F. Quantities of Material

Project Element	Type of Material	Quantity of Fill
Drop Structure #1	Native stone boulders 4'-6' min. diameter	300 c.y. (190 c.y. of recycled fill)
Drop Structure #1	Concrete Grout	30 c.y.
Drop Structure #2	Native stone boulders 4'-6' min. diameter	400 c.y. (220 c.y. of recycled fill)
Drop Structure #2	Concrete Grout	40 c.y.
Drop Structure #3	Native stone boulders 4'-6' min. diameter	400 c.y. (220 c.y. of recycled fill)
Drop Structure #3	Concrete Grout	40 c.y.
Drop Structure #4	Native stone boulders 4'-6' min. diameter	400 c.y. (220 c.y. of recycled fill)
Drop Structure #4	Concrete Grout	40 c.y.
Drop Structure #5	Native stone boulders 4'-6' min. diameter	350 c.y. (180 c.y. of recycled fill)
Drop Structure #5	Concrete Grout	35 c.y.
Drop Structure #6	Native stone boulders 4'-6' min. diameter	350 c.y. (180 c.y. of recycled fill)
Drop Structure #6	Concrete Grout	35 c.y.
Single Current Deflector #7	Native stone boulders 4'-6' min. diameter	120 c.y.
Single Current Deflector #8	Native stone boulders 4'-6' min. diameter	120 c.y.
Single Current Deflector #9	Native stone boulders 4'-6' min. diameter	120 c.y.
Single Current Deflector #10	Native stone boulders 4'-6' min. diameter	120 c.y.
Drop Structure (upstream of Hwy 160 bridge)	Native stone boulders 4'-6' min. diameter	300 c.y. (190 c.y. of recycled fill)
Drop Structure (downstream of Hwy 160 bridge)	Native stone boulders 4'-6' min. diameter	300 c.y. (190 c.y. of recycled fill)
Stone Bank Terracing/ Stabilization below McCabe Creek/Centennial Park/& right side below existing "U" structure	Native stone boulders 3'-5' min. diameter	270 c.y.
Stone Bank Terracing/Bank Stabilization, Right Bank along 6th Street, downstream of McCabe Creek	Native stone boulders 3'-5' min. diameter	600 c.y.
Thalweg Pool	On site native cobble, cut from pool, replaced below normal high water line, for point bar creation	450 c.y.
Thalweg Pool	On site native cobble, cut from pool, replaced below normal high water line, for point bar creation	450 c.y.
Thalweg Pool	On site native cobble, cut from pool, replaced	450 c.y.

Figure 1

	below normal high water line , for point bar creation	
Random Boulders	Native stone boulders 6'min. diameter (60 individual boulders)	180 c.y.
Coffer Dam	Temporary fill, native cobble and gravel,	70 c.y (per drop structure)

Work Completed in March 2005

Type of Material	Unit	Total Quantity of Material Below Normal High Water Line
Large Native Clean Stone Boulders (3'-5' typical) - Single "U" Drop Structure*	Cubic Yards (CY)	180 CY
Large Native Clean Stone Boulders (3'-5' typical) - Bank Restoration/Terracing	CY	220 CY
Concrete Grout Placed Within Selected Voids	CY	40 CY
On-Site Clean Cobble and Gravel-Coffer Dam**	CY	40 CY
Existing Large Random Boulders (5'-7' typical)- Relocated Within Channel	Each	12

