/92

PARAMETER	UNITS	01
FECAL COLIFORM		2400
CYANIDE, TOTAL	MG/L	0.03
OIL AND GREASE, GRAVIMETRIC	MG/L	4
PHENOLICS, TOTAL	MG/L	0.03

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES ATI I.D. : 202605

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20299904	<0.01	<0.01	NA	0.25	0.25	100
OIL AND GREASE, GRAVIM	MG/L	20258902	2	2	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20260501	0.03	0.03	0	0.28	0.25	100

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 202605

PARAMETER	QC ID	RESULT	TRUE VALUE	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.22	0.25	0.18-0.27
Total Phenol	Solutions Plus Lot #910919	0.25	0.25	0.22-0.30
Oil & Grease	ERA 8033	41	49	37-61

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260501

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 45	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	30 J
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	104
BROMOFLUOROBENZENE (%)	102
TOLUENE-D8 (%)	113

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260501

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260502

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/20/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	101
BROMOFLUOROBENZENE (%)	97
TOLUENE-D8 (%)	107

Analytical **Technologies,** Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260502

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

		ATI I.D.	: 202605
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 02/10/92
PROJECT #	: 9155038 H 0013	DATE ANALYZED	: 02/10/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	94
BROMOFLUOROBENZENE (%)	95
TOLUENE-D8 (%)	98

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 202605

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202605

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20260601

DATE ANALYZED : 02/10/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	47	94	49	98	4
TRICHLOROETHENE	<1	50	45	90	45	90	0
CHLOROBENZENE	<1	50	49	98	49	98	0
TOLUENE	<1	50	48	96	50	100	4
BENZENE	<1	50	43	86	42	84	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 202605

QUALITY CONTROL DATA: 589
METHOD 624

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 02/10/92

	FOUND	ACTUAL	% REC	CONTROL LIMITS
1,1-DICHLOROETHENE	53	50	106	61-145
CHLOROFORM	50	50	100	80-120
1,1,1-TRICHLOROETHANE	48	50	96	80-120
BROMODICHLOROMETHANE	49	50	98	80-120
TRICHLOROETHENE	46	50	92	71-120
TETRACHLOROETHENE	48	50	96	80-120
CHLOROBENZENE	52	50	104	75-130
BENZENE	38	50	76	76-127
TOLUENE	50	50	100	76-125

% SURROGATE RECOVERY
90 % 1,2-DICHLOROETHANE-D4
105 % BROMOFLUOROBENZENE (BFB)
100 % TOLUENE - D8

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 02-07-92
DATE OF ANALYSIS: 02-07-92 to 02-10-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
202600-1	920496	800	9,000
202601-1	920497	3,000	3,000
202602-1	920498	3,000	> 160,000
202603-1	920499	2,200	13,000
202604-1	920500	700	3,000
202605-1	920501	2,400	13,000
202606-1	920502	< 2	< 2

Reviewed by: Frederick A Amalfi Date: 12/16/92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 202604

April 1, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038 H 0013

Attention: Patricia Murray

On 02/07/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Enclosed is an amended report for method 624 sample ID IB-11. Acetone is now reported at less than the method detection limit.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Consulting and Testing. J indicates the value is estimated and below the detection limit.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry for
Elizabeth Proffitt
Senior Project Manager

Lorraine Davis for
Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260401

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: IB-11	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	102
BROMOFLUOROBENZENE (%)	103
TOLUENE-D8 (%)	107

Analytical **Technologies,** Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. **202604**

March 17, 1992

IB-11
Feb. 6, 7, 8
grab

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038

Attention: Patricia Murray

On **02/07/92**, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report is being revised to include inorganic reagent blank information and explanations of any abbreviations.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Consulting and Testing. J indicates the value is estimated and below the detection limit.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 202604

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK (mg/l)
Fecal Coliform	9221C	02/07/92	NA
Fecal Streptococci	9230B	02/07/92	NA
Cyanide	335.3	02/19/92	<0.01
Oil & Grease	413.1	02/12/92	<2
Phenols	420.2	02/18/92	<0.02

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

Standard Methods for the Examination of Water and Wastewater, 17th Edition

SW 846, 3'rd Edition

Methods for Determination of Inorganic Substances in Water and Fluvial Sediments USGS Book 5, 1979

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/24/92

ATI I.D. : 202604

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	IB-11	AQUEOUS	02/07/92
02	TRIP BLANK	AQUEOUS	01/20/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 202604

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/07/92
REPORT DATE : 02/24/92

PARAMETER	UNITS	01
FECAL COLIFORM		700
CYANIDE, TOTAL	MG/L	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	4
PHENOLICS, TOTAL	MG/L	<0.02

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES ATI I.D. : 202604

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20299904	<0.01	<0.01	NA	0.25	0.25	100
OIL AND GREASE, GRAVIM	MG/L	20258902	2	2	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	20260501	0.03	0.03	0	0.28	0.25	100

NA = Not Applicable

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession # 202604

PARAMETER	QC ID	RESULT	TRUE VALUE	CONTROL LIMITS
Cyanide	Solutions Plus Lot #910315	0.22	0.25	0.18-0.27
Total Phenol	Solutions Plus Lot #910919	0.25	0.25	0.22-0.30
Oil & Grease	ERA 8033	41	49	37-61

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260401

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: IB-11	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	40 J
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	102
BROMOFLUOROBENZENE (%)	103
TOLUENE-D8 (%)	107

J = Estimated Value

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260401

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260402

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 01/20/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	101
BROMOFLUOROBENZENE (%)	110
TOLUENE-D8 (%)	106

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20260402

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 202604
PROJECT #	: 9155038 H 0013	DATE EXTRACTED	: 02/10/92
PROJECT NAME	: COP NPDES	DATE ANALYZED	: 02/10/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	94
BROMOFLUOROBENZENE (%)	95
TOLUENE-D8 (%)	98

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX ATI I.D : 202604

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202604

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20260601

DATE ANALYZED : 02/10/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	47	94	49	98	4
TRICHLOROETHENE	<1	50	45	90	45	90	0
CHLOROBENZENE	<1	50	49	98	49	98	0
TOLUENE	<1	50	48	96	50	100	4
BENZENE	<1	50	43	86	42	84	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 202604

QUALITY CONTROL DATA: 589
METHOD 624

CLIENT: Woodward Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 02/10/92

	FOUND	ACTUAL	% REC	CONTROL LIMITS
1,1-DICHLOROETHENE	53	50	106	61-145
CHLOROFORM	50	50	100	80-120
1,1,1-TRICHLOROETHANE	48	50	96	80-120
BROMODICHLOROMETHANE	49	50	98	80-120
TRICHLOROETHENE	46	50	92	71-120
TETRACHLOROETHENE	48	50	96	80-120
CHLOROBENZENE	52	50	104	75-130
BENZENE	38	50	76	76-127
TOLUENE	50	50	100	76-125

% SURROGATE RECOVERY
90 % 1,2-DICHLOROETHANE-D4
105 % BROMOFLUOROBENZENE (BFB)
100 % TOLUENE - D8

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 02-07-92
DATE OF ANALYSIS: 02-07-92 to 02-10-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
202600-1	920496	800	9,000
202601-1	920497	3,000	3,000
202602-1	920498	3,000	> 160,000
202603-1	920499	2,200	13,000
202604-1	920500	700	3,000
202605-1	920501	2,400	13,000
202606-1	920502	< 2	< 2

Reviewed by: Frederick A Amalfi Date: 12/6/92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 202605

APR 16 1992
WOODWARD-CLYDE
PHOENIX ARIZONA

April 15, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

SR-45
Feb. 6,7,8
grab
volatile page
replacement

Project Name/Number: COP NPDES/9155038 H 0C

Attention: Patricia Murray

On 02/07/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Enclosed is an amended report for Method 624. The acetone is now reported at less than the method detection limit.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Consulting and Testing. J indicates the value is estimated and below the detection limit.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry for
Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20260501

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/07/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 45	DATE ANALYZED	: 02/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	104
BROMOFLUOROBENZENE (%)	102
TOLUENE-D8 (%)	113

J = Estimated Value

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 202633

March 4, 1992

Woodward Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038 H 0013

Attention: Patricia Murray

On 02/08/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

BOD analyses were performed by Aquatic Consulting and Testing.

For Method 608, samples 05 and 11 had to be diluted due to the presence of extraneous (unidentified) peaks in the chromatogram. For Method 615, samples 05, 11, and 33 were all diluted due to the same extraneous peaks.

The duplicate results for copper and zinc were outside ATI criteria for sample 08. Not enough sample was available for reanalysis. Generally the RPD should be 10% or less.

There is no reportable LCS for the analysis of Mercury or Method 614.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

ACCESSION #: 202633

PARAMETER	METHOD	DATE ANALYZED
BOD	405.1	02/09/92
COD	410.1	02/12/92
Total Phosphorus	365.3	02/13/92
Dissolved Phosphorus	365.3	02/14/92
Hardness	2340B	02/19/92
Ammonia	350.2	02/18/92
Nitrite	353.2	02/17/92
Nitrate	353.2	02/17/92
pH	150.1	02/13/92
TDS	160.1	02/11/92
TKN (20263303)	351.2	02/14/92
TKN (20263301)	351.2	02/19/92
TSS	160.2	02/13/92
Silver	272.2	02/19/92
Arsenic	206.2	02/18/92
Beryllium	210.2	02/21/92
Cadmium	213.2	02/21/92
Chromium	218.2	02/24/92
Copper	200.7	02/19/92
Mercury	245.1	02/18/92
Nickel	200.7	02/19/92
Lead	239.2	02/19/92
Antimony	204.2	02/20/92
Selenium	200.7	02/17/92
Thallium	279.2	02/17/92
Zinc	200.7	02/19/92

Reference(s): Methods for Chemical Analysis of Water and Wastes
March 1983 EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/08/92
REPORT DATE : 02/25/92

ATI I.D. : 202633

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	05 (TOTALS)	AQUEOUS	02/07/92
02	05 (DISSOLVED)	AQUEOUS	02/07/92
03	11 (TOTALS)	AQUEOUS	02/07/92
04	11 (DISSOLVED)	AQUEOUS	02/07/92
05	33 (TOTALS)	AQUEOUS	02/07/92
06	33 (DISSOLVED)	AQUEOUS	02/07/92
07	08 (TOTALS)	AQUEOUS	02/07/92
08	08 (DISSOLVED)	AQUEOUS	02/07/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	8

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 202633

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/08/92
REPORT DATE : 02/25/92

PARAMETER	UNITS	01	03	05	07
BIOLOGICAL OXYGEN DEMAND	MG/L	15	14	10	12
CHEMICAL OXYGEN DEMAND	MG/L	110	110	71	110
PHOSPHORUS, DISSOLVED	MG/L	0.17	0.24	-	-
AMMONIA AS NITROGEN	MG/L	0.77	0.90	-	-
NITRITE AS NITROGEN	MG/L	<0.06	<0.06	-	-
NITRATE AS NITROGEN	MG/L	0.57	0.87	-	-
PH	UNITS	6.5	7.0	7.3	7.2
TOTAL DISSOLVED SOLIDS	MG/L	90	190	360	150
TOTAL KJELDAHL NITROGEN	MG/L	2.2	2.8	-	-
PHOSPHORUS, TOTAL	MG/L	0.21	0.25	-	-
TOTAL SUSPENDED SOLIDS	MG/L	50	90	110	260

Analytical Technologies, Inc.

Accession #202633

PARAMETER	QC ID	TRUE VALUE	RESULT	CONTROL LIMITS
pH	Fisher Buffer Salt Lot #884658	6.86	6.86	6.84 - 6.88
TDS	ATI 110691-1	293	302	250 - 327
TSS	ERA 489 #1	31.5	26	24 - 36
COD	ERA 9920	118	114	96 - 134
Nitrate	EPA 378	2.20	2.15/2.13	2.03 - 2.34
Nitrite	ATI KNO_2 Stock	1.50	1.57/1.61	1.43 - 1.63
Dissolved Phosphorus	ERA 9929	5.0	4.5	4.1 - 5.9
Total Phosphorus	ERA 9929	5.0	4.5	4.1 - 5.9
TKN	ERA 9925	5.2	5.0/5.2	4.2 - 6.2
Ammonia	ERA 9934	6.00	6.05/5.98	4.95 - 6.70

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 202633

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/08/92
REPORT DATE : 02/25/92

PARAMETER	UNITS	01	02	03	04	05
SILVER	MG/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
ARSENIC	MG/L	0.002	<0.001	0.002	0.001	0.003
BERYLLIUM	MG/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
CADMIUM	MG/L	0.0004	<0.0002	0.0003	<0.0002	0.0003
CHROMIUM	MG/L	0.002	0.001	0.002	<0.001	0.002
COPPER	MG/L	0.022	<0.010	0.023	<0.010	0.023
HARDNESS	MG/L	27.8	-	87.0	-	120
MERCURY	MG/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
NICKEL	MG/L	<0.020	<0.020	<0.020	<0.020	<0.020
LEAD	MG/L	0.019	0.005	0.012	<0.001	0.025
ANTIMONY	MG/L	<0.003	<0.003	<0.003	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001	<0.001	<0.001	<0.001
ZINC	MG/L	0.103	0.053	0.068	0.012	0.084

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 202633

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 02/08/92
REPORT DATE : 02/25/92

PARAMETER	UNITS	06	07	08
SILVER	MG/L	<0.0002	<0.0002	<0.0002
ARSENIC	MG/L	0.002	0.003	0.002
BERYLLIUM	MG/L	<0.0002	0.0005	<0.0002
CADMIUM	MG/L	<0.0002	0.0010	0.0002
CHROMIUM	MG/L	<0.001	0.007	0.002
COPPER	MG/L	<0.010	0.042	0.019
HARDNESS	MG/L	-	59.7	-
MERCURY	MG/L	<0.0002	<0.0002	<0.0002
NICKEL	MG/L	<0.020	0.023	<0.020
LEAD	MG/L	0.001	0.058	0.007
ANTIMONY	MG/L	<0.003	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001	<0.001
ZINC	MG/L	0.025	0.205	0.036

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES ATI I.D. : 202633

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20263301	<0.0002	<0.0002	NA	MSA	CC =	.999
ARSENIC	MG/L	20263301	0.002	0.002	0	0.052	0.050	100
BERYLLIUM	MG/L	20263301	<0.0002	<0.0002	NA	MSA	CC=	.999
CADMIUM	MG/L	20263301	0.0004	0.0004	0	0.0488	0.0500	97
CHROMIUM	MG/L	20263301	0.002	0.002	0	MSA	CC=	.999
COPPER	MG/L	20263701	0.054	0.054	0	0.514	0.500	92
COPPER	MG/L	20263307	0.042	0.047	11*	0.504	0.500	92
HARDNESS	MG/L	20263301	27.8	27.8	0	NA	NA	NA
MERCURY	MG/L	20270301	<0.0002	<0.0002	NA	0.0050	0.0050	100
NICKEL	MG/L	20263307	0.023	0.024	4	0.927	1.00	90
LEAD	MG/L	20263301	0.019	0.018	5	0.066	0.050	94
ANTIMONY	MG/L	20263301	<0.003	<0.003	NA	0.011	0.012	92
SELENIUM	MG/L	20263301	<0.0008	<0.0008	NA	0.0086	0.0125	69
THALLIUM	MG/L	20263301	<0.001	<0.001	NA	0.046	0.050	92
ZINC	MG/L	20263701	0.250	0.251	0.4	0.698	0.500	90
ZINC	MG/L	20263307	0.205	0.240	16*	0.658	0.500	91

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

* Result out of limits due to sample matrix interference

Analytical Technologies, Inc.

