

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow Difference		Percent Difference	Flow Difference		Percent Difference	Flow Difference		Percent Difference
							Flow (cfs)	(cfs)		Flow (cfs)	(cfs)		Flow (cfs)	(cfs)	
ME 2	44 58 4	2017	Wet	June	--	2,096.2	2,058.9	37.3	1.8%	2,051.6	44.6	2.1%	2,030.2	66.0	3.1%
ME 2	44 58 4	2017	Wet	July	--	922.5	885.7	36.8	4.0%	878.4	44.1	4.8%	857.1	65.4	7.1%
ME 2	44 58 4	2017	Wet	August	--	494.8	460.9	33.9	6.9%	454.1	40.7	8.2%	433.9	60.9	12.3%
ME 2	44 58 4	2017	Wet	September	Used in Summary Table Analysis	313.1	281.7	31.4	10.0%	275.3	37.8	12.1%	256.4	56.7	18.1%
ME 2	44 58 4	2018	Above Normal	October	Used in Summary Table Analysis	265.9	242.4	23.5	8.8%	237.6	28.3	10.6%	223.3	42.6	16.0%
ME 2	44 58 4	2018	Above Normal	November	Used in Summary Table Analysis	10,598.6	10,581.3	17.4	0.2%	10,577.8	20.8	0.2%	10,567.1	31.5	0.3%
ME 2	44 58 4	2018	Above Normal	December	--	5,428.2	5,413.9	14.4	0.3%	5,411.0	17.2	0.3%	5,402.1	26.2	0.5%
ME 2	44 58 4	2018	Above Normal	January	--	17,447.9	17,435.2	12.7	0.1%	17,432.9	15.0	0.1%	17,424.8	23.1	0.1%
ME 2	44 58 4	2018	Above Normal	February	--	7,581.8	7,570.6	11.2	0.1%	7,568.3	13.5	0.2%	7,561.2	20.6	0.3%
ME 2	44 58 4	2018	Above Normal	March	--	20,486.1	20,475.7	10.4	0.1%	20,473.4	12.7	0.1%	20,466.4	19.7	0.1%
ME 2	44 58 4	2018	Above Normal	April	--	31,949.1	31,939.8	9.3	0.0%	31,937.5	11.6	0.0%	31,931.7	17.4	0.1%
ME 2	44 58 4	2018	Above Normal	May	--	6,980.0	6,952.0	28.0	0.4%	6,946.5	33.4	0.5%	6,929.7	50.2	0.7%
ME 2	44 58 4	2018	Above Normal	June	--	1,905.4	1,870.1	35.3	1.9%	1,863.3	42.1	2.2%	1,843.2	62.3	3.3%
ME 2	44 58 4	2018	Above Normal	July	--	771.9	734.9	36.9	4.8%	727.6	44.3	5.7%	705.6	66.2	8.6%
ME 2	44 58 4	2018	Above Normal	August	--	433.1	400.6	32.5	7.5%	394.1	39.0	9.0%	374.5	58.6	13.5%
ME 2	44 58 4	2018	Above Normal	September	Used in Summary Table Analysis	291.4	259.9	31.5	10.8%	253.6	37.8	13.0%	234.6	56.8	19.5%
ME 2	44 58 4	2019	Below Normal	October	Used in Summary Table Analysis	201.4	178.0	23.4	11.6%	173.3	28.2	14.0%	159.0	42.5	21.1%
ME 2	44 58 4	2019	Below Normal	November	Used in Summary Table Analysis	6,497.0	6,479.4	17.6	0.3%	6,475.8	21.2	0.3%	6,464.9	32.1	0.5%
ME 2	44 58 4	2019	Below Normal	December	--	14,450.2	14,435.2	15.0	0.1%	14,431.7	18.5	0.1%	14,422.5	27.8	0.2%
ME 2	44 58 4	2019	Below Normal	January	--	34,782.4	34,768.5	13.9	0.0%	34,766.2	16.2	0.0%	34,758.1	24.3	0.1%
ME 2	44 58 4	2019	Below Normal	February	--	141,458.3	141,446.8	11.6	0.0%	141,435.2	23.1	0.0%	141,435.2	23.1	0.0%
ME 2	44 58 4	2019	Below Normal	March	--	42,078.7	42,068.3	10.4	0.0%	42,066.0	12.7	0.0%	42,059.0	19.7	0.0%
ME 2	44 58 4	2019	Below Normal	April	--	15,206.0	15,196.8	9.3	0.1%	15,194.4	11.6	0.1%	15,188.7	17.4	0.1%
ME 2	44 58 4	2019	Below Normal	May	--	16,608.8	16,578.7	30.1	0.2%	16,572.9	35.9	0.2%	16,554.4	54.4	0.3%
ME 2	44 58 4	2019	Below Normal	June	--	4,243.5	4,206.1	37.4	0.9%	4,199.2	44.3	1.0%	4,178.9	64.6	1.5%
ME 2	44 58 4	2019	Below Normal	July	--	1,349.0	1,312.0	36.9	2.7%	1,304.6	44.3	3.3%	1,283.0	66.0	4.9%
ME 2	44 58 4	2019	Below Normal	August	--	585.3	552.1	33.1	5.7%	545.5	39.8	6.8%	525.8	59.5	10.2%
ME 2	44 58 4	2019	Below Normal	September	Used in Summary Table Analysis	453.5	422.4	31.1	6.9%	416.1	37.4	8.2%	397.5	56.1	12.4%
ME 2	44 58 4	2020	Dry	October	Used in Summary Table Analysis	349.4	327.6	21.9	6.3%	323.1	26.3	7.5%	309.8	39.7	11.4%
ME 2	44 58 4	2020	Dry	November	Used in Summary Table Analysis	304.4	288.7	15.7	5.2%	285.5	18.9	6.2%	275.8	28.5	9.4%
ME 2	44 58 4	2020	Dry	December	--	12,968.8	12,954.9	13.9	0.1%	12,952.5	16.2	0.1%	12,943.3	25.5	0.2%
ME 2	44 58 4	2020	Dry	January	--	22,081.0	22,068.3	12.7	0.1%	22,066.0	15.0	0.1%	22,057.9	23.1	0.1%
ME 2	44 58 4	2020	Dry	February	--	7,403.9	7,392.8	11.1	0.2%	7,390.5	13.4	0.2%	7,383.6	20.4	0.3%
ME 2	44 58 4	2020	Dry	March	--	7,199.5	7,189.0	10.5	0.1%	7,186.9	12.6	0.2%	7,180.4	19.1	0.3%
ME 2	44 58 4	2020	Dry	April	--	5,433.6	5,404.1	29.5	0.5%	5,398.3	35.3	0.6%	5,380.8	52.8	1.0%
ME 2	44 58 4	2020	Dry	May	--	7,313.2	7,278.5	34.7	0.5%	7,271.5	41.7	0.6%	7,250.8	62.4	0.9%
ME 2	44 58 4	2020	Dry	June	--	2,103.4	2,056.9	46.4	2.2%	2,048.1	55.2	2.6%	2,022.2	81.1	3.9%
ME 2	44 58 4	2020	Dry	July	--	789.6	746.6	43.1	5.5%	738.0	51.7	6.5%	717.1	72.5	9.2%
ME 2	44 58 4	2020	Dry	August	--	391.8	351.5	40.3	10.3%	343.4	48.4	12.4%	321.4	70.4	18.0%
ME 2	44 58 4	2020	Dry	September	Used in Summary Table Analysis	241.5	203.8	37.8	15.6%	195.9	45.6	18.9%	173.3	68.2	28.2%
ME 2	43 58 5	2000	Above Normal	October	Used in Summary Table Analysis	805.3	781.3	24.0	3.0%	776.4	28.9	3.6%	761.8	43.6	5.4%
ME 2	43 58 5	2000	Above Normal	November	Used in Summary Table Analysis	11,893.5	11,875.0	18.5	0.2%	11,870.4	23.1	0.2%	11,860.0	33.6	0.3%
ME 2	43 58 5	2000	Above Normal	December	--	10,691.1	10,675.9	15.2	0.1%	10,672.8	18.3	0.2%	10,663.4	27.7	0.3%
ME 2	43 58 5	2000	Above Normal	January	--	28,195.6	28,181.7	13.9	0.0%	28,179.4	16.2	0.1%	28,170.1	25.5	0.1%
ME 2	43 58 5	2000	Above Normal	February	--	36,792.8	36,780.1	12.7	0.0%	36,777.8	15.0	0.0%	36,770.8	22.0	0.1%
ME 2	43 58 5	2000	Above Normal	March	--	18,239.6	18,229.2	10.4	0.1%	18,226.9	12.7	0.1%	18,219.9	19.7	0.1%
ME 2	43 58 5	2000	Above Normal	April	--	12,256.9	12,246.5	10.4	0.1%	12,244.2	12.7	0.1%	12,238.4	18.5	0.2%
ME 2	43 58 5	2000	Above Normal	May	--	7,047.6	7,017.7	29.9	0.4%	7,011.7	35.9	0.5%	6,993.9	53.7	0.8%
ME 2	43 58 5	2000	Above Normal	June	--	2,594.3	2,547.8	46.5	1.8%	2,538.7	55.7	2.1%	2,511.6	82.8	3.2%
ME 2	43 58 5	2000	Above Normal	July	--	984.9	946.9	38.0	3.9%	939.4	45.5	4.6%	916.9	68.0	6.9%
ME 2	43 58 5	2000	Above Normal	August	--	514.5	480.3	34.1	6.6%	473.6	40.9	8.0%	453.1	61.4	11.9%
ME 2	43 58 5	2000	Above Normal	September	Used in Summary Table Analysis	289.1	259.8	29.3	10.1%	253.9	35.2	12.2%	236.3	52.8	18.3%
ME 2	43 58 5	2001	Dry	October	Used in Summary Table Analysis	3,764.7	3,741.1	23.6	0.6%	3,736.2	28.5	0.8%	3,721.8	42.9	1.1%
ME 2	43 58 5	2001	Dry	November	Used in Summary Table Analysis	6,040.9	6,022.7	18.2	0.3%	6,019.1	21.8	0.4%	6,008.1	32.8	0.5%
ME 2	43 58 5	2001	Dry	December	--	8,754.7	8,739.5	15.3	0.2%	8,736.3	18.4	0.2%	8,727.1	27.7	0.3%
ME 2	43 58 5	2001	Dry	January	--	12,629.6	12,615.7	13.9	0.1%	12,613.4	16.2	0.1%	12,604.2	25.5	0.2%
ME 2	43 58 5	2001	Dry	February	--	17,370.4	17,358.8	11.6	0.1%	17,356.5	13.9	0.1%	17,348.4	22.0	0.1%
ME 2	43 58 5	2001	Dry	March	--	12,245.4	12,233.8	11.6	0.1%	12,232.6	12.7	0.1%	12,225.7	19.7	0.2%
ME 2	43 58 5	2001	Dry	April	--	10,917.9	10,886.9	31.0	0.3%	10,880.8	37.2	0.3%	10,862.4	55.6	0.5%
ME 2	43 58 5	2001	Dry	May	--	2,637.4	2,601.3	36.1	1.4%	2,594.1	43.3	1.6%	2,572.7	64.7	2.5%
ME 2	43 58 5	2001	Dry	June	--	2,614.8	2,563.5	51.3	2.0%	2,553.6	61.2	2.3%	2,524.3	90.5	3.5%
ME 2	43 58 5	2001	Dry	July	--	717.0	673.0	43.9	6.1%	664.3	52.7	7.3%	643.0	74.0	10.3%
ME 2	43 58 5	2001	Dry	August	--	168.0	126.5	41.4	24.7%	118.2	49.7	29.6%	95.7	72.3	43.0%
ME 2	43 58 5	2001	Dry	September	Used in Summary Table Analysis	90.3	54.3	36.0	39.8%	47.2	43.2	47.8%	26.5	63.8	70.6%

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**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 2	43 58 5	2002	Below Normal	October	Used in Summary Table Analysis	258.9	229.0	29.9	11.6%	222.9	36.0	13.9%	204.6	54.3	21.0%
ME 2	43 58 5	2002	Below Normal	November	Used in Summary Table Analysis	11,914.4	11,891.2	23.1	0.2%	11,886.6	27.8	0.2%	11,870.4	44.0	0.4%
ME 2	43 58 5	2002	Below Normal	December	--	35,339.1	35,320.6	18.5	0.1%	35,316.0	23.1	0.1%	35,303.2	35.9	0.1%
ME 2	43 58 5	2002	Below Normal	January	--	30,659.7	30,643.5	16.2	0.1%	30,640.0	19.7	0.1%	30,629.6	30.1	0.1%
ME 2	43 58 5	2002	Below Normal	February	--	24,547.5	24,532.4	15.0	0.1%	24,528.9	18.5	0.1%	24,519.7	27.8	0.1%
ME 2	43 58 5	2002	Below Normal	March	--	17,678.2	17,664.4	13.9	0.1%	17,662.0	16.2	0.1%	17,652.8	25.5	0.1%
ME 2	43 58 5	2002	Below Normal	April	--	9,887.5	9,857.2	30.3	0.3%	9,851.3	36.2	0.4%	9,833.2	54.3	0.5%
ME 2	43 58 5	2002	Below Normal	May	--	3,307.2	3,272.1	35.1	1.1%	3,265.0	42.1	1.3%	3,244.1	63.1	1.9%
ME 2	43 58 5	2002	Below Normal	June	--	849.5	808.0	41.5	4.9%	799.9	49.6	5.8%	776.0	73.5	8.6%
ME 2	43 58 5	2002	Below Normal	July	--	357.8	318.1	39.6	11.1%	310.3	47.5	13.3%	287.4	70.3	19.7%
ME 2	43 58 5	2002	Below Normal	August	--	220.9	185.0	36.0	16.3%	177.8	43.1	19.5%	155.8	65.2	29.5%
ME 2	43 58 5	2002	Below Normal	September	Used in Summary Table Analysis	158.2	125.3	32.9	20.8%	118.7	39.4	24.9%	98.0	60.2	38.1%
ME 2	43 58 5	2003	Wet	October	Used in Summary Table Analysis	123.3	97.1	26.2	21.2%	91.9	31.5	25.5%	75.9	47.4	38.4%
ME 2	43 58 5	2003	Wet	November	Used in Summary Table Analysis	887.8	867.8	20.0	2.2%	863.7	24.1	2.7%	851.3	36.5	4.1%
ME 2	43 58 5	2003	Wet	December	--	56,009.3	55,991.9	17.4	0.0%	55,988.4	20.8	0.0%	55,978.0	31.3	0.1%
ME 2	43 58 5	2003	Wet	January	--	31,363.4	31,348.4	15.0	0.0%	31,346.1	17.4	0.1%	31,336.8	26.6	0.1%
ME 2	43 58 5	2003	Wet	February	--	20,266.2	20,253.5	12.7	0.1%	20,250.0	16.2	0.1%	20,241.9	24.3	0.1%
ME 2	43 58 5	2003	Wet	March	--	23,899.3	23,886.6	12.7	0.1%	23,884.3	15.0	0.1%	23,877.3	22.0	0.1%
ME 2	43 58 5	2003	Wet	April	--	42,577.5	42,566.0	11.6	0.0%	42,563.7	13.9	0.0%	42,556.7	20.8	0.0%
ME 2	43 58 5	2003	Wet	May	--	12,179.4	12,149.3	30.1	0.2%	12,142.4	37.0	0.3%	12,125.0	54.4	0.4%
ME 2	43 58 5	2003	Wet	June	--	3,157.8	3,119.4	38.3	1.2%	3,112.0	45.7	1.4%	3,090.3	67.5	2.1%
ME 2	43 58 5	2003	Wet	July	--	1,464.9	1,425.8	39.1	2.7%	1,418.1	46.9	3.2%	1,395.0	69.9	4.8%
ME 2	43 58 5	2003	Wet	August	--	751.9	714.6	37.3	5.0%	706.7	45.2	6.0%	681.8	70.1	9.3%
ME 2	43 58 5	2003	Wet	September	Used in Summary Table Analysis	450.7	421.0	29.7	6.6%	415.1	35.6	7.9%	396.1	54.5	12.1%
ME 2	43 58 5	2004	Wet	October	Used in Summary Table Analysis	317.9	293.9	24.0	7.6%	289.0	28.9	9.1%	274.3	43.6	13.7%
ME 2	43 58 5	2004	Wet	November	Used in Summary Table Analysis	5,714.4	5,695.8	18.5	0.3%	5,692.0	22.3	0.4%	5,680.4	33.9	0.6%
ME 2	43 58 5	2004	Wet	December	--	35,907.4	35,891.2	16.2	0.0%	35,887.7	19.7	0.1%	35,878.5	28.9	0.1%
ME 2	43 58 5	2004	Wet	January	--	31,199.1	31,185.2	13.9	0.0%	31,181.7	17.4	0.1%	31,173.6	25.5	0.1%
ME 2	43 58 5	2004	Wet	February	--	37,972.2	37,959.5	12.7	0.0%	37,957.2	15.0	0.0%	37,949.1	23.1	0.1%
ME 2	43 58 5	2004	Wet	March	--	16,478.0	16,466.4	11.6	0.1%	16,464.1	13.9	0.1%	16,457.2	20.8	0.1%
ME 2	43 58 5	2004	Wet	April	--	9,417.4	9,406.6	10.8	0.1%	9,404.4	13.0	0.1%	9,397.8	19.6	0.2%
ME 2	43 58 5	2004	Wet	May	--	3,394.0	3,363.9	30.1	0.9%	3,358.0	36.0	1.1%	3,340.3	53.7	1.6%
ME 2	43 58 5	2004	Wet	June	--	688.1	651.5	36.6	5.3%	644.3	43.7	6.4%	623.3	64.8	9.4%
ME 2	43 58 5	2004	Wet	July	--	349.8	311.5	38.4	11.0%	303.9	46.0	13.1%	281.1	68.8	19.7%
ME 2	43 58 5	2004	Wet	August	--	219.4	185.0	34.4	15.7%	178.2	41.3	18.8%	157.4	62.0	28.3%
ME 2	43 58 5	2004	Wet	September	Used in Summary Table Analysis	157.1	124.1	33.0	21.0%	117.5	39.6	25.2%	97.7	59.5	37.8%
ME 2	43 58 5	2005	Above Normal	October	Used in Summary Table Analysis	7,566.6	7,541.8	24.8	0.3%	7,536.8	29.7	0.4%	7,521.8	44.8	0.6%
ME 2	43 58 5	2005	Above Normal	November	Used in Summary Table Analysis	2,242.1	2,223.7	18.4	0.8%	2,220.0	22.1	1.0%	2,208.7	33.4	1.5%
ME 2	43 58 5	2005	Above Normal	December	--	20,691.0	20,674.8	16.2	0.1%	20,671.3	19.7	0.1%	20,662.0	28.9	0.1%
ME 2	43 58 5	2005	Above Normal	January	--	22,120.4	22,106.5	13.9	0.1%	22,104.2	16.2	0.1%	22,094.9	25.5	0.1%
ME 2	43 58 5	2005	Above Normal	February	--	13,965.3	13,953.7	11.6	0.1%	13,950.2	15.0	0.1%	13,943.3	22.0	0.2%
ME 2	43 58 5	2005	Above Normal	March	--	28,366.9	28,355.3	11.6	0.0%	28,353.0	13.9	0.0%	28,346.1	20.8	0.1%
ME 2	43 58 5	2005	Above Normal	April	--	21,313.7	21,303.2	10.4	0.0%	21,300.9	12.7	0.1%	21,294.0	19.7	0.1%
ME 2	43 58 5	2005	Above Normal	May	--	19,413.2	19,381.9	31.3	0.2%	19,376.2	37.0	0.2%	19,357.6	55.6	0.3%
ME 2	43 58 5	2005	Above Normal	June	--	15,685.2	15,637.7	47.5	0.3%	15,628.5	56.7	0.4%	15,600.7	84.5	0.5%
ME 2	43 58 5	2005	Above Normal	July	--	2,863.1	2,822.8	40.3	1.4%	2,815.3	47.8	1.7%	2,792.9	70.1	2.4%
ME 2	43 58 5	2005	Above Normal	August	--	974.3	940.0	34.3	3.5%	933.3	41.0	4.2%	913.0	61.3	6.3%
ME 2	43 58 5	2005	Above Normal	September	Used in Summary Table Analysis	516.3	486.9	29.4	5.7%	481.1	35.2	6.8%	463.6	52.7	10.2%
ME 2	43 58 5	2006	Wet	October	Used in Summary Table Analysis	624.5	601.1	23.4	3.7%	596.4	28.1	4.5%	582.1	42.3	6.8%
ME 2	43 58 5	2006	Wet	November	Used in Summary Table Analysis	9,153.2	9,135.6	17.6	0.2%	9,132.1	21.2	0.2%	9,121.3	31.9	0.3%
ME 2	43 58 5	2006	Wet	December	--	42,990.7	42,975.7	15.0	0.0%	42,972.2	18.5	0.0%	42,963.0	27.8	0.1%
ME 2	43 58 5	2006	Wet	January	--	45,838.0	45,824.1	13.9	0.0%	45,820.6	17.4	0.0%	45,812.5	25.5	0.1%
ME 2	43 58 5	2006	Wet	February	--	26,422.5	26,409.7	12.7	0.0%	26,407.4	15.0	0.1%	26,400.5	22.0	0.1%
ME 2	43 58 5	2006	Wet	March	--	46,796.3	46,784.7	11.6	0.0%	46,782.4	13.9	0.0%	46,775.5	20.8	0.0%
ME 2	43 58 5	2006	Wet	April	--	30,285.9	30,275.5	10.4	0.0%	30,273.1	12.7	0.0%	30,267.4	18.5	0.1%
ME 2	43 58 5	2006	Wet	May	--	14,125.0	14,108.8	16.2	0.1%	14,105.3	19.7	0.1%	14,096.1	28.9	0.2%
ME 2	43 58 5	2006	Wet	June	--	3,539.9	3,500.8	39.1	1.1%	3,493.3	46.6	1.3%	3,470.9	69.0	1.9%
ME 2	43 58 5	2006	Wet	July	--	1,268.8	1,230.4	38.3	3.0%	1,223.0	45.7	3.6%	1,200.8	67.9	5.4%
ME 2	43 58 5	2006	Wet	August	--	655.2	619.6	35.5	5.4%	612.6	42.5	6.5%	591.5	63.7	9.7%
ME 2	43 58 5	2006	Wet	September	Used in Summary Table Analysis	417.3	387.5	29.8	7.1%	381.6	35.7	8.6%	363.7	53.6	12.8%
ME 2	43 58 5	2007	Above Normal	October	Used in Summary Table Analysis	267.4	243.6	23.8	8.9%	238.8	28.6	10.7%	224.2	43.2	16.2%
ME 2	43 58 5	2007	Above Normal	November	Used in Summary Table Analysis	8,532.6	8,514.0	18.6	0.2%	8,510.2	22.5	0.3%	8,498.7	33.9	0.4%
ME 2	43 58 5	2007	Above Normal	December	--	20,135.4	20,119.2	16.2	0.1%	20,115.7	19.7	0.1%	20,105.3	30.1	0.1%
ME 2	43 58 5	2007	Above Normal	January	--	10,179.3	10,165.4	13.9	0.1%	10,162.6	16.7	0.2%	10,153.9	25.3	0.2%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 2	43 58 5	2007	Above Normal	February	--	30,262.7	30,250.0	12.7	0.0%	30,246.5	16.2	0.1%	30,238.4	24.3	0.1%
ME 2	43 58 5	2007	Above Normal	March	--	13,049.8	13,037.0	12.7	0.1%	13,034.7	15.0	0.1%	13,027.8	22.0	0.2%
ME 2	43 58 5	2007	Above Normal	April	--	11,486.5	11,457.3	29.2	0.3%	11,451.4	35.1	0.3%	11,434.0	52.4	0.5%
ME 2	43 58 5	2007	Above Normal	May	--	4,118.9	4,085.0	33.9	0.8%	4,078.1	40.7	1.0%	4,057.8	61.1	1.5%
ME 2	43 58 5	2007	Above Normal	June	--	1,485.0	1,441.3	43.6	2.9%	1,432.9	52.1	3.5%	1,407.8	77.2	5.2%
ME 2	43 58 5	2007	Above Normal	July	--	491.7	450.7	41.1	8.4%	442.5	49.2	10.0%	418.7	73.1	14.9%
ME 2	43 58 5	2007	Above Normal	August	--	216.9	181.8	35.1	16.2%	174.8	42.1	19.4%	153.4	63.4	29.3%
ME 2	43 58 5	2007	Above Normal	September	Used in Summary Table Analysis	144.5	112.4	32.2	22.3%	105.9	38.6	26.7%	86.5	58.1	40.2%
ME 2	43 58 5	2008	Dry	October	Used in Summary Table Analysis	3,386.6	3,361.0	25.6	0.8%	3,355.8	30.8	0.9%	3,340.3	46.3	1.4%
ME 2	43 58 5	2008	Dry	November	Used in Summary Table Analysis	3,229.7	3,210.8	19.0	0.6%	3,206.9	22.8	0.7%	3,195.3	34.5	1.1%
ME 2	43 58 5	2008	Dry	December	--	22,767.4	22,751.2	16.2	0.1%	22,747.7	19.7	0.1%	22,737.3	30.1	0.1%
ME 2	43 58 5	2008	Dry	January	--	37,186.3	37,171.3	15.0	0.0%	37,169.0	17.4	0.0%	37,159.7	26.6	0.1%
ME 2	43 58 5	2008	Dry	February	--	26,187.5	26,175.9	11.6	0.0%	26,172.5	15.0	0.1%	26,165.5	22.0	0.1%
ME 2	43 58 5	2008	Dry	March	--	11,756.9	11,745.4	11.6	0.1%	11,743.1	13.9	0.1%	11,736.1	20.8	0.2%
ME 2	43 58 5	2008	Dry	April	--	8,987.8	8,956.8	31.0	0.3%	8,950.7	37.2	0.4%	8,932.3	55.6	0.6%
ME 2	43 58 5	2008	Dry	May	--	1,364.0	1,333.7	30.3	2.2%	1,327.9	36.1	2.6%	1,310.6	53.4	3.9%
ME 2	43 58 5	2008	Dry	June	--	433.0	385.0	48.0	11.1%	375.6	57.4	13.3%	348.0	85.0	19.6%
ME 2	43 58 5	2008	Dry	July	--	251.8	207.3	44.4	17.6%	198.6	53.2	21.1%	177.1	74.6	29.6%
ME 2	43 58 5	2008	Dry	August	--	174.7	133.1	41.5	23.8%	124.8	49.8	28.5%	99.4	75.3	43.1%
ME 2	43 58 5	2008	Dry	September	Used in Summary Table Analysis	136.4	96.2	40.2	29.5%	88.2	48.2	35.4%	65.1	71.3	52.3%
ME 2	43 58 5	2009	Critical	October	Used in Summary Table Analysis	915.8	886.1	29.8	3.3%	880.0	35.8	3.9%	861.4	54.4	5.9%
ME 2	43 58 5	2009	Critical	November	Used in Summary Table Analysis	5,425.5	5,403.5	22.0	0.4%	5,399.0	26.5	0.5%	5,382.6	42.8	0.8%
ME 2	43 58 5	2009	Critical	December	--	11,982.6	11,964.1	18.5	0.2%	11,959.5	23.1	0.2%	11,947.9	34.7	0.3%
ME 2	43 58 5	2009	Critical	January	--	8,745.3	8,728.7	16.6	0.2%	8,725.3	19.9	0.2%	8,715.0	30.2	0.3%
ME 2	43 58 5	2009	Critical	February	--	22,461.8	22,447.9	13.9	0.1%	22,444.4	17.4	0.1%	22,436.3	25.5	0.1%
ME 2	43 58 5	2009	Critical	March	--	21,006.9	20,994.2	12.7	0.1%	20,991.9	15.0	0.1%	20,983.8	23.1	0.1%
ME 2	43 58 5	2009	Critical	April	--	10,084.3	10,052.1	32.2	0.3%	10,045.8	38.4	0.4%	10,026.9	57.4	0.6%
ME 2	43 58 5	2009	Critical	May	--	15,526.6	15,487.3	39.4	0.3%	15,480.3	46.3	0.3%	15,457.2	69.4	0.4%
ME 2	43 58 5	2009	Critical	June	--	3,152.3	3,100.5	51.9	1.6%	3,090.5	61.8	2.0%	3,060.9	91.4	2.9%
ME 2	43 58 5	2009	Critical	July	--	1,256.6	1,211.9	44.7	3.6%	1,203.1	53.5	4.3%	1,181.7	74.9	6.0%
ME 2	43 58 5	2009	Critical	August	--	662.4	620.7	41.7	6.3%	612.4	50.0	7.5%	589.7	72.7	11.0%
ME 2	43 58 5	2009	Critical	September	Used in Summary Table Analysis	384.4	348.3	36.2	9.4%	341.0	43.4	11.3%	320.2	64.2	16.7%
ME 2	43 58 5	2010	Below Normal	October	Used in Summary Table Analysis	6,077.7	6,047.8	29.9	0.5%	6,041.7	36.0	0.6%	6,022.2	55.4	0.9%
ME 2	43 58 5	2010	Below Normal	November	Used in Summary Table Analysis	8,232.3	8,209.7	22.6	0.3%	8,205.2	27.1	0.3%	8,188.5	43.7	0.5%
ME 2	43 58 5	2010	Below Normal	December	--	12,236.1	12,217.6	18.5	0.2%	12,214.1	22.0	0.2%	12,201.4	34.7	0.3%
ME 2	43 58 5	2010	Below Normal	January	--	35,834.5	35,818.3	16.2	0.0%	35,814.8	19.7	0.1%	35,804.4	30.1	0.1%
ME 2	43 58 5	2010	Below Normal	February	--	27,133.1	27,118.1	15.0	0.1%	27,115.7	17.4	0.1%	27,106.5	26.6	0.1%
ME 2	43 58 5	2010	Below Normal	March	--	28,740.7	28,726.9	13.9	0.0%	28,724.5	16.2	0.1%	28,716.4	24.3	0.1%
ME 2	43 58 5	2010	Below Normal	April	--	39,833.3	39,820.6	12.7	0.0%	39,818.3	15.0	0.0%	39,810.2	23.1	0.1%
ME 2	43 58 5	2010	Below Normal	May	--	20,129.6	20,097.2	32.4	0.2%	20,090.3	39.4	0.2%	20,071.8	57.9	0.3%
ME 2	43 58 5	2010	Below Normal	June	--	9,240.6	9,191.9	48.7	0.5%	9,182.4	58.2	0.6%	9,154.3	86.3	0.9%
ME 2	43 58 5	2010	Below Normal	July	--	1,448.6	1,408.2	40.4	2.8%	1,400.5	48.1	3.3%	1,377.5	71.1	4.9%
ME 2	43 58 5	2010	Below Normal	August	--	560.2	525.1	35.2	6.3%	518.2	42.0	7.5%	497.4	62.8	11.2%
ME 2	43 58 5	2010	Below Normal	September	Used in Summary Table Analysis	642.0	608.0	34.0	5.3%	601.2	40.8	6.4%	580.9	61.1	9.5%
ME 2	43 58 5	2011	Wet	October	Used in Summary Table Analysis	9,549.9	9,525.8	24.1	0.3%	9,520.9	28.9	0.3%	9,506.4	43.5	0.5%
ME 2	43 58 5	2011	Wet	November	Used in Summary Table Analysis	14,123.8	14,105.3	18.5	0.1%	14,101.9	22.0	0.2%	14,090.3	33.6	0.2%
ME 2	43 58 5	2011	Wet	December	--	33,305.6	33,289.4	16.2	0.0%	33,285.9	19.7	0.1%	33,276.6	28.9	0.1%
ME 2	43 58 5	2011	Wet	January	--	14,082.2	14,068.3	13.9	0.1%	14,066.0	16.2	0.1%	14,057.9	24.3	0.2%
ME 2	43 58 5	2011	Wet	February	--	20,695.6	20,682.9	12.7	0.1%	20,680.6	15.0	0.1%	20,672.5	23.1	0.1%
ME 2	43 58 5	2011	Wet	March	--	51,747.7	51,735.0	12.7	0.0%	51,732.6	15.0	0.0%	51,725.7	22.0	0.0%
ME 2	43 58 5	2011	Wet	April	--	24,710.6	24,699.1	11.6	0.0%	24,696.8	13.9	0.1%	24,689.8	20.8	0.1%
ME 2	43 58 5	2011	Wet	May	--	11,341.2	11,310.6	30.6	0.3%	11,304.5	36.7	0.3%	11,286.3	54.9	0.5%
ME 2	43 58 5	2011	Wet	June	--	7,015.7	6,968.1	47.7	0.7%	6,958.7	57.1	0.8%	6,931.0	84.7	1.2%
ME 2	43 58 5	2011	Wet	July	--	1,825.9	1,780.9	45.0	2.5%	1,772.0	53.9	3.0%	1,746.9	79.1	4.3%
ME 2	43 58 5	2011	Wet	August	--	770.1	735.5	34.6	4.5%	728.6	41.5	5.4%	708.0	62.1	8.1%
ME 2	43 58 5	2011	Wet	September	Used in Summary Table Analysis	426.8	396.6	30.2	7.1%	390.5	36.3	8.5%	372.4	54.4	12.7%
ME 2	43 58 5	2012	Below Normal	October	Used in Summary Table Analysis	4,499.8	4,475.6	24.2	0.5%	4,470.7	29.1	0.6%	4,455.8	44.0	1.0%
ME 2	43 58 5	2012	Below Normal	November	Used in Summary Table Analysis	8,150.3	8,131.6	18.8	0.2%	8,127.8	22.6	0.3%	8,116.3	34.0	0.4%
ME 2	43 58 5	2012	Below Normal	December	--	5,145.5	5,129.7	15.7	0.3%	5,126.5	19.0	0.4%	5,116.8	28.7	0.6%
ME 2	43 58 5	2012	Below Normal	January	--	19,860.0	19,846.1	13.9	0.1%	19,843.8	16.2	0.1%	19,834.5	25.5	0.1%
ME 2	43 58 5	2012	Below Normal	February	--	18,140.0	18,127.3	12.7	0.1%	18,125.0	15.0	0.1%	18,116.9	23.1	0.1%
ME 2	43 58 5	2012	Below Normal	March	--	45,123.8	45,111.1	12.7	0.0%	45,108.8	15.0	0.0%	45,101.9	22.0	0.0%
ME 2	43 58 5	2012	Below Normal	April	--	26,750.0	26,738.4	11.6	0.0%	26,736.1	13.9	0.1%	26,729.2	20.8	0.1%
ME 2	43 58 5	2012	Below Normal	May	--	7,457.3	7,426.6	30.7	0.4%	7,420.6	36.7	0.5%	7,402.7	54.6	0.7%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 2	43 58 5	2012	Below Normal	June	--	5,475.7	5,427.2	48.5	0.9%	5,417.7	58.0	1.1%	5,389.7	86.0	1.6%
ME 2	43 58 5	2012	Below Normal	July	--	2,199.8	2,155.6	44.2	2.0%	2,146.8	53.0	2.4%	2,120.9	78.8	3.6%
ME 2	43 58 5	2012	Below Normal	August	--	384.1	351.6	32.6	8.5%	345.1	39.0	10.2%	325.7	58.4	15.2%
ME 2	43 58 5	2012	Below Normal	September	Used in Summary Table Analysis	242.8	214.6	28.3	11.6%	208.9	33.9	14.0%	192.1	50.8	20.9%
ME 2	43 58 5	2013	Below Normal	October	Used in Summary Table Analysis	1,885.2	1,860.9	24.3	1.3%	1,856.0	29.2	1.5%	1,841.2	44.0	2.3%
ME 2	43 58 5	2013	Below Normal	November	Used in Summary Table Analysis	14,523.1	14,504.6	18.5	0.1%	14,501.2	22.0	0.2%	14,489.6	33.6	0.2%
ME 2	43 58 5	2013	Below Normal	December	--	59,625.0	59,607.6	17.4	0.0%	59,604.2	20.8	0.0%	59,594.9	30.1	0.1%
ME 2	43 58 5	2013	Below Normal	January	--	22,093.8	22,079.9	13.9	0.1%	22,077.5	16.2	0.1%	22,068.3	25.5	0.1%
ME 2	43 58 5	2013	Below Normal	February	--	8,796.3	8,783.3	13.0	0.1%	8,780.7	15.6	0.2%	8,772.8	23.5	0.3%
ME 2	43 58 5	2013	Below Normal	March	--	10,255.1	10,242.9	12.2	0.1%	10,240.5	14.6	0.1%	10,233.1	22.0	0.2%
ME 2	43 58 5	2013	Below Normal	April	--	8,269.4	8,240.9	28.6	0.3%	8,235.2	34.3	0.4%	8,218.2	51.3	0.6%
ME 2	43 58 5	2013	Below Normal	May	--	4,402.3	4,368.4	33.9	0.8%	4,361.6	40.7	0.9%	4,341.3	61.0	1.4%
ME 2	43 58 5	2013	Below Normal	June	--	2,102.1	2,058.7	43.4	2.1%	2,050.2	51.9	2.5%	2,025.1	77.0	3.7%
ME 2	43 58 5	2013	Below Normal	July	--	715.5	676.9	38.6	5.4%	669.3	46.2	6.5%	647.1	68.4	9.6%
ME 2	43 58 5	2013	Below Normal	August	--	335.2	300.0	35.2	10.5%	293.0	42.2	12.6%	271.4	63.7	19.0%
ME 2	43 58 5	2013	Below Normal	September	Used in Summary Table Analysis	4,743.1	4,706.3	36.8	0.8%	4,698.7	44.3	0.9%	4,676.5	66.6	1.4%
ME 2	43 58 5	2014	Critical	October	Used in Summary Table Analysis	281.3	256.5	24.8	8.8%	251.4	29.8	10.6%	237.2	44.1	15.7%
ME 2	43 58 5	2014	Critical	November	Used in Summary Table Analysis	1,516.0	1,496.9	19.1	1.3%	1,492.9	23.0	1.5%	1,481.3	34.7	2.3%
ME 2	43 58 5	2014	Critical	December	--	1,577.4	1,561.3	16.1	1.0%	1,558.0	19.4	1.2%	1,548.1	29.3	1.9%
ME 2	43 58 5	2014	Critical	January	--	2,798.4	2,784.4	14.0	0.5%	2,781.5	16.9	0.6%	2,772.8	25.6	0.9%
ME 2	43 58 5	2014	Critical	February	--	15,680.6	15,667.8	12.7	0.1%	15,665.5	15.0	0.1%	15,657.4	23.1	0.1%
ME 2	43 58 5	2014	Critical	March	--	31,391.2	31,379.6	11.6	0.0%	31,377.3	13.9	0.0%	31,370.4	20.8	0.1%
ME 2	43 58 5	2014	Critical	April	--	12,958.3	12,927.1	31.3	0.2%	12,921.3	37.0	0.3%	12,901.6	56.7	0.4%
ME 2	43 58 5	2014	Critical	May	--	5,169.0	5,132.3	36.7	0.7%	5,124.9	44.1	0.9%	5,102.9	66.1	1.3%
ME 2	43 58 5	2014	Critical	June	--	1,191.4	1,139.4	52.0	4.4%	1,129.2	62.2	5.2%	1,100.2	91.3	7.7%
ME 2	43 58 5	2014	Critical	July	--	542.7	498.3	44.4	8.2%	489.5	53.3	9.8%	467.9	74.9	13.8%
ME 2	43 58 5	2014	Critical	August	--	343.0	301.8	41.2	12.0%	293.5	49.5	14.4%	271.1	71.9	21.0%
ME 2	43 58 5	2014	Critical	September	Used in Summary Table Analysis	2,553.7	2,512.5	41.2	1.6%	2,504.4	49.3	1.9%	2,480.4	73.3	2.9%
ME 2	43 58 5	2015	Dry	October	Used in Summary Table Analysis	11,281.3	11,250.7	30.6	0.3%	11,244.7	36.6	0.3%	11,226.7	54.5	0.5%
ME 2	43 58 5	2015	Dry	November	Used in Summary Table Analysis	8,955.0	8,933.0	22.0	0.2%	8,928.6	26.4	0.3%	8,912.4	42.6	0.5%
ME 2	43 58 5	2015	Dry	December	--	32,299.8	32,281.3	18.5	0.1%	32,277.8	22.0	0.1%	32,265.0	34.7	0.1%
ME 2	43 58 5	2015	Dry	January	--	14,530.1	14,513.9	16.2	0.1%	14,510.4	19.7	0.1%	14,500.0	30.1	0.2%
ME 2	43 58 5	2015	Dry	February	--	27,110.0	27,096.1	13.9	0.1%	27,092.6	17.4	0.1%	27,084.5	25.5	0.1%
