# 8. Appendixes

## Appendix A
Form 10.0, 10.1, 10.2, 10.3, 10.4, and 10.5 Copy Masters

## Appendix B
Examples of Completed Field Forms 10.0, 10.1, 10.2, 10.3, 10.4, and 10.5

## Appendix C
Scour Monitor Size and Construction Details

## Appendix D
Scour N* Matrix

## Appendix E
Sample Site Selection Worksheet Example

## Appendix F
Standard Field and Vehicle Gear Checklist Copy Master

## Appendix G
Data Management Example

# Appendix A

Form 10.0, 10.1, 10.2, 10.3, 10.4 and 10.5 Copy Masters

(Keep original copy master with manual)

TFW Monitoring Program

Stream Name

Page ___ of

# SG SCOUR SURVEY

## HEADER INFORMATION

# FORM 10.0

**WRIA #** __ __ . __ __ __ __ | Unlisted Trib __ __ __ ○ RB ○ LB | **Segment #** _____ | _____ Sub-Segment Code | **Date** _____ / _____ / _____

## Study Design Information

Begin Survey Date ___/___/_____

End Survey Date ___/___/_____

**Survey Length**

| **Survey Coverage** | | **Percentage** |
|---|---|---|
| ○ WHL | (Whole) | 100 % |
| ○ SUB | (Sub-sample) | _____% |
| ○ PRT | (Partial) | _____% |
| ○ PSB | (Partial Sub-sample) | _____% |
| ○ OTH | (Other) | _____% |

*Partial/Other Survey Location*

WRIA River Mile: from ____ to ____

Reference Points: from ____ to ____

## Site Inventory Information

*Study Design Targets*

T = ____ P = ____ CL = ____ Prec = ____

| N* | Strategy | Sampling Ratio |
|---|---|---|
| | | |

| | *Site Inventory* | | | *Sub-Sample* | |
|---|---|---|---|---|---|
| SH Type | # X-Sect | % X-Sect | SP1 | # X-Sect | # Monit |
| A | | | | | |
| B | | | | | |
| C | | | | | |
| D | | | | | |
| Total | | | | | |

## Survey Crew

| *Name* | *Affiliation* | |
|---|---|---|
| | | (Lead) |
| | | (Rec.) |
| | | |

Crew Lead: Year of most recent Scour Training _____ QA Review _____

## Survey Notes

| Form | # Pages |
|---|---|
| 10.1 | |
| 10.2 | |
| 10.3 | |
| 10.4 | |
| 10.5 | |

○ *continued page*

*Form 10.0*
Error Checked by: _____ Date: ___ / ___ / ____

*All Field Forms*
Error Checked by: _____ Date: ___ / ___ / ____

*All Data Entry*
Error Checked by: _____ Date: ___ / ___ / ____

| **Equipment** ○ Metric ○ English | Size | Accuracy | Calib. |
|---|---|---|---|
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| | | | |
| | | | |
| Compass ○ True ○ Magnetic | True Declination _____° E W | | |

## Peak Discharge Information

| Date | Peak Disch. | Meas. Unit |
|---|---|---|
| | | |
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| | | |

TFW Monitoring Program

Stream Name

Crew Lead ____
Recorder(s) ____

Page ___ of ____

# S.G. SCOUR SURVEY

○ Meters
○ Feet

## SITE INVENTORY

# FORM 10.1

**WRIA #** __ __ . __ __ __

TFW Monitoring Program

Stream Name

Crew Lead _____
Recorder(s) _____

Page ___ of _____

# SG SCOUR SURVEY

METERS
FEET

## CROSS SECTION DOCUMENTATION

# FORM 10.2

**WRIA #** __ __ . __ __ __ __

Unlisted Trib __ __ __ RB LB

**Segment #** _____

_____ Sub-Segment Code

**Date** ____/____/_____

### Cross Section Information

| X-Sect # | SH Type | Type D OFP | Pin # | Bank | Pin Structure Type/ Spec | Dia | Pin Height | BFCE Dist | Dist to P1 | Azim to P1 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | P1 | | | | | | | |
| | | | P2 | | | | | | | |
| | | | BM | | | | | | | |

*Spawn Habitat Location*

| X-Sect # | Tape Dist 1 | Tape Dist 2 |
|---|---|---|
| Anchor Pins | | |
| SH-1 | | |
| SH-2 | | |
| SH-3 | | |

*Photographs* Roll # _____ Frame #'s _____

Notes: _____

Sketch Map of Cross Section Site

### Cross Section Information

| X-Sect # | SH Type | Type D OFP | Pin # | Bank | Pin Structure Type/ Spec | Dia | Pin Height | BFCE Dist | Dist to P1 | Azim to P1 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | P1 | | | | | | | |
| | | | P2 | | | | | | | |
| | | | BM | | | | | | | |

*Spawn Habitat Location*

| X-Sect # | Tape Dist 1 | Tape Dist 2 |
|---|---|---|
| Anchor Pins | | |
| SH-1 | | |
| SH-2 | | |
| SH-3 | | |

*Photographs* Roll # _____ Frame #'s _____

Notes: _____

Sketch Map of Cross Section Site

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ERROR CHECKED by: _____ Date: ___ / ___ / ____

TFW Monitoring Program

Stream Name

Crew Lead _____
Recorder(s) _____ Page ___ of _____

# SG SCOUR SURVEY

## PEBBLE COUNT

# FORM 10.3

**WRIA #** __ __ . __ __ __ __ | Unlisted Trib __ __ ◯ RB ◯ LB | **Segment #** _____ | _____ Sub-Segment Code | **Date** _____/_____/_____

| Pebble Size (mm) | X-Section # _____ | Total | Pebble Size (mm) | X-Section # _____ | Total | Pebble Size (mm) | X-Section # _____ | Total |
|---|---|---|---|---|---|---|---|---|
| ≥ 512 | | | ≥ 512 | | | ≥ 512 | | |
| ≥ 256 | | | ≥ 256 | | | ≥ 256 | | |
| ≥ 180 | | | ≥ 180 | | | ≥ 180 | | |
| ≥ 128 | | | ≥ 128 | | | ≥ 128 | | |
| ≥ 90 | | | ≥ 90 | | | ≥ 90 | | |
| ≥ 64 | | | ≥ 64 | | | ≥ 64 | | |
| ≥ 45 | | | ≥ 45 | | | ≥ 45 | | |
| ≥ 32 | | | ≥ 32 | | | ≥ 32 | | |
| ≥ 22 | | | ≥ 22 | | | ≥ 22 | | |
| ≥ 16 | | | ≥ 16 | | | ≥ 16 | | |
| ≥ 11 | | | ≥ 11 | | | ≥ 11 | | |
| ≥ 8 | | | ≥ 8 | | | ≥ 8 | | |
| ≥ 6 | | | ≥ 6 | | | ≥ 6 | | |
| ≥ 4 | | | ≥ 4 | | | ≥ 4 | | |
| ≥ 2 | | | ≥ 2 | | | ≥ 2 | | |
| < 2 | | | < 2 | | | < 2 | | |
| | Sample Total | | | Sample Total | | | Sample Total | |

Notes: _____

Notes: _____

Notes: _____

TFW Monitoring Program

Stream Name

Crew Lead _____
Other(s) _____ _____

Page ___ of

# SCOUR SURVEY

◯ METERS
◯ FEET

## SCOUR & BED ELEVATION DATA

# FORM 10.4

**WRIA #** __ __ . __ __ __ __

Unlisted Trib __ __ __ ◯ RB ◯ LB

**Segment #** _____

_____ Sub-Segment Code

**Date** _____ / _____ / _____

Type of Vist: ☐ Installation ☐ spection R☐ oval

| X-Sect # | Monitor # | Tape Dist (from P1) | Balls/Beads Expo # | Scour Depth (cm) | Bed Elev (from 10.5) | Field Notes | X-Sect # | Monitor # | Tape Dist (from P1) | Balls/Beads Expo # | Scour Depth (cm) | Bed Elev (from 10.5) | Field Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
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ERROR CHECKED by: _____ Date: ___ / ___ / ____

TFW Monitoring Program

Stream Name

Crew Lead _____
Recorder(s) _____ Page ___ of _____

# SG SCOUR SURVEY

○ METERS
○ FEET

## BED ELEVATION SURVEY

# FORM 10.5

**WRIA #** __ __ . __ __ __ __ Unlisted Trib ___ ___ ___ ○ RB ○ LB **Segment #** _____ _____ Sub-Segment Code **Date** ____/____/_____

**X-Sect #**

| Tape Dist | BS (+) | HI | FS (-) | Elev | Notes |
|---|---|---|---|---|---|
| | | | | | |

**X-Sect #**

| Tape Dist | BS (+) | HI | FS (-) | Elev | Notes |
|---|---|---|---|---|---|
| | | | | | |

**X-Sect #**

| Tape Dist | BS (+) | HI | FS (-) | Elev | Notes |
|---|---|---|---|---|---|
| | | | | | |

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ERROR CHECKED by: _____ Date: ___ / ___ / ____