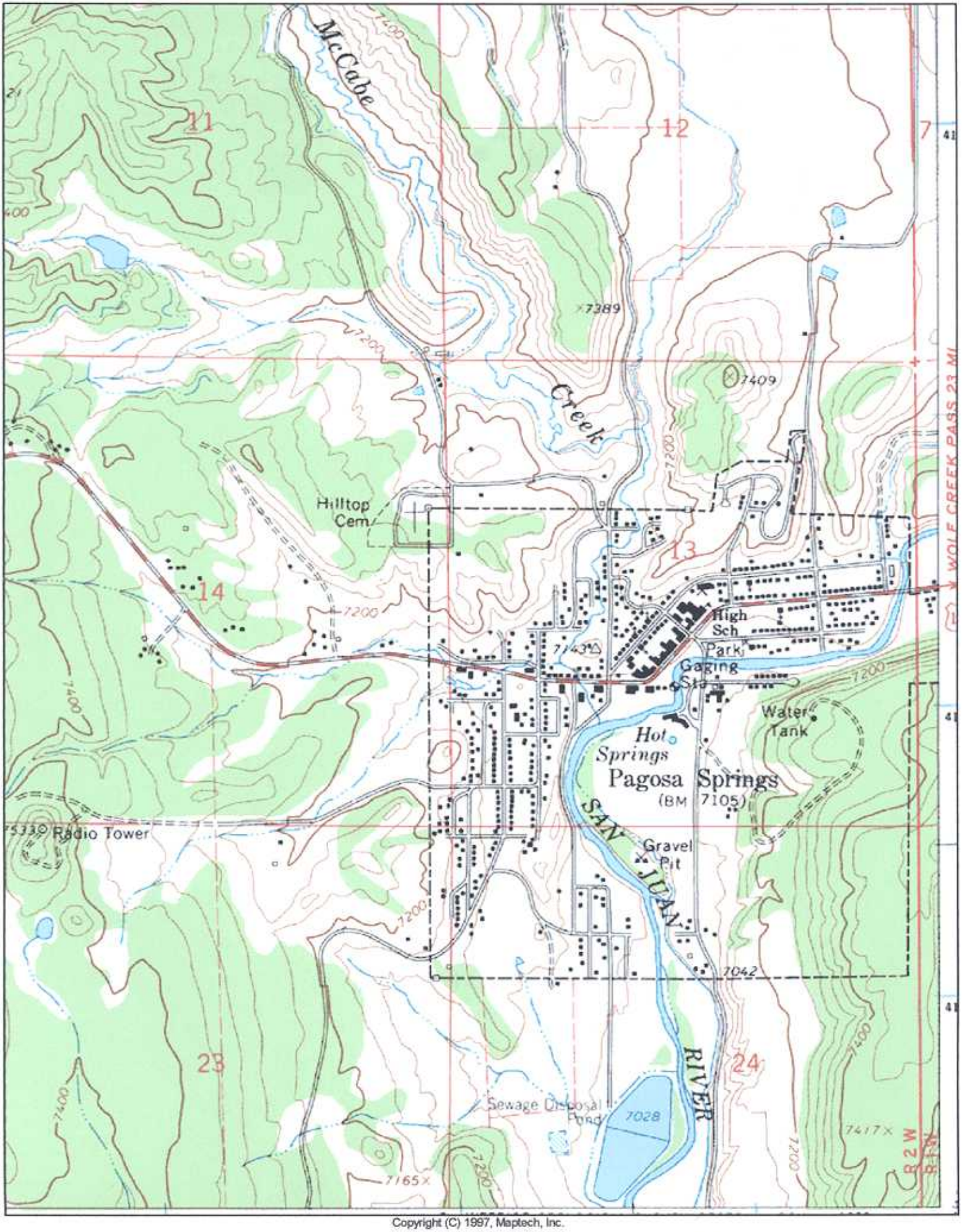

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