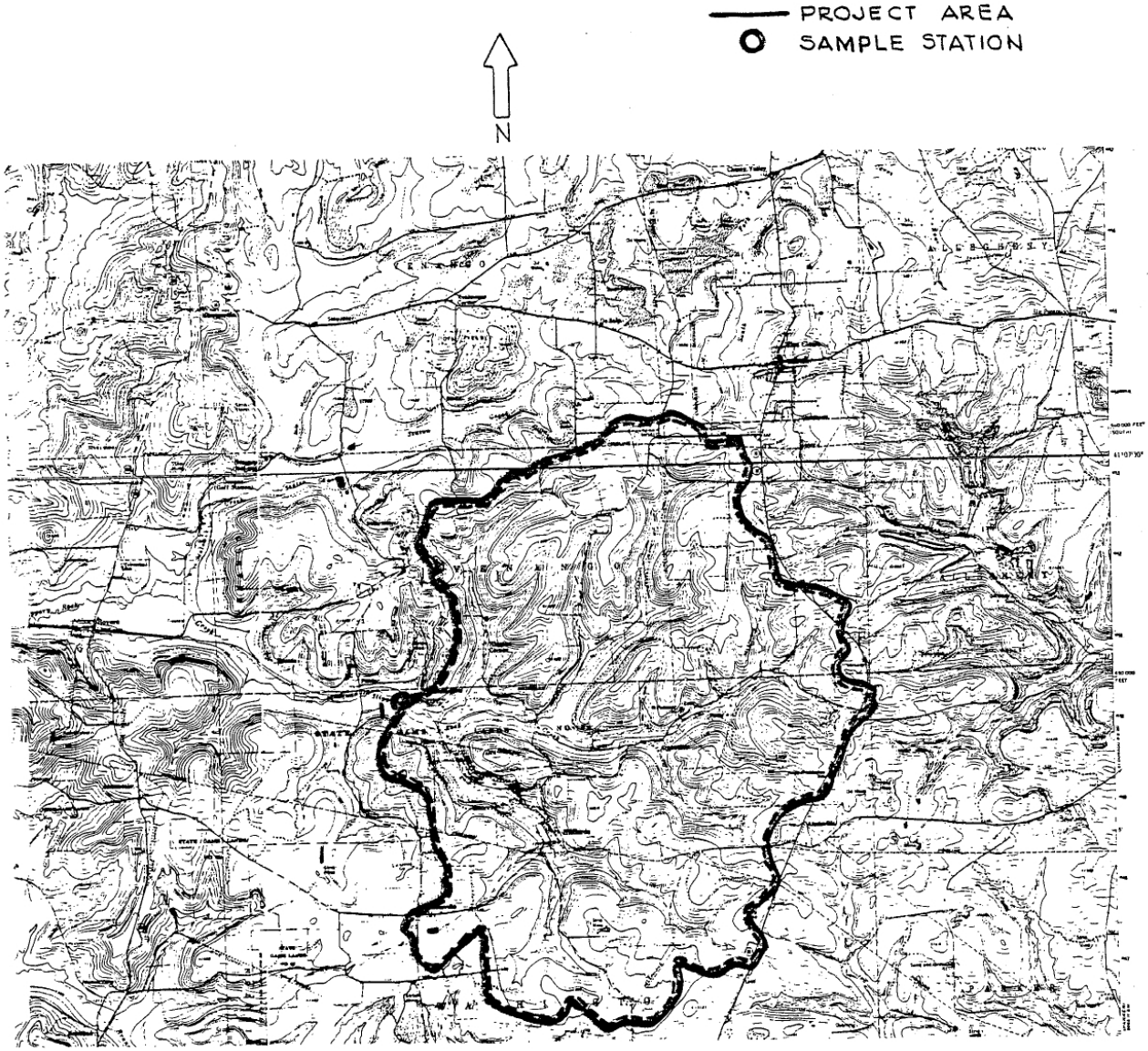
APPENDIX 1

SAMPLE STATION 1 SLIPPERY ROCK CREEK

PA STATE GAME LANDS #95

PROJECT SL-110-7-101.5



SAMPLE STATION 1 (--)

SAMPLE LOCATION IN RELATION
TO
TOTAL SITE

SAMPLE 1 PROJECT SL110-7-101.5:BIG BERTHA

DATE	SPEC COND UMHOS/CM	DISCHARGE C.F.S.	PH SU	ALKALINITY MG/L	ACIDITY MG/L	SULPHATES MG/L	TOTAL IRON MG/L	FERROUS IRON MG/L	FERRIC IRON MG/L	REC #
021783	270	14.69	3.91	00	22	141	3.2	1.5	1.7	1
022883	330	10.29	3.85	00	23	144	3.2	1.6	1.6	2
030783	385	8.36	3.65	00	35	171	2.9	.9	2.0	3
031483	290	13.84	4.03	00	23	135	2.0	1.7	.3	4
032583	180	28.71	4.34	00	18	91	1.3	.4	.9	5
033183	200	28.20	4.30	00	18	118	1.4	.4	1.0	6
040783	200	29.95	3.70	00	18	112	1.4	.6	.8	7
041383	160	49.94	4.58	01	09	75	.9	.3	.6	8
042083	210	31.00	4.26	00	13	92	1.3	.6	.7	9
042683	250	15.99	3.96	00	23	127	2.1	.8	1.3	10
050483	140	63.60	4.24	00	21	42	.7	.2	.5	11
051183	210	21.58	4.06	00	40	104	1.7	.7	1.0	12
051983	220	19.92	3.67	00	43	128	2.7	.9	1.8	13
052583	170	48.81	4.60	01	08	69	1.0	.3	.7	14
060183	250	18.56	4.06	00	25	110	1.5	.8	.7	15
060783	220	22.36	4.29	00	20	99	1.4	.5	.9	16
061283	360	10.64	4.44	00	25	132	1.9	.4	1.5	17
061683	380	8.36	3.39	00	39	176	2.8	.8	2.0	18
062183	410	7.97	3.60	00	36	171	2.4	.7	1.7	19
062983	150	51.86	4.50	00	13	89	1.5	.6	.9	20
071083	460	6.17	3.64	00	29	172	3.2	.7	2.5	21
071983	500	5.53	3.58	00	30	196	2.8	.6	2.2	22
072683	610	3.23	3.30	00	52	232	4.8	1.2	3.6	23
080683	680	2.73	3.29	00	53	227	4.2	1.2	3.0	24
082183	720	1.83	3.24	00	77	353	6.2	1.9	4.3	25

SAMPLE STATION 1

Discharge Relationships

1. Drainage Area

The surface acreage contributing runoff to the monitoring location is estimated to be 7550 acres

2. Measurement of Discharge

The discharge at this, monitoring point was observed using a currency meter or by additive methods,

3. Observed Discharge

The observed range of discharge measured at this monitoring point varied from 1.83 c.f.s. 63.60 c.f.s. during the sampling.

