

12-4-2009

Ex. 281-US-427

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WD-4



"Bring in the Rain."  
ALL-WEATHER  
LEVEL BOOK  
No. 310

May 14, 2004

Sampling

1442.01



WD-4 Habitat Mapping 05/14/04

UNIT

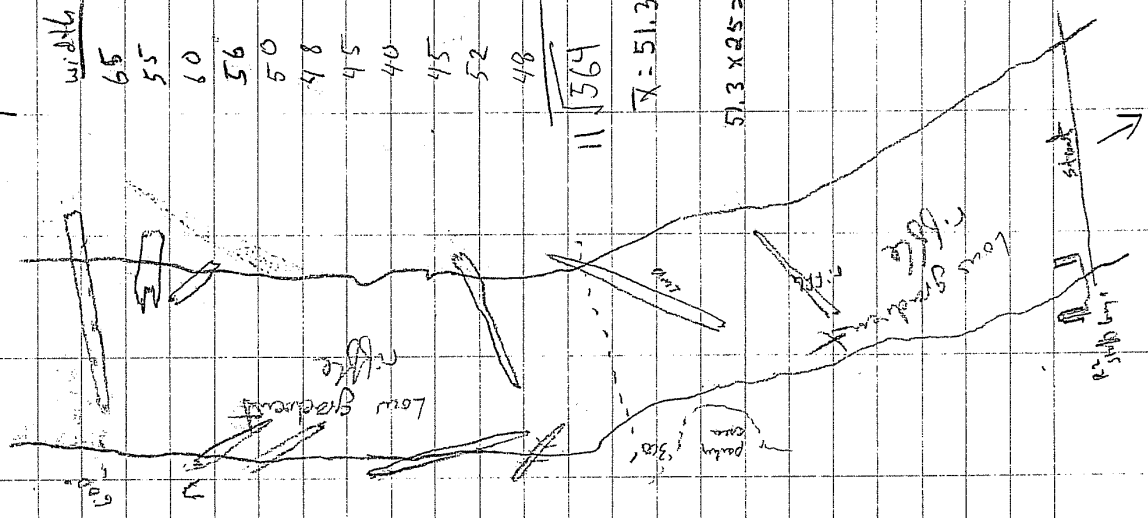
Type Length Width

12.81'

Notes

\*only one habitat type

WD-4 Habitat Map 05/14/04



width

65

55

60

56

50

48

45

40

45

52

48

11564

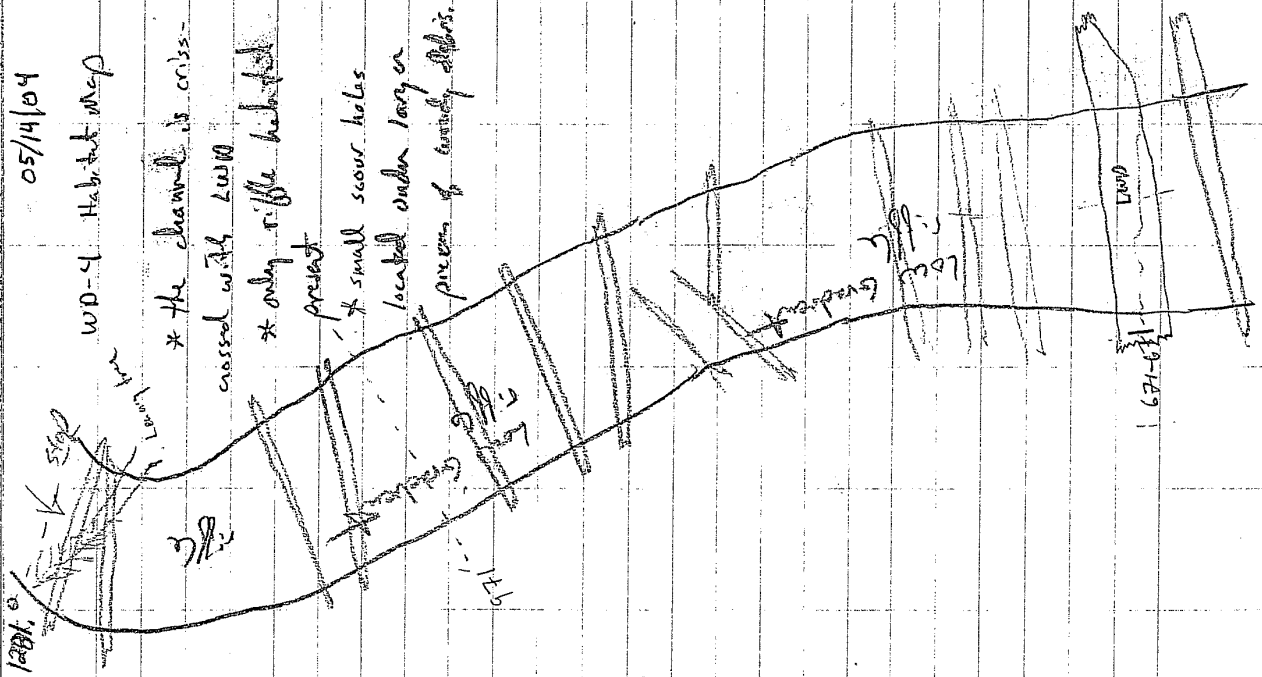
$\bar{x} = 51.3'$

$57.3 \times 25 = 1432.5'$

05/14/04

### WD-4 Habitat Map

- \* the channel is cross-
- crossed with LWD
- \* only riffle habitat present
- \* small scour holes located under large pieces of woody debris.

