

U.S. Army Corps of Engineers

New England District
Concord, Massachusetts

SUPPLEMENTAL DESIGN INFORMATION FOR PHASE 3 - DAWES AVENUE TO THE CONFLUENCE - OF THE 1.5 MILE REACH REMOVAL ACTION

DCN: GE-020405-ACOB

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**Environmental Remediation Contract
General Electric (GE)/Housatonic River Project
Pittsfield, Massachusetts**

Contract No. DACW33-00-D-0006
Task Order No. 0005

02M-0140



This document provides supplemental information prepared as part of the finalization of the Phase 3 design for Station 543+50 (Dawes Avenue) to Station 575+33 (Confluence of east and west branches of the Housatonic River). The paragraphs below provide a brief description of the information. Related tables and figures are included as Attachments. The following two main elements are included:

- Tables listing excavation and backfill volumes and associated flood storage changes for Phase 3 – From Station 543+50 (Dawes Avenue) to Station 561+33 (Pomeroy Avenue), from Station 561+33 (Pomeroy Avenue) to Station 575+33 (the Confluence), and from Station 543+50 (Dawes Avenue) to Station 575+33 (the Confluence).
- Documentation of the HEC-RAS model results for Dawes Avenue to the Confluence.

Final Excavation and Backfill Volumes

Weston has conducted analysis and calculations relative to the excavation and backfill amounts and resulting flood storage capacity (FSC) changes based on the final design of Phase 3 from Dawes Avenue to the Confluence. The results of the calculations are provided in Attachment A in twelve tables. Table A-1 through Table A-4 present the calculations completed for Phase 3 from Dawes Avenue to Pomeroy Avenue. Table A-5 through Table A-8 present the calculations completed for Phase 3 from Pomeroy Avenue to the Confluence. Table A-9 through Table A-12 present the calculations completed for the entire Phase 3 reach from Dawes Avenue to the Confluence. These tables are as follows:

Dawes Avenue to Pomeroy Avenue

Table A-1	Excavation and Backfill Volumes – Phase 3 Final Design, Dawes Avenue to Pomeroy Avenue
Table A-2	Excavation Volumes by Soil/Sediment Classification – Phase 3 Final Design, Dawes Avenue to Pomeroy Avenue
Table A-3	Summary of Estimated Flood Storage Capacity Changes – Phase 3 Final Design, Dawes Avenue to Pomeroy Avenue
Table A-4	Comparison of In-Place Excavation Volume Estimates – Phase 3 Final Design, Dawes Avenue to Pomeroy Avenue

Pomeroy Avenue to the Confluence

Table A-5	Excavation and Backfill Volumes – Phase 3 Final Design, Pomeroy Avenue to the Confluence
Table A-6	Excavation Volumes by Soil/Sediment Classification – Phase 3 Final Design, Pomeroy Avenue to the Confluence
Table A-7	Summary of Estimated Flood Storage Capacity Changes – Phase 3 Final Design, Pomeroy Avenue to the Confluence

Table A-8	Comparison of In-Place Excavation Volume Estimates – Phase 3 Final Design, Pomeroy Avenue to the Confluence
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Dawes Avenue to the Confluence

Table A-9	Excavation and Backfill Volumes – Phase 3 Final Design
Table A-10	Excavation Volumes by Soil/Sediment Classification – Phase 3 Final Design
Table A-11	Summary of Estimated Flood Storage Capacity Changes – Phase 3 Final Design
Table A-12	Comparison of In-Place Excavation Volume Estimates – Phase 3 Final Design

Based on the calculations and as documented in the tables listed above, the total amount of estimated FSC gain in Phase 3 from Dawes Avenue to the Confluence is 2,500. For the reach from Dawes Avenue to Pomeroy Avenue, the FSC gain is estimated at 300 cy and for the reach from Pomeroy Avenue to the confluence the estimated FSC gain is 2,200 cubic yards.

HEC-RAS Model Results

Summarized below and in Attachment B are the updated results of the HEC-RAS modeling based on input of the final design cross sections for the entire reach from Dawes Avenue to the confluence. Also presented below are conclusions derived from the modeling results. Note that these results and associated documentation will be incorporated into the Final Basis of Design for Phase 3.

The HEC-RAS model water surface elevation results were evaluated from Station 543+50 to Station 575+33 (Dawes Avenue to the confluence). A tabular summary of the model results is provided in Table B-1. Four model output figures (B-1 through B-4) are also provided depicting flood stage heights for the 100, 50, 10 and 5-year storm events. These figures compare the flood stage height between existing conditions and design conditions. Overall, the modeling results for Dawes Avenue to the confluence show that the implementation of the removal action as designed will not significantly alter flood elevations or river flow velocities in this reach.

For the Dawes to Pomeroy reach, the maximum increase in river flow velocity is 1.76 ft/sec (increase from 4.20 ft/sec to 5.96 ft/sec) during the 2 year storm event (2,047 cfs) at Station 550+50 (700 feet downstream of the Dawes Avenue Bridge). However, this increase in velocity is accompanied by a decrease in water surface elevation of 1.34 ft. The restored riverbed and banks in this area are considered stable under this velocity condition and the design riprap sizes. For the reach from Pomeroy Avenue to the confluence, the maximum increase in river flow velocity is 1.56 ft/sec, which occurs in two situations: the 5-yr storm at Station 567+50 and the 10-yr storm at Station 568+00. Overall, increases in velocity can be attributed to a general smoothing of the river channel and lowering of minimum channel elevations, particularly near the confluence.

For the reach from Dawes Avenue to Pomeroy Avenue, there were no increases in water surface elevations. Water surface elevation decreases ranged from 0.03 ft at Station 543+40 during the average annual flow(134 cfs at the Dawes Avenue bridge) to 1.42 ft at Station 543+50 at the 1.5-year storm event (1,761 cfs). For the reach from Pomeroy Avenue to the confluence, the maximum water surface elevation increase is 0.00 ft. at Station 575+00 (just upstream of the confluence), which occurs during the 0.5-year storm event (1,422 cfs). In all other cases, water surfaces decreased, with the maximum decrease of 1.13 ft occurring at Station 561+37 at the 2-yr storm (2,047 cfs), which is just downstream of the Pomeroy Avenue bridge. These decreases in water surface elevations are due to the deepening of the river channel (removal of aggrading bars), particularly at the downstream end of the design reach near the confluence.

ATTACHMENT A

Table A-1
Excavation and Backfill Volumes
Phase 3 Final Design
Dawes Avenue to Pomeroy Avenue

	Cut (CY)	Fill (CY)
East Bank	4,400	4,000
River Bed	11,100	9,900
West Bank	3,500	3,400
Total	19,000	17,300
Overexcavation (@10%)	1,900	1,900
Total (w/ overexcavation)	20,900	19,200

Table A-2
Excavation Volumes by Soil/Sediment Classification
Phase 3 Final Design
Dawes Avenue to Pomeroy Avenue

Soil/Sediment Classification	In-Place Volume (CY)	Total With Overexcavation Factor of 10% (CY)
Bank Soil (TSCA)	2,700	3,000
Riverbed (TSCA)	1,100	1,200
Total TSCA	3,800	4,200
non-TSCA	15,200	16,700
Total	19,000	20,900

Table A-3
Summary of Estimated Flood Storage Capacity Changes
Phase 3 Final Design
Dawes Avenue to Pomeroy Avenue

Section	Volume (CY) ¹
Volume of Material to be Excavated	20,900
Volume of Material to be Backfilled ²	-20,500
Aquatic Habitat Enhancement Structures ³	-60
Net Change between the Existing Conditions and Restored Conditions ⁴	300

¹ Positive value indicates net increase and negative value indicates loss.

² The volume of material to be backfilled presented in this calculation (20,500 cy), represents no underfill in the riverbed. The 19,200 cy figure presented in Table A-1 represents underfilling the riverbed by a maximum of 6 inches, except where filling is required to meet bank slope requirements.

³ Approximately 60 cy of fill material will be installed in the river channel in the form of aquatic habitat enhancement structures as part of the restoration effort.

⁴ All of the 300 cy of increased flood storage capacity is located within the HEC-RAS modelled 100-year floodplain.

Table A-4
Comparison of In-Place Excavation Volume Estimates
Phase 3 Final Design
Dawes Avenue to Pomeroy Avenue

Location	EE/CA ¹ (CY)	Final Design Calculation (CY)
East Bank	6,700	4,400
River	9,000	11,100
West Bank	6,100	3,500
Total (in place)	21,800	19,000
Total with 10% Overexcavation Factor	24,000	20,900

1. EE/CA volumes include 3740 cy for deeper residential excavations and 498 cy for aggrading bars.

Table A-5
Excavation and Backfill Volumes
Phase 3 Final Design
Pomeroy Avenue to the Confluence

	Cut (CY)	Fill (CY)
East Bank	3,500	2,600
River Bed	9,200	8,400
West Bank	3,600	2,600
Total	16,300	13,600
Overexcavation (@10%)	1,600	1,600
Total (w/ overexcavation)	17,900	15,200

Table A-6
Excavation Volumes by Soil/Sediment Classification
Phase 3 Final Design
Pomeroy Avenue to the Confluence

Soil/Sediment Classification	In-Place Volume (CY)	Total With Overexcavation Factor of 10% (CY)
Bank Soil (TSCA)	1,900	2,100
Riverbed (TSCA)	1,200	1,300
Total TSCA	3,100	3,400
non-TSCA	13,200	14,500
Total	16,300	17,900

Table A-7
Summary of Estimated Flood Storage Capacity Changes
Phase 3 Final Design
Pomeroy Avenue to the Confluence

Section	Volume (CY) ¹
Volume of Material to be Excavated	17,900
Volume of Material to be Backfilled ²	-15,600
Aquatic Habitat Enhancement Structures ³	-114
Net Change between the Existing Conditions and Restored Conditions ⁴	2,200

¹ Positive value indicates net increase and negative value indicates loss.

² The volume of material to be backfilled presented in this calculation (15,600 cy), represents no underfill in the riverbed. The 15,200 cy figure presented in Table A-5 represents underfilling the riverbed by a maximum of 6 inches, except where filling is required to meet bank slope requirements and between stations 570+00 and 574+00.

³ Approximately 114 cy of fill material will be installed in the river channel in the form of aquatic habitat enhancement structures as part of the restoration effort.

⁴ All of the 2,200 cy of increased flood storage capacity is located within the HEC-RAS modelled 100-year floodplain.

