Purlear Creek - Phase I
Stream Restoration
Annual Monitoring Report

Monitoring Year: 2006
Measurement Year: 2
As-built Date: 2004
NCEEP Project Number: 294

Delivered to: NCDENR-Ecosystem Enhancement Program
1619 Mail Service Center
Raleigh, NC 27699-1619

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Project Designed By: Kimley-Horn and Associated

Submitted: December, 2006

Ecosystem Enhancement PROGRAM

NCDENR

PURLEAR CREEK - PHASE 1 STREAM RESTORATION
2006 MONITORING REPORT

CONDUCTED FOR THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

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I. Executive Summary/Project Abstract

The channel has remained stable since construction. Study reaches show no significant bed profile, channel pattern or cross sectional changes. The majority of channel banks are well-covered with vegetation. Planted trees and shrubs are doing well throughout the buffer.

The primary area of concern is the grade drops at several of the cross vanes on the project. The grade drops of 0.5 feet or more are listed in the problem area table. No action is recommended at this time but these structures should be monitored closely in upcoming monitoring events. Other concern areas are primarily small erosional areas that appear to be localized. At three locations along the project, excess nutrients are entering the channel and bypassing the established buffer.

No immediate action is recommended for problem areas.

II. Project Background

Project background information can be obtained from the as-built monitoring report prepared by Kimley-Horn and Associates dated 2004.

Table I lists project structure and objectives while Table II lists project activity and reporting history. The project contact table is listed in Table III and Table IV lists the background information for the project. Figure 1 shows a map with detailed directions to the project site. A watershed map is contained in Figure 2 in the form of an aerial photograph.

Table I. Project Mitigation Structure and Objectives Purlear Creek Phase I / Project # 294					
Project Segment or Reach ID	**MitigationType**	**Approach**	**Linear Footage or Acreage**	**Stationing***	**Comment**
Reach I - Upper Main Reach	R	P1	2,260 lf	-0+50 to 10+00	From Channel start to confluence with Upper Middle Tributary
Reach II - Upper Middle Tributary	R	P1	1,340 lf	0+00 to 2+60	
Reach III - Middle Main Reach	R	P1	2,850 lf	0+00 to 7+00	From confluence with Upper Middle Tributary to confluence with Lower Middle Tributary
Reach IV – Lower Middle Tributary (upper reach)	R	P1	700 lf	0+00 to 6+50	From start of Lower Middle Tributary to first culvert crossing
Reach V - Lower Middle Tributary (lower reach)	R	P1	2,750 lf	0+00 to 7+00	From first culvert crossing below Lower Middle Tributary to confluence with Middle Main Reach
Reach VI - Lower Main Reach	R	P1	1,600 lf	0+00 to 9+00	From confluence with Lower Middle Tributary to end of Phase I
Total Project			**11,500 lf**		

* Only a portion of each reach was surveyed for monitoring

R = Restoration
EI = Enhancement I
EII = Enhancement II
S = Stabilization
P1 = Priority I
P2 = Priority II
P3 = Priority III
SS = Stream Bank stabilization

Table II. Project Activity and Reporting History Purlear Creek Phase I / Project # 294			
Activity or Report	**Scheduled Completion**	**Data Collection Complete**	**Actual Completion or Delivery**
Restoration Plan	Unknown	N/A*	October-02
Final Design - 90%	Unknown	N/A*	N/A*
Construction	Unknown	N/A*	November-03
Temporary S&E mix applied to entire project area	Unknown	N/A*	November-03
Permanent seed mix applied to reach	Unknown	N/A*	November-03
Containerized and B&B plantings	Unknown	N/A*	N/A*
Mitigation Plan / As-built (Year 0 Monitoring – baseline)	January-04	January-04	March-04
Structural maintenance (Bank repair and revegetation)	N/A*	March-05	March-05
Initial – Year 1 monitoring	January-05	January-05	March-05
Year 2 Monitoring	August-06	August-06	December-06
Year 3 Monitoring	August-07	N/A*	
Year 4 Monitoring	August-08	N/A*	
Year 5 Monitoring	August-09	N/A*	
Year 5+ Monitoring			

* Historical project documents necessary to provide these data were unavailable at the time of report submission

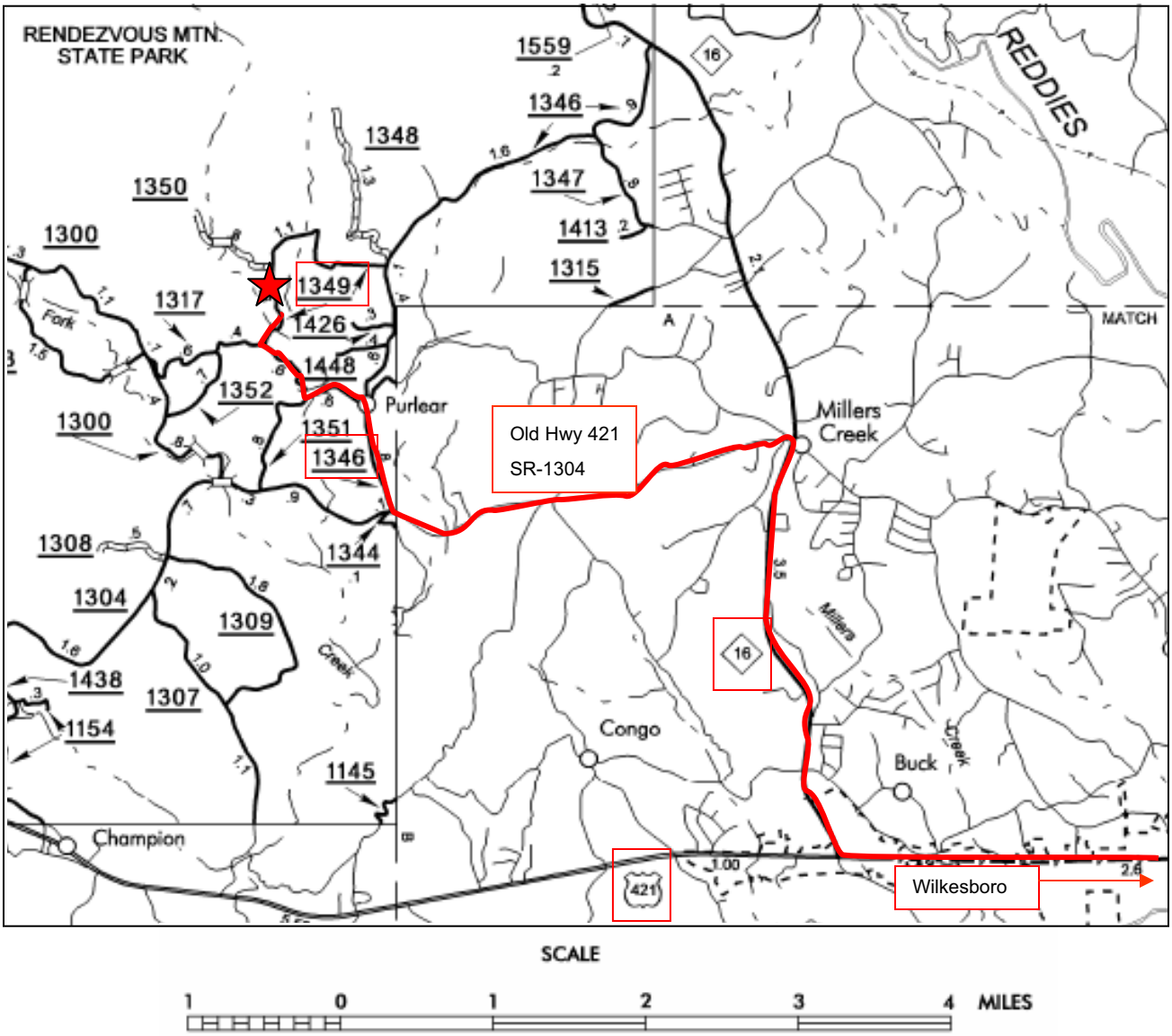
Table III. Project Contact Table Purlear Creek Phase I / Project # 294	
Designer Primary project design POC	Kimley-Horn and Associates 3001 Weston Parkway Cary, NC 27513 (919)-677-2000 Will Wilhelm, PE
Construction Contractor	L-J Inc.
Planting Contractor Planting contractor POC	N/A*
Seeding Contractor Planting contractor point of contact	N/A*
Seeding Contractor Planting contractor point of contact	N/A*
Nursery Stock Suppliers	N/A*
Monitoring Performers	Biological & Agricultural Engineering North Carolina State University Campus Box 7625 Raleigh, NC 27695
Stream Monitoring POC	Jan Patterson (919) 515-6771
Vegetation Monitoring POC	Jan Patterson (919) 515-6771

*Historical project documents necessary to provide these data were unavailable at the time of report submission.

Table IV. Project Background Table Purlear Creek Phase I / Project # 294	
Project County	Wilkes
Drainage Area	1.3 - 2.6 mi² (Main Reach) 0.1 - 0.8mi² (Tributaries)
Drainage impervious cover estimate (%)	Estimated at <5%
Stream Order	1st and 2nd Order
Physiographic Region	Piedmont
Ecoregion	Northern Inner Piedmont (45e)
Rosgen Classification of As-built	B and E-streamtypes
Cowardin Classification	N/A*
Dominant soil types	N/A*
Reference site ID	Big Warrior and Basin Creek
USGS HUC for Project and Reference	3040101
NCDWQ Sub-basin for Project and Reference	03-07-01
NCDWQ classification for Project and Reference	C
Any portion of any project segment 303d listed?	No
Any portion of any project segment upstream of a 303d listed segment?	No
Reasons for 303d listing or stressor	N/A
% of project easement fenced	100%

*Historical project documents necessary to provide these data were unavailable at the time of report submission.

Figure 1. Project Location



Directions from Hwy. 421 in Wilkesboro:

From Wilkesboro on Hwy. 421, turn right onto NC-16. Follow NC-16 for 3.5 miles to the Miller's Creek intersection. Turn left onto Old Hwy. 421 (SR-1304) and follow for 2.6 miles. Turn right onto Purlear Road (SR-1346) and follow for 0.8 miles. You will come to a stop sign at a church, turn left to stay on Purlear Road (also called New Hope Road). Follow Purlear Road for 0.6 miles until the intersection with Vannoy Maxwell Road. Project begins at this intersection and continues through the intersection with CC Hayes Road (SR- 1349).

Contact the EEP Project Manager for access and landowner notification instructions. Access is not permitted to this site without prior approval.

LEGEND
2006 THALWEG
2006 WATER EDGE
2006 BANKFULL
AS-BUILT TOP OF BANK
AS-BUILT THALWEG
2005 THALWEG
PHOTO POINT P#
VEG PLOT

FLOW MEASUREMENT & SAMPLING POINT – J-1

FLOW MEASUREMENT & SAMPLING POINT – J-2

FLOW MEASUREMENT & SAMPLING POINT – J-3

VEG PLOT #1
VEG PLOT #2
VEG PLOT #3
VEG PLOT #4
VEG PLOT #5
VEG PLOT #6
VEG PLOT #7

P1 P2 P3 P4 P5 P6 P7 P8 P9 P10 P11 P12 P13 P14 P15 P16

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 10+36.02
1+55.66
1+28.65
0+00 1+00 2+00 2+64.82

REACH 1

REACH 2

SCALE 1" = 100'
50 0 50 100

SHEET 1

NOTE:
ADDITIONAL VEGETATION PLOTS ARE LOCATED DOWNSTREAM. PLEASE SEE OVERALL MONITORING PLAN SHEET FOR LOCATIONS

NO	REVISIONS	DRN	CHK	DATE
1	AS-BUILT PLAN	DRC	DAB	03/01/06

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North Carolina State University
Raleigh, NC 27695

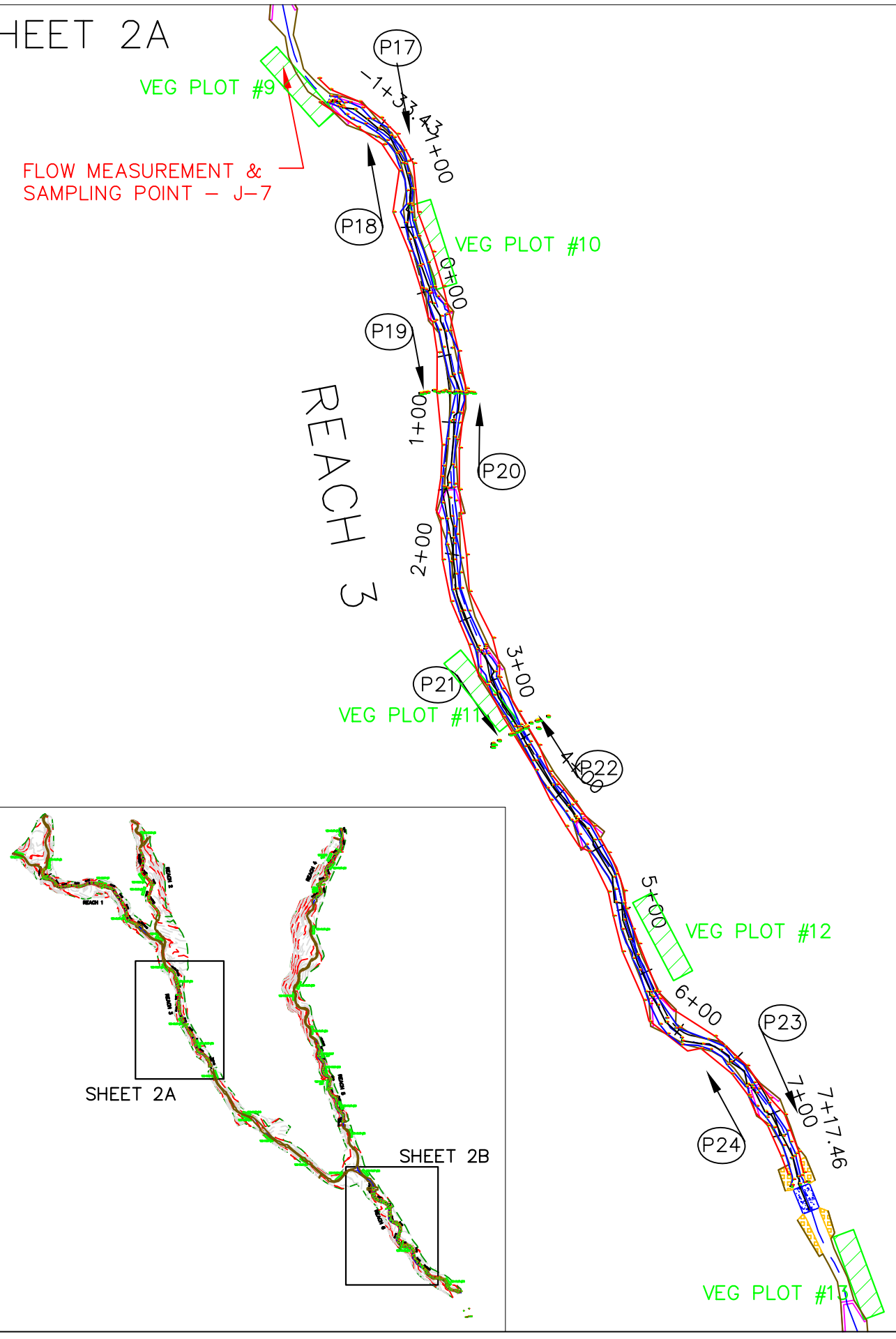
PURLEAR CREEK – PHASE 1
WILKES COUNTY, N.C.

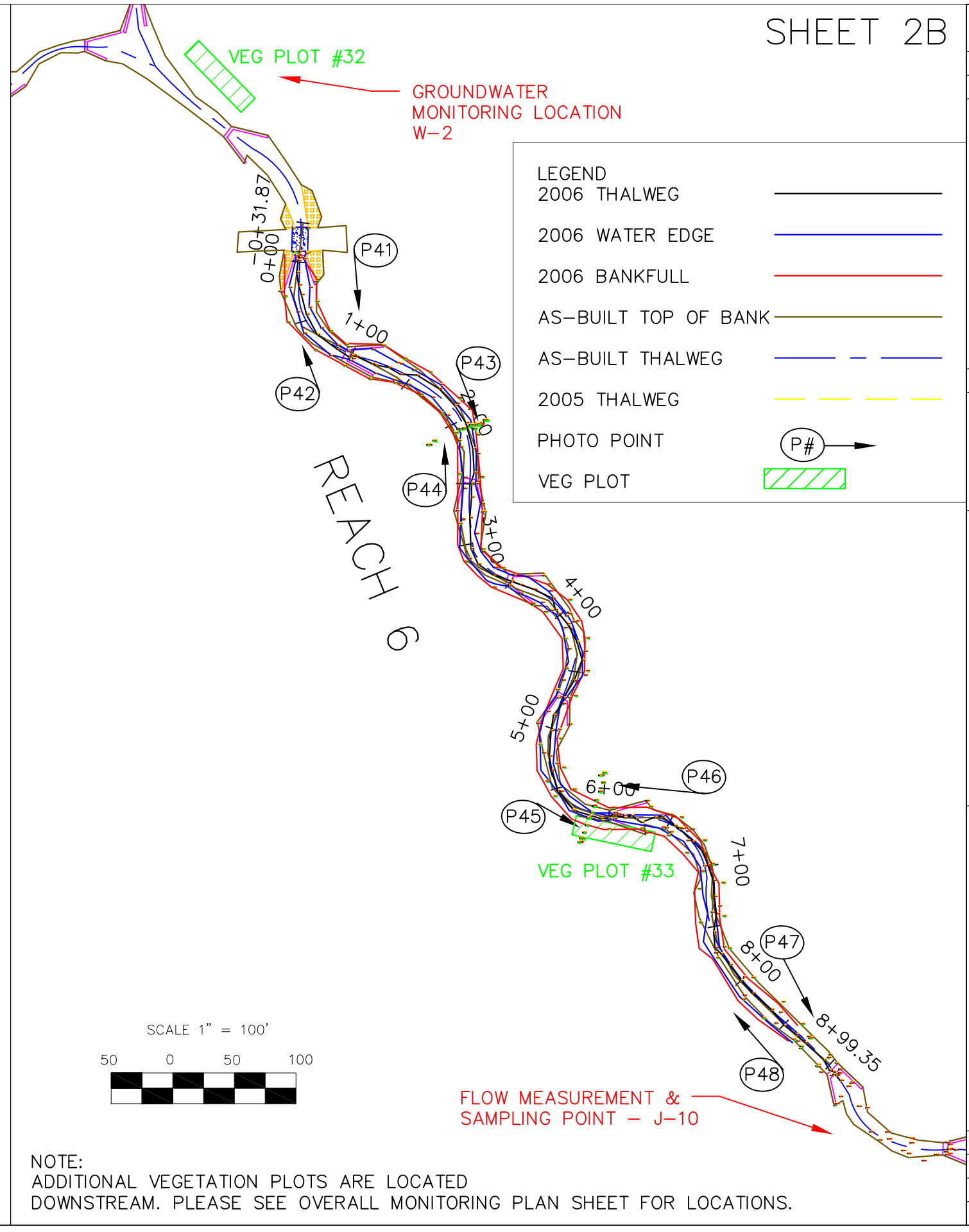
FIGURE 2a. MONITORING PLAN
SHEET – REACHES 1 & 2

DATE 03/01/2006
PROJECT NO. 294
FILENAME PULEAR ASBUILT 05.DWG
SHEET NO. MONITORING 1 of 3

SHEET 2A

SHEET 2B





LEGEND
- 2006 THALWEG
- 2006 WATER EDGE
- 2006 BANKFULL
- AS-BUILT TOP OF BANK
- AS-BUILT THALWEG
- 2005 THALWEG
- PHOTO POINT P#
- VEG PLOT

SCALE 1" = 100'

50 0 50 100

NOTE:
ADDITIONAL VEGETATION PLOTS ARE LOCATED DOWNSTREAM. PLEASE SEE OVERALL MONITORING PLAN SHEET FOR LOCATIONS.

NO	AS-BUILT PLAN	DRN	CHK	DATE
1	REVISIONS	DRC	DAB	03/01/06

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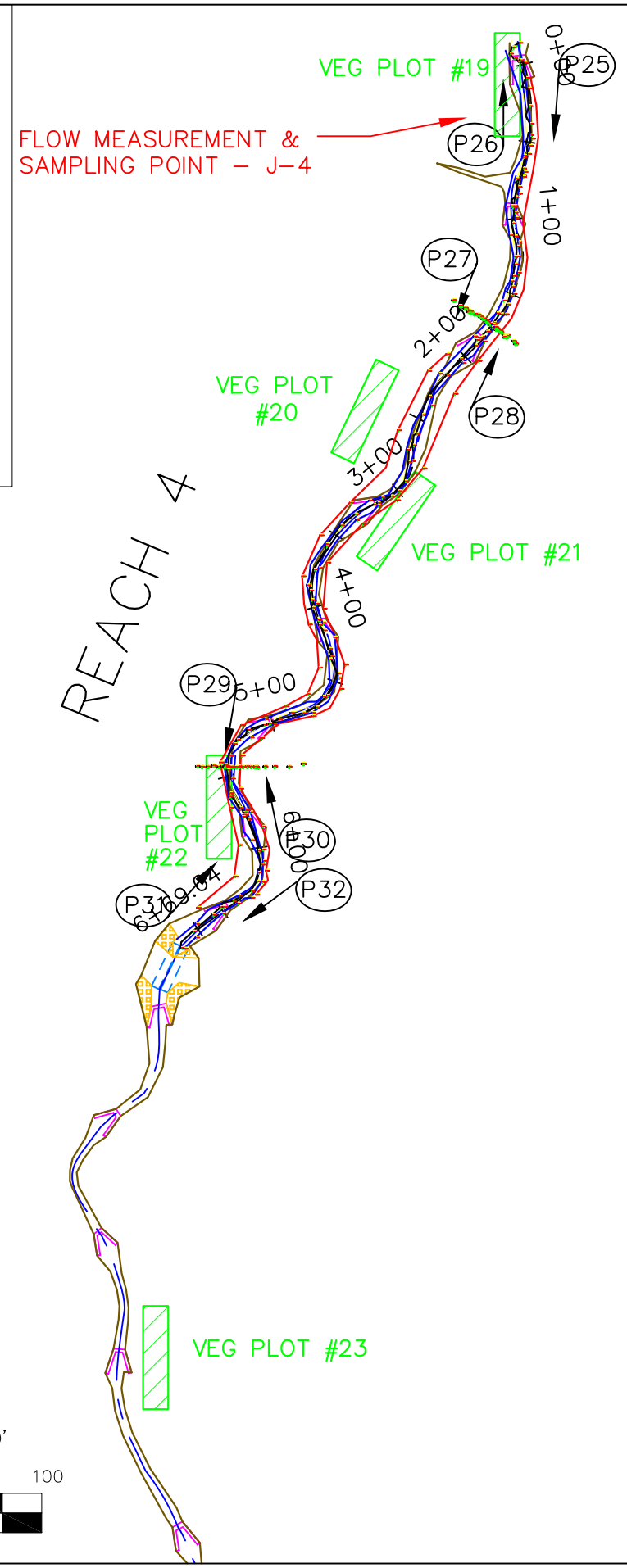
PURLEAR CREEK – PHASE 1
WILKES COUNTY, N.C.

FIGURE 2b. MONITORING PLAN
SHEET – REACHES 3 & 6

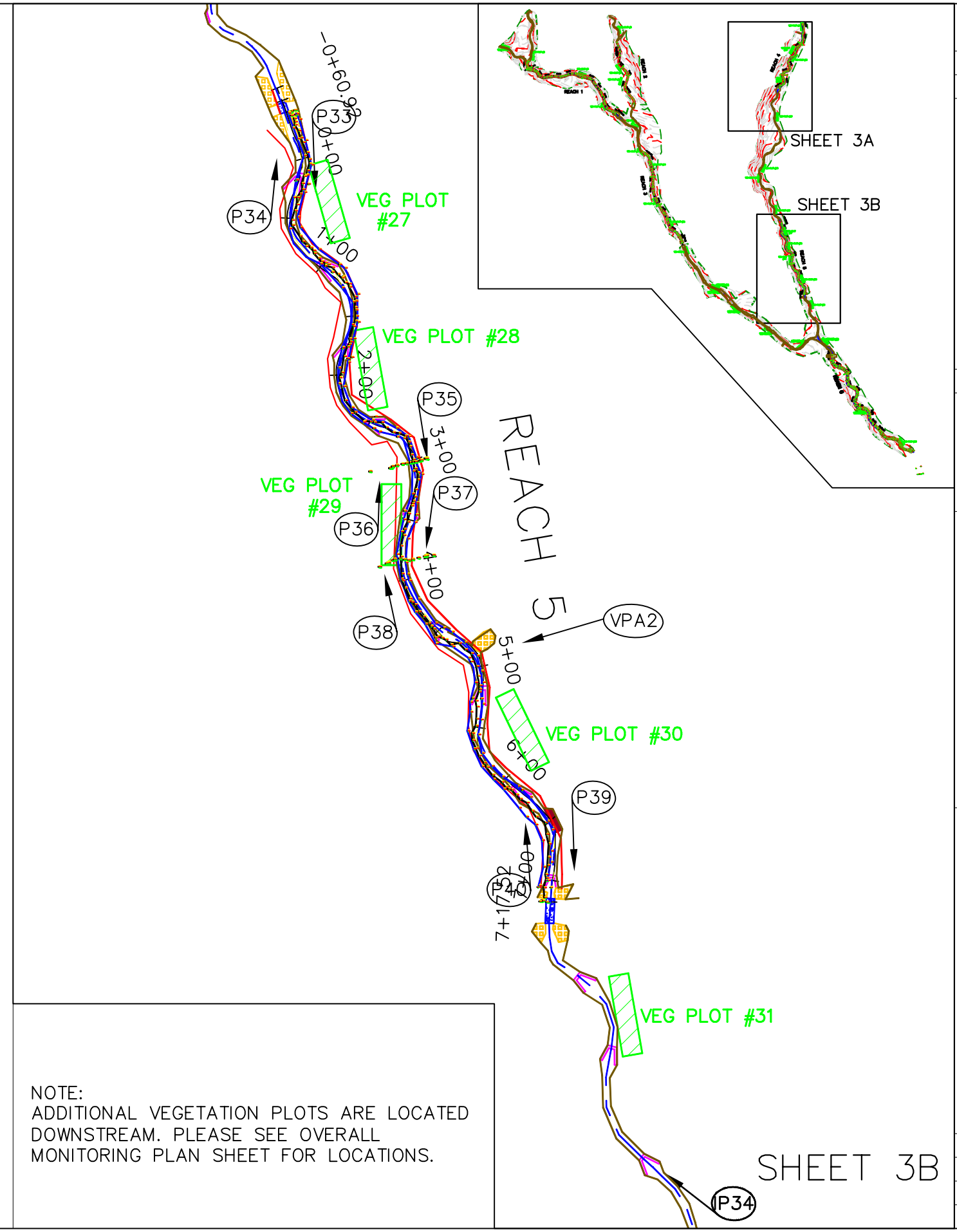
DATE 03/01/2006
PROJECT NO. 294
FILENAME PULEAR ASBUILT 05.DWG
SHEET NO. MONITORING 2 of 3

LEGEND
2006 THALWEG
2006 WATER EDGE
2006 BANKFULL
AS-BUILT TOP OF BANK
AS-BUILT THALWEG
2005 THALWEG
PHOTO POINT P#
VEG PLOT



SCALE 1" = 100'
50 0 50 100

SHEET 3A



SHEET 3B

NOTE:
ADDITIONAL VEGETATION PLOTS ARE LOCATED DOWNSTREAM. PLEASE SEE OVERALL MONITORING PLAN SHEET FOR LOCATIONS.

NO	MONITORING PLAN	DRC	DAB	03/01/06
	REVISIONS	DRN	CHK	DATE

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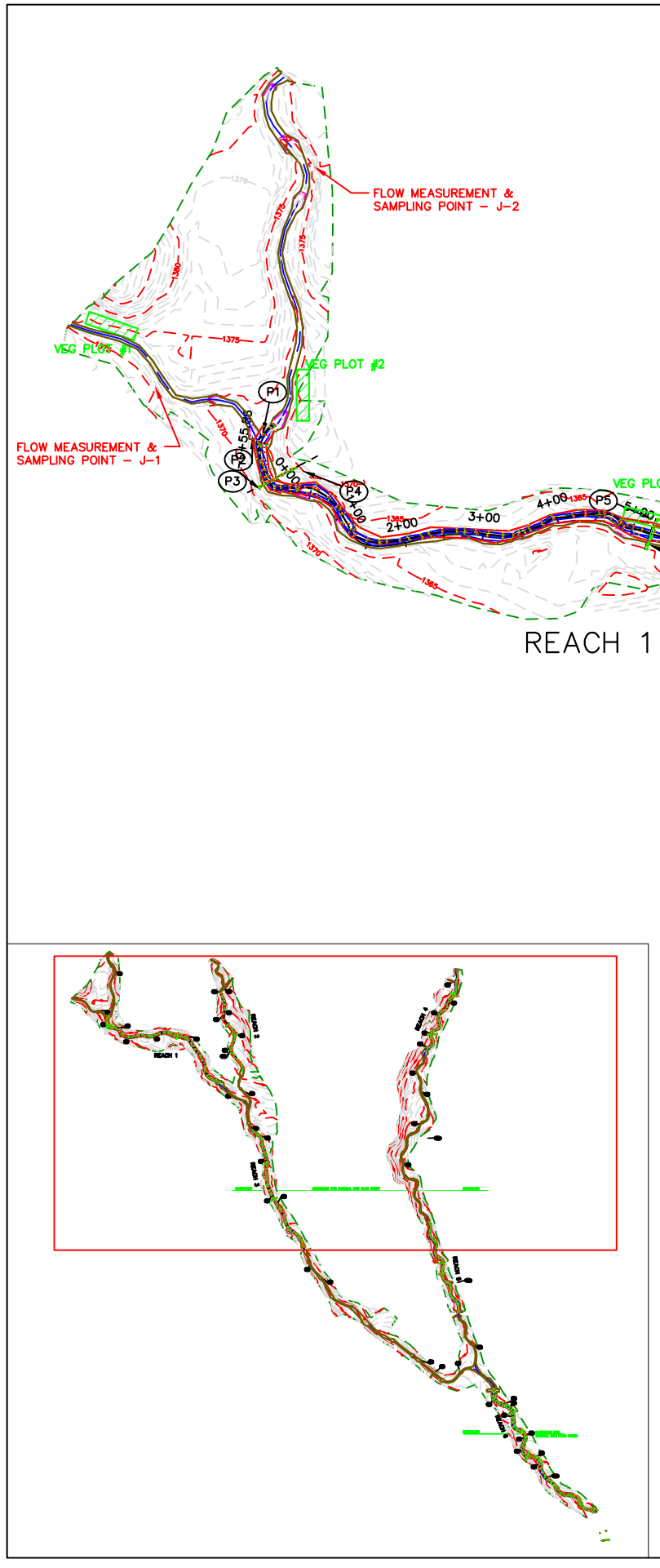
PURLEAR CREEK – PHASE 1
WILKES COUNTY, N.C.

FIGURE 2c. MONITORING PLAN
SHEET – REACHES 4 & 5

DATE 03/01/2006
PROJECT NO. 294
FILENAME PULEAR ASBUILT 05.DWG
SHEET NO. MONITORING 3 of 3



LEGEND
2006 THALWEG
2006 WATER EDGE
2006 BANKFULL
AS-BUILT TOP OF BANK
AS-BUILT THALWEG
2005 THALWEG
PHOTO POINT
VEG PLOT

FLOW MEASUREMENT & SAMPLING POINT – J-1
FLOW MEASUREMENT & SAMPLING POINT – J-2
FLOW MEASUREMENT & SAMPLING POINT – J-3
FLOW MEASUREMENT & SAMPLING POINT – J-4
FLOW MEASUREMENT & SAMPLING POINT – J-5
FLOW MEASUREMENT & SAMPLING POINT – J-7
VEG PLOT #1
VEG PLOT #2
VEG PLOT #3
VEG PLOT #4
VEG PLOT #5
VEG PLOT #6
VEG PLOT #7
VEG PLOT #8
VEG PLOT #9
VEG PLOT #10
VEG PLOT #11
VEG PLOT #12
VEG PLOT #19
VEG PLOT #20
VEG PLOT #21
VEG PLOT #22
VEG PLOT #23
VEG PLOT #24
VEG PLOT #25
VEG PLOT #26
REACH 1
REACH 2
REACH 3
REACH 4
MATCHLINE
MATCHLINE FOR OVERALL SITE PLAN SHEET
MATCHLINE

SCALE 1" = 200'
100 0 100 200

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NO	AS-BUILT PLAN	DRN	CHK	DATE
1	REVISIONS	DRC	DAB	03/01/06

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PURLEAR CREEK – PHASE 1
WILKES COUNTY, N.C.

FIGURE 2d – OVERALL
MONITORING PLAN SHEET

DATE 03/01/2006
PROJECT NO. 294
FILENAME PULEAR ASBUILT 05.DWG
SHEET NO. MON OVERALL 1 of 2

MATCHLINE

MATCHLINE FOR OVERALL SITE PLAN SHEET

MATCHLINE

REACH 3

REACH 5

REACH 6

VEG PLOT #11

VEG PLOT #12

VEG PLOT #13

VEG PLOT #14

VEG PLOT #15

VEG PLOT #16

VEG PLOT #17

VEG PLOT #18

VEG PLOT #26

VEG PLOT #27

VEG PLOT #28

VEG PLOT #29

VEG PLOT #30

VEG PLOT #31

VEG PLOT #32

VEG PLOT #33

VEG PLOT #34

GROUNDWATER MONITORING LOCATION W-1

GROUNDWATER MONITORING LOCATION W-2

FLOW MEASUREMENT & SAMPLING POINT – J-10

FLOW MEASUREMENT &

SCALE 1" = 200'

100 0 100 200

LEGEND

2006 THALWEG

2006 WATER EDGE

2006 BANKFULL

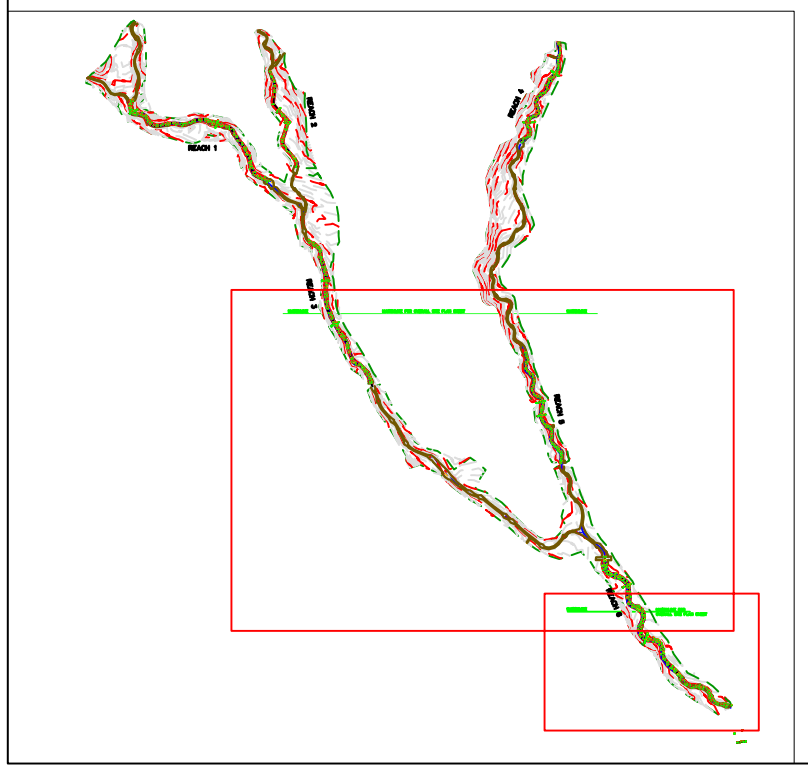
AS-BUILT TOP OF BANK

AS-BUILT THALWEG

2005 THALWEG

PHOTO POINT P#

VEG PLOT



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NO	AS-BUILT PLAN	REVISIONS	DRN	CHK	DATE
1			DRC	DAB	03/01/06

PURLEAR CREEK – PHASE 1
WILKES COUNTY, N.C.

FIGURE 2e – OVERALL MONITORING PLAN SHEET

DATE 03/01/2006

PROJECT NO. 294

FILENAME PULEAR ASBUILT 05.DWG

SHEET NO. MON OVERALL 2 of 2

III. Project Condition and Monitoring Results

Results of the 2006 monitoring are shown below. Monitoring was conducted in June of 2006.

A. Vegetation Assessment

Twenty-eight (28) vegetation monitoring plots were surveyed in the riparian buffer of the Purlear Phase I project. All the plots had been previously established and sampled in 2005. Plot numbering is consistent with numbering from the 2005 monitoring report.

Vegetation in this second year of monitoring appeared highly successful. Herbaceous vegetation on the banks and the floodplain is dense. Large areas of the floodplain are covered with native rushes, planted warm-season grasses are thriving in many areas, and the banks and edges of structures are well vegetated. Naturally regenerating *Rubus* plants are becoming common, increasing physiognomic complexity and food supply within the buffer. Planted trees and shrubs were doing well along the entire buffer. Willow trees especially are thriving, with many trees reaching 10 or more feet in height.

Many plots show higher planted stem numbers in 2006 than in 2005. This is due to more intensive sampling effort (many plots were sampled with a 5-person team), and also to larger stems that can be easily spotted in the tall grass. Many alder trees were measured in the plots, and were of a size consistent with planted material. However, since the total number of alder trees within plots increased from 2 (2005 sampling) to 64 (2006 sampling), most of these trees were classified as naturally regenerated. Observations at other mountain projects have shown that naturally regenerated alder can surpass planted material in size within a few years. While alder was the only naturally regenerated species showing up in plots, naturally regenerated pine and sourwood trees are present on the site.

Because there were higher numbers of planted stems in 2006 than in 2005, tree survival for most species is difficult to estimate. For species that did show a decrease in planted live stems between 2005 and 2006, survival was generally high. The only exception was chokeberry (*Aronia arbutifolia)*, and sample size was low (n = 11).

Fescue (*Festuca* spp.) is common in the buffer, increasing in density toward the fences. However, planted tree survival was high, indicating that fescue is not creating significant planted stem mortality. No action is recommended for fescue removal at this time. A few individuals of Chinese privet (*Ligustrum sinense*) were spotted this year.

The following tables summarize vegetation and soils results for 2006 monitoring. Soil data from the soil survey are summarized in Table V. Raw vegetation data can be found in Appendix A. Problem areas are listed in Table VI – there were only three small problem areas throughout this long project. Vegetation plot data are summarized in Table VII below. Photos of each vegetation plot can be found in the vegetation photo log located in Appendix A.

Table V. Preliminary Soil Data Purlear Creek Phase I / Project # 294					
Series	**Max Depth (in.)**	**% Clay on Surface**	**K**	**T**	**OM %**
Braddock (BrD2)	60	27-40	0.32	3	0.5-1
Chewacla (CkA)	60	10-25	0.28	5	1-4
Evard-Cowee complex (EsE)	60	5-20	0.15	5	1-5
Masada (MaB2)	60	20-35	0.24	4	1-3
Masada (MaC2)	60	20-35	0.24	4	1-3
Pacolet (PcB2)	60	20-35	0.24	2	0.5-1
Pacolet (PcC2)	60	20-35	0.24	2	0.5-1
Rion (RnD)	60	5-20	0.24	3	0.5-2
State (StB)	72	5-20	0.28	5	<2
Tate (TaD)	60	5-20	0.24	5	1-3
Tate-Cullowhee complex (TcC)	60	5-20	0.24	5	1-3
Wehadkee (WhA)	60	7-20	0.24	5	2-5

Table VI. Vegetative Problem Areas Purlear Creek Phase I / Project # 294				
Issue	**UTM N**	**UTM E**	**Probable Cause**	**Photo #**
Bare floodplain	4006028	473744	Head cut from pasture channel	VPA-1
Bare floodplain	4006168	473771	Head cut from pasture channel	VPA-2
Bare bank	4006343	473269	Constructed steep slope	VPA-3

Table VII - Stem Counts by Plot Purlear Creek Phase I / Project #294															
Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Shrubs															
Aronia arbutifolia										1					
Cephalanthus occidentalis							1	1							
Cornus amomum	4	5	14	23	8	8	28	1		8	7	10	5		5
Salix nigra	5	15	3	4	2	13	3	15	1		3		6	2	4
Sambucus canadensis														1	
Trees															
Acer rubrum												1			1
Alnus serrulata				2											
Betula nigra	1			4	2	1	2	2			5	1	5	7	
Carpinus caroliniana										3					
Celtis occidentalis															1
Diospyros virginiana												1			1
Fraxinus pennsylvanica	3	1	1	7	12	2				5			2	2	5
Hamamelis virginiana									1			4			
Juglans nigra		1													
Nyssa sylvatica															
Platanus occidentalis		2													
Populus deltoides										1					
Quercus spp.								1							
Quercus michauxii		4		3	6	4		2		1	6	2	2	3	
Quercus phellos	3			1	3	7	6	4	5			2			
Totals	**16**	**28**	**18**	**44**	**33**	**35**	**40**	**26**	**7**	**19**	**21**	**21**	**20**	**15**	**17**

Species	16	17	18	21	23	24	26	29	30	31	32	33	34	**2005 totals**	**2006 totals**	**Survival %**
Shrubs																
Aronia arbutifolia						1			1				1	11	4	36%
Cephalanthus occidentalis						1							1		4	
Cornus amomum	27	10			3	8	2	9	14	12	12	1	31	259	255	98%
Salix nigra	2	20		1	5	2		1	1	19		10	5	140	142	
Sambucus canadensis						1				1	1			6	4	67%
Trees																
Acer rubrum															2	
Alnus serrulata														2	2	100%
Betula nigra	1	2	6				3		1	7	8	5	3	67	66	99%
Carpinus caroliniana															3	
Celtis occidentalis			2	1										1	4	
Diospyros virginiana		1			3	1					1	6	3	14	17	
Fraxinus pennsylvanica	2	4		5		1	6	7		2	1		1	68	69	
Hamamelis virginiana														3	5	
Juglans nigra															1	
Nyssa sylvatica					1	1				4		2			8	
Platanus occidentalis															2	
Populus deltoides										1		2	1	5	5	100%
Quercus spp.															1	
Quercus michauxii	2	1	1	4	4	3	1		6		3	2	1	66	61	92%
Quercus phellos	10				2	2	1	1		8		8		53	63	
Totals	**44**	**38**	**9**	**11**	**18**	**21**	**13**	**18**	**23**	**54**	**26**	**36**	**47**	**695**	**718**	

B. Stream Assessment

The stream channel is in a stable condition, with only localized problem areas identified in this survey.

Hydrologic Assessment

Continuous stage recorders were installed at various locations along the channel in the winter of 2005. Table VIII lists the number of events equal to or greater then bankfull. Over the past year, there were 3 events documented that were out of bank. A graph of 2006 monitoring period flow data is included in Appendix B.

Table VIII. Verification of Bankfull Events

Purlear Creek Phase I / Project # 294

Date of Data Collection	Date of Occurrence	Method	Photo # (if available)
7/1/2006	06/26/2006	On-site transducer/data logger	
9/1/2006	08/30/2006	On-site transducer/data logger	
11/1/2006	10/21/2006	On-site transducer/data logger	

Note: No peak flow data was collected prior to the 2006 monitoring period.

Bank Stability Assessment

Table IX lists the results of a BEHI (Bank Hazard Erosion Assessment) conducted during the 2006 monitoring period. In general, the banks scored very low to low. The primary factors leading to those scores were low bank height ratios, full surface protection, excellent root density, and moderate bank angles. Estimated sediment yield was not calculated.

Table IX. Project BEHI Conditions

Purlear Creek Phase I / Project # 294

Time Point	Segment/ Reach	Linear Footage*	Extreme		Very High		High		Moderate		Low		Very low	
	lf		ft	%	ft	%	ft	%	ft	%	ft	%	ft	%
2006	Reach I	1000	0	0%	0	0%	150	15%	250	25%	200	20%	400	40%
	Reach II	260	0	0%	0	0%	0	0%	50	19%	40	15%	170	65%
	Reach III	700	0	0%	40	6%	0	0%	280	40%	200	29%	180	26%
	Reach IV	650	0	0%	0	0%	0	0%	50	8%	100	15%	500	77%
	Reach V	700	0	0%	0	0%	0	0%	75	11%	100	14%	525	75%
	Reach VI	900	0	0%	0	0%	120	13%	200	22%	300	33%	280	31%
	Project Total	**4210**	**0**	**0%**	**40**	**1%**	**270**	**6%**	**905**	**21%**	**940**	**22%**	**2055**	**49%**

**Linear footage includes the study reaches only.*

Project Problem Area

Table X lists the project problem areas for 2006. Also listed are problems identified in 2005. If the problem no longer exists or if the potential for degradation has diminished, it is noted in the comments.

Table X. 2006 Purlear Problem Areas				
Feature Issue	**Reach**	**Problem/ Photo**	**Station Numbers**	**Suspected Cause**
Bed Elevation Drop	Reach 1	IP1	Above Study Reach	Steep Channel Grade Drop Designed into Structure
		IP2	Above Study Reach	
		IP3	Above Study Reach	
		IP4	0+30	
		IP5	1+00	
		IP7	5+50	
		IP8	Below Study Reach	
	Reach 2	IP9	Above Study Reach	
		IP11	-1+30	
		IP13	0+74	
		IP14	1+75	
	Reach 3	IP18	0+00	
		IP19	2+77	
		IP21	Below Study Reach	
	Reach 4	IP29	6+50	
	Reach 5	IP30	Above Study Reach	
		IP34	Below Study Reach	
	Reach 6	IP35	Above Study Reach	
		IP37	1+00	
		IP40	3+50	
		IP42	4+70	

2006 Purlear Problem Areas				
Reach	**Problem/ Photo Number**	**Feature Issue**	**Station Numbers**	**Suspected Cause**
Reach 1	IP6	Bank Erosion	4+25	High shear stress, poor vegetation Note: Vegetation is establishing in this area, reducing future risk.
Reach 2	IP 14a	Large Drop and Piping	2+20	
Reach 3	IP17	Double Drop Vane w/ Bank Erosion	Above Study Reach	Constriction of Flow Note: Vegetation is establishing in this area, reducing future risk.
	IP 18	Slump Arm	0+00	Poor Soils, Lack of sufficient footers
	IP20	Erosion / Ground Hog	4+00	Ground Hogs
	IP24	Excess Nutrients through Buffer	Below Study Reach	Farmer Note: Area is significantly more well vegetated then last year.
Reach 6	IP36	Tile	Above Study Reach	Farmer Note: Could not field locate this pipe.
	IP39	Tile	2+10	Farmer Note: Could not field locate this pipe.
	IP40	Vane Undermine Rt.	3+50	Poor Soils, Lack of sufficient footers
	IP41	Bank Erosion	4+00	High shear stress, poor vegetation Note: Area is improving due to vegetation establishment.
	IP44	Bank Erosion	7+50	High shear stress, poor vegetation Note: Area is improving due to vegetation establishment.