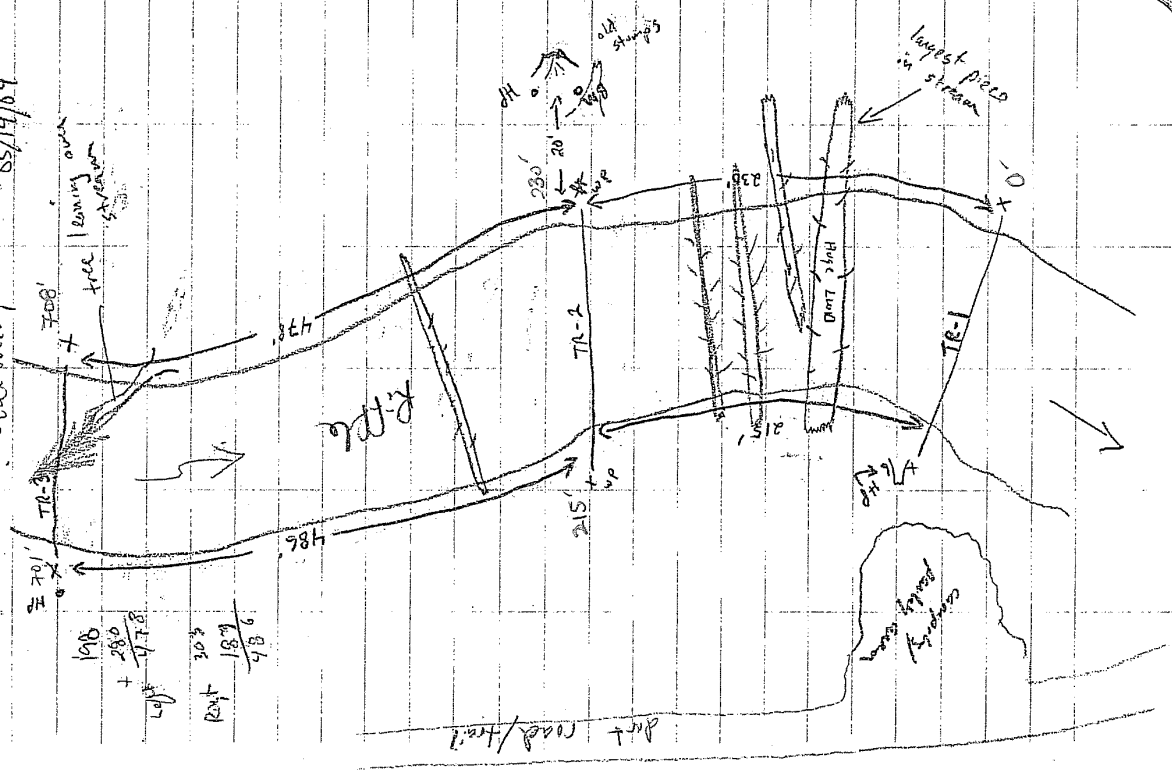


### WD-4 Transect Map & staking

05/14/04

$$\begin{array}{r} 198 \\ + 280 \\ \hline 478 \\ \text{Left} \end{array}$$

$$\begin{array}{r} 303 \\ + 187 \\ \hline 490 \\ \text{Right} \end{array}$$



WD-4 Level Loop 05/14/04

STA BS HI FS Eleva

BM 3.19 103.19 100.00

TR-1 5.44 97.75 ✓

TR-2 3.62 99.57 ✓

TRFB 2.89 100.30 ✓

TP 2.29

TR-3 2.29 100.30

TR-2 3.03 99.56 ✓

TR-1 4.84 97.75 ✓

BM 2.59 100.00 ✓

OK

\* Recommend using a turning point b/w TR-2 & TR-3 survey points

WD-4 WSE 05/14/04

STA BS HI FS Eleva

102.59

TR-1 7.69 94.90

MWS 7.68 94.91

LWS 7.69 94.90

TR-2 6.93 95.66

MWS 6.92 95.68

LWS 6.91 95.68

TR-3 HP 2.68 102.98 100.30

RWS 5.82 97.16

MWS 5.82 97.16

LWS 5.83 97.15

BM



05/14/04

swifp = 3602

WD-4 TR-20 cont. 3A prop

STA Depth Vel. Notes

RWE = 8.7 0.0 0.0 ~10 est

9.0 .55 .51

11.0 .75 .82

13.0 .70 .70

15.0 .75 .70

18.0 .90 .98

21.0 1.10 1.27

24.0 .85 1.33

27.0 1.1 1.25

30.0 1.05 .95

33.0 1.10 1.0

36.0 .90 .85

39.0 .85 .88

42.0 .90 .87

45.0 .85 1.011

48.0 .90 .98

51.0 .90 1.55

54.0 .90 1.19

57.0 .85 .83

60.0 .85 1.36

63.0 .85 1.06

66.0 .70 .72

69 .75 .87

WD-4 TR-2 cont. 05/14/04

STA Depth Vel. Notes

72.0 .55 .82

75.0 .40 .20 cobble vel. cover

77.0 .35 .25 edge vel. cover

79.0 .29 .12

80.1 0.0 0.0

LWP = 93.0

Swath = 3602 prof, 3A  
 WD-4 TA-3 05/14/04

| STA       | Depth | Vel.  | Notes                            |
|-----------|-------|-------|----------------------------------|
| AWP = 10' |       |       |                                  |
| 16.0      | 0.0   | 0.0   |                                  |
| 17.5      | 0.5   | -0.05 | Estimated                        |
| 19.0      | 0.7   | 0.20  |                                  |
| 21.0      | 0.5   | 0.27  | u/s velocity shelter (small log) |
| 24.0      | 0.05  | 0.07  | " "                              |
| 27.0      | 1.15  | 0.03  | " "                              |
| 28.0      | 1.30  | 1.07  |                                  |
| 31.0      | 1.30  | 1.10  |                                  |
| 34.0      | 1.30  | 1.37  |                                  |
| 37.0      | 1.30  | 1.63  |                                  |
| 40.0      | 1.20  | 1.74  |                                  |
| 43.0      | 1.20  | 1.63  |                                  |
| 46.0      | 1.20  | 1.37  |                                  |
| 49.0      | 0.90  | 0.96  |                                  |