# Appendix B

Completed Examples of
Forms 10.0, 10.1, 10.2, 10.3, 10.4 and 10.5

TFW Monitoring Program

Stream Name BLUE CREEK



# SG SCOUR SURVEY — HEADER INFORMATION — FORM 10.0

WRIA # 17.9999 | Unlisted Trib 000 ○RB ○LB | Segment # 15 | B Sub-Segment Code | Date 10/4/99

## Study Design Information

Begin Survey Date 10/12/1999
End Survey Date 4/21/00

**Survey Length** 1100 m

| Survey Coverage | | Percentage |
|---|---|---|
| ● WHL | (Whole) | 100 % |
| ○ SUB | (Sub-sample) | ____ % |
| ○ PRT | (Partial) | ____ % |
| ○ PSB | (Partial Sub-sample) | ____ % |
| ○ OTH | (Other) | ____ % |

*Partial/Other Survey Location* N/A
WRIA River Mile: from ____ to ____
Reference Points: from ____ to ____

## Site Inventory Information

*Study Design Targets*

T = 96 P = 50% CL = 95% Prec = ±10%

| N* | Strategy | Sampling Ratio |
|---|---|---|
| 66 | SP1 | 1/3 |

| | *Site Inventory* | | | *Sub-Sample* | |
|---|---|---|---|---|---|
| SH Type | # X-Sect | % X-Sect | SP1 | # X-Sect | # Monit |
| A | 21 | 55% | 154 | 7 | 44 |
| B | 9 | 24% | 33 | 4 | 18 |
| C | 6 | 16% | 15 | 2 | 3 |
| D | 2 | 5% | 5 | 1 | 2 |
| Total | 38 | | 207 | 14 | 67 |

## Survey Crew

| Name | Affiliation | |
|---|---|---|
| ALLEN PLEUS | TFW MONITORING PROGRAM | (Lead) |
| DAVE SCHUETT-HAMES | " " " | (Rec.) |

Crew Lead: Year of most recent Scour Training 99 QA Review 99

## Survey Notes

* EXAMPLE DATA ONLY *

| Equipment ● Metric ○ English | Size | Accuracy | Calib. |
|---|---|---|---|
| (NEW) GOLF BALL MONITORS | 40cm | ±2cm | 10/1/99 |
| FIBERGLASS TAPES (2) | 50m | ±0.01 | " |
| " " (1) | 30m | " | " |
| REBAR-½" w/ ORANGE CAPS | 18-36" | / | / |
| ALUM. NAILS | 20d. | / | / |
| ALUM. TAGS | 1X3" | / | / |
| AUTO LEVEL | STND | ±0.001 | 10/1/99 |
| STADIA ROD | 5.0 | ±0.01 | " |
| VERNIER CALIPER | | ±1mm | " |
| Compass SUUNTO MC-1 ● True ○ Magnetic | True Declination 21° (E) W | | ID# 249 |

## Peak Discharge Information

| Date | Peak Disch. | Meas. Unit |
|---|---|---|
| 11/26/99 | 18.11 | cms |
| 1/21/00 | 21.09 | cms |
| 3/15/00 | 19.42 | cms |

| Form | # Pages |
|---|---|
| 10.1 | 2 |
| 10.2 | 7 |
| 10.3 | 5 |
| 10.4 | 18 |
| 10.5 | 25 |

○ *continued page* X

*Form 10.0* Error Checked by: AP Date: 4/26/00
*All Field Forms* Error Checked by: AP Date: 4/25/00
*All Data Entry* Error Checked by: AP Date: 4/28/00

TFW Monitoring Program

Stream Name BLUE CREEK

Crew Lead AP
Recorder(s) DSH / Page 1 of 2

# S.G. SCOUR SURVEY

● Meters ○ Feet

## SITE INVENTORY

# FORM 10.1

WRIA # 17.9999 | Unlisted Trib 000 ○RB ○LB | Segment # 15 | B Sub-Segment Code | Date 10 / 8 / 99

| Landmark/RP X-Sect # | | Cum DIST | SH Type (A-D) | OFP | SH Width | EST # Monitors | FIELD NOTES ▶ ○ = SELECTED FOR SAMPLING; C2 = Adjacent Channel |
|---|---|---|---|---|---|---|---|
| RP#0 | | 0 | | | | | LOWER SEGMENT BOUNDARY |
| ▶ 1 | 2/8 | 5 | A | / | 2.6 | 2 | |
| 2 | 15/26 | 21 | A | / | 5.4 | 5 | |
| 3 | 71/87 | 79 | B | / | 2.7 | 2 | |
| 4 | 93/106 | 100 | A | / | 17.3 | 17 | Wide Meander bend |
| RP#1 | | 102 | | | | | |
| 5 | 111/137 | 124 | C | / | 2.1 | 2 | C2 |
| ▶ 6 | 152/177 | 165 | A | / | 1.5 | 1 | C2 |
| 7 | 184/193 | 189 | B | / | 3.2 | 3 | |
| RP#2 | | 199 | | | | | |
| 8 | 204/252 | 228 | A | / | 14.8 | 14 | |
| 9 | 264/289 | 277 | A | / | 9.2 | 9 | |
| ▶ 10 | 268 | S-10 | C | / | 1.4 | 1 | END (S-10 = cum Dist) SIDE CHANNEL LB |
| ▶ 11 | | S-13 | B | / | 1.7 | 1 | |
| ▶ 12 | 295 | S-18 | A | / | 2.8 | 2 | START |
| RP#3 | | 303 | | | | | |
| 13 | 305/337 | 321 | A | / | 16.0 | 16 | |
| 14 | 342/390 | 366 | A | / | 3.5 | 3 | |
| 15 | 390/394 | 392 | B | / | 4.3 | 4 | |
| 16 | 394/402 | 398 | C | / | 2.2 | 2 | C |
| RP#4 | | 400 | | | 1.7 | 1 | |
| 17 | 417/421 | 419 | C | / | 1.7 | 1 | C2 |
| ▶ 18 | 432/437 | 435 | D | 3 | 2.4 | 2 | CENTER CHANNEL |
| ▶ 19 | 451/487 | 469 | A | / | 19.5 | 19 | |
| RP#5 | | 497 | | | | | |
| 20 | 497/518 | 508 | A | / | 5.3 | 5 | |
| ▶ 21 | 518/522 | 520 | B | / | 11.1 | 11 | |
| 22 | 534/562 | 548 | A | / | 15.7 | 15 | |
| ▶ 23 | 568/579 | 574 | A | / | 8.2 | 8 | |
| 24 | 581/603 | 592 | A | / | 2.5 | 2 | C2 |
| RP#6 | | 596 | | | | | |
| 25 | 619/669 | 644 | A | / | 14.6 | 14 | |
| ▶ 26 | 669/674 | 672 | B | / | 4.8 | 4 | |
| ▶ 27 | 684/689 | 687 | C | / | 2.9 | 2 | C2 |
| RP#7 | | 700 | | | | | |
| 28 | 703/709 | 706 | B | / | 3.1 | 3 | |
| 29 | 724/729 | 727 | D | 3 | 3.3 | 3 | |
| 30 | 731/750 | 741 | C | / | 7.2 | 7 | OK |
| BRIDGE | 742/817 | 792 | | | | | 50m Downstream 25m Upstream Buffer |
| RP#8 | | 801 | A | / | 11.4 | 11 | |
| ▶ 31 | 821/847 | 834 | A | / | 11.4 | 11 | OK |
| 32 | 847/850 | 848 | B | / | 3.9 | 3 | |
| 33 | 869/879 | 874 | A | / | 4.3 | 4 | |
| 34 | 865/873 | 869 | A | / | 2.7 | 2 | ADJ Channel RB / MORE ↻ |



ERROR CHECKED by [illegible] Date 10/9/99

TFW Monitoring Program

Stream Name BLUE CREEK

Crew Lead DSH
Recorder(s) AP / Page 5 of 7

# SG SCOUR SURVEY

● METERS ○ FEET

## CROSS SECTION DOCUMENTATION

# FORM 10.2

WRIA # 17.9999 | Unlisted Trib 000 ○RB ○LB | Segment # 15 | B Sub-Segment Code | Date 10/13/99

### Cross Section Information

| X-Sect # | SH Type | Type D OFP | Pin # | Bank | Pin Structure Type/Spec | Dia | Pin Height | BFCE Dist | Dist to P1 | Azim to P1 |
|---|---|---|---|---|---|---|---|---|---|---|
| 23 | A | / | P1 | L | ALDER | 0.2 | 0.5 | 5.7 | | |
| | | | P2 | R | CAP REBAR | ½" | 0.1 | 2.9 | 17.9 | 318° (T) |
| | | | BM | L | D.FIR | 0.5 | 0.4 | 7.5 | 6.1 | 200° (T) |