The following were problem areas noted in 2005 that are no longer of concern due to the reason listed.

Feature Issue	Reach	Problem/ Photo	Station Numbers	Note
Bed Elevation Drop	Reach 2	IP10	Above Study Reach	Dense vegetation has established around the structure minimizing risk to the structure
Bed Elevation Drop		IP12	-0+65	Dense vegetation has established around the structure minimizing risk to the structure
Bed Elevation Drop		IP15	Below Study Reach	Dense vegetation has established around the structure minimizing risk to the structure
Bed Elevation Drop	Reach 3	IP16	Above Study Reach	Dense vegetation has established around the structure minimizing risk to the structure
Bed Elevation Drop		IP23	Below Study Reach	Dense vegetation has established around the structure minimizing risk to the structure
Excess Nutrients through Buffer	Reach 4	IP25	0+50	Farmer has fenced out cattle and an excellent stand of vegetation has now established
Bed Elevation Drop		IP26	1+84	Dense vegetation has established around the structure minimizing risk to the structure
Bed Elevation Drop		IP27	3+15	Dense vegetation has established around the structure minimizing risk to the structure
Bed Elevation Drop		IP28	5+00	Dense vegetation has established around the structure minimizing risk to the structure
Bed Elevation Drop	Reach 5	IP31	Above Study Reach	Dense vegetation has established around the structure minimizing risk to the structure
Bed Elevation Drop		IP32	Above Study Reach	Dense vegetation has established around the structure minimizing risk to the structure
Bed Elevation Drop		IP33	Above Study Reach	Dense vegetation has established around the structure minimizing risk to the structure
Vane Slump and Erosion	Reach 6	IP38	1+00	Vegetation has now established in the erosion area. No signs of risk to the structure exists.
Bed Elevation Drop		IP43	6+00	Dense vegetation has established around the structure minimizing risk to the structure

Stream Visual Assessment

Table XI lists the results of a visual assessment conducted over each study reach. The data used to calculate the percentages listed in this table are found in Table B1(a through f) in Appendix B.

Channel Morphology

Tables XII a and b list baseline channel morphology and hydraulic conditions for the main stem of Purlear Creek and the Tributaries within the project. Channel morphology results from the current years survey and prior years surveys are listed in Tables XIII a though f. Results from each study area are described below. Problem area photos, problem area plan views, and raw and analyzed data can be found in Appendix B.

Area 1 – Upper Main Reach

The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. This reach includes 8 cross vane grade controls with downstream elevation drops of greater than 0.5 ft. Three of these were located within the monitored reach, and four were located upstream. All were of concern in 2005 and remain a concern in 2006 due to the large elevation difference through the vane. The risk of loss of grade control remains. The 2006 survey included slope measurements for two large cross vane grade drops that were not included in the as-built condition survey. This explains the increase in water surface and bankfull slope between as-built (2004) and 2006 (MY-02). The water surface slope is similar to 2005.

Channel cross sections showed no significant changes in riffle cross sectional area but a large decrease in pool area. The source of the aggradation in the pool is likely off-site bank erosion directly upstream of the project. The pool section is located at the upper end of the project. This aggradation is not typical of the other pools in this reach. The reduction in area occurred in the point bar area although the max depth did decrease 0.4 feet from as built conditions. Overall pool quality has decreased but the section is not eroding and the meander is not migrating. Riffle dimensions remain consistent with as-built conditions.

The typical bed material particle size increased in both cross-sections over the past year although the D50 and D84 are significantly finer than as-built conditions. Channel pattern is similar to as-built conditions. Dense vegetation is establishing along the channel banks. This vegetation is providing an excellent root mass to stabilize the banks. There are no areas of visible meander migrations throughout this reach. One area of localized erosion exists at station 4+25. This erosion area appears to be stabilizing as vegetation is becoming established. No additional erosion has occurred over the past year.

A visual assessment of this reach showed a total decrease in number of riffles and pools but those that remain are mostly stable. Meanders are maintaining location and stability throughout the reach. The channel bed is mostly stable with four areas totaling 160 feet of minor degradation. Channel stabilization structures scored lower on the assessment due to several at-risk structures with large elevation drops through the structures. No structures have failed their purpose in this reach.

Area 2 - Upper Middle Tributary

The channel profile is similar to the as-built survey condition, with the majority of bedform features maintaining their locations and depths. This reach includes 7 cross vane grade controls with downstream elevation drops of greater than 0.5 ft. Of the 7, only four remain a concern for future stability. The remaining three have become embedded with dense vegetation around the vane arms. This vegetation has greatly reduced the risk of the vanes failing in the future. The average water surface slope is consistent with as-built conditions.

Channel cross sections have decreased in area significantly over the past year. Similar to Reach 1, sediment coming from off-site is the likely source. Riffle cross sectional area decreased from 12.4 to 8.6 sq ft and pool area decreased from 13.4 to 7.6 sq ft. Throughout this reach, aggradation is evident along all channel banks. Dense vegetation is doing an excellent job of inducing aggradation along the channel banks. Channel thalweg is being maintained in the proper location and banks show no signs of degrading.

The typical bed material particle size decreased as a result of the high fine sediment load entering the system. Channel pattern is similar to as-built conditions. Dense vegetation is establishing along the channel banks. This vegetation is providing an excellent root mass to stabilize the banks. There are no areas of visible meander migrations throughout this reach. No erosion areas were observed along this reach.

A visual assessment of this reach showed a decrease in riffle condition due to sediment overloading this reach. Meanders are maintaining location and stability throughout the reach. Channel stabilization structures scored the lowest on the assessment due to several at risk with large elevation drops through the structures. No structures have failed their purpose in this reach.

Area 3 – Middle Main Reach

The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. This reach includes 5 cross vane grade controls with downstream elevation drops of greater than 0.5 ft. Two of these were removed from concern since dense vegetation is establishing along the vane arm, reducing the risk of piping or undermining. The three remaining structures continue to be at risk, but have not changed condition over the past year. Average water surface slope remains consistent with as-built conditions.

Channel cross sections are stable and remain similar to as-built conditions. The pool decreased area from 44.8 to 37 sq ft. Reduction is resulting from the pool filling in with sediment. Channel banks on both cross sections remain well vegetated and stable.

The typical bed material particle size remained similar to 2005 measurements with a slight decrease in D50 at the riffle and an increase in D50 and D84 in the pool. No aggradation or degradation has occurred in the channel, indicating the channel appears to be transporting the sediment load delivered to it by its watershed.

Channel pattern is similar to as-built conditions. Since the channel in this area is mostly straight, no pattern measurements were conducted. Dense vegetation is establishing along the channel banks. This vegetation is providing an excellent root mass to stabilize the banks. There are two areas of erosion along the reach. Both are more vegetated and appear more stable then in 2005 but should continue to be monitored.

A visual assessment of this reach showed bedform and channel geometry in excellent condition. Channel stabilization structures scored the lowest on the assessment due to several at risk structures with large elevation drops through the structures. No structures have failed their purpose in this reach.

Area 4 – Lower Middle Tributary (Upper Section)

The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. This reach includes 5 cross vane grade controls with downstream elevation drops of greater than 0.5 ft. Four of the vanes appear stable due to the dense vegetation surrounding the vane arms. The vegetation has reduced the risk of piping or undercutting. One vane, station 6+50, remains an area of concern.

Channel cross sections are stable and remain similar to as-built conditions. A small decrease in area has occurred in both sections and is likely the result of a large sediment load entering the project from channel instability above this project. Channel banks are well vegetated and appear stable.

The typical bed material particle size continues to decrease as further evidence of the large sediment load entering the project from up stream. Dense vegetation has engulfed the channel which is adding to the sediment trapping along this reach.

Channel pattern is similar to as-built conditions. Dense vegetation is establishing along the channel banks. This vegetation is providing an excellent root mass to stabilize the banks. There are no areas of visible meander migrations throughout this reach. No erosion areas were observed along this reach.

One area of concern from 2005 was near the beginning of the project where waste is washing directly into creek in large volume. The farmer has fenced out the cattle from this area and vegetation has reestablished and this area is no longer a problem.

A visual assessment of this reach showed bedform degraded slightly as a result of sediment deposition. Channel geometry rated excellent. Channel stabilization structures scored the lowest on the assessment due to several at risk structures with large elevation drops through the structures. No structures have failed their purpose in this reach.

Area 5 - Lower Middle Tributary (Lower Section)

The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. This reach includes 5 cross vane grade controls with downstream elevation drops of greater than 0.5 ft. Three of the vanes appear stable due to the dense vegetation surrounding the vane arms. The vegetation has reduced the risk of piping or undercutting. Two vanes remain a concern.

Channel cross sections are very stable and remain similar to as-built conditions. A small decrease in area has occurred in both sections. Vegetation has become well established within the active channel and is adding to the sediment deposition along the channel banks. Channel banks are well vegetated and appear stable.

The typical bed material particle size decreased in both sections. A large amount of sediment is washing into this reach from upstream (reach 4). Dense vegetation has engulfed the channel which is adding to the sediment trapping along this reach.

Channel pattern is similar to as-built conditions. Dense vegetation is establishing along the channel banks. This vegetation is providing an excellent root mass to stabilize the banks. There are no areas of visible meander migrations throughout this reach. No erosion areas were observed along this reach.

A visual assessment of this reach showed bedform degraded slightly as a result of sediment deposition. Channel geometry rated excellent. Channel stabilization structures scored high indicating the structures are functioning well.

Area 6 – Lower Main Reach

The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. This reach includes 5 cross vane grade controls with downstream elevation drops of greater than 0.5 ft. Four of the vanes are within the study reach and one is located upstream. One appears to have stabilized with dense vegetation and is no longer a concern.

Channel cross sections have decreased in area over the past year. The riffle continues to increase in maximum depth and appears to be transitioning into a pool feature. The right bank is building as dense vegetation traps sediment. Both banks remain well vegetated and stable.

The left bank of the pool cross-section has not continued to migrate as it had between 2004 and 2005. Dense herbaceous cover and willow stakes are quickly establishing and the bank appears to have stabilized.

The typical bed material particle size increased in the riffle cross-section and remained constant in the pool cross-section. No aggradation or degradation has occurred in the channel, indicating the channel appears to be transporting the sediment load delivered to it by its watershed.

Channel pattern is similar to as-built conditions. Dense vegetation is establishing along the channel banks in most areas. This vegetation is providing an excellent root mass to stabilize the banks. The only observed area of meander migration is the area along the pool cross-section although this appears to have stabilized.

Two drain tiles that were installed in fall 2005 could not be field located but appear to still be draining water through the buffer and adjacent field.

A visual assessment of this reach showed bedform degraded slightly as a result of downcutting between grade control structures. Channel geometry scored lower due to several meanders showing signs of erosion. Channel stabilization structures scored the low on the assessment due to several at risk structures with large elevation drops through the structures. No structures have failed their purpose in this reach.

Stream problem areas (described above) are listed in Table X. A categorical stream feature visual stability assessment can be found in Table XI. Baseline morphology and summary morphology data are located in tables XII and XIII, respectively.

Table XIIa. Baseline Morphology and Hydraulic Summary

Project Number and Name: 249(Purlear Creek) - Main Stem

Parameter	USGS Gage Data			Regional Curve Interval			Pre-Existing				Design				Project Reference Stream			
							Main Channel				Proposed Reach	Proposed	Propsed Reach	Proposed Reach	Reach	Upper Big	Reach Basin	Reach Basin
				Middle Main			(2A2)[1]	(2A)[1]	(2)[1]	(1A)[1]	(2A2)[1]	(2A)[1]	(2)[1]	(1A)[1]	Upstream 1	Warrior Creek	Creek 2	Creek
Dimension	Min	Max	Med	Min	Max	Med					Med	Med	Med	Med	Med	Med	Med	Med
BF Width (ft)	USGS gage data is unavailable for this project						22	14.8	16.2	37	17.2	17.6	18	25	12.5	15.7	30.7	33.2
Floodprone Width (ft)											31	31.7	30.6	70	18	30	85	329
BF Cross Sectional Area (ft2)							10.6	15.6	17.8	33.1	19	20	22.7	29	7.4	21.9	57.4	68.4
BF Mean Depth (ft)							0.5	1.1	1.1	0.9	1	1.1	1.3	1.1	0.6	1.4	1.9	2.1
BF Max Depth (ft)							1.3	1.5	1.6	2.2	1.5	1.7	1.8	1.5	1	1.8	2.5	3.1
Width/Depth Ratio							44	13.5	14.7	41.1	17.2	16	13.8	22.7	20.8	11.2	16.2	15.8
Entrenchment Ratio							1.4	2.2	4.3	2.2	1.8	1.8	1.7	2.8	1.4	1.9	2.8	9.9
Wetted Perimeter(ft)																		
Hydraulic radius (ft)																		
Pattern																		
Channel Beltwidth (ft)							N/A	N/A	N/A	N/A	29.2	29.9	30.6	67.5	21	N/A	105	64.7
Radius of Curvature (ft)							N/A	N/A	N/A	N/A	27.5	28.2	28.8	62.5	20.6	N/A		51.2
Meander Wavelength (ft)							N/A	N/A	N/A	N/A	172	176	180	275	100	N/A		350
Meander Width ratio							N/A	N/A	N/A	N/A	1.7	1.7	1.7	2.7	1.7	N/A		1.9
Profile																		
Riffle length (ft)																		
Riffle slope (ft/ft)															0.03	N/A	0.051	0.021
Pool length (ft)																		
Pool spacing (ft)							106	124	N/A	43	108	111	113	205	100	N/A	224	305
Substrate																		
d50 (mm)																		
d84 (mm)																		
Additional Reach Parameters																		
Valley Length (ft)																		
Channel Length (ft)																		
Valley Slope (ft)							0.022	0.016	0.015	0.01	0.013	0.013	0.011	0.01	0.017	N/A	0.014	N/A
Sinuosity							1	1	1.1	1	1.2	1.2	1.2	1.2	1.06	N/A	1.4	N/A
Water Surface Slope (ft/ft)																		
BF slope (ft/ft)																		
Rosgen Classification							F3	C4(Incised)→ G4	C4	C4(Incised)→ G4	B3c	B4c	B4c	C4c	B4c	B	C4	C4
Number of Bankfull Events																		
Extent of BF floodplain (acres)																		
Drainage Area (sq mile)							1.3	1.5	1.71	2.59	1.3	1.5	1.71	2.59	0.57	0.7	6.8	7.2
Max d(riff) / d(bkf) ratio							2.6	1.4	1.5	2.4	1.5	1.5	1.4	1.4	1.7	1.3	1.3	1.5
Low Bank Height to max Dbkf ratio							1.8	2.2	1.5	1.8	1	1	1	1	2.8	N/A	N/A	1.2
Avg Stream Slope							0.022	0.016	0.014	0.0096	0.016	0.016	0.013	0.009	0.016	N/A	0.01	0.014
Riffle Slope							0.028	0.03	0.01	0.01	0.03	0.03	0.02	0.01	0.03	N/A	0.051	0.021
Ratio of Riffle Slope to Avg. Slope							1.273	1.875	1	1	1.8	1.8	1.8	1.5	1.8	N/A	3.6	1.5
Pool Slope							0.001	0.001	0.01	0.002	0.002	0.002	0.001	0.003	0.002	N/A	0.0055	0.002
Ratio of Pool Slope to Avg. Slope							0	0.1	0.7	0.2	0.1	0.1	0.1	0.4	0.1	N/A	0.6	0.1
Maximum Pool Depth							1.9	2.3	2.2	2.1	2.2	2.4	2.9	2.2	1.3	N/A	3.1	4.8
Ratio of Pool Depth to Avg. Depth							3.8	2.1	2	2.3	2.2	2.2	2.2	2	2.2	N/A	1.6	2.3
Pool Width							21.4	13.6	30.6	20.2	17.2	17.6	18	35	12.5	N/A	40.6	50.3
Ratio of Pool Width to Bankfull Width							1	0.9	1.9	0.5	1	1	1	1.4	1	N/A	1.3	1.5
Pool Area							21.2	24.4	36.9	26.9	20.9	22	25	40.6	8	N/A	64.4	109.6
Ratio of Pool Area to Bankfull Area							2	1.6	2.1	0.8	1.1	1.1	1.1	1.4	1.1	N/A	1.1	1.6
Ratio of Pool to Pool Spacing							4.8	8.4	N/A	1.2	6.3	6.3	6.3	8.2	6.3	N/A	7.3	9.2
*BEHI																		
Bankfull Mean Velocity							N/A	N/A	5.3	4								
Bankfull Discharge, cfs							N/A	N/A	94.3	132.4								
Ratio of Meander Length to Meander Bankfull							N/A	N/A	N/A	N/A	10	10	10	11	8	N/A	11.4	10.5
Ratio of Radius of Curvature to Bankfull Width							N/A	N/A	N/A	N/A	1.6	1.6	1.6	2.5	1.6	N/A	3.4	1.5

Note: Reaches 2A2, 2A, and 2 compare to As-built study reach 2. Reach 1A compares to As-built study reaches 1, 3, and 6

Table XIIb. Baseline Morphology and Hydraulic Summary
Project Number and Name: 249 (Purlear Creek) - Tributaries

Parameter	USGS Gage Data			Regional Curve			Pre-Existing			Design			Project Reference Stream			
							Tributary			Proposed Reach	Proposed Reach	Proposed Reach	Reach	Upper Big Warrior Creek	Reach Basin Creek 2	Reach Basin Creek
				Middle Main			2A1	2B	3	(2A1)	(2B)	3	Upstream 1			
Dimension	Min	Max	Med	Min	Max	Med				Med	Med	Med	Med	Med	Med	Med
BF Width (ft)	USGS gage data is unavailable for this project						5.1	8.9	10	8.9	6.5	15	12.5	15.7	30.7	33.2
Floodprone Width (ft)							19	14	16	15.1	18.2	42	18	30	85	329
BF Cross Sectional Area (ft2)							2.8	6.1	13.4	5.2	2.8	15.8	7.4	21.9	57.4	68.4
BF Mean Depth (ft)							0.5	0.7	1.3	0.6	0.4	1	0.6	1.4	1.9	2.1
BF Max Depth (ft)							1.1	1.2	2	0.8	0.6	1.5	1	1.8	2.5	3.1
Width/Depth Ratio							10.2	12.7	7.7	17.6	17.6	15	20.8	11.2	16.2	15.8
Entrenchment Ratio							3.7	1.6	1.6	1.7	2.8	2.8	1.4	1.9	2.8	9.9
Wetted Perimeter(ft)																
Hydraulic radius (ft)																
Pattern																
Channel Beltwidth (ft)								N/A		15.1	17.6	40.5	21	N/A	105	64.7
Radius of Curvature (ft)								N/A		14.2	16.3	37.5	20.6	N/A	105.3	51.2
Meander Wavelength (ft)								N/A		89	71.5	165	100	N/A	350	350
Meander Width ratio								N/A		1.7	2.7	2.7	1.7	N/A	3.4	1.9
Profile																
Riffle length (ft)																
Riffle slope (ft/ft)													0.03	N/A	0.051	0.021
Pool length (ft)																
Pool spacing (ft)							31	40	N/A	62	53	123	100	N/A	224	305
Substrate																
d50 (mm)																
d84 (mm)																
Additional Reach Parameters																
Valley Length (ft)																
Channel Length (ft)																
Valley Slope (ft)							0.018	0.023	0.014	0.015	0.007	0.012	0.017	N/A	0.014	N/A
Sinuosity							1.5	1.2	1.1	1.2	1.2	1.2	1.06	N/A	1.4	N/A
Water Surface Slope (ft/ft)																
BF slope (ft/ft)																
Rosgen Classification							E5b	B5c	G4	B4c	C4	C4	B4c	B	C4	C4
Number of Bankfull Events																
Extent of BF floodplain (acres)																
Drainage Area (sq mile)							0.2	0.08	0.72	0.2	0.08	0.8	0.57	0.7	6.8	7.2
Max d(riff) / d(bkf) ratio							2.2	1.7	1.5	1.4	1.5	1.5	1.7	1.3	1.3	1.5
Low Bank Height to max Dbkf ratio							1.1	2.6	2.4	1	1	1	2.8	N/A	N/A	1.2
Avg Stream Slope							0.012	0.019	0.013	0.018	0.008	0.014	0.016	N/A	0.01	0.014
Riffle Slope							0.017	0.028	0.02	0.03	0.01	0.02	0.03	N/A	0.051	0.021
Ratio of Riffle Slope to Avg. Slope							1.417	1.474	1.5	1.8	1.5	1.5	1.8	N/A	3.6	1.5
Pool Slope							0.001	0.001	0.01	0.002	0.003	0.005	0.002	N/A	0.0055	0.002
Ratio of Pool Slope to Avg. Slope							0.1	0.1	0.4	0.1	0.4	0.4	0.1	N/A	0.6	0.1
Maximum Pool Depth							1.4	1.5	2.2	1.3	0.8	2	1.3	N/A	3.1	4.8
Ratio of Pool Depth to Avg. Depth							2.8	2.1	1.7	2.2	2	2	2.2	N/A	1.6	2.3
Pool Width							7.7	24.3	18.5	10.7	9.1	21	12.5	N/A	40.6	50.3
Ratio of Pool Width to Bankfull Width							1.5	2.7	1.9	1.2	1.4	1.4	1	N/A	1.3	1.5
Pool Area							5.7	19.8	24.1	6.2	3.9	22.1	8	N/A	64.4	109.6
Ratio of Pool Area to Bankfull Area							2	3.2	1.8	1.2	1.4	1.4	1.1	N/A	1.1	1.6
Ratio of Pool to Pool Spacing							6.1	4.5	N/A	7	8.2	8.2	6.3	N/A	7.3	9.2
*BEHI																
Bankfull Mean Velocity							N/A	N/A	6.4							
Bankfull Discharge, cfs							N/A	N/A	85.8							
Ratio of Meander Length to Meander Bankfull							N/A	N/A	N/A	10	11	11	8	N/A	11.4	10.5
Ratio of Radius of Curvature to Bankfull Width							N/A	N/A	N/A	1.6	2.5	2.5	1.6	N/A	3.4	

Note: Reaches 2A1, 2B, and 3 compare to As-built study reaches 4 and 5.

Table XIIIa. Morphology and Hydraulic Monitoring Summary for Area 1
Purlear Creek Phase I / Project # 294 - Upper Main

Parameter	Cross Section 1 Area 1 Pool						Cross Section 2 Area 1 Riffle					
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5
BF Width (ft)	29.9	29.6	22.7				26.7	26.4	31.4			
Floodprone Width (ft) (approx)							53	53	53			
BF Cross Sectional Area (ft^2)	36.7	35.5	14.8				39.6	39.6	41			
BF Mean Depth (ft)	1.2	1.2	0.6				1.5	1.5	1.3			
BF Max Depth (ft)	2.3	2.6	1.9				2.3	2.3	2.5			
Width/Depth Ratio							18.1	17.6	24.154			
Entrenchment Ratio (greater							2.0	2.0	1.7			
Wetted Perimeter(ft)												
Hydraulic radius (ft)												
Substrate												
d50 (mm)	13.4	0.006	0.4				17.73	0.6	1.01			
d84 (mm)	35.7	0.2	1.14				36.4	1.5	4.42			

Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	25	87		-	-	202	37	202	46									
Radius of Curvature (ft)	18	96		-	-	-	41	58	55									
Meander Wavelength (ft)	160	200		-	-	-	117	171	144									
Meander Width ratio	0.8	2.9		-	-	-	1.2	6.4	1.5									
Profile																		
Riffle length (ft)	-	-	-	30.0	116.0	43.5	24	99	41									
Riffle slope (ft/ft)	0.020	0.120	0.060	0.011	0.040	0.018	0.013	0.029	0.019									
Pool length (ft)	29	136	58	13.0	56.0	25.0	15	48	26									
Pool spacing (ft)	74	193	120	28	225	64	28	117	68									

Additional Reach Parameters	MY-0 (2004)	MY-01 (2005)	MY-02 (2006)	MY-03 (2007)	MY-04 (2008)	MY-05 (2009)
Valley Length (ft)	1022					
Channel Length (ft)	1091					
Sinuosity	1.07					
Water Surface Slope (ft/ft)	0.009	0.014	0.015			
BF slope (ft/ft)	0.008	0.016	0.015			
Rosgen Classification	B4	B4	B4			

Table XIIIb. Morphology and Hydraulic Monitoring Summary for Area 2
Purlear Creek Phase I / Project # 294 - Upper Middle Trib

Parameter	Cross Section 1 Area 2 Riffle						Cross Section 2 Area 2 Pool					
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5
BF Width (ft)	17.4	16.2	17.3				19.4	19.3	18.5			
Floodprone Width (ft) (approx)	40	40	40									
BF Cross Sectional Area (ft^2)	11.9	12.4	8.6				12.8	13.4	7.6			
BF Mean Depth (ft)	0.7	0.8	0.5				0.7	0.7	0.4			
BF Max Depth (ft)	1.5	1.7	1.4				1.6	1.6	1.1			
Width/Depth Ratio	25.5	21.1	34.6									
Entrenchment Ratio (greater	2.3	2.5	2.3									
Wetted Perimeter(ft)												
Hydraulic radius (ft)												
Substrate												
d50 (mm)	0.06	17.42	0.06				0.16	17.42	0.06			
d84 (mm)	4.23	50.98	0.06				1	72	0.45			

Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	-	-	-	69	70	69	69	70	69									
Radius of Curvature (ft)	-	-	17	62	81	73	56	68	63									
Meander Wavelength (ft)	-	-	-	236	255	245	236	255	245									
Meander Width ratio	-	-	-	4.3	4.3	4.3	4.0	4.0	4.0									
Profile																		
Riffle length (ft)	-	-	-	15.0	73.0	35.0	21	74	30									
Riffle slope (ft/ft)	-	-	-	0.003	0.017	0.007	0.016	0.024	0.019									
Pool length (ft)	10	18	13	5.0	25.0	11.0	16	23	19									
Pool spacing (ft)	42	100	71	29	93	45	40.5	95	67.75									

Additional Reach Parameters	MY-0 (2004)	MY-01 (2005)	MY-02 (2006)	MY-03 (2007)	MY-04 (2008)	MY-05 (2009)
Valley Length (ft)	358					
Channel Length (ft)	393					
Sinuosity	1.10					
Water Surface Slope (ft/ft)	0.016	0.015	0.016			
BF slope (ft/ft)	0.020	0.018	0.014			
Rosgen Classification	C4	C4	C4			

Table XIIIc. Morphology and Hydraulic Monitoring Summary for Area 3
Purlear Creek Phase I / Project # 294 - Middle Main

Parameter	Cross Section 1 Area 3 Pool						Cross Section 2 Area 3 Riffle					
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5
BF Width (ft)	26.8	26.2	24.2				24.5	24.2	25.1			
Floodprone Width (ft) (approx)							60	60	60			
BF Cross Sectional Area (ft^2)	45.2	44.8	37				28.3	28.1	27.2			
BF Mean Depth (ft)	1.7	1.7	1.5				1.2	1.2	1.1			
BF Max Depth (ft)	3.1	3.3	2.5				2.1	2.1	2.4			
Width/Depth Ratio							21.3	20.9	23			
Entrenchment Ratio (greater							2.4	2.5	2.4			
Wetted Perimeter(ft)												
Hydraulic radius (ft)												
Substrate												
d50 (mm)	6.1	0.19	12.85				0.56	12.32	6.85			
d84 (mm)	22.63	8.25	37.94				14.36	36.86	33.46			

Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	37	58		-	-	-	-	-	-									
Radius of Curvature (ft)	27	94		-	-	-	-	-	-									
Meander Wavelength (ft)	230	356		-	-	-	-	-	-									
Meander Width ratio	1.4	2.2		-	-	-	-	-	-									
Profile																		
Riffle length (ft)				16	94	35	17	59	46									
Riffle slope (ft/ft)	0.010	0.030	0.020	0.003	0.028	0.014	0.005	0.051	0.014									
Pool length (ft)	24	74	51	9	84	20	17	68	29									
Pool spacing (ft)	79	132	112	29	120	66	36	145	73									

Additional Reach Parameters	MY-0 (2004)	MY-01 (2005)	MY-02 (2006)	MY-03 (2007)	MY-04 (2008)	MY-05 (2009)
Valley Length (ft)	821					
Channel Length (ft)	850					
Sinuosity	1.04					
Water Surface Slope (ft/ft)	0.014	0.014	0.013			
BF slope (ft/ft)	0.015	0.013	0.015			
Rosgen Classification	B4	B4	B4			

Table XIIId. Morphology and Hydraulic Monitoring Summary for Area 4
Purlear Creek Phase I / Project # 294 - Lower Middle Trib (Upper Section)

Parameter	Cross Section 1 Area 4 Riffle						Cross Section 2 Area 4 Pool					
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5
BF Width (ft)	25.1	25.1	22.3				22.6	21.2	20.3			
Floodprone Width (ft) (approx)	50	50	50									
BF Cross Sectional Area (ft^2)	21.8	19.1	18.8				21.5	18.1	13.9			
BF Mean Depth (ft)	0.9	0.8	0.8				1	0.9	0.7			
BF Max Depth (ft)	1.6	1.5	2.2				2.3	2.2	2.2			
Width/Depth Ratio	28.9	32.9	26.5									
Entrenchment Ratio (greater than	2.0	2.0	2.2									
Wetted Perimeter(ft)												
Hydraulic radius (ft)												
Substrate												
d50 (mm)	10.36	0.69	0.09				3.93	3	0.38			
d84 (mm)	20.74	11.89	1.35				13.53	13.14	1.95			

Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	28	71		28	55	47	28	55	47									
Radius of Curvature (ft)	81	81		37	77	49	37	77	49									
Meander Wavelength (ft)	116	170		120	157	135	120	157	55									
Meander Width ratio	1.1	2.8		1.1	2.2	1.9	1.3	2.5	2.1									
Profile																		
Riffle length (ft)				7	60	19	24	50	44.5									
Riffle slope (ft/ft)				0.007	0.019	0.012	0.008	0.036	0.015									
Pool length (ft)	54	85	70	6	45	23	15	91	27									
Pool spacing (ft)	88	184	131	29	115	49	26	106	63									

Additional Reach Parameters	MY-0 (2004)	MY-01 (2005)	MY-02 (2006)	MY-03 (2007)	MY-04 (2008)	MY-05 (2009)
Valley Length (ft)	599					
Channel Length (ft)	669					
Sinuosity	1.12					
Water Surface Slope (ft/ft)	0.015	0.013	0.014			
BF slope (ft/ft)	0.015	0.015	0.015			
Rosgen Classification	B4	B4	B4			

Table XIIIe. Morphology and Hydraulic Monitoring Summary for Area 5
Purlear Creek Phase I / Project # 294 - Lower Middle Trib (Lower Section)

Parameter	Cross Section 1 Area 5 Pool						Cross Section 2 Area 5 Riffle					
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5
BF Width (ft)	21.4	21.4	23.7				26.3	25	23.5			
Floodprone Width (ft) (approx)							60	60	60			
BF Cross Sectional Area (ft^2)	26.8	29.4	27.4				23.1	19.8	23.5			
BF Mean Depth (ft)	1.3	1.4	1.2				0.9	0.8	0.8			
BF Max Depth (ft)	2.5	3.3	2.9				1.7	1.7	1.4			
Width/Depth Ratio							30	31.7	30.9			
Entrenchment Ratio (greater than							2.3	2.4	2.6			
Wetted Perimeter(ft)												
Hydraulic radius (ft)												
Substrate												
d50 (mm)	0.5	2.06	0.13				15.85	0.54	0.07			
d84 (mm)	8.25	13.06	1.48				29.94	3.33	0.75			

Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	28	71		36	50	45	36	50	45									
Radius of Curvature (ft)	81	81		40	87	51	40	87	47									
Meander Wavelength (ft)	116	170		113	187	145	113	187	145									
Meander Width ratio	1.3	3.3		1.4	2.0	1.8	1.5	2.1	1.9									
Profile																		
Riffle length (ft)				5	49	28	16	48	33									
Riffle slope (ft/ft)				0.005	0.039	0.014	0.009	0.025	0.016									
Pool length (ft)	23	76	49	11	38	26	13	37	21.5									
Pool spacing (ft)	81	110	97	19	77	51	34	83	44									

Additional Reach Parameters	MY-0 (2004)	MY-01 (2005)	MY-02 (2006)	MY-03 (2007)	MY-04 (2008)	MY-05 (2009)
Valley Length (ft)	674					
Channel Length (ft)	778					
Sinuosity	1.15					
Water Surface Slope (ft/ft)	0.012	0.012	0.012			
BF slope (ft/ft)	0.009	0.011	0.010			
Rosgen Classification	B4	B4	C4			

Table XIIIf. Morphology and Hydraulic Monitoring Summary for Area 6
Purlear Creek Phase I / Project # 294 - Lower Main

Parameter	Cross Section 1 Area 1 Pool						Cross Section 2 Area 1 Riffle					
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5
BF Width (ft)	18.9	19.2	17.9				27.1	26.9	34.3			
Floodprone Width (ft) (approx)							60	60	60			
BF Cross Sectional Area (ft^2)	43.6	36.3	33.2				40.2	37.8	35.2			
BF Mean Depth (ft)	2.3	1.9	1.9				1.5	1.4	1			
BF Max Depth (ft)	3.8	3.5	3.3				2.5	2.9	3			
Width/Depth Ratio							18.3	19.2	33.4			
Entrenchment Ratio (greater							2.2	2.2	1.7			
Wetted Perimeter(ft)												
Hydraulic radius (ft)												
Substrate												
d50 (mm)	11.33	0.11	0.29				0.06	1.5	11.65			
d84 (mm)	24.5	14.22	12.85				11.01	65.75	45.17			

Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	39	87		55	71	68	66	93	73									
Radius of Curvature (ft)	39	75		50	139	73	43	90	65									
Meander Wavelength (ft)	168	240		182	238	194	188	238	198									
Meander Width ratio	1.4	3.2		2.0	2.6	2.5	1.9	2.7	2.1									
Profile																		
Riffle length (ft)	-	-	-	30	36	34	19	32	24									
Riffle slope (ft/ft)	-	-	-	0.015	0.029	0.019	0.021	0.037	0.032									
Pool length (ft)	40	110	71	37	147	84	29	145	62									
Pool spacing (ft)	160	213	190	47	128	94	47	128	76									

Additional Reach Parameters	MY-0 (2004)	MY-01 (2005)	MY-02 (2006)	MY-03 (2007)	MY-04 (2008)	MY-05 (2009)
Valley Length (ft)	805					
Channel Length (ft)	931					
Sinuosity	1.16					
Water Surface Slope (ft/ft)	0.010	0.010	0.008			
BF slope (ft/ft)	0.009	0.010	0.009			
Rosgen Classification	B4	B4	B4			

VI. Methodology Section

Monitoring methods used are based on US Army Corps of Engineering and NC Division of Water Quality Guides as referenced below.

References:

USACOE (2003) *Stream Mitigation Guidelines*. USACOE, USEPA, NCWRC, NCDENR-DWQ

Rosgen, D L. (1996) *Applied River Morphology*. Wildland Hydrology Books, Pagosa Springs, CO.

APPENDIX A

Vegetation Raw Data

1. Vegetation Photo Log
2. Vegetation Plot Data

Notes:

- No separate plan view was established for vegetation conditions. See monitoring plan view for this information.
- No vegetation problems occur on this project therefore those sections have been omitted from the appendix.

Plot 1, 07-Jun-06

Plot 2, 07-Jun-06

Plot 3, 07-Jun-06

Plot 4 , 07-Jun-06

Plot 5, 07-Jun-06

Plot 6, 07-Jun-06

Plot 7, 07-Jun-06

Plot 8, 07-Jun-06

Plot 9, 06-Jun-06

Plot 10, 06-Jun-06

Plot 11, 06-Jun-06

Plot 12, 06-Jun-06

Plot 13, 06-Jun-06

Plot 14, 06-Jun-06

Plot 15, 06-Jun-06

Plot 16, 07-Jun-06

Plot 17, 07-Jun-06

Plot 18, 08-Jun-06

Plot 21, 27-Nov-06

Plot 23, 27-Nov-06

Plot 24, 27-Nov-06

Plot 26, 27-Nov-06

Plot 29, 08-Jun-06

Plot 30, 08-Jun-06

Plot 31, 08-Jun-06

Plot 32, 08-Jun-06

Plot 33, 08-Jun-06

Plot 34, 08-Jun-06

VPA-1, 27-Nov-06

VPA-2, 27-Nov-06

VPA-3, 27-Nov-06

Species	Total Stems	# plots	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	21	23	24	26	29	30	31	32	33	34	2005 totals	2006 totals	Survival
Shrubs																																	
Aronia arbutifolia	4	4										1											1			1				1	11	4	36%
Cephalanthus occidentalis	4	4							1	1													1							1		4	
Cornus amomum	255	24	4	5	14	23	8	8	28	1		8	7	10	5		5	27	10			3	8	2	9	14	12	12	1	31	259	255	98%
Salix nigra	142	23	5	15	3	4	2	13	3	15	1		3		6	2	4	2	20		1	5	2		1	1	19		10	5	140	142	
Sambucus canadensis	4	4														1							1				1	1			6	4	67%
Trees																																	
Acer rubrum	2	2												1			1															2	
Alnus serrulata	2	1				2																									2	2	100%
Betula nigra	66	19	1			4	2	1	2	2			5	1	5	7		1	2	6				3		1	7	8	5	3	67	66	99%
Carpinus caroliniana	3	1										3																				3	
Celtis occidentalis	4	3															1			2	1										1	4	
Diospyros virginiana	17	8												1			1		1			3	1					1	6	3	14	17	
Fraxinus pennsylvanica	69	19	3	1	1	7	12	2				5			2	2	5	2	4		5		1	6	7		2	1		1	68	69	
Hamamelis virginiana	5	2									1			4																	3	5	
Juglans nigra	1	1		1																												1	
Nyssa sylvatica	8	4																				1	1				4		2			8	
Platanus occidentalis	2	1		2																												2	
Populus deltoides	5	4										1															1		2	1	5	5	100%
Quercus spp.	1	1								1																						1	
Quercus michauxii	61	21		4		3	6	4		2		1	6	2	2	3		2	1	1	4	4	3	1		6		3	2	1	66	61	92%
Quercus phellos	63	15	3			1	3	7	6	4	5			2				10				2	2	1	1		8		8		53	63	
Totals	**718**	**28**	**16**	**28**	**18**	**44**	**33**	**35**	**40**	**26**	**7**	**19**	**21**	**21**	**20**	**15**	**17**	**44**	**38**	**9**	**11**	**18**	**21**	**13**	**18**	**23**	**54**	**26**	**36**	**47**	**695**	**718**	

APPENDIX B

Morphology Raw Data

1. Visual Morphology Assessment Tables (B-1)
2. Project Photo Log
3. Problem Area Plan Views
4. Problem Area Photo Log
5. Cross section and Pebble Count Plots and Raw Data Tables
6. Longitudinal Plots and Raw Data Tables
7. Slope Measurement Tables
8. Pattern Measurement Tables
9. GPS Point Table

Table B1. Visual Morphological Stability Assessment (Area 1) **Purlear Creek Phase I / Project # 294 - Upper Main (100 lf)**						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state[1]	% Perform in Stable Condition[2]	Feature Perform. Mean or Total[3]
A. Riffles	1. Present?[4]	10	13	0/0	100	
	2. Armor stable (e.g. no displacement)?	10	13	0/0	100	
	3. Facet grade appears stable?	10	13	0/0	100	
	4. Minimal evidence of embedding/fining?	10	13	0/0	100	
	5. Length appropriate?	10	13	0/0	100	**77%**
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?)[4]	11	13	1/50	77	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	10	13	1/50	77	
	3. Length appropriate?	7	13	0/0	100	**85%**
C. Thalweg	1. Upstream of meander bend (run/inflection) centering?[5]	8	8	NA	100	
	2. Downstream of meander (glide/inflection) centering?[5]	8	8	NA	100	**100%**
D. Meanders	1. Outer bend in state of limited/controlled erosion?	8	8	NA	100	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	NA	100	
	3. Apparent Rc within spec?	3	3	NA	100	
	4. Sufficient floodplain access and relief?[6]	8	8	NA	100	**100%**
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	1/50	95	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	3/110	89	**92%**
F. Vanes	1. Free of back or arm scour?	5	5	NA	100	
	2. Height appropriate?	2	5	NA	100	
	3. Angle and geometry appear appropriate?	5	5	NA	40	
	4. Free of piping or other structural failures?	4	5	NA	80	**80%**
G. Wads/ Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	**NA**

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

1 Metrics that are spatial estimates should be entered as: The number of locales over the reach for which the failing condition is observed / followed by the total linear distance (feet) or area for which the failing or unstable condition is observed.

state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from 1 and then multiplied by 100 to give a

3 The mean of the metrics for a given feature category.

4 Was the feature actually present as compared to the As-built or has the feature been completely obscured (aggraded) or removed (degraded).

5 Is the Thalweg centering up on the channel in between meander bends?

6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

USDA-NRCS (1998) *Stream Visual Assessment Protocol* National Water and Climate Center (Technical Note 99–1)

Rosgen, D L. (1996) *Applied River Morphology* . Wildland Hydrology Books, Pagosa Springs, CO.

Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/20 0

Table B1. Visual Morphological Stability Assessment (Area 2) Purlear Creek Phase I / Project # 294 - Upper Middle Trib (260 lf)						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state[1]	% Perform in Stable Condition[2]	Feature Perform. Mean or Total[3]
A. Riffles	1. Present?[4]	3	4	0/0	75	
	2. Armor stable (e.g. no displacement)?	3	4	0/0	75	
	3. Facet grade appears stable?	3	4	0/0	75	
	4. Minimal evidence of embedding/fining?	0	4	3/58	0	
	5. Length appropriate?	3	4	0/0	75	**60%**
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?)[4]	3	3	0/0	100	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	3	3	0/0	86	
	3. Length appropriate?	3	3	0/0	86	**100%**
C. Thalweg	1. Upstream of meander bend (run/inflection) centering?[5]	4	4	NA	100	
	2. Downstream of meander (glide/inflection) centering?[5]	4	4	NA	100	**100%**
D. Meanders	1. Outer bend in state of limited/controlled erosion?	4	4	NA	100	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	NA	100	
	3. Apparent Rc within spec?	4	4	NA	100	
	4. Sufficient floodplain access and relief?[6]	4	4	NA	100	**100%**
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	3/58	78	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	0/0	100	**89%**
F. Vanes	1. Free of back or arm scour?	5	5	NA	100	
	2. Height appropriate?	1	5	NA	100	
	3. Angle and geometry appear appropriate?	5	5	NA	20	
	4. Free of piping or other structural failures?	3	5	NA	60	**70%**
G. Wads/ Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	**N/A**

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

1 Metrics that are spatial estimates should be entered as: The number of locales over the reach for which the failing condition is observed / [illegible] a state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from 1 and then multiplied by 100

3 The mean of the metrics for a given feature category.

4 Was the feature actually present as compared to the As-built or has the feature been completely obscured (aggraded) or removed (degraded).

5 Is the Thalweg centering up on the channel in between meander bends?

6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

USDA-NRCS (1998) *Stream Visual Assessment Protocol* National Water and Climate Center (Technical Note 99–1)

Rosgen, D L. (1996) *Applied River Morphology* . Wildland Hydrology Books, Pagosa Springs, CO.

Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/20 0

Table B1. Visual Morphological Stability Assessment (Area 3) Purlear Creek Phase I / Project # 294 - Middle Main (700lf)						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state[1]	% Perform in Stable Condition[2]	Feature Perform. Mean or Total[3]
A. Riffles	1. Present?[4]	7	7	0/0	100	
	2. Armor stable (e.g. no displacement)?	7	7	0/0	100	
	3. Facet grade appears stable?	7	7	0/0	100	
	4. Minimal evidence of embedding/fining?	7	7	0/0	100	
	5. Length appropriate?	7	7	0/0	100	**100%**
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?)[4]	9	9	0/0	100	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	9	9	0/0	100	
	3. Length appropriate?	9	9	0/0	100	**100%**
C. Thalweg	1. Upstream of meander bend (run/inflection) centering?[5]	6	6	0/0	100	
	2. Downstream of meander (glide/inflection) centering?[5]	6	6	0/0	100	**100%**
D. Meanders	1. Outer bend in state of limited/controlled erosion?	5	6	1/30	96	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	0/0	100	
	3. Apparent Rc within spec?	6	6	0/0	100	
	4. Sufficient floodplain access and relief?[6]	6	6	0/0	100	**99%**
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	0/0	100	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	2/70	90	**95%**
F. Vanes	1. Free of back or arm scour?	6	6	NA	100	
	2. Height appropriate?	4	6	NA	66	
	3. Angle and geometry appear appropriate?	6	6	NA	100	
	4. Free of piping or other structural failures?	5	6	NA	83	**87%**
G. Wads/ Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	**NA**

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

1 Metrics that are spatial estimates should be entered as: The number of locales over the reach for which the failing condition is observed / followed by the total linear distance (feet) or area for which the failing or unstable condition is observed.

a state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from 1 and then multiplied by 100

3 The mean of the metrics for a given feature category.

4 Was the feature actually present as compared to the As-built or has the feature been completely obscured (aggraded) or removed (degraded).

5 Is the Thalweg centering up on the channel in between meander bends?

6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

USDA-NRCS (1998) *Stream Visual Assessment Protocol* National Water and Climate Center (Technical Note 99–1)

Rosgen, D L. (1996) *Applied River Morphology* . Wildland Hydrology Books, Pagosa Springs, CO.

Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/20 0

Table B1. Visual Morphological Stability Assessment (Area 4) Purlear Creek Phase I / Project # 294 - Lower Middle Trib (Upper Section) (650lf)						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state[1]	% Perform in Stable Condition[2]	Feature Perform. Mean or Total[3]
A. Riffles	1. Present?[4]	6	8	0/0	100	
	2. Armor stable (e.g. no displacement)?	6	8	0/0	100	
	3. Facet grade appears stable?	6	8	0/0	100	
	4. Minimal evidence of embedding/fining?	6	8	3/100	58	
	5. Length appropriate?	6	8	0/0	100	**92%**
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?)[4]	9	12	0/0	100	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	9	12	0/0	100	
	3. Length appropriate?	9	12	0/0	100	**100%**
C. Thalweg	1. Upstream of meander bend (run/inflection) centering?[5]	9	9	NA	100	
	2. Downstream of meander (glide/inflection) centering?[5]	9	9	NA	100	**100%**
D. Meanders	1. Outer bend in state of limited/controlled erosion?	9	9	NA	100	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	NA	100	
	3. Apparent Rc within spec?	9	9	NA	100	
	4. Sufficient floodplain access and relief?[6]	9	9	NA	100	**100%**
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	3/100	58	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	2/110	84	**71%**
F. Vanes	1. Free of back or arm scour?	8	8	NA	100	
	2. Height appropriate?	6	8	NA	75	
	3. Angle and geometry appear appropriate?	8	8	NA	100	
	4. Free of piping or other structural failures?	8	8	NA	100	**94%**
G. Wads/ Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	**NA**

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

1 Metrics that are spatial estimates should be entered as: The number of locales over the reach for which the failing condition is observed / followed by the total linear distance (feet) or area for which the failing or unstable condition is observed.
in a state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from 1 and then multiplied by 100

3 The mean of the metrics for a given feature category.

4 Was the feature actually present as compared to the As-built or has the feature been completely obscured (aggraded) or removed (degraded).