| 52.0      | 0.80  | 1.32  |                                  |
| 55.0      | 0.80  | 1.24  | Roll 356                         |
| 58.0      | 0.75  | 1.48  | 305: TR 3 L → R                  |
| 61.0      | 0.75  | 1.52  | 424: TR 3 R → L                  |
| 64.0      | 0.90  | 1.37  | 403: TR 3 L ← R                  |
| 67.0      | 0.80  | 1.24  | 472: " " "                       |
| 70.0      | 0.65  | 0.61  |                                  |
| 73.0      | 0.80  | 0.64  |                                  |
| 76.0      | 0.55  | 1.48  |                                  |
| 79.0      | 0.60  | 0.44  |                                  |

WD-4 TR-3 cont'd

| STA  | Depth | Vel. | Notes            |
|------|-------|------|------------------|
| 81.0 | 0.55  | 0.72 | Log @ 81'-02"    |
| 82.0 | 0.45  | 0.0  | LWD vel. shelter |
| 83.0 | 0.3   | 0.0  |                  |
| 83.4 | 0.0   | 0.0  | LWE              |



W10-4 TR-1  
 Marsh Mc Birney  
 SN: 2005068  
 05/14/04

| STA  | Depth | Vel. | Comments       |
|------|-------|------|----------------|
| 7.3  | 0.0   | 0.0  |                |
| 7.4  | 0.4*  | 0    | estimated vel. |
| 8.0  | .55   | .10  |                |
| 8.5  | .7    | 1.35 |                |
| 9.0  | .7    | 1.18 |                |
| 11.5 | .75   | 1.57 |                |
| 14   | 0.7   | 1.5  |                |
| 17   | 0.8   | 1.67 |                |
| 20   | 0.97  | 1.33 |                |
| 23   | 1.2   | 1.62 |                |
| 26   | .90   | 1.72 |                |
| 29   | .55   | 1.73 | on top of mud  |
| 32   | .87   | 1.12 |                |
| 35   | .67   | 1.07 |                |
| 38   | .65   | .64  |                |
| 41   | .75   | .90  |                |
| 44   | .70   | 0.77 |                |
| 47   | 0.65  | 0.98 |                |
| 50   | .80   | .93  |                |
| 53   | .80   | 1.26 |                |
| 56   | 0.80  | 1.76 |                |

W10-4 TR-1  
 continue  
 05/14/04

| STA        | Depth | Vel. | Comments         |
|------------|-------|------|------------------|
| 59         | 0.80  | 1.31 |                  |
| 61         | 0.55  | .66  |                  |
| 63         | 0.55  | .82  |                  |
| 66         | 0.80  | 1.14 |                  |
| 69         | 0.80  | 0.74 | velocity shelter |
| 70.3       | .32   | 0.0  |                  |
| LWE = 70.6 |       | 0.0  |                  |
| LWP = 90.2 |       | 0.0  |                  |