Table A-8
Comparison of In-Place Excavation Volume Estimates
Phase 3 Final Design
Pomeroy Avenue to the Confluence

Location	EE/CA ¹ (CY)	Final Design Calculation (CY)
East Bank	4,200	3,500
River	8,100	9,200
West Bank	2,900	3,600
Total (in place)	15,200	16,300
Total with 10% Overexcavation Factor	16,700	17,900

1. EE/CA volumes include 1,336 cy for aggrading bars.

C:\Ryan\Documents\EE-CA\Phase III\Design\Flood Storage\FSC Tables and Bid Schedules\Final Phase 3 cut and fill and FSC Tables2-9-05 (Final for Reporting).xls\Pomeroy to Confluence

Table A-9
Excavation and Backfill Volumes
Phase 3 Final Design

	Cut (CY)	Fill (CY)
East Bank	7,900	6,600
River Bed	20,400	18,300
West Bank	7,100	6,000
Total	35,400	30,900
Overexcavation (@10%)	3,500	3,500
Total (w/ overexcavation)	38,900	34,400

Table A-10
Excavation Volumes by Soil/Sediment Classification
Phase 3 Final Design

Soil/Sediment Classification	In-Place Volume (CY)	Total With Overexcavation Factor of 10% (CY)
Bank Soil (TSCA)	4,600	5,100
Riverbed (TSCA)	2,300	2,500
Total TSCA	6,900	7,600
non-TSCA	28,500	31,300
Total	35,400	38,900

Table A-11
Summary of Estimated Flood Storage Capacity Changes
Phase 3 Final Design

Section	Volume (CY) ¹
Volume of Material to be Excavated	38,900
Volume of Material to be Backfilled ²	-36,200
Aquatic Habitat Enhancement Structures ³	-174
Net Change between the Existing Conditions and Restored Conditions ⁴	2,500

¹ Positive value indicates net increase and negative value indicates loss.

² The volume of material to be backfilled presented in this calculation (36,200 cy), represents no underfill in the riverbed. The 34,400 cy figure presented in Table 1 represents underfilling the riverbed by a maximum of 6 inches, except where filling is required to meet bank slope requirements and between Stations 570+00 and 574+00.

³ Approximately 174 cy of fill material will be installed in the river channel in the form of aquatic habitat enhancement structures as part of the restoration effort.

⁴ All of the 2,500 cy of increased flood storage capacity is located within the HEC-RAS modelled 100-year floodplain.

Table A-12
Comparison of In-Place Excavation Volume Estimates
Phase 3 Final Design

Location	EE/CA ¹ (CY)	Final Design Calculation (CY)
East Bank	10,900	7,900
River	17,000	20,400
West Bank	9,000	7,100
Total (in place)	36,900	35,400
Total with 10% Overexcavation Factor	40,600	38,900

1. EE/CA volumes include 3740 cy for deeper residential excavations and 1834 cy for aggrading bars.

C:\Ryan\Documents\EE-CA\Phase III\Design\Flood Storage\FSC Tables and Bid Schedules\{Final Phase 3 cut and fill and FSC Tables2-9-05 (Final for Reporting).xls]Phase 3 (Dawes to Confluence)

ATTACHMENT B

Table B-1									
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence									
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)	
Const Sta	River Sta	Profile	Q (cfs)	EI. (ft.)	V (fps)	EI. (ft)	V (fps)	Δ EI	MAX??
Dawes Ave	47735	Dawes Avenue Bridge							
543+40	47730	Avg Annual	134	962.08	1.92	962.05	1.98	-0.03	MAX
543+40	47730	0.5-yr	1,422	968.1	3.35	966.92	4	-1.18	0.65
543+40	47730	1-yr	1,670	968.92	3.53	967.57	4.24	-1.35	0.71
543+40	47730	1.5-yr	1,761	969.18	3.61	967.8	4.33	-1.38	0.72
543+40	47730	2-yr	2,047	969.87	3.87	968.51	4.56	-1.36	0.69
543+40	47730	5-yr	3,336	971.73	5.22	970.86	5.68	-0.87	0.46
543+40	47730	10-yr	4,375	972.79	6.24	971.99	6.69	-0.80	0.45
543+40	47730	50-yr	7,239	975.32	8.51	974.59	8.97	-0.73	0.46
543+40	47730	100-yr	8,721	976.14	9.7	975.6	10.05	-0.54	0.35
543+43	47727	Avg Annual	134	962.04	2.4	962	2.48	-0.04	0.08
543+43	47727	0.5-yr	1,422	968.08	3.49	966.85	4.44	-1.23	0.95
543+43	47727	1-yr	1,670	968.92	3.55	967.52	4.55	-1.40	1.00
543+43	47727	1.5-yr	1,761	969.18	3.59	967.76	4.58	-1.42	0.99
543+43	47727	2-yr	2,047	969.88	3.76	968.49	4.67	-1.39	0.91
543+43	47727	5-yr	3,336	971.78	4.83	970.9	5.36	-0.88	0.53
543+43	47727	10-yr	4,375	972.86	5.64	972.06	6.14	-0.80	0.50
543+43	47727	50-yr	7,239	975.53	7.34	974.8	7.8	-0.73	0.46
543+43	47727	100-yr	8,721	976.44	8.24	975.91	8.59	-0.53	0.35
543+50	47720	Avg Annual	134	962.02	2.38	961.91	3.13	-0.11	0.75
543+50	47720	0.5-yr	1,422	968.11	2.99	966.88	4.04	-1.23	1.05
543+50	47720	1-yr	1,670	968.95	3.07	967.55	4.18	-1.40	1.11
543+50	47720	1.5-yr	1,761	969.21	3.11	967.79	4.22	-1.42	1.11
543+50	47720	2-yr	2,047	969.92	3.26	968.52	4.34	-1.40	1.08
543+50	47720	5-yr	3,336	971.84	4.11	970.95	4.92	-0.89	0.81
543+50	47720	10-yr	4,375	972.95	4.72	972.14	5.54	-0.81	0.82
543+50	47720	50-yr	7,239	975.7	5.88	974.97	6.69	-0.73	0.81
543+50	47720	100-yr	8,721	976.67	6.48	976.14	7.22	-0.53	0.74
544+00	47670	Avg Annual	134	961.83	2.39	961.67	2.7	-0.16	0.31
544+00	47670	0.5-yr	1,422	968.05	3.04	966.85	3.77	-1.20	0.73
544+00	47670	1-yr	1,670	968.89	3.11	967.52	3.91	-1.37	0.80
544+00	47670	1.5-yr	1,761	969.15	3.16	967.76	3.95	-1.39	0.79
544+00	47670	2-yr	2,047	969.85	3.31	968.49	4.07	-1.36	0.76
544+00	47670	5-yr	3,336	971.74	4.24	970.9	4.71	-0.84	0.47
544+00	47670	10-yr	4,375	972.83	4.91	972.07	5.37	-0.76	0.46
544+00	47670	50-yr	7,239	975.56	6.06	974.86	6.6	-0.70	0.54
544+00	47670	100-yr	8,721	976.63	6.09	976.07	6.85	-0.56	0.76
544+50	47620	Avg Annual	134	961.61	2.65	961.27	3.61	-0.34	0.96
544+50	47620	0.5-yr	1,422	967.95	3.23	966.75	4.12	-1.20	0.89
544+50	47620	1-yr	1,670	968.79	3.34	967.42	4.3	-1.37	0.96
544+50	47620	1.5-yr	1,761	969.05	3.39	967.65	4.36	-1.40	0.97
544+50	47620	2-yr	2,047	969.74	3.59	968.38	4.51	-1.36	0.92
544+50	47620	5-yr	3,336	971.56	4.7	970.73	5.34	-0.83	0.64
544+50	47620	10-yr	4,375	972.6	5.44	971.83	6.13	-0.77	0.69
544+50	47620	50-yr	7,239	975.32	6.47	974.59	7.31	-0.73	0.84
544+50	47620	100-yr	8,721	976.38	6.6	975.8	7.52	-0.58	0.92
545+00	47570	Avg Annual	134	961.59	1.46	961.3	1.6	-0.29	0.14
545+00	47570	0.5-yr	1,422	967.9	3.09	966.76	3.56	-1.14	0.47
545+00	47570	1-yr	1,670	968.74	3.21	967.42	3.76	-1.32	0.55
545+00	47570	1.5-yr	1,761	969	3.27	967.65	3.82	-1.35	0.55
545+00	47570	2-yr	2,047	969.69	3.47	968.38	4.01	-1.31	0.54
545+00	47570	5-yr	3,336	971.5	4.46	970.73	4.85	-0.77	0.39
545+00	47570	10-yr	4,375	972.57	4.95	971.86	5.48	-0.71	0.53
545+00	47570	50-yr	7,239	975.4	5.1	974.74	5.97	-0.66	0.87
545+00	47570	100-yr	8,721	976.48	5.07	975.97	6.02	-0.51	0.95

Table B-1											
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence											
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)			
Const Sta	River Sta	Profile	Q (cfs)	El. (ft.)	V (fps)	El. (ft)	V (fps)	Δ El	MAX??	Δ V (fps)	MAX??
545+50	47520	Avg Annual	134	961.57	1.1	961.29	1.16	-0.28		0.06	
545+50	47520	0.5-yr	1,422	967.87	2.81	966.75	3.2	-1.12		0.39	
545+50	47520	1-yr	1,670	968.71	2.95	967.42	3.4	-1.29		0.45	
545+50	47520	1.5-yr	1,761	968.96	3.01	967.65	3.47	-1.31		0.46	
545+50	47520	2-yr	2,047	969.65	3.2	968.38	3.66	-1.27		0.46	
545+50	47520	5-yr	3,336	971.48	3.85	970.74	4.38	-0.74		0.53	
545+50	47520	10-yr	4,375	972.58	4.09	971.89	4.82	-0.69		0.73	
545+50	47520	50-yr	7,239	975.43	3.98	974.81	5.04	-0.62		1.06	
545+50	47520	100-yr	8,721	976.5	3.96	976.04	5.04	-0.46		1.08	
546+00	47470	Avg Annual	134	961.52	1.61	961.25	1.65	-0.27		0.04	
546+00	47470	0.5-yr	1,422	967.73	3.44	966.64	3.86	-1.09		0.42	
546+00	47470	1-yr	1,670	968.56	3.51	967.3	4.06	-1.26		0.55	
546+00	47470	1.5-yr	1,761	968.82	3.54	967.53	4.12	-1.29		0.58	
546+00	47470	2-yr	2,047	969.52	3.62	968.25	4.29	-1.27		0.67	
546+00	47470	5-yr	3,336	971.4	3.7	970.69	4.44	-0.71		0.74	
546+00	47470	10-yr	4,375	972.5	3.73	971.87	4.49	-0.63		0.76	
546+00	47470	50-yr	7,239	975.38	3.45	974.81	4.31	-0.57		0.86	
546+00	47470	100-yr	8,721	976.45	3.58	976.05	4.29	-0.40		0.71	
546+50	47420	Avg Annual	134	961.46	1.71	961.22	1.58	-0.24		-0.13	
546+50	47420	0.5-yr	1,422	967.62	3.59	966.6	3.76	-1.02		0.17	
546+50	47420	1-yr	1,670	968.44	3.64	967.26	3.96	-1.18		0.32	
546+50	47420	1.5-yr	1,761	968.7	3.65	967.49	4.03	-1.21		0.38	
546+50	47420	2-yr	2,047	969.41	3.6	968.2	4.2	-1.21		0.60	
546+50	47420	5-yr	3,336	971.32	3.67	970.64	4.15	-0.68		0.48	
546+50	47420	10-yr	4,375	972.43	3.83	971.83	4.28	-0.60		0.45	
546+50	47420	50-yr	7,239	975.36	3.76	974.79	4.32	-0.57		0.56	
546+50	47420	100-yr	8,721	976.44	3.85	976.03	4.3	-0.41		0.45	
547+00	47370	Avg Annual	134	961.4	1.7	961.16	1.93	-0.24		0.23	
547+00	47370	0.5-yr	1,422	967.55	3.52	966.47	4.29	-1.08		0.77	
547+00	47370	1-yr	1,670	968.38	3.48	967.13	4.5	-1.25		1.02	
547+00	47370	1.5-yr	1,761	968.65	3.45	967.36	4.55	-1.29		1.10	
547+00	47370	2-yr	2,047	969.36	3.27	968.09	4.62	-1.27		1.35	
547+00	47370	5-yr	3,336	971.31	2.93	970.62	3.85	-0.69		0.92	
547+00	47370	10-yr	4,375	972.44	2.89	971.84	3.72	-0.60		0.83	
547+00	47370	50-yr	7,239	975.38	2.68	974.82	3.41	-0.56		0.73	
547+00	47370	100-yr	8,721	976.46	2.79	976.07	3.38	-0.39		0.59	
547+50	47320	Avg Annual	134	961.35	1.59	961.13	1.58	-0.22		-0.01	
547+50	47320	0.5-yr	1,422	967.47	3.38	966.46	3.87	-1.01		0.49	
547+50	47320	1-yr	1,670	968.32	3.28	967.11	4.06	-1.21		0.78	
547+50	47320	1.5-yr	1,761	968.59	3.23	967.35	4.11	-1.24		0.88	
547+50	47320	2-yr	2,047	969.29	3.06	968.08	4.16	-1.21		1.10	
547+50	47320	5-yr	3,336	971.27	2.68	970.58	3.62	-0.69		0.94	
547+50	47320	10-yr	4,375	972.41	2.57	971.81	3.47	-0.60		0.90	
547+50	47320	50-yr	7,239	975.37	2.32	974.81	3.19	-0.56		0.87	
547+50	47320	100-yr	8,721	976.45	2.39	976.06	3.17	-0.39		0.78	
548+00	47270	Avg Annual	134	961.3	1.54	961.1	1.61	-0.20		0.07	
548+00	47270	0.5-yr	1,422	967.41	3.06	966.44	3.54	-0.97		0.48	
548+00	47270	1-yr	1,670	968.26	2.9	967.11	3.64	-1.15		0.74	
548+00	47270	1.5-yr	1,761	968.54	2.78	967.35	3.66	-1.19		0.88	
548+00	47270	2-yr	2,047	969.25	2.59	968.08	3.61	-1.17		1.02	
548+00	47270	5-yr	3,336	971.25	2.39	970.6	2.86	-0.65		0.47	
548+00	47270	10-yr	4,375	972.39	2.39	971.82	2.84	-0.57		0.45	
548+00	47270	50-yr	7,239	975.36	2.29	974.82	2.75	-0.54		0.46	
548+00	47270	100-yr	8,721	976.44	2.37	976.07	2.77	-0.37		0.40	

