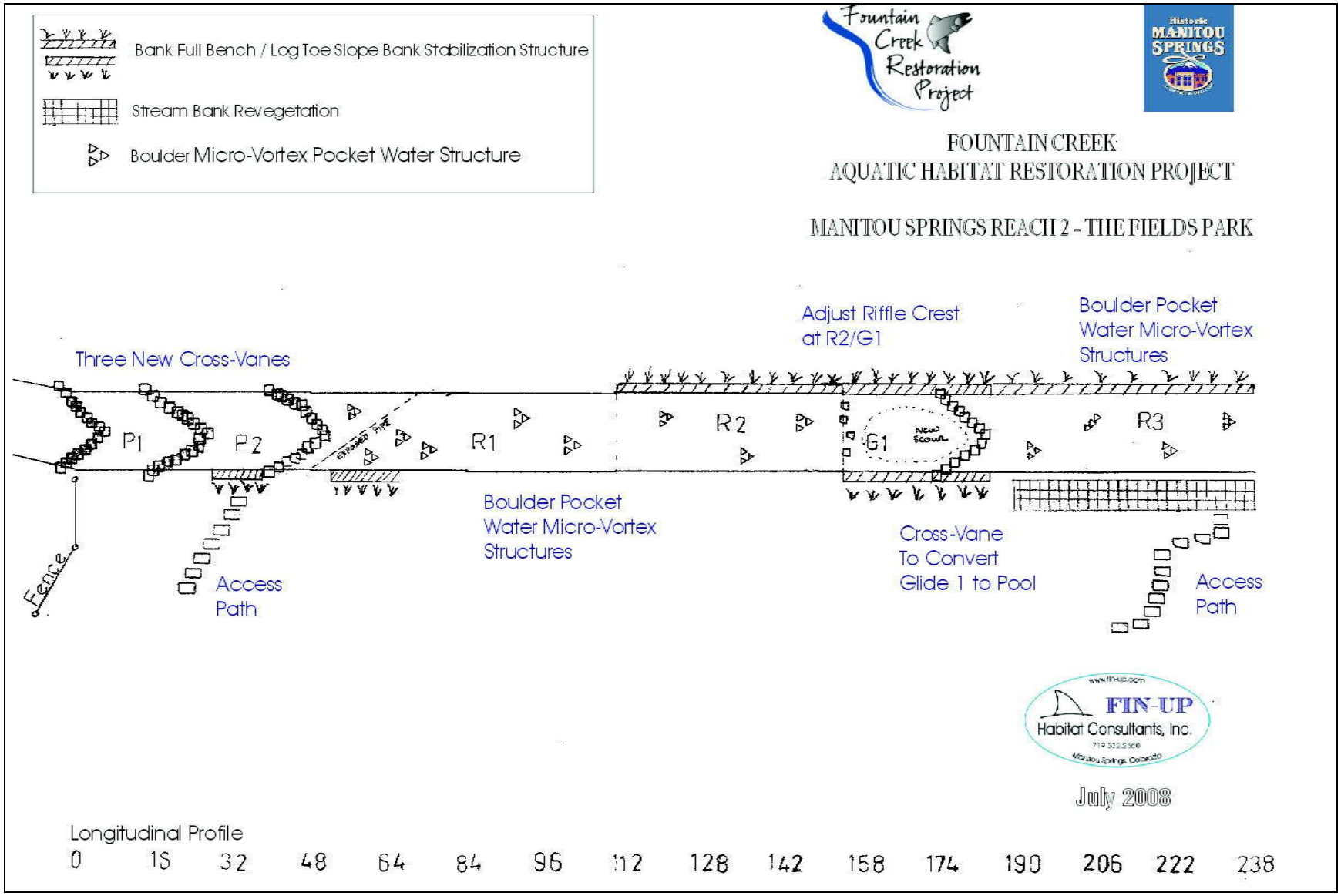
EXHIBIT A

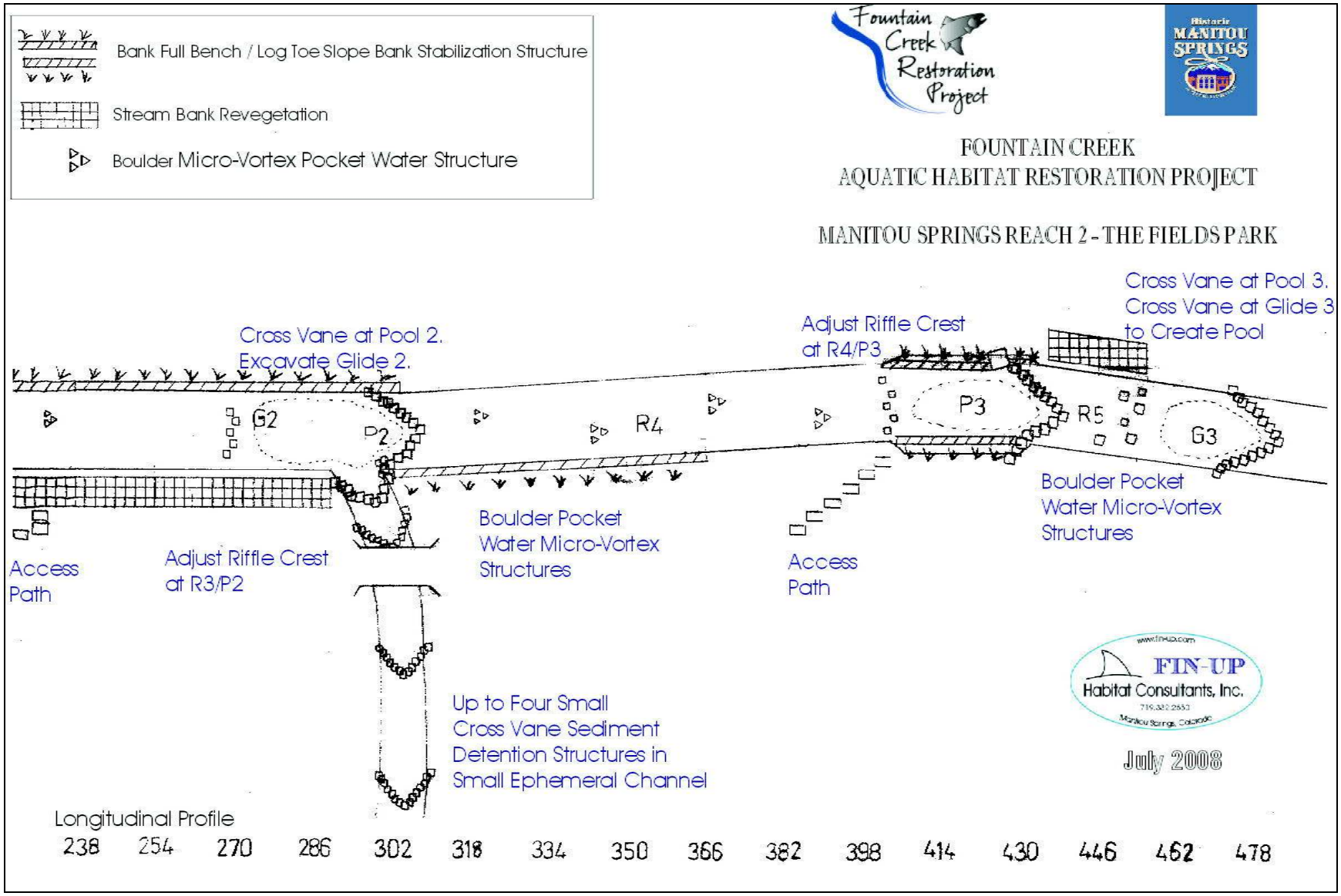
FOUNTAIN CREEK REACH 2

FIELDS PARK

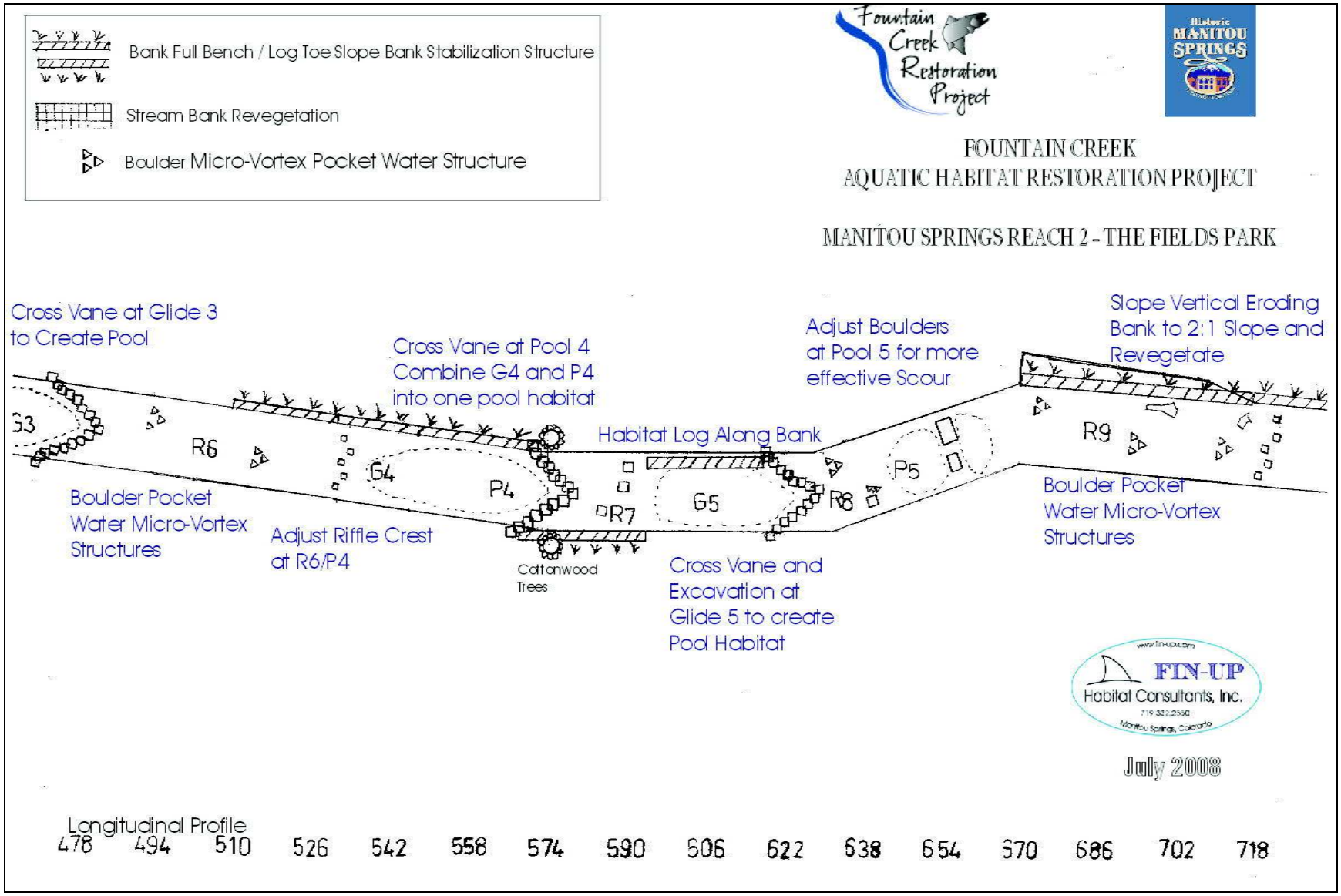
STREAM RESTORATION PLAN DRAWINGS



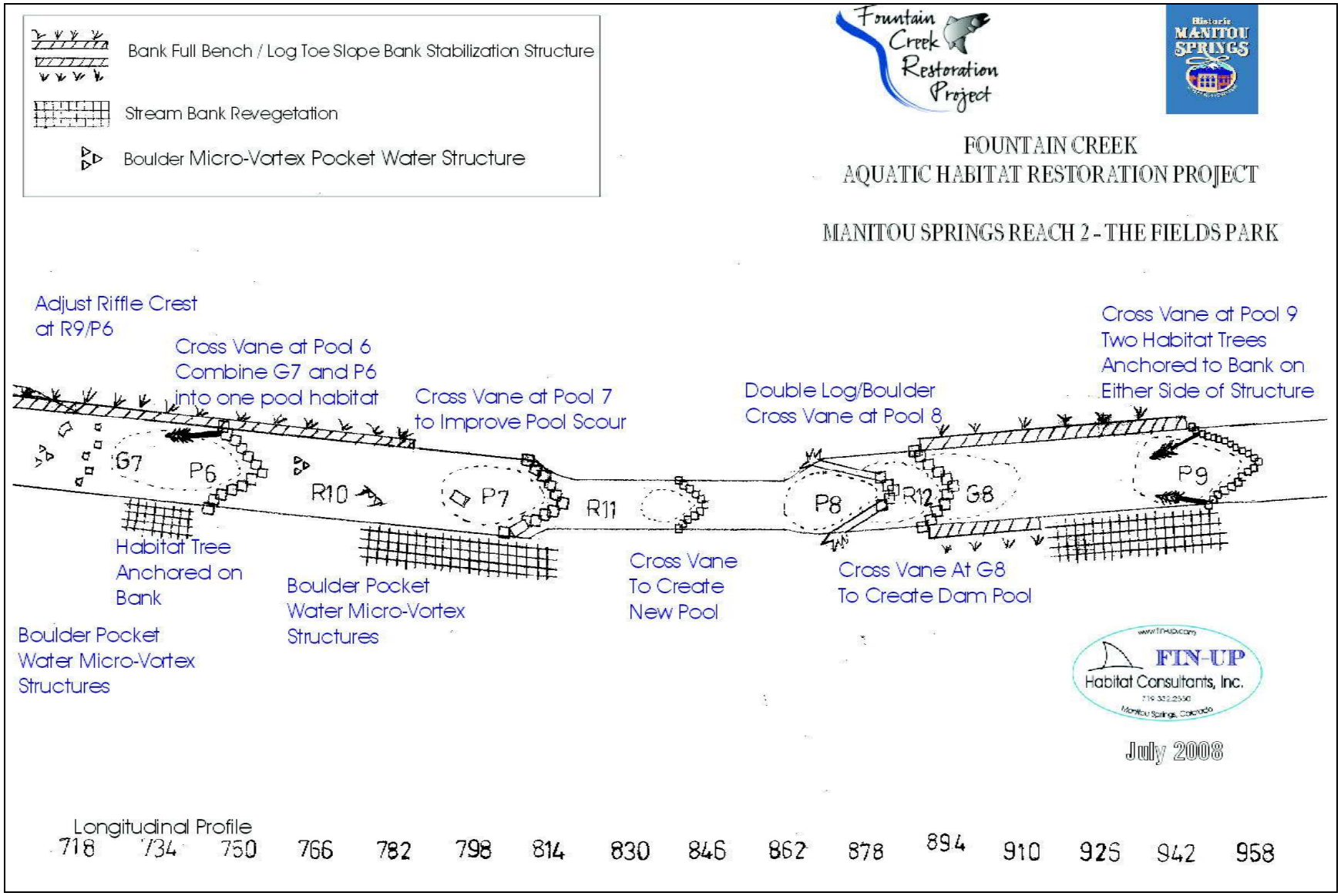
Proposed Stream Restoration Treatments on Fountain Creek - The Fields Park Reach 2 Downstream Segment from 0 ft. to 238ft along the longitudinal axis of the Reach.



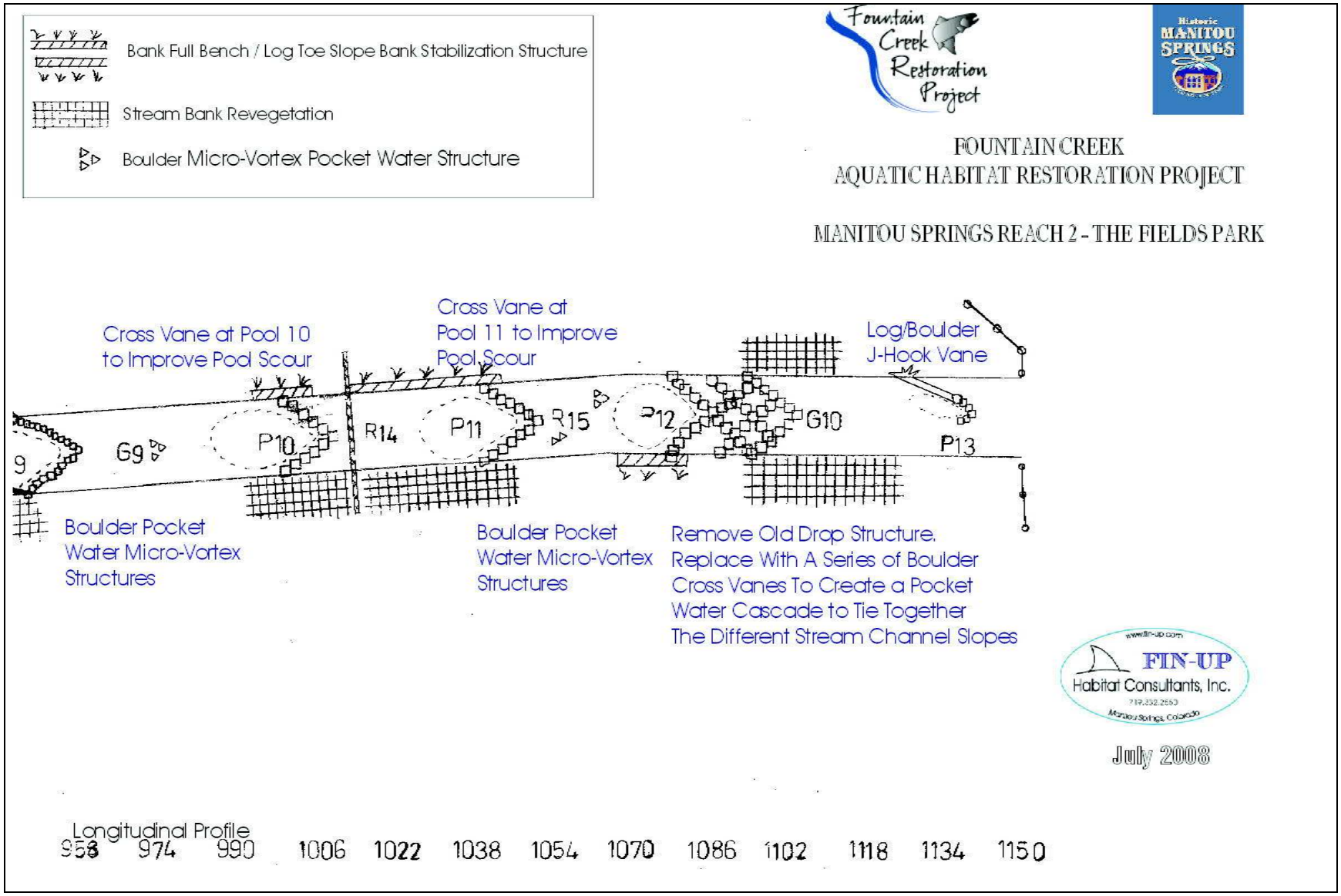