ME 2	43 58 5	2015	Dry	March	--	11,542.0	11,529.6	12.4	0.1%	11,527.1	14.9	0.1%	11,519.4	22.6	0.2%
ME 2	43 58 5	2015	Dry	April	--	8,305.8	8,274.1	31.7	0.4%	8,267.7	38.1	0.5%	8,248.8	56.9	0.7%
ME 2	43 58 5	2015	Dry	May	--	1,508.7	1,471.9	36.8	2.4%	1,464.7	44.0	2.9%	1,444.0	64.7	4.3%
ME 2	43 58 5	2015	Dry	June	--	650.3	601.7	48.7	7.5%	592.2	58.2	8.9%	564.1	86.2	13.3%
ME 2	43 58 5	2015	Dry	July	--	266.0	221.2	44.8	16.8%	212.4	53.6	20.2%	190.7	75.3	28.3%
ME 2	43 58 5	2015	Dry	August	--	162.0	120.3	41.7	25.8%	111.9	50.1	30.9%	89.3	72.8	44.9%
ME 2	43 58 5	2015	Dry	September	Used in Summary Table Analysis	117.5	78.5	39.0	33.2%	70.3	47.1	40.1%	46.9	70.5	60.0%
ME 2	43 58 5	2016	Above Normal	October	Used in Summary Table Analysis	83.2	51.2	32.0	38.5%	45.1	38.0	45.7%	26.7	56.4	67.9%
ME 2	43 58 5	2016	Above Normal	November	Used in Summary Table Analysis	3,793.5	3,770.8	22.7	0.6%	3,766.2	27.3	0.7%	3,749.1	44.4	1.2%
ME 2	43 58 5	2016	Above Normal	December	--	36,245.4	36,225.7	19.7	0.1%	36,222.2	23.1	0.1%	36,209.5	35.9	0.1%
ME 2	43 58 5	2016	Above Normal	January	--	56,924.8	56,907.4	17.4	0.0%	56,903.9	20.8	0.0%	56,893.5	31.3	0.1%
ME 2	43 58 5	2016	Above Normal	February	--	24,204.9	24,191.0	13.9	0.1%	24,188.7	16.2	0.1%	24,179.4	25.5	0.1%
ME 2	43 58 5	2016	Above Normal	March	--	41,596.1	41,582.2	13.9	0.0%	41,579.9	16.2	0.0%	41,571.8	24.3	0.1%
ME 2	43 58 5	2016	Above Normal	April	--	18,487.3	18,474.5	12.7	0.1%	18,472.2	15.0	0.1%	18,465.3	22.0	0.1%
ME 2	43 58 5	2016	Above Normal	May	--	5,198.7	5,182.3	16.4	0.3%	5,178.9	19.8	0.4%	5,169.0	29.7	0.6%
ME 2	43 58 5	2016	Above Normal	June	--	1,503.7	1,467.7	36.0	2.4%	1,461.7	42.0	2.8%	1,444.1	59.6	4.0%
ME 2	43 58 5	2016	Above Normal	July	--	816.6	778.1	38.5	4.7%	770.5	46.1	5.6%	748.1	68.5	8.4%
ME 2	43 58 5	2016	Above Normal	August	--	484.8	448.7	36.0	7.4%	441.5	43.2	8.9%	420.1	64.7	13.3%
ME 2	43 58 5	2016	Above Normal	September	Used in Summary Table Analysis	321.6	288.5	33.1	10.3%	281.7	40.0	12.4%	261.3	60.3	18.8%
ME 2	43 58 5	2017	Wet	October	Used in Summary Table Analysis	18,137.7	18,112.3	25.5	0.1%	18,107.6	30.1	0.2%	18,092.6	45.1	0.2%
ME 2	43 58 5	2017	Wet	November	Used in Summary Table Analysis	18,660.9	18,642.4	18.5	0.1%	18,638.9	22.0	0.1%	18,627.3	33.6	0.2%
ME 2	43 58 5	2017	Wet	December	--	23,858.8	23,842.6	16.2	0.1%	23,839.1	19.7	0.1%	23,829.9	28.9	0.1%
ME 2	43 58 5	2017	Wet	January	--	106,151.6	106,137.7	13.9	0.0%	106,134.3	17.4	0.0%	106,125.0	26.6	0.0%
ME 2	43 58 5	2017	Wet	February	--	81,398.1	81,384.3	13.9	0.0%	81,381.9	16.2	0.0%	81,373.8	24.3	0.0%
ME 2	43 58 5	2017	Wet	March	--	27,136.6	27,125.0	11.6	0.0%	27,122.7	13.9	0.1%	27,114.6	22.0	0.1%
ME 2	43 58 5	2017	Wet	April	--	22,790.5	22,780.1	10.4	0.0%	22,777.8	12.7	0.1%	22,770.8	19.7	0.1%
ME 2	43 58 5	2017	Wet	May	--	6,269.3	6,252.9	16.4	0.3%	6,249.7	19.7	0.3%	6,239.9	29.4	0.5%
ME 2	43 58 5	2017	Wet	June	--	2,099.4	2,060.9	38.5	1.8%	2,053.4	46.1	2.2%	2,031.3	68.2	3.2%
ME 2	43 58 5	2017	Wet	July	--	924.7	886.2	38.5	4.2%	878.7	46.1	5.0%	856.4	68.4	7.4%
ME 2	43 58 5	2017	Wet	August	--	497.0	461.3	35.7	7.2%	454.2	42.8	8.6%	433.0	64.1	12.9%
ME 2	43 58 5	2017	Wet	September	Used in Summary Table Analysis	315.1	282.1	33.0	10.5%	275.4	39.7	12.6%	255.6	59.5	18.9%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 2	43 58 5	2018	Above Normal	October	Used in Summary Table Analysis	267.9	243.1	24.8	9.2%	238.1	29.8	11.1%	223.1	44.8	16.7%
ME 2	43 58 5	2018	Above Normal	November	Used in Summary Table Analysis	10,619.9	10,601.6	18.3	0.2%	10,597.9	22.0	0.2%	10,586.7	33.2	0.3%
ME 2	43 58 5	2018	Above Normal	December	--	5,431.1	5,416.0	15.2	0.3%	5,412.8	18.3	0.3%	5,403.6	27.5	0.5%
ME 2	43 58 5	2018	Above Normal	January	--	17,483.8	17,469.9	13.9	0.1%	17,467.6	16.2	0.1%	17,459.5	24.3	0.1%
ME 2	43 58 5	2018	Above Normal	February	--	7,584.4	7,572.6	11.8	0.2%	7,570.1	14.2	0.2%	7,562.7	21.6	0.3%
ME 2	43 58 5	2018	Above Normal	March	--	20,509.3	20,498.8	10.4	0.1%	20,496.5	12.7	0.1%	20,489.6	19.7	0.1%
ME 2	43 58 5	2018	Above Normal	April	--	31,976.9	31,966.4	10.4	0.0%	31,964.1	12.7	0.0%	31,958.3	18.5	0.1%
ME 2	43 58 5	2018	Above Normal	May	--	6,981.7	6,952.7	29.1	0.4%	6,947.0	34.7	0.5%	6,929.5	52.2	0.7%
ME 2	43 58 5	2018	Above Normal	June	--	1,907.3	1,870.4	36.9	1.9%	1,863.2	44.1	2.3%	1,842.1	65.2	3.4%
ME 2	43 58 5	2018	Above Normal	July	--	773.8	735.2	38.6	5.0%	727.5	46.3	6.0%	704.6	69.2	8.9%
ME 2	43 58 5	2018	Above Normal	August	--	435.1	400.8	34.2	7.9%	394.0	41.1	9.4%	373.4	61.6	14.2%
ME 2	43 58 5	2018	Above Normal	September	Used in Summary Table Analysis	293.3	260.2	33.1	11.3%	253.6	39.7	13.5%	233.7	59.6	20.3%
ME 2	43 58 5	2019	Below Normal	October	Used in Summary Table Analysis	203.1	178.4	24.6	12.1%	173.4	29.6	14.6%	158.4	44.6	22.0%
ME 2	43 58 5	2019	Below Normal	November	Used in Summary Table Analysis	6,511.2	6,492.7	18.5	0.3%	6,488.9	22.3	0.3%	6,477.5	33.7	0.5%
ME 2	43 58 5	2019	Below Normal	December	--	14,473.4	14,458.3	15.0	0.1%	14,454.9	18.5	0.1%	14,445.6	27.8	0.2%
ME 2	43 58 5	2019	Below Normal	January	--	34,828.7	34,814.8	13.9	0.0%	34,812.5	16.2	0.0%	34,803.2	25.5	0.1%
ME 2	43 58 5	2019	Below Normal	February	--	141,504.6	141,493.1	11.6	0.0%	141,493.1	11.6	0.0%	141,481.5	23.1	0.0%
ME 2	43 58 5	2019	Below Normal	March	--	42,105.3	42,093.8	11.6	0.0%	42,091.4	13.9	0.0%	42,084.5	20.8	0.0%
ME 2	43 58 5	2019	Below Normal	April	--	15,214.1	15,203.7	10.4	0.1%	15,201.4	12.7	0.1%	15,195.6	18.5	0.1%
ME 2	43 58 5	2019	Below Normal	May	--	16,643.5	16,612.3	31.3	0.2%	16,606.5	37.0	0.2%	16,588.0	55.6	0.3%
ME 2	43 58 5	2019	Below Normal	June	--	4,244.3	4,205.4	38.9	0.9%	4,198.1	46.2	1.1%	4,176.9	67.5	1.6%
ME 2	43 58 5	2019	Below Normal	July	--	1,351.2	1,312.5	38.7	2.9%	1,304.9	46.3	3.4%	1,282.2	69.0	5.1%
ME 2	43 58 5	2019	Below Normal	August	--	587.4	552.6	34.8	5.9%	545.6	41.8	7.1%	524.9	62.5	10.6%
ME 2	43 58 5	2019	Below Normal	September	Used in Summary Table Analysis	455.5	422.8	32.7	7.2%	416.2	39.3	8.6%	396.6	58.9	12.9%
ME 2	43 58 5	2020	Dry	October	Used in Summary Table Analysis	351.1	328.0	23.1	6.6%	323.3	27.8	7.9%	309.2	41.9	11.9%
ME 2	43 58 5	2020	Dry	November	Used in Summary Table Analysis	306.9	290.3	16.6	5.4%	286.9	20.0	6.5%	276.7	30.2	9.9%
ME 2	43 58 5	2020	Dry	December	--	13,003.5	12,988.4	15.0	0.1%	12,985.0	18.5	0.1%	12,975.7	27.8	0.2%
ME 2	43 58 5	2020	Dry	January	--	22,107.6	22,094.9	12.7	0.1%	22,091.4	16.2	0.1%	22,083.3	24.3	0.1%
ME 2	43 58 5	2020	Dry	February	--	7,405.9	7,394.1	11.8	0.2%	7,391.7	14.2	0.2%	7,384.5	21.4	0.3%
ME 2	43 58 5	2020	Dry	March	--	7,205.2	7,194.2	11.0	0.2%	7,191.9	13.3	0.2%	7,185.2	20.0	0.3%
ME 2	43 58 5	2020	Dry	April	--	5,439.7	5,409.1	30.6	0.6%	5,403.0	36.7	0.7%	5,385.0	54.7	1.0%
ME 2	43 58 5	2020	Dry	May	--	7,320.9	7,284.6	36.3	0.5%	7,277.3	43.6	0.6%	7,255.8	65.2	0.9%
ME 2	43 58 5	2020	Dry	June	--	2,104.4	2,056.3	48.1	2.3%	2,047.1	57.3	2.7%	2,020.1	84.3	4.0%
ME 2	43 58 5	2020	Dry	July	--	791.3	746.2	45.0	5.7%	737.2	54.0	6.8%	715.3	76.0	9.6%
ME 2	43 58 5	2020	Dry	August	--	393.5	351.1	42.5	10.8%	342.5	51.0	13.0%	319.4	74.2	18.8%
ME 2	43 58 5	2020	Dry	September	Used in Summary Table Analysis	243.2	203.4	39.8	16.4%	195.2	48.0	19.7%	171.5	71.7	29.5%
ME 2	42 59 6	2000	Above Normal	October	Used in Summary Table Analysis	808.1	782.9	25.3	3.1%	777.7	30.4	3.8%	762.4	45.7	5.7%
ME 2	42 59 6	2000	Above Normal	November	Used in Summary Table Analysis	11,921.3	11,901.6	19.7	0.2%	11,898.1	23.1	0.2%	11,886.6	34.7	0.3%
ME 2	42 59 6	2000	Above Normal	December	--	10,706.8	10,690.7	16.1	0.2%	10,687.5	19.3	0.2%	10,677.7	29.2	0.3%
ME 2	42 59 6	2000	Above Normal	January	--	28,241.9	28,228.0	13.9	0.0%	28,224.5	17.4	0.1%	28,215.3	26.6	0.1%
ME 2	42 59 6	2000	Above Normal	February	--	36,822.9	36,810.2	12.7	0.0%	36,807.9	15.0	0.0%	36,799.8	23.1	0.1%
ME 2	42 59 6	2000	Above Normal	March	--	18,250.0	18,238.4	11.6	0.1%	18,236.1	13.9	0.1%	18,229.2	20.8	0.1%
ME 2	42 59 6	2000	Above Normal	April	--	12,265.0	12,254.6	10.4	0.1%	12,252.3	12.7	0.1%	12,245.4	19.7	0.2%
ME 2	42 59 6	2000	Above Normal	May	--	7,054.6	7,023.5	31.1	0.4%	7,017.2	37.4	0.5%	6,998.7	55.9	0.8%
ME 2	42 59 6	2000	Above Normal	June	--	2,597.7	2,549.3	48.4	1.9%	2,539.7	58.0	2.2%	2,511.6	86.1	3.3%
ME 2	42 59 6	2000	Above Normal	July	--	987.2	947.2	39.9	4.0%	939.4	47.8	4.8%	915.8	71.4	7.2%
ME 2	42 59 6	2000	Above Normal	August	--	516.8	480.8	36.0	7.0%	473.6	43.2	8.4%	452.0	64.8	12.5%
ME 2	42 59 6	2000	Above Normal	September	Used in Summary Table Analysis	291.3	260.3	31.0	10.6%	254.1	37.2	12.8%	235.5	55.8	19.1%
ME 2	42 59 6	2001	Dry	October	Used in Summary Table Analysis	3,772.2	3,747.3	24.9	0.7%	3,742.2	30.0	0.8%	3,727.1	45.1	1.2%
ME 2	42 59 6	2001	Dry	November	Used in Summary Table Analysis	6,052.2	6,033.2	19.0	0.3%	6,029.4	22.8	0.4%	6,017.8	34.4	0.6%
ME 2	42 59 6	2001	Dry	December	--	8,766.2	8,750.2	16.0	0.2%	8,746.9	19.3	0.2%	8,737.2	29.1	0.3%
ME 2	42 59 6	2001	Dry	January	--	12,649.3	12,635.4	13.9	0.1%	12,633.1	16.2	0.1%	12,623.8	25.5	0.2%
ME 2	42 59 6	2001	Dry	February	--	17,384.3	17,371.5	12.7	0.1%	17,369.2	15.0	0.1%	17,361.1	23.1	0.1%
ME 2	42 59 6	2001	Dry	March	--	12,253.5	12,241.9	11.6	0.1%	12,239.6	13.9	0.1%	12,231.5	22.0	0.2%
ME 2	42 59 6	2001	Dry	April	--	10,925.8	10,893.6	32.2	0.3%	10,887.2	38.7	0.4%	10,868.2	57.6	0.5%
ME 2	42 59 6	2001	Dry	May	--	2,638.8	2,600.8	38.0	1.4%	2,593.3	45.5	1.7%	2,570.7	68.1	2.6%
ME 2	42 59 6	2001	Dry	June	--	2,620.3	2,566.9	53.4	2.0%	2,556.6	63.7	2.4%	2,526.0	94.2	3.6%
ME 2	42 59 6	2001	Dry	July	--	718.6	672.4	46.2	6.4%	663.2	55.4	7.7%	640.6	78.0	10.9%
ME 2	42 59 6	2001	Dry	August	--	170.0	126.1	43.9	25.8%	117.3	52.6	31.0%	93.4	76.5	45.0%
ME 2	42 59 6	2001	Dry	September	Used in Summary Table Analysis	92.4	54.3	38.1	41.2%	46.7	45.7	49.5%	24.8	67.6	73.1%
ME 2	42 59 6	2002	Below Normal	October	Used in Summary Table Analysis	261.2	229.7	31.5	12.0%	223.3	37.8	14.5%	204.1	57.1	21.8%
ME 2	42 59 6	2002	Below Normal	November	Used in Summary Table Analysis	11,929.4	11,905.1	24.3	0.2%	11,900.5	28.9	0.2%	11,883.1	46.3	0.4%
ME 2	42 59 6	2002	Below Normal	December	--	35,381.9	35,361.1	20.8	0.1%	35,357.6	24.3	0.1%	35,343.8	38.2	0.1%
ME 2	42 59 6	2002	Below Normal	January	--	30,687.5	30,669.0	18.5	0.1%	30,665.5	22.0	0.1%	30,655.1	32.4	0.1%

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Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 2	42 59 6	2002	Below Normal	February	--	24,563.7	24,548.6	15.0	0.1%	24,545.1	18.5	0.1%	24,534.7	28.9	0.1%
ME 2	42 59 6	2002	Below Normal	March	--	17,692.1	17,677.1	15.0	0.1%	17,674.8	17.4	0.1%	17,665.5	26.6	0.2%
ME 2	42 59 6	2002	Below Normal	April	--	9,893.3	9,861.8	31.5	0.3%	9,855.7	37.6	0.4%	9,836.9	56.4	0.6%
ME 2	42 59 6	2002	Below Normal	May	--	3,310.0	3,273.3	36.7	1.1%	3,265.9	44.1	1.3%	3,244.0	66.0	2.0%
ME 2	42 59 6	2002	Below Normal	June	--	851.4	808.2	43.3	5.1%	799.7	51.8	6.1%	774.7	76.7	9.0%
ME 2	42 59 6	2002	Below Normal	July	--	359.8	318.2	41.6	11.6%	309.9	49.9	13.9%	285.9	73.9	20.5%
ME 2	42 59 6	2002	Below Normal	August	--	223.1	185.1	38.1	17.1%	177.5	45.6	20.5%	154.3	68.9	30.9%
ME 2	42 59 6	2002	Below Normal	September	Used in Summary Table Analysis	160.3	125.6	34.7	21.6%	118.7	41.7	26.0%	96.8	63.5	39.6%
ME 2	42 59 6	2003	Wet	October	Used in Summary Table Analysis	125.5	97.9	27.5	21.9%	92.4	33.1	26.4%	75.6	49.8	39.7%
ME 2	42 59 6	2003	Wet	November	Used in Summary Table Analysis	890.4	869.3	21.0	2.4%	865.0	25.4	2.8%	852.0	38.4	4.3%
ME 2	42 59 6	2003	Wet	December	--	56,106.5	56,088.0	18.5	0.0%	56,084.5	22.0	0.0%	56,074.1	32.4	0.1%
ME 2	42 59 6	2003	Wet	January	--	31,384.3	31,369.2	15.0	0.0%	31,365.7	18.5	0.1%	31,356.5	27.8	0.1%
ME 2	42 59 6	2003	Wet	February	--	20,277.8	20,263.9	13.9	0.1%	20,260.4	17.4	0.1%	20,252.3	25.5	0.1%
ME 2	42 59 6	2003	Wet	March	--	23,916.7	23,903.9	12.7	0.1%	23,900.5	16.2	0.1%	23,893.5	23.1	0.1%
ME 2	42 59 6	2003	Wet	April	--	42,619.2	42,606.5	12.7	0.0%	42,604.2	15.0	0.0%	42,596.1	23.1	0.1%
ME 2	42 59 6	2003	Wet	May	--	12,186.3	12,153.9	32.4	0.3%	12,148.1	38.2	0.3%	12,128.5	57.9	0.5%
ME 2	42 59 6	2003	Wet	June	--	3,160.1	3,119.8	40.3	1.3%	3,112.0	48.0	1.5%	3,089.1	70.9	2.2%
ME 2	42 59 6	2003	Wet	July	--	1,467.5	1,426.4	41.1	2.8%	1,418.3	49.2	3.4%	1,394.1	73.4	5.0%
ME 2	42 59 6	2003	Wet	August	--	754.3	715.1	39.2	5.2%	706.8	47.5	6.3%	680.8	73.6	9.8%
ME 2	42 59 6	2003	Wet	September	Used in Summary Table Analysis	453.0	421.6	31.4	6.9%	415.4	37.6	8.3%	395.4	57.6	12.7%
ME 2	42 59 6	2004	Wet	October	Used in Summary Table Analysis	320.2	294.9	25.3	7.9%	289.8	30.4	9.5%	274.4	45.8	14.3%
ME 2	42 59 6	2004	Wet	November	Used in Summary Table Analysis	5,726.6	5,707.1	19.6	0.3%	5,703.0	23.6	0.4%	5,690.9	35.8	0.6%
ME 2	42 59 6	2004	Wet	December	--	35,957.2	35,941.0	16.2	0.0%	35,937.5	19.7	0.1%	35,927.1	30.1	0.1%
ME 2	42 59 6	2004	Wet	January	--	31,232.6	31,218.8	13.9	0.0%	31,215.3	17.4	0.1%	31,206.0	26.6	0.1%
ME 2	42 59 6	2004	Wet	February	--	38,005.8	37,991.9	13.9	0.0%	37,989.6	16.2	0.0%	37,981.5	24.3	0.1%
ME 2	42 59 6	2004	Wet	March	--	16,485.0	16,472.2	12.7	0.1%	16,469.9	15.0	0.1%	16,463.0	22.0	0.1%
ME 2	42 59 6	2004	Wet	April	--	9,422.8	9,411.5	11.3	0.1%	9,409.1	13.7	0.1%	9,402.2	20.6	0.2%
ME 2	42 59 6	2004	Wet	May	--	3,398.4	3,367.1	31.3	0.9%	3,361.0	37.4	1.1%	3,342.5	55.9	1.6%
ME 2	42 59 6	2004	Wet	June	--	689.9	651.4	38.5	5.6%	643.9	46.0	6.7%	621.7	68.2	9.9%
ME 2	42 59 6	2004	Wet	July	--	352.0	311.8	40.3	11.4%	303.8	48.3	13.7%	279.9	72.2	20.5%
ME 2	42 59 6	2004	Wet	August	--	221.6	185.3	36.3	16.4%	178.0	43.6	19.7%	156.1	65.4	29.5%
ME 2	42 59 6	2004	Wet	September	Used in Summary Table Analysis	159.2	124.6	34.7	21.8%	117.6	41.6	26.1%	96.8	62.5	39.2%
ME 2	42 59 6	2005	Above Normal	October	Used in Summary Table Analysis	7,582.1	7,556.0	26.0	0.3%	7,550.8	31.3	0.4%	7,535.1	47.0	0.6%
ME 2	42 59 6	2005	Above Normal	November	Used in Summary Table Analysis	2,245.5	2,226.0	19.4	0.9%	2,222.1	23.4	1.0%	2,210.3	35.2	1.6%
ME 2	42 59 6	2005	Above Normal	December	--	20,732.6	20,716.4	16.2	0.1%	20,713.0	19.7	0.1%	20,702.5	30.1	0.1%
ME 2	42 59 6	2005	Above Normal	January	--	22,153.9	22,138.9	15.0	0.1%	22,136.6	17.4	0.1%	22,127.3	26.6	0.1%
ME 2	42 59 6	2005	Above Normal	February	--	13,972.2	13,959.5	12.7	0.1%	13,957.2	15.0	0.1%	13,949.1	23.1	0.2%
ME 2	42 59 6	2005	Above Normal	March	--	28,392.4	28,380.8	11.6	0.0%	28,378.5	13.9	0.0%	28,370.4	22.0	0.1%
ME 2	42 59 6	2005	Above Normal	April	--	21,331.0	21,319.4	11.6	0.1%	21,317.1	13.9	0.1%	21,310.2	20.8	0.1%
ME 2	42 59 6	2005	Above Normal	May	--	19,434.0	19,401.6	32.4	0.2%	19,394.7	39.4	0.2%	19,376.2	57.9	0.3%
ME 2	42 59 6	2005	Above Normal	June	--	15,709.5	15,659.7	49.8	0.3%	15,649.3	60.2	0.4%	15,621.5	88.0	0.6%
ME 2	42 59 6	2005	Above Normal	July	--	2,864.6	2,822.3	42.2	1.5%	2,814.6	50.0	1.7%	2,791.0	73.6	2.6%
ME 2	42 59 6	2005	Above Normal	August	--	976.7	940.6	36.2	3.7%	933.5	43.3	4.4%	912.1	64.7	6.6%
ME 2	42 59 6	2005	Above Normal	September	Used in Summary Table Analysis	518.7	487.7	31.0	6.0%	481.6	37.2	7.2%	463.1	55.6	10.7%
ME 2	42 59 6	2006	Wet	October	Used in Summary Table Analysis	627.1	602.5	24.6	3.9%	597.6	29.5	4.7%	582.6	44.5	7.1%
ME 2	42 59 6	2006	Wet	November	Used in Summary Table Analysis	9,173.3	9,154.7	18.5	0.2%	9,150.9	22.3	0.2%	9,139.6	33.7	0.4%
ME 2	42 59 6	2006	Wet	December	--	43,054.4	43,037.0	17.4	0.0%	43,033.6	20.8	0.0%	43,023.1	31.3	0.1%
ME 2	42 59 6	2006	Wet	January	--	45,894.7	45,879.6	15.0	0.0%	45,876.2	18.5	0.0%	45,868.1	26.6	0.1%
ME 2	42 59 6	2006	Wet	February	--	26,446.8	26,434.0	12.7	0.0%	26,431.7	15.0	0.1%	26,423.6	23.1	0.1%
ME 2	42 59 6	2006	Wet	March	--	46,841.4	46,829.9	11.6	0.0%	46,826.4	15.0	0.0%	46,819.4	22.0	0.0%
ME 2	42 59 6	2006	Wet	April	--	30,304.4	30,292.8	11.6	0.0%	30,290.5	13.9	0.0%	30,284.7	19.7	0.1%
ME 2	42 59 6	2006	Wet	May	--	14,136.6	14,119.2	17.4	0.1%	14,115.7	20.8	0.1%	14,106.5	30.1	0.2%
ME 2	42 59 6	2006	Wet	June	--	3,542.2	3,501.6	40.6	1.1%	3,493.6	48.6	1.4%	3,470.5	71.8	2.0%
ME 2	42 59 6	2006	Wet	July	--	1,271.4	1,231.1	40.3	3.2%	1,223.3	48.1	3.8%	1,199.9	71.5	5.6%
ME 2	42 59 6	2006	Wet	August	--	657.8	620.3	37.5	5.7%	612.9	44.9	6.8%	590.7	67.2	10.2%
ME 2	42 59 6	2006	Wet	September	Used in Summary Table Analysis	419.8	388.3	31.5	7.5%	382.1	37.7	9.0%	363.2	56.6	13.5%
ME 2	42 59 6	2007	Above Normal	October	Used in Summary Table Analysis	269.7	244.7	25.0	9.3%	239.6	30.1	11.2%	224.3	45.4	16.8%
ME 2	42 59 6	2007	Above Normal	November	Used in Summary Table Analysis	8,550.3	8,530.8	19.6	0.2%	8,526.9	23.5	0.3%	8,514.7	35.6	0.4%
ME 2	42 59 6	2007	Above Normal	December	--	20,170.1	20,152.8	17.4	0.1%	20,149.3	20.8	0.1%	20,138.9	31.3	0.2%
ME 2	42 59 6	2007	Above Normal	January	--	10,189.4	10,174.8	14.6	0.1%	10,171.9	17.5	0.2%	10,162.7	26.6	0.3%
ME 2	42 59 6	2007	Above Normal	February	--	30,300.9	30,288.2	12.7	0.0%	30,284.7	16.2	0.1%	30,276.6	24.3	0.1%
ME 2	42 59 6	2007	Above Normal	March	--	13,056.7	13,045.1	11.6	0.1%	13,041.7	15.0	0.1%	13,034.7	22.0	0.2%
ME 2	42 59 6	2007	Above Normal	April	--	11,493.8	11,463.4	30.3	0.3%	11,457.4	36.3	0.3%	11,439.5	54.3	0.5%
ME 2	42 59 6	2007	Above Normal	May	--	4,122.8	4,087.3	35.5	0.9%	4,080.2	42.6	1.0%	4,058.8	64.0	1.6%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 2	42 59 6	2007	Above Normal	June	--	1,488.0	1,442.7	45.3	3.0%	1,433.8	54.2	3.6%	1,407.8	80.2	5.4%
ME 2	42 59 6	2007	Above Normal	July	--	493.7	450.7	43.0	8.7%	442.2	51.5	10.4%	417.2	76.5	15.5%
ME 2	42 59 6	2007	Above Normal	August	--	219.1	182.0	37.1	16.9%	174.6	44.5	20.3%	152.0	67.1	30.6%
ME 2	42 59 6	2007	Above Normal	September	Used in Summary Table Analysis	146.8	112.8	34.0	23.2%	106.0	40.8	27.8%	85.5	61.3	41.8%
ME 2	42 59 6	2008	Dry	October	Used in Summary Table Analysis	3,393.9	3,366.9	27.0	0.8%	3,361.5	32.4	1.0%	3,345.1	48.7	1.4%
ME 2	42 59 6	2008	Dry	November	Used in Summary Table Analysis	3,236.7	3,216.7	20.0	0.6%	3,212.7	24.0	0.7%	3,200.5	36.2	1.1%
ME 2	42 59 6	2008	Dry	December	--	22,812.5	22,795.1	17.4	0.1%	22,790.5	22.0	0.1%	22,780.1	32.4	0.1%
ME 2	42 59 6	2008	Dry	January	--	37,230.3	37,214.1	16.2	0.0%	37,210.6	19.7	0.1%	37,201.4	28.9	0.1%
ME 2	42 59 6	2008	Dry	February	--	26,199.1	26,186.3	12.7	0.0%	26,182.9	16.2	0.1%	26,174.8	24.3	0.1%
ME 2	42 59 6	2008	Dry	March	--	11,762.7	11,751.2	11.6	0.1%	11,748.8	13.9	0.1%	11,740.7	22.0	0.2%
ME 2	42 59 6	2008	Dry	April	--	8,992.8	8,960.6	32.2	0.4%	8,954.2	38.7	0.4%	8,935.1	57.8	0.6%
ME 2	42 59 6	2008	Dry	May	--	1,364.8	1,332.8	32.1	2.3%	1,326.6	38.2	2.8%	1,308.2	56.6	4.1%
ME 2	42 59 6	2008	Dry	June	--	435.0	385.0	50.0	11.5%	375.2	59.8	13.7%	346.4	88.6	20.4%
ME 2	42 59 6	2008	Dry	July	--	253.8	207.1	46.7	18.4%	197.8	55.9	22.0%	175.1	78.6	31.0%
ME 2	42 59 6	2008	Dry	August	--	176.7	132.8	43.9	24.9%	124.0	52.7	29.8%	97.2	79.6	45.0%
ME 2	42 59 6	2008	Dry	September	Used in Summary Table Analysis	138.5	96.2	42.3	30.6%	87.7	50.8	36.7%	63.4	75.1	54.2%
ME 2	42 59 6	2009	Critical	October	Used in Summary Table Analysis	918.4	887.1	31.3	3.4%	880.7	37.7	4.1%	861.2	57.2	6.2%
ME 2	42 59 6	2009	Critical	November	Used in Summary Table Analysis	5,437.4	5,414.2	23.1	0.4%	5,409.5	27.9	0.5%	5,392.5	44.9	0.8%
ME 2	42 59 6	2009	Critical	December	--	12,005.8	11,986.1	19.7	0.2%	11,982.6	23.1	0.2%	11,969.9	35.9	0.3%
ME 2	42 59 6	2009	Critical	January	--	8,753.0	8,735.6	17.4	0.2%	8,732.1	20.9	0.2%	8,721.3	31.7	0.4%
ME 2	42 59 6	2009	Critical	February	--	22,482.6	22,467.6	15.0	0.1%	22,464.1	18.5	0.1%	22,454.9	27.8	0.1%
ME 2	42 59 6	2009	Critical	March	--	21,023.1	21,009.3	13.9	0.1%	21,006.9	16.2	0.1%	20,997.7	25.5	0.1%
ME 2	42 59 6	2009	Critical	April	--	10,087.2	10,053.8	33.3	0.3%	10,047.2	39.9	0.4%	10,027.4	59.7	0.6%
ME 2	42 59 6	2009	Critical	May	--	15,534.7	15,494.2	40.5	0.3%	15,486.1	48.6	0.3%	15,461.8	72.9	0.5%
ME 2	42 59 6	2009	Critical	June	--	3,154.7	3,100.7	54.1	1.7%	3,090.4	64.4	2.0%	3,059.5	95.3	3.0%
ME 2	42 59 6	2009	Critical	July	--	1,258.8	1,211.8	47.0	3.7%	1,202.5	56.3	4.5%	1,179.7	79.1	6.3%
ME 2	42 59 6	2009	Critical	August	--	664.6	620.5	44.1	6.6%	611.7	52.9	8.0%	587.6	77.0	11.6%
ME 2	42 59 6	2009	Critical	September	Used in Summary Table Analysis	386.6	348.3	38.3	9.9%	340.6	46.0	11.9%	318.6	68.0	17.6%
ME 2	42 59 6	2010	Below Normal	October	Used in Summary Table Analysis	6,080.7	6,049.2	31.5	0.5%	6,042.8	37.8	0.6%	6,022.5	58.2	1.0%
ME 2	42 59 6	2010	Below Normal	November	Used in Summary Table Analysis	8,241.0	8,217.2	23.7	0.3%	8,212.4	28.6	0.3%	8,195.0	45.9	0.6%
ME 2	42 59 6	2010	Below Normal	December	--	12,252.3	12,232.6	19.7	0.2%	12,229.2	23.1	0.2%	12,216.4	35.9	0.3%
ME 2	42 59 6	2010	Below Normal	January	--	35,885.4	35,868.1	17.4	0.0%	35,864.6	20.8	0.1%	35,853.0	32.4	0.1%
ME 2	42 59 6	2010	Below Normal	February	--	27,148.1	27,133.1	15.0	0.1%	27,129.6	18.5	0.1%	27,120.4	27.8	0.1%
ME 2	42 59 6	2010	Below Normal	March	--	28,754.6	28,739.6	15.0	0.1%	28,737.3	17.4	0.1%	28,728.0	26.6	0.1%
ME 2	42 59 6	2010	Below Normal	April	--	39,857.6	39,843.8	13.9	0.0%	39,841.4	16.2	0.0%	39,833.3	24.3	0.1%
ME 2	42 59 6	2010	Below Normal	May	--	20,148.1	20,114.6	33.6	0.2%	20,107.6	40.5	0.2%	20,088.0	60.2	0.3%
ME 2	42 59 6	2010	Below Normal	June	--	9,255.6	9,204.9	50.7	0.5%	9,194.9	60.6	0.7%	9,165.5	90.0	1.0%
ME 2	42 59 6	2010	Below Normal	July	--	1,450.7	1,408.3	42.4	2.9%	1,400.1	50.6	3.5%	1,376.0	74.7	5.1%
ME 2	42 59 6	2010	Below Normal	August	--	562.7	525.6	37.1	6.6%	518.3	44.4	7.9%	496.4	66.3	11.8%
ME 2	42 59 6	2010	Below Normal	September	Used in Summary Table Analysis	644.6	608.9	35.7	5.5%	601.7	42.9	6.7%	580.4	64.2	10.0%
ME 2	42 59 6	2011	Wet	October	Used in Summary Table Analysis	9,562.2	9,536.8	25.3	0.3%	9,531.7	30.4	0.3%	9,516.3	45.8	0.5%
ME 2	42 59 6	2011	Wet	November	Used in Summary Table Analysis	14,137.7	14,118.1	19.7	0.1%	14,114.6	23.1	0.2%	14,103.0	34.7	0.2%
ME 2	42 59 6	2011	Wet	December	--	33,356.5	33,340.3	16.2	0.0%	33,336.8	19.7	0.1%	33,326.4	30.1	0.1%
ME 2	42 59 6	2011	Wet	January	--	14,092.6	14,078.7	13.9	0.1%	14,075.2	17.4	0.1%	14,067.1	25.5	0.2%
ME 2	42 59 6	2011	Wet	February	--	20,706.0	20,693.3	12.7	0.1%	20,691.0	15.0	0.1%	20,682.9	23.1	0.1%
ME 2	42 59 6	2011	Wet	March	--	51,782.4	51,769.7	12.7	0.0%	51,767.4	15.0	0.0%	51,759.3	23.1	0.0%
ME 2	42 59 6	2011	Wet	April	--	24,723.4	24,711.8	11.6	0.0%	24,709.5	13.9	0.1%	24,701.4	22.0	0.1%
ME 2	42 59 6	2011	Wet	May	--	11,347.9	11,316.0	31.9	0.3%	11,309.7	38.2	0.3%	11,290.9	57.1	0.5%
ME 2	42 59 6	2011	Wet	June	--	7,022.3	6,972.8	49.5	0.7%	6,963.0	59.4	0.8%	6,934.1	88.2	1.3%
ME 2	42 59 6	2011	Wet	July	--	1,827.8	1,780.8	47.0	2.6%	1,771.5	56.3	3.1%	1,745.3	82.5	4.5%
ME 2	42 59 6	2011	Wet	August	--	772.4	735.9	36.5	4.7%	728.6	43.7	5.7%	706.9	65.5	8.5%
ME 2	42 59 6	2011	Wet	September	Used in Summary Table Analysis	429.1	397.2	31.9	7.4%	390.8	38.3	8.9%	371.7	57.4	13.4%
ME 2	42 59 6	2012	Below Normal	October	Used in Summary Table Analysis	4,506.6	4,481.3	25.3	0.6%	4,476.0	30.6	0.7%	4,460.4	46.2	1.0%
ME 2	42 59 6	2012	Below Normal	November	Used in Summary Table Analysis	8,163.0	8,143.4	19.6	0.2%	8,139.4	23.6	0.3%	8,127.3	35.6	0.4%
ME 2	42 59 6	2012	Below Normal	December	--	5,151.7	5,135.3	16.4	0.3%	5,131.9	19.8	0.4%	5,121.6	30.1	0.6%
ME 2	42 59 6	2012	Below Normal	January	--	19,894.7	19,879.6	15.0	0.1%	19,876.2	18.5	0.1%	19,866.9	27.8	0.1%
ME 2	42 59 6	2012	Below Normal	February	--	18,151.6	18,137.7	13.9	0.1%	18,135.4	16.2	0.1%	18,127.3	24.3	0.1%
ME 2	42 59 6	2012	Below Normal	March	--	45,163.2	45,150.5	12.7	0.0%	45,148.1	15.0	0.0%	45,140.0	23.1	0.1%
ME 2	42 59 6	2012	Below Normal	April	--	26,765.0	26,753.5	11.6	0.0%	26,751.2	13.9	0.1%	26,744.2	20.8	0.1%
ME 2	42 59 6	2012	Below Normal	May	--	7,461.9	7,430.0	31.9	0.4%	7,423.6	38.3	0.5%	7,405.0	56.9	0.8%
ME 2	42 59 6	2012	Below Normal	June	--	5,482.2	5,431.8	50.3	0.9%	5,421.9	60.3	1.1%	5,392.8	89.4	1.6%
ME 2	42 59 6	2012	Below Normal	July	--	2,204.3	2,158.2	46.1	2.1%	2,149.1	55.2	2.5%	2,122.1	82.2	3.7%
ME 2	42 59 6	2012	Below Normal	August	--	386.1	351.7	34.4	8.9%	344.8	41.3	10.7%	324.4	61.7	16.0%
ME 2	42 59 6	2012	Below Normal	September	Used in Summary Table Analysis	245.1	215.2	29.9	12.2%	209.2	35.8	14.6%	191.4	53.7	21.9%

Table A.1

**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow	Flow Difference	Percent Difference	Flow	Flow Difference	Percent Difference	Flow	Flow Difference	Percent Difference
							(cfs)	(cfs)		(cfs)	(cfs)		(cfs)	(cfs)	
ME 2	42 59 6	2013	Below Normal	October	Used in Summary Table Analysis	1,890.0	1,864.7	25.3	1.3%	1,859.5	30.6	1.6%	1,844.0	46.1	2.4%
ME 2	42 59 6	2013	Below Normal	November	Used in Summary Table Analysis	14,545.1	14,525.5	19.7	0.1%	14,522.0	23.1	0.2%	14,510.4	34.7	0.2%
