

DS #: 4501

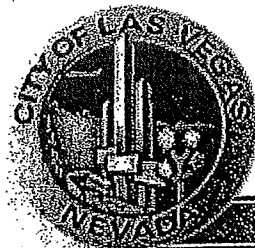
APN: 126-13-110-016

PROJECT: CLIFF'S EDGE PODS 201 & 203 - UNIT 5
(AKA CAMBRIDGE VILLAS / CAMBRIDGE CROSSING)

SUBMITTAL: 3RD

SCANNED BY/DATE: _____

CHECKED BY/DATE: _____





AS

CITY OF LAS VEGAS			DATE:
INTER-OFFICE MEMORANDUM			February 17, 2011
TO: Land Development Services Department of Public Works			FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT: Drainage Study for: Cliff's Edge PODs 201 & 203 – Unit 5 (aka Cambridge Villas / Cambridge Crossing)			COPIES TO: VTN Nevada
Cross Streets:	SEC of Grand Teton Drive & Puli Road		KB Homes
File Number:	F:\Depot\DSMemos\DS4501B.doc		Bart Anderson, P.E., DevCo
Parcel Number:	126-13-110-016		CCRFCD
Zoning Action:	TMP-39088 & WVR-39089		CCPW
FEMA Flood Zone	YES	NO X	
Proposed Storm Drain	YES	NO X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1 st Submittal	10/28/2010	11/10/2010	Not Approved	\$400.00	156512: \$400
2 nd Submittal & Supplement	1/25/2011 & 2/9/2011	2/17/2011	See Comments Below	\$400.00	161424: \$400
			TOTAL FEES (LDDRS):	\$800.00	----

REMARKS:

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
X	is conditionally approved subject to Clark County Public Works Department concurrence.

1. **This drainage study is acceptable in concept**; however, *City of Las Vegas* will not formally accept the study until the *Clark County Regional Flood Control District* (CCRFCD) has issued a letter of concurrence. The Engineer should contact the CCRFCD to confirm that they have begun their review.
2. The site is also adjacent to the west half of Puli Road which is a *Clark County* right-of-way. The engineer must coordinate with *Clark County Public Works* and incorporate any concerns for boundary conditions. CCPW concurrence is required prior to final acceptance of the study.
3. **Sheet G1:** It appears that at the west end of *Bayview House Avenue*, there is an existing drainage easement to accept and perpetuate drainage from Unit 5. Identify the easement and label with recorded document number.
4. **Sheet D1: Section Details 6, 7 & 15:** Provide a minimum of 6"-deep swale in the flow area and a 1'-bench adjacent to the property wall.

5. Private streets must be public drainage easements. Provide a note on the grading plans "Note: All Private streets are P.U.E., Public Sewer Easements and Public Drainage Easements to be privately maintained by the HOA".

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see <http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

NOTES: This drainage study assumes that the project will be constructed in one phase. If improvement plans are submitted to break the project into separate phases, a drainage study update will be required for each phase addressing the interim condition.

Any proposed public drainage easement within a residential subdivision must also be dedicated as a "COMMON LOT" to be owned and maintained by the Homeowners Association.

END OF REMARKS
ays

T/R/S: T19S/R59E/13
AREA F-13

Post-it® Fax Note 7671		Date 2/17/11	# of pages 2
To Woei Then	From Albert Sung		
Co./Dept. VTN	Co. CLV		
Phone #	Phone # 229-2001		
Fax # 362-2597	Fax #		

TRANSACTION REPORT

P. 01

FEB-17-2011 THU 01:37 PM

FOR: CITY OF LAS VEGAS

7023828551

SEND

DATE	START	RECEIVER	TX TIME	PAGES	TYPE	NOTE	M#	DP
FEB-17	01:36 PM	3622597	56"	2	FAX TX	OK	646	

TOTAL : 56S PAGES: 2

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END OF REMARKS
ays

T/R/S: T19S/R59E/13
AREA F-13

**SUPPLEMENT #1 TO ADDENDUM # 1
TO UPDATE #3 TO
TECHNICAL DRAINAGE STUDY**

FOR

**CLIFF'S EDGE
PODS 201 & 203 – UNIT 5
(aka Cambridge Villas/Cambridge Crossing)**

CITY OF LAS VEGAS

W.O. # 6335-5

Prepared for:
KB HOME

Submitted to:
CITY OF LAS VEGAS

DEPARTMENT OF PUBLIC WORKS





Date 2/9/2011
W.O. # 6335-5

City of Las Vegas
Department of Public Services
731 South Fourth Street
Las Vegas, Nevada 89101

Attention: Mr. Albert Sung, P.E.

SUBJECT: SUPPLEMENT #1 TO ADDENDUM #1 TO UPDATE #3 for THE
TECHNICAL DRAINAGE STUDY FOR: CLIFF'S EDGE PODS 201 & 203
UNIT – 5 (aka Cambridge Villas/Cambridge Crossing)

Mr. Sung

This Supplement #1 to Addendum #1 to the Update # 3 for Technical Drainage Study for Cliffs Edge PODS 201 & 203 UNIT – 5 is being submitted to the City of Las Vegas, Department of Public Works to address the riprap proposed along Puli Road in the previous submittal dated 1/25/2011.

A meeting was held on 2/7/2011 with City of Las Vegas Flood Control staff to discuss the concept of subdividing basin EXI-14 to create a more accurate determination of the flow impacting the wall at various locations. City of Las Vegas agreed to the concept of subdividing the basins using area ratio method based on the total flow of basin EXI-14. The flow calculations and subbasin delineations are included in the Appendix. By subdividing the offsite basin, flow impacting Puli Road at specific location was determined and incorporated into the HEC-RAS analysis included with this supplement. The HEC-RAS result shows non erosive velocity from River Station 1003.6 to 400 and 150 to 0. For the sections where erosive velocity are apparent (River Station 350 to 200), riprap protections is proposed.

All pertinent calculations have been revised accordingly and included in the Appendix. The grading plans and detail sheet are also revised to reflect the change and in included in the Appendix.

I hope this addresses your concerns regarding the riprap issue. If there are any questions or any additional information is required, please contact this office.

Respectfully Submitted,

VTN Nevada

Woei Y. Then, P.E.

APPENDIX

**REVISED DRAINAGE BASIN MAP
AND
FLOW CALCULATIONS**

Flow Caluclation by Area Ratio

Pod 201 and 203 - Unit 5 (SUP1 to AD1)

WO# 6335-5

<i>Basin From Approved TDS</i>						
Basin Name	Basin Area (ac.)	MDS Basin Name	Flow 100-YR (cfs)	Basin Area (ac)	Ratio ¹	Calculated Flow 100-YR ³ (cfs)
E-14-A	3.00	EXI-14	127	51.73	0.06	7.4
E-14-B	6.25	EXI-14	127	51.73	0.12	15.3
E-14-C	27.72	EXI-14	127	51.73	0.54	68.1
E-14-D	5.38	EXI-14	127	51.73	0.10	13.2
E-14-E	9.38	EXI-14	127	51.73	0.18	23.0

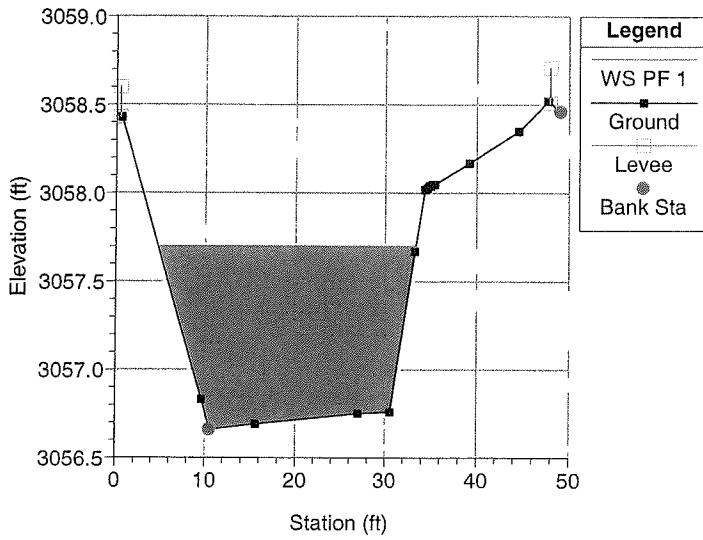
NOTE: Ratio¹ = (Basin Area)/(Basin Area from Approved Study)
 Calculated Flow 100-YR³ = (Flow 100-YR from Approved MDS) x (Ratio¹)

