Mainstem Yuba River
Habitat Mapping Data

Yuba County Water Agency Hydroelectric Project
FERC 2246

Yuba Mainstem above and below Colgate Powerhouse – Ground-based Habitat Mapping Data

Stream: Yuba River **Date:** Oct-09 **Parent Material:** volcanic (Smartville Complex), gabbro (Pleasant Valley
Reach: Yuba Mainstem above and below Colgate PH **Map Gradient (%):** 1.8%

Date	Section Number	Ordered Unit #	Original Unit #	Unit Habitat Type	Length (ft)	Cum. Length (ft)	River Mile	Est avg BFW (ft)	BFD (ft)	Est avg pool depth (ft)	Max. pool depth (ft)	Pooltail embed-dedness (%)	Cover	Dominant substrate	Sub-dominant substrate	Dominant bank substrate	Erosion (ft)	FPW	Confine-ment	Flag/ Label	Flag Description	Trib cfs	Land-marks or Photos	Total LWD (bankful)	Total LWD wetted width	Fish Migration Barrier?	Total Spawnable gravel area (sq. ft.)	Max spawning gravel patch (sq ft)	Northing	Easting	Post-Field Changes	Comments
10/5/2009	Yuba < Colgate		1	RUN	352	352	32.90	180	no clear BFD		5		INSIGNIF	COB	BLD	COB			1	y	at top		DTA2 2198 LDS			n			655061	4353986		too deep to be glide, especially RBA, uniform cobble substrate only occasional boulders
10/5/2009	Yuba < Colgate		2	GLI	235	587	33.01	176.5					INSIGNIF	COB	BLD	COB			1	n			DTA2 2199			n						
10/5/2009	Yuba < Colgate		3	MCP	1080	1667	33.22	120.75		13	18		BLDR	BLD	COB	BLD			2	n			DTA2 2200, 2201 LDS			n						weak control at base, pool tail into glide. Looks to be 20 ft deep but can't gauge well. Unable to see tail for embeddedness
10/5/2009	Yuba < Colgate		4	RUN	110	1777	33.24	120					BLDR	BLD	COB	BLD			1	n			DTA2 2203			n						
10/5/2009	Yuba < Colgate		5	LGR	163	1940	33.27	127.5	5.5				BLDR	BLD	COB	BLD			1	y	at top		DTA2 2204			n			655314	4354371		1% gradient
10/5/2009	Yuba < Colgate		6	RUN	436	2376	33.35	116.5	5.5				BLDR	BLD	BED	BLD			1	y	at base		DTA2 2204			n	24	24	655314	4354371		spawning gravel maybe too deep because it was estimated. Unit glide like in some areas, but deep, fast, variable substrate not sheet pool min.
10/5/2009	Yuba < Colgate		7	RAP	171	2547	33.38	115.5	6				BLDR	BLD	BED	BLD			1	n			DTA2 2205 LDS			n						
10/5/2009	Yuba < Colgate		SPLIT		140	2687	33.41																DTA2 2206									RBA - run, LBA - rapid
10/5/2009	Yuba < Colgate		8	RAP	430	3117	33.49	117.33	7				BLDR	BLD	COB	BLD			1	n			DTA2 2207, 2208			n	3	3				run-like in middle, but still standing waves
10/5/2009	Yuba < Colgate		9	RUN		3117	33.49	83.5	9				BLDR	BLD	COB	BLD				n			DTA2 2209			n						
10/5/2009	Yuba < Colgate		10	RAP	313	3430	33.55	74.67	6				BLDR	BLD	COB	BLD			1	y	at top		DTA2 2210			n	5	2	655503	4354838		run-like in middle but still standing waves
10/5/2009	Yuba < Colgate		SPLIT		101	3531	33.57	90												y	at base		DTA2 2211			n						at corner length and width measurements oblique
10/5/2009	Yuba < Colgate		11	MCP	600	4131	33.68	140					BLDR	BLD	SND	BLD			2	n			DTA2 2212, 2213 LDS from road									non-modelable due to corner!
10/5/2009	Yuba < Colgate		12	RUN	250	4381	33.73	106.67					BLDR	BLD	SND	BLD			1	n			DTA2 2214 LUS from road bottom RUN/RAP			n						