ME 2	42 59 6	2013	Below Normal	December	--	59,673.6	59,656.3	17.4	0.0%	59,651.6	22.0	0.0%	59,641.2	32.4	0.1%
ME 2	42 59 6	2013	Below Normal	January	--	22,108.8	22,093.8	15.0	0.1%	22,091.4	17.4	0.1%	22,082.2	26.6	0.1%
ME 2	42 59 6	2013	Below Normal	February	--	8,803.8	8,790.4	13.4	0.2%	8,787.6	16.2	0.2%	8,779.3	24.5	0.3%
ME 2	42 59 6	2013	Below Normal	March	--	10,266.1	10,253.5	12.6	0.1%	10,250.9	15.2	0.1%	10,243.2	22.9	0.2%
ME 2	42 59 6	2013	Below Normal	April	--	8,273.6	8,244.1	29.5	0.4%	8,238.2	35.4	0.4%	8,220.6	53.0	0.6%
ME 2	42 59 6	2013	Below Normal	May	--	4,407.4	4,371.9	35.5	0.8%	4,364.8	42.6	1.0%	4,343.6	63.8	1.4%
ME 2	42 59 6	2013	Below Normal	June	--	2,104.6	2,059.5	45.1	2.1%	2,050.7	53.9	2.6%	2,024.7	80.0	3.8%
ME 2	42 59 6	2013	Below Normal	July	--	717.3	676.8	40.5	5.6%	668.8	48.5	6.8%	645.5	71.8	10.0%
ME 2	42 59 6	2013	Below Normal	August	--	337.3	300.1	37.2	11.0%	292.7	44.6	13.2%	269.9	67.3	20.0%
ME 2	42 59 6	2013	Below Normal	September	Used in Summary Table Analysis	4,750.1	4,711.5	38.7	0.8%	4,703.7	46.4	1.0%	4,680.3	69.8	1.5%
ME 2	42 59 6	2014	Critical	October	Used in Summary Table Analysis	282.7	256.6	26.1	9.2%	251.4	31.3	11.1%	236.4	46.3	16.4%
ME 2	42 59 6	2014	Critical	November	Used in Summary Table Analysis	1,520.3	1,500.2	20.0	1.3%	1,496.2	24.1	1.6%	1,483.9	36.3	2.4%
ME 2	42 59 6	2014	Critical	December	--	1,580.6	1,563.7	16.9	1.1%	1,560.2	20.4	1.3%	1,549.7	30.9	2.0%
ME 2	42 59 6	2014	Critical	January	--	2,802.8	2,788.1	14.7	0.5%	2,785.1	17.7	0.6%	2,775.9	26.9	1.0%
ME 2	42 59 6	2014	Critical	February	--	15,692.1	15,678.2	13.9	0.1%	15,675.9	16.2	0.1%	15,667.8	24.3	0.2%
ME 2	42 59 6	2014	Critical	March	--	31,405.1	31,393.5	11.6	0.0%	31,390.0	15.0	0.0%	31,383.1	22.0	0.1%
ME 2	42 59 6	2014	Critical	April	--	12,963.0	12,931.7	31.3	0.2%	12,924.8	38.2	0.3%	12,905.1	57.9	0.4%
ME 2	42 59 6	2014	Critical	May	--	5,172.8	5,134.3	38.5	0.7%	5,126.6	46.2	0.9%	5,103.5	69.3	1.3%
ME 2	42 59 6	2014	Critical	June	--	1,193.6	1,139.6	54.0	4.5%	1,129.1	64.6	5.4%	1,098.8	94.8	7.9%
ME 2	42 59 6	2014	Critical	July	--	544.6	497.9	46.7	8.6%	488.6	56.0	10.3%	465.7	78.9	14.5%
ME 2	42 59 6	2014	Critical	August	--	345.1	301.5	43.6	12.6%	292.8	52.4	15.2%	268.9	76.2	22.1%
ME 2	42 59 6	2014	Critical	September	Used in Summary Table Analysis	2,557.9	2,514.5	43.4	1.7%	2,505.9	52.0	2.0%	2,480.8	77.1	3.0%
ME 2	42 59 6	2015	Dry	October	Used in Summary Table Analysis	11,293.3	11,261.1	32.2	0.3%	11,254.9	38.4	0.3%	11,235.9	57.4	0.5%
ME 2	42 59 6	2015	Dry	November	Used in Summary Table Analysis	8,967.2	8,944.1	23.1	0.3%	8,939.5	27.8	0.3%	8,922.6	44.7	0.5%
ME 2	42 59 6	2015	Dry	December	--	32,341.4	32,321.8	19.7	0.1%	32,318.3	23.1	0.1%	32,305.6	35.9	0.1%
ME 2	42 59 6	2015	Dry	January	--	14,537.0	14,519.7	17.4	0.1%	14,516.2	20.8	0.1%	14,505.8	31.3	0.2%
ME 2	42 59 6	2015	Dry	February	--	27,127.3	27,112.3	15.0	0.1%	27,110.0	17.4	0.1%	27,100.7	26.6	0.1%
ME 2	42 59 6	2015	Dry	March	--	11,547.1	11,534.1	13.0	0.1%	11,531.5	15.6	0.1%	11,523.4	23.7	0.2%
ME 2	42 59 6	2015	Dry	April	--	8,317.6	8,284.6	33.0	0.4%	8,278.0	39.6	0.5%	8,258.3	59.3	0.7%
ME 2	42 59 6	2015	Dry	May	--	1,510.2	1,471.5	38.7	2.6%	1,464.0	46.2	3.1%	1,442.1	68.1	4.5%
ME 2	42 59 6	2015	Dry	June	--	652.1	601.4	50.7	7.8%	591.5	60.7	9.3%	562.2	89.9	13.8%
ME 2	42 59 6	2015	Dry	July	--	267.9	220.8	47.1	17.6%	211.5	56.4	21.1%	188.5	79.4	29.6%
ME 2	42 59 6	2015	Dry	August	--	164.1	120.0	44.2	26.9%	111.1	53.0	32.3%	87.1	77.1	47.0%
ME 2	42 59 6	2015	Dry	September	Used in Summary Table Analysis	119.4	78.3	41.1	34.4%	69.7	49.7	41.6%	45.1	74.3	62.2%
ME 2	42 59 6	2016	Above Normal	October	Used in Summary Table Analysis	85.1	51.5	33.5	39.4%	45.2	39.9	46.9%	25.9	59.2	69.6%
ME 2	42 59 6	2016	Above Normal	November	Used in Summary Table Analysis	3,804.3	3,780.4	23.8	0.6%	3,775.6	28.7	0.8%	3,757.8	46.5	1.2%
ME 2	42 59 6	2016	Above Normal	December	--	36,294.0	36,274.3	19.7	0.1%	36,269.7	24.3	0.1%	36,256.9	37.0	0.1%
ME 2	42 59 6	2016	Above Normal	January	--	56,976.9	56,958.3	18.5	0.0%	56,954.9	22.0	0.0%	56,943.3	33.6	0.1%
ME 2	42 59 6	2016	Above Normal	February	--	24,214.1	24,199.1	15.0	0.1%	24,196.8	17.4	0.1%	24,187.5	26.6	0.1%
ME 2	42 59 6	2016	Above Normal	March	--	41,621.5	41,606.5	15.0	0.0%	41,603.0	18.5	0.0%	41,594.9	26.6	0.1%
ME 2	42 59 6	2016	Above Normal	April	--	18,495.4	18,482.6	12.7	0.1%	18,480.3	15.0	0.1%	18,472.2	23.1	0.1%
ME 2	42 59 6	2016	Above Normal	May	--	5,202.3	5,185.0	17.4	0.3%	5,181.5	20.8	0.4%	5,171.1	31.3	0.6%
ME 2	42 59 6	2016	Above Normal	June	--	1,505.9	1,468.3	37.6	2.5%	1,461.9	44.0	2.9%	1,443.4	62.5	4.2%
ME 2	42 59 6	2016	Above Normal	July	--	818.9	778.3	40.6	5.0%	770.3	48.6	5.9%	746.6	72.2	8.8%
ME 2	42 59 6	2016	Above Normal	August	--	487.2	449.1	38.1	7.8%	441.5	45.7	9.4%	418.8	68.3	14.0%
ME 2	42 59 6	2016	Above Normal	September	Used in Summary Table Analysis	324.0	289.1	34.9	10.8%	281.9	42.0	13.0%	260.6	63.4	19.6%
ME 2	42 59 6	2017	Wet	October	Used in Summary Table Analysis	18,158.6	18,131.9	26.6	0.1%	18,126.2	32.4	0.2%	18,111.1	47.5	0.3%
ME 2	42 59 6	2017	Wet	November	Used in Summary Table Analysis	18,684.0	18,664.4	19.7	0.1%	18,659.7	24.3	0.1%	18,648.1	35.9	0.2%
ME 2	42 59 6	2017	Wet	December	--	23,892.4	23,875.0	17.4	0.1%	23,871.5	20.8	0.1%	23,861.1	31.3	0.1%
ME 2	42 59 6	2017	Wet	January	--	106,248.8	106,233.8	15.0	0.0%	106,230.3	18.5	0.0%	106,221.1	27.8	0.0%
ME 2	42 59 6	2017	Wet	February	--	81,454.9	81,441.0	13.9	0.0%	81,437.5	17.4	0.0%	81,429.4	25.5	0.0%
ME 2	42 59 6	2017	Wet	March	--	27,155.1	27,142.4	12.7	0.0%	27,140.0	15.0	0.1%	27,131.9	23.1	0.1%
ME 2	42 59 6	2017	Wet	April	--	22,810.2	22,799.8	10.4	0.0%	22,797.5	12.7	0.1%	22,790.5	19.7	0.1%
ME 2	42 59 6	2017	Wet	May	--	6,271.2	6,253.9	17.2	0.3%	6,250.6	20.6	0.3%	6,240.4	30.8	0.5%
ME 2	42 59 6	2017	Wet	June	--	2,103.0	2,063.0	40.0	1.9%	2,055.1	47.9	2.3%	2,032.1	70.9	3.4%
ME 2	42 59 6	2017	Wet	July	--	927.4	886.9	40.6	4.4%	878.9	48.5	5.2%	855.4	72.0	7.8%
ME 2	42 59 6	2017	Wet	August	--	499.7	462.0	37.7	7.5%	454.5	45.2	9.0%	432.1	67.7	13.5%
ME 2	42 59 6	2017	Wet	September	Used in Summary Table Analysis	317.6	282.8	34.7	10.9%	275.9	41.7	13.1%	255.0	62.5	19.7%
ME 2	42 59 6	2018	Above Normal	October	Used in Summary Table Analysis	270.4	244.4	26.0	9.6%	239.1	31.3	11.6%	223.4	47.0	17.4%
ME 2	42 59 6	2018	Above Normal	November	Used in Summary Table Analysis	10,642.9	10,623.7	19.2	0.2%	10,619.8	23.1	0.2%	10,608.0	35.0	0.3%
ME 2	42 59 6	2018	Above Normal	December	--	5,434.5	5,418.6	15.9	0.3%	5,415.4	19.1	0.4%	5,405.6	28.9	0.5%
ME 2	42 59 6	2018	Above Normal	January	--	17,522.0	17,508.1	13.9	0.1%	17,504.6	17.4	0.1%	17,496.5	25.5	0.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 2	42 59 6	2018	Above Normal	February	--	7,587.5	7,575.1	12.4	0.2%	7,572.5	15.0	0.2%	7,564.8	22.7	0.3%
ME 2	42 59 6	2018	Above Normal	March	--	20,534.7	20,523.1	11.6	0.1%	20,520.8	13.9	0.1%	20,513.9	20.8	0.1%
ME 2	42 59 6	2018	Above Normal	April	--	32,005.8	31,995.4	10.4	0.0%	31,993.1	12.7	0.0%	31,987.3	18.5	0.1%
ME 2	42 59 6	2018	Above Normal	May	--	6,983.9	6,953.7	30.2	0.4%	6,947.7	36.2	0.5%	6,929.5	54.4	0.8%
ME 2	42 59 6	2018	Above Normal	June	--	1,909.5	1,870.7	38.8	2.0%	1,863.2	46.3	2.4%	1,841.0	68.5	3.6%
ME 2	42 59 6	2018	Above Normal	July	--	776.2	735.7	40.5	5.2%	727.7	48.5	6.3%	703.6	72.6	9.4%
ME 2	42 59 6	2018	Above Normal	August	--	437.5	401.4	36.1	8.3%	394.2	43.3	9.9%	372.5	65.0	14.9%
ME 2	42 59 6	2018	Above Normal	September	Used in Summary Table Analysis	295.6	260.9	34.7	11.7%	253.9	41.7	14.1%	233.1	62.5	21.2%
ME 2	42 59 6	2019	Below Normal	October	Used in Summary Table Analysis	205.2	179.3	25.9	12.6%	174.1	31.1	15.2%	158.4	46.8	22.8%
ME 2	42 59 6	2019	Below Normal	November	Used in Summary Table Analysis	6,526.9	6,507.4	19.4	0.3%	6,503.4	23.5	0.4%	6,491.4	35.4	0.5%
ME 2	42 59 6	2019	Below Normal	December	--	14,498.8	14,482.6	16.2	0.1%	14,479.2	19.7	0.1%	14,468.8	30.1	0.2%
ME 2	42 59 6	2019	Below Normal	January	--	34,878.5	34,864.6	13.9	0.0%	34,861.1	17.4	0.0%	34,851.9	26.6	0.1%
ME 2	42 59 6	2019	Below Normal	February	--	141,562.5	141,539.4	23.1	0.0%	141,539.4	23.1	0.0%	141,539.4	23.1	0.0%
ME 2	42 59 6	2019	Below Normal	March	--	42,131.9	42,120.4	11.6	0.0%	42,118.1	13.9	0.0%	42,111.1	20.8	0.0%
ME 2	42 59 6	2019	Below Normal	April	--	15,222.2	15,211.8	10.4	0.1%	15,209.5	12.7	0.1%	15,202.5	19.7	0.1%
ME 2	42 59 6	2019	Below Normal	May	--	16,681.7	16,649.3	32.4	0.2%	16,643.5	38.2	0.2%	16,623.8	57.9	0.3%
ME 2	42 59 6	2019	Below Normal	June	--	4,245.6	4,204.7	40.9	1.0%	4,197.1	48.5	1.1%	4,174.7	70.9	1.7%
ME 2	42 59 6	2019	Below Normal	July	--	1,353.8	1,313.3	40.5	3.0%	1,305.2	48.6	3.6%	1,281.5	72.3	5.3%
ME 2	42 59 6	2019	Below Normal	August	--	590.0	553.2	36.8	6.2%	545.9	44.1	7.5%	524.1	65.9	11.2%
ME 2	42 59 6	2019	Below Normal	September	Used in Summary Table Analysis	457.9	423.5	34.4	7.5%	416.6	41.3	9.0%	396.0	61.9	13.5%
ME 2	42 59 6	2020	Dry	October	Used in Summary Table Analysis	353.2	328.9	24.3	6.9%	323.9	29.3	8.3%	309.2	44.1	12.5%
ME 2	42 59 6	2020	Dry	November	Used in Summary Table Analysis	310.0	292.4	17.6	5.7%	288.8	21.2	6.8%	278.0	32.0	10.3%
ME 2	42 59 6	2020	Dry	December	--	13,039.4	13,024.3	15.0	0.1%	13,020.8	18.5	0.1%	13,010.4	28.9	0.2%
ME 2	42 59 6	2020	Dry	January	--	22,136.6	22,122.7	13.9	0.1%	22,120.4	16.2	0.1%	22,111.1	25.5	0.1%
ME 2	42 59 6	2020	Dry	February	--	7,408.3	7,395.9	12.4	0.2%	7,393.4	14.9	0.2%	7,385.8	22.6	0.3%
ME 2	42 59 6	2020	Dry	March	--	7,211.5	7,200.0	11.5	0.2%	7,197.6	13.9	0.2%	7,190.5	20.9	0.3%
ME 2	42 59 6	2020	Dry	April	--	5,446.5	5,414.8	31.7	0.6%	5,408.4	38.1	0.7%	5,389.6	56.9	1.0%
ME 2	42 59 6	2020	Dry	May	--	7,329.5	7,291.3	38.2	0.5%	7,283.7	45.8	0.6%	7,261.0	68.5	0.9%
ME 2	42 59 6	2020	Dry	June	--	2,105.9	2,055.8	50.1	2.4%	2,046.2	59.7	2.8%	2,017.9	88.0	4.2%
ME 2	42 59 6	2020	Dry	July	--	793.4	746.1	47.3	6.0%	736.6	56.8	7.2%	713.4	80.0	10.1%
ME 2	42 59 6	2020	Dry	August	--	395.7	350.8	44.9	11.4%	341.8	53.9	13.6%	317.2	78.5	19.8%
ME 2	42 59 6	2020	Dry	September	Used in Summary Table Analysis	245.4	203.5	41.9	17.1%	194.8	50.6	20.6%	169.8	75.6	30.8%
ME 2	41 58 8	2000	Above Normal	October	Used in Summary Table Analysis	801.8	773.9	27.9	3.5%	768.2	33.6	4.2%	751.2	50.6	6.3%
ME 2	41 58 8	2000	Above Normal	November	Used in Summary Table Analysis	11,943.3	11,921.3	22.0	0.2%	11,917.8	25.5	0.2%	11,903.9	39.4	0.3%
ME 2	41 58 8	2000	Above Normal	December	--	10,715.0	10,696.9	18.2	0.2%	10,693.2	21.9	0.2%	10,682.1	33.0	0.3%
ME 2	41 58 8	2000	Above Normal	January	--	28,284.7	28,268.5	16.2	0.1%	28,265.0	19.7	0.1%	28,254.6	30.1	0.1%
ME 2	41 58 8	2000	Above Normal	February	--	36,849.5	36,834.5	15.0	0.0%	36,831.0	18.5	0.1%	36,822.9	26.6	0.1%
ME 2	41 58 8	2000	Above Normal	March	--	18,253.5	18,240.7	12.7	0.1%	18,237.3	16.2	0.1%	18,229.2	24.3	0.1%
ME 2	41 58 8	2000	Above Normal	April	--	12,266.2	12,253.5	12.7	0.1%	12,250.0	16.2	0.1%	12,241.9	24.3	0.2%
ME 2	41 58 8	2000	Above Normal	May	--	7,053.6	7,019.2	34.4	0.5%	7,012.3	41.3	0.6%	6,991.8	61.8	0.9%
ME 2	41 58 8	2000	Above Normal	June	--	2,592.6	2,540.4	52.2	2.0%	2,530.1	62.5	2.4%	2,499.5	93.1	3.6%
ME 2	41 58 8	2000	Above Normal	July	--	980.6	937.0	43.6	4.4%	928.4	52.2	5.3%	902.6	78.0	8.0%
ME 2	41 58 8	2000	Above Normal	August	--	510.2	470.5	39.7	7.8%	462.6	47.6	9.3%	438.7	71.4	14.0%
ME 2	41 58 8	2000	Above Normal	September	Used in Summary Table Analysis	284.5	250.2	34.3	12.0%	243.4	41.1	14.5%	222.7	61.8	21.7%
ME 2	41 58 8	2001	Dry	October	Used in Summary Table Analysis	3,771.1	3,743.5	27.5	0.7%	3,737.8	33.2	0.9%	3,721.1	50.0	1.3%
ME 2	41 58 8	2001	Dry	November	Used in Summary Table Analysis	6,055.6	6,034.1	21.4	0.4%	6,029.9	25.7	0.4%	6,016.8	38.8	0.6%
ME 2	41 58 8	2001	Dry	December	--	8,769.6	8,751.4	18.2	0.2%	8,747.6	22.0	0.3%	8,736.5	33.1	0.4%
ME 2	41 58 8	2001	Dry	January	--	12,663.2	12,647.0	16.2	0.1%	12,644.7	18.5	0.1%	12,634.3	28.9	0.2%
ME 2	41 58 8	2001	Dry	February	--	17,390.0	17,375.0	15.0	0.1%	17,372.7	17.4	0.1%	17,363.4	26.6	0.2%
ME 2	41 58 8	2001	Dry	March	--	12,252.3	12,238.4	13.9	0.1%	12,236.1	16.2	0.1%	12,228.0	24.3	0.2%
ME 2	41 58 8	2001	Dry	April	--	10,925.5	10,889.8	35.6	0.3%	10,882.8	42.7	0.4%	10,861.7	63.8	0.6%
ME 2	41 58 8	2001	Dry	May	--	2,631.4	2,589.7	41.7	1.6%	2,581.4	50.0	1.9%	2,556.5	74.9	2.8%
ME 2	41 58 8	2001	Dry	June	--	2,617.1	2,560.1	57.1	2.2%	2,549.0	68.2	2.6%	2,516.1	101.0	3.9%
ME 2	41 58 8	2001	Dry	July	--	711.3	661.0	50.3	7.1%	650.9	60.3	8.5%	625.8	85.4	12.0%
ME 2	41 58 8	2001	Dry	August	--	163.0	114.9	48.1	29.5%	105.3	57.7	35.4%	78.8	84.2	51.6%
ME 2	41 58 8	2001	Dry	September	Used in Summary Table Analysis	85.4	43.6	41.8	49.0%	35.2	50.2	58.8%	11.1	74.4	87.0%
ME 2	41 58 8	2002	Below Normal	October	Used in Summary Table Analysis	254.2	219.8	34.4	13.5%	212.9	41.4	16.3%	191.8	62.4	24.6%
ME 2	41 58 8	2002	Below Normal	November	Used in Summary Table Analysis	11,935.2	11,909.7	25.5	0.2%	11,903.9	31.3	0.3%	11,885.4	49.8	0.4%
ME 2	41 58 8	2002	Below Normal	December	--	35,419.0	35,397.0	22.0	0.1%	35,392.4	26.6	0.1%	35,377.3	41.7	0.1%
ME 2	41 58 8	2002	Below Normal	January	--	30,708.3	30,688.7	19.7	0.1%	30,685.2	23.1	0.1%	30,672.5	35.9	0.1%
ME 2	41 58 8	2002	Below Normal	February	--	24,574.1	24,556.7	17.4	0.1%	24,553.2	20.8	0.1%	24,541.7	32.4	0.1%
ME 2	41 58 8	2002	Below Normal	March	--	17,697.9	17,681.7	16.2	0.1%	17,678.2	19.7	0.1%	17,667.8	30.1	0.2%
ME 2	41 58 8	2002	Below Normal	April	--	9,891.1	9,856.3	34.8	0.4%	9,849.4	41.7	0.4%	9,828.6	62.5	0.6%
ME 2	41 58 8	2002	Below Normal	May	--	3,304.4	3,263.8	40.6	1.2%	3,255.7	48.7	1.5%	3,231.4	73.0	2.2%

Table A.1

**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow Difference		Percent Difference	Flow Difference		Percent Difference	Flow Difference		Percent Difference
							Flow (cfs)	(cfs)		Flow (cfs)	(cfs)		Flow (cfs)	(cfs)	
ME 2	41 58 8	2002	Below Normal	June	--	844.7	798.0	46.7	5.5%	788.8	55.8	6.6%	761.7	82.9	9.8%
ME 2	41 58 8	2002	Below Normal	July	--	352.9	307.6	45.2	12.8%	298.6	54.3	15.4%	272.4	80.4	22.8%
ME 2	41 58 8	2002	Below Normal	August	--	216.4	174.7	41.7	19.3%	166.4	50.0	23.1%	141.0	75.4	34.9%
ME 2	41 58 8	2002	Below Normal	September	Used in Summary Table Analysis	153.5	115.3	38.1	24.8%	107.7	45.8	29.8%	83.8	69.7	45.4%
ME 2	41 58 8	2003	Wet	October	Used in Summary Table Analysis	118.6	88.2	30.3	25.6%	82.1	36.5	30.7%	63.6	55.0	46.4%
ME 2	41 58 8	2003	Wet	November	Used in Summary Table Analysis	883.7	860.3	23.4	2.6%	855.4	28.2	3.2%	840.9	42.7	4.8%
ME 2	41 58 8	2003	Wet	December	--	56,204.9	56,185.2	19.7	0.0%	56,180.6	24.3	0.0%	56,169.0	35.9	0.1%
ME 2	41 58 8	2003	Wet	January	--	31,400.5	31,383.1	17.4	0.1%	31,378.5	22.0	0.1%	31,368.1	32.4	0.1%
ME 2	41 58 8	2003	Wet	February	--	20,282.4	20,266.2	16.2	0.1%	20,263.9	18.5	0.1%	20,253.5	28.9	0.1%
ME 2	41 58 8	2003	Wet	March	--	23,927.1	23,912.0	15.0	0.1%	23,908.6	18.5	0.1%	23,900.5	26.6	0.1%
ME 2	41 58 8	2003	Wet	April	--	42,656.3	42,641.2	15.0	0.0%	42,638.9	17.4	0.0%	42,629.6	26.6	0.1%
ME 2	41 58 8	2003	Wet	May	--	12,185.2	12,150.5	34.7	0.3%	12,143.5	41.7	0.3%	12,121.5	63.7	0.5%
ME 2	41 58 8	2003	Wet	June	--	3,154.3	3,110.2	44.1	1.4%	3,101.6	52.7	1.7%	3,076.4	77.9	2.5%
ME 2	41 58 8	2003	Wet	July	--	1,461.3	1,416.6	44.8	3.1%	1,407.8	53.6	3.7%	1,381.3	80.1	5.5%
ME 2	41 58 8	2003	Wet	August	--	747.9	705.0	42.9	5.7%	696.0	51.9	6.9%	667.7	80.2	10.7%
ME 2	41 58 8	2003	Wet	September	Used in Summary Table Analysis	446.4	411.7	34.7	7.8%	404.8	41.6	9.3%	382.8	63.6	14.3%
ME 2	41 58 8	2004	Wet	October	Used in Summary Table Analysis	313.5	285.5	28.0	8.9%	279.9	33.6	10.7%	262.7	50.8	16.2%
ME 2	41 58 8	2004	Wet	November	Used in Summary Table Analysis	5,730.7	5,708.8	21.9	0.4%	5,704.3	26.4	0.5%	5,690.7	39.9	0.7%
ME 2	41 58 8	2004	Wet	December	--	36,003.5	35,985.0	18.5	0.1%	35,980.3	23.1	0.1%	35,968.8	34.7	0.1%
ME 2	41 58 8	2004	Wet	January	--	31,263.9	31,246.5	17.4	0.1%	31,243.1	20.8	0.1%	31,233.8	30.1	0.1%
ME 2	41 58 8	2004	Wet	February	--	38,033.6	38,018.5	15.0	0.0%	38,015.0	18.5	0.0%	38,005.8	27.8	0.1%
ME 2	41 58 8	2004	Wet	March	--	16,483.8	16,469.9	13.9	0.1%	16,467.6	16.2	0.1%	16,458.3	25.5	0.2%
ME 2	41 58 8	2004	Wet	April	--	9,420.0	9,406.9	13.1	0.1%	9,404.3	15.7	0.2%	9,396.2	23.8	0.3%
ME 2	41 58 8	2004	Wet	May	--	3,394.7	3,360.2	34.5	1.0%	3,353.5	41.2	1.2%	3,333.0	61.7	1.8%
ME 2	41 58 8	2004	Wet	June	--	683.1	640.7	42.4	6.2%	632.4	50.7	7.4%	607.9	75.2	11.0%
ME 2	41 58 8	2004	Wet	July	--	345.4	301.4	43.9	12.7%	292.7	52.7	15.3%	266.6	78.8	22.8%
ME 2	41 58 8	2004	Wet	August	--	214.7	174.7	40.0	18.6%	166.8	48.0	22.3%	142.6	72.1	33.6%
ME 2	41 58 8	2004	Wet	September	Used in Summary Table Analysis	152.3	114.3	38.0	24.9%	106.7	45.6	30.0%	83.7	68.5	45.0%
ME 2	41 58 8	2005	Above Normal	October	Used in Summary Table Analysis	7,589.7	7,561.0	28.7	0.4%	7,555.2	34.5	0.5%	7,537.6	52.1	0.7%
ME 2	41 58 8	2005	Above Normal	November	Used in Summary Table Analysis	2,239.7	2,218.1	21.6	1.0%	2,213.7	26.0	1.2%	2,200.3	39.4	1.8%
ME 2	41 58 8	2005	Above Normal	December	--	20,770.8	20,752.3	18.5	0.1%	20,747.7	23.1	0.1%	20,736.1	34.7	0.2%
ME 2	41 58 8	2005	Above Normal	January	--	22,181.7	22,165.5	16.2	0.1%	22,162.0	19.7	0.1%	22,151.6	30.1	0.1%
ME 2	41 58 8	2005	Above Normal	February	--	13,971.1	13,957.2	13.9	0.1%	13,953.7	17.4	0.1%	13,944.4	26.6	0.2%
ME 2	41 58 8	2005	Above Normal	March	--	28,412.0	28,398.1	13.9	0.0%	28,395.8	16.2	0.1%	28,386.6	25.5	0.1%
ME 2	41 58 8	2005	Above Normal	April	--	21,341.4	21,328.7	12.7	0.1%	21,326.4	15.0	0.1%	21,318.3	23.1	0.1%
ME 2	41 58 8	2005	Above Normal	May	--	19,447.9	19,412.0	35.9	0.2%	19,405.1	42.8	0.2%	19,384.3	63.7	0.3%
ME 2	41 58 8	2005	Above Normal	June	--	15,728.0	15,673.6	54.4	0.3%	15,663.2	64.8	0.4%	15,631.9	96.1	0.6%
ME 2	41 58 8	2005	Above Normal	July	--	2,857.5	2,811.7	45.8	1.6%	2,803.1	54.4	1.9%	2,777.4	80.1	2.8%
ME 2	41 58 8	2005	Above Normal	August	--	970.5	930.7	39.8	4.1%	922.8	47.7	4.9%	899.2	71.3	7.3%
ME 2	41 58 8	2005	Above Normal	September	Used in Summary Table Analysis	512.3	478.0	34.3	6.7%	471.2	41.1	8.0%	450.6	61.7	12.0%
ME 2	41 58 8	2006	Wet	October	Used in Summary Table Analysis	620.8	593.6	27.2	4.4%	588.1	32.7	5.3%	571.5	49.3	7.9%
ME 2	41 58 8	2006	Wet	November	Used in Summary Table Analysis	9,186.0	9,165.3	20.7	0.2%	9,161.1	24.9	0.3%	9,148.3	37.7	0.4%
ME 2	41 58 8	2006	Wet	December	--	43,114.6	43,096.1	18.5	0.0%	43,091.4	23.1	0.1%	43,079.9	34.7	0.1%
ME 2	41 58 8	2006	Wet	January	--	45,950.2	45,934.0	16.2	0.0%	45,930.6	19.7	0.0%	45,920.1	30.1	0.1%
ME 2	41 58 8	2006	Wet	February	--	26,467.6	26,452.5	15.0	0.1%	26,450.2	17.4	0.1%	26,441.0	26.6	0.1%
ME 2	41 58 8	2006	Wet	March	--	46,883.1	46,869.2	13.9	0.0%	46,866.9	16.2	0.0%	46,857.6	25.5	0.1%
ME 2	41 58 8	2006	Wet	April	--	30,317.1	30,304.4	12.7	0.0%	30,302.1	15.0	0.0%	30,294.0	23.1	0.1%
ME 2	41 58 8	2006	Wet	May	--	14,141.2	14,121.5	19.7	0.1%	14,118.1	23.1	0.2%	14,107.6	33.6	0.2%
ME 2	41 58 8	2006	Wet	June	--	3,536.2	3,492.7	43.5	1.2%	3,484.1	52.1	1.5%	3,459.3	77.0	2.2%
ME 2	41 58 8	2006	Wet	July	--	1,265.5	1,221.6	43.9	3.5%	1,213.1	52.4	4.1%	1,187.6	77.9	6.2%
ME 2	41 58 8	2006	Wet	August	--	651.7	610.6	41.1	6.3%	602.5	49.2	7.6%	578.0	73.7	11.3%
ME 2	41 58 8	2006	Wet	September	Used in Summary Table Analysis	413.4	378.7	34.7	8.4%	371.8	41.7	10.1%	350.9	62.5	15.1%
ME 2	41 58 8	2007	Above Normal	October	Used in Summary Table Analysis	263.0	235.4	27.7	10.5%	229.8	33.3	12.6%	212.8	50.2	19.1%
ME 2	41 58 8	2007	Above Normal	November	Used in Summary Table Analysis	8,560.5	8,538.8	21.8	0.3%	8,534.4	26.2	0.3%	8,520.8	39.7	0.5%
ME 2	41 58 8	2007	Above Normal	December	--	20,199.1	20,180.6	18.5	0.1%	20,175.9	23.1	0.1%	20,164.4	34.7	0.2%
ME 2	41 58 8	2007	Above Normal	January	--	10,191.9	10,175.5	16.4	0.2%	10,172.1	19.8	0.2%	10,161.8	30.1	0.3%
ME 2	41 58 8	2007	Above Normal	February	--	30,335.6	30,319.4	16.2	0.1%	30,317.1	18.5	0.1%	30,306.7	28.9	0.1%
ME 2	41 58 8	2007	Above Normal	March	--	13,057.9	13,042.8	15.0	0.1%	13,040.5	17.4	0.1%	13,031.3	26.6	0.2%
ME 2	41 58 8	2007	Above Normal	April	--	11,492.8	11,459.3	33.6	0.3%	11,452.5	40.3	0.4%	11,432.5	60.3	0.5%
ME 2	41 58 8	2007	Above Normal	May	--	4,118.4	4,079.1	39.4	1.0%	4,071.2	47.2	1.1%	4,047.6	70.8	1.7%
ME 2	41 58 8	2007	Above Normal	June	--	1,482.5	1,433.8	48.7	3.3%	1,424.3	58.2	3.9%	1,396.1	86.5	5.8%
ME 2	41 58 8	2007	Above Normal	July	--	486.8	440.2	46.6	9.6%	430.9	55.9	11.5%	403.8	83.0	17.0%
ME 2	41 58 8	2007	Above Normal	August	--	212.3	171.7	40.7	19.2%	163.6	48.8	23.0%	138.8	73.6	34.6%
ME 2	41 58 8	2007	Above Normal	September	Used in Summary Table Analysis	140.0	102.6	37.4	26.7%	95.1	44.8	32.0%	72.6	67.4	48.2%

Table A.1

**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 2	41 58 8	2008	Dry	October	Used in Summary Table Analysis	3,392.4	3,362.7	29.6	0.9%	3,356.7	35.6	1.1%	3,338.5	53.8	1.6%
ME 2	41 58 8	2008	Dry	November	Used in Summary Table Analysis	3,235.1	3,212.8	22.2	0.7%	3,208.3	26.7	0.8%	3,194.7	40.4	1.2%
ME 2	41 58 8	2008	Dry	December	--	22,853.0	22,833.3	19.7	0.1%	22,829.9	23.1	0.1%	22,818.3	34.7	0.2%
ME 2	41 58 8	2008	Dry	January	--	37,268.5	37,251.2	17.4	0.0%	37,247.7	20.8	0.1%	37,236.1	32.4	0.1%
ME 2	41 58 8	2008	Dry	February	--	26,203.7	26,188.7	15.0	0.1%	26,185.2	18.5	0.1%	26,175.9	27.8	0.1%
ME 2	41 58 8	2008	Dry	March	--	11,761.6	11,747.7	13.9	0.1%	11,744.2	17.4	0.1%	11,736.1	25.5	0.2%
ME 2	41 58 8	2008	Dry	April	--	8,989.4	8,953.8	35.5	0.4%	8,946.9	42.5	0.5%	8,925.8	63.5	0.7%
ME 2	41 58 8	2008	Dry	May	--	1,357.1	1,321.4	35.6	2.6%	1,314.6	42.5	3.1%	1,294.0	63.1	4.6%
ME 2	41 58 8	2008	Dry	June	--	428.2	374.8	53.4	12.5%	364.4	63.9	14.9%	333.5	94.7	22.1%
ME 2	41 58 8	2008	Dry	July	--	246.8	196.4	50.3	20.4%	186.5	60.3	24.4%	161.6	85.2	34.5%
ME 2	41 58 8	2008	Dry	August	--	169.8	122.1	47.7	28.1%	112.5	57.2	33.7%	83.4	86.3	50.9%
ME 2	41 58 8	2008	Dry	September	Used in Summary Table Analysis	131.5	85.8	45.7	34.8%	76.6	54.8	41.7%	50.3	81.2	61.7%
ME 2	41 58 8	2009	Critical	October	Used in Summary Table Analysis	911.7	877.6	34.1	3.7%	870.8	41.0	4.5%	849.6	62.1	6.8%
ME 2	41 58 8	2009	Critical	November	Used in Summary Table Analysis	5,441.3	5,415.7	25.6	0.5%	5,410.5	30.8	0.6%	5,392.1	49.2	0.9%
ME 2	41 58 8	2009	Critical	December	--	12,023.1	12,001.2	22.0	0.2%	11,997.7	25.5	0.2%	11,983.8	39.4	0.3%
ME 2	41 58 8	2009	Critical	January	--	8,752.2	8,732.8	19.4	0.2%	8,728.8	23.4	0.3%	8,716.8	35.4	0.4%
ME 2	41 58 8	2009	Critical	February	--	22,495.4	22,478.0	17.4	0.1%	22,474.5	20.8	0.1%	22,464.1	31.3	0.1%
ME 2	41 58 8	2009	Critical	March	--	21,031.3	21,015.0	16.2	0.1%	21,012.7	18.5	0.1%	21,002.3	28.9	0.1%
ME 2	41 58 8	2009	Critical	April	--	10,081.7	10,045.1	36.6	0.4%	10,037.8	43.9	0.4%	10,016.1	65.6	0.7%
ME 2	41 58 8	2009	Critical	May	--	15,534.7	15,490.7	44.0	0.3%	15,482.6	52.1	0.3%	15,456.0	78.7	0.5%
ME 2	41 58 8	2009	Critical	June	--	3,148.6	3,091.2	57.4	1.8%	3,080.1	68.5	2.2%	3,047.2	101.4	3.2%
ME 2	41 58 8	2009	Critical	July	--	1,252.3	1,201.6	50.7	4.0%	1,191.7	60.6	4.8%	1,166.7	85.6	6.8%
ME 2	41 58 8	2009	Critical	August	--	658.0	610.1	47.9	7.3%	600.5	57.4	8.7%	574.1	83.8	12.7%
ME 2	41 58 8	2009	Critical	September	Used in Summary Table Analysis	379.8	338.1	41.7	11.0%	329.7	50.0	13.2%	305.6	74.1	19.5%
ME 2	41 58 8	2010	Below Normal	October	Used in Summary Table Analysis	6,074.0	6,039.7	34.3	0.6%	6,032.8	41.2	0.7%	6,010.6	63.3	1.0%
ME 2	41 58 8	2010	Below Normal	November	Used in Summary Table Analysis	8,241.0	8,214.8	26.2	0.3%	8,209.6	31.4	0.4%	8,190.6	50.3	0.6%
ME 2	41 58 8	2010	Below Normal	December	--	12,261.6	12,239.6	22.0	0.2%	12,235.0	26.6	0.2%	12,221.1	40.5	0.3%
ME 2	41 58 8	2010	Below Normal	January	--	35,932.9	35,913.2	19.7	0.1%	35,909.7	23.1	0.1%	35,897.0	35.9	0.1%
ME 2	41 58 8	2010	Below Normal	February	--	27,156.3	27,138.9	17.4	0.1%	27,135.4	20.8	0.1%	27,125.0	31.3	0.1%
ME 2	41 58 8	2010	Below Normal	March	--	28,760.4	28,744.2	16.2	0.1%	28,740.7	19.7	0.1%	28,730.3	30.1	0.1%
ME 2	41 58 8	2010	Below Normal	April	--	39,875.0	39,860.0	15.0	0.0%	39,856.5	18.5	0.0%	39,847.2	27.8	0.1%
ME 2	41 58 8	2010	Below Normal	May	--	20,160.9	20,123.8	37.0	0.2%	20,116.9	44.0	0.2%	20,094.9	66.0	0.3%
ME 2	41 58 8	2010	Below Normal	June	--	9,264.2	9,209.6	54.6	0.6%	9,198.8	65.4	0.7%	9,167.1	97.1	1.0%
ME 2	41 58 8	2010	Below Normal	July	--	1,444.6	1,398.4	46.2	3.2%	1,389.6	55.0	3.8%	1,363.2	81.4	5.6%
ME 2	41 58 8	2010	Below Normal	August	--	556.5	515.7	40.8	7.3%	507.7	48.9	8.8%	483.5	73.0	13.1%
ME 2	41 58 8	2010	Below Normal	September	Used in Summary Table Analysis	638.3	599.2	39.1	6.1%	591.4	46.9	7.3%	568.0	70.3	11.0%
ME 2	41 58 8	2011	Wet	October	Used in Summary Table Analysis	9,565.9	9,537.7	28.1	0.3%	9,532.2	33.7	0.4%	9,515.0	50.8	0.5%