**REVISED HYDRAULIC
CALCULATIONS
(HEC-RAS)**

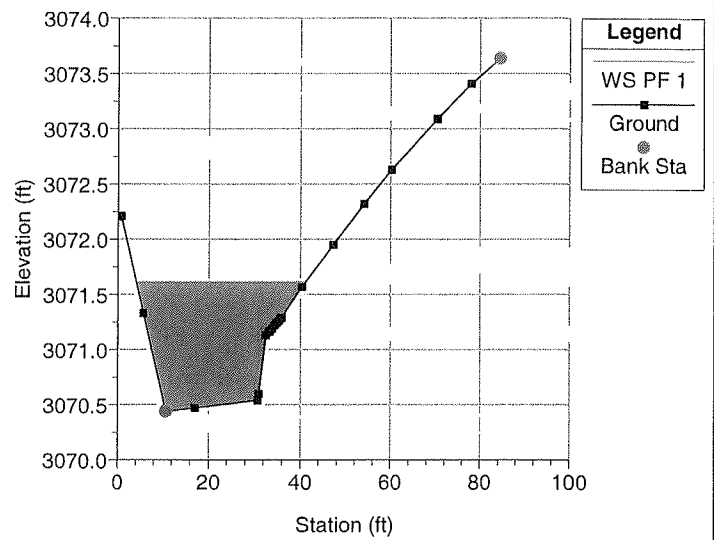
HEC-RAS Plan: Plan 07 River: Puli Reach: PULI-HEC-RAS Profile: PF 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Max Chl Dpth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
PULI-HEC-RAS	1003.6	PF 1	15.30	3070.44	3071.61	1.17	3070.75	3071.62	0.000098	0.53	29.84	36.94	0.10
PULI-HEC-RAS	950	PF 1	15.30	3070.94	3071.60	0.66		3071.61	0.000290	0.67	23.35	45.15	0.16
PULI-HEC-RAS	900	PF 1	15.30	3071.18	3071.46	0.28	3071.46	3071.55	0.014405	2.49	6.20	30.57	0.97
PULI-HEC-RAS	850	PF 1	15.30	3068.90	3070.46	1.56	3069.83	3070.47	0.000159	0.55	27.60	42.62	0.12
PULI-HEC-RAS	800	PF 1	15.30	3069.56	3070.33	0.77	3070.33	3070.43	0.016075	2.54	6.06	31.30	1.01
PULI-HEC-RAS	750	PF 1	15.30	3066.37	3068.67	2.30	3067.03	3068.67	0.000038	0.48	31.67	20.01	0.07
PULI-HEC-RAS	700	PF 1	15.30	3068.28	3068.55	0.27	3068.55	3068.66	0.015312	2.55	6.04	30.02	0.99
PULI-HEC-RAS	650	PF 1	15.30	3067.25	3067.52	0.27	3067.56	3067.69	0.024546	3.35	4.63	22.04	1.27
PULI-HEC-RAS	600	PF 1	15.30	3065.64	3066.07	0.43	3066.16	3066.35	0.029186	4.20	3.64	13.65	1.43
PULI-HEC-RAS	550.01	PF 1	15.30	3064.94	3065.31	0.36	3065.31	3065.39	0.016315	2.39	6.44	36.89	1.00
PULI-HEC-RAS	500	PF 1	15.30	3064.03	3064.32	0.29	3064.34	3064.47	0.020276	3.15	4.91	22.17	1.16
PULI-HEC-RAS	450	PF 1	15.30	3062.96	3063.24	0.28	3063.27	3063.40	0.022440	3.25	4.76	22.08	1.22
PULI-HEC-RAS	400	PF 1	83.40	3061.89	3062.52	0.63	3062.52	3062.74	0.012122	3.79	22.24	51.43	1.01
PULI-HEC-RAS	350	PF 1	83.40	3060.81	3061.31	0.50	3061.45	3061.80	0.031245	5.65	15.11	39.33	1.58
PULI-HEC-RAS	300	PF 1	83.40	3059.74	3060.56	0.82	3060.57	3060.92	0.010428	4.90	18.02	26.78	1.01
PULI-HEC-RAS	250	PF 1	96.60	3058.67	3059.37	0.70	3059.58	3060.08	0.026029	6.90	14.70	25.70	1.55
PULI-HEC-RAS	200	PF 1	96.60	3057.60	3058.35	0.75	3058.50	3058.93	0.019050	6.25	16.27	26.21	1.35
PULI-HEC-RAS	150	PF 1	96.60	3056.91	3057.99	1.07	3057.80	3058.22	0.004896	4.01	25.12	28.98	0.72
PULI-HEC-RAS	100	PF 1	96.60	3056.66	3057.70	1.04	3057.56	3057.96	0.005647	4.20	23.96	28.65	0.77
PULI-HEC-RAS	50	PF 1	96.60	3056.41	3057.29	0.88	3057.29	3057.58	0.010106	4.42	22.37	36.69	0.98
PULI-HEC-RAS	0	PF 1	96.60	3056.16	3056.80	0.64	3056.69	3056.91	0.005306	2.65	36.71	77.62	0.67

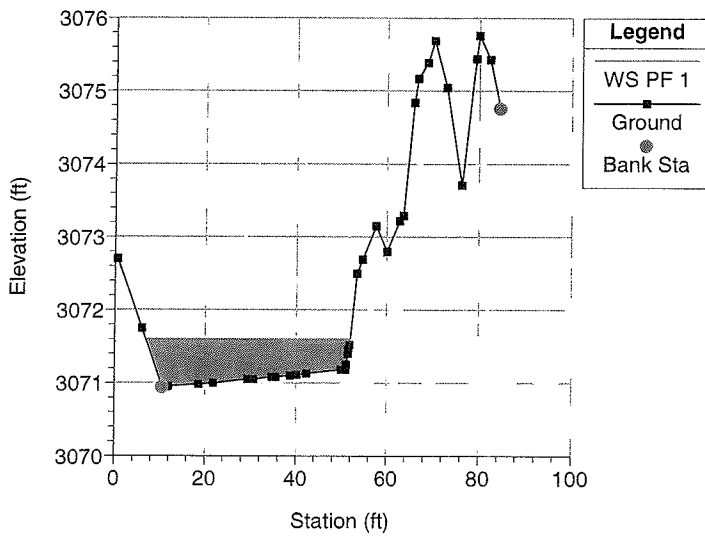
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River = Puli Reach = PULI-HEC-RAS RS = 100



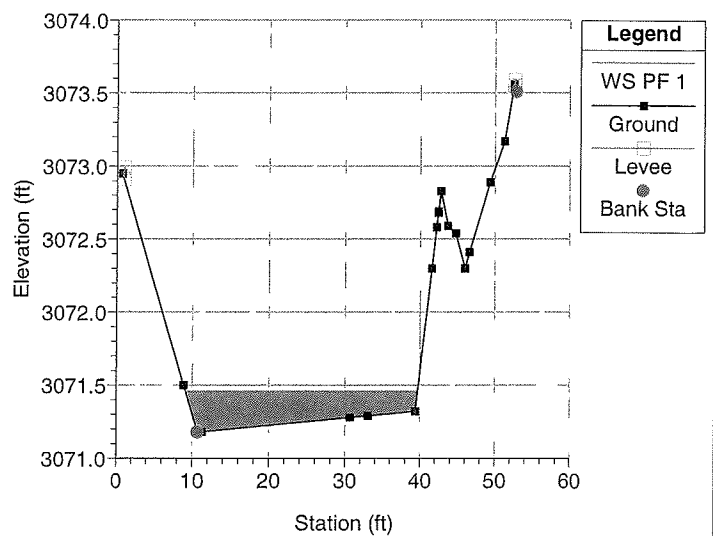
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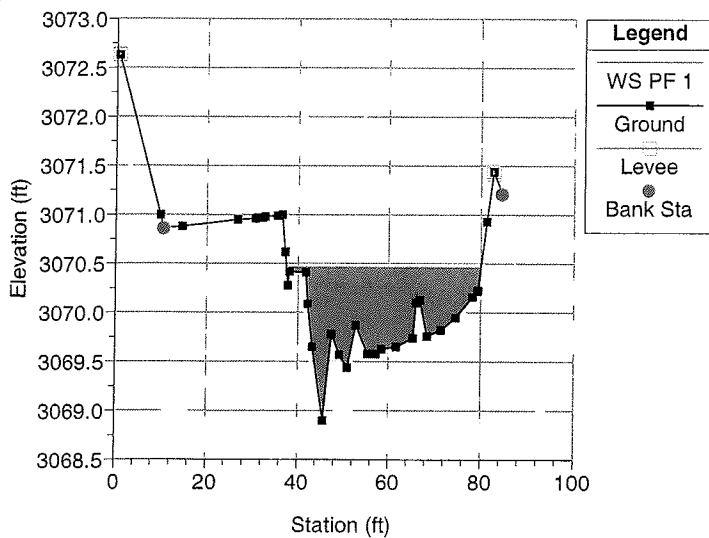
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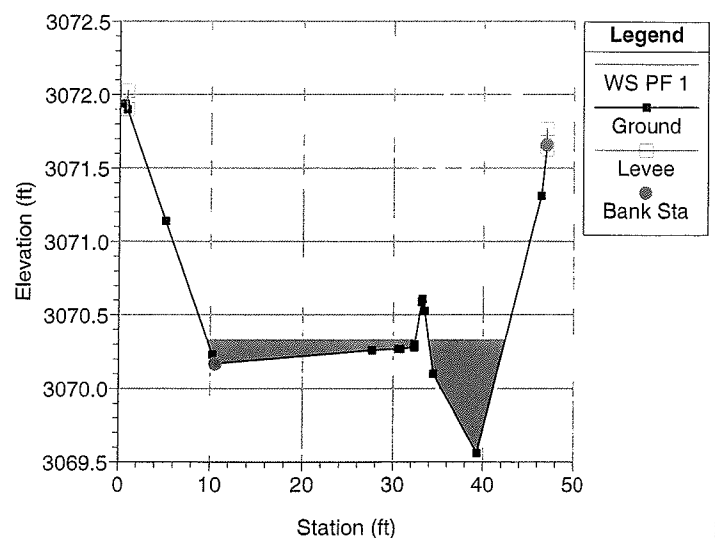
PULI-PL-AD1-SUP1 Plan: Plan 07 2/9/2011
River = Puli Reach = PULI-HEC-RAS RS = 900



PULI-PL-AD1-SUP1 Plan: Plan 07 2/9/2011
River = Puli Reach = PULI-HEC-RAS RS = 850