10/5/2009	Yuba < Colgate		13	RAP	75	4456	33.90	162.5					BLDR	BLD	SND	BLD			1	n			DTA2 2214 LUS from road bottom RUN/RAP			n						Power house at pool next unit above rapid. Several willow sp., Robinia, Alder, big leaf mapple, Brickellia, through boulder banks. Upland community change aburpt at change into steep 40-60% sloeps; sandy deposition at boulder base, wetted edge. Riparian community fairly well-establaihsed, especially where the largest boulders are absent.
10/16/2009	Yuba > Colgate		1	MCP	532	4988	34.00	98		6	10	too deep	BLDR	BLD	COB	BLD			3	y	at top		not charged			n			655938	4355021		POOL @ base of PH
10/16/2009	Yuba > Colgate		2	LGR	452	5440	34.09	116.25					BLDR	BLD	COB	BLD			3	y	at base					n	13	4				2.5% gradient
10/16/2009	Yuba > Colgate		3	MCP	391	5831	34.16	140.33		3	10	70	BLDR	BLD	COB	SND			3	n						n	3	1				MCP with POW characteristics at pool tailout. 2x6 & 1x4 patches of spawning gravel out of water RBA
10/16/2009	Yuba > Colgate		4	HGR	318	6149	34.22	135					BLDR	BLD	COB	SND			1	n						n	8	2				4% gradient (water temp monitor LBA)
10/16/2009	Yuba > Colgate		5	MCP	1036	7185	34.42	102.5		6	10	too deep	BLDR	BLD	BED	SND			2	y	at top					n	422	300	656505	4355144		pool tailout has POW characteristic but deep water not moving, no scour so MCP
10/16/2009	Yuba > Colgate		6	LGR	91	7276	34.43	53.67					BLDR	BLD	BED	SND			1	y	at base								656505	4355144		2.5% gradient
10/16/2009	Yuba > Colgate		7	HGR	67	7343	34.45	48					BLDR	BLD	BED	BLD			1	n						n						11% gradient
10/16/2009	Yuba > Colgate		8	LGR	52	7395	34.46	68					BLDR	BLD	BED	COB			1	n						n	16	16				1% gradient
10/16/2009	Yuba > Colgate		9	POW	177	7572	34.49	62.67					BLDR	BLD	BED	COB			1	n						n	80	80				
10/16/2009	Yuba > Colgate		10	HGR	85	7657	34.51	51.33					BLDR	BLD	BED	BLD			1	y	at top					n			656536	4355528		9% gradient
10/16/2009	Yuba > Colgate		11	MCP	257	7914	34.55	84.67		6	10	too deep	BLDR	BLD	BED	BLD			1	y	at base					n			656536	4355528		6+ deep @ edge LBA
10/16/2009	Yuba > Colgate		12	LGR	33	7947	34.56	56					BLDR	BLD	BED	BLD			2	n												1.5% gradient
10/16/2009	Yuba > Colgate		13	POW	223	8170	34.60	89.33					BLDR	BLD	BED	BLD			2	n						n						
10/16/2009	Yuba > Colgate		14	LGR	54	8224	34.61	133					BLDR	BLD	BED	BLD			2	n						n						2% gradient
10/16/2009	Yuba > Colgate		15	MCP	592	8816	34.73	87.25		6	10	too deep	BLDR	BED	BLD	BLD			2	y	at top	0.5 cfs				n			656670	4355787		depth is over 6 ft! at edge LBA
10/16/2009	Yuba > Colgate		16	HGR	105	8921	34.75	47.5					BLDR	BLD	BED	BLD			2	y	at base					n	20	4	656670	4355787		9% gradient
10/16/2009	Yuba > Colgate		17	MCP	110	9031	34.77	64		6	10	too deep	BLDR	BLD	BED	COB			2	n						n						characteristics of POW but no divergent flow and deep
10/16/2009	Yuba > Colgate		18	HGR	216	9247	34.81	84.67					BLDR	BLD	COB	BED			2	n						n	211	80				4% gradient
10/16/2009	Yuba > Colgate		19	POW	412	9659	34.89	116.5					BLDR	BED	BLD	BED			2	n						n	600	600				moved away from river to climb banks
			20	MCP	380	10039	34.96	80		6	10	no access	BLDR	BED	BLD	BED			2	y	at base					n			656850	4355960		estimated length and width from above - cliffed out both sides