5 Is the Thalweg centering up on the channel in between meander bends?

6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

USDA-NRCS (1998) *Stream Visual Assessment Protocol* National Water and Climate Center (Technical Note 99–1)

Rosgen, D L. (1996) *Applied River Morphology* . Wildland Hydrology Books, Pagosa Springs, CO.

Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/20 0

Table B1. Visual Morphological Stability Assessment (Area 5) Purlear Creek Phase I / Project # 294 - Lower Middle Trib (Lower Section) (700 lf)						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state 1	% Perform in Stable Condition 2	Feature Perform. Mean or Total 3
A. Riffles	1. Present? 4	9	10	0/0	100	
	2. Armor stable (e.g. no displacement)?	9	10	0/0	100	
	3. Facet grade appears stable?	9	10	0/0	100	
	4. Minimal evidence of embedding/fining?	9	10	0/0	100	
	5. Length appropriate?	9	10	0/0	100	**100%**
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?) 4	14	15	0/0	100	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	14	15	0/0	100	
	3. Length appropriate?	14	15	0/0	100	**100%**
C. Thalweg	1. Upstream of meander bend (run/inflection) centering? 5	9	9	0/0	100	
	2. Downstream of meander (glide/inflection) centering? 5	9	9	0/0	100	**100%**
D. Meanders	1. Outer bend in state of limited/controlled erosion?	9	9	0/0	100	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	0/0	100	
	3. Apparent Rc within spec?	9	9	0/0	100	
	4. Sufficient floodplain access and relief? 6	9	9	0/0	100	**100%**
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	3/94	68	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	0/0	100	**84%**
F. Vanes	1. Free of back or arm scour?	7	8	0/0	100	
	2. Height appropriate?	6	8	0/0	100	
	3. Angle and geometry appear appropriate?	7	8	0/0	100	
	4. Free of piping or other structural failures?	6	8	0/0	100	**100%**
G. Wads/ Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	**NA**

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

1 Metrics that are spatial estimates should be entered as: The number of locales over the reach for which the failing condition is observed / followed by the total linear distance (feet) or area for which the failing or unstable condition is observed.

in a state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from 1 and then multiplied by 100

3 The mean of the metrics for a given feature category.

4 Was the feature actually present as compared to the As-built or has the feature been completely obscured (aggraded) or removed (degraded).

5 Is the Thalweg centering up on the channel in between meander bends?

6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

USDA-NRCS (1998) *Stream Visual Assessment Protocol* National Water and Climate Center (Technical Note 99–1)

Rosgen, D L. (1996) *Applied River Morphology* . Wildland Hydrology Books, Pagosa Springs, CO.

Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/20 0

Table B1. Visual Morphological Stability Assessment (Area 6) Purlear Creek Phase I / Project # 294 - Lower Main (900lf)						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state 1	% Perform in Stable Condition 2	Feature Perform. Mean or Total 3
A. Riffles	1. Present? 4	4	4	0/0	100	
	2. Armor stable (e.g. no displacement)?	4	4	0/0	100	
	3. Facet grade appears stable?	4	4	0/0	100	
	4. Minimal evidence of embedding/fining?	4	4	0/0	100	
	5. Length appropriate?	4	4	0/0	100	**100%**
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?) 4	9	9	0/0	100	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	9	9	0/0	100	
	3. Length appropriate?	9	9	0/0	100	**100%**
C. Thalweg	1. Upstream of meander bend (run/inflection) centering? 5	7	7	0/0	100	
	2. Downstream of meander (glide/inflection) centering? 5	7	7	0/0	100	**100%**
D. Meanders	1. Outer bend in state of limited/controlled erosion?	4	7	3/120	26	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	0/0	100	
	3. Apparent Rc within spec?	7	7	0/0	100	
	4. Sufficient floodplain access and relief? 6	7	7	0/0	100	**82%**
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	0/0	100	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	4/300	66	**83%**
F. Vanes	1. Free of back or arm scour?	8	8	NA	100	
	2. Height appropriate?	3	8	NA	38	
	3. Angle and geometry appear appropriate?	8	8	NA	100	
	4. Free of piping or other structural failures?	8	8	NA	100	**85%**
G. Wads/ Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	**NA**

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

1 Metrics that are spatial estimates should be entered as: The number of locales over the reach for which the failing condition is observed / followed by the total linear distance (feet) or area for which the failing or unstable condition is observed.
in a state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from 1 and then multiplied by

3 The mean of the metrics for a given feature category.

4 Was the feature actually present as compared to the As-built or has the feature been completely obscured (aggraded) or removed (degraded).

5 Is the Thalweg centering up on the channel in between meander bends?

6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

USDA-NRCS (1998) *Stream Visual Assessment Protocol* National Water and Climate Center (Technical Note 99–1)
Rosgen, D L. (1996) *Applied River Morphology* . Wildland Hydrology Books, Pagosa Springs, CO.
Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/20 0

Purlear Creek Photo Log
2006

Reach 1

Jan. 2005 **September 5, 2006**

P1. Start Downstream

P2. Start Upstream

P3. X1 Downstream (Station 0+00)

P4. X1 Upstream (Station 0+00)

P5. X2 Downstream (Station 5+25)

P6. X2 Upstream (Station 5+25)

P7. End Downstream

P8. End Upstream

Reach 2

Jan. 2005

September 5, 2006

P9. Start Downstream

P10. Start Upstream

P11. X1 Downstream (Station 0+25)

P12. X1 Upstream (Station 0+25)

P13. X2 Downstream (Station 1+20)

P14. X2 Upstream (Station 1+20)

P15. End Downstream

P16. End Upstream

Reach 3

Jan. 2005

September 5, 2006

P17. Start Downstream

P18. Start Upstream

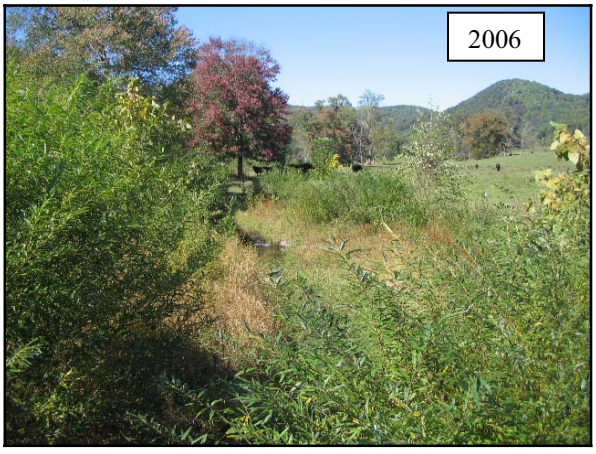
P19. X1 Downstream (Station 0+80)

P20. X1 Upstream (Station 0+80)

P21. X2 Downstream (Station 3+45)

P22. X2 Upstream (Station 3+45)

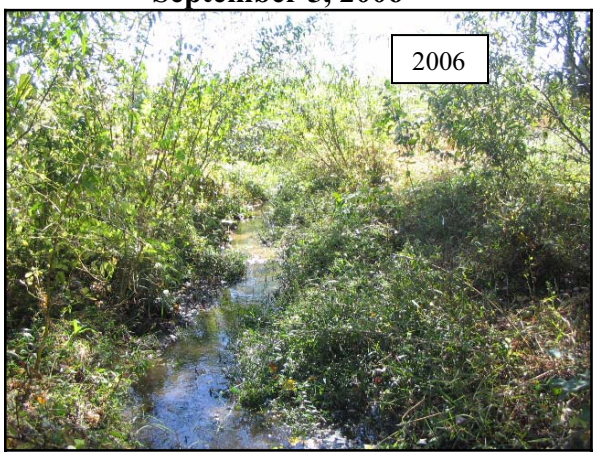
P23. End Downstream



P24. End Upstream

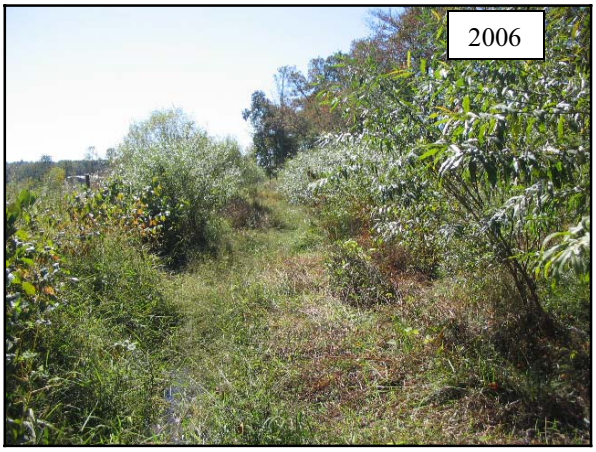
Reach 4

Jan. 2005 **September 5, 2006**



P25. Start Downstream

P26. Start Upstream



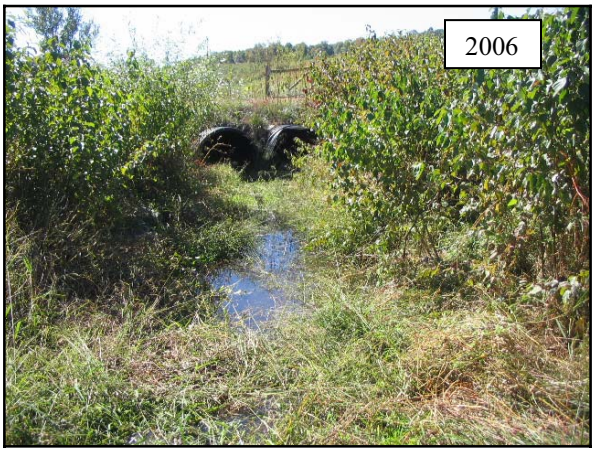
P27. X1 Downstream (Station 1+75)

P28. X1 Upstream (Station 1+75)

P29. X2 Downstream (Station 5+45)

P30. X2 Upstream (Station 5+45)

P31. End Downstream

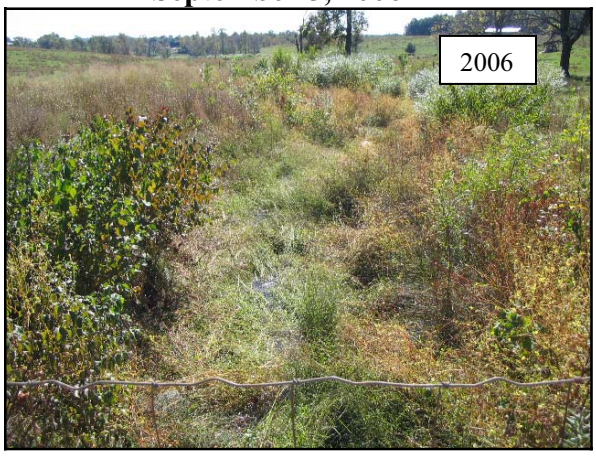


P32. End Upstream

Reach 5

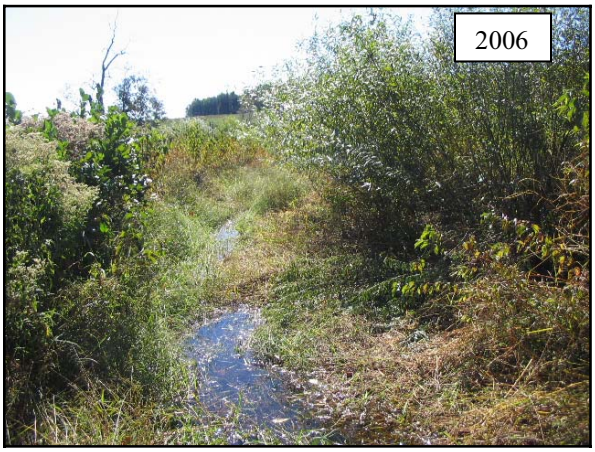
Jan. 2005

September 5, 2006



P33. Start Downstream

P34. Start Upstream



P35. X1 Downstream (Station 3+00)

P36. X1 Upstream (Station 3+00)

P37. X2 Downstream (Station 3+85)

P38. X2 Upstream (Station 3+85)

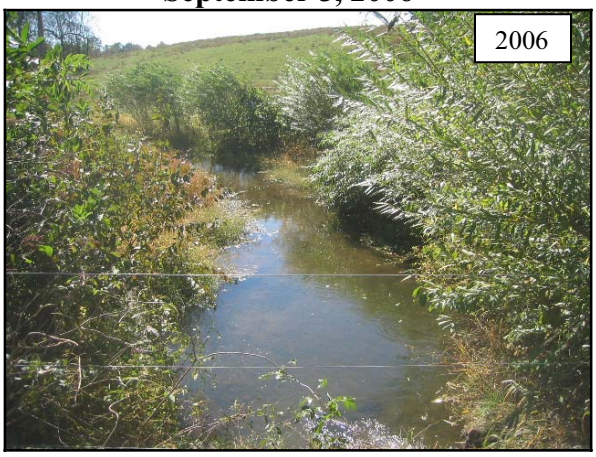
P39. End Downstream

P40. End Upstream

Reach 6

Jan. 2005

September 5, 2006



P41. Start Downstream

P42. Start Upstream

P43. X1 Downstream (Station 2+05)

P44. X1 Upstream (Station 2+05)

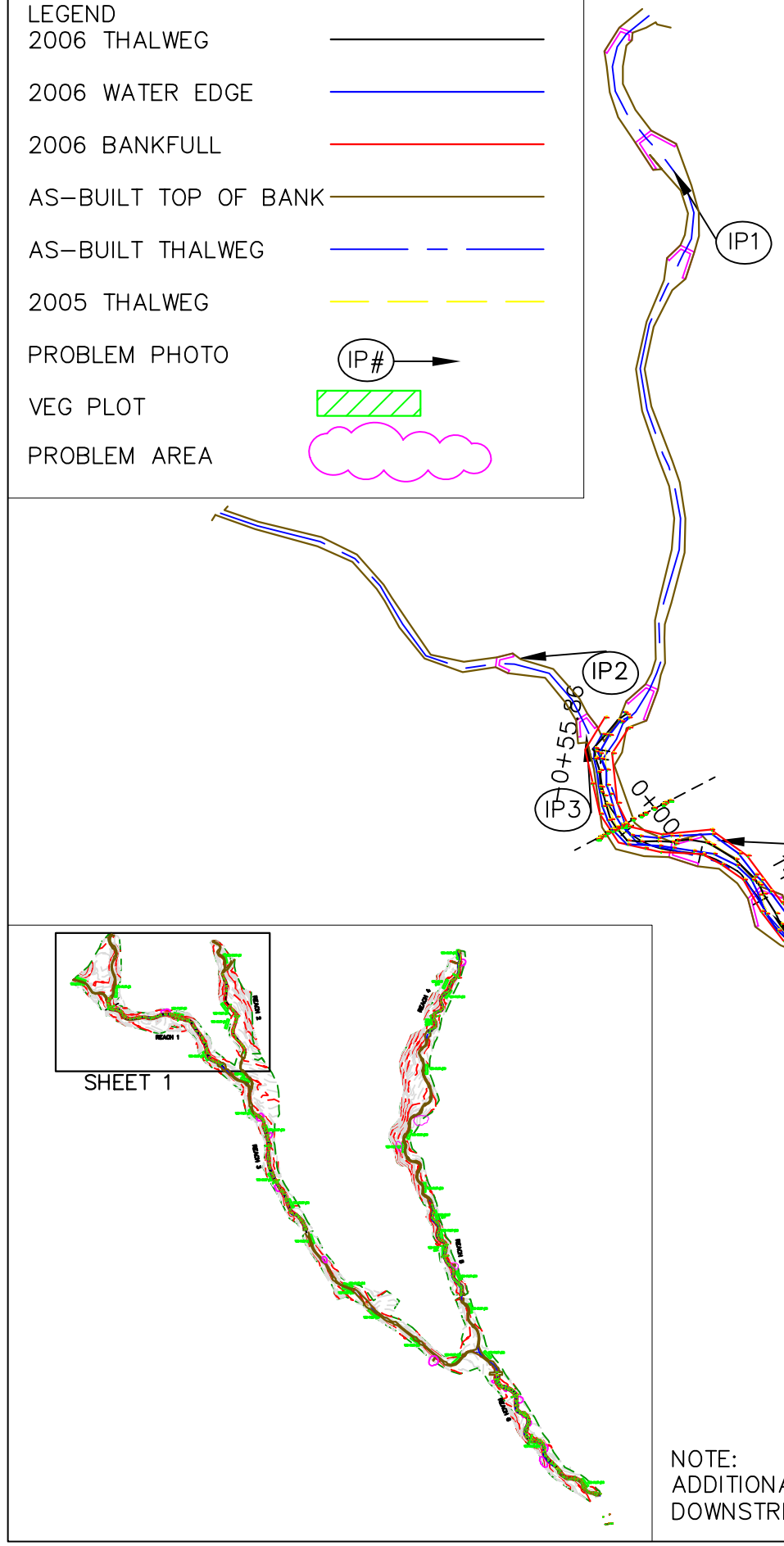
P45. X2 Downstream (Station 5+80)

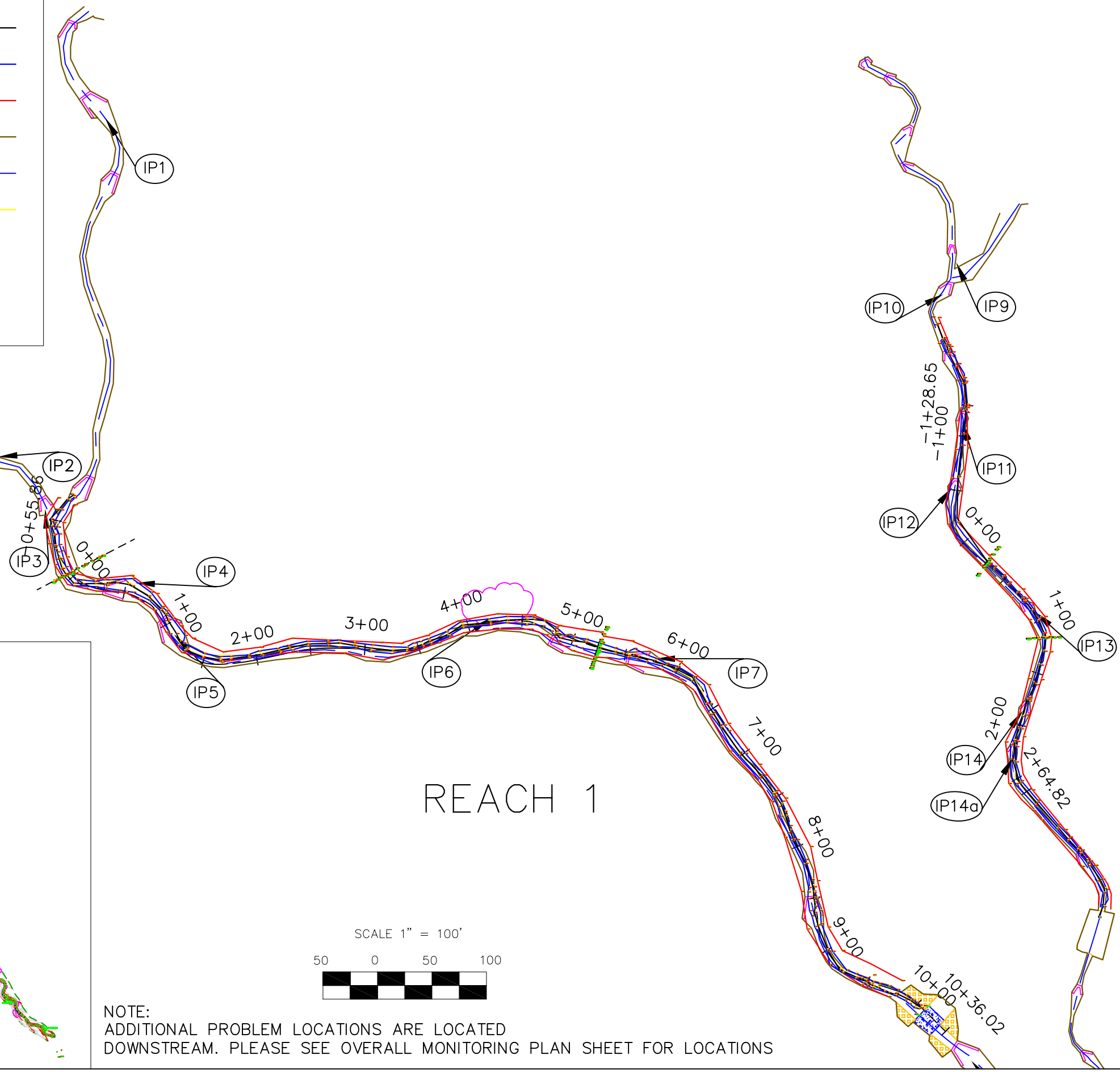
P46. X2 Upstream (Station 5+80)

P47. End Downstream

P48. End Upstream

LEGEND
2006 THALWEG
2006 WATER EDGE
2006 BANKFULL
AS-BUILT TOP OF BANK
AS-BUILT THALWEG
2005 THALWEG
PROBLEM PHOTO IP#
VEG PLOT
PROBLEM AREA





REACH 1

REACH 2

SCALE 1" = 100'
50 0 50 100

NOTE:
ADDITIONAL PROBLEM LOCATIONS ARE LOCATED DOWNSTREAM. PLEASE SEE OVERALL MONITORING PLAN SHEET FOR LOCATIONS

NO	REVISIONS	DRN	CHK	DATE
1	AS-BUILT PLAN	DRC	DAB	03/01/06

NC STATE UNIVERSITY

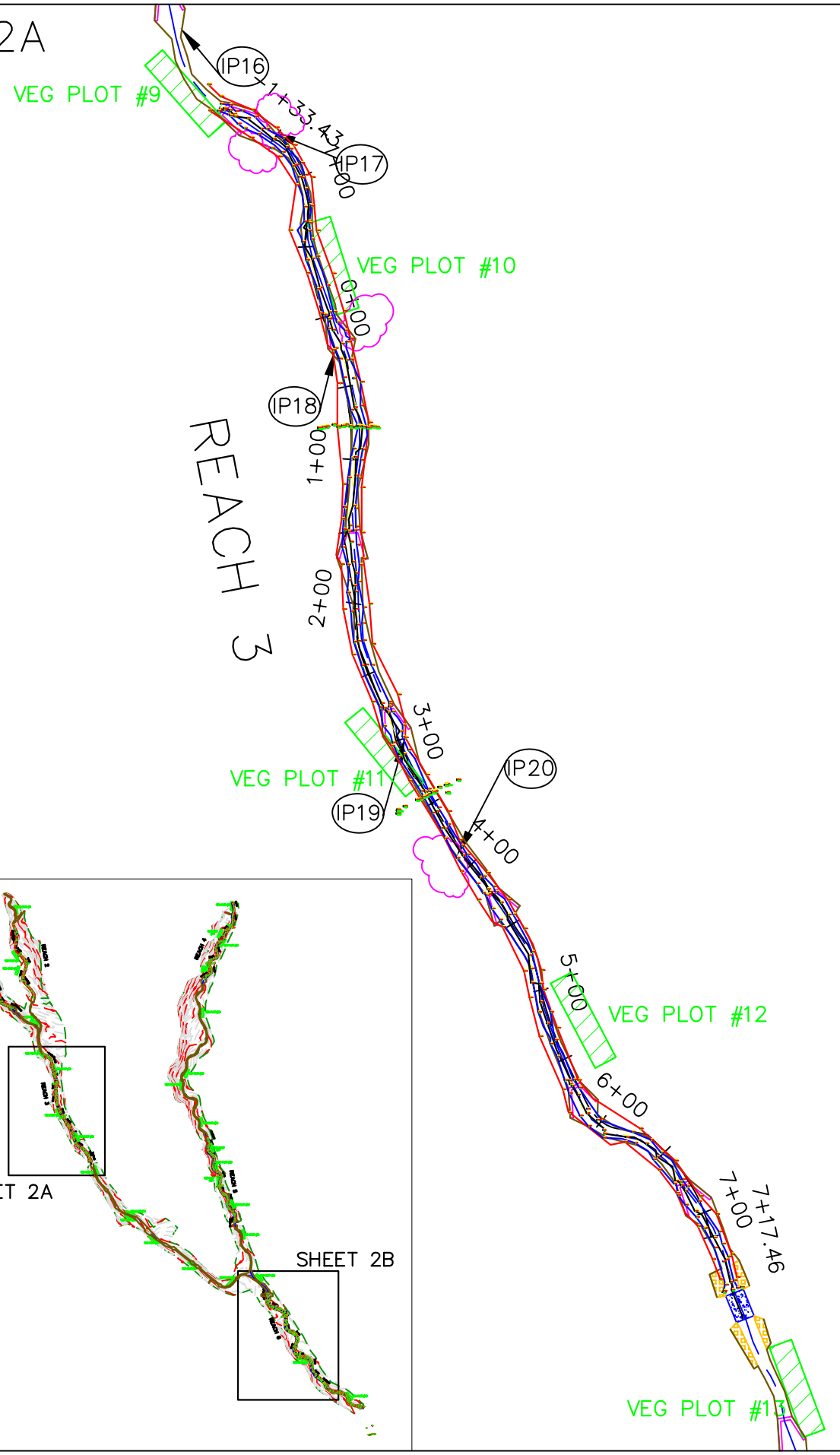
BIOLOGICAL & AGRICULTURAL ENGINEERING
Weaver Labs Campus Box 7625
North Carolina State University
Raleigh, NC 27695

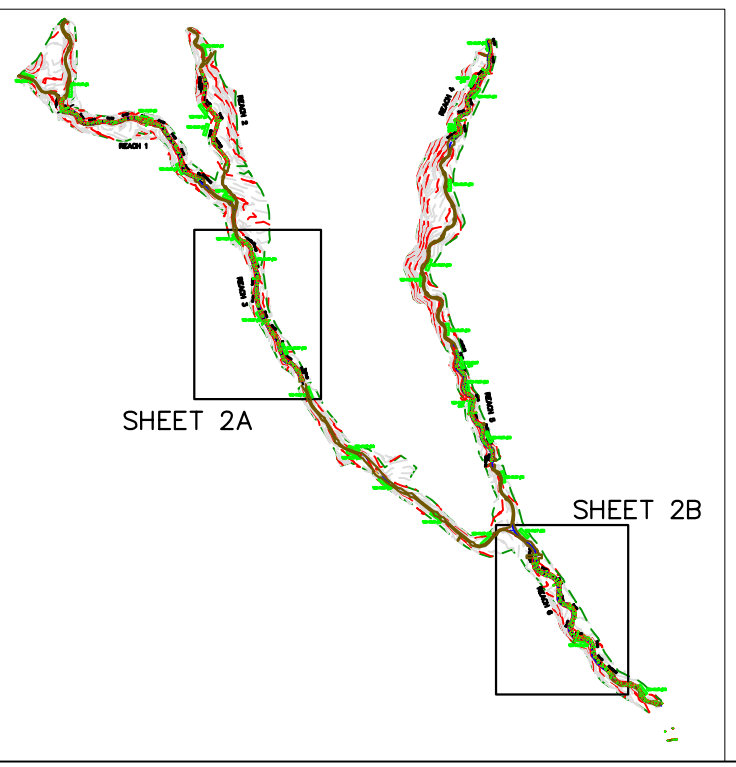
PURLEAR CREEK – PHASE 1
WILKES COUNTY, N.C.

PROBLEM AREA PLAN SHEET
SHEET 1 of 3

DATE 03/01/2006
PROJECT NO. 294
FILENAME PULEAR ASBUILT 05.DWG
SHEET NO. PROBLEM 1 of 3

SHEET 2A





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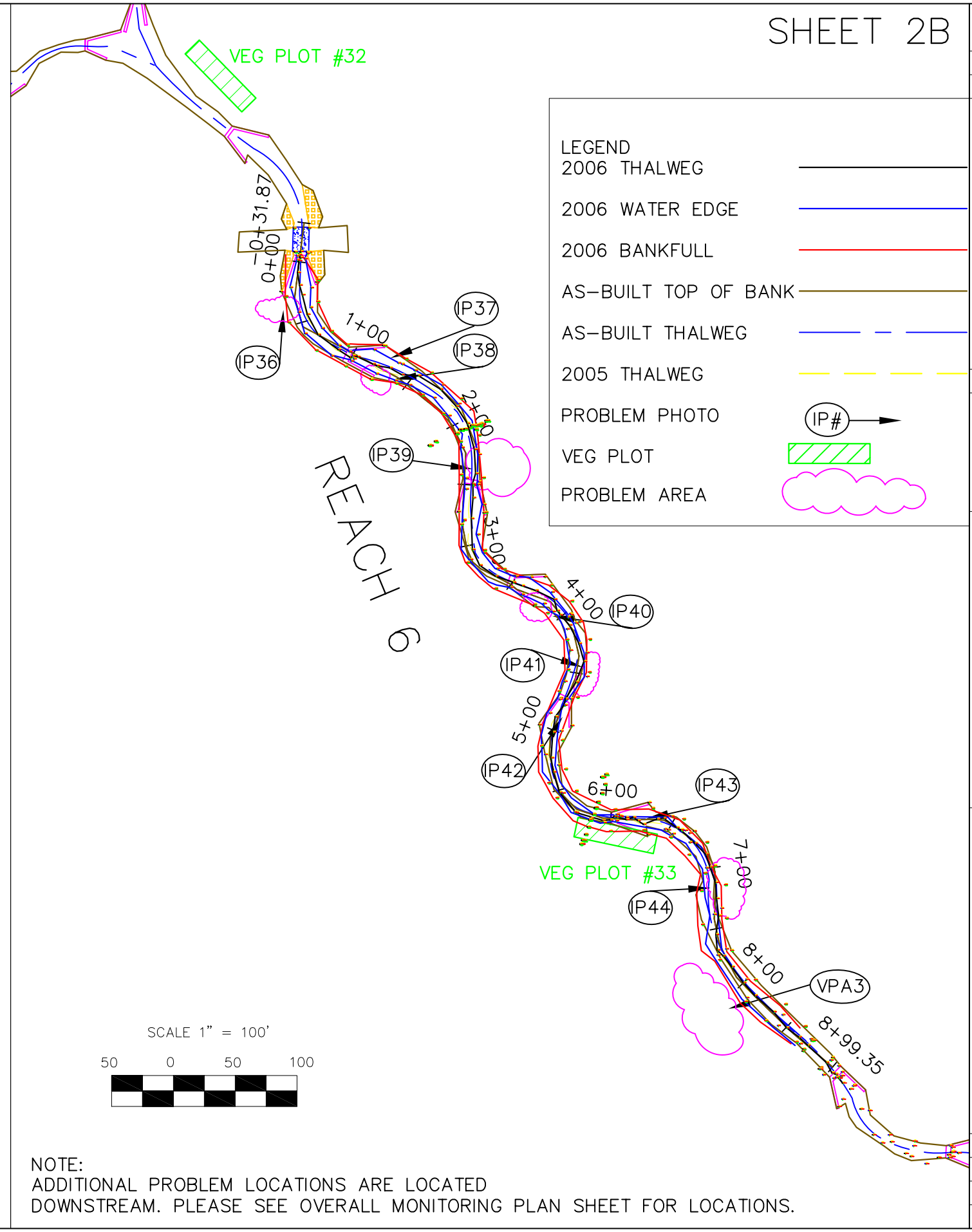

LEGEND
- 2006 THALWEG
- 2006 WATER EDGE
- 2006 BANKFULL
- AS-BUILT TOP OF BANK
- AS-BUILT THALWEG
- 2005 THALWEG
- PROBLEM PHOTO (IP#)
- VEG PLOT
- PROBLEM AREA

SCALE 1" = 100'

50 0 50 100

NOTE:
ADDITIONAL PROBLEM LOCATIONS ARE LOCATED DOWNSTREAM. PLEASE SEE OVERALL MONITORING PLAN SHEET FOR LOCATIONS.

NO	AS-BUILT PLAN	REVISIONS	DRN	CHK	DATE
1			DRC	DAB	03/01/06

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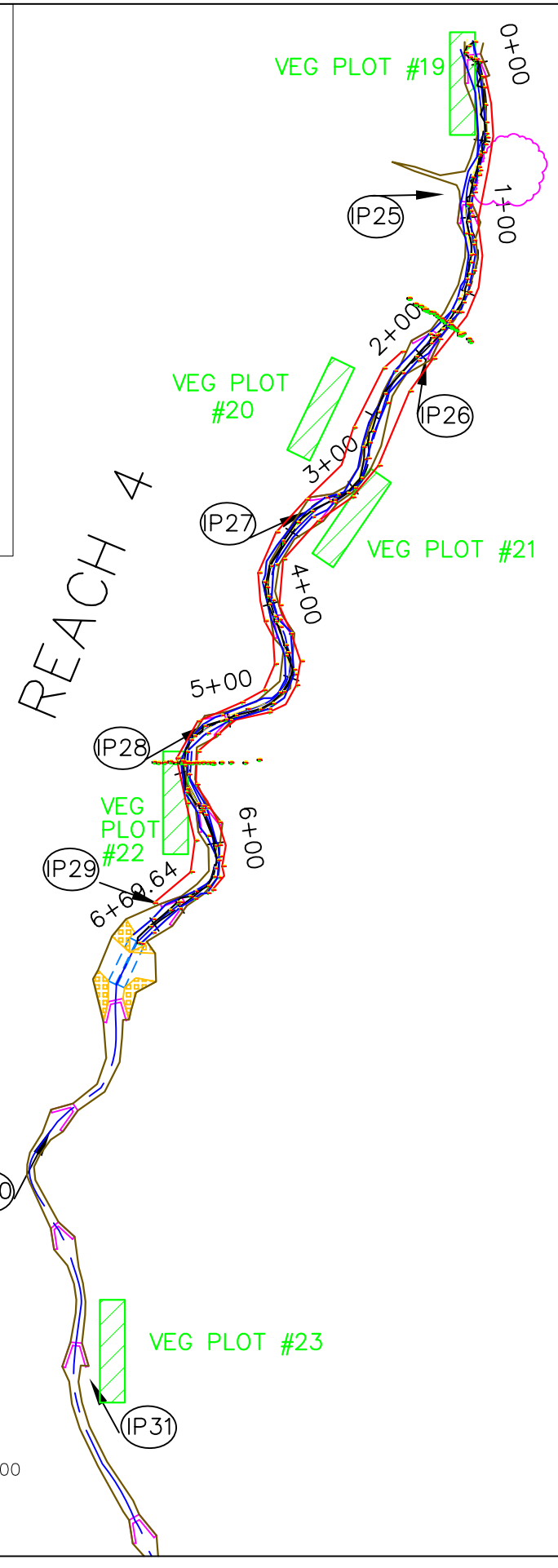
Raleigh, NC 27695

PURLEAR CREEK – PHASE 1
WILKES COUNTY, N.C.

PROBLEM AREA PLAN SHEET
SHEET 2 of 3

DATE 03/01/2006
PROJECT NO. 294
FILENAME PULEAR ASBUILT 05.DWG
SHEET NO. PROBLEM 2 of 3

LEGEND
2006 THALWEG
2006 WATER EDGE
2006 BANKFULL
AS-BUILT TOP OF BANK
AS-BUILT THALWEG
2005 THALWEG
PROBLEM PHOTO IP#
VEG PLOT
PROBLEM AREA



SCALE 1" = 100'
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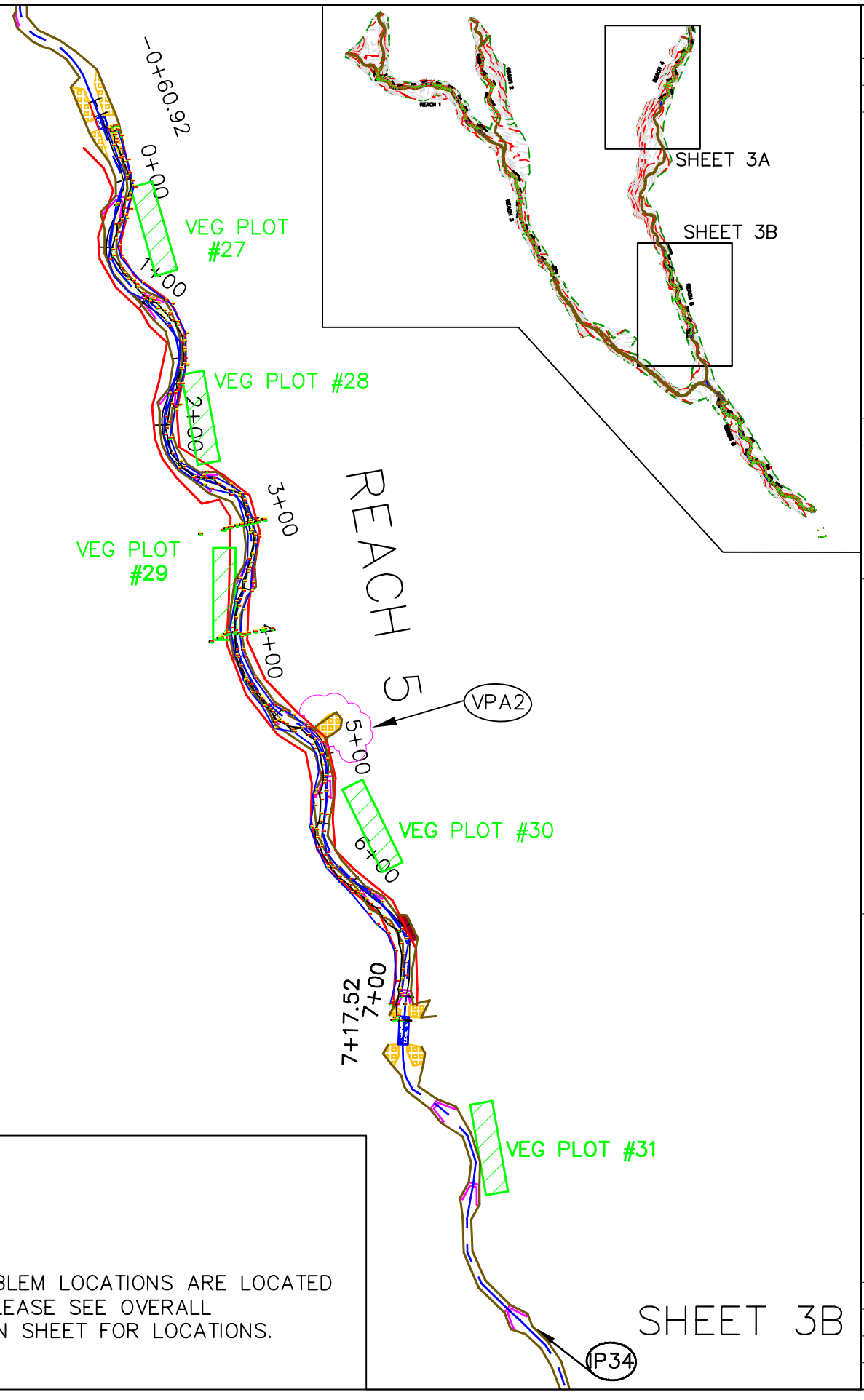
SHEET 3A



SHEET 3B

NOTE:
ADDITIONAL PROBLEM LOCATIONS ARE LOCATED DOWNSTREAM. PLEASE SEE OVERALL MONITORING PLAN SHEET FOR LOCATIONS.

NO	REVISIONS	DRN	CHK	DATE
1	MONITORING PLAN	DAB	DRC	03/01/06

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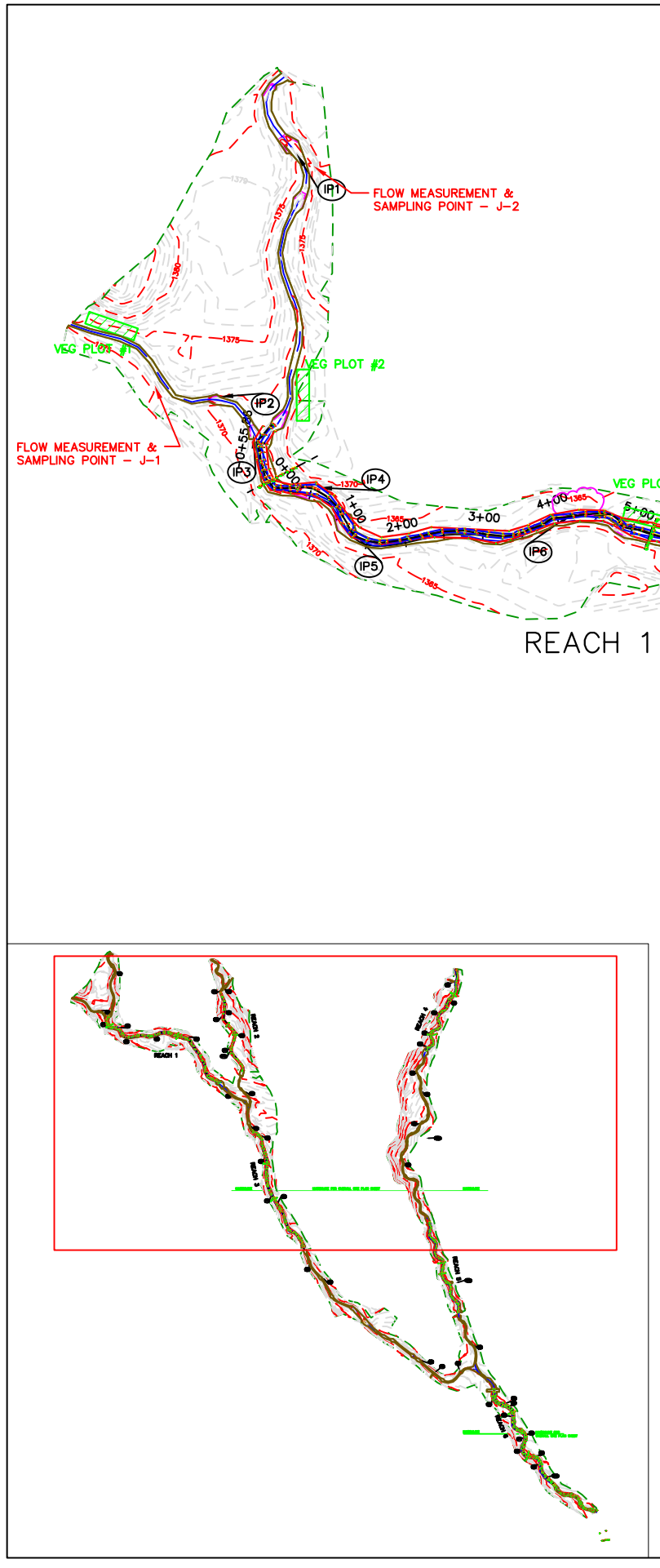
North Carolina State University
Raleigh, NC 27695

PURLEAR CREEK - PHASE 1
WILKES COUNTY, N.C.

PROBLEM AREA PLAN SHEET
SHEET 3 of 3

DATE 03/01/2006
PROJECT NO. 294
FILENAME PULEAR ASBUILT 05.DWG
SHEET NO. PROBLEM 3 of 3



LEGEND

- 2006 THALWEG
- 2006 WATER EDGE
- 2006 BANKFULL
- AS-BUILT TOP OF BANK
- AS-BUILT THALWEG
- 2005 THALWEG
- PROBLEM PHOTO (IP#)
- VEG PLOT
- PROBLEM AREA

NO	REVISIONS	DRN	CHK	DATE
1	AS-BUILT PLAN	DRC	DAB	03/01/06

NC STATE UNIVERSITY

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Weaver Labs Campus Box 7625
North Carolina State University
Raleigh, NC 27695

PURLEAR CREEK – PHASE 1
WILKES COUNTY, N.C.
OVERALL PROBLEM AREA PLAN SHT
SHEET 1 of 2

DATE 03/01/2006
PROJECT NO. 294
FILENAME PULEAR ASBUILT 05.DWG
SHEET NO. PROB OVERALL 1 of 2

MATCHLINE

MATCHLINE FOR OVERALL SITE PLAN SHEET

MATCHLINE

REACH 3

REACH 5

REACH 6

VEG PLOT #11

VEG PLOT #12

VEG PLOT #13

VEG PLOT #14

VEG PLOT #15

VEG PLOT #16

VEG PLOT #17

VEG PLOT #18

VEG PLOT #26

VEG PLOT #27

VEG PLOT #28

VEG PLOT #29

VEG PLOT #30

VEG PLOT #31

VEG PLOT #32

VEG PLOT #33

VEG PLOT #34

GROUNDWATER MONITORING LOCATION W-1

GROUNDWATER MONITORING LOCATION W-2

FLOW MEASUREMENT & SAMPLING POINT – J-10

FLOW MEASUREMENT &

SCALE 1" = 200'

100 0 100 200

LEGEND

2006 THALWEG

2006 WATER EDGE

2006 BANKFULL

AS-BUILT TOP OF BANK

AS-BUILT THALWEG

2005 THALWEG

PROBLEM AREA PHOTO

VEG PLOT

PROBLEM AREA

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Raleigh, NC 27695

NO	REVISIONS	DRN	CHK	DATE
1	AS-BUILT PLAN	DRC	DAB	03/01/06

PURLEAR CREEK – PHASE 1
WILKES COUNTY, N.C.

