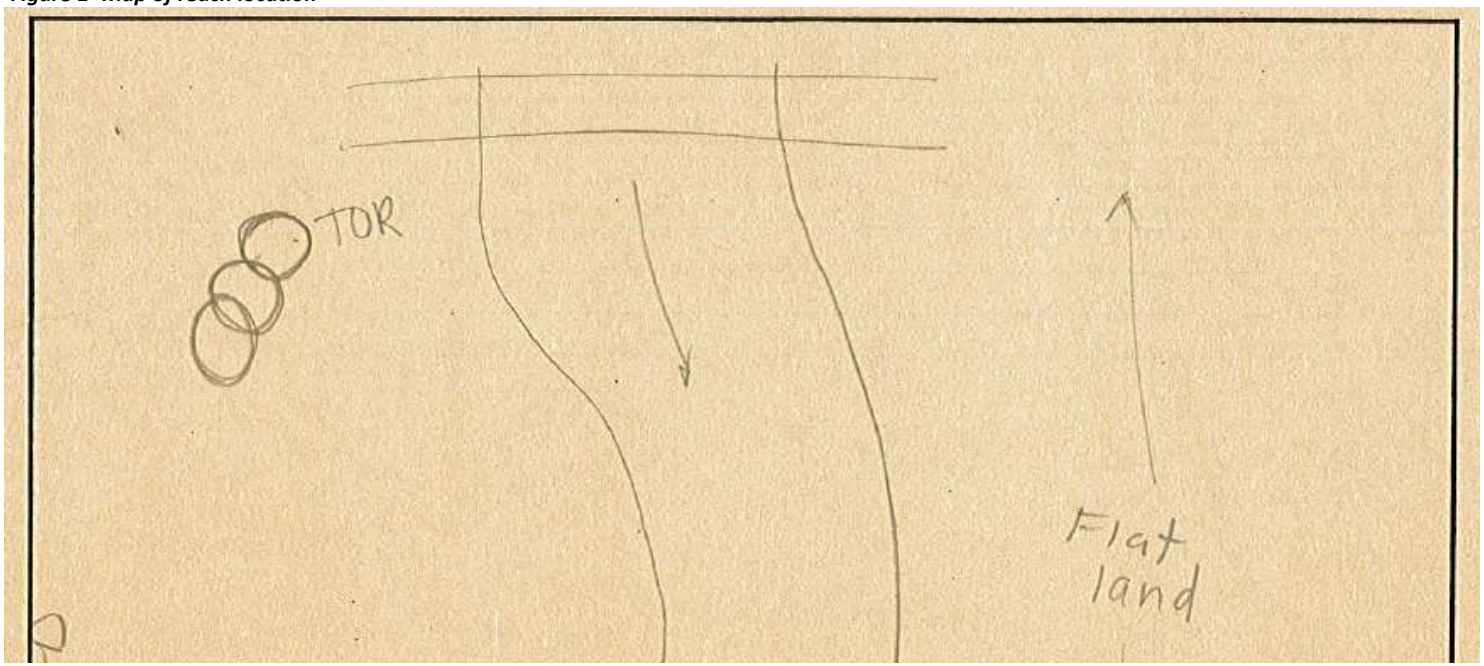
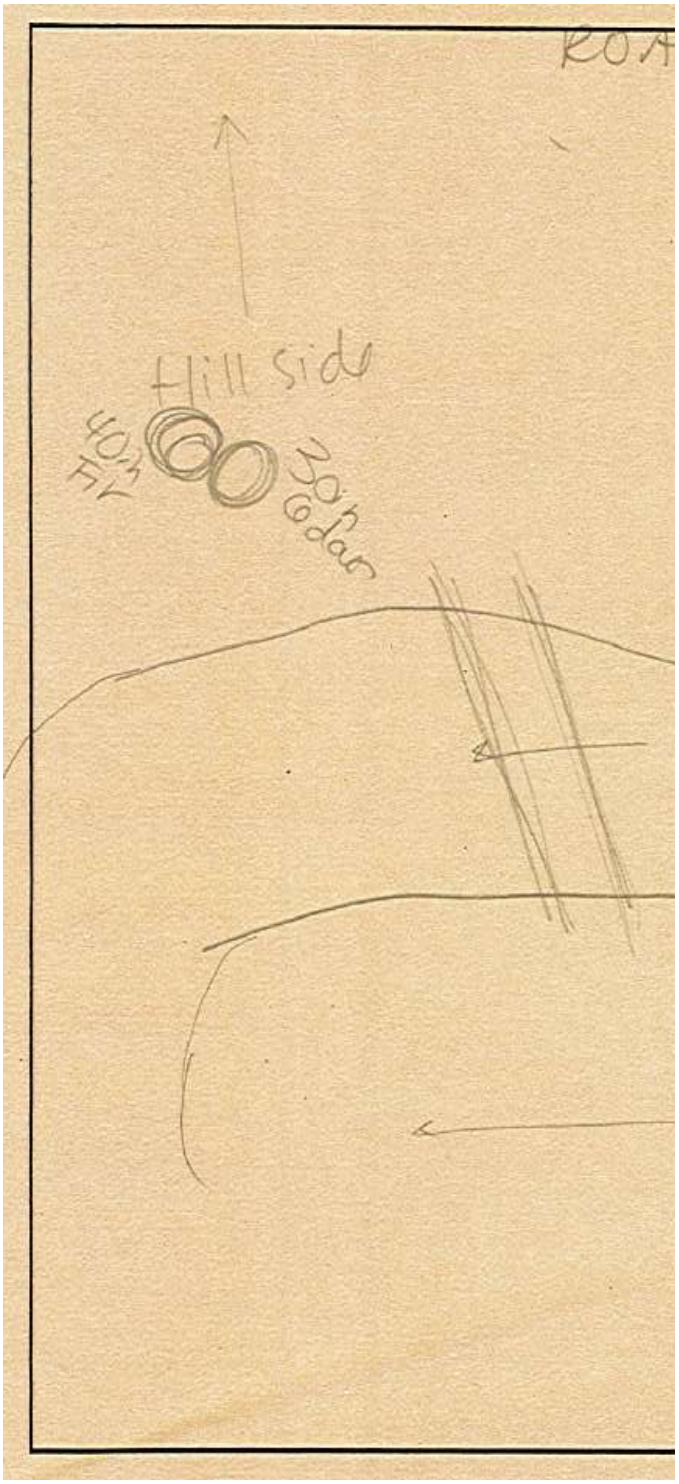
| ***Site Information*** | | | | | |
|---|---|---|---|---|---|
| ***Date:*** | 22-Aug-2019 | | | | |
| ***Stream Name:*** | Brown Springs Creek 286 Rd | | | | |
| ***Location:*** | | ***TOR:*** | *11T 603456 5102574* | ***BOR:*** | 11T 603421 5102579 |
| ***Reach:*** | 0 | ***TOR info:*** | 3 cedars in 1 on LBLU | ***BOR Info:*** | Located on 30" cedar on LBLU |
| ***Rosgen Type:*** | B3 | | | | infront of 40" fir |
| ***Channel Slope:*** | #VALUE! | ***Sampling*** | RL, KB, EP | | |