Table B-1									
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence									
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)	
Const Sta	River Sta	Profile	Q (cfs)	El. (ft.)	V (fps)	El. (ft)	V (fps)	Δ El	MAX??
548+50	47220	Avg Annual	134	961.27	1.19	961.08	1.28	-0.19	0.09
548+50	47220	0.5-yr	1,422	967.36	2.86	966.43	3.24	-0.93	0.38
548+50	47220	1-yr	1,670	968.19	2.88	967.08	3.43	-1.11	0.55
548+50	47220	1.5-yr	1,761	968.45	2.87	967.32	3.48	-1.13	0.61
548+50	47220	2-yr	2,047	969.16	2.87	968.03	3.56	-1.13	0.69
548+50	47220	5-yr	3,336	971.17	2.98	970.48	3.56	-0.69	0.58
548+50	47220	10-yr	4,375	972.32	3.09	971.71	3.7	-0.61	0.61
548+50	47220	50-yr	7,239	975.31	3.07	974.73	3.75	-0.58	0.68
548+50	47220	100-yr	8,721	976.39	3.21	975.98	3.83	-0.41	0.62
549+00	47170	Avg Annual	134	961.27	0.95	961.07	1.04	-0.20	0.09
549+00	47170	0.5-yr	1,422	967.31	2.87	966.4	3.18	-0.91	0.31
549+00	47170	1-yr	1,670	968.13	2.84	967.05	3.35	-1.08	0.51
549+00	47170	1.5-yr	1,761	968.4	2.8	967.29	3.4	-1.11	0.60
549+00	47170	2-yr	2,047	969.12	2.68	968	3.46	-1.12	0.78
549+00	47170	5-yr	3,336	971.14	2.61	970.48	3.1	-0.66	0.49
549+00	47170	10-yr	4,375	972.3	2.71	971.71	3.15	-0.59	0.44
549+00	47170	50-yr	7,239	975.29	2.75	974.73	3.2	-0.56	0.45
549+00	47170	100-yr	8,721	976.38	2.87	975.98	3.25	-0.40	0.38
549+50	47120	Avg Annual	134	961.26	0.82	961.08	0.62	-0.18	-0.20
549+50	47120	0.5-yr	1,422	967.28	2.63	966.42	2.53	-0.86	-0.10
549+50	47120	1-yr	1,670	968.09	2.72	967.07	2.71	-1.02	-0.01
549+50	47120	1.5-yr	1,761	968.35	2.76	967.3	2.77	-1.05	0.01
549+50	47120	2-yr	2,047	969.05	2.89	968	2.93	-1.05	0.04
549+50	47120	5-yr	3,336	971.01	3.48	970.4	3.46	-0.61	-0.02
549+50	47120	10-yr	4,375	972.14	3.81	971.6	3.84	-0.54	0.03
549+50	47120	50-yr	7,239	975.15	3.99	974.59	4.23	-0.56	0.24
549+50	47120	100-yr	8,721	976.24	4.1	975.85	4.34	-0.39	0.24
550+00	47070	Avg Annual	134	961.22	1.51	961.05	1.26	-0.17	-0.25
550+00	47070	0.5-yr	1,422	967.14	3.53	966.23	3.99	-0.91	0.46
550+00	47070	1-yr	1,670	967.95	3.53	966.86	4.23	-1.09	0.70
550+00	47070	1.5-yr	1,761	968.22	3.53	967.09	4.29	-1.13	0.76
550+00	47070	2-yr	2,047	968.93	3.58	967.78	4.4	-1.15	0.82
550+00	47070	5-yr	3,336	970.93	3.88	970.23	4.56	-0.70	0.68
550+00	47070	10-yr	4,375	972.07	4.1	971.46	4.73	-0.61	0.63
550+00	47070	50-yr	7,239	975.1	4.22	974.52	4.78	-0.58	0.56
550+00	47070	100-yr	8,721	976.19	4.41	975.78	4.87	-0.41	0.46
550+50	47020	Avg Annual	134	961.13	2.16	960.91	2.88	-0.22	0.72
550+50	47020	0.5-yr	1,422	967	3.96	965.91	5.46	-1.09	1.50
550+50	47020	1-yr	1,670	967.8	4.05	966.52	5.69	-1.28	1.64
550+50	47020	1.5-yr	1,761	968.06	4.09	966.73	5.77	-1.33	1.68
550+50	47020	2-yr	2047	968.74	4.2	967.40	5.96	-1.34	1.76 MAX
550+50	47020	5-yr	3,336	970.73	4.52	969.86	5.95	-0.87	1.43
550+50	47020	10-yr	4,375	971.87	4.77	971.12	6	-0.75	1.23
550+50	47020	50-yr	7,239	974.92	4.82	974.27	5.73	-0.65	0.91
550+50	47020	100-yr	8,721	976.01	4.99	975.55	5.69	-0.46	0.70
551+00	46970	Avg Annual	134	961.05	1.98	960.81	2.34	-0.24	0.36
551+00	46970	0.5-yr	1,422	966.96	3.45	965.9	4.63	-1.06	1.18
551+00	46970	1-yr	1,670	967.77	3.51	966.52	4.85	-1.25	1.34
551+00	46970	1.5-yr	1,761	968.03	3.52	966.73	4.93	-1.30	1.41
551+00	46970	2-yr	2,047	968.71	3.6	967.4	5.09	-1.31	1.49
551+00	46970	5-yr	3,336	970.73	3.78	969.87	5	-0.86	1.22
551+00	46970	10-yr	4,375	971.87	3.97	971.15	5.02	-0.72	1.05
551+00	46970	50-yr	7,239	974.94	3.93	974.31	4.76	-0.63	0.83
551+00	46970	100-yr	8,721	976.02	4.06	975.59	4.73	-0.43	0.67

Table B-1											
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence											
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)			
Const Sta	River Sta	Profile	Q (cfs)	EI. (ft.)	V (fps)	EI. (ft)	V (fps)	Δ EI	MAX??	Δ V (fps)	MAX??
551+50	46920	Avg Annual	134	961.01	1.44	960.76	1.78	-0.25		0.34	
551+50	46920	0.5-yr	1,422	966.95	2.97	965.91	3.87	-1.04		0.90	
551+50	46920	1-yr	1,670	967.74	3.1	966.53	4.07	-1.21		0.97	
551+50	46920	1.5-yr	1,761	968	3.15	966.74	4.14	-1.26		0.99	
551+50	46920	2-yr	2,047	968.67	3.3	967.41	4.33	-1.26		1.03	
551+50	46920	5-yr	3,336	970.63	3.94	969.78	4.86	-0.85		0.92	
551+50	46920	10-yr	4,375	971.74	4.3	971	5.18	-0.74		0.88	
551+50	46920	50-yr	7,239	974.8	4.53	974.14	5.25	-0.66		0.72	
551+50	46920	100-yr	8,721	975.88	4.72	975.42	5.32	-0.46		0.60	
552+00	46870	Avg Annual	134	960.86	2.45	960.64	2.42	-0.22		-0.03	
552+00	46870	0.5-yr	1,422	966.87	3.36	965.84	3.96	-1.03		0.60	
552+00	46870	1-yr	1,670	967.65	3.48	966.46	4.15	-1.19		0.67	
552+00	46870	1.5-yr	1,761	967.9	3.53	966.68	4.22	-1.22		0.69	
552+00	46870	2-yr	2,047	968.56	3.72	967.34	4.39	-1.22		0.67	
552+00	46870	5-yr	3,336	970.43	4.72	969.66	5.13	-0.77		0.41	
552+00	46870	10-yr	4,375	971.44	5.51	970.78	5.86	-0.66		0.35	
552+00	46870	50-yr	7,239	974.28	6.64	973.62	7.1	-0.66		0.46	
552+00	46870	100-yr	8,721	975.32	6.97	974.84	7.38	-0.48		0.41	
552+50	46820	Avg Annual	134	960.77	1.8	960.58	1.79	-0.19		-0.01	
552+50	46820	0.5-yr	1,422	966.84	3.07	965.82	3.6	-1.02		0.53	
552+50	46820	1-yr	1,670	967.62	3.22	966.44	3.8	-1.18		0.58	
552+50	46820	1.5-yr	1,761	967.87	3.27	966.65	3.86	-1.22		0.59	
552+50	46820	2-yr	2,047	968.52	3.48	967.32	4.04	-1.20		0.56	
552+50	46820	5-yr	3,336	970.38	4.47	969.65	4.78	-0.73		0.31	
552+50	46820	10-yr	4,375	971.38	5.23	970.76	5.49	-0.62		0.26	
552+50	46820	50-yr	7,239	974.12	6.52	973.58	6.77	-0.54		0.25	
552+50	46820	100-yr	8,721	975.14	6.87	974.72	7.22	-0.42		0.35	
553+00	46770	Avg Annual	134	960.72	1.56	960.5	2.01	-0.22		0.45	
553+00	46770	0.5-yr	1,422	966.8	3.03	965.76	3.68	-1.04		0.65	
553+00	46770	1-yr	1,670	967.58	3.16	966.38	3.87	-1.20		0.71	
553+00	46770	1.5-yr	1,761	967.83	3.22	966.6	3.94	-1.23		0.72	
553+00	46770	2-yr	2,047	968.47	3.42	967.26	4.11	-1.21		0.69	
553+00	46770	5-yr	3,336	970.31	4.43	969.59	4.85	-0.72		0.42	
553+00	46770	10-yr	4,375	971.28	5.2	970.69	5.57	-0.59		0.37	
553+00	46770	50-yr	7,239	974	6.39	973.49	6.8	-0.51		0.41	
553+00	46770	100-yr	8,721	975	6.59	974.61	7.11	-0.39		0.52	
553+50	46720	Avg Annual	134	960.68	1.47	960.46	1.62	-0.22		0.15	
553+50	46720	0.5-yr	1,422	966.76	2.95	965.75	3.3	-1.01		0.35	
553+50	46720	1-yr	1,670	967.54	3.04	966.37	3.49	-1.17		0.45	
553+50	46720	1.5-yr	1,761	967.79	3.08	966.59	3.55	-1.20		0.47	
553+50	46720	2-yr	2,047	968.43	3.23	967.26	3.71	-1.17		0.48	
553+50	46720	5-yr	3,336	970.28	3.95	969.59	4.28	-0.69		0.33	
553+50	46720	10-yr	4,375	971.29	4.43	970.72	4.75	-0.57		0.32	
553+50	46720	50-yr	7,239	974.09	4.99	973.64	5.32	-0.45		0.33	
553+50	46720	100-yr	8,721	975.04	5.47	974.75	5.55	-0.29		0.08	
554+00	46670	Avg Annual	134	960.65	1.36	960.42	1.57	-0.23		0.21	
554+00	46670	0.5-yr	1,422	966.67	3.26	965.64	3.9	-1.03		0.64	
554+00	46670	1-yr	1,670	967.44	3.41	966.25	4.13	-1.19		0.72	
554+00	46670	1.5-yr	1,761	967.69	3.47	966.46	4.2	-1.23		0.73	
554+00	46670	2-yr	2,047	968.33	3.69	967.12	4.4	-1.21		0.71	
554+00	46670	5-yr	3,336	970.11	4.7	969.4	5.19	-0.71		0.49	
554+00	46670	10-yr	4,375	971.09	5.27	970.49	5.82	-0.60		0.55	
554+00	46670	50-yr	7,239	973.95	5.66	973.45	6.29	-0.50		0.63	
554+00	46670	100-yr	8,721	974.9	6.08	974.55	6.62	-0.35		0.54	