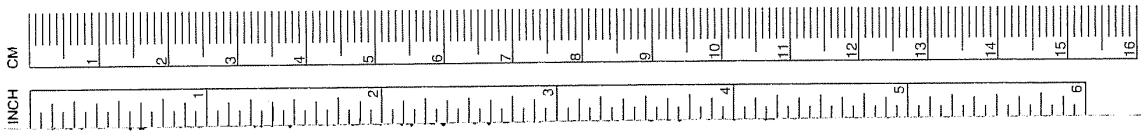
WD-4



*"Sit in the Rain"*  
ALL-WEATHER  
LEVEL BOOK  
No. 310

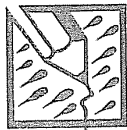
June 27, 2004

Survey



MEASUREMENT CONVERSIONS

| IF YOU KNOW  | MULTIPLY BY | TO FIND        |
|--|-------------|----------------|
| <b>LENGTH</b>  |             |                |
| inches   | 2.540       | centimeters    |
| feet   | 30.480      | centimeters    |
| yards  | 0.914       | meters         |
| miles  | 1.609       | kilometers     |
| millimeters  | 0.039       | inches         |
| centimeters  | 0.393       | inches         |
| meters   | 3.280       | feet           |
| kilometers   | 1.093       | yards          |
|  | 0.621       | miles          |
| <b>WEIGHT</b>  |             |                |
| ounces   | 28.350      | grams          |
| pounds   | 0.453       | kilograms      |
| grams  | 0.035       | ounces         |
| kilograms  | 2.204       | pounds         |
| <b>VOLUME</b>  |             |                |
| fluid ounces   | 29.573      | milliliters    |
| pints  | 0.473       | liters         |
| quarts   | 0.946       | liters         |
| gallons (U.S.)   | 3.785       | liters         |
| milliliters  | 0.033       | fluid ounces   |
| liters   | 1.056       | quarts         |
|  | 0.264       | gallons (U.S.) |
| <b>TEMPERATURE</b>                                       |             |                |
| $^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times .555$ |             |                |
| $^{\circ}\text{F} = (^{\circ}\text{C} \times 1.8) + 32$  |             |                |
| <b>Length Conversions</b>                                |             |                |
| Inches   | Decimals    | Milli-Meters   |
| 1/16   | .0625       | 1.5875         |
| 1/8  | .125        | 3.1750         |
| 3/16   | .1875       | 4.7625         |
| 1/4  | .2500       | 6.3500         |
| 5/16   | .3125       | 7.9375         |
| 3/8  | .3750       | 9.5250         |
| 1/2  | .5000       | 12.7000        |
| 5/8  | .6250       | 15.8750        |
| 3/4  | .7500       | 19.0500        |
| 7/8  | .8750       | 22.2250        |
| 1"   | 1.0000      | 25.4000        |
| 2"   | 2.0000      | 50.8000        |
| 3"   | 3.0000      | 76.2000        |
| 4"   | 4.0000      | 101.6000       |
| 5"   | 5.0000      | 127.0000       |
| 6"   | 6.0000      | 152.4000       |
| 7"   | 7.0000      | 177.8000       |
| 8"   | 8.0000      | 203.2000       |
| 9"   | 9.0000      | 228.6000       |
| 10"  | 10.0000     | 254.0000       |
| 11"  | 11.0000     | 279.4000       |
| 1 foot   | 12.0000     | 304.8000       |



"Rite in the Rain"  
ALL-WEATHER WRITING PAPER

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R2 Resources Consultants  
 Address 15250 ME 95 St.  
Redmond, WA 98019  
 Phone 425/556-1288  
 Project 1442.01 PHABSIM Data

"Rite in the Rain" - a unique all-weather writing surface created to shed water and to enhance the written image. Makes it possible to write sharp, legible field data in any kind of weather.

a product of  
**J. L. DARLING CORPORATION**  
 TACOMA, WA 98424-1017 USA  
[www.ritemtherain.com](http://www.ritemtherain.com)

WD4 FORT CREEK

6/27/04

|      | IN      | OUT    |
|------|---------|--------|
| TIME | 12:50pm | 4:10pm |
| SG.  | 1.00    | 1.00   |

CREW: C. Yoder, A. Weylough

Equipment: Swaffer #5750 Prop 2A

nice sunny day, few clouds

| TYPE  | TR | RWP | LWP  | RWE  | LWE  |
|-------|----|-----|------|------|------|
| Rifle | 1  | 1.0 | 90.2 | 7.3  | 70.6 |
| Rifle | 2  | 1.0 | 93.0 | 8.7  | 80.1 |
| Rifle | 3  | 1.0 | 93.5 | 16.8 | 83.4 |

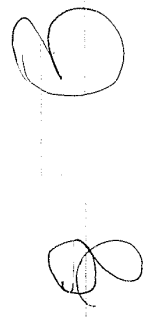
PHOTO LOG CEYS

- (20) WD4 TR2 LB to RB
- (19) WD4 TR2 UPstream
- (18) WD4 TR2 downstream
- (17) WD4 TR2 RB to LB
- (16) WD4 TR3 RB to LB
- (15) WD4 TR3 Upstream
- (14) WD4 TR3 Downstream
- (13) WD4 TR3 LB to RB
- (12) WD4 TR1 RB to LB
- (11) WD4 TR1 upstream
- (10) WD4 TR1 downstream
- (9) WD4 TR1 LB to RB