OVERALL PROBLEM AREA PLAN
SHEET
SHEET 2 of 2

DATE 03/01/2006

PROJECT NO. 294

FILENAME PULEAR ASBUILT 05.DWG

SHEET NO. PROB OVERALL 2 of 2

2006 Purlear Phase 1
Stream
Problem Areas

Reach 1

Jan. 2006

Sept. 5, 2006

IP 1 Bed Elevation Drop (Upstream of Study Reach)

Jan. 2006

Sept. 5, 2006

IP 2 Bed Elevation Drop (Upstream of Study Reach)

Jan. 2006

Sept. 5, 2006

IP 3 Bed Elevation Drop (Upstream of Study Reach)

Jan. 2006

Sept. 5, 2006

IP 4 Bed Elevation Drop (Station 0+30)

Jan. 2006

Sept. 5, 2006

IP 5 Bed Elevation Drop (Station 0+89)

Jan. 2006

Sept. 5, 2006

IP 6 Bank Erosion (Station 4+25)

Jan. 2006

Sept. 5, 2006

IP 7 Bed Elevation Drop (Station 5+50)

Jan. 2006

Sept. 5, 2006

IP 8 Bed Elevation Drop Below Study Reach)

Reach 2

Jan. 2006

Sept. 5, 2006

IP 9 Bed Elevation Drop (Upstream of Study Reach)

Jan. 2006

Sept. 5, 2006

IP 10 Bed Elevation Drop (Upstream of Study Reach)

Jan. 2006

Sept. 5, 2006

IP 11 Bed Elevation Drop (Station -1+30)

Jan. 2006

Sept. 5, 2006

IP 12 Bed Elevation Drop (Station -0+65)

Jan. 2006

Sept. 5, 2006

IP 13 Bed Elevation Drop (Station 0+74)

Jan. 2006

Sept. 5, 2006

IP 14 Bed Elevation Drop (Station 1+75)

Sept. 5, 2006

IP12a (new) Piping through cross vane (Station 2+20)

Jan. 2006

Sept. 5, 2006

IP 15 Bed Elevation Drop (Below Study Reach)

Reach 3

Jan. 2006

Sept. 5, 2006

IP 16 Bed Elevation Drop (Above Study Reach)

Jan. 2006

Sept. 5, 2006

IP 17 Double Drop Vane w/ Erosion (Above Study Reach)

Jan. 2006

Sept. 5, 2006

IP 18 Slump Arm (Station 0+00)

Jan. 2006

Sept. 5, 2006

IP 19 Bed Elevation Drop (Station 2+77)

Jan. 2006

Sept. 5, 2006

IP 20 Erosion Ground Hog Tunnels (Station 4+00)

Jan. 2006

Sept. 5, 2006

IP 21 Bed Elevation Drop (Below Study Reach)

Jan. 2006

Sept. 5, 2006

IP 22 Slump Arm and Piping (Below Study Reach)

Jan. 2006

Sept. 5, 2006

IP 23 Bed Elevation Drop (Below Study Reach)

Jan. 2006 **Sept. 5, 2006**

IP 24 Excess Nutrients through Buffer (Below Study Reach)

Reach 4

Jan. 2006 **Sept. 5, 2006**

IP 25 Excess Nutrients through Buffer (Station 0+50)

Jan. 2006 **Sept. 5, 2006**

IP 26 Bed Elevation Drop (Station 1+84)

Jan. 2006

Sept. 5, 2006

IP 27 Bed Elevation Drop (Station 3+15)

Jan. 2006

Sept. 5, 2006

IP 28 Bed Elevation Drop (Station 5+00)

Jan. 2006

Sept. 5, 2006

IP 29 Bed Elevation Drop (Station 6+50)

Reach 5

Jan. 2006

Sept. 5, 2006

IP 30 Bed Elevation Drop (Above Study Reach)

Jan. 2006

Sept. 5, 2006

IP 31 Bed Elevation Drop (Above Study Reach)

Jan. 2006

Sept. 5, 2006

IP 32 Bed Elevation Drop (Above Study Reach)

Jan. 2006

Sept. 5, 2006

IP 33 Bed Elevation Drop (Above Study Reach)

Jan. 2006

Sept. 5, 2006

IP 34 Bed Elevation Drop (Below Study Reach)

Reach 6

Jan. 2006

Sept. 5, 2006

IP 35 Bed Elevation Drop (Above Study Reach)

Drain Tile could not be field located

Jan. 2006 **Sept. 5, 2006**

IP 36 Tile (Above Study Reach)

Jan. 2006 **Sept. 5, 2006**

IP 37 Bed Elevation Drop (Station 1+00)

Jan. 2006 **Sept. 5, 2006**

IP 38 Vane Slump and Erosion (Station 1+00)

Jan. 2006

Drain Tile could not be field located

Sept. 5, 2006

IP 39 Tile (Station 2+10)

Jan. 2006

Sept. 5, 2006

IP 40 Vane Undermine Rt. Arm (Station 3+50)

Jan. 2006

Sept. 5, 2006

IP 41 Bank Erosion (Station 4+70)

Jan. 2006

Sept. 5, 2006

IP 42 Bed Elevation Drop (Station 4+70)

Jan. 2006

Sept. 5, 2006

IP 43 Bed Elevation Drop (Station 6+00)

Jan. 2006

Sept. 5, 2006

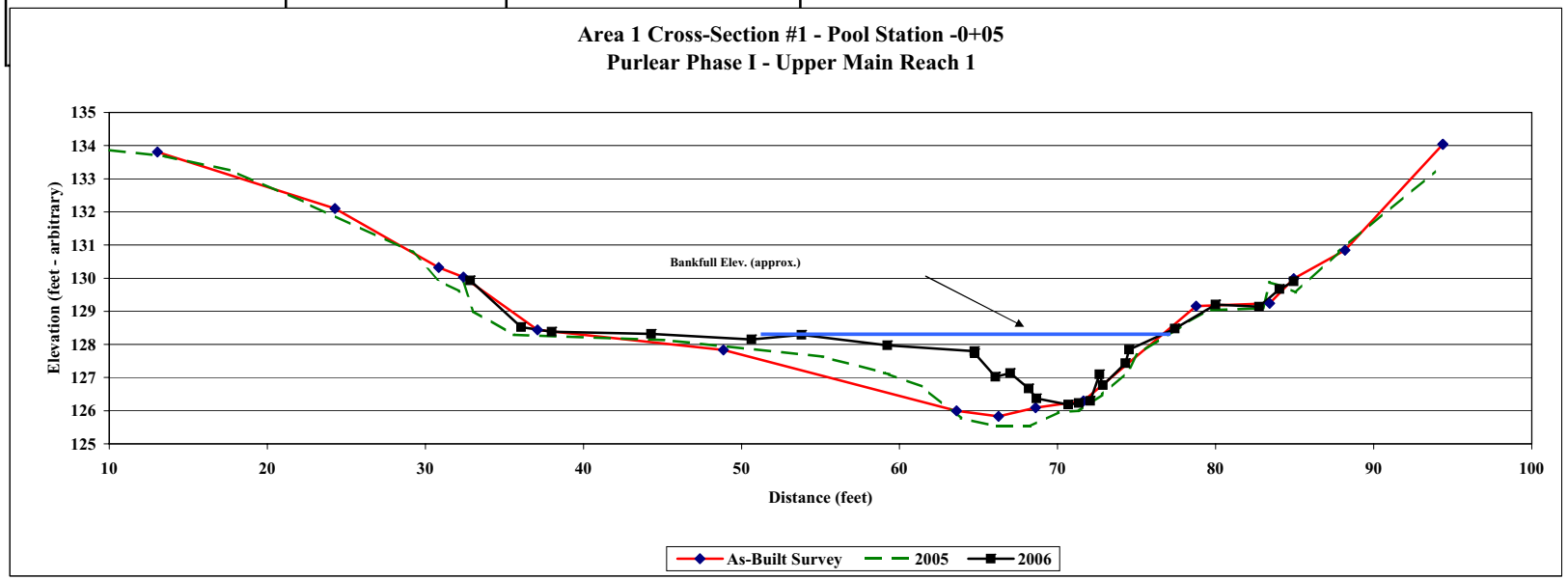
IP 44 Bank Erosion (Station 7+50)

Project Name	Purlear Phase I
Cross Section	1 - Upper Main Reach 1
Feature	Pool
Date	8/1/2006
Crew	Shaffer, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
13.04	133.81	XS4	10.03	133.86	X1	201	32.84	129.93	(R1X1LP)
24.29	132.1	XS4	13.58	133.68	X1	202	36.06	128.52	(R1X1)
30.85	130.32	XS4	17.69	133.25	X1	203	37.99	128.38	(R1X1)
32.4	130.03	XS4LP	22.36	132.29	X1	204	44.29	128.32	(R1X1)
37.1	128.44	BKF	29.17	130.79	X1	205	50.64	128.15	(R1X1)
48.85	127.83	XS4	30.89	129.92	x1lp	206	53.8	128.29	(R1X1)
63.6	126	XS4	32.14	129.6	X1	207	59.22	127.97	(R1X1)
66.26	125.83	XS4	32.4	129.86	X1LP	208	64.73	127.8	(R1X1)
68.6	126.09	XS4	33.04	129.01	X1	212	64.76	127.73	(R1X1)
71.64	126.3	XS4	35.62	128.29	BKF	211	66.07	127.02	(R1X1W)
78.77	129.16	XS4BF	45.44	128.12	X1	209	67	127.13	(R1X1)
83.42	129.24	XS4	55.17	127.63	X1	210	68.18	126.67	(R1X1)
84.94	129.99	XS4LP	59.03	127.14	X1W	213	68.66	126.37	(R1X1)
88.18	130.84	XS4	59.34	127.1	w	215	70.68	126.18	(R1X1)
94.37	134.04	XS4	61.4	126.73	X1	216	71.35	126.23	(R1X1)
94.37	134.04	XS4	63.89	125.77	X1	217	72.06	126.3	(R1X1)
			66.2	125.52	X1	214	72.65	127.1	(R1X1W)
			68.27	125.53	X1T	218	72.87	126.77	(R1X1)
			70.05	125.95	m	219	74.3	127.43	(R1X1)
			71.36	126	X1	221	74.53	127.84	(R1X1)
			72.82	126.49	X1	222	77.41	128.48	(R1X1)
			74.47	127.19	X1W	220	80	129.2	(R1X1)
			75.06	127.7	X1	223	82.75	129.14	(R1X1)
			77.76	128.54	X1	224	84.04	129.67	(R1X1)
			79.49	129.04	X1B	225	84.94	129.9	(R1X1RP)
			83.01	129.09	X1				
			83.42	129.87	x1rp				
			84.28	129.74	X1RP				
			85.08	129.57	X1				
			87.8	130.8	X1				
			93.87	133.23	X1				

Photo of Area 1 Cross-Section #1 - Looking Downstream

	As-Built	2005	2006
Area	36.7	35.5	14.8
Width	29.9	29.6	22.7
Mean Depth	1.2	1.2	0.6
Max Depth	2.3	2.6	1.9



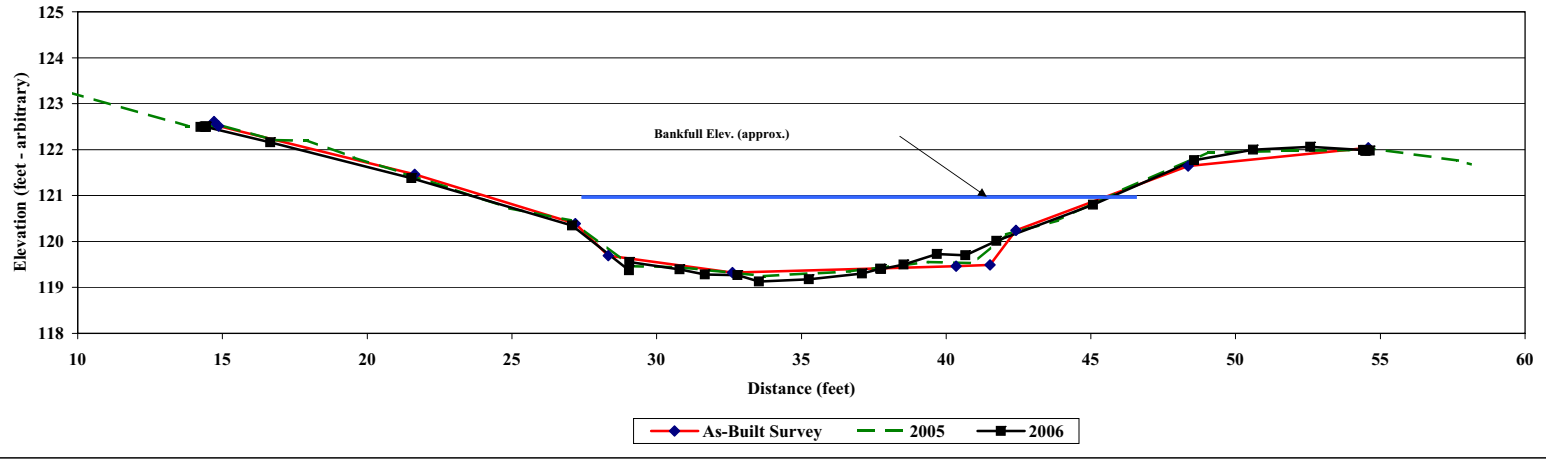
Project Name	Purlear Phase I
Cross Section	2 - Upper Main Reach 1
Feature	Riffle
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	**Elev.**	**Notes**	**Station**	**Elev.**	**Notes**	**Pt #**	**Station**	**Elev.**	**Notes**
14.71	122.61	XPR	5.91	123.92	X2	491	14.25	122.49	R1X2LP
14.86	122.51	XSRPL	13.78	122.51	x2lp	395	14.39	122.5	R1X2LP
21.64	121.46	XSR3	14.67	122.51	X2	463	14.42	122.5	R1X2LP
27.19	120.39	XSR3	14.86	122.55	X2LP	200	14.42	122.5	R1X2LP
28.33	119.69	XSR3	16.74	122.21	X2	486	14.43	122.49	R1X2LP
32.62	119.32	XSR3	17.94	122.2	2lp	462	16.65	122.16	R1X2
40.34	119.46	XSR3	19.54	121.83	X2B	461	21.53	121.38	R1X2
41.52	119.49	XSR3	21.16	121.5	X2	460	27.08	120.35	R1X2
42.41	120.24	XSR3	22.93	121.15	X2	392	29.05	119.37	R1X2W
48.36	121.64	XSR3	24.92	120.72	X2	459	29.06	119.55	R1X2
54.58	122.04	XSR3	27.04	120.46	X2	458	30.79	119.39	R1X2W
			29.12	119.46	X2	457	31.67	119.28	R1X2
			30.77	119.44	X2	456	32.8	119.27	R1X2
			33.71	119.25	X2T	455	33.53	119.13	R1X2
			36.67	119.35	X2	454	35.26	119.18	R1X2
			39.37	119.55	X2	453	37.1	119.3	R1X2
			40.95	119.53	X2	452	37.72	119.41	R1X2W
			42.08	120.15	X2	393	37.76	119.4	R1X2W
			43.86	120.46	X2	451	38.53	119.5	R1X2
			46.07	121.11	X2	450	39.68	119.73	R1X2
			49.05	121.94	X2B	449	40.67	119.7	R1X2
			53.92	121.99	x2rp	448	41.74	120.01	R1X2
			54.29	122.03	X2	447	45.08	120.8	R1X2
			54.6	122.03	X2RP	446	48.57	121.77	R1X2
			57.68	121.76	X2	445	50.6	122	R1X2
			58.12	121.68	2rp	394	52.58	122.06	R1X2
						485	54.41	121.99	R1X2RP
						444	54.47	121.99	R1X2RP
						391	54.48	121.97	R1X2RP
						490	54.53	121.98	R1X2RP
						199	54.64	121.98	R1X2RP

Photo of Area 1 Cross-Section #2 - Looking Downstream

	As-Built	**2005**	**2006**
Area	39.6	39.6	41.0
Width	26.7	26.4	31.4
Mean Depth	1.5	1.5	1.3
Max Depth	2.3	2.3	2.5
w/d ratio	18.1	17.6	24.1
FPW	53	53	53
ER (greater than)	2.0	2.0	1.7
Stream Type	C4	C4	C4

Area 1 Cross-Section #2 - Riffle Station 5+25
Purlear Phase I - Upper Main

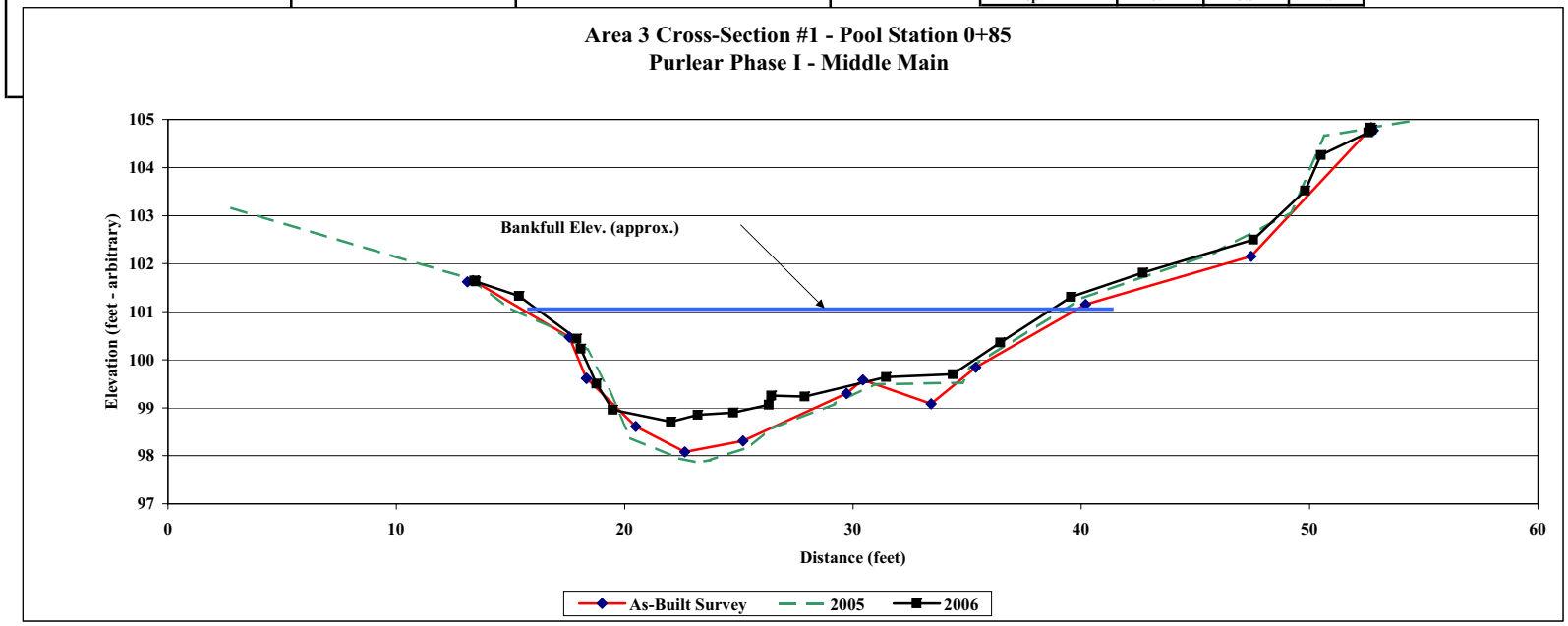


Project Name	Purlear Phase I
Cross Section	1 - Middle Main Reach 3
Feature	Pool
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
13.12	101.62	X2P	2.79	103.16	fl	630	13.42	101.65	(R3X2LP)
13.37	101.65	X2PLP	13.37	101.66	x2lp	707	13.47	101.63	(R3X1LP)
17.58	100.47	X2P	14.78	101.12	bf	709	15.37	101.33	(R3X1)
18.33	99.61	X2P	16.79	100.67	x2	711	17.9	100.44	(R3X1)
18.34	99.61	X2P	18.36	100.21	x2	712	18.07	100.23	(R3X1)
20.48	98.61	X2P	19.3	99.39	x2	714	18.76	99.5	(R3X1)
22.64	98.08	X2P	20.27	98.37	x2	710	19.48	98.96	(R3X1W)
25.19	98.31	X2P	22.33	97.95	x2	713	22.03	98.71	(R3X1)
29.72	99.3	X2P	23.19	97.86	m	715	23.2	98.85	(R3X1)
30.44	99.58	WS	23.77	97.91	x2	716	24.76	98.9	(R3X1)
33.43	99.08	X2P	25.49	98.19	x2	717	26.31	99.06	(R3X1W)
35.38	99.84	X2P	26.28	98.53	x2	719	26.43	99.25	(R3X1)
40.19	101.15	X2P	29.21	99.08	x2	718	27.88	99.23	(R3X1)
47.43	102.15	X2P	30.95	99.49	x2	720	31.46	99.64	(R3X1)
52.7	104.83	X2PRP	34.79	99.52	x2	721	34.38	99.7	(R3X1)
52.79	104.77	X2P	35.13	99.83	x2	722	36.45	100.36	(R3X1)
			39.94	101.26	x2	723	39.55	101.31	(R3X1)
			45.88	102.24	x2	725	42.7	101.81	(R3X1)
			49.19	103.07	x2	724	47.53	102.5	(R3X1)
			50.66	104.66	x2	726	49.8	103.52	(R3X1)
			52.49	104.81	x2rp	727	50.49	104.26	(R3X1)
			54.45	104.97	fl	728	52.58	104.73	(R3X1)
						629	52.64	104.82	(R3X2RP)
						729	52.65	104.83	(R3X1RP)
						708	52.73	104.79	(R3X1RP)

Photo of Area 3 Cross-Section #1 - Looking Downstream

	As-Built	2005	2006
Area	43.7	44.8	37.0
Width	22.6	26.2	24.2
Mean Depth	1.9	1.7	1.5
Max Depth	3.1	3.3	2.5

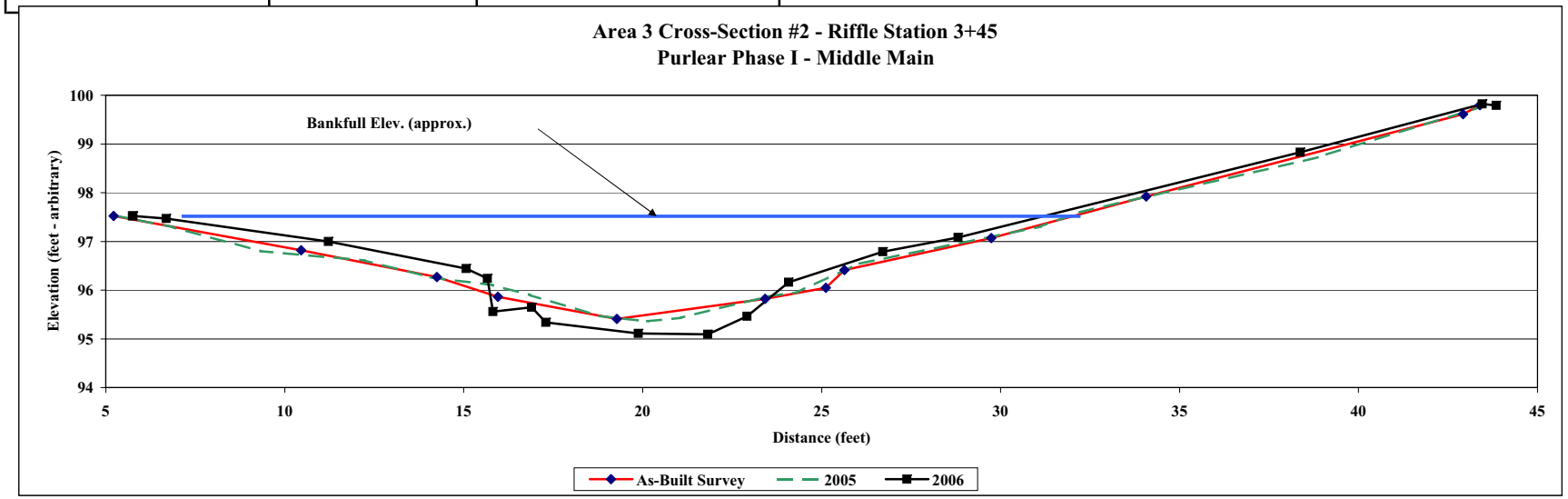


Project Name	Purlear Phase I
Cross Section	2 - Middle Main Reach 3
Feature	Riffle
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	**Elev.**	**Notes**	**Station**	**Elev.**	**Notes**	**Pt #**	**Station**	**Elev.**	**Notes**
5.22	97.52	X1L	5.22	97.54	x1lp	791	5.75	97.52	(R3X2LP)
10.46	96.82	X1	6.89	97.29	x1	632	5.76	97.52	(R3X2LP06)
14.25	96.27	X1	9.33	96.8	x1	794	6.69	97.47	(R3X2)
15.96	95.86	X1LEW	12.24	96.61	x1	796	11.22	97	(R3X2)
19.28	95.41	X1	14.08	96.26	x1	798	15.07	96.44	(R3X2)
23.42	95.82	X1REW	15.82	96.1	x1	800	15.66	96.24	(R3X2)
25.12	96.05	X1	16.86	95.9	x1	802	15.82	95.56	(R3X2)
25.64	96.41	X1	18.8	95.47	x1	805	16.9	95.65	(R3X2)
29.74	97.07	X1	20.13	95.36	x1	793	17.3	95.34	(R3X2W)
34.07	97.92	X1	21.07	95.43	x1	797	19.88	95.11	(R3X2)
42.92	99.61	X1	23.48	95.87	x1	801	21.82	95.09	(R3X2)
43.39	99.8	X1R	24.33	95.96	x1	803	22.92	95.46	(R3X2W)
			25.99	96.53	x1	804	24.08	96.16	(R3X2)
			31.13	97.31	x1	806	26.71	96.79	(R3X2)
			32.16	97.59	x1	807	28.81	97.08	(R3X2)
			38.87	98.73	x1	799	38.37	98.83	(R3X2)
			43.55	99.79	x1rp	795	43.46	99.82	(R3X2RP)
						631	43.85	99.79	(R3X2RP06)

Photo of Area 3 Cross-Section #2 - Looking Downstream

	As-Built	**2005**	**2006**
Area	28.3	28.1	27.2
Width	24.5	24.2	25.1
Mean Depth	1.2	1.2	1.1
Max Depth	2.1	2.1	2.4
w/d ratio	21.3	20.9	23.0
FPW	60	60	60
ER (greater than)	2.4	2.5	2.4
Stream Type	C4	C4	C4

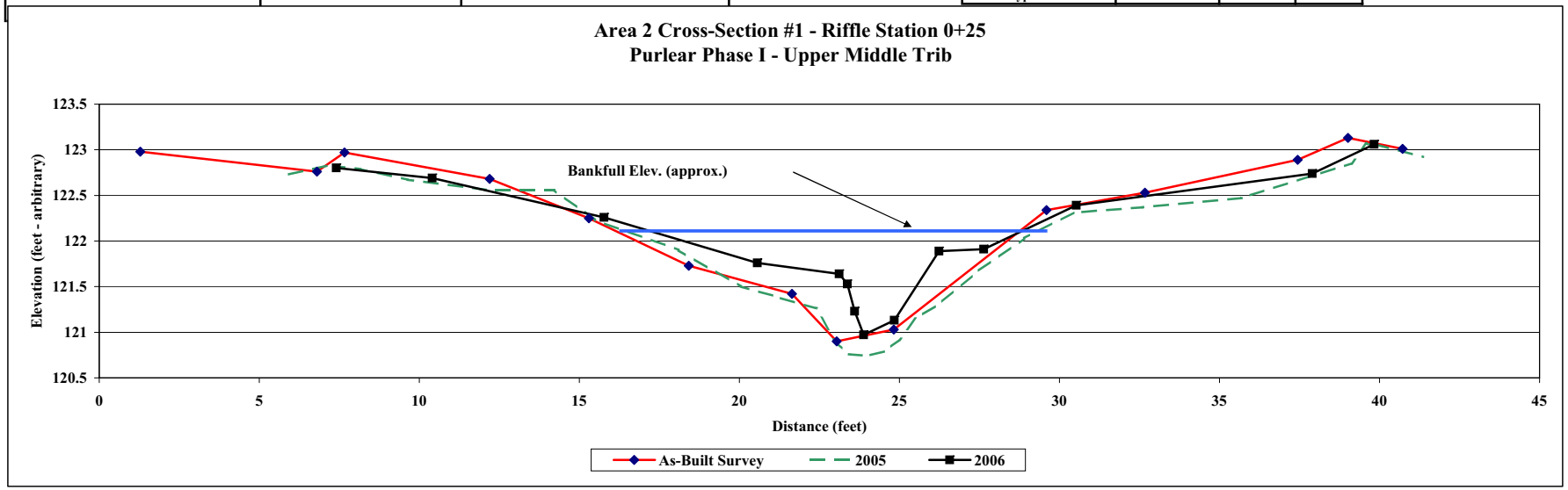


Project Name	Purlear Phase I
Cross Section	1 - Upper Middle Trib Reach 2
Feature	Riffle
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	**Elev.**	**Notes**	**Station**	**Elev.**	**Notes**	**Pt #**	**Station**	**Elev.**	**Notes**
1.28	122.98	X1	5.93	122.73	X1	65	7.41	122.8	(R1X1LP)
6.8	122.76	X1TPL	7.15	122.83	X1LP	63	10.4	122.69	(R1X1)
7.66	122.97	X1	7.25	122.82	X1LP	61	15.77	122.26	(R1X1)
12.2	122.68	X1	7.36	122.82	x1lp	59	20.56	121.76	(R1X1)
15.3	122.25	XB	8.16	122.79	X1	64	23.12	121.64	(R1X1)
18.42	121.73	X1	9.64	122.67	X1	62	23.37	121.53	(R1X1W)
21.64	121.42	X1	12.08	122.56	X1	60	23.6	121.23	(R1X1)
23.04	120.9	XT	14.22	122.56	X1	58	23.88	120.97	(R1X1)
24.82	121.03	W	15.49	122.23	X1	57	24.84	121.13	(R1X1)
29.6	122.34	XB	18.1	121.9	X1	55	26.24	121.89	(R1X1)
32.67	122.53	X1	20.05	121.5	X1	54	27.64	121.91	(R1X1)
37.44	122.89	X1	21.24	121.38	X1	53	30.53	122.39	(R1X1)
39.02	123.13	X1TPR	22.4	121.26	X1	52	37.9	122.74	(R1X1)
40.72	123.01	X1	23	120.9	X1	51	39.83	123.06	(R1X1RP)
			23.43	120.76	X1				
			24	120.74	X1				
			24.52	120.79	X1				
			24.99	120.92	X1				
			25.54	121.16	X1				
			26.28	121.32	X1				
			27.34	121.64	X1				
			28.9	122.03	X1				
			30.44	122.31	X1				
			32.6	122.37	X1				
			35.69	122.47	X1				
			39.11	122.85	X1				
			39.6	123.07	X1rp				
			39.76	123.05	x1rp				
			39.79	123.07	X1RP				
			41.36	122.92	X1				

Photo of Area 2 Cross-Section #1 - Looking Downstream

	As-Built	**2005**	**2006**
Area	11.9	12.4	8.6
Width	17.4	16.2	17.3
Mean Depth	0.7	0.8	0.5
Max Depth	1.5	1.7	1.4
w/d ratio	25.5	21.1	34.6
FPW	40	40	40
ER (greater than)	2.3	2.5	2.3
Stream Type	C4	C4	C4



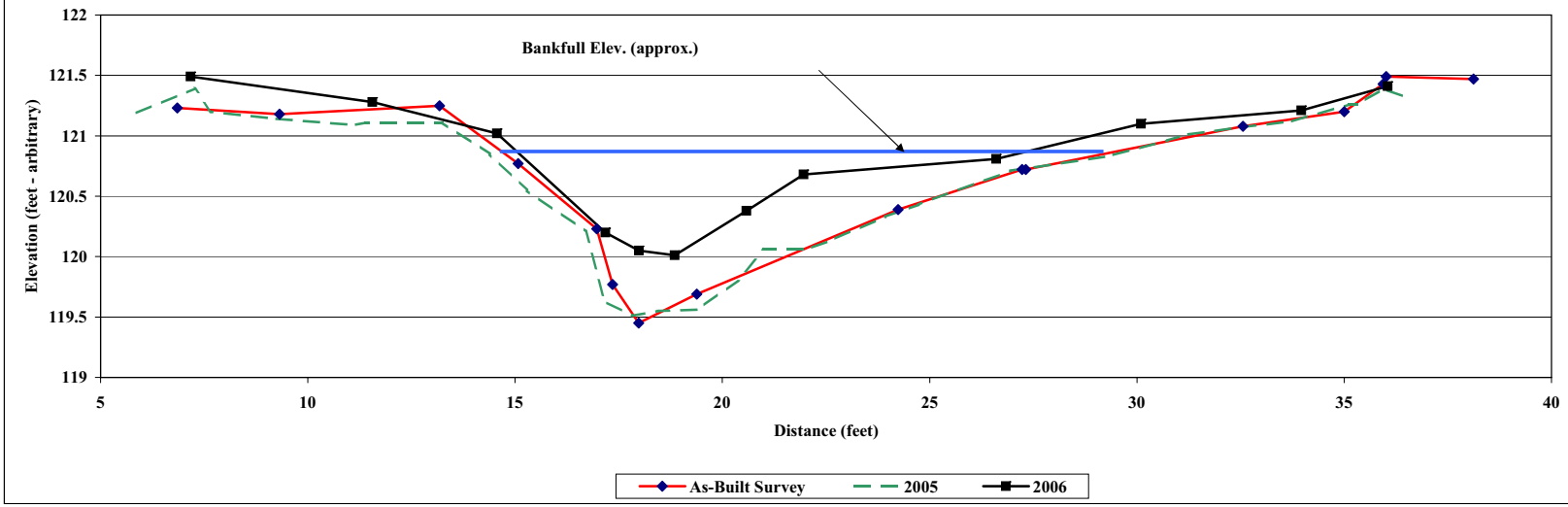
Project Name	Purlear Phase I
Cross Section	2 - Upper Middle Trib Reach 2
Feature	Pool
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	**Elev.**	**Notes**	**Station**	**Elev.**	**Notes**	**Pt #**	**Station**	**Elev.**	**Notes**
6.85	121.23	X2TPL	5.88	121.19	X2	109	7.17	121.49	(R1X2LP)
9.32	121.18	X2	7.26	121.39	X2LP	108	11.56	121.28	(R1X2)
13.18	121.25	X2	7.66	121.2	X2	106	14.56	121.02	(R1X2)
15.07	120.77	XB	9.24	121.14	X2	102	17.18	120.2	(R1X2)
16.97	120.23	X2	11.11	121.09	B	107	17.99	120.05	(R1X2)
17.35	119.77	X2	11.4	121.11	X2	105	18.85	120.01	(R1X2)
17.98	119.45	XT	13.25	121.11	X2	104	20.58	120.38	(R1X2)
19.38	119.69	XW	14.39	120.85	X2	101	21.96	120.68	(R1X2)
24.24	120.39	X2	15.29	120.55	X2	100	26.61	120.81	(R1X2)
27.23	120.72	XB	16.71	120.21	X2	99	30.1	121.1	(R1X2)
27.32	120.72	7	17.16	119.63	X2	97	33.97	121.21	(R1X2)
32.56	121.08	X2	17.82	119.51	X2	98	36.05	121.41	(R1X2RP)
35	121.2	X2	18.45	119.55	X2				
35.94	121.43	X2RP	19.4	119.56	X2				
36.01	121.49	X2RT	20.36	119.8	X2				
38.12	121.47	X2	21.01	120.06	X2				
			22.04	120.06	X2				
			22.66	120.14	X2				
			23.93	120.33	X2				
			24.73	120.43	X2				
			26.95	120.71	X2				
			29.28	120.83	X2				
			30.74	120.96	X2				
			31.17	121.01	B				
			32.52	121.07	X2				
			33.74	121.12	X2				
			35.11	121.26	X2				
			35.31	121.26	X2				
			35.94	121.39	X2RP				
			36.57	121.31	X2				

Photo of Area 2 Cross-Section #2 - Looking Downstream

	As-Built	**2005**	**2006**
Area	12.8	13.4	7.6
Width	19.4	19.3	18.5
Mean Depth	0.7	0.7	0.4
Max Depth	1.6	1.6	1.1

Area 2 Cross-Section #2 - Pool Station 1+15
Purlear Phase I - Upper Middle Trib

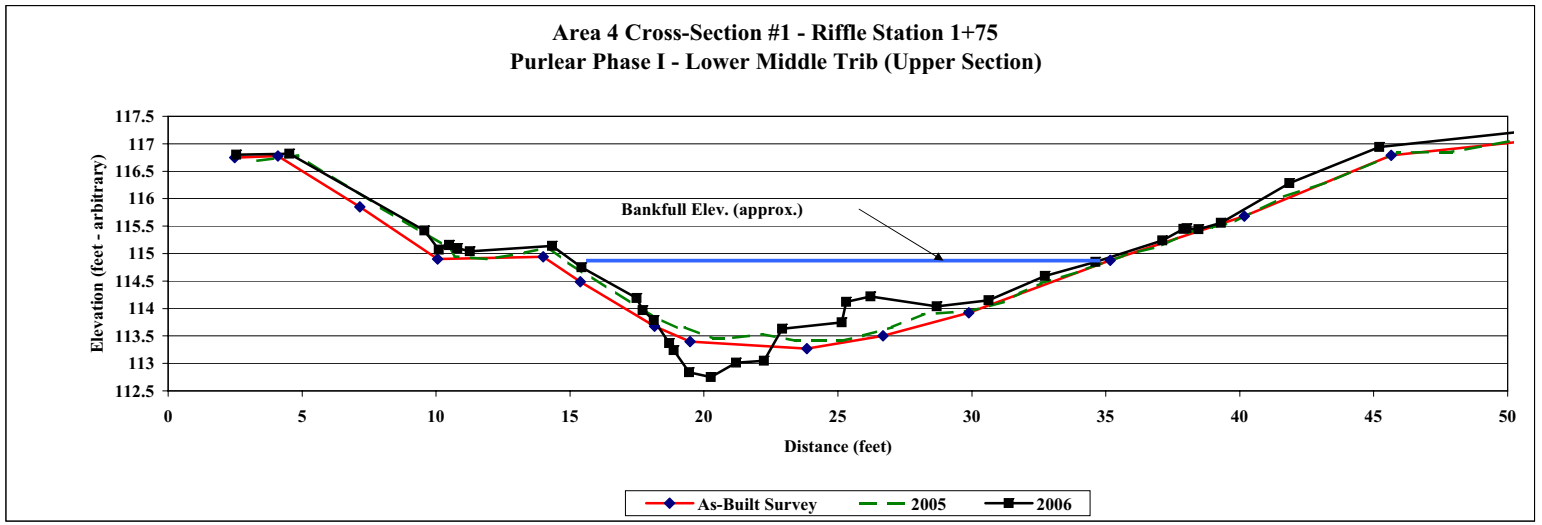


Project Name	Purlear Phase I
Cross Section	1 - Lower Middle Trib (Upper Section) Reach 4
Feature	Riffle
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
2.48	116.75	X1	3.34	116.69	x1	1036	2.55	116.8	(x1r4)
4.1	116.78	X1	4.85	116.79	x1	1037	4.53	116.82	(x1r4)
7.15	115.85	X1	7.96	115.84	x1	1038	9.57	115.42	(x1r4)
10.06	114.9	X1	10.49	115.1	x1lp	1039	10.1	115.07	(x1r4)
14	114.94	X1B	10.72	114.95	x1	1127	10.49	115.16	(r4x1lp)
15.38	114.49	X1	11.97	114.9	x1	1040	10.49	115.15	(x1r4lp)
18.15	113.68	X1EW	13.34	115.02	x1	1199	10.8	115.1	(r4x1lp)
19.48	113.4	X1	14.22	115.11	x1	1041	11.26	115.04	(x1r4)
23.84	113.27	X1	14.65	114.93	bf	1042	14.33	115.14	(x1r4)
26.69	113.5	X1EW	18.05	113.87	x1	1043	15.43	114.75	(x1r4)
29.89	113.92	X1	18.98	113.65	x1	1044	17.49	114.19	(x1r4)
35.16	114.88	X1	19.29	113.66	w	1045	17.71	113.97	(x1r4)
40.17	115.68	X1RP	20.35	113.45	x1	1046	18.13	113.79	(x1r4)
45.65	116.79	X1	20.83	113.45	x1	1047	18.7	113.37	(x1r4)
50.51	117.04	X1	22.2	113.53	x1	1048	18.87	113.24	(x1r4)
			23.43	113.41	x1	1049	19.45	112.84	(x1r4)
			24.42	113.41	x1	1050	20.26	112.75	(x1r4)
			25.14	113.41	x1	1051	21.2	113.01	(x1r4)
			25.96	113.51	x1	1052	22.24	113.05	(x1r4)
			27.03	113.66	x1	1053	22.92	113.63	(x1r4)
			28.16	113.89	x1	1054	25.14	113.75	(x1r4)
			30.04	113.96	x1	1055	25.31	114.12	(x1r4)
			31.19	114.12	x1	1056	26.22	114.22	(x1r4)
			31.8	114.28	bf	1057	28.69	114.04	(x1r4)
			32.59	114.46	x1	1058	30.63	114.15	(x1r4)
			33.97	114.67	x1	1059	32.73	114.59	(x1r4)
			35.63	114.96	x1	1060	34.62	114.85	(x1r4)
			37.06	115.14	x1	1061	37.11	115.24	(x1r4)
			38.11	115.39	x1rp	1087	37.9	115.45	(x1r4rp)
			38.94	115.47	x1	1128	38.02	115.46	(r4x1rp)
			39.77	115.57	x1	1200	38.46	115.44	(r4x1rp)
			41.63	116.03	x1	1062	39.3	115.56	(x1r4)
						1063	41.85	116.28	(x1r4)
						1064	45.21	116.94	(x1r4)
						1065	50.52	117.22	(x1r4)

Photo of Area 4 Cross-Section #1 - Looking Downstream

	As-Built	2005	2005
Area	21.8	19.1	18.8
Width	25.1	25.1	22.3
Mean Depth	0.9	0.8	0.8
Max Depth	1.6	1.5	2.2
w/d ratio	28.9	32.9	26.5
FPW	50	50	50
ER (greater than)	2.0	2.0	2.2
Stream Type	C4	C4	C4



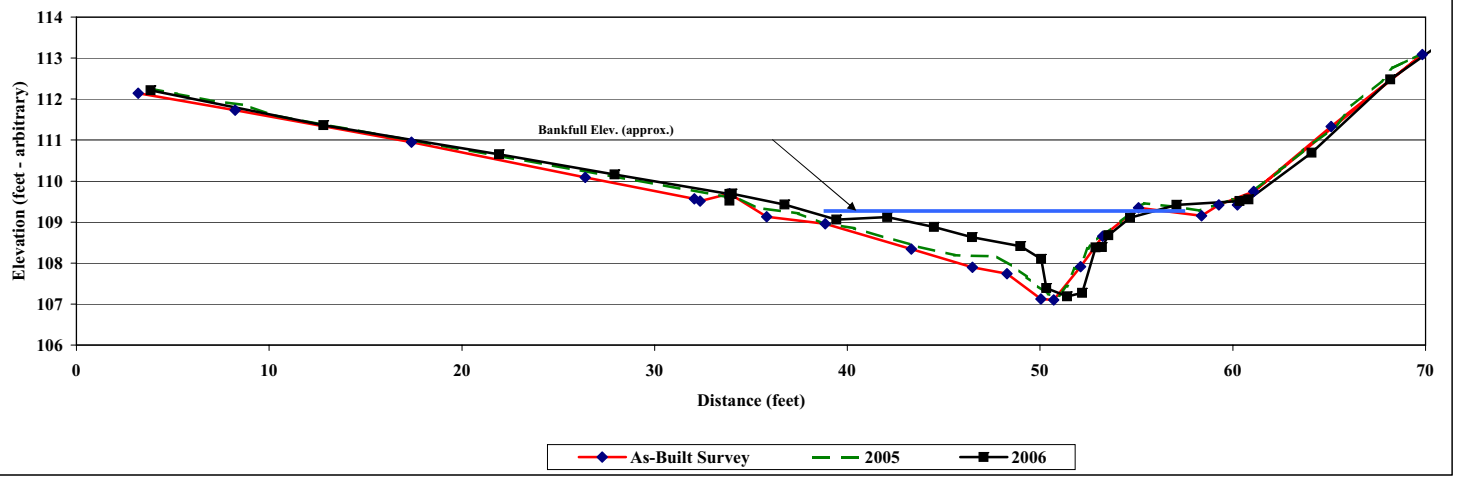
Project Name	Purlear Phase I
Cross Section	2 - Lower Middle Trib (Upper Section) Reach 4
Feature	Pool
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	**Elev.**	**Notes**	**Station**	**Elev.**	**Notes**	**Pt #**	**Station**	**Elev.**	**Notes**
3.21	112.14	X2	3.7	112.27	x2	1106	3.85	112.21	(x2)
8.23	111.73	X2	5.21	112.13	x2	1107	12.81	111.36	(x2)
17.39	110.95	X2	6.85	111.97	x2	1108	21.94	110.65	(x2)
26.4	110.09	X2	8.77	111.85	x2	1109	27.93	110.16	(x2)
32.06	109.57	VP	10.13	111.61	x2	1035	33.88	109.68	(R4x2LP)
32.36	109.51	X2	33.72	109.61	lp	1110	33.89	109.52	(x2)
33.88	109.69	X2LP	33.88	109.68	x2lp	1091	33.98	109.68	(x2lp)
35.81	109.13	X2	35.27	109.36	x2	1102	34.01	109.69	(r4x2lp)
38.85	108.96	X2	37.48	109.21	bf	1111	36.75	109.43	(x2)
43.32	108.34	X2	38.6	108.99	x2	1112	39.44	109.06	(x2)
46.49	107.9	X2EW	40.37	108.85	x2	1113	42.08	109.12	(x2)
48.28	107.74	X2	43.55	108.41	x2	1114	44.5	108.88	(x2)
50.05	107.12	T	45.56	108.19	x2	1115	46.47	108.63	(x2)
50.71	107.1	X2	47.76	108.16	x2	1116	48.98	108.41	(x2w)
52.1	107.91	X2EW	48.93	107.83	x2	1117	50.06	108.1	(x2)
53.25	108.65	X2	49.31	107.66	x2	1118	50.33	107.39	(x2)
55.11	109.35	X2BF	49.91	107.44	x2	1119	51.4	107.19	(x2)
58.38	109.15	X2	50.42	107.25	x2	1120	52.19	107.27	(x2)
59.28	109.42	X2RP	50.91	107.18	x2	1121	52.88	108.38	(x2w)
61.08	109.75	X2	51.38	107.43	x2	1105	53.21	108.39	(x2)
65.1	111.33	X2	51.81	107.87	x2	1122	53.54	108.68	(x2)
69.83	113.09	X2	52.07	107.87	x2	1104	54.67	109.11	(x2)
60.24	109.42	X2	52.46	108.36	x2	1103	57.09	109.42	(x2)
			52.7	108.49	x2	1101	60.36	109.51	(r4x2rp)
			54.19	109.01	x2	1123	60.82	109.55	(x2)
			54.82	109.28	x2	1124	64.09	110.69	(x2)
			55.09	109.38	bf	1126	68.18	112.48	(x2)
			55.4	109.46	x2	1125	70.91	113.39	(x2)
			57.01	109.37	x2				
			58.28	109.28	x2				
			59.96	109.55	x2rp				
			59.96	109.58	rp				

Photo of Area 4 Cross-Section #2 - Looking Downstream

	As-Built	**2005**	**2005**
Area	21.5	18.1	13.9
Width	22.6	21.2	20.3
Mean Depth	1.0	0.9	0.7
Max Depth	2.3	2.2	2.2

Area 4 Cross-Section #2 - Pool Station 5+45
Purlear Phase I - Lower Middle Trib (Upper Section)