***Photo 1 & 2 - TOR facing downstream & upstream***

***Photo 3 & 4 - BOR facing upstream & downstream***

*Figure 1- Map of reach location*




ROA
Hill side
40'3 Ft
20 p Cedar

# Particle Size Distribution Worksheet - all particles (bed and channel)

**Stream:** Brown Springs Creek 286 Rd

**Observers:** RL, KB, EP
[First Intiial, Last Name]

**Reach:**

**Date:** ######### [MON-DD-YYYY]

| # | Size (mm) | Location |
|---|---|---|
| 1 | 1 | b |
| 2 | 60 | b |
| 3 | 75 | |
| 4 | 65 | |
| 5 | 43 | |
| 6 | 55 | |
| 7 | 1 | |
| 8 | 1 | b |
| 9 | 78 | |
| 10 | 36 | |
| 11 | 115 | |
| 12 | 1 | b |
| 13 | 75 | |
| 14 | 40 | |
| 15 | 1 | b |
| 16 | 65 | |
| 17 | 67 | |
| 18 | 66 | |
| 19 | 1 | b |
| 20 | 80 | |
| 21 | 2 | b |
| 22 | 110 | |
| 23 | 49 | |
| 24 | 1 | b |
| 25 | 56 | |
| 26 | 1 | |
| 27 | 80 | |
| 28 | 1 | b |
| 29 | 83 | |
| 30 | 36 | |
| 31 | 9 | |
| 32 | 1 | b |
| 33 | 74 | |
| 34 | 220 | |
| 35 | 58 | |
| 36 | 25 | |
| 37 | 57 | b |
| 38 | 72 | |
| 39 | 1 | b |
| 40 | 45 | |
| 41 | 8 | |
| 42 | 50 | |
| 43 | 50 | |

50 Percentile (mm): 36

84 Percentile (mm): 73.84

% Fines (<4mm): 27.1

RSI: N/A

**Particle Size Class Frequency Array**

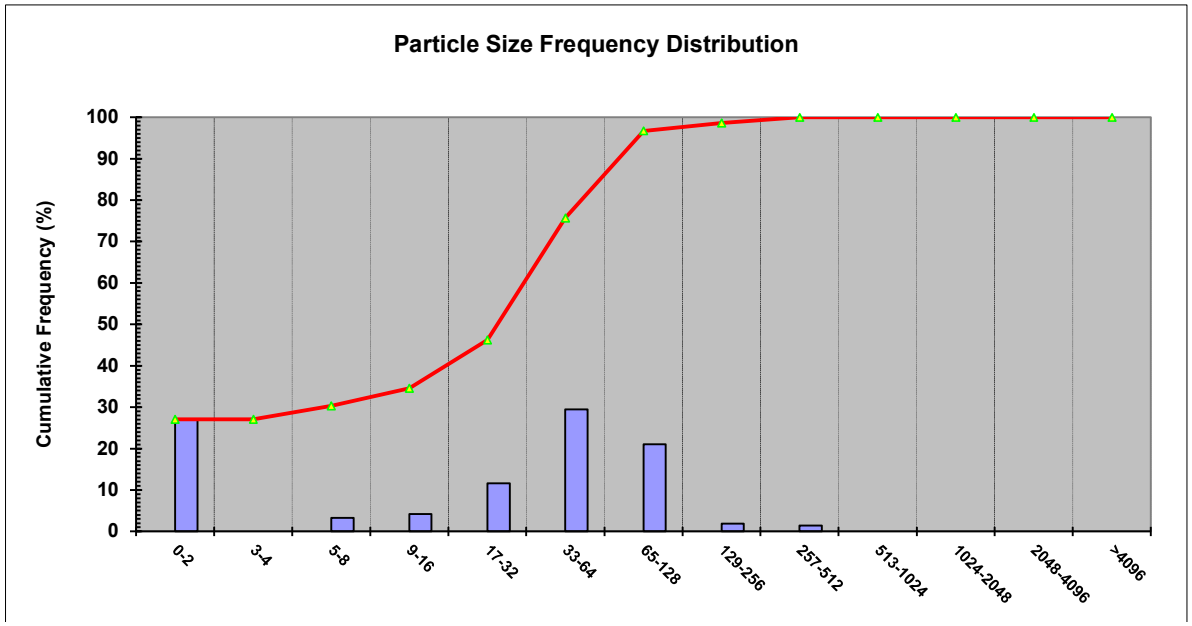
| Size Class | # | % in Class | Cumulative % |
|---|---|---|---|
| 0-2 | 58 | 27.1 | 27.1 |
| 3-4 | 0 | 0.0 | 27.1 |
| 5-8 | 7 | 3.3 | 30.4 |
| 9-16 | 9 | 4.2 | 34.6 |
| 17-32 | 25 | 11.7 | 46.3 |
| 33-64 | 63 | 29.4 | 75.7 |
| 65-128 | 45 | 21.0 | 96.7 |
| 129-256 | 4 | 1.9 | 98.6 |
| 257-512 | 3 | 1.4 | 100.0 |
| 513-1024 | 0 | 0.0 | 100.0 |
| 1024-2048 | 0 | 0.0 | 100.0 |
| 2048-4096 | 0 | 0.0 | 100.0 |
| >4096 | 0 | 0.0 | 100.0 |