108.70

LEVEL LOOP SURVEY 6/27/04

| STA | BS   | HI     | FS   | ELV    | ROD | STA                       | BS | HI                | FS              | ELV              | ROD  |
|-----|------|--------|------|--------|-----|---------------------------|----|-------------------|-----------------|------------------|------|
| BM  | 2.02 | 102.02 |      | 100.00 |     | TR2-R                     |    | 102.94            | 7.25            | 95.69            |      |
| TR2 |      |        | 5.09 | 97.73  | V   | TR2-L                     |    |                   | 7.23            | 95.71            |      |
| TR2 |      |        | 3.28 | 99.54  |     | = upstream TR3            |    | 103.04            | 6.61            | 97.23            |      |
| TR3 |      |        | 2.54 | 100.28 |     | ~60'                      |    | 103.04            | 7.76            | 97.33            | 1.25 |
| TP  |      |        |      |        |     | upstream TR3              |    |                   |                 |                  |      |
| TR3 |      |        |      |        |     | ~60'                      |    |                   |                 |                  |      |
| TR3 | 2.60 | 102.94 |      | 100.28 |     | <del>downstream TR1</del> |    | <del>100.03</del> | <del>5.59</del> | <del>95.24</del> |      |
| TR2 |      |        | 3.37 | 99.57  |     | downstream TR1            |    | 100.03            | 7.39            | 94.77            | 1.33 |
| TR2 |      |        | 5.21 | 97.73  | ↓   | ~60'                      |    |                   | 6.09            | 94.74            |      |
| BM  |      |        | 2.94 | 100.00 |     | downstream TR1            |    |                   | 7.40            | 94.75            | 1.32 |
| TR2 |      |        | 3.38 | 99.56  | ✓   | ~60'                      |    |                   |                 |                  |      |





RIFFILE - TR2

CROSS SECTIONAL PROFILE

| STA   | BSI  | HI     | FS   | ELV    | BOO |
|-------|------|--------|------|--------|-----|
| -11.0 |      | 102.94 | 1.20 | 101.60 |     |
| -6.0  |      | 1.01   |      |        |     |
| 1.0   |      | 4.00   |      |        |     |
| 4.0   |      | 5.95   |      | 96.99  |     |
| 7.0   |      | 6.72   |      | 96.22  |     |
| 8.54  |      | 6.95   |      | 95.99  |     |
| 8.7   |      | 7.25   |      | 95.69  |     |
| 80.1  |      | 7.23   |      | 95.71  |     |
| 70.5  | 80.5 | 7.04   |      | 95.90  |     |
| 83.0  |      | 6.83   |      | 96.11  |     |
| 88.0  |      | 5.89   |      | 97.05  |     |
| 93.0  |      | 5.20   |      | 97.60  |     |
| 113.0 |      | 4.37   |      | 98.57  |     |
| 123.0 |      | 2.37   |      | 100.57 |     |

MS  
KPB  
10/11

6/27/04

| DOM  | SUB  | %  | COMMENTS  |
|------|------|----|-----------|
| Sand | veg  | 60 | RWP - 12' |
|      |      | 60 | RWP - 7'  |
|      |      | 70 | RWP       |
| Veg  | Sand | 80 |           |
| Veg  | Sand | 80 |           |
| Veg  | sand | 80 |           |
| Veg  | sand | 90 |           |
| Veg  | Sand | 80 | RWE       |
| Veg  | Sand | 80 | LWE       |
| Veg  | Sand | 80 |           |
| Veg  | Sand | 60 |           |
| Veg  | Sand | 60 | LWP       |
| Veg  | Sand | 60 | LWP + 20  |
| Sand | Veg  | 70 | LWP + 30  |
| Veg  | Sand | 60 |           |

TRA DISCHARGE SURVEY 6/27/04

| STA  | DEPTH | VEL  | DOM           | SUB               | %  | COM              |
|------|-------|------|---------------|-------------------|----|------------------|
| 1.0  | 0     | 0    | Veg           | Sand              | 80 | RWP              |
| 8.7  | 0.6   | 0.2  | Sand          | sm. gravel        | 70 | RWE              |
| 9.0  | 0.75  | 0.65 | Sand          | sm. gravel        | 40 |                  |
| 11.0 | 0.75  | 0.78 | Sand          | sm. gravel        | 60 |                  |
| 13.0 | 0.8   | 0.81 | Sand          | sm. coarse gravel | 70 |                  |
| 18.0 | 1.12  | 1.31 | coarse gravel | Sand              | 60 |                  |
| 21.0 | 0.88  | 1.47 | coarse gravel | fine gravel       | 90 |                  |
| 24.0 | 1.1   | 1.13 | coarse gravel | Sand              | 70 |                  |
| 27.0 | 1.02  | 0.95 | Sand          | sm. gravel        | 70 |                  |
| 30.0 | 1.05  | 1.03 | Sand          | sm. gravel        | 70 |                  |
| 33.0 | 0.9   | 0.87 | Sand          | sm. gravel        | 70 |                  |
| 36.0 | 0.7   | 1.07 | sm. gravel    | Sand              | 60 |                  |
| 39.0 | 0.82  | 0.62 | coarse gravel | fine gravel       | 80 |                  |
| 45.0 | 0.97  | 1.15 | coarse gravel | fine gravel       | 60 |                  |
| 48.0 | 0.9   | 1.18 | coarse gravel | fine gravel       | 60 |                  |
| 51.0 | 0.82  | 1.43 | coarse gravel | fine gravel       | 80 |                  |
| 54.0 | 1.02  | 1.37 | coarse gravel | fine gravel       | 80 | behind rock      |
| 57.0 | 0.85  | 0.70 | coarse gravel | "                 | 80 | FOCK behind rock |
| 60.0 | 0.78  | 1.27 | "             | "                 | "  | "                |
| 63.0 | 0.82  | 0.95 | "             | "                 | "  | "                |
| 66.0 | 0.68  | 0.83 | "             | "                 | "  | "                |