Proposed Stream Restoration Treatments on Fountain Creek - The Fields Park Reach 2 Downstream Segment from 238 ft to 478 ft along the longitudinal axis of the Reach.



Proposed Stream Restoration Treatments on Fountain Creek - The Fields Park Reach 2 Downstream Segment from 478 ft to 718 ft along the longitudinal axis of the Reach.

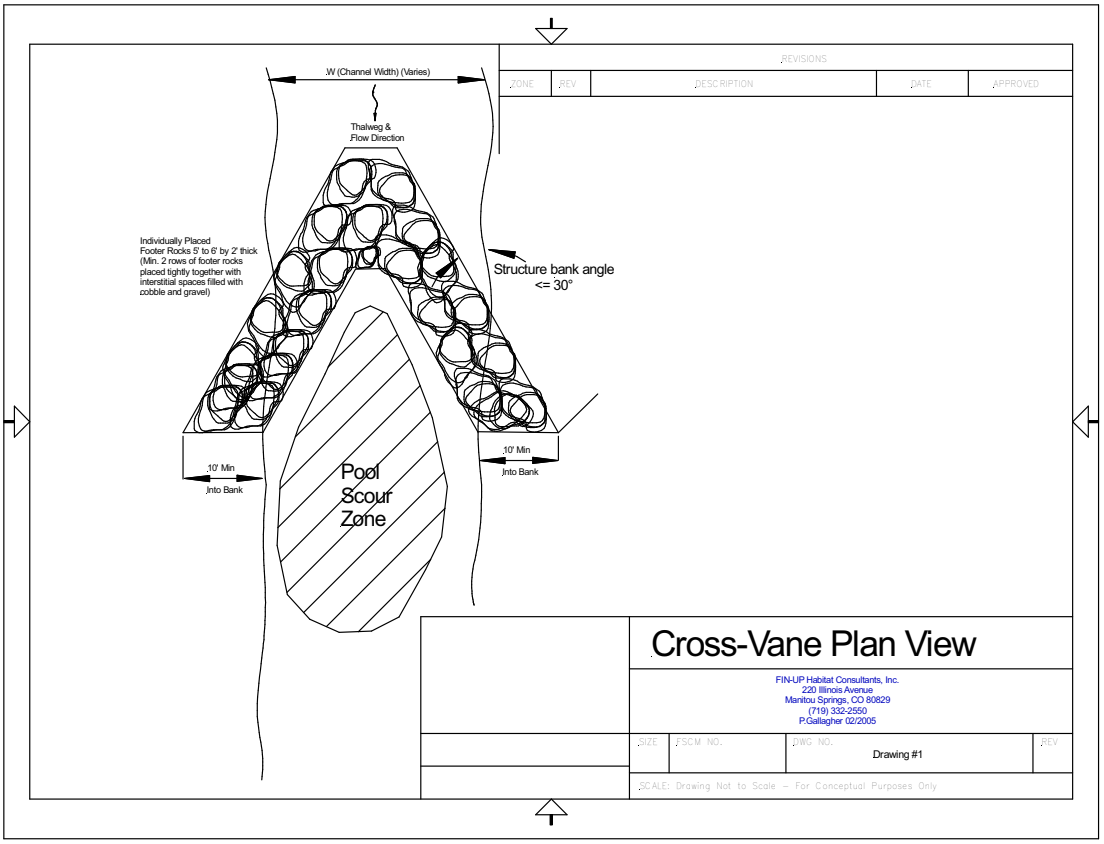


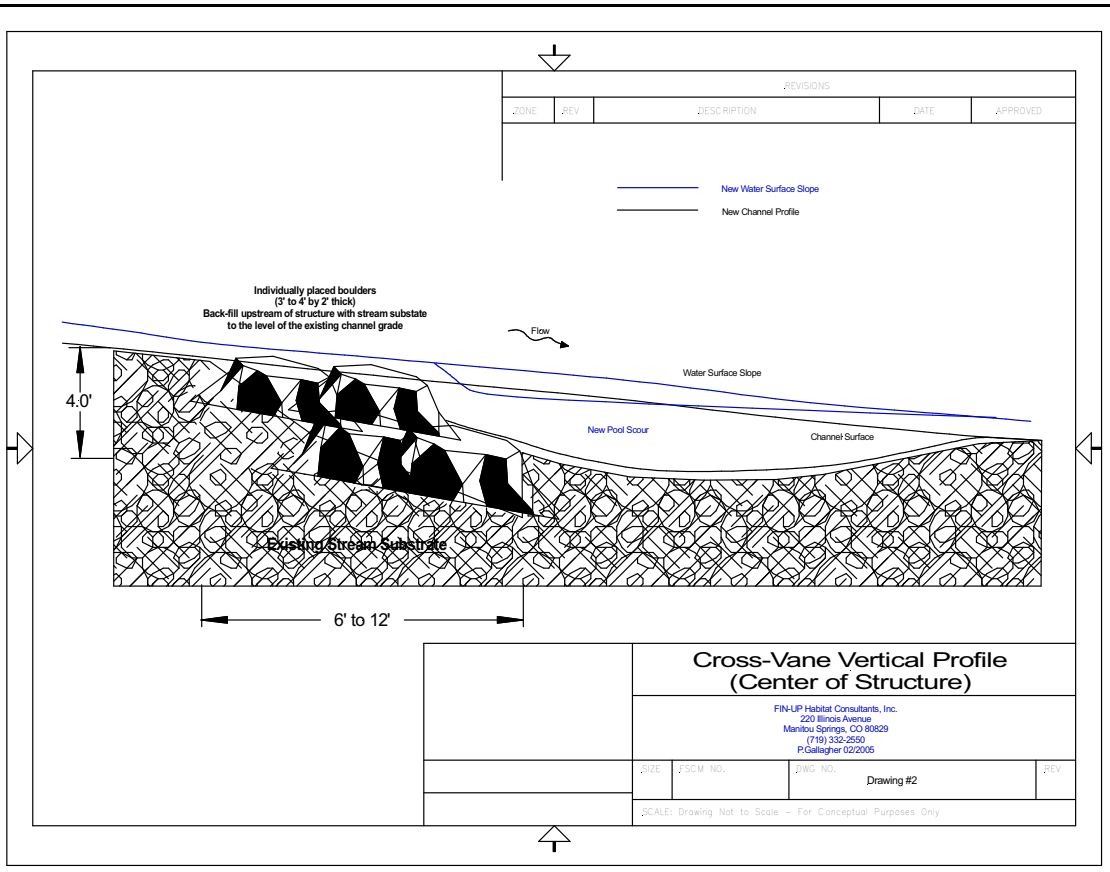
Proposed Stream Restoration Treatments on Fountain Creek - The Fields Park Reach 2 Downstream Segment from 718 ft to 958 ft along the longitudinal axis of the Reach.