*Total: 214*

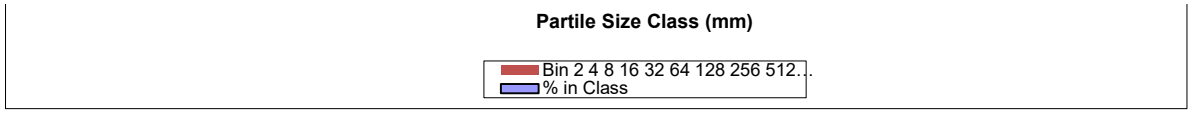
**30 Particle Bar Count (mm)**

| | | | |
|---|---|---|---|
| 1 | | 16 | |
| 2 | | 17 | |
| 3 | | 18 | |
| 4 | | 19 | |
| 5 | | 20 | |
| 6 | | 21 | |
| 7 | | 22 | |
| 8 | | 23 | |
| 9 | | 24 | |
| 10 | | 25 | |
| 11 | | 26 | |
| 12 | | 27 | |
| 13 | | 28 | |
| 14 | | 29 | |
| 15 | | 30 | |

Mean Grain Size: #DIV/0!



| | | |
|---|---|---|
| 44 | 70 | |
| 45 | 1 | b |
| 46 | 2 | |
| 47 | 1 | b |
| 48 | 65 | |
| 49 | 46 | |
| 50 | 1 | |
| 51 | 35 | |
| 52 | 50 | |
| 53 | 1 | b |
| 54 | 1 | b |
| 55 | 38 | b |
| 56 | 1 | b |
| 57 | 37 | |
| 58 | 58 | b |
| 59 | 1 | b |
| 60 | 35 | |
| 61 | 45 | |
| 62 | 20 | |
| 63 | 1 | b |
| 64 | 2 | |
| 65 | 1 | |
| 66 | 54 | |
| 67 | 60 | |
| 68 | 48 | |
| 69 | 122 | |
| 70 | 27 | |
| 71 | 55 | |
| 72 | 1 | b |
| 73 | 13 | |
| 74 | 1 | |
| 75 | 18 | |
| 76 | 61 | |
| 77 | 10 | |
| 78 | 5 | |
| 79 | 1 | b |
| 80 | 1 | b |
| 81 | 32 | |
| 82 | 125 | |
| 83 | 1 | |
| 84 | 25 | |
| 85 | 44 | |
| 86 | 95 | |
| 87 | 26 | |
| 88 | 50 | |
| 89 | 1 | b |
| 90 | 108 | |
| 91 | 31 | |
| 92 | 5 | |
| 93 | 1 | b |
| 94 | 10 | |
| 95 | 61 | |
| 96 | 38 | |
| 97 | 72 | |



| | | |
|---|---|---|
| 98 | 135 | |
| 99 | 1 | |
| 100 | 36 | |
| 101 | 31 | |
| 102 | 115 | |
| 103 | 41 | |
| 104 | 1 | b |
| 105 | 14 | |
| 106 | 35 | |
| 107 | 1 | |
| 108 | 61 | |
| 109 | 70 | |
| 110 | 1 | b |
| 111 | 1 | |
| 112 | 13 | |
| 113 | 41 | |
| 114 | 280 | |
| 115 | 35 | |
| 116 | 1 | |
| 117 | 120 | |
| 118 | 1 | b |
| 119 | 15 | |
| 120 | 40 | |
| 121 | 32 | |
| 122 | 62 | |
| 123 | 41 | b |
| 124 | 48 | |
| 125 | 97 | |
| 126 | 49 | |
| 127 | 35 | |
| 128 | 62 | |
| 129 | 1 | |
| 130 | 39 | |
| 131 | 26 | |
| 132 | 52 | |
| 133 | 117 | |
| 134 | 33 | |
| 135 | 42 | |
| 136 | 111 | b |
| 137 | 95 | |
| 138 | 51 | |
| 139 | 8 | |
| 140 | 43 | |
| 141 | 28 | |
| 142 | 64 | |
| 143 | 66 | |
| 144 | 15 | b |
| 145 | 1 | b |
| 146 | 37 | |
| 147 | 28 | |
| 148 | 5 | |
| 149 | 20 | |
| 150 | 115 | |
| 151 | 1 | b |