Table B-1											
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence											
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)			
Const Sta	River Sta	Profile	Q (cfs)	El. (ft.)	V (fps)	El. (ft)	V (fps)	Δ El	MAX??	Δ V (fps)	MAX??
554+50	46620	Avg Annual	134	960.63	1.4	960.4	1.54	-0.23		0.14	
554+50	46620	0.5-yr	1,422	966.59	3.45	965.49	4.54	-1.10		1.09	
554+50	46620	1-yr	1,670	967.36	3.64	966.08	4.83	-1.28		1.19	
554+50	46620	1.5-yr	1,761	967.6	3.71	966.28	4.93	-1.32		1.22	
554+50	46620	2-yr	2,047	968.22	3.97	966.92	5.19	-1.30		1.22	
554+50	46620	5-yr	3,336	969.93	5.13	969.1	6.25	-0.83		1.12	
554+50	46620	10-yr	4,375	970.91	5.56	970.12	6.98	-0.79		1.42	
554+50	46620	50-yr	7,239	973.85	5.42	973.35	6.32	-0.50		0.90	
554+50	46620	100-yr	8,721	974.81	5.64	974.48	6.37	-0.33		0.73	
555+00	46570	Avg Annual	134	960.59	1.56	960.37	1.64	-0.22		0.08	
555+00	46570	0.5-yr	1,422	966.52	3.53	965.42	4.51	-1.10		0.98	
555+00	46570	1-yr	1,670	967.28	3.68	966.01	4.78	-1.27		1.10	
555+00	46570	1.5-yr	1,761	967.53	3.73	966.22	4.88	-1.31		1.15	
555+00	46570	2-yr	2,047	968.14	3.94	966.85	5.13	-1.29		1.19	
555+00	46570	5-yr	3,336	969.82	4.9	968.98	6.04	-0.84		1.14	
555+00	46570	10-yr	4,375	970.81	5.24	969.99	6.63	-0.82		1.39	
555+00	46570	50-yr	7,239	973.8	5.12	973.31	5.93	-0.49		0.81	
555+00	46570	100-yr	8,721	974.77	5.35	974.44	6.04	-0.33		0.69	
555+50	46520	Avg Annual	134	960.58	1.38	960.36	1.39	-0.22		0.01	
555+50	46520	0.5-yr	1,422	966.46	3.62	965.38	4.27	-1.08		0.65	
555+50	46520	1-yr	1,670	967.21	3.78	965.97	4.55	-1.24		0.77	
555+50	46520	1.5-yr	1,761	967.45	3.85	966.17	4.65	-1.28		0.80	
555+50	46520	2-yr	2,047	968.05	4.07	966.8	4.91	-1.25		0.84	
555+50	46520	5-yr	3,336	969.66	5.23	968.88	5.9	-0.78		0.67	
555+50	46520	10-yr	4,375	970.54	6.01	969.82	6.74	-0.72		0.73	
555+50	46520	50-yr	7,239	973.54	6.17	973.04	6.78	-0.50		0.61	
555+50	46520	100-yr	8,721	974.5	6.46	974.19	6.9	-0.31		0.44	
556+00	46470	Avg Annual	134	960.56	1.32	960.35	1.24	-0.21		-0.08	
556+00	46470	0.5-yr	1,422	966.41	3.52	965.35	3.95	-1.06		0.43	
556+00	46470	1-yr	1,670	967.16	3.67	965.94	4.22	-1.22		0.55	
556+00	46470	1.5-yr	1,761	967.39	3.73	966.15	4.32	-1.24		0.59	
556+00	46470	2-yr	2,047	967.99	3.97	966.78	4.56	-1.21		0.59	
556+00	46470	5-yr	3,336	969.64	4.68	968.87	5.41	-0.77		0.73	
556+00	46470	10-yr	4,375	970.58	5	969.86	5.94	-0.72		0.94	
556+00	46470	50-yr	7,239	973.62	4.7	973.12	5.71	-0.50		1.01	
556+00	46470	100-yr	8,721	974.58	4.9	974.26	5.9	-0.32		1.00	
556+50	46420	Avg Annual	134	960.54	1.24	960.32	1.37	-0.22		0.13	
556+50	46420	0.5-yr	1,422	966.37	3.23	965.34	3.59	-1.03		0.36	
556+50	46420	1-yr	1,670	967.13	3.29	965.93	3.8	-1.20		0.51	
556+50	46420	1.5-yr	1,761	967.37	3.29	966.14	3.86	-1.23		0.57	
556+50	46420	2-yr	2,047	967.99	3.36	966.78	3.99	-1.21		0.63	
556+50	46420	5-yr	3,336	969.66	3.86	968.96	4.2	-0.70		0.34	
556+50	46420	10-yr	4,375	970.59	4.23	969.97	4.55	-0.62		0.32	
556+50	46420	50-yr	7,239	973.63	4.15	973.21	4.38	-0.42		0.23	
556+50	46420	100-yr	8,721	974.59	4.34	974.35	4.48	-0.24		0.14	
557+00	46370	Avg Annual	134	960.51	1.4	960.29	1.53	-0.22		0.13	
557+00	46370	0.5-yr	1,422	966.34	3.13	965.29	3.65	-1.05		0.52	
557+00	46370	1-yr	1,670	967.1	3.13	965.88	3.83	-1.22		0.70	
557+00	46370	1.5-yr	1,761	967.34	3.12	966.08	3.89	-1.26		0.77	
557+00	46370	2-yr	2,047	967.96	3.14	966.72	3.99	-1.24		0.85	
557+00	46370	5-yr	3,336	969.66	3.36	968.94	3.98	-0.72		0.62	
557+00	46370	10-yr	4,375	970.6	3.58	969.97	4.16	-0.63		0.58	
557+00	46370	50-yr	7,239	973.64	3.56	973.23	3.94	-0.41		0.38	
557+00	46370	100-yr	8,721	974.6	3.78	974.36	4.09	-0.24		0.31	