*Spawn Habitat Location*

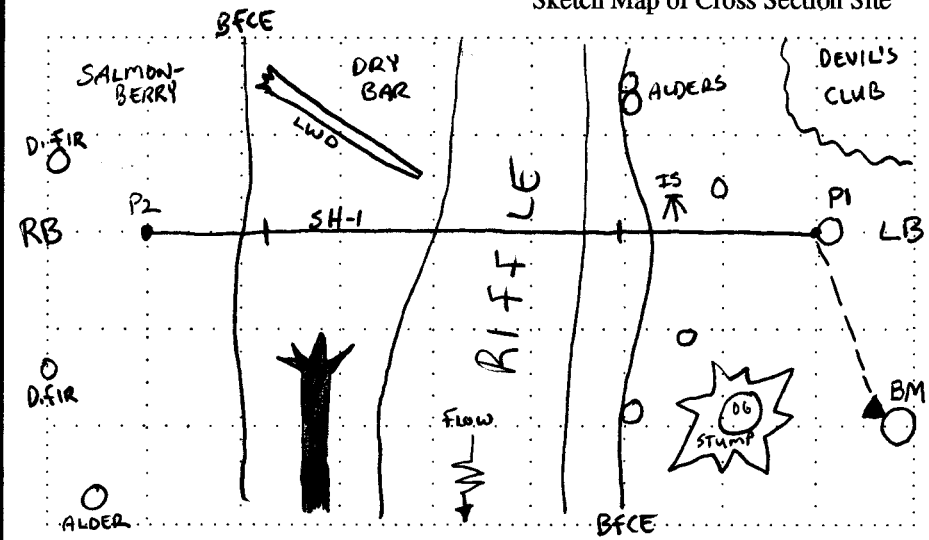
| X-Sect # | Tape Dist 1 | Tape Dist 2 |
|---|---|---|
| Anchor Pins | Ø | 17.9 |
| SH-1 | 6.3 | 14.5 |
| SH-2 | — | — |
| SH-3 | — | — |

*Photographs* Roll # 005 Frame #'s 17-19

Notes: ACCESS FROM UPSTREAM TRAIL OFF LOGGING ROAD 3300 @ MILE 8
D.FIR = DOUGLAS FIR OG = OLD GROWTH
▲BM = BENCHMARK ⅄ IS = INSTRUMENT STATION
BM HAS NAIL W/SHINER TAG 10

* EXAMPLE ONLY *

Sketch Map of Cross Section Site




### Cross Section Information

| X-Sect # | SH Type | Type D OFP | Pin # | Bank | Pin Structure Type/Spec | Dia | Pin Height | BFCE Dist | Dist to P1 | Azim to P1 |
|---|---|---|---|---|---|---|---|---|---|---|
| 26 | B | / | P1 | L | CAP REBAR | ½" | 0.2 | 2.8 | | |
| | | | P2 | R | ALDER | 0.3 | 0.1 | 3.4 | 14.4 | 212° (T) |
| | | | BM | L | CEDAR | 0.3 | 0.5 | 7.0 | 6.5 | 336° (T) |

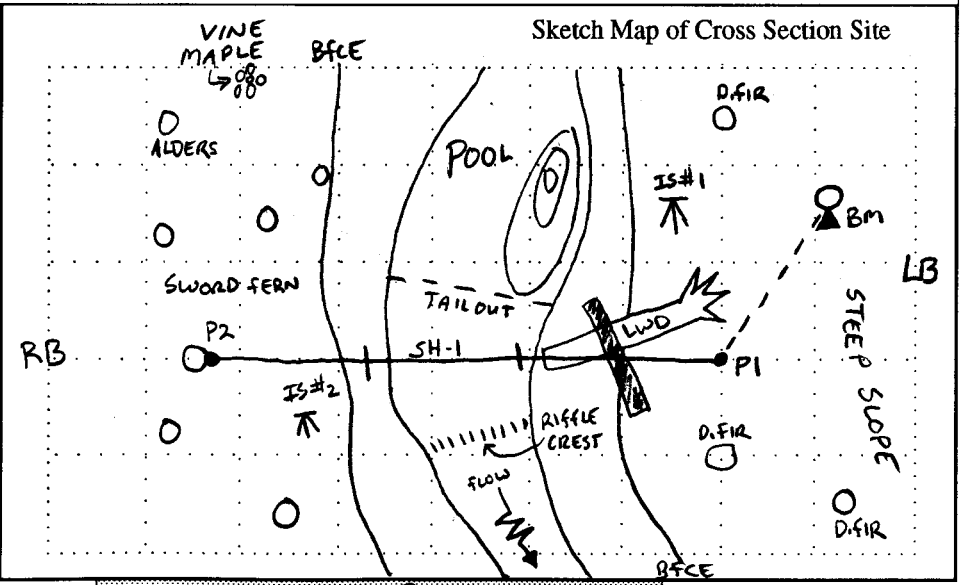
*Spawn Habitat Location*

| X-Sect # | Tape Dist 1 | Tape Dist 2 |
|---|---|---|
| Anchor Pins | Ø | 14.4 |
| SH-1 | 5.6 | 10.4 |
| SH-2 | — | — |
| SH-3 | — | — |

*Photographs* Roll # 005 Frame #'s 20-21

Notes: ACCESS FROM LB SLOPE ~50 m TO 3300 RD. @ Mile 9
BM HAS NAIL W/SHINER TAG 10

Sketch Map of Cross Section Site






ERROR CHECKED by: Date 10/20/99

TFW Monitoring Program

Stream Name BLUE CREEK

Crew Lead DSH
Recorder(s) AP –



# SG SCOUR SURVEY — PEBBLE COUNT — FORM 10.3

WRIA # 17.9999 | Unlisted Trib 000 ○RB ○LB | Segment # 15 | B Sub-Segment Code | Date 10/13/99

| Pebble Size (mm) | X-Section # 35 | Total | Pebble Size (mm) | X-Section # 38 | Total | Pebble Size (mm) | X-Section # ____ | Total |
|---|---|---|---|---|---|---|---|---|
| ≥ 512 | | Ø | ≥ 512 | | Ø | ≥ 512 | | |
| ≥ 256 | II | 2 | ≥ 256 | I | 1 | ≥ 256 | | |
| ≥ 180 | 卌 | 5 | ≥ 180 | II | 2 | ≥ 180 | END | |
| ≥ 128 | IIII | 4 | ≥ 128 | II | 2 | ≥ 128 | | |
| ≥ 90 | 卌 II | 7 | ≥ 90 | 卌 I | 6 | ≥ 90 | | |
| ≥ 64 | 卌 卌 III | 13 | ≥ 64 | III | 3 | ≥ 64 | OF | |
| ≥ 45 | 卌 II | 7 | ≥ 45 | 卌 IIII | 9 | ≥ 45 | | |
| ≥ 32 | 卌 卌 卌 卌 III | 23 | ≥ 32 | 卌 卌 I | 11 | ≥ 32 | PEBBLE | |
| ≥ 22 | 卌 I | 6 | ≥ 22 | 卌 I | 6 | ≥ 22 | COUNT | |
| ≥ 16 | 卌 III | 8 | ≥ 16 | 卌 卌 III | 13 | ≥ 16 | | |
| ≥ 11 | IIII | 4 | ≥ 11 | 卌 III | 8 | ≥ 11 | | |
| ≥ 8 | 卌 IIII | 8 | ≥ 8 | 卌 卌 卌 IIII | 19 | ≥ 8 | | |
| ≥ 6 | 卌 | 5 | ≥ 6 | 卌 I | 6 | ≥ 6 | | |
| ≥ 4 | IIII | 4 | ≥ 4 | 卌 II | 7 | ≥ 4 | | |
| ≥ 2 | II | 2 | ≥ 2 | III | 3 | ≥ 2 | | |
| < 2 | III | 3 | < 2 | IIII | 4 | < 2 | | |
| | Sample Total | 101 | | Sample Total | 100 | | Sample Total | |

Notes:

Notes:

Notes: * EXAMPLE ONLY *

TFW Monitoring Program

Stream Name BLUE CREEK

Crew Lead AP
Other(s) DSH —



# SCOUR SURVEY

● METERS ○ FEET

## SCOUR & BED ELEVATION DATA

# FORM 10.4

WRIA # 17.9999 | Unlisted Trib 000 ○RB ○LB | Segment # 15 | B Sub-Segment Code | Date 3 / 17 / 2000