4. Specific Yield

The specific yield of this monitoring point showed the following range: 0.2 c.f.s./1000 acres Mini= yield 8.4 c.f.s./1000 acres Min yield

The reviewer is directed to refer to the following materials during the discussion of the sample analyses and trends at this monitoring points:

a. Sheet 18 - which shows the data plotted and shows the regression line and field of variance.

b. Appendix 1 - which contains the sample data and regression runs.

5. pH relationship

The pH during the sampling period varied from 3.24 - 4.60. Regression analysis of the pH values indicates: An extremely strong relationship exists where pH values increases as discharge increases.

6. Specific conductance relationship

The conductance during the sampling period varied from 140 - 720 Regression analysis of the conductance indicates: An extremely strong relationship exists where conductance decreases as discharge increases.

Chemical Relationships l. pH relationship

The pH during the sampling period varied from 3.24 - 4.60.
Regression analysis of the pH values showed that:
An extremely strongrelationship exists where pH values decrease as conductance increases.

2. Acidity/Alkalinity balance (mg/l)

The acidity during the sampling period varied from 8 - 77.
Regression analysis of the acidity values indicates:
An extremely strong relationship exists;mere acidity concentration increases as conductance increases.
The alkalinity during the sample period varied from 0-l. No regression analysis was attempted as the alkalinity was generally absent.

3. Sulphate relationship (mg/l)

The sulphates during the sampling period varied from 42 - 353
Regression analysis of the sulphate values indicates:
An extremely strong relationship exists where sulphate concentrations increases as conductance increases.

4. Total iron relationship (mg/l)

The total =on during the sampling period varied from 0.7 - 6.2.
Regression analysis of the total iron values indicates:
An extremely strongrelationship exists where total iron concentrations increases as conductance increases.

5. Ferrous iron relationship (mg/l)

The ferrous iron during the sampling period varied from 0.2 - l.9
Regression analysis of the ferrous iron values indicates:
A moderate relationship exists where ferrous iron concentrations increases as conductance increases.

6. Ferric iron relationship (mg/l)

The ferric iron during the sampling period varied from 0.3 - 4.3
Regression analysis of the ferric iron values indicates:
An extremely strongrelationship exists where ferric iron concentrations increases as conductance increases.

SAMPLE.ONE DISCHARGE VS. SPECIFIC CONDUCTANCE

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	52	1797	7955.00
52	1797	79018	114366.00
1797	79018	3946268	3223173.00

REGRESSION COEFFICIENTS OF NORMAL EQUATION

629.363037109375
- 24.936187744141
0.294389724731

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
14.6900	270.0000	326.5786	56.5786
10.2900	330.0000	403.9409	73.9409
8.3600	385.0000	441.4712	56.4712
13.8400	290.0000	340.6353	50.6353
28.7100	180.0000	156.1000	23.9000
28.2000	200.0000	160.2732	39.7268
29.9500	200.0000	146.5925	53.4075
49.9400	160.0000	118.2588	41.7412
31.0000	210.0000	139.2498	70.7502
15.9900	250.0000	305.9031	55.9031
63.6000	140.0000	234.2161	94.2161
21.5800	210.0000	228.3364	18.3364
19.9200	220.0000	249.4499	29.4499
48.8100	170.0000	113.5864	56.4136
18.5600	250.0000	267.9570	17.9570
22.3600	220.0000	218.9759	1.0241
10.6400	360.0000	397.3696	37.3696
8.3600	380.0000	441.4712	61.4712
7.9700	410.0000	449.3213	39.3213
51.8600	150.0000	127.9214	22.0786
6.1700	460.0000	486.7136	26.7136
5.5300	500.0000	500.4685	0.4685
3.2300	610.0000	551.8904	58.1096
2.7300	680.0000	563.4810	116.5190
1.8300	720.0000	584.7156	135.2844

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 2
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 658445
SUMS OF SQUARES DUE TO REGRESSION= 572328
SUMS OF SQUARES DUE TO DEVIATION= 86117
GOODNESS OF FIT= .869211
MULTIPLE CORRELATION COEFFICIENT 0.93232
STANDARD DEVIATION 59.90164

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LAST REGRESSION	393358.00	1	393358.00
CUR. REGRESSION	572328.00	2	286164.00
CUR. ADDITION	178970.00	1	178970.00
CUR. DEVIATION	86117.00	22	3914.41
TOTAL VARIATION	658445.00	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 73.11
LEVEL .05% - CRITICAL VALUE = 3.44

F TEST - IMPROVEMENT OF ADDED TERM = 45.72
LEVEL .05% - CRITICAL VALUE = 4.30

SAMPLE.ONE DISCHARGE VS. PH

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	52	98.4799
52	1797	2195.7827

REGRESSION COEFFICIENTS OF NORMAL EQUATION

3.545340538025
0.018786549568

ORIGINAL X	Y PAIRS	PREDICTED VALUES	DEVIATION
14.6900	3.9100	3.8213	0.0887
10.2900	3.8500	3.7387	0.1113
8.3600	3.6500	3.7024	0.0524
13.8400	4.0300	3.8053	0.2247
28.7100	4.3400	4.0847	0.2553
28.2000	4.3000	4.0751	0.2249
29.9500	3.7000	4.1080	0.4080
49.9400	4.5800	4.4835	0.0965
31.0000	4.2600	4.1277	0.1323
15.9900	3.9600	3.8457	0.1143
63.6000	4.2400	4.7402	0.5002
21.5800	4.0600	3.9508	0.1092
19.9200	3.6700	3.9196	0.2496
48.8100	4.6000	4.4623	0.1377
18.5600	4.0600	3.8940	0.1660
22.3600	4.2900	3.9654	0.3246
10.6400	4.4400	3.7452	0.6948
8.3600	3.3900	3.7024	0.3124
7.9700	3.6000	3.6951	0.0951
51.8600	4.5000	4.5196	0.0196
6.1700	3.6400	3.6613	0.0213
5.5300	3.5800	3.6492	0.0692
3.2300	3.3000	3.6060	0.3060
2.7300	3.2900	3.5966	0.3066
1.8300	3.2400	3.5797	0.3397

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 4.235352
SUMS OF SQUARES DUE TO REGRESSION= 2.464355
SUMS OF SQUARES DUE TO DEVIATION= 1.770996
GOODNESS OF FIT= .581854
MULTIPLE CORRELATION COEFFICIENT 0.76279
STANDARD DEVIATION .271646

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	2.46	1	2.46
DEVIATION	1.77	23	.08
TOTAL VARIATION	4.24	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 32.00
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.ONE SPECIFIC CONDUCTANCE VS. PH