Stream: Yuba River
Reach: Yuba Mainstem above and below Colgate PH

Table 1a. Summary Statistics - Mapped Units

Unit Type	Total Length (ft)	Length Rel Frequency	Number	Number of Units (frequency)	Average width (ft)	Average pool depth (ft)	Average maximum pool depth (ft)	Average pooltail embeddedness (%)
Fall								
Cascade								
Chute								
Rapid	989	10.1%	4	12.1%	117.5			
High Gradient Riffle	791	8.1%	5	15.2%	73.3			
Low Gradient Riffle	845	8.6%	6	18.2%	92.4			
Glide	235	2.4%	1	3.0%	176.5			
Run	1148	11.7%	5	15.2%	121.3			
Step Run								
Pocket Water	812	8.3%	3	9.1%	89.5			
Sheet								
Convergance Pool								
Mid-Channel Pool	4978	50.8%	9	27.3%	104.7	6.6	11.1	#VALUE!
Lateral Scour Pool								
Trench Pool								
Plunge Pool								
TOTAL	**9798**	**100.0%**	**33**	**100.0%**	**104.8**	**6.6**	**11.1**	**#VALUE!**
QC			**0**		**Weighted Average By Length (ft)**			

Table 2. Stream Cover

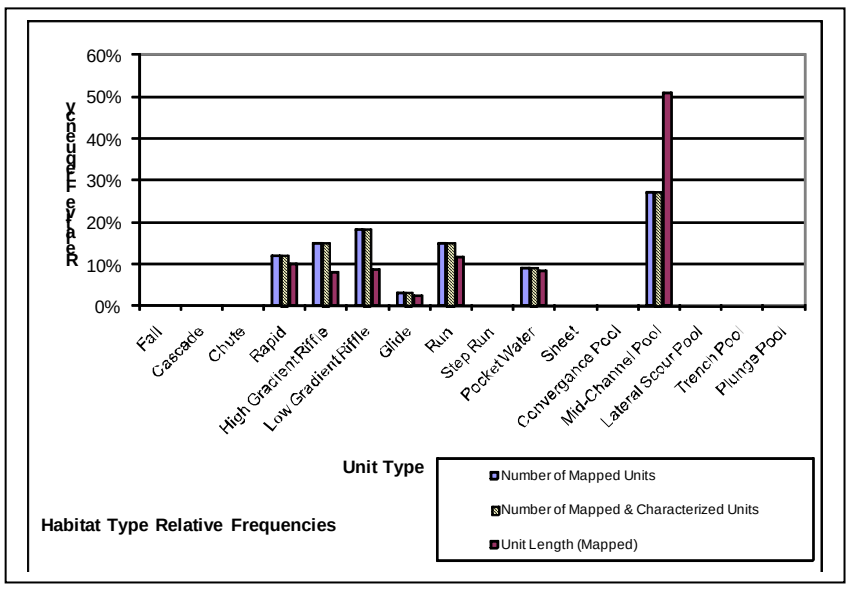
Dominant Cover Type	Number	Relative Frequency
Insignificant	2	6%
Boulder	31	94%
Vegetation	0	
Wood	0	
SUM	33	100%
QC	**OK**	