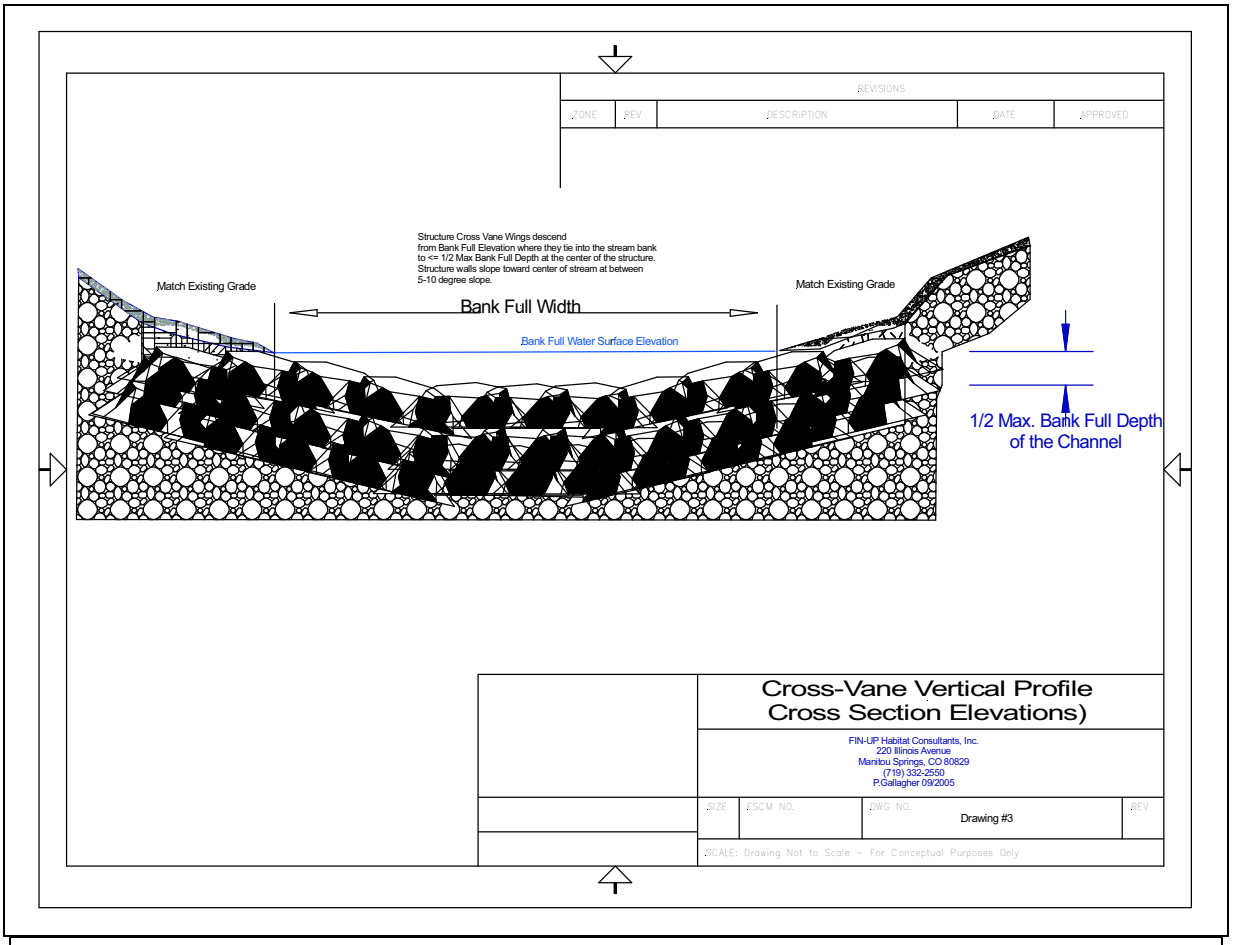


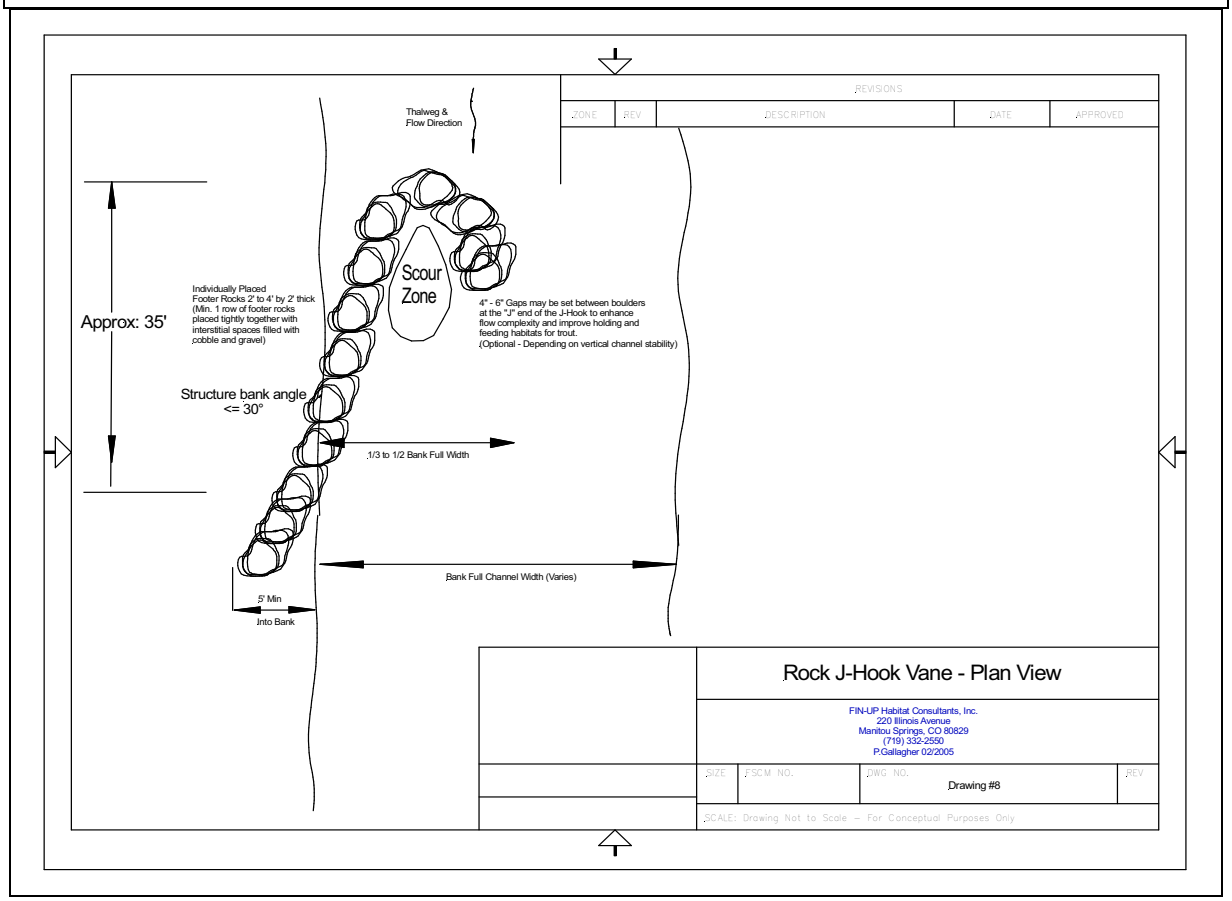
Proposed Stream Restoration Treatments on Fountain Creek - The Fields Park Reach 2 Downstream Segment from 958 ft to the upstream boundary of Reach 2.