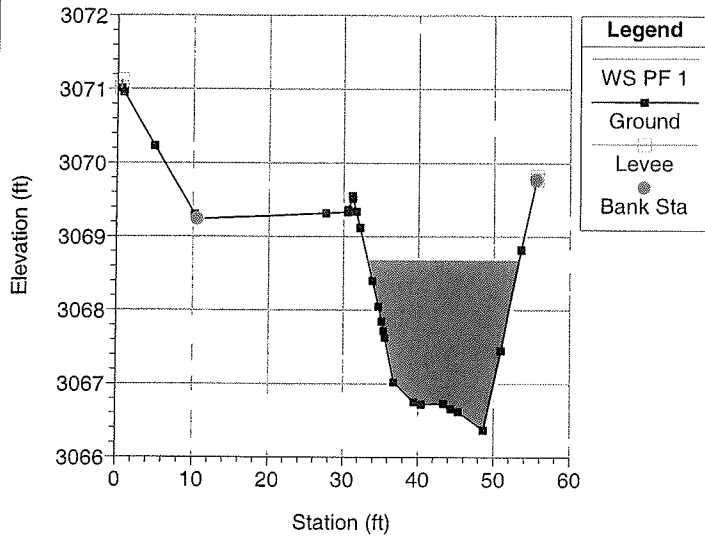


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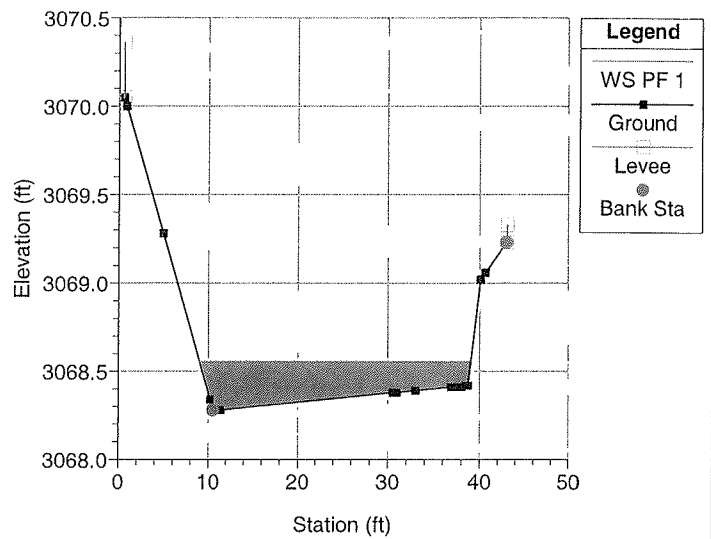
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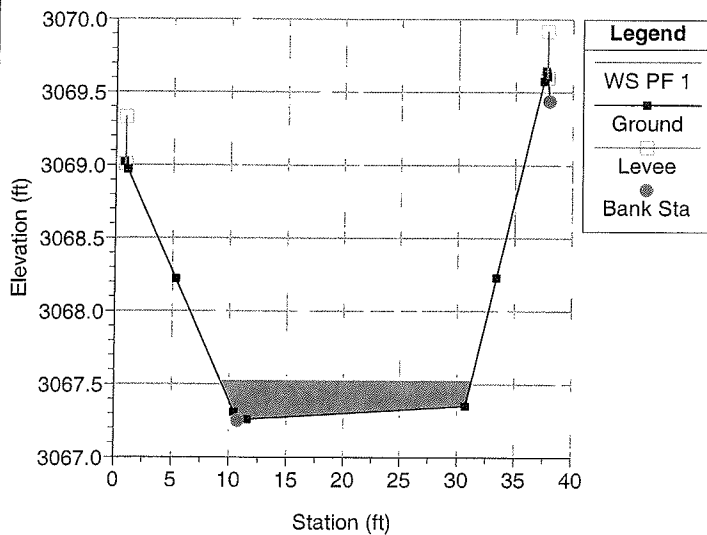
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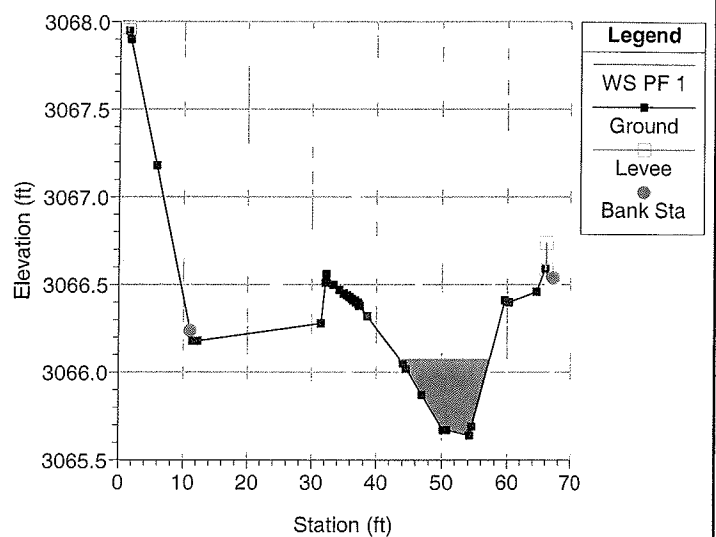
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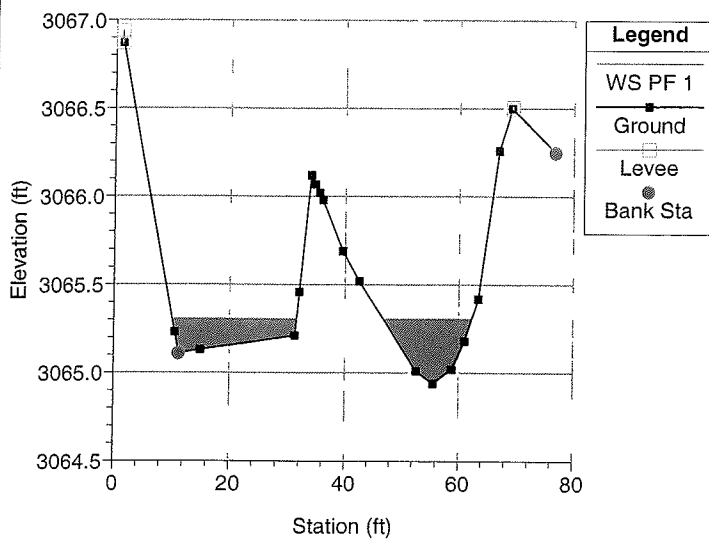
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River = Puli Reach = PULI-HEC-RAS RS = 600



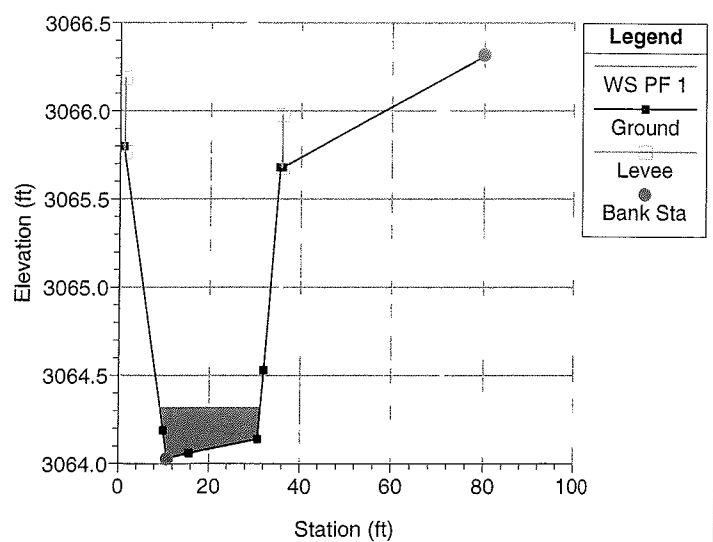
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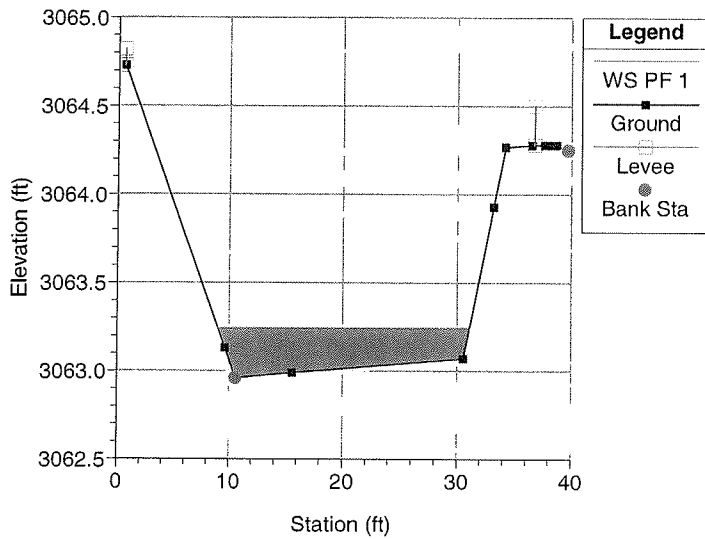
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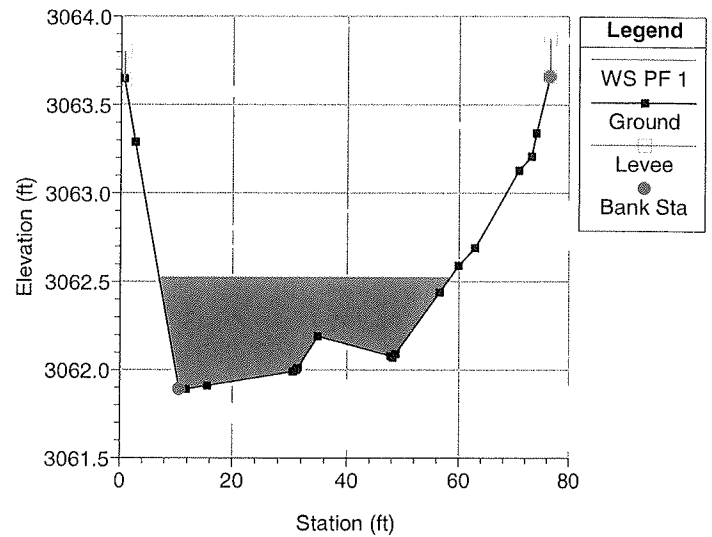
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River = Puli Reach = PULI-HEC-RAS RS = 450