ME 2	41 58 8	2011	Wet	November	Used in Summary Table Analysis	14,143.5	14,121.5	22.0	0.2%	14,116.9	26.6	0.2%	14,104.2	39.4	0.3%
ME 2	41 58 8	2011	Wet	December	--	33,405.1	33,386.6	18.5	0.1%	33,381.9	23.1	0.1%	33,370.4	34.7	0.1%
ME 2	41 58 8	2011	Wet	January	--	14,096.1	14,079.9	16.2	0.1%	14,077.5	18.5	0.1%	14,067.1	28.9	0.2%
ME 2	41 58 8	2011	Wet	February	--	20,709.5	20,694.4	15.0	0.1%	20,691.0	18.5	0.1%	20,681.7	27.8	0.1%
ME 2	41 58 8	2011	Wet	March	--	51,810.2	51,796.3	13.9	0.0%	51,792.8	17.4	0.0%	51,784.7	25.5	0.0%
ME 2	41 58 8	2011	Wet	April	--	24,729.2	24,715.3	13.9	0.1%	24,713.0	16.2	0.1%	24,704.9	24.3	0.1%
ME 2	41 58 8	2011	Wet	May	--	11,347.0	11,311.7	35.3	0.3%	11,304.7	42.2	0.4%	11,283.9	63.1	0.6%
ME 2	41 58 8	2011	Wet	June	--	7,020.9	6,967.6	53.4	0.8%	6,956.9	64.0	0.9%	6,925.8	95.1	1.4%
ME 2	41 58 8	2011	Wet	July	--	1,820.8	1,770.1	50.7	2.8%	1,760.2	60.6	3.3%	1,731.7	89.1	4.9%
ME 2	41 58 8	2011	Wet	August	--	765.8	725.6	40.3	5.3%	717.6	48.3	6.3%	693.5	72.3	9.4%
ME 2	41 58 8	2011	Wet	September	Used in Summary Table Analysis	422.4	387.0	35.4	8.4%	379.9	42.5	10.1%	358.6	63.8	15.1%
ME 2	41 58 8	2012	Below Normal	October	Used in Summary Table Analysis	4,504.6	4,476.4	28.2	0.6%	4,470.6	34.0	0.8%	4,453.1	51.5	1.1%
ME 2	41 58 8	2012	Below Normal	November	Used in Summary Table Analysis	8,167.6	8,145.6	22.0	0.3%	8,141.1	26.5	0.3%	8,127.4	40.2	0.5%
ME 2	41 58 8	2012	Below Normal	December	--	5,149.5	5,130.9	18.6	0.4%	5,127.1	22.5	0.4%	5,115.5	34.0	0.7%
ME 2	41 58 8	2012	Below Normal	January	--	19,922.5	19,906.3	16.2	0.1%	19,902.8	19.7	0.1%	19,892.4	30.1	0.2%
ME 2	41 58 8	2012	Below Normal	February	--	18,153.9	18,138.9	15.0	0.1%	18,135.4	18.5	0.1%	18,126.2	27.8	0.2%
ME 2	41 58 8	2012	Below Normal	March	--	45,197.9	45,182.9	15.0	0.0%	45,180.6	17.4	0.0%	45,171.3	26.6	0.1%
ME 2	41 58 8	2012	Below Normal	April	--	26,774.3	26,760.4	13.9	0.1%	26,758.1	16.2	0.1%	26,748.8	25.5	0.1%
ME 2	41 58 8	2012	Below Normal	May	--	7,458.9	7,423.6	35.3	0.5%	7,416.7	42.2	0.6%	7,396.1	62.8	0.8%
ME 2	41 58 8	2012	Below Normal	June	--	5,480.7	5,426.3	54.4	1.0%	5,415.6	65.0	1.2%	5,384.1	96.5	1.8%
ME 2	41 58 8	2012	Below Normal	July	--	2,200.3	2,150.7	49.7	2.3%	2,141.0	59.4	2.7%	2,111.8	88.5	4.0%
ME 2	41 58 8	2012	Below Normal	August	--	379.2	341.6	37.7	9.9%	334.1	45.2	11.9%	311.6	67.7	17.8%
ME 2	41 58 8	2012	Below Normal	September	Used in Summary Table Analysis	238.4	205.6	32.8	13.8%	199.1	39.3	16.5%	179.5	58.9	24.7%
ME 2	41 58 8	2013	Below Normal	October	Used in Summary Table Analysis	1,886.1	1,858.2	27.9	1.5%	1,852.5	33.6	1.8%	1,835.5	50.6	2.7%
ME 2	41 58 8	2013	Below Normal	November	Used in Summary Table Analysis	14,560.2	14,538.2	22.0	0.2%	14,534.7	25.5	0.2%	14,520.8	39.4	0.3%
ME 2	41 58 8	2013	Below Normal	December	--	59,716.4	59,696.8	19.7	0.0%	59,692.1	24.3	0.0%	59,680.6	35.9	0.1%
ME 2	41 58 8	2013	Below Normal	January	--	22,118.1	22,101.9	16.2	0.1%	22,098.4	19.7	0.1%	22,088.0	30.1	0.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 2	41 58 8	2013	Below Normal	February	--	8,803.9	8,788.7	15.3	0.2%	8,785.5	18.4	0.2%	8,776.2	27.8	0.3%
ME 2	41 58 8	2013	Below Normal	March	--	10,269.3	10,254.7	14.6	0.1%	10,251.9	17.5	0.2%	10,242.9	26.4	0.3%
ME 2	41 58 8	2013	Below Normal	April	--	8,269.2	8,236.3	32.9	0.4%	8,229.9	39.4	0.5%	8,210.2	59.0	0.7%
ME 2	41 58 8	2013	Below Normal	May	--	4,404.1	4,364.8	39.2	0.9%	4,356.9	47.1	1.1%	4,333.4	70.6	1.6%
ME 2	41 58 8	2013	Below Normal	June	--	2,098.3	2,049.9	48.4	2.3%	2,040.4	57.9	2.8%	2,012.2	86.1	4.1%
ME 2	41 58 8	2013	Below Normal	July	--	710.2	666.1	44.1	6.2%	657.3	52.8	7.4%	631.9	78.3	11.0%
ME 2	41 58 8	2013	Below Normal	August	--	330.4	289.7	40.7	12.3%	281.5	48.9	14.8%	256.6	73.8	22.3%
ME 2	41 58 8	2013	Below Normal	September	Used in Summary Table Analysis	4,748.3	4,706.3	42.0	0.9%	4,697.7	50.6	1.1%	4,672.3	75.9	1.6%
ME 2	41 58 8	2014	Critical	October	Used in Summary Table Analysis	275.2	246.3	28.9	10.5%	240.5	34.7	12.6%	223.8	51.4	18.7%
ME 2	41 58 8	2014	Critical	November	Used in Summary Table Analysis	1,515.7	1,493.3	22.5	1.5%	1,488.7	27.1	1.8%	1,475.0	40.7	2.7%
ME 2	41 58 8	2014	Critical	December	--	1,574.5	1,555.4	19.1	1.2%	1,551.5	23.0	1.5%	1,539.7	34.8	2.2%
ME 2	41 58 8	2014	Critical	January	--	2,798.3	2,781.5	16.8	0.6%	2,778.0	20.3	0.7%	2,767.6	30.7	1.1%
ME 2	41 58 8	2014	Critical	February	--	15,693.3	15,678.2	15.0	0.1%	15,674.8	18.5	0.1%	15,665.5	27.8	0.2%
ME 2	41 58 8	2014	Critical	March	--	31,409.7	31,395.8	13.9	0.0%	31,392.4	17.4	0.1%	31,384.3	25.5	0.1%
ME 2	41 58 8	2014	Critical	April	--	12,960.6	12,924.8	35.9	0.3%	12,917.8	42.8	0.3%	12,897.0	63.7	0.5%
ME 2	41 58 8	2014	Critical	May	--	5,168.2	5,125.8	42.4	0.8%	5,117.4	50.8	1.0%	5,091.9	76.3	1.5%
ME 2	41 58 8	2014	Critical	June	--	1,187.2	1,129.2	57.9	4.9%	1,117.9	69.2	5.8%	1,085.3	101.8	8.6%
ME 2	41 58 8	2014	Critical	July	--	537.5	486.7	50.8	9.4%	476.6	60.9	11.3%	451.2	86.3	16.1%
ME 2	41 58 8	2014	Critical	August	--	338.2	290.5	47.7	14.1%	281.0	57.2	16.9%	254.6	83.6	24.7%
ME 2	41 58 8	2014	Critical	September	Used in Summary Table Analysis	2,552.8	2,505.8	47.0	1.8%	2,496.6	56.1	2.2%	2,469.2	83.6	3.3%
ME 2	41 58 8	2015	Dry	October	Used in Summary Table Analysis	11,296.5	11,261.6	35.0	0.3%	11,254.7	41.8	0.4%	11,234.0	62.5	0.6%
ME 2	41 58 8	2015	Dry	November	Used in Summary Table Analysis	8,971.6	8,946.2	25.5	0.3%	8,941.1	30.6	0.3%	8,922.7	49.0	0.5%
ME 2	41 58 8	2015	Dry	December	--	32,379.6	32,357.6	22.0	0.1%	32,353.0	26.6	0.1%	32,339.1	40.5	0.1%
ME 2	41 58 8	2015	Dry	January	--	14,537.0	14,518.5	18.5	0.1%	14,513.9	23.1	0.2%	14,502.3	34.7	0.2%
ME 2	41 58 8	2015	Dry	February	--	27,137.7	27,120.4	17.4	0.1%	27,116.9	20.8	0.1%	27,106.5	31.3	0.1%
ME 2	41 58 8	2015	Dry	March	--	11,544.2	11,529.4	14.8	0.1%	11,526.4	17.8	0.2%	11,517.2	27.0	0.2%
ME 2	41 58 8	2015	Dry	April	--	8,322.0	8,285.8	36.2	0.4%	8,278.5	43.5	0.5%	8,256.9	65.0	0.8%
ME 2	41 58 8	2015	Dry	May	--	1,503.0	1,460.6	42.4	2.8%	1,452.3	50.7	3.4%	1,428.4	74.7	5.0%
ME 2	41 58 8	2015	Dry	June	--	645.0	590.8	54.2	8.4%	580.2	64.8	10.0%	548.9	96.1	14.9%
ME 2	41 58 8	2015	Dry	July	--	260.7	210.0	50.7	19.5%	199.9	60.8	23.3%	174.7	86.0	33.0%
ME 2	41 58 8	2015	Dry	August	--	157.1	109.2	48.0	30.5%	99.6	57.6	36.6%	73.2	83.9	53.4%
ME 2	41 58 8	2015	Dry	September	Used in Summary Table Analysis	112.2	67.7	44.5	39.7%	58.5	53.7	47.9%	31.8	80.4	71.7%
ME 2	41 58 8	2016	Above Normal	October	Used in Summary Table Analysis	77.8	41.6	36.3	46.6%	34.7	43.2	55.5%	13.7	64.1	82.4%
ME 2	41 58 8	2016	Above Normal	November	Used in Summary Table Analysis	3,806.8	3,780.6	26.3	0.7%	3,775.2	31.6	0.8%	3,755.8	51.0	1.3%
ME 2	41 58 8	2016	Above Normal	December	--	36,339.1	36,317.1	22.0	0.1%	36,312.5	26.6	0.1%	36,297.5	41.7	0.1%
ME 2	41 58 8	2016	Above Normal	January	--	57,025.5	57,004.6	20.8	0.0%	57,001.2	24.3	0.0%	56,987.3	38.2	0.1%
ME 2	41 58 8	2016	Above Normal	February	--	24,217.6	24,200.2	17.4	0.1%	24,196.8	20.8	0.1%	24,186.3	31.3	0.1%
ME 2	41 58 8	2016	Above Normal	March	--	41,638.9	41,622.7	16.2	0.0%	41,619.2	19.7	0.0%	41,608.8	30.1	0.1%
ME 2	41 58 8	2016	Above Normal	April	--	18,495.4	18,481.5	13.9	0.1%	18,478.0	17.4	0.1%	18,469.9	25.5	0.1%
ME 2	41 58 8	2016	Above Normal	May	--	5,197.8	5,178.4	19.4	0.4%	5,174.4	23.4	0.4%	5,162.7	35.1	0.7%
ME 2	41 58 8	2016	Above Normal	June	--	1,499.4	1,458.8	40.6	2.7%	1,451.9	47.6	3.2%	1,431.5	67.9	4.5%
ME 2	41 58 8	2016	Above Normal	July	--	812.3	768.2	44.1	5.4%	759.5	52.8	6.5%	733.7	78.6	9.7%
ME 2	41 58 8	2016	Above Normal	August	--	480.5	438.9	41.7	8.7%	430.5	50.0	10.4%	405.7	74.8	15.6%
ME 2	41 58 8	2016	Above Normal	September	Used in Summary Table Analysis	317.2	279.0	38.2	12.0%	271.2	46.0	14.5%	247.8	69.4	21.9%
ME 2	41 58 8	2017	Wet	October	Used in Summary Table Analysis	18,171.3	18,141.2	30.1	0.2%	18,135.4	35.9	0.2%	18,118.1	53.2	0.3%
ME 2	41 58 8	2017	Wet	November	Used in Summary Table Analysis	18,699.1	18,677.1	22.0	0.1%	18,672.5	26.6	0.1%	18,659.7	39.4	0.2%
ME 2	41 58 8	2017	Wet	December	--	23,921.3	23,901.6	19.7	0.1%	23,898.1	23.1	0.1%	23,886.6	34.7	0.1%
ME 2	41 58 8	2017	Wet	January	--	106,346.1	106,329.9	16.2	0.0%	106,326.4	19.7	0.0%	106,314.8	31.3	0.0%
ME 2	41 58 8	2017	Wet	February	--	81,511.6	81,496.5	15.0	0.0%	81,493.1	18.5	0.0%	81,483.8	27.8	0.0%
ME 2	41 58 8	2017	Wet	March	--	27,169.0	27,155.1	13.9	0.1%	27,151.6	17.4	0.1%	27,143.5	25.5	0.1%
ME 2	41 58 8	2017	Wet	April	--	22,824.1	22,811.3	12.7	0.1%	22,809.0	15.0	0.1%	22,800.9	23.1	0.1%
ME 2	41 58 8	2017	Wet	May	--	6,264.9	6,245.6	19.3	0.3%	6,241.8	23.1	0.4%	6,230.2	34.7	0.6%
ME 2	41 58 8	2017	Wet	June	--	2,098.3	2,055.3	42.9	2.0%	2,046.9	51.4	2.4%	2,022.0	76.3	3.6%
ME 2	41 58 8	2017	Wet	July	--	921.3	877.2	44.2	4.8%	868.5	52.8	5.7%	842.8	78.5	8.5%
ME 2	41 58 8	2017	Wet	August	--	493.5	452.1	41.4	8.4%	443.9	49.6	10.1%	419.2	74.3	15.1%
ME 2	41 58 8	2017	Wet	September	Used in Summary Table Analysis	311.0	273.0	38.0	12.2%	265.4	45.6	14.7%	242.5	68.4	22.0%
ME 2	41 58 8	2018	Above Normal	October	Used in Summary Table Analysis	263.7	235.0	28.7	10.9%	229.2	34.5	13.1%	211.8	51.9	19.7%
ME 2	41 58 8	2018	Above Normal	November	Used in Summary Table Analysis	10,658.9	10,637.3	21.6	0.2%	10,632.9	26.0	0.2%	10,619.7	39.2	0.4%
ME 2	41 58 8	2018	Above Normal	December	--	5,428.9	5,411.0	17.9	0.3%	5,407.3	21.6	0.4%	5,396.2	32.8	0.6%
ME 2	41 58 8	2018	Above Normal	January	--	17,556.7	17,540.5	16.2	0.1%	17,537.0	19.7	0.1%	17,526.6	30.1	0.2%
ME 2	41 58 8	2018	Above Normal	February	--	7,581.9	7,567.8	14.1	0.2%	7,564.8	17.1	0.2%	7,555.9	26.0	0.3%
ME 2	41 58 8	2018	Above Normal	March	--	20,553.2	20,540.5	12.7	0.1%	20,537.0	16.2	0.1%	20,528.9	24.3	0.1%
ME 2	41 58 8	2018	Above Normal	April	--	32,030.1	32,017.4	12.7	0.0%	32,015.0	15.0	0.0%	32,006.9	23.1	0.1%
ME 2	41 58 8	2018	Above Normal	May	--	6,978.1	6,944.7	33.4	0.5%	6,938.2	39.9	0.6%	6,918.1	60.1	0.9%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 2	41 58 8	2018	Above Normal	June	--	1,903.2	1,860.6	42.6	2.2%	1,852.4	50.8	2.7%	1,828.0	75.2	4.0%
ME 2	41 58 8	2018	Above Normal	July	--	769.8	725.7	44.1	5.7%	716.9	52.9	6.9%	690.7	79.1	10.3%
ME 2	41 58 8	2018	Above Normal	August	--	430.9	391.2	39.7	9.2%	383.3	47.7	11.1%	359.4	71.6	16.6%
ME 2	41 58 8	2018	Above Normal	September	Used in Summary Table Analysis	288.9	250.9	38.0	13.2%	243.3	45.6	15.8%	220.4	68.5	23.7%
ME 2	41 58 8	2019	Below Normal	October	Used in Summary Table Analysis	198.2	169.7	28.5	14.4%	163.9	34.3	17.3%	146.5	51.7	26.1%
ME 2	41 58 8	2019	Below Normal	November	Used in Summary Table Analysis	6,534.6	6,512.8	21.8	0.3%	6,508.3	26.3	0.4%	6,494.9	39.7	0.6%
ME 2	41 58 8	2019	Below Normal	December	--	14,517.4	14,500.0	17.4	0.1%	14,495.4	22.0	0.2%	14,485.0	32.4	0.2%
ME 2	41 58 8	2019	Below Normal	January	--	34,925.9	34,909.7	16.2	0.0%	34,906.3	19.7	0.1%	34,895.8	30.1	0.1%
ME 2	41 58 8	2019	Below Normal	February	--	141,608.8	141,597.2	11.6	0.0%	141,585.6	23.1	0.0%	141,574.1	34.7	0.0%
ME 2	41 58 8	2019	Below Normal	March	--	42,157.4	42,144.7	12.7	0.0%	42,141.2	16.2	0.0%	42,133.1	24.3	0.1%
ME 2	41 58 8	2019	Below Normal	April	--	15,224.5	15,211.8	12.7	0.1%	15,209.5	15.0	0.1%	15,201.4	23.1	0.2%
ME 2	41 58 8	2019	Below Normal	May	--	16,716.4	16,681.7	34.7	0.2%	16,674.8	41.7	0.2%	16,653.9	62.5	0.4%
ME 2	41 58 8	2019	Below Normal	June	--	4,238.4	4,193.8	44.7	1.1%	4,185.3	53.1	1.3%	4,160.5	77.9	1.8%
ME 2	41 58 8	2019	Below Normal	July	--	1,347.9	1,303.7	44.2	3.3%	1,294.9	53.0	3.9%	1,269.0	78.9	5.9%
ME 2	41 58 8	2019	Below Normal	August	--	583.7	543.2	40.5	6.9%	535.1	48.6	8.3%	511.0	72.7	12.5%
ME 2	41 58 8	2019	Below Normal	September	Used in Summary Table Analysis	451.3	413.5	37.7	8.4%	405.9	45.3	10.0%	383.3	68.0	15.1%
ME 2	41 58 8	2020	Dry	October	Used in Summary Table Analysis	346.2	319.2	27.0	7.8%	313.8	32.5	9.4%	297.3	48.9	14.1%
ME 2	41 58 8	2020	Dry	November	Used in Summary Table Analysis	304.0	284.1	19.9	6.5%	280.0	24.0	7.9%	267.8	36.2	11.9%
ME 2	41 58 8	2020	Dry	December	--	13,071.8	13,053.2	18.5	0.1%	13,049.8	22.0	0.2%	13,038.2	33.6	0.3%
ME 2	41 58 8	2020	Dry	January	--	22,159.7	22,143.5	16.2	0.1%	22,141.2	18.5	0.1%	22,130.8	28.9	0.1%
ME 2	41 58 8	2020	Dry	February	--	7,402.5	7,388.3	14.2	0.2%	7,385.3	17.2	0.2%	7,376.4	26.2	0.4%
ME 2	41 58 8	2020	Dry	March	--	7,209.4	7,195.9	13.4	0.2%	7,193.3	16.1	0.2%	7,185.1	24.3	0.3%
ME 2	41 58 8	2020	Dry	April	--	5,445.0	5,409.7	35.3	0.6%	5,402.8	42.2	0.8%	5,381.9	63.1	1.2%
ME 2	41 58 8	2020	Dry	May	--	7,329.4	7,287.4	42.0	0.6%	7,278.9	50.5	0.7%	7,253.9	75.5	1.0%
ME 2	41 58 8	2020	Dry	June	--	2,098.5	2,044.6	53.9	2.6%	2,034.3	64.2	3.1%	2,003.8	94.7	4.5%
ME 2	41 58 8	2020	Dry	July	--	786.6	735.1	51.5	6.5%	724.8	61.8	7.9%	699.1	87.5	11.1%
ME 2	41 58 8	2020	Dry	August	--	388.9	339.6	49.3	12.7%	329.7	59.2	15.2%	302.4	86.4	22.2%
ME 2	41 58 8	2020	Dry	September	Used in Summary Table Analysis	238.4	192.6	45.9	19.2%	183.1	55.3	23.2%	155.6	82.8	34.7%
ME 3	39 58 10	2000	Above Normal	October	Used in Summary Table Analysis	806.9	775.8	31.1	3.9%	769.4	37.4	4.6%	750.5	56.4	7.0%
ME 3	39 58 10	2000	Above Normal	November	Used in Summary Table Analysis	11,991.9	11,967.6	24.3	0.2%	11,963.0	28.9	0.2%	11,947.9	44.0	0.4%
ME 3	39 58 10	2000	Above Normal	December	--	10,741.8	10,721.3	20.5	0.2%	10,717.1	24.7	0.2%	10,704.5	37.3	0.3%
ME 3	39 58 10	2000	Above Normal	January	--	28,364.6	28,344.9	19.7	0.1%	28,341.4	23.1	0.1%	28,329.9	34.7	0.1%
ME 3	39 58 10	2000	Above Normal	February	--	36,901.6	36,884.3	17.4	0.0%	36,880.8	20.8	0.1%	36,870.4	31.3	0.1%
ME 3	39 58 10	2000	Above Normal	March	--	18,270.8	18,254.6	16.2	0.1%	18,252.3	18.5	0.1%	18,241.9	28.9	0.2%
ME 3	39 58 10	2000	Above Normal	April	--	12,280.1	12,265.0	15.0	0.1%	12,261.6	18.5	0.2%	12,252.3	27.8	0.2%
ME 3	39 58 10	2000	Above Normal	May	--	7,065.4	7,028.2	37.2	0.5%	7,020.7	44.7	0.6%	6,998.6	66.8	0.9%
ME 3	39 58 10	2000	Above Normal	June	--	2,598.5	2,542.5	56.0	2.2%	2,531.4	67.1	2.6%	2,498.6	99.9	3.8%
ME 3	39 58 10	2000	Above Normal	July	--	984.5	936.7	47.8	4.9%	927.3	57.2	5.8%	899.0	85.5	8.7%
ME 3	39 58 10	2000	Above Normal	August	--	514.4	470.5	43.9	8.5%	461.7	52.7	10.2%	435.3	79.1	15.4%
ME 3	39 58 10	2000	Above Normal	September	Used in Summary Table Analysis	288.5	250.4	38.1	13.2%	242.8	45.8	15.9%	219.8	68.8	23.8%
ME 3	39 58 10	2001	Dry	October	Used in Summary Table Analysis	3,784.3	3,753.6	30.7	0.8%	3,747.2	37.0	1.0%	3,728.5	55.8	1.5%
ME 3	39 58 10	2001	Dry	November	Used in Summary Table Analysis	6,075.2	6,051.2	24.1	0.4%	6,046.3	28.9	0.5%	6,031.6	43.6	0.7%
ME 3	39 58 10	2001	Dry	December	--	8,789.4	8,768.6	20.7	0.2%	8,764.5	24.9	0.3%	8,751.7	37.6	0.4%
ME 3	39 58 10	2001	Dry	January	--	12,699.1	12,680.6	18.5	0.1%	12,677.1	22.0	0.2%	12,665.5	33.6	0.3%
ME 3	39 58 10	2001	Dry	February	--	17,413.2	17,395.8	17.4	0.1%	17,392.4	20.8	0.1%	17,381.9	31.3	0.2%
ME 3	39 58 10	2001	Dry	March	--	12,265.0	12,250.0	15.0	0.1%	12,246.5	18.5	0.2%	12,237.3	27.8	0.2%
ME 3	39 58 10	2001	Dry	April	--	10,938.9	10,900.6	38.3	0.4%	10,892.9	45.9	0.4%	10,870.1	68.8	0.6%
ME 3	39 58 10	2001	Dry	May	--	2,633.8	2,588.5	45.3	1.7%	2,579.5	54.3	2.1%	2,552.5	81.3	3.1%
ME 3	39 58 10	2001	Dry	June	--	2,626.5	2,565.3	61.2	2.3%	2,553.2	73.3	2.8%	2,517.9	108.6	4.1%
ME 3	39 58 10	2001	Dry	July	--	714.3	659.2	55.1	7.7%	648.3	66.1	9.3%	620.3	94.0	13.2%
ME 3	39 58 10	2001	Dry	August	--	166.7	113.8	53.0	31.8%	103.2	63.5	38.1%	73.8	93.0	55.8%
ME 3	39 58 10	2001	Dry	September	Used in Summary Table Analysis	89.4	43.1	46.2	51.8%	33.9	55.5	62.1%	7.0	82.4	92.2%
ME 3	39 58 10	2002	Below Normal	October	Used in Summary Table Analysis	258.5	220.6	37.9	14.7%	212.9	45.6	17.6%	189.7	68.8	26.6%
ME 3	39 58 10	2002	Below Normal	November	Used in Summary Table Analysis	11,961.8	11,932.9	28.9	0.2%	11,927.1	34.7	0.3%	11,906.3	55.6	0.5%
ME 3	39 58 10	2002	Below Normal	December	--	35,490.7	35,465.3	25.5	0.1%	35,460.6	30.1	0.1%	35,444.4	46.3	0.1%
ME 3	39 58 10	2002	Below Normal	January	--	30,754.6	30,732.6	22.0	0.1%	30,728.0	26.6	0.1%	30,714.1	40.5	0.1%
ME 3	39 58 10	2002	Below Normal	February	--	24,603.0	24,582.2	20.8	0.1%	24,577.5	25.5	0.1%	24,566.0	37.0	0.2%
ME 3	39 58 10	2002	Below Normal	March	--	17,719.9	17,701.4	18.5	0.1%	17,697.9	22.0	0.1%	17,686.3	33.6	0.2%
ME 3	39 58 10	2002	Below Normal	April	--	9,900.8	9,863.1	37.7	0.4%	9,855.7	45.1	0.5%	9,833.2	67.6	0.7%
ME 3	39 58 10	2002	Below Normal	May	--	3,309.1	3,264.9	44.2	1.3%	3,256.0	53.1	1.6%	3,229.5	79.6	2.4%
ME 3	39 58 10	2002	Below Normal	June	--	848.1	797.7	50.4	5.9%	787.8	60.3	7.1%	758.4	89.7	10.6%
ME 3	39 58 10	2002	Below Normal	July	--	356.5	307.0	49.5	13.9%	297.2	59.4	16.6%	268.5	88.1	24.7%
ME 3	39 58 10	2002	Below Normal	August	--	220.5	174.6	45.8	20.8%	165.5	55.0	24.9%	137.5	83.0	37.6%
ME 3	39 58 10	2002	Below Normal	September	Used in Summary Table Analysis	157.5	115.3	42.2	26.8%	106.9	50.7	32.2%	80.5	77.1	48.9%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	39 58 10	2003	Wet	October	Used in Summary Table Analysis	122.7	89.0	33.7	27.5%	82.2	40.5	33.0%	61.6	61.1	49.8%
ME 3	39 58 10	2003	Wet	November	Used in Summary Table Analysis	888.5	862.2	26.2	3.0%	856.8	31.6	3.6%	840.6	47.9	5.4%
ME 3	39 58 10	2003	Wet	December	--	56,371.5	56,348.4	23.1	0.0%	56,343.8	27.8	0.0%	56,329.9	41.7	0.1%
ME 3	39 58 10	2003	Wet	January	--	31,435.2	31,415.5	19.7	0.1%	31,410.9	24.3	0.1%	31,399.3	35.9	0.1%
ME 3	39 58 10	2003	Wet	February	--	20,302.1	20,283.6	18.5	0.1%	20,280.1	22.0	0.1%	20,268.5	33.6	0.2%
ME 3	39 58 10	2003	Wet	March	--	23,956.0	23,939.8	16.2	0.1%	23,936.3	19.7	0.1%	23,925.9	30.1	0.1%
ME 3	39 58 10	2003	Wet	April	--	42,725.7	42,709.5	16.2	0.0%	42,706.0	19.7	0.0%	42,695.6	30.1	0.1%
ME 3	39 58 10	2003	Wet	May	--	12,195.6	12,157.4	38.2	0.3%	12,150.5	45.1	0.4%	12,127.3	68.3	0.6%
ME 3	39 58 10	2003	Wet	June	--	3,158.1	3,110.2	47.9	1.5%	3,100.8	57.3	1.8%	3,073.3	84.8	2.7%
ME 3	39 58 10	2003	Wet	July	--	1,465.6	1,416.6	49.1	3.3%	1,406.8	58.8	4.0%	1,377.9	87.7	6.0%
ME 3	39 58 10	2003	Wet	August	--	752.2	705.0	47.2	6.3%	695.1	57.1	7.6%	664.2	88.0	11.7%
ME 3	39 58 10	2003	Wet	September	Used in Summary Table Analysis	450.6	412.0	38.6	8.6%	404.3	46.3	10.3%	379.9	70.7	15.7%
ME 3	39 58 10	2004	Wet	October	Used in Summary Table Analysis	317.8	286.6	31.2	9.8%	280.3	37.5	11.8%	261.2	56.6	17.8%
ME 3	39 58 10	2004	Wet	November	Used in Summary Table Analysis	5,751.9	5,727.2	24.7	0.4%	5,722.1	29.7	0.5%	5,706.8	45.0	0.8%
ME 3	39 58 10	2004	Wet	December	--	36,089.1	36,067.1	22.0	0.1%	36,062.5	26.6	0.1%	36,049.8	39.4	0.1%
ME 3	39 58 10	2004	Wet	January	--	31,321.8	31,303.2	18.5	0.1%	31,298.6	23.1	0.1%	31,287.0	34.7	0.1%
ME 3	39 58 10	2004	Wet	February	--	38,090.3	38,072.9	17.4	0.0%	38,069.4	20.8	0.1%	38,057.9	32.4	0.1%
ME 3	39 58 10	2004	Wet	March	--	16,495.4	16,479.2	16.2	0.1%	16,475.7	19.7	0.1%	16,466.4	28.9	0.2%
ME 3	39 58 10	2004	Wet	April	--	9,428.9	9,413.7	15.3	0.2%	9,410.5	18.4	0.2%	9,401.3	27.7	0.3%
ME 3	39 58 10	2004	Wet	May	--	3,402.3	3,365.0	37.3	1.1%	3,357.6	44.7	1.3%	3,335.4	66.9	2.0%
ME 3	39 58 10	2004	Wet	June	--	686.4	640.2	46.1	6.7%	631.2	55.2	8.0%	604.4	81.9	11.9%
ME 3	39 58 10	2004	Wet	July	--	349.3	301.2	48.1	13.8%	291.6	57.7	16.5%	263.0	86.3	24.7%
ME 3	39 58 10	2004	Wet	August	--	218.7	174.5	44.3	20.2%	165.6	53.1	24.3%	138.9	79.8	36.5%
ME 3	39 58 10	2004	Wet	September	Used in Summary Table Analysis	156.2	114.3	41.9	26.8%	105.9	50.3	32.2%	80.6	75.6	48.4%
ME 3	39 58 10	2005	Above Normal	October	Used in Summary Table Analysis	7,616.6	7,584.5	32.1	0.4%	7,578.1	38.4	0.5%	7,558.6	58.0	0.8%
ME 3	39 58 10	2005	Above Normal	November	Used in Summary Table Analysis	2,245.6	2,221.2	24.4	1.1%	2,216.3	29.3	1.3%	2,201.3	44.3	2.0%
ME 3	39 58 10	2005	Above Normal	December	--	20,842.6	20,820.6	22.0	0.1%	20,817.1	25.5	0.1%	20,803.2	39.4	0.2%
ME 3	39 58 10	2005	Above Normal	January	--	22,238.4	22,219.9	18.5	0.1%	22,216.4	22.0	0.1%	22,204.9	33.6	0.2%
ME 3	39 58 10	2005	Above Normal	February	--	13,982.6	13,966.4	16.2	0.1%	13,963.0	19.7	0.1%	13,952.5	30.1	0.2%
ME 3	39 58 10	2005	Above Normal	March	--	28,456.0	28,439.8	16.2	0.1%	28,436.3	19.7	0.1%	28,427.1	28.9	0.1%
ME 3	39 58 10	2005	Above Normal	April	--	21,370.4	21,355.3	15.0	0.1%	21,353.0	17.4	0.1%	21,342.6	27.8	0.1%
ME 3	39 58 10	2005	Above Normal	May	--	19,481.5	19,443.3	38.2	0.2%	19,436.3	45.1	0.2%	19,413.2	68.3	0.4%
ME 3	39 58 10	2005	Above Normal	June	--	15,767.4	15,710.6	56.7	0.4%	15,699.1	68.3	0.4%	15,665.5	101.9	0.6%
ME 3	39 58 10	2005	Above Normal	July	--	2,860.0	2,810.0	50.0	1.7%	2,800.5	59.5	2.1%	2,772.3	87.6	3.1%
ME 3	39 58 10	2005	Above Normal	August	--	974.7	930.7	44.1	4.5%	922.0	52.8	5.4%	895.8	78.9	8.1%
ME 3	39 58 10	2005	Above Normal	September	Used in Summary Table Analysis	516.6	478.5	38.1	7.4%	470.9	45.7	8.9%	448.0	68.6	13.3%
ME 3	39 58 10	2006	Wet	October	Used in Summary Table Analysis	625.6	595.4	30.3	4.8%	589.3	36.3	5.8%	570.8	54.8	8.8%
ME 3	39 58 10	2006	Wet	November	Used in Summary Table Analysis	9,220.4	9,197.0	23.4	0.3%	9,192.2	28.1	0.3%	9,177.9	42.5	0.5%
ME 3	39 58 10	2006	Wet	December	--	43,221.1	43,200.2	20.8	0.0%	43,196.8	24.3	0.1%	43,182.9	38.2	0.1%
ME 3	39 58 10	2006	Wet	January	--	46,046.3	46,027.8	18.5	0.0%	46,023.1	23.1	0.1%	46,011.6	34.7	0.1%
ME 3	39 58 10	2006	Wet	February	--	26,509.3	26,491.9	17.4	0.1%	26,489.6	19.7	0.1%	26,479.2	30.1	0.1%
ME 3	39 58 10	2006	Wet	March	--	46,959.5	46,943.3	16.2	0.0%	46,939.8	19.7	0.0%	46,930.6	28.9	0.1%
ME 3	39 58 10	2006	Wet	April	--	30,347.2	30,333.3	13.9	0.0%	30,329.9	17.4	0.1%	30,320.6	26.6	0.1%
ME 3	39 58 10	2006	Wet	May	--	14,159.7	14,137.7	22.0	0.2%	14,134.3	25.5	0.2%	14,121.5	38.2	0.3%
ME 3	39 58 10	2006	Wet	June	--	3,539.8	3,492.9	46.9	1.3%	3,483.8	56.0	1.6%	3,456.8	83.0	2.3%
ME 3	39 58 10	2006	Wet	July	--	1,269.9	1,222.0	47.9	3.8%	1,212.6	57.3	4.5%	1,184.7	85.2	6.7%
ME 3	39 58 10	2006	Wet	August	--	656.3	611.0	45.3	6.9%	602.0	54.3	8.3%	575.0	81.3	12.4%
ME 3	39 58 10	2006	Wet	September	Used in Summary Table Analysis	417.9	379.3	38.6	9.2%	371.7	46.3	11.1%	348.5	69.5	16.6%
ME 3	39 58 10	2007	Above Normal	October	Used in Summary Table Analysis	267.3	236.5	30.8	11.5%	230.3	37.0	13.8%	211.4	55.8	20.9%
ME 3	39 58 10	2007	Above Normal	November	Used in Summary Table Analysis	8,591.1	8,566.7	24.4	0.3%	8,561.7	29.4	0.3%	8,546.5	44.6	0.5%
ME 3	39 58 10	2007	Above Normal	December	--	20,258.1	20,237.3	20.8	0.1%	20,232.6	25.5	0.1%	20,219.9	38.2	0.2%
ME 3	39 58 10	2007	Above Normal	January	--	10,209.0	10,190.3	18.8	0.2%	10,186.5	22.6	0.2%	10,174.8	34.3	0.3%
ME 3	39 58 10	2007	Above Normal	February	--	30,401.6	30,384.3	17.4	0.1%	30,379.6	22.0	0.1%	30,369.2	32.4	0.1%
ME 3	39 58 10	2007	Above Normal	March	--	13,069.4	13,053.2	16.2	0.1%	13,049.8	19.7	0.2%	13,039.4	30.1	0.2%
ME 3	39 58 10	2007	Above Normal	April	--	11,505.1	11,468.9	36.2	0.3%	11,461.6	43.5	0.4%	11,439.9	65.2	0.6%
ME 3	39 58 10	2007	Above Normal	May	--	4,125.0	4,082.1	42.9	1.0%	4,073.5	51.5	1.2%	4,047.7	77.3	1.9%
ME 3	39 58 10	2007	Above Normal	June	--	1,487.7	1,435.5	52.2	3.5%	1,425.2	62.5	4.2%	1,394.8	92.9	6.2%
ME 3	39 58 10	2007	Above Normal	July	--	490.4	439.6	50.8	10.4%	429.5	60.9	12.4%	399.9	90.5	18.5%
ME 3	39 58 10	2007	Above Normal	August	--	216.4	171.6	44.8	20.7%	162.7	53.7	24.8%	135.4	81.0	37.4%
ME 3	39 58 10	2007	Above Normal	September	Used in Summary Table Analysis	144.1	102.7	41.4	28.7%	94.4	49.7	34.5%	69.5	74.7	51.8%
ME 3	39 58 10	2008	Dry	October	Used in Summary Table Analysis	3,405.1	3,372.2	32.9	1.0%	3,365.6	39.5	1.2%	3,345.5	59.6	1.8%
ME 3	39 58 10	2008	Dry	November	Used in Summary Table Analysis	3,247.3	3,222.5	24.9	0.8%	3,217.5	29.9	0.9%	3,202.1	45.3	1.4%
ME 3	39 58 10	2008	Dry	December	--	22,929.4	22,907.4	22.0	0.1%	22,902.8	26.6	0.1%	22,890.0	39.4	0.2%
ME 3	39 58 10	2008	Dry	January	--	37,342.6	37,321.8	20.8	0.1%	37,318.3	24.3	0.1%	37,305.6	37.0	0.1%

Table A.1

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	39 58 10	2008	Dry	February	--	26,222.2	26,204.9	17.4	0.1%	26,201.4	20.8	0.1%	26,191.0	31.3	0.1%
ME 3	39 58 10	2008	Dry	March	--	11,770.8	11,754.6	16.2	0.1%	11,752.3	18.5	0.2%	11,741.9	28.9	0.2%
ME 3	39 58 10	2008	Dry	April	--	8,997.7	8,959.8	37.8	0.4%	8,952.3	45.4	0.5%	8,929.9	67.8	0.8%
ME 3	39 58 10	2008	Dry	May	--	1,358.6	1,319.7	38.9	2.9%	1,312.3	46.3	3.4%	1,289.7	68.9	5.1%
ME 3	39 58 10	2008	Dry	June	--	431.9	374.7	57.2	13.2%	363.4	68.4	15.8%	330.3	101.6	23.5%
ME 3	39 58 10	2008	Dry	July	--	250.5	195.8	54.6	21.8%	185.0	65.5	26.1%	157.5	92.9	37.1%
ME 3	39 58 10	2008	Dry	August	--	173.6	121.5	52.1	30.0%	111.1	62.6	36.0%	79.4	94.3	54.3%
ME 3	39 58 10	2008	Dry	September	Used in Summary Table Analysis	135.4	85.6	49.8	36.7%	75.7	59.7	44.1%	46.9	88.4	65.3%