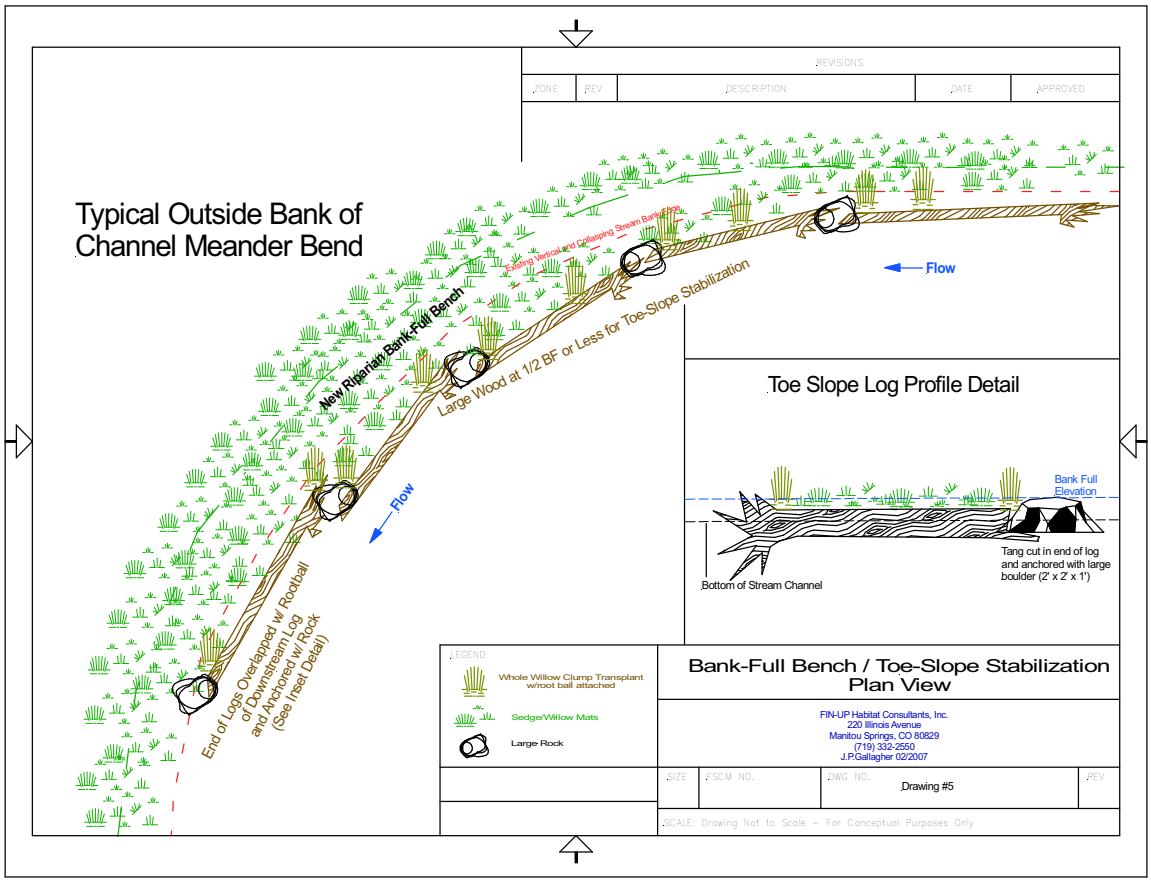
EXHIBIT B
STREAM RESTORATION STRUCTURE PLAN AND PROFILE DRAWINGS

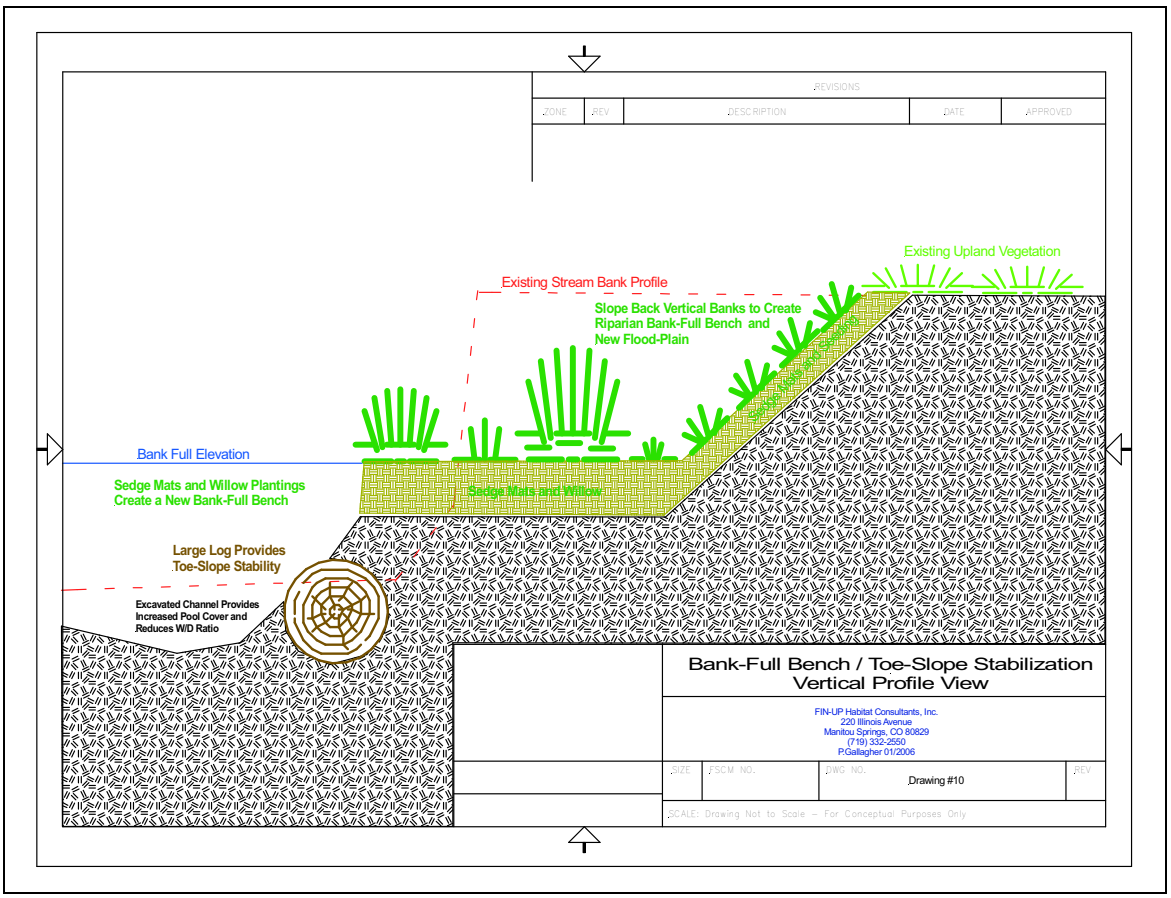


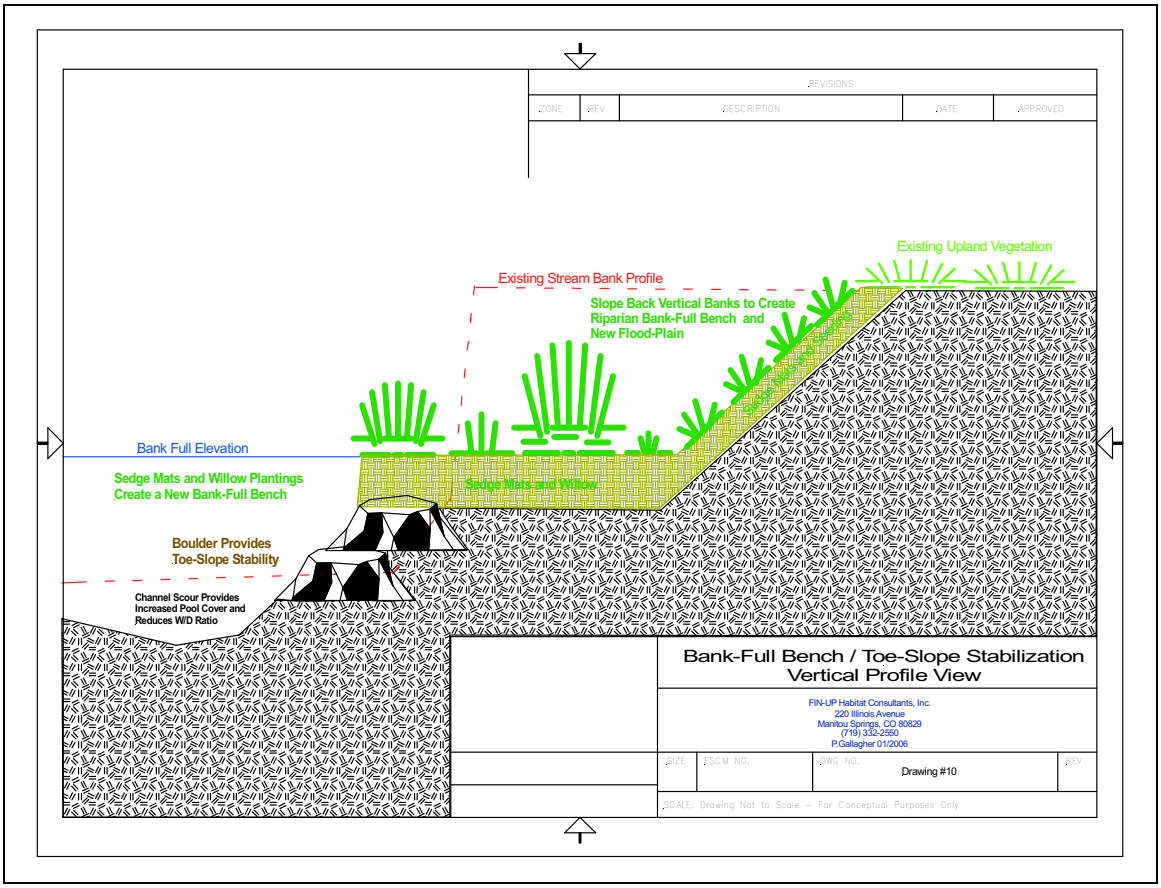


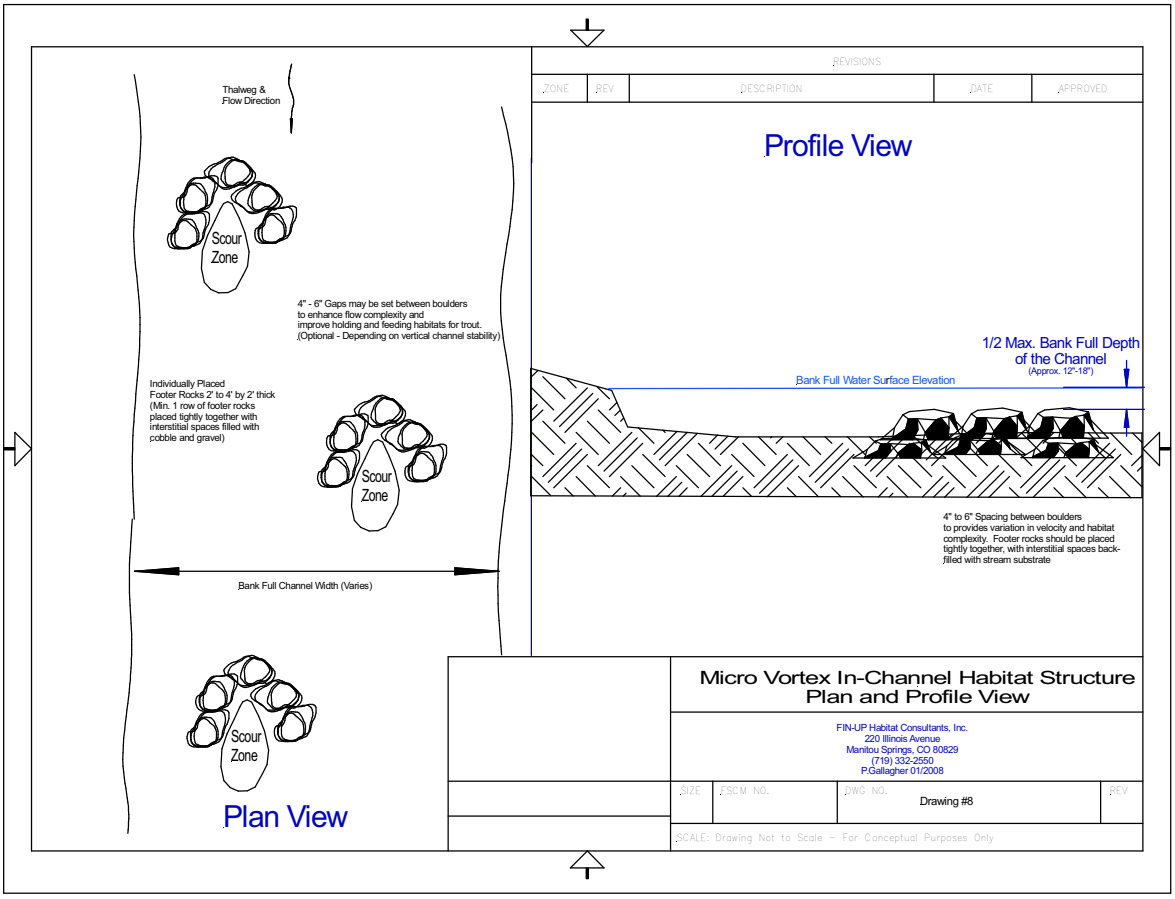

REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
Structure Cross Vane Wings descend from Bank Full Elevation where they tie into the stream bank to <= 1/2 Max Bank Full Depth at the center of the structure. Structure walls slope toward center of stream at between 5-10 degree slope.
Match Existing Grade
Bank Full Width
Match Existing Grade
Bank Full Water Surface Elevation
1/2 Max. Bank Full Depth of the Channel
Cross-Vane Vertical Profile
Cross Section Elevations)
FIN-UP Habitat Consultants, Inc.
220 Illinois Avenue
Manitou Springs, CO 80829
(719) 332-2550
P.Gallagher 09/2005
SIZE
FSCM NO.
DWG NO.
Drawing #3
REV
SCALE: Drawing Not to Scale – For Conceptual Purposes Only

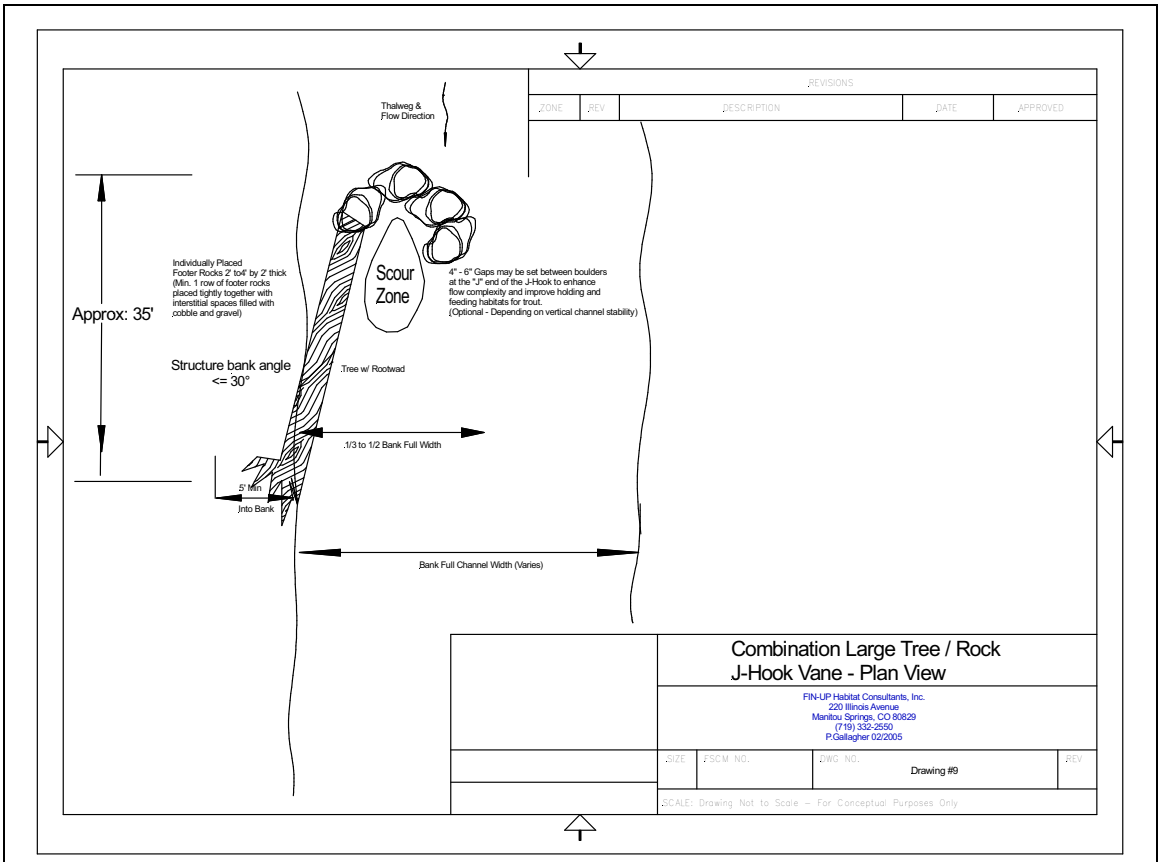

REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
Thalweg & Flow Direction
Approx: 35'
Individually Placed Footer Rocks 2' to 4' by 2' thick (Min. 1 row of footer rocks placed tightly together with interstitial spaces filled with cobble and gravel)
Scour Zone
4" - 6" Gaps may be set between boulders at the "J" end of the J-Hook to enhance flow complexity and improve holding and feeding habitats for trout. (Optional - Depending on vertical channel stability)
Structure bank angle <= 30°
1/3 to 1/2 Bank Full Width
Bank Full Channel Width (Varies)
5' Min
Into Bank
Rock J-Hook Vane - Plan View
FIN-UP Habitat Consultants, Inc.
220 Illinois Avenue
Manitou Springs, CO 80829
(719) 332-2550
P.Gallagher 02/2005
SIZE
FSCM NO.
DWG NO.
Drawing #8
REV
SCALE: Drawing Not to Scale – For Conceptual Purposes Only