Table 3. Reach Summary

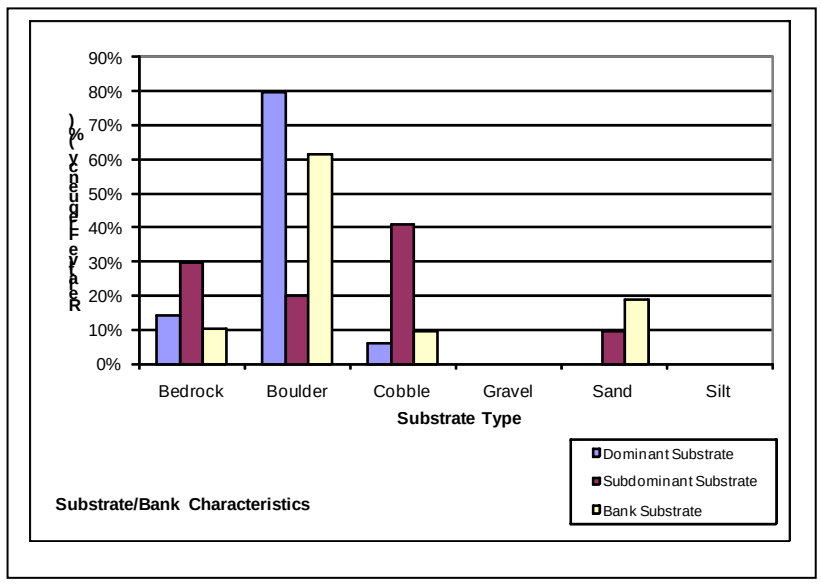
Total Reach Length:	**7.5** mi.	
Total Mapped Length:	1.86 mi.	24.7% mapped
Average Bankfull Width:	104.8 ft.	0.00 mi. charac
Bankfull Depth:	**6.5** ft.	24.74% Total m & c
Width:Depth:	16	
Flood Prone Width:	**0** ft.	
Entrenchment Ratio:	0.0	
Total Spawnable Gravel:	1,405 ft^2 - trout	
Avg Largest Patch Size:	93 ft^2 - trout	
LWD Density:	0 / mile (bankful)	
Wetted LWD Density:	0 / mile (wetted width)	
Parent Material:	volcanic (Smartville Complex), gabbro (Pleasant Valley Pluton), quartz diorite	
Bank Erosion % of Reach:	0.0%	
Tot No. Passage Barriers:	0	

Table 4. Reach Summary - Substrate and Bank Characteristics

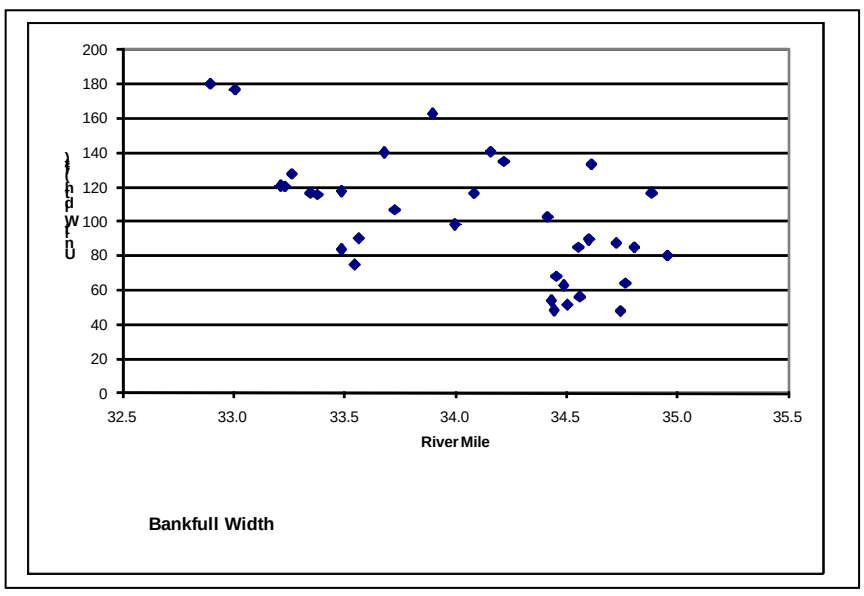
	Dominant Substrate		Subdominant Substrate		Bank Substrate		Bank Substrate Erosion	
	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency	Total Length (ft)	Length Rel Frequency
Bedrock	1384	14.1%	2897	29.6%	1008	10.3%	0	
Boulder	7827	79.9%	1971	20.1%	6028	61.5%	0	
Cobble	587	6.0%	4005	40.9%	926	9.5%	0	
Gravel	0		0		0		0	
Sand	0		925	9.4%	1836	18.7%	0	
Silt	0		0		0		0	
SUM	**9798**	**100.0%**	**9798**	**100.0%**	**9798**	**100.0%**	**0**	**0.0%**