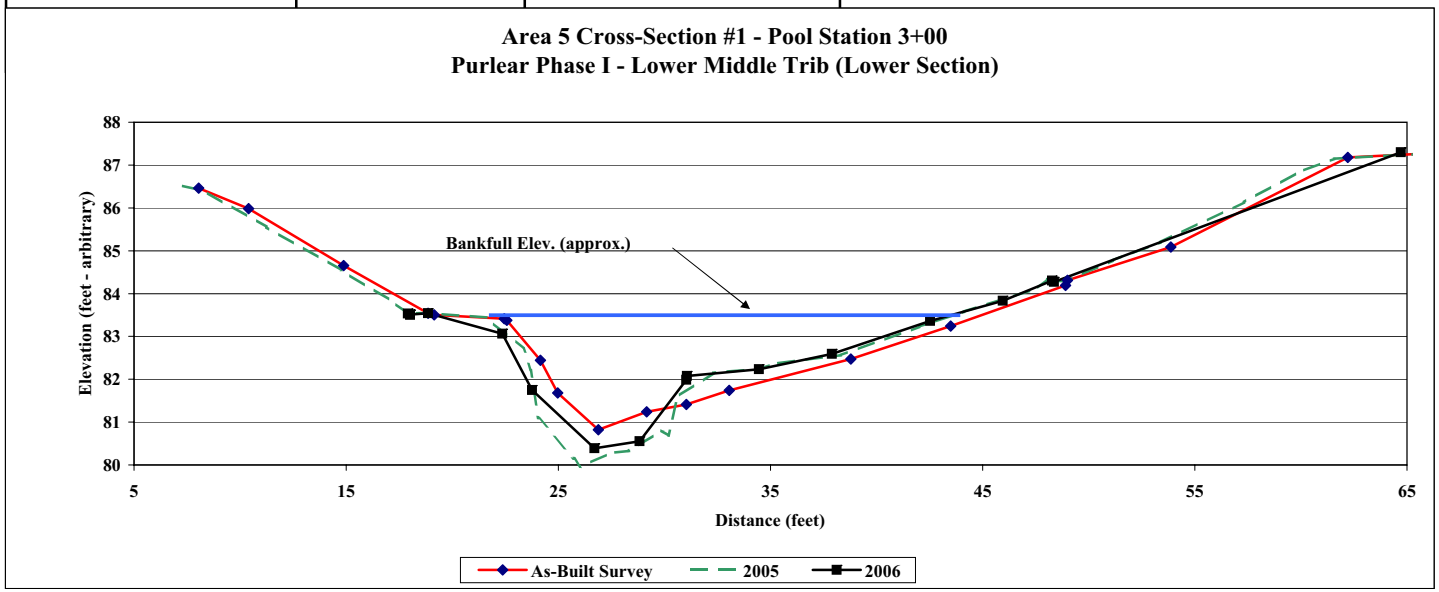


Project Name	Purlear Phase I
Cross Section	1 -Lower Middle Trib (Lower Section) Reach 5
Feature	Pool
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	**Elev.**	**Notes**	**Station**	**Elev.**	**Notes**	**Pt #**	**Station**	**Elev.**	**Notes**
8.05	86.46	X1	7.32	86.51	x1	2028	17.91	83.53	(x1p)
10.4	85.98	X1	8.35	86.39	x1	2828	18.02	83.5	(r5x1lp)
14.88	84.65	X1	11.25	85.56	x1	3097	18.02	83.51	(r5x1lp)
18.86	83.54	X1LP	14.78	84.55	x1	2067	18.86	83.54	(X1LP)
19.15	83.5	X1	17.32	83.77	x1	2827	22.36	83.06	(r5x1)
22.45	83.41	X1	17.91	83.53	x1p	2826	23.77	81.75	(r5x1)
22.57	83.38	X1B	17.99	83.53	lp	2825	26.7	80.39	(r5x1)
24.16	82.44	X1	18.71	83.55	x1	2824	28.83	80.55	(r5x1)
24.97	81.68	X1EW	21.61	83.44	x1	2823	31.04	81.99	(r5x1w)
26.89	80.82	X1	23.35	82.72	x1	2822	31.07	82.08	(r5x1)
29.17	81.24	X1	23.71	82.21	x1	2821	34.46	82.23	(r5x1)
31.03	81.41	X1	24.05	81.09	x1	2820	37.9	82.59	(r5x1)
33.05	81.74	X1EW	25.72	80.15	x1	2819	42.53	83.36	(r5x1)
38.78	82.47	X1	26.04	79.96	t	2818	45.95	83.83	(r5x1)
43.49	83.24	X1	27.48	80.28	x1	2029	48.27	84.3	(x1p)
48.91	84.19	X1	28.34	80.33	x1	2816	48.37	84.27	(r5x1rp)
48.99	84.31	X1	29.87	80.81	x1	2817	64.72	87.3	(r5x1)
53.87	85.09	X1	30.19	80.69	x1				
62.21	87.18	X1	30.63	81.6	x1				
66.44	87.28	X1	32.32	82.15	x1				
			34.54	82.25	x1				
			35.17	82.36	x1				
			38.32	82.56	x1				
			42.02	83.23	x1				
			44.13	83.58	x1				
			47.61	84.13	x1				
			48.04	84.34	rp				
			48.27	84.3	x1p				
			48.92	84.29	x1				
			51.14	84.77	x1				
			53.38	85.2	x1				

Photo of Area 5 Cross-Section #1 - Looking Downstream

	As-Built	**2005**	**2006**
Area	26.8	29.4	27.4
Width	21.4	21.4	23.7
Mean Dept	1.3	1.4	1.2
Max Depth	2.5	3.3	2.9

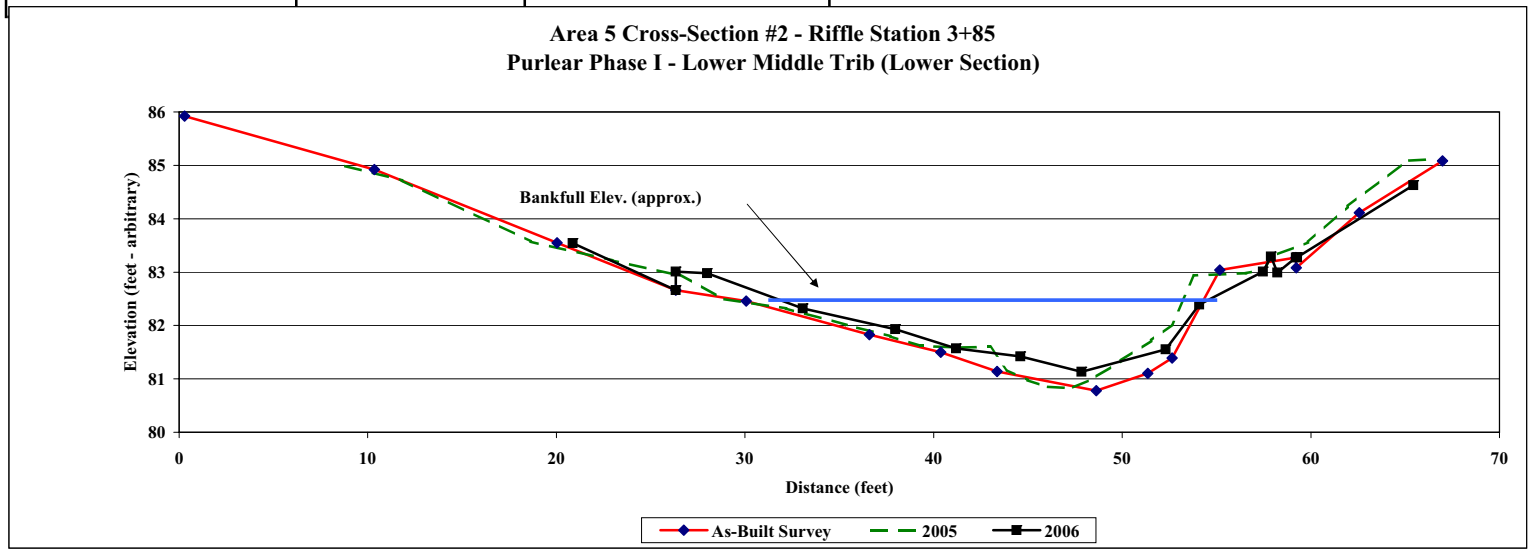


Project Name	Purlear Phase I
Cross Section	2 -Lower Middle Trib (Lower Section) Reach 5
Feature	Riffle
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	**Elev.**	**Notes**	**Station**	**Elev.**	**Notes**	**Pt #**	**Station**	**Elev.**	**Notes**
0.29	85.92	X2	8.82	84.99	x2	2830	20.86	83.54	(r5x2)
10.35	84.92	X2	11.83	84.72	x2	2069	26.33	82.66	(X2LP)
20.04	83.55	X2	18.65	83.57	x2	2026	26.33	83.01	(x2lp)
26.33	82.66	X2LP	22.97	83.22	x2	2829	27.99	82.98	(r5x2lp)
30.06	82.46	X2	26.32	82.95	x2	2831	33.07	82.32	(r5x2)
36.6	81.83	2)	26.33	83.01	x2lp	2832	37.97	81.93	(r5x2)
40.37	81.5	X2T	28.8	82.5	x2	2833	41.2	81.57	(r5x2)
43.37	81.14	X2EW	32.19	82.32	x2	2834	44.61	81.42	(r5x2w)
48.63	80.78	X2	35.39	82.01	x2	2835	47.85	81.13	(r5x2)
51.35	81.1	X2EW	37.71	81.8	x2	2838	52.31	81.55	(r5x2w)
52.65	81.39	X2	39.3	81.62	x2	2836	54.09	82.39	(r5x2)
55.18	83.04	X2B	41.39	81.59	x2	2837	57.47	83.01	(r5x2)
59.21	83.27	X2RP	42.98	81.6	x2	2027	57.88	83.29	(x2rp)
59.22	83.08	X2	43.91	81.16	x2	2839	58.22	82.99	(r5x2)
62.57	84.11	X2	45	80.98	x2	2068	59.21	83.27	(X2RP)
66.98	85.08	X2	45.89	80.86	x2	2840	59.28	83.28	(r5x2rp)
			47.3	80.82	x2	2841	65.44	84.63	(r5x2)
			48.5	81.01	x2				
			49.93	81.34	x2				
			51.54	81.72	x2				
			52.65	82.02	x2				
			53.81	82.94	x2				
			56.56	82.98	x2				
			57.54	83.05	x2				
			57.88	83.29	x2rp				
			59.86	83.56	x2				
			61.96	84.23	x2				
			65.07	85.08	x2				
			66.45	85.12	x2				

Photo of Area 5 Cross-Section #2 - Looking Downstream

	As-Built	**2005**	**2006**
Area	23.1	19.8	17.9
Width	26.3	25.0	23.5
Mean Depth	0.9	0.8	0.8
Max Depth	1.7	1.7	1.4
w/d ratio	30.0	31.7	30.9
FPW	60	60	60
ER (greater than)	2.3	2.4	2.6
Stream Type	C4	C4	C4

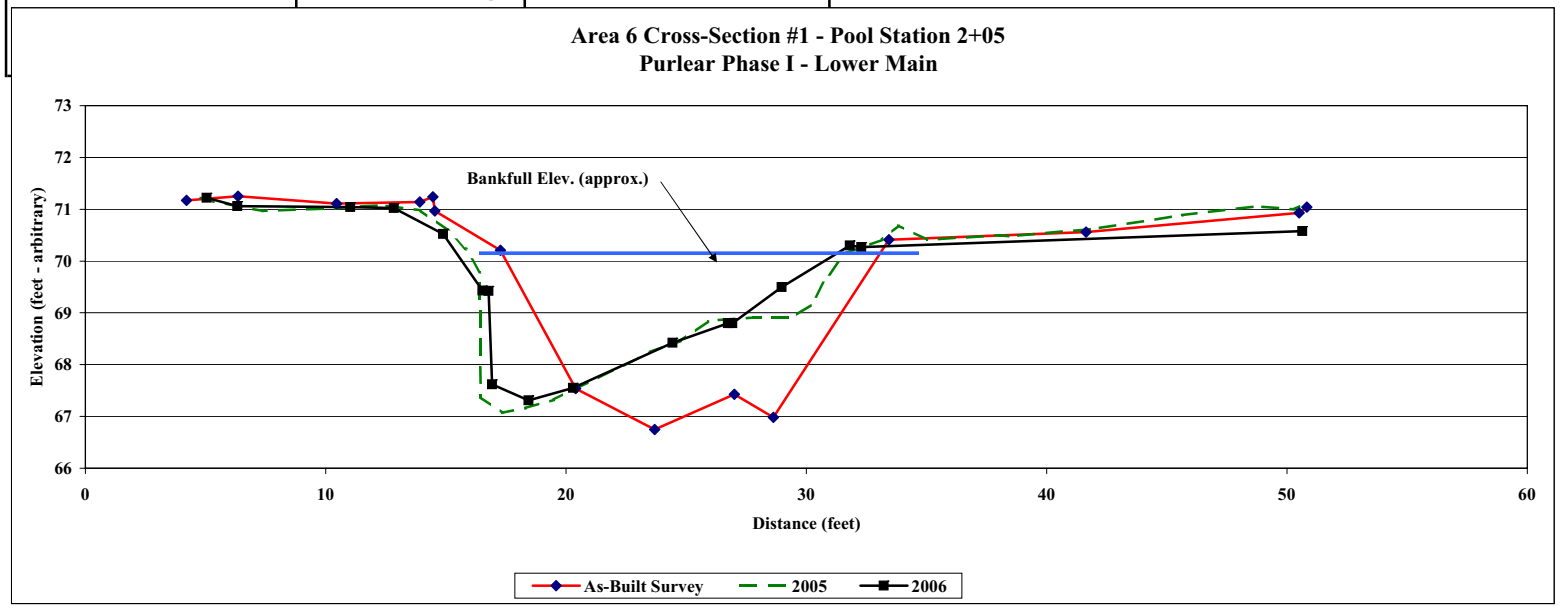


Project Name	Purlear Phase I
Cross Section	1 - Lower Main Reach 6
Feature	Pool
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	**Elev.**	**Notes**	**Station**	**Elev.**	**Notes**	**Pt #**	**Station**	**Elev.**	**Notes**
4.21	71.17	X1	4.81	71.22	xlp	2666	5.05	71.22	(r6x1lp)
6.35	71.25	X2LP	5.32	71.15	x	2671	6.33	71.06	(r6x1)
10.45	71.11	X1	7.36	70.97	x	2672	11.03	71.04	(r6x1)
13.92	71.14	X1	10.42	71.02	x	2674	12.83	71.02	(r6x1)
14.46	71.24	B	12.27	71.08	x	2677	14.89	70.52	(r6x1)
14.54	70.97	X1	13.96	70.98	x	2683	16.53	69.43	(r6x1w)
17.27	70.21	X1	15.04	70.6	x	2680	16.78	69.42	(r6x1)
20.4	67.54	X1	15.83	70.23	x	2681	16.93	67.62	(r6x1)
23.69	66.75	X1	16.42	69.79	x	2682	18.44	67.31	(r6x1)
27	67.43	X1	16.45	67.38	x	2676	20.29	67.55	(r6x1)
28.63	66.98	X1	17.35	67.07	x	2673	24.43	68.42	(r6x1)
33.44	70.41	X1	18.32	67.16	x	2670	26.74	68.8	(r6x1)
41.64	70.56	X1	19.5	67.32	x	2669	26.93	68.8	(r6x1)
50.5	70.93	X1RP	23.5	68.24	x	2667	28.97	69.5	(r6x1w)
50.82	71.04	X1	24.77	68.46	x	2665	31.81	70.3	(r6x1)
			25.91	68.84	x	2668	32.29	70.27	(r6x1)
			27.79	68.91	x	2662	50.64	70.58	(r6x1rp)
			29.4	68.91	x				
			30.23	69.17	x				
			30.83	69.67	x				
			31.58	70.14	x				
			33.16	70.41	x				
			33.84	70.69	bf				
			35.02	70.41	x				
			38.05	70.5	bf				
			38.45	70.48	x				
			42.09	70.63	x				
			45.65	70.89	x				
			48.74	71.06	x				
			50.29	71	x				
			50.5	71.06	xrp				

Photo of Area 6 Cross-Section #1 - Looking Downstream

	As-Built	**2005**	**2006**
Area	43.6	36.3	33.2
Width	18.9	19.2	17.9
Mean Depth	2.3	1.9	1.9
Max Depth	3.8	3.5	3.3



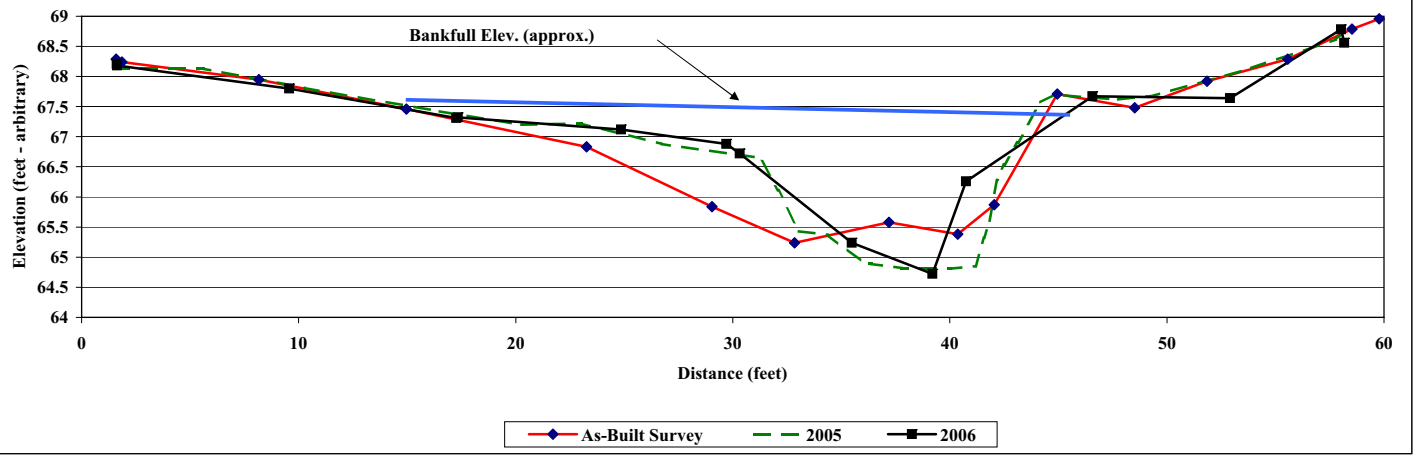
Project Name	Purlear Phase I
Cross Section	2 - Lower Main Reach 6
Feature	Riffle
Date	8/1/2006
Crew	Shaffer, Bidelspach, Clinton

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			
Station	**Elev.**	**Notes**	**Station**	**Elev.**	**Notes**	**Pt #**	**Station**	**Elev.**	**Notes**
1.59	68.29	X2LP	1.62	68.22	xlp	2553	1.62	68.21	(r6x2lp)
1.86	68.24	X2	1.9	68.13	x	2555	1.64	68.18	(r6x2)
8.17	67.95	X2	5.63	68.13	x	2558	9.57	67.8	(r6x2)
14.96	67.46	X2	10.28	67.81	x	2562	17.26	67.31	(r6x2)
23.27	66.83	X2	16.19	67.44	x	2560	17.34	67.32	(r6x2)
29.04	65.84	X2EW	20.27	67.2	bf	2563	24.85	67.12	(r6x2)
32.85	65.24	X2	23	67.22	x	2565	29.71	66.88	(r6x2)
37.2	65.58	X2	26.72	66.88	x	2557	30.33	66.72	(r6x2)
40.36	65.38	X2	31.22	66.65	x	2559	35.49	65.24	(r6x2)
42.05	65.87	X2EW	32.1	66.11	x	2561	39.2	64.72	(r6x2)
44.95	67.71	X2B	33.05	65.43	x	2564	40.74	66.26	(r6x2w)
48.51	67.48	X2	34.4	65.37	x	2567	46.57	67.67	(r6x2)
51.85	67.92	X2	36.11	64.89	x	2566	52.91	67.64	(r6x2)
55.57	68.29	X2	36.37	64.89	x	2554	58.03	68.78	(r6x2rp)
58.52	68.79	X2RP	37.79	64.82	x	2556	58.17	68.56	(r6x2)
59.78	68.96	X2	40.02	64.81	x				
			41.19	64.85	x				
			41.57	65.32	x				
			41.82	65.6	x				
			42.18	66.28	x				
			42.5	66.54	x				
			43.12	66.9	x				
			44.16	67.57	x				
			44.8	67.7	x				
			47.71	67.62	x				
			49.42	67.68	x				
			53.89	68.14	x				
			57.79	68.62	x				
			58.23	68.76	xrp				

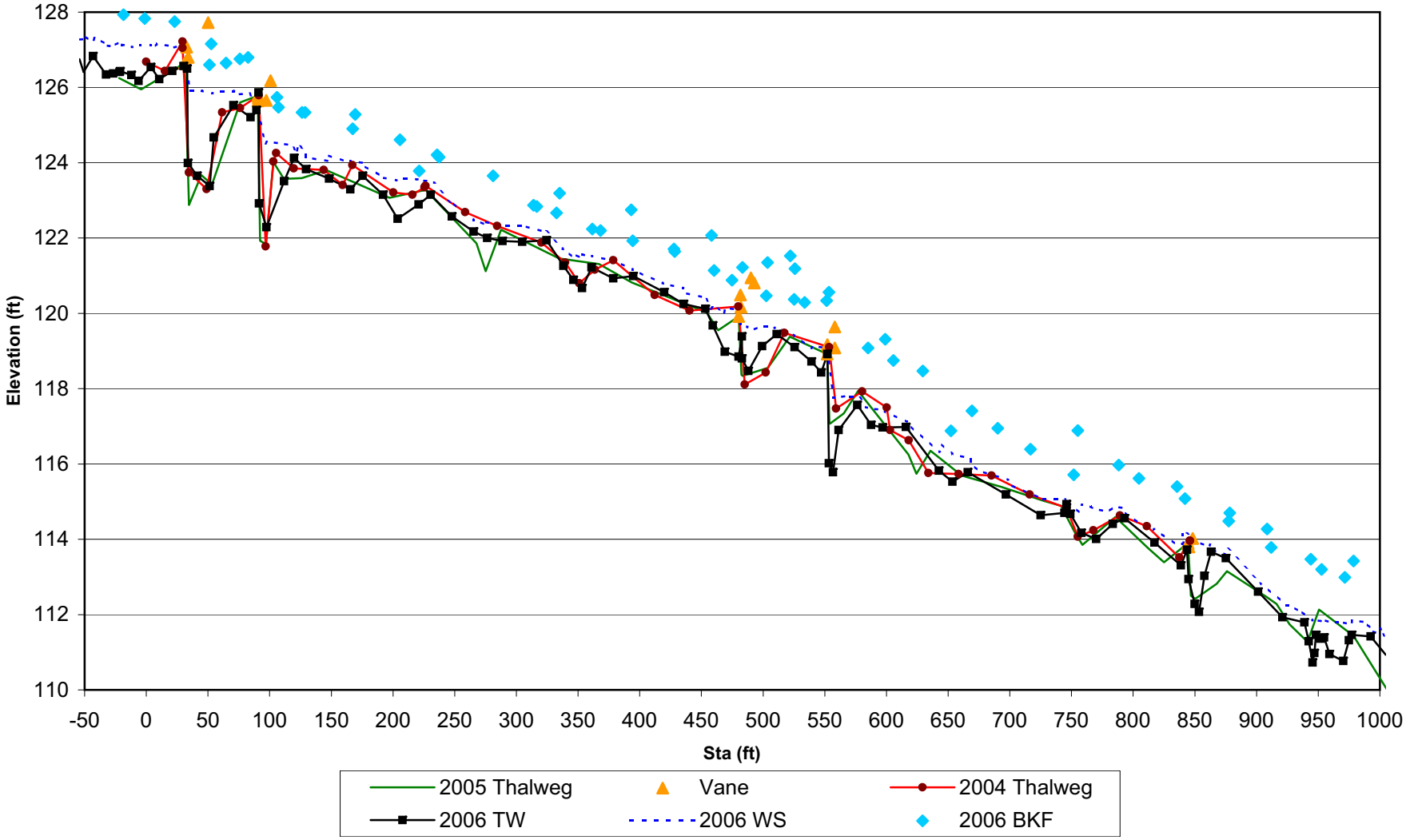
Photo of Area 6 Cross-Section #2 - Looking Downstream

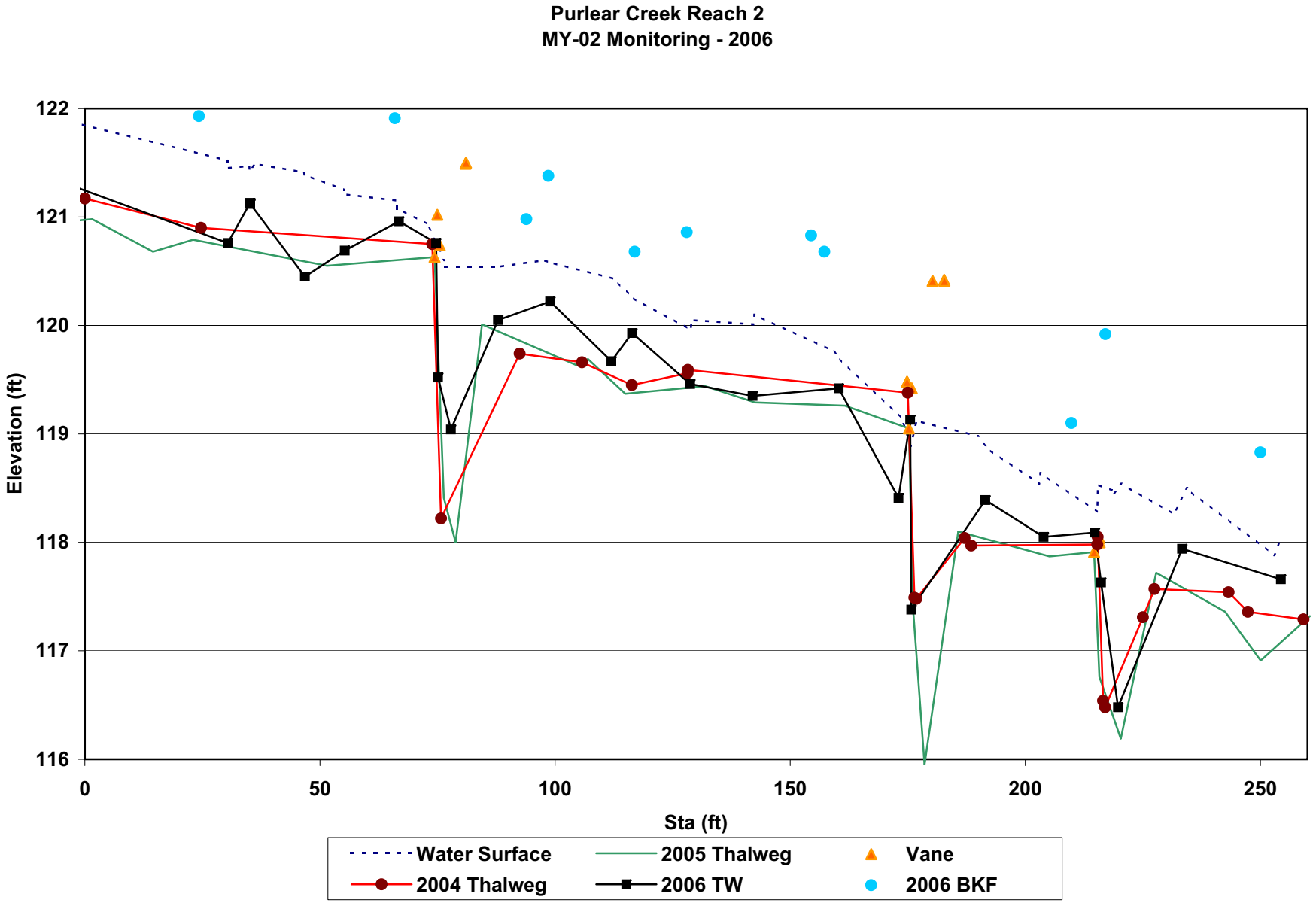
	As-Built	**2005**	**2006**
Area	40.2	37.8	35.2
Width	27.1	26.9	34.3
Mean Depth	1.5	1.4	1.0
Max Depth	2.5	2.9	3.0
w/d ratio	18.3	19.2	33.4
FPW	60	60	60
ER (greater than)	2.2	2.2	1.7
Stream Type	C4	C4	C4

Area 6 Cross-Section #2 - Riffle Station 5+85
Purlear Phase I - Lower Main

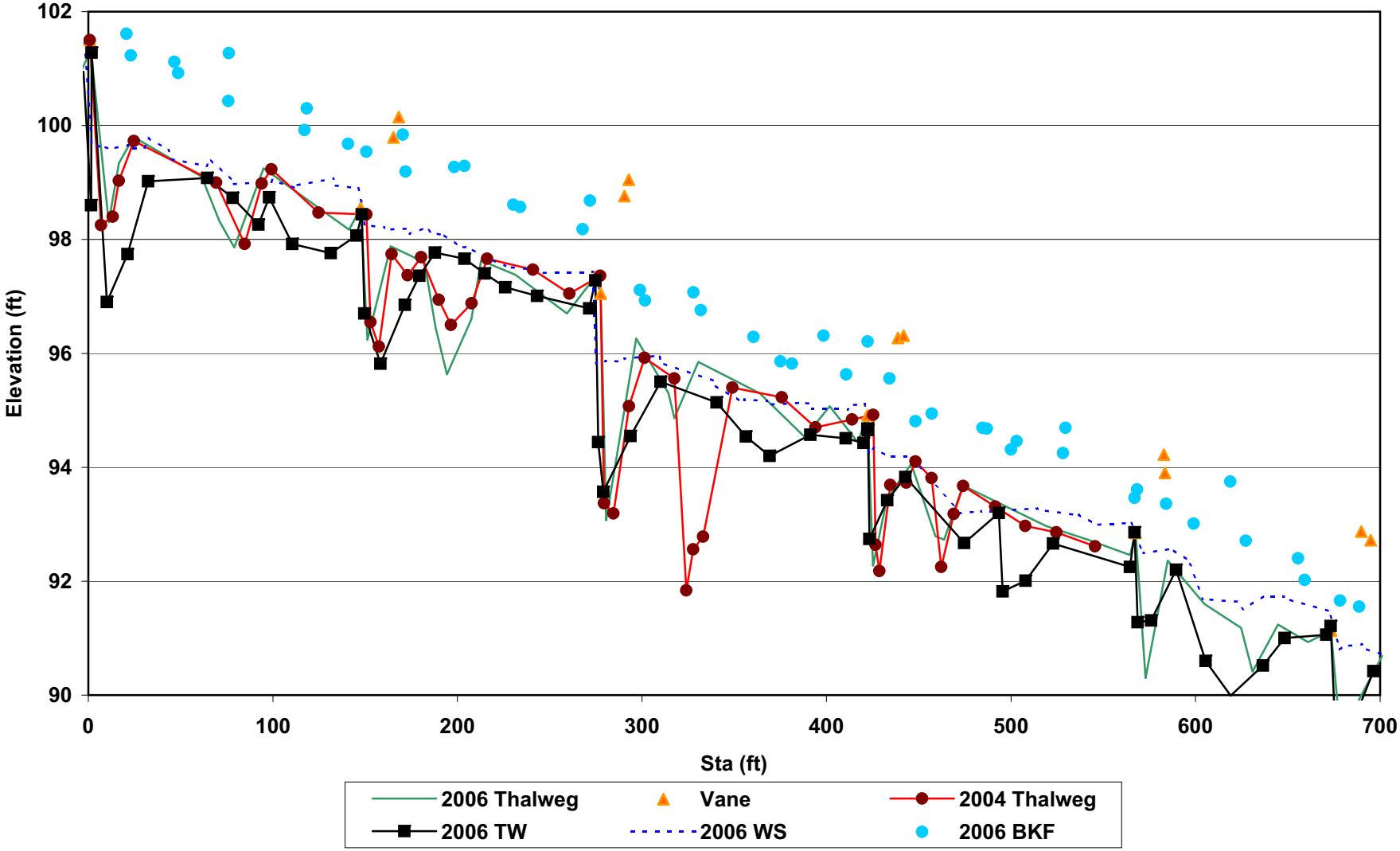


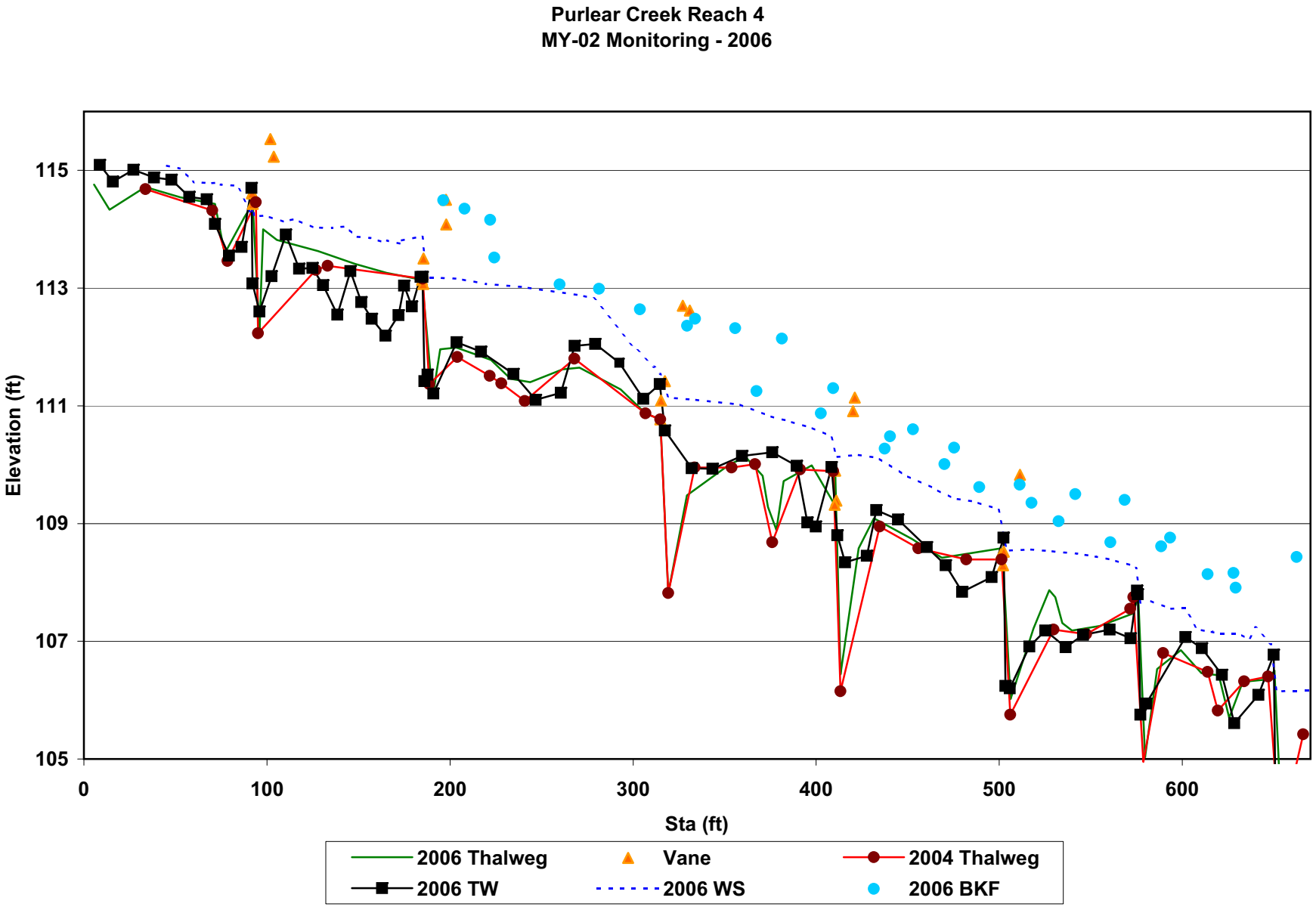
Purlear Creek Reach 1
MY-02 Monitoring - 2006

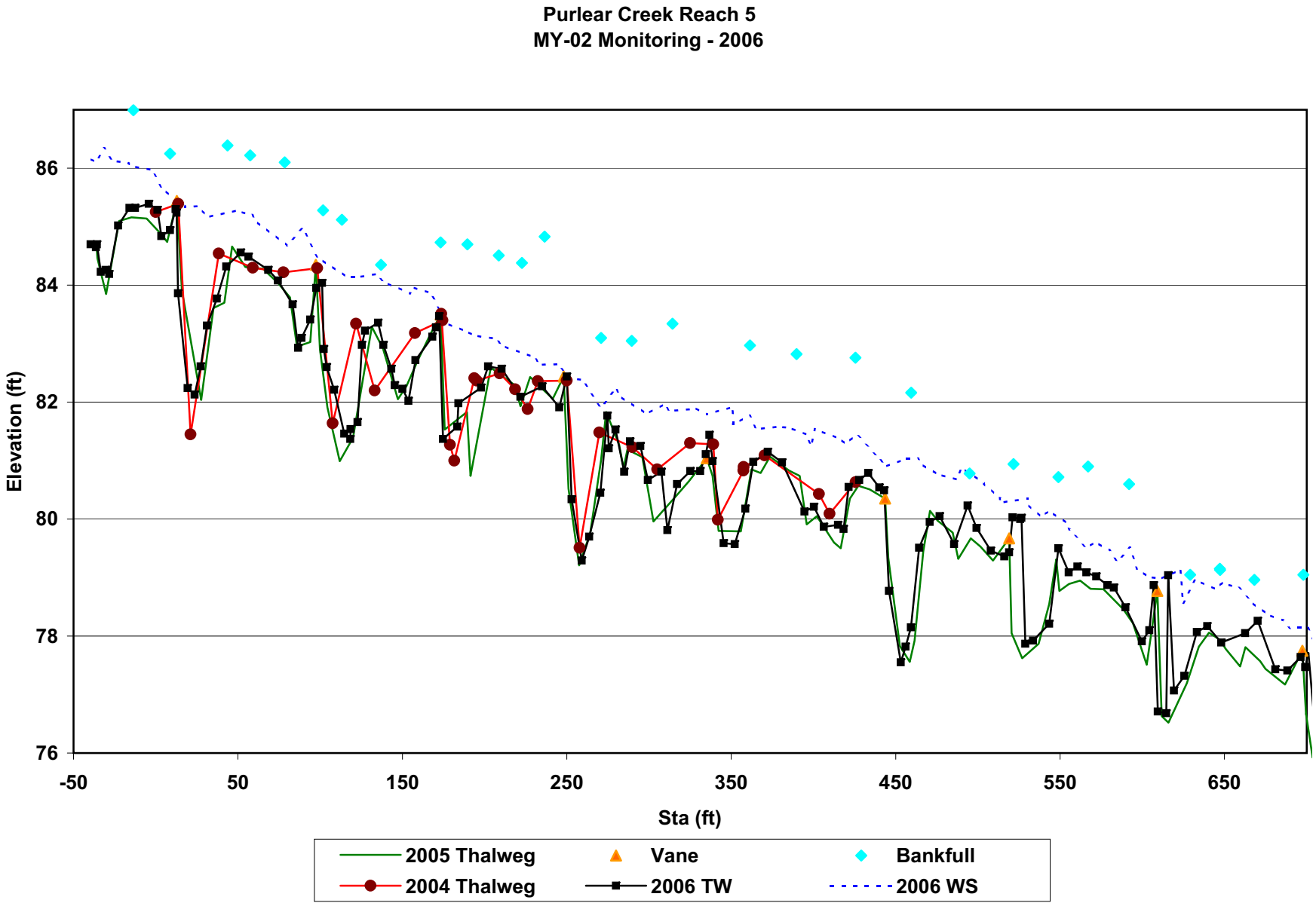


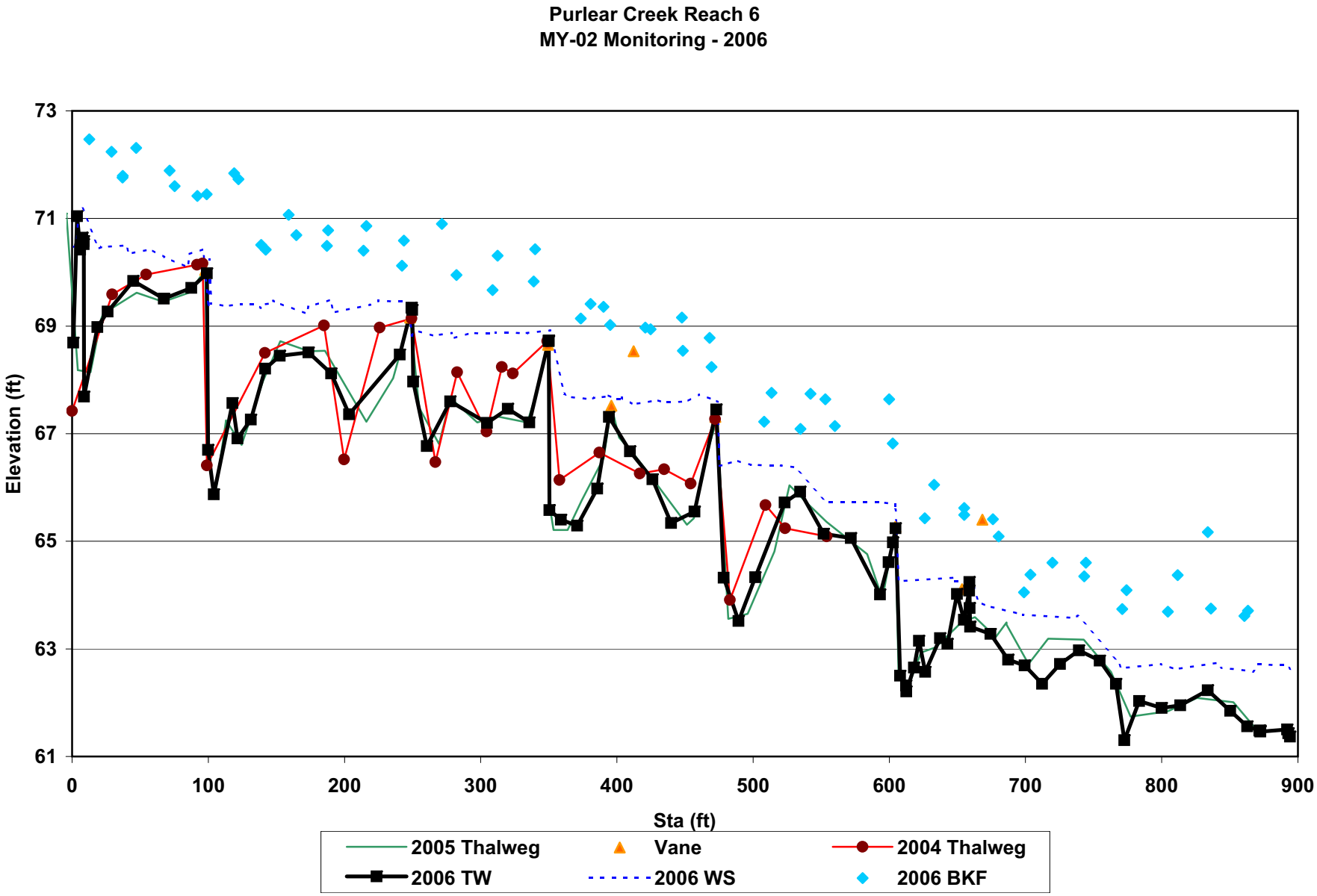

Purlear Creek Reach 2
MY-02 Monitoring - 2006
Elevation (ft)
122
121
120
119
118
117
116
0
50
100
150
200
250
Sta (ft)
Water Surface
2005 Thalweg
Vane
2004 Thalweg
2006 TW
2006 BKF

Purlear Creek Reach 3
MY-02 Monitoring - 2006




Purlear Creek Reach 4
MY-02 Monitoring - 2006
Elevation (ft)
115
113
111
109
107
105
0
100
200
300
400
500
600
Sta (ft)
2006 Thalweg
Vane
2004 Thalweg
2006 TW
2006 WS
2006 BKF


Purlear Creek Reach 5
MY-02 Monitoring - 2006
Elevation (ft)
86
84
82
80
78
76
-50
50
150
250
350
450
550
650
Sta (ft)
2005 Thalweg
Vane
Bankfull
2004 Thalweg
2006 TW
2006 WS


Purlear Creek Reach 6
MY-02 Monitoring - 2006
Elevation (ft)
73
71
69
67
65
63
61
0
100
200
300
400
500
600
700
800
900
Sta (ft)
2005 Thalweg
Vane
2004 Thalweg
2006 TW
2006 WS
2006 BKF

Project Name	Purlear Creek
Task	Feature Slope and Length Calculations
Date	8/1/06
Crew	Shaffer, Bidelspach, Clinton

Area 1 - 2006

Riffle		Water		
Station	Change	Elev	change	slope
123		124.51		
147	24	124.05	0.46	1.92%
175		124		
202	27	123.53	0.47	1.74%
230		123.51		
266	36	122.48	1.03	2.86%
306		122.32		
346	40	121.57	0.75	1.88%
361		121.53		
460	99	120.23	1.3	1.31%
510		119.63		
551	41	119.08	0.55	1.34%
578		117.78		
642	64	116.32	1.46	2.28%
668		116.14		
745	77	115.06	1.08	1.40%
792		114.82		
833	41	113.9	0.92	2.24%
876		113.77		
949	73	111.87	1.9	2.60%
987		111.79		
998	11	111.51	0.28	2.55%
	533			
	11			

Pool Station	length	p-p spacing
35		
83	48	
98		
121	23	50.5
148		
175	27	52
192		
230	38	49.5
266		
306	40	75
346		
361	15	67.5
460		
481	21	117
487		
510	23	28
557		
578	21	69
642		
668	26	87.5
748		
792	44	115
883		
866		
949		
987		
	326	
	11	

	min	max	median
Length	24.0	99.0	41.0
Slope	1.31%	2.86%	1.90%
Length	15.0	48.0	26.0
Spacing	28	117	68

Area 2 - 2006

Riffle		Water		
Station	Change	Elev	change	slope
36		121.49		
73	37	120.9	0.59	1.59%
99		120.58		
173	74	119.14	1.44	1.95%
192		118.86		
215	23	118.3	0.56	2.43%
231		118.26		
252	21	117.88	0.38	1.81%
	155			
	4			

Pool Station	length	p-p spacing
76		
99	23	
173		
192	19	95
215		
231	16	40.5
	58	
	3	

	min	max	median
Length	21.0	74.0	30.0
Slope	1.59%	2.43%	1.88%
Length	16.0	23.0	19.0
Spacing	41	95	68

Area 3 - 2006

Riffle		Water		
Station	Change	Elev	change	slope
32		99.78		
78	46	98.97	0.81	1.76%
185		98.12		
244	59	97.41	0.71	1.20%
309		95.84		
355	46	95.19	0.65	1.41%
444		94.21		
472	28	93.23	0.980	3.50%
516		93.25		
565	49	93.02	0.230	0.47%
588		92.54		
605	17	91.68	0.860	5.06%
648		91.7		
672	24	91.45	0.250	1.04%
	269			
	7			