Type of Vist: ☐ Installation ☒ Inspection ☐ Removal

| X-Sect # | Monitor # | Tape Dist (from P1) | Balls/Beads Expo # | Scour Depth (cm) | Bed Elev (from 10.5) | Field Notes |
|---|---|---|---|---|---|---|
| 21 | 17 | 8.3 | 1 | 4 | 27.98 | * EXAMPLE ONLY * |
| | 19 | 9.3 | 3 | 12 | 27.81 | |
| | 22 | 10.3 | 2 | 8 | 27.84 | REMOVED HANGING DEBRIS |
| | 18 | 11.5 | 4 (-1) | 12 | 27.77 | 1 BALL EXPOSED @ Installation |
| | 21 | 12.5 | 6 | 24 | 27.85 | |
| | 20 | 13.5 | 10 | 40 | 27.89 | |
| | 27 | 14.5 | 8 | 32 | 27.78 | |
| | 36 | 15.5 | 4 (-2) | 8 | 27.75 | 2 Balls EXPOSED BY FISH 11/21 VISIT |
| | 4 | 16.5 | 1 | 4 | 27.85 | |
| | 50 | 17.6 | Ø | Ø | 27.90 | |
| | 52 | 18.6 | Ø | Ø | 27.97 | |
| | 6 | 19.9 | Ø | Ø | 28.10 | |
| 23 | 7 | 6.8 | Ø | Ø | 28.85 | |
| | 8 | 7.8 | Ø | Ø | 28.81 | |

| X-Sect # | Monitor # | Tape Dist (from P1) | Balls/Beads Expo # | Scour Depth (cm) | Bed Elev (from 10.5) | Field Notes |
|---|---|---|---|---|---|---|
| 23 | 9 | 8.8 | 2 | 8 | 28.80 | |
| | 11 | 9.8 | 3 | 12 | 28.62 | |
| | 15 | 10.8 | 3 | 12 | 28.65 | |
| | 14 | 11.8 | 2 | 8 | 28.78 | |
| | 10 | 12.8 | 1 | 4 | 28.76 | |
| | 12 | 13.8 | Ø | Ø | 28.81 | |
| 26 | 61 | 6.1 | 4 | 16 | 28.48 | |
| | 59 | 7.1 | 6 | 24 | 28.31 | |
| | 60 | 8.1 | 3 | 12 | 28.39 | |
| | 62 | 9.1 | 1 | 4 | 28.54 | |
| 27 | 33 | 11.3 | Ø | Ø | 27.94 | |
| | 34 | 12.5 | 1 | 4 | 27.87 | |
| 31 | 37 | 3.4 | Ø | Ø | 28.74 | |
| | 36 | 4.4 | Ø | Ø | 28.70 | |

TFW Monitoring Program

Stream Name BLUE CREEK

Crew Lead DSH
Recorder(s) AP /



# SG SCOUR SURVEY

● METERS ○ FEET

## BED ELEVATION SURVEY

# FORM 10.5

WRIA # 17.9999 | Unlisted Trib 000 ○RB ○LB | Segment # 15 | B Sub-Segment Code | Date 3/17/2000

**X-Sect # 23**

| Tape Dist | BS (+) | HI | FS (-) | Elev | Notes (M# = MONITOR ID NUMBER; QC = QUALITY CONTROL) |
|---|---|---|---|---|---|
| | 0.52 | 30.52 | / | 30.00 | BENCHMARK |
| Ø | | | 1.23 | 29.29 | P1 FLOODPLAIN |
| 1.0 | | | 1.31 | 29.21 | FLOODPLAIN (FP) |
| 2.0 | | | 1.38 | 29.14 | |
| 3.0 | | | 1.35 | 29.17 | |
| 4.0 | | | 1.37 | 29.15 | |
| 5.0 | | | 1.32 | 29.20 | |
| 5.7 | | | 1.46 | 29.06 | BFCE-LB (BANKFULL CHANNEL EDGE) |
| 6.0 | | | 1.61 | 28.91 | LEW (LEFT EDGE OF WATER) |
| 6.8 | | | 1.67 | 28.85 | M # 7 |
| 7.8 | | | 1.71 | 28.81 | M # 8 |
| 8.8 | | | 1.72 | 28.80 | M # 9 |
| 9.8 | | | 1.90 | 28.62 | M # 11 |
| 10.8 | | | 1.87 | 28.65 | M # 15 |
| 11.8 | | | 1.74 | 28.78 | M # 14 |
| 12.8 | | | 1.76 | 28.76 | M # 10 |
| 13.8 | | | 1.71 | 28.81 | M # 12 |
| 14.5 | | | 1.62 | 28.90 | REW |
| 15.0 | | | 1.45 | 29.07 | BFCE-RB |
| 16.0 | | | 1.35 | 29.17 | FP |
| 17.0 | | | 1.21 | 29.31 | FP |
| 17.9 | | | 1.19 | 29.33 | P2 |
| QC | | | 0.52 | 30.00 | BENCHMARK |
| | | | | | CLOSE SURVEY |

**X-Sect # 26**

| Tape Dist | BS (+) | HI | FS (-) | Elev | Notes |
|---|---|---|---|---|---|
| | 0.05 | 30.05 | / | 30.00 | BENCHMARK |
| Ø | | | 0.21 | 29.84 | P1 HILLSLOPE |
| 2.8 | | | 1.14 | 28.91 | BFCE-LB |
| 6.1 | | | 1.57 | 28.48 | M # 61 |
| 6.1 | 1.55 | 30.03 | | 28.48 | TP1 @ M # 61 |
| 7.1 | | | 1.62 | 28.41 | M # 59 |
| 8.1 | | | 1.54 | 28.49 | M # 60 |
| 9.1 | | | 1.39 | 28.64 | M # 62 |
| 11.0 | | | 1.00 | 29.03 | BFCE-RB |
| 14.4 | | | 0.91 | 29.12 | P2 FLOODPLAIN |
| QC | 0.02 | | | 30.01 | BENCHMARK |
| | | | | | CLOSE SURVEY |

**X-Sect # 27**

| Tape Dist | BS (+) | HI | FS (-) | Elev | Notes |
|---|---|---|---|---|---|
| | 0.33 | 30.33 | / | 30.00 | |
| 7.3 | | | 2.39 | 27.94 | |
| 8.3 | | | 2.46 | 27.87 | |
| QC | | | 0.33 | 30.00 | BENCHMARK |
| | | | | | CLOSE SURVEY |

* EXAMPLES ONLY *

# Appendix C

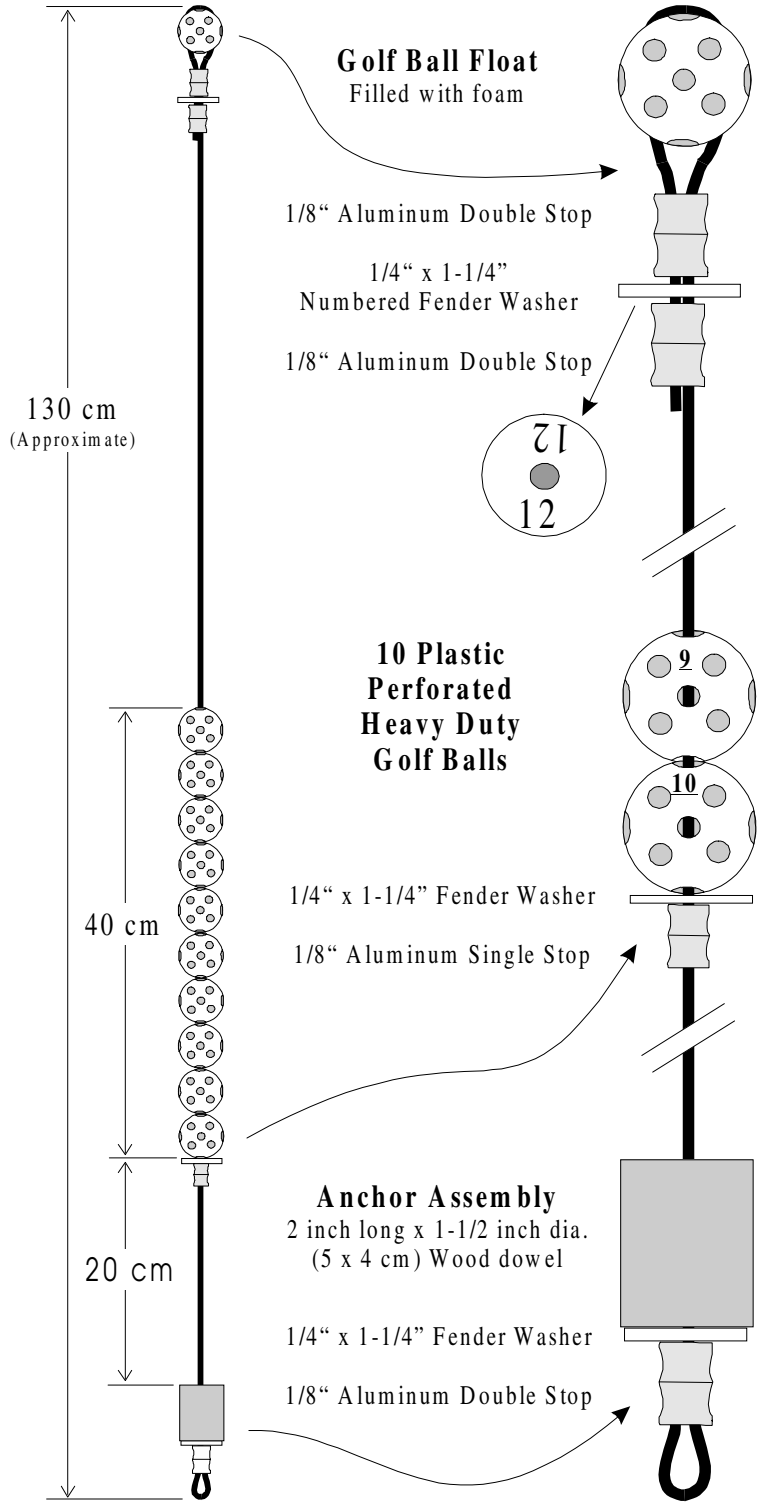
## Scour Monitor Size and Construction Details Copy Master