COEFFICIENT MATRIX AND AUGMENTED MATRIX

25	7950	984.799
7950	3189720	299781.172

REGRESSION COEFFICIENTS OF NORMAL EQUATION

4.595533370972

- 0.002062671119

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
270.0000	3.9100	4.0386	0.1286
330.0000	3.8500	3.9149	0.0649
385.0000	3.6500	3.8014	0.1514
290.0000	4.0300	3.9974	0.0326
180.0000	4.3400	4.2243	0.1157
200.0000	4.3000	4.1830	0.1170
200.0000	3.7000	4.1830	0.4830
160.0000	4.5800	4.2655	0.3145
210.0000	4.2600	4.1624	0.0976
250.0000	3.9600	4.0799	0.1199
140.0000	4.2400	4.3068	0.0668
210.0000	4.0600	4.1624	0.1024
220.0000	3.6700	4.1417	0.4717
170.0000	4.6000	4.2449	0.3551
250.0000	4.0600	4.0799	0.0199
220.0000	4.2900	4.1417	0.1483
360.0000	4.4400	3.8530	0.5870
380.0000	3.3900	3.8117	0.4217
410.0000	3.6000	3.7498	0.1498
150.0000	4.5000	4.2861	0.2139
460.0000	3.6400	3.6467	0.0067
500.0000	3.5800	3.5642	0.0158
610.0000	3.3000	3.3373	0.0373
680.0000	3.2900	3.1929	0.0971
720.0000	3.2400	3.1104	0.1296

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 4.235352
SUMS OF SQUARES DUE TO REGRESSION= 2.801025
SUMS OF SQUARES DUE TO DEVIATION= 1.434326
GOODNESS OF FIT= .661344
MULTIPLE CORRELATION COEFFICIENT 0.81323
STANDARD DEVIATION .244466

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	2.80	1	2.80
DEVIATION	1.43	23	.06
TOTAL VARIATION	4.24	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 44.92
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.ONE SPECIFIC CONDUCTANCE VS. ALKALINITY

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	795	2.0000
795	318972	330.0000

REGRESSION COEFFICIENTS OF NORMAL EQUATION

0.228068590164
- 0.000465333229

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
270.0000	0.0000	0.1024	0.1024
330.0000	0.0000	0.0745	0.0745
385.0000	0.0000	0.0489	0.0489
290.0000	0.0000	0.0931	0.0931
180.0000	0.0000	0.1443	0.1443
200.0000	0.0000	0.1350	0.1350
200.0000	0.0000	0.1350	0.1350
160.0000	1.0000	0.1536	0.8464
210.0000	0.0000	0.1303	0.1303
250.0000	0.0000	0.1117	0.1117
140.0000	0.0000	0.1629	0.1629
210.0000	0.0000	0.1303	0.1303
220.0000	0.0000	0.1257	0.1257
170.0000	1.0000	0.1490	0.8510
250.0000	0.0000	0.1117	0.1117
220.0000	0.0000	0.1257	0.1257
360.0000	0.0000	0.0605	0.0605
380.0000	0.0000	0.0512	0.0512
410.0000	0.0000	0.0373	0.0373
150.0000	0.0000	0.1583	0.1583
460.0000	0.0000	0.0140	0.0140
500.0000	0.0000	0.0046	0.0046
610.0000	0.0000	0.0558	0.0558
680.0000	0.0000	0.0884	0.0884
720.0000	0.0000	0.1070	0.1070

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 1.84
SUMS OF SQUARES DUE TO REGRESSION= .142577
SUMS OF SQUARES DUE TO DEVIATION= 1.697423
GOODNESS OF FIT= .077487
MULTIPLE CORRELATION COEFFICIENT 0.27836
STANDARD DEVIATION .265943

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	.14	1	.14
DEVIATION	1.70	23	.07
TOTAL VARIATION	1.84	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 1.93
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.ONE SPECIFIC CONDUCTANCE VS. ACIDITY

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	795	721.0000
795	318972	282915.0000

REGRESSION COEFFICIENTS OF NORMAL EQUATION

2.988830566406
0.081241607666

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
270.0000	22.0000	24.9241	2.9241
330.0000	23.0000	29.7986	6.7986
385.0000	35.0000	34.2668	0.7332
290.0000	23.0000	26.5489	3.5489
180.0000	18.0000	17.6123	0.3877
200.0000	18.0000	19.2372	1.2372
200.0000	18.0000	19.2372	1.2372
160.0000	9.0000	15.9875	6.9875
210.0000	13.0000	20.0496	7.0496
250.0000	23.0000	23.2992	0.2992
140.0000	21.0000	14.3627	6.6373
210.0000	40.0000	20.0496	19.9504
220.0000	43.0000	20.8620	22.1380
170.0000	8.0000	16.7999	8.7999
250.0000	25.0000	23.2992	1.7008
220.0000	20.0000	20.8620	0.8620
360.0000	25.0000	32.2358	7.2358
380.0000	39.0000	33.8606	5.1394
410.0000	36.0000	36.2979	0.2979
150.0000	13.0000	15.1751	2.1751
460.0000	29.0000	40.3600	11.3600
500.0000	38.0000	43.6096	5.6096
610.0000	52.0000	52.5462	0.5462
680.0000	53.0000	58.2331	5.2331
720.0000	77.0000	61.4828	15.5172

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 6041.375
SUMS OF SQUARES DUE TO REGRESSION= 4345.957
SUMS OF SQUARES DUE TO DEVIATION= 1695.417
GOODNESS OF FIT= .719366
MULTIPLE CORRELATION COEFFICIENT 0.84815
STANDARD DEVIATION 8.404899

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	4345.96	1	4345.96
DEVIATION	1695.42	23	73.71
TOTAL VARIATION	6041.37	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 58.96
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.ONE SPECIFIC CONDUCTANCE VS. SULPHATES

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	795	3506.0000
795	318972	1357935.0000

REGRESSION COEFFICIENTS OF NORMAL EQUATION

23.134963989258
0.368024289608

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
270.0000	141.0000	122.5015	18.4985
330.0000	144.0000	144.5830	0.5830
385.0000	171.0000	164.8243	6.1757
290.0000	135.0000	129.8620	5.1380
180.0000	91.0000	89.3793	1.6207
200.0000	118.0000	96.7398	21.2602
200.0000	112.0000	96.7398	15.2602
160.0000	75.0000	82.0188	7.0188
210.0000	92.0000	100.4201	8.4201
250.0000	127.0000	115.1410	11.8590
140.0000	42.0000	74.6584	32.6584
210.0000	104.0000	100.4201	3.5799
220.0000	128.0000	104.1003	23.8997
170.0000	69.0000	85.6991	16.6991
250.0000	110.0000	115.1410	5.1410
220.0000	99.0000	104.1003	5.1003
360.0000	132.0000	155.6237	23.6237
380.0000	176.0000	162.9842	13.0158
410.0000	171.0000	174.0249	3.0249
150.0000	89.0000	78.3386	10.6614
460.0000	172.0000	192.4261	20.4261
500.0000	196.0000	207.1471	11.1471
610.0000	232.0000	247.6298	15.6298
680.0000	227.0000	273.3914	46.3914
720.0000	353.0000	288.1121	64.8879