Pool Station	length	p-p spacing
7		
32	25	
78		
146	68	92.5
149		
185	36	55
244		
273	29	91.5
280		
309	29	36
355		
421	66	93.5
425		
444	19	46.5
571		
588	17	145
605		
648	43	47
	332	
	9	

	min	max	median
Length	17.0	59.0	46.0
Slope	0.47%	5.06%	1.41%
Length	17.0	68.0	29.0
Spacing	36	145	73

Area 4 - 2006

Riffle		Water		
Station	Change	Elev	change	slope
45		115.08		
69	24	114.78	0.3	1.25%
114		114.17		
150	36	113.87	0.3	0.83%
278		112.83		
314	36	111.54	1.29	3.58%
358		111.02		
408	50	110.48	0.54	1.08%
434		110.11		
474	40	109.43	0.68	1.70%
601		107.56		
650	49	106.15	1.41	2.88%
	235			
	6			

Pool Station	length	p-p spacing
69		
92	23	
99		
114	15	26
150		
185	35	61
187		
278	91	65
319		
358	39	106
411		
434	23	84
474		
499	25	64
504		
574	70	52.5
577		
604	27	51.5
	348	
	9	

	min	max	median
Length	24.0	50.0	44.5
Slope	0.83%	3.58%	1.47%
Length	15.0	91.0	27.0
Spacing	26	106	63

Area 5 - 2006

Riffle		Water		
Station	Change	Elev	change	slope
-13		86.03		
3	16	85.66	0.37	2.31%
58		85.2		
79	21	84.68	0.52	2.48%
130		84.19		
154	24	83.86	0.33	1.37%
207		83.08		
250	43	82.41	0.67	1.56%
280		82.24		
298	18	81.8	0.44	2.44%
365		81.54		
398	33	81.25	0.29	0.88%
465		80.94		
513	48	80.36	0.58	1.21%
543		80.14		
584	41	79.28	0.86	2.10%
658		78.82		
700	42	78.15	0.67	1.60%
	286			
	9			

Pool Station	length	p-p spacing
-40		
-13	27	
32		
58	26	71.5
79		
98	19	43.5
115		
130	15	34
154		
167	13	38
186		
207	21	36
259		
280	21	73
298		
335	37	47
350		
365	15	41
398		
426	28	54.5
443		
465	22	42
530		
543	13	82.5
584		
611	27	61
624		
658	34	43.5
	318	
	14	

	min	max	median
Length	16.0	48.0	33.0
Slope	0.88%	2.48%	1.60%
Length	13.0	318.0	21.5
Spacing	34	83	44

Area 6 - 2006

Riffle		Water		
Station	Change	Elev	change	slope
392		66.41		
411	19	65.72	0.69	3.63%
530		64.2		
554	24	63.69	0.51	2.13%
646		63.63		
670	24	62.75	0.88	3.67%
738		63.63		
770	32	62.75	0.88	2.75%
	99			
	4			

Pool Station	length	p-p spacing
20		
96	76	
102		
247	145	116.5
253		
351	98	127.5
363		
392	29	75.5
411		
473	62	64.5
477		
530	53	61.5
554		
604	50	75.5
606		
646	40	47
670		
738	68	78
	621	
	9	

	min	max	median
Length	19.0	32.0	24.0
Slope	2.13%	3.67%	3.19%
Length	29.0	145.0	62.0
Spacing	47	128	76

PT #	STA	OFFSET	ELEV	DESC	PT #	STA	OFFSET	ELEV	DESC	PT #	STA	OFFSET	ELEV	DESC	PT #	STA	OFFSET	ELEV	DESC
235	-54.25	4.168762	126.75	(T)	435	-54.8	-6.74817	128.69	(B)	236	-53.59	1.428173	127.27	(W)	496	596.34	4.223418	117.45	(W)
240	-50.77	3.453715	126.41	(T)	437	-35.3	6.255088	128.61	(B)	238	-50.24	0.267926	127.29	(W)	497	598.85	-1.53804	117.4	(W)
241	-43.16	0.505372	126.83	(T)	434	-18.47	-5.34935	127.93	(B)	239	-50.01	4.208804	127.36	(W)	494	616.48	3.827794	117.12	(W)
244	-32.52	1.076619	126.34	(T)	436	-18.18	7.760256	128.11	(B)	242	-43.24	-3.82609	127.21	(W)	493	616.69	-1.40448	117.1	(W)
247	-26.72	0.531411	126.37	(T)	433	-1.33	-2.42664	127.83	(B)	243	-41.9	2.156073	127.32	(W)	499	642.73	5.656674	116.32	(W)
251	-21.62	1.572799	126.41	(T)	432	14.96	3.183027	128.07	(B)	245	-33.05	-2.94033	127.16	(W)	500	644.97	1.266462	116.53	(W)
252	-21.13	1.331841	126.43	(T)	431	22.97	-8.76995	127.75	(B)	246	-33	2.03231	127.12	(W)	502	653.58	6.336574	116.26	(W)
255	-11.97	4.045118	126.33	(T)	430	24.74	2.371263	128.08	(B)	249	-29.58	2.142462	127.1	(W)	505	668.35	5.096996	116.14	(W)
257	-6.22	4.389407	126.17	(T)	429	51.17	-0.53539	126.6	(B)	248	-26.28	-3.50264	127.11	(W)	506	668.35	0.841587	116	(W)
261	3.78	4.654569	126.54	(T)	428	52.71	-16.9116	127.16	(B)	253	-21.23	4.018798	127.21	(W)	503	674.74	0.600388	115.83	(W)
263	10.61	0.895651	126.22	(T)	427	64.76	1.15937	126.65	(B)	250	-19.68	-0.21823	127.14	(W)	508	698.36	6.116892	115.58	(W)
265	21.13	-3.82092	126.44	(T)	425	75.83	-11.5603	126.76	(B)	256	-12.56	5.929365	127.09	(W)	509	700.62	0.454844	115.45	(W)
268	30.2	-5.5182	126.57	(T)	426	82.56	0.954056	126.8	(B)	254	-11.17	0.25349	127.07	(W)	512	726.38	4.387571	115.07	(W)
270	33.06	-4.83248	126.5	(RV)	423	105.96	2.709112	125.74	(B)	259	-6.01	7.019028	127.12	(W)	511	727.41	-0.94351	115.06	(W)
273	33.76	-7.16225	123.99	(T)	424	107.08	-11.6379	125.47	(B)	258	-5.17	0.856165	127.12	(W)	513	745.06	-0.39208	115.06	(W)
275	41.32	-8.21041	123.65	(T)	421	126.24	-14.2596	125.34	(B)	260	3.45	0.669542	127.12	(W)	515	745.46	4.274261	114.88	(W)
277	51.41	-8.20942	123.38	(T)	422	128.74	2.078086	125.34	(B)	262	4.75	6.759423	127.04	(W)	518	748.46	4.751357	114.94	(W)
279	54.76	-7.83716	124.67	(T)	420	167.33	-2.00399	124.9	(B)	264	8.55	-1.92322	127.16	(W)	519	756.24	-0.7544	114.72	(W)
280	70.68	-5.6967	125.53	(T)	419	169.33	-11.1508	125.28	(B)	266	20.44	-5.87145	127.1	(W)	521	758.75	5.044346	114.92	(W)
283	84.59	-5.25443	125.21	(T)	418	205.76	-10.6992	124.61	(B)	267	22.84	-1.24489	127.06	(W)	524	765.42	1.406173	114.87	(W)
286	89.34	-5.17872	125.4	(T)	417	221.3	-1.34597	123.78	(B)	269	28.59	-9.18171	127.12	(W)	525	768.82	6.560649	114.8	(W)
287	91.01	-5.68149	125.87	(RV)	415	235.68	-12.4434	124.21	(B)	271	31.58	-1.92589	127.02	(W)	527	779.55	0.785584	114.74	(W)
289	91.35	-5.54336	122.92	(T)	416	237.35	0.849964	124.15	(B)	274	35.15	-9.9772	125.91	(W)	528	785.42	4.111301	114.87	(W)
292	97.44	-4.05495	122.29	(T)	414	281.04	4.337043	123.65	(B)	272	44.91	-1.42148	125.91	(W)	530	792.61	3.955111	114.82	(W)
294	111.63	-4.97911	123.51	(T)	413	313.99	-7.27958	122.87	(B)	276	53.52	-14.3072	125.84	(W)	531	794.08	-1.74342	114.7	(W)
296	119.74	-3.56552	124.13	(T)	412	316.61	8.69406	122.84	(B)	278	57.22	-2.7873	125.88	(W)	534	814.1	-1.41646	114.21	(W)
300	129.55	-1.91475	123.83	(T)	411	332.46	-7.242	122.67	(B)	282	70.97	-10.0197	125.9	(W)	533	817.04	2.473486	114.28	(W)
302	148.3	-4.99511	123.58	(T)	410	335.02	3.338629	123.19	(B)	281	73.22	-2.89509	125.81	(W)	537	833.08	-0.75369	113.9	(W)
305	165.45	-4.04385	123.29	(T)	409	361.58	-8.46298	122.24	(B)	284	83.87	-6.81528	125.85	(W)	540	839.64	-1.10128	113.88	(W)
308	175.33	-4.45698	123.65	(T)	408	368.22	2.300472	122.2	(B)	285	85.5	-3.40356	125.7	(W)	536	839.7	3.811605	114.13	(W)
311	191.95	-4.53169	123.15	(T)	407	393.1	-7.20058	122.75	(B)	288	89.15	-8.284	125.67	(W)	542	840.04	-1.17399	113.88	(W)
314	203.87	-4.01826	122.51	(T)	406	394.26	4.792231	121.93	(B)	291	96.32	-1.3897	124.5	(W)	539	843.53	5.025371	114.15	(W)
317	220.78	-4.42296	122.89	(T)	405	427.64	-6.3349	121.71	(B)	290	98.14	-8.31959	124.56	(W)	543	849.93	6.288974	113.92	(W)
320	230.63	-4.40294	123.15	(T)	404	428.32	7.61495	121.64	(B)	293	108.77	0.745043	124.51	(W)	545	850.5	-1.35374	113.95	(W)
325	247.69	-5.02128	122.57	(T)	403	458.19	-6.74514	122.07	(B)	295	118.86	-10.5389	124.47	(W)	547	861.19	6.306257	113.8	(W)
326	265.43	-5.05613	122.17	(T)	402	460.34	6.280381	121.14	(B)	298	121.52	0.60564	124.23	(W)	549	862.47	-3.35319	113.85	(W)
329	276.4	-4.80435	122	(T)	400	474.81	5.654188	120.88	(B)	297	123.34	-4.9397	124.51	(W)	551	866.19	4.585633	113.76	(W)
332	288.88	-3.1129	121.92	(T)	401	483.39	-6.85548	121.22	(B)	299	128.86	-3.87261	124.23	(W)	552	866.37	-3.36162	113.68	(W)
336	304.78	-1.54894	121.9	(T)	399	502.64	10.3862	120.47	(B)	301	128.95	-0.64833	124.14	(W)	555	874.27	-2.78055	113.6	(W)
338	324.54	-0.47669	121.94	(T)	398	503.67	-10.9594	121.35	(B)	304	147.38	-3.81469	124.05	(W)	554	876.04	3.594531	113.77	(W)
341	338.12	-1.50309	121.26	(T)	623	522.09	-14.5345	121.53	(B)	303	148.18	-8.20901	124.19	(W)	557	899.47	-0.16418	112.99	(W)
344	346.21	-2.57809	120.89	(T)	396	525.22	8.707551	120.37	(B)	307	165.09	-3.39894	124	(W)	558	903.69	-4.08071	112.83	(W)
347	353.35	-2.42727	120.67	(T)	397	525.86	-11.6997	121.19	(B)	306	165.62	-7.02743	124.05	(W)	559	924.34	1.553295	112.25	(W)
350	361.05	-3.11617	121.22	(T)	624	533.64	6.665191	120.29	(B)	310	174.88	-3.99147	124	(W)	560	926.35	-2.67706	112.25	(W)
353	378.53	0.575756	120.93	(T)	621	551.51	8.161061	120.34	(B)	309	175.29	-6.73917	123.94	(W)	563	936.16	-3.97409	112.07	(W)
356	394.67	-2.40495	120.99	(T)	622	553.46	-13.5285	120.56	(B)	312	192.53	-5.8761	123.61	(W)	562	937.01	0.337673	112.08	(W)
359	419.89	1.350232	120.56	(T)	619	585.06	5.094576	119.08	(B)	313	192.71	-2.97483	123.6	(W)	567	945.26	2.048531	111.85	(W)
362	435.7	-0.32715	120.25	(T)	620	598.99	-6.6775	119.31	(B)	315	202.97	-7.56387	123.53	(W)	566	947.47	-3.47021	111.87	(W)
365	453.22	-1.71539	120.12	(T)	618	605.58	8.459871	118.75	(B)	316	205.43	-2.59171	123.58	(W)	569	949.14	3.157828	111.84	(W)
368	459.31	-3.01133	119.68	(T)	617	629.4	-6.88507	118.47	(B)	318	219.93	-6.36545	123.56	(W)	570	953.51	-1.40679	111.83	(W)
371	469.09	-5.75829	118.98	(T)	616	652.18	7.664358	116.88	(B)	319	221.99	-2.41116	123.53	(W)	573	954.1	4.267538	111.86	(W)
374	480.12	-2.59876	118.85	(T)	614	669.33	-3.06928	117.41	(B)	321	230.69	-6.76767	123.51	(W)	572	959.46	-1.32558	111.8	(W)
377	482.8	-1.06152	119.39	(RV)	615	690.23	10.22734	116.95	(B)	322	232.99	-2.02116	123.46	(W)	580	965.87	4.442893	111.81	(W)
379	482.87	1.208235	118.8	(T)	612	716.67	-3.42445	116.39	(B)	324	247.18	-3.2157	122.93	(W)	575	968.46	-1.70436	111.81	(W)
380	488.09	3.527016	118.47	(T)	613	751.75	7.797318	115.71	(B)	323	247.36	-7.59978	122.97	(W)	584	977.29	4.585035	111.73	(W)
383	499.23	1.96965	119.13	(T)	610	755.07	-4.51007	116.89	(B)	327	265.44	-6.56673	122.48	(W)	578	977.35	-1.21776	111.84	(W)
386	510.98	-0.86703	119.45	(T)	611	788.36	8.138695	115.97	(B)	328	266.15	-2.76761	122.48	(W)	582	986.52	0.481329	111.81	(W)
388	525.52	-0.44617	119.1	(T)	609	804.77	-10.8454	115.62	(B)	330	275.43	-7.53499	122.35	(W)	587	987.59	5.257344	111.79	(W)
464	539.35	-0.56402	118.72	(T)	606	835.53	-5.63194	115.4	(B)	331	275.53	-1.32266	122.42	(W)	589	994.24	5.057768	111.61	(W)
467	547.13	-0.30582	118.43	(T)	608	842.01	10.91749	115.08	(B)	334	289.43	-5.52461	122.32	(W)	586	994.78	0.144542	111.55	(W)
471	552.14	0.432192	118.92	(RV)	607	877.39	10.75162	114.48	(B)	333	291.16	-1.35932	122.33	(W)	590	998.38	-0.50802	111.51	(W)
470	552.16	0.444845	118.92	(T)	604	878.33	-8.66035	114.7	(B)	335	304.5	1.654492	122.33	(W)	592	1000.42	4.410629	111.62	(W)
472	553.31	0.296886	116.02	(T)	602	908.56	-11.8721	114.27	(B)	337	306.09	-4.56656	122.32	(W)	594	1002.22	-0.84879	111.5	(W)
475	556.78	-1.34876	115.78	(T)	605	911.96	5.017751	113.78	(B)	339	324.15	2.415914	122.15	(W)	596	1002.29	-0.65241	111.51	(W)
476	561.22	-0.85611	116.9	(T)	603	944.04	4.411784	113.47	(B)	340	324.19	-3.69409	122.17	(W)	595	1003.48	2.506701	111.45	(W)
479	576.36	-1.13118	117.57	(T)	601	952.78	-7.52817	113.2	(B)	342	337.58	-0.23315	121.72	(W)					
482	587.57	0.035528	117.04	(T)	600	971.49	7.58118	112.99	(B)	343	337.96	-3.68182	121.7	(W)					
495	596.9	0.936475	116.97	(T)	599	978.69	-10.4392	113.42	(B)	345	344.75	-1.72078	121.52	(W)					
492	615.75	0.303409	116.98	(T)						346	346.41	-6.31589	121.57	(W)					
498	642.56	3.937486	115.82	(T)						349	352.91	-5.87084	121.47	(W)					
501	653.43	3.254376	115.53	(T)						348	353.57	-0.4909	121.56	(W)					
504	665.94	4.106249	115.78	(T)						352	360.72	-5.38828	121.52	(W)					
507	696.83	3.681783	115.19	(T)						351	361.35	-0.2466	121.53	(W)					
510	724.97	1.452799	114.64	(T)						355	379.05	-2.79023	121.39	(W)					
514	744.3	2.644007	114.7	(T)						354	379.85	1.981267	121.39	(W)					
522	745.97	3.115943	114.84	(RV)						357	394.17	0.274175	121.17	(W)					
516	746.01	1.934035	114.93	(T)						358	394.37	-5.58945	121.15	(W)					
517	749.14	2.308011	114.67	(T)						361	418.53	-2.30013	120.81	(W)					
520	757.99	1.448798	114.17	(T)						360	419.88	3.238952	120.78	(W)					
523	770.06	2.069378	114.01	(T)						363	435.35	2.118006	120.67	(W)					
526	783.61	1.765527	114.41	(T)						364	435.54	-3.65373	120.55	(W)					
529	793.05	1.385892	114.56	(T)						367	452.32	-3.95158	120.42	(W)					
532	817.26	0.026148	113.91	(T)						366	453.59	3.347574	120.41	(W)					
535	838.62	-0.10214	113.31	(T)						370	457.45	-4.77475	120.13	(W)					
538	843.69	0.09096	113.72	(RV)						369	460.31	1.506061	120.23	(W)					
541	845	0.219981	112.94	(T)						373	468.17	-5.87095	119.97	(W)					
544	849.87	0.832609	112.28	(T)						372	469.42	-0.75492	120.14	(W)					
546	853.38	0.643194	112.07	(T)						375	478.22	0.705279	120.11	(W)					
548	857.86	0.684642	113.03	(T)						376	481.12	-4.46501	120.09	(W)					
550	863.19	1.839354	113.67	(T)						378	481.37	2.520441	119.7	(W)					
553	875.11	0.519404	113.5	(T)						381	487.44	6.565463	119.64	(W)					
556	901.23	-1.03087	112.61	(T)						382	491.69	-0.66252	119.56	(W)					
564	921.07	1.20298	111.93	(T)						384	499.34	-1.57467	119.66	(W)					
561	938.9	-1.0488	111.79	(T)						385	502.92	5.498865	119.66	(W)					
565	942.4	-1.49125	111.29	(T)						389	509.42	5.381311	119.61	(W)					
568	945.56	-0.76967	110.73	(T)						387	510.67	-3.8133	119.63	(W)					
574	946.84	-0.65383	110.98	(T)						390	525.47	-4.58654	119.41	(W)					
571	948.14	-0.11141	111.46	(T)						465	539.01	-3.96937	119.08	(W)					
577	952.17	1.619018	111.36	(T)						466	540.27	1.456979	119.13	(W)					
576	954.73	2.269322	111.39	(BDRK)						468	551.12	-2.78001	119.08	(W)					
579	959.25	2.375414	110.95	(T)						469	551.81	2.003981	119.08	(W)					
581	970.39	3.984973	110.77	(T)						473	557.02	-6.97224	117.77	(W)					
583	974.91	3.674329	111.32	(T)						474	560.09	1.635987	117.77	(W)					
585	977.26	2.33874	111.46	(T)						477	568.77	-4.40422	117.81	(W)					
588	992.51	2.140012	111.42	(T)						478	569.75	1.964825	117.78	(W)					
591	1004.74	0.281419	110.93	(T)						480	578.15	-3.72235	117.78	(W)					
										481	583.38	1.804179	117.51	(W)					
										483	588.33	-1.4799	117.46	(W)					

2006 R2 Data Purlear Phase 1																	
PT #	STA	OFFSET	ELEV	DESC		PT #	STA	OFFSET	ELEV	DESC		PT #	STA	OFFSET	ELEV	DESC	
9	-125.12	2.597541	124.58	(RV)	RV	11	-128.17	3.12208	124.91	(W)	W	41	-126.5	0.470052	125.51	(B)	B
6	-122.8	0.974783	122.13	(T)	T	10	-128.13	0.014647	124.83	(W)	W	40	-125.91	5.800129	125.46	(B)	B
3	-102.52	1.730111	122.99	(T)	T	8	-122.78	4.786733	123.45	(W)	W	42	-90.04	-4.36534	124.35	(B)	B
12	-62.48	0.762777	122.24	(RV)	RV	7	-121.97	0.123682	123.53	(W)	W	43	-86.97	6.78866	123.94	(B)	B
66	30.39	-2.02702	120.76	(T)	T	4	-102.23	0.916975	123.28	(W)	W	44	-60.42	6.717936	123.57	(B)	B
73	35.16	-2.67279	121.13	(T)	T	5	-101.71	3.763967	123.37	(W)	W	47	-20.27	-2.92481	122.5	(B)	B
69	35.17	-2.66485	121.12	(T)	T	2	-91.87	2.656845	122.91	(W)	W	45	-19.65	6.569637	122.69	(B)	B
74	46.81	-3.22932	120.45	(T)	T	1	-91.74	0.895526	122.82	(W)	W	48	24.28	-7.84821	121.93	(B)	B
77	55.26	-1.60332	120.69	(T)	T	67	30.32	-3.24232	121.52	(W)	W	50	25.81	3.826	122.43	(B)	B
80	66.8	-1.27879	120.96	(T)	T	68	30.33	-1.00575	121.45	(W)	W	197	65.92	5.673901	121.91	(B)	B
83	74.7	-0.98474	120.76	(RV)	RV	70	34.97	-4.01108	121.47	(W)	W	196	68.43	-7.08266	122.18	(B)	B
86	75.11	-0.57379	119.52	(T)	T	72	35.01	-3.96884	121.42	(W)	W	195	93.9	8.011185	120.98	(B)	B
89	77.86	-0.59879	119.04	(MP)	MP	71	36.23	-1.34528	121.49	(W)	W	194	98.56	-6.27242	121.38	(B)	B
90	87.87	0.573212	120.05	(T)	T	75	46.59	-4.29682	121.41	(W)	W	193	116.91	6.214359	120.68	(B)	B
92	98.95	0.912379	120.22	(T)	T	76	46.7	-1.81636	121.39	(W)	W	192	128.01	-5.57687	120.86	(B)	B
95	111.97	-0.31702	119.67	(T)	T	79	55.16	-0.11625	121.25	(W)	W	190	154.46	-5.39	120.83	(B)	B
110	116.38	-1.44091	119.93	(T)	T	78	55.18	-3.21307	121.21	(W)	W	191	157.26	6.258561	120.68	(B)	B
112	128.72	0.652537	119.46	(T)	T	82	66.43	-0.32708	121.15	(W)	W	189	209.79	-5.56532	119.1	(B)	B
116	142.01	-0.01237	119.35	(T)	T	81	66.44	-2.21794	121.08	(W)	W	188	217.02	9.696596	119.92	(B)	B
118	160.3	-1.14462	119.42	(T)	T	84	73.06	-0.01268	120.93	(W)	W	186	249.99	8.561068	118.83	(B)	B
121	173.04	-0.23943	118.41	(T)	T	85	73.2	-1.70425	120.9	(W)	W						
124	175.53	-0.76238	119.13	(RV)	RV	88	76.46	-3.08821	120.6	(W)	W						
125	175.75	1.044443	117.38	(T)	T	87	76.58	0.884479	120.54	(W)	W						
128	191.5	0.453544	118.39	(T)	T	91	87.96	1.341503	120.54	(W)	W						
131	203.88	0.40053	118.05	(W)	W	94	97.53	-1.62876	120.6	(W)	W						
140	214.75	1.612379	118.09	(RV)	RV	93	99.07	2.075113	120.58	(W)	W						
134	216.1	1.942425	117.63	(T)	T	96	112.45	1.329075	120.43	(W)	W						
138	219.7	0.964249	116.48	(T)	T	111	116.67	-0.06046	120.25	(W)	W						
144	233.33	2.132793	117.94	(T)	T	114	128.83	-0.35028	119.96	(W)	W						
148	254.34	0.204607	117.66	(T)	T	113	129.04	1.350576	120.05	(W)	W						
						117	142.14	-0.6261	120.01	(W)	W						
						115	142.41	1.719348	120.1	(W)	W						
						119	159.27	1.335083	119.76	(W)	W						
						120	160.37	-2.43354	119.7	(W)	W						
123	173.61	0.235414	118.75	(W)	W	122	173.73	-0.7861	119.14	(W)	W						
						127	175.61	1.537146	118.89	(W)	W						
						126	176.89	-1.05836	119.12	(W)	W						
						129	189.86	-2.07273	118.98	(W)	W						
						130	192.15	0.504665	118.86	(W)	W						
						132	202.9	1.881076	118.54	(W)	W						
						133	203.24	-1.57965	118.64	(W)	W						
						135	215.3	2.577421	118.28	(W)	W						
						136	215.43	-0.85079	118.53	(W)	W						
						137	218.35	4.79719	118.48	(W)	W						
						141	218.54	5.043815	118.44	(W)	W						
						139	220.49	-0.62107	118.54	(W)	W						
						143	231.53	4.624706	118.26	(W)	W						
						142	234.42	-0.38087	118.5	(W)	W						
						145	234.49	0.029828	118.49	(W)	W						
						146	252.9	3.364788	117.88	(W)	W						
						147	254.06	-2.07066	118	(W)	W						

2006 R3 Data Purlear Phase 1																					
PT #	STA	OFFSET	ELEV	DESC			PT #	STA	OFFSET	ELEV	DESC			PT #	STA	OFFSET	ELEV	DESC		
656	-123.55	1.280693	101.62	(T)			655	-130.84	8.777441	102.63	(W)			963	-121.46	8.946091	103.63	(B)		
660	-109.48	3.137825	102.32	(T)			657	-129.05	-1.93219	102.69	(W)			962	-120.93	-3.52066	103.69	(B)		
664	-98.71	2.418884	101.99	(T)			658	-122.84	5.75358	102.65	(W)			960	-97.07	-4.07345	103.46	(B)		
666	-90.63	2.154669	101.6	(T)			659	-120.75	0.211875	102.67	(W)			961	-94.42	7.545717	102.94	(B)		
668	-78.95	0.237648	101.29	(T)			661	-109.43	5.205617	102.65	(W)			958	-62.83	-7.13285	102.67	(B)		
670	-67.82	-0.13848	101.03	(T)			662	-108.46	-1.14819	102.6	(W)			959	-60.14	11.22486	103.1	(B)		
672	-61.39	-1.18277	100.54	(T)			665	-100.09	4.084128	102.51	(W)			957	-32.48	2.844442	102.23	(B)		
674	-41.32	-2.94437	101.06	(T)			663	-100.01	-0.12967	102.45	(W)			956	-27.7	-13.9132	102.39	(B)		
680	-20.7	-3.10343	101.01	(T)			667	-78.49	-1.20182	101.68	(W)			955	-3.55	1.411308	102.14	(B)		
684	-2.63	-5.18474	100.94	(T)			669	-77.73	3.497626	101.74	(W)			954	-0.44	-15.0396	102.17	(B)		
687	1.55	-3.96524	98.6	(T)			671	-67.17	2.325175	101.63	(W)			952	20.72	-12.6728	101.61	(B)		
686	1.76	-3.15758	101.28	(RV)			673	-66.81	-1.1981	101.61	(W)			953	23.04	1.614029	101.23	(B)		
690	10.07	-3.09158	96.9	(MP)			677	-55.39	-3.96197	101.63	(W)			951	46.6	3.474148	101.12	(B)		
694	21.24	-5.30834	97.74	(T)			675	-53.56	2.064583	101.57	(W)			950	48.66	-11.0525	100.92	(B)		
697	32.43	-4.80136	99.02	(T)			676	-41.88	-6.26853	101.44	(W)			948	75.88	-12.7028	100.43	(B)		
702	64.52	-3.8639	99.08	(T)			678	-41.31	1.114415	101.56	(W)			949	76.18	9.108857	101.27	(B)		
705	78.23	-8.05503	98.73	(T)			682	-20.84	-8.10378	101.51	(W)			947	117.19	3.548085	99.92	(B)		
730	92.23	-6.40166	98.26	(T)			681	-20.2	-0.94956	101.52	(W)			946	118.36	-9.38425	100.3	(B)		
733	98.01	-2.6966	98.74	(T)			679	-19.77	-1.4922	101.51	(W)			945	140.79	2.69524	99.68	(B)		
736	110.55	-4.45896	97.92	(T)			683	-2.25	-7.97086	101.44	(W)			944	150.66	-10.5725	99.54	(B)		
739	131.37	-4.36878	97.76	(T)			685	-2.05	-1.18243	101.46	(W)			942	170.51	-10.6159	99.84	(B)		
742	145.38	-2.62939	98.07	(T)			688	1.94	-3.14371	99.66	(W)			943	172.02	4.890252	99.19	(B)		
744	148.29	0.414765	98.44	(RV)			689	6.89	-7.68045	99.63	(W)			940	198.36	-10.6792	99.27	(B)		
747	149.64	-1.1297	96.7	(T)			691	8.23	-0.49653	99.63	(W)			941	203.88	6.811374	99.29	(B)		
750	158.29	-3.96825	95.82	(MP)			692	12.04	-10.9126	99.59	(W)			938	230.31	-9.41799	98.61	(B)		
751	171.53	-2.6339	96.85	(T)			695	21.46	-9.20634	99.65	(W)			939	234.03	5.645122	98.57	(B)		
754	179.46	-3.45824	97.36	(T)			693	22.41	-0.32771	99.6	(W)			937	267.95	5.287305	98.18	(B)		
757	187.83	-1.02631	97.77	(T)			696	30.17	-0.75546	99.61	(W)			936	271.87	-12.6393	98.68	(B)		
760	203.89	-1.41173	97.66	(T)			698	32.8	-7.70798	99.78	(W)			934	298.99	-6.74928	97.11	(B)		
764	214.81	-1.3499	97.4	(T)			699	43.36	-0.08045	99.57	(W)			935	301.64	4.129583	96.93	(B)		
765	225.98	-0.14189	97.16	(T)			700	45.28	-6.34962	99.41	(W)			933	327.95	4.097563	97.07	(B)		
768	243.18	-0.89176	97.01	(T)			703	64.06	-8.27181	99.29	(W)			932	331.91	-7.23061	96.76	(B)		
771	271.51	0.340202	96.79	(T)			701	65.92	-1.17546	99.42	(W)			930	360.54	-6.51167	96.29	(B)		
774	274.77	-4.09624	97.28	(RV)			704	77.63	-5.07675	99.05	(W)			931	375.09	5.242363	95.86	(B)		
777	276.26	-3.09374	94.44	(T)			706	78.97	-10.6815	98.97	(W)			929	381.34	-2.83121	95.82	(B)		
780	279.11	0.08702	93.57	(T)			731	92.58	-1.43658	99	(W)			928	398.38	8.135945	96.31	(B)		
784	293.78	-3.70622	94.55	(T)			732	92.68	-7.93579	99.09	(W)			927	410.75	-4.48126	95.63	(B)		
786	310.05	0.8395	95.5	(T)			734	99.09	-0.22304	99.01	(W)			926	422.32	10.50858	96.21	(B)		
789	340.47	0.019169	95.14	(T)			735	99.75	-7.15587	99.04	(W)			925	434.2	-5.00976	95.56	(B)		
809	356.3	0.318246	94.54	(T)			738	112.36	-6.35559	98.9	(W)			924	448.25	7.622481	94.81	(B)		
812	369.13	1.604204	94.2	(T)			737	112.56	0.505227	98.95	(W)			923	457.04	-4.48163	94.94	(B)		
815	391.21	0.674508	94.57	(T)			740	132.76	1.801618	99.07	(W)			922	484.53	8.122771	94.69	(B)		
818	410.41	1.632226	94.51	(T)			741	133.18	-6.24817	98.95	(W)			921	486.88	-3.52278	94.68	(B)		
820	420.13	1.135238	94.43	(T)			743	146.27	-7.08998	98.9	(W)			919	500.05	-1.70476	94.31	(B)		
822	422.23	0.982571	94.68	(RV)			745	147.89	1.895535	98.66	(W)			920	502.99	8.739154	94.46	(B)		
824	422.47	0.94371	94.65	(T)			746	149.79	-5.35906	98.25	(W)			917	528.11	-3.24684	94.25	(B)		
826	423.27	2.475948	92.74	(T)			748	160.3	2.392557	98.21	(W)			918	529.61	10.17636	94.69	(B)		
830	432.91	0.399382	93.42	(T)			749	160.83	-7.67529	98.17	(W)			915	566.89	-1.67524	93.46	(B)		
831	442.78	0.266384	93.83	(T)			753	172.75	1.012246	98.19	(W)			916	568.32	10.46381	93.61	(B)		
834	474.68	1.91655	92.67	(T)			752	174.33	-7.35063	98.1	(W)			914	584.03	13.62338	93.36	(B)		
838	493.44	5.533424	93.2	(T)	89.5		756	183.45	1.909451	98.21	(W)			913	598.94	-1.33813	93.01	(B)		
836	495.42	0.476022	91.82	(T)	88.12		755	185.59	-4.47793	98.12	(W)			912	618.8	8.003855	93.75	(B)		
839	507.83	2.561588	92.01	(T)	88.31		759	191.6	4.412399	98.08	(W)			910	627.26	-3.09766	92.71	(B)		96.41
842	522.85	2.705467	92.66	(T)	88.96		758	191.97	-1.16436	98.1	(W)			911	655.57	11.73832	92.4	(B)		96.1
846	564.45	4.032682	92.25	(T)			761	202.15	-6.92034	97.86	(W)			908	659.16	-0.53094	92.02	(B)		95.72
849	566.95	4.686057	92.86	(RV)			762	205.27	1.555641	97.87	(W)			909	678.37	11.14608	91.66	(B)		95.36
850	568.6	3.926427	91.28	(T)			763	214.25	-5.10978	97.71	(W)			907	688.68	-1.76942	91.55	(B)		
853	575.86	3.362059	91.31	(T)			767	225.98	2.714969	97.53	(W)			906	703.57	-7.46464	91.63	(B)		
856	589.45	3.557284	92.2	(T)			766	226.31	-3.75908	97.52	(W)			905	707.72	7.099719	91.49	(B)		
861	605.48	6.062073	90.6	(T)			770	242.68	2.094273	97.47	(W)									
863	618.95	4.477004	89.99	(T)			769	244.64	-4.40365	97.41	(W)									
865	636.45	5.299526	90.52	(T)			772	273.31	-4.65519	97.43	(W)									
869	648.26	6.386453	91	(T)			773	273.4	2.737093	97.46	(W)									
872	670.88	7.424624	91.06	(T)			775	275.26	0.645036	95.83	(W)									
874	673.17	5.546962	91.21	(RV)			776	280.54	-2.68078	95.87	(W)									
877	675.33	5.853408	89.68	(T)			778	287.72	6.404992	95.86	(W)									
880	679.85	5.510064	89.09	(T)			779	290.46	-6.67789	95.91	(W)									
883	696.39	5.593518	90.42	(T)			782	297.83	-4.99756	95.93	(W)									
							781	299.9	2.619935	95.88	(W)									
							783	300.12	2.606761	95.92	(W)									
							787	309.76	-3.55897	95.97	(W)									
							785	309.81	4.633512	95.84	(W)									
							788	338.76	2.422561	95.52	(W)									
							790	340.12	-2.58827	95.43	(W)									
							808	354.72	-1.97014	95.14	(W)									
							810	355.71	3.325717	95.19	(W)									
							813	367.65	3.920762	95.16	(W)									
							811	367.78	-1.52804	95.1	(W)									
							814	385.14	-2.158	95.13	(W)									
							817	390.81	5.054839	95.12	(W)									
							816	392.38	-2.16451	95.03	(W)									
							819	411.37	-1.08337	95.02	(W)									
							821	413.03	5.375328	95.09	(W)									
							823	420.69	5.166421	95.11	(W)									
							825	421.04	-3.30086	95.03	(W)									
							827	423.05	4.050015	94.23	(W)									
							829	425.72	-1.8392	94.33	(W)									
							828	433.31	7.638541	94.19	(W)									
							832	443	6.827443	94.19	(W)									
							833	444.36	-3.01409	94.21	(W)									
							835	472.98	-0.63352	93.2	(W)									
							837	483.77	3.242914	93.23	(W)	89.53								
							840	483.87	3.437338	93.22	(W)									
							841	495.44	-0.45017	93.24	(W)									
							843	513.87	5.800523	93.28	(W)									
							844	516.09	-2.21831	93.25	(W)									
							847	535.22	1.060217	93.16	(W)									
							845	536.7	4.949614	93.17	(W)									
							848	546.31	4.126445	92.99	(W)									
							851	562.87	6.644091	93.02	(W)									
							852	565.22	1.071909	93.02	(W)									
							854	571.65	7.900643	92.48	(W)									
							855	571.93	0.004153	92.49	(W)									
							858	587.17	1.712613	92.57	(W)									
							857	588.28	8.344425	92.54	(W)									
							864	595.91	8.357859	92.37	(W)									
							859	596.96	1.226217	92.3	(W)									
							860	603.95	4.244624	91.69	(W)									
							862	605.85	8.968469	91.68	(W)									
							866	622.33	0.279658	91.64	(W)									
							867	625.84	7.318822	91.51	(W)									
							868	637.1	1.185217	91.74	(W)									
							870	647.84	9.505786	91.73	(W)									
							871	648.2	2.389378	91.7	(W)									
							873	671.76	9.350505	91.48	(W)									
							875	672.53	2.884106	91.45	(W)									
							878	678.22	2.779598	90.8	(W)									
							876	680.09	11.18518	90.86	(W)									
							879	690.02	10.05334	90.89	(W)									
							882	691.27	0.979604	90.82	(W)									
							881	700.89	6.278563	90.72	(W)									
							884	710.25	3.063422	90.61	(W)									
							885	710.26	3.821906	90.62	(W)									
							886	714.91	-5.9373	90.73	(W)									

2006 R4 Data Purlear Phase 1																
PT #	STA	OFFSET	ELEV	DESC		PT #	STA	OFFSET	ELEV	DESC		PT #	STA	OFFSET	ELEV	DESC
1008	8.78	1.145683	115.09	(t)		1084	45.51	-1.28428	115.08	(w)	w	1249	196.34	-7.37783	114.49	(b)
1009	15.79	0.930429	114.81	(t)		1086	52.34	-1.75104	115.03	(w)	w	1250	207.93	9.56824	114.35	(b)
1010	27.07	1.266499	115.01	(t)		1093	59.05	0.967802	114.84	(w)	w	1251	221.93	9.638287	114.16	(b)
1011	38.37	-0.36028	114.88	(t)		1085	60.11	1.255514	114.8	(w)	w	1248	224.2	-12.3731	113.52	(b)
1012	47.77	-2.28884	114.84	(t)		1083	69.09	-1.40231	114.78	(w)	w	1252	259.88	9.309878	113.06	(b)
1013	57.57	-1.50112	114.55	(t)		1092	72.34	-1.48792	114.79	(w)	w	1247	281.45	-6.63567	112.99	(b)
1014	67.09	-0.29091	114.51	(t)		1082	74.8	2.152439	114.76	(w)	w	1246	303.71	-4.63934	112.64	(b)
1015	71.56	-1.32355	114.09	(t)		1080	83.77	-1.73401	114.74	(w)	w	1253	329.51	5.872629	112.36	(b)
1016	79.34	-0.68247	113.55	(t)		1089	91.82	2.001437	114.24	(w)	w	1245	333.84	-9.2412	112.48	(b)
1017	86.13	0.010869	113.7	(t)		1081	92.1	1.161935	114.67	(w)	w	1254	355.84	8.962355	112.32	(b)
1018	91.61	0.11957	114.7	(v)		1079	92.88	1.346702	114.22	(w)	w	1244	367.48	-4.79039	111.25	(b)
1019	92.13	0.784785	113.08	(t)		1078	99.26	-0.74904	114.23	(w)	w	1255	381.31	6.999117	112.14	(b)
1020	95.94	-0.2563	112.6	(t)		1076	108.79	5.170629	114.13	(w)	w	1243	402.58	-4.77685	110.87	(b)
1021	102.53	1.56259	113.2	(t)		1077	114.88	1.748781	114.17	(w)	w	1256	409.38	7.029989	111.3	(b)
1022	110.35	2.56508	113.91	(t)		1075	125.36	5.97453	114.03	(w)	w	1257	437.44	10.89949	110.27	(b)
1023	117.56	3.433009	113.33	(t)		1074	135.62	1.756681	114.02	(w)	w	1242	440.35	-5.42684	110.48	(b)
1024	124.89	4.290605	113.34	(t)		1073	142.46	4.655599	114.05	(w)	w	1241	452.87	-4.68792	110.6	(b)
1025	130.65	4.742207	113.05	(t)		1072	149.57	-0.09645	113.87	(w)	w	1258	470.12	9.127358	110.01	(b)
1026	138.52	3.954492	112.55	(t)		1071	156.52	4.183038	113.85	(w)	w	1240	475.32	-4.44738	110.29	(b)
1027	145.65	2.5364	113.29	(t)		1070	163.26	-1.46247	113.78	(w)	w	1259	489.07	8.569718	109.62	(b)
1028	151.56	1.201697	112.76	(t)		1069	165.72	3.435931	113.81	(w)	w	1239	511.19	-6.78429	109.66	(b)
1029	157.24	0.519331	112.48	(t)		1066	173.4	1.346621	113.75	(w)	w	1260	517.72	6.456213	109.35	(b)
1030	164.71	0.817792	112.19	(t)		1068	173.48	-0.5833	113.81	(w)	w	1238	532.52	-7.4529	109.04	(b)
1031	171.91	1.347314	112.54	(t)		1201	185	-1.30331	113.88	(w)	w	1261	541.58	3.778655	109.5	(b)
1067	174.95	0.736664	113.04	(w)	w	1202	187.1	5.557797	113.18	(w)	w	1237	560.72	-4.13106	108.68	(b)
1032	179.22	1.750251	112.69	(t)		1203	204.14	-1.55493	113.16	(w)	w	1262	568.59	6.813453	109.4	(b)
1033	183.94	2.119422	113.19	(v)		1204	219.57	3.276867	113.07	(w)	w	1236	588.43	-6.16539	108.61	(b)
1198	185	2.37722	113.19	(rv)		1205	238.87	-3.91236	113.02	(w)	w	1263	593.41	12.32013	108.76	(b)
1034	186.09	2.341377	111.42	(t)		1206	270.29	4.165551	112.88	(w)	w	1235	613.85	-4.93772	108.14	(b)
1197	187.75	2.837642	111.53	(t)		1207	278.27	1.088116	112.83	(w)	w	1234	627.98	-4.85791	108.16	(b)
1196	190.96	1.098707	111.21	(t)		1208	299.91	-0.46926	112.02	(w)	w	1264	629.23	13.11918	107.91	(b)
1195	203.57	1.490732	112.08	(t)		1209	311.48	0.479602	111.66	(w)	w	1265	662.44	11.4881	108.43	(b)
1194	216.94	-0.78643	111.92	(t)		1210	314.85	-4.18281	111.54	(w)	w					
1193	234.7	0.618341	111.54	(t)		1211	319.33	0.757866	111.14	(w)	w					
1192	246.87	-1.72237	111.1	(t)		1212	334.35	-4.80209	111.1	(w)	w					
1191	260.51	-2.6443	111.22	(t)		1213	358.52	2.857834	111.02	(w)	w					
1190	268.13	-0.31261	112.02	(t)		1214	374.03	-1.98504	110.83	(w)	w					
1189	279.3	3.05653	112.05	(t)		1215	386.15	3.466221	110.73	(w)	w					
1188	292.54	0.815482	111.73	(t)		1216	397.95	-0.92556	110.62	(w)	w					
1187	305.54	-0.76593	111.12	(t)		1217	408.2	0.951451	110.48	(w)	w					
1186	314.65	-2.3275	111.37	(rv)		1218	411.1	-1.7125	110.13	(w)	w					
1185	317.31	-2.71286	110.58	(t)		1219	422.46	-5.61559	110.17	(w)	w					
1184	332.02	-1.71067	109.94	(t)		1220	434.24	2.957958	110.11	(w)	w					
1183	343.4	1.420633	109.93	(t)		1221	447.32	-1.06353	109.84	(w)	w					
1182	359.53	1.939072	110.15	(t)		1222	462.83	1.852941	109.62	(w)	w					
1181	375.96	0.810304	110.21	(t)		1223	474.55	-2.40064	109.43	(w)	w					
1180	389.38	1.669935	109.98	(t)		1224	486.95	3.504397	109.37	(w)	w					
1179	395.15	1.480072	109.02	(t)		1225	499.64	-0.96172	109.24	(w)	w					
1178	399.86	1.950293	108.95	(t)		1226	504.23	3.682622	108.54	(w)	w					
1177	408.39	0.786646	109.96	(rv)		1227	517.36	-3.18509	108.56	(w)	w					
1176	411.52	1.092249	108.8	(t)		1228	528.58	0.857997	108.53	(w)	w					
1175	415.74	-0.56903	108.34	(t)		1229	542.65	0.780739	108.49	(w)	w					
1174	427.73	0.630023	108.45	(t)		1230	552.62	-2.47494	108.44	(w)	w					
1173	432.8	1.469164	109.23	(t)		1231	562.01	4.365233	108.38	(w)	w					
1172	444.7	-0.08372	109.07	(t)		1232	574.35	-0.7801	108.27	(w)	w					
1171	460.51	0.178114	108.6	(t)		1155	574.83	-1.46408	108.24	(w)	w					
1170	470.7	-0.85975	108.29	(t)		1152	577.08	-3.07093	107.65	(w)	w					
1169	479.77	0.275556	107.84	(t)		1233	577.22	2.908185	107.75	(w)	w					
1168	495.85	1.578285	108.09	(t)		1151	593.48	4.168147	107.55	(w)	w					
1167	502.39	0.161056	108.76	(rv)		1150	601.43	-1.63285	107.56	(w)	w					
1166	503.45	-0.03558	106.24	(t)		1147	608.33	-2.31714	107.2	(w)	w					
1165	505.8	0.279958	106.2	(t)		1146	616.08	-0.00056	107.16	(w)	w					
1164	516.43	1.886921	106.91	(t)		1145	620.96	-3.8649	107.13	(w)	w					
1163	525.19	0.836772	107.18	(t)		1142	631.17	-3.97526	107.13	(w)	w					
1162	536.34	-0.75411	106.9	(t)		1141	636.49	2.297017	107.03	(w)	w					
1161	545.75	-1.21698	107.11	(t)		1139	639.95	-1.21639	107.23	(w)	w					
1160	560.36	2.768315	107.2	(t)		1137	648.44	2.317823	106.95	(w)	w					
1159	571.72	1.391001	107.05	(t)		1135	651.46	-0.76139	106.15	(w)	w					
1156	575.27	0.62797	107.86	(rv)		1133	669.12	3.663347	106.16	(w)	w					
1158	575.69	0.129136	107.8	(rv)												
1154	577.13	0.739634	105.75	(t)												
1153	580.28	0.211291	105.94	(t)												
1149	601.75	1.199506	107.07	(t)												
1148	610.73	-1.05513	106.88	(t)												
1144	621.6	-0.81357	106.43	(t)												
1143	628.39	-0.80058	105.61	(t)												
1140	641.6	1.899455	106.09	(t)												
1138	649.86	3.267915	106.77	(rv)												
1136	650.97	2.933266	104.02	(t)												
1134	657.03	2.309585	103.83	(t)												