C-1: Standard Golf Ball Scour Monitor Size and Construction Details Sheet
C-2: Instructions for Constructing Standard Golf Ball Scour Monitors
C-3: Standard Golf Ball Scour Monitor Inserter Size and Construction Details Sheet
C-4: Standard Sliding-Bead Scour Monitor Size and Construction Details Sheet
C-5: Instructions for Constructing Standard Sliding-Bead Scour Monitors
C-6: Standard Sliding-Bead Scour Monitor Inserter Size and Construction Details Sheet

(Keep original copy masters with manual)

# APPENDIX C-1

## Standard Golf Ball Scour Monitor
### Size and Construction Details




**Materials List for 20 Monitors**

- ❑ 30.5 meters (100 feet) of 1/8 inch dia. Braided stainless steel aircraft cable
- ❑ 220 each standard size plastic perforated heavy duty golf balls
- ❑ 110 cm (44 inches) of 4 cm (1-1/2 inch) diameter wood closed dowel
- ❑ 60 each 1/4 x 1-1/4 inch stainless steel fender washers
- ❑ 40 each 1/8 inch double-size cable stops
- ❑ 20 each 1/8 inch single-size cable stops
- ❑ 1 can polycell foam insulation

**Tools Required:**

- ❑ Safety glasses and gloves
- ❑ Cable cutter
- ❑ Saw
- ❑ Drill and 1/8 inch bit
- ❑ Vise
- ❑ Crimping tool
- ❑ Numbering stamping dies and hammer

Stainless steel hardware is recommended if monitors are to be used for more than one season.

11/10/99
Allen Pleus

# APPENDIX C-2

## Instructions for Constructing Standard Golf Ball Scour Monitors

Construction can be speeded up by completing each step for all monitors before going to the next step. Refer to the figure in Appendix C-1.

1.) *Cut cable to 1.5 meter lengths*. Measure and mark a 1.5 meter length along a section of workbench. Use this to quickly measure the proper length for each monitor. Use a sharp cable cutter to have clean cuts that prevent individual wires in the cable from unraveling. If unraveling is a problem, make cuts through a wrap of electrical or masking tape.

2.) *Cut and drill anchor dowel*. Measure out 5 cm increments along the dowel and cut with a hand saw. If available, use a band, table, or chop saw with a length stop. Secure the cut pieces of dowel on end in a vise, use a 16d nail or the tip of a phillips screwdriver to indent the center of the dowel. Drill a 1/4 inch hole through the center along the entire length of the dowel. If available, use a drill press.

3.) *Prepare Identification tags.* Use the number stamping dies and the hammer to sequentially number 20 of the 60 fender washers and place them in a separate pile. Be sure to place numbers towards outside of washer. Keep the sequential numbering going if constructing more than 20 monitors. Pre-numbered tags are available for purchase through forestry and survey suppliers.

4.) *Assemble and secure monitor anchor.* Thread one end of the cable through one anchor dowel, one unnumbered fender washer, and one double cable stop. Loop the cable end back through the stop and work the cable to make the smallest loop possible while keeping the cut end just above the stop. Crimp the stop in place with the crimping tool. Securing one arm of the crimping tool in a vise can make this an easier task.

5.) *Measure and secure monitor ball washer/stop.* From the other end of the cable (top), thread one single cable stop and one unnumbered fender washer. With the anchor dowel resting on its washer and cable stop, crimp the cable stop so that the top of the new stop is 20 cm from the top of the dowel. A pre-marked length on the workbench and a felt tip marker are useful techniques for quickly identifying this position.

6.) *Thread 10 golf balls onto the monitor cable.* From the top end of the cable, thread the perforated golf balls onto the cable using holes that guide the cable through the center of the balls. Make sure the balls can travel freely along the cable. In rare cases, these two holes may need to be enlarged by drilling. Balls can be of different colors to improve visibility or identify different scour depths. Number the balls with a permanent marker sequentially from 1 to 10 - top ball being #1.

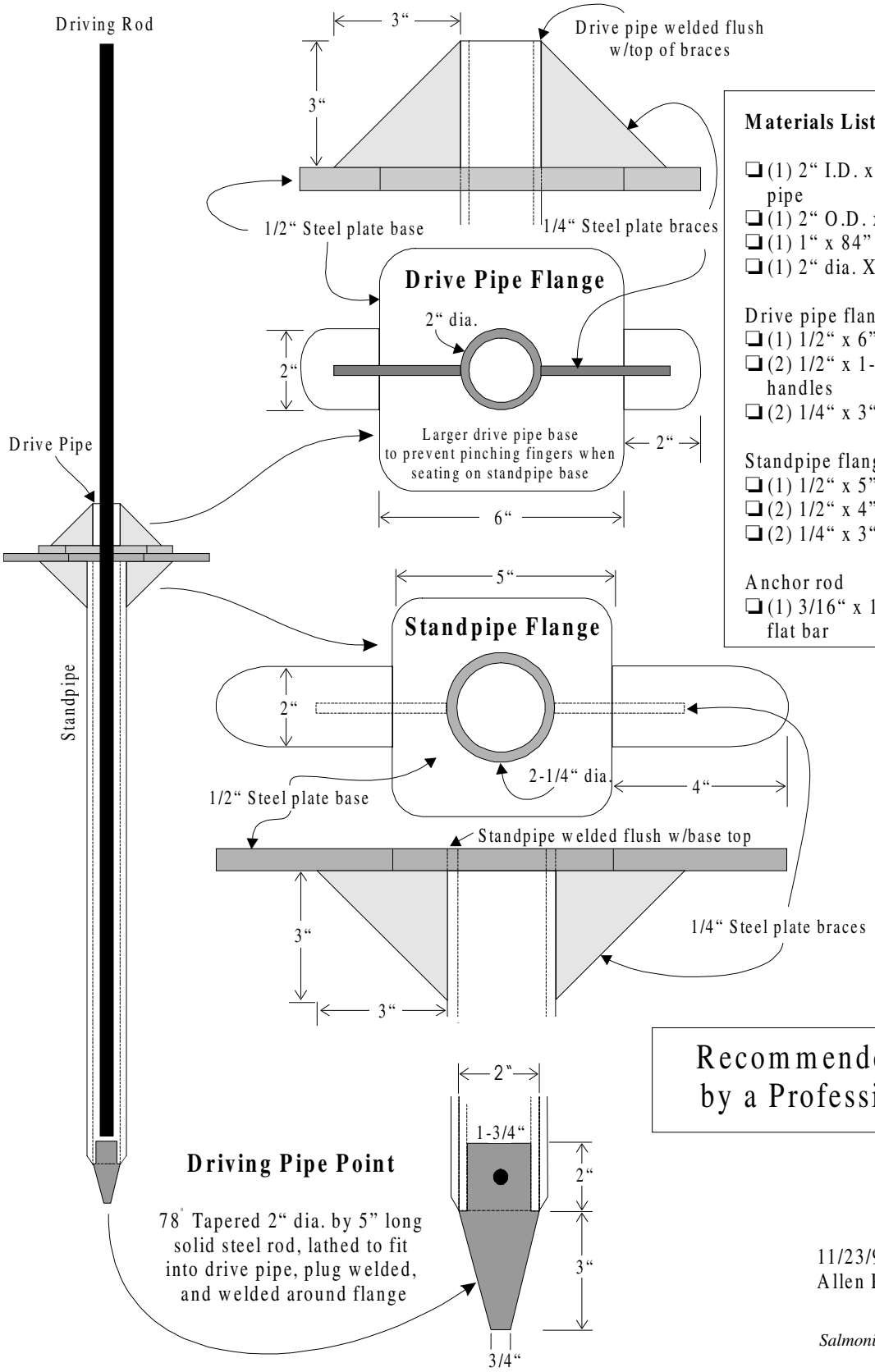
7.) *Secure monitor float and ID tag assembly.* From the top end of the cable, thread on one double cable stop, one numbered fender washer (number side up), one double cable stop, and one perforated golf ball. The cable is looped through holes parallel to the center of the golf ball and then back through the cable stops and fender washer. With about six to eight centimeters of end cable coming back out the golf ball, work the cable to make the loop top rest on the top of the golf ball and the top cable stop just below the ball in the fashion of a slightly loosened necktie. Crimp this stop in place. Adjust the bottom stop so that the end of the cable just comes out and crimp in place.

8.) *Fill monitor golf ball float with foam.* Insert the filling tube into the golf ball float and fill with foam. Set aside in an area that expanding or dripping foam does not harm. The scour monitor is now complete.

9.) *Organize monitors for field transport.* Monitors can be combined in groups of 5 to 20 and placed in 5 gallon buckets for efficient storage and transport for field use.