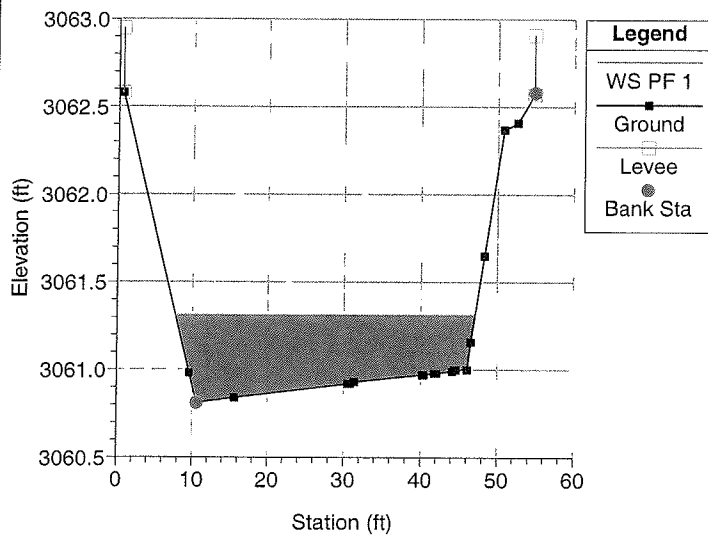
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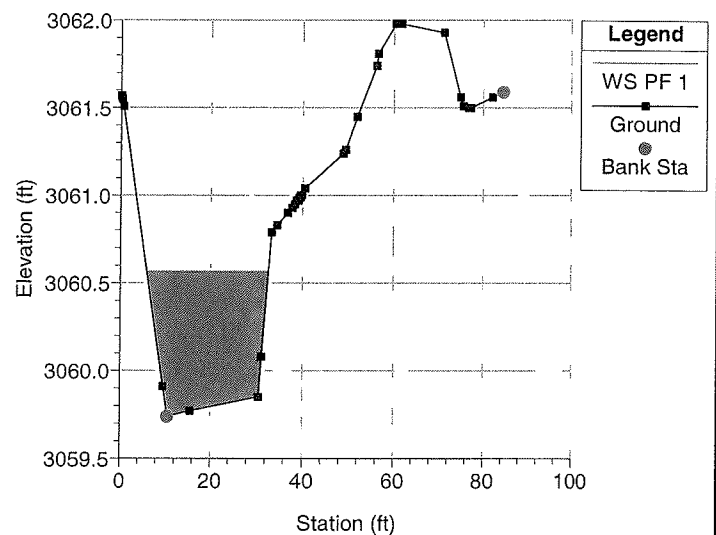
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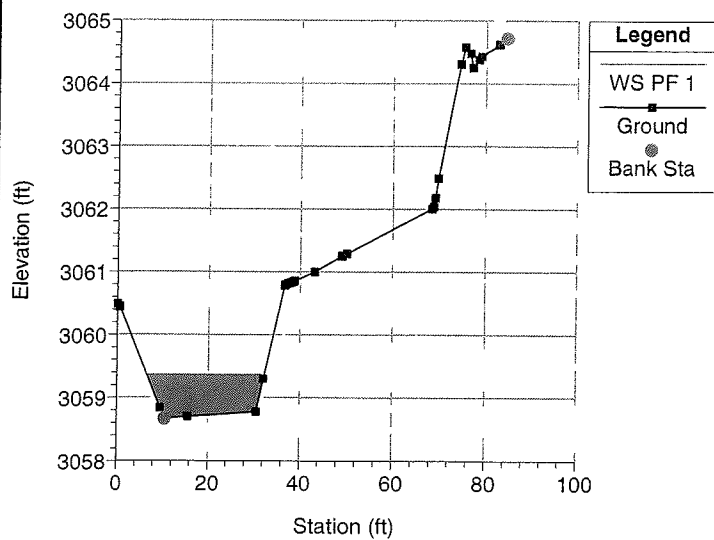
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River = Puli Reach = PULI-HEC-RAS RS = 300



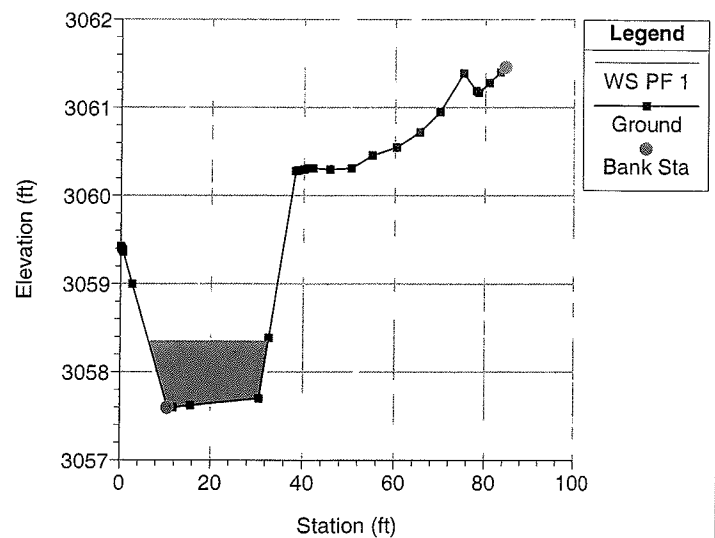
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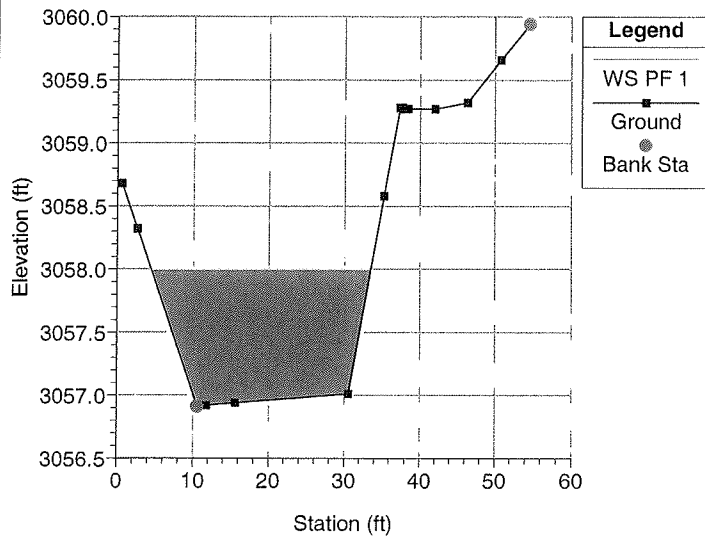
PULI-PL-AD1-SUP1 Plan: Plan 07 2/9/2011

River = Puli Reach = PULI-HEC-RAS RS = 200



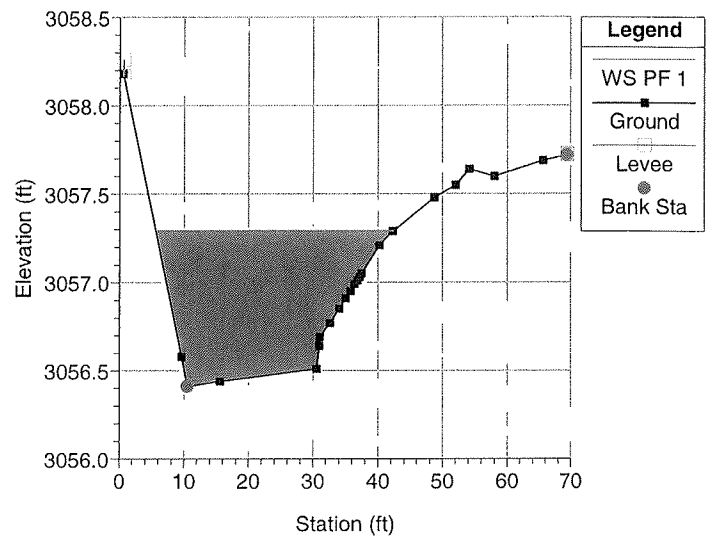
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River = Puli Reach = PULI-HEC-RAS RS = 150



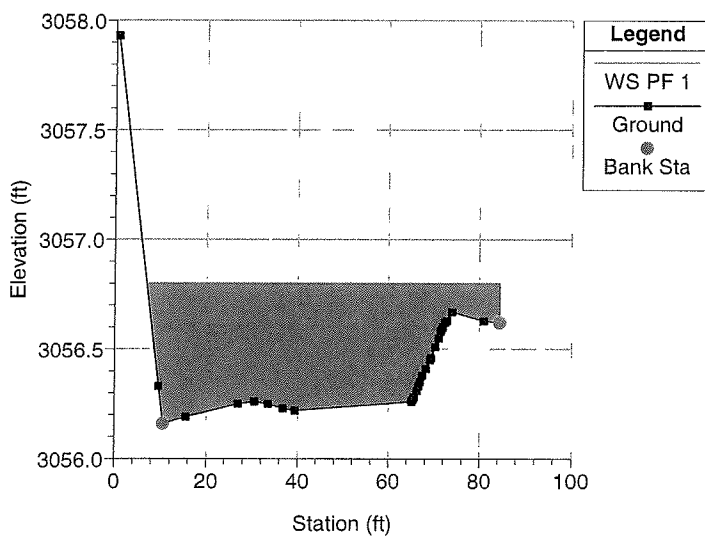
PULI-PL-AD1-SUP1 Plan: Plan 07 2/9/2011

River = Puli Reach = PULI-HEC-RAS RS = 50



PULI-PL-AD1-SUP1 Plan: Plan 07 2/9/2011

River = Puli Reach = PULI-HEC-RAS RS = 0



HEC-RAS Version 4.1.0 Jan 2010
 U.S. Army Corps of Engineers
 Hydrologic Engineering Center
 609 Second Street
 Davis, California

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X  X  XXXXXX  XXXX  XXXX  XX  XXXX
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PROJECT DATA