| | | |
|---|---|---|
| 152 | 1 | |
| 153 | 92 | |
| 154 | 70 | |
| 155 | 1 | |
| 156 | 65 | |
| 157 | 360 | |
| 158 | 1 | |
| 159 | 21 | |
| 160 | 5 | |
| 161 | 1 | |
| 162 | 60 | |
| 163 | 43 | |
| 164 | 32 | |
| 165 | 1 | b |
| 166 | 1 | |
| 167 | 1 | |
| 168 | 1 | |
| 169 | 44 | |
| 170 | 56 | |
| 171 | 222 | |
| 172 | 295 | |
| 173 | 63 | |
| 174 | 5 | |
| 175 | 87 | |
| 176 | 45 | |
| 177 | 28 | |
| 178 | 250 | |
| 179 | 2 | |
| 180 | 53 | |
| 181 | 31 | |
| 182 | 1 | b |
| 183 | 72 | |
| 184 | 41 | |
| 185 | 17 | |
| 186 | 1 | |
| 187 | 105 | |
| 188 | 1 | |
| 189 | 1 | |
| 190 | 1 | |
| 191 | 88 | |
| 192 | 24 | |
| 193 | 2 | |
| 194 | 26 | |
| 195 | 94 | |
| 196 | 60 | |
| 197 | 67 | |
| 198 | 30 | |
| 199 | 10 | |
| 200 | 46 | |
| 201 | 80 | |
| 202 | 20 | |
| 203 | 2 | |
| 204 | 33 | |
| 205 | 20 | |

| | | |
|---|---|---|
| 206 | 98 | |
| 207 | 59 | |
| 208 | 72 | |
| 209 | 65 | b |
| 210 | 65 | |
| 211 | 30 | |
| 212 | 1 | |
| 213 | 100 | |
| 214 | 1 | |
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| 300 | | |

***Stream Name:*** Brown Springs Creek 286 Rd ***Date:*** 8/22/19 [MON-DD-YYYY]

***Reach:***

***Surveyor(s):*** RL, KB, EP ***Recorder:***

***Reach Length(m):*** 50 [First Initial, Last Name]

***Random Start (m):*** 7 ***Rosgen Channel Type:*** B3

**Transect #:** 1 **Transect Location Above BOR(m):** 7

**Wetted Width (m)** 1.65

**Bankfull Width (m)** 3.30

**Bankfull Depth 1 (m)** 0.27 **Bankfull Depth 2 (m)** 0.45 **Bankfull Depth 3 (m)** 0.51

**Width/Depth** 8.05

| Hoop #1 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 0 | 54 | 0.00 |
| 0 | 36 | 0.00 |
| 0 | 51 | 0.00 |
| 0 | 24 | 0.00 |
| 0 | 30 | 0.00 |
| 0 | 23 | 0.00 |
| 0 | 37 | 0.00 |
| 25 | 50 | 50.00 |
| 21 | 53 | 39.62 |
| 19 | 47 | 40.43 |
| 0 | 29 | 0.00 |
| | | #DIV/0! |

| Hoop #2 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 60 | 105 | 57.14 |
| 25 | 42 | 59.52 |
| 25 | 47 | 53.19 |
| 15 | 75 | 20.00 |
| 20 | 36 | 55.56 |
| 3 | 590 | 0.51 |
| 0 | 15 | 0.00 |
| 30 | 55 | 54.55 |
| 25 | 60 | 41.67 |
| 30 | 64 | 46.88 |
| | | #DIV/0! |
| | | #DIV/0! |

| Hoop #3 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 0 | 45 | 0.00 |
| 0 | 60 | 0.00 |
| 0 | 52 | 0.00 |
| 25 | 55 | 45.45 |
| 11 | 59 | 18.64 |
| 0 | 40 | 0.00 |
| 65 | 115 | 56.52 |
| 90 | 160 | 56.25 |
| 23 | 77 | 29.87 |
| 25 | 65 | 38.46 |
| 68 | 145 | 46.90 |
| | | #DIV/0! |

**Average MCE (%):** 11.82 **Average MCE (%):** 38.90 **Average MCE (%):** 26.55

**%Fines:** 0.03 **%Fines:** 0.04 **%Fines:** 0.02

**WCE:** 14.47 **WCE:** 41.34 **WCE:** 28.02

**Transect #:** 2 **Transect Location above BOR(m):** 17

**Wetted Width (m)** 1.40

**Bankfull Width (m)** 2.70

**Bankfull Depth 1 (m)** 0.58 **Bankfull Depth 2 (m)** 0.56 **Bankfull Depth 3 (m)** 0.38

**Width/Depth** 5.33

| Hoop #1 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 0 | 70 | 0.00 |
| 0 | 50 | 0.00 |
| 10 | 43 | 23.26 |
| 50 | 125 | 40.00 |
| 25 | 40 | 62.50 |
| 0 | 35 | 0.00 |
| 40 | 105 | 38.10 |
| 0 | 30 | 0.00 |
| 20 | 95 | 21.05 |
| | | #DIV/0! |
| | | #DIV/0! |