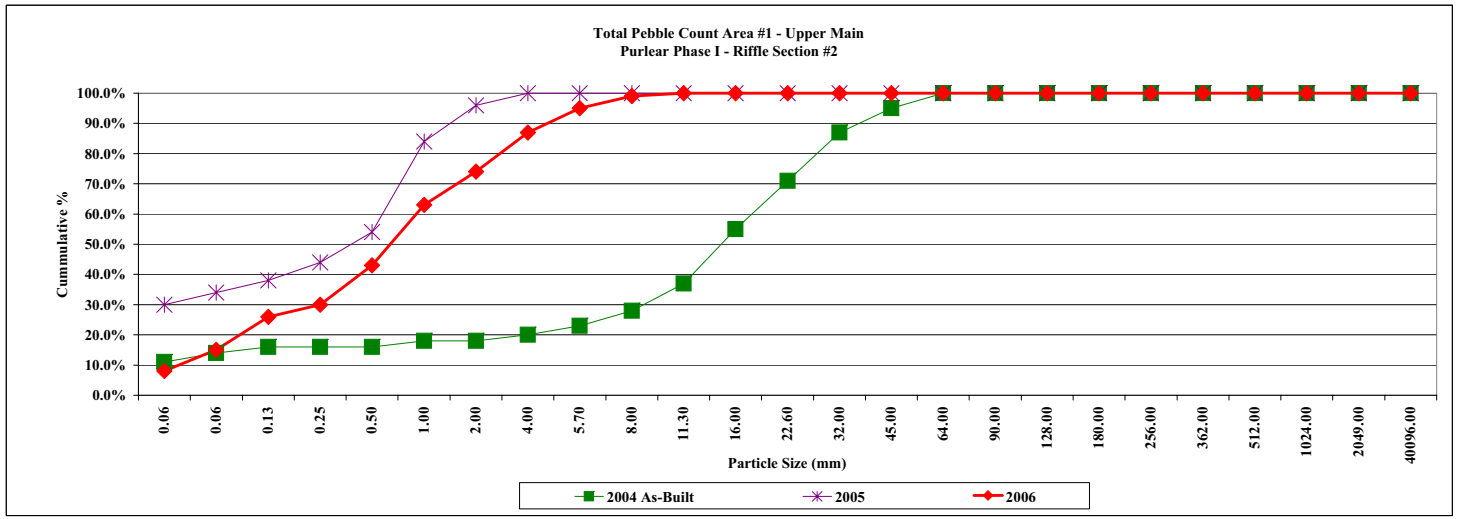
2006 R5 Data Purlear Phase 1												
PT #	STA	OFFSET	ELEV	DESC		PT #	STA	OFFSET	ELEV	DESC		
2843	-39.6	-4.22125	84.7	(culv)	culv	3095	-38.93	-1.17351	86.15	(w)	w	
2844	-36.41	-2.63406	84.65	(culv)	culv	3096	-36.42	-7.36836	86.11	(w)	w	
2842	-35.8	-6.0422	84.7	(culv)	culv	3094	-31.35	-8.1296	86.34	(w)	w	
2847	-33.41	-4.1971	84.23	(t)	t	3093	-26.44	-0.67319	86.13	(w)	w	
2849	-30.47	-3.99887	84.26	(t)	t	3092	-16.59	-1.10257	86.09	(w)	w	
2848	-28.21	-3.13861	84.19	(t)	t	3091	-13.2	-6.29601	86.03	(w)	w	
2850	-22.88	-4.50215	85.02	(t)	t	3090	-2.25	-1.95798	85.97	(w)	w	
2852	-15.98	-3.49781	85.32	(t)	t	3089	3.82	-7.16049	85.66	(w)	w	
2851	-12.54	-3.63066	85.32	(t)	t	3088	17.99	2.349418	85.34	(w)	w	
2853	-4.24	-4.57903	85.39	(t)	t	3087	24.93	-7.12168	85.35	(w)	w	
2854	1.11	-4.96576	85.29	(t)	t	3086	32.22	-1.18935	85.17	(w)	w	
2855	3.44	-5.37169	84.84	(t)	t	3085	48.45	-8.37562	85.27	(w)	w	
2856	8.77	-4.60327	84.94	(t)	t	3084	58.83	-0.9814	85.2	(w)	w	
2857	12.03	-4.75038	85.3	(t)	t	3083	60.31	-9.8187	85.11	(w)	w	
2858	12.66	-3.6343	85.24	(rv)	rv	3082	79.54	-4.95745	84.68	(w)	w	
2859	13.6	-2.93402	83.86	(t)	t	3081	89.43	-10.6683	84.97	(w)	w	
2862	19.46	-2.84275	82.24	(t)	t	3080	98.26	-2.3583	84.49	(w)	w	
2863	23.62	-4.9187	82.13	(t)	t	3079	115.74	-10.9629	84.15	(w)	w	
2864	27.4	-4.46367	82.61	(t)	t	3078	124.59	1.358134	84.14	(w)	w	
2865	31.12	-3.7809	83.31	(t)	t	3077	133.99	-7.38652	84.19	(w)	w	
2866	37.23	-5.80569	83.77	(t)	t	3076	138.55	-2.04424	84.06	(w)	w	
2867	42.95	-5.32591	84.32	(t)	t	3074	154.41	-4.35822	83.86	(w)	w	
2868	51.72	-3.73175	84.56	(t)	t	3075	156.79	0.287703	83.96	(w)	w	
2869	56.37	-3.72139	84.49	(t)	t	3072	166.94	-4.29138	83.87	(w)	w	
2870	68.49	-6.51046	84.26	(t)	t	3073	176.97	0.727717	83.35	(w)	w	
2871	74.27	-5.8307	84.08	(t)	t	3070	186.72	-7.75221	83.23	(w)	w	
2873	83.21	-6.99078	83.67	(t)	t	3071	193.95	-1.46614	83.14	(w)	w	
2872	86.69	-6.82382	82.93	(t)	t	3069	207.08	-0.67707	83.08	(w)	w	
2874	88.63	-5.50524	83.1	(t)	t	3068	210.36	-4.25229	82.97	(w)	w	
2875	94.05	-4.88474	83.41	(t)	t	3066	230.58	-2.20687	82.76	(w)	w	
2876	97.72	-4.43939	83.95	(t)	t	3067	233.29	1.982894	82.64	(w)	w	
2877	101.15	-5.33144	84.04	(rv)	rv	3065	244.79	2.479341	82.65	(w)	w	
2879	102.23	-3.28674	82.91	(t)	t	3064	250.87	-2.31633	82.41	(w)	w	
2878	103.91	-5.63849	82.6	(t)	t	3063	259.23	4.293328	82.38	(w)	w	
2880	108.49	-5.60344	82.21	(t)	t	3062	270.74	-3.42778	81.91	(w)	w	
2883	114.68	-3.5602	81.46	(t)	t	3060	280.1	-0.95746	82.24	(w)	w	
2884	118.4	-4.93321	81.37	(t)	t	3061	282.03	-5.2018	82.11	(w)	w	
2885	118.43	-3.33328	81.54	(t)	t	3059	298.63	-0.64211	81.8	(w)	w	
2886	122.71	-3.05643	81.66	(t)	t	3058	309.55	4.632967	81.97	(w)	w	
2888	125.34	-5.10889	82.98	(t)	t	3057	312.36	-2.40483	81.85	(w)	w	
2887	127.29	-3.99051	83.22	(t)	t	3056	329.01	2.321946	81.89	(w)	w	
2889	135.18	-4.64643	83.36	(t)	t	3054	335.33	-2.77985	81.79	(w)	w	
2890	138.4	-4.41395	82.98	(t)	t	3052	350.9	-5.46111	81.92	(w)	w	
2891	143.34	-3.06901	82.57	(t)	t	3055	351.07	3.781801	81.62	(w)	w	
2893	145.33	-3.1611	82.29	(t)	t	3053	361.31	2.98979	81.77	(w)	w	
2892	150.06	-2.76926	82.23	(t)	t	3050	365.24	-4.00844	81.54	(w)	w	
2895	153.74	-2.37898	82.02	(t)	t	3051	378.67	3.858677	81.58	(w)	w	
2894	158	-1.17468	82.72	(t)	t	3048	385.95	-2.70768	81.56	(w)	w	
2896	168.32	-1.27269	83.12	(t)	t	3047	395.51	-2.73272	81.45	(w)	w	
2899	170.38	-2.72277	83.28	(t)	t	3049	398.62	2.760233	81.25	(w)	w	
2897	172.29	-2.82047	83.47	(rv)	rv	3045	400.91	-3.39086	81.54	(w)	w	
2900	174.64	-2.58924	81.37	(t)	t	3046	416.33	3.21379	81.37	(w)	w	
2902	183.34	-3.24595	81.58	(t)	t	3043	419.38	-3.86869	81.29	(w)	w	
2903	184.14	-6.24312	81.98	(t)	t	3044	426.32	4.189338	81.44	(w)	w	
2904	197.91	-3.9246	82.25	(t)	t	3042	439.16	3.686008	81.07	(w)	w	
2905	202.21	-2.28363	82.61	(t)	t	3041	443.85	-3.10043	80.9	(w)	w	
2906	210.36	-2.74599	82.57	(t)	t	3040	456.69	7.679511	81.03	(w)	w	
2907	221.88	-1.95527	82.09	(t)	t	3039	463.62	-8.23326	81.03	(w)	w	
2908	235.08	-0.77321	82.27	(t)	t	3038	465.97	3.44999	80.94	(w)	w	
2909	245.47	1.180882	81.91	(t)	t	3037	475.34	-0.97142	80.77	(w)	w	
2910	249.94	-0.47836	82.44	(rv)	rv	3036	486.96	7.887983	80.68	(w)	w	
2913	252.9	-1.42413	80.34	(t)	t	3035	490.41	1.189385	80.88	(w)	w	
2915	259.17	-3.39147	79.29	(t)	t	3033	503.77	1.37116	80.61	(w)	w	
2916	263.65	-0.28347	79.7	(t)	t	3031	513.28	0.518075	80.36	(w)	w	
2917	270.42	1.030268	80.45	(t)	t	3034	513.61	6.757566	80.28	(w)	w	
2919	274.67	-1.41083	81.77	(t)	t	3032	530.34	9.874987	80.35	(w)	w	
2918	275.56	1.904783	81.21	(t)	t	3030	530.69	-0.22161	80.25	(w)	w	
2920	279.65	-3.31299	81.53	(t)	t	3029	538.33	8.811897	80.04	(w)	w	
2921	284.9	-1.9354	80.81	(t)	t	3028	543.49	-0.52393	80.14	(w)	w	
2922	288.43	-0.36653	81.33	(t)	t	3027	553.88	9.10726	79.94	(w)	w	
2923	294.71	2.412677	81.25	(t)	t	3026	555.75	-0.0366	79.82	(w)	w	
2924	299.32	2.687594	80.67	(t)	t	3025	566.03	3.985581	79.51	(w)	w	
2925	307.48	2.972646	80.81	(t)	t	3024	571.77	-0.22799	79.61	(w)	w	
2926	311.27	0.682332	79.81	(t)	t	3023	579.86	6.617433	79.47	(w)	w	
2927	317.06	0.405313	80.6	(t)	t	3022	584.82	0.213049	79.28	(w)	w	
2928	325.1	0.502383	80.82	(t)	t	3021	592.61	6.858174	79.51	(w)	w	
2929	331.12	-0.0731	80.82	(t)	t	3020	596.79	0.57256	79.15	(w)	w	
2931	334.6	0.08969	81.11	(t)	t	3019	604.01	7.003315	79.01	(w)	w	
2930	336.69	0.395595	81.44	(rv)	rv	3018	611.59	-2.23181	78.98	(w)	w	
2932	338.64	0.507454	80.99	(t)	t	3017	623.26	10.96452	79.14	(w)	w	
2935	345.46	1.610252	79.59	(t)	t	3016	624.73	-1.47742	78.56	(w)	w	
2936	352.17	0.257631	79.57	(t)	t	3015	632.31	13.18081	78.96	(w)	w	
2937	358.57	1.362708	80.18	(t)	t	3013	643.96	11.84439	78.81	(w)	w	
2938	363.4	0.241895	80.98	(t)	t	3014	648.52	2.732464	78.91	(w)	w	
2939	372.28	0.511907	81.15	(t)	t	3012	658.66	3.006478	78.82	(w)	w	
2940	380.91	0.80172	80.97	(t)	t	3011	667.51	10.79612	78.56	(w)	w	
2941	394.51	1.669227	80.13	(t)	t	3010	676.08	3.455389	78.37	(w)	w	
2942	400.25	2.054465	80.21	(t)	t	3007	685.27	3.528034	78.27	(w)	w	
2943	406.25	1.177531	79.87	(t)	t	3009	689.92	9.103888	78.14	(w)	w	
2944	415.02	1.585747	79.9	(t)	t	3006	700.58	3.998168	78.15	(w)	w	
2945	418.41	1.92325	79.83	(t)	t	3008	705.19	10.55828	77.86	(w)	w	
2946	421.45	0.899979	80.55	(t)	t							
2947	427.84	1.725054	80.67	(t)	t							
2948	433.3	1.371202	80.79	(t)	t							
2950	440.1	1.167203	80.54	(t)	t							
2949	443.01	1.338822	80.49	(rv)	rv							
2951	446.01	1.454334	78.77	(t)	t							
2953	453.17	3.103715	77.55	(t)	t							
2956	456.12	1.20515	77.82	(t)	t							
2955	459.31	-0.22626	78.15	(t)	t							
2957	464.32	2.15443	79.51	(t)	t							
2958	470.77	0.303038	79.95	(t)	t							
2959	476.78	4.816364	80.05	(t)	t							
2960	485.58	3.840382	79.57	(t)	t							
2961	493.82	7.771553	80.23	(t)	t							
2962	499.15	4.323741	79.85	(t)	t							
2963	507.86	4.68189	79.46	(t)	t							
2964	516.16	3.032405	79.36	(t)	t							
2966	518.99	2.928987	79.43	(t)	t							
2965	521.09	3.091814	80.03	(rv)	rv							
2968	525.75	8.672986	80	(rv)	rv							
2967	526.47	1.516492	80.02	(rv)	rv							
2969	528.87	5.670872	77.87	(t)	t							
2970	533.54	4.203689	77.92	(t)	t							
2971	543.45	3.224086	78.21	(t)	t							
2972	549.04	3.038274	79.5	(t)	t							
2973	555.27	5.258857	79.09	(t)	t							
2974	560.54	4.33662	79.19	(t)	t							
2975	566.07	2.099617	79.09	(t)	t							
2976	571.97	3.084751	79.02	(t)	t							
2977	578.74	3.491506	78.87	(t)	t							
2978	582.66	4.030173	78.83	(t)	t							
2979	589.82	4.80461	78.49	(t)	t							
2980	599.71	3.889647	77.91	(t)	t							
2981	604.25	4.624006	78.1	(t)	t							
2983	606.89	4.442325	78.87	(rv)	rv							
2982	609.43	3.449393	76.71	(t)	t							
2984	614.58	4.175285	76.68	(t)	t							
2985	615.75	-1.57959	79.04	(rv)	rv							
2986	619.25	4.876837	77.07	(t)	t							
2987	625.6	3.866728	77.32	(t)	t							
2988	633.21	6.587931	78.07	(t)	t							
2989	639.52	7.200108	78.17	(t)	t							
2990	648.07	4.951112	77.89	(t)	t							
2991	662.51	7.42718	78.05	(t)	t							
2992	670.27	5.372274	78.26	(t)	t							
2993	680.94	5.888463	77.43	(t)	t							
2994	688.2	5.990697	77.41	(t)	t							
2995	696.4	6.636451	77.64	(t)	t							
2996	699.09	5.480359	77.47	(t)	t							
2997	701.06	5.388853	77.71	(rv)	rv							
2999	706.5	6.388976	75.98	(t)	t							
3001	714.21	5.393534	76.09	(culv)	culv							
3002	716.11	7.719916	76.09	(culv)	culv							
3003	716.82	6.534254	76.09	(botculv)	botculv							

2006 R6 Data Purlear Phase 1																	
PT #	STA	OFFSET	ELEV	DESC		PT #	STA	OFFSET	ELEV	DESC		PT #	STA	OFFSET	ELEV	DESC	
2626	0.91	0.288317	68.69	(t)	t	2639	1.33	2.1464	70.47	(w)	w	2814	12.58	-16.4024	72.47	(bnkf)	bnkf
2623	3.63	-0.45152	71.04	(rv)	rv	2636	3.1	-4.47058	70.51	(w)	w	2812	29.01	7.68685	72.24	(bnkf)	bnkf
2632	5.92	0.872831	70.42	(t)	t	2637	4.55	2.785377	71.02	(w)	w	2811	37.03	-16.6523	71.76	(bnkf)	bnkf
2635	7.48	4.689933	70.64	(cultoe)	cultoe	2638	7.68	-5.4454	71.19	(w)	w	2813	37.19	-16.6559	71.79	(bnkf)	bnkf
2628	8.54	-0.05312	70.52	(t)	t	2641	19.55	-11.944	70.44	(w)	w	2810	47.09	10.53258	72.31	(bnkf)	bnkf
2634	8.55	-4.90625	70.58	(cultoe)	cultoe	2640	21.46	4.731861	70.47	(w)	w	2808	71.6	12.03562	71.89	(bnkf)	bnkf
2629	8.76	0.153195	67.69	(t)	t	2643	40.2	-9.915	70.5	(w)	w	2809	75.31	-7.53676	71.6	(bnkf)	bnkf
2625	18.66	-2.61597	68.98	(t)	t	2642	41.38	0.407529	70.34	(w)	w	2807	91.88	-3.643	71.42	(bnkf)	bnkf
2624	26.2	-5.89748	69.27	(t)	t	2644	57.43	4.164439	70.43	(w)	w	2806	98.78	12.26021	71.45	(bnkf)	bnkf
2622	44.97	-6.1465	69.84	(t)	t	2645	67.71	-6.14754	70.28	(w)	w	2805	118.91	-17.575	71.84	(bnkf)	bnkf
2621	67.41	-0.16631	69.51	(t)	t	2646	84.93	10.09662	70.09	(w)	w	2804	122.21	11.90935	71.73	(bnkf)	bnkf
2619	87.59	2.977629	69.71	(t)	t	2647	86.11	-0.06106	70.34	(w)	w	2803	138.87	-16.4092	70.51	(bnkf)	bnkf
2617	98.92	3.998358	69.98	(rv)	rv	2648	96.13	0.365472	70.43	(w)	w	2802	142.23	4.729798	70.42	(bnkf)	bnkf
2620	99.89	3.170684	66.7	(t)	t	2649	100.17	1.884159	69.33	(w)	w	2801	159.08	-19.9769	71.07	(bnkf)	bnkf
2618	104.07	0.79299	65.87	(t)	t	2650	101.11	6.205405	70.24	(w)	w	2800	164.68	-1.28186	70.69	(bnkf)	bnkf
2614	117.75	-0.03409	67.57	(t)	t	2651	102.17	3.691384	69.42	(w)	w	2799	187.01	-0.36079	70.49	(bnkf)	bnkf
2613	121.43	-0.55739	66.91	(t)	t	2652	112.75	-10.4943	69.37	(w)	w	2798	187.95	-19.3391	70.78	(bnkf)	bnkf
2612	131.3	-3.8653	67.26	(t)	t	2653	123.89	5.609982	69.41	(w)	w	2797	213.93	0.174531	70.4	(bnkf)	bnkf
2610	141.75	-3.81888	68.21	(t)	t	2655	135.19	-10.4986	69.4	(w)	w	2796	216.03	-15.6021	70.86	(bnkf)	bnkf
2609	152.6	-11.6579	68.45	(t)	t	2654	138.3	-11.1816	69.34	(w)	w	2795	242.25	3.480013	70.12	(bnkf)	bnkf
2611	173.49	-14.3661	68.51	(t)	t	2656	139.86	3.16953	69.4	(w)	w	2794	243.63	-14.6451	70.59	(bnkf)	bnkf
2608	190.29	-12.6735	68.12	(t)	t	2657	147.22	-12.8153	69.43	(w)	w	2792	271.55	-18.2517	70.9	(bnkf)	bnkf
2607	203.33	-11.6196	67.36	(t)	t	2658	147.82	-13.2403	69.47	(w)	w	2793	282.19	1.772576	69.95	(bnkf)	bnkf
2604	240.68	-8.78031	68.47	(t)	t	2659	151.52	-1.0847	69.43	(w)	w	2790	308.74	-12.1996	69.67	(bnkf)	bnkf
2601	249.18	-6.63549	69.34	(rv)	rv	2660	172.28	-17.6351	69.23	(w)	w	2791	312.36	4.356111	70.31	(bnkf)	bnkf
2600	249.66	-7.12545	69.3	(t)	t	2661	173.49	-5.45155	69.36	(w)	w	2789	338.88	-8.29173	69.83	(bnkf)	bnkf
2599	250.38	-7.15239	67.97	(t)	t	2664	189.98	-15.3234	69.49	(w)	w	2788	339.91	8.801445	70.43	(bnkf)	bnkf
2598	260.41	-7.7993	66.77	(t)	t	2663	191.66	-2.86862	69.25	(w)	w	2786	373.49	6.493689	69.14	(bnkf)	bnkf
2597	277.68	-6.84786	67.6	(t)	t	2684	218.95	1.086245	69.4	(w)	w	2787	380.6	-12.691	69.41	(bnkf)	bnkf
2596	304.7	-3.82166	67.2	(t)	t	2685	225.08	-10.4573	69.47	(w)	w	2784	390.23	8.056375	69.36	(bnkf)	bnkf
2595	319.99	-1.60398	67.46	(t)	t	2687	244.71	-1.17046	69.45	(w)	w	2785	395.13	-13.4599	69.02	(bnkf)	bnkf
2594	335.76	-0.16666	67.21	(t)	t	2686	247.2	-11.483	69.42	(w)	w	2783	420.84	7.218627	68.97	(bnkf)	bnkf
2590	349.92	-2.52249	68.73	(t)	t	2690	249.31	-10.8848	68.83	(w)	w	2782	424.71	-10.8083	68.94	(bnkf)	bnkf
2591	349.98	-2.38047	68.72	(rv)	rv	2689	253.55	-1.54629	68.91	(w)	w	2781	447.8	-9.74494	69.16	(bnkf)	bnkf
2589	350.47	-2.4322	65.58	(t)	t	2688	265.19	-16.3017	68.82	(w)	w	2780	448.42	7.644828	68.54	(bnkf)	bnkf
2588	358.98	-4.23165	65.4	(t)	t	2695	278.64	-0.57715	68.87	(w)	w	2779	468.07	-7.04339	68.78	(bnkf)	bnkf
2587	370.81	-4.48665	65.29	(t)	t	2692	279.36	-0.52415	68.77	(w)	w	2778	469.5	8.525459	68.24	(bnkf)	bnkf
2586	385.67	-3.52147	65.98	(t)	t	2691	292.67	-10.5577	68.87	(w)	w	2777	508.16	-9.10236	67.22	(bnkf)	bnkf
2584	394.22	0.32769	67.31	(lv)	lv	2693	310.82	-11.3686	68.86	(w)	w	2776	513.49	7.493583	67.76	(bnkf)	bnkf
2583	409.59	-0.11599	66.67	(t)	t	2694	311.14	1.062502	68.88	(w)	w	2775	534.79	-9.01395	67.09	(bnkf)	bnkf
2582	426.14	-2.19189	66.15	(t)	t	2696	333.84	-6.01966	68.87	(w)	w	2774	542.06	7.02384	67.74	(bnkf)	bnkf
2581	439.8	-4.68691	65.34	(t)	t	2697	351.07	1.953596	68.92	(w)	w	2773	552.98	5.421067	67.64	(bnkf)	bnkf
2580	457.02	-1.59768	65.55	(t)	t	2699	361.29	2.369211	67.74	(w)	w	2772	559.99	-9.81885	67.14	(bnkf)	bnkf
2577	472.93	0.572318	67.45	(rv)	rv	2701	363.22	-13.1838	67.69	(w)	w	2771	599.86	10.00577	67.64	(bnkf)	bnkf
2576	478.39	-0.22049	64.32	(t)	t	2700	380.49	3.2117	67.64	(w)	w	2770	602.44	-7.67393	66.82	(bnkf)	bnkf
2575	489.4	2.539558	63.52	(t)	t	2702	383.55	-7.8202	67.67	(w)	w	2768	625.98	8.517383	65.43	(bnkf)	bnkf
2574	501.65	-0.28143	64.33	(t)	t	2703	392.08	3.850657	67.69	(w)	w	2769	632.84	-9.13091	66.05	(bnkf)	bnkf
2573	523.21	-0.67017	65.72	(t)	t	2705	392.58	3.68073	67.73	(w)	w	2767	654.93	-8.7587	65.49	(bnkf)	bnkf
2572	534.63	0.765926	65.92	(t)	t	2709	398.21	0.891498	67.65	(w)	w	2766	654.99	9.378144	65.62	(bnkf)	bnkf
2571	551.74	0.441237	65.14	(t)	t	2704	402.45	-6.09002	67.65	(w)	w	2764	675.97	11.41642	65.41	(bnkf)	bnkf
2570	571.77	2.731355	65.06	(t)	t	2707	403.48	-3.04952	67.62	(w)	w	2765	680.2	-5.54539	65.09	(bnkf)	bnkf
2568	593.27	1.831862	64.01	(t)	t	2706	403.68	-6.2627	67.67	(w)	w	2763	698.91	-0.10411	64.05	(bnkf)	bnkf
2569	599.51	1.184059	64.61	(t)	t	2708	410.65	3.597523	67.56	(w)	w	2762	703.68	8.534066	64.38	(bnkf)	bnkf
2550	602.67	-2.15933	64.98	(t)	t	2710	411.11	-4.96328	67.54	(w)	w	2760	719.78	12.4421	64.6	(bnkf)	bnkf
2548	604.7	-1.68403	65.24	(rv)	rv	2711	429.97	6.004753	67.62	(w)	w	2758	743.11	-9.07539	64.35	(bnkf)	bnkf
2546	607.95	-2.22549	62.5	(t)	t	2712	434.69	-6.36331	67.58	(w)	w	2757	744.39	10.85185	64.6	(bnkf)	bnkf
2547	612.26	-1.62226	62.32	(t)	t	2714	451.61	-8.63258	67.6	(w)	w	2756	771.08	-6.06965	63.74	(bnkf)	bnkf
2549	612.48	0.155619	62.21	(t)	t	2713	460.32	7.13603	67.73	(w)	w	2755	774.17	5.78616	64.09	(bnkf)	bnkf
2544	618.09	-1.96702	62.65	(t)	t	2717	471.08	-3.21364	67.63	(w)	w	2754	804.56	-9.08964	63.69	(bnkf)	bnkf
2545	621.74	0.85728	63.15	(t)	t	2716	473.96	4.900261	67.59	(w)	w	2753	811.67	8.931415	64.37	(bnkf)	bnkf
2543	626.31	3.814216	62.57	(t)	t	2718	475.19	5.058152	66.4	(w)	w	2752	833.84	8.336848	65.17	(bnkf)	bnkf
2542	637.35	-0.59911	63.2	(t)	t	2715	477.7	-0.8342	66.42	(w)	w	2750	836.04	-12.2407	63.75	(bnkf)	bnkf
2541	642.68	-1.56285	63.09	(t)	t	2719	488.33	8.101859	66.5	(w)	w	2749	860.61	-10.3002	63.61	(bnkf)	bnkf
2537	649.77	5.317487	64.02	(lv)	lv	2720	498.42	-5.58284	66.42	(w)	w	2751	863.33	3.956945	63.71	(bnkf)	bnkf
2535	654.79	-0.12062	63.54	(t)	t	2722	520.38	3.845675	66.41	(w)	w						
2539	658.72	-0.71031	64.08	(lv)	lv	2721	530.18	-4.42447	66.38	(w)	w						
2538	658.81	-1.03619	64.24	(lv)	lv	2723	553.98	-0.93614	65.73	(w)	w						
2536	658.98	-0.96506	63.76	(t)	t	2726	594.35	3.650333	65.73	(w)	w						
2534	659.44	-0.53264	63.41	(t)	t	2728	604.22	1.52839	65.68	(w)	w						
2533	674.23	0.902996	63.28	(t)	t	2727	604.23	-3.55711	65.56	(w)	w						
2532	687.23	1.216477	62.8	(t)	t	2724	604.69	-3.76275	65.59	(w)	w						
2531	699.34	3.256988	62.69	(t)	t	2730	606.95	-2.64603	64.26	(w)	w						
2530	712.29	0.373099	62.35	(t)	t	2732	646.6	-5.54231	64.32	(w)	w						
2529	725.35	-0.88358	62.72	(t)	t	2731	646.97	6.124878	64.25	(w)	w						
2528	739.19	-3.40788	62.97	(t)	t	2733	655.34	5.789491	64.25	(w)	w						
2527	754.46	1.144061	62.78	(t)	t	2734	661.82	-2.30018	64.16	(w)	w						
2526	766.37	3.81047	62.35	(t)	t	2736	665.5	-2.53464	63.87	(w)	w						
2525	772.64	1.386701	61.3	(t)	t	2735	670.35	3.17055	63.81	(w)	w						
2524	783.53	-0.57134	62.03	(t)	t	2737	697.05	6.484277	63.64	(w)	w						
2523	799.96	-0.88446	61.9	(t)	t	2738	698.35	-0.22818	63.64	(w)	w						
2522	813.61	-0.33476	61.95	(t)	t	2740	733.01	-4.94271	63.58	(w)	w						
2521	833.75	-1.49386	62.23	(t)	t	2739	738.26	0.833771	63.61	(w)	w						
2520	850.36	0.499067	61.85	(t)	t	2741	768.44	-2.89053	62.76	(w)	w						
2519	862.75	-0.7795	61.56	(t)	t	2742	770.06	5.440119	62.64	(w)	w						
2517	871.73	4.343299	61.48	(culpt)	culpt	2743	799.44	-4.34432	62.72	(w)	w						
2516	872.37	-4.81161	61.48	(culpt)	culpt	2744	810.16	5.872788	62.62	(w)	w						
2518	872.47	-0.35324	61.46	(t)	t	2746	840.59	-4.66472	62.74	(w)	w						
2397	892.05	6.566005	61.5	(cul)	cul	2745	843.97	4.295158	62.65	(w)	w						
2396	892.91	0.465154	61.43	(t)	t	2747	866.79	2.942953	62.58	(w)	w						
2398	894.29	-2.91214	61.37	(cul)	cul	2748	870.92	-5.50055	62.71	(w)	w						
2457	899.17	-3.16012	1299.61	(pt)	pt	2400	892.75	7.719985	62.69	(w)	w						
						2399	894.37	-3.27413	62.63	(w)	w						
						2401	897.32	9.84755	62.68	(w)	w						

Project Name	Purlear Phase I
Cross Section	2 - Area #1 - Upper Main
Feature	Riffle
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Riffle**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	11	11.0%	11.0%	9	6	30.0%	30.0%	3	5	8.0%	8.0%
Sand	very fine sand	0.062	3	3.0%	14.0%	0	2	4.0%	34.0%	0	7	7.0%	15.0%
	fine sand	0.125	2	2.0%	16.0%	0	2	4.0%	38.0%	3	8	11.0%	26.0%
	medium sand	0.25	0	0.0%	16.0%	3	0	6.0%	44.0%	4	0	4.0%	30.0%
	course sand	0.50	0	0.0%	16.0%	5	0	10.0%	54.0%	13	0	13.0%	43.0%
	very course sand	1.0	2	2.0%	18.0%	15	0	30.0%	84.0%	20	0	20.0%	63.0%
G r a v e l	very fine gravel	2.0	0	0.0%	18.0%	6	0	12.0%	96.0%	11	0	11.0%	74.0%
	fine gravel	4.0	2	2.0%	20.0%	2	0	4.0%	100.0%	13	0	13.0%	87.0%
	fine gravel	5.7	3	3.0%	23.0%	0	0	0.0%	100.0%	8	0	8.0%	95.0%
	medium gravel	8.0	5	5.0%	28.0%	0	0	0.0%	100.0%	4	0	4.0%	99.0%
	medium gravel	11.3	9	9.0%	37.0%	0	0	0.0%	100.0%	1	0	1.0%	100.0%
	course gravel	16.0	18	18.0%	55.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	course gravel	22.6	16	16.0%	71.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very course gravel	32	16	16.0%	87.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very course gravel	45	8	8.0%	95.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Cobble	small cobble	64	5	5.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			100	100.0%		40	10	100%		80	20	100%	

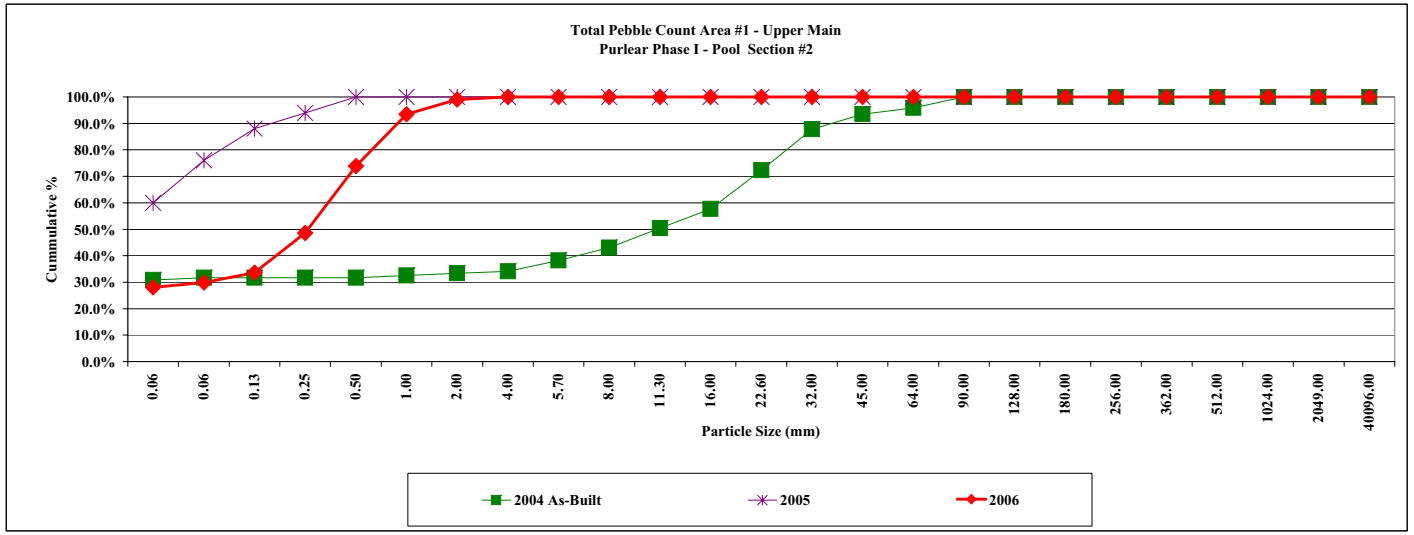
	d16	d35	d50	d84	d95
2004 As-Built	0.38	12.76	17.73	36.40	54.50
2005	0.00	0.12	0.60	1.50	2.88
2006	0.10	0.52	1.01	4.42	6.85
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	1 - Area #1 - Upper Main
Feature	Pool
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Pool**	**%**	**Cum %**	**Pool - Bed**	**Pool - Bank**	**%**	**Cum %**	**Pool - Bed**	**Pool - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	38	30.9%	30.9%	20	10	60.0%	60.0%	10	20	28.0%	28.0%
Sand	very fine sand	0.062	1	0.8%	31.7%	8	0	16.0%	76.0%	2	0	1.9%	29.9%
	fine sand	0.125	0	0.0%	31.7%	6	0	12.0%	88.0%	4	0	3.7%	33.6%
	medium sand	0.25	0	0.0%	31.7%	3	0	6.0%	94.0%	16	0	15.0%	48.6%
	course sand	0.50	0	0.0%	31.7%	3	0	6.0%	100.0%	27	0	25.2%	73.8%
	very course sand	1.0	1	0.8%	32.5%	0	0	0.0%	100.0%	21	0	19.6%	93.5%
G r a v e l	very fine gravel	2.0	1	0.8%	33.3%	0	0	0.0%	100.0%	6	0	5.6%	99.1%
	fine gravel	4.0	1	0.8%	34.1%	0	0	0.0%	100.0%	1	0	0.9%	100.0%
	fine gravel	5.7	5	4.1%	38.2%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium gravel	8.0	6	4.9%	43.1%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium gravel	11.3	9	7.3%	50.4%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	course gravel	16.0	9	7.3%	57.7%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	course gravel	22.6	18	14.6%	72.4%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very course gravel	32	19	15.4%	87.8%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very course gravel	45	7	5.7%	93.5%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Cobble	small cobble	64	3	2.4%	95.9%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium cobble	90	5	4.1%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			123	100.0%		40	10	100%		87	20	100%	

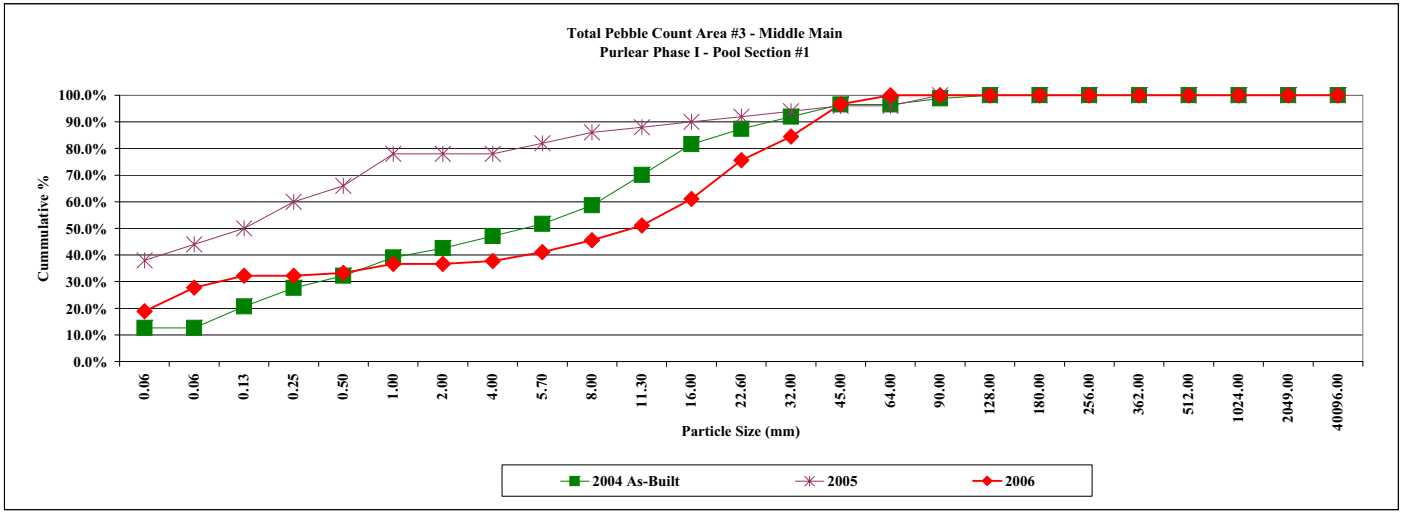
	d16	d35	d50	d84	d95
2004 As-Built	0.00	5.27	13.43	35.74	68.37
2005	0.00	0.00	0.00	0.16	0.44
2006	0.00	0.20	0.40	1.14	1.91
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	1 - Area #3 - Middle Main
Feature	Pool
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Pool - Bed**	**%**	**Cum %**	**Pool - Bed**	**Pool - Bank**	**%**	**Cum %**	**Pool - Bed**	**Pool - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	11	12.6%	12.6%	12	7	38.0%	38.0%	0	17	18.9%	18.9%
Sand	very fine sand	0.062	0	0.0%	12.6%	0	3	6.0%	44.0%	0	8	8.9%	27.8%
	fine sand	0.125	7	8.0%	20.7%	1	2	6.0%	50.0%	1	3	4.4%	32.2%
	medium sand	0.25	6	6.9%	27.6%	2	3	10.0%	60.0%	0	0	0.0%	32.2%
	course sand	0.50	4	4.6%	32.2%	2	1	6.0%	66.0%	0	1	1.1%	33.3%
	very course sand	1.0	6	6.9%	39.1%	4	2	12.0%	78.0%	2	1	3.3%	36.7%
G r a v e l	very fine gravel	2.0	3	3.4%	42.5%	0	0	0.0%	78.0%	0	0	0.0%	36.7%
	fine gravel	4.0	4	4.6%	47.1%	0	0	0.0%	78.0%	1	0	1.1%	37.8%
	fine gravel	5.7	4	4.6%	51.7%	2	0	4.0%	82.0%	3	0	3.3%	41.1%
	medium gravel	8.0	6	6.9%	58.6%	0	2	4.0%	86.0%	4	0	4.4%	45.6%
	medium gravel	11.3	10	11.5%	70.1%	1	0	2.0%	88.0%	5	0	5.6%	51.1%
	course gravel	16.0	10	11.5%	81.6%	1	0	2.0%	90.0%	9	0	10.0%	61.1%
	course gravel	22.6	5	5.7%	87.4%	1	0	2.0%	92.0%	13	0	14.4%	75.6%
	very course gravel	32	4	4.6%	92.0%	1	0	2.0%	94.0%	8	0	8.9%	84.4%
	very course gravel	45	4	4.6%	96.6%	1	0	2.0%	96.0%	11	0	12.2%	96.7%
Cobble	small cobble	64	0	0.0%	96.6%	0	0	0.0%	96.0%	3	0	3.3%	100.0%
	medium cobble	90	2	2.3%	98.9%	2	0	4.0%	100.0%	0	0	0.0%	100.0%
	large cobble	128	1	1.1%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			87	100.0%		30	20	100.0%		60	30	100.0%	

	d16	d35	d50	d84	d95
2004 As-Built	0.13	1.06	6.10	22.63	49.10
2005	0.00	0.00	0.19	8.25	46.50
2006	0.00	1.13	12.85	37.94	52.32
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00

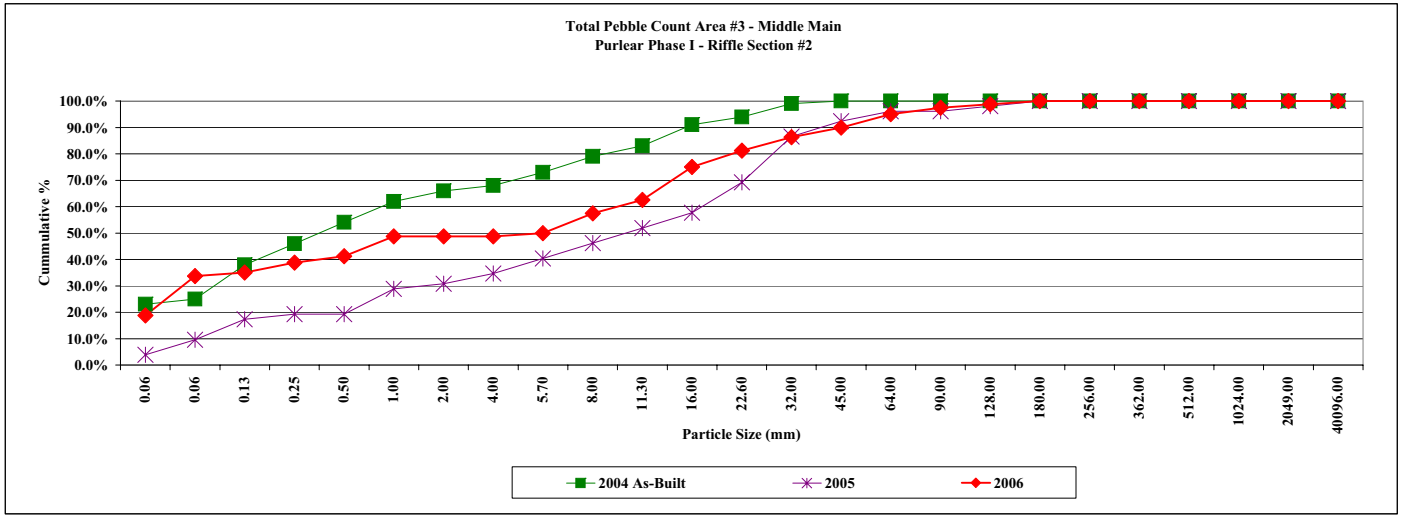


Project Name	Purlear Phase I
Cross Section	2 - Area #3 - Middle Main
Feature	Riffle
Date	10/13/2006
Crew	Clinton

Cross Section #1

		2004 As-Built				2005				2005			
Description	**Material**	**Size (mm)**	**Riffle - Bed**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	23	23.0%	23.0%	0	2	3.8%	3.8%	0	15	18.8%	18.8%
Sand	very fine sand	0.062	2	2.0%	25.0%	0	3	5.8%	9.6%	0	12	15.0%	33.8%
	fine sand	0.125	13	13.0%	38.0%	0	4	7.7%	17.3%	0	1	1.3%	35.0%
	medium sand	0.25	8	8.0%	46.0%	0	1	1.9%	19.2%	3	0	3.8%	38.8%
	course sand	0.50	8	8.0%	54.0%	0	0	0.0%	19.2%	1	1	2.5%	41.3%
	very course sand	1.0	8	8.0%	62.0%	5	0	9.6%	28.8%	5	1	7.5%	48.8%
G r a v e l	very fine gravel	2.0	4	4.0%	66.0%	1	0	1.9%	30.8%	0	0	0.0%	48.8%
	fine gravel	4.0	2	2.0%	68.0%	2	0	3.8%	34.6%	0	0	0.0%	48.8%
	fine gravel	5.7	5	5.0%	73.0%	3	0	5.8%	40.4%	1	0	1.3%	50.0%
	medium gravel	8.0	6	6.0%	79.0%	3	0	5.8%	46.2%	6	0	7.5%	57.5%
	medium gravel	11.3	4	4.0%	83.0%	3	0	5.8%	51.9%	4	0	5.0%	62.5%
	course gravel	16.0	8	8.0%	91.0%	3	0	5.8%	57.7%	10	0	12.5%	75.0%
	course gravel	22.6	3	3.0%	94.0%	6	0	11.5%	69.2%	5	0	6.3%	81.3%
	very course gravel	32	5	5.0%	99.0%	9	0	17.3%	86.5%	4	0	5.0%	86.3%
	very course gravel	45	1	1.0%	100.0%	3	0	5.8%	92.3%	3	0	3.8%	90.0%
Cobble	small cobble	64	0	0.0%	100.0%	2	0	3.8%	96.2%	4	0	5.0%	95.0%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	96.2%	2	0	2.5%	97.5%
	large cobble	128	0	0.0%	100.0%	1	0	1.9%	98.1%	1	0	1.3%	98.8%
	very large cobble	180	0	0.0%	100.0%	1	0	1.9%	100.0%	1	0	1.3%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			100	100.0%		42	10	100%		50	30	100%	