ACCESSION #: 202633

	TRUE VALUE	FOUND	CONTROL RANGE
Silver	50.0	47.2	42.5 - 57.6
Arsenic	47.4	48.1	39.6 - 55.1
Beryllium	50.0	49.1	40.0 - 60.0
Cadmium	50.0	45.8	40.0 - 60.0
Chromium	100.0	87.2	80.0 - 120.0
Copper	496	466	446 - 546
Nickel	982	939	884 - 1080
Lead	47.6	49.5	40.5 - 54.8
Antimony	12.5	13.0	10.0 - 15.0
Selenium	12.5	14.7	10.0 - 15.0
Thallium	44.5	46.7	31.2 - 57.7
Zinc	524	466	400 - 648

Analytical **Technologies,** Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20263301

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/11/92
CLIENT I.D.	: 05 (TOTALS)	DATE ANALYZED	: 02/18/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
ALDRIN	<0.25
ALPHA BHC	<0.25
BETA BHC	<0.25
GAMMA BHC (LINDANE)	<0.25
DELTA BHC	<0.25
ALPHA-CHLORDANE	<2.5
4,4'-DDD	<0.5
4,4'-DDE	<0.5
4,4'-DDT	<0.5
DIELDRIN	<0.5
ENDOSULFAN I	<0.25
ENDOSULFAN II	<0.5
ENDOSULFAN SULFATE	<0.5
ENDRIN	<0.5
ENDRIN ALDEHYDE	<0.5
ENDRIN KETONE	<0.5
HEPTACHLOR	<0.25
HEPTACHLOR EPOXIDE	<0.25
METHOXYCHLOR	<2.5
TOXAPHENE	<5.0
AROCLOR 1016	<2.5
AROCLOR 1221	<2.5
AROCLOR 1232	<2.5
AROCLOR 1242	<2.5
AROCLOR 1248	<2.5
AROCLOR 1254	<2.5
AROCLOR 1260	<2.5
GAMMA-CHLORDANE	<2.5

SURROGATE PERCENT RECOVERIES

DBC (%)	88

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20263303

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/11/92
CLIENT I.D.	: 11 (TOTALS)	DATE ANALYZED	: 02/18/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
ALDRIN	<0.25
ALPHA BHC	<0.25
BETA BHC	<0.25
GAMMA BHC (LINDANE)	<0.25
DELTA BHC	<0.25
ALPHA-CHLORDANE	<2.5
4,4'-DDD	<0.5
4,4'-DDE	<0.5
4,4'-DDT	<0.5
DIELDRIN	<0.5
ENDOSULFAN I	<0.25
ENDOSULFAN II	<0.5
ENDOSULFAN SULFATE	<0.5
ENDRIN	<0.5
ENDRIN ALDEHYDE	<0.5
ENDRIN KETONE	<0.5
HEPTACHLOR	<0.25
HEPTACHLOR EPOXIDE	<0.25
METHOXYCHLOR	<2.5
TOXAPHENE	<5.0
AROCLOR 1016	<2.5
AROCLOR 1221	<2.5
AROCLOR 1232	<2.5
AROCLOR 1242	<2.5
AROCLOR 1248	<2.5
AROCLOR 1254	<2.5
AROCLOR 1260	<2.5
GAMMA-CHLORDANE	<2.5

SURROGATE PERCENT RECOVERIES

DBC (%)	64

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20263305

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/11/92
CLIENT I.D.	: 33 (TOTALS)	DATE ANALYZED	: 02/18/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 2

COMPOUNDS	RESULTS
ALDRIN	<0.10
ALPHA BHC	<0.10
BETA BHC	<0.10
GAMMA BHC (LINDANE)	<0.10
DELTA BHC	<0.10
ALPHA-CHLORDANE	<1.0
4,4'-DDD	<0.2
4,4'-DDE	<0.2
4,4'-DDT	<0.2
DIELDRIN	<0.2
ENDOSULFAN I	<0.10
ENDOSULFAN II	<0.2
ENDOSULFAN SULFATE	<0.2
ENDRIN	<0.2
ENDRIN ALDEHYDE	<0.2
ENDRIN KETONE	<0.2
HEPTACHLOR	<0.10
HEPTACHLOR EPOXIDE	<0.10
METHOXYCHLOR	<1.0
TOXAPHENE	<2.0
AROCLOR 1016	<1.0
AROCLOR 1221	<1.0
AROCLOR 1232	<1.0
AROCLOR 1242	<1.0
AROCLOR 1248	<1.0
AROCLOR 1254	<1.0
AROCLOR 1260	<1.0
GAMMA-CHLORDANE	<1.0

SURROGATE PERCENT RECOVERIES

DBC (%)	58

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 202633
PROJECT #	: 9155038 H 0013	DATE EXTRACTED	: 02/11/92
PROJECT NAME	: COP NPDES	DATE ANALYZED	: 02/18/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
ALDRIN	<0.05
ALPHA BHC	<0.05
BETA BHC	<0.05
GAMMA BHC (LINDANE)	<0.05
DELTA BHC	<0.05
ALPHA-CHLORDANE	<0.5
4,4'-DDD	<0.1
4,4'-DDE	<0.1
4,4'-DDT	<0.1
DIELDRIN	<0.1
ENDOSULFAN I	<0.05
ENDOSULFAN II	<0.1
ENDOSULFAN SULFATE	<0.1
ENDRIN	<0.1
ENDRIN ALDEHYDE	<0.1
ENDRIN KETONE	<0.1
HEPTACHLOR	<0.05
HEPTACHLOR EPOXIDE	<0.05
METHOXYCHLOR	<0.5
TOXAPHENE	<1.0
AROCLOR 1016	<0.5
AROCLOR 1221	<0.5
AROCLOR 1232	<0.5
AROCLOR 1242	<0.5
AROCLOR 1248	<0.5
AROCLOR 1254	<0.5
AROCLOR 1260	<0.5
GAMMA-CHLORDANE	<0.5

SURROGATE PERCENT RECOVERIES

DBC (%)	90

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202633

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20299911

DATE ANALYZED : 02/18/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
GAMMA BHC	<0.05	2.00	1.93	96	1.95	98	1
HEPTACHLOR	<0.05	2.00	1.82	91	1.83	92	1
ALDRIN	<0.05	2.00	1.81	90	1.77	88	2
DIELDRIN	<0.1	2.0	1.7	85	1.7	85	0
ENDRIN	<0.1	2.0	1.9	95	1.9	95	0
DDT	<0.1	2.0	1.7	85	1.8	90	6

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

Accession No. 202633

EPA Method 608

Compound	True Value (ug/l)	Found (ug/l)	Control Limits (ug/l)
Aldrin	0.942	0.885	0.40 - 1.1
gamma-BHC (Lindane)	4.67	4.40	1.5 - 5.9
4,4'-DDD	0.607	0.691	0.19 - 0.86
4,4'-DDE	2.02	1.98	0.60 - 2.9
4,4'-DDT	1.34	1.45	0.33 - 2.1
Dieldrin	3.43	3.15	1.2 - 5.0
Endosulfan II	2.27	1.57	0.34 - 4.6
Heptachlor	0.191	0.129	0.065 - 0.21
Heptachlor epoxide	2.25	2.28	0.83 - 3.2
Methoxychlor	3.21	3.31	1.2 - 5.1

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20263301

TEST : ORGANOPHOSPHATE PESTICIDES EPA METHOD 614

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/11/92
CLIENT I.D.	: 05 (TOTALS)	DATE ANALYZED	: 02/14/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
DEMETON (TOTAL)	<2.0
DIAZINON	<2.0
DISULFOTON	<2.0
METHYL PARATHION	<2.0
MALATHION	<2.0
ETHYL PARATHION	<2.0
ETHION	<2.0
AZINPHOSMETHYL (GUTHION)	<3.0
SURROGATE PERCENT RECOVERIES	
PHORATE (%)	59

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20263303

TEST : ORGANOPHOSPHATE PESTICIDES EPA METHOD 614

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/11/92
CLIENT I.D.	: 11 (TOTALS)	DATE ANALYZED	: 02/14/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
DEMETON (TOTAL)	<2.0
DIAZINON	<2.0
DISULFOTON	<2.0
METHYL PARATHION	<2.0
MALATHION	<2.0
ETHYL PARATHION	<2.0
ETHION	<2.0
AZINPHOSMETHYL (GUTHION)	<3.0
SURROGATE PERCENT RECOVERIES	
PHORATE (%)	67

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20263305

TEST : ORGANOPHOSPHATE PESTICIDES EPA METHOD 614

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/11/92
CLIENT I.D.	: 33 (TOTALS)	DATE ANALYZED	: 02/14/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
DEMETON (TOTAL)	<2.0
DIAZINON	<2.0
DISULFOTON	<2.0
METHYL PARATHION	<2.0
MALATHION	<2.0
ETHYL PARATHION	<2.0
ETHION	<2.0
AZINPHOSMETHYL (GUTHION)	<3.0
SURROGATE PERCENT RECOVERIES	
PHORATE (%)	60

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : ORGANOPHOSPHATE PESTICIDES EPA METHOD 614

		ATI I.D.	: 202633
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 02/11/92
PROJECT #	: 9155038 H 0013	DATE ANALYZED	: 02/14/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
DEMETON (TOTAL)	<2.0
DIAZINON	<2.0
DISULFOTON	<2.0
METHYL PARATHION	<2.0
MALATHION	<2.0
ETHYL PARATHION	<2.0
ETHION	<2.0
AZINPHOSMETHYL (GUTHION)	<3.0

SURROGATE PERCENT RECOVERIES

PHORATE (%)	78

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202633

TEST : ORGANOPHOSPHATE PESTICIDES EPA METHOD 614

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20299905

DATE ANALYZED : 02/14/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIAZINON	<2.0	30	33	110	34	113	3
DISULFOTON	<2.0	30	32	107	32	107	0
ETHYL PARATHION	<2.0	96	59	61	59	61	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20263301

TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/11/92
CLIENT I.D.	: 05 (TOTALS)	DATE ANALYZED	: 02/19/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
2,4-D	<2.0
2,4,5-TP (SILVEX)	<1.0
SURROGATE PERCENT RECOVERIES	
DICAMBA (%)	114

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20263303

TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/11/92
CLIENT I.D.	: 11 (TOTALS)	DATE ANALYZED	: 02/19/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
2,4-D	<2.0
2,4,5-TP (SILVEX)	<1.0
SURROGATE PERCENT RECOVERIES	
DICAMBA (%)	113

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20263305

TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/11/92
CLIENT I.D.	: 33 (TOTALS)	DATE ANALYZED	: 02/19/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
2,4-D	<2.0
2,4,5-TP (SILVEX)	<1.0
SURROGATE PERCENT RECOVERIES	
DICAMBA (%)	112

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

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TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

		ATI I.D.	: 202633
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 02/11/92
PROJECT #	: 9155038 H 0013	DATE ANALYZED	: 02/18/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
2,4-D	<0.4
2,4,5-TP (SILVEX)	<0.2

SURROGATE PERCENT RECOVERIES

DICAMBA (%)	108

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202633

TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20299902

DATE ANALYZED : 02/19/92
SAMPLE MATRIX :
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
2,4-D	<0.4	16.7	18.0	108	17.6	105	2
SILVEX	<0.2	3.3	4.1	124	3.9	118	5

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

EPA Method 615

Accession No. 202633

Compound	True Value (ug/l)	Found (ug/l)	Control Limits (ug/l)
2,4-D	4.15	4.9	1.2 - 5.4
Silvex	3.10	3.5	0.93 - 4.0

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20263301

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/10/92
CLIENT I.D.	: 05 (TOTALS)	DATE ANALYZED	: 02/14/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20263301

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	TR
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	94
2-FLUOROBIPHENYL (%)	87
TERPHENYL (%)	67
PHENOL-D6 (%)	86
2-FLUOROPHENOL (%)	82
2,4,6-TRIBROMOPHENOL (%)	72

TR - Compound detected at an unquantifiable trace level

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20263301

COMPOUNDS	RESULTS
BUTOXY ETHOXY ETHANOL	700
BUTOXY ETHOXY ETHANOL ACETATE	100

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20263303

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/10/92
CLIENT I.D.	: 11 (TOTALS)	DATE ANALYZED	: 02/14/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20263303

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	TR
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	87
2-FLUOROBIPHENYL (%)	83
TERPHENYL (%)	52
PHENOL-D6 (%)	61
2-FLUOROPHENOL (%)	53
2,4,6-TRIBROMOPHENOL (%)	56

TR - Compound detected at an unquantifiable trace level

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20263303

COMPOUNDS	RESULTS
BUTOXY ETHOXY ETHANOL	1000
BUTOXY ETHOXY ETHANOL ACETATE	300

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20263305

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/10/92
CLIENT I.D.	: 33 (TOTALS)	DATE ANALYZED	: 02/14/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20263305

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	67
2-FLUOROBIPHENYL (%)	80
TERPHENYL (%)	57
PHENOL-D6 (%)	68
2-FLUOROPHENOL (%)	55
2,4,6-TRIBROMOPHENOL (%)	49

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20263305

COMPOUNDS	RESULTS
BUTOXY ETHOXY ETHANOL	1000
BUTOXY ETHOXY ETHANOL ACETATE	500

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20263307

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 02/07/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 02/08/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 02/10/92
CLIENT I.D.	: 08 (TOTALS)	DATE ANALYZED	: 02/14/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20263307

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	TR
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	97
2-FLUOROBIPHENYL (%)	87
TERPHENYL (%)	67
PHENOL-D6 (%)	71
2-FLUOROPHENOL (%)	75
2,4,6-TRIBROMOPHENOL (%)	54

TR - Compound detected at an unquantifiable trace level

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20263307

COMPOUNDS	RESULTS
BUTOXY ETHOXY ETHANOL	1000
BUTOXY ETHOXY ETHANOL ACETATE	200

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 202633
PROJECT #	: 9155038 H 0013	DATE EXTRACTED	: 02/10/92
PROJECT NAME	: COP NPDES	DATE ANALYZED	: 02/14/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 202633

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	92
2-FLUOROBIPHENYL (%)	89
TERPHENYL (%)	70
PHENOL-D6 (%)	67
2-FLUOROPHENOL (%)	83
2,4,6-TRIBROMOPHENOL (%)	58

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 202633

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20299902

DATE ANALYZED : 02/14/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	50	41	82	43	86	5
ACENAPHTHENE	<10	50	34	68	33	66	3
2,4-DINITROTOLUENE	<10	50	35	70	36	72	3
PYRENE	<10	50	46	92	43	86	7
N-NITROSO-DI-N-PROPYLAMINE	<10	50	41	82	41	82	0
1,4-DICHLOROBENZENE	<10	50	45	90	44	88	2
PENTACHLOROPHENOL	<50	100	34	34	43	43	23
PHENOL	<10	100	55	55	55	55	0
2-CHLOROPHENOL	<10	100	68	68	68	68	0
4-CHLORO-3-METHYLPHENOL	<10	100	48	48	47	47	2
4-NITROPHENOL	<50	100	67	67	66	66	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

EPA Method 625

ACCESSION #: 202633

PARAMETER	TRUE VALUE	FOUND	CONTROL LIMIT
Bis (2-chloroethyl) ether	100	60.3	12 - 158
1,3-Dichlorobenzene	100	64.8	D - 172
1,2-Dichlorobenzene	100	47.4	32 - 129
Nitrosodi-n-propylamine	100	59.4	D - 230
Isophorone	100	71.6	21 - 196
Bis (2-Chloroethoxy)methane	100	76.4	33 - 184
1,2,4-Trichlorobenzene	100	61.8	44 - 142
Hexachlorobutadiene	100	57.2	24 - 116
2-Chloronaphthalene	100	71.0	60 - 118
2,6-Dinitrotoluene	100	56.9	50 - 158
2,4-Dinitrotoluene	100	61.2	39 - 139
Diethyl Phthalate	100	11.0	D - 114
Hexachlorobenzene	100	71.4	D - 152
Phenanthrene	100	66.5	54 - 120
Di-n-butyl Phthalate	100	17.3	1 - 118
Pyrene	100	96.2	53 - 115
Benzo (a) anthracene	100	45.6	33 - 143
Di-n-octyl Phthalate	100	104.8	4 - 146
Benzo (k) fluoranthene	100	55.4	11 - 162
4-Chloro-3-methylphenol	100	67.6	22 - 147
2-Chlorophenol	100	60.3	23 - 134
2,4-Dichlorophenol	100	61.6	39 - 135
2,4-Dimethylphenol	100	65.8	32 - 119
2,4-Dinitrophenol	100	ND	D - 191
2-Methyl-4,6-dinitrophenol	100	ND	D - 181
2-Nitrophenol	100	29.2	29 - 182
4-Nitrophenol	100	44.6	D - 132
Pentachlorophenol	100	61.2	14 - 176
Phenol	100	67	5 - 112
2,4,6-Trichlorophenol	100	58.2	37 - 144

D = Detected; result must be greater than zero.

ND = None detected

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 203936

April 17, 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES Pt. 2/9155038H-0013

Attention: Patricia Murray

On 03/27/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Consulting and Testing. A copy of Aquatic's report is enclosed.

The Method 624 analyses for samples 11 and 08 required dilutions due to matrix foaming during the purge and trap procedure (EPA 5030).

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry

Michael G. Barry
Project Manager

Robert V. Woods

Robert V. Woods
Laboratory Manager

RVW:jat
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX DATE RECEIVED : 03/27/92
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES REPORT DATE : 04/16/92
ATI I.D. : 203936

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	11	AQUEOUS	03/27/92
02	TRIP BLANK 11	AQUEOUS	03/03/92
03	08	AQUEOUS	03/27/92
04	TRIP BLANK 08	AQUEOUS	03/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 203936

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/27/92
REPORT DATE : 04/16/92

PARAMETER	UNITS	01	03
FECAL COLIFORM		1100	800
CYANIDE, TOTAL	MG/L	<0.01	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	3	5
PHENOLICS, TOTAL	MG/L	<0.02	<0.02

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES ATI I.D. : 203936

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20386401	<0.01	<0.01	NA	0.22	0.25	88
OIL AND GREASE, GRAVIM	MG/L	20499909	<2	<2	NA	40	40	100
PHENOLICS, TOTAL	MG/L	20373505	0.05	0.05	0	0.28	0.25	92

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION #: 203936

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK RESULTS	ANALYST
Cyanide	335.3	04/01/92	<0.01	N. Milan
Oil & Grease	413.1	04/01/92	<2	M. Bernhardt
Phenolics	420.2	04/01/92	<0.02	P. Williamson

Reference(s): Methods for Chemical Analysis of Water and Wastes
March 1983 EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20393601

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/27/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 03/27/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 11	DATE ANALYZED	: 03/31/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	115
BROMOFLUOROBENZENE (%)	97
TOLUENE-D8 (%)	102

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20393601

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20393602

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 03/27/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK 11	DATE ANALYZED	: 03/31/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	102
BROMOFLUOROBENZENE (%)	92
TOLUENE-D8 (%)	100

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20393602

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20393603

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/27/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 03/27/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 08	DATE ANALYZED	: 03/31/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	113
BROMOFLUOROBENZENE (%)	93
TOLUENE-D8 (%)	101

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20393603

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20393604

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 03/27/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK 08	DATE ANALYZED	: 03/31/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	111
BROMOFLUOROBENZENE (%)	100
TOLUENE-D8 (%)	103

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20393604

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 203936
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 03/31/92
PROJECT NAME	: COP NPDES	DATE ANALYZED	: 03/31/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	105
BROMOFLUOROBENZENE (%)	98
TOLUENE-D8 (%)	102

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 203936

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES
REF I.D. : 20393601

DATE ANALYZED : 03/31/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	49	98	48	96	2
TRICHLOROETHENE	<1	50	48	96	44	88	9
CHLOROBENZENE	<1	50	53	106	52	104	2
TOLUENE	<1	50	50	100	50	100	0
BENZENE	<1	50	42	84	43	86	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 03-27-92
DATE OF ANALYSIS: 03-27-92 to 03-30-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
203936-1	9201025	1,100	28,000
203936-3	9201026	800	50,000
203937-1	9201027	130	3,000
203938-1	9201028	30,000	90,000
203939-1	9201029	1,300	30,000

Reviewed by: Frederick A Amalfi Date: 31 Mar 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 203937

April 17, 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES Pt. 2/9155038H-0013

Attention: Patricia Murray

On 03/27/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Consulting and Testing. A copy of Aquatic's report is enclosed.