**Average MCE (%):** 20.54
**%Fines:** 0.20
**WCE:** 36.44

| Hoop #2 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 0 | 30 | 0.00 |
| 25 | 50 | 50.00 |
| 15 | 87 | 17.24 |
| 0 | 50 | 0.00 |
| 0 | 40 | 0.00 |
| | | #DIV/0! |
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**Average MCE (%):** 13.45
**%Fines:** 0.50
**WCE:** 56.72

| Hoop #3 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 0 | 26 | 0.00 |
| 0 | 37 | 0.00 |
| 90 | 118 | 76.27 |
| 0 | 65 | 0.00 |
| 0 | 34 | 0.00 |
| 31 | 69 | 44.93 |
| 45 | 87 | 51.72 |
| 0 | 54 | 0.00 |
| 0 | 28 | 0.00 |
| 62 | 104 | 59.62 |
| | | #DIV/0! |

**Average MCE (%):** 23.25
**%Fines:** 0.20
**WCE:** 38.60

**Transect #:** 3
**Transect Location above BOR(m):** 27
**Wetted Width (m)** 1.60
**Bankfull Width (m)** 2.40
**Bankfull Depth 1 (m)** 0.47
**Bankfull Depth 2 (m)** 0.59
**Bankfull Depth 3 (m)** 0.50
**Width/Depth** 4.62

| Hoop #1 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 0 | 46 | 0.00 |
| 0 | 32 | 0.00 |
| 62 | 86 | 72.09 |
| 0 | 48 | 0.00 |
| 25 | 30 | 83.33 |
| 0 | 25 | 0.00 |
| 0 | 74 | 0.00 |
| 100 | 135 | 74.07 |
| 0 | 54 | 0.00 |
| 0 | 21 | 0.00 |
| | | #DIV/0! |

| Hoop #2 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 0 | 40 | 0.00 |
| 20 | 50 | 40.00 |
| 90 | 135 | 66.67 |
| 65 | 119 | 54.62 |
| 45 | 65 | 69.23 |
| 30 | 48 | 62.50 |
| 15 | 44 | 34.09 |
| | | #DIV/0! |
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| | | #DIV/0! |
| | | #DIV/0! |

| Hoop #3 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 0 | 18 | 0.00 |
| 17 | 60 | 28.33 |
| 20 | 35 | 57.14 |
| 0 | 26 | 0.00 |
| 40 | 66 | 60.61 |
| 73 | 120 | 60.83 |
| 42 | 71 | 59.15 |
| 0 | 22 | 0.00 |
| 0 | 34 | 0.00 |
| 0 | 20 | 0.00 |
| | | #DIV/0! |

| | | |
|---|---|---|
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| | | |
|---|---|---|
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| | | |
|---|---|---|
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**Average MCE (%):** 22.95
**%Fines:** 0.01
**WCE:** 23.72

**Average MCE (%):** 46.73
**%Fines:** 0.35
**WCE:** 65.37

**Average MCE (%):** 26.61
**%Fines:** 0.20
**WCE:** 41.29

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**Transect #:** 4
**Wetted Width (m)** 3.60
**Bankfull Width (m)** 4.20
**Bankfull Depth 1 (m)** 0.21
**Width/Depth** 14.16

**Transect Location above BOR(m):** 37

**Bankfull Depth 2 (m)** 0.38

**Bankfull Depth 3 (m)** 0.30

| Hoop #1 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 18 | 35 | 51.43 |
| 14 | 34 | 41.18 |
| 30 | 60 | 50.00 |
| 60 | 110 | 54.55 |
| 40 | 125 | 32.00 |
| | | #DIV/0! |
| | | #DIV/0! |

| Hoop #2 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 0 | 80 | 0.00 |
| 0 | 84 | 0.00 |
| 0 | 51 | 0.00 |
| 0 | 40 | 0.00 |
| 0 | 65 | 0.00 |
| 0 | 78 | 0.00 |
| | | #DIV/0! |

| Hoop #3 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |
| 20 | 75 | 26.67 |
| 40 | 80 | 50.00 |
| 55 | 140 | 39.29 |
| 25 | 56 | 44.64 |
| 35 | 73 | 47.95 |
| 31 | 66 | 46.97 |
| | | #DIV/0! |

**Averge MCE (%):** 45.83
**%Fines:** 0.50
**WCE:** 72.92

**Averge MCE (%):** 0.00
**%Fines:** 0.02
**WCE:** 2.00

**Averge MCE (%):** 42.59
**%Fines:** 0.20
**WCE:** 54.07

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**Transect #:** 5
**Wetted Width (m)** 1.80
**Bankfull Width (m)** 2.90
**Bankfull Depth 1 (m)** 0.31
**Width/Depth** 11.45

**Transect Location above BOR(m):** 47

**Bankfull Depth 2 (m)** 0.20

**Bankfull Depth 3 (m)** 0.25

| Hoop #1 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |

| Hoop #2 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |

| Hoop #3 | | |
|---|---|---|
| *De (mm)* | *Dt(mm)* | *MCE (%)* |

| | | |
|---|---|---|
| 51 | 109 | 46.79 |
| 0 | 65 | 0.00 |
| 0 | 63 | 0.00 |
| 41 | 84 | 48.81 |
| 18 | 50 | 36.00 |
| 51 | 70 | 72.86 |
| 0 | 50 | 0.00 |
| 0 | 33 | 0.00 |
| 0 | 40 | 0.00 |
| 0 | 29 | 0.00 |
| 41 | 67 | 61.19 |
| | | #DIV/0! |
| | | #DIV/0! |