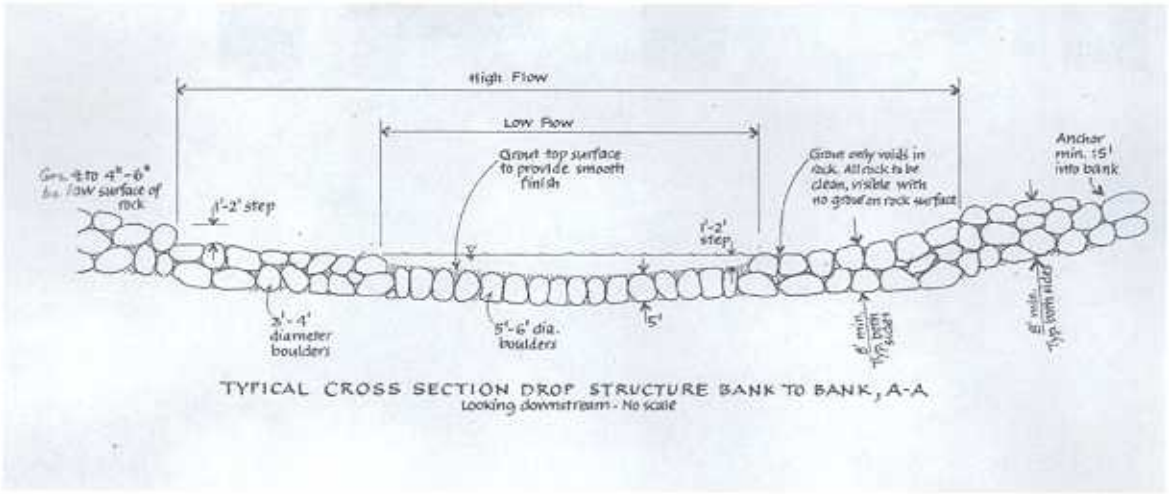
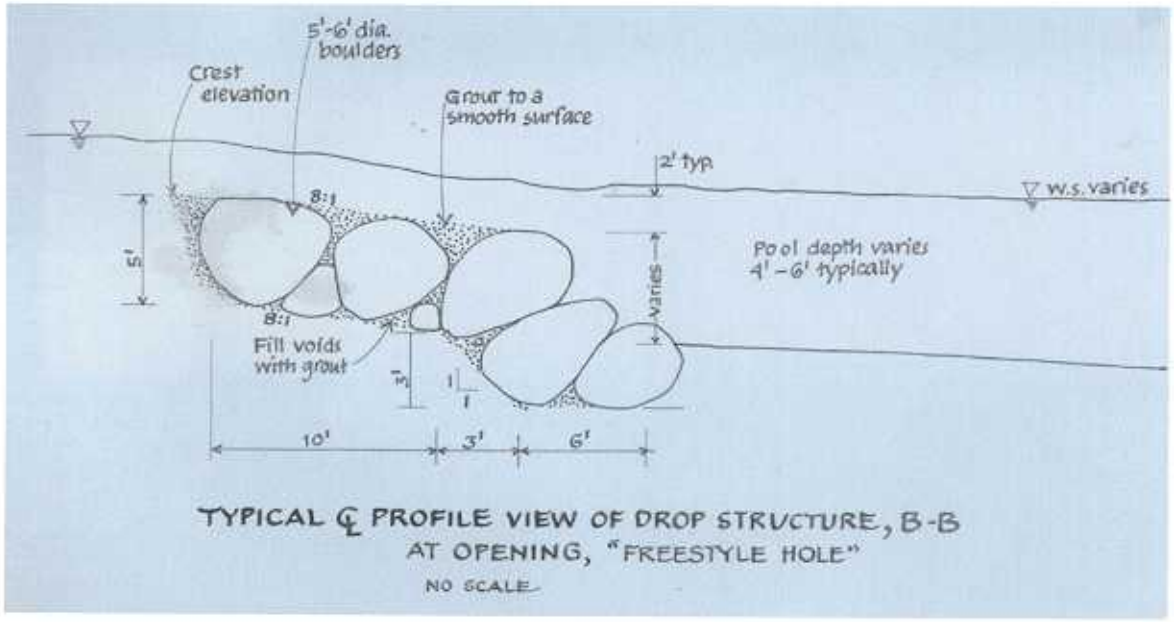
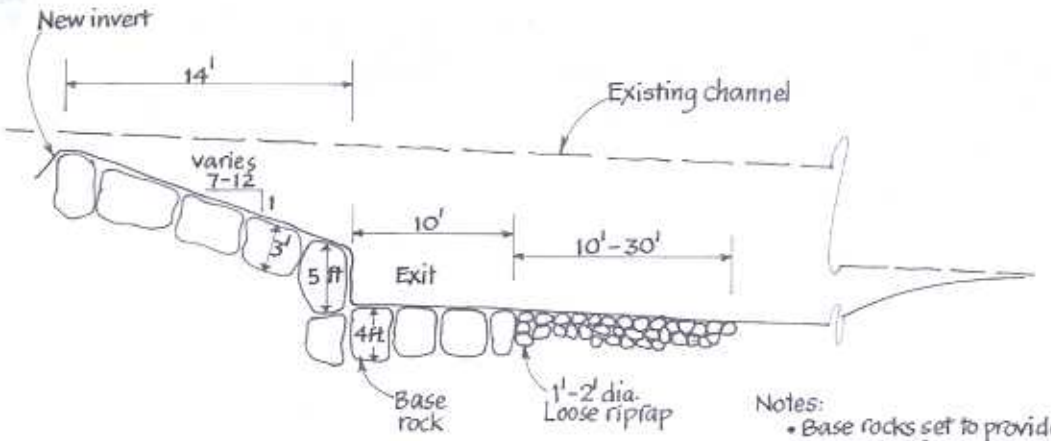
Figure 2