# APPENDIX C-3

## Standard Golf Ball Scour Monitor Inserter
### Size and Construction Details




**Materials List for Golf Ball Inserter**

- ❑ (1) 2“ I.D. x 48” Stainless Sch. 40 pipe
- ❑ (1) 2“ O.D. x 51-1/2” Steel Tubing
- ❑ (1) 1“ x 84” Solid steel rod
- ❑ (1) 2“ dia. X 5” Solid steel rod

Drive pipe flange (Stainless steel)
- ❑ (1) 1/2“ x 6” x 6” steel plate base
- ❑ (2) 1/2“ x 1-1/2” x 2” steel plate handles
- ❑ (2) 1/4“ x 3“ x 3” triangle braces

Standpipe flange
- ❑ (1) 1/2“ x 5” x 5” steel plate base
- ❑ (2) 1/2“ x 4” x 2” steel plate handles
- ❑ (2) 1/4“ x 3“ x 3” triangle braces

Anchor rod
- ❑ (1) 3/16“ x 1/2” x 70” galvanized flat bar

**Driving Pipe Point**

78° Tapered 2“ dia. by 5” long solid steel rod, lathed to fit into drive pipe, plug welded, and welded around flange

Recommended Assembly by a Professional Welder

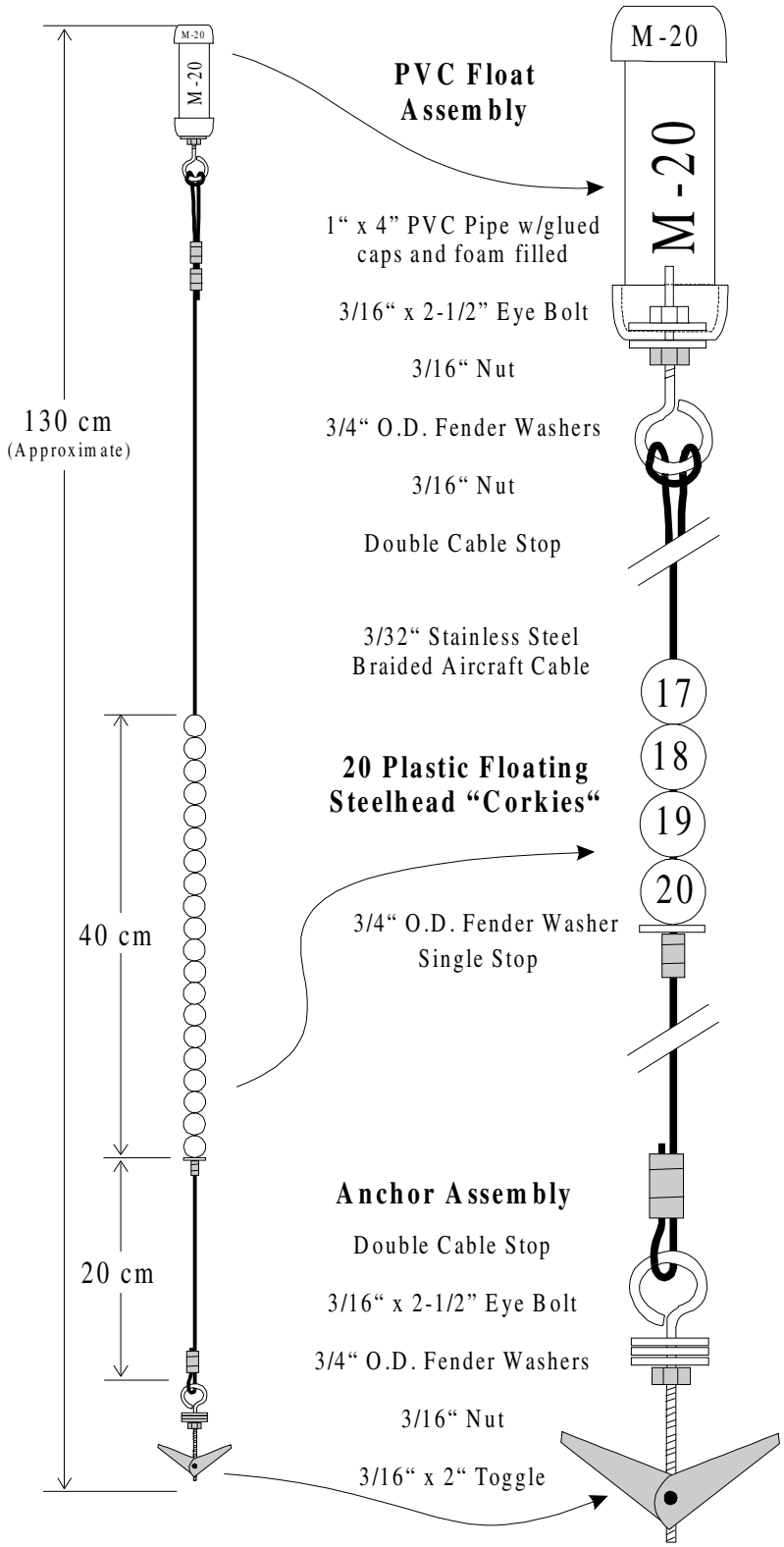
11/23/99
Allen Pleus

# APPENDIX C-4

## Standard Sliding-Bead Scour Monitor

### Size and Construction Details

Based on Jim Matthews design, Yakama Nation




**Materials List for 20 Monitors**

- ❑ 30.5 meters (100 feet) of 3/32 inch dia. Braided stainless steel aircraft cable
- ❑ 400 each ¾ inch long plastic floating steelhead "Corkies"
- ❑ 80 inches of 1 inch diameter schedule 40 PVC pipe
- ❑ 40 each 1 inch PVC end caps
- ❑ 1 small can PVC glue
- ❑ 20 each 3/16 x 1-1/2 inch eye bolts
- ❑ 20 each 3/16 x 2-1/2 inch eye bolts
- ❑ 20 each 3/16 x 2 inch toggle bolts
- ❑ 120 each 1/8 x ¾ inch fender washers
- ❑ 60 each 3/16 inch nuts
- ❑ 60 each double-size cable stops
- ❑ 20 each single-size cable stops
- ❑ 1 can polycell foam insulation

**Tools Required:**

- ❑ Safety glasses and gloves
- ❑ Cable cutter
- ❑ Saw
- ❑ Drill and 1/8 inch bit
- ❑ Vise
- ❑ Crimping tool
- ❑ Permanent ink marker

Stainless steel hardware is recommended if monitors are to be used for more than one season.

11/24/99
Allen Pleus

# APPENDIX C-5

## Instructions for Constructing Standard Sliding-Bead Scour Monitors

Construction can be speeded up by completing each step for all monitors before going to the next step. Refer to the figure in Appendix C-4.

1.) *Cut cable to 1.5 meter lengths*. Measure and mark a 1.5 meter length along a section of workbench. Use this to quickly measure the proper length for each monitor. Use a sharp cable cutter to have clean cuts that prevent individual wires in the cable from unraveling.

2.) *Cut and drill PVC float parts*. Measure out 10 cm (4 inch) increments along the PVC pipe and cut with a hack saw. If available, use a band, table, or chop saw with a length stop. Secure an end cap with the top facing down in a vise. Drill a 1/8 inch hole through the center of the cap. If available, use a drill press.

3.) *Assemble and secure monitor anchor.* Thread three fender washers and screw one nut to the upper end of an eye bolt. Disassemble the toggle from the bolt (the bolt will not be used) and screw onto the end of the eye bolt until at least 1 cm of thread is exposed. Thread the end of the cable through one double cable stop and the eye bolt opening. Loop the cable end back through the stop and work the cable to make the smallest loop possible while keeping the cut end just above the stop. Crimp the stop in place with the crimping tool. Securing one arm of the crimping tool in a vise can make this an easier task.

4.) *Measure and secure monitor bead washer/stop.* From the other end of the cable (top), thread one single cable stop and one fender washer. Crimp the cable stop so that the top of the new stop is 20 cm from the top of the anchor eye bolt. A pre-marked length on the workbench and a felt tip marker are useful techniques for quickly identifying this position. This distance can be reduced for shallow gravel conditions up to having the beads rest directly on the anchor cable stop.

5.) *Thread 20 corkie beads onto the monitor cable.* Gently secure each corkie in the vise and use the 1/8" drill bit to resize the hole. From the top end of the cable, thread the corkie beads onto the. Make sure the beads can travel freely along the cable. Beads can be color coded to improve visibility or identify different scour depths.

6.) *Measure and secure float end loop.* Thread the end of the cable through two double cable stops. Measure and mark 15 cm from the end of the cable. Loop the cable so that the 15 cm mark is at the top and thread the cable back through the stops. Adjust the bottom stop so that the end of the cable just comes out and crimp this one in place. Crimp the second stop one centimeter above this one.

7.) *Assemble monitor floats.* Screw a nut to the top of a 1-1/2 inch eye bolt. Thread one washer onto the eyebolt and then insert the eyebolt into one of the drilled PVC caps so that the eye rests on the outside of the cap. Thread one washer and screw one nut onto the eyebolt on the inside of the cap until the nut is finger tight. Glue the cap on to the end of one pipe. Fill the pipe with foam according to manufacturer recommendations for expansion. Glue on the second undrilled end cap.