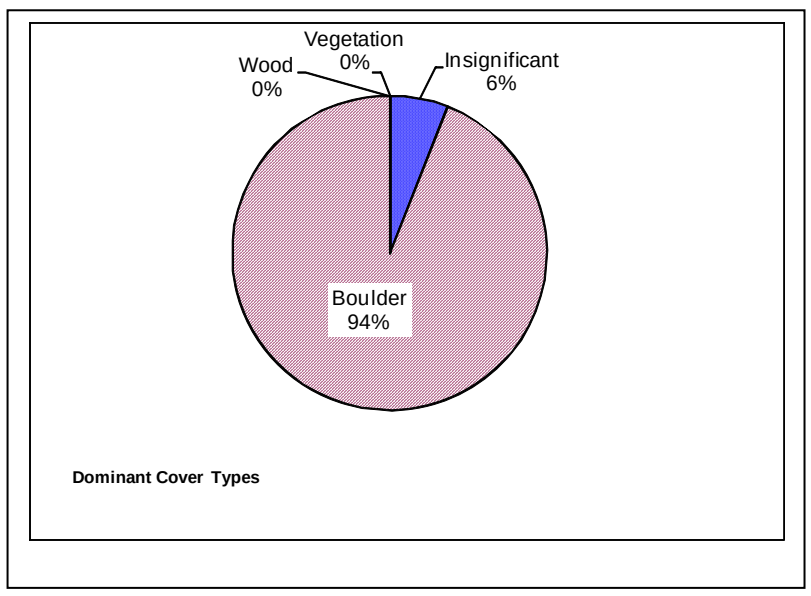
Habitat Type Relative Frequencies



Substrate/Bank Characteristics



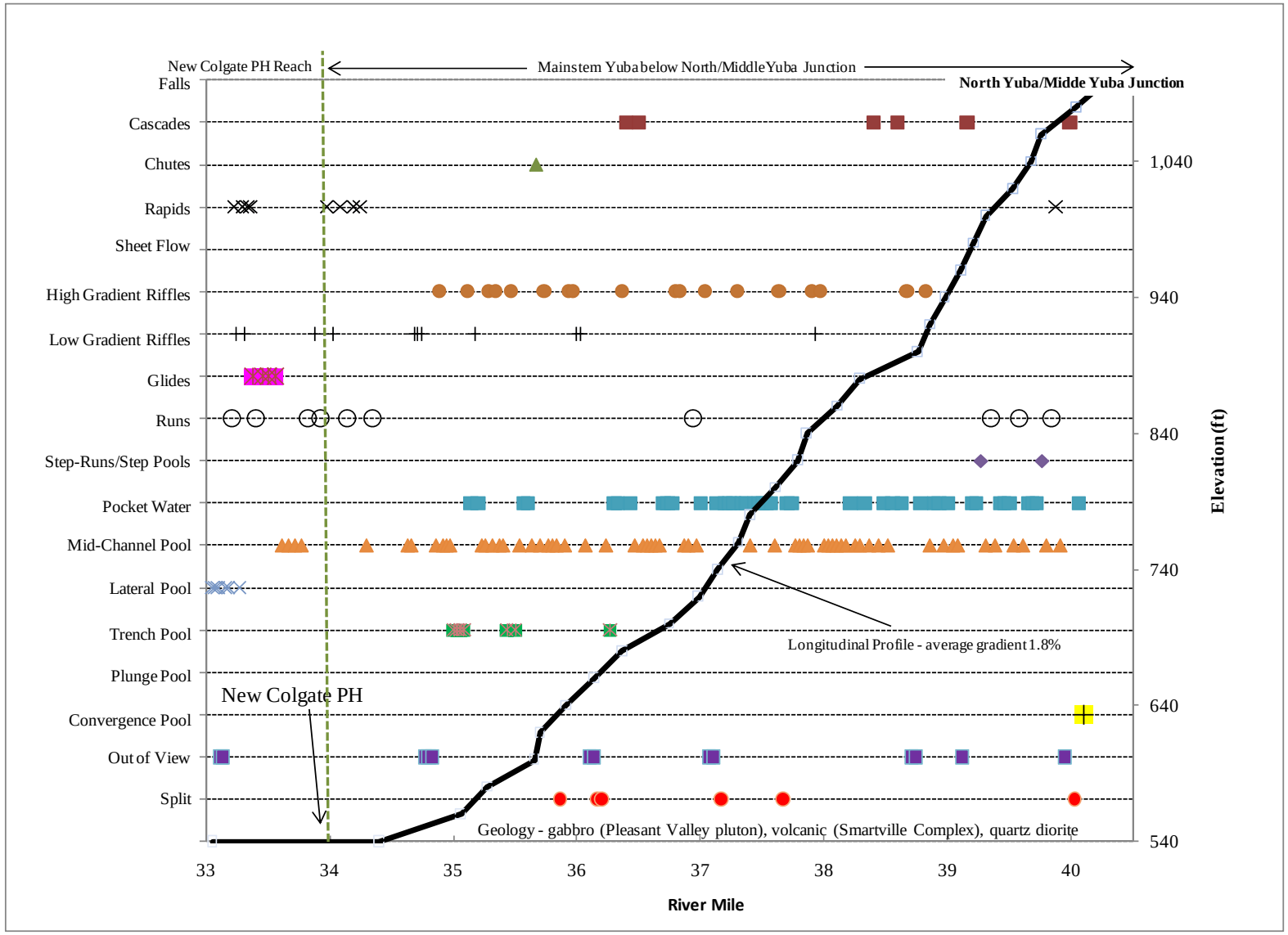
Bankfull Width



Dominant Cover Types

Mainstem Yuba River – Habitat Mapping Data – Video based – From high water influence of Englebright Reservoir to North Yuba/Middle Yuba Junction