ME 3	39 58 10	2009	Critical	October	Used in Summary Table Analysis	916.5	879.0	37.5	4.1%	871.5	45.0	4.9%	848.3	68.2	7.4%
ME 3	39 58 10	2009	Critical	November	Used in Summary Table Analysis	5,462.0	5,433.7	28.4	0.5%	5,428.0	34.0	0.6%	5,407.8	54.3	1.0%
ME 3	39 58 10	2009	Critical	December	--	12,063.7	12,039.4	24.3	0.2%	12,034.7	28.9	0.2%	12,019.7	44.0	0.4%
ME 3	39 58 10	2009	Critical	January	--	8,765.7	8,743.8	22.0	0.3%	8,739.2	26.5	0.3%	8,725.7	40.0	0.5%
ME 3	39 58 10	2009	Critical	February	--	22,528.9	22,510.4	18.5	0.1%	22,505.8	23.1	0.1%	22,494.2	34.7	0.2%
ME 3	39 58 10	2009	Critical	March	--	21,056.7	21,039.4	17.4	0.1%	21,035.9	20.8	0.1%	21,025.5	31.3	0.1%
ME 3	39 58 10	2009	Critical	April	--	10,086.7	10,047.5	39.2	0.4%	10,039.8	46.9	0.5%	10,016.4	70.3	0.7%
ME 3	39 58 10	2009	Critical	May	--	15,549.8	15,502.3	47.5	0.3%	15,493.1	56.7	0.4%	15,464.1	85.6	0.6%
ME 3	39 58 10	2009	Critical	June	--	3,152.7	3,091.2	61.5	1.9%	3,079.4	73.3	2.3%	3,044.1	108.6	3.4%
ME 3	39 58 10	2009	Critical	July	--	1,256.1	1,201.2	55.0	4.4%	1,190.3	65.9	5.2%	1,162.7	93.4	7.4%
ME 3	39 58 10	2009	Critical	August	--	662.0	609.7	52.4	7.9%	599.2	62.8	9.5%	570.2	91.9	13.9%
ME 3	39 58 10	2009	Critical	September	Used in Summary Table Analysis	383.8	338.0	45.8	11.9%	328.9	54.9	14.3%	302.3	81.5	21.2%
ME 3	39 58 10	2010	Below Normal	October	Used in Summary Table Analysis	6,079.5	6,041.7	37.8	0.6%	6,034.0	45.5	0.7%	6,009.8	69.7	1.1%
ME 3	39 58 10	2010	Below Normal	November	Used in Summary Table Analysis	8,256.1	8,227.0	29.2	0.4%	8,221.1	35.1	0.4%	8,200.3	55.8	0.7%
ME 3	39 58 10	2010	Below Normal	December	--	12,289.4	12,263.9	25.5	0.2%	12,259.3	30.1	0.2%	12,243.1	46.3	0.4%
ME 3	39 58 10	2010	Below Normal	January	--	36,019.7	35,996.5	23.1	0.1%	35,993.1	26.6	0.1%	35,978.0	41.7	0.1%
ME 3	39 58 10	2010	Below Normal	February	--	27,181.7	27,163.2	18.5	0.1%	27,158.6	23.1	0.1%	27,147.0	34.7	0.1%
ME 3	39 58 10	2010	Below Normal	March	--	28,782.4	28,763.9	18.5	0.1%	28,760.4	22.0	0.1%	28,748.8	33.6	0.1%
ME 3	39 58 10	2010	Below Normal	April	--	39,915.5	39,898.1	17.4	0.0%	39,894.7	20.8	0.1%	39,884.3	31.3	0.1%
ME 3	39 58 10	2010	Below Normal	May	--	20,192.1	20,151.6	40.5	0.2%	20,144.7	47.5	0.2%	20,120.4	71.8	0.4%
ME 3	39 58 10	2010	Below Normal	June	--	9,289.2	9,230.8	58.4	0.6%	9,219.2	70.0	0.8%	9,185.1	104.2	1.1%
ME 3	39 58 10	2010	Below Normal	July	--	1,447.9	1,397.6	50.3	3.5%	1,387.8	60.1	4.1%	1,358.9	89.0	6.1%
ME 3	39 58 10	2010	Below Normal	August	--	560.8	515.7	45.2	8.1%	506.8	54.1	9.6%	480.0	80.8	14.4%
ME 3	39 58 10	2010	Below Normal	September	Used in Summary Table Analysis	642.9	599.9	43.0	6.7%	591.3	51.6	8.0%	565.4	77.4	12.0%
ME 3	39 58 10	2011	Wet	October	Used in Summary Table Analysis	9,586.9	9,555.7	31.3	0.3%	9,549.3	37.6	0.4%	9,530.3	56.6	0.6%
ME 3	39 58 10	2011	Wet	November	Used in Summary Table Analysis	14,166.7	14,142.4	24.3	0.2%	14,137.7	28.9	0.2%	14,122.7	44.0	0.3%
ME 3	39 58 10	2011	Wet	December	--	33,493.1	33,472.2	20.8	0.1%	33,467.6	25.5	0.1%	33,453.7	39.4	0.1%
ME 3	39 58 10	2011	Wet	January	--	14,114.6	14,096.1	18.5	0.1%	14,092.6	22.0	0.2%	14,081.0	33.6	0.2%
ME 3	39 58 10	2011	Wet	February	--	20,726.9	20,709.5	17.4	0.1%	20,706.0	20.8	0.1%	20,695.6	31.3	0.2%
ME 3	39 58 10	2011	Wet	March	--	51,869.2	51,851.9	17.4	0.0%	51,848.4	20.8	0.0%	51,839.1	30.1	0.1%
ME 3	39 58 10	2011	Wet	April	--	24,750.0	24,733.8	16.2	0.1%	24,731.5	18.5	0.1%	24,721.1	28.9	0.1%
ME 3	39 58 10	2011	Wet	May	--	11,357.9	11,319.8	38.1	0.3%	11,312.3	45.6	0.4%	11,289.6	68.3	0.6%
ME 3	39 58 10	2011	Wet	June	--	7,032.1	6,974.8	57.3	0.8%	6,963.4	68.6	1.0%	6,930.1	102.0	1.5%
ME 3	39 58 10	2011	Wet	July	--	1,823.8	1,768.9	55.0	3.0%	1,758.1	65.7	3.6%	1,727.1	96.8	5.3%
ME 3	39 58 10	2011	Wet	August	--	769.8	725.2	44.6	5.8%	716.4	53.5	6.9%	689.7	80.1	10.4%
ME 3	39 58 10	2011	Wet	September	Used in Summary Table Analysis	426.5	387.0	39.5	9.3%	379.1	47.4	11.1%	355.3	71.2	16.7%
ME 3	39 58 10	2012	Below Normal	October	Used in Summary Table Analysis	4,516.7	4,485.1	31.6	0.7%	4,478.6	38.1	0.8%	4,459.0	57.6	1.3%
ME 3	39 58 10	2012	Below Normal	November	Used in Summary Table Analysis	8,189.5	8,164.6	24.9	0.3%	8,159.5	30.0	0.4%	8,144.1	45.4	0.6%
ME 3	39 58 10	2012	Below Normal	December	--	5,160.5	5,139.4	21.2	0.4%	5,135.0	25.6	0.5%	5,121.9	38.7	0.7%
ME 3	39 58 10	2012	Below Normal	January	--	19,980.3	19,961.8	18.5	0.1%	19,957.2	23.1	0.1%	19,945.6	34.7	0.2%
ME 3	39 58 10	2012	Below Normal	February	--	18,172.5	18,155.1	17.4	0.1%	18,151.6	20.8	0.1%	18,140.0	32.4	0.2%
ME 3	39 58 10	2012	Below Normal	March	--	45,266.2	45,248.8	17.4	0.0%	45,245.4	20.8	0.0%	45,235.0	31.3	0.1%
ME 3	39 58 10	2012	Below Normal	April	--	26,799.8	26,783.6	16.2	0.1%	26,780.1	19.7	0.1%	26,770.8	28.9	0.1%
ME 3	39 58 10	2012	Below Normal	May	--	7,466.2	7,428.2	38.0	0.5%	7,420.7	45.5	0.6%	7,398.4	67.8	0.9%
ME 3	39 58 10	2012	Below Normal	June	--	5,491.7	5,433.4	58.2	1.1%	5,421.9	69.8	1.3%	5,388.2	103.5	1.9%
ME 3	39 58 10	2012	Below Normal	July	--	2,208.1	2,154.5	53.6	2.4%	2,143.9	64.2	2.9%	2,112.4	95.7	4.3%
ME 3	39 58 10	2012	Below Normal	August	--	382.8	341.3	41.4	10.8%	333.1	49.7	13.0%	308.3	74.4	19.4%
ME 3	39 58 10	2012	Below Normal	September	Used in Summary Table Analysis	242.4	206.2	36.2	14.9%	199.0	43.4	17.9%	177.4	65.1	26.8%
ME 3	39 58 10	2013	Below Normal	October	Used in Summary Table Analysis	1,894.9	1,864.0	30.9	1.6%	1,857.8	37.2	2.0%	1,838.9	56.0	3.0%
ME 3	39 58 10	2013	Below Normal	November	Used in Summary Table Analysis	14,598.4	14,574.1	24.3	0.2%	14,569.4	28.9	0.2%	14,554.4	44.0	0.3%
ME 3	39 58 10	2013	Below Normal	December	--	59,798.6	59,776.6	22.0	0.0%	59,772.0	26.6	0.0%	59,759.3	39.4	0.1%
ME 3	39 58 10	2013	Below Normal	January	--	22,142.4	22,123.8	18.5	0.1%	22,119.2	23.1	0.1%	22,108.8	33.6	0.2%
ME 3	39 58 10	2013	Below Normal	February	--	8,816.6	8,799.1	17.5	0.2%	8,795.5	21.1	0.2%	8,784.8	31.7	0.4%
ME 3	39 58 10	2013	Below Normal	March	--	10,287.8	10,271.2	16.7	0.2%	10,267.8	20.0	0.2%	10,257.6	30.2	0.3%
ME 3	39 58 10	2013	Below Normal	April	--	8,276.4	8,240.9	35.5	0.4%	8,233.8	42.6	0.5%	8,212.5	63.9	0.8%
ME 3	39 58 10	2013	Below Normal	May	--	4,412.7	4,369.9	42.8	1.0%	4,361.3	51.4	1.2%	4,335.6	77.1	1.7%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	39 58 10	2013	Below Normal	June	--	2,102.8	2,050.7	52.1	2.5%	2,040.5	62.3	3.0%	2,010.1	92.7	4.4%
ME 3	39 58 10	2013	Below Normal	July	--	713.5	665.2	48.2	6.8%	655.7	57.8	8.1%	627.8	85.7	12.0%
ME 3	39 58 10	2013	Below Normal	August	--	334.2	289.4	44.8	13.4%	280.5	53.8	16.1%	253.1	81.2	24.3%
ME 3	39 58 10	2013	Below Normal	September	Used in Summary Table Analysis	4,760.6	4,714.6	46.1	1.0%	4,705.2	55.4	1.2%	4,677.4	83.2	1.7%
ME 3	39 58 10	2014	Critical	October	Used in Summary Table Analysis	278.0	245.8	32.1	11.6%	239.3	38.6	13.9%	220.6	57.4	20.6%
ME 3	39 58 10	2014	Critical	November	Used in Summary Table Analysis	1,523.5	1,498.1	25.3	1.7%	1,493.1	30.4	2.0%	1,477.7	45.8	3.0%
ME 3	39 58 10	2014	Critical	December	--	1,580.2	1,558.4	21.8	1.4%	1,554.1	26.2	1.7%	1,540.6	39.6	2.5%
ME 3	39 58 10	2014	Critical	January	--	2,806.4	2,787.0	19.3	0.7%	2,783.1	23.3	0.8%	2,771.2	35.2	1.3%
ME 3	39 58 10	2014	Critical	February	--	15,713.0	15,694.4	18.5	0.1%	15,691.0	22.0	0.1%	15,679.4	33.6	0.2%
ME 3	39 58 10	2014	Critical	March	--	31,434.0	31,416.7	17.4	0.1%	31,413.2	20.8	0.1%	31,402.8	31.3	0.1%
ME 3	39 58 10	2014	Critical	April	--	12,969.9	12,931.7	38.2	0.3%	12,923.6	46.3	0.4%	12,900.5	69.4	0.5%
ME 3	39 58 10	2014	Critical	May	--	5,174.8	5,128.9	45.8	0.9%	5,119.8	55.0	1.1%	5,092.1	82.6	1.6%
ME 3	39 58 10	2014	Critical	June	--	1,191.2	1,128.9	62.3	5.2%	1,116.7	74.5	6.3%	1,081.6	109.6	9.2%
ME 3	39 58 10	2014	Critical	July	--	541.0	485.5	55.5	10.3%	474.5	66.6	12.3%	446.3	94.8	17.5%
ME 3	39 58 10	2014	Critical	August	--	342.2	289.8	52.4	15.3%	279.3	62.8	18.4%	250.1	92.0	26.9%
ME 3	39 58 10	2014	Critical	September	Used in Summary Table Analysis	2,560.2	2,508.9	51.3	2.0%	2,498.8	61.3	2.4%	2,468.9	91.3	3.6%
ME 3	39 58 10	2015	Dry	October	Used in Summary Table Analysis	11,317.2	11,278.8	38.4	0.3%	11,271.3	45.9	0.4%	11,248.5	68.8	0.6%
ME 3	39 58 10	2015	Dry	November	Used in Summary Table Analysis	8,992.7	8,964.5	28.2	0.3%	8,958.8	33.9	0.4%	8,938.7	54.1	0.6%
ME 3	39 58 10	2015	Dry	December	--	32,451.4	32,427.1	24.3	0.1%	32,422.5	28.9	0.1%	32,406.3	45.1	0.1%
ME 3	39 58 10	2015	Dry	January	--	14,549.8	14,527.8	22.0	0.2%	14,523.1	26.6	0.2%	14,510.4	39.4	0.3%
ME 3	39 58 10	2015	Dry	February	--	27,166.7	27,148.1	18.5	0.1%	27,144.7	22.0	0.1%	27,131.9	34.7	0.1%
ME 3	39 58 10	2015	Dry	March	--	11,552.7	11,535.8	16.9	0.1%	11,532.3	20.4	0.2%	11,521.9	30.8	0.3%
ME 3	39 58 10	2015	Dry	April	--	8,341.9	8,303.2	38.7	0.5%	8,295.4	46.5	0.6%	8,272.3	69.6	0.8%
ME 3	39 58 10	2015	Dry	May	--	1,505.6	1,460.1	45.5	3.0%	1,451.0	54.5	3.6%	1,425.0	80.6	5.4%
ME 3	39 58 10	2015	Dry	June	--	648.2	590.2	58.0	8.9%	578.8	69.4	10.7%	545.2	103.1	15.9%
ME 3	39 58 10	2015	Dry	July	--	264.1	209.1	55.1	20.9%	198.1	66.0	25.0%	170.4	93.8	35.5%
ME 3	39 58 10	2015	Dry	August	--	161.0	108.6	52.4	32.6%	98.1	62.9	39.1%	69.1	91.9	57.1%
ME 3	39 58 10	2015	Dry	September	Used in Summary Table Analysis	115.9	67.3	48.6	41.9%	57.3	58.6	50.6%	28.2	87.8	75.7%
ME 3	39 58 10	2016	Above Normal	October	Used in Summary Table Analysis	81.5	41.8	39.6	48.6%	34.3	47.2	57.9%	11.3	70.2	86.1%
ME 3	39 58 10	2016	Above Normal	November	Used in Summary Table Analysis	3,825.7	3,796.5	29.2	0.8%	3,790.5	35.2	0.9%	3,769.2	56.5	1.5%
ME 3	39 58 10	2016	Above Normal	December	--	36,423.6	36,398.1	25.5	0.1%	36,393.5	30.1	0.1%	36,377.3	46.3	0.1%
ME 3	39 58 10	2016	Above Normal	January	--	57,113.4	57,090.3	23.1	0.0%	57,084.5	28.9	0.1%	57,070.6	42.8	0.1%
ME 3	39 58 10	2016	Above Normal	February	--	24,232.6	24,213.0	19.7	0.1%	24,209.5	23.1	0.1%	24,197.9	34.7	0.1%
ME 3	39 58 10	2016	Above Normal	March	--	41,680.6	41,662.0	18.5	0.0%	41,658.6	22.0	0.1%	41,647.0	33.6	0.1%
ME 3	39 58 10	2016	Above Normal	April	--	18,508.1	18,491.9	16.2	0.1%	18,488.4	19.7	0.1%	18,478.0	30.1	0.2%
ME 3	39 58 10	2016	Above Normal	May	--	5,203.5	5,181.7	21.8	0.4%	5,177.3	26.2	0.5%	5,164.1	39.4	0.8%
ME 3	39 58 10	2016	Above Normal	June	--	1,503.1	1,459.0	44.1	2.9%	1,451.4	51.7	3.4%	1,428.9	74.2	4.9%
ME 3	39 58 10	2016	Above Normal	July	--	816.3	768.1	48.2	5.9%	758.5	57.8	7.1%	730.3	86.0	10.5%
ME 3	39 58 10	2016	Above Normal	August	--	484.8	438.9	45.9	9.5%	429.7	55.1	11.4%	402.3	82.5	17.0%
ME 3	39 58 10	2016	Above Normal	September	Used in Summary Table Analysis	321.4	279.3	42.1	13.1%	270.7	50.8	15.8%	244.9	76.6	23.8%
ME 3	39 58 10	2017	Wet	October	Used in Summary Table Analysis	18,206.0	18,173.6	32.4	0.2%	18,166.7	39.4	0.2%	18,148.1	57.9	0.3%
ME 3	39 58 10	2017	Wet	November	Used in Summary Table Analysis	18,737.3	18,713.0	24.3	0.1%	18,707.2	30.1	0.2%	18,692.1	45.1	0.2%
ME 3	39 58 10	2017	Wet	December	--	23,978.0	23,957.2	20.8	0.1%	23,952.5	25.5	0.1%	23,939.8	38.2	0.2%
ME 3	39 58 10	2017	Wet	January	--	106,510.4	106,490.7	19.7	0.0%	106,487.3	23.1	0.0%	106,474.5	35.9	0.0%
ME 3	39 58 10	2017	Wet	February	--	81,606.5	81,589.1	17.4	0.0%	81,585.6	20.8	0.0%	81,574.1	32.4	0.0%
ME 3	39 58 10	2017	Wet	March	--	27,199.1	27,182.9	16.2	0.1%	27,179.4	19.7	0.1%	27,169.0	30.1	0.1%
ME 3	39 58 10	2017	Wet	April	--	22,857.6	22,842.6	15.0	0.1%	22,839.1	18.5	0.1%	22,829.9	27.8	0.1%
ME 3	39 58 10	2017	Wet	May	--	6,267.5	6,245.7	21.8	0.3%	6,241.4	26.0	0.4%	6,228.4	39.1	0.6%
ME 3	39 58 10	2017	Wet	June	--	2,104.1	2,057.8	46.3	2.2%	2,048.7	55.3	2.6%	2,021.9	82.2	3.9%
ME 3	39 58 10	2017	Wet	July	--	925.8	877.4	48.4	5.2%	867.9	57.9	6.3%	839.8	86.0	9.3%
ME 3	39 58 10	2017	Wet	August	--	498.1	452.4	45.7	9.2%	443.3	54.8	11.0%	416.1	82.0	16.5%
ME 3	39 58 10	2017	Wet	September	Used in Summary Table Analysis	315.3	273.5	41.8	13.3%	265.1	50.2	15.9%	239.9	75.4	23.9%
ME 3	39 58 10	2018	Above Normal	October	Used in Summary Table Analysis	268.2	236.2	31.9	11.9%	229.8	38.4	14.3%	210.4	57.8	21.6%
ME 3	39 58 10	2018	Above Normal	November	Used in Summary Table Analysis	10,698.3	10,674.0	24.3	0.2%	10,669.0	29.3	0.3%	10,654.1	44.2	0.4%
ME 3	39 58 10	2018	Above Normal	December	--	5,435.0	5,414.6	20.4	0.4%	5,410.4	24.5	0.5%	5,397.8	37.2	0.7%
ME 3	39 58 10	2018	Above Normal	January	--	17,621.5	17,603.0	18.5	0.1%	17,599.5	22.0	0.1%	17,588.0	33.6	0.2%
ME 3	39 58 10	2018	Above Normal	February	--	7,587.3	7,570.9	16.3	0.2%	7,567.5	19.8	0.3%	7,557.3	30.0	0.4%
ME 3	39 58 10	2018	Above Normal	March	--	20,597.2	20,581.0	16.2	0.1%	20,577.5	19.7	0.1%	20,568.3	28.9	0.1%
ME 3	39 58 10	2018	Above Normal	April	--	32,079.9	32,066.0	13.9	0.0%	32,062.5	17.4	0.1%	32,053.2	26.6	0.1%
ME 3	39 58 10	2018	Above Normal	May	--	6,981.5	6,945.6	35.9	0.5%	6,938.4	43.1	0.6%	6,916.9	64.6	0.9%
ME 3	39 58 10	2018	Above Normal	June	--	1,906.9	1,860.9	46.1	2.4%	1,851.9	55.1	2.9%	1,825.2	81.7	4.3%
ME 3	39 58 10	2018	Above Normal	July	--	774.0	725.7	48.3	6.2%	716.1	57.9	7.5%	687.5	86.5	11.2%
ME 3	39 58 10	2018	Above Normal	August	--	435.3	391.4	43.9	10.1%	382.6	52.7	12.1%	356.2	79.1	18.2%
ME 3	39 58 10	2018	Above Normal	September	Used in Summary Table Analysis	293.2	251.3	41.9	14.3%	242.9	50.3	17.1%	217.7	75.5	25.8%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	39 58 10	2019	Below Normal	October	Used in Summary Table Analysis	202.2	170.6	31.6	15.6%	164.2	38.0	18.8%	144.8	57.3	28.4%
ME 3	39 58 10	2019	Below Normal	November	Used in Summary Table Analysis	6,561.6	6,537.0	24.5	0.4%	6,532.1	29.5	0.4%	6,516.9	44.7	0.7%
ME 3	39 58 10	2019	Below Normal	December	--	14,561.3	14,540.5	20.8	0.1%	14,537.0	24.3	0.2%	14,523.1	38.2	0.3%
ME 3	39 58 10	2019	Below Normal	January	--	35,011.6	34,993.1	18.5	0.1%	34,988.4	23.1	0.1%	34,976.9	34.7	0.1%
ME 3	39 58 10	2019	Below Normal	February	--	141,701.4	141,678.2	23.1	0.0%	141,678.2	23.1	0.0%	141,666.7	34.7	0.0%
ME 3	39 58 10	2019	Below Normal	March	--	42,203.7	42,188.7	15.0	0.0%	42,185.2	18.5	0.0%	42,175.9	27.8	0.1%
ME 3	39 58 10	2019	Below Normal	April	--	15,238.4	15,223.4	15.0	0.1%	15,221.1	17.4	0.1%	15,211.8	26.6	0.2%
ME 3	39 58 10	2019	Below Normal	May	--	16,781.3	16,743.1	38.2	0.2%	16,735.0	46.3	0.3%	16,713.0	68.3	0.4%
ME 3	39 58 10	2019	Below Normal	June	--	4,240.3	4,191.8	48.5	1.1%	4,182.5	57.8	1.4%	4,155.6	84.7	2.0%
ME 3	39 58 10	2019	Below Normal	July	--	1,352.3	1,303.9	48.4	3.6%	1,294.3	58.0	4.3%	1,265.9	86.5	6.4%
ME 3	39 58 10	2019	Below Normal	August	--	588.2	543.4	44.8	7.6%	534.4	53.8	9.1%	507.7	80.5	13.7%
ME 3	39 58 10	2019	Below Normal	September	Used in Summary Table Analysis	455.5	413.9	41.6	9.1%	405.6	50.0	11.0%	380.5	75.0	16.5%
ME 3	39 58 10	2020	Dry	October	Used in Summary Table Analysis	350.1	320.0	30.1	8.6%	313.9	36.2	10.3%	295.5	54.6	15.6%
ME 3	39 58 10	2020	Dry	November	Used in Summary Table Analysis	309.5	286.9	22.7	7.3%	282.3	27.3	8.8%	268.4	41.2	13.3%
ME 3	39 58 10	2020	Dry	December	--	13,134.3	13,113.4	20.8	0.2%	13,108.8	25.5	0.2%	13,096.1	38.2	0.3%
ME 3	39 58 10	2020	Dry	January	--	22,209.5	22,191.0	18.5	0.1%	22,187.5	22.0	0.1%	22,175.9	33.6	0.2%
ME 3	39 58 10	2020	Dry	February	--	7,406.7	7,390.0	16.7	0.2%	7,386.7	20.0	0.3%	7,376.5	30.2	0.4%
ME 3	39 58 10	2020	Dry	March	--	7,220.3	7,204.6	15.6	0.2%	7,201.5	18.8	0.3%	7,191.9	28.4	0.4%
ME 3	39 58 10	2020	Dry	April	--	5,456.8	5,418.9	38.0	0.7%	5,411.2	45.6	0.8%	5,388.8	68.1	1.2%
ME 3	39 58 10	2020	Dry	May	--	7,344.1	7,298.5	45.6	0.6%	7,289.4	54.7	0.7%	7,262.3	81.8	1.1%
ME 3	39 58 10	2020	Dry	June	--	2,101.2	2,043.2	58.0	2.8%	2,032.1	69.1	3.3%	1,999.2	102.0	4.9%
ME 3	39 58 10	2020	Dry	July	--	790.4	734.0	56.4	7.1%	722.8	67.6	8.6%	694.2	96.2	12.2%
ME 3	39 58 10	2020	Dry	August	--	392.9	338.5	54.4	13.9%	327.6	65.4	16.6%	297.3	95.6	24.3%
ME 3	39 58 10	2020	Dry	September	Used in Summary Table Analysis	242.5	192.0	50.5	20.8%	181.6	60.9	25.1%	151.2	91.3	37.6%
ME 3	39 57 11	2000	Above Normal	October	Used in Summary Table Analysis	809.2	774.7	34.5	4.3%	767.7	41.5	5.1%	746.8	62.4	7.7%
ME 3	39 57 11	2000	Above Normal	November	Used in Summary Table Analysis	12,006.9	11,980.3	26.6	0.2%	11,974.5	32.4	0.3%	11,958.3	48.6	0.4%
ME 3	39 57 11	2000	Above Normal	December	--	10,751.2	10,727.8	23.4	0.2%	10,723.0	28.1	0.3%	10,708.8	42.4	0.4%
ME 3	39 57 11	2000	Above Normal	January	--	28,388.9	28,368.1	20.8	0.1%	28,363.4	25.5	0.1%	28,350.7	38.2	0.1%
ME 3	39 57 11	2000	Above Normal	February	--	36,919.0	36,899.3	19.7	0.1%	36,895.8	23.1	0.1%	36,883.1	35.9	0.1%
ME 3	39 57 11	2000	Above Normal	March	--	18,277.8	18,259.3	18.5	0.1%	18,255.8	22.0	0.1%	18,244.2	33.6	0.2%
ME 3	39 57 11	2000	Above Normal	April	--	12,284.7	12,267.4	17.4	0.1%	12,263.9	20.8	0.2%	12,252.3	32.4	0.3%
ME 3	39 57 11	2000	Above Normal	May	--	7,070.3	7,029.9	40.4	0.6%	7,021.9	48.4	0.7%	6,997.8	72.5	1.0%
ME 3	39 57 11	2000	Above Normal	June	--	2,601.4	2,541.8	59.6	2.3%	2,530.0	71.4	2.7%	2,495.1	106.3	4.1%
ME 3	39 57 11	2000	Above Normal	July	--	986.7	934.7	52.0	5.3%	924.5	62.2	6.3%	894.0	92.7	9.4%
ME 3	39 57 11	2000	Above Normal	August	--	516.6	468.4	48.1	9.3%	458.8	57.7	11.2%	430.2	86.4	16.7%
ME 3	39 57 11	2000	Above Normal	September	Used in Summary Table Analysis	290.6	248.6	42.0	14.4%	240.2	50.4	17.3%	215.0	75.6	26.0%
ME 3	39 57 11	2001	Dry	October	Used in Summary Table Analysis	3,789.1	3,755.0	34.1	0.9%	3,748.0	41.1	1.1%	3,727.3	61.8	1.6%
ME 3	39 57 11	2001	Dry	November	Used in Summary Table Analysis	6,082.2	6,055.0	27.2	0.4%	6,049.5	32.6	0.5%	6,033.0	49.2	0.8%
ME 3	39 57 11	2001	Dry	December	--	8,796.4	8,772.7	23.7	0.3%	8,767.9	28.5	0.3%	8,753.5	42.9	0.5%
ME 3	39 57 11	2001	Dry	January	--	12,710.6	12,689.8	20.8	0.2%	12,685.2	25.5	0.2%	12,672.5	38.2	0.3%
ME 3	39 57 11	2001	Dry	February	--	17,421.3	17,401.6	19.7	0.1%	17,397.0	24.3	0.1%	17,385.4	35.9	0.2%
ME 3	39 57 11	2001	Dry	March	--	12,270.8	12,252.3	18.5	0.2%	12,247.7	23.1	0.2%	12,237.3	33.6	0.3%
ME 3	39 57 11	2001	Dry	April	--	10,944.3	10,902.8	41.6	0.4%	10,894.6	49.8	0.5%	10,870.0	74.3	0.7%
ME 3	39 57 11	2001	Dry	May	--	2,635.8	2,587.2	48.6	1.8%	2,577.4	58.3	2.2%	2,548.5	87.3	3.3%
ME 3	39 57 11	2001	Dry	June	--	2,630.4	2,564.9	65.5	2.5%	2,552.2	78.2	3.0%	2,514.8	115.6	4.4%
ME 3	39 57 11	2001	Dry	July	--	716.3	656.6	59.7	8.3%	644.7	71.5	10.0%	614.5	101.7	14.2%
ME 3	39 57 11	2001	Dry	August	--	168.7	111.3	57.4	34.0%	99.9	68.8	40.8%	68.2	100.5	59.6%
ME 3	39 57 11	2001	Dry	September	Used in Summary Table Analysis	91.4	41.1	50.3	55.0%	31.1	60.3	66.0%	2.0	89.4	97.9%
ME 3	39 57 11	2002	Below Normal	October	Used in Summary Table Analysis	260.5	219.3	41.3	15.8%	210.9	49.7	19.1%	185.7	74.8	28.7%
ME 3	39 57 11	2002	Below Normal	November	Used in Summary Table Analysis	11,969.9	11,938.7	31.3	0.3%	11,931.7	38.2	0.3%	11,909.7	60.2	0.5%
ME 3	39 57 11	2002	Below Normal	December	--	35,515.0	35,486.1	28.9	0.1%	35,480.3	34.7	0.1%	35,463.0	52.1	0.1%
ME 3	39 57 11	2002	Below Normal	January	--	30,770.8	30,745.4	25.5	0.1%	30,740.7	30.1	0.1%	30,724.5	46.3	0.2%
ME 3	39 57 11	2002	Below Normal	February	--	24,613.4	24,589.1	24.3	0.1%	24,584.5	28.9	0.1%	24,570.6	42.8	0.2%
ME 3	39 57 11	2002	Below Normal	March	--	17,729.2	17,707.2	22.0	0.1%	17,702.5	26.6	0.2%	17,688.7	40.5	0.2%
ME 3	39 57 11	2002	Below Normal	April	--	9,905.2	9,864.2	41.0	0.4%	9,856.1	49.1	0.5%	9,831.7	73.5	0.7%
ME 3	39 57 11	2002	Below Normal	May	--	3,311.9	3,263.5	48.4	1.5%	3,253.9	58.0	1.8%	3,225.2	86.7	2.6%
ME 3	39 57 11	2002	Below Normal	June	--	850.2	796.2	54.0	6.3%	785.6	64.6	7.6%	754.2	96.0	11.3%
ME 3	39 57 11	2002	Below Normal	July	--	358.6	304.9	53.6	15.0%	294.3	64.3	17.9%	263.4	95.1	26.5%
ME 3	39 57 11	2002	Below Normal	August	--	222.5	172.9	49.6	22.3%	163.0	59.5	26.7%	132.9	89.6	40.3%
ME 3	39 57 11	2002	Below Normal	September	Used in Summary Table Analysis	159.6	113.4	46.2	29.0%	104.2	55.4	34.7%	75.7	83.9	52.6%
ME 3	39 57 11	2003	Wet	October	Used in Summary Table Analysis	124.7	87.6	37.1	29.8%	80.1	44.6	35.8%	57.5	67.2	53.9%
ME 3	39 57 11	2003	Wet	November	Used in Summary Table Analysis	890.7	861.4	29.2	3.3%	855.4	35.2	4.0%	837.4	53.3	6.0%
ME 3	39 57 11	2003	Wet	December	--	56,423.6	56,397.0	26.6	0.0%	56,392.4	31.3	0.1%	56,377.3	46.3	0.1%
ME 3	39 57 11	2003	Wet	January	--	31,447.9	31,424.8	23.1	0.1%	31,420.1	27.8	0.1%	31,406.3	41.7	0.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	39 57 11	2003	Wet	February	--	20,310.2	20,289.4	20.8	0.1%	20,284.7	25.5	0.1%	20,272.0	38.2	0.2%
ME 3	39 57 11	2003	Wet	March	--	23,966.4	23,946.8	19.7	0.1%	23,943.3	23.1	0.1%	23,930.6	35.9	0.1%
ME 3	39 57 11	2003	Wet	April	--	42,748.8	42,729.2	19.7	0.0%	42,725.7	23.1	0.1%	42,713.0	35.9	0.1%
ME 3	39 57 11	2003	Wet	May	--	12,201.4	12,159.7	41.7	0.3%	12,151.6	49.8	0.4%	12,126.2	75.2	0.6%
ME 3	39 57 11	2003	Wet	June	--	3,160.6	3,108.9	51.7	1.6%	3,099.0	61.7	2.0%	3,069.3	91.3	2.9%
ME 3	39 57 11	2003	Wet	July	--	1,467.9	1,414.7	53.2	3.6%	1,404.2	63.8	4.3%	1,373.0	94.9	6.5%
ME 3	39 57 11	2003	Wet	August	--	754.4	703.0	51.5	6.8%	692.3	62.1	8.2%	659.1	95.3	12.6%
ME 3	39 57 11	2003	Wet	September	Used in Summary Table Analysis	452.8	410.3	42.5	9.4%	401.8	51.0	11.3%	375.3	77.5	17.1%
ME 3	39 57 11	2004	Wet	October	Used in Summary Table Analysis	319.9	285.3	34.6	10.8%	278.3	41.6	13.0%	257.2	62.7	19.6%
ME 3	39 57 11	2004	Wet	November	Used in Summary Table Analysis	5,759.0	5,731.4	27.7	0.5%	5,725.7	33.3	0.6%	5,708.7	50.3	0.9%
ME 3	39 57 11	2004	Wet	December	--	36,116.9	36,092.6	24.3	0.1%	36,086.8	30.1	0.1%	36,071.8	45.1	0.1%
ME 3	39 57 11	2004	Wet	January	--	31,341.4	31,319.4	22.0	0.1%	31,314.8	26.6	0.1%	31,302.1	39.4	0.1%
ME 3	39 57 11	2004	Wet	February	--	38,108.8	38,089.1	19.7	0.1%	38,084.5	24.3	0.1%	38,071.8	37.0	0.1%
ME 3	39 57 11	2004	Wet	March	--	16,500.0	16,481.5	18.5	0.1%	16,478.0	22.0	0.1%	16,466.4	33.6	0.2%
ME 3	39 57 11	2004	Wet	April	--	9,433.0	9,414.9	18.1	0.2%	9,411.3	21.6	0.2%	9,400.3	32.6	0.3%
ME 3	39 57 11	2004	Wet	May	--	3,405.9	3,365.4	40.5	1.2%	3,357.4	48.5	1.4%	3,333.4	72.5	2.1%
ME 3	39 57 11	2004	Wet	June	--	688.4	638.6	49.8	7.2%	628.8	59.6	8.7%	600.0	88.4	12.8%
ME 3	39 57 11	2004	Wet	July	--	351.4	299.1	52.4	14.9%	288.7	62.7	17.9%	257.9	93.5	26.6%
ME 3	39 57 11	2004	Wet	August	--	220.8	172.3	48.5	22.0%	162.6	58.1	26.3%	133.7	87.1	39.4%
ME 3	39 57 11	2004	Wet	September	Used in Summary Table Analysis	158.2	112.4	45.8	28.9%	103.3	54.9	34.7%	75.8	82.4	52.1%
ME 3	39 57 11	2005	Above Normal	October	Used in Summary Table Analysis	7,625.5	7,590.0	35.4	0.5%	7,582.9	42.6	0.6%	7,561.3	64.1	0.8%
ME 3	39 57 11	2005	Above Normal	November	Used in Summary Table Analysis	2,248.4	2,220.9	27.4	1.2%	2,215.5	32.9	1.5%	2,198.7	49.7	2.2%
ME 3	39 57 11	2005	Above Normal	December	--	20,864.6	20,841.4	23.1	0.1%	20,836.8	27.8	0.1%	20,821.8	42.8	0.2%
ME 3	39 57 11	2005	Above Normal	January	--	22,256.9	22,236.1	20.8	0.1%	22,231.5	25.5	0.1%	22,217.6	39.4	0.2%
ME 3	39 57 11	2005	Above Normal	February	--	13,988.4	13,968.8	19.7	0.1%	13,964.1	24.3	0.2%	13,952.5	35.9	0.3%
ME 3	39 57 11	2005	Above Normal	March	--	28,471.1	28,451.4	19.7	0.1%	28,447.9	23.1	0.1%	28,436.3	34.7	0.1%
ME 3	39 57 11	2005	Above Normal	April	--	21,380.8	21,363.4	17.4	0.1%	21,360.0	20.8	0.1%	21,348.4	32.4	0.2%
ME 3	39 57 11	2005	Above Normal	May	--	19,494.2	19,452.5	41.7	0.2%	19,444.4	49.8	0.3%	19,420.1	74.1	0.4%
ME 3	39 57 11	2005	Above Normal	June	--	15,781.3	15,719.9	61.3	0.4%	15,708.3	72.9	0.5%	15,672.5	108.8	0.7%
ME 3	39 57 11	2005	Above Normal	July	--	2,862.0	2,807.8	54.3	1.9%	2,797.6	64.5	2.3%	2,767.0	95.0	3.3%
ME 3	39 57 11	2005	Above Normal	August	--	977.0	928.7	48.3	4.9%	919.2	57.8	5.9%	890.8	86.2	8.8%
ME 3	39 57 11	2005	Above Normal	September	Used in Summary Table Analysis	518.8	476.8	42.0	8.1%	468.5	50.4	9.7%	443.4	75.4	14.5%
ME 3	39 57 11	2006	Wet	October	Used in Summary Table Analysis	627.9	594.4	33.4	5.3%	587.7	40.2	6.4%	567.3	60.6	9.6%
ME 3	39 57 11	2006	Wet	November	Used in Summary Table Analysis	9,231.6	9,205.4	26.2	0.3%	9,200.1	31.5	0.3%	9,184.0	47.6	0.5%
ME 3	39 57 11	2006	Wet	December	--	43,255.8	43,231.5	24.3	0.1%	43,226.9	28.9	0.1%	43,211.8	44.0	0.1%
ME 3	39 57 11	2006	Wet	January	--	46,077.5	46,055.6	22.0	0.0%	46,050.9	26.6	0.1%	46,038.2	39.4	0.1%
ME 3	39 57 11	2006	Wet	February	--	26,524.3	26,504.6	19.7	0.1%	26,501.2	23.1	0.1%	26,488.4	35.9	0.1%
ME 3	39 57 11	2006	Wet	March	--	46,985.0	46,966.4	18.5	0.0%	46,961.8	23.1	0.0%	46,951.4	33.6	0.1%
ME 3	39 57 11	2006	Wet	April	--	30,358.8	30,341.4	17.4	0.1%	30,338.0	20.8	0.1%	30,327.5	31.3	0.1%
ME 3	39 57 11	2006	Wet	May	--	14,166.7	14,142.4	24.3	0.2%	14,137.7	28.9	0.2%	14,123.8	42.8	0.3%
ME 3	39 57 11	2006	Wet	June	--	3,542.2	3,492.0	50.2	1.4%	3,482.2	60.1	1.7%	3,453.2	89.0	2.5%