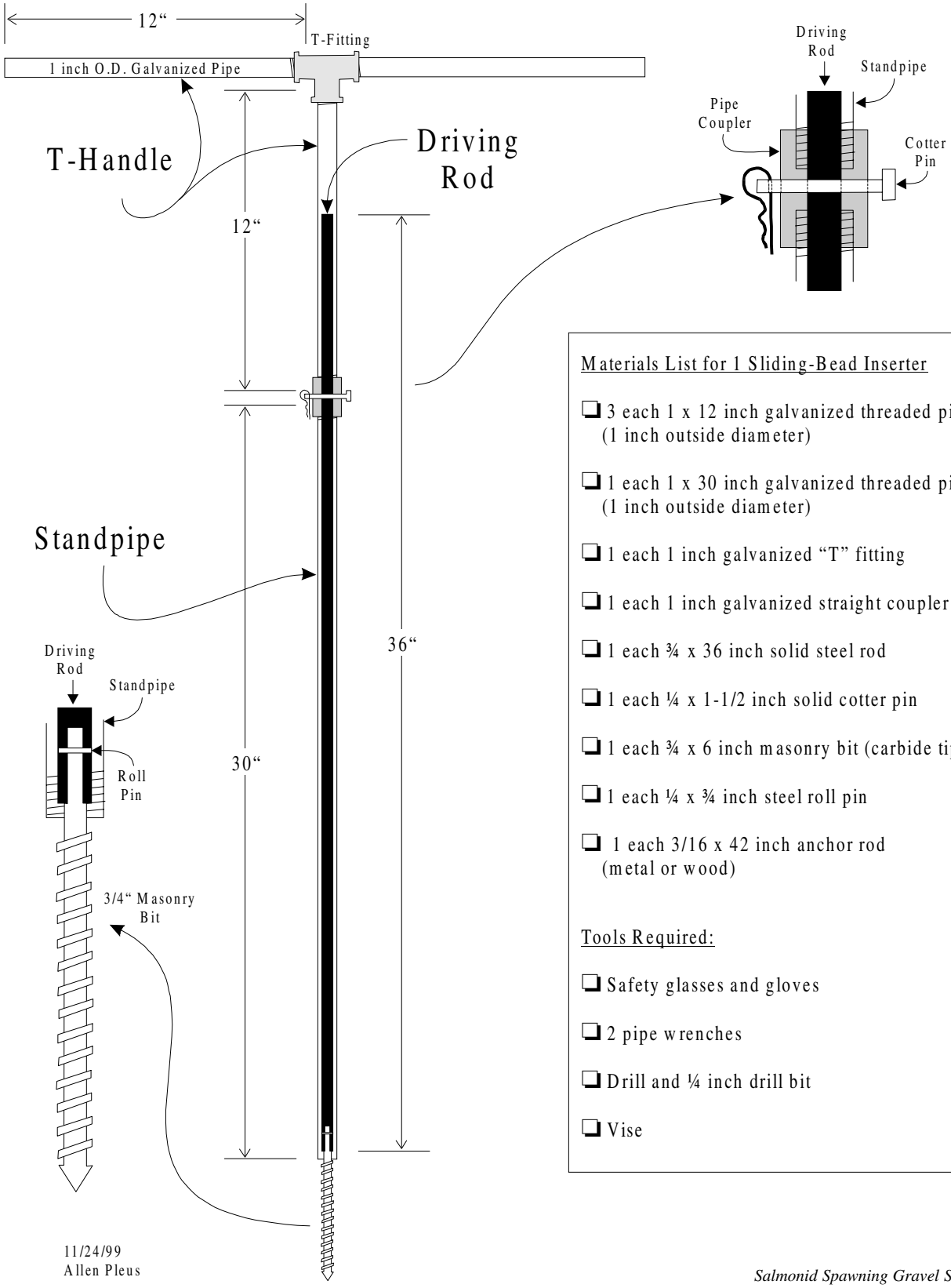
8.) *Mark identification numbers on the PVC float.* Use a permanent marker to sequentially number all the finished monitors. When choosing a marker, remember that it has to remaine ledgible for the entire winter storm season. Write the numbers in several places for quick identification. Keep the sequential numbering going if constructing more than 20 monitors.

9.) *Organize monitors for field transport.* Monitors can be combined in groups of 5 to 20 and placed in 5 gallon buckets for efficient storage and transport for field use. Floats are looped on in the field after insertion.

# Standard Sliding-Bead Scour Monitor Inserter

## Size and Construction Details

Based on Jim Matthews design, Yakama Nation




Materials List for 1 Sliding-Bead Inserter

- ❑ 3 each 1 x 12 inch galvanized threaded pipe (1 inch outside diameter)
- ❑ 1 each 1 x 30 inch galvanized threaded pipe (1 inch outside diameter)
- ❑ 1 each 1 inch galvanized “T” fitting
- ❑ 1 each 1 inch galvanized straight coupler
- ❑ 1 each ¾ x 36 inch solid steel rod
- ❑ 1 each ¼ x 1-1/2 inch solid cotter pin
- ❑ 1 each ¾ x 6 inch masonry bit (carbide tip)
- ❑ 1 each ¼ x ¾ inch steel roll pin
- ❑ 1 each 3/16 x 42 inch anchor rod (metal or wood)

Tools Required:

- ❑ Safety glasses and gloves
- ❑ 2 pipe wrenches
- ❑ Drill and ¼ inch drill bit
- ❑ Vise

# Appendix D

## Scour N* Matrix

# APPENDIX D

## Scour N* Matrix

| First Approx. Sample Size (FA) | Inventory Sample Population (SP1) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (Table 4) | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 120 | 140 | 160 | 180 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 |
| 6 | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 9 | 5 | 6 | 7 | 7 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 11 | 5 | 7 | 8 | 9 | 9 | 9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| 13 | 6 | 8 | 9 | 10 | 10 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| 15 | 6 | 9 | 10 | 11 | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| 17 | 6 | 9 | 11 | 12 | 13 | 13 | 14 | 14 | 14 | 15 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 17 | 17 | 17 | 17 | 17 |
| 18 | 6 | 9 | 11 | 12 | 13 | 14 | 14 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 18 | 18 | 18 | 18 |
| 23 | 7 | 11 | 13 | 15 | 16 | 17 | 17 | 18 | 18 | 19 | 19 | 20 | 20 | 20 | 21 | 21 | 21 | 21 | 21 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 |
| 24 | 7 | 11 | 13 | 15 | 16 | 17 | 18 | 18 | 19 | 19 | 20 | 20 | 21 | 21 | 21 | 22 | 22 | 22 | 22 | 22 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| 25 | 7 | 11 | 14 | 15 | 17 | 18 | 18 | 19 | 20 | 20 | 21 | 21 | 22 | 22 | 22 | 23 | 23 | 23 | 23 | 23 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| 30 | 8 | 12 | 15 | 17 | 19 | 20 | 21 | 22 | 23 | 23 | 24 | 25 | 25 | 26 | 26 | 26 | 27 | 27 | 27 | 28 | 28 | 28 | 28 | 29 | 29 | 29 | 29 | 29 |
| 32 | 8 | 12 | 15 | 18 | 20 | 21 | 22 | 23 | 24 | 24 | 25 | 26 | 27 | 27 | 28 | 28 | 28 | 29 | 29 | 29 | 30 | 30 | 30 | 30 | 31 | 31 | 31 | 31 |
| 35 | 8 | 13 | 16 | 19 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 29 | 30 | 30 | 31 | 31 | 31 | 32 | 32 | 32 | 33 | 33 | 33 | 34 | 34 | 34 |
| 43 | 8 | 14 | 18 | 21 | 23 | 25 | 27 | 28 | 29 | 30 | 32 | 33 | 34 | 35 | 35 | 36 | 37 | 37 | 38 | 38 | 39 | 39 | 40 | 40 | 41 | 41 | 41 | 41 |
| 51 | 8 | 14 | 19 | 22 | 25 | 28 | 30 | 31 | 33 | 34 | 36 | 37 | 39 | 40 | 41 | 42 | 42 | 43 | 44 | 45 | 45 | 46 | 46 | 47 | 48 | 48 | 48 | 49 |
| 68 | 9 | 15 | 21 | 25 | 29 | 32 | 34 | 37 | 39 | 40 | 43 | 46 | 48 | 49 | 51 | 52 | 53 | 55 | 55 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 |
| 72 | 9 | 16 | 21 | 26 | 30 | 33 | 35 | 38 | 40 | 42 | 45 | 48 | 50 | 51 | 53 | 55 | 56 | 57 | 58 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 67 |
| 96 | 9 | 17 | 23 | 28 | 33 | 37 | 40 | 44 | 46 | 49 | 53 | 57 | 60 | 63 | 65 | 67 | 69 | 71 | 73 | 75 | 77 | 79 | 81 | 83 | 84 | 86 | 87 | 88 |
| 98 | 9 | 17 | 23 | 28 | 33 | 37 | 41 | 44 | 47 | 49 | 54 | 58 | 61 | 63 | 66 | 68 | 70 | 72 | 74 | 77 | 79 | 80 | 82 | 84 | 86 | 87 | 88 | 89 |
| 138 | 9 | 17 | 25 | 31 | 37 | 42 | 46 | 51 | 54 | 58 | 64 | 69 | 74 | 78 | 82 | 86 | 89 | 92 | 95 | 99 | 103 | 106 | 108 | 112 | 115 | 118 | 120 | 121 |
| 204 | 10 | 18 | 26 | 33 | 40 | 46 | 52 | 57 | 62 | 67 | 76 | 83 | 90 | 96 | 101 | 107 | 112 | 117 | 121 | 129 | 135 | 140 | 145 | 152 | 158 | 163 | 166 | 169 |
| 272 | 10 | 19 | 27 | 35 | 42 | 49 | 56 | 62 | 68 | 73 | 83 | 92 | 101 | 108 | 115 | 123 | 130 | 137 | 143 | 153 | 162 | 170 | 176 | 187 | 196 | 203 | 209 | 214 |
| 288 | 10 | 19 | 27 | 35 | 43 | 50 | 56 | 63 | 69 | 74 | 85 | 94 | 103 | 111 | 118 | 126 | 134 | 141 | 147 | 158 | 167 | 176 | 183 | 195 | 204 | 212 | 218 | 224 |
| 384 | 10 | 19 | 28 | 36 | 44 | 52 | 59 | 66 | 73 | 79 | 91 | 103 | 113 | 123 | 132 | 142 | 151 | 160 | 168 | 183 | 196 | 207 | 217 | 234 | 248 | 259 | 269 | 277 |