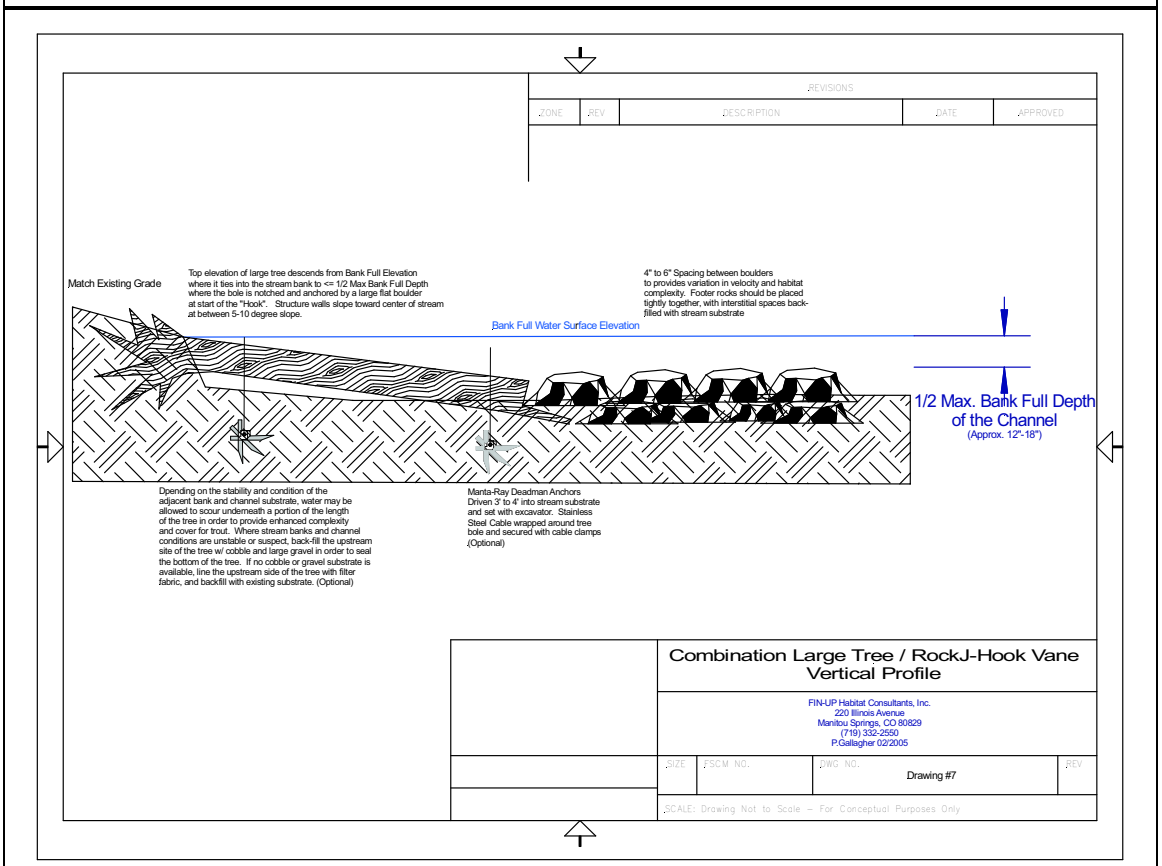

REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
Typical Outside Bank of Channel Meander Bend
Existing Vertical and Collapsing Stream Bank Edge
New Riparian Bank-Full Bench
Large Wood at 1/2 BF or Less for Toe-Slope Stabilization
Flow
Flow
End of Logs Overlapped w/ Rootball of Downstream Log and Anchored w/ Rock (See Inset Detail)
Toe Slope Log Profile Detail
Bank Full Elevation
Tang cut in end of log and anchored with large boulder (2' x 2' x 1')
Bottom of Stream Channel
LEGEND
Whole Willow Clump Transplant w/root ball attached
Sedge/Willow Mats
Large Rock
Bank-Full Bench / Toe-Slope Stabilization Plan View
FIN-UP Habitat Consultants, Inc.
220 Illinois Avenue
Manitou Springs, CO 80829
(719) 332-2550
J.P.Gallagher 02/2007
SIZE
FSCM NO.
DWG NO.
Drawing #5
REV
SCALE: Drawing Not to Scale – For Conceptual Purposes Only

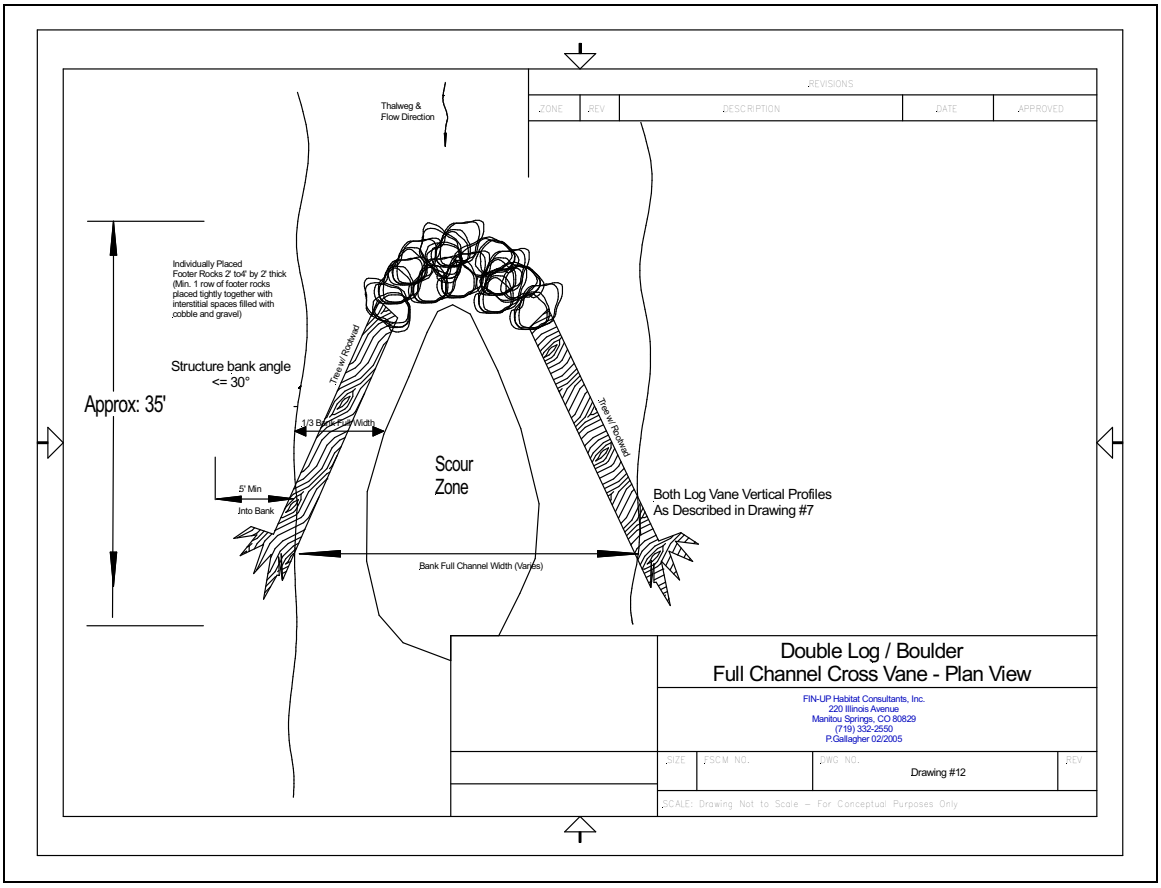

REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
Existing Upland Vegetation
Existing Stream Bank Profile
Slope Back Vertical Banks to Create Riparian Bank-Full Bench and New Flood-Plain
Bank Full Elevation
Sedge Mats and Willow Plantings Create a New Bank-Full Bench
Sedge Mats and Willow
Large Log Provides Toe-Slope Stability
Excavated Channel Provides Increased Pool Cover and Reduces W/D Ratio
Bank-Full Bench / Toe-Slope Stabilization Vertical Profile View
FIN-UP Habitat Consultants, Inc.
220 Illinois Avenue
Manitou Springs, CO 80829
(719) 332-2550
P.Gallagher 01/2006
SIZE
FSCM NO.
DWG NO.
Drawing #10
REV
SCALE: Drawing Not to Scale – For Conceptual Purposes Only


REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
Existing Upland Vegetation
Existing Stream Bank Profile
Slope Back Vertical Banks to Create Riparian Bank-Full Bench and New Flood-Plain
Bank Full Elevation
Sedge Mats and Willow Plantings Create a New Bank-Full Bench
Sedge Mats and Willow
Boulder Provides Toe-Slope Stability
Channel Scour Provides Increased Pool Cover and Reduces W/D Ratio
Bank-Full Bench / Toe-Slope Stabilization
Vertical Profile View
FIN-UP Habitat Consultants, Inc.
220 Illinois Avenue
Manitou Springs, CO 80829
(719) 332-2550
P.Gallagher 01/2006
SIZE
FSCM NO.
DWG NO.
Drawing #10
REV
SCALE: Drawing Not to Scale – For Conceptual Purposes Only


REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
Thalweg & Flow Direction
Scour Zone
4" - 6" Gaps may be set between boulders to enhance flow complexity and improve holding and feeding habitats for trout. (Optional - Depending on vertical channel stability)
Individually Placed Footer Rocks 2' to 4' by 2' thick (Min. 1 row of footer rocks placed tightly together with interstitial spaces filled with cobble and gravel)
Scour Zone
Bank Full Channel Width (Varies)
Scour Zone
Plan View
Profile View
1/2 Max. Bank Full Depth of the Channel
(Approx. 12"-18")
Bank Full Water Surface Elevation
4" to 6" Spacing between boulders to provides variation in velocity and habitat complexity. Footer rocks should be placed tightly together, with interstitial spaces back-filled with stream substrate
Micro Vortex In-Channel Habitat Structure
Plan and Profile View
FIN-UP Habitat Consultants, Inc.
220 Illinois Avenue
Manitou Springs, CO 80829
(719) 332-2550
P.Gallagher 01/2008
SIZE
FSCM NO.
DWG NO.
Drawing #8
REV
SCALE: Drawing Not to Scale – For Conceptual Purposes Only


REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
Thalweg &
Flow Direction
Approx: 35'
Individually Placed
Footer Rocks 2' to4' by 2' thick
(Min. 1 row of footer rocks
placed tightly together with
interstitial spaces filled with
cobble and gravel)
Scour
Zone
4" - 6" Gaps may be set between boulders
at the "J" end of the J-Hook to enhance
flow complexity and improve holding and
feeding habitats for trout.
(Optional - Depending on vertical channel stability)
Structure bank angle
<= 30°
Tree w/ Rootwad
1/3 to 1/2 Bank Full Width
5' Min
Into Bank
Bank Full Channel Width (Varies)
Combination Large Tree / Rock
J-Hook Vane - Plan View
FIN-UP Habitat Consultants, Inc.
220 Illinois Avenue
Manitou Springs, CO 80829
(719) 332-2550
P.Gallagher 02/2005
SIZE
FSCM NO.
DWG NO.
Drawing #9
REV
SCALE: Drawing Not to Scale – For Conceptual Purposes Only


REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
Match Existing Grade
Top elevation of large tree descends from Bank Full Elevation
where it ties into the stream bank to <= 1/2 Max Bank Full Depth
where the bole is notched and anchored by a large flat boulder
at start of the "Hook". Structure walls slope toward center of stream
at between 5-10 degree slope.
4" to 6" Spacing between boulders
to provides variation in velocity and habitat
complexity. Footer rocks should be placed
tightly together, with interstitial spaces back-
filled with stream substrate
Bank Full Water Surface Elevation
1/2 Max. Bank Full Depth
of the Channel
(Approx. 12"-18")
Depending on the stability and condition of the
adjacent bank and channel substrate, water may be
allowed to scour underneath a portion of the length
of the tree in order to provide enhanced complexity
and cover for trout. Where stream banks and channel
conditions are unstable or suspect, back-fill the upstream
site of the tree w/ cobble and large gravel in order to seal
the bottom of the tree. If no cobble or gravel substrate is
available, line the upstream side of the tree with filter
fabric, and backfill with existing substrate. (Optional)
Manta-Ray Deadman Anchors
Driven 3' to 4' into stream substrate
and set with excavator. Stainless
Steel Cable wrapped around tree
bole and secured with cable clamps
(Optional)
Combination Large Tree / RockJ-Hook Vane
Vertical Profile
FIN-UP Habitat Consultants, Inc.
220 Illinois Avenue
Manitou Springs, CO 80829
(719) 332-2550
P.Gallagher 02/2005
SIZE
FSCM NO.
DWG NO.
Drawing #7
REV
SCALE: Drawing Not to Scale – For Conceptual Purposes Only



PHOTOGRAPHS OF TREATMENT TYPES

Cross Vane Structure on Cheyenne Creek below I-25 Overpass. Colorado Springs, El Paso County, Colorado

Cross Vane Structure on Fountain Creek below 21st Street Bridge, El Paso County, CO.

Cottonwood trees used as toe-slope stabilization with riparian benches. Cucharas Creek, Huerfano County, Colorado.