The Method 624 analysis for sample 05 required a dilution due to matrix foaming during the purge and trap procedure (EPA 5030).

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry

Michael G. Barry
Project Manager

Robert V. Woods

Robert V. Woods
Laboratory Manager

RVW:jat
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/27/92
REPORT DATE : 04/10/92

ATI I.D. : 203937

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	05	AQUEOUS	03/27/92
02	TRIP BLANK	AQUEOUS	03/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 203937

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/27/92
REPORT DATE : 04/10/92

PARAMETER	UNITS	01
FECAL COLIFORM		130
CYANIDE, TOTAL	MG/L	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	3
PHENOLICS, TOTAL	MG/L	<0.02

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES ATI I.D. : 203937

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20393901	<0.01	<0.01	NA	0.30	0.25	120
OIL AND GREASE, GRAVIM	MG/L	20499909	<2	<2	NA	40	40	100
PHENOLICS, TOTAL	MG/L	20373505	0.05	0.05	0	0.28	0.25	92

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION #: 203937

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK RESULTS	ANALYST
Cyanide	335.3	04/08/92	<0.01	P. Williamson
Oil & Grease	413.1	04/01/92	<2	M. Bernhardt
Phenolics	420.2	04/01/92	<0.02	P. Williamson

Reference(s): Methods for Chemical Analysis of Water and Wastes
March 1983 EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20393701

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/27/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 03/27/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 05	DATE ANALYZED	: 03/31/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	118
BROMOFLUOROBENZENE (%)	98
TOLUENE-D8 (%)	101

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20393701

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20393702

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/03/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 03/27/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 03/31/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	111
BROMOFLUOROBENZENE (%)	97
TOLUENE-D8 (%)	101

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20393702

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

		ATI I.D.	: 203937
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 03/31/92
PROJECT #	: 9155038 H 0013	DATE ANALYZED	: 03/31/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	105
BROMOFLUOROBENZENE (%)	98
TOLUENE-D8 (%)	102

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 203937

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20393601

DATE ANALYZED : 03/31/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	49	98	48	96	2
TRICHLOROETHENE	<1	50	48	96	44	88	9
CHLOROBENZENE	<1	50	53	106	52	104	2
TOLUENE	<1	50	50	100	50	100	0
BENZENE	<1	50	42	84	43	86	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 03-27-92
DATE OF ANALYSIS: 03-27-92 to 03-30-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
203936-1	9201025	1,100	28,000
203936-3	9201026	800	50,000
203937-1	9201027	130	3,000
203938-1	9201028	30,000	90,000
203939-1	9201029	1,300	30,000

Reviewed by: Frederick A Amalfi Date: 31 Mar 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 203938

April 17, 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES Pt. 2/9155038H-0013

Attention: Patricia Murray

On 03/27/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Consulting and Testing. A copy of Aquatic's report is enclosed.

The Method 624 analysis for sample 07 required a dilution due to matrix foaming during the purge and trap procedure (EPA 5030).

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry

Michael G. Barry
Project Manager

Robert V. Woods

Robert V. Woods
Laboratory Manager

RVW:jat
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX DATE RECEIVED : 03/27/92
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES REPORT DATE : 04/10/92
ATI I.D. : 203938

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	07	AQUEOUS	03/27/92
02	TRIP BLANK	AQUEOUS	03/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 203938

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/27/92
REPORT DATE : 04/10/92

PARAMETER	UNITS	01
FECAL COLIFORM		30000
CYANIDE, TOTAL	MG/L	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	5
PHENOLICS, TOTAL	MG/L	<0.02

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES ATI I.D. : 203938

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20393901	<0.01	<0.01	NA	0.30	0.25	120
OIL AND GREASE, GRAVIM	MG/L	20499909	<2	<2	NA	40	40	100
PHENOLICS, TOTAL	MG/L	20454501	0.19	0.19	0	0.72	0.50	106

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION #: 203938

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK RESULTS	ANALYST
Cyanide	335.3	04/08/92	<0.01	P. Williamson
Oil & Grease	413.1	04/01/92	<2	M. Bernhardt
Phenolics	420.2	04/07/92	<0.02	N. Milan

Reference(s): Methods for Chemical Analysis of Water and Wastes
March 1983 EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20393801

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/27/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 03/27/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 07	DATE ANALYZED	: 03/31/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 20

COMPOUNDS	RESULTS
CHLOROMETHANE	<200
BROMOMETHANE	<200
VINYL CHLORIDE	<20
CHLOROETHANE	<20
METHYLENE CHLORIDE	<100
ACETONE	<200
CARBON DISULFIDE	<20
1,1-DICHLOROETHENE	<20
1,1-DICHLOROETHANE	<20
1,2-DICHLOROETHENE (TOTAL)	<20
CHLOROFORM	<20
1,2-DICHLOROETHANE	<20
2-BUTANONE (MEK)	<200
1,1,1-TRICHLOROETHANE	<20
CARBON TETRACHLORIDE	<20
VINYL ACETATE	<200
BROMODICHLOROMETHANE	<20
1,1,2,2-TETRACHLOROETHANE	<20
1,2-DICHLOROPROPANE	<20
TRANS-1,3-DICHLOROPROPENE	<20
TRICHLOROETHENE	<20
DIBROMOCHLOROMETHANE	<20
1,1,2-TRICHLOROETHANE	<20
BENZENE	<20
CIS-1,3-DICHLOROPROPENE	<20
2-CHLOROETHYLVINYLETHER	<200
BROMOFORM	<100
2-HEXANONE (MBK)	<200
4-METHYL-2-PENTANONE (MIBK)	<200
TETRACHLOROETHENE	<20
TOLUENE	<20
CHLOROBENZENE	<20
ETHYLBENZENE	<20
STYRENE	<20
TOTAL XYLENES	<20

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	100
BROMOFLUOROBENZENE (%)	97
TOLUENE-D8 (%)	101

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20393801

COMPOUNDS	RESULTS
ACROLEIN	<400
ACRYLONITRILE	<200

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20393802

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/03/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 03/27/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 03/31/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	95
BROMOFLUOROBENZENE (%)	98
TOLUENE-D8 (%)	98

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20393802

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

		ATI I.D.	: 203938
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 03/31/92
PROJECT #	: 9155038 H 0013	DATE ANALYZED	: 03/31/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	105
BROMOFLUOROBENZENE (%)	98
TOLUENE-D8 (%)	102

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 203938

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20393601

DATE ANALYZED : 03/31/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	49	98	48	96	2
TRICHLOROETHENE	<1	50	48	96	44	88	9
CHLOROBENZENE	<1	50	53	106	52	104	2
TOLUENE	<1	50	50	100	50	100	0
BENZENE	<1	50	42	84	43	86	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 03-27-92
DATE OF ANALYSIS: 03-27-92 to 03-30-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
203936-1	9201025	1,100	28,000
203936-3	9201026	800	50,000
203937-1	9201027	130	3,000
203938-1	9201028	30,000	90,000
203939-1	9201029	1,300	30,000

Reviewed by: Frederick A Amalfi Date: 31 Mar 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 203939

April 17, 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES Pt. 2/9155038H-0013

Attention: Patricia Murray

On 03/27/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Fecal Coliform and Fecal Streptococci analyses were performed by Aquatic Consulting and Testing. A copy of Aquatic's report is enclosed.

The Method 624 analysis for sample 03 required a dilution due to matrix foaming during the purge and trap procedure (EPA 5030).

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry

Michael G. Barry
Project Manager

Robert V. Woods

Robert V. Woods
Laboratory Manager

RVW:jat
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX DATE RECEIVED : 03/27/92
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES REPORT DATE : 04/16/92
ATI I.D. : 203939

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	03	AQUEOUS	03/27/92
02	TRIP BLANK	AQUEOUS	03/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact your sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 203939

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/27/92
REPORT DATE : 04/16/92

PARAMETER	UNITS	01
FECAL COLIFORM		1300
CYANIDE, TOTAL	MG/L	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	3
PHENOLICS, TOTAL	MG/L	<0.02

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES ATI I.D. : 203939

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20393901	<0.01	<0.01	NA	0.30	0.25	120
OIL AND GREASE, GRAVIM	MG/L	20499902	<2	<2	NA	40	40	100
PHENOLICS, TOTAL	MG/L	20454501	0.19	0.19	0	0.72	0.50	106

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION #: 203939

PARAMETER	METHOD	DATE ANALYZED	REAGENT BLANK RESULTS	ANALYST
Cyanide	335.3	04/08/92	<0.01	P. Williamson
Oil & Grease	413.1	04/01/92	<2	M. Bernhardt
Phenolics	420.2	04/07/92	<0.02	N. Milan

Reference(s): Methods for Chemical Analysis of Water and Wastes
March 1983 EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20393901

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/27/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 03/27/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 03	DATE ANALYZED	: 03/31/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 20

COMPOUNDS	RESULTS
CHLOROMETHANE	<200
BROMOMETHANE	<200
VINYL CHLORIDE	<20
CHLOROETHANE	<20
METHYLENE CHLORIDE	<100
ACETONE	<200
CARBON DISULFIDE	<20
1,1-DICHLOROETHENE	<20
1,1-DICHLOROETHANE	<20
1,2-DICHLOROETHENE (TOTAL)	<20
CHLOROFORM	<20
1,2-DICHLOROETHANE	<20
2-BUTANONE (MEK)	<200
1,1,1-TRICHLOROETHANE	<20
CARBON TETRACHLORIDE	<20
VINYL ACETATE	<200
BROMODICHLOROMETHANE	<20
1,1,2,2-TETRACHLOROETHANE	<20
1,2-DICHLOROPROPANE	<20
TRANS-1,3-DICHLOROPROPENE	<20
TRICHLOROETHENE	<20
DIBROMOCHLOROMETHANE	<20
1,1,2-TRICHLOROETHANE	<20
BENZENE	<20
CIS-1,3-DICHLOROPROPENE	<20
2-CHLOROETHYLVINYLETHER	<200
BROMOFORM	<100
2-HEXANONE (MBK)	<200
4-METHYL-2-PENTANONE (MIBK)	<200
TETRACHLOROETHENE	<20
TOLUENE	<20
CHLOROBENZENE	<20
ETHYLBENZENE	<20
STYRENE	<20
TOTAL XYLENES	<20
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	103
BROMOFLUOROBENZENE (%)	100
TOLUENE-D8 (%)	100

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20393901

COMPOUNDS	RESULTS
ACROLEIN	<400
ACRYLONITRILE	<200

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20393902

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/03/92
PROJECT #	: 9155038 H 0013	DATE RECEIVED	: 03/27/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 03/31/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	98
BROMOFLUOROBENZENE (%)	100
TOLUENE-D8 (%)	96

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20393902

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

		ATI I.D.	: 203939
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 03/31/92
PROJECT #	: 9155038 H 0013	DATE ANALYZED	: 03/31/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	105
BROMOFLUOROBENZENE (%)	98
TOLUENE-D8 (%)	102

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 203939

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038 H 0013
PROJECT NAME : COP NPDES
REF I.D. : 20393601

DATE ANALYZED : 03/31/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	49	98	48	96	2
TRICHLOROETHENE	<1	50	48	96	44	88	9
CHLOROBENZENE	<1	50	53	106	52	104	2
TOLUENE	<1	50	50	100	50	100	0
BENZENE	<1	50	42	84	43	86	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 03-27-92
DATE OF ANALYSIS: 03-27-92 to 03-30-92
SAMPLE TYPE: water
METHOD REFERENCE: Standard Methods for the Examination of Water and Wastewater, 17th Edition

Fecal Coliform: 9221C
Fecal Streptococcus: 9230B

RESULTS

Client I.D.	Lab I.D.	Fecal Coliform MPN/100 mL	Fecal Streptococcus MPN/100 mL
203936-1	9201025	1,100	28,000
203936-3	9201026	800	50,000
203937-1	9201027	130	3,000
203938-1	9201028	30,000	90,000
203939-1	9201029	1,300	30,000

Reviewed by: Frederick A Amalfi Date: 31 Mar 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc.
9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 203966

April 23, 1992

APR 2 4 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP NPDES/9155038H-0013

Attention: Patricia Murray

On 03/28/92, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

BOD analyses were performed by Aquatic Consulting and Testing. A copy of Aquatic's report is enclosed.

The total nickel result is less than the dissolved nickel result for sample I.D. 21 (2F). Repeat of the analysis confirmed the results.

A laboratory control standard is not available for Biological Oxygen Demand (BOD) analysis.

The zinc quality control data for the matrix spike percent recovery is just below ATI's acceptable criteria. Not enough sample matrix was available to repeat the analysis. All other quality assurance parameters were within acceptable limits for zinc.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry

Michael G. Barry
Project Manager

E. Proffitt for:

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/28/92
REPORT DATE : 04/22/92

ATI I.D. : 203966

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	05 (3E) TOTALS	AQUEOUS	03/27/92
02	05 (3E) DISSOLVED	AQUEOUS	03/27/92
03	45 (3D,1B,1E) TOTALS	AQUEOUS	03/27/92
04	45 (3D,1B,1E) DISSOLVED	AQUEOUS	03/27/92
05	08 (1A,2C) TOTALS	AQUEOUS	03/27/92
06	08 (1A,2C) DISSOLVED	AQUEOUS	03/27/92
07	21 (2F) TOTALS	AQUEOUS	03/27/92
08	21 (2F) DISSOLVED	AQUEOUS	03/27/92
09	11 (3G) TOTALS	AQUEOUS	03/27/92
10	11 (3G) DISSOLVED	AQUEOUS	03/27/92
11	INORGANIC REAGENT BLANK	AQUEOUS	03/27/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	11

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 203966

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/28/92
REPORT DATE : 04/22/92

PARAMETER	UNITS	01	03	05	07	09
BIOLOGICAL OXYGEN DEMAND	MG/L	16	21	16	11	13
CHEMICAL OXYGEN DEMAND	MG/L	82	120	81	70	69
PHOSPHORUS, DISSOLVED	MG/L	0.09	0.14	0.13	0.12	0.06
AMMONIA AS NITROGEN	MG/L	0.47	0.60	0.62	0.54	0.54
NITRITE/NITRATE-N (TOTAL)	MG/L	0.5	0.8	0.4	1.5	0.4
PH	UNITS	6.5	6.8	6.7	6.6	6.5
TOTAL DISSOLVED SOLIDS	MG/L	40	70	70	60	70
TOTAL KJELDAHL NITROGEN	MG/L	1.6	2.4	2.3	1.7	2.3
PHOSPHORUS, TOTAL	MG/L	0.21	0.52	0.44	0.20	0.28
TOTAL SUSPENDED SOLIDS	MG/L	40	170	170	30	90

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 203966

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/28/92
REPORT DATE : 04/22/92

PARAMETER	UNITS	11
CHEMICAL OXYGEN DEMAND	MG/L	<5
PHOSPHORUS, DISSOLVED	MG/L	<0.05
AMMONIA AS NITROGEN	MG/L	<0.03
NITRITE/NITRATE-N (TOTAL)	MG/L	<0.06
TOTAL DISSOLVED SOLIDS	MG/L	<10
TOTAL KJELDAHL NITROGEN	MG/L	<0.2
PHOSPHORUS, TOTAL	MG/L	<0.05
TOTAL SUSPENDED SOLIDS	MG/L	<10
BIOLOGICAL OXYGEN DEMAND	MG/L	NOT APPLICABLE
PH	UNITS	NOT APPLICABLE

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES ATI I.D. : 203966

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20396607	11	10	10	191	198	91
CHEMICAL OXYGEN DEMAND	MG/L	20397206	95	95	0	132	37.5	99
PHOSPHOROUS, DISSOLVED	MG/L	20396609	0.06	0.06	0	0.30	0.25	96
AMMONIA AS NITROGEN	MG/L	20395901	0.06	0.06	0	0.55	0.50	98
NITRITE/NITRATE-N (TOT	MG/L	20397208	11.4	11.6	2	16.4	5.0	100
PH	UNITS	20396601	6.5	6.4	2	NA	NA	NA
TOTAL DISSOLVED SOLIDS	MG/L	20393201	2300	2400	4	NA	NA	NA
TOTAL DISSOLVED SOLIDS	MG/L	20395602	850	840	1	NA	NA	NA
TOTAL KJELDAHL NITROGE	MG/L	20395901	0.7	0.7	0	2.8	2.0	105
PHOSPHOROUS,TOTAL	MG/L	20499901	0.06	0.06	0	0.30	0.25	96
TOTAL SUSPENDED SOLIDS	MG/L	20393201	<10	<10	NA	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

NA = NOT APPLICABLE

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 203966

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/28/92
REPORT DATE : 04/22/92

PARAMETER	UNITS	01	02	03	04	05
SILVER	MG/L	0.0011	<0.0008	0.0010	<0.0008	<0.0008
ARSENIC	MG/L	0.001	<0.001	0.005	0.002	0.003
BERYLLIUM	MG/L	<0.0002	<0.0002	0.0003	<0.0002	0.0004
CADMIUM	MG/L	0.0003	<0.0002	0.0013	0.0007	0.0004
CHROMIUM	MG/L	0.004	<0.001	0.006	<0.001	0.006
COPPER	MG/L	0.012	0.008	0.063	0.020	0.019
HARDNESS	MG/L	14.6	-	45.6	-	31.0
MERCURY	MG/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
NICKEL	MG/L	0.015	0.006	0.046	0.015	0.014
LEAD	MG/L	0.018	0.004	0.050	0.012	0.038
ANTIMONY	MG/L	<0.003	<0.003	<0.003	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001	<0.001	<0.001	<0.001
ZINC	MG/L	0.081	0.041	0.173	0.086	0.092