Table B-1											
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence											
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)			
Const Sta	River Sta	Profile	Q (cfs)	El. (ft.)	V (fps)	El. (ft)	V (fps)	Δ El	MAX??	Δ V (fps)	MAX??
557+50	46320	Avg Annual	134	960.48	1.45	960.24	1.67	-0.24		0.22	
557+50	46320	0.5-yr	1,422	966.29	3.15	965.22	3.78	-1.07		0.63	
557+50	46320	1-yr	1,670	967.06	3.08	965.81	4	-1.25		0.92	
557+50	46320	1.5-yr	1,761	967.31	3.03	966.01	4.07	-1.30		1.04	
557+50	46320	2-yr	2,047	967.94	2.88	966.65	4.16	-1.29		1.28	
557+50	46320	5-yr	3,336	969.66	2.85	968.93	3.67	-0.73		0.82	
557+50	46320	10-yr	4,375	970.61	3	969.98	3.7	-0.63		0.70	
557+50	46320	50-yr	7,239	973.65	2.82	973.25	3.35	-0.40		0.53	
557+50	46320	100-yr	8,721	974.63	2.89	974.39	3.37	-0.24		0.48	
558+00	46270	Avg Annual	134	960.45	1.4	960.2	1.61	-0.25		0.21	
558+00	46270	0.5-yr	1,422	966.21	3.22	965.18	3.7	-1.03		0.48	
558+00	46270	1-yr	1,670	966.96	3.33	965.76	3.91	-1.20		0.58	
558+00	46270	1.5-yr	1,761	967.19	3.35	965.96	3.98	-1.23		0.63	
558+00	46270	2-yr	2,047	967.81	3.33	966.6	4.16	-1.21		0.83	
558+00	46270	5-yr	3,336	969.56	3.36	968.79	4.21	-0.77		0.85	
558+00	46270	10-yr	4,375	970.51	3.46	969.84	4.33	-0.67		0.87	
558+00	46270	50-yr	7,239	973.61	3.05	973.17	3.8	-0.44		0.75	
558+00	46270	100-yr	8,721	974.59	3.05	974.34	3.72	-0.25		0.67	
558+50	46220	Avg Annual	134	960.42	1.29	960.17	1.55	-0.25		0.26	
558+50	46220	0.5-yr	1,422	966.16	3.13	965.14	3.7	-1.02		0.57	
558+50	46220	1-yr	1,670	966.89	3.24	965.71	3.93	-1.18		0.69	
558+50	46220	1.5-yr	1,761	967.12	3.26	965.91	4.01	-1.21		0.75	
558+50	46220	2-yr	2,047	967.76	3.2	966.54	4.19	-1.22		0.99	
558+50	46220	5-yr	3,336	969.52	3.16	968.75	4.11	-0.77		0.95	
558+50	46220	10-yr	4,375	970.48	3.26	969.81	4.16	-0.67		0.90	
558+50	46220	50-yr	7,239	973.61	2.49	973.2	3.21	-0.41		0.72	
558+50	46220	100-yr	8,721	974.6	2.52	974.36	3.15	-0.24		0.63	
559+00	46170	Avg Annual	134	960.37	1.61	960.07	2.19	-0.30		0.58	
559+00	46170	0.5-yr	1,422	966.08	3.25	965.05	4	-1.03		0.75	
559+00	46170	1-yr	1,670	966.8	3.35	965.62	4.23	-1.18		0.88	
559+00	46170	1.5-yr	1,761	967.03	3.37	965.82	4.31	-1.21		0.94	
559+00	46170	2-yr	2,047	967.68	3.34	966.44	4.5	-1.24		1.16	
559+00	46170	5-yr	3,336	969.46	3.38	968.67	4.42	-0.79		1.04	
559+00	46170	10-yr	4,375	970.45	3.32	969.75	4.44	-0.70		1.12	
559+00	46170	50-yr	7,239	973.61	2.58	973.19	3.26	-0.42		0.68	
559+00	46170	100-yr	8,721	974.59	2.62	974.35	3.22	-0.24		0.60	
559+50	46120	Avg Annual	134	960.31	1.75	959.92	2.5	-0.39		0.75	
559+50	46120	0.5-yr	1,422	966.01	3.25	965	3.97	-1.01		0.72	
559+50	46120	1-yr	1,670	966.72	3.34	965.57	4.19	-1.15		0.85	
559+50	46120	1.5-yr	1,761	966.96	3.37	965.76	4.26	-1.20		0.89	
559+50	46120	2-yr	2,047	967.6	3.42	966.38	4.42	-1.22		1.00	
559+50	46120	5-yr	3,336	969.4	3.45	968.56	4.63	-0.84		1.18	
559+50	46120	10-yr	4,375	970.39	3.42	969.68	4.54	-0.71		1.12	
559+50	46120	50-yr	7,239	973.58	2.68	973.15	3.5	-0.43		0.82	
559+50	46120	100-yr	8,721	974.57	2.67	974.32	3.4	-0.25		0.73	
560+00	46070	Avg Annual	134	960.29	1.27	959.89	1.63	-0.40		0.36	
560+00	46070	0.5-yr	1,422	965.93	3.29	964.97	3.75	-0.96		0.46	
560+00	46070	1-yr	1,670	966.63	3.47	965.53	4	-1.10		0.53	
560+00	46070	1.5-yr	1,761	966.85	3.53	965.72	4.09	-1.13		0.56	
560+00	46070	2-yr	2,047	967.48	3.7	966.32	4.31	-1.16		0.61	
560+00	46070	5-yr	3,336	969.3	3.86	968.45	4.86	-0.85		1.00	
560+00	46070	10-yr	4,375	970.31	3.76	969.58	4.86	-0.73		1.10	
560+00	46070	50-yr	7,239	973.56	2.85	973.12	3.73	-0.44		0.88	
560+00	46070	100-yr	8,721	974.55	2.84	974.29	3.64	-0.26		0.80	

Table B-1									
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence									
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)	
Const Sta	River Sta	Profile	Q (cfs)	El. (ft.)	V (fps)	El. (ft)	V (fps)	Δ El	MAX??
560+50	46020	Avg Annual	134	960.26	1.42	959.87	1.35	-0.39	-0.07
560+50	46020	0.5-yr	1,422	965.89	3.22	964.94	3.49	-0.95	0.27
560+50	46020	1-yr	1,670	966.59	3.28	965.51	3.7	-1.08	0.42
560+50	46020	1.5-yr	1,761	966.83	3.23	965.7	3.77	-1.13	0.54
560+50	46020	2-yr	2,047	967.49	2.86	966.3	3.95	-1.19	1.09
560+50	46020	5-yr	3,336	969.34	1.76	968.57	2.52	-0.77	0.76
560+50	46020	10-yr	4,375	970.33	1.55	969.68	1.95	-0.65	0.40
560+50	46020	50-yr	7,239	973.54	1.12	973.14	1.22	-0.40	0.10
560+50	46020	100-yr	8,721	974.53	1.09	974.31	1.11	-0.22	0.02
560+70	46000	Avg Annual	134	960.25	1.31	959.87	1.03	-0.38	-0.28
560+70	46000	0.5-yr	1,422	965.88	3.23	964.94	3.29	-0.94	0.06
560+70	46000	1-yr	1,670	966.57	3.36	965.51	3.54	-1.06	0.18
560+70	46000	1.5-yr	1,761	966.8	3.36	965.7	3.62	-1.10	0.26
560+70	46000	2-yr	2,047	967.45	3.31	966.29	3.86	-1.16	0.55
560+70	46000	5-yr	3,336	969.3	3.25	968.5	3.81	-0.80	0.56
560+70	46000	10-yr	4,375	970.31	3.4	969.63	3.79	-0.68	0.39
560+70	46000	50-yr	7,239	973.55	2.58	973.14	2.7	-0.41	0.12
560+70	46000	100-yr	8,721	974.53	2.62	974.32	2.62	-0.21	0.00
Pomeroy	45963	Pomeroy Avenue Bridge							
561+37	45933	Avg Annual	134	960.18	1.81	959.77	2.13	-0.41	0.32
561+37	45933	0.5-yr	1,422	965.79	3.55	964.83	3.8	-0.96	0.25
561+37	45933	1-yr	1,670	966.47	3.69	965.39	4.04	-1.08	0.35
561+37	45933	1.5-yr	1,761	966.7	3.75	965.58	4.13	-1.12	0.38
561+37	45933	2-yr	2,047	967.3	3.96	966.17	4.36	-1.13	0.40
561+37	45933	5-yr	3,336	969.03	4.25	968.2	5.06	-0.83	0.81
561+37	45933	10-yr	4,375	969.96	4.36	969.26	5.07	-0.7	0.71
561+37	45933	50-yr	7,239	972.83	3.49	972.48	3.8	-0.35	0.31
561+37	45933	100-yr	8,721	973.97	3.32	973.69	3.55	-0.28	0.23
561+50	45920	Avg Annual	134	960.15	2.05	959.73	2.32	-0.42	0.27
561+50	45920	0.5-yr	1,422	965.69	4.18	964.79	4.01	-0.9	-0.17
561+50	45920	1-yr	1,670	966.37	4.3	965.35	4.25	-1.02	-0.05
561+50	45920	1.5-yr	1,761	966.59	4.35	965.54	4.34	-1.05	-0.01
561+50	45920	2-yr	2,047	967.19	4.55	966.12	4.57	-1.07	0.02
561+50	45920	5-yr	3,336	968.85	5.21	968.08	5.56	-0.77	0.35
561+50	45920	10-yr	4,375	969.92	4.5	969.05	5.94	-0.87	1.44
561+50	45920	50-yr	7,239	972.83	3.05	972.43	4.15	-0.4	1.10
561+50	45920	100-yr	8,721	973.97	2.84	973.66	3.88	-0.31	1.04
562+00	45870	Avg Annual	134	960.11	1.64	959.74	1.19	-0.37	-0.45
562+00	45870	0.5-yr	1,422	965.63	3.88	964.78	3.61	-0.85	-0.27
562+00	45870	1-yr	1,670	966.3	4.06	965.33	3.88	-0.97	-0.18
562+00	45870	1.5-yr	1,761	966.52	4.11	965.52	3.97	-1	-0.14
562+00	45870	2-yr	2,047	967.12	4.31	966.1	4.24	-1.02	-0.07
562+00	45870	5-yr	3,336	968.68	5.3	968.04	5.22	-0.64	-0.08
562+00	45870	10-yr	4,375	969.63	5.44	968.98	5.77	-0.65	0.33
562+00	45870	50-yr	7,239	972.68	4.41	972.33	4.72	-0.35	0.31
562+00	45870	100-yr	8,721	973.86	4.2	973.57	4.48	-0.29	0.28
562+50	45820	Avg Annual	134	960.08	1.44	959.73	1.25	-0.35	-0.19
562+50	45820	0.5-yr	1,422	965.6	3.59	964.73	3.66	-0.87	0.07
562+50	45820	1-yr	1,670	966.27	3.77	965.28	3.93	-0.99	0.16
562+50	45820	1.5-yr	1,761	966.49	3.83	965.47	4.03	-1.02	0.20
562+50	45820	2-yr	2,047	967.09	3.99	966.05	4.3	-1.04	0.31
562+50	45820	5-yr	3,336	968.73	4.4	968.03	4.96	-0.7	0.56
562+50	45820	10-yr	4,375	969.67	4.49	969.02	5.12	-0.65	0.63
562+50	45820	50-yr	7,239	972.67	3.83	972.34	4.1	-0.33	0.27
562+50	45820	100-yr	8,721	973.85	3.74	973.57	3.96	-0.28	0.22