| STA  | DEPTH | VEL  | DOM         | SUB           | %  | COM |
|------|-------|------|-------------|---------------|----|-----|
| 69.0 | 0.7   | 0.74 | fine gravel | coarse gravel | 60 |     |
| 72.0 | 0.57  | 0.86 | Sand        | sm. gravel    | 60 |     |
| 75.0 | 0.35  | 0.19 | Sand        | sm. gravel    | 60 |     |
| 77.0 | 0.3   | 0.40 | Sand        | sm. gravel    | 70 |     |
| 79.0 | 0.2   | 0.4  | Sand        | sm. gravel    | 60 |     |
| 80.1 |       |      | Veg         | Sand          | 80 | LWE |
| 93.0 |       |      |             |               |    | LWP |

RIFLE TL3

CROSS SECTIONAL PROFILE

STA BS HI FS ELV EOO

|        |      |        |      |        |                 |
|--------|------|--------|------|--------|-----------------|
| TR3 HP | 3.56 | 103.84 |      | 100.28 |                 |
| -3.5   |      |        | 2.13 |        |                 |
| 1.0    |      |        | 3.99 | 7.55   |                 |
| 6.0    |      |        | 4.93 | 98.91  |                 |
| 11.0   |      |        | 5.23 | 98.61  |                 |
| 12.6   |      |        | 5.95 | 97.89  |                 |
| 14.5   |      |        | 6.22 | 97.64  |                 |
| 16.7   |      |        | 6.48 | 97.36  |                 |
| 16.8   |      |        | 6.69 | 97.15  |                 |
|        |      |        | 6.70 | 97.14  |                 |
|        |      |        | 6.71 | 97.13  |                 |
| 83.4   |      |        | 6.71 | 97.13  |                 |
| 83.6   |      |        | 6.58 | 97.26  |                 |
| 87.5   |      |        | 6.35 | 97.49  |                 |
| 91.0   |      |        | 5.66 | 98.18  |                 |
| 93.5   |      |        | 4.83 | 99.01  |                 |
| 98'    |      |        | 4.07 | 98.97  |                 |
| 102.5  |      |        |      |        | LWP+HD = 102.97 |

6/27/04

DOM SURS % COMMENTS

|            |          |    |            |
|------------|----------|----|------------|
| Sand       | veg      | 80 | RWP - 4.5' |
| Sand       | veg      | 80 | RWP        |
| Sand - veg |          | 80 |            |
| Sand veg   |          | 80 | 9'-12' log |
| Veg Sand   | Sand veg | 70 |            |
| Veg        | Sand     | 80 |            |
| Veg        | Sand     | 80 |            |
| Veg        | Sand     | 80 | RWE        |
|            |          |    | RWSE       |
|            |          |    | LWSE       |
|            |          |    | LWE        |
| Veg        | Silt     | 60 |            |
| Veg        | Silt     | 60 |            |
| Veg        | Silt     | 70 |            |
| Veg        | Silt     | 80 |            |
| Veg        | Sand     | 60 | LWP        |
| Sand       | Veg      | 60 | LWP + 4.5' |
|            |          |    | LWP + 1.9' |

TR 3

DISCHARGE SURVEY

| STA  | DEPTH | VEL   | DOM        | SUB %      | COM |
|------|-------|-------|------------|------------|-----|
| 1.0  |       |       |            |            | RWP |
| 16.8 | 0     | 0     | veg        | sand       | 80  |
| 17.5 | 0.58  | -0.03 | sm. gravel | log gravel | 60  |
| 19.0 | 0.7   | 0.09  | "          | "          | 70  |
| 21.0 | 0.5   | 0.22  | sand       | sm gravel  | 70  |
| 24.0 | 0.82  | 0.15  | sand       | sm gravel  | 80  |
| 27.0 | 1.07  | 0.38  | sand       | sm gravel  | 60  |
| 28.0 | 1.25  | 1.16  | log gravel | sm gravel  | 60  |
| 31.0 | 1.32  | 0.98  | "          | "          | 80  |
| 34.0 | 1.37  | 0.99  | "          | sand       | 80  |
| 37.0 | 1.2   | 1.55  | log gravel | sm gravel  | 60  |
| 40.0 | 1.1   | 1.62  | "          | "          | 60  |
| 43.0 | 1.2   | 1.34  | "          | "          | 70  |
| 46.0 | 1.02  | 1.06  | "          | "          | 60  |
| 49.0 | 0.88  | 0.83  | log gravel | sm gravel  | 60  |
| 52.0 | 0.8   | 1.18  | sand       | sm gravel  | 100 |
| 55.0 | 0.75  | 1.21  | sm gravel  | log gravel | 60  |
| 58.0 | 0.8   | 1.08  | log gravel | sm gravel  | 60  |
| 61.0 | 0.8   | 1.08  | sm gravel  | log gravel | 70  |
| 64.0 | 0.8   | 1.03  | "          | "          | 60  |
| 67.0 | 0.8   | 1.02  | log gravel | sm gravel  | 60  |
| 70.0 | 0.63  | 0.69  | sm gravel  | sand       | 80  |
| 73.0 | 0.83  | 0.56  | sm gravel  | sand       | 70  |