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 203966

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/28/92
REPORT DATE : 04/22/92

PARAMETER	UNITS	06 8	07 21	08	09 11	10
SILVER	MG/L	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
ARSENIC	MG/L	0.001	0.002	0.001	0.002	<0.001
BERYLLIUM	MG/L	<0.0002	<0.0002	<0.0002	0.0002	<0.0002
CADMIUM	MG/L	0.0003	0.0006	0.0004	0.0004	<0.0002
CHROMIUM	MG/L	<0.001	0.003	<0.001	0.003	<0.001
COPPER	MG/L	0.006	0.031	0.025	0.012	0.012
HARDNESS	MG/L	-	29.5	-	40.3	-
MERCURY	MG/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
NICKEL	MG/L	0.007	0.006	0.009	0.010	0.010
LEAD	MG/L	0.007	0.010	0.005	0.010	0.001
ANTIMONY	MG/L	<0.003	<0.003	<0.003	<0.003	<0.003
SELENIUM	MG/L	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001	<0.001	<0.001	<0.001
ZINC	MG/L	0.047	0.046	0.034	0.057	0.040

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 203966

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 03/28/92
REPORT DATE : 04/22/92

PARAMETER	UNITS	11
SILVER	MG/L	<0.0008
ARSENIC	MG/L	<0.001
BERYLLIUM	MG/L	<0.0002
CADMIUM	MG/L	<0.0002
CHROMIUM	MG/L	<0.001
COPPER	MG/L	<0.003
HARDNESS	MG/L	<0.2
MERCURY	MG/L	<0.0002
NICKEL	MG/L	<0.005
LEAD	MG/L	<0.001
ANTIMONY	MG/L	<0.003
SELENIUM	MG/L	<0.0008
THALLIUM	MG/L	<0.001
ZINC	MG/L	<0.003

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES ATI I.D. : 203966

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20396605	<0.0008	<0.0008	NA	0.414	0.500	83
ARSENIC	MG/L	20396607	0.002	0.002	0	0.983	1.00	98
BERYLLIUM	MG/L	20396603	0.0003	0.0003	0	MSA	CC=	1.00
CADMIUM	MG/L	20396607	0.0006	0.0006	0	0.51	0.50	102
CHROMIUM	MG/L	20396603	0.006	0.006	0	1.09	1.00	108
COPPER	MG/L	20396605	0.019	0.019	0	0.131	0.125	90
COPPER	MG/L	20396610	0.012	0.012	0	0.037	0.025	100
HARDNESS	MG/L	20396607	29.5	29.5	0	NA	NA	NA
MERCURY	MG/L	20396609	<0.0002	<0.0002	NA	0.0049	0.0050	98
NICKEL	MG/L	20396605	0.014	0.013	7	0.242	0.250	91
NICKEL	MG/L	20396607	0.006	0.005	18	0.027	0.025	84
LEAD	MG/L	20396607	0.010	0.011	10	1.03	1.00	102
ANTIMONY	MG/L	20396607	<0.003	<0.003	NA	1.17	1.00	117
SELENIUM	MG/L	20396607	<0.0008	<0.0008	NA	0.828	1.00	83
THALLIUM	MG/L	20396607	<0.001	<0.001	NA	0.903	1.00	90
ZINC	MG/L	20499904	0.095	0.105	10	0.206	0.125	89
ZINC	MG/L	20396605	0.092	0.088	4	0.196	0.125	83*

MSA = MATRIX STANDARD ADDITION
NA = NOT APPLICABLE

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

* Result out of limits due to sample matrix interference

Analytical Technologies, Inc.

QUALITY CONTROL REPORT

ANALYTE	QC NAME	VALUE FOUND	TRUE VALUE	LOWER CONTROL LIMIT	UPPER CONTROL LIMIT	UNIT
** ACCESSION NUMBER: 203966						
Chemical Oxygen Demand	ERA 9920	102	118	96	134	mg/l
Ammonia	ERA 9936	0.38	0.39	0.33	0.43	mg/l
Nitrate	ERA 378	2.18	2.20	2.03	2.34	mg/l
pH	Buffer	6.86	6.86	6.84	6.88	pH
TDS	In House	248	293	234	358	mg/l
Total Kjeldahl Nitrogen	ERA 9925	5.11	5.20	4.2	6.2	mg/l
Dissolved/Total Phosphorous	ERA 9929	4.9	5.0	4.1	5.9	mg/l
TSS	EPA 489	24	31.5	24	36	mg/l
Silver	WP 378	5.11	5.0	4.25	5.75	ug/l
Arsenic	WP 378	31.0	31.5	25.8	37.3	ug/l
Beryllium	WP287	1.9	2.0	1.8	2.2	ug/l
Cadmium	WP378	1.4	1.5	1.1	1.8	ug/l
Chromium	WP287	22.2	20.0	16.9	23.0	ug/l
Lead	WP287/5	21.4	21.4	17.5	25.3	ug/l
Antimony	WP186	20.7	25.0	7.9	31.4	ug/l
Selenium	WP287	21.9	21.1	15.5	26.6	ug/l
Thallium	WP186	20.2	20.2	15.5	24.9	ug/l
Copper	ICAP3/10	0.096	0.096	0.086	0.106	mg/l
Copper	ICAP3/10	0.096	0.096	0.086	0.106	mg/l
Hardness	ICAP4/10	63.5	67.8	61.0	74.6	mg/l
Mercury	ERA 2521	2.86	3.02	2.20	3.80	ug/l
Nickel	ICAP3/10	0.097	0.102	0.086	0.117	mg/l
Nickel	ICAP3/10	0.108	0.102	0.086	0.117	mg/l
Zinc	ICAP3/10	0.100	0.107	0.092	0.122	mg/l
Zinc	ICAP3/10	0.099	0.107	0.092	0.122	mg/l

Analytical Technologies, Inc.

ACCESSION #: 203966

PARAMETER	METHOD	DATE ANALYZED	ANALYST
BOD	405.1	03/29/92	Aquatic Cons.
COD	410M	04/03/92	C. Warren
Dissolved phosphorus	365.3	04/01/92	C. Warren
Ammonia	350.3	04/07/92	T. Kehler
Nitrate/Nitrite	353.2	04/02/92	P. Williamson
pH	150.1	04/06/92	T. Kehler
TDS	160.1	03/30/92	M. Bernhardt
TKN	351.2	03/31/92	P. Williamson
Total phosphorus	365.3	04/01/92	C. Warren
TSS	160.2	03/30/92	M. Bernhardt
Silver	272.2	04/15/92	W. Flanery
Arsenic	206.2	04/08/92	W. Flanery
Beryllium	210.1	04/14/92	S. Stanley
Cadmium	213.1	04/14/92	S. Stanley
Chromium	218.2	04/14/92	S. Stanley
Copper	200.7	04/07/92	J. Hrubant
Hardness	200.7 + calculation	04/06/92	J. Hrubant
Mercury	245.1	04/08/92	W. Flanery
Nickel	200.7	04/07/92	J. Hrubant
Lead	239.2	04/09/92	W. Flanery
Antimony	204.2	04/08/92	W. Flanery
Selenium	270.2	04/06/92	W. Flanery
Thallium	279.2	04/09/92	W. Flanery
Zinc	200.7	04/07/92	J. Hrubant

Reference(s): Methods for Chemical Analysis of Water and Wastes
March 1983 EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20396601

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/27/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 03/28/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 03/31/92
CLIENT I.D.	: 05 (3E) TOTALS	DATE ANALYZED	: 04/04/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20396601

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	62
2-FLUOROBIPHENYL (%)	59
TERPHENYL (%)	53
PHENOL-D6 (%)	71
2-FLUOROPHENOL (%)	55
2,4,6-TRIBROMOPHENOL (%)	55

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20396601

COMPOUNDS	RESULTS
HEXADECANOIC ACID	30
OXYGENATED HYDROCARBORN C18	30
BUTOXYETHOXYETHANOL	800

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20396603

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/27/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 03/28/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 03/31/92
CLIENT I.D.	: 45 (3D,1B,1E) TOTALS	DATE ANALYZED	: 04/04/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20396603

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	TR
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	62
2-FLUOROBIPHENYL (%)	53
TERPHENYL (%)	33
PHENOL-D6 (%)	76
2-FLUOROPHENOL (%)	65
2,4,6-TRIBROMOPHENOL (%)	55

TR - Compound detected at an unquantifiable trace level

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20396603

COMPOUNDS	RESULTS
BUTOXYETHOXYETHANOL ACETATE	30
BUTOXYETHOXYETHOXYETHANOL	20
BUTOXYETHOXYETHANOL	300

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20396605

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/27/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 03/28/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 03/31/92
CLIENT I.D.	: 08 (1A,2C) TOTALS	DATE ANALYZED	: 04/04/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
IS(2-CHLOROISOPROPYL)ETHER	<10
-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
4-DINITROPHENOL	<50
-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20396605

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	62
2-FLUOROBIPHENYL (%)	53
TERPHENYL (%)	34
PHENOL-D6 (%)	66
2-FLUOROPHENOL (%)	58
2,4,6-TRIBROMOPHENOL (%)	50

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20396605

COMPOUNDS	RESULTS
BUTOXYETHOXYETHANOL	500
BUTOXYETHOXYETHANOL ACETATE	40

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20396607

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/27/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 03/28/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 03/31/92
CLIENT I.D.	: 21 (2F) TOTALS	DATE ANALYZED	: 04/04/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20396607

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	58
2-FLUOROBIPHENYL (%)	57
TERPHENYL (%)	44
PHENOL-D6 (%)	54
2-FLUOROPHENOL (%)	50
2,4,6-TRIBROMOPHENOL (%)	47

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20396607

COMPOUNDS	RESULTS
BUTOXYETHOXYETHANOL ACETATE	30
PHOSPHORIC ACID TRIBUTYL ESTER	60
BUTOXYETHOXYETHANOL	400

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20396609

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 03/27/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 03/28/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 03/31/92
CLIENT I.D.	: 11 (3G) TOTALS	DATE ANALYZED	: 04/06/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20396609

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	75
2-FLUOROBIPHENYL (%)	73
TERPHENYL (%)	33
PHENOL-D6 (%)	79
2-FLUOROPHENOL (%)	70
2,4,6-TRIBROMOPHENOL (%)	64

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20396609

COMPOUNDS	RESULTS
BUTOXYETHOXYETHANOL	900
BUTOXYETHOXYETHANOL ACETATE	100

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

		ATI I.D.	: 203966
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 03/31/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 04/04/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 203966

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	55
2-FLUOROBIPHENYL (%)	47
TERPHENYL (%)	58
PHENOL-D6 (%)	79
2-FLUOROPHENOL (%)	67
2,4,6-TRIBROMOPHENOL (%)	52

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 203966

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES
REF I.D. : 20396607

DATE ANALYZED : 04/05/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	50	30	60	29	58	3
ACENAPHTHENE	<10	50	35	70	36	72	3
2,4-DINITROTOLUENE	<10	50	33	66	36	72	9
PYRENE	<10	50	39	78	46	92	16
N-NITROSO-DI-N-PROPYLAMINE	<10	50	37	74	36	72	3
1,4-DICHLOROBENZENE	<10	50	28	56	27	54	4
PENTACHLOROPHENOL	<50	100	89	89	80	80	11
PHENOL	<10	100	72	72	68	68	6
2-CHLOROPHENOL	<10	100	88	88	78	78	12
4-CHLORO-3-METHYLPHENOL	<10	100	84	84	83	83	1
4-NITROPHENOL	<50	100	64	64	44	44	37

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 203966

LABORATORY CONTROL STANDARD: 889BN/A
METHOD 625

CLIENT: Woodward-Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 04/06/92

	TRUE VALUE	OBSERVED VALUE	% REC
PHENOL	100	77	77
1,2-DICHLOROBENZENE	100	88	88
HEXACHLOROETHANE	100	107	107
ISOPHORONE	100	80	80
2-NITROPHENOL	100	81	81
2,4-DIMETHYLPHENOL	100	74	74
HEXACHLOROBUTADIENE	100	128	128
4-CHLORO-3-METHYLPHENOL	100	84	84
2-METHYLNAPHTHALENE	100	96	96
ACENAPHTHYLENE	100	82	82
4-NITROPHENOL	100	34	34
2,6-DINITROTOLUENE	100	75	75
4-CHLOROPHENYL PHENYLETHER	100	66	66
N-NITROSODI-N-PHENYLAMINE	100	84	84
PENTACHLOROPHENOL	100	48	48
DI-N-BUTYLPHTHALATE	100	85	85
PYRENE	100	138	138
BIS(2-ETHYLHEXYL)PHTHALATE	100	107	107

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED:	03-28-92
DATES OF ANALYSIS:	03-29-92 to 04-03-92
SAMPLE TYPE:	aqueous
METHOD REFERENCE:	EPA Method 405.1

RESULTS

Client I.D.	Lab I.D.	BOD5 (mg/L)
203966-1	L92-0509	16
203966-3	L92-0510	21
203966-5	L92-0511	16
203966-7	L92-0512	11
203966-9	L92-0513	13
203966-7 dup	L92-0512	10
203966-7 spk (spiked @ 198 mg/L)	L92-0512	[91% rec'y]

Reviewed by: Frederick A Amalfi Date: 06 Apr 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. **208562**

October 8, 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: City of Phoenix, NPDES/9155038H-0013

Attention: Patricia Murray

On **08/05/92**, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Fecal Coliform and Fecal Streptococcus analyses were performed by Aquatic Consulting & Testing. A copy of Aquatic's report is enclosed.

The Method 624 analyses of samples 21, 45, 08, and 11 required a 5x dilution due to a foamy matrix.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry

Michael G. Barry
Project Manager

Robert V. Woods

Robert V. Woods
Laboratory Manager

RVW:ehj
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX DATE RECEIVED : 08/05/92
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES REPORT DATE : 08/19/92
ATI I.D. : 208562

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	21	AQUEOUS	08/05/92
02	21 TRIP BLANK	AQUEOUS	06/03/92
03	45	AQUEOUS	08/05/92
04	45 TRIP BLANK	AQUEOUS	06/03/92
05	08	AQUEOUS	08/05/92
06	08 TRIP BLANK	AQUEOUS	06/03/92
07	11	AQUEOUS	08/05/92
08	11 TRIP BLANK	AQUEOUS	06/03/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	8

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 208562

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 08/05/92
REPORT DATE : 08/19/92

PARAMETER	UNITS	01	03	05	07
FECAL COLIFORM (MPN/100ML)		300	1600	240	1600
CYANIDE, TOTAL	MG/L	<0.01	<0.01	<0.01	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	7	5	5	4
PHENOLICS, TOTAL	MG/L	<0.02	<0.02	<0.02	<0.02

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES ATI I.D. : 208562

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20855602	<0.01	<0.01	NA	0.23	0.25	92
OIL AND GREASE, GRAVIM	MG/L	20849801	<2	<2	NA	40	40	100
PHENOLICS, TOTAL	MG/L	20856203	<0.02	<0.02	NA	0.24	0.25	96

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 208562

QUALITY CONTROL REPORT

ANALYTE	INIT.	DATE OF ANALYSIS	REAGENT BLANK	QC NAME	VALUE FOUND	TRUE VALUE	LOWER CONTROL LIMIT	UPPER CONTROL LIMIT	UNIT
Method 413.1 Oil & Grease	JR	08/06/92	<2	04511	24	20	16	24	mg/l
Method RFA 335.3 Cyanide	PW	08/12/92	<0.01	LCS	0.25	0.25	0.18	0.27	mg/l
Method RFA 420.2 Phenol	PW	08/13/92	<0.02	LCS	0.24	0.25	0.22	0.30	mg/l

Reference(s): Methods for Chemical Analysis of Water and Wastes
March 1983 EPA-600 4-79-020

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20856201

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/05/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/05/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 21	DATE ANALYZED	: 08/06/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	98
BROMOFLUOROBENZENE (%)	91
TOLUENE-D8 (%)	88

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20856201

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20856202

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 06/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/05/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 21 TRIP BLANK	DATE ANALYZED	: 08/06/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	106
BROMOFLUOROBENZENE (%)	107
TOLUENE-D8 (%)	112

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20856202

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20856203

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/05/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/05/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 45	DATE ANALYZED	: 08/06/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	106
BROMOFLUOROBENZENE (%)	95
TOLUENE-D8 (%)	95

Analytical Technologies, Inc. ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20856203

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20856204

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 06/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/05/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 45 TRIP BLANK	DATE ANALYZED	: 08/06/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	81
BROMOFLUOROBENZENE (%)	83
TOLUENE-D8 (%)	85

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20856204

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20856205

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/05/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/05/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 08	DATE ANALYZED	: 08/08/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	101
BROMOFLUOROBENZENE (%)	110
TOLUENE-D8 (%)	95

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20856205

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20856206

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 06/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/05/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 08 TRIP BLANK	DATE ANALYZED	: 08/06/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	90
BROMOFLUOROBENZENE (%)	89
TOLUENE-D8 (%)	93

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20856206

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20856207

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/05/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/05/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 11	DATE ANALYZED	: 08/08/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROMETHANE	<50
BROMOMETHANE	<50
VINYL CHLORIDE	<5
CHLOROETHANE	<5
METHYLENE CHLORIDE	<25
ACETONE	<50
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<50
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<50
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	<50
BROMOFORM	<25
2-HEXANONE (MBK)	<50
4-METHYL-2-PENTANONE (MIBK)	<50
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	107
BROMOFLUOROBENZENE (%)	116
TOLUENE-D8 (%)	101

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20856207

COMPOUNDS	RESULTS
ACROLEIN	<100
ACRYLONITRILE	<50

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20856208

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 06/03/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/05/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: N/A
CLIENT I.D.	: 11 TRIP BLANK	DATE ANALYZED	: 08/06/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	97
BROMOFLUOROBENZENE (%)	97
TOLUENE-D8 (%)	102

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20856208

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

		ATI I.D.	: 208562
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 08/06/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 08/06/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	115
BROMOFLUOROBENZENE (%)	97
TOLUENE-D8 (%)	104

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

		ATI I.D.	: 208562
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 08/08/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 08/08/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	99
BROMOFLUOROBENZENE (%)	99
TOLUENE-D8 (%)	90

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 208562

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES
REF I.D. : 20849905

DATE ANALYZED : 08/06/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	54	108	55	110	2
TRICHLOROETHENE	<1	50	50	100	53	106	6
CHLOROBENZENE	<1	50	50	100	53	106	6
TOLUENE	<1	50	50	100	53	106	6
BENZENE	<1	50	52	104	54	108	4

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION #: 208562

QUALITY CONTROL DATA: 589

METHOD: 624

CLIENT: WOODWARD CLYDE CONSULTANTS
UNITS: UG/L
ANALYSIS DATE: 08/08/92

	TRUE VALUE	FOUND	% REC
1,1-DICHLOROETHENE	50	49	98
CHLOROFORM	50	49	98
1,1,1-TRICHLOROETHANE	50	47	94
BROMODICHLOROMETHANE	50	47	94
TRICHLOROETHENE	50	51	102
TETRACHLOROETHENE	50	47	94
CHLOROBENZENE	50	53	106
BENZENE	50	51	102
TOLUENE	50	51	102

%SURROGATE RECOVERY

104% 1,2-DICHLOROETHANE-D4
114% BROMOFLUOROBENZENE (BFB)
105% TOLUENE-D8

Analytical Technologies, Inc.