# Appendix E

## Sample Site Selection Worksheet Example

# APPENDIX E

**EXAMPLE: Sample Site Selection Worksheet**

| X-Sect # | SP1 | SP2 | | X-Sect # | A | B | C | D | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 2 | | 1 | 2 | | | | |
| 2 | 5 | 4 | | | 5 | | | | |
| 3 | 2 | 2 | | | | 2 | | | |
| 4 | 17 | 6 | | | 17 | | | | |
| 5 | 2 | 2 | | | | | 2 | | |
| 6 | 1 | 1 | | 6 | 1 | | | | |
| 7 | 3 | 3 | | | | 3 | | | |
| 8 | 14 | 5 | | | 14 | | | | |
| 9 | 9 | 4 | | | 9 | | | | |
| 10 | 1 | 1 | | 10 | | | 1 | | |
| 11 | 1 | 1 | | 11 | | 1 | | | |
| 12 | 2 | 2 | | 12 | 2 | | | | |
| 13 | 16 | 6 | | | 16 | | | | |
| 14 | 3 | 3 | | | 3 | | | | |
| 15 | 4 | 4 | | | | 4 | | | |
| 16 | 2 | 2 | | | | | 2 | | |
| 17 | 1 | 1 | | | | | 1 | | |
| 18 | 2 | 2 | | 18 | | | | 2 | |
| 19 | 19 | 6 | | 19 | 19 | | | | |
| 20 | 5 | 4 | | | 5 | | | | |
| 21 | 11 | 5 | | 21 | | 11 | | | |
| 22 | 15 | 6 | | | 15 | | | | |
| 23 | 8 | 4 | | 23 | 8 | | | | |
| 24 | 2 | 2 | | | 2 | | | | |
| 25 | 14 | 5 | | | 14 | | | | |
| 26 | 4 | 4 | | 26 | | 4 | | | |
| 27 | 2 | 2 | | 27 | | | 2 | | |
| 28 | 3 | 3 | | | | 3 | | | |
| 29 | 3 | 3 | | | | | | 3 | |
| 30 | 7 | 4 | | | | | 7 | | |
| 31 | 11 | 5 | | 31 | 11 | | | | |
| 32 | 3 | 3 | | | | 3 | | | |
| 33 | 4 | 4 | | | 4 | | | | |
| 34 | 2 | 2 | | | 2 | | | | |
| 35 | 1 | 1 | | 35 | 1 | | | | |
| 36 | 2 | 2 | | | 2 | | | | |
| 37 | 2 | 2 | | | 2 | | | | |
| 38 | 2 | 2 | | 38 | | 2 | | | Total |
| | **207** | 120 | | # Monitors | 44 | 18 | 3 | 2 | **67** |
| | | | | # XS | 21 | 9 | 6 | 2 | 38 |
| Target | N* | N*/SP1 | | Random # | 1 | 3 | 2 | 1 | |
| **96** | **66** | **31.68%** | | | | | | (< 10%) | |
| | | | | | | Not Sampled | | | |
| Sampling Ratio | | | | | 3 | Random systematic sampling strategy | | | |
| **Sample 1 of every 3 cross sections** | | | | | 2 | Randomly added sample to meet N* | | | |
| | | | | | | or 2 spawning habitat type criteria | | | |

# Appendix F

Standard Field and Vehicle Gear Checklist Copy Master

(Keep original copy master with manual)

# Appendix F

## ✓ STANDARD FIELD GEAR

- ❑ Field clip board/form holder
- ❑ Survey Forms (on waterproof paper)
- ❑ Copy of survey methods
- ❑ Maps- topographic and road
- ❑ Pencils & erasers
- ❑ Permanent ink marker
- ❑ Calculator
- ❑ 150 mm ruler
- ❑ Pocket field notebook

- ❑ Survey Vest
- ❑ Compass
- ❑ Safety whistle
- ❑ Spring clips (2)
- ❑ Vinyl flagging
- ❑ Pocket knife/multi-purpose tool

- ❑ Backpack or canvas tote bag
- ❑ First aid kit
- ❑ Water bottle and/or filtration system
- ❑ Food/energy bars
- ❑ Rain gear
- ❑ Leather gloves
- ❑ Safety glasses
- ❑ Bug repellant
- ❑ Sun screen
- ❑ Small flashlight or headlamp
- ❑ Matches/fire starter
- ❑ Emergency blanket
- ❑ Snake bite kit (eastern Washington)

## ✓ STANDARD VEHICLE GEAR

- ❑ Waterproof plastic tote box
- ❑ Backup fiberglass tape
- ❑ Comprehensive first aid kit
- ❑ Rain tarp
- ❑ Rope (100 ft.)
- ❑ Extra water
- ❑ Extra food
- ❑ Extra dry clothes
- ❑ Extra batteries
- ❑ Spare tire/jack/tire iron
- ❑ Tire sealant/inflater
- ❑ Tow strap
- ❑ Come-along winch
- ❑ Fire shovel
- ❑ Fire extinguisher
- ❑ CB radio (to monitor logging activity)
- ❑ Cell phone/VHF radio
- ❑ Brush cutter
- ❑ Ax/bow saw/chain saw
- ❑ Tire chains

For remote work, extra survival & safety gear is recommended.

*This gear list is provided as a guideline for outfitting field crews and is not intended to cover all situations. Local conditions may require additional or different gear.*

# Appendix G

## Data Management Example

### Excel Data Entry Spreadsheet File Headers

# APPENDIX G

## EXAMPLE: Excel Data Entry Spreadsheet File Headers

**TFW Monitoring Program**

**Spawning Gravel Scour Survey Header** **Form 10.0** scrhd.xls

| wria basin | wria stream | trib | segm | sub segm | begin survey date | end survey date | leader first name | leader last name | leader affil | recorder first | recorder last | recorder affil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| >>>> | begin river mile | end river mile | begin ref pt | end ref pt | survey length | survey coverage | survey percent | field notes |
|---|---|---|---|---|---|---|---|---|

**TFW Monitoring Program**

**Spawning Gravel Scour Survey Peak Discharge Data** **Form 10.0** scrpkdis.xls

| wria basin | wria stream | trib | segm | sub segm | begin survey date | peak discharge date | peak discharge | measurement unit | field notes |
|---|---|---|---|---|---|---|---|---|---|

**TFW Monitoring Program**

**Spawning Gravel Scour Survey Cross-section Data** **Form 10.2** scrcross.xls

| wria basin | wria stream | trib | segm | sub segm | begin survey date | cross-section number | downstream reference point | habitat type | gravel obstruction type | pool-riffle sequence number | cross-section width | right bank pin description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| >>>> | right bank compass bearing | left bank pin description | left bank compass bearing | photo roll number | photo frame number | field notes |
|---|---|---|---|---|---|---|

**TFW Monitoring Program**

**Spawning Gravel Scour Survey Pebble Count** **Form 10.3** scrpebct.xls

| wria basin | wria stream | trib | segm | sub segm | begin survey date | cross-section number | count date | particle size class | pebble tally | field notes |
|---|---|---|---|---|---|---|---|---|---|---|

**TFW Monitoring Program**

**Spawning Gravel Scour Survey Scour and Bed Elevation Data** **Form 10.4** scrdata.xls

| wria basin | wria stream | trib | segm | sub segm | begin survey date | cross-section number | inspection date | scour monitor number | tape distance | scour depth (r | bed elevation | bed elevation measurement unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| >>>> | field notes |
|---|---|