log at 75.5

6/27/03

| STA  | DEPTH | VEL  | DOM       | SUB %     | COM |
|------|-------|------|-----------|-----------|-----|
| 76.0 | 0.55  | 0.52 | sm gravel | sand      | 70  |
| 79.0 | 0.67  | 0.71 | "         | "         | 60  |
| 80.0 | 0.62  | 0.57 | sand      | cobble    | 60  |
| 81.0 | 0.55  | 0.77 | sand      | sm gravel | 70  |
| 82.0 | 0.47  | 0.02 | sand      | silt      | 60  |
| 83.0 | 0.38  | 0.02 | sand      | silt      | 60  |
| 83.4 | 0     | 0    | veg       | silt      | 60  |

LWE  
LWPP

TRJ

CROSS SECTIONAL PROFILE

STA BS HI FS ELV ROD

| TRJ MP | BS   | HI     | FS    | ELV    | ROD  |
|--------|------|--------|-------|--------|------|
| -12    | 3.10 | 100.83 | 97.73 | 97.07  | +4.0 |
| -4     |      |        | 2.96  | 97.07  |      |
| #1.0   |      |        | 3.00  | 96.95  |      |
| 2.1    |      |        | 4.62  | 96.21  |      |
| 5.5    |      |        | 5.66  | 95.71  |      |
| 7.1    |      |        | 5.89  | 95.24  |      |
| 7.3    |      |        | 5.91  | 94.92  |      |
|        |      |        | 5.92  | 94.91  |      |
|        |      |        | 5.93  | 94.90  |      |
| 70.6   |      |        | 5.92  | 94.91  |      |
| 70.9   |      |        | 5.04  | 94.99  |      |
| 73.0   |      |        | 5.55  | 95.26  |      |
| 76.5   |      |        | 5.24  | 95.59  |      |
| 79.5   |      |        | 5.07  | 95.76  |      |
| 83.0   |      |        | 4.50  | 96.33  |      |
| 86.5   |      |        | 3.42  | 97.41  |      |
| 90.2   |      |        | 2.53  | 98.3   |      |
| 100.2  |      |        | 6.79  | 100.04 |      |

6127104

DOM SUB % COMMENTS

|      |      |    |          |
|------|------|----|----------|
| veg  | Sand | 80 | RNP - 13 |
| veg  | Sand | 80 | RNP - 5  |
| veg  | Sand | 80 | RWP      |
| Sand | veg  | 70 |          |
| veg  | Sand | 80 |          |
| veg  | Sand | 80 |          |
| veg  | Sand | 80 |          |
|      |      |    | RWE      |
|      |      |    | RWSE     |
|      |      |    | LWSE     |
|      |      |    | LWE      |
| veg  | silt | 70 |          |
| veg  | silt | 70 |          |
| veg  | silt | 90 |          |
| veg  | silt | 90 |          |
| veg  | silt | 90 |          |
| veg  | Sand | 80 |          |
| veg  | Sand | 80 |          |
| veg  | Sand | 80 | LWP      |
| veg  | Sand | 90 | LWP+10   |



TR 1

DISCHARGE SURVEY

| STA  | DEPTH | VEL  | DOM           | SUB %            | COM    |
|------|-------|------|---------------|------------------|--------|
| 1    | 1.0   |      |               |                  | K.W.P. |
| 7.3  | 0     | 0    | Veg           | Sand 80          | K.W.E  |
| 8.0  | 0.62  | 0.13 | sm gravel     | Sand 70          |        |
| 8.5  | 0.62  | 1.30 | "             | " " 80           |        |
| 9.0  | 0.62  | 1.41 | "             | cobble 60        |        |
| 11.5 | 0.78  | 0.91 | cobble        | coarse gravel 70 |        |
| 14.0 | 0.75  | 1.49 | coarse gravel | cobble 70        |        |
| 17.0 | 0.92  | 1.63 | big gravel    | sm gravel 60     |        |
| 20.0 | 1.05  | 1.31 | "             | " " 60           |        |
| 23.0 | 1.15  | 1.34 | coarse gravel | sm gravel 70     |        |
| 26.0 | 0.97  | 1.63 | big gravel    | sm gravel 70     |        |
| 29.0 | 0.68  | 1.79 | "             | " " Sand 70      |        |
| 32.0 | 0.78  | 1.28 | sm gravel     | Sand 70          |        |
| 35.0 | 0.7   | 0.99 | Sand          | sm gravel 60     |        |
| 38.0 | 0.7   | 0.72 | Sand          | sm gravel 70     |        |
| 41.0 | 0.8   | 0.83 | Sand          | sm gravel 60     |        |
| 44.0 | 0.75  | 0.87 | sm gravel     | Sand 60          |        |
| 47.0 | 0.65  | 1.11 | "             | " " 80           |        |
| 50.0 | 0.8   | 1.09 | "             | big gravel 60    |        |
| 53.0 | 0.85  | 0.91 | big gravel    | sm gravel 70     |        |
| 56.0 | 1.0   | 2.12 | "             | " " cobble 60    |        |
| 59.0 | 0.92  | 1.16 | "             | " " sm gravel 80 |        |
| 61.0 | 0.62  | 0.68 | Sand          | sm gravel 70     |        |