ACCESSION #: 208562

QUALITY CONTROL DATA: 589

METHOD: 624

CLIENT: WOODWARD CLYDE CONSULTANTS
UNITS: UG/L
ANALYSIS DATE: 08/06/92

	TRUE VALUE	FOUND	% REC
1,1-DICHLOROETHENE	50	50	100
CHLOROFORM	50	49	98
1,1,1-TRICHLOROETHANE	50	49	98
BROMODICHLOROMETHANE	50	49	98
TRICHLOROETHENE	50	52	104
TETRACHLOROETHENE	50	50	100
CHLOROBENZENE	50	48	96
BENZENE	50	54	108
TOLUENE	50	52	104

%SURROGATE RECOVERY

117% 1,2-DICHLOROETHANE-D4
108% BROMOFLUOROBENZENE (BFB)
108% TOLUENE-D8

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 08-05-92
DATE OF ANALYSIS: 08-05-92 to 08-08-92
SAMPLE TYPE: water
METHOD REFERENCE: Fecal Coliform: SM9221C Mult Tube
Fecal Streptococcus: SM9230B Mult Tube

RESULTS

Client I.D.	Lab I.D.	Fecal Streptococcus MPN/100 mL	Fecal Coliform MPN/100 mL
208562-1	9202521	1600	300
208562-3	9202522	900	1600
208562-5	9202523	900	240
208562-7	9202524	500	1600

Reviewed by: Frederick A Amalfi Date: 13 Aug 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. **208563**

September 1, 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP-NPDES/9155038H-0013

Attention: Patricia Murray

On **08/05/92**, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

BOD analyses were performed by Aquatic Consulting & Testing.

A laboratory control standard is not available for biochemical oxygen demand.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Steven E Stanley for
Michael G. Barry
Project Manager

Robert V. Woods
Robert V. Woods
Laboratory Manager

Robert Hermerath
Robert Hermerath
QA Coordinator

RVW:ehj
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX DATE RECEIVED : 08/05/92
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES REPORT DATE : 08/27/92
ATI I.D. : 208563

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	21 (1-A) TOTALS	AQUEOUS	08/05/92
02	21 (1-A) DISSOLVED	AQUEOUS	08/05/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 208563

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES

DATE RECEIVED : 08/05/92
REPORT DATE : 08/27/92

PARAMETER	UNITS	01
BIOCHEMICAL OXYGEN DEMAND	MG/L	14
CHEMICAL OXYGEN DEMAND	MG/L	100
PHOSPHORUS, DISSOLVED	MG/L	0.08
AMMONIA AS NITROGEN	MG/L	1.13
NITRITE/NITRATE-N (TOTAL)	MG/L	1.53
PH	UNITS	6.4
TOTAL DISSOLVED SOLIDS	MG/L	100
TOTAL KJELDAHL NITROGEN	MG/L	2.5
PHOSPHORUS, TOTAL	MG/L	0.33
TOTAL SUSPENDED SOLIDS	MG/L	110

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES ATI I.D. : 208563

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20859301	<2	<2	NA	213	198	108
CHEMICAL OXYGEN DEMAND	MG/L	20854702	18	19	5	100	75	109
PHOSPHOROUS, DISSOLVED	MG/L	20868001	0.11	0.11	0	0.62	0.50	102
AMMONIA AS NITROGEN	MG/L	20853001	1.44	1.44	0	2.80	1.40	97
NITRITE/NITRATE-N (TOT	MG/L	20856301	1.53	1.51	1	3.50	2.00	98
PH	UNITS	20853701	8.3	8.4	1	NA	NA	NA
TOTAL DISSOLVED SOLIDS	MG/L	20853101	780	780	0	NA	NA	NA
TOTAL KJELDAHL NITROGE	MG/L	20853101	0.6	0.7	15	3.0	2.0	120
PHOSPHORUS,TOTAL	MG/L	20859301	<0.05	<0.05	NA	0.54	0.50	108
TOTAL SUSPENDED SOLIDS	MG/L	20706507	50	50	0	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 208563

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES

DATE RECEIVED : 08/05/92
REPORT DATE : 09/01/92

PARAMETER	UNITS	01	02
SILVER	MG/L	<0.0002	<0.0002
ARSENIC	MG/L	0.003	0.001
BERYLLIUM	MG/L	<0.0002	<0.0002
CADMIUM	MG/L	0.0009	<0.0005
CHROMIUM	MG/L	0.007	0.002
COPPER	MG/L	0.064	0.031
MERCURY	MG/L	<0.0002	<0.0002
NICKEL	MG/L	0.010	<0.005
LEAD	MG/L	0.022	<0.001
ANTIMONY	MG/L	<0.005	<0.005
SELENIUM	MG/L	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001
ZINC	MG/L	0.122	0.054

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES ATI I.D. : 208563

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20856302	<0.0002	<0.0002	NA	0.0048	0.0050	96
ARSENIC	MG/L	20856302	0.001	<0.001	NA	0.030	0.050	98
BERYLLIUM	MG/L	20856302	<0.0002	<0.0002	NA	0.120	0.120	100
CADMIUM	MG/L	20855601	0.0011	0.0013	17	0.0052	0.0050	82
CHROMIUM	MG/L	20799901	0.002	0.003	40	MSA	CC=	.998
COPPER	MG/L	20857301	0.020	0.020	0	0.481	0.500	92
MERCURY	MG/L	20700001	<0.0002	<0.0002	NA	0.0049	0.0050	98
NICKEL	MG/L	20868002	<0.005	<0.005	NA	0.241	0.250	96
LEAD	MG/L	20856302	<0.001	<0.001	NA	0.055	0.050	110
ANTIMONY	MG/L	20868001	<0.005	<0.005	NA	0.042	0.050	84
SELENIUM	MG/L	20856302	<0.0008	<0.0008	NA	0.0093	0.0125	74
THALLIUM	MG/L	20705601	<0.005	<0.005	NA	0.049	0.050	98
ZINC	MG/L	20857301	0.058	0.060	3	0.587	0.500	106

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession No.: 208563

QUALITY CONTROL REPORT

ACCESSION NUMBER: 208563

ANALYTE	QC NAME	VALUE FOUND	TRUE VALUE	LOWER CONTROL LIMIT	UPPER CONTROL LIMIT	UNIT	REAGENT BLANK
Chemical Oxygen Demand	ERA 9920	108	118	96	134	mg/l	NA
Ammonia	ERA 9923	4.17	4.24	3.71	4.53	mg/l	<0.03
Nitrate/Nitrite	ERA 378	2.24	2.20	2.03	2.34	mg/l	<0.06
pH	Buffer	6.86	6.86	6.84	6.88	pH	NA
TDS	In House	312	293	250	327	mg/l	<10
Total Kjeldahl Nitrogen	ERA 9925	4.6	4.7	3.8	5.6	mg/l	<0.2
Dissolved/Total Phosphorus	ERA 9929	4.8	5.0	4.1	5.9	mg/l	<0.05
TSS	EPA 489	56	69.5	51.8	80.1	mg/l	<10
Silver	WP 378-12	4.3	4.6	3.7	5.4	ug/l	<0.0002
Arsenic	WP 378-12	30.6	31.5	25.8	37.3	ug/l	<0.001
Beryllium	WP287	2.0	2.0	1.8	2.2	ug/l	<0.0002
Cadmium	WP378-12	1.4	1.5	1.1	1.8	ug/l	<0.0005
Chromium	WP287	10.8	10.4	8.4	11.5	ug/l	<0.001
Lead	WP287	19.8	21.4	17.5	25.3	ug/l	<0.001
Antimony	WP186	18.3	25.0	7.9	31.4	ug/l	<0.005
Selenium	WP287	23.5	21.1	15.5	26.6	ug/l	<0.0008
Thallium	WP186	20.2	20.2	15.5	24.9	ug/l	<0.001
Copper	ICAP3/10	0.096	0.096	0.086	0.106	mg/l	<0.003
Mercury	ERA 2539	2.91	3.00	2.55	3.45	ug/l	<0.0002
Nickel	ICAP3/10	0.098	0.102	0.086	0.117	mg/l	<0.005
Zinc	ICAP3/10	0.107	0.107	0.092	0.122	mg/l	<0.003

Analytical Technologies, Inc.

ACCESSION #: 208563

PARAMETER	METHOD	DATE ANALYZED	ANALYST
BOD	405.1	08/06/92	Aquatic Cons.
COD	410M	08/07/92	C. Warren
Dissolved phosphorus	365.3	08/13/92	C. Warren
Ammonia	350.3	08/14/92	T. Kehler
Nitrate/Nitrite	353.2	08/06/92	N. Milan
pH	150.1	08/13/92	T. Kehler
TDS	160.1	08/07/92	J. Rodriguez
TKN	351.2	08/11/92	P. Williamson
Total phosphorus	365.3	08/13/92	C. Warren
TSS	160.2	08/06/92	J. Rodriguez
Silver	272.2	08/24/92	W. Flanery
Arsenic	206.2	08/15/92	M. Zhou
Beryllium	210.1	08/25/92	W. Flanery
Cadmium	213.1	08/24/92	S. Mustain
Chromium	218.2	08/19/92	S. Mustain
Copper	200.7	08/13/92	J. Hrubant
Mercury	245.1	08/12/92	K. Jagger
Nickel	200.7	08/19/92	M. Zhou
Lead	239.2	08/20/92	W. Flanery
Antimony	204.2	08/25/92	M. Zhou
Selenium	270.2	08/17/92	W. Flanery
Thallium	279.2	08/18/92	W. Flanery
Zinc	200.7	08/13/982	J. Hrubant

Reference(s): Methods for Chemical Analysis of Water and Wastes
March 1983 EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20856301

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/05/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/05/92
PROJECT NAME	: COP-NPDES	DATE EXTRACTED	: 08/05/92
CLIENT I.D.	: 21 (1-A) TOTALS	DATE ANALYZED	: 08/10/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	TR
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	TR
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

TR - Compound detected at an unquantifiable trace level

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20856301

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	TR
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	99
2-FLUOROBIPHENYL (%)	84
TERPHENYL (%)	55
PHENOL-D6 (%)	87
2-FLUOROPHENOL (%)	77
2,4,6-TRIBROMOPHENOL (%)	66

TR - Compound detected at an unquantifiable trace level

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20856301

COMPOUNDS	RESULTS
OXYGENATED HYDROCARBONS C6-C9	60
HEXANOIC ACID	50
HEPTANOIC ACID	30
BUTOXYETHOXYETHANOL	700
BUTOXYETHOXYETHANOL ACETATE	100
PHOSPHORIC ACID ESTER	80

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 208563
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 08/05/92
PROJECT NAME	: COP-NPDES	DATE ANALYZED	: 08/10/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 208563

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	103
2-FLUOROBIPHENYL (%)	94
TERPHENYL (%)	86
PHENOL-D6 (%)	81
2-FLUOROPHENOL (%)	73
2,4,6-TRIBROMOPHENOL (%)	80

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 208563

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES
REF I.D. : 20856604

DATE ANALYZED : 08/10/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	100	83	83	78	78	6
ACENAPHTHENE	<10	100	89	89	80	80	11
2,4-DINITROTOLUENE	<10	100	88	88	78	78	12
PYRENE	<10	100	120	120	110	110	9
N-NITROSO-DI-N-PROPYLAMINE	<10	100	91	91	82	82	10
1,4-DICHLOROBENZENE	<10	100	87	87	78	78	11
PENTACHLOROPHENOL	<50	200	160	80	180	90	12
PHENOL	<10	200	120	60	130	65	8
2-CHLOROPHENOL	<10	200	130	65	140	70	7
4-CHLORO-3-METHYLPHENOL	<10	200	120	60	130	65	8
4-NITROPHENOL	<10	200	130	65	150	75	14

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 208563

LABORATORY CONTROL STANDARD: WP586/86
METHOD 625

CLIENT: Woodward-Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 08/06/92

COMPOUND	TRUE VALUE	FOUND	% REC
PHENOL	98.8	74	75
1-4-DICHLOROBENZENE	100	76	76
2-METHYLPHENOL	86.2	64	74
4-METHYLPHENOL	125	92	74
HEXACHLOROETHANE	100	75	75
NITROBENZENE	100	83	83
NAPHTHALENE	100	77	77
2,4,6-TRICHLOROPHENOL	68.5	52	76
2,4,5-TRICHLOROPHENOL	66.1	47	71
DIMETHYL PHTHALATE	100	12	12
ACENAPHTHENE	100	71	71
4-CHLOROPHENYL PHENYL ETHER	100	73	73
FLUORENE	100	81	81
4-BROMOPHENYL PHENYL ETHER	100	75	75
PENTACHLOROPHENOL	149	128	86
ANTHRACENE	100	56	56
FLUORANTHENE	100	99	99
BUTYL BENZYL PHTHALATE	100	23	23
BIS (2-ETHYL HEXYL) PHTHALATE	100	78	78
CHRYSENE	100	146	146
BENZO (b) FLUORANTHENE	100	92	92
BENZO (a) PYRENE	100	86	86
DIBENZO (a,h) ANTHRACENE	100	82	82
BENZO (g,h,i) PERYLENE	100	83	83

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 208680

September 8, 1992

- 9 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: COP-NPDES/9155038H-0013

Attention: Patricia Murray

On **08/12/92**, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

BOD analyses were performed by Aquatic Consulting & Testing. A Laboratory Control Standard was not available for the BOD analysis.

The chromium quality control data for sample I.D. 1B-11 Totals for relative percent difference (RPD) of the duplicate analysis does not meet ATI criteria. There was insufficient sample to reanalyze. The reported value does correspond well with the spike analysis.

Methods 608 and 615 required dilution for the analysis of sample I.D. 1B-11 Totals due to a matrix interference.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Steven E. Stanley for
Michael G. Barry
Project Manager

Robert V. Woods
Robert V. Woods
Laboratory Manager

RVW:ehj
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES

DATE RECEIVED : 08/12/92
REPORT DATE : 09/01/92

ATI I.D. : 208680

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	1B-11 TOTALS	AQUEOUS	08/12/92
02	1B-11 DISSOLVED	AQUEOUS	08/12/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 208680

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES

DATE RECEIVED : 08/12/92
REPORT DATE : 09/01/92

PARAMETER	UNITS	01
BIOCHEMICAL OXYGEN DEMAND	MG/L	4
CHEMICAL OXYGEN DEMAND	MG/L	64
PHOSPHORUS, DISSOLVED	MG/L	0.11
AMMONIA AS NITROGEN	MG/L	0.62
NITRITE/NITRATE-N (TOTAL)	MG/L	1.01
PH	UNITS	7.3
TOTAL DISSOLVED SOLIDS	MG/L	80
TOTAL KJELDAHL NITROGEN	MG/L	1.8
PHOSPHORUS, TOTAL	MG/L	0.45
TOTAL SUSPENDED SOLIDS	MG/L	250

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 208680

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES

DATE RECEIVED : 08/12/92
REPORT DATE : 09/01/92

PARAMETER	UNITS	01	02
SILVER	MG/L	<0.0002	<0.0002
ARSENIC	MG/L	0.003	0.001
BERYLLIUM	MG/L	0.0003	<0.0002
CADMIUM	MG/L	0.0002	<0.0002
CHROMIUM	MG/L	0.005	0.002
COPPER	MG/L	0.020	0.007
MERCURY	MG/L	<0.0002	<0.0002
NICKEL	MG/L	0.010	<0.005
LEAD	MG/L	0.010	0.002
ANTIMONY	MG/L	<0.005	<0.005
SELENIUM	MG/L	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001
ZINC	MG/L	0.154	0.058

Analytical **Technologies,** Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES ATI I.D. : 208680

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20856302	<0.0002	<0.0002	NA	0.0048	0.0050	96
ARSENIC	MG/L	20868001	0.003	0.003	0	0.017	0.012	117
BERYLLIUM	MG/L	20856302	<0.0002	<0.0002	NA	0.120	0.120	100
CADMIUM	MG/L	20868001	0.0002	0.0003	40	0.0047	0.0050	90
CHROMIUM	MG/L	20868001	0.005	0.010	67*	0.028	0.025	92
CHROMIUM	MG/L	20799901	0.002	0.003	40	MSA	CC=	.998
COPPER	MG/L	20868002	0.007	0.007	0	0.124	0.125	94
MERCURY	MG/L	20869202	<0.0002	<0.0002	NA	0.0048	0.0050	96
NICKEL	MG/L	20868002	<0.005	<0.005	NA	0.241	0.250	96
LEAD	MG/L	20878201	0.052	0.052	0	0.100	0.050	96
ANTIMONY	MG/L	20868001	<0.005	<0.005	NA	0.042	0.050	84
SELENIUM	MG/L	20868201	<0.005	<0.005	NA	0.030	0.050	60
THALLIUM	MG/L	20868001	<0.001	<0.001	NA	0.055	0.050	110
ZINC	MG/L	20868002	0.058	0.056	4	0.168	0.125	88

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

* Result out of limits due to sample matrix interference

Analytical Technologies, Inc.