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 Project File : PULI-PL-AD1-SUP1.prj
 Run Date and Time: 2/9/2011 8:26:01 AM

Project in English units

PLAN DATA

Plan Title: Plan 07
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Geometry Title: Puli Rd FG + 20ft
 Geometry File : j:\6335- CAMBRIDGE\Update3\SUP1 to AD1 to UP\HEC-RAS\PULI-PL-AD1-SUP1.g06

Flow Title : EX 100YR FLOW
 Flow File : j:\6335- CAMBRIDGE\Update3\SUP1 to AD1 to UP\HEC-RAS\PULI-PL-AD1-SUP1.f01

Plan Summary Information:

Number of: Cross Sections = 21 Multiple Openings = 0
 Culverts = 0 Inline Structures = 0
 Bridges = 0 Lateral Structures = 0

Computational Information

Water surface calculation tolerance = 0.01
 Critical depth calculation tolerance = 0.01
 Maximum number of iterations = 20
 Maximum difference tolerance = 0.3
 Flow tolerance factor = 0.001

Computation Options

Critical depth computed only where necessary
 Conveyance Calculation Method: At breaks in n values only
 Friction Slope Method: Average Conveyance
 Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: EX 100YR FLOW
 Flow File : j:\6335- CAMBRIDGE\Update3\SUP1 to AD1 to UP\HEC-RAS\PULI-PL-AD1-SUP1.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Puli	PULI-HEC-RAS	1003.6	15.3
Puli	PULI-HEC-RAS	400	83.4
Puli	PULI-HEC-RAS	250	96.6

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Puli	PULI-HEC-RAS	PF 1	Normal S = 0.0032	Normal S = 0.0053

GEOMETRY DATA

Geometry Title: Puli Rd FG + 20ft
 Geometry File : j:\6335- CAMBRIDGE\Update3\SUP1 to AD1 to UP\HEC-RAS\PULI-PL-AD1-SUP1.g06

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 1003.6

INPUT

Description:

Station Elevation Data		num=	22	Sta		Elev	Sta	Elev	Sta	Elev
.7799988	3072.215	760002	3071.33	10.78	3070.44	17.14	3070.47	30.79	3070.54	
30.96	3070.6	32.55	3071.13	33.26	3071.16	33.47	3071.17	33.9	3071.19	
34.43	3071.22	34.88	3071.24	35.27	3071.26	35.61	3071.28	35.92	3071.29	
40.38	3071.57	47.25	3071.95	54.13	3072.32	60.23	3072.63	70.43	3073.09	
78.08	3073.41	84.61	3073.64							

Manning's n Values		num=	3	Sta		n Val	Sta	n Val
.7799988	.025	10.78	.025	84.61	.025			

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.78 84.61 53.6 53.6 53.6 .1 .3

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 950

INPUT

Description:

Station Elevation Data		num=	43						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.5699997	3072.75	980003	3071.75	10.61	3070.94	11.58	3070.94	12.01	3070.95
18.7	3070.98	21.93	3071	29.48	3071.05	30.04	3071.05	30.25	3071.05
30.71	3071.05	34.73	3071.08	35.55	3071.08	38.73	3071.1	40.26	3071.11
42.33	3071.13	50.02	3071.18	50.24	3071.18	50.25	3071.18	50.29	3071.18
50.39	3071.18	50.66	3071.18	50.93	3071.18	51.08	3071.25	51.45	3071.4
51.59	3071.45	51.87	3071.52	53.38	3072.5	54.63	3072.69	57.6	3073.15
60.03	3072.8	62.83	3073.22	63.63	3073.29	65.91	3074.84	66.77	3075.17
68.78	3075.39	70.3	3075.69	72.99	3075.05	76.34	3073.71	79.36	3075.44
79.96	3075.76	82.42	3075.43	84.61	3074.76				

Manning's n Values num= 3
 Sta n Val Sta n Val
 .5699997 .025 10.61 .025 84.61 .025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.61 84.61 50 50 50 .1 .3

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 900

INPUT

Description:

Station Elevation Data		num=	20						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.7200012	3072.958	889999	3071.5	10.72	3071.18	11.31	3071.18	30.72	3071.28
33.1	3071.29	39.4	3071.32	41.57	3072.3	42.22	3072.58	42.44	3072.68
42.46	3072.69	42.78	3072.83	43.69	3072.59	44.79	3072.54	46.05	3072.3
46.65	3072.41	49.36	3072.89	51.25	3073.17	52.55	3073.56	52.86	3073.51

Manning's n Values num= 3
 Sta n Val Sta n Val
 .7200012 .025 10.72 .025 52.86 .025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.72 52.86 50 50 50 .1 .3
 Left Levee Station= .93 Elevation= 3072.99
 Right Levee Station= 52.61 Elevation= 3073.59

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 850

INPUT

Description:

Station Elevation Data		num=	40						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.590004	3072.639	830002	3071	10.59	3070.86	14.68	3070.88	26.78	3070.95
30.59	3070.96	31.08	3070.97	32.2	3070.97	32.75	3070.98	35.45	3070.99
35.83	3070.99	35.86	3070.99	36.51	3071	37.18	3070.62	37.8	3070.28
38.12	3070.42	41.81	3070.41	42.25	3070.09	43.29	3069.65	45.71	3068.9
47.48	3069.78	49.24	3069.57	50.91	3069.44	52.73	3069.87	55.34	3069.58
57.27	3069.58	58.52	3069.63	61.75	3069.65	65.4	3069.74	66.06	3070.1
66.87	3070.13	68.44	3069.76	71.5	3069.82	74.67	3069.95	78.31	3070.16
79.36	3070.22	79.52	3070.23	81.23	3070.93	82.74	3071.44	84.61	3071.21

Manning's n Values num= 3
 Sta n Val Sta n Val
 .590004 .025 10.59 .025 84.61 .025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.59 84.61 50 50 50 .1 .3
 Left Levee Station= .56 Elevation= 3072.64
 Right Levee Station= 82.68 Elevation= 3071.45

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 800

INPUT

Description:

Station Elevation Data		num=	18						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.590004	3071.94	860006	3071.95	120003	3071.14	10.26	3070.23	10.59	3070.17
27.66	3070.26	30.59	3070.27	30.82	3070.27	32.34	3070.28	32.39	3070.3
33.12	3070.59	33.22	3070.61	33.23	3070.61	33.47	3070.53	34.46	3070.1
39.35	3069.56	46.39	3071.31	47.03	3071.66				

Manning's n Values num= 3
 Sta n Val Sta n Val
 .590004 .025 10.59 .025 47.03 .025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.59 47.03 50 50 50 .1 .3
 Left Levee Station= .84 Elevation= 3072.03
 Right Levee Station= 46.98 Elevation= 3071.77

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 750

INPUT

Description:

Station	Elevation	Data	num=	27	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.590004	3071.01	8499985	3070.964	959999	3070.23	10.25	3069.3	10.59	3069.24			
27.65	3069.32	30.59	3069.33	30.66	3069.36	31.23	3069.55	31.29	3069.52			
31.72	3069.34	32.23	3069.12	33.94	3068.4	34.75	3068.05	35.16	3067.85			
35.42	3067.72	35.61	3067.63	36.82	3067.02	39.49	3066.75	40.48	3066.72			
43.44	3066.73	44.4	3066.66	45.34	3066.62	48.65	3066.37	50.95	3067.45			
53.61	3068.82	55.58	3069.77									

Manning's n Values num= 3

Sta	n Val	Sta	n Val
.590004	.025	10.59	.025
55.58	.025		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.59 55.58 50 50 .1 .3
 Left Levee Station= .56 Elevation= 3071.12
 Right Levee Station= 55.68 Elevation= 3069.82

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 700

INPUT

Description:

Station	Elevation	Data	num=	18	Sta	Elev	Sta	Elev	Sta	Elev
.590004	3070.05	8499985	3070.4	959999	3069.28	10.25	3068.34	10.59	3068.28	
11.43	3068.28	30.59	3068.38	30.78	3068.38	30.96	3068.38	33.05	3068.39	
36.96	3068.41	37.77	3068.41	38.05	3068.41	38.5	3068.42	38.76	3068.42	
40.1	3069.02	40.64	3069.06	43.04	3069.23					

Manning's n Values num= 3

Sta	n Val	Sta	n Val
.590004	.025	10.59	.025
43.04	.025		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.59 43.04 50 50 .1 .3
 Left Levee Station= .56 Elevation= 3070.36
 Right Levee Station= 43.04 Elevation= 3069.33

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 650

INPUT

Description:

Station	Elevation	Data	num=	14	Sta	Elev	Sta	Elev	Sta	Elev
.7700043	3069.021	050003	3068.975	330002	3068.22	10.44	3067.31	10.77	3067.25	
11.59	3067.26	30.77	3067.35	33.42	3068.23	37.47	3069.58	37.69	3069.65	
37.73	3069.63	37.74	3069.63	37.79	3069.61	38	3069.44			

Manning's n Values num= 3

Sta	n Val	Sta	n Val
.7700043	.025	10.77	.025
38	.025		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.77 38 50 50 .1 .3
 Left Levee Station= .84 Elevation= 3069.33
 Right Levee Station= 37.8 Elevation= 3069.92

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 600

INPUT

Description:

Station	Elevation	Data	num=	37	Sta	Elev	Sta	Elev	Sta	Elev
1.419998	3067.951	690002	3067.95	790001	3067.18	11.08	3066.24	11.42	3066.18	
12.26	3066.18	31.42	3066.28	32.11	3066.51	32.26	3066.56	33.37	3066.5	
34.31	3066.47	35	3066.45	35.51	3066.44	35.91	3066.43	36.23	3066.42	
36.49	3066.41	36.71	3066.41	36.89	3066.4	37.05	3066.4	37.18	3066.4	
37.29	3066.39	37.39	3066.38	37.47	3066.38	38.63	3066.32	44.09	3066.05	
44.53	3066.02	47	3065.87	50.18	3065.67	50.81	3065.67	54.28	3065.64	
54.6	3065.69	59.66	3066.41	60.29	3066.4	64.59	3066.46	66.01	3066.59	
66.74	3066.55	67.23	3066.54							