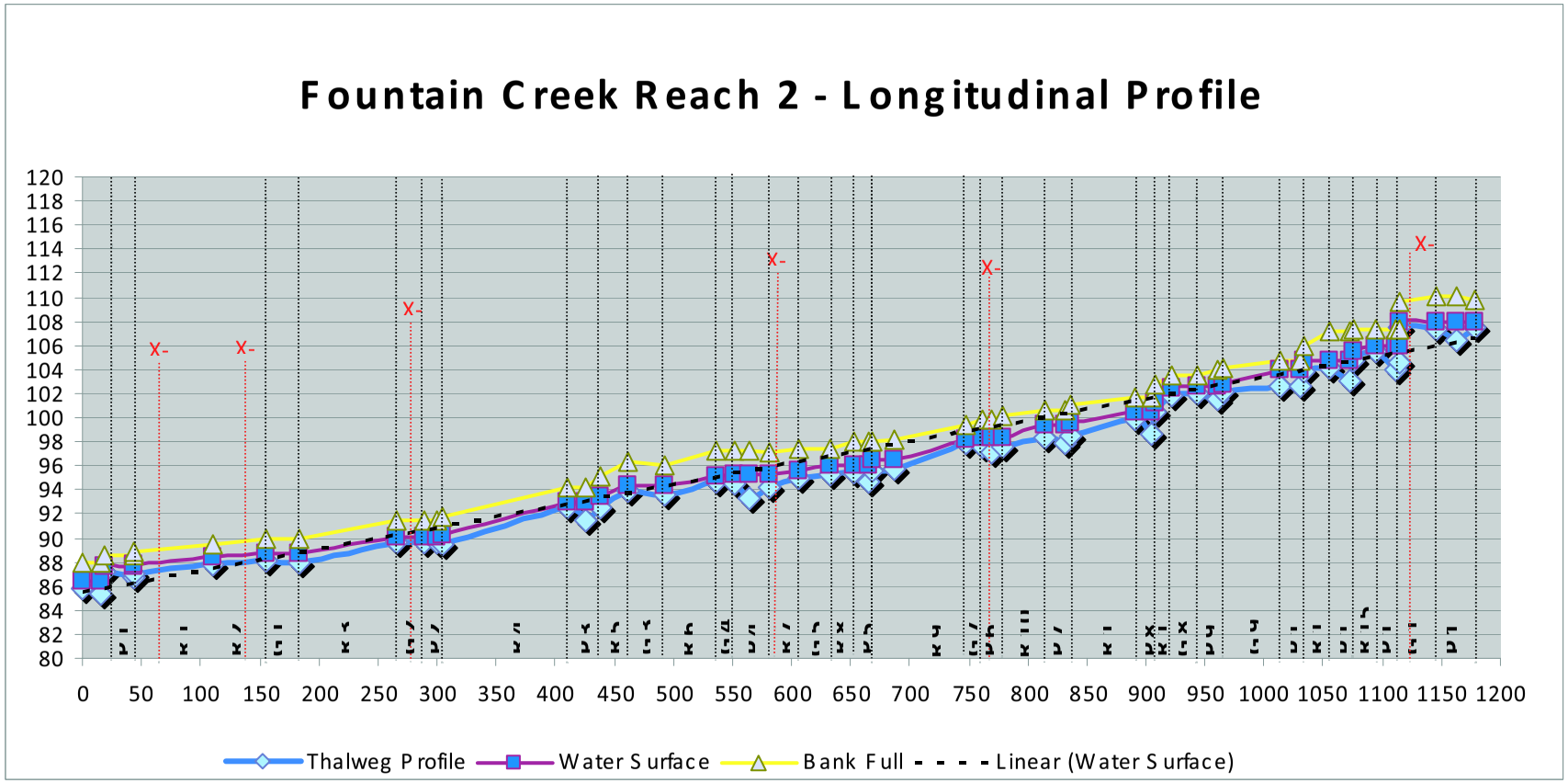
Boulders placed in clusters to create pocket water micro vortex habitats. South Platte River, Park County, CO.

Picketwire Canyonlands, SE Colorado - Rock vanes used to protect dinosaur trackway. These structures were installed in 1998, and survived a 100 year event the following spring. Note the deposition and new willow vegetation taking hold in between the structures.