Accession No.: 208680

QUALITY CONTROL REPORT

ANALYTE	QC NAME	VALUE FOUND	TRUE VALUE	LOWER CONTROL LIMIT	UPPER CONTROL LIMIT	UNIT	REAGENT BLANK
Chemical Oxygen Demand	ERA 9920	103	118	96	134	mg/l	NA
Ammonia	ERA 9936	0.42	0.39	0.33	0.45	mg/l	<0.03
Nitrate/Nitrite	ERA 378	2.24	2.20	2.03	2.34	mg/l	<0.06
pH	Buffer	6.86	6.86	6.84	6.88	pH	NA
TDS	In House	304	293	250	327	mg/l	<10
Total Kjeldahl Nitrogen	ERA 9925	4.3	4.7	3.8	5.6	mg/l	<0.2
Dissolved/Total Phosphorus	ERA 9929	4.8	5.0	4.1	5.9	mg/l	<0.05
TSS	EPA 489	56	69.5	51.8	80.1	mg/l	<10
Silver	WP 287	4.3	4.6	3.7	5.4	ug/l	<0.0002
Arsenic	WP 378	30.7	31.5	25.8	37.3	ug/l	<0.001
Beryllium	WP287	2.0	2.0	1.8	2.2	ug/l	<0.0002
Cadmium	WP378-12	1.4	1.5	1.1	1.8	ug/l	<0.0002
Chromium	WP287	11.0	10.0	8.5	11.5	ug/l	<0.001
Lead	LCS25	24.6	25.0	21.2	28.8	ug/l	<0.001
Antimony	WP186	18.3	25.0	7.9	31.4	ug/l	<0.005
Selenium	WP287	19.7	21.1	15.5	26.6	ug/l	<0.0008
Thallium	WP186	20.2	20.2	15.5	24.9	ug/l	<0.001
Copper	ICAP3/10	0.096	0.096	0.086	0.106	mg/l	<0.003
Mercury	ERA 2539	2.76	3.00	2.55	3.45	ug/l	<0.0002
Nickel	ICAP3/10	0.098	0.102	0.086	0.117	mg/l	<0.005
Zinc	ICAP3/10	0.106	0.107	0.092	0.122	mg/l	<0.003

Analytical Technologies, Inc.

ACCESSION #: 208680

PARAMETER	METHOD	DATE ANALYZED	ANALYST
BOD	405.1	08/13/92	Aquatic Cons.
COD	410M	08/20/92	C. Warren
Dissolved phosphorus	365.3	08/13/92	C. Warren
Ammonia	350.3	08/14/92	T. Kehler
Nitrate/Nitrite	353.2	08/14/92	C. Warren
pH	150.1	08/13/92	T. Kehler
TDS	160.1	08/12/92	J. Rodriguez
TKN	351.2	08/20/92	P. Williamson
Total phosphorus	365.3	08/13/92	C. Warren
TSS	160.2	08/13/92	J. Rodriguez
Silver	272.2	08/24/92	W. Flanery
Arsenic	206.2	08/20/92	W. Flanery
Beryllium	210.1	08/25/92	W. Flanery
Cadmium	213.1	08/25/92	W. Flanery
Chromium	218.2	08/20/92	W. Flanery
Copper	200.7	08/19/92	M. Zhou
Mercury	245.1	08/14/92	K. Jagger
Nickel	200.7	08/19/92	M. Zhou
Lead	239.2	08/27/92	W. Flanery
Antimony	204.2	08/25/92	M. Zhou
Selenium	270.2	08/18/92	W. Flanery
Thallium	279.2	08/18/92	W. Flanery
Zinc	200.7	08/19/92	M. Zhou

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983 EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20868001

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/12/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/12/92
PROJECT NAME	: COP-NPDES	DATE EXTRACTED	: 08/12/92
CLIENT I.D.	: 1B-11 TOTALS	DATE ANALYZED	: 08/19/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
ALDRIN	<0.25
ALPHA BHC	<0.25
BETA BHC	<0.25
GAMMA BHC (LINDANE)	<0.25
DELTA BHC	<0.25
ALPHA-CHLORDANE	<2.5
4,4'-DDD	<0.5
4,4'-DDE	<0.5
4,4'-DDT	<0.5
DIELDRIN	<0.5
ENDOSULFAN I	<0.25
ENDOSULFAN II	<0.5
ENDOSULFAN SULFATE	<0.5
ENDRIN	<0.5
ENDRIN ALDEHYDE	<0.5
ENDRIN KETONE	<0.5
HEPTACHLOR	<0.25
HEPTACHLOR EPOXIDE	<0.25
METHOXYCHLOR	<2.5
TOXAPHENE	<5.0
AROCLOR 1016	<2.5
AROCLOR 1221	<2.5
AROCLOR 1232	<2.5
AROCLOR 1242	<2.5
AROCLOR 1248	<2.5
AROCLOR 1254	<2.5
AROCLOR 1260	<2.5
GAMMA-CHLORDANE	<2.5

SURROGATE PERCENT RECOVERIES

DBC (%)	31*
DBOFBP (%)	71

* Result out of limits due to sample matrix interference

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 208680
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 08/12/92
PROJECT NAME	: COP-NPDES	DATE ANALYZED	: 08/17/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
ALDRIN	<0.05
ALPHA BHC	<0.05
BETA BHC	<0.05
GAMMA BHC (LINDANE)	<0.05
DELTA BHC	<0.05
ALPHA-CHLORDANE	<0.5
4,4'-DDD	<0.1
4,4'-DDE	<0.1
4,4'-DDT	<0.1
DIELDRIN	<0.1
ENDOSULFAN I	<0.05
ENDOSULFAN II	<0.1
ENDOSULFAN SULFATE	<0.1
ENDRIN	<0.1
ENDRIN ALDEHYDE	<0.1
ENDRIN KETONE	<0.1
HEPTACHLOR	<0.05
HEPTACHLOR EPOXIDE	<0.05
METHOXYCHLOR	<0.5
TOXAPHENE	<1.0
AROCLOR 1016	<0.5
AROCLOR 1221	<0.5
AROCLOR 1232	<0.5
AROCLOR 1242	<0.5
AROCLOR 1248	<0.5
AROCLOR 1254	<0.5
AROCLOR 1260	<0.5
GAMMA-CHLORDANE	<0.5

SURROGATE PERCENT RECOVERIES

DBC (%)	99
DBOFBP (%)	95

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 208680

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES
REF I.D. : 20849909

DATE ANALYZED : 08/17/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
GAMMA BHC	<0.05	2.0	2.1	105	2.1	105	0
HEPTACHLOR	<0.05	2.0	2.2	110	2.2	110	0
ALDRIN	<0.05	2.0	2.0	100	2.0	100	0
DIELDRIN	<0.1	2.0	2.1	105	2.1	105	0
ENDRIN	<0.1	2.0	2.1	105	1.8	90	15
DDT	<0.1	2.0	2.3	115	2.3	115	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 208680

LABORATORY CONTROL STANDARD: 98973
METHOD 608

CLIENT: Woodward-Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 08/17/92

COMPOUND	TRUE VALUE	FOUND	% REC
Aldrin	4.10	3.79	92
Gamma-BHC (Lindane)	1.02	1.13	111
4,4'-DDD	0.911	1.15	126
4,4'-DDE	0.252	0.280	111
4,4'-DDT	0.975	1.16	119
Dieldrin	0.0907	0.115	127
Endrin	2.02	2.28	113
Heptachlor	1.51	1.7	113
Heptachlor Epoxide	0.512	0.54	105
Methoxychlor	1.34	1.8	1.34

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20868001

TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/12/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/12/92
PROJECT NAME	: COP-NPDES	DATE EXTRACTED	: 08/12/92
CLIENT I.D.	: 1B-11 TOTALS	DATE ANALYZED	: 08/21/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
2,4-D	<4.0
2,4,5-TP (SILVEX)	<2.0
SURROGATE PERCENT RECOVERIES	
DCAA (%)	111

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 208680
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 08/12/92
PROJECT NAME	: COP-NPDES	DATE ANALYZED	: 08/20/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
2,4-D	<0.4
2,4,5-TP (SILVEX)	<0.2

SURROGATE PERCENT RECOVERIES

DCAA (%)	121

Analytical **Technologies**, Inc.

QUALITY CONTROL DATA

ATI I.D. : 208680

TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES
REF I.D. : 20868001

DATE ANALYZED : 08/20/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
2,4-D	<0.4	17	11	65	11	65	0
SILVEX	<0.2	3.3	3.5	106	3.5	106	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 208680

LABORATORY CONTROL STANDARD: ERA 2528
METHOD 615

CLIENT: Woodward-Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 08/20/92

COMPOUND	TRUE VALUE	FOUND	% REC
2,4-D	3.19	3.3	103
2,4,5-TP	2.91	3.6	124

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20868001

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/12/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/12/92
PROJECT NAME	: COP-NPDES	DATE EXTRACTED	: 08/12/92
CLIENT I.D.	: 1B-11 TOTALS	DATE ANALYZED	: 08/18/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	TR
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

TR - Compound detected at an unquantifiable trace level

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20868001

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	86
2-FLUOROBIPHENYL (%)	76
TERPHENYL (%)	65
PHENOL-D6 (%)	58
2-FLUOROPHENOL (%)	56
2,4,6-TRIBROMOPHENOL (%)	67

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20868001

COMPOUNDS	RESULTS
BUTOXYETHOXYETHANOL	600
BUTOXYETHOXYETHANOL ACETATE	500

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 208680
PROJECT #	: 9155038H-0013	DATE EXTRACTED	: 08/12/92
PROJECT NAME	: COP-NPDES	DATE ANALYZED	: 08/17/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

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ATI I.D. : 208680

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	80
2-FLUOROBIPHENYL (%)	73
TERPHENYL (%)	71
PHENOL-D6 (%)	64
2-FLUOROPHENOL (%)	62
2,4,6-TRIBROMOPHENOL (%)	61

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 208680

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP-NPDES
REF I.D. : 20874601

DATE ANALYZED : 08/17/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	100	64	64	64	64	0
ACENAPHTHENE	<10	100	70	70	72	72	3
2,4-DINITROTOLUENE	<10	100	75	75	80	80	6
PYRENE	<10	100	59	59	61	61	3
N-NITROSO-DI-N-PROPYLAMINE	<10	100	73	73	79	79	8
1,4-DICHLOROBENZENE	<10	100	66	66	64	64	3
PENTACHLOROPHENOL	<50	200	180	90	190	95	5
PHENOL	<10	200	110	55	110	55	0
2-CHLOROPHENOL	<10	200	120	60	120	60	0
4-CHLORO-3-METHYLPHENOL	<10	200	120	60	120	60	0
4-NITROPHENOL	<10	200	110	55	100	50	10

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 208680

LABORATORY CONTROL STANDARD: WP586/86
METHOD 625

CLIENT: Woodward-Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 08/18/92

COMPOUND	TRUE VALUE	FOUND	% REC
PHENOL	98.8	63	64
1-4-DICHLOROBENZENE	100	70	70
2-METHYLPHENOL	86.2	55	64
4-METHYLPHENOL	125	79	63
HEXACHLOROETHANE	100	69	69
NITROBENZENE	100	77	77
NAPHTHALENE	100	74	74
2,4,6-TRICHLOROPHENOL	68.5	41	60
2,4,5-TRICHLOROPHENOL	66.1	44	67
DIMETHYL PHTHALATE	100	18	18
ACENAPHTHENE	100	70	70
4-CHLOROPHENYL PHENYL ETHER	100	75	75
FLUORENE	100	80	80
4-BROMOPHENYL PHENYL ETHER	100	62	62
PENTACHLOROPHENOL	149	71	48
ANTHRACENE	100	73	73
FLUORANTHENE	100	71	71
BUTYL BENZYL PHTHALATE	100	26	26
BIS (2-ETHYL HEXYL) PHTHALATE	100	72	72
CHRYSENE	100	89	89
BENZO (b) FLUORANTHENE	100	70	70
BENZO (a) PYRENE	100	70	70
DIBENZO (a,h) ANTHRACENE	100	59	59
BENZO (g,h,i) PERYLENE	100	68	68

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. **208782**

September 15, 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

SEP 16 1992

Project Name/Number: COP NPDES/9155038H

Attention: Patricia Murray

On **08/18/92**, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

BOD analyses were performed by Aquatic Consulting & Testing. A Laboratory Control Standard is not available for BOD.

The quality control data for zinc sample I.D. 20878202 did not meet ATI acceptance criteria for percent recovery. Reanalysis met criteria using the duplicate sample to determine the percent recovery. The original reanalysis value was contaminated. There was insufficient sample to repeat the analysis a third time.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry

Michael G. Barry
Project Manager

Robert V. Woods

Robert V. Woods
Laboratory Manager

RVW:ktd
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H
PROJECT NAME : COP-NPDES

DATE RECEIVED : 08/18/92
REPORT DATE : 09/15/92

ATI I.D. : 208782

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	1B08 (TOTALS)	AQUEOUS	08/17/92
02	1B08 (DISSOLVED)	AQUEOUS	08/17/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 208782

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H
PROJECT NAME : COP-NPDES

DATE RECEIVED : 08/18/92
REPORT DATE : 09/15/92

PARAMETER	UNITS	01
BIOCHEMICAL OXYGEN DEMAND	MG/L	22
CHEMICAL OXYGEN DEMAND	MG/L	200
PHOSPHORUS, DISSOLVED	MG/L	0.09
AMMONIA AS NITROGEN	MG/L	1.58
NITRITE/NITRATE-N (TOTAL)	MG/L	1.20
PH	UNITS	7.4
TOTAL DISSOLVED SOLIDS	MG/L	110
TOTAL KJELDAHL NITROGEN	MG/L	4.4
PHOSPHORUS, TOTAL	MG/L	0.50
TOTAL SUSPENDED SOLIDS	MG/L	250

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H
PROJECT NAME : COP-NPDES

ATI I.D. : 208782

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20877601	<2	<2	NA	186	198	94
CHEMICAL OXYGEN DEMAND	MG/L	20878201	200	190	5	530	300	110
PHOSPHOROUS, DISSOLVED	MG/L	20878201	0.09	0.09	0	0.58	0.50	98
AMMONIA AS NITROGEN	MG/L	20878201	1.58	1.59	0.6	3.09	1.60	94
NITRITE/NITRATE-N (TOT	MG/L	20830101	4.10	4.10	0	8.10	4.00	100
PH	UNITS	20876201	7.5	7.4	1	NA	NA	NA
TOTAL DISSOLVED SOLIDS	MG/L	20880001	<10	<10	NA	NA	NA	NA
TOTAL KJELDAHL NITROGE	MG/L	20877701	<0.2	<0.2	NA	2.1	2.0	105
PHOSPHORUS,TOTAL	MG/L	20877601	0.06	0.05	18	0.55	0.50	98
TOTAL SUSPENDED SOLIDS	MG/L	20878201	250	240	4	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 208782

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H
PROJECT NAME : COP-NPDES

DATE RECEIVED : 08/18/92
REPORT DATE : 09/15/92

PARAMETER	UNITS	01	02
SILVER	MG/L	<0.0002	<0.0002
ARSENIC	MG/L	0.004	0.001
BERYLLIUM	MG/L	0.0004	<0.0002
CADMIUM	MG/L	0.0012	<0.0002
CHROMIUM	MG/L	0.019	0.013
COPPER	MG/L	0.045	0.017
MERCURY	MG/L	<0.0002	<0.0002
NICKEL	MG/L	0.018	0.008
LEAD	MG/L	0.052	0.006
ANTIMONY	MG/L	<0.005	<0.005
SELENIUM	MG/L	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001
ZINC	MG/L	0.245	0.086

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H
PROJECT NAME : COP-NPDES ATI I.D. : 208782

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20878201	<0.0002	<0.0002	NA	MSA	CC=	.998
ARSENIC	MG/L	20878201	0.004	0.005	22	0.014	0.012	83
BERYLLIUM	MG/L	20878201	0.0004	0.0005	22	MSA	CC=	.998
CADMIUM	MG/L	20878201	0.0012	0.0010	18	0.0058	0.0050	92
CHROMIUM	MG/L	20878201	0.019	0.019	0	0.044	0.025	100
COPPER	MG/L	20878202	0.017	0.017	0	0.124	0.125	86
MERCURY	MG/L	20879801	<0.0002	<0.0002	NA	0.0047	0.0050	94
NICKEL	MG/L	20878202	0.008	0.010	22	0.210	0.250	81
LEAD	MG/L	20878201	0.052	0.052	0	0.100	0.050	96
ANTIMONY	MG/L	20878201	<0.005	<0.005	NA	0.040	0.050	80
SELENIUM	MG/L	20878201	<0.0008	<0.0008	NA	MSA	CC=	0.99
THALLIUM	MG/L	20878201	<0.001	<0.001	NA	0.010	0.012	83
ZINC	MG/L	20878001	<0.010	<0.010	NA	1.03	1.00	103
ZINC	MG/L	20878202	0.086	0.085	1	0.177	0.125	73*

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

* Result out of limits due to sample matrix interference

Analytical Technologies, Inc.