Figure 3. Section and profile view of Boulder V-dam







TYPICAL PROFILE VIEW OF DROP STRUCTURE FOR WHITEWATER WAVE, B-B

Notes:

- Base rocks set to provide scour reinforcement (i.e. scour depth = to depth of base rocks
- River is not impounded by drop structure. All drop is below existing channel invert.
- Total drop < 2 feet

Figure 4. Boulder Edge

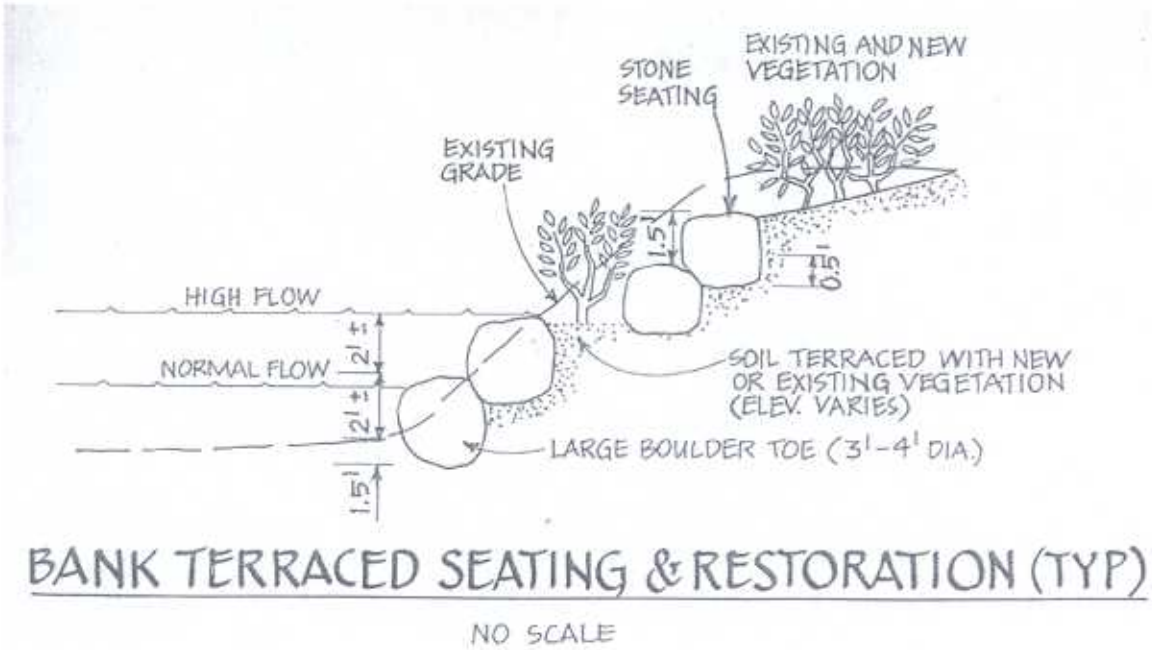
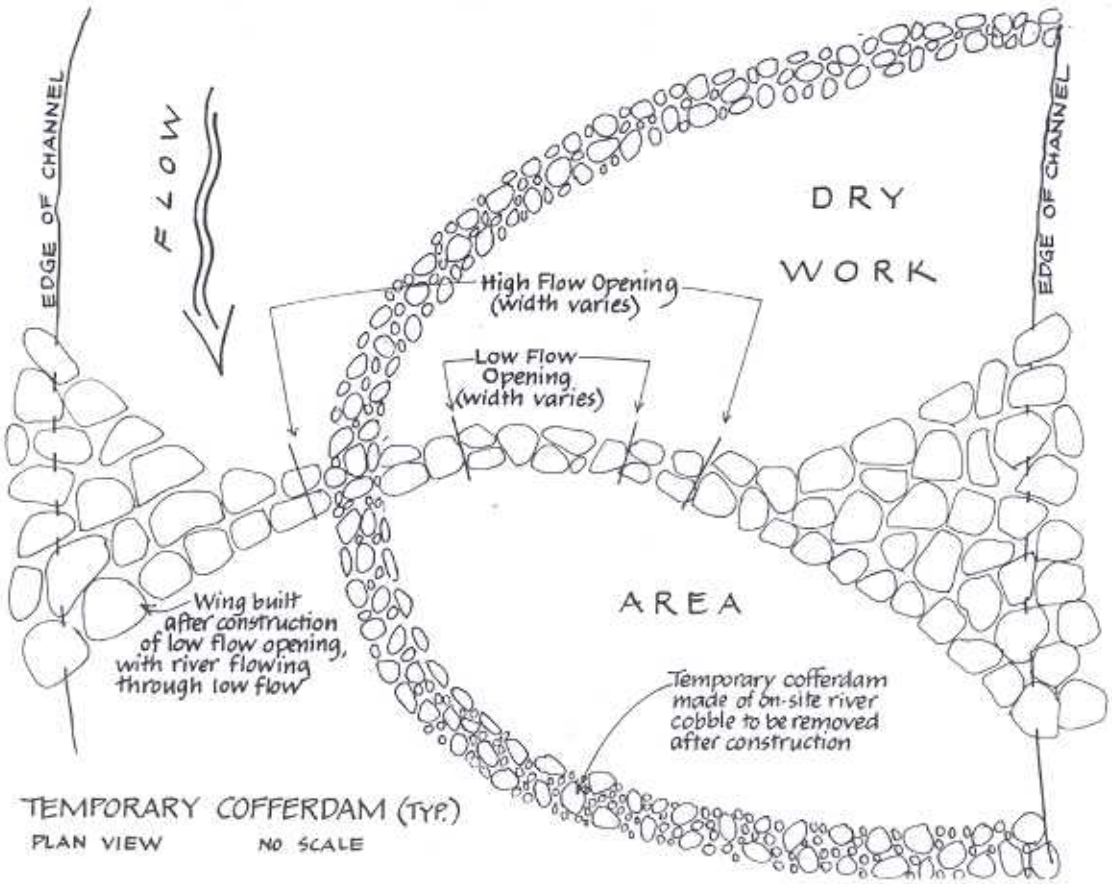