Manning's n Values num= 3

Sta	n Val	Sta	n Val
1.419998	.025	11.08	.025
67.23	.025		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 11.08 67.23 49.99 49.99 49.99 .1 .3
 Left Levee Station= 1.3 Elevation= 3067.97
 Right Levee Station= 66.11 Elevation= 3066.74

CROSS SECTION

RIVER: Puli

REACH: PULI-HEC-RAS RS: 550.01

PULI-PL-AD1-SUP1.rep

INPUT

Description:

Station	Elevation	Data	num=	20	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1.290001	3066.87	10.6	3065.23	11.29	3065.11	15.02	3065.13	31.3	3065.21			
32.02	3065.46	34.02	3066.12	34.74	3066.07	35.5	3066.02	36.06	3065.98			
39.58	3065.69	42.54	3065.52	52.67	3065.01	55.61	3064.94	58.87	3065.02			
61.11	3065.18	63.41	3065.42	66.94	3066.26	69.12	3066.5	76.85	3066.25			

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
1.290001	.025	11.29	.025
		76.85	.025

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	11.29	76.85		50.01	50.01		.1	.3
Left Levee	Station=	1.21		Elevation=	3066.94			
Right Levee	Station=	69.23		Elevation=	3066.51			

CROSS SECTION

RIVER: Puli

REACH: PULI-HEC-RAS RS: 500

INPUT

Description:

Station	Elevation	Data	num=	10	Sta	Elev	Sta	Elev	Sta	Elev
.840004	3065.8	9.93	3064.19	10.84	3064.03	15.72	3064.06	30.84	3064.14	
32.01	3064.53	35.47	3065.68	35.99	3065.68	79.95	3066.31	80.06	3066.32	

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
.840004	.025	10.84	.025
		80.06	.025

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	10.84	80.06		50	50		.1	.3
Left Levee	Station=	1.02		Elevation=	3066.19			
Right Levee	Station=	35.85		Elevation=	3065.98			

CROSS SECTION

RIVER: Puli

REACH: PULI-HEC-RAS RS: 450

INPUT

Description:

Station	Elevation	Data	num=	14	Sta	Elev	Sta	Elev	Sta	Elev
.590004	3064.739	650002	3063.13	10.59	3062.96	15.64	3062.99	30.59	3063.07	
33.18	3063.93	34.2	3064.27	36.54	3064.28	37.66	3064.28	38.16	3064.28	
38.44	3064.28	38.62	3064.28	38.74	3064.28	39.74	3064.25			

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
.590004	.025	10.59	.025
		39.74	.025

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	10.59	39.74		50	50		.1	.3
Left Levee	Station=	.56		Elevation=	3064.82			
Right Levee	Station=	36.78		Elevation=	3064.5			

CROSS SECTION

RIVER: Puli

REACH: PULI-HEC-RAS RS: 400

INPUT

Description:

Station	Elevation	Data	num=	20	Sta	Elev	Sta	Elev	Sta	Elev
.590004	3063.652	629997	3063.29	10.59	3061.89	11.8	3061.89	15.64	3061.91	
30.59	3061.99	30.64	3061.99	31.19	3062	31.43	3062.01	34.9	3062.19	
47.76	3062.08	48.17	3062.07	48.65	3062.09	56.6	3062.44	59.95	3062.59	
62.93	3062.69	70.86	3063.13	73.17	3063.21	74.01	3063.34	76.42	3063.66	

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
.590004	.025	10.59	.025
		76.42	.025

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	10.59	76.42		50	50		.1	.3
Left Levee	Station=	.65		Elevation=	3063.8			
Right Levee	Station=	76.44		Elevation=	3063.87			

CROSS SECTION

RIVER: Puli

REACH: PULI-HEC-RAS RS: 350

INPUT

Description:

Station	Elevation	Data	num=	20	Sta	Elev	Sta	Elev	Sta	Elev
.590004	3062.589	650002	3060.98	10.59	3060.81	15.64	3060.84	30.59	3060.92	
30.87	3060.92	31.39	3060.93	40.28	3060.97	40.49	3060.97	41.9	3060.98	
42.12	3060.98	44.2	3060.99	44.45	3061	44.7	3061	46.12	3061	
46.59	3061.16	48.3	3061.65	50.78	3062.37	52.57	3062.41	54.86	3062.58	

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val

.590004 .035 10.59 .025 54.86 .025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.59 54.86 50 50 50 .1 .3
 Left Levee Station= .56 Elevation= 3062.95
 Right Levee Station= 54.75 Elevation= 3062.91

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 300

INPUT

Description:

Station	Elevation	Data	num=	42	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3061.57	.02	3061.57	.05	3061.57	.1100006	3061.56	.25	3061.55			
.590004	3061.519	.650002	3059.91	10.59	3059.74	15.64	3059.77	30.59	3059.85			
31.27	3060.08	33.4	3060.79	34.61	3060.83	36.83	3060.9	37.83	3060.93			
38.4	3060.95	38.77	3060.97	39.03	3060.97	39.22	3060.98	39.37	3060.99			
39.48	3060.99	39.58	3060.99	39.66	3061	39.72	3061	39.78	3061			
39.83	3061	39.88	3061	40.49	3061.04	48.86	3061.24	49.36	3061.26			
51.89	3061.45	56.18	3061.74	56.5	3061.81	60.43	3061.98	61.66	3061.98			
71.24	3061.93	74.98	3061.56	75.6	3061.51	76.81	3061.5	77.23	3061.5			
82.09	3061.56	84.61	3061.59									

Manning's n Values num= 3
 Sta n Val Sta n Val
 0 .035 10.59 .025 84.61 .025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.59 84.61 50 50 50 .1 .3

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 250

INPUT

Description:

Station	Elevation	Data	num=	44	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3060.49	.4599991	3060.45	.4700012	3060.45	.4800034	3060.45	.4899979	3060.45			
.5	3060.45	.5100021	3060.44	.5200043	3060.44	.5299988	3060.44	.5400009	3060.44			
.5500031	3060.44	.5699997	3060.44	.5800018	3060.44	.5900004	3060.44	.600002	3058.84			
10.59	3058.67	15.64	3058.7	30.59	3058.78	32.16	3059.3	36.64	3060.79			
36.84	3060.8	37.37	3060.82	37.81	3060.83	38.19	3060.84	38.52	3060.85			
38.8	3060.86	43.2	3061	49	3061.25	49.04	3061.25	49.18	3061.26			
50.09	3061.29	68.48	3062.01	68.83	3062.04	69.14	3062.18	69.8	3062.49			
74.55	3064.31	75.48	3064.58	76.64	3064.48	77.18	3064.25	78.52	3064.38			
78.99	3064.43	82.75	3064.62	82.97	3064.63	84.61	3064.72					

Manning's n Values num= 3
 Sta n Val Sta n Val
 0 .035 10.59 .025 84.61 .025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.59 84.61 50 50 50 .1 .3

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 200

INPUT

Description:

Station	Elevation	Data	num=	44	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3059.42	.01	3059.42	.02	3059.42	.0299	3059.42	.04	3059.42			
.05	3059.42	.0599	3059.41	.0699	3059.41	.08	3059.41	.09	3059.41			
.1100006	3059.41	.1299973	3059.41	.1600037	3059.4	.1900024	3059.4	.2300034	3059.4			
.2799988	3059.39	.3499985	3059.39	.4599991	3059.38	.5900004	3059.362	.629997	3059			
10.59	3057.6	11.8	3057.6	15.64	3057.62	30.59	3057.7	32.66	3058.39			
38.33	3060.28	38.9	3060.29	40.11	3060.3	40.95	3060.31	41.56	3060.31			
42.02	3060.31	45.72	3060.3	50.36	3060.31	55.03	3060.46	60.3	3060.55			
65.48	3060.72	69.96	3060.95	75.17	3061.39	77.98	3061.19	78.54	3061.17			
80.89	3061.28	83.41	3061.4	84.42	3061.44	84.61	3061.46					

Manning's n Values num= 3
 Sta n Val Sta n Val
 0 .035 10.59 .025 84.61 .025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10.59 84.61 50 50 50 .1 .3

CROSS SECTION

RIVER: Puli
 REACH: PULI-HEC-RAS RS: 150

INPUT

Description:

Station	Elevation	Data	num=	27	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.590004	3058.682	.629997	3058.32	10.59	3056.91	11.8	3056.92	15.64	3056.94			
30.59	3057.01	35.28	3058.58	37.39	3059.28	37.55	3059.28	37.73	3059.28			
37.87	3059.27	37.98	3059.27	38.07	3059.27	38.14	3059.27	38.2	3059.27			
38.25	3059.27	38.29	3059.27	38.33	3059.27	38.36	3059.27	38.39	3059.27			
38.41	3059.27	38.42	3059.27	38.44	3059.27	42.05	3059.27	46.38	3059.32			
50.79	3059.66	54.69	3059.94									

Manning's n Values num= 3

Sta	n	Val	Sta	n	Val	Sta	n	Val
.590004		.025	10.59		.025	54.69		.025

Bank Sta:	Left	Right	Lengths:		Left	Channel	Right	Coeff	Contr.	Expan.
	10.59	54.69			50	50	50		.1	.3

CROSS SECTION

```
RIVER: Puli
REACH: PULI-HEC-RAS          RS: 100
```

INPUT

Description:											
Station Elevation Data				num= 19							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.590004	3058.439	650002	3056.83	10.59	3056.66	15.64	3056.69	27.01	3056.75		
30.59	3056.76	33.31	3057.67	34.37	3058.02	34.44	3058.02	34.66	3058.03		
34.85	3058.04	35.02	3058.04	35.17	3058.05	35.31	3058.05	35.43	3058.05		
39.22	3058.17	44.55	3058.35	47.72	3058.52	49.08	3058.46				