6/27/04

| STA  | DEPTH | VEL  | DOM        | SUB %         | COM      |
|------|-------|------|------------|---------------|----------|
| 63.0 | 0.5   | 0.87 | sm gravel  | Sand 70       |          |
| 66.0 | 0.7   | 1.52 | cobble     | big gravel 60 | sm stick |
| 69.0 | 0.62  | 0.76 | big gravel | sm gravel 80  |          |
| 70.3 | 0.45  | 0    | Sand       | sm gravel 60  |          |
| 70.6 | 0     | 0    | Veg        | Silt 70       | LWE      |
| 90.2 |       |      |            |               | LWP      |

WD-4



*"Get in the Rain"*  
ALL-WEATHER  
LEVEL BOOK  
No. 310

Aug. 19 2004

Sampling

1442.01

WD-4  
FORT CREEK 8/19/04

| IN    | OUT  |
|-------|------|
| 12:20 | 3pm  |
| 1:47  | 1:47 |

Crews: Adam Weybright  
Glen Anderson

Sunny, clear ~85°F

Equip: Swiffer # 5750  
prop. 2A  
Cal. 186

Photo Log

13/122 WD-4 looking W/S  
19 SG below WD-4 site  
25/20 Const. in stream below SG - may have changed reading  
Same flow as WSE, no pics taken of transects.

Fort Ck. WD-4 8/19/04  
Level Loop (2 loops - too big for 1/2 loops)

| STA | BS   | HI     | FS   | ELEV     |
|-----|------|--------|------|----------|
| BM  | 1.30 | 101.30 |      | 100.00   |
| TR3 |      |        | 1.02 | 100.28   |
| TR2 | 1.85 | 101.41 | 1.74 | 97.56    |
| BM  |      |        | 1.41 | 100.00 ✓ |
| TR3 |      |        | 1.13 | 100.28 ✓ |

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|        |      |        |      |       |      |
|--------|------|--------|------|-------|------|
| TR2    |      | 101.41 | 5.72 | 95.69 | LWSE |
| TR3-HP | 3.52 | 103.80 | 5.75 | 95.66 | RWSE |
| TR3    |      |        | 6.66 | 97.14 | LWSE |
|        |      |        | 6.66 | 97.14 | RWSE |

|        |      |        |      |        |
|--------|------|--------|------|--------|
| BM     | 1.46 | 101.46 |      | 100.00 |
| TR1-HP | 3.84 | 101.57 | 3.73 | 97.73  |
| BM     |      |        | 1.56 | 100.01 |

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|     |      |        |      |        |      |
|-----|------|--------|------|--------|------|
| BM  | 1.56 |        |      | 100.00 |      |
| TR1 |      | 101.56 | 6.64 | 94.92  | LWSE |
|     |      |        | 6.62 | 94.94  | RWSE |

100  
101.56  
6.62  
94.94

Fort Creek WD-4  
 TR3 Discharge 8/19/07

| STA  | D    | V    | RWP | RWE |
|------|------|------|-----|-----|
| 1.0  | -    | -    | RWP | RWE |
| 16.8 | ⊖    | ⊖    |     |     |
| 17.5 | 0.60 | 0.05 |     |     |
| 19   | 0.70 | 0.08 |     |     |
| 21   | 0.52 | 0.12 |     |     |
| 24   | 0.75 | 0.03 |     |     |
| 27   | 1.10 | 0.39 |     |     |
| 28   | 1.20 | 1.02 |     |     |
| 31   | 1.40 | 0.98 |     |     |
| 34   | 1.40 | 1.19 |     |     |
| 37   | 1.2  | 1.63 |     |     |
| 40   | 1.15 | 1.59 |     |     |
| 43   | 1.25 | 1.44 |     |     |
| 46   | 1.02 | 1.13 |     |     |
| 49   | 0.88 | 0.86 |     |     |
| 52   | 0.82 | 1.20 |     |     |
| 55   | 0.80 | 1.16 |     |     |
| 58   | 0.80 | 1.10 |     |     |
| 61   | 0.75 | 1.42 |     |     |
| 64   | 0.78 | 1.14 |     |     |
| 67   | 0.85 | 1.03 |     |     |
| 70   | 0.63 | 0.71 |     |     |
| 73   | 0.78 | 0.70 |     |     |
| 76   | 0.57 | 0.48 |     |     |

| STA  | D    | V     | LWE | LWP |
|------|------|-------|-----|-----|
| 79   | 0.58 | 0.43  |     |     |
| 80   | 0.60 | 0.56  |     |     |
| 81   | 0.57 | 0.49  |     |     |
| 82   | 0.48 | 0.05* |     |     |
| 83   | 0.40 | 0.01* |     |     |
| 83.4 | ⊖    | ⊖     | LWE | LWP |