**Average MCE (%):** 24.15
**%Fines:** 0.02
**WCE:** 25.67

| | | |
|---|---|---|
| 0 | 40 | 0.00 |
| 0 | 60 | 0.00 |
| 0 | 30 | 0.00 |
| 5 | 52 | 9.62 |
| 0 | 65 | 0.00 |
| 0 | 25 | 0.00 |
| 0 | 12 | 0.00 |
| 40 | 95 | 42.11 |
| 30 | 60 | 50.00 |
| 0 | 22 | 0.00 |
| 0 | 35 | 0.00 |
| 0 | 20 | 0.00 |
| | | #DIV/0! |

**Average MCE (%):** 8.48
**%Fines:** 0.15
**WCE:** 22.21

| | | |
|---|---|---|
| 25 | 55 | 45.45 |
| 0 | 55 | 0.00 |
| 0 | 32 | 0.00 |
| 10 | 60 | 16.67 |
| 21 | 55 | 38.18 |
| 0 | 37 | 0.00 |
| 60 | 135 | 44.44 |
| 10 | 30 | 33.33 |
| | | #DIV/0! |
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**Average MCE (%):** 22.26
**%Fines:** 0.10
**WCE:** 30.03

| Reach Summaries | |
|---|---|
| Average Wetted Width: | 2.01 |
| Average Bankfull Width: | 3.10 |
| Average Bankfull Depth: | 0.40 |
| Average W/D: | 7.80 |
| Average WCE: | 36.86 |

*Explanation:*

*bankfull width over bankfull depth*

## CHANNEL STABILITY
## PFANKUCH EVALUATION AND STREAM CLASSIFICATION SUMMARY
**Revised for the Clearwater N.F. using adjustments developed by D. Rosgen (7/01)**

| | | | |
|---|---|---|---|
| **Stream Name:** | Brown Springs Creek 286 Rd | **HUC:** 1706-_____ | **Reach:**_____ |
| **Observers:** | RL, KB, EP | **Date:** | 22-Aug-2019 |

| Category | | Excellent | Drop-Down Box |
|---|---|---|---|
| **Upper Banks** | **1. Landform Slope** | Bank Slope Gradient < 30%. | **0** |
| | **2. Mass Wasting** | No evidence of past or future mass wasting. | **3** |
| | **3. Debris Jam Potential** | Essentially absent from the immediate channel area. | **0** |
| | **4. Vegetative Bank Protection** | 90% + plant density. Vigor and variety suggests a deep dense soil binding root mass. | **3** |
| **Lower B** (Bankful to channel bottom) | **5. Channel Capacity** | Ample for the present plus some increases. Peak flows contained. W/D ratio < 7. | **0** |
| | **6. Bank Rock Content** | 65% with large angular boulders. 12" + are common. | **0** |
| | **7. Obstructions to Flow** | Rocks and logs firmly imbedded. Flow pattern without cutting or deposition. A stable bed. | **0** |
| | **8. Cutting** | Little or none. Infrequent raw banks less then 6 " high generally. | **0** |
| | **9. Deposition** | Little or no enlargement of the channel or point bars developed. | **0** |
| **Channel Bottom** | **10. Rock Angularity** | Sharp edges and corners. Plane surfaces are rough. | **1** |
| | **11. Brightness** | Surfaces are dull, dark, or stained. Generally not bright. | **1** |
| | **12. Consolidation of Particles** | Assorted sizes tightly packed, or overlapping. | **0** |
| | **13. Bottom Size Distribution** | No size change evident. Stable materials are 80-100%. | **0** |
| | **14. Scouring and Deposition** | < 5% of the bottom affected by channel scour or deposition. | **0** |
| | **15. Aquatic Vegetation** | Abundant growth present. Largely moss-like, dark green perennials. Also in swift water. | **0** |
| | | ***Total*** | 8 |

| Category | | Good | |
|---|---|---|---|
| **Upper Banks** (Floodplain Area) | **1. Landform Slope** | Bank Slope Gradient 30-40% | **4** |
| | **2. Mass Wasting** | Infrequent mass wasting. Mostly healed aver with low future potential | **0** |
| | **3. Debris Jam Potential** | Present, but mostly small twigs and limbs | **4** |
| | **4. Vegetative Bank Protection** | 70 - 90% plant density. Fewer species or less vigor suggests a less dense or deep root mass. | **0** |
| **Lower B** (Bankful to channel bottom) | **5. Channel Capacity** | Adequate channel capacity. Bank overflows are rare. W/D ratio 8-15. | **2** |
| | **6. Bank Rock Content** | 40 - 65% rock content. Mostly small boulders to cobbles 6-12". | **0** |
| | **7. Obstructions to Flow** | Some present causing erosive cross currents and minor pool filling. Obstructions are newer and less firm. | **4** |
| | **8. Cutting** | Some present, intermittently at the outcurves and constrictions. Raw banks may be up to 12" high. | **6** |
| | **9. Deposition** | Some new bar increases, mostly from coarse gravel. | **8** |
| **Channel Bottom** | **10. Rock Angularity** | Rounded corners and edges, surfaces are smooth and flat. | **0** |
| | **11. Brightness** | Surfaces are mostly dull, but may have < 35% surface brightness. | **0** |
| | **12. Consolidation of Particles** | Moderately packed with some particle overlapping present. | **4** |
| | **13. Bottom Size Distribution** | Distribution shift is light. Stable material is 50 – 80%. | **8** |
| | **14. Scouring and Deposition** | 5 – 30% of the bottom affected. Scour at constrictions and where the grades steepen. | **12** |
| | **15. Aquatic Vegetation** | Common growth present. Algae forms in the low velocity and pool areas. Moss here also. | **0** |
| | | ***Total*** | **52** |