ACCESSION #: 208782

PARAMETER	METHOD	DATE ANALYZED	ANALYST
BOD	405.1	08/19/92	Aquatic Cons.
COD	410M	08/20/92	C. Warren
Dissolved phosphorus	365.3	08/24/92	C. Warren
Ammonia	350.3	08/25/92	T. Kehler
Nitrate/Nitrite	353.2	08/24/92	P. Williamson
pH	150.1	08/18/92	T. Kehler
TDS	160.1	08/19/92	J. Rodriguez
TKN	351.2	08/20/92	P. Williamson
Total phosphorus	365.3	08/24/92	C. Warren
TSS	160.2	08/20/92	J. Rodriguez
Silver	272.2	09/08/92	W. Flanery
Arsenic	206.2	09/03/92	W. Flanery
Beryllium	210.1	09/01/92	W. Flanery
Cadmium	213.1	09/03/92	W. Flanery
Chromium	218.2	09/08/92	S. Mustain
Copper	200.7	09/02/92	M. Zhou
Mercury	245.1	09/01/92	K. Jagger
Nickel	200.7	09/02/92	M. Zhou
Lead	239.2	09/02/92	W. Flanery
Antimony	204.2	09/04/92	M. Zhou
Selenium	270.2	09/02/92	W. Flanery
Thallium	279.2	08/31/92	W. Flanery
Zinc	200.7	09/02/92	M. Zhou

Reference(s): Methods for Chemical Analysis of Water and Wastes
March 1983 EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession No.: 208782

QUALITY CONTROL REPORT

ANALYTE	QC NAME	VALUE FOUND	TRUE VALUE	LOWER CONTROL LIMIT	UPPER CONTROL LIMIT	UNIT	REAGENT BLANK
Chemical Oxygen Demand	Hach STD.	299	300	255	345	mg/l	<5
Ammonia	ERA 9923	4.19	4.24	3.71	4.53	mg/l	<0.03
Nitrate/Nitrite	ERA 378	2.22	2.20	2.03	2.34	mg/l	<0.06
pH	Buffer	6.85	6.86	6.84	6.88	pH	NA
TDS	In House	280	293	250	327	mg/l	<10
Total Kjeldahl Nitrogen	ERA 9925	4.3	4.7	3.8	5.6	mg/l	<0.2
Dissolved/Total Phosphorus	ERA 9929	5.0	5.0	4.1	5.9	mg/l	<0.05
TSS	EPA 489	52	69.5	51.8	80.1	mg/l	<10
Silver	WP378	4.6	4.6	3.7	5.4	ug/l	<0.2
Arsenic	WP378	29.4	31.5	25.8	37.3	ug/l	<1
Beryllium	WP287	2.0	2.0	1.8	2.2	ug/l	<0.2
Cadmium	WP378-12	1.5	1.5	1.1	1.8	ug/l	<0.2
Chromium	WP287	10.9	10.0	8.5	11.5	ug/l	<1
Lead	WP287/5	20.0	21.4	17.5	25.3	ug/l	<1
Antimony	WP186	22.8	19.8	15.2	24.4	ug/l	<5
Selenium	WP287	23.1	21.1	15.5	26.6	ug/l	<0.8
Thallium	WP186	19.7	20.2	15.5	24.9	ug/l	<1
Copper	ICAP3/10	0.103	0.096	0.086	0.106	mg/l	<0.003
Mercury	EM LCS	2.93	3.00	2.55	3.45	ug/l	<0.2
Nickel	ICAP3/10	0.091	0.102	0.086	0.117	mg/l	<0.005
Zinc	ICAP3/10	0.107	0.107	0.092	0.122	mg/l	<0.003

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20878201

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/17/92
PROJECT #	: 9155038H	DATE RECEIVED	: 08/18/92
PROJECT NAME	: COP-NPDES	DATE EXTRACTED	: 08/18/92
CLIENT I.D.	: 1B08 (TOTALS)	DATE ANALYZED	: 08/20/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	94
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20878201

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	12
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	76
2-FLUOROBIPHENYL (%)	70
TERPHENYL (%)	55
PHENOL-D6 (%)	57
2-FLUOROPHENOL (%)	46
2,4,6-TRIBROMOPHENOL (%)	61

Analytical Technologies, Inc. ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20878201

COMPOUNDS	RESULTS
OXYGENATED HYDROCARBONS C6-C12	60
BUTOXYETHOXYETHANOL	1000
BUTOXYETHOXYETHOXYETHANOL	200
BUTOXYETHOXYEHTOXYETHANOL ACETATE	40

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 208782
PROJECT #	: 9155038H	DATE EXTRACTED	: 08/18/92
PROJECT NAME	: COP-NPDES	DATE ANALYZED	: 08/20/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 208782

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	74
2-FLUOROBIPHENYL (%)	77
TERPHENYL (%)	75
PHENOL-D6 (%)	51
2-FLUOROPHENOL (%)	56
2,4,6-TRIBROMOPHENOL (%)	61

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 208782

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H
PROJECT NAME : COP-NPDES
REF I.D. : 20877201

DATE ANALYZED : 08/19/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	100	75	75	66	66	13
ACENAPHTHENE	<10	100	78	78	75	75	4
2,4-DINITROTOLUENE	<10	100	81	81	82	82	1
PYRENE	<10	100	85	85	88	88	3
N-NITROSO-DI-N-PROPYLAMINE	<10	100	73	73	68	68	7
1,4-DICHLOROBENZENE	<10	100	71	71	61	61	15
PENTACHLOROPHENOL	<50	200	190	95	190	95	0
PHENOL	<10	200	91	46	100	50	9
2-CHLOROPHENOL	<10	200	100	50	110	55	10
4-CHLORO-3-METHYLPHENOL	<10	200	130	65	140	70	7
4-NITROPHENOL	<50	200	100	50	120	60	18

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 208782

LABORATORY CONTROL STANDARD: 820B
METHOD 625

CLIENT: Woodward-Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 08/20/92

COMPOUND	TRUE VALUE	FOUND	% REC
PHENOL	98.8	67	68
1,4-DICHLOROBENZENE	100	74	74
2-METHYLPHENOL	86.2	62	72
4-METHYLPHENOL	125	85	68
HEXACHLOROETHANE	100	75	75
NITROBENZENE	100	79	79
NAPHTHALENE	100	76	76
2,4,6-TRICHLOROPHENOL	68.5	52	76
2,4,5-TRICHLOROPHENOL	66.1	47	71
DIMETHYL PHTHALATE	100	83	83
ACENAPHTHENE	100	75	75
4-CHLOROPHENYL PHENYL ETHER	100	84	84
FLUORENE	100	88	88
4-BROMOPHENYL PHENYL ETHER	100	72	72
PENTACHLOROPHENOL	149	120	81
ANTHRACENE	100	50	50
FLUORANTHENE	100	82	82
BUTYL BENZYL PHTHALATE	100	94	94
BIS (2-ETHYL HEXYL) PHTHALATE	100	93	93
CHRYSENE	100	107	107
BENZO (b) FLUORANTHENE	100	102	102
BENZO (a) PYRENE	100	86	86
DIBENZO (a,h) ANTHRACENE	100	72	72
BENZO (g,h,i) PERYLENE	100	85	85

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

16 1992

ATI I.D. **208898**

September 16, 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: City of Phoenix/9155038H

Attention: Patricia Murray

On **08/23/92**, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Fecal Coliform and Fecal Streptococcus analyses were performed by Aquatic Consulting & Testing. A copy of their final report is enclosed. A laboratory control standard is not available for Fecal Coliform and Fecal Streptococci.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry

Michael G. Barry
Project Manager

Robert V. Woods

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H
PROJECT NAME : CITY OF PHX

DATE RECEIVED : 08/23/92
REPORT DATE : 09/09/92

ATI I.D. : 208898

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	SR-03	AQUEOUS	08/23/92
02	AC-05	AQUEOUS	08/23/92
03	SR-33	AQUEOUS	08/22/92
04	TRIP BLANK (SR-03,AC-05)	AQUEOUS	08/06/92
05	TRIP BLANK (SR-33)	AQUEOUS	08/06/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	5

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 208898

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H
PROJECT NAME : CITY OF PHX

DATE RECEIVED : 08/23/92
REPORT DATE : 09/09/92

PARAMETER	UNITS	01	02	03
FECAL COLIFORM (MPN/100ML)		1600000	90000	-
CYANIDE, TOTAL	MG/L	<0.01	<0.01	<0.01
OIL AND GREASE, GRAVIMETRIC	MG/L	<2	5	5
PHENOLICS, TOTAL	MG/L	<0.02	<0.02	<0.02

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H
PROJECT NAME : CITY OF PHX ATI I.D. : 208898

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/L	20889801	<0.01	<0.01	NA	0.22	0.25	88
OIL AND GREASE, GRAVIM	MG/L	20849806	<2	<2	NA	41	40	102
PHENOLICS, TOTAL	MG/L	20889801	<0.02	<0.02	NA	0.03	0.02	150
PHENOLICS, TOTAL	MG/L	20949902	<0.1	<0.1	NA	0.13	0.12	108

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ACCESSION #: 208782

PARAMETER	METHOD	DATE ANALYZED	ANALYST
Cyanide	335.2	08/27/92	N. Milan
Oil & grease	413.1	08/24/92	J. Rodriguez
Phenolics	420.2	09/01/92	P. Williamson

Reference(s): Methods for Chemical Analysis of Water and Wastes
March 1983 EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

Accession No.: 208898

QUALITY CONTROL REPORT

ANALYTE	QC NAME	VALUE FOUND	TRUE VALUE	LOWER CONTROL LIMIT	UPPER CONTROL LIMIT	UNIT	REAGENT BLANK
Cyanide	LCS #1	0.26	0.25	0.18	0.27	mg/l	<0.01
Oil & grease	04511	24	20	16	24	mg/l	<2
Phenolics	QC Macro	0.25	0.25	0.23	0.27	mg/l	<0.02

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20889801

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/23/92
PROJECT #	: 9155038H	DATE RECEIVED	: 08/23/92
PROJECT NAME	: CITY OF PHX	DATE EXTRACTED	: N/A
CLIENT I.D.	: SR-03	DATE ANALYZED	: 08/25/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	112
BROMOFLUOROBENZENE (%)	109
TOLUENE-D8 (%)	110

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20889801

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20889802

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/23/92
PROJECT #	: 9155038H	DATE RECEIVED	: 08/23/92
PROJECT NAME	: CITY OF PHX	DATE EXTRACTED	: N/A
CLIENT I.D.	: AC-05	DATE ANALYZED	: 08/25/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	11
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	112
BROMOFLUOROBENZENE (%)	104
TOLUENE-D8 (%)	107

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20889802

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20889803

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/22/92
PROJECT #	: 9155038H	DATE RECEIVED	: 08/23/92
PROJECT NAME	: CITY OF PHX	DATE EXTRACTED	: N/A
CLIENT I.D.	: SR-33	DATE ANALYZED	: 08/25/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	14
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	112
BROMOFLUOROBENZENE (%)	106
TOLUENE-D8 (%)	112

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20889803

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20889804

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/06/92
PROJECT #	: 9155038H	DATE RECEIVED	: 08/23/92
PROJECT NAME	: CITY OF PHX	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK (SR-03,AC-05)	DATE ANALYZED	: 08/25/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	105
BROMOFLUOROBENZENE (%)	103
TOLUENE-D8 (%)	105

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20889804

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20889805

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/06/92
PROJECT #	: 9155038H	DATE RECEIVED	: 08/23/92
PROJECT NAME	: CITY OF PHX	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK (SR-33)	DATE ANALYZED	: 08/25/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	115
BROMOFLUOROBENZENE (%)	105
TOLUENE-D8 (%)	112

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 20889805

COMPOUNDS	RESULTS
ACROLEIN	<20
ACRYLONITRILE	<10

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 624)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	ATI I.D.	: 208898
PROJECT #	: 9155038H	DATE EXTRACTED	: 08/25/92
PROJECT NAME	: CITY OF PHX	DATE ANALYZED	: 08/25/92
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLOROETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYLBENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	110
BROMOFLUOROBENZENE (%)	110
TOLUENE-D8 (%)	108

Analytical Technologies, Inc.

QUALITY CONTROL DATA

TEST : VOLATILE ORGANICS (EPA 624)

ATI I.D. : 208898

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H
PROJECT NAME : CITY OF PHX
REF I.D. : 20889801

DATE ANALYZED : 08/25/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	50	55	110	58	116	5
TRICHLOROETHENE	<1	50	51	102	50	100	2
CHLOROBENZENE	<1	50	49	98	51	102	4
TOLUENE	<1	50	54	108	54	108	0
BENZENE	<1	50	55	110	56	112	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 208898

QUALITY CONTROL DATA: 589
METHOD 624

CLIENT: WOODWARD CLYDE CONSULTANTS
UNITS: UG/L
ANALYSIS DATE: 08/25/92

	TRUE VALUE	FOUND	% REC
1,1-DICHLOROETHENE	50	48	96
CHLOROFORM	50	51	102
1,1,1-TRICHLOROETHANE	50	47	94
BROMODICHLOROMETHANE	50	47	94
TRICHLOROETHENE	50	48	96
TETRACHLOROETHENE	50	47	94
CHLOROBENZENE	50	50	100
BENZENE	50	52	104
TOLUENE	50	52	104

% SURROGATE RECOVERY
103% 1,2-DICHLOROETHANE-D4
103% BROMOFLUOROBENZENE (BFB)
102% TOLUENE - D8

AQUATIC CONSULTING & TESTING, INC.

1555 W. University Drive, Suite 103
P.O. Box 1510
Tempe, Arizona 85281
Phone: (602) 921-8044 • FAX: (602) 921-0049

LABORATORY REPORT

CLIENT: Analytical Technologies, Inc.
9830 S. 51st Street, B-113
Phoenix, AZ 85044
Attention: Ms. Rebecca Tubeszewski

P.O. #: ---

DATE SUBMITTED: 08-23-92
DATE OF ANALYSIS: 08-23-92 to 08-26-92
SAMPLE TYPE: aqueous
METHOD REFERENCE: Fecal Coliform: SM9221C Mult Tube
Fecal Streptococcus: SM9230B Mult Tube

RESULTS

Client I.D.	Lab I.D.	Fecal Streptococcus MPN/100 mL	Fecal Coliform MPN/100 mL
SR-03	9202820	500	1,600,000
AC-05	9202821	3,000	90,000

Reviewed by: Frederick A Amalfi Date: 3 Sep 92

Frederick A. Amalfi, Ph.D.
Laboratory Director

Analytical **Technologies,** Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 208903

RECEIVED SEP 18 1992

September 16, 1992

Woodward-Clyde Consultants
426 N. 44th Street
Suite 300
Phoenix, AZ 85008

Project Name/Number: C.O.P./9155038H-0013

Attention: Patricia Murray

On **08/24/92**, Analytical Technologies, Inc. received a request to analyze **aqueous** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

BOD analyses were performed by Aquatic Consulting & Testing. A Laboratory Control Standard is not available for the BOD.

Due to a limited amount of sample for AC-05 (Dissolved), the mercury analysis had to be analyzed at a 2x dilution. Since the total analysis for AC-05 for mercury was <0.0002 mg/l, it can be extrapolated that the dissolved is also <0.0002 mg/l.

The dissolved results were higher than the total results for all the chromium analyses and sample SR-03 for the nickel analysis. These analyses were repeated by digested and undigested techniques and confirmed the original enclosed results. It is possible the dissolved samples were contaminated during the filtering procedure, which ATI performed. The charges have been dropped for these four analyses.

The dissolved results were higher than the total results for all the zinc analyses. Redigestion and reanalysis of the total zinc results confirmed the original results enclosed. Undigested analyses of the dissolved zinc samples SR-03 and SR-33 found results lower than total zinc.

Sample I.D.	Undigested zinc (mg/l)
SR-03 (Dissolved)	0.016
SR-33 (Dissolved)	0.038

Unfortunately there was insufficient sample to repeat the dissolved sample AC-05 for zinc.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

M. Barry

Michael G. Barry
Project Manager

Robert V. Woods

Robert V. Woods
Laboratory Manager

Robert Hermerath

Robert Hermerath
QA Coordinator

RVW:clf
Enclosure

Analytical Technologies, Inc.