Figure 5. Temporary Cofferdam



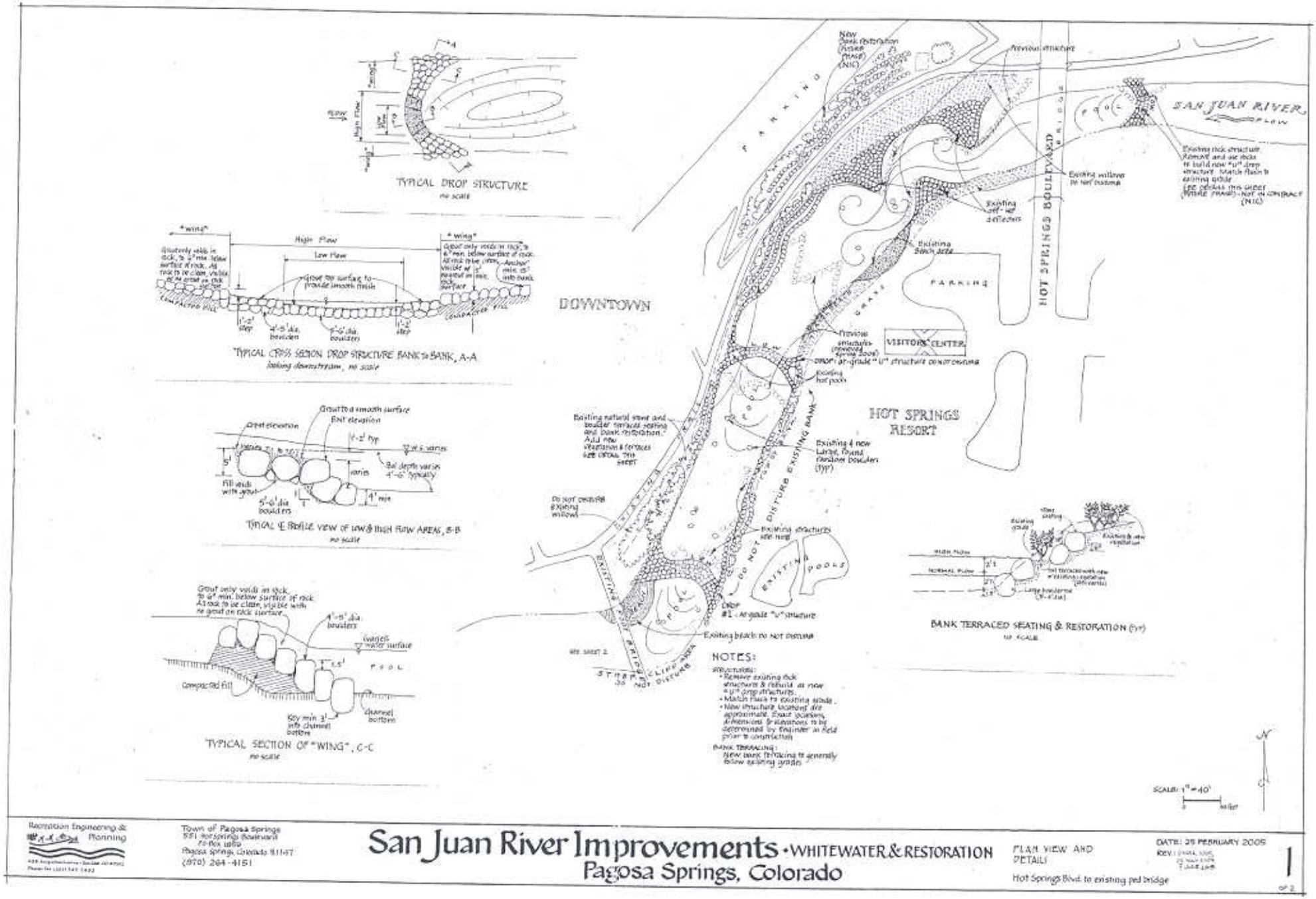