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 100519
SUMS OF SQUARES DUE TO REGRESSION= 89181.31
SUMS OF SQUARES DUE TO DEVIATION= 11337.68
GOODNESS OF FIT= .887208
MULTIPLE CORRELATION COEFFICIENT 0.94192
STANDARD DEVIATION 21.73481

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	89181.31	1	89181.31
DEVIATION	11337.69	23	492.94
TOTAL VARIATION	100519.00	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 180.92
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.ONE SPECIFIC CONDUCTANCE VS. TOTAL IRON

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	795	58.4999
795	318972	23331.4531

REGRESSION COEFFICIENTS OF NORMAL EQUATION

0.060517311096
0.007163640112

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
270.0000	3.2000	1.9947	1.2053
330.0000	3.2000	2.4245	0.7755
385.0000	2.9000	2.8185	0.0815
290.0000	2.0000	2.1380	0.1380
180.0000	1.3000	1.3500	0.0500
200.0000	1.4000	1.4932	0.0932
200.0000	1.4000	1.4932	0.0932
160.0000	0.9000	1.2067	0.3067
210.0000	1.3000	1.5649	0.2649
250.0000	2.1000	1.8514	0.2486
140.0000	0.7000	1.0634	0.3634
210.0000	1.7000	1.5649	0.1351
220.0000	2.7000	1.6365	1.0635
170.0000	1.0000	1.2783	0.2783
250.0000	1.5000	1.8514	0.3514
220.0000	1.4000	1.6365	0.2365
360.0000	1.9000	2.6394	0.7394
380.0000	2.8000	2.7827	0.0173
410.0000	2.4000	2.9976	0.5976
150.0000	1.5000	1.1351	0.3649
460.0000	3.2000	3.3558	0.1558
500.0000	2.8000	3.6423	0.8423
610.0000	4.8000	4.4303	0.3697
680.0000	4.2000	4.9318	0.7318
720.0000	6.2000	5.2183	0.9817

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 41.0604
SUMS OF SQUARES DUE TO REGRESSION= 33.79026
SUMS OF SQUARES DUE TO DEVIATION= 7.270142
GOODNESS OF FIT= .82294
MULTIPLE CORRELATION COEFFICIENT 0.90716
STANDARD DEVIATION .550384

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	33.79	1	33.79
DEVIATION	7.27	23	.32
TOTAL VARIATION	41.06	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 106.90
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.ONE SPECIFIC CONDUCTANCE VS. FERROUS IRON

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	795	20.3000
795	318972	7515.4844

REGRESSION COEFFICIENTS OF NORMAL EQUATION

0.301665425301
0.001603817334

ORIGINAL X	Y PAIRS	PREDICTED VALUES	DEVIATION
270.0000	1.5000	0.7347	0.7653
330.0000	1.6000	0.8309	0.7691
385.0000	0.9000	0.9191	0.0191
290.0000	1.7000	0.7668	0.9332
180.0000	0.4000	0.5904	0.1904
200.0000	0.4000	0.6224	0.2224
200.0000	0.6000	0.6224	0.0224
160.0000	0.3000	0.5583	0.2583
210.0000	0.6000	0.6385	0.0385
250.0000	0.8000	0.7026	0.0974
140.0000	0.2000	0.5262	0.3262
210.0000	0.7000	0.6385	0.0615
220.0000	0.9000	0.6545	0.2455
170.0000	0.3000	0.5743	0.2743
250.0000	0.8000	0.7026	0.0974
220.0000	0.5000	0.6545	0.1545
360.0000	0.4000	0.8790	0.4790
380.0000	0.8000	0.9111	0.1111
410.0000	0.7000	0.9592	0.2592
150.0000	0.6000	0.5422	0.0578
460.0000	0.7000	1.0394	0.3394
500.0000	0.6000	1.1036	0.5036
610.0000	1.2000	1.2800	0.0800
680.0000	1.2000	1.3923	0.1923
720.0000	1.9000	1.4564	0.4436

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 5.106552
SUMS OF SQUARES DUE TO REGRESSION= 1.693848
SUMS OF SQUARES DUE TO DEVIATION= 3.412704
GOODNESS OF FIT= .331701
MULTIPLE CORRELATION COEFFICIENT 0.57593
STANDARD DEVIATION .377088

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	1.69	1	1.69
DEVIATION	3.41	23	.15
TOTAL VARIATION	5.11	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 11.42
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.ONE SPECIFIC CONDUCTANCE VS. FERRIC IRON

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	795	38.2000
795	318972	15815.9844

REGRESSION COEFFICIENTS OF NORMAL EQUATION

- 0.241139411926
0.005559802055

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
270.0000	1.7000	1.2600	0.4400
330.0000	1.6000	1.5936	0.0064
385.0000	2.0000	1.8994	0.1006
290.0000	0.3000	1.3712	1.0712
180.0000	0.9000	0.7596	0.1404
200.0000	1.0000	0.8708	0.1292
200.0000	0.8000	0.8708	0.0708
160.0000	0.6000	0.6484	0.0484
210.0000	0.7000	0.9264	0.2264
250.0000	1.3000	1.1488	0.1512
140.0000	0.5000	0.5372	0.0372
210.0000	1.0000	0.9264	0.0736
220.0000	1.8000	0.9820	0.8180
170.0000	0.7000	0.7040	0.0040
250.0000	0.7000	1.1488	0.4488
220.0000	0.9000	0.9820	0.0820
360.0000	1.5000	1.7604	0.2604
380.0000	2.0000	1.8716	0.1284
410.0000	1.7000	2.0384	0.3384
150.0000	0.9000	0.5928	0.3072
460.0000	2.5000	2.3164	0.1836
500.0000	2.2000	2.5388	0.3388
610.0000	3.6000	3.1503	0.4497
680.0000	3.0000	3.5395	0.5395
720.0000	4.3000	3.7619	0.5381

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 23.93054
SUMS OF SQUARES DUE TO REGRESSION= 20.35371
SUMS OF SQUARES DUE TO DEVIATION= 3.576828
GOODNESS OF FIT= .850533
MULTIPLE CORRELATION COEFFICIENT 0.92224
STANDARD DEVIATION .38605

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	20.35	1	20.35
DEVIATION	3.58	23	.16
TOTAL VARIATION	23.93	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 130.88
LEVEL .05% - CRITICAL VALUE = 4.28