| Category | | Fair | |
|---|---|---|---|
| **Upper Banks** (Floodplain Area) | **1. Landform Slope** | Bank Slope Gradient 40-60%. | **0** |
| | **2. Mass Wasting** | Moderately frequent and sized with some raw spots eroded by water during high flows. | **0** |
| | **3. Debris Jam Potential** | Present, with volume and sizes both increasing. | **0** |
| | **4. Vegetative Bank Protection** | 50 - 70% plant density. Lower vigor and fewer species from a shallow discontinuous root mass. | **0** |

| | | | |
|---|---|---|---|
| **Lower B** (Bankful to channel bottom) | **5. Channel Capacity** | Barely contains present peak flows. Occasional overbank floods. W/D ratio 15 to 25. | **0** |
| | **6. Bank Rock Content** | 20 - 40% rock content, with most in the 3 to 6" diameter classes. | **6** |
| | **7. Obstructions to Flow** | Moderately frequent, unstable obstructions move with the high flows causing bank cutting and pool filling. | **0** |
| | **8. Cutting** | Significant cutting present. Cuts are 12 to 24" high. Root mat overhangs and sloughing is evident. | **0** |
| | **9. Deposition** | Moderate amounts of deposition with new gravel and course sand on the old and some new bars. | **0** |
| **Channel Bottom** | **10. Rock Angularity** | Corners and edges well rounded in two dimensions. | **0** |
| | **11. Brightness** | Mixture of dull and bright, ie. 35-65% range. | **0** |
| | **12. Consolidation of Particles** | Mostly a loose assortment with no apparent overlap. | **0** |
| | **13. Bottom Size Distribution** | Moderate change in size distribution. Stable materials 20 – 50%. | **0** |
| | **14. Scouring and Deposition** | 30 – 50% of the bottom affected. Deposits & scour at obstructions, constrictions and bends. Some filling of the pools. | **0** |
| | **15. Aquatic Vegetation** | Present but spotty, mostly in the backwater areas. Seasonal algae growth makes rocks slick. | **3** |
| | | ***Total*** | **9** |

| **Category** | | **Poor** | |
|---|---|---|---|
| **Upper Banks** (Floodplain Area) | **1. Landform Slope** | Bank Slope Gradient 60%+ | **0** |
| | **2. Mass Wasting** | Frequent mass wasting causing sediment nearly yearlong or imminent danger of same. | **0** |
| | **3. Debris Jam Potential** | Moderate to heavy amounts, predominately the larger sizes. | **0** |
| | **4. Vegetative Bank Protection** | <50% plant density. Fewer species or less vigor indicate a poor, discontinous and shallow root mass. | **0** |
| **Lower B** (Bankful to channel bottom) | **5. Channel Capacity** | Inadequate to contain present peak flows. Overbank floods are common. W/D ratio >25. | **0** |
| | **6. Bank Rock Content** | <20% rock fragments of the gravel size range, 1 to 3" or less. | **0** |
| | **7. Obstructions to Flow** | Sediment traps are full, channel migration is occurring. | **0** |
| | **8. Cutting** | Almost continuous cutting present, some over 24" high. Failure of the overhangs are frequent. | **0** |
| | **9. Deposition** | Extensive amounts of deposition. Predominately the finger particles. Accelerated bar development. | **0** |
| **Channel Bottom** | **10. Rock Angularity** | Corners and edges well rounded in two dimensions | **0** |
| | **11. Brightness** | Mixture of dull and bright, ie. 35-65% range | **0** |
| | **12. Consolidation of Particles** | Mostly a loose assortment with no apparent overlap. | **0** |
| | **13. Bottom Size Distribution** | Moderate change in size distribution. Stable materials 20 – 50%. | **0** |
| | **14. Scouring and Deposition** | 30 – 50% of the bottom affected. Deposits & scour at obstructions, constrictions and bends. Some filling of the pools. | **0** |
| | **15. Aquatic Vegetation** | Present but spotty, mostly in the backwater areas. Seasonal algae growth makes rocks slick | **0** |
| | | ***Total*** | **0** |

| | | | |
|---|---|---|---|
| Stream Width_____ | x avg. depth_____ | x mean velocity_____ | = Q_____cfs |
| Gauge Ht._____ | Reach Gradient_____ | Stream Order_____ | Sinuosity Ratio_____ |
| Width (bkf)_____ | Depth (bfk)_____ | W/D Ratio_____ | Discharge (Qbkf)_____ |
| Drainage Area_____ | Valley Gradient_____ | Stream Length_____ | Valley Length_____ |
| Sinuosity_____ | Entrenchment Ratio_____ | Length Meander (Lm)_____ | Belt Width_____ |

| **Sediment Supply** | **Stream Bed Stability** | **Width/Depth Ratio Condition** | | |
|---|---|---|---|---|
| Extreme_____ | Aggrading_____ | Normal_____ | | |
| Very High_____ | Degrading_____ | High_____ | | |
| High _____ | Stable _____ | Very High _____ | **Stream Type** | B3 |
| Moderate_____ | | | | |
| Low _____ | **TOTAL Score for Reach** E_____+ G_____+ F_____+ P_____= | | **Pfankuch Rating** | 69 |
| | | | **Reach Condition** (From table below) | FAIR |