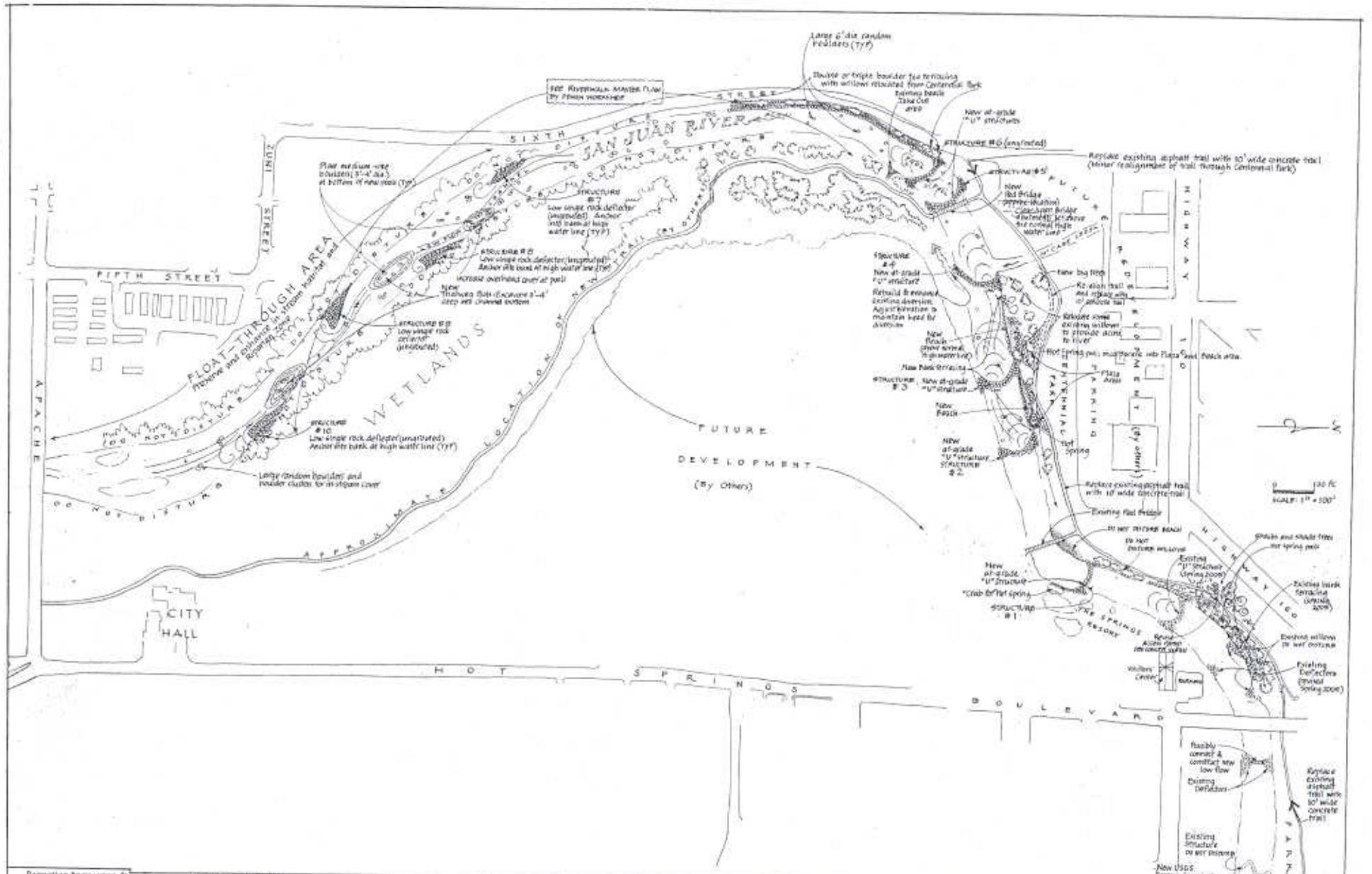