ME 3	39 57 11	2006	Wet	July	--	1,272.3	1,220.5	51.9	4.1%	1,210.4	61.9	4.9%	1,180.4	91.9	7.2%
ME 3	39 57 11	2006	Wet	August	--	658.6	609.2	49.4	7.5%	599.5	59.2	9.0%	570.3	88.3	13.4%
ME 3	39 57 11	2006	Wet	September	Used in Summary Table Analysis	420.2	377.7	42.4	10.1%	369.3	50.9	12.1%	343.9	76.2	18.1%
ME 3	39 57 11	2007	Above Normal	October	Used in Summary Table Analysis	269.4	235.3	34.1	12.6%	228.4	40.9	15.2%	207.7	61.7	22.9%
ME 3	39 57 11	2007	Above Normal	November	Used in Summary Table Analysis	8,601.2	8,573.8	27.3	0.3%	8,568.3	32.9	0.4%	8,551.5	49.7	0.6%
ME 3	39 57 11	2007	Above Normal	December	--	20,277.8	20,253.5	24.3	0.1%	20,248.8	28.9	0.1%	20,233.8	44.0	0.2%
ME 3	39 57 11	2007	Above Normal	January	--	10,215.7	10,194.2	21.5	0.2%	10,189.9	25.8	0.3%	10,176.5	39.2	0.4%
ME 3	39 57 11	2007	Above Normal	February	--	30,422.5	30,402.8	19.7	0.1%	30,398.1	24.3	0.1%	30,385.4	37.0	0.1%
ME 3	39 57 11	2007	Above Normal	March	--	13,075.2	13,055.6	19.7	0.2%	13,052.1	23.1	0.2%	13,039.4	35.9	0.3%
ME 3	39 57 11	2007	Above Normal	April	--	11,510.2	11,470.5	39.7	0.3%	11,462.6	47.6	0.4%	11,439.1	71.1	0.6%
ME 3	39 57 11	2007	Above Normal	May	--	4,128.4	4,081.4	47.0	1.1%	4,072.0	56.4	1.4%	4,044.0	84.4	2.0%
ME 3	39 57 11	2007	Above Normal	June	--	1,490.5	1,434.6	55.9	3.8%	1,423.6	66.9	4.5%	1,391.2	99.3	6.7%
ME 3	39 57 11	2007	Above Normal	July	--	492.4	437.5	54.9	11.2%	426.6	65.8	13.4%	394.9	97.5	19.8%
ME 3	39 57 11	2007	Above Normal	August	--	218.5	169.9	48.6	22.2%	160.3	58.2	26.6%	130.9	87.6	40.1%
ME 3	39 57 11	2007	Above Normal	September	Used in Summary Table Analysis	146.2	100.8	45.4	31.0%	91.8	54.4	37.2%	64.7	81.5	55.8%
ME 3	39 57 11	2008	Dry	October	Used in Summary Table Analysis	3,409.7	3,373.6	36.1	1.1%	3,366.3	43.4	1.3%	3,344.2	65.5	1.9%
ME 3	39 57 11	2008	Dry	November	Used in Summary Table Analysis	3,252.0	3,224.3	27.7	0.9%	3,218.6	33.3	1.0%	3,201.7	50.2	1.5%
ME 3	39 57 11	2008	Dry	December	--	22,953.7	22,929.4	24.3	0.1%	22,924.8	28.9	0.1%	22,909.7	44.0	0.2%
ME 3	39 57 11	2008	Dry	January	--	37,366.9	37,343.8	23.1	0.1%	37,338.0	28.9	0.1%	37,324.1	42.8	0.1%
ME 3	39 57 11	2008	Dry	February	--	26,230.3	26,210.6	19.7	0.1%	26,206.0	24.3	0.1%	26,194.4	35.9	0.1%
ME 3	39 57 11	2008	Dry	March	--	11,775.5	11,756.9	18.5	0.2%	11,753.5	22.0	0.2%	11,741.9	33.6	0.3%
ME 3	39 57 11	2008	Dry	April	--	9,001.5	8,961.1	40.4	0.4%	8,953.0	48.5	0.5%	8,928.9	72.6	0.8%
ME 3	39 57 11	2008	Dry	May	--	1,360.3	1,318.4	41.9	3.1%	1,310.3	50.0	3.7%	1,286.1	74.2	5.5%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	39 57 11	2008	Dry	June	--	433.9	373.3	60.6	14.0%	361.5	72.5	16.7%	326.4	107.5	24.8%
ME 3	39 57 11	2008	Dry	July	--	252.4	194.1	58.4	23.1%	182.5	69.9	27.7%	153.0	99.4	39.4%
ME 3	39 57 11	2008	Dry	August	--	175.6	119.8	55.8	31.8%	108.7	67.0	38.1%	74.9	100.7	57.3%
ME 3	39 57 11	2008	Dry	September	Used in Summary Table Analysis	137.4	84.2	53.2	38.7%	73.6	63.8	46.4%	42.9	94.5	68.8%
ME 3	39 57 11	2009	Critical	October	Used in Summary Table Analysis	918.7	878.1	40.6	4.4%	869.9	48.8	5.3%	844.9	73.8	8.0%
ME 3	39 57 11	2009	Critical	November	Used in Summary Table Analysis	5,469.2	5,438.1	31.1	0.6%	5,431.7	37.5	0.7%	5,409.8	59.4	1.1%
ME 3	39 57 11	2009	Critical	December	--	12,077.5	12,050.9	26.6	0.2%	12,045.1	32.4	0.3%	12,027.8	49.8	0.4%
ME 3	39 57 11	2009	Critical	January	--	8,770.9	8,746.1	24.9	0.3%	8,741.0	30.0	0.3%	8,725.7	45.3	0.5%
ME 3	39 57 11	2009	Critical	February	--	22,541.7	22,518.5	23.1	0.1%	22,513.9	27.8	0.1%	22,501.2	40.5	0.2%
ME 3	39 57 11	2009	Critical	March	--	21,066.0	21,046.3	19.7	0.1%	21,041.7	24.3	0.1%	21,030.1	35.9	0.2%
ME 3	39 57 11	2009	Critical	April	--	10,089.7	10,047.9	41.8	0.4%	10,039.6	50.1	0.5%	10,014.7	75.0	0.7%
ME 3	39 57 11	2009	Critical	May	--	15,555.6	15,504.6	50.9	0.3%	15,494.2	61.3	0.4%	15,464.1	91.4	0.6%
ME 3	39 57 11	2009	Critical	June	--	3,155.2	3,090.4	64.8	2.1%	3,077.9	77.3	2.5%	3,040.6	114.6	3.6%
ME 3	39 57 11	2009	Critical	July	--	1,258.3	1,199.5	58.8	4.7%	1,188.1	70.3	5.6%	1,158.4	99.9	7.9%
ME 3	39 57 11	2009	Critical	August	--	664.2	608.1	56.1	8.4%	596.9	67.2	10.1%	565.8	98.3	14.8%
ME 3	39 57 11	2009	Critical	September	Used in Summary Table Analysis	385.8	336.6	49.2	12.8%	326.8	59.0	15.3%	298.4	87.5	22.7%
ME 3	39 57 11	2010	Below Normal	October	Used in Summary Table Analysis	6,081.9	6,040.7	41.2	0.7%	6,032.4	49.5	0.8%	6,006.4	75.6	1.2%
ME 3	39 57 11	2010	Below Normal	November	Used in Summary Table Analysis	8,261.6	8,229.4	32.2	0.4%	8,222.9	38.7	0.5%	8,200.5	61.1	0.7%
ME 3	39 57 11	2010	Below Normal	December	--	12,298.6	12,270.8	27.8	0.2%	12,265.0	33.6	0.3%	12,247.7	50.9	0.4%
ME 3	39 57 11	2010	Below Normal	January	--	36,047.5	36,022.0	25.5	0.1%	36,017.4	30.1	0.1%	36,001.2	46.3	0.1%
ME 3	39 57 11	2010	Below Normal	February	--	27,192.1	27,170.1	22.0	0.1%	27,165.5	26.6	0.1%	27,151.6	40.5	0.1%
ME 3	39 57 11	2010	Below Normal	March	--	28,791.7	28,769.7	22.0	0.1%	28,766.2	25.5	0.1%	28,753.5	38.2	0.1%
ME 3	39 57 11	2010	Below Normal	April	--	39,929.4	39,908.6	20.8	0.1%	39,905.1	24.3	0.1%	39,892.4	37.0	0.1%
ME 3	39 57 11	2010	Below Normal	May	--	20,203.7	20,159.7	44.0	0.2%	20,151.6	52.1	0.3%	20,126.2	77.5	0.4%
ME 3	39 57 11	2010	Below Normal	June	--	9,298.5	9,236.2	62.3	0.7%	9,224.1	74.4	0.8%	9,187.8	110.6	1.2%
ME 3	39 57 11	2010	Below Normal	July	--	1,450.2	1,395.6	54.6	3.8%	1,385.1	65.2	4.5%	1,353.9	96.3	6.6%
ME 3	39 57 11	2010	Below Normal	August	--	563.1	513.7	49.4	8.8%	504.0	59.1	10.5%	475.0	88.1	15.6%
ME 3	39 57 11	2010	Below Normal	September	Used in Summary Table Analysis	645.1	598.2	46.9	7.3%	588.8	56.3	8.7%	560.9	84.2	13.1%
ME 3	39 57 11	2011	Wet	October	Used in Summary Table Analysis	9,594.1	9,559.5	34.6	0.4%	9,552.5	41.6	0.4%	9,531.5	62.6	0.7%
ME 3	39 57 11	2011	Wet	November	Used in Summary Table Analysis	14,174.8	14,148.1	26.6	0.2%	14,142.4	32.4	0.2%	14,125.0	49.8	0.4%
ME 3	39 57 11	2011	Wet	December	--	33,520.8	33,496.5	24.3	0.1%	33,491.9	28.9	0.1%	33,476.9	44.0	0.1%
ME 3	39 57 11	2011	Wet	January	--	14,121.5	14,100.7	20.8	0.1%	14,096.1	25.5	0.2%	14,083.3	38.2	0.3%
ME 3	39 57 11	2011	Wet	February	--	20,733.8	20,714.1	19.7	0.1%	20,709.5	24.3	0.1%	20,696.8	37.0	0.2%
ME 3	39 57 11	2011	Wet	March	--	51,887.7	51,869.2	18.5	0.0%	51,864.6	23.1	0.0%	51,853.0	34.7	0.1%
ME 3	39 57 11	2011	Wet	April	--	24,759.3	24,739.6	19.7	0.1%	24,736.1	23.1	0.1%	24,724.5	34.7	0.1%
ME 3	39 57 11	2011	Wet	May	--	11,362.7	11,321.5	41.2	0.4%	11,313.3	49.4	0.4%	11,288.8	74.0	0.7%
ME 3	39 57 11	2011	Wet	June	--	7,036.7	6,975.8	60.9	0.9%	6,963.7	73.0	1.0%	6,928.2	108.4	1.5%
ME 3	39 57 11	2011	Wet	July	--	1,825.9	1,766.7	59.3	3.2%	1,755.1	70.8	3.9%	1,721.8	104.2	5.7%
ME 3	39 57 11	2011	Wet	August	--	772.0	723.0	49.0	6.3%	713.3	58.7	7.6%	684.3	87.6	11.4%
ME 3	39 57 11	2011	Wet	September	Used in Summary Table Analysis	428.6	384.8	43.9	10.2%	376.0	52.6	12.3%	350.0	78.7	18.4%
ME 3	39 57 11	2012	Below Normal	October	Used in Summary Table Analysis	4,521.1	4,485.8	35.3	0.8%	4,478.7	42.4	0.9%	4,456.9	64.1	1.4%
ME 3	39 57 11	2012	Below Normal	November	Used in Summary Table Analysis	8,197.0	8,169.0	28.0	0.3%	8,163.3	33.7	0.4%	8,145.9	51.0	0.6%
ME 3	39 57 11	2012	Below Normal	December	--	5,164.9	5,140.7	24.2	0.5%	5,135.8	29.2	0.6%	5,120.8	44.1	0.9%
ME 3	39 57 11	2012	Below Normal	January	--	19,998.8	19,976.9	22.0	0.1%	19,972.2	26.6	0.1%	19,958.3	40.5	0.2%
ME 3	39 57 11	2012	Below Normal	February	--	18,179.4	18,158.6	20.8	0.1%	18,155.1	24.3	0.1%	18,142.4	37.0	0.2%
ME 3	39 57 11	2012	Below Normal	March	--	45,288.2	45,268.5	19.7	0.0%	45,263.9	24.3	0.1%	45,252.3	35.9	0.1%
ME 3	39 57 11	2012	Below Normal	April	--	26,809.0	26,790.5	18.5	0.1%	26,785.9	23.1	0.1%	26,774.3	34.7	0.1%
ME 3	39 57 11	2012	Below Normal	May	--	7,470.1	7,428.9	41.2	0.6%	7,420.8	49.3	0.7%	7,396.6	73.5	1.0%
ME 3	39 57 11	2012	Below Normal	June	--	5,496.2	5,434.0	62.2	1.1%	5,421.8	74.4	1.4%	5,385.9	110.3	2.0%
ME 3	39 57 11	2012	Below Normal	July	--	2,211.5	2,154.2	57.3	2.6%	2,142.8	68.6	3.1%	2,109.3	102.2	4.6%
ME 3	39 57 11	2012	Below Normal	August	--	384.8	339.9	44.9	11.7%	331.0	53.8	14.0%	304.3	80.5	20.9%
ME 3	39 57 11	2012	Below Normal	September	Used in Summary Table Analysis	244.5	205.1	39.4	16.1%	197.3	47.2	19.3%	173.8	70.7	28.9%
ME 3	39 57 11	2013	Below Normal	October	Used in Summary Table Analysis	1,898.3	1,864.2	34.0	1.8%	1,857.4	40.9	2.2%	1,836.8	61.5	3.2%
ME 3	39 57 11	2013	Below Normal	November	Used in Summary Table Analysis	14,611.1	14,583.3	27.8	0.2%	14,578.7	32.4	0.2%	14,561.3	49.8	0.3%
ME 3	39 57 11	2013	Below Normal	December	--	59,825.2	59,800.9	24.3	0.0%	59,795.1	30.1	0.1%	59,780.1	45.1	0.1%
ME 3	39 57 11	2013	Below Normal	January	--	22,151.6	22,130.8	20.8	0.1%	22,126.2	25.5	0.1%	22,113.4	38.2	0.2%
ME 3	39 57 11	2013	Below Normal	February	--	8,822.0	8,801.7	20.3	0.2%	8,797.6	24.4	0.3%	8,785.3	36.7	0.4%
ME 3	39 57 11	2013	Below Normal	March	--	10,294.8	10,275.1	19.7	0.2%	10,271.2	23.6	0.2%	10,259.3	35.5	0.3%
ME 3	39 57 11	2013	Below Normal	April	--	8,279.7	8,241.0	38.8	0.5%	8,233.2	46.5	0.6%	8,210.1	69.7	0.8%
ME 3	39 57 11	2013	Below Normal	May	--	4,416.4	4,369.7	46.8	1.1%	4,360.3	56.1	1.3%	4,332.5	83.9	1.9%
ME 3	39 57 11	2013	Below Normal	June	--	2,105.1	2,049.5	55.6	2.6%	2,038.5	66.6	3.2%	2,006.1	99.0	4.7%
ME 3	39 57 11	2013	Below Normal	July	--	715.4	663.1	52.3	7.3%	652.7	62.7	8.8%	622.6	92.8	13.0%
ME 3	39 57 11	2013	Below Normal	August	--	336.3	287.7	48.6	14.4%	278.0	58.3	17.3%	248.5	87.8	26.1%
ME 3	39 57 11	2013	Below Normal	September	Used in Summary Table Analysis	4,765.2	4,715.0	50.1	1.1%	4,705.0	60.2	1.3%	4,675.0	90.2	1.9%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	39 57 11	2014	Critical	October	Used in Summary Table Analysis	279.8	244.2	35.6	12.7%	237.0	42.7	15.3%	216.3	63.5	22.7%
ME 3	39 57 11	2014	Critical	November	Used in Summary Table Analysis	1,526.6	1,498.3	28.4	1.9%	1,492.5	34.1	2.2%	1,475.2	51.4	3.4%
ME 3	39 57 11	2014	Critical	December	--	1,582.9	1,557.9	25.0	1.6%	1,552.9	30.0	1.9%	1,537.6	45.3	2.9%
ME 3	39 57 11	2014	Critical	January	--	2,809.6	2,787.3	22.3	0.8%	2,782.8	26.9	1.0%	2,769.0	40.6	1.4%
ME 3	39 57 11	2014	Critical	February	--	15,718.8	15,697.9	20.8	0.1%	15,694.4	24.3	0.2%	15,680.6	38.2	0.2%
ME 3	39 57 11	2014	Critical	March	--	31,442.1	31,422.5	19.7	0.1%	31,417.8	24.3	0.1%	31,406.3	35.9	0.1%
ME 3	39 57 11	2014	Critical	April	--	12,974.5	12,932.9	41.7	0.3%	12,924.8	49.8	0.4%	12,899.3	75.2	0.6%
ME 3	39 57 11	2014	Critical	May	--	5,178.0	5,128.7	49.3	1.0%	5,118.9	59.1	1.1%	5,089.2	88.8	1.7%
ME 3	39 57 11	2014	Critical	June	--	1,193.5	1,126.9	66.6	5.6%	1,113.9	79.7	6.7%	1,076.5	117.1	9.8%
ME 3	39 57 11	2014	Critical	July	--	543.0	483.1	59.9	11.0%	471.2	71.8	13.2%	440.7	102.3	18.8%
ME 3	39 57 11	2014	Critical	August	--	344.2	287.8	56.5	16.4%	276.5	67.7	19.7%	245.0	99.2	28.8%
ME 3	39 57 11	2014	Critical	September	Used in Summary Table Analysis	2,563.1	2,508.2	54.9	2.1%	2,497.5	65.6	2.6%	2,465.3	97.8	3.8%
ME 3	39 57 11	2015	Dry	October	Used in Summary Table Analysis	11,324.3	11,282.6	41.7	0.4%	11,274.5	49.8	0.4%	11,249.8	74.5	0.7%
ME 3	39 57 11	2015	Dry	November	Used in Summary Table Analysis	9,000.2	8,969.1	31.1	0.3%	8,962.8	37.4	0.4%	8,941.1	59.1	0.7%
ME 3	39 57 11	2015	Dry	December	--	32,474.5	32,447.9	26.6	0.1%	32,442.1	32.4	0.1%	32,424.8	49.8	0.2%
ME 3	39 57 11	2015	Dry	January	--	14,555.6	14,531.3	24.3	0.2%	14,525.5	30.1	0.2%	14,510.4	45.1	0.3%
ME 3	39 57 11	2015	Dry	February	--	27,177.1	27,156.3	20.8	0.1%	27,151.6	25.5	0.1%	27,137.7	39.4	0.1%
ME 3	39 57 11	2015	Dry	March	--	11,556.8	11,537.4	19.4	0.2%	11,533.4	23.4	0.2%	11,521.4	35.4	0.3%
ME 3	39 57 11	2015	Dry	April	--	8,349.2	8,307.9	41.3	0.5%	8,299.7	49.5	0.6%	8,275.0	74.2	0.9%
ME 3	39 57 11	2015	Dry	May	--	1,507.5	1,458.9	48.6	3.2%	1,449.4	58.1	3.9%	1,421.6	85.9	5.7%
ME 3	39 57 11	2015	Dry	June	--	650.1	588.7	61.4	9.4%	576.6	73.5	11.3%	541.1	109.0	16.8%
ME 3	39 57 11	2015	Dry	July	--	266.0	207.2	58.8	22.1%	195.5	70.5	26.5%	165.8	100.2	37.7%
ME 3	39 57 11	2015	Dry	August	--	162.9	106.8	56.1	34.4%	95.6	67.3	41.3%	64.6	98.3	60.3%
ME 3	39 57 11	2015	Dry	September	Used in Summary Table Analysis	117.8	65.8	52.0	44.1%	55.1	62.7	53.2%	24.0	93.8	79.6%
ME 3	39 57 11	2016	Above Normal	October	Used in Summary Table Analysis	83.3	40.5	42.8	51.4%	32.3	51.0	61.2%	7.5	75.8	91.0%
ME 3	39 57 11	2016	Above Normal	November	Used in Summary Table Analysis	3,832.2	3,800.0	32.2	0.8%	3,793.5	38.7	1.0%	3,770.4	61.8	1.6%
ME 3	39 57 11	2016	Above Normal	December	--	36,451.4	36,422.5	28.9	0.1%	36,417.8	33.6	0.1%	36,399.3	52.1	0.1%
ME 3	39 57 11	2016	Above Normal	January	--	57,141.2	57,115.7	25.5	0.0%	57,110.0	31.3	0.1%	57,093.8	47.5	0.1%
ME 3	39 57 11	2016	Above Normal	February	--	24,239.6	24,217.6	22.0	0.1%	24,213.0	26.6	0.1%	24,200.2	39.4	0.2%
ME 3	39 57 11	2016	Above Normal	March	--	41,695.6	41,674.8	20.8	0.0%	41,670.1	25.5	0.1%	41,657.4	38.2	0.1%
ME 3	39 57 11	2016	Above Normal	April	--	18,513.9	18,495.4	18.5	0.1%	18,490.7	23.1	0.1%	18,479.2	34.7	0.2%
ME 3	39 57 11	2016	Above Normal	May	--	5,206.6	5,182.1	24.5	0.5%	5,177.1	29.5	0.6%	5,162.3	44.3	0.9%
ME 3	39 57 11	2016	Above Normal	June	--	1,505.2	1,457.8	47.5	3.2%	1,449.4	55.8	3.7%	1,425.1	80.1	5.3%
ME 3	39 57 11	2016	Above Normal	July	--	818.4	766.5	52.0	6.3%	756.2	62.3	7.6%	725.9	92.5	11.3%
ME 3	39 57 11	2016	Above Normal	August	--	486.9	437.0	49.9	10.2%	427.0	59.8	12.3%	397.5	89.3	18.3%
ME 3	39 57 11	2016	Above Normal	September	Used in Summary Table Analysis	323.5	277.4	46.1	14.2%	268.0	55.5	17.1%	240.1	83.4	25.8%
ME 3	39 57 11	2017	Wet	October	Used in Summary Table Analysis	18,217.6	18,181.7	35.9	0.2%	18,174.8	42.8	0.2%	18,152.8	64.8	0.4%
ME 3	39 57 11	2017	Wet	November	Used in Summary Table Analysis	18,750.0	18,722.2	27.8	0.1%	18,716.4	33.6	0.2%	18,700.2	49.8	0.3%
ME 3	39 57 11	2017	Wet	December	--	23,996.5	23,973.4	23.1	0.1%	23,967.6	28.9	0.1%	23,953.7	42.8	0.2%
ME 3	39 57 11	2017	Wet	January	--	106,562.5	106,540.5	22.0	0.0%	106,535.9	26.6	0.0%	106,522.0	40.5	0.0%
ME 3	39 57 11	2017	Wet	February	--	81,638.9	81,618.1	20.8	0.0%	81,614.6	24.3	0.0%	81,601.9	37.0	0.0%
ME 3	39 57 11	2017	Wet	March	--	27,211.8	27,192.1	19.7	0.1%	27,187.5	24.3	0.1%	27,175.9	35.9	0.1%
ME 3	39 57 11	2017	Wet	April	--	22,869.2	22,851.9	17.4	0.1%	22,848.4	20.8	0.1%	22,836.8	32.4	0.1%
ME 3	39 57 11	2017	Wet	May	--	6,269.8	6,244.9	24.9	0.4%	6,240.0	29.7	0.5%	6,225.2	44.6	0.7%
ME 3	39 57 11	2017	Wet	June	--	2,106.9	2,057.4	49.5	2.4%	2,047.6	59.4	2.8%	2,018.9	88.1	4.2%
ME 3	39 57 11	2017	Wet	July	--	928.1	875.7	52.4	5.6%	865.4	62.6	6.7%	835.2	92.9	10.0%
ME 3	39 57 11	2017	Wet	August	--	500.3	450.5	49.8	10.0%	440.6	59.7	11.9%	411.2	89.2	17.8%
ME 3	39 57 11	2017	Wet	September	Used in Summary Table Analysis	317.4	271.8	45.6	14.4%	262.7	54.8	17.3%	235.3	82.1	25.9%
ME 3	39 57 11	2018	Above Normal	October	Used in Summary Table Analysis	270.3	234.9	35.4	13.1%	227.7	42.5	15.7%	206.3	63.9	23.7%
ME 3	39 57 11	2018	Above Normal	November	Used in Summary Table Analysis	10,711.0	10,683.7	27.3	0.3%	10,678.1	32.9	0.3%	10,661.3	49.7	0.5%
ME 3	39 57 11	2018	Above Normal	December	--	5,437.8	5,414.7	23.1	0.4%	5,410.0	27.9	0.5%	5,395.7	42.1	0.8%
ME 3	39 57 11	2018	Above Normal	January	--	17,642.4	17,621.5	20.8	0.1%	17,616.9	25.5	0.1%	17,604.2	38.2	0.2%
ME 3	39 57 11	2018	Above Normal	February	--	7,590.3	7,571.2	19.1	0.3%	7,567.2	23.0	0.3%	7,555.4	34.8	0.5%
ME 3	39 57 11	2018	Above Normal	March	--	20,611.1	20,592.6	18.5	0.1%	20,589.1	22.0	0.1%	20,577.5	33.6	0.2%
ME 3	39 57 11	2018	Above Normal	April	--	32,096.1	32,079.9	16.2	0.1%	32,076.4	19.7	0.1%	32,066.0	30.1	0.1%
ME 3	39 57 11	2018	Above Normal	May	--	6,984.3	6,945.4	38.9	0.6%	6,937.7	46.5	0.7%	6,914.5	69.8	1.0%
ME 3	39 57 11	2018	Above Normal	June	--	1,909.3	1,859.7	49.5	2.6%	1,850.0	59.3	3.1%	1,821.4	87.8	4.6%
ME 3	39 57 11	2018	Above Normal	July	--	776.2	723.8	52.4	6.8%	713.4	62.8	8.1%	682.6	93.6	12.1%
ME 3	39 57 11	2018	Above Normal	August	--	437.5	389.5	48.0	11.0%	379.9	57.5	13.2%	351.3	86.1	19.7%
ME 3	39 57 11	2018	Above Normal	September	Used in Summary Table Analysis	295.3	249.6	45.7	15.5%	240.4	54.9	18.6%	213.0	82.3	27.9%
ME 3	39 57 11	2019	Below Normal	October	Used in Summary Table Analysis	204.1	169.3	34.9	17.1%	162.2	41.9	20.5%	141.0	63.2	30.9%
ME 3	39 57 11	2019	Below Normal	November	Used in Summary Table Analysis	6,570.5	6,542.9	27.5	0.4%	6,537.4	33.1	0.5%	6,520.5	50.0	0.8%
ME 3	39 57 11	2019	Below Normal	December	--	14,576.4	14,552.1	24.3	0.2%	14,547.5	28.9	0.2%	14,532.4	44.0	0.3%
ME 3	39 57 11	2019	Below Normal	January	--	35,038.2	35,017.4	20.8	0.1%	35,012.7	25.5	0.1%	35,000.0	38.2	0.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	39 57 11	2019	Below Normal	February	--	141,724.5	141,713.0	11.6	0.0%	141,701.4	23.1	0.0%	141,689.8	34.7	0.0%
ME 3	39 57 11	2019	Below Normal	March	--	42,221.1	42,202.5	18.5	0.0%	42,199.1	22.0	0.1%	42,187.5	33.6	0.1%
ME 3	39 57 11	2019	Below Normal	April	--	15,244.2	15,226.9	17.4	0.1%	15,223.4	20.8	0.1%	15,213.0	31.3	0.2%
ME 3	39 57 11	2019	Below Normal	May	--	16,802.1	16,760.4	41.7	0.2%	16,752.3	49.8	0.3%	16,728.0	74.1	0.4%
ME 3	39 57 11	2019	Below Normal	June	--	4,242.2	4,190.0	52.2	1.2%	4,180.1	62.2	1.5%	4,150.9	91.3	2.2%
ME 3	39 57 11	2019	Below Normal	July	--	1,354.7	1,302.1	52.7	3.9%	1,291.8	63.0	4.6%	1,261.0	93.8	6.9%
ME 3	39 57 11	2019	Below Normal	August	--	590.4	541.2	49.2	8.3%	531.4	59.0	10.0%	502.4	88.0	14.9%
ME 3	39 57 11	2019	Below Normal	September	Used in Summary Table Analysis	457.6	412.1	45.5	9.9%	403.0	54.6	11.9%	375.7	81.9	17.9%
ME 3	39 57 11	2020	Dry	October	Used in Summary Table Analysis	352.0	318.6	33.4	9.5%	311.9	40.2	11.4%	291.5	60.5	17.2%
ME 3	39 57 11	2020	Dry	November	Used in Summary Table Analysis	312.0	286.2	25.7	8.2%	281.0	30.9	9.9%	265.3	46.6	15.0%
ME 3	39 57 11	2020	Dry	December	--	13,153.9	13,129.6	24.3	0.2%	13,125.0	28.9	0.2%	13,111.1	42.8	0.3%
ME 3	39 57 11	2020	Dry	January	--	22,226.9	22,204.9	22.0	0.1%	22,200.2	26.6	0.1%	22,187.5	39.4	0.2%
ME 3	39 57 11	2020	Dry	February	--	7,409.5	7,390.0	19.4	0.3%	7,386.1	23.4	0.3%	7,374.2	35.3	0.5%
ME 3	39 57 11	2020	Dry	March	--	7,224.7	7,206.3	18.4	0.3%	7,202.4	22.2	0.3%	7,191.3	33.3	0.5%
ME 3	39 57 11	2020	Dry	April	--	5,461.5	5,420.4	41.1	0.8%	5,412.2	49.3	0.9%	5,387.8	73.6	1.3%
ME 3	39 57 11	2020	Dry	May	--	7,349.5	7,300.5	49.1	0.7%	7,290.7	58.8	0.8%	7,261.6	88.0	1.2%
ME 3	39 57 11	2020	Dry	June	--	2,103.1	2,041.2	61.9	2.9%	2,029.3	73.8	3.5%	1,994.3	108.8	5.2%
ME 3	39 57 11	2020	Dry	July	--	792.5	731.4	61.1	7.7%	719.3	73.2	9.2%	688.5	104.0	13.1%
ME 3	39 57 11	2020	Dry	August	--	395.0	335.7	59.3	15.0%	323.9	71.1	18.0%	291.4	103.5	26.2%
ME 3	39 57 11	2020	Dry	September	Used in Summary Table Analysis	244.6	189.6	55.0	22.5%	178.4	66.2	27.1%	145.7	98.9	40.4%
ME 3	38 57 12	2000	Above Normal	October	Used in Summary Table Analysis	810.6	775.0	35.6	4.4%	767.8	42.8	5.3%	746.3	64.4	7.9%
ME 3	38 57 12	2000	Above Normal	November	Used in Summary Table Analysis	12,023.1	11,995.4	27.8	0.2%	11,989.6	33.6	0.3%	11,972.2	50.9	0.4%
ME 3	38 57 12	2000	Above Normal	December	--	10,760.4	10,736.3	24.1	0.2%	10,731.4	29.1	0.3%	10,716.7	43.8	0.4%
ME 3	38 57 12	2000	Above Normal	January	--	28,416.7	28,394.7	22.0	0.1%	28,390.0	26.6	0.1%	28,376.2	40.5	0.1%
ME 3	38 57 12	2000	Above Normal	February	--	36,937.5	36,917.8	19.7	0.1%	36,913.2	24.3	0.1%	36,900.5	37.0	0.1%
ME 3	38 57 12	2000	Above Normal	March	--	18,284.7	18,265.0	19.7	0.1%	18,261.6	23.1	0.1%	18,250.0	34.7	0.2%
ME 3	38 57 12	2000	Above Normal	April	--	12,290.5	12,272.0	18.5	0.2%	12,268.5	22.0	0.2%	12,256.9	33.6	0.3%
ME 3	38 57 12	2000	Above Normal	May	--	7,074.5	7,033.4	41.1	0.6%	7,025.1	49.4	0.7%	7,000.7	73.8	1.0%
ME 3	38 57 12	2000	Above Normal	June	--	2,603.5	2,542.6	60.9	2.3%	2,530.7	72.8	2.8%	2,495.1	108.3	4.2%
ME 3	38 57 12	2000	Above Normal	July	--	987.9	934.6	53.3	5.4%	924.1	63.8	6.5%	892.9	95.1	9.6%
ME 3	38 57 12	2000	Above Normal	August	--	517.7	468.2	49.5	9.6%	458.4	59.3	11.5%	428.9	88.8	17.1%
ME 3	38 57 12	2000	Above Normal	September	Used in Summary Table Analysis	291.7	248.4	43.2	14.8%	239.8	51.9	17.8%	213.8	77.8	26.7%
ME 3	38 57 12	2001	Dry	October	Used in Summary Table Analysis	3,793.3	3,758.1	35.2	0.9%	3,750.9	42.4	1.1%	3,729.5	63.8	1.7%
ME 3	38 57 12	2001	Dry	November	Used in Summary Table Analysis	6,088.8	6,060.8	28.0	0.5%	6,055.1	33.7	0.6%	6,038.0	50.8	0.8%
ME 3	38 57 12	2001	Dry	December	--	8,803.1	8,778.7	24.4	0.3%	8,773.7	29.4	0.3%	8,758.8	44.3	0.5%
ME 3	38 57 12	2001	Dry	January	--	12,723.4	12,701.4	22.0	0.2%	12,696.8	26.6	0.2%	12,682.9	40.5	0.3%
ME 3	38 57 12	2001	Dry	February	--	17,429.4	17,408.6	20.8	0.1%	17,405.1	24.3	0.1%	17,392.4	37.0	0.2%
ME 3	38 57 12	2001	Dry	March	--	12,275.5	12,255.8	19.7	0.2%	12,252.3	23.1	0.2%	12,240.7	34.7	0.3%
ME 3	38 57 12	2001	Dry	April	--	10,949.1	10,906.8	42.2	0.4%	10,898.5	50.6	0.5%	10,873.5	75.6	0.7%
ME 3	38 57 12	2001	Dry	May	--	2,636.6	2,587.0	49.5	1.9%	2,577.1	59.5	2.3%	2,547.6	89.0	3.4%
ME 3	38 57 12	2001	Dry	June	--	2,633.4	2,566.8	66.7	2.5%	2,553.7	79.7	3.0%	2,515.5	117.9	4.5%
ME 3	38 57 12	2001	Dry	July	--	717.1	655.9	61.2	8.5%	643.7	73.3	10.2%	612.7	104.4	14.6%
ME 3	38 57 12	2001	Dry	August	--	169.7	110.7	59.0	34.8%	98.9	70.8	41.7%	66.3	103.4	60.9%
ME 3	38 57 12	2001	Dry	September	Used in Summary Table Analysis	92.3	40.6	51.8	56.1%	30.2	62.1	67.3%	0.2	92.1	99.8%
ME 3	38 57 12	2002	Below Normal	October	Used in Summary Table Analysis	261.6	219.1	42.5	16.3%	210.4	51.1	19.6%	184.5	77.0	29.5%
ME 3	38 57 12	2002	Below Normal	November	Used in Summary Table Analysis	11,979.2	11,945.6	33.6	0.3%	11,938.7	40.5	0.3%	11,916.7	62.5	0.5%
ME 3	38 57 12	2002	Below Normal	December	--	35,539.4	35,510.4	28.9	0.1%	35,504.6	34.7	0.1%	35,486.1	53.2	0.1%
ME 3	38 57 12	2002	Below Normal	January	--	30,787.0	30,760.4	26.6	0.1%	30,755.8	31.3	0.1%	30,739.6	47.5	0.2%
ME 3	38 57 12	2002	Below Normal	February	--	24,622.7	24,599.5	23.1	0.1%	24,593.8	28.9	0.1%	24,579.9	42.8	0.2%
ME 3	38 57 12	2002	Below Normal	March	--	17,737.3	17,714.1	23.1	0.1%	17,709.5	27.8	0.2%	17,695.6	41.7	0.2%
ME 3	38 57 12	2002	Below Normal	April	--	9,908.9	9,867.0	41.9	0.4%	9,858.8	50.1	0.5%	9,833.9	75.0	0.8%
ME 3	38 57 12	2002	Below Normal	May	--	3,313.7	3,264.2	49.4	1.5%	3,254.4	59.3	1.8%	3,225.1	88.5	2.7%
ME 3	38 57 12	2002	Below Normal	June	--	851.2	796.1	55.1	6.5%	785.2	66.0	7.7%	753.1	98.1	11.5%
ME 3	38 57 12	2002	Below Normal	July	--	359.5	304.6	55.0	15.3%	293.6	65.9	18.3%	262.0	97.6	27.1%
ME 3	38 57 12	2002	Below Normal	August	--	223.6	172.6	51.0	22.8%	162.4	61.2	27.4%	131.5	92.1	41.2%
ME 3	38 57 12	2002	Below Normal	September	Used in Summary Table Analysis	160.6	113.0	47.6	29.6%	103.5	57.0	35.5%	74.2	86.4	53.8%
ME 3	38 57 12	2003	Wet	October	Used in Summary Table Analysis	125.7	87.4	38.3	30.5%	79.7	46.0	36.6%	56.4	69.2	55.1%
ME 3	38 57 12	2003	Wet	November	Used in Summary Table Analysis	891.9	861.7	30.2	3.4%	855.5	36.4	4.1%	836.9	55.0	6.2%
ME 3	38 57 12	2003	Wet	December	--	56,480.3	56,453.7	26.6	0.0%	56,449.1	31.3	0.1%	56,432.9	47.5	0.1%
ME 3	38 57 12	2003	Wet	January	--	31,460.6	31,437.5	23.1	0.1%	31,432.9	27.8	0.1%	31,417.8	42.8	0.1%
ME 3	38 57 12	2003	Wet	February	--	20,317.1	20,295.1	22.0	0.1%	20,290.5	26.6	0.1%	20,277.8	39.4	0.2%
ME 3	38 57 12	2003	Wet	March	--	23,976.9	23,957.2	19.7	0.1%	23,952.5	24.3	0.1%	23,939.8	37.0	0.2%
ME 3	38 57 12	2003	Wet	April	--	42,773.1	42,753.5	19.7	0.0%	42,748.8	24.3	0.1%	42,737.3	35.9	0.1%
ME 3	38 57 12	2003	Wet	May	--	12,206.0	12,163.2	42.8	0.4%	12,155.1	50.9	0.4%	12,129.6	76.4	0.6%

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	38 57 12	2003	Wet	June	--	3,162.2	3,109.3	52.9	1.7%	3,099.1	63.1	2.0%	3,068.6	93.5	3.0%
ME 3	38 57 12	2003	Wet	July	--	1,469.3	1,414.7	54.6	3.7%	1,403.9	65.4	4.5%	1,372.0	97.3	6.6%
ME 3	38 57 12	2003	Wet	August	--	755.7	702.8	52.9	7.0%	691.9	63.8	8.4%	657.9	97.8	12.9%
ME 3	38 57 12	2003	Wet	September	Used in Summary Table Analysis	453.9	410.2	43.8	9.6%	401.4	52.5	11.6%	374.1	79.9	17.6%
ME 3	38 57 12	2004	Wet	October	Used in Summary Table Analysis	321.0	285.3	35.7	11.1%	278.1	42.9	13.4%	256.4	64.6	20.1%
ME 3	38 57 12	2004	Wet	November	Used in Summary Table Analysis	5,766.0	5,737.4	28.6	0.5%	5,731.5	34.5	0.6%	5,713.9	52.1	0.9%
ME 3	38 57 12	2004	Wet	December	--	36,147.0	36,121.5	25.5	0.1%	36,115.7	31.3	0.1%	36,100.7	46.3	0.1%
ME 3	38 57 12	2004	Wet	January	--	31,361.1	31,339.1	22.0	0.1%	31,334.5	26.6	0.1%	31,320.6	40.5	0.1%
ME 3	38 57 12	2004	Wet	February	--	38,128.5	38,107.6	20.8	0.1%	38,104.2	24.3	0.1%	38,091.4	37.0	0.1%
ME 3	38 57 12	2004	Wet	March	--	16,504.6	16,486.1	18.5	0.1%	16,481.5	23.1	0.1%	16,469.9	34.7	0.2%