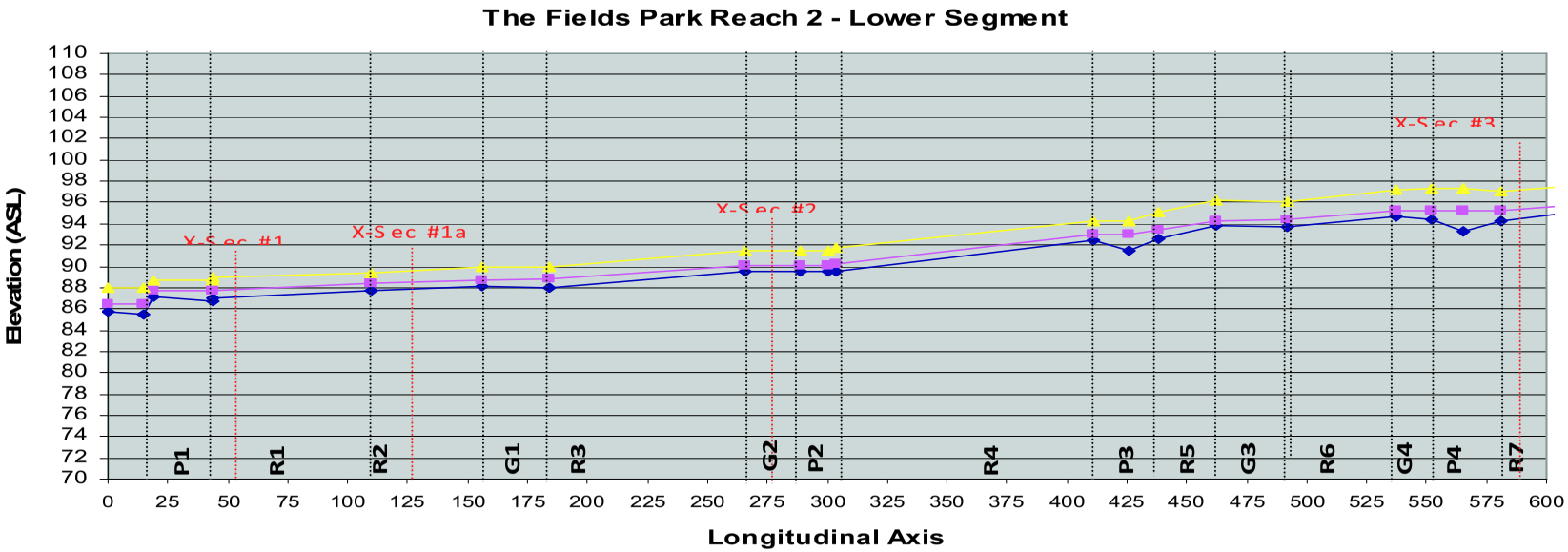
EXHIBIT C

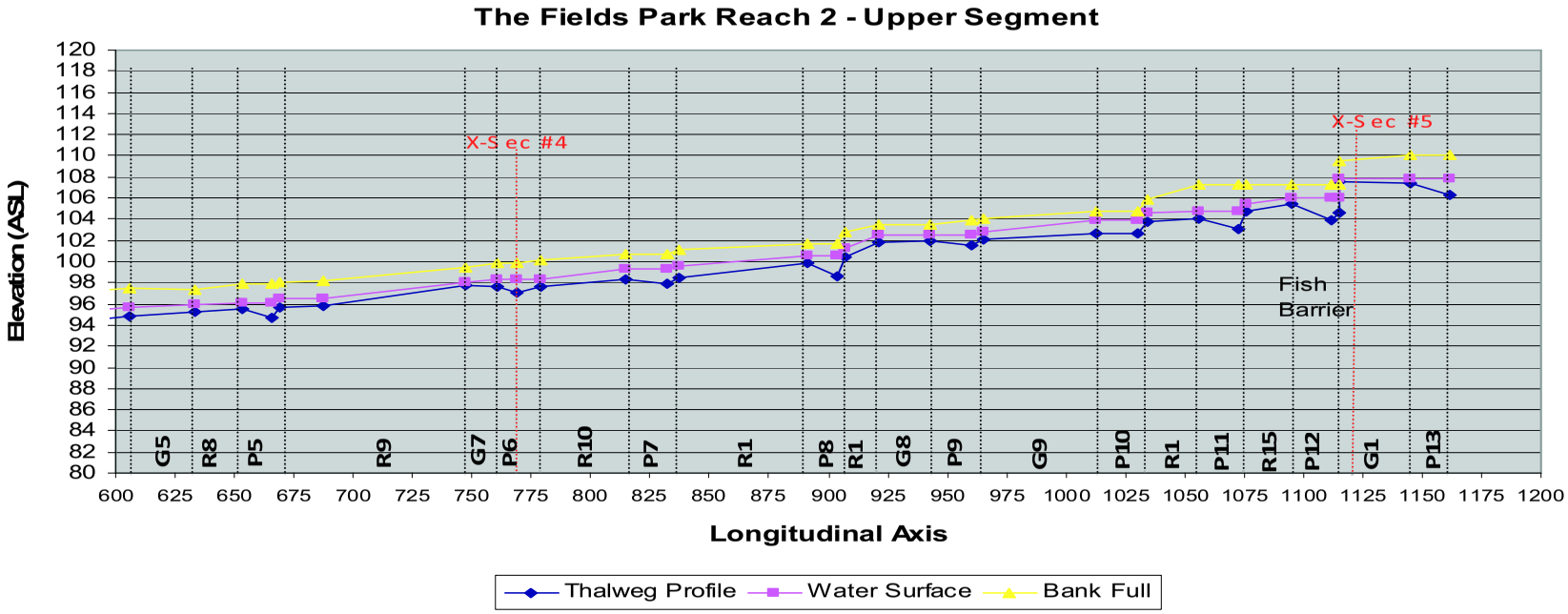
FOUNTAIN CREEK REACH 2
&
FIELDS PARK

LONGITUDINAL PROFILE AND CHANNEL SURVEYS

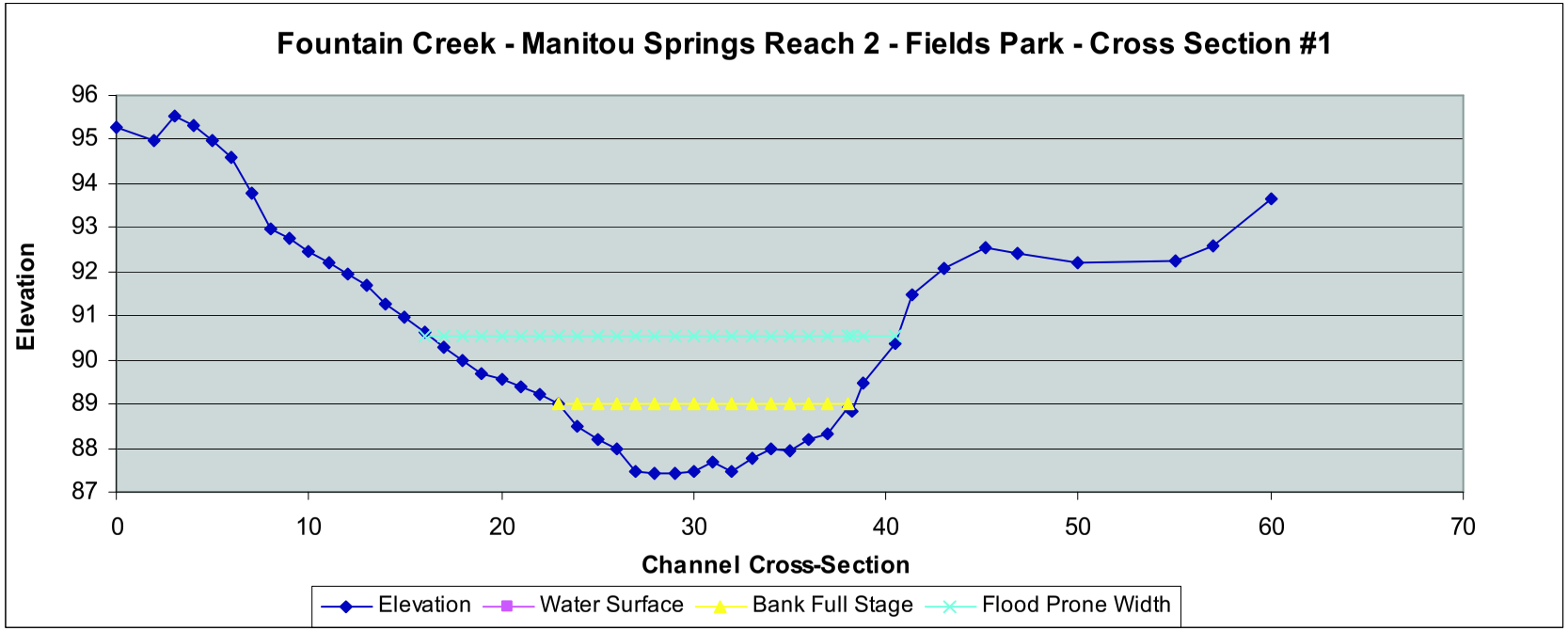


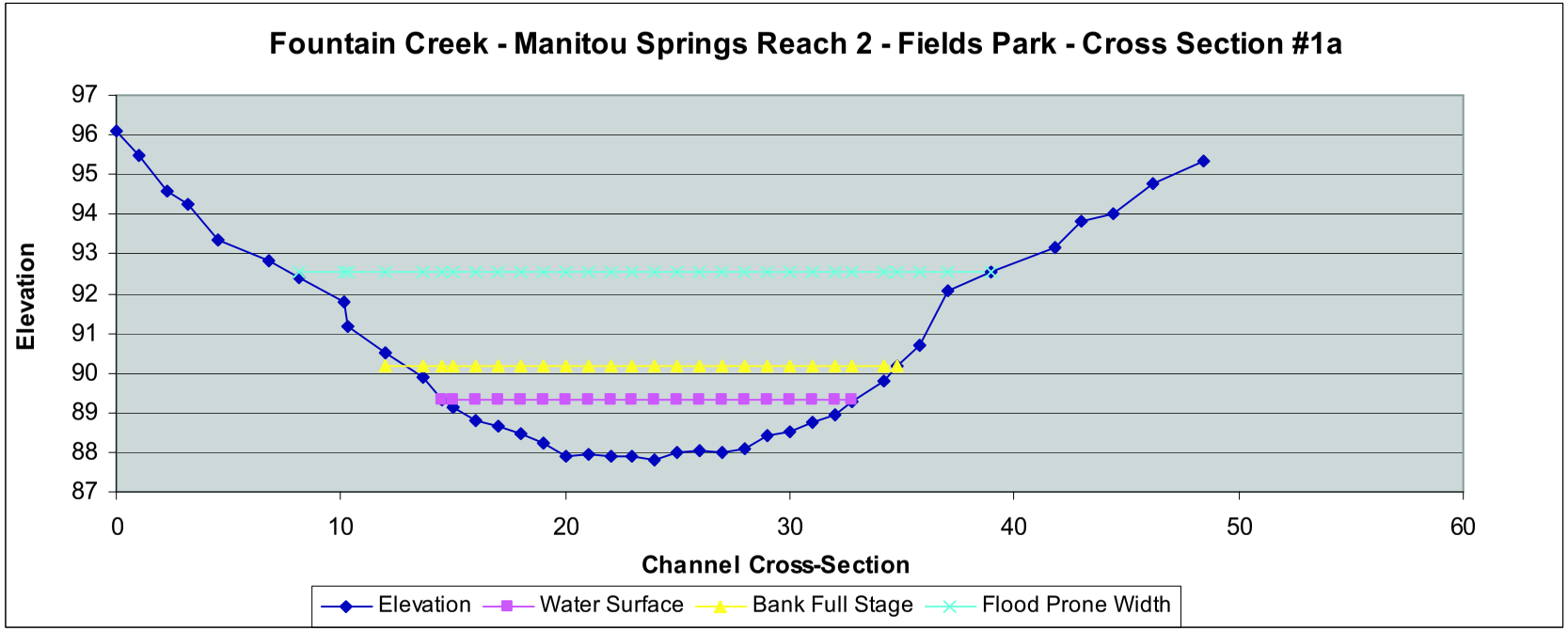
Longitudinal Profile of Fountain Creek Reach 2 - The Fields Park in Manitou Springs, CO.

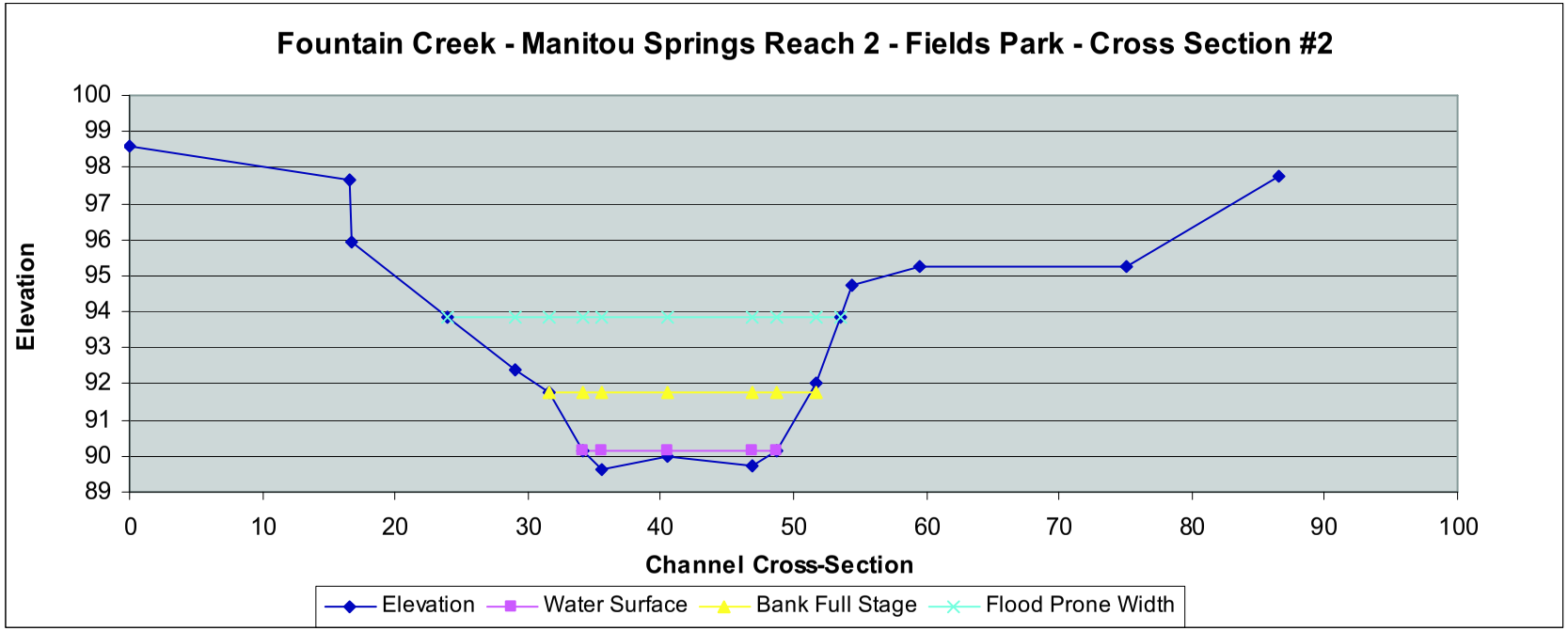

The Fields Park Reach 2 - Lower Segment
Elevation (ASL)
Longitudinal Axis
X-Sec #1
X-Sec #1a
X-Sec #2
X-Sec #3
P1
R1
R2
G1
R3
G2
P2
R4
P3
R5
G3
R6
G4
P4
R7

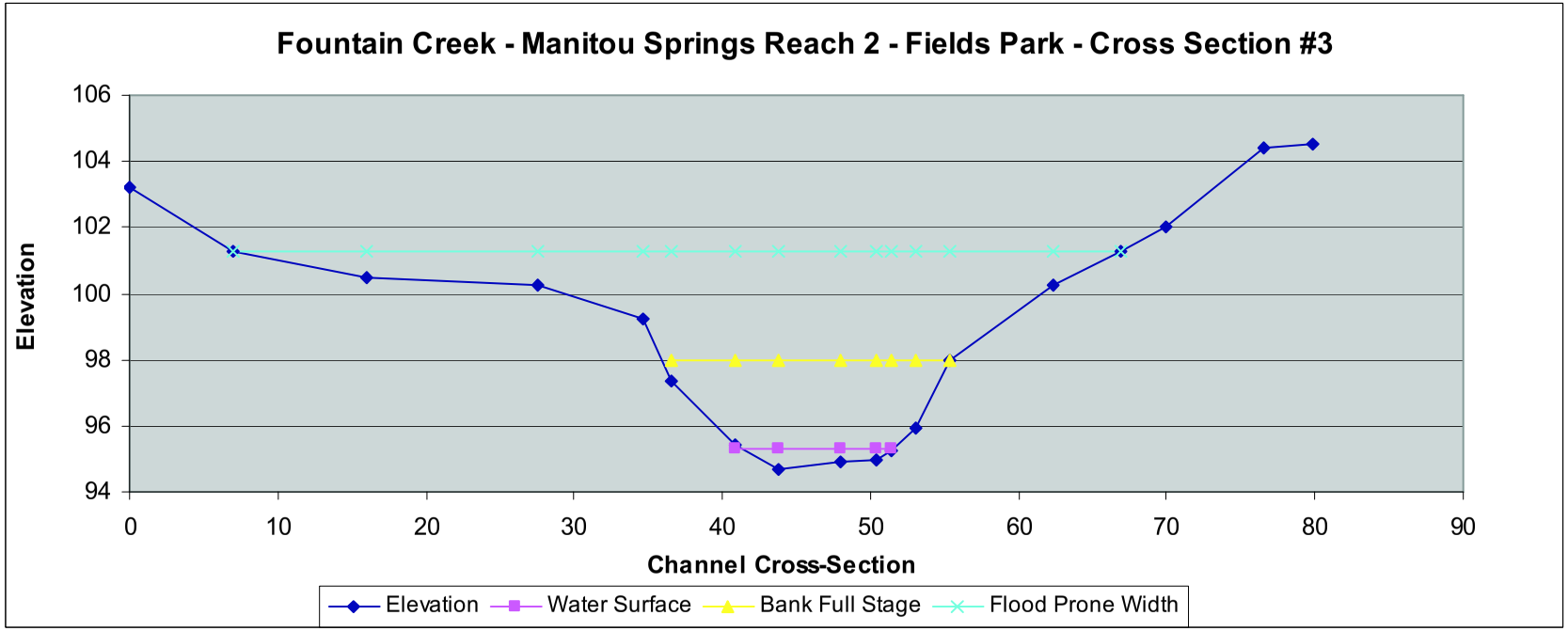

The Fields Park Reach 2 - Upper Segment
Elevation (ASL)
Longitudinal Axis
X-Sec #4
X-Sec #5
Fish Barrier
G5
R8
P5
R9
G7
P6
R10
P7
R1
P8
R1
G8
P9
G9
P10
R1
P11
R15
P12
G1
P13
Thalweg Profile
Water Surface
Bank Full

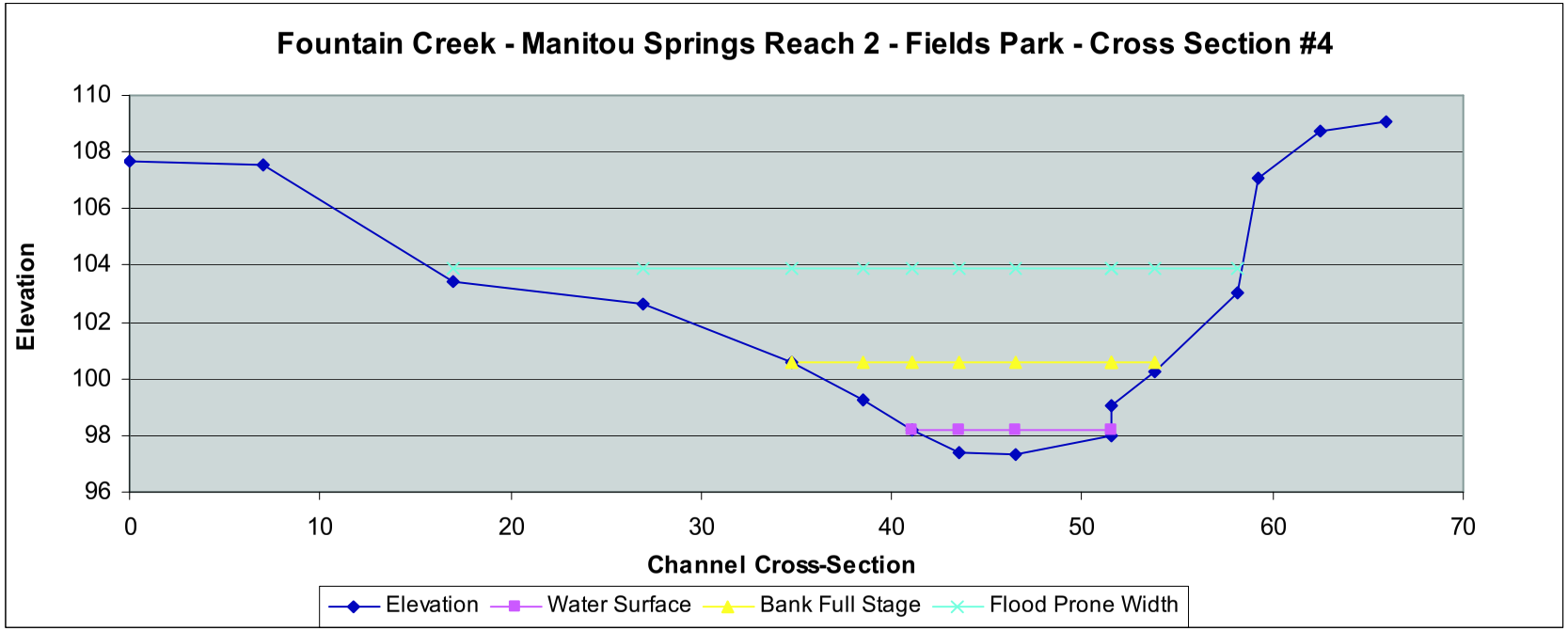
The Fields Park Reach 2 Cross - Sections