Time	RM	Habitat	Habitat	HM Unit
0:28:34	32.55	13	LAP	
0:28:37	32.57	13	LAP	
0:28:40	32.59	13	LAP	
0:28:43	32.62	17	OOV	
0:28:46	32.64	17	OOV	
0:28:49	32.66	13	LAP	
0:28:52	32.68	13	LAP	
0:28:55	32.70	9	RUN	
0:28:58	32.73	4	RAP	
0:29:01	32.75	7	LGR	
0:29:04	32.77	13	LAP	
0:29:07	32.79	4	RAP	French Bar
0:29:10	32.81	7	LGR	
0:29:13	32.83	4	RAP	
0:29:16	32.86	4	RAP	
0:29:19	32.88	8	GLI	split
0:29:22	32.90	9	RUN	1
0:29:25	32.95	8	GLI	2
0:29:28	33.01	8	GLI	2
0:29:31	33.06	8	GLI	2
0:29:34	33.11	12	MCP	3
0:29:37	33.16	12	MCP	3
0:29:40	33.22	12	MCP	3
0:29:43	33.27	12	MCP	3
0:29:46	33.32	9	RUN	4
0:29:49	33.37	7	LGR	5
0:29:52	33.43	9	RUN	6
0:29:55	33.48	4	RAP	7
0:29:58	33.53	7	LGR	split at low flow
0:30:01	33.58	4	RAP	8
0:30:04	33.64	9	RUN	9
0:30:07	33.69	4	RAP	10
0:30:10	33.74	4	RAP	10
0:30:13	33.79	12	MCP	11
0:30:16	33.85	9	RUN	12
0:30:19	33.90	#N/A		Colgate PH
0:30:22	33.93	#N/A		Penstock
0:30:25	33.96	#N/A		Colgate PH
0:30:28	33.99	#N/A		Colgate PH
0:30:31	34.01	#N/A		Tailrace
0:30:34	34.04	#N/A		Tailrace
0:30:37	34.07	#N/A		Tailrace
0:30:40	34.10	#N/A		Tailrace
0:30:43	34.13	12	MCP	1
0:30:46	34.16	12	MCP	1
0:30:49	34.19	7	LGR	2
0:30:52	34.21	7	LGR	2
0:30:55	34.24	7	LGR	2
0:30:58	34.27	17	OOV	
0:31:01	34.30	17	OOV	
0:31:04	34.33	17	OOV	
0:31:07	34.36	12	MCP	3
0:31:10	34.39	6	HGR	4
0:31:13	34.41	12	MCP	5
0:31:16	34.44	12	MCP	5
0:31:19	34.47	12	MCP	5
0:31:22	34.50	14	TRP	
0:31:25	34.53	14	TRP	
0:31:28	34.56	14	TRP	
0:31:31	34.59	14	TRP	
0:31:34	34.61	6	HGR	7
0:31:37	34.64	11	POW	9
0:31:40	34.67	7	LGR	12
0:31:43	34.70	11	POW	13
0:31:46	34.73	12	MCP	15
0:31:49	34.76	12	MCP	15
0:31:52	34.79	6	HGR	16
0:31:55	34.81	12	MCP	17
0:31:58	34.84	6	HGR	18
0:32:01	34.87	12	MCP	20
0:32:04	34.90	12	MCP	20
0:32:07	34.93	14	TRP	
0:32:10	34.97	6	HGR	
0:32:13	35.00	14	TRP	
0:32:16	35.03	12	MCP	
0:32:19	35.07	11	POW	
0:32:22	35.10	11	POW	
0:32:25	35.13	12	MCP	
0:32:28	35.17	3	CHU	
0:32:31	35.20	12	MCP	
0:32:34	35.23	6	HGR	
0:32:37	35.27	12	MCP	
0:32:40	35.30	12	MCP	
0:32:43	35.33	12	MCP	
0:32:46	35.37	18	SPLIT	
0:32:49	35.40	12	MCP	
0:32:52	35.43	6	HGR	
0:32:55	35.47	6	HGR	
0:32:58	35.50	7	LGR	
0:33:01	35.53	7	LGR	
0:33:04	35.57	12	MCP	
0:33:07	35.60	17	OOV	
0:33:10	35.63	17	OOV	
0:33:13	35.67	18	SPLIT	
0:33:16	35.70	18	SPLIT	
0:33:19	35.73	12	MCP	
0:33:22	35.77	14	TRP	
0:33:25	35.80	11	POW	
0:33:28	35.83	11	POW	
0:33:31	35.87	6	HGR	
0:33:34	35.90	2	CAS	
0:33:37	35.93	11	POW	