ME 3	38 57 12	2004	Wet	April	--	9,436.3	9,417.7	18.6	0.2%	9,413.9	22.5	0.2%	9,402.5	33.8	0.4%
ME 3	38 57 12	2004	Wet	May	--	3,408.6	3,367.2	41.3	1.2%	3,359.1	49.4	1.4%	3,334.7	73.8	2.2%
ME 3	38 57 12	2004	Wet	June	--	689.4	638.5	50.9	7.4%	628.5	60.9	8.8%	599.0	90.4	13.1%
ME 3	38 57 12	2004	Wet	July	--	352.5	298.9	53.7	15.2%	288.2	64.3	18.2%	256.6	95.9	27.2%
ME 3	38 57 12	2004	Wet	August	--	221.8	171.9	49.8	22.5%	162.0	59.8	26.9%	132.3	89.5	40.4%
ME 3	38 57 12	2004	Wet	September	Used in Summary Table Analysis	159.2	112.1	47.0	29.5%	102.7	56.4	35.5%	74.5	84.7	53.2%
ME 3	38 57 12	2005	Above Normal	October	Used in Summary Table Analysis	7,634.3	7,597.8	36.5	0.5%	7,590.5	43.8	0.6%	7,568.3	66.0	0.9%
ME 3	38 57 12	2005	Above Normal	November	Used in Summary Table Analysis	2,250.3	2,222.0	28.4	1.3%	2,216.3	34.0	1.5%	2,199.0	51.4	2.3%
ME 3	38 57 12	2005	Above Normal	December	--	20,890.0	20,864.6	25.5	0.1%	20,860.0	30.1	0.1%	20,844.9	45.1	0.2%
ME 3	38 57 12	2005	Above Normal	January	--	22,277.8	22,254.6	23.1	0.1%	22,250.0	27.8	0.1%	22,236.1	41.7	0.2%
ME 3	38 57 12	2005	Above Normal	February	--	13,993.1	13,972.2	20.8	0.1%	13,968.8	24.3	0.2%	13,956.0	37.0	0.3%
ME 3	38 57 12	2005	Above Normal	March	--	28,486.1	28,466.4	19.7	0.1%	28,463.0	23.1	0.1%	28,450.2	35.9	0.1%
ME 3	38 57 12	2005	Above Normal	April	--	21,392.4	21,372.7	19.7	0.1%	21,369.2	23.1	0.1%	21,357.6	34.7	0.2%
ME 3	38 57 12	2005	Above Normal	May	--	19,505.8	19,464.1	41.7	0.2%	19,456.0	49.8	0.3%	19,430.6	75.2	0.4%
ME 3	38 57 12	2005	Above Normal	June	--	15,795.1	15,733.8	61.3	0.4%	15,721.1	74.1	0.5%	15,685.2	110.0	0.7%
ME 3	38 57 12	2005	Above Normal	July	--	2,863.1	2,807.5	55.6	1.9%	2,797.0	66.1	2.3%	2,765.7	97.3	3.4%
ME 3	38 57 12	2005	Above Normal	August	--	978.4	928.7	49.6	5.1%	919.0	59.4	6.1%	889.7	88.6	9.1%
ME 3	38 57 12	2005	Above Normal	September	Used in Summary Table Analysis	520.1	476.8	43.3	8.3%	468.2	51.9	10.0%	442.4	77.7	14.9%
ME 3	38 57 12	2006	Wet	October	Used in Summary Table Analysis	629.2	594.8	34.5	5.5%	587.8	41.4	6.6%	566.8	62.4	9.9%
ME 3	38 57 12	2006	Wet	November	Used in Summary Table Analysis	9,243.1	9,216.0	27.1	0.3%	9,210.5	32.5	0.4%	9,194.0	49.1	0.5%
ME 3	38 57 12	2006	Wet	December	--	43,292.8	43,268.5	24.3	0.1%	43,263.9	28.9	0.1%	43,247.7	45.1	0.1%
ME 3	38 57 12	2006	Wet	January	--	46,111.1	46,089.1	22.0	0.0%	46,084.5	26.6	0.1%	46,070.6	40.5	0.1%
ME 3	38 57 12	2006	Wet	February	--	26,539.4	26,519.7	19.7	0.1%	26,515.0	24.3	0.1%	26,502.3	37.0	0.1%
ME 3	38 57 12	2006	Wet	March	--	47,011.6	46,993.1	18.5	0.0%	46,988.4	23.1	0.0%	46,976.9	34.7	0.1%
ME 3	38 57 12	2006	Wet	April	--	30,370.4	30,353.0	17.4	0.1%	30,349.5	20.8	0.1%	30,338.0	32.4	0.1%
ME 3	38 57 12	2006	Wet	May	--	14,173.6	14,149.3	24.3	0.2%	14,143.5	30.1	0.2%	14,129.6	44.0	0.3%
ME 3	38 57 12	2006	Wet	June	--	3,543.8	3,492.5	51.3	1.4%	3,482.4	61.3	1.7%	3,453.0	90.7	2.6%
ME 3	38 57 12	2006	Wet	July	--	1,273.8	1,220.7	53.1	4.2%	1,210.3	63.5	5.0%	1,179.5	94.3	7.4%
ME 3	38 57 12	2006	Wet	August	--	660.0	609.2	50.8	7.7%	599.2	60.8	9.2%	569.3	90.7	13.7%
ME 3	38 57 12	2006	Wet	September	Used in Summary Table Analysis	421.4	377.7	43.7	10.4%	369.0	52.4	12.4%	342.9	78.5	18.6%
ME 3	38 57 12	2007	Above Normal	October	Used in Summary Table Analysis	270.5	235.4	35.1	13.0%	228.3	42.2	15.6%	206.9	63.6	23.5%
ME 3	38 57 12	2007	Above Normal	November	Used in Summary Table Analysis	8,611.2	8,583.1	28.1	0.3%	8,577.4	33.8	0.4%	8,560.1	51.2	0.6%
ME 3	38 57 12	2007	Above Normal	December	--	20,298.6	20,273.1	25.5	0.1%	20,267.4	31.3	0.2%	20,252.3	46.3	0.2%
ME 3	38 57 12	2007	Above Normal	January	--	10,221.9	10,199.8	22.1	0.2%	10,195.3	26.6	0.3%	10,181.5	40.4	0.4%
ME 3	38 57 12	2007	Above Normal	February	--	30,445.6	30,424.8	20.8	0.1%	30,420.1	25.5	0.1%	30,406.3	39.4	0.1%
ME 3	38 57 12	2007	Above Normal	March	--	13,081.0	13,060.2	20.8	0.2%	13,055.6	25.5	0.2%	13,044.0	37.0	0.3%
ME 3	38 57 12	2007	Above Normal	April	--	11,514.6	11,474.2	40.4	0.4%	11,466.2	48.4	0.4%	11,442.1	72.5	0.6%
ME 3	38 57 12	2007	Above Normal	May	--	4,130.8	4,082.8	48.0	1.2%	4,073.1	57.6	1.4%	4,044.6	86.2	2.1%
ME 3	38 57 12	2007	Above Normal	June	--	1,492.1	1,435.2	56.9	3.8%	1,424.1	68.1	4.6%	1,390.9	101.3	6.8%
ME 3	38 57 12	2007	Above Normal	July	--	493.4	437.2	56.2	11.4%	426.0	67.4	13.7%	393.5	99.9	20.2%
ME 3	38 57 12	2007	Above Normal	August	--	219.5	169.6	49.9	22.7%	159.7	59.8	27.3%	129.5	90.0	41.0%
ME 3	38 57 12	2007	Above Normal	September	Used in Summary Table Analysis	147.2	100.5	46.7	31.7%	91.2	56.0	38.0%	63.3	83.9	57.0%
ME 3	38 57 12	2008	Dry	October	Used in Summary Table Analysis	3,413.8	3,369.0	37.3	1.1%	3,369.0	44.8	1.3%	3,346.2	67.6	2.0%
ME 3	38 57 12	2008	Dry	November	Used in Summary Table Analysis	3,255.9	3,227.3	28.6	0.9%	3,221.5	34.4	1.1%	3,204.1	51.9	1.6%
ME 3	38 57 12	2008	Dry	December	--	22,980.3	22,954.9	25.5	0.1%	22,949.1	31.3	0.1%	22,934.0	46.3	0.2%
ME 3	38 57 12	2008	Dry	January	--	37,392.4	37,368.1	24.3	0.1%	37,363.4	28.9	0.1%	37,348.4	44.0	0.1%
ME 3	38 57 12	2008	Dry	February	--	26,237.3	26,217.6	19.7	0.1%	26,213.0	24.3	0.1%	26,200.2	37.0	0.1%
ME 3	38 57 12	2008	Dry	March	--	11,778.9	11,760.4	18.5	0.2%	11,756.9	22.0	0.2%	11,745.4	33.6	0.3%
ME 3	38 57 12	2008	Dry	April	--	9,004.5	8,963.4	41.1	0.5%	8,955.2	49.3	0.5%	8,930.8	73.7	0.8%
ME 3	38 57 12	2008	Dry	May	--	1,360.9	1,318.1	42.8	3.1%	1,309.7	51.2	3.8%	1,285.0	75.9	5.6%
ME 3	38 57 12	2008	Dry	June	--	435.0	373.1	61.8	14.2%	361.0	73.9	17.0%	325.3	109.7	25.2%
ME 3	38 57 12	2008	Dry	July	--	253.4	193.6	59.8	23.6%	181.7	71.6	28.3%	151.4	101.9	40.2%
ME 3	38 57 12	2008	Dry	August	--	176.6	119.2	57.3	32.5%	107.8	68.8	39.0%	73.2	103.4	58.6%
ME 3	38 57 12	2008	Dry	September	Used in Summary Table Analysis	138.3	83.7	54.6	39.5%	72.8	65.5	47.3%	41.3	97.0	70.2%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	38 57 12	2009	Critical	October	Used in Summary Table Analysis	919.9	878.1	41.9	4.5%	869.7	50.3	5.5%	843.9	76.0	8.3%
ME 3	38 57 12	2009	Critical	November	Used in Summary Table Analysis	5,476.0	5,443.9	32.2	0.6%	5,437.3	38.8	0.7%	5,414.8	61.2	1.1%
ME 3	38 57 12	2009	Critical	December	--	12,091.4	12,063.7	27.8	0.2%	12,057.9	33.6	0.3%	12,040.5	50.9	0.4%
ME 3	38 57 12	2009	Critical	January	--	8,775.6	8,749.9	25.7	0.3%	8,744.8	30.8	0.4%	8,728.9	46.6	0.5%
ME 3	38 57 12	2009	Critical	February	--	22,553.2	22,530.1	23.1	0.1%	22,525.5	27.8	0.1%	22,511.6	41.7	0.2%
ME 3	38 57 12	2009	Critical	March	--	21,075.2	21,054.4	20.8	0.1%	21,050.9	24.3	0.1%	21,038.2	37.0	0.2%
ME 3	38 57 12	2009	Critical	April	--	10,091.7	10,049.2	42.5	0.4%	10,040.7	50.9	0.5%	10,015.4	76.3	0.8%
ME 3	38 57 12	2009	Critical	May	--	15,560.2	15,509.3	50.9	0.3%	15,498.8	61.3	0.4%	15,467.6	92.6	0.6%
ME 3	38 57 12	2009	Critical	June	--	3,156.7	3,090.6	66.1	2.1%	3,077.9	78.8	2.5%	3,039.9	116.8	3.7%
ME 3	38 57 12	2009	Critical	July	--	1,259.6	1,199.3	60.3	4.8%	1,187.5	72.1	5.7%	1,157.0	102.6	8.1%
ME 3	38 57 12	2009	Critical	August	--	665.3	607.7	57.6	8.7%	596.2	69.1	10.4%	564.2	101.1	15.2%
ME 3	38 57 12	2009	Critical	September	Used in Summary Table Analysis	386.9	336.2	50.6	13.1%	326.1	60.8	15.7%	296.8	90.1	23.3%
ME 3	38 57 12	2010	Below Normal	October	Used in Summary Table Analysis	6,083.4	6,041.1	42.4	0.7%	6,032.5	50.9	0.8%	6,005.7	77.8	1.3%
ME 3	38 57 12	2010	Below Normal	November	Used in Summary Table Analysis	8,266.7	8,233.4	33.2	0.4%	8,226.7	39.9	0.5%	8,203.6	63.1	0.8%
ME 3	38 57 12	2010	Below Normal	December	--	12,307.9	12,278.9	28.9	0.2%	12,273.1	34.7	0.3%	12,255.8	52.1	0.4%
ME 3	38 57 12	2010	Below Normal	January	--	36,077.5	36,050.9	26.6	0.1%	36,046.3	31.3	0.1%	36,030.1	47.5	0.1%
ME 3	38 57 12	2010	Below Normal	February	--	27,201.4	27,178.2	23.1	0.1%	27,173.6	27.8	0.1%	27,159.7	41.7	0.2%
ME 3	38 57 12	2010	Below Normal	March	--	28,799.8	28,777.8	22.0	0.1%	28,773.1	26.6	0.1%	28,760.4	39.4	0.1%
ME 3	38 57 12	2010	Below Normal	April	--	39,944.4	39,923.6	20.8	0.1%	39,919.0	25.5	0.1%	39,906.3	38.2	0.1%
ME 3	38 57 12	2010	Below Normal	May	--	20,215.3	20,170.1	45.1	0.2%	20,162.0	53.2	0.3%	20,136.6	78.7	0.4%
ME 3	38 57 12	2010	Below Normal	June	--	9,307.3	9,244.0	63.3	0.7%	9,231.5	75.8	0.8%	9,194.6	112.7	1.2%
ME 3	38 57 12	2010	Below Normal	July	--	1,451.5	1,395.5	56.0	3.9%	1,384.7	66.8	4.6%	1,352.7	98.8	6.8%
ME 3	38 57 12	2010	Below Normal	August	--	564.4	513.6	50.8	9.0%	503.6	60.8	10.8%	473.8	90.6	16.1%
ME 3	38 57 12	2010	Below Normal	September	Used in Summary Table Analysis	646.4	598.2	48.2	7.5%	588.6	57.8	8.9%	559.8	86.6	13.4%
ME 3	38 57 12	2011	Wet	October	Used in Summary Table Analysis	9,601.0	9,565.4	35.6	0.4%	9,558.2	42.8	0.4%	9,536.6	64.5	0.7%
ME 3	38 57 12	2011	Wet	November	Used in Summary Table Analysis	14,184.0	14,155.1	28.9	0.2%	14,149.3	34.7	0.2%	14,131.9	52.1	0.4%
ME 3	38 57 12	2011	Wet	December	--	33,550.9	33,526.6	24.3	0.1%	33,520.8	30.1	0.1%	33,505.8	45.1	0.1%
ME 3	38 57 12	2011	Wet	January	--	14,128.5	14,106.5	22.0	0.2%	14,101.9	26.6	0.2%	14,088.0	40.5	0.3%
ME 3	38 57 12	2011	Wet	February	--	20,740.7	20,719.9	20.8	0.1%	20,715.3	25.5	0.1%	20,702.5	38.2	0.2%
ME 3	38 57 12	2011	Wet	March	--	51,908.6	51,888.9	19.7	0.0%	51,885.4	23.1	0.0%	51,872.7	35.9	0.1%
ME 3	38 57 12	2011	Wet	April	--	24,766.2	24,747.7	18.5	0.1%	24,743.1	23.1	0.1%	24,731.5	34.7	0.1%
ME 3	38 57 12	2011	Wet	May	--	11,366.9	11,324.9	42.0	0.4%	11,316.6	50.3	0.4%	11,291.6	75.3	0.7%
ME 3	38 57 12	2011	Wet	June	--	7,040.7	6,978.6	62.2	0.9%	6,966.3	74.4	1.1%	6,930.2	110.5	1.6%
ME 3	38 57 12	2011	Wet	July	--	1,827.0	1,766.3	60.6	3.3%	1,754.5	72.5	4.0%	1,720.5	106.5	5.8%
ME 3	38 57 12	2011	Wet	August	--	773.2	722.8	50.4	6.5%	712.8	60.3	7.8%	683.1	90.1	11.7%
ME 3	38 57 12	2011	Wet	September	Used in Summary Table Analysis	429.7	384.6	45.2	10.5%	375.6	54.2	12.6%	348.7	81.0	18.9%
ME 3	38 57 12	2012	Below Normal	October	Used in Summary Table Analysis	4,524.9	4,488.5	36.3	0.8%	4,481.1	43.8	1.0%	4,458.7	66.2	1.5%
ME 3	38 57 12	2012	Below Normal	November	Used in Summary Table Analysis	8,204.3	8,175.5	28.8	0.4%	8,169.6	34.7	0.4%	8,151.7	52.5	0.6%
ME 3	38 57 12	2012	Below Normal	December	--	5,168.6	5,143.6	25.0	0.5%	5,138.5	30.1	0.6%	5,123.1	45.5	0.9%
ME 3	38 57 12	2012	Below Normal	January	--	20,018.5	19,996.5	22.0	0.1%	19,991.9	26.6	0.1%	19,976.9	41.7	0.2%
ME 3	38 57 12	2012	Below Normal	February	--	18,185.2	18,164.4	20.8	0.1%	18,160.9	24.3	0.1%	18,147.0	38.2	0.2%
ME 3	38 57 12	2012	Below Normal	March	--	45,312.5	45,291.7	20.8	0.0%	45,287.0	25.5	0.1%	45,274.3	38.2	0.1%
ME 3	38 57 12	2012	Below Normal	April	--	26,818.3	26,798.6	19.7	0.1%	26,795.1	23.1	0.1%	26,782.4	35.9	0.1%
ME 3	38 57 12	2012	Below Normal	May	--	7,473.0	7,431.1	41.9	0.6%	7,422.9	50.1	0.7%	7,398.3	74.8	1.0%
ME 3	38 57 12	2012	Below Normal	June	--	5,500.0	5,436.7	63.3	1.2%	5,424.2	75.8	1.4%	5,387.6	112.4	2.0%
ME 3	38 57 12	2012	Below Normal	July	--	2,214.1	2,155.6	58.6	2.6%	2,143.9	70.3	3.2%	2,109.6	104.5	4.7%
ME 3	38 57 12	2012	Below Normal	August	--	385.8	339.7	46.1	11.9%	330.6	55.2	14.3%	303.1	82.7	21.4%
ME 3	38 57 12	2012	Below Normal	September	Used in Summary Table Analysis	245.6	205.1	40.5	16.5%	197.0	48.6	19.8%	172.8	72.8	29.6%
ME 3	38 57 12	2013	Below Normal	October	Used in Summary Table Analysis	1,900.9	1,866.0	35.0	1.8%	1,858.9	42.0	2.2%	1,837.7	63.2	3.3%
ME 3	38 57 12	2013	Below Normal	November	Used in Summary Table Analysis	14,623.8	14,596.1	27.8	0.2%	14,590.3	33.6	0.2%	14,572.9	50.9	0.3%
ME 3	38 57 12	2013	Below Normal	December	--	59,854.2	59,828.7	25.5	0.0%	59,822.9	31.3	0.1%	59,807.9	46.3	0.1%
ME 3	38 57 12	2013	Below Normal	January	--	22,160.9	22,138.9	22.0	0.1%	22,134.3	26.6	0.1%	22,121.5	39.4	0.2%
ME 3	38 57 12	2013	Below Normal	February	--	8,826.5	8,805.7	20.8	0.2%	8,801.5	25.0	0.3%	8,788.8	37.7	0.4%
ME 3	38 57 12	2013	Below Normal	March	--	10,301.3	10,281.0	20.3	0.2%	10,277.0	24.3	0.2%	10,264.7	36.6	0.4%
ME 3	38 57 12	2013	Below Normal	April	--	8,282.4	8,242.8	39.6	0.5%	8,235.0	47.5	0.6%	8,211.3	71.1	0.9%
ME 3	38 57 12	2013	Below Normal	May	--	4,419.4	4,371.6	47.8	1.1%	4,362.2	57.3	1.3%	4,333.8	85.6	1.9%
ME 3	38 57 12	2013	Below Normal	June	--	2,106.5	2,049.9	56.6	2.7%	2,038.7	67.8	3.2%	2,005.6	100.9	4.8%
ME 3	38 57 12	2013	Below Normal	July	--	716.4	662.7	53.6	7.5%	652.1	64.3	9.0%	621.2	95.1	13.3%
ME 3	38 57 12	2013	Below Normal	August	--	337.3	287.4	49.9	14.8%	277.5	59.8	17.7%	247.1	90.2	26.7%
ME 3	38 57 12	2013	Below Normal	September	Used in Summary Table Analysis	4,769.1	4,717.7	51.4	1.1%	4,707.4	61.7	1.3%	4,676.5	92.6	1.9%
ME 3	38 57 12	2014	Critical	October	Used in Summary Table Analysis	280.5	243.9	36.7	13.1%	236.5	44.1	15.7%	215.0	65.5	23.3%
ME 3	38 57 12	2014	Critical	November	Used in Summary Table Analysis	1,528.9	1,499.7	29.3	1.9%	1,493.8	35.2	2.3%	1,475.9	53.0	3.5%
ME 3	38 57 12	2014	Critical	December	--	1,584.5	1,558.8	25.7	1.6%	1,553.5	31.0	2.0%	1,537.7	46.8	3.0%
ME 3	38 57 12	2014	Critical	January	--	2,812.0	2,789.0	23.0	0.8%	2,784.3	27.8	1.0%	2,770.1	41.9	1.5%

Table A.1

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	38 57 12	2014	Critical	February	--	15,725.7	15,703.7	22.0	0.1%	15,700.2	25.5	0.2%	15,686.3	39.4	0.3%
ME 3	38 57 12	2014	Critical	March	--	31,450.2	31,430.6	19.7	0.1%	31,425.9	24.3	0.1%	31,413.2	37.0	0.1%
ME 3	38 57 12	2014	Critical	April	--	12,978.0	12,935.2	42.8	0.3%	12,927.1	50.9	0.4%	12,901.6	76.4	0.6%
ME 3	38 57 12	2014	Critical	May	--	5,180.4	5,130.0	50.5	1.0%	5,120.0	60.4	1.2%	5,089.8	90.6	1.7%
ME 3	38 57 12	2014	Critical	June	--	1,194.8	1,126.8	68.0	5.7%	1,113.5	81.3	6.8%	1,075.4	119.4	10.0%
ME 3	38 57 12	2014	Critical	July	--	543.9	482.5	61.4	11.3%	470.3	73.6	13.5%	438.9	105.0	19.3%
ME 3	38 57 12	2014	Critical	August	--	345.2	287.2	58.0	16.8%	275.6	69.6	20.2%	243.3	102.0	29.5%
ME 3	38 57 12	2014	Critical	September	Used in Summary Table Analysis	2,565.3	2,508.9	56.4	2.2%	2,497.8	67.5	2.6%	2,464.8	100.5	3.9%
ME 3	38 57 12	2015	Dry	October	Used in Summary Table Analysis	11,331.1	11,288.3	42.8	0.4%	11,280.0	51.2	0.5%	11,254.5	76.6	0.7%
ME 3	38 57 12	2015	Dry	November	Used in Summary Table Analysis	9,007.5	8,975.3	32.2	0.4%	8,968.9	38.7	0.4%	8,946.5	61.0	0.7%
ME 3	38 57 12	2015	Dry	December	--	32,498.8	32,471.1	27.8	0.1%	32,466.4	32.4	0.1%	32,447.9	50.9	0.2%
ME 3	38 57 12	2015	Dry	January	--	14,560.2	14,534.7	25.5	0.2%	14,530.1	30.1	0.2%	14,513.9	46.3	0.3%
ME 3	38 57 12	2015	Dry	February	--	27,187.5	27,165.5	22.0	0.1%	27,160.9	26.6	0.1%	27,147.0	40.5	0.1%
ME 3	38 57 12	2015	Dry	March	--	11,560.1	11,540.0	20.0	0.2%	11,536.0	24.1	0.2%	11,523.5	36.6	0.3%
ME 3	38 57 12	2015	Dry	April	--	8,356.1	8,314.1	42.0	0.5%	8,305.7	50.5	0.6%	8,280.6	75.6	0.9%
ME 3	38 57 12	2015	Dry	May	--	1,508.4	1,458.9	49.5	3.3%	1,449.1	59.4	3.9%	1,420.7	87.7	5.8%
ME 3	38 57 12	2015	Dry	June	--	651.0	588.4	62.6	9.6%	576.1	74.9	11.5%	539.8	111.2	17.1%
ME 3	38 57 12	2015	Dry	July	--	266.9	206.6	60.3	22.6%	194.7	72.2	27.1%	164.1	102.8	38.5%
ME 3	38 57 12	2015	Dry	August	--	163.9	106.3	57.7	35.2%	94.7	69.2	42.2%	62.8	101.1	61.7%
ME 3	38 57 12	2015	Dry	September	Used in Summary Table Analysis	118.6	65.2	53.4	45.0%	54.2	64.4	54.3%	22.3	96.4	81.2%
ME 3	38 57 12	2016	Above Normal	October	Used in Summary Table Analysis	84.2	40.1	44.0	52.3%	31.7	52.5	62.3%	0.0	84.2	100.0%
ME 3	38 57 12	2016	Above Normal	November	Used in Summary Table Analysis	3,838.2	3,805.1	33.1	0.9%	3,798.3	39.9	1.0%	3,774.4	63.8	1.7%
ME 3	38 57 12	2016	Above Normal	December	--	36,480.3	36,451.4	28.9	0.1%	36,445.6	34.7	0.1%	36,427.1	53.2	0.1%
ME 3	38 57 12	2016	Above Normal	January	--	57,172.5	57,144.7	27.8	0.0%	57,140.0	32.4	0.1%	57,122.7	49.8	0.1%
ME 3	38 57 12	2016	Above Normal	February	--	24,245.4	24,223.4	22.0	0.1%	24,218.8	26.6	0.1%	24,204.9	40.5	0.2%
ME 3	38 57 12	2016	Above Normal	March	--	41,710.6	41,688.7	22.0	0.1%	41,684.0	26.6	0.1%	41,671.3	39.4	0.1%
ME 3	38 57 12	2016	Above Normal	April	--	18,518.5	18,498.8	19.7	0.1%	18,495.4	23.1	0.1%	18,483.8	34.7	0.2%
ME 3	38 57 12	2016	Above Normal	May	--	5,208.8	5,183.6	25.2	0.5%	5,178.5	30.3	0.6%	5,163.2	45.6	0.9%
ME 3	38 57 12	2016	Above Normal	June	--	1,506.5	1,458.0	48.5	3.2%	1,449.4	57.1	3.8%	1,424.5	81.9	5.4%
ME 3	38 57 12	2016	Above Normal	July	--	819.6	766.3	53.3	6.5%	755.8	63.8	7.8%	724.7	94.9	11.6%
ME 3	38 57 12	2016	Above Normal	August	--	488.0	436.8	51.3	10.5%	426.5	61.5	12.6%	396.2	91.8	18.8%
ME 3	38 57 12	2016	Above Normal	September	Used in Summary Table Analysis	324.6	277.3	47.4	14.6%	267.6	57.0	17.6%	238.9	85.8	26.4%
ME 3	38 57 12	2017	Wet	October	Used in Summary Table Analysis	18,229.2	18,192.1	37.0	0.2%	18,185.2	44.0	0.2%	18,163.2	66.0	0.4%
ME 3	38 57 12	2017	Wet	November	Used in Summary Table Analysis	18,762.7	18,735.0	27.8	0.1%	18,729.2	33.6	0.2%	18,711.8	50.9	0.3%
ME 3	38 57 12	2017	Wet	December	--	24,016.2	23,991.9	24.3	0.1%	23,987.3	28.9	0.1%	23,972.2	44.0	0.2%
ME 3	38 57 12	2017	Wet	January	--	106,619.2	106,596.1	23.1	0.0%	106,591.4	27.8	0.0%	106,577.5	41.7	0.0%
ME 3	38 57 12	2017	Wet	February	--	81,673.6	81,651.6	22.0	0.0%	81,647.0	26.6	0.0%	81,634.3	39.4	0.0%
ME 3	38 57 12	2017	Wet	March	--	27,223.4	27,202.5	20.8	0.1%	27,199.1	24.3	0.1%	27,186.3	37.0	0.1%
ME 3	38 57 12	2017	Wet	April	--	22,880.8	22,863.4	17.4	0.1%	22,858.8	22.0	0.1%	22,848.4	32.4	0.1%
ME 3	38 57 12	2017	Wet	May	--	6,271.3	6,245.7	25.6	0.4%	6,240.6	30.7	0.5%	6,225.3	45.9	0.7%
ME 3	38 57 12	2017	Wet	June	--	2,109.0	2,058.4	50.6	2.4%	2,048.5	60.5	2.9%	2,019.2	89.8	4.3%
ME 3	38 57 12	2017	Wet	July	--	929.5	875.8	53.7	5.8%	865.3	64.2	6.9%	834.2	95.3	10.3%
ME 3	38 57 12	2017	Wet	August	--	501.7	450.5	51.2	10.2%	440.3	61.4	12.2%	410.0	91.7	18.3%
ME 3	38 57 12	2017	Wet	September	Used in Summary Table Analysis	318.7	271.8	46.9	14.7%	262.4	56.3	17.7%	234.3	84.4	26.5%
ME 3	38 57 12	2018	Above Normal	October	Used in Summary Table Analysis	271.5	235.0	36.5	13.4%	227.6	43.8	16.1%	205.6	65.9	24.3%
ME 3	38 57 12	2018	Above Normal	November	Used in Summary Table Analysis	10,724.2	10,695.9	28.2	0.3%	10,690.3	33.9	0.3%	10,672.9	51.3	0.5%
ME 3	38 57 12	2018	Above Normal	December	--	5,440.0	5,416.1	24.0	0.4%	5,411.2	28.8	0.5%	5,396.4	43.6	0.8%
ME 3	38 57 12	2018	Above Normal	January	--	17,664.4	17,643.5	20.8	0.1%	17,638.9	25.5	0.1%	17,625.0	39.4	0.2%
ME 3	38 57 12	2018	Above Normal	February	--	7,592.4	7,572.7	19.7	0.3%	7,568.6	23.7	0.3%	7,556.4	36.0	0.5%
ME 3	38 57 12	2018	Above Normal	March	--	20,626.2	20,606.5	19.7	0.1%	20,603.0	23.1	0.1%	20,591.4	34.7	0.2%
ME 3	38 57 12	2018	Above Normal	April	--	32,114.6	32,096.1	18.5	0.1%	32,092.6	22.0	0.1%	32,082.2	32.4	0.1%
ME 3	38 57 12	2018	Above Normal	May	--	6,985.9	6,946.4	39.5	0.6%	6,938.5	47.3	0.7%	6,914.8	71.1	1.0%
ME 3	38 57 12	2018	Above Normal	June	--	1,910.6	1,860.0	50.7	2.7%	1,850.0	60.6	3.2%	1,820.8	89.8	4.7%
ME 3	38 57 12	2018	Above Normal	July	--	777.4	723.7	53.7	6.9%	713.1	64.4	8.3%	681.5	96.0	12.3%
ME 3	38 57 12	2018	Above Normal	August	--	438.7	389.4	49.3	11.2%	379.5	59.1	13.5%	350.1	88.5	20.2%
ME 3	38 57 12	2018	Above Normal	September	Used in Summary Table Analysis	296.4	249.4	47.0	15.9%	240.0	56.4	19.0%	211.9	84.6	28.5%
ME 3	38 57 12	2019	Below Normal	October	Used in Summary Table Analysis	205.1	169.2	35.9	17.5%	161.9	43.2	21.1%	140.1	65.1	31.7%
ME 3	38 57 12	2019	Below Normal	November	Used in Summary Table Analysis	6,579.3	6,550.9	28.4	0.4%	6,545.1	34.1	0.5%	6,527.8	51.5	0.8%
ME 3	38 57 12	2019	Below Normal	December	--	14,590.3	14,566.0	24.3	0.2%	14,561.3	28.9	0.2%	14,546.3	44.0	0.3%
ME 3	38 57 12	2019	Below Normal	January	--	35,068.3	35,046.3	22.0	0.1%	35,041.7	26.6	0.1%	35,027.8	40.5	0.1%
ME 3	38 57 12	2019	Below Normal	February	--	141,759.3	141,736.1	23.1	0.0%	141,736.1	23.1	0.0%	141,724.5	34.7	0.0%
ME 3	38 57 12	2019	Below Normal	March	--	42,237.3	42,218.8	18.5	0.0%	42,215.3	22.0	0.1%	42,203.7	33.6	0.1%
ME 3	38 57 12	2019	Below Normal	April	--	15,250.0	15,231.5	18.5	0.1%	15,228.0	22.0	0.1%	15,217.6	32.4	0.2%
ME 3	38 57 12	2019	Below Normal	May	--	16,825.2	16,782.4	42.8	0.3%	16,774.3	50.9	0.3%	16,748.8	76.4	0.5%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	38 57 12	2019	Below Normal	June	--	4,243.2	4,189.9	53.2	1.3%	4,179.7	63.4	1.5%	4,149.9	93.3	2.2%
ME 3	38 57 12	2019	Below Normal	July	--	1,356.3	1,302.3	53.9	4.0%	1,291.7	64.6	4.8%	1,260.2	96.1	7.1%
ME 3	38 57 12	2019	Below Normal	August	--	591.8	541.2	50.6	8.6%	531.1	60.7	10.3%	501.3	90.5	15.3%
ME 3	38 57 12	2019	Below Normal	September	Used in Summary Table Analysis	458.8	412.0	46.7	10.2%	402.7	56.1	12.2%	374.6	84.2	18.3%
ME 3	38 57 12	2020	Dry	October	Used in Summary Table Analysis	353.0	318.6	34.4	9.8%	311.6	41.4	11.7%	290.6	62.4	17.7%
ME 3	38 57 12	2020	Dry	November	Used in Summary Table Analysis	313.5	286.9	26.6	8.5%	281.5	32.0	10.2%	265.2	48.3	15.4%
ME 3	38 57 12	2020	Dry	December	--	13,174.8	13,150.5	24.3	0.2%	13,145.8	28.9	0.2%	13,130.8	44.0	0.3%
ME 3	38 57 12	2020	Dry	January	--	22,244.2	22,221.1	23.1	0.1%	22,216.4	27.8	0.1%	22,203.7	40.5	0.2%
ME 3	38 57 12	2020	Dry	February	--	7,411.2	7,391.2	20.0	0.3%	7,387.0	24.2	0.3%	7,374.8	36.5	0.5%
ME 3	38 57 12	2020	Dry	March	--	7,228.5	7,209.4	19.1	0.3%	7,205.4	23.0	0.3%	7,193.9	34.6	0.5%
ME 3	38 57 12	2020	Dry	April	--	5,465.5	5,423.6	41.9	0.8%	5,415.3	50.2	0.9%	5,390.5	75.0	1.4%
ME 3	38 57 12	2020	Dry	May	--	7,354.4	7,304.4	50.0	0.7%	7,294.4	60.0	0.8%	7,264.7	89.7	1.2%
ME 3	38 57 12	2020	Dry	June	--	2,104.1	2,040.9	63.2	3.0%	2,028.7	75.3	3.6%	1,992.9	111.1	5.3%
ME 3	38 57 12	2020	Dry	July	--	793.6	731.0	62.6	7.9%	718.6	75.0	9.5%	686.9	106.7	13.4%
ME 3	38 57 12	2020	Dry	August	--	396.1	335.1	60.9	15.4%	323.0	73.1	18.4%	289.5	106.5	26.9%
ME 3	38 57 12	2020	Dry	September	Used in Summary Table Analysis	245.6	189.1	56.5	23.0%	177.5	68.1	27.7%	143.9	101.7	41.4%
ME 3	38 56 13	2000	Above Normal	October	Used in Summary Table Analysis	811.9	775.5	36.4	4.5%	768.1	43.8	5.4%	746.0	65.9	8.1%
ME 3	38 56 13	2000	Above Normal	November	Used in Summary Table Analysis	12,046.3	12,017.4	28.9	0.2%	12,011.6	34.7	0.3%	11,993.1	53.2	0.4%
ME 3	38 56 13	2000	Above Normal	December	--	10,771.9	10,747.1	24.8	0.2%	10,742.0	29.9	0.3%	10,726.9	45.0	0.4%
ME 3	38 56 13	2000	Above Normal	January	--	28,453.7	28,430.6	23.1	0.1%	28,425.9	27.8	0.1%	28,412.0	41.7	0.1%
ME 3	38 56 13	2000	Above Normal	February	--	36,961.8	36,941.0	20.8	0.1%	36,936.3	25.5	0.1%	36,923.6	38.2	0.1%
ME 3	38 56 13	2000	Above Normal	March	--	18,290.5	18,272.0	18.5	0.1%	18,267.4	23.1	0.1%	18,255.8	34.7	0.2%
ME 3	38 56 13	2000	Above Normal	April	--	12,295.1	12,276.6	18.5	0.2%	12,272.0	23.1	0.2%	12,260.4	34.7	0.3%
ME 3	38 56 13	2000	Above Normal	May	--	7,078.7	7,036.9	41.8	0.6%	7,028.5	50.2	0.7%	7,003.6	75.1	1.1%
ME 3	38 56 13	2000	Above Normal	June	--	2,604.9	2,543.3	61.6	2.4%	2,531.1	73.7	2.8%	2,495.1	109.7	4.2%
ME 3	38 56 13	2000	Above Normal	July	--	988.6	934.3	54.2	5.5%	923.6	64.9	6.6%	891.8	96.8	9.8%
ME 3	38 56 13	2000	Above Normal	August	--	518.5	468.1	50.5	9.7%	458.0	60.5	11.7%	428.0	90.6	17.5%
ME 3	38 56 13	2000	Above Normal	September	Used in Summary Table Analysis	292.4	248.3	44.2	15.1%	239.4	53.0	18.1%	212.9	79.5	27.2%
ME 3	38 56 13	2001	Dry	October	Used in Summary Table Analysis	3,798.5	3,762.5	36.0	0.9%	3,755.1	43.4	1.1%	3,733.2	65.3	1.7%
ME 3	38 56 13	2001	Dry	November	Used in Summary Table Analysis	6,097.1	6,068.3	28.8	0.5%	6,062.4	34.7	0.6%	6,044.9	52.2	0.9%
ME 3	38 56 13	2001	Dry	December	--	8,811.3	8,786.1	25.2	0.3%	8,781.0	30.3	0.3%	8,765.6	45.7	0.5%
ME 3	38 56 13	2001	Dry	January	--	12,738.4	12,716.4	22.0	0.2%	12,711.8	26.6	0.2%	12,696.8	41.7	0.3%
ME 3	38 56 13	2001	Dry	February	--	17,438.7	17,417.8	20.8	0.1%	17,413.2	25.5	0.1%	17,400.5	38.2	0.2%
ME 3	38 56 13	2001	Dry	March	--	12,280.1	12,260.4	19.7	0.2%	12,255.8	24.3	0.2%	12,244.2	35.9	0.3%
ME 3	38 56 13	2001	Dry	April	--	10,954.1	10,911.1	42.9	0.4%	10,902.5	51.5	0.5%	10,877.2	76.9	0.7%
ME 3	38 56 13	2001	Dry	May	--	2,636.3	2,585.9	50.5	1.9%	2,575.9	60.4	2.3%	2,545.9	90.4	3.4%
ME 3	38 56 13	2001	Dry	June	--	2,636.7	2,569.1	67.6	2.6%	2,555.9	80.8	3.1%	2,517.1	119.6	4.5%
ME 3	38 56 13	2001	Dry	July	--	717.3	655.0	62.2	8.7%	642.7	74.6	10.4%	610.9	106.3	14.8%
ME 3	38 56 13	2001	Dry	August	--	170.3	110.2	60.1	35.3%	98.3	72.0	42.3%	64.9	105.4	61.9%
ME 3	38 56 13	2001	Dry	September	Used in Summary Table Analysis	93.1	40.3	52.8	56.7%	29.8	63.3	68.0%	0.0	93.1	100.0%
ME 3	38 56 13	2002	Below Normal	October	Used in Summary Table Analysis	262.5	219.1	43.4	16.5%	210.3	52.2	19.9%	183.8	78.7	30.0%
ME 3	38 56 13	2002	Below Normal	November	Used in Summary Table Analysis	11,989.6	11,956.0	33.6	0.3%	11,949.1	40.5	0.3%	11,925.9	63.7	0.5%