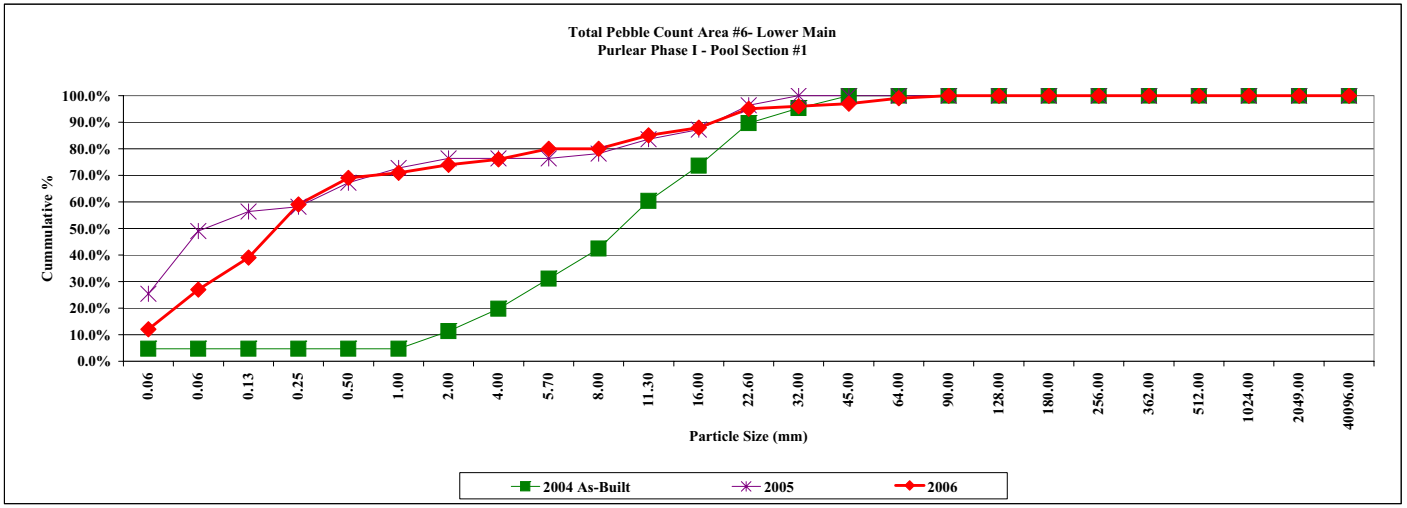
	d16	d35	d50	d84	d95
2004 As-Built	0.00	0.17	0.56	14.36	29.54
2005	0.17	4.98	12.32	36.86	70.25
2006	0.00	0.19	6.85	33.46	77.00
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	1 - Area #6 - Lower Main
Feature	Pool
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Pool - Bed**	**%**	**Cum %**	**Pool - Bed**	**Pool - Bank**	**%**	**Cum %**	**Pool - Bed**	**Pool - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	5	4.7%	4.7%	12	2	25.5%	25.5%	3	9	12.0%	12.0%
Sand	very fine sand	0.062	0	0.0%	4.7%	7	6	23.6%	49.1%	8	7	15.0%	27.0%
	fine sand	0.125	0	0.0%	4.7%	3	1	7.3%	56.4%	8	4	12.0%	39.0%
	medium sand	0.25	0	0.0%	4.7%	1	0	1.8%	58.2%	20	0	20.0%	59.0%
	course sand	0.50	0	0.0%	4.7%	4	1	9.1%	67.3%	10	0	10.0%	69.0%
	very course sand	1.0	0	0.0%	4.7%	3	0	5.5%	72.7%	2	0	2.0%	71.0%
G r a v e l	very fine gravel	2.0	7	6.6%	11.3%	2	0	3.6%	76.4%	3	0	3.0%	74.0%
	fine gravel	4.0	9	8.5%	19.8%	0	0	0.0%	76.4%	2	0	2.0%	76.0%
	fine gravel	5.7	12	11.3%	31.1%	0	0	0.0%	76.4%	4	0	4.0%	80.0%
	medium gravel	8.0	12	11.3%	42.5%	1	0	1.8%	78.2%	0	0	0.0%	80.0%
	medium gravel	11.3	19	17.9%	60.4%	3	0	5.5%	83.6%	5	0	5.0%	85.0%
	course gravel	16.0	14	13.2%	73.6%	2	0	3.6%	87.3%	3	0	3.0%	88.0%
	course gravel	22.6	17	16.0%	89.6%	5	0	9.1%	96.4%	7	0	7.0%	95.0%
	very course gravel	32	6	5.7%	95.3%	2	0	3.6%	100.0%	1	0	1.0%	96.0%
	very course gravel	45	5	4.7%	100.0%	0	0	0.0%	100.0%	1	0	1.0%	97.0%
Cobble	small cobble	64	0	0.0%	100.0%	0	0	0.0%	100.0%	2	0	2.0%	99.0%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	1	0	1.0%	100.0%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			106	100.0%		45	10	100%		80	20	100%	

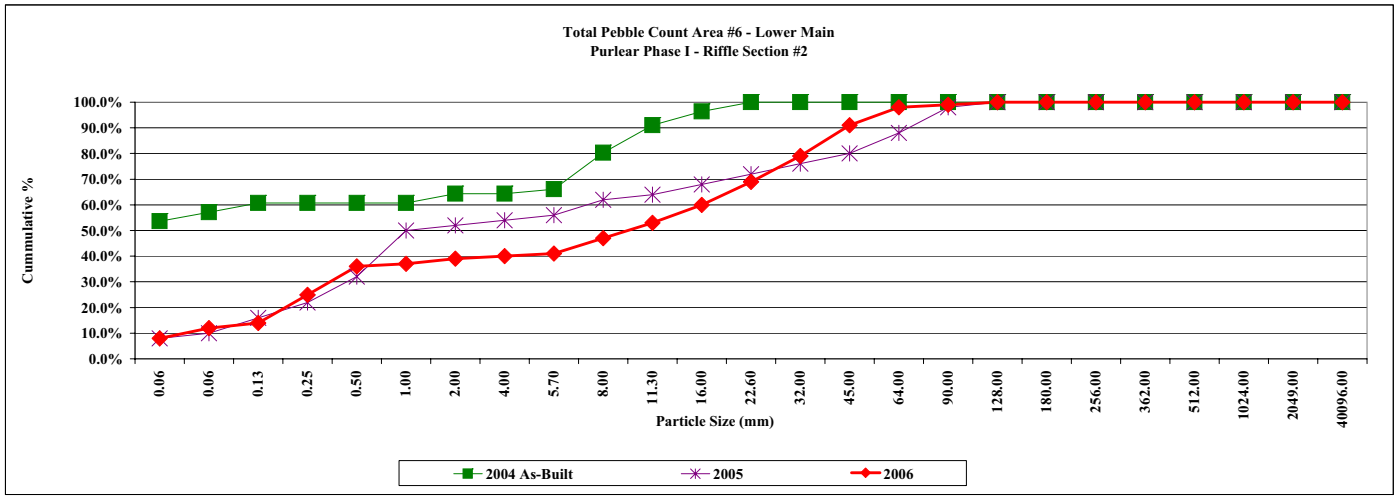
	d16	d35	d50	d84	d95
2004 As-Built	4.02	7.81	11.33	24.50	37.94
2005	0.00	0.07	0.11	14.22	26.10
2006	0.07	0.16	0.29	12.85	27.30
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	2 - Area #6 - Lower Main
Feature	Riffle
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Riffle - Bed**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	30	53.6%	53.6%	2	2	8.0%	8.0%	8	0	8.0%	8.0%
Sand	very fine sand	0.062	2	3.6%	57.1%	0	1	2.0%	10.0%	4	0	4.0%	12.0%
	fine sand	0.125	2	3.6%	60.7%	3	0	6.0%	16.0%	2	0	2.0%	14.0%
	medium sand	0.25	0	0.0%	60.7%	2	1	6.0%	22.0%	11	0	11.0%	25.0%
	course sand	0.50	0	0.0%	60.7%	4	1	10.0%	32.0%	11	0	11.0%	36.0%
	very course sand	1.0	0	0.0%	60.7%	7	2	18.0%	50.0%	1	0	1.0%	37.0%
G r a v e l	very fine gravel	2.0	2	3.6%	64.3%	1	0	2.0%	52.0%	0	2	2.0%	39.0%
	fine gravel	4.0	0	0.0%	64.3%	1	0	2.0%	54.0%	1	0	1.0%	40.0%
	fine gravel	5.7	1	1.8%	66.1%	1	0	2.0%	56.0%	0	1	1.0%	41.0%
	medium gravel	8.0	8	14.3%	80.4%	1	2	6.0%	62.0%	2	4	6.0%	47.0%
	medium gravel	11.3	6	10.7%	91.1%	1	0	2.0%	64.0%	3	3	6.0%	53.0%
	course gravel	16.0	3	5.4%	96.4%	1	1	4.0%	68.0%	2	5	7.0%	60.0%
	course gravel	22.6	2	3.6%	100.0%	2	0	4.0%	72.0%	0	9	9.0%	69.0%
	very course gravel	32	0	0.0%	100.0%	2	0	4.0%	76.0%	0	10	10.0%	79.0%
	very course gravel	45	0	0.0%	100.0%	2	0	4.0%	80.0%	0	12	12.0%	91.0%
Cobble	small cobble	64	0	0.0%	100.0%	4	0	8.0%	88.0%	0	7	7.0%	98.0%
	medium cobble	90	0	0.0%	100.0%	5	0	10.0%	98.0%	0	1	1.0%	99.0%
	large cobble	128	0	0.0%	100.0%	1	0	2.0%	100.0%	0	1	1.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			56	100.0%		40	10	100%		45	55	100%	

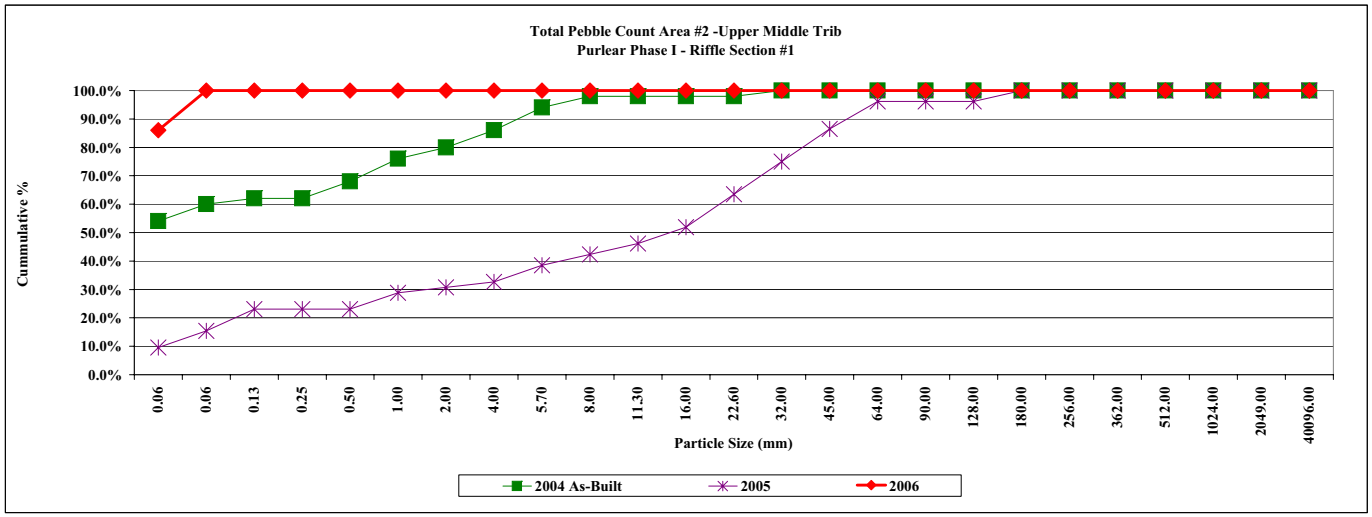
	d16	d35	d50	d84	d95
2004 As-Built	0.00	0.00	0.00	11.01	17.79
2005	0.19	0.88	1.50	65.75	99.40
2006	0.22	0.72	11.65	45.17	67.36
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	1 - Area #2 - Upper Middle Trib
Feature	Riffle
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Riffle**	**%**	**Cum %**	**Riffle**	**Riffle - Bank**	**%**	**Cum %**	**Riffle**	**Riffle - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	27	54.0%	54.0%	1	4	9.6%	9.6%	33	10	86.0%	86.0%
Sand	very fine sand	0.062	3	6.0%	60.0%	0	3	5.8%	15.4%	7	0	14.0%	100.0%
	fine sand	0.125	1	2.0%	62.0%	1	3	7.7%	23.1%	0	0	0.0%	100.0%
	medium sand	0.25	0	0.0%	62.0%	0	0	0.0%	23.1%	0	0	0.0%	100.0%
	course sand	0.50	3	6.0%	68.0%	0	0	0.0%	23.1%	0	0	0.0%	100.0%
	very course sand	1.0	4	8.0%	76.0%	3	0	5.8%	28.8%	0	0	0.0%	100.0%
G r a v e l	very fine gravel	2.0	2	4.0%	80.0%	1	0	1.9%	30.8%	0	0	0.0%	100.0%
	fine gravel	4.0	3	6.0%	86.0%	1	0	1.9%	32.7%	0	0	0.0%	100.0%
	fine gravel	5.7	4	8.0%	94.0%	3	0	5.8%	38.5%	0	0	0.0%	100.0%
	medium gravel	8.0	2	4.0%	98.0%	2	0	3.8%	42.3%	0	0	0.0%	100.0%
	medium gravel	11.3	0	0.0%	98.0%	2	0	3.8%	46.2%	0	0	0.0%	100.0%
	course gravel	16.0	0	0.0%	98.0%	3	0	5.8%	51.9%	0	0	0.0%	100.0%
	course gravel	22.6	0	0.0%	98.0%	6	0	11.5%	63.5%	0	0	0.0%	100.0%
	very course gravel	32	1	2.0%	100.0%	6	0	11.5%	75.0%	0	0	0.0%	100.0%
	very course gravel	45	0	0.0%	100.0%	6	0	11.5%	86.5%	0	0	0.0%	100.0%
Cobble	small cobble	64	0	0.0%	100.0%	5	0	9.6%	96.2%	0	0	0.0%	100.0%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	96.2%	0	0	0.0%	100.0%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	96.2%	0	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	2	0	3.8%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			50	100.0%		42	10	100%		40	10	100%	

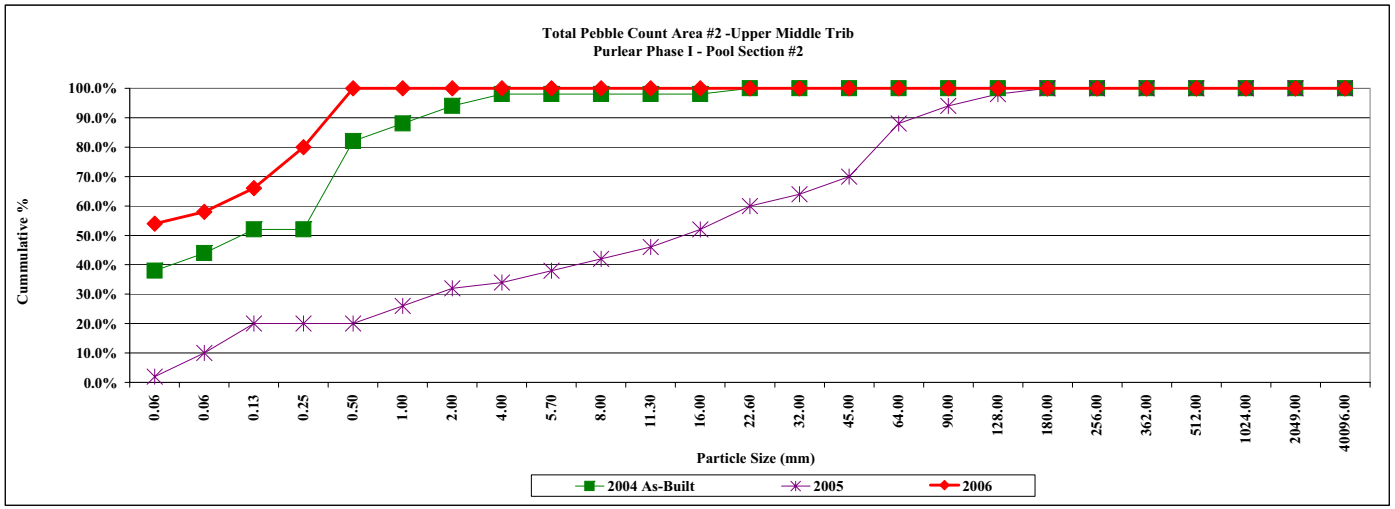
	d16	d35	d50	d84	d95
2004 As-Built	0.00	0.00	0.00	4.23	7.55
2005	0.10	5.65	17.42	50.98	74.30
2006	0.00	0.00	0.00	0.00	0.08
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	2 - Area #2 - Upper Middle Trib
Feature	Pool
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Pool**	**%**	**Cum %**	**Pool**	**Pool - Bank**	**%**	**Cum %**	**Pool**	**Pool - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	19	38.0%	38.0%	0	1	2.0%	2.0%	19	8	54.0%	54.0%
Sand	very fine sand	0.062	3	6.0%	44.0%	0	4	8.0%	10.0%	0	2	4.0%	58.0%
	fine sand	0.125	4	8.0%	52.0%	0	5	10.0%	20.0%	4	0	8.0%	66.0%
	medium sand	0.25	0	0.0%	52.0%	0	0	0.0%	20.0%	7	0	14.0%	80.0%
	course sand	0.50	15	30.0%	82.0%	0	0	0.0%	20.0%	10	0	20.0%	100.0%
	very course sand	1.0	3	6.0%	88.0%	3	0	6.0%	26.0%	0	0	0.0%	100.0%
G r a v e l	very fine gravel	2.0	3	6.0%	94.0%	3	0	6.0%	32.0%	0	0	0.0%	100.0%
	fine gravel	4.0	2	4.0%	98.0%	1	0	2.0%	34.0%	0	0	0.0%	100.0%
	fine gravel	5.7	0	0.0%	98.0%	2	0	4.0%	38.0%	0	0	0.0%	100.0%
	medium gravel	8.0	0	0.0%	98.0%	2	0	4.0%	42.0%	0	0	0.0%	100.0%
	medium gravel	11.3	0	0.0%	98.0%	2	0	4.0%	46.0%	0	0	0.0%	100.0%
	course gravel	16.0	0	0.0%	98.0%	3	0	6.0%	52.0%	0	0	0.0%	100.0%
	course gravel	22.6	1	2.0%	100.0%	4	0	8.0%	60.0%	0	0	0.0%	100.0%
	very course gravel	32	0	0.0%	100.0%	2	0	4.0%	64.0%	0	0	0.0%	100.0%
	very course gravel	45	0	0.0%	100.0%	3	0	6.0%	70.0%	0	0	0.0%	100.0%
Cobble	small cobble	64	0	0.0%	100.0%	9	0	18.0%	88.0%	0	0	0.0%	100.0%
	medium cobble	90	0	0.0%	100.0%	3	0	6.0%	94.0%	0	0	0.0%	100.0%
	large cobble	128	0	0.0%	100.0%	2	0	4.0%	98.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	1	0	2.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			50	100.0%		40	10	100%		40	10	100%	

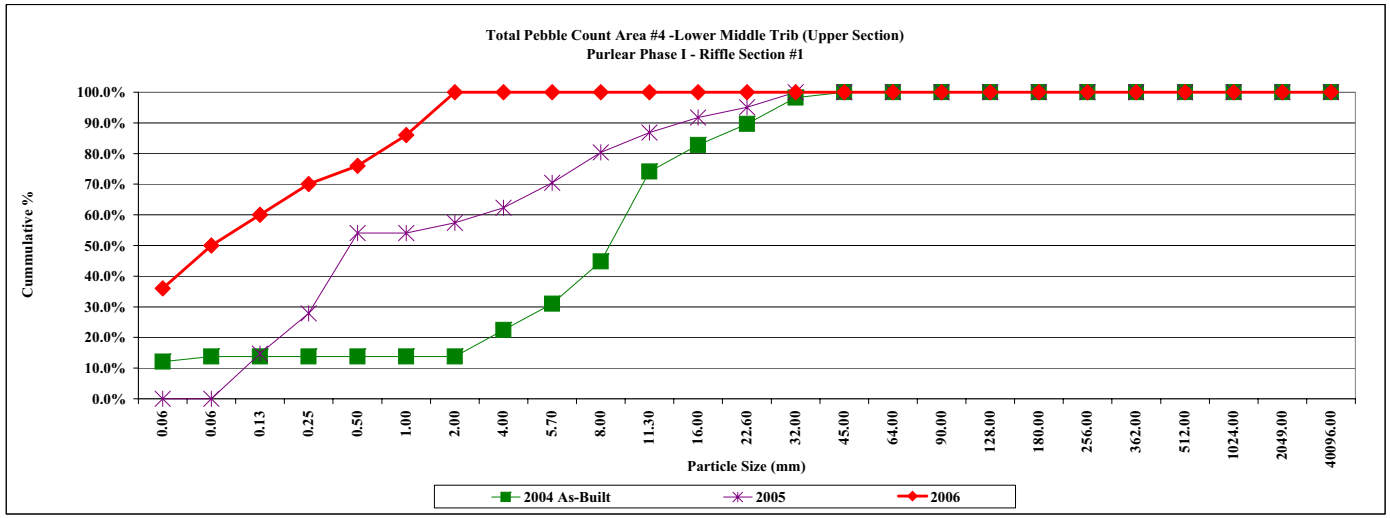
	d16	d35	d50	d84	d95
2004 As-Built	0.00	0.00	0.16	1.00	3.46
2005	0.15	5.35	17.42	72.00	120.25
2006	0.00	0.00	0.00	0.45	0.66
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	1 - Area #4- Lower Middle Trib (Upper section)
Feature	Riffle
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Riffle - Bed**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	7	12.1%	12.1%	0	0	0.0%	0.0%	12	6	36.0%	36.0%
Sand	very fine sand	0.062	1	1.7%	13.8%	0	0	0.0%	0.0%	4	3	14.0%	50.0%
	fine sand	0.125	0	0.0%	13.8%	7	2	14.8%	14.8%	4	1	10.0%	60.0%
	medium sand	0.25	0	0.0%	13.8%	0	8	13.1%	27.9%	5	0	10.0%	70.0%
	course sand	0.50	0	0.0%	13.8%	16	0	26.2%	54.1%	3	0	6.0%	76.0%
	very course sand	1.0	0	0.0%	13.8%	0	0	0.0%	54.1%	5	0	10.0%	86.0%
G r a v e l	very fine gravel	2.0	0	0.0%	13.8%	2	0	3.3%	57.4%	7	0	14.0%	100.0%
	fine gravel	4.0	5	8.6%	22.4%	3	0	4.9%	62.3%	0	0	0.0%	100.0%
	fine gravel	5.7	5	8.6%	31.0%	5	0	8.2%	70.5%	0	0	0.0%	100.0%
	medium gravel	8.0	8	13.8%	44.8%	6	0	9.8%	80.3%	0	0	0.0%	100.0%
	medium gravel	11.3	17	29.3%	74.1%	4	0	6.6%	86.9%	0	0	0.0%	100.0%
	course gravel	16.0	5	8.6%	82.8%	3	0	4.9%	91.8%	0	0	0.0%	100.0%
	course gravel	22.6	4	6.9%	89.7%	2	0	3.3%	95.1%	0	0	0.0%	100.0%
	very course gravel	32	5	8.6%	98.3%	3	0	4.9%	100.0%	0	0	0.0%	100.0%
	very course gravel	45	1	1.7%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Cobble	small cobble	64	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			58	100.0%		51	10	100%		40	10	100%	

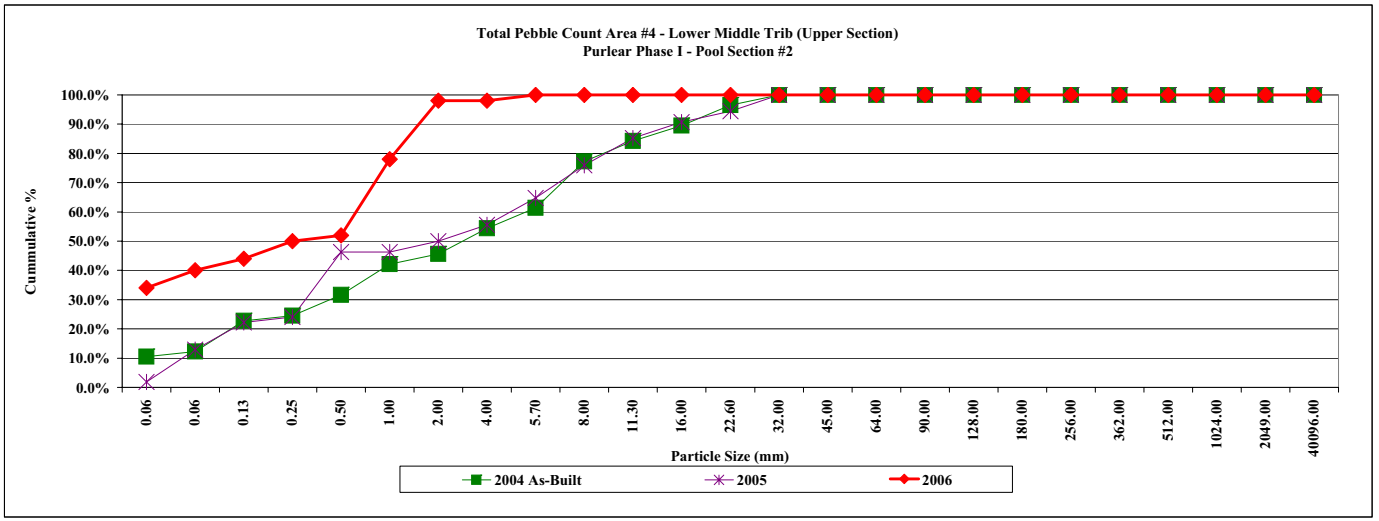
	d16	d35	d50	d84	d95
2004 As-Built	3.47	7.66	10.36	20.74	34.24
2005	0.21	0.48	0.69	11.89	27.10
2006	0.00	0.00	0.09	1.35	2.46
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	2 -Area #4 - Lower Middle Trib (Upper Section)
Feature	Pool
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Riffle - Bed**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	6	10.5%	10.5%	0	1	1.9%	1.9%	9	8	34.0%	34.0%
Sand	very fine sand	0.062	1	1.8%	12.3%	2	4	11.1%	13.0%	1	2	6.0%	40.0%
	fine sand	0.125	6	10.5%	22.8%	5	0	9.3%	22.2%	2	0	4.0%	44.0%
	medium sand	0.25	1	1.8%	24.6%	0	1	1.9%	24.1%	3	0	6.0%	50.0%
	course sand	0.50	4	7.0%	31.6%	8	4	22.2%	46.3%	1	0	2.0%	52.0%
	very course sand	1.0	6	10.5%	42.1%	0	0	0.0%	46.3%	13	0	26.0%	78.0%
G r a v e l	very fine gravel	2.0	2	3.5%	45.6%	2	0	3.7%	50.0%	10	0	20.0%	98.0%
	fine gravel	4.0	5	8.8%	54.4%	3	0	5.6%	55.6%	0	0	0.0%	98.0%
	fine gravel	5.7	4	7.0%	61.4%	5	0	9.3%	64.8%	1	0	2.0%	100.0%
	medium gravel	8.0	9	15.8%	77.2%	6	0	11.1%	75.9%	0	0	0.0%	100.0%
	medium gravel	11.3	4	7.0%	84.2%	4	1	9.3%	85.2%	0	0	0.0%	100.0%
	course gravel	16.0	3	5.3%	89.5%	3	0	5.6%	90.7%	0	0	0.0%	100.0%
	course gravel	22.6	4	7.0%	96.5%	2	0	3.7%	94.4%	0	0	0.0%	100.0%
	very course gravel	32	2	3.5%	100.0%	3	0	5.6%	100.0%	0	0	0.0%	100.0%
	very course gravel	45	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Cobble	small cobble	64	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			57	100.0%		43	11	100%		40	10	100%	

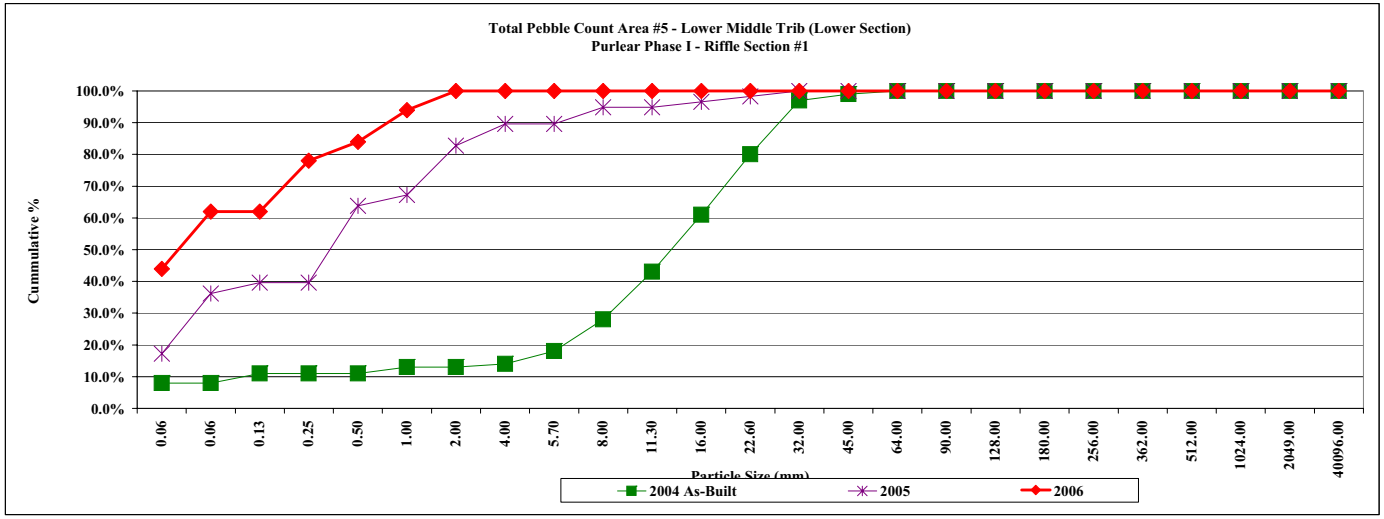
	d16	d35	d50	d84	d95
2004 As-Built	0.13	0.99	3.93	13.53	25.60
2005	0.12	0.56	3.00	13.14	28.42
2006	0.00	0.07	0.38	1.95	2.78
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	2 - Area #5 - Lower Middle Trib (Lower Section)
Feature	Riffle
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Riffle - Bed**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**	**Riffle - Bed**	**Riffle - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	8	8.0%	8.0%	7	3	17.2%	17.2%	16	6	44.0%	44.0%
Sand	very fine sand	0.062	0	0.0%	8.0%	4	7	19.0%	36.2%	7	2	18.0%	62.0%
	fine sand	0.125	3	3.0%	11.0%	1	1	3.4%	39.7%	0	0	0.0%	62.0%
	medium sand	0.25	0	0.0%	11.0%	0	0	0.0%	39.7%	8	0	16.0%	78.0%
	course sand	0.50	0	0.0%	11.0%	14	0	24.1%	63.8%	1	2	6.0%	84.0%
	very course sand	1.0	2	2.0%	13.0%	2	0	3.4%	67.2%	5	0	10.0%	94.0%
G r a v e l	very fine gravel	2.0	0	0.0%	13.0%	9	0	15.5%	82.8%	3	0	6.0%	100.0%
	fine gravel	4.0	1	1.0%	14.0%	4	0	6.9%	89.7%	0	0	0.0%	100.0%
	fine gravel	5.7	4	4.0%	18.0%	0	0	0.0%	89.7%	0	0	0.0%	100.0%
	medium gravel	8.0	10	10.0%	28.0%	3	0	5.2%	94.8%	0	0	0.0%	100.0%
	medium gravel	11.3	15	15.0%	43.0%	0	0	0.0%	94.8%	0	0	0.0%	100.0%
	course gravel	16.0	18	18.0%	61.0%	1	0	1.7%	96.6%	0	0	0.0%	100.0%
	course gravel	22.6	19	19.0%	80.0%	1	0	1.7%	98.3%	0	0	0.0%	100.0%
	very course gravel	32	17	17.0%	97.0%	1	0	1.7%	100.0%	0	0	0.0%	100.0%
	very course gravel	45	2	2.0%	99.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Cobble	small cobble	64	1	1.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			100	100.0%		47	11	100%		40	10	100%	

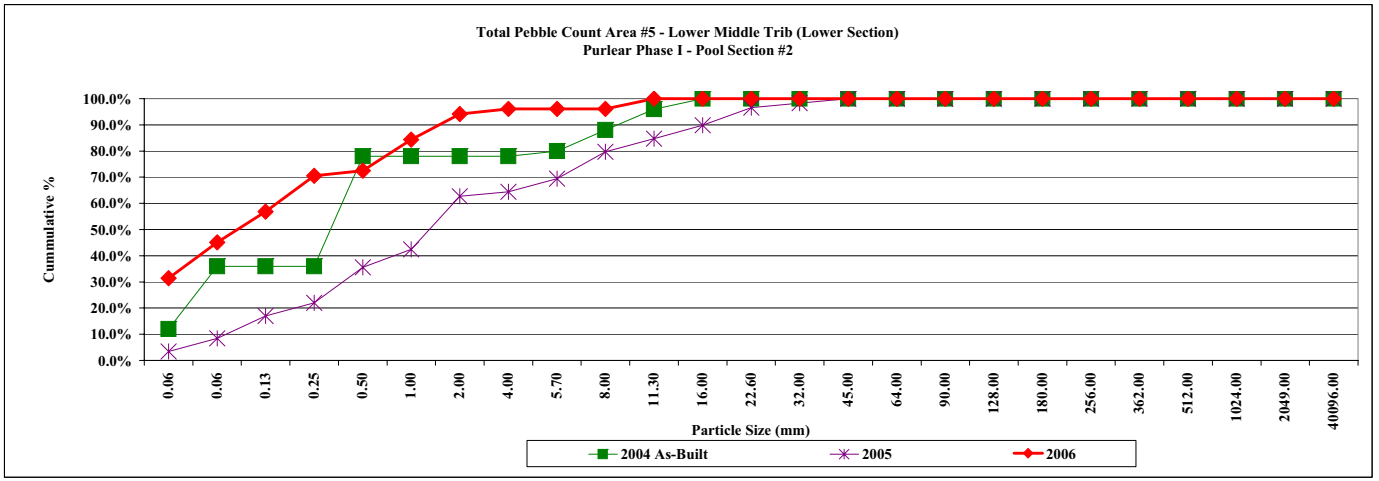
	d16	d35	d50	d84	d95
2004 As-Built	5.85	11.52	15.85	29.94	37.18
2005	0.00	0.09	0.54	3.33	14.22
2006	0.00	0.00	0.07	0.75	1.75
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	1 - Area #5 - Lower Middle Trib (Lower Section)
Feature	Pool
Date	10/13/2006
Crew	Clinton

		2004 As-Built				2005				2006			
Description	**Material**	**Size (mm)**	**Pool - Bed**	**%**	**Cum %**	**Pool - Bed**	**Pool - Bank**	**%**	**Cum %**	**Pool - Bed**	**Pool - Bank**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	6	12.0%	12.0%	0	2	3.4%	3.4%	11	5	31.4%	31.4%
Sand	very fine sand	0.062	12	24.0%	36.0%	0	3	5.1%	8.5%	6	1	13.7%	45.1%
	fine sand	0.125	0	0.0%	36.0%	0	5	8.5%	16.9%	5	1	11.8%	56.9%
	medium sand	0.25	0	0.0%	36.0%	1	2	5.1%	22.0%	5	2	13.7%	70.6%
	course sand	0.50	21	42.0%	78.0%	8	0	13.6%	35.6%	1	0	2.0%	72.5%
	very course sand	1.0	0	0.0%	78.0%	4	0	6.8%	42.4%	6	0	11.8%	84.3%
Gravel	very fine gravel	2.0	0	0.0%	78.0%	12	0	20.3%	62.7%	5	0	9.8%	94.1%
	fine gravel	4.0	0	0.0%	78.0%	1	0	1.7%	64.4%	1	0	2.0%	96.1%
	fine gravel	5.7	1	2.0%	80.0%	3	0	5.1%	69.5%	0	0	0.0%	96.1%
	medium gravel	8.0	4	8.0%	88.0%	6	0	10.2%	79.7%	0	0	0.0%	96.1%
	medium gravel	11.3	4	8.0%	96.0%	3	0	5.1%	84.7%	1	1	3.9%	100.0%
	course gravel	16.0	2	4.0%	100.0%	3	0	5.1%	89.8%	0	0	0.0%	100.0%
	course gravel	22.6	0	0.0%	100.0%	4	0	6.8%	96.6%	0	0	0.0%	100.0%
	very course gravel	32	0	0.0%	100.0%	1	0	1.7%	98.3%	0	0	0.0%	100.0%
	very course gravel	45	0	0.0%	100.0%	1	0	1.7%	100.0%	0	0	0.0%	100.0%
Cobble	small cobble	64	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			50	100.0%		47	12	100%		41	10	100%	

	d16	d35	d50	d84	d95
2004 As-Built	0.07	0.09	0.50	8.25	13.15
2005	0.18	0.73	2.06	13.06	25.40
2006	0.00	0.07	0.13	1.48	3.83
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



GPS Coordinates

Project Number and Name: 294 (Purlear Creek)

NAD 1983 State Plane North Carolina FIPS 3200 GCS_North_American_1983

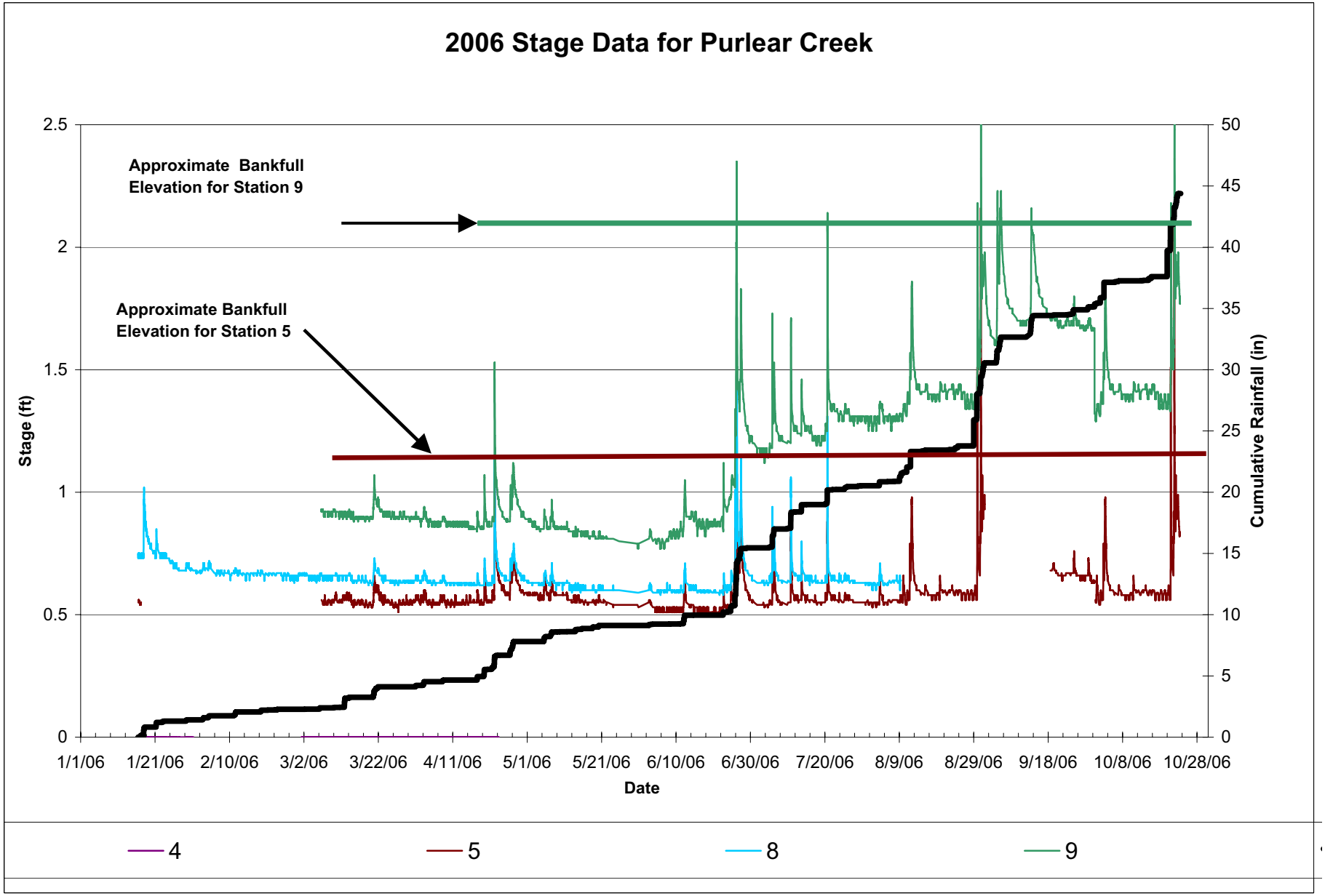
Description	Northing	Easting	EASTING	NORTHING	LONGITUDE	LATITUDE
Purlear plot 1	4006693	472576	402322.68	274716.68	-81.30507	36.20466
Purlear plot 2	4006663	472640	402386.09	274685.39	-81.30435	36.20440
Purlear plot 3	4006623	472787	402532.32	274642.43	-81.30272	36.20404
Purlear plot 4	4006740	472876	402623.69	274757.67	-81.30173	36.20510
Purlear plot 5	4006639	472884	402629.66	274656.48	-81.30164	36.20419
Purlear plot 6	4006600	472882	402626.87	274617.52	-81.30166	36.20383
Purlear plot7	4006533	472845	402588.52	274551.25	-81.30207	36.20323
Purlear plot 8	4006486	472933	402675.60	274502.47	-81.30109	36.20281
Purlear plot 9	4006414	472949	402690.15	274430.13	-81.30091	36.20216
Purlear plot 10	4006374	472973	402713.35	274389.64	-81.30064	36.20180
Purlear plot 11	4006277	472993	402731.41	274292.22	-81.30041	36.20093
Purlear plot 12	4006218	473030	402767.23	274232.47	-81.30000	36.20039
Purlear plot 13	4006142	473075	402810.72	274155.55	-81.29950	36.19971
Purlear plot 14	4006049	473162	402895.86	274060.78	-81.29853	36.19887
Purlear plot 15	4006046	473161	402894.80	274057.80	-81.29854	36.19885
Purlear plot 16	4005993	473216	402948.75	274003.69	-81.29792	36.19837
Purlear plot 17	4005936	473309	403040.62	273944.81	-81.29689	36.19786
Purlear plot 18	4005889	473383	403113.70	273896.31	-81.29606	36.19744
Purlear plot 19	4006759	473378	403126.17	274766.59	-81.29615	36.20528
Purlear plot 20	4006697	473343	403089.92	274705.28	-81.29653	36.20472
Purlear plot 21	4006677	473348	403094.51	274685.17	-81.29648	36.20454
Purlear plot 22	4006618	473325	403070.33	274626.62	-81.29673	36.20401
Purlear plot 23	4006511	473310	403053.17	274519.90	-81.29689	36.20304
Purlear plot 24	4006372	473273	403013.37	274381.62	-81.29730	36.20179
Purlear plot 25	4006343	473269	403008.79	274352.69	-81.29735	36.20153
Purlear plot 26	4006258	473311	403049.09	274266.83	-81.29688	36.20076
Purlear plot 27	4006199	473340	403076.91	274207.24	-81.29655	36.20023
Purlear plot 28	4006158	473350	403086.09	274166.03	-81.29644	36.19986
Purlear plot 29	4006120	473359	403094.33	274127.84	-81.29634	36.19952
Purlear plot 30	4006070	473392	403126.33	274077.17	-81.29597	36.19907
Purlear plot 31	4006000	473416	403148.93	274006.67	-81.29570	36.19844
Purlear plot 32	4005903	473461	403191.99	273908.75	-81.29519	36.19757
Purlear plot 33	4005727	473567	403294.48	273730.59	-81.29401	36.19598
Purlear plot 34	4005632	473674	403399.59	273633.42	-81.29282	36.19513

Reach - Field number	Location	Northern	Westing
R1	X1LP	361215.5	811805.7
	X1RP	361215.3	811806.1
	X2LP	361214.6	811804.9
	X2RP	361214.6	811805.3
R2	X1LP	361205.8	811801.9
	X1RP	361205.7	811802.4
	X2LP	361203.2	811801.3
	X2RP	361203.2	811801.7
R3	X1LP	361215.2	811815.5
	X1RP	361215.1	811816.3
	X2LP	361214.9	811810.3
	X2RP	361214.3	811810.4
R4	X1LP	351217.9	811746.3
	X1RP	361217.9	811746.4
	X2LP	361215	811748.1
	X2RP	361215.1	811748.4
R5	X1LP	361159.2	811746.5
	X1RP	361159.1	811746.9
	X2LP	361158.5	811746.6
	X2RP	361158.4	811746.9
R6	X1LP	361148.9	811740.2
	X1RP	361148.7	811740.8
	X2LP	361146	811738.9
	X2RP	361143.4	811739.1

APPENDIX C

Surface Water Graphs

1. Surface Water Graphs


2006 Stage Data for Purlear Creek
Approximate Bankfull Elevation for Station 9
Approximate Bankfull Elevation for Station 5
Stage (ft)
Cumulative Rainfall (in)
Date
2.5
2
1.5
1
0.5
0
50
45
40
35
30
25
20
15
10
5
0
1/1/06
1/21/06
2/10/06
3/2/06
3/22/06
4/11/06
5/1/06
5/21/06
6/10/06
6/30/06
7/20/06
8/9/06
8/29/06
9/18/06
10/8/06
10/28/06
4
5
8
9