0:33:40	35.97	12	MCP	
0:33:43	36.00	2	CAS	
0:33:46	36.03	12	MCP	
0:33:49	36.07	12	MCP	
0:33:52	36.10	12	MCP	
0:33:55	36.13	12	MCP	
0:33:58	36.17	12	MCP	
0:34:01	36.20	11	POW	
0:34:04	36.23	11	POW	
0:34:07	36.27	11	POW	
0:34:10	36.30	6	HGR	
0:34:13	36.33	6	HGR	
0:34:16	36.37	12	MCP	
0:34:19	36.40	12	MCP	
0:34:22	36.43	9	RUN	
0:34:25	36.47	12	MCP	
0:34:28	36.50	11	POW	
0:34:31	36.53	6	HGR	
0:34:34	36.57	17	OOV	
0:34:37	36.60	17	oov	
0:34:40	36.63	11	POW	
0:34:43	36.67	18	SPLIT	
0:34:46	36.70	11	POW	
0:34:49	36.73	11	POW	
0:34:52	36.77	11	POW	
0:34:55	36.80	6	HGR	
0:34:58	36.83	11	POW	
0:35:01	36.87	11	POW	
0:35:04	36.90	12	MCP	
0:35:07	36.93	11	POW	
0:35:10	36.97	11	POW	
0:35:13	37.00	11	POW	
0:35:16	37.03	11	POW	
0:35:19	37.07	11	POW	
0:35:22	37.10	12	MCP	
0:35:25	37.13	6	HGR	
0:35:28	37.17	18	SPLIT	
0:35:31	37.20	11	POW	
0:35:34	37.23	11	POW	
0:35:37	37.27	12	MCP	
0:35:40	37.30	12	MCP	
0:35:43	37.33	12	MCP	
0:35:46	37.37	12	MCP	
0:35:49	37.40	6	HGR	
0:35:52	37.43	7	LGR	
0:35:55	37.47	6	HGR	
0:35:58	37.50	12	MCP	
0:36:01	37.53	12	MCP	
0:36:04	37.57	12	MCP	
0:36:07	37.60	12	MCP	
0:36:10	37.64	12	MCP	
0:36:13	37.68	12	MCP	
0:36:16	37.71	11	POW	
0:36:19	37.75	12	MCP	
0:36:22	37.79	12	MCP	
0:36:25	37.83	11	POW	
0:36:28	37.86	12	MCP	
0:36:31	37.90	2	CAS	
0:36:34	37.94	12	MCP	
0:36:37	37.98	11	POW	
0:36:40	38.02	12	MCP	
0:36:43	38.05	11	POW	
0:36:46	38.09	2	CAS	
0:36:49	38.13	11	POW	
0:36:52	38.17	6	HGR	
0:36:55	38.20	17	OOV	
0:36:58	38.24	17	OOV	
0:37:01	38.28	11	POW	
0:37:04	38.32	6	HGR	
0:37:07	38.35	12	MCP	
0:37:10	38.39	11	POW	
0:37:13	38.43	11	POW	
0:37:16	38.47	12	MCP	
0:37:19	38.51	11	POW	
0:37:22	38.54	12	MCP	
0:37:25	38.58	12	MCP	
0:37:28	38.62	17	OOV	
0:37:31	38.66	2	CAS	
0:37:34	38.69	11	POW	
0:37:37	38.73	11	POW	
0:37:40	38.77	10	STEP	
0:37:43	38.81	12	MCP	
0:37:46	38.85	9	RUN	
0:37:49	38.88	12	MCP	
0:37:52	38.92	11	POW	
0:37:55	38.96	11	POW	
0:37:58	39.00	11	POW	
0:38:01	39.03	12	MCP	
0:38:04	39.07	9	RUN	
0:38:07	39.11	12	MCP	
0:38:10	39.15	11	POW	
0:38:13	39.18	11	POW	
0:38:16	39.22	11	POW	
0:38:19	39.26	10	STEP	
0:38:22	39.30	12	MCP	
0:38:25	39.34	9	RUN	
0:38:28	39.37	4	RAP	
0:38:31	39.41	12	MCP	
0:38:34	39.45	17	OOV	
0:38:37	39.49	2	CAS	
0:38:40	39.52	18	SPLIT	
0:38:43	39.56	11	POW	
0:38:46	39.60	16	COP	North Yuba/Middle Yuba Junction



Mainstem Yuba River – Habitat Mapping Units using video-mapped data and longitudinal profile.