Table B-1									
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence									
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)	
Const Sta	River Sta	Profile	Q (cfs)	EI. (ft.)	V (fps)	EI. (ft)	V (fps)	Δ EI	MAX??
563+00	45770	Avg Annual	134	960.06	1.35	959.69	1.62	-0.37	0.27
563+00	45770	0.5-yr	1,422	965.58	3.42	964.62	4.15	-0.96	0.73
563+00	45770	1-yr	1,670	966.25	3.62	965.19	4.33	-1.06	0.71
563+00	45770	1.5-yr	1,761	966.48	3.59	965.38	4.38	-1.1	0.79
563+00	45770	2-yr	2,047	967.1	3.55	965.99	4.47	-1.11	0.92
563+00	45770	5-yr	3,336	968.76	3.72	968.05	4.57	-0.71	0.85
563+00	45770	10-yr	4,375	969.7	3.83	969.05	4.6	-0.65	0.77
563+00	45770	50-yr	7,239	972.67	3.52	972.34	3.92	-0.33	0.40
563+00	45770	100-yr	8,721	973.84	3.55	973.57	3.92	-0.27	0.37
563+50	45720	Avg Annual	134	960.03	1.49	959.64	1.77	-0.39	0.28
563+50	45720	0.5-yr	1,422	965.43	4.09	964.56	4.18	-0.87	0.09
563+50	45720	1-yr	1,670	966.08	4.37	965.1	4.46	-0.98	0.09
563+50	45720	1.5-yr	1,761	966.28	4.47	965.28	4.56	-1	0.09
563+50	45720	2-yr	2,047	966.91	4.49	965.85	4.83	-1.06	0.34
563+50	45720	5-yr	3,336	968.64	4.45	967.92	4.99	-0.72	0.54
563+50	45720	10-yr	4,375	969.59	4.54	968.92	5.1	-0.67	0.56
563+50	45720	50-yr	7,239	972.62	4.04	972.27	4.39	-0.35	0.35
563+50	45720	100-yr	8,721	973.79	4.05	973.5	4.4	-0.29	0.35
564+00	45670	Avg Annual	134	960.02	1.34	959.61	1.59	-0.41	0.25
564+00	45670	0.5-yr	1,422	965.43	3.49	964.53	3.93	-0.9	0.44
564+00	45670	1-yr	1,670	966.12	3.35	965.08	4.1	-1.04	0.75
564+00	45670	1.5-yr	1,761	966.34	3.28	965.27	4.14	-1.07	0.86
564+00	45670	2-yr	2,047	966.99	3.01	965.87	4.16	-1.12	1.15
564+00	45670	5-yr	3,336	968.69	2.85	968	3.59	-0.69	0.74
564+00	45670	10-yr	4,375	969.63	2.94	968.99	3.67	-0.64	0.73
564+00	45670	50-yr	7,239	972.63	2.75	972.3	3.31	-0.33	0.56
564+00	45670	100-yr	8,721	973.8	2.83	973.52	3.37	-0.28	0.54
564+50	45620	Avg Annual	134	959.99	1.57	959.56	1.69	-0.43	0.12
564+50	45620	0.5-yr	1,422	965.4	3.29	964.49	3.77	-0.91	0.48
564+50	45620	1-yr	1,670	966.07	3.25	965.04	3.95	-1.03	0.70
564+50	45620	1.5-yr	1,761	966.29	3.2	965.23	3.99	-1.06	0.79
564+50	45620	2-yr	2,047	966.95	2.94	965.83	4.06	-1.12	1.12
564+50	45620	5-yr	3,336	968.66	2.77	967.96	3.54	-0.7	0.77
564+50	45620	10-yr	4,375	969.61	2.84	968.97	3.58	-0.64	0.74
564+50	45620	50-yr	7,239	972.61	2.65	972.28	3.16	-0.33	0.51
564+50	45620	100-yr	8,721	973.78	2.72	973.51	3.22	-0.27	0.50
565+00	45570	Avg Annual	134	959.92	1.76	959.52	1.63	-0.4	-0.13
565+00	45570	0.5-yr	1,422	965.37	3.15	964.46	3.56	-0.91	0.41
565+00	45570	1-yr	1,670	966.04	3.14	965.01	3.74	-1.03	0.60
565+00	45570	1.5-yr	1,761	966.26	3.13	965.21	3.78	-1.05	0.65
565+00	45570	2-yr	2,047	966.89	3.05	965.81	3.84	-1.08	0.79
565+00	45570	5-yr	3,336	968.61	2.93	967.9	3.7	-0.71	0.77
565+00	45570	10-yr	4,375	969.56	2.97	968.92	3.66	-0.64	0.69
565+00	45570	50-yr	7,239	972.59	2.67	972.27	3.07	-0.32	0.40
565+00	45570	100-yr	8,721	973.76	2.7	973.5	3.08	-0.26	0.38
565+50	45520	Avg Annual	134	959.87	1.51	959.45	1.86	-0.42	0.35
565+50	45520	0.5-yr	1,422	965.3	3.31	964.38	3.84	-0.92	0.53
565+50	45520	1-yr	1,670	965.96	3.39	964.91	4.1	-1.05	0.71
565+50	45520	1.5-yr	1,761	966.17	3.4	965.1	4.18	-1.07	0.78
565+50	45520	2-yr	2,047	966.8	3.37	965.67	4.37	-1.13	1.00
565+50	45520	5-yr	3,336	968.55	3.26	967.79	4.19	-0.76	0.93
565+50	45520	10-yr	4,375	969.51	3.26	968.83	4.09	-0.68	0.83
565+50	45520	50-yr	7,239	972.56	2.87	972.24	3.25	-0.32	0.38
565+50	45520	100-yr	8,721	973.74	2.92	973.47	3.29	-0.27	0.37

Table B-1									
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence									
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)	
Const Sta	River Sta	Profile	Q (cfs)	EI. (ft.)	V (fps)	EI. (ft)	V (fps)	Δ EI	MAX??
566+00	45470	Avg Annual	134	959.84	1.34	959.46	1.07	-0.38	-0.27
566+00	45470	0.5-yr	1,422	965.24	3.4	964.39	3.24	-0.85	-0.16
566+00	45470	1-yr	1,670	965.89	3.52	964.92	3.49	-0.97	-0.03
566+00	45470	1.5-yr	1,761	966.1	3.55	965.11	3.58	-0.99	0.03
566+00	45470	2-yr	2,047	966.72	3.57	965.68	3.79	-1.04	0.22
566+00	45470	5-yr	3,336	968.49	3.39	967.75	3.98	-0.74	0.59
566+00	45470	10-yr	4,375	969.46	3.34	968.79	3.94	-0.67	0.60
566+00	45470	50-yr	7,239	972.54	2.87	972.22	3.2	-0.32	0.33
566+00	45470	100-yr	8,721	973.72	2.88	973.45	3.2	-0.27	0.32
566+50	45420	Avg Annual	134	959.82	1.35	959.41	1.67	-0.41	0.32
566+50	45420	0.5-yr	1,422	965.2	3.32	964.29	3.74	-0.91	0.42
566+50	45420	1-yr	1,670	965.83	3.53	964.82	3.99	-1.01	0.46
566+50	45420	1.5-yr	1,761	966.03	3.6	965	4.08	-1.03	0.48
566+50	45420	2-yr	2,047	966.64	3.7	965.56	4.32	-1.08	0.62
566+50	45420	5-yr	3,336	968.43	3.54	967.61	4.61	-0.82	1.07
566+50	45420	10-yr	4,375	969.4	3.51	968.67	4.58	-0.73	1.07
566+50	45420	50-yr	7,239	972.5	2.98	972.17	3.64	-0.33	0.66
566+50	45420	100-yr	8,721	973.68	2.98	973.41	3.63	-0.27	0.65
567+00	45370	Avg Annual	134	959.79	1.3	959.37	1.61	-0.42	0.31
567+00	45370	0.5-yr	1,422	965.08	3.65	964.17	4.22	-0.91	0.57
567+00	45370	1-yr	1,670	965.69	3.81	964.69	4.48	-1	0.67
567+00	45370	1.5-yr	1,761	965.9	3.86	964.87	4.57	-1.03	0.71
567+00	45370	2-yr	2,047	966.51	3.95	965.43	4.77	-1.08	0.82
567+00	45370	5-yr	3,336	968.35	3.62	967.5	4.89	-0.85	1.27
567+00	45370	10-yr	4,375	969.35	3.47	968.59	4.74	-0.76	1.27
567+00	45370	50-yr	7,239	972.48	2.83	972.14	3.61	-0.34	0.78
567+00	45370	100-yr	8,721	973.66	2.81	973.39	3.58	-0.27	0.77
567+50	45320	Avg Annual	134	959.76	1.39	959.35	1.41	-0.41	0.02
567+50	45320	0.5-yr	1,422	964.96	3.6	964.13	4	-0.83	0.40
567+50	45320	1-yr	1,670	965.56	3.79	964.64	4.28	-0.92	0.49
567+50	45320	1.5-yr	1,761	965.76	3.86	964.82	4.37	-0.94	0.51
567+50	45320	2-yr	2,047	966.34	4.03	965.36	4.62	-0.98	0.59
567+50	45320	5-yr	3,336	968.2	3.38	967.38	4.94	-0.82	1.56 MAX
567+50	45320	10-yr	4,375	969.11	2.83	968.51	4.09	-0.6	1.26
567+50	45320	50-yr	7,239	972.2	1.73	971.96	2.22	-0.24	0.49
567+50	45320	100-yr	8,721	973.37	1.64	973.19	2.08	-0.18	0.44
568+00	45270	Avg Annual	134	959.75	1.04	959.35	1.09	-0.4	0.05
568+00	45270	0.5-yr	1,422	964.83	3.77	964.1	3.8	-0.73	0.03
568+00	45270	1-yr	1,670	965.4	4.05	964.6	4.11	-0.8	0.06
568+00	45270	1.5-yr	1,761	965.59	4.15	964.77	4.22	-0.82	0.07
568+00	45270	2-yr	2,047	966.15	4.4	965.31	4.51	-0.84	0.11
568+00	45270	5-yr	3,336	967.97	4.89	967.18	5.49	-0.79	0.60
568+00	45270	10-yr	4,375	968.96	4.33	968.22	5.89	-0.74	1.56 MAX
568+00	45270	50-yr	7,239	972.01	2.54	971.86	3.2	-0.15	0.66
568+00	45270	100-yr	8,721	973.18	2.35	973.08	2.98	-0.1	0.63
568+50	45220	Avg Annual	134	959.73	1.24	959.34	1.06	-0.39	-0.18
568+50	45220	0.5-yr	1,422	964.77	3.69	964.06	3.73	-0.71	0.04
568+50	45220	1-yr	1,670	965.33	3.97	964.56	4.03	-0.77	0.06
568+50	45220	1.5-yr	1,761	965.51	4.06	964.73	4.13	-0.78	0.07
568+50	45220	2-yr	2,047	966.06	4.34	965.27	4.42	-0.79	0.08
568+50	45220	5-yr	3,336	967.81	5.11	967.12	5.34	-0.69	0.23
568+50	45220	10-yr	4,375	968.79	5.63	968.12	5.95	-0.67	0.32
568+50	45220	50-yr	7,239	972.1	5.32	971.83	5.56	-0.27	0.24
568+50	45220	100-yr	8,721	973.29	5.43	973.07	5.7	-0.22	0.27