APPENDIX 2

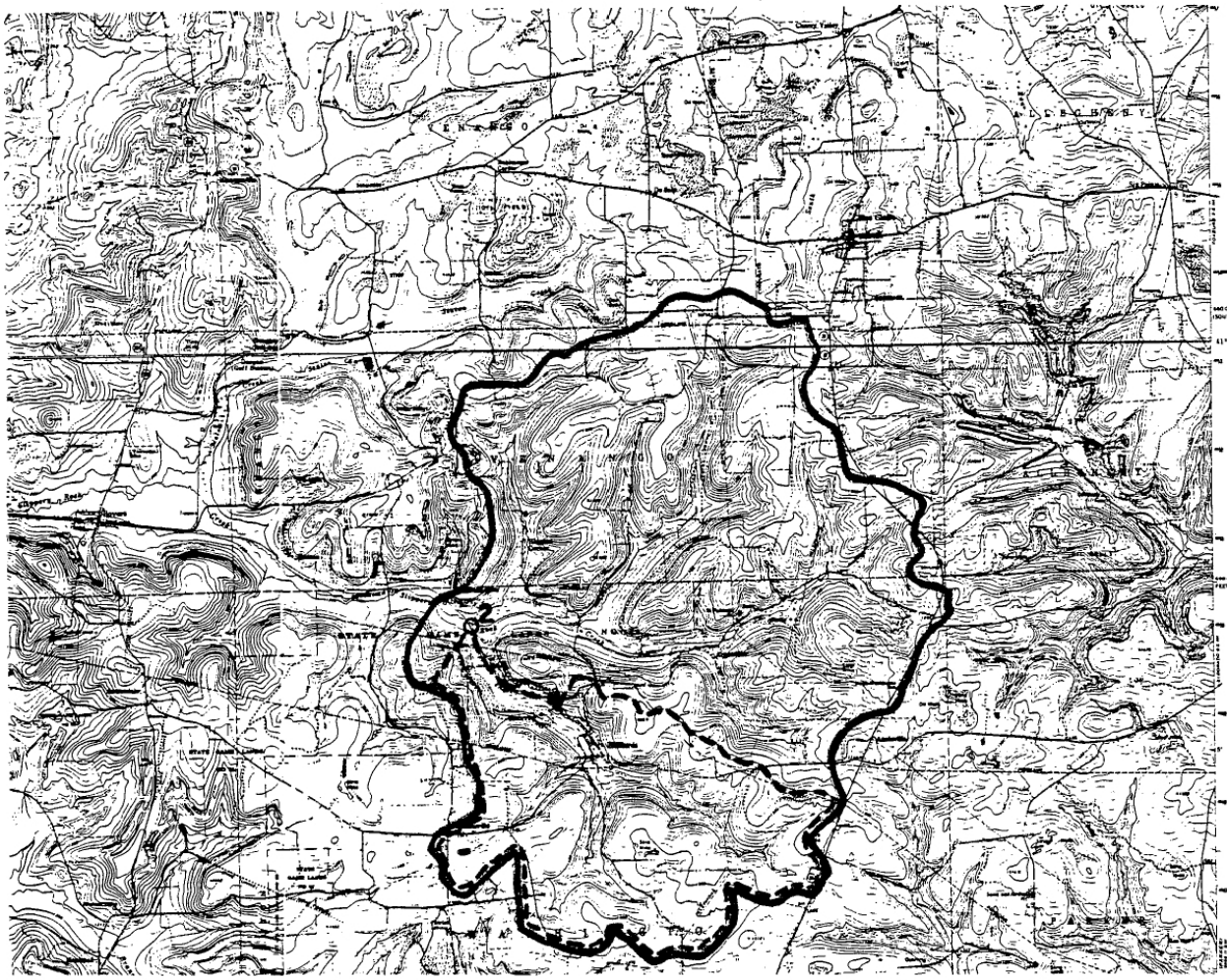
SAMPLE STATION 2 TRIBUTARY TO SLIPPERY ROCK CREEK

PA STATE GAME LANDS #95

PROJECT SL-110-7-101.5

LEGEND:
- DRAINAGE AREA
- PROJECT AREA
- SAMPLE STATION

N



SAMPLE STATION 2 (--)

SAMPLE LOCATION IN RELATION
TO
TOTAL SITE

SAMPLE 2 PROJECT SL110-7-101.5:BIG BERTHA

DATE	SPEC COND UNHOS/CM	DISCHARGE C.F.S.	PH SU	ALKALINITY MG/L	ACIDITY MG/L	SULPHATES MG/L	TOTAL IRON MG/L	FERROUS IRON MG/L	FERRIC IRON MG/L	REC #
021783	160	5.72	5.91	06	05	75	.4	.3	.1	1
022883	180	3.13	5.97	05	02	62	.2	.2	.0	2
030783	215	2.48	5.08	02	20	104	.3	.2	.1	3
031483	205	5.33	5.69	04	07	83	.3	.1	.2	4
032583	140	12.65	5.56	02	06	75	.2	.1	.1	5
033183	150	12.14	5.77	03	03	79	.3	.1	.2	6
040783	160	12.14	5.05	02	03	93	.2	.1	.1	7
041383	130	19.33	5.76	03	07	64	.2	.1	.1	8
042083	150	13.19	5.05	02	09	45	.4	.2	.2	9
042683	150	6.13	5.27	02	08	76	.3	.2	.1	10
050483	120	29.46	5.47	02	04	24	.2	.1	.1	11
051183	180	8.77	5.31	03	14	75	.4	.2	.2	12
051983	180	7.85	5.46	03	06	78	.5	.2	.3	13
052583	135	22.28	5.64	03	03	82	.3	.1	.2	14
060183	160	6.55	5.61	03	03	61	.4	.1	.3	15
060783	150	9.24	5.85	10	03	59	.6	.2	.4	16
061283	210	3.82	5.34	02	04	82	.2	.1	.1	17
061683	210	2.48	4.85	02	26	74	.3	.1	.2	18
062183	220	2.48	5.08	02	10	93	.4	.2	.2	19
062783	110	24.25	5.93	07	03	57	1.1	.4	.7	20
071083	205	2.19	5.86	04	04	77	.8	.3	.5	21
071983	220	1.90	5.74	07	09	77	.7	.2	.5	22
072683	260	.88	5.66	05	10	102	.9	.3	.6	23
080683	280	.67	5.96	04	02	104	.8	.2	.6	24
082183	300	.29	5.01	02	11	143	.8	.2	.6	25

SAMPLE STATION 2

Discharge Relationships

I. Drainage Area

The surface acreage contributing runoff to the monitoring location is estimated to be 2430 acres.

2. Measurement of Discharge

The discharge at this monitoring point was observed using a rectangular weir capable of measuring a discharge range up to 35 c.f.s. The weir size was 6' opening, 13 inches high.

3. Observed Discharge

The observed range of discharge measured at this monitoring point varied from 0.29 c . f .s . 29.46 c . f . s . during the sampling.