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX DATE RECEIVED : 08/24/92
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES REPORT DATE : 09/15/92
ATI I.D. : 208903

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	SR-03 (TOTALS)	AQUEOUS	08/24/92
02	SR-03 (DISSOLVED)	AQUEOUS	08/24/92
03	SR-33 (TOTALS)	AQUEOUS	08/24/92
04	SR-33 (DISSOLVED)	AQUEOUS	08/24/92
05	AC-05 (TOTALS)	AQUEOUS	08/24/92
06	AC-05 (DISSOLVED)	AQUEOUS	08/24/92

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	6

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 208903

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 08/24/92
REPORT DATE : 09/15/92

PARAMETER	UNITS	01	03	05
BIOCHEMICAL OXYGEN DEMAND	MG/L	3	11	13
CHEMICAL OXYGEN DEMAND	MG/L	31	-	100
PHOSPHORUS, DISSOLVED	MG/L	0.14	-	-
AMMONIA AS NITROGEN	MG/L	0.04	-	-
NITRITE/NITRATE-N (TOTAL)	MG/L	2.92	-	-
PH	UNITS	7.7	7.5	7.4
TOTAL DISSOLVED SOLIDS	MG/L	660	140	80
TOTAL KJELDAHL NITROGEN	MG/L	0.9	-	-
PHOSPHORUS, TOTAL	MG/L	0.24	-	-
TOTAL SUSPENDED SOLIDS	MG/L	40	80	30

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES ATI I.D. : 208903

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
BIOCHEMICAL OXYGEN DEM	MG/L	20892602	6	6	0	222	198	109
CHEMICAL OXYGEN DEMAND	MG/L	20890301	31	31	0	110	75	105
PHOSPHOROUS, DISSOLVED	MG/L	20890301	0.14	0.15	7	0.64	0.50	100
AMMONIA AS NITROGEN	MG/L	20886401	<0.03	<0.03	NA	0.49	0.50	98
NITRITE/NITRATE-N (TOT	MG/L	20892601	1.62	1.58	2	3.54	2.00	96
PH	UNITS	20890801	7.0	7.2	3	NA	NA	NA
TOTAL DISSOLVED SOLIDS	MG/L	20890801	900	910	1	NA	NA	NA
TOTAL DISSOLVED SOLIDS	MG/L	20894801	<10	<10	NA	NA	NA	NA
TOTAL KJELDAHL NITROGE	MG/L	20884301	<0.2	<0.2	NA	2.4	2.0	120
PHOSPHORUS,TOTAL	MG/L	20890801	0.12	0.12	0	0.62	0.50	100
TOTAL SUSPENDED SOLIDS	MG/L	20890301	40	40	0	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 208903

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 08/24/92
REPORT DATE : 09/15/92

PARAMETER	UNITS	01	02	03	04	05
SILVER	MG/L	0.0003	<0.0002	<0.0002	<0.0002	<0.0002
ARSENIC	MG/L	0.038	0.031	0.011	0.007	0.005
BERYLLIUM	MG/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
CADMIUM	MG/L	<0.0002	<0.0002	0.0004	<0.0002	0.0002
CHROMIUM	MG/L	0.004	0.026	0.003	<0.001	0.003
COPPER	MG/L	0.010	0.010	0.019	0.017	0.010
HARDNESS	MG/L	219	-	57.8	-	27.5
MERCURY	MG/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
NICKEL	MG/L	<0.005	0.016	0.008	0.007	<0.005
LEAD	MG/L	0.003	0.001	0.021	0.002	0.007
ANTIMONY	MG/L	<0.005	<0.005	<0.005	<0.005	<0.005
SELENIUM	MG/L	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
THALLIUM	MG/L	<0.001	<0.001	<0.001	<0.001	<0.001
ZINC	MG/L	0.020	0.031	0.117	0.198	0.078

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 208903

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES

DATE RECEIVED : 08/24/92
REPORT DATE : 09/15/92

PARAMETER	UNITS	06
SILVER	MG/L	<0.0002
ARSENIC	MG/L	0.005
BERYLLIUM	MG/L	<0.0002
CADMIUM	MG/L	<0.0002
CHROMIUM	MG/L	0.004
COPPER	MG/L	0.008
MERCURY	MG/L	<0.0004
NICKEL	MG/L	<0.005
LEAD	MG/L	0.004
ANTIMONY	MG/L	<0.005
SELENIUM	MG/L	<0.0008
THALLIUM	MG/L	<0.001
ZINC	MG/L	0.105

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES ATI I.D. : 208903

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	20890304	<0.0002	<0.0002	NA	0.0044	0.0050	88
ARSENIC	MG/L	20890306	0.005	0.005	0	0.047	0.050	84
BERYLLIUM	MG/L	20890306	<0.0002	<0.0002	NA	MSA	CC=	.999
CADMIUM	MG/L	20890306	<0.0002	<0.0002	NA	0.0026	0.0025	104
CHROMIUM	MG/L	20890306	0.004	0.004	0	MSA	CC=	.998
CHROMIUM	MG/L	20890304	<0.001	<0.001	NA	MSA	CC=	.997
COPPER	MG/L	20890305	0.010	0.010	0	0.132	0.125	98
COPPER	MG/L	20890302	0.010	0.009	11	0.126	0.125	93
HARDNESS	MG/L	20883601	170	169	0.6	NA	NA	NA
MERCURY	MG/L	20890303	<0.0002	<0.0002	NA	0.0052	0.0050	104
MERCURY	MG/L	20888801	<0.0002	<0.0002	NA	0.0047	0.0050	94
NICKEL	MG/L	20890302	0.016	0.014	13	0.215	0.250	80
NICKEL	MG/L	20890801	<0.020	<0.020	NA	0.896	1.00	90
LEAD	MG/L	20890302	0.001	0.001	0	0.012	0.012	92
LEAD	MG/L	20890306	0.004	0.004	0	0.062	0.050	116
ANTIMONY	MG/L	20890306	<0.005	<0.005	NA	0.015	0.012	125
SELENIUM	MG/L	20890306	<0.0008	<0.0008	NA	0.0091	0.0125	73
THALLIUM	MG/L	20890306	<0.001	<0.001	NA	0.012	0.010	120
ZINC	MG/L	20895001	0.013	0.013	0	0.113	0.100	100
ZINC	MG/L	20890302	0.031	0.025	21	0.129	0.125	78

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

Accession No.: 208903

QUALITY CONTROL REPORT

ANALYTE	QC NAME	VALUE FOUND	TRUE VALUE	LOWER CONTROL LIMIT	UPPER CONTROL LIMIT	UNIT	REAGENT BLANK
Chemical Oxygen Demand	ERA 9920	106	118	96	134	mg/l	<5
Ammonia	ERA 9936	0.41	0.39	0.33	0.43	mg/l	<0.03
Nitrate/Nitrite	ERA 378	2.16	2.20	2.03	2.34	mg/l	<0.06
pH	Buffer	6.87	6.86	6.84	6.88	pH	NA
TDS	In House	272	293	250	327	mg/l	<10
Total Kjeldahl Nitrogen	ERA 9925	4.6	4.7	3.8	5.6	mg/l	<0.2
Dissolved/Total Phosphorus	ERA 9929	4.9	5.0	4.1	5.9	mg/l	<0.05
TSS	EPA 489	58	69.5	51.8	80.1	mg/l	<10
Silver	WP378	4.6	4.6	3.7	5.4	ug/l	<0.2
Arsenic	WP378	29.4	31.5	25.8	37.3	ug/l	<1
Beryllium	WP287	2.0	2.0	1.8	2.2	ug/l	<0.2
Cadmium	WP378-12	1.5	1.5	1.1	1.8	ug/l	<0.2
Chromium	WP287	10.9	10.0	8.5	11.5	ug/l	<1
Lead	WP287/5	20.0	21.4	17.5	25.3	ug/l	<1
Antimony	WP186	22.8	19.8	15.2	24.4	ug/l	<5
Selenium	WP287	23.1	21.1	15.5	26.6	ug/l	<0.8
Thallium	WP186	19.7	20.2	15.5	24.9	ug/l	<1
Copper	ICAP3/10	0.103	0.096	0.086	0.106	mg/l	<0.003
Mercury	EM LCS	2.93	3.00	2.55	3.45	ug/l	<0.2
Nickel	ICAP3/10	0.091	0.102	0.086	0.117	mg/l	<0.005
Zinc	ICAP3/10	0.107	0.107	0.092	0.122	mg/l	<0.003

Analytical Technologies, Inc.

ACCESSION #: 208903

PARAMETER	METHOD	DATE ANALYZED	ANALYST
BOD	405.1	08/25/92	Aquatic Cons.
COD	410M	08/27/92	C. Warren
Dissolved phosphorus	365.3	09/02/92	C. Warren
Ammonia	350.3	08/27/92	T. Kehler
Nitrate/Nitrite	353.2	09/01/92	N. Milan
pH	150.1	08/31/92	T. Kehler
TDS	160.1	08/27/92	J. Rodriguez
TKN	351.2	08/26/92	P. Williamson
Total phosphorus	365.3	09/02/92	C. Warren
TSS	160.2	08/27/92	J. Rodriguez
Silver	272.2	09/08/92	W. Flanery
Arsenic	206.2	09/03/92	W. Flanery
Beryllium	210.1	09/01/92	W. Flanery
Cadmium	213.1	09/03/92	W. Flanery
Chromium	218.2	09/08/92	S. Mustain
Copper	200.7	09/02/92	M. Zhou
Mercury	245.1	09/01/92	K. Jagger
Nickel	200.7	09/02/92	M. Zhou
Lead	239.2	09/02/92	W. Flanery
Antimony	204.2	09/04/92	M. Zhou
Selenium	270.2	09/02/92	W. Flanery
Thallium	279.2	08/31/92	W. Flanery
Zinc	200.7	09/02/92	M. Zhou

Reference(s): Methods for Chemical Analysis of Water and Wastes March 1983
EPA-600 4-79-020

SW 846, 3'rd Edition

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20890301

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/24/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/24/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 08/25/92
CLIENT I.D.	: SR-03 (TOTALS)	DATE ANALYZED	: 09/04/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
ALDRIN	<0.05
ALPHA BHC	<0.05
BETA BHC	<0.05
GAMMA BHC (LINDANE)	<0.05
DELTA BHC	<0.05
ALPHA-CHLORDANE	<0.5
4,4'-DDD	<0.1
4,4'-DDE	<0.1
4,4'-DDT	<0.1
DIELDRIN	<0.1
ENDOSULFAN I	<0.05
ENDOSULFAN II	<0.1
ENDOSULFAN SULFATE	<0.1
ENDRIN	<0.1
ENDRIN ALDEHYDE	<0.1
ENDRIN KETONE	<0.1
HEPTACHLOR	<0.05
HEPTACHLOR EPOXIDE	<0.05
METHOXYCHLOR	<0.5
TOXAPHENE	<1.0
AROCLOR 1016	<0.5
AROCLOR 1221	<0.5
AROCLOR 1232	<0.5
AROCLOR 1242	<0.5
AROCLOR 1248	<0.5
AROCLOR 1254	<0.5
AROCLOR 1260	<0.5
GAMMA-CHLORDANE	<0.5

SURROGATE PERCENT RECOVERIES

DBC (%)	28*
DBOFBP (%)	54

* Result out of limits due to sample matrix interference

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

		ATI I.D.	: 208903
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 08/25/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 08/28/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
ALDRIN	<0.05
ALPHA BHC	<0.05
BETA BHC	<0.05
GAMMA BHC (LINDANE)	<0.05
DELTA BHC	<0.05
ALPHA-CHLORDANE	<0.5
4,4'-DDD	<0.1
4,4'-DDE	<0.1
4,4'-DDT	<0.1
DIELDRIN	<0.1
ENDOSULFAN I	<0.05
ENDOSULFAN II	<0.1
ENDOSULFAN SULFATE	<0.1
ENDRIN	<0.1
ENDRIN ALDEHYDE	<0.1
ENDRIN KETONE	<0.1
HEPTACHLOR	<0.05
HEPTACHLOR EPOXIDE	<0.05
METHOXYCHLOR	<0.5
TOXAPHENE	<1.0
AROCLOR 1016	<0.5
AROCLOR 1221	<0.5
AROCLOR 1232	<0.5
AROCLOR 1242	<0.5
AROCLOR 1248	<0.5
AROCLOR 1254	<0.5
AROCLOR 1260	<0.5
GAMMA-CHLORDANE	<0.5

SURROGATE PERCENT RECOVERIES

DBC (%)	86
DBOFBP (%)	98

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 208903

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 608)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES
REF I.D. : 20949901

DATE ANALYZED : 09/01/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
GAMMA BHC	<0.05	2.0	2.0	100	2.0	100	0
HEPTACHLOR	<0.05	2.0	1.9	95	1.8	90	5
ALDRIN	<0.05	2.0	2.0	100	1.9	95	5
DIELDRIN	<0.1	2.0	2.0	100	2.0	100	0
ENDRIN	<0.1	2.0	2.0	100	2.0	100	0
DDT	<0.1	2.0	2.0	100	1.9	95	5

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 208903

LABORATORY CONTROL STANDARD
METHOD 608

CLIENT: WOODWARD CLYDE CONSULTANTS
UNITS: UG/L
ANALYSIS DATE: 09/03/92

COMPOUND	TRUE VALUE	FOUND	% REC
LINDANE	0.20	0.20	100
HEPTACHLOR	0.20	0.19	95
ALDRIN	0.20	0.19	95
DIELDRIN	0.20	0.20	100
ENDRIN	0.20	0.18	90
4,4-DDT	0.20	0.19	95

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 20890301

TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/24/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/24/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 08/25/92
CLIENT I.D.	: SR-03 (TOTALS)	DATE ANALYZED	: 08/27/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
2,4-D	<0.4
2,4,5-TP (SILVEX)	<0.2
SURROGATE PERCENT RECOVERIES	
DCAA (%)	102

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

		ATI I.D.	: 208903
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 08/25/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 08/27/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
2,4-D	<0.4
2,4,5-TP (SILVEX)	<0.2

SURROGATE PERCENT RECOVERIES

DCAA (%)	98

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 208903

TEST : CHLORINATED HERBICIDES (EPA METHOD 615)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES
REF I.D. : 20890301

DATE ANALYZED : 08/27/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
2,4-D	<0.4	17	12	71	14	82	15
SILVEX	<0.2	3.3	3.4	103	3.9	118	14

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 208903

LABORATORY CONTROL STANDARD
METHOD 615

CLIENT: WOODWARD CLYDE CONSULTANTS
UNITS: UG/L
ANALYSIS DATE: 08/26/92

COMPOUND	TRUE VALUE	FOUND	% REC
2,4-D	3.19	3.5	110
2,4,5-TP	2.91	3.5	120

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20890301

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/24/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/24/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 08/31/92
CLIENT I.D.	: SR-03 (TOTALS)	DATE ANALYZED	: 09/02/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20890301

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	80
2-FLUOROBIPHENYL (%)	80
TERPHENYL (%)	67
PHENOL-D6 (%)	50
2-FLUOROPHENOL (%)	53
2,4,6-TRIBROMOPHENOL (%)	75

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20890301

COMPOUNDS	RESULTS
BUTOXYETHOXYETHANOL	400
BUTOXYETHOXYETHANOL ACETATE	100
OXYGENATED HYDROCARBONS C8	100

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20890305

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE SAMPLED	: 08/24/92
PROJECT #	: 9155038H-0013	DATE RECEIVED	: 08/24/92
PROJECT NAME	: COP NPDES	DATE EXTRACTED	: 08/31/92
CLIENT I.D.	: AC-05 (TOTALS)	DATE ANALYZED	: 09/02/92
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 20890305

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	TR
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	70
2-FLUOROBIPHENYL (%)	80
TERPHENYL (%)	70
PHENOL-D6 (%)	48
2-FLUOROPHENOL (%)	51
2,4,6-TRIBROMOPHENOL (%)	83

TR - Compound detected at an unquantifiable trace level

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

ATI I.D. : 20890305

COMPOUNDS	RESULTS
HYDROCARBON C11	20
OXYGENATED HYDROCARBONS C7-C8	30

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

		ATI I.D.	: 208903
CLIENT	: WOODWARD CLYDE CONSULTANTS, PHX	DATE EXTRACTED	: 08/31/92
PROJECT #	: 9155038H-0013	DATE ANALYZED	: 09/02/92
PROJECT NAME	: COP NPDES	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 208903

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3'-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	76
2-FLUOROBIPHENYL (%)	77
TERPHENYL (%)	90
PHENOL-D6 (%)	42
2-FLUOROPHENOL (%)	50
2,4,6-TRIBROMOPHENOL (%)	66

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 208903

TEST : SEMI-VOLATILE ORGANICS (EPA 625)

CLIENT : WOODWARD CLYDE CONSULTANTS, PHX
PROJECT # : 9155038H-0013
PROJECT NAME : COP NPDES
REF I.D. : 20800101

DATE ANALYZED : 09/02/92
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	100	69	69	71	71	3
ACENAPHTHENE	<10	100	77	77	74	74	4
2,4-DINITROTOLUENE	<10	100	80	80	79	79	1
PYRENE	<10	100	55	55	64	64	15
N-NITROSO-DI-N-PROPYLAMINE	<10	100	68	68	67	67	1
1,4-DICHLOROBENZENE	<10	100	67	67	68	68	1
PENTACHLOROPHENOL	<50	200	160	80	180	90	12
PHENOL	<10	200	130	65	130	65	0
2-CHLOROPHENOL	<10	200	140	70	140	70	0
4-CHLORO-3-METHYLPHENOL	<10	200	140	70	150	75	7
4-NITROPHENOL	<50	200	110	55	110	55	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

ACCESSION: 208903

LABORATORY CONTROL STANDARD: 820B
METHOD 625

CLIENT: Woodward-Clyde Consultants
UNITS: UG/L
ANALYSIS DATE: 08/20/92

COMPOUND	TRUE VALUE	FOUND	% REC
PHENOL	98.8	67	68
1,4-DICHLOROBENZENE	100	74	74
2-METHYLPHENOL	86.2	62	72
4-METHYLPHENOL	125	85	68
HEXACHLOROETHANE	100	75	75
NITROBENZENE	100	79	79
NAPHTHALENE	100	76	76
2,4,6-TRICHLOROPHENOL	68.5	52	76
2,4,5-TRICHLOROPHENOL	66.1	47	71
DIMETHYL PHTHALATE	100	83	83
ACENAPHTHENE	100	75	75
4-CHLOROPHENYL PHENYL ETHER	100	84	84
FLUORENE	100	88	88
4-BROMOPHENYL PHENYL ETHER	100	72	72
PENTACHLOROPHENOL	149	120	81
ANTHRACENE	100	50	50
FLUORANTHENE	100	82	82
BUTYL BENZYL PHTHALATE	100	94	94
BIS (2-ETHYL HEXYL) PHTHALATE	100	93	93
CHRYSENE	100	107	107
BENZO (b) FLUORANTHENE	100	102	102
BENZO (a) PYRENE	100	86	86
DIBENZO (a,h) ANTHRACENE	100	72	72
BENZO (g,h,i) PERYLENE	100	85	85