Table B-1									
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence									
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)	
Const Sta	River Sta	Profile	Q (cfs)	El. (ft.)	V (fps)	El. (ft)	V (fps)	Δ El	MAX??
569+00	45170	Avg Annual	134	959.68	1.65	959.33	1.11	-0.35	-0.54
569+00	45170	0.5-yr	1,422	964.66	4.02	964.02	3.7	-0.64	-0.32
569+00	45170	1-yr	1,670	965.21	4.28	964.51	4	-0.7	-0.28
569+00	45170	1.5-yr	1,761	965.39	4.36	964.68	4.1	-0.71	-0.26
569+00	45170	2-yr	2,047	965.94	4.55	965.22	4.38	-0.72	-0.17
569+00	45170	5-yr	3,336	967.73	5	967.07	5.13	-0.66	0.13
569+00	45170	10-yr	4,375	968.72	5.39	968.09	5.58	-0.63	0.19
569+00	45170	50-yr	7,239	972.05	5.02	971.82	5.03	-0.23	0.01
569+00	45170	100-yr	8,721	973.24	5.15	973.07	5.19	-0.17	0.04
569+50	45120	Avg Annual	134	959.59	2.07	959.29	1.51	-0.3	-0.56
569+50	45120	0.5-yr	1,422	964.48	4.41	963.87	4.35	-0.61	-0.06
569+50	45120	1-yr	1,670	965.03	4.6	964.35	4.68	-0.68	0.08
569+50	45120	1.5-yr	1,761	965.22	4.62	964.52	4.78	-0.7	0.16
569+50	45120	2-yr	2,047	965.8	4.64	965.04	5.07	-0.76	0.43
569+50	45120	5-yr	3,336	967.63	4.8	966.89	5.69	-0.74	0.89
569+50	45120	10-yr	4,375	968.62	5.17	967.94	6.01	-0.68	0.84
569+50	45120	50-yr	7,239	972.02	4.53	971.76	5.23	-0.26	0.70
569+50	45120	100-yr	8,721	973.22	4.61	973.02	5.33	-0.2	0.72
570+00	45070	Avg Annual	134	959.59	1.12	959.28	1.35	-0.31	0.23
570+00	45070	0.5-yr	1,422	964.47	3.45	963.85	3.93	-0.62	0.48
570+00	45070	1-yr	1,670	965.01	3.72	964.33	4.24	-0.68	0.52
570+00	45070	1.5-yr	1,761	965.19	3.82	964.5	4.35	-0.69	0.53
570+00	45070	2-yr	2,047	965.74	4.07	965.01	4.64	-0.73	0.57
570+00	45070	5-yr	3,336	967.49	4.78	966.81	5.55	-0.68	0.77
570+00	45070	10-yr	4,375	968.47	5.23	967.82	6.03	-0.65	0.80
570+00	45070	50-yr	7,239	971.87	5.1	971.65	5.54	-0.22	0.44
570+00	45070	100-yr	8,721	973.07	5.25	972.9	5.69	-0.17	0.44
570+50	45020	Avg Annual	134	959.55	1.51	959.18	2.22	-0.37	0.71
570+50	45020	0.5-yr	1,422	964.34	3.92	963.72	4.4	-0.62	0.48
570+50	45020	1-yr	1,670	964.87	4.19	964.19	4.7	-0.68	0.51
570+50	45020	1.5-yr	1,761	965.05	4.29	964.36	4.8	-0.69	0.51
570+50	45020	2-yr	2,047	965.59	4.53	964.87	5.08	-0.72	0.55
570+50	45020	5-yr	3,336	967.38	5.03	966.69	5.82	-0.69	0.79
570+50	45020	10-yr	4,375	968.38	5.35	967.74	6.11	-0.64	0.76
570+50	45020	50-yr	7,239	971.84	4.72	971.65	5.15	-0.19	0.43
570+50	45020	100-yr	8,721	973.06	4.72	972.92	5.13	-0.14	0.41
571+00	44970	Avg Annual	134	959.54	1.15	959.22	0.87	-0.32	-0.28
571+00	44970	0.5-yr	1,422	964.3	3.56	963.78	3.21	-0.52	-0.35
571+00	44970	1-yr	1,670	964.83	3.85	964.25	3.5	-0.58	-0.35
571+00	44970	1.5-yr	1,761	965	3.95	964.42	3.59	-0.58	-0.36
571+00	44970	2-yr	2,047	965.53	4.22	964.93	3.86	-0.6	-0.36
571+00	44970	5-yr	3,336	967.27	4.98	966.72	4.78	-0.55	-0.20
571+00	44970	10-yr	4,375	968.26	5.3	967.74	5.25	-0.52	-0.05
571+00	44970	50-yr	7,239	971.77	4.67	971.62	4.75	-0.15	0.08
571+00	44970	100-yr	8,721	972.99	4.67	972.88	4.82	-0.11	0.15
571+50	44920	Avg Annual	134	959.51	1.34	959.19	1.25	-0.32	-0.09
571+50	44920	0.5-yr	1,422	964.23	3.68	963.69	3.7	-0.54	0.02
571+50	44920	1-yr	1,670	964.74	3.97	964.15	3.99	-0.59	0.02
571+50	44920	1.5-yr	1,761	964.92	4.08	964.32	4.09	-0.6	0.01
571+50	44920	2-yr	2,047	965.43	4.38	964.81	4.38	-0.62	0.00
571+50	44920	5-yr	3,336	967.04	5.55	966.53	5.48	-0.51	-0.07
571+50	44920	10-yr	4,375	967.93	6.21	967.47	6.19	-0.46	-0.02
571+50	44920	50-yr	7,239	971.56	5.53	971.43	5.58	-0.13	0.05
571+50	44920	100-yr	8,721	972.81	5.5	972.72	5.64	-0.09	0.14

Table B-1									
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence									
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)	
Const Sta	River Sta	Profile	Q (cfs)	El. (ft.)	V (fps)	El. (ft)	V (fps)	Δ El	MAX??
572+00	44870	Avg Annual	134	959.48	1.16	959.17	1.35	-0.31	0.19
572+00	44870	0.5-yr	1,422	964.16	3.56	963.65	3.67	-0.51	0.11
572+00	44870	1-yr	1,670	964.67	3.83	964.11	3.96	-0.56	0.13
572+00	44870	1.5-yr	1,761	964.84	3.93	964.27	4.06	-0.57	0.13
572+00	44870	2-yr	2,047	965.35	4.21	964.76	4.35	-0.59	0.14
572+00	44870	5-yr	3,336	966.95	5.18	966.45	5.44	-0.5	0.26
572+00	44870	10-yr	4,375	967.86	5.62	967.4	6.05	-0.46	0.43
572+00	44870	50-yr	7,239	971.65	3.95	971.5	4.76	-0.15	0.81
572+00	44870	100-yr	8,721	972.94	3.34	972.83	4.22	-0.11	0.88
572+50	44820	Avg Annual	134	959.41	1.67	959.12	1.75	-0.29	0.08
572+50	44820	0.5-yr	1,422	963.97	4.09	963.55	4.09	-0.42	0.00
572+50	44820	1-yr	1,670	964.47	4.34	964	4.39	-0.47	0.05
572+50	44820	1.5-yr	1,761	964.64	4.44	964.16	4.48	-0.48	0.04
572+50	44820	2-yr	2,047	965.12	4.72	964.64	4.76	-0.48	0.04
572+50	44820	5-yr	3,336	966.64	5.76	966.28	5.85	-0.36	0.09
572+50	44820	10-yr	4,375	967.54	6.23	967.21	6.46	-0.33	0.23
572+50	44820	50-yr	7,239	971.54	4.34	971.43	4.97	-0.11	0.63
572+50	44820	100-yr	8,721	972.88	3.63	972.79	4.34	-0.09	0.71
573+00	44770	Avg Annual	134	959.33	1.87	959.06	1.84	-0.27	-0.03
573+00	44770	0.5-yr	1,422	963.78	4.38	963.42	4.52	-0.36	0.14
573+00	44770	1-yr	1,670	964.26	4.67	963.85	4.87	-0.41	0.20
573+00	44770	1.5-yr	1,761	964.42	4.77	964	4.99	-0.42	0.22
573+00	44770	2-yr	2,047	964.89	5.04	964.46	5.32	-0.43	0.28
573+00	44770	5-yr	3,336	966.43	5.88	966.07	6.4	-0.36	0.52
573+00	44770	10-yr	4,375	967.39	6.05	967.08	6.71	-0.31	0.66
573+00	44770	50-yr	7,239	971.53	3.85	971.45	4.53	-0.08	0.68
573+00	44770	100-yr	8,721	972.86	3.26	972.8	3.96	-0.06	0.70
573+50	44720	Avg Annual	134	959.14	2.69	959.01	1.73	-0.13	-0.96
573+50	44720	0.5-yr	1,422	963.64	4.35	963.4	4.02	-0.24	-0.33
573+50	44720	1-yr	1,670	964.1	4.65	963.84	4.33	-0.26	-0.32
573+50	44720	1.5-yr	1,761	964.25	4.75	963.99	4.44	-0.26	-0.31
573+50	44720	2-yr	2,047	964.73	4.92	964.45	4.72	-0.28	-0.20
573+50	44720	5-yr	3,336	966.36	5.16	966.13	5.3	-0.23	0.14
573+50	44720	10-yr	4,375	967.33	5.22	967.14	5.53	-0.19	0.31
573+50	44720	50-yr	7,239	971.52	3.45	971.45	4.05	-0.07	0.60
573+50	44720	100-yr	8,721	972.85	3.08	972.8	3.69	-0.05	0.61
574+00	44670	Avg Annual	134	959.1	1.18	959.03	0.77	-0.07	-0.41
574+00	44670	0.5-yr	1,422	963.61	3.37	963.44	3.03	-0.17	-0.34
574+00	44670	1-yr	1,670	964.05	3.67	963.88	3.32	-0.17	-0.35
574+00	44670	1.5-yr	1,761	964.2	3.78	964.04	3.42	-0.16	-0.36
574+00	44670	2-yr	2,047	964.67	3.98	964.5	3.69	-0.17	-0.29
574+00	44670	5-yr	3,336	966.33	4.05	966.18	4.26	-0.15	0.21
574+00	44670	10-yr	4,375	967.32	4.06	967.19	4.5	-0.13	0.44
574+00	44670	50-yr	7,239	971.51	2.69	971.46	3.51	-0.05	0.82
574+00	44670	100-yr	8,721	972.85	2.41	972.8	3.27	-0.05	0.86
574+50	44620	Avg Annual	134	959.08	0.82	959.03	0.64	-0.05	-0.18
574+50	44620	0.5-yr	1,422	963.55	2.88	963.44	2.76	-0.11	-0.12
574+50	44620	1-yr	1,670	964.01	3.02	963.89	2.99	-0.12	-0.03
574+50	44620	1.5-yr	1,761	964.16	3.06	964.04	3.06	-0.12	0.00
574+50	44620	2-yr	2,047	964.64	3.17	964.52	3.26	-0.12	0.09
574+50	44620	5-yr	3,336	966.31	3.14	966.21	3.57	-0.1	0.43
574+50	44620	10-yr	4,375	967.31	3.13	967.22	3.73	-0.09	0.60
574+50	44620	50-yr	7,239	971.51	2.15	971.48	2.89	-0.03	0.74
574+50	44620	100-yr	8,721	972.84	1.97	972.81	2.73	-0.03	0.76

Table B-1									
Summary of HEC-RAS Predictions for Changes in Water Surface Elevations for Phase 3 from Dawes Ave. to the Confluence									
Stationing		Storm		Existing		Phase 3 Design		Change (Design - Existing)	
Const Sta	River Sta	Profile	Q (cfs)	EI. (ft.)	V (fps)	EI. (ft)	V (fps)	Δ EI	MAX??
575+00	44570	Avg Annual	134	959.05	0.97	959.03	0.68	-0.02	-0.29
575+00	44570	0.5-yr	1,422	963.42	3.45	963.42	2.85	0.00 MAX	-0.60
575+00	44570	1-yr	1,670	963.88	3.53	963.87	3.05	-0.01	-0.48
575+00	44570	1.5-yr	1,761	964.04	3.55	964.02	3.11	-0.02	-0.44
575+00	44570	2-yr	2,047	964.52	3.64	964.5	3.29	-0.02	-0.35
575+00	44570	5-yr	3,336	966.2	3.79	966.16	3.78	-0.04	-0.01
575+00	44570	10-yr	4,375	967.23	3.68	967.18	3.94	-0.05	0.26
575+00	44570	50-yr	7,239	971.5	2.38	971.47	2.98	-0.03	0.60
575+00	44570	100-yr	8,721	972.83	2.16	972.8	2.81	-0.03	0.65

Figure B-1
Dawes Avenue to the Confluence
100-Yr Storm Event (8,721 CFS)
Existing vs. Design