4. Specific Yield

The specific yield of this monitoring point showed the following range:

.01 c . f . s . /10 00 acres Minx= yield
12.10 c.f.s./1000 acres Maximum. yield

The reviewer is directed to refer to the following materials during the discussion of the sample analyses and trends at this monitoring points:

a. Sheet 17 - which shows the data plotted and shows the regression line and field of variance.

b. Appendix 2 - which contains the sample data and regression runs. 5. pH relationship

The pH during the sampling period varied from 5.01-5.96. Regression analysis of the pH values indicates: An extremely weak relationship exists where pH values increases as discharge increases.

6. Specific conductance relationship

The conductance during the sampling period varied from 110 - 300 Regression analysis of the conductance indicates: An extremely strong relationship exists where conductance decreases as discharge increases.

Chemical relationships

1. pH relationship

   The pH during the sampling period varied from 5.01 - 5.96 Regression analysis of the pH values showed that: A weak relationship exists where pH values decreases as conductance increases.

2. Acidity/Alkalinity balance (mg/l)

   The acidity during the sampling period varied from 2- 26 Regression analysis of the acidity values indicates: A weak relationship exists There acidity concentration increases as conductance increases.

   The alkalinity during the sample period varied from 2-10. Regression analysis of the alkalinity values indicates: An extremely weak relationship exists where alkalinity' concentration decreases as conductance increases.

3. Sulphate relationship (mg/l)

   The sulphates during the sampling period varied from 24 - 143 Regression analysis of the sulphate values indicates: A strong relationship exists where sulphate concentrations increases as conductance increases.

4. Total iron relationship (mg/l)

   The total iron during the sampling period varied from 0.2 - 1.1 Regression analysis of the total iron values indicates: A moderate relationship exists where total iron concentrations increases as conductance increases.

5. Ferrous iron relationship (mg/l)

   The ferrous iron during the sampling period varied from 0.l - 0.4 Regression analysis of the ferrous iron values indicates: An extremely weak relationship exists where ferrous iron concentrations increases as conductance increases.

6. Ferric iron relationship (mg/l)

   The ferric iron during the sampling period varied from. 0.0 - 0.7 Regression analysis of the ferric iron values indicates: A moderate relationship exists where ferric i=on concentrations increases as conductance increases.

SAMPLE.TWO DISCHARGE VS. SPECIFIC CONDUCTANCE

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	21	337	4580.0000
21	337	6895	31924.7656
337	6895	160698	450836.0000

REGRESSION COEFFICIENTS OF NORMAL EQUATION

253.328842163086
- 12.830759048462
0.299415588379

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
5.7200	160.0000	189.7333	29.7333
3.1300	180.0000	216.1019	36.1019
2.4800	215.0000	223.3501	8.3501
5.3300	205.0000	193.4470	11.5530
12.6500	140.0000	138.9330	1.0670
12.1400	150.0000	141.6912	8.3088
12.1400	160.0000	141.6912	18.3088
19.3300	130.0000	117.1866	12.8134
13.1900	150.0000	136.1823	13.8177
6.1300	150.0000	185.9274	35.9274
29.4600	120.0000	135.1948	15.1948
3.7700	180.0000	163.8320	16.1680
7.8500	180.0000	171.0581	8.9419
22.2800	135.0000	116.0891	18.9109
6.5500	160.0000	182.1330	22.1330
9.2400	150.0000	160.3360	10.3360
3.8200	210.0000	208.6845	1.3155
2.4800	210.0000	223.3501	13.3501
2.4800	220.0000	223.3501	3.3501
24.2500	110.0000	118.2582	8.2582
2.1900	205.0000	226.6655	21.6655
1.9000	220.0000	230.0313	10.0313
0.8800	260.0000	242.2696	17.7304
0.6700	280.0000	244.8666	35.1334
0.2900	300.0000	249.6331	50.3669

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 2
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 57444
SUMS OF SQUARES DUE TO REGRESSION= 46558.31
SUMS OF SQUARES DUE TO DEVIATION= 10885.68
GOODNESS OF FIT= .810499
MULTIPLE CORRELATION COEFFICIENT 0.90028
STANDARD DEVIATION 21.29718

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LAST REGRESSION	37333.44	1	37333.44
CUR. REGRESSION	46558.31	2	23279.13
CUR. ADDITION	9224.87	1	9224.87
CUR. DEVIATION	10885.69	22	494.80
TOTAL VARIATION	57444.00	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 47.05
LEVEL .05% - CRITICAL VALUE = 3.44

F TEST - IMPROVEMENT OF ADDED TERM = 18.64
LEVEL .05% - CRITICAL VALUE = 4.30

SAMPLE.TWO DISCHARGE VS. PH

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	21	137.8798
21	337	1197.3882

REGRESSION COEFFICIENTS OF NORMAL EQUATION

5.460163116455
0.006387174129

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
5.7200	5.9100	5.4967	0.4133
3.1300	5.9700	5.4802	0.4898
2.4800	5.0800	5.4760	0.3960
5.3300	5.6900	5.4942	0.1958
12.6500	5.5600	5.5410	0.0190
12.1400	5.7700	5.5377	0.2323
12.1400	5.0500	5.5377	0.4877
19.3300	5.7600	5.5836	0.1764
13.1900	5.0500	5.5444	0.4944
6.1300	5.2700	5.4993	0.2293
29.4600	5.4700	5.6483	0.1783
8.7700	5.3100	5.5162	0.2062
7.8500	5.4600	5.5103	0.0503
22.2800	5.6400	5.6025	0.0375
6.5500	5.6100	5.5020	0.1080
9.2400	5.8500	5.5192	0.3308
3.8200	5.3400	5.4846	0.1446
2.4800	4.8500	5.4760	0.6260
2.4800	5.0800	5.4760	0.3960
24.2500	5.9300	5.6151	0.3149
2.1900	5.8600	5.4742	0.3858
1.9000	5.7400	5.4723	0.2677
0.8800	5.6600	5.4658	0.1942
0.6700	5.9600	5.4644	0.4956
0.2900	5.0100	5.4620	0.4520

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 2.868652
SUMS OF SQUARES DUE TO REGRESSION= .065186
SUMS OF SQUARES DUE TO DEVIATION= 2.803467
GOODNESS OF FIT= .022723
MULTIPLE CORRELATION COEFFICIENT 0.15074
STANDARD DEVIATION .341776

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	.07	1	.07
DEVIATION	2.80	23	.12
TOTAL VARIATION	2.87	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 0.53
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.TWO SPECIFIC CONDUCTANCE VS. PH

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	458	137.8798
458	89650	25176.3125