## CONVERSION OF STABILITY RATING TO REACH CONDITION BY STREAM TYPE

| Stream Type | A1 | A2 | A3 | A4 | A5 | A6 | B1 | B2 | B3 | B4 | B5 | B6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GOOD | 38-43 | 38-43 | 54-90 | 60-95 | 60-95 | 50-80 | 38-45 | 38-45 | 40-60 | 40-64 | 48-68 | 40-60 |
| FAIR | 44-47 | 44-47 | 91-129 | 96-132 | 96-142 | 81-110 | 46-58 | 46-58 | 61-78 | 65-84 | 69-88 | 61-78 |
| POOR | 48+ | 48+ | 130+ | 133+ | 143+ | 111+ | 59+ | 59+ | 79+ | 85+ | 89+ | 79+ |
| **Stream Type** | **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **D3** | **D4** | **D5** | **D6** | | |
| GOOD | 38-50 | 38-50 | 60-85 | 70-90 | 70-90 | 60-85 | 85-107 | 85-107 | 85-107 | 67-98 | | |
| FAIR | 51-61 | 51-61 | 86-105 | 91-110 | 91-110 | 86-105 | 108-132 | 108-132 | 108-132 | 99-125 | | |
| POOR | 62+ | 62+ | 106+ | 111+ | 111+ | 106+ | 133+ | 133+ | 133+ | 126+ | | |
| **Stream Type** | **DA3** | **DA4** | **DA5** | **DA6** | **E3** | **E4** | **E5** | **E6** | | | | |
| GOOD | 40-63 | 40-63 | 40-63 | 40-63 | 40-63 | 50-75 | 50-75 | 40-63 | | | | |
| FAIR | 64-86 | 64-86 | 64-86 | 64-86 | 64-86 | 76-96 | 76-96 | 64-86 | | | | |
| POOR | 87+ | 87+ | 87+ | 87+ | 87+ | 97+ | 97+ | 87+ | | | | |
| **Stream Type** | **F1** | **F2** | **F3** | **F4** | **F5** | **F6** | **G1** | **G2** | **G3** | **G4** | **G5** | **G6** |
| GOOD | 60-85 | 60-85 | 85-110 | 85-110 | 90-115 | 80-95 | 40-60 | 40-60 | 85-107 | 85-107 | 90-112 | 85-107 |
| FAIR | 86-105 | 86-105 | 111-125 | 111-125 | 116-130 | 96-110 | 61-78 | 61-78 | 108-120 | 108-120 | 113-125 | 108-120 |
| POOR | 106+ | 106+ | 126+ | 126+ | 131+ | 111+ | 79+ | 79+ | 121+ | 121+ | 126+ | 121+ |

# *Rosgen Reach Channel Classification Form*

Version 5.1, June 2000 Clearwater Natioanl Forest

**DATE:** 8/22/2019 **DISTRICT:** _____ **STREAM:** Brown Springs Creek 286 Rd

**REACH:** _____ **OBSERVERS:** RL, KB, EP

**HUC:** 1706- _____ **WRC[1]:** 1706- _____ **DATA RECORD #[2]** _____

| **Channel Braiding** | **Single Thread Channel:** X | **Multiple Thread Channel:** _____ |
|---|---|---|

| SITE # 1 | measurements across channel 0.25 | 0.50 | 0.75 | Mean | 2X Max BF Depth |
|---|---|---|---|---|---|
| Bankfull Depths (m) | 0.27 | 0.45 | 0.51 | 0.41 | 1.04 |
| Bankfull Width (m) | 3.3 | Width/Depth Ratio (site 1)[3] | | | 8.05 |
| Floodprone Width (m) | 9.8 | Entrenchment (site1)[4] | | | 3.0 |
| Channel Gradient % | up | down | Average site 1 | | |
| | | | #DIV/0! | | |

| SITE # 2 | measurements across channel 0.25 | 0.50 | 0.75 | Mean | 2X Max BF Depth |
|---|---|---|---|---|---|
| Bankfull Depths (m) | 0.47 | 0.59 | 0.50 | 0.52 | 1.20 |
| Bankfull Width (m) | 2.40 | Width/Depth Ratio (site2)[3] | | | 4.6 |
| Floodprone Width (m) | 11.7 | Entrenchment (site 2)[4] | | | 4.9 |
| Channel Gradient % | up | down | Average site 2 | | |
| | 5.0% | 4.0% | 5% | | |

| SITE # 3 | measurements across channel 0.25 | 0.50 | 0.75 | Mean | 2X Max BF Depth |
|---|---|---|---|---|---|
| Bankfull Depths (m) | 0.31 | 0.20 | 0.25 | 0.25 | 0.62 |
| Bankfull Width (m) | 2.90 | Width/Depth Ratio (site3)[3] | | | 11.4 |
| Floodprone Width (m) | 7.7 | Entrenchment (site3)[4] | | | 2.7 |
| Channel Gradient % | up | down | Average site 3 | | |
| | | | #DIV/0! | | |

**Mean Channel Gradient:** 4.5% **Mean W / D Ratio:** 8.04 **Mean Entrenchment Ratio:** 3.50

| **Sinuosity:** | **Low (<1.2):** _____ | **Moderate (>1.2):** _____ | **High (>1.4):** _____ | **Very High (>1.6):** _____ |
|---|---|---|---|---|

**Channel Substrate Percentage (D50)**

| Bedrock % | Boulder (256mm+)% | Cobble (64-256 mm) % | Gravel (2-64 mm) % | Sand (0-2 mm) % | Silt / Clay % | D 50 | Channel Type |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

**Notes :** _____

1 - Water Resource Codes are required for the FISHAB program
2 - Data Record # is a number assigned by the FISHAB program. It is not the same as the reach number. This will be filled in when data is entered
3 - Width/Depth ratio is bankfull width/average bankfull depth
4 - Entrenchment is the the floodprone width/bnakfull width ratio