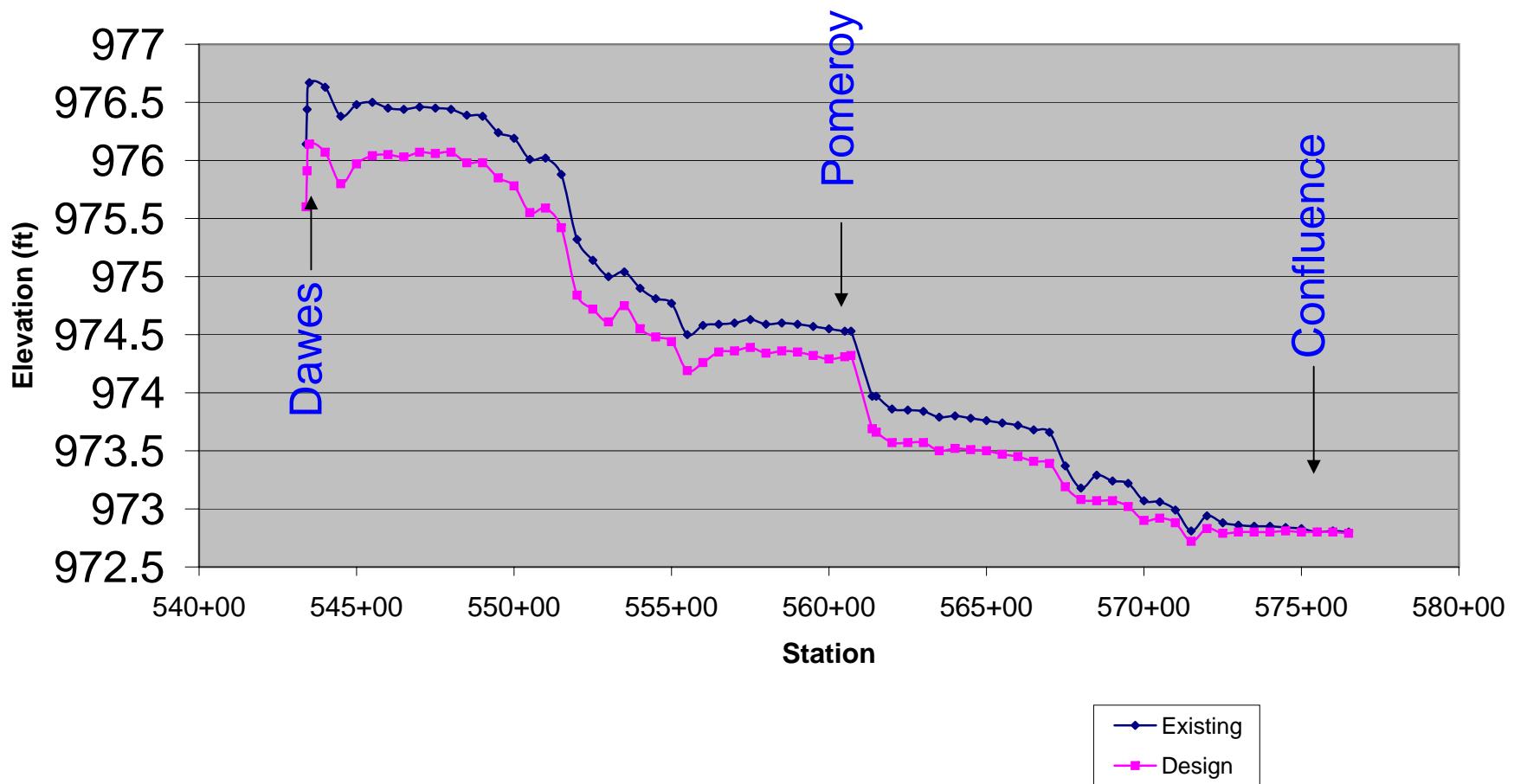


Figure B-2
Dawes Avenue to the Confluence
50-Yr Storm Event (7,239 CFS)
Existing vs. Design

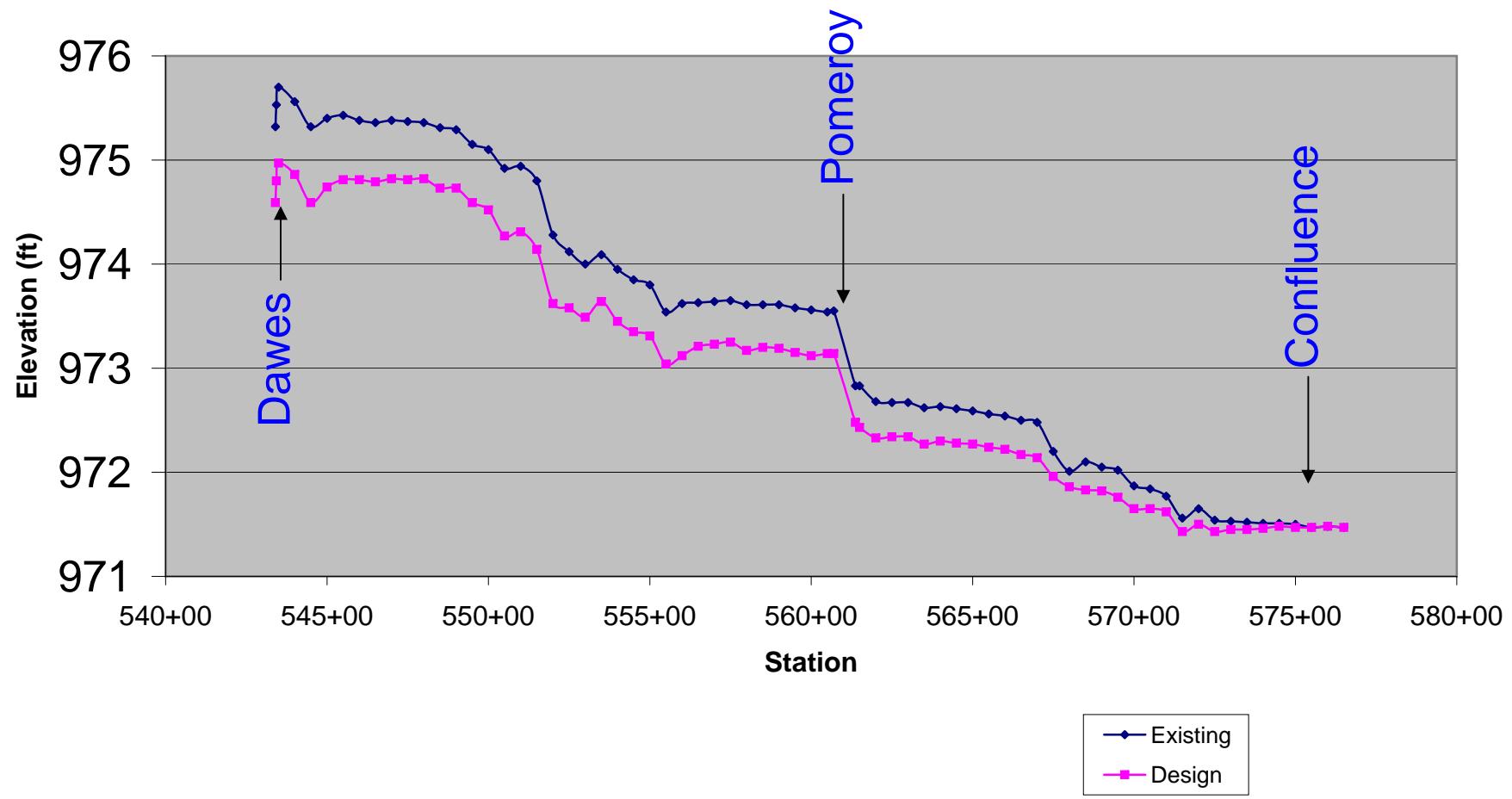


Figure B-3
Dawes Avenue to the Confluence
10-Yr Storm Event (4,375 CFS)
Existing vs. Design

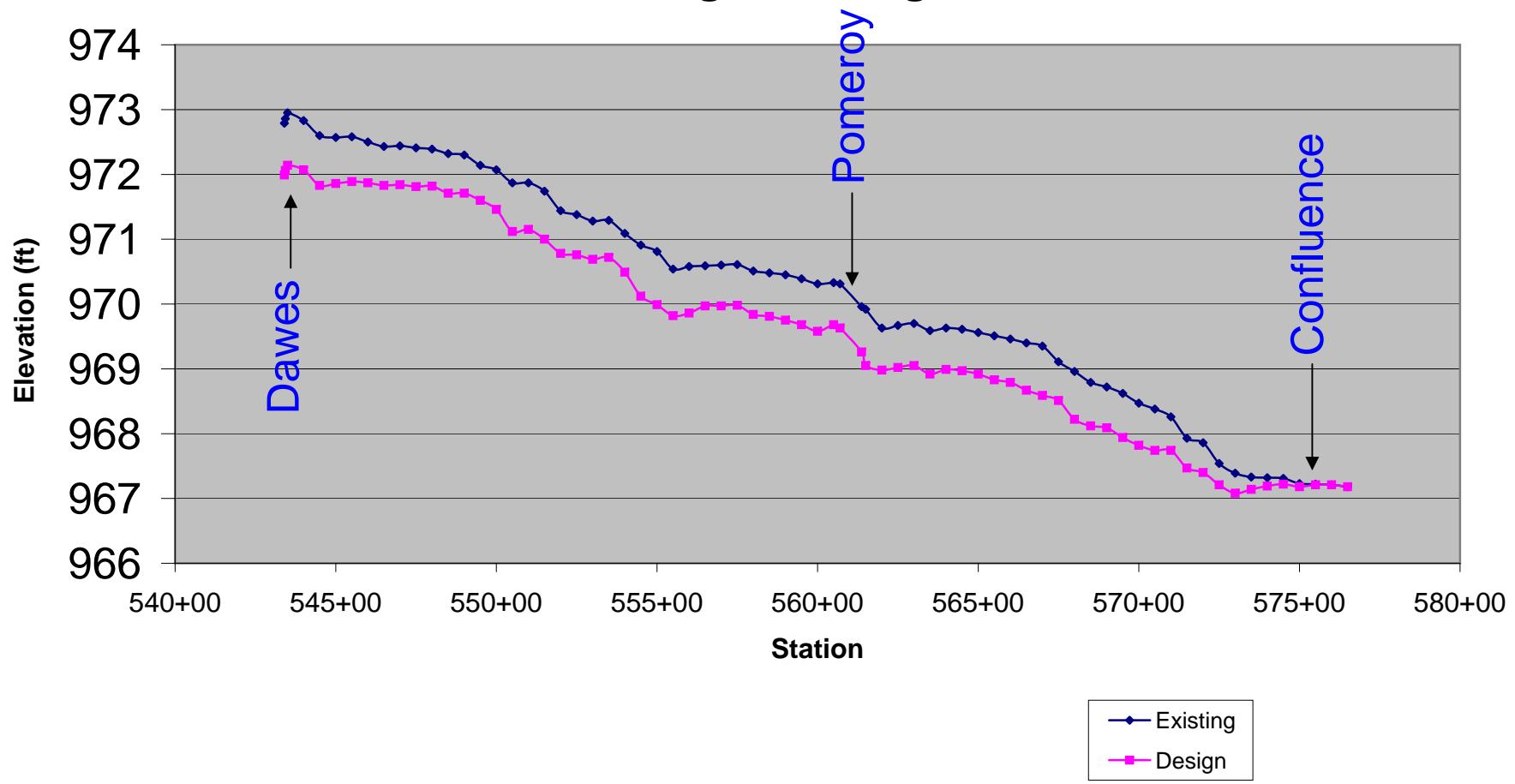


Figure B-4
Dawes Avenue to the Confluence
5-Yr Storm Event (3,336 CFS)
Existing vs. Design