REGRESSION COEFFICIENTS OF NORMAL EQUATION

5.780594825745

\- 0.001448759809

ORIGINAL X	Y PAIRS	PREDICTED VALUES	DEVIATION
160.0000	5.9100	5.5488	0.3612
180.0000	5.9700	5.5198	0.4502
215.0000	5.0800	5.4691	0.3891
205.0000	5.6900	5.4836	0.2064
140.0000	5.5600	5.5778	0.0178
150.0000	5.7700	5.5633	0.2067
160.0000	5.0500	5.5488	0.4988
130.0000	5.7600	5.5923	0.1677
150.0000	5.0500	5.5633	0.5133
150.0000	5.2700	5.5633	0.2933
120.0000	5.4700	5.6067	0.1367
180.0000	5.3100	5.5198	0.2098
180.0000	5.4600	5.5198	0.0598
135.0000	5.6400	5.5850	0.0550
160.0000	5.6100	5.5488	0.0612
150.0000	5.8500	5.5633	0.2867
210.0000	5.3400	5.4764	0.1364
210.0000	4.8500	5.4764	0.6264
220.0000	5.0800	5.4619	0.3819
110.0000	5.9300	5.6212	0.3088
205.0000	5.8600	5.4836	0.3764
220.0000	5.7400	5.4619	0.2781
260.0000	5.6600	5.4039	0.2561
280.0000	5.9600	5.3749	0.5851
300.0000	5.0100	5.3460	0.3360

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 2.868652
SUMS OF SQUARES DUE TO REGRESSION= .123291
SUMS OF SQUARES DUE TO DEVIATION= 2.745361
GOODNESS OF FIT= .042979
MULTIPLE CORRELATION COEFFICIENT 0.20731
STANDARD DEVIATION .338215

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	.12	1	.12
DEVIATION	2.75	23	.12
TOTAL VARIATION	2.87	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 1.03
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.TWO SPECIFIC CONDUCTANCE VS. ALKALINITY

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	458	90.0000
458	89650	16285.0000

REGRESSION COEFFICIENTS OF NORMAL EQUATION

4.247259140015
0.003533124458

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
160.0000	6.0000	3.6820	2.3180
180.0000	5.0000	3.6113	1.3887
215.0000	2.0000	3.4876	1.4876
205.0000	4.0000	3.5230	0.4770
140.0000	2.0000	3.7526	1.7526
150.0000	3.0000	3.7173	0.7173
160.0000	2.0000	3.6820	1.6820
130.0000	3.0000	3.7880	0.7880
150.0000	2.0000	3.7173	1.7173
150.0000	2.0000	3.7173	1.7173
120.0000	2.0000	3.8233	1.8233
180.0000	3.0000	3.6113	0.6113
180.0000	3.0000	3.6113	0.6113
135.0000	3.0000	3.7703	0.7703
160.0000	3.0000	3.6820	0.6820
150.0000	10.0000	3.7173	6.2827
210.0000	2.0000	3.5053	1.5053
210.0000	2.0000	3.5053	1.5053
220.0000	2.0000	3.4700	1.4700
110.0000	7.0000	3.8586	3.1414
205.0000	4.0000	3.5230	0.4770
220.0000	7.0000	3.4700	3.5300
260.0000	5.0000	3.3286	1.6714
280.0000	4.0000	3.2580	0.7420
300.0000	2.0000	3.1873	1.1873

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 102
SUMS OF SQUARES DUE TO REGRESSION= .718262
SUMS OF SQUARES DUE TO DEVIATION= 101.2817
GOODNESS OF FIT= 7.041752E-3
MULTIPLE CORRELATION COEFFICIENT 0.08392
STANDARD DEVIATION 2.054278

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	.72	1	.72
DEVIATION	101.28	23	4.40
TOTAL VARIATION	102.00	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 0.16
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.TWO SPECIFIC CONDUCTANCE VS. ACIDITY

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	458	182.0000
458	89650	35630.0000

REGRESSION COEFFICIENTS OF NORMAL EQUATION

\- 0.015620231628
0.039823248982

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
160.0000	5.0000	6.3561	1.3561
180.0000	2.0000	7.1526	5.1526
215.0000	20.0000	8.5464	11.4536
205.0000	7.0000	8.1481	1.1481
140.0000	6.0000	5.5596	0.4404
150.0000	3.0000	5.9579	2.9579
160.0000	3.0000	6.3561	3.3561
130.0000	7.0000	5.1614	1.8386
150.0000	9.0000	5.9579	3.0421
150.0000	8.0000	5.9579	2.0421
120.0000	4.0000	4.7632	0.7632
180.0000	14.0000	7.1526	6.8474
180.0000	6.0000	7.1526	1.1526
135.0000	3.0000	5.3605	2.3605
160.0000	3.0000	6.3561	3.3561
150.0000	3.0000	5.9579	2.9579
210.0000	4.0000	8.3473	4.3473
210.0000	26.0000	8.3473	17.6527
220.0000	10.0000	8.7455	1.2545
110.0000	3.0000	4.3649	1.3649
205.0000	4.0000	8.1481	4.1481
220.0000	9.0000	8.7455	0.2545
260.0000	10.0000	10.3384	0.3384
280.0000	2.0000	11.1349	9.1349
300.0000	11.0000	11.9314	0.9314

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 799.0429
SUMS OF SQUARES DUE TO REGRESSION= 91.104
SUMS OF SQUARES DUE TO DEVIATION= 707.9389
GOODNESS OF FIT= .114016
MULTIPLE CORRELATION COEFFICIENT 0.33766
STANDARD DEVIATION 5.431143

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	91.10	1	91.10
DEVIATION	707.94	23	30.78
TOTAL VARIATION	799.04	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 2.96
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.TWO SPECIFIC CONDUCTANCE VS. SULPHATES

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	458	1944.0000
458	89650	377090.0000

REGRESSION COEFFICIENTS OF NORMAL EQUATION

10.945266723633
0.364708006382

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
160.0000	75.0000	69.2985	5.7015
180.0000	62.0000	76.5927	14.5927
215.0000	104.0000	89.3575	14.6425
205.0000	83.0000	85.7104	2.7104
140.0000	75.0000	62.0044	12.9956
150.0000	79.0000	65.6515	13.3485
160.0000	93.0000	69.2985	23.7015
130.0000	64.0000	58.3573	5.6427
150.0000	45.0000	65.6515	20.6515
150.0000	76.0000	65.6515	10.3485
120.0000	24.0000	54.7102	30.7102
180.0000	75.0000	76.5927	1.5927
180.0000	78.0000	76.5927	1.4073
135.0000	82.0000	60.1808	21.8192
160.0000	61.0000	69.2985	8.2985
150.0000	59.0000	65.6515	6.6515
210.0000	82.0000	87.5339	5.5339
210.0000	74.0000	87.5339	13.5339
220.0000	93.0000	91.1810	1.8190
110.0000	57.0000	51.0631	5.9369
205.0000	77.0000	85.7104	8.7104
220.0000	77.0000	91.1810	14.1810
260.0000	102.0000	105.7693	3.7693
280.0000	104.0000	113.0635	9.0635
300.0000	143.0000	120.3577	22.6423