TYPICAL DROP STRUCTURE
no scale
TYPICAL CROSS SECTION DROP STRUCTURE BANK to BANK, A-A
looking downstream, no scale
TYPICAL ¢ PROFILE VIEW OF LOW & HIGH FLOW AREAS, B-B
no scale
TYPICAL SECTION OF "WING", C-C
no scale
DOWNTOWN
HOT SPRINGS RESORT
VISITORS CENTER
HOT SPRINGS BOULEVARD
SAN JUAN RIVER
PARKING
POOL
BANK TERRACED SEATING & RESTORATION (typ)
no scale
NOTES:
STRUCTURES:
• Remove existing rock structure & rebuild as new "U" drop structure.
• Match flows to existing grade.
• New structure location are approximate. Exact location, dimensions & elevations to be determined by Engineer in field prior to construction
BANK TERRACING:
New bank terracing to generally follow existing grade.
SCALE: 1" = 40'
Recreation Engineering & Planning
Town of Pagosa Springs
551 Hot Springs Boulevard
PO Box 1889
Pagosa Springs, Colorado 81147
(970) 264-4151
San Juan River Improvements • WHITEWATER & RESTORATION
Pagosa Springs, Colorado
PLAN VIEW AND DETAILS
Hot Springs Blvd. to existing ped bridge
DATE: 28 FEBRUARY 2005
1

Figure 6



Recreation Engineering & Planning

Town of Pagosa Springs
451 Hot Springs Boulevard
Pagosa Springs, Colorado 81147
(970) 264-4151

San Juan River Improvements

Pagosa Springs, Colorado

WHITEWATER & RESTORATION CONCEPTUAL PLAN Existing Red Bridge to Apache

DATE: May 2008

REV: June 2009

2 of 2