Fountain Creek - Manitou Springs Reach 2 - Fields Park - Cross Section #1
Elevation
96
95
94
93
92
91
90
89
88
87
0
10
20
30
40
50
60
70
Channel Cross-Section
Elevation
Water Surface
Bank Full Stage
Flood Prone Width


Fountain Creek - Manitou Springs Reach 2 - Fields Park - Cross Section #1a
Elevation
97
96
95
94
93
92
91
90
89
88
87
0
10
20
30
40
50
60
Channel Cross-Section
Elevation
Water Surface
Bank Full Stage
Flood Prone Width


Fountain Creek - Manitou Springs Reach 2 - Fields Park - Cross Section #2
Elevation
100
99
98
97
96
95
94
93
92
91
90
89
0
10
20
30
40
50
60
70
80
90
100
Channel Cross-Section
Elevation
Water Surface
Bank Full Stage
Flood Prone Width


Fountain Creek - Manitou Springs Reach 2 - Fields Park - Cross Section #3
Elevation
106
104
102
100
98
96
94
0
10
20
30
40
50
60
70
80
90
Channel Cross-Section
Elevation
Water Surface
Bank Full Stage
Flood Prone Width


Fountain Creek - Manitou Springs Reach 2 - Fields Park - Cross Section #4
Elevation
110
108
106
104
102
100
98
96
0
10
20
30
40
50
60
70
Channel Cross-Section
Elevation
Water Surface
Bank Full Stage
Flood Prone Width

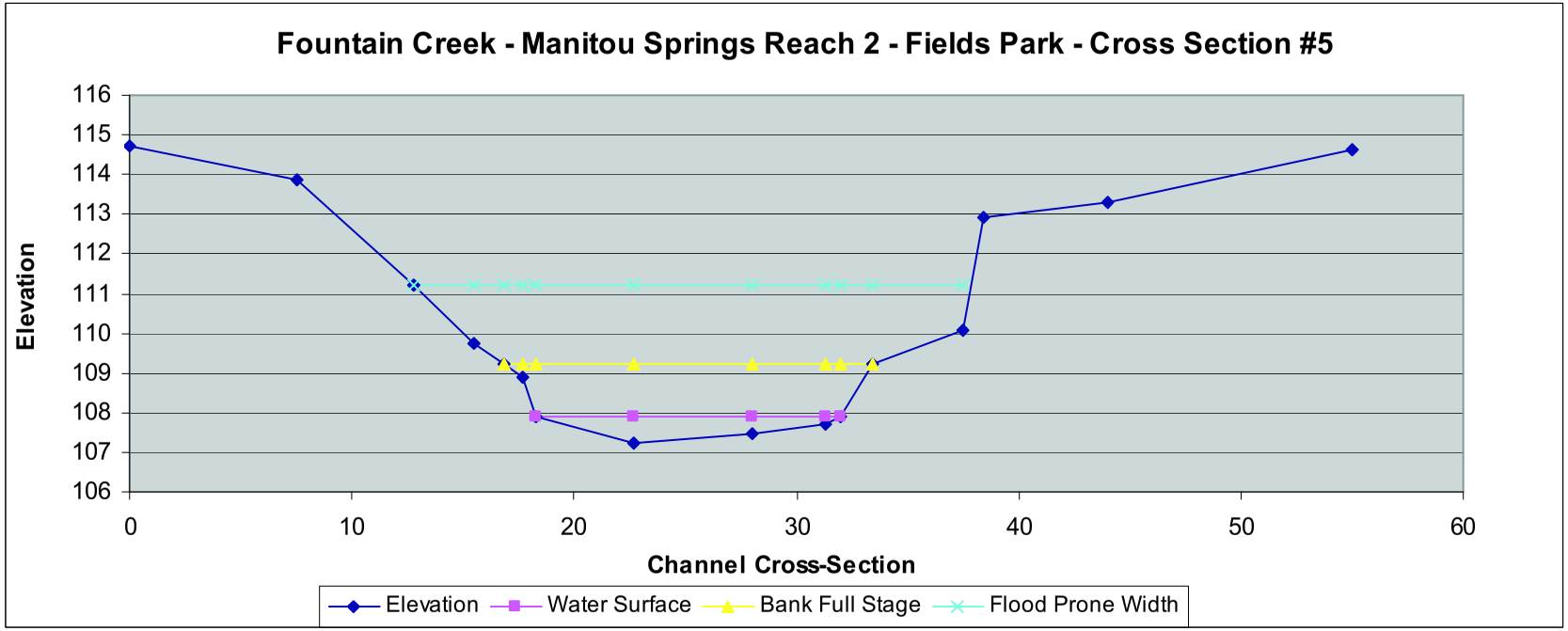
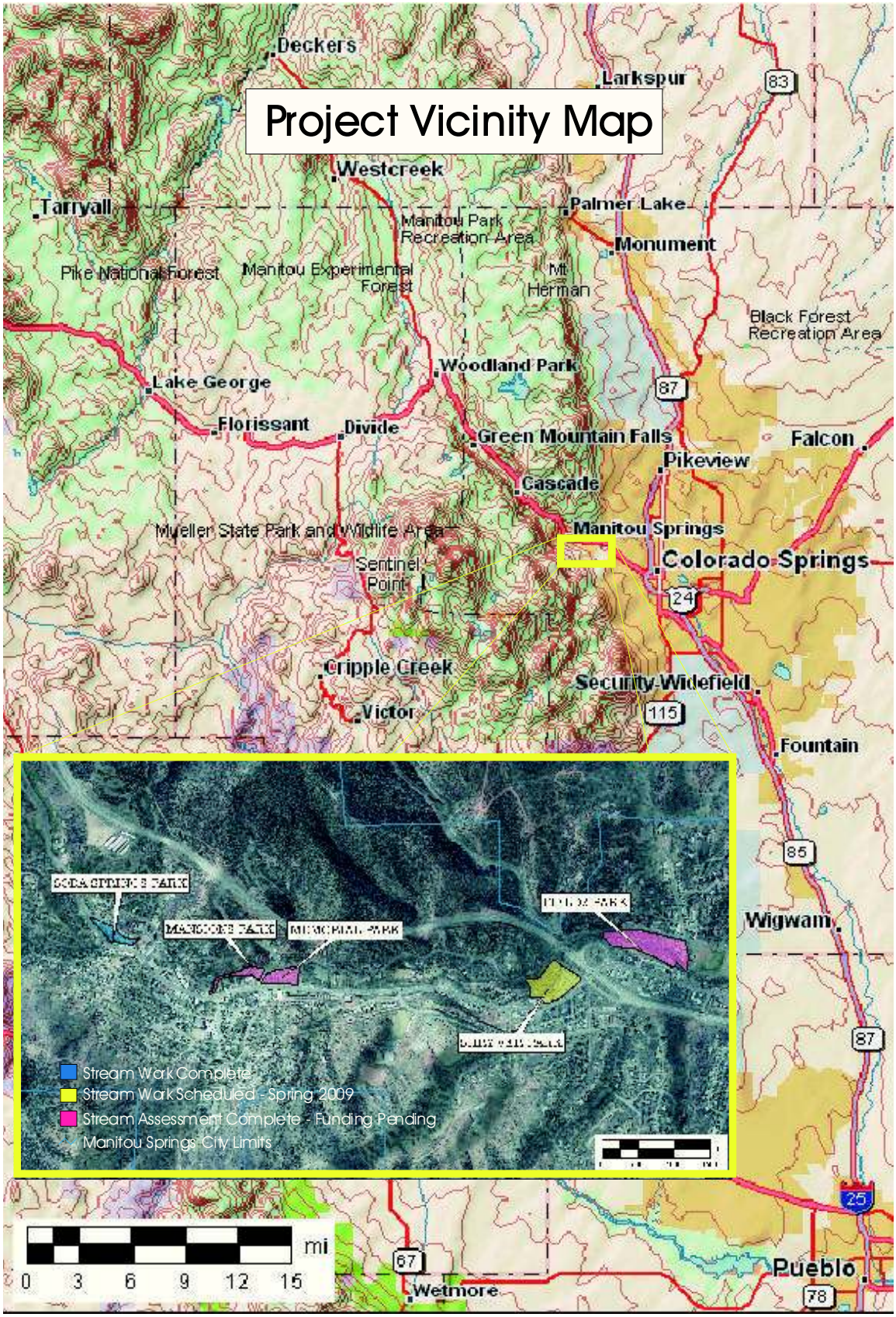

Fountain Creek - Manitou Springs Reach 2 - Fields Park - Cross Section #5
Elevation
116
115
114
113
112
111
110
109
108
107
106
0
10
20
30
40
50
60
Channel Cross-Section
Elevation
Water Surface
Bank Full Stage
Flood Prone Width

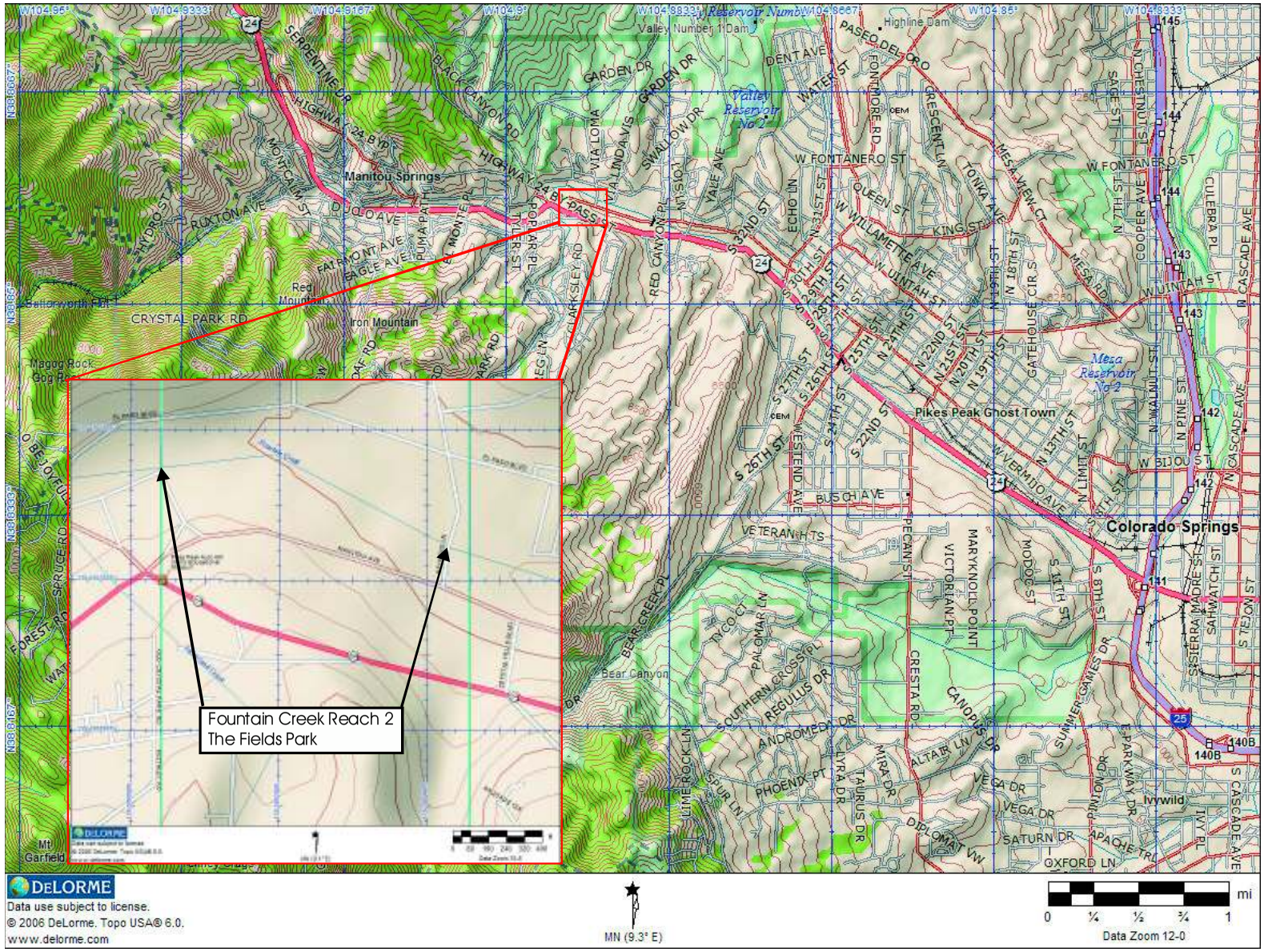
EXHIBIT D

FOUNTAIN CREEK REACH 2
&
FIELDS PARK

PROJECT VICINITY, AREA & REACH 2 LOCATION MAPS

Project Vicinity Map





Project Vicinity and Location Map.