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 12257
SUMS OF SQUARES DUE TO REGRESSION= 7640.875
SUMS OF SQUARES DUE TO DEVIATION= 4616.125
GOODNESS OF FIT= .623389
MULTIPLE CORRELATION COEFFICIENT 0.78955
STANDARD DEVIATION 13.86861

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	7640.87	1	7640.87
DEVIATION	4616.12	23	200.70
TOTAL VARIATION	12257.00	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 38.07
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.TWO SPECIFIC CONDUCTANCE VS. TOTAL IRON

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	458	11.2000
458	89650	2172.4973

REGRESSION COEFFICIENTS OF NORMAL EQUATION

0.063184738159
0.002100514714

ORIGINAL X	Y PAIRS	PREDICTED VALUES	DEVIATION
160.0000	0.4000	0.3993	0.0007
180.0000	0.2000	0.4413	0.2413
215.0000	0.3000	0.5148	0.2148
205.0000	0.3000	0.4938	0.1938
140.0000	0.2000	0.3573	0.1573
150.0000	0.3000	0.3783	0.0783
160.0000	0.2000	0.3993	0.1993
130.0000	0.2000	0.3363	0.1363
150.0000	0.4000	0.3783	0.0217
150.0000	0.3000	0.3783	0.0783
120.0000	0.2000	0.3152	0.1152
180.0000	0.4000	0.4413	0.0413
180.0000	0.5000	0.4413	0.0587
135.0000	0.3000	0.3468	0.0468
160.0000	0.4000	0.3993	0.0007
150.0000	0.6000	0.3783	0.2217
210.0000	0.2000	0.5043	0.3043
210.0000	0.3000	0.5043	0.2043
220.0000	0.4000	0.5253	0.1253
110.0000	1.1000	0.2942	0.8058
205.0000	0.8000	0.4938	0.3062
220.0000	0.7000	0.5253	0.1747
260.0000	0.9000	0.6093	0.2907
280.0000	0.8000	0.6513	0.1487
300.0000	0.8000	0.6933	0.1067

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= 1.602416
SUMS OF SQUARES DUE TO REGRESSION= .253454
SUMS OF SQUARES DUE TO DEVIATION= 1.348962
GOODNESS OF FIT= .15817
MULTIPLE CORRELATION COEFFICIENT 0.39771
STANDARD DEVIATION .23708

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	.25	1	.25
DEVIATION	1.35	23	.06
TOTAL VARIATION	1.60	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 4.32
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.TWO SPECIFIC CONDUCTANCE VS. FERROUS IRON

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	458	4.5000
458	89650	838.4978

REGRESSION COEFFICIENTS OF NORMAL EQUATION

0.135029137135
0.000245470554

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
160.0000	0.3000	0.1743	0.1257
180.0000	0.2000	0.1792	0.0208
215.0000	0.2000	0.1878	0.0122
205.0000	0.1000	0.1854	0.0854
140.0000	0.1000	0.1694	0.0694
150.0000	0.1000	0.1718	0.0718
160.0000	0.1000	0.1743	0.0743
130.0000	0.1000	0.1669	0.0669
150.0000	0.2000	0.1718	0.0282
150.0000	0.2000	0.1718	0.0282
120.0000	0.1000	0.1645	0.0645
180.0000	0.2000	0.1792	0.0208
180.0000	0.2000	0.1792	0.0208
135.0000	0.1000	0.1682	0.0682
160.0000	0.1000	0.1743	0.0743
150.0000	0.2000	0.1718	0.0282
210.0000	0.1000	0.1866	0.0866
210.0000	0.1000	0.1866	0.0866
220.0000	0.2000	0.1890	0.0110
110.0000	0.4000	0.1620	0.2380
205.0000	0.3000	0.1854	0.1146
220.0000	0.2000	0.1890	0.0110
260.0000	0.3000	0.1989	0.1011
280.0000	0.2000	0.2038	0.0038
300.0000	0.2000	0.2087	0.0087

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= .160002
SUMS OF SQUARES DUE TO REGRESSION= 3.463507E-3
SUMS OF SQUARES DUE TO DEVIATION= .156539
GOODNESS OF FIT= .021647
MULTIPLE CORRELATION COEFFICIENT 0.14713
STANDARD DEVIATION .080761

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	.00	1	.00
DEVIATION	.16	23	.01
TOTAL VARIATION	.16	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 0.51
LEVEL .05% - CRITICAL VALUE = 4.28

SAMPLE.TWO SPECIFIC CONDUCTANCE VS. FERRIC IRON

COEFFICIENT MATRIX AND AUGMENTED MATRIX

2	458	6.7000
458	89650	1333.9985

REGRESSION COEFFICIENTS OF NORMAL EQUATION

\- 0.071841299534
0.001855027163

ORIGINAL X - Y PAIRS		PREDICTED VALUES	DEVIATION
160.0000	0.1000	0.2250	0.1250
180.0000	0.0000	0.2621	0.2621
215.0000	0.1000	0.3270	0.2270
205.0000	0.2000	0.3084	0.1084
140.0000	0.1000	0.1879	0.0879
150.0000	0.2000	0.2064	0.0064
160.0000	0.1000	0.2250	0.1250
130.0000	0.1000	0.1693	0.0693
150.0000	0.2000	0.2064	0.0064
150.0000	0.1000	0.2064	0.1064
120.0000	0.1000	0.1508	0.0508
180.0000	0.2000	0.2621	0.0621
180.0000	0.3000	0.2621	0.0379
135.0000	0.2000	0.1786	0.0214
160.0000	0.3000	0.2250	0.0750
150.0000	0.4000	0.2064	0.1936
210.0000	0.1000	0.3177	0.2177
210.0000	0.2000	0.3177	0.1177
220.0000	0.2000	0.3363	0.1363
110.0000	0.7000	0.1322	0.5678
205.0000	0.5000	0.3084	0.1916
220.0000	0.5000	0.3363	0.1637
260.0000	0.6000	0.4105	0.1895
280.0000	0.6000	0.4476	0.1524
300.0000	0.6000	0.4847	0.1153

STATISTICAL ANALYSIS WITH ORDER OF EQUATION= 1
NUMBER OF X - Y PAIRS= 25
TOTAL SUMS OF SQUARE= .974405
SUMS OF SQUARES DUE TO REGRESSION= .197686
SUMS OF SQUARES DUE TO DEVIATION= .776719
GOODNESS OF FIT= .202879
MULTIPLE CORRELATION COEFFICIENT 0.45042
STANDARD DEVIATION .179898

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
LIN. REGRESSION	.20	1	.20
DEVIATION	.78	23	.03
TOTAL VARIATION	.97	24	

F-TEST FOR EQUALITY OF SAMPLE/REGRESSION VARIANCE
F TEST - SIGNIFICANCE OF REGRESSION = 5.85
LEVEL .05% - CRITICAL VALUE = 4.28