Manning's n values		num=		3	
Sta	n val	Sta	n val	Sta	n val
.590004	.025	10.59	.025	49.08	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
10.59	49.08	50	50	50		.1	.3
Left Levee	Station=	.47	Elevation=	3058.6			
Right Levee	Station=	47.95	Elevation=	3058.71			

CROSS SECTION

RIVER: PULI
REACH: PULI-HEC-RAS RS: 50

INPUT

Description:											
Station Elevation Data						num= 23					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.590004	3058.189	650002	3056.58	10.59	3056.41	15.64	3056.44	30.59	3056.51		
30.97	3056.64	31.11	3056.69	32.68	3056.77	34.11	3056.85	35.11	3056.91		
35.85	3056.95	36.42	3056.99	36.87	3057.01	37.23	3057.03	37.53	3057.05		
40.25	3057.21	42.28	3057.29	48.75	3057.48	52.1	3057.55	54.17	3057.64		
58.03	3057.6	65.65	3057.69	69.5	3057.72						

Manning's	n	Values	num=	3	
Sta	n	Val	Sta	n	Val
.590004	.025	10.59	.025	69.5	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10.59	69.5	50	50	.1	.3
Left Levee	Station=	.65	Elevation= 3058.26		
Right Levee	Station=	69.51	Elevation= 3057.73		

CROSS SECTION

RIVER: PULI
REACH: PULI-HEC-RAS RS: 0

INPUT

Description:									
Station		Elevation		Data	num=	29	Sta		Elev
Sta	Elev	Sta	Elev				Sta	Elev	
.590004	3057.939	.650002	3056.33			10.59	3056.16	15.64	3056.19
60.59	3056.26	33.62	3056.23			36.85	3056.23	39.47	3056.22
67.41	3056.38	68.25	3056.41			66.59	3056.31	69.37	3056.35
65.5	3056.38	68.25	3056.41			69.2	3056.45	69.37	3056.46
71.04	3056.55	71.53	3056.58			71.73	3056.59	72.01	3056.6
72.88	3056.63	74.01	3056.67			81.07	3056.63	84.61	3056.62

Manning's	n	Values	num=	3
Sta	n	Val	Sta	n
.590004	.025	10.59	.025	84.61
				.025

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	10.59	84.61		.1	.3

SUMMARY OF MANNING'S N VALUES

River: Puli

Reach	River Sta.	n1	n2	n3
PULI-HEC-RAS	1003.6	.025	.025	.025
PULI-HEC-RAS	950	.025	.025	.025
PULI-HEC-RAS	900	.025	.025	.025
PULI-HEC-RAS	850	.025	.025	.025
PULI-HEC-RAS	800	.025	.025	.025
PULI-HEC-RAS	750	.025	.025	.025
PULI-HEC-RAS	700	.025	.025	.025
PULI-HEC-RAS	650	.025	.025	.025
PULI-HEC-RAS	600	.025	.025	.025
PULI-HEC-RAS	550.01	.025	.025	.025
PULI-HEC-RAS	500	.025	.025	.025
PULI-HEC-RAS	450	.025	.025	.025
PULI-HEC-RAS	400	.025	.025	.025
PULI-HEC-RAS	350	.035	.025	.025
PULI-HEC-RAS	300	.035	.025	.025
PULI-HEC-RAS	250	.035	.025	.025
PULI-HEC-RAS	200	.035	.025	.025
PULI-HEC-RAS	150	.025	.025	.025
PULI-HEC-RAS	100	.025	.025	.025

PULI-HEC-RAS	50	.025	.025	PULI-PL-AD1-SUP1.rep
PULI-HEC-RAS	0	.025	.025	.025

SUMMARY OF REACH LENGTHS

River: Puli

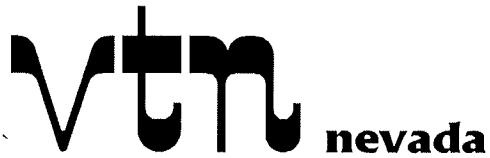
Reach	River Sta.	Left	Channel	Right
PULI-HEC-RAS	1003.6	53.6	53.6	53.6
PULI-HEC-RAS	950	50	50	50
PULI-HEC-RAS	900	50	50	50
PULI-HEC-RAS	850	50	50	50
PULI-HEC-RAS	800	50	50	50
PULI-HEC-RAS	750	50	50	50
PULI-HEC-RAS	700	50	50	50
PULI-HEC-RAS	650	50	50	50
PULI-HEC-RAS	600	49.99	49.99	49.99
PULI-HEC-RAS	550.01	50.01	50.01	50.01
PULI-HEC-RAS	500	50	50	50
PULI-HEC-RAS	450	50	50	50
PULI-HEC-RAS	400	50	50	50
PULI-HEC-RAS	350	50	50	50
PULI-HEC-RAS	300	50	50	50
PULI-HEC-RAS	250	50	50	50
PULI-HEC-RAS	200	50	50	50
PULI-HEC-RAS	150	50	50	50
PULI-HEC-RAS	100	50	50	50
PULI-HEC-RAS	50	50	50	50
PULI-HEC-RAS	0			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Puli

Reach	River Sta.	Contr.	Expan.
PULI-HEC-RAS	1003.6	.1	.3
PULI-HEC-RAS	950	.1	.3
PULI-HEC-RAS	900	.1	.3
PULI-HEC-RAS	850	.1	.3
PULI-HEC-RAS	800	.1	.3
PULI-HEC-RAS	750	.1	.3
PULI-HEC-RAS	700	.1	.3
PULI-HEC-RAS	650	.1	.3
PULI-HEC-RAS	600	.1	.3
PULI-HEC-RAS	550.01	.1	.3
PULI-HEC-RAS	500	.1	.3
PULI-HEC-RAS	450	.1	.3
PULI-HEC-RAS	400	.1	.3
PULI-HEC-RAS	350	.1	.3
PULI-HEC-RAS	300	.1	.3
PULI-HEC-RAS	250	.1	.3
PULI-HEC-RAS	200	.1	.3
PULI-HEC-RAS	150	.1	.3
PULI-HEC-RAS	100	.1	.3
PULI-HEC-RAS	50	.1	.3
PULI-HEC-RAS	0	.1	.3

REVISED GRADING PLANS



LETTER OF TRANSMITTAL

TO: City of Las Vegas

DATE: February 9, 2011

**Dept. of Public Works (7th Floor)
333 N. Rancho Drive
Las Vegas, NV 89106**

**PROJECT: Cliff's Edge – PODS 201 & 203 – Unit 5
(a.k.a. Cambridge Villas / Cambridge Crossings)**

ATTN: Mr. Albert Sung, P.E.

W.O. NO.: 6335-5

BY MAIL:

**BY XXX
MESSENGER:**

PICK-UP:

EXPRESS MAIL:

FAX:

FEDERAL EXPRESS:

No. Copies:

Description

1

Supplement #1 to Addendum #1 to Update # 3 to Technical Drainage Study For Cliff's Edge PODS 201 & 203 – Unit 5 (a.k.a. Cambridge Villas / Cambridge Crossings)

COMMENTS:

MATERIAL SENT FOR THE FOLLOWING REASONS:

CHECKING:

FILING:

APPROVAL: XXX

YOUR FILES:

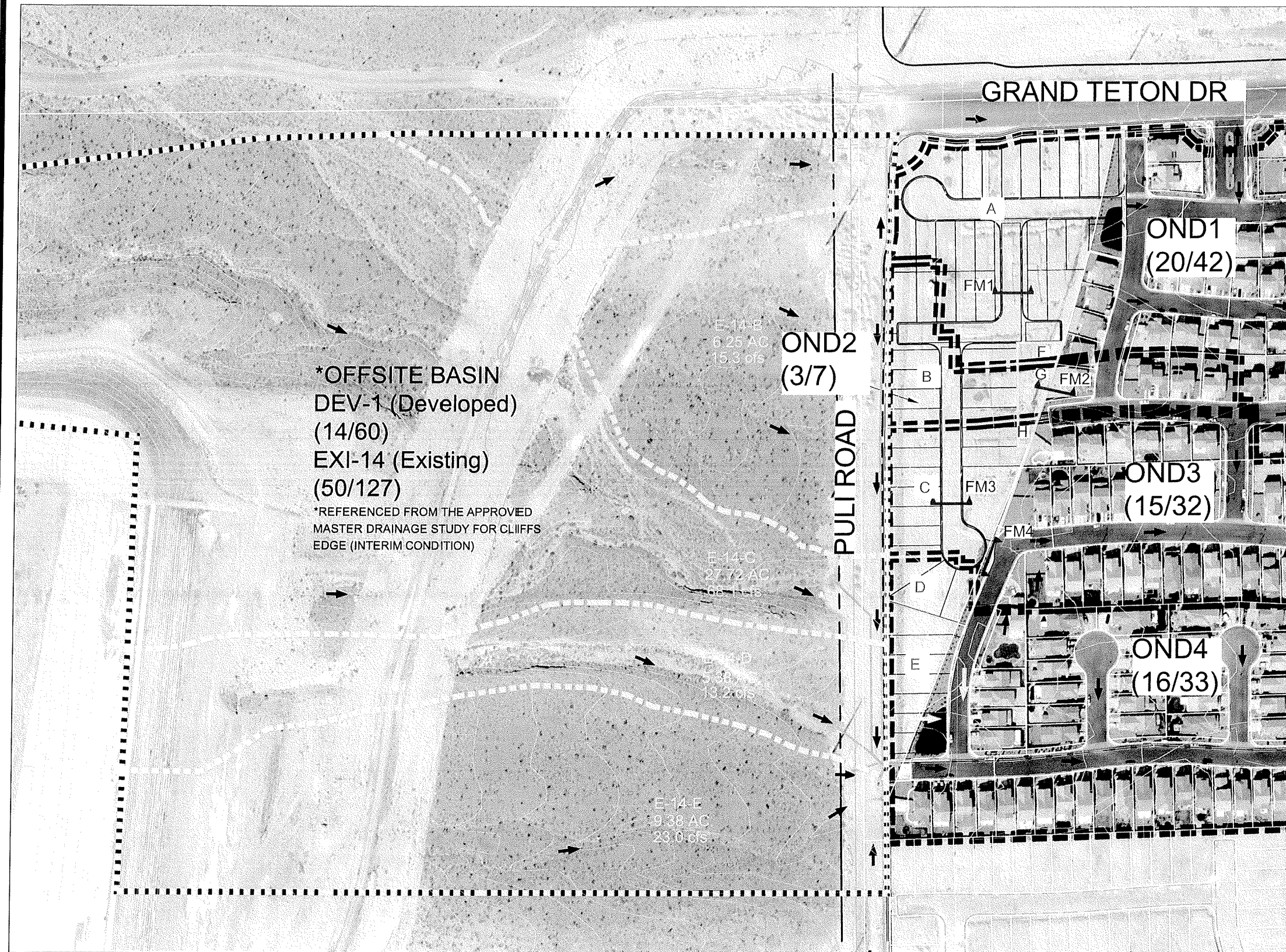
OTHER:

CC:

SENDER: Woei Y. Then, P.E.

ABOVE MATERIAL RECEIVED BY:

**2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146-5148
TEL: (702)873-7550 FAX: 362-2597
PUBLIC WORKS DEPARTMENT TEL: (702) 247-4020 FAX: (702) 247-4262**



*OFFSITE BASIN
DEV-1 (Developed)
(14/60)
EXI-14 (Existing)
(50/127)

*REFERENCED FROM THE APPROVED
MASTER DRAINAGE STUDY FOR CLIFFS
EDGE (INTERIM CONDITION)

E-14-B
6.25 AC
15.3 cfs

OND2
(3/7)

E-14-C
27.72 AC
65.1 cfs

E-14-D
5.38 AC
13.2 cfs

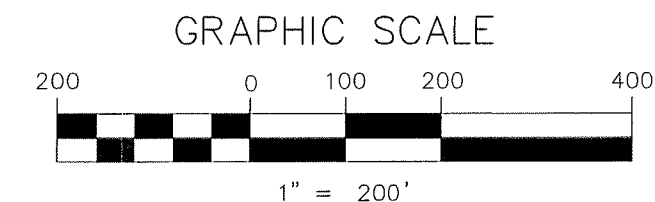
E-14-E
9.38 AC
23.0 cfs

GRAND TETON DR

OND1
(20/42)

OND3
(15/32)

OND4
(16/33)



LEGEND

OND4
(16/33) BASIN NAME PER APPROVED TDS
FLOW VALUE (10 YR/100YR) IN CFS
PER APPROVED TDS

→ DIRECTION OF FLOW
BASIN DELINEATION PER APPROVED TDS

A NEW BASIN NAME FOR PROPOSED SITE
NEW BASIN DELINEATION

FM2 FLOWMASTER SECTIONS

FLOW SUMMARY

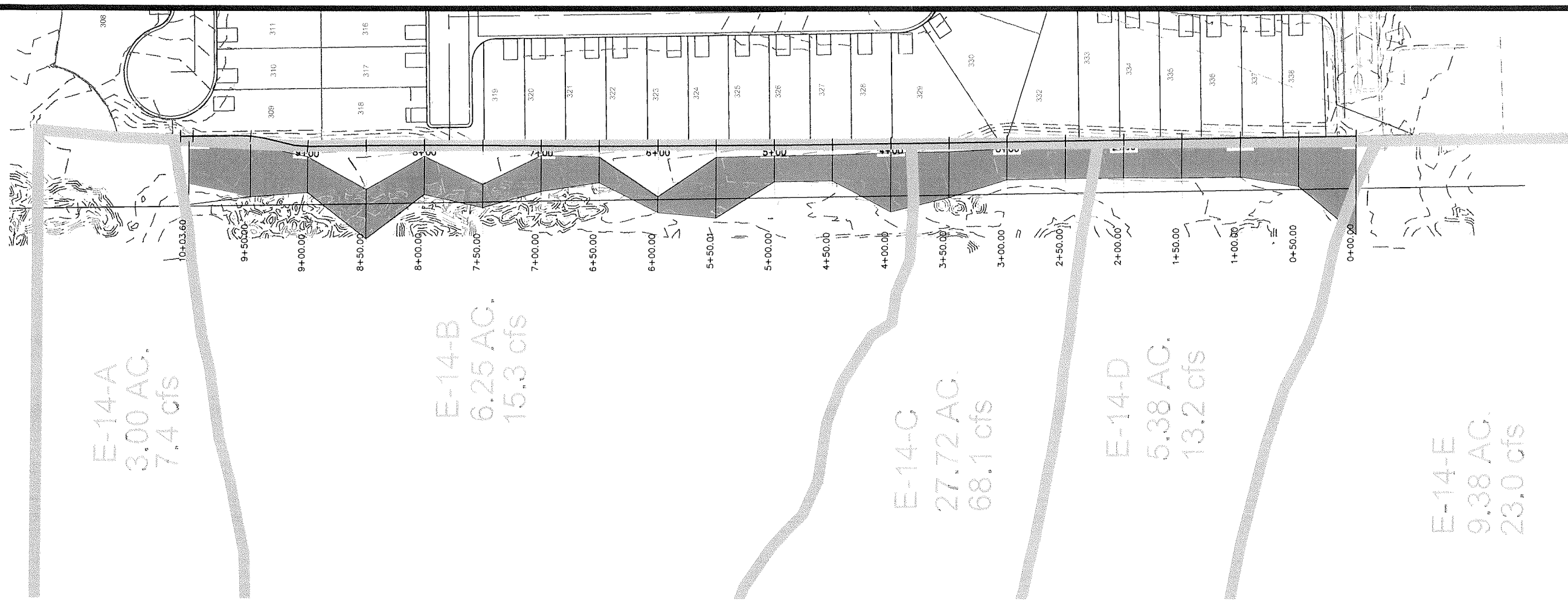
NEW BASIN NAME	BASIN AREA (ac)	10-YR FLOW (cfs)	100-YR FLOW (cfs)
A	2.88	4.4	9.2
B	0.99	1.6	3.6
C	1.24	1.8	3.9
D	0.35	0.6	1.2
E	0.70	1.1	2.4
F	0.06	0.1	0.2
G	0.12	0.2	0.4
H	0.03	0.0	0.1

* Basin referenced from the approved Master Drainage Study for Cliffs Edge

W.O.#: 6335-5
DATE: 2-9-2011
BY: WT
SCALE: 1" = 200'
SHEET 1 OF 1

CAMBRIDGE VILLAS UNIT 5
DRAINAGE BASIN MAP
UPDATE #3 - SUP#1 to AD1





River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Max Chl Dpth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1003.6	15.3	3070.44	3071.61	1.17	3070.75	3071.62	0.000098	0.53	29.84	36.94	0.10
950	15.3	3070.94	3071.60	0.66		3071.61	0.000290	0.67	23.35	45.15	0.16
900	15.3	3071.18	3071.46	0.28	3071.46	3071.55	0.014405	2.49	6.20	30.57	0.97
850	15.3	3068.90	3070.46	1.56	3069.83	3070.47	0.000159	0.55	27.60	42.62	0.12
800	15.3	3069.56	3070.33	0.77	3070.33	3070.43	0.016075	2.54	6.06	31.30	1.01
750	15.3	3066.37	3068.67	2.30	3067.03	3068.67	0.000038	0.48	31.67	20.01	0.07
700	15.3	3068.28	3068.55	0.27	3068.55	3068.66	0.015312	2.55	6.04	30.02	0.99
650	15.3	3067.25	3067.52	0.27	3067.56	3067.69	0.024546	3.35	4.63	22.04	1.27
600	15.3	3065.64	3066.07	0.43	3066.16	3066.35	0.029186	4.20	3.64	13.65	1.43
550.01	15.3	3064.94	3065.31	0.36	3065.31	3065.39	0.016315	2.39	6.44	36.89	1.00
500	15.3	3064.03	3064.32	0.29	3064.34	3064.47	0.020276	3.15	4.91	22.17	1.16
450	15.3	3062.96	3063.24	0.28	3063.27	3063.40	0.022440	3.25	4.76	22.08	1.22
400	83.4	3061.89	3062.52	0.63	3062.52	3062.74	0.012122	3.79	22.24	51.43	1.01
350	83.4	3060.81	3061.31	0.50	3061.45	3061.80	0.031245	5.65	15.11	39.33	1.58
300	83.4	3059.74	3060.56	0.82	3060.57	3060.92	0.010428	4.90	18.02	26.78	1.01
250	96.6	3058.67	3059.37	0.70	3059.58	3060.08	0.026029	6.90	14.70	25.70	1.55
200	96.6	3057.60	3058.35	0.75	3058.50	3058.93	0.019050	6.25	16.27	26.21	1.35
150	96.6	3056.91	3057.99	1.07	3057.80	3058.22	0.004896	4.01	25.12	28.98	0.72
100	96.6	3056.66	3057.70	1.04	3057.56	3057.96	0.005647	4.20	23.96	28.65	0.77
50	96.6	3056.41	3057.29	0.88	3057.29	3057.58	0.010106	4.42	22.37	36.69	0.98
0	96.6	3056.16	3056.80	0.64	3056.69	3056.91	0.005306	2.65	36.71	77.62	0.67

LEGENDS

329

UNIT 5 LOT NUMBER

1+50.00

HEC-RAS STATIONING

WATER SURFACE EXTEND