ME 3	38 56 13	2002	Below Normal	December	--	35,572.9	35,542.8	30.1	0.1%	35,537.0	35.9	0.1%	35,517.4	55.6	0.2%
ME 3	38 56 13	2002	Below Normal	January	--	30,806.7	30,780.1	26.6	0.1%	30,775.5	31.3	0.1%	30,759.3	47.5	0.2%
ME 3	38 56 13	2002	Below Normal	February	--	24,635.4	24,610.0	25.5	0.1%	24,605.3	30.1	0.1%	24,590.3	45.1	0.2%
ME 3	38 56 13	2002	Below Normal	March	--	17,746.5	17,722.2	24.3	0.1%	17,717.6	28.9	0.2%	17,703.7	42.8	0.2%
ME 3	38 56 13	2002	Below Normal	April	--	9,911.9	9,869.4	42.5	0.4%	9,861.0	50.9	0.5%	9,835.6	76.3	0.8%
ME 3	38 56 13	2002	Below Normal	May	--	3,314.5	3,264.2	50.2	1.5%	3,254.3	60.2	1.8%	3,224.4	90.0	2.7%
ME 3	38 56 13	2002	Below Normal	June	--	851.6	795.6	56.0	6.6%	784.6	67.0	7.9%	752.0	99.6	11.7%
ME 3	38 56 13	2002	Below Normal	July	--	360.1	304.2	55.9	15.5%	293.1	67.0	18.6%	260.8	99.2	27.6%
ME 3	38 56 13	2002	Below Normal	August	--	224.4	172.5	51.9	23.1%	162.1	62.3	27.8%	130.6	93.8	41.8%
ME 3	38 56 13	2002	Below Normal	September	Used in Summary Table Analysis	161.4	112.9	48.5	30.1%	103.2	58.2	36.0%	73.3	88.1	54.6%
ME 3	38 56 13	2003	Wet	October	Used in Summary Table Analysis	126.5	87.4	39.1	30.9%	79.5	47.0	37.2%	55.7	70.8	56.0%
ME 3	38 56 13	2003	Wet	November	Used in Summary Table Analysis	893.0	862.0	31.0	3.5%	855.7	37.3	4.2%	836.6	56.4	6.3%
ME 3	38 56 13	2003	Wet	December	--	56,559.0	56,531.3	27.8	0.0%	56,526.6	32.4	0.1%	56,509.3	49.8	0.1%
ME 3	38 56 13	2003	Wet	January	--	31,476.9	31,451.4	25.5	0.1%	31,446.8	30.1	0.1%	31,431.7	45.1	0.1%
ME 3	38 56 13	2003	Wet	February	--	20,325.2	20,302.1	23.1	0.1%	20,297.5	27.8	0.1%	20,284.7	40.5	0.2%
ME 3	38 56 13	2003	Wet	March	--	23,989.6	23,968.8	20.8	0.1%	23,964.1	25.5	0.1%	23,951.4	38.2	0.2%
ME 3	38 56 13	2003	Wet	April	--	42,805.6	42,784.7	20.8	0.0%	42,780.1	25.5	0.1%	42,767.4	38.2	0.1%
ME 3	38 56 13	2003	Wet	May	--	12,208.3	12,165.5	42.8	0.4%	12,157.4	50.9	0.4%	12,131.9	76.4	0.6%
ME 3	38 56 13	2003	Wet	June	--	3,162.5	3,108.8	53.7	1.7%	3,098.4	64.1	2.0%	3,067.6	94.9	3.0%
ME 3	38 56 13	2003	Wet	July	--	1,470.0	1,414.5	55.6	3.8%	1,403.6	66.4	4.5%	1,370.9	99.1	6.7%
ME 3	38 56 13	2003	Wet	August	--	756.5	702.7	53.8	7.1%	691.5	65.0	8.6%	656.9	99.6	13.2%
ME 3	38 56 13	2003	Wet	September	Used in Summary Table Analysis	454.8	410.1	44.7	9.8%	401.1	53.6	11.8%	373.2	81.6	17.9%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	38 56 13	2004	Wet	October	Used in Summary Table Analysis	321.9	285.4	36.5	11.3%	278.0	43.9	13.6%	255.7	66.2	20.6%
ME 3	38 56 13	2004	Wet	November	Used in Summary Table Analysis	5,775.0	5,745.6	29.4	0.5%	5,739.7	35.3	0.6%	5,721.5	53.5	0.9%
ME 3	38 56 13	2004	Wet	December	--	36,186.3	36,160.9	25.5	0.1%	36,155.1	31.3	0.1%	36,138.9	47.5	0.1%
ME 3	38 56 13	2004	Wet	January	--	31,387.7	31,364.6	23.1	0.1%	31,360.0	27.8	0.1%	31,346.1	41.7	0.1%
ME 3	38 56 13	2004	Wet	February	--	38,153.9	38,133.1	20.8	0.1%	38,128.5	25.5	0.1%	38,114.6	39.4	0.1%
ME 3	38 56 13	2004	Wet	March	--	16,508.1	16,488.4	19.7	0.1%	16,485.0	23.1	0.1%	16,472.2	35.9	0.2%
ME 3	38 56 13	2004	Wet	April	--	9,439.0	9,419.8	19.2	0.2%	9,415.9	23.1	0.2%	9,404.2	34.8	0.4%
ME 3	38 56 13	2004	Wet	May	--	3,410.8	3,368.9	41.9	1.2%	3,360.5	50.2	1.5%	3,335.6	75.1	2.2%
ME 3	38 56 13	2004	Wet	June	--	689.7	637.9	51.7	7.5%	627.8	61.9	9.0%	597.8	91.8	13.3%
ME 3	38 56 13	2004	Wet	July	--	353.2	298.6	54.6	15.5%	287.8	65.5	18.5%	255.6	97.6	27.6%
ME 3	38 56 13	2004	Wet	August	--	222.5	171.7	50.8	22.8%	161.6	61.0	27.4%	131.2	91.3	41.0%
ME 3	38 56 13	2004	Wet	September	Used in Summary Table Analysis	159.9	111.9	48.0	30.0%	102.3	57.6	36.0%	73.5	86.4	54.0%
ME 3	38 56 13	2005	Above Normal	October	Used in Summary Table Analysis	7,646.1	7,608.7	37.4	0.5%	7,601.2	44.9	0.6%	7,578.4	67.7	0.9%
ME 3	38 56 13	2005	Above Normal	November	Used in Summary Table Analysis	2,251.7	2,222.7	29.1	1.3%	2,216.9	34.8	1.5%	2,199.1	52.7	2.3%
ME 3	38 56 13	2005	Above Normal	December	--	20,923.6	20,897.0	26.6	0.1%	20,892.4	31.3	0.1%	20,877.3	46.3	0.2%
ME 3	38 56 13	2005	Above Normal	January	--	22,303.2	22,280.1	23.1	0.1%	22,275.5	27.8	0.1%	22,261.6	41.7	0.2%
ME 3	38 56 13	2005	Above Normal	February	--	13,996.5	13,975.7	20.8	0.1%	13,971.1	25.5	0.2%	13,958.3	38.2	0.3%
ME 3	38 56 13	2005	Above Normal	March	--	28,505.8	28,485.0	20.8	0.1%	28,481.5	24.3	0.1%	28,468.8	37.0	0.1%
ME 3	38 56 13	2005	Above Normal	April	--	21,403.9	21,384.3	19.7	0.1%	21,380.8	23.1	0.1%	21,369.2	34.7	0.2%
ME 3	38 56 13	2005	Above Normal	May	--	19,520.8	19,478.0	42.8	0.2%	19,469.9	50.9	0.3%	19,444.4	76.4	0.4%
ME 3	38 56 13	2005	Above Normal	June	--	15,813.7	15,750.0	63.7	0.4%	15,738.4	75.2	0.5%	15,701.4	112.3	0.7%
ME 3	38 56 13	2005	Above Normal	July	--	2,862.7	2,806.1	56.6	2.0%	2,795.5	67.2	2.3%	2,763.5	99.2	3.5%
ME 3	38 56 13	2005	Above Normal	August	--	979.1	928.5	50.6	5.2%	918.5	60.6	6.2%	888.7	90.4	9.2%
ME 3	38 56 13	2005	Above Normal	September	Used in Summary Table Analysis	520.9	476.7	44.2	8.5%	467.9	53.0	10.2%	441.6	79.4	15.2%
ME 3	38 56 13	2006	Wet	October	Used in Summary Table Analysis	630.3	595.1	35.3	5.6%	588.0	42.4	6.7%	566.4	63.9	10.1%
ME 3	38 56 13	2006	Wet	November	Used in Summary Table Analysis	9,258.4	9,230.7	27.8	0.3%	9,225.1	33.3	0.4%	9,208.0	50.5	0.5%
ME 3	38 56 13	2006	Wet	December	--	43,342.6	43,317.1	25.5	0.1%	43,312.5	30.1	0.1%	43,296.3	46.3	0.1%
ME 3	38 56 13	2006	Wet	January	--	46,156.3	46,133.1	23.1	0.1%	46,128.5	27.8	0.1%	46,114.6	41.7	0.1%
ME 3	38 56 13	2006	Wet	February	--	26,557.9	26,537.0	20.8	0.1%	26,532.4	25.5	0.1%	26,520.8	37.0	0.1%
ME 3	38 56 13	2006	Wet	March	--	47,046.3	47,026.6	19.7	0.0%	47,023.1	23.1	0.0%	47,010.4	35.9	0.1%
ME 3	38 56 13	2006	Wet	April	--	30,383.1	30,364.6	18.5	0.1%	30,361.1	22.0	0.1%	30,350.7	32.4	0.1%
ME 3	38 56 13	2006	Wet	May	--	14,180.6	14,155.1	25.5	0.2%	14,150.5	30.1	0.2%	14,135.4	45.1	0.3%
ME 3	38 56 13	2006	Wet	June	--	3,543.9	3,491.9	52.0	1.5%	3,481.7	62.2	1.8%	3,451.9	92.0	2.6%
ME 3	38 56 13	2006	Wet	July	--	1,274.5	1,220.6	53.9	4.2%	1,210.1	64.5	5.1%	1,178.8	95.7	7.5%
ME 3	38 56 13	2006	Wet	August	--	660.9	609.2	51.7	7.8%	599.0	61.9	9.4%	568.5	92.5	14.0%
ME 3	38 56 13	2006	Wet	September	Used in Summary Table Analysis	422.4	377.7	44.6	10.6%	368.9	53.5	12.7%	342.2	80.2	19.0%
ME 3	38 56 13	2007	Above Normal	October	Used in Summary Table Analysis	271.3	235.4	35.9	13.2%	228.2	43.1	15.9%	206.2	65.1	24.0%
ME 3	38 56 13	2007	Above Normal	November	Used in Summary Table Analysis	8,624.8	8,595.9	28.8	0.3%	8,590.0	34.7	0.4%	8,572.2	52.5	0.6%
ME 3	38 56 13	2007	Above Normal	December	--	20,325.2	20,299.8	25.5	0.1%	20,294.0	31.3	0.2%	20,278.9	46.3	0.2%
ME 3	38 56 13	2007	Above Normal	January	--	10,228.6	10,205.8	22.8	0.2%	10,201.2	27.4	0.3%	10,187.0	41.6	0.4%
ME 3	38 56 13	2007	Above Normal	February	--	30,476.9	30,454.9	22.0	0.1%	30,450.2	26.6	0.1%	30,436.3	40.5	0.1%
ME 3	38 56 13	2007	Above Normal	March	--	13,084.5	13,063.7	20.8	0.2%	13,060.2	24.3	0.2%	13,046.3	38.2	0.3%
ME 3	38 56 13	2007	Above Normal	April	--	11,519.0	11,477.8	41.2	0.4%	11,469.7	49.3	0.4%	11,445.1	73.8	0.6%
ME 3	38 56 13	2007	Above Normal	May	--	4,132.4	4,083.6	48.8	1.2%	4,073.8	58.6	1.4%	4,044.8	87.6	2.1%
ME 3	38 56 13	2007	Above Normal	June	--	1,493.4	1,435.6	57.8	3.9%	1,424.3	69.1	4.6%	1,390.6	102.8	6.9%
ME 3	38 56 13	2007	Above Normal	July	--	493.9	436.7	57.2	11.6%	425.4	68.5	13.9%	392.3	101.6	20.6%
ME 3	38 56 13	2007	Above Normal	August	--	220.3	169.5	50.8	23.1%	159.4	60.9	27.7%	128.6	91.7	41.6%
ME 3	38 56 13	2007	Above Normal	September	Used in Summary Table Analysis	148.1	100.4	47.6	32.2%	91.0	57.1	38.6%	62.5	85.6	57.8%
ME 3	38 56 13	2008	Dry	October	Used in Summary Table Analysis	3,418.6	3,380.6	38.1	1.1%	3,372.9	45.7	1.3%	3,349.7	69.0	2.0%
ME 3	38 56 13	2008	Dry	November	Used in Summary Table Analysis	3,260.5	3,231.3	29.3	0.9%	3,225.3	35.2	1.1%	3,207.4	53.1	1.6%
ME 3	38 56 13	2008	Dry	December	--	23,016.2	22,989.6	26.6	0.1%	22,985.0	31.3	0.1%	22,968.8	47.5	0.2%
ME 3	38 56 13	2008	Dry	January	--	37,425.9	37,401.6	24.3	0.1%	37,395.8	30.1	0.1%	37,380.8	45.1	0.1%
ME 3	38 56 13	2008	Dry	February	--	26,245.4	26,223.4	22.0	0.1%	26,219.9	25.5	0.1%	26,206.0	39.4	0.1%
ME 3	38 56 13	2008	Dry	March	--	11,782.4	11,762.7	19.7	0.2%	11,759.3	23.1	0.2%	11,746.5	35.9	0.3%
ME 3	38 56 13	2008	Dry	April	--	9,007.1	8,965.3	41.8	0.5%	8,957.1	50.0	0.6%	8,932.2	74.9	0.8%
ME 3	38 56 13	2008	Dry	May	--	1,360.2	1,316.7	43.5	3.2%	1,308.3	51.9	3.8%	1,283.1	77.1	5.7%
ME 3	38 56 13	2008	Dry	June	--	435.5	372.9	62.6	14.4%	360.6	74.8	17.2%	324.4	111.1	25.5%
ME 3	38 56 13	2008	Dry	July	--	253.9	193.3	60.7	23.9%	181.3	72.7	28.6%	150.4	103.5	40.8%
ME 3	38 56 13	2008	Dry	August	--	177.3	119.0	58.3	32.9%	107.4	69.9	39.4%	72.2	105.1	59.3%
ME 3	38 56 13	2008	Dry	September	Used in Summary Table Analysis	139.0	83.6	55.5	39.9%	72.5	66.5	47.8%	40.4	98.6	70.9%
ME 3	38 56 13	2009	Critical	October	Used in Summary Table Analysis	921.1	878.4	42.7	4.6%	869.8	51.3	5.6%	843.6	77.5	8.4%
ME 3	38 56 13	2009	Critical	November	Used in Summary Table Analysis	5,485.0	5,452.0	33.0	0.6%	5,445.3	39.7	0.7%	5,422.3	62.6	1.1%
ME 3	38 56 13	2009	Critical	December	--	12,110.0	12,081.0	28.9	0.2%	12,075.2	34.7	0.3%	12,057.9	52.1	0.4%
ME 3	38 56 13	2009	Critical	January	--	8,780.6	8,754.2	26.4	0.3%	8,748.8	31.7	0.4%	8,732.6	47.9	0.5%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	38 56 13	2009	Critical	February	--	22,568.3	22,545.1	23.1	0.1%	22,539.4	28.9	0.1%	22,525.5	42.8	0.2%
ME 3	38 56 13	2009	Critical	March	--	21,086.8	21,064.8	22.0	0.1%	21,061.3	25.5	0.1%	21,047.5	39.4	0.2%
ME 3	38 56 13	2009	Critical	April	--	10,092.5	10,049.3	43.2	0.4%	10,040.7	51.7	0.5%	10,015.0	77.4	0.8%
ME 3	38 56 13	2009	Critical	May	--	15,566.0	15,513.9	52.1	0.3%	15,503.5	62.5	0.4%	15,472.2	93.8	0.6%
ME 3	38 56 13	2009	Critical	June	--	3,157.2	3,090.3	66.9	2.1%	3,077.4	79.7	2.5%	3,038.9	118.3	3.7%
ME 3	38 56 13	2009	Critical	July	--	1,260.2	1,199.0	61.2	4.9%	1,186.9	73.3	5.8%	1,155.9	104.2	8.3%
ME 3	38 56 13	2009	Critical	August	--	666.1	607.5	58.6	8.8%	595.9	70.2	10.5%	563.3	102.8	15.4%
ME 3	38 56 13	2009	Critical	September	Used in Summary Table Analysis	387.6	336.1	51.5	13.3%	325.8	61.8	15.9%	295.9	91.7	23.6%
ME 3	38 56 13	2010	Below Normal	October	Used in Summary Table Analysis	6,084.7	6,041.6	43.2	0.7%	6,032.8	52.0	0.9%	6,005.3	79.4	1.3%
ME 3	38 56 13	2010	Below Normal	November	Used in Summary Table Analysis	8,272.6	8,238.5	34.0	0.4%	8,231.7	40.9	0.5%	8,208.1	64.5	0.8%
ME 3	38 56 13	2010	Below Normal	December	--	12,319.4	12,290.5	28.9	0.2%	12,284.7	34.7	0.3%	12,266.2	53.2	0.4%
ME 3	38 56 13	2010	Below Normal	January	--	36,118.1	36,090.3	27.8	0.1%	36,085.6	32.4	0.1%	36,068.3	49.8	0.1%
ME 3	38 56 13	2010	Below Normal	February	--	27,211.8	27,188.7	23.1	0.1%	27,184.0	27.8	0.1%	27,169.0	42.8	0.2%
ME 3	38 56 13	2010	Below Normal	March	--	28,809.0	28,785.9	23.1	0.1%	28,781.3	27.8	0.1%	28,768.5	40.5	0.1%
ME 3	38 56 13	2010	Below Normal	April	--	39,961.8	39,939.8	22.0	0.1%	39,935.2	26.6	0.1%	39,922.5	39.4	0.1%
ME 3	38 56 13	2010	Below Normal	May	--	20,228.0	20,182.9	45.1	0.2%	20,174.8	53.2	0.3%	20,148.1	79.9	0.4%
ME 3	38 56 13	2010	Below Normal	June	--	9,318.1	9,253.8	64.2	0.7%	9,241.2	76.9	0.8%	9,203.7	114.4	1.2%
ME 3	38 56 13	2010	Below Normal	July	--	1,451.7	1,394.8	56.9	3.9%	1,383.8	67.9	4.7%	1,351.2	100.6	6.9%
ME 3	38 56 13	2010	Below Normal	August	--	565.2	513.4	51.8	9.2%	503.2	62.0	11.0%	472.8	92.4	16.4%
ME 3	38 56 13	2010	Below Normal	September	Used in Summary Table Analysis	647.3	598.2	49.1	7.6%	588.4	58.9	9.1%	559.0	88.3	13.6%
ME 3	38 56 13	2011	Wet	October	Used in Summary Table Analysis	9,609.8	9,573.3	36.6	0.4%	9,566.0	43.9	0.5%	9,543.8	66.1	0.7%
ME 3	38 56 13	2011	Wet	November	Used in Summary Table Analysis	14,193.3	14,164.4	28.9	0.2%	14,158.6	34.7	0.2%	14,140.0	53.2	0.4%
ME 3	38 56 13	2011	Wet	December	--	33,592.6	33,567.1	25.5	0.1%	33,561.3	31.3	0.1%	33,545.1	47.5	0.1%
ME 3	38 56 13	2011	Wet	January	--	14,135.4	14,112.3	23.1	0.2%	14,107.6	27.8	0.2%	14,093.8	41.7	0.3%
ME 3	38 56 13	2011	Wet	February	--	20,747.7	20,725.7	22.0	0.1%	20,722.2	25.5	0.1%	20,708.3	39.4	0.2%
ME 3	38 56 13	2011	Wet	March	--	51,935.2	51,914.4	20.8	0.0%	51,910.9	24.3	0.0%	51,898.1	37.0	0.1%
ME 3	38 56 13	2011	Wet	April	--	24,774.3	24,754.6	19.7	0.1%	24,751.2	23.1	0.1%	24,738.4	35.9	0.1%
ME 3	38 56 13	2011	Wet	May	--	11,370.5	11,327.8	42.7	0.4%	11,319.3	51.2	0.4%	11,293.9	76.6	0.7%
ME 3	38 56 13	2011	Wet	June	--	7,044.6	6,981.6	63.0	0.9%	6,969.2	75.3	1.1%	6,932.5	112.0	1.6%
ME 3	38 56 13	2011	Wet	July	--	1,827.0	1,753.4	61.6	3.4%	1,753.4	73.6	4.0%	1,718.8	108.2	5.9%
ME 3	38 56 13	2011	Wet	August	--	773.8	722.4	51.4	6.6%	712.2	61.6	8.0%	681.8	92.0	11.9%
ME 3	38 56 13	2011	Wet	September	Used in Summary Table Analysis	430.5	384.3	46.2	10.7%	375.1	55.4	12.9%	347.6	82.9	19.3%
ME 3	38 56 13	2012	Below Normal	October	Used in Summary Table Analysis	4,529.4	4,492.1	37.3	0.8%	4,484.6	44.8	1.0%	4,461.6	67.8	1.5%
ME 3	38 56 13	2012	Below Normal	November	Used in Summary Table Analysis	8,213.5	8,183.8	29.7	0.4%	8,177.8	35.8	0.4%	8,159.5	54.1	0.7%
ME 3	38 56 13	2012	Below Normal	December	--	5,172.5	5,146.8	25.7	0.5%	5,141.6	30.9	0.6%	5,125.7	46.8	0.9%
ME 3	38 56 13	2012	Below Normal	January	--	20,045.1	20,022.0	23.1	0.1%	20,017.4	27.8	0.1%	20,002.3	42.8	0.2%
ME 3	38 56 13	2012	Below Normal	February	--	18,193.3	18,171.3	22.0	0.1%	18,166.7	26.6	0.1%	18,152.8	40.5	0.2%
ME 3	38 56 13	2012	Below Normal	March	--	45,342.6	45,321.8	20.8	0.0%	45,317.1	25.5	0.1%	45,304.4	38.2	0.1%
ME 3	38 56 13	2012	Below Normal	April	--	26,828.7	26,809.0	19.7	0.1%	26,804.4	24.3	0.1%	26,791.7	37.0	0.1%
ME 3	38 56 13	2012	Below Normal	May	--	7,475.0	7,432.4	42.6	0.6%	7,424.0	51.0	0.7%	7,399.0	76.0	1.0%
ME 3	38 56 13	2012	Below Normal	June	--	5,503.9	5,439.7	64.2	1.2%	5,427.1	76.9	1.4%	5,390.0	113.9	2.1%
ME 3	38 56 13	2012	Below Normal	July	--	2,216.4	2,156.9	59.5	2.7%	2,145.3	71.2	3.2%	2,110.3	106.1	4.8%
ME 3	38 56 13	2012	Below Normal	August	--	386.2	339.3	46.9	12.1%	330.0	56.2	14.6%	302.0	84.2	21.8%
ME 3	38 56 13	2012	Below Normal	September	Used in Summary Table Analysis	246.3	205.0	41.3	16.8%	196.8	49.5	20.1%	172.1	74.2	30.1%
ME 3	38 56 13	2013	Below Normal	October	Used in Summary Table Analysis	1,903.9	1,868.2	35.8	1.9%	1,861.0	42.9	2.3%	1,839.2	64.7	3.4%
ME 3	38 56 13	2013	Below Normal	November	Used in Summary Table Analysis	14,641.2	14,612.3	28.9	0.2%	14,606.5	34.7	0.2%	14,589.1	52.1	0.4%
ME 3	38 56 13	2013	Below Normal	December	--	59,892.4	59,865.7	26.6	0.0%	59,860.0	32.4	0.1%	59,843.8	48.6	0.1%
ME 3	38 56 13	2013	Below Normal	January	--	22,171.3	22,149.3	22.0	0.1%	22,144.7	26.6	0.1%	22,130.8	40.5	0.2%
ME 3	38 56 13	2013	Below Normal	February	--	8,831.1	8,809.7	21.4	0.2%	8,805.3	25.8	0.3%	8,792.2	38.9	0.4%
ME 3	38 56 13	2013	Below Normal	March	--	10,308.7	10,287.8	20.8	0.2%	10,283.7	25.0	0.2%	10,270.9	37.7	0.4%
ME 3	38 56 13	2013	Below Normal	April	--	8,284.3	8,244.1	40.2	0.5%	8,236.0	48.3	0.6%	8,212.0	72.2	0.9%
ME 3	38 56 13	2013	Below Normal	May	--	4,422.2	4,373.6	48.6	1.1%	4,363.9	58.3	1.3%	4,335.0	87.3	2.0%
ME 3	38 56 13	2013	Below Normal	June	--	2,107.3	2,049.8	57.5	2.7%	2,038.4	68.9	3.3%	2,004.9	102.4	4.9%
ME 3	38 56 13	2013	Below Normal	July	--	716.7	662.1	54.6	7.6%	651.3	65.4	9.1%	619.8	96.8	13.5%
ME 3	38 56 13	2013	Below Normal	August	--	337.9	287.1	50.8	15.0%	277.0	60.9	18.0%	246.1	91.9	27.2%
ME 3	38 56 13	2013	Below Normal	September	Used in Summary Table Analysis	4,773.8	4,721.4	52.4	1.1%	4,710.9	63.0	1.3%	4,679.5	94.3	2.0%
ME 3	38 56 13	2014	Critical	October	Used in Summary Table Analysis	280.6	243.1	37.5	13.4%	235.5	45.1	16.1%	213.5	67.1	23.9%
ME 3	38 56 13	2014	Critical	November	Used in Summary Table Analysis	1,531.5	1,501.4	30.1	2.0%	1,495.4	36.1	2.4%	1,477.1	54.4	3.6%
ME 3	38 56 13	2014	Critical	December	--	1,586.0	1,559.5	26.5	1.7%	1,554.2	31.8	2.0%	1,538.0	48.0	3.0%
ME 3	38 56 13	2014	Critical	January	--	2,814.7	2,790.9	23.8	0.8%	2,786.0	28.7	1.0%	2,771.4	43.3	1.5%
ME 3	38 56 13	2014	Critical	February	--	15,732.6	15,710.6	22.0	0.1%	15,706.0	26.6	0.2%	15,692.1	40.5	0.3%
ME 3	38 56 13	2014	Critical	March	--	31,459.5	31,438.7	20.8	0.1%	31,435.2	24.3	0.1%	31,421.3	38.2	0.1%
ME 3	38 56 13	2014	Critical	April	--	12,980.3	12,937.5	42.8	0.3%	12,929.4	50.9	0.4%	12,902.8	77.5	0.6%
ME 3	38 56 13	2014	Critical	May	--	5,182.2	5,130.9	51.3	1.0%	5,120.7	61.5	1.2%	5,090.2	92.0	1.8%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	38 56 13	2014	Critical	June	--	1,195.4	1,126.5	68.9	5.8%	1,113.0	82.3	6.9%	1,074.3	121.1	10.1%
ME 3	38 56 13	2014	Critical	July	--	544.4	481.9	62.5	11.5%	469.5	74.9	13.8%	437.5	106.9	19.6%
ME 3	38 56 13	2014	Critical	August	--	345.9	286.9	59.0	17.1%	275.1	70.8	20.5%	242.1	103.8	30.0%
ME 3	38 56 13	2014	Critical	September	Used in Summary Table Analysis	2,567.6	2,510.3	57.3	2.2%	2,499.1	68.5	2.7%	2,465.4	102.2	4.0%
ME 3	38 56 13	2015	Dry	October	Used in Summary Table Analysis	11,339.7	11,296.1	43.6	0.4%	11,287.5	52.2	0.5%	11,261.5	78.2	0.7%
ME 3	38 56 13	2015	Dry	November	Used in Summary Table Analysis	9,016.2	8,983.3	32.9	0.4%	8,976.7	39.5	0.4%	8,953.8	62.4	0.7%
ME 3	38 56 13	2015	Dry	December	--	32,532.4	32,504.6	27.8	0.1%	32,498.8	33.6	0.1%	32,480.3	52.1	0.2%
ME 3	38 56 13	2015	Dry	January	--	14,564.8	14,538.2	26.6	0.2%	14,533.6	31.3	0.2%	14,517.4	47.5	0.3%
ME 3	38 56 13	2015	Dry	February	--	27,200.2	27,177.1	23.1	0.1%	27,172.5	27.8	0.1%	27,158.6	41.7	0.2%
ME 3	38 56 13	2015	Dry	March	--	11,562.5	11,541.9	20.6	0.2%	11,537.6	24.9	0.2%	11,524.9	37.6	0.3%
ME 3	38 56 13	2015	Dry	April	--	8,364.4	8,321.8	42.6	0.5%	8,313.2	51.2	0.6%	8,287.7	76.6	0.9%
ME 3	38 56 13	2015	Dry	May	--	1,508.2	1,458.0	50.2	3.3%	1,448.1	60.1	4.0%	1,419.3	88.9	5.9%
ME 3	38 56 13	2015	Dry	June	--	651.3	587.8	63.4	9.7%	575.4	75.9	11.7%	538.6	112.6	17.3%
ME 3	38 56 13	2015	Dry	July	--	267.3	206.1	61.2	22.9%	194.0	73.3	27.4%	162.9	104.4	39.1%
ME 3	38 56 13	2015	Dry	August	--	164.6	106.0	58.6	35.6%	94.3	70.3	42.7%	61.8	102.7	62.4%
ME 3	38 56 13	2015	Dry	September	Used in Summary Table Analysis	119.2	64.9	54.3	45.5%	53.7	65.5	54.9%	21.3	98.0	82.2%
ME 3	38 56 13	2016	Above Normal	October	Used in Summary Table Analysis	84.7	39.9	44.8	52.9%	31.3	53.4	63.0%	0.0	84.7	100.0%
ME 3	38 56 13	2016	Above Normal	November	Used in Summary Table Analysis	3,846.2	3,812.3	33.9	0.9%	3,805.3	40.9	1.1%	3,780.8	65.4	1.7%
ME 3	38 56 13	2016	Above Normal	December	--	36,519.7	36,490.7	28.9	0.1%	36,483.8	35.9	0.1%	36,465.3	54.4	0.1%
ME 3	38 56 13	2016	Above Normal	January	--	57,213.0	57,185.2	27.8	0.0%	57,179.4	33.6	0.1%	57,162.0	50.9	0.1%
ME 3	38 56 13	2016	Above Normal	February	--	24,251.2	24,228.0	23.1	0.1%	24,223.4	27.8	0.1%	24,209.5	41.7	0.2%
ME 3	38 56 13	2016	Above Normal	March	--	41,729.2	41,706.0	23.1	0.1%	41,701.4	27.8	0.1%	41,688.7	40.5	0.1%
ME 3	38 56 13	2016	Above Normal	April	--	18,523.1	18,503.5	19.7	0.1%	18,498.8	24.3	0.1%	18,486.1	37.0	0.2%
ME 3	38 56 13	2016	Above Normal	May	--	5,210.0	5,184.1	25.8	0.5%	5,178.8	31.1	0.6%	5,163.2	46.8	0.9%
ME 3	38 56 13	2016	Above Normal	June	--	1,506.8	1,457.5	49.3	3.3%	1,448.8	58.0	3.8%	1,423.5	83.3	5.5%
ME 3	38 56 13	2016	Above Normal	July	--	820.2	766.1	54.2	6.6%	755.3	64.9	7.9%	723.7	96.5	11.8%
ME 3	38 56 13	2016	Above Normal	August	--	488.8	436.6	52.2	10.7%	426.2	62.6	12.8%	395.2	93.6	19.1%
ME 3	38 56 13	2016	Above Normal	September	Used in Summary Table Analysis	325.4	277.1	48.3	14.8%	267.2	58.2	17.9%	237.9	87.5	26.9%
ME 3	38 56 13	2017	Wet	October	Used in Summary Table Analysis	18,244.2	18,207.2	37.0	0.2%	18,199.1	45.1	0.2%	18,177.1	67.1	0.4%
ME 3	38 56 13	2017	Wet	November	Used in Summary Table Analysis	18,780.1	18,751.2	28.9	0.2%	18,744.2	35.9	0.2%	18,726.9	53.2	0.3%
ME 3	38 56 13	2017	Wet	December	--	24,042.8	24,017.4	25.5	0.1%	24,012.7	30.1	0.1%	23,996.5	46.3	0.2%
ME 3	38 56 13	2017	Wet	January	--	106,696.8	106,672.5	24.3	0.0%	106,667.8	28.9	0.0%	106,652.8	44.0	0.0%
ME 3	38 56 13	2017	Wet	February	--	81,717.6	81,695.6	22.0	0.0%	81,691.0	26.6	0.0%	81,677.1	40.5	0.0%
ME 3	38 56 13	2017	Wet	March	--	27,236.1	27,214.1	22.0	0.1%	27,210.6	25.5	0.1%	27,197.9	38.2	0.1%
ME 3	38 56 13	2017	Wet	April	--	22,895.8	22,876.2	19.7	0.1%	22,872.7	23.1	0.1%	22,861.1	34.7	0.2%
ME 3	38 56 13	2017	Wet	May	--	6,270.7	6,244.6	26.2	0.4%	6,239.4	31.4	0.5%	6,223.7	47.0	0.7%
ME 3	38 56 13	2017	Wet	June	--	2,110.3	2,059.0	51.3	2.4%	2,049.0	61.3	2.9%	2,019.2	91.1	4.3%
ME 3	38 56 13	2017	Wet	July	--	930.3	875.7	54.6	5.9%	865.0	65.3	7.0%	833.4	96.9	10.4%
ME 3	38 56 13	2017	Wet	August	--	502.7	450.5	52.2	10.4%	440.1	62.6	12.4%	409.2	93.4	18.6%
ME 3	38 56 13	2017	Wet	September	Used in Summary Table Analysis	319.5	271.7	47.8	15.0%	262.1	57.4	18.0%	233.4	86.1	26.9%
ME 3	38 56 13	2018	Above Normal	October	Used in Summary Table Analysis	272.4	235.1	37.3	13.7%	227.5	44.8	16.5%	205.0	67.4	24.8%
ME 3	38 56 13	2018	Above Normal	November	Used in Summary Table Analysis	10,742.0	10,713.1	28.9	0.3%	10,707.2	34.8	0.3%	10,689.4	52.7	0.5%
ME 3	38 56 13	2018	Above Normal	December	--	5,441.3	5,416.7	24.7	0.5%	5,411.7	29.6	0.5%	5,396.5	44.8	0.8%
ME 3	38 56 13	2018	Above Normal	January	--	17,695.6	17,672.5	23.1	0.1%	17,667.8	27.8	0.2%	17,653.9	41.7	0.2%
ME 3	38 56 13	2018	Above Normal	February	--	7,593.3	7,572.9	20.4	0.3%	7,568.8	24.5	0.3%	7,556.1	37.2	0.5%
ME 3	38 56 13	2018	Above Normal	March	--	20,644.7	20,625.0	19.7	0.1%	20,621.5	23.1	0.1%	20,610.0	34.7	0.2%
ME 3	38 56 13	2018	Above Normal	April	--	32,136.6	32,118.1	18.5	0.1%	32,114.6	22.0	0.1%	32,104.2	32.4	0.1%
ME 3	38 56 13	2018	Above Normal	May	--	6,985.9	6,945.7	40.2	0.6%	6,937.8	48.0	0.7%	6,913.7	72.2	1.0%
ME 3	38 56 13	2018	Above Normal	June	--	1,911.0	1,859.6	51.4	2.7%	1,849.5	61.5	3.2%	1,819.9	91.1	4.8%
ME 3	38 56 13	2018	Above Normal	July	--	778.2	723.5	54.7	7.0%	712.7	65.5	8.4%	680.5	97.7	12.5%
ME 3	38 56 13	2018	Above Normal	August	--	439.5	389.3	50.3	11.4%	379.2	60.3	13.7%	349.2	90.3	20.5%
ME 3	38 56 13	2018	Above Normal	September	Used in Summary Table Analysis	297.3	249.4	47.9	16.1%	239.8	57.5	19.4%	211.1	86.3	29.0%
ME 3	38 56 13	2019	Below Normal	October	Used in Summary Table Analysis	205.8	169.1	36.7	17.8%	161.7	44.2	21.5%	139.3	66.6	32.3%
ME 3	38 56 13	2019	Below Normal	November	Used in Summary Table Analysis	6,591.1	6,561.9	29.2	0.4%	6,556.0	35.1	0.5%	6,538.2	52.9	0.8%
ME 3	38 56 13	2019	Below Normal	December	--	14,611.1	14,585.6	25.5	0.2%	14,579.9	31.3	0.2%	14,564.8	46.3	0.3%
ME 3	38 56 13	2019	Below Normal	January	--	35,107.6	35,085.6	22.0	0.1%	35,081.0	26.6	0.1%	35,067.1	40.5	0.1%
ME 3	38 56 13	2019	Below Normal	February	--	141,805.6	141,782.4	23.1	0.0%	141,782.4	23.1	0.0%	141,759.3	46.3	0.0%
ME 3	38 56 13	2019	Below Normal	March	--	42,258.1	42,238.4	19.7	0.0%	42,235.0	23.1	0.1%	42,223.4	34.7	0.1%
ME 3	38 56 13	2019	Below Normal	April	--	15,254.6	15,236.1	18.5	0.1%	15,232.6	22.0	0.1%	15,221.1	33.6	0.2%
ME 3	38 56 13	2019	Below Normal	May	--	16,855.3	16,811.3	44.0	0.3%	16,803.2	52.1	0.3%	16,777.8	77.5	0.5%
ME 3	38 56 13	2019	Below Normal	June	--	4,242.4	4,188.3	54.1	1.3%	4,178.0	64.4	1.5%	4,147.7	94.7	2.2%
ME 3	38 56 13	2019	Below Normal	July	--	1,356.9	1,302.1	54.9	4.0%	1,291.3	65.6	4.8%	1,259.3	97.7	7.2%
ME 3	38 56 13	2019	Below Normal	August	--	592.7	541.0	51.6	8.7%	530.8	61.9	10.4%	500.3	92.3	15.6%
ME 3	38 56 13	2019	Below Normal	September	Used in Summary Table Analysis	459.6	411.9	47.7	10.4%	402.3	57.3	12.5%	373.7	85.9	18.7%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 3	38 56 13	2020	Dry	October	Used in Summary Table Analysis	353.7	318.4	35.3	10.0%	311.3	42.4	12.0%	289.7	63.9	18.1%
ME 3	38 56 13	2020	Dry	November	Used in Summary Table Analysis	315.0	287.6	27.4	8.7%	282.0	32.9	10.5%	265.3	49.6	15.8%
ME 3	38 56 13	2020	Dry	December	--	13,203.7	13,179.4	24.3	0.2%	13,173.6	30.1	0.2%	13,158.6	45.1	0.3%
ME 3	38 56 13	2020	Dry	January	--	22,266.2	22,243.1	23.1	0.1%	22,238.4	27.8	0.1%	22,224.5	41.7	0.2%
ME 3	38 56 13	2020	Dry	February	--	7,411.7	7,390.9	20.8	0.3%	7,386.6	25.1	0.3%	7,374.0	37.7	0.5%
ME 3	38 56 13	2020	Dry	March	--	7,232.2	7,212.5	19.7	0.3%	7,208.4	23.7	0.3%	7,196.5	35.6	0.5%
ME 3	38 56 13	2020	Dry	April	--	5,469.8	5,427.2	42.6	0.8%	5,418.8	51.0	0.9%	5,393.5	76.3	1.4%
ME 3	38 56 13	2020	Dry	May	--	7,360.1	7,309.3	50.8	0.7%	7,299.2	60.9	0.8%	7,269.0	91.1	1.2%
ME 3	38 56 13	2020	Dry	June	--	2,103.9	2,039.9	64.0	3.0%	2,027.5	76.4	3.6%	1,991.2	112.7	5.4%
ME 3	38 56 13	2020	Dry	July	--	794.2	730.5	63.7	8.0%	717.9	76.3	9.6%	685.5	108.6	13.7%
ME 3	38 56 13	2020	Dry	August	--	396.8	334.7	62.1	15.6%	322.3	74.4	18.8%	288.1	108.6	27.4%
ME 3	38 56 13	2020	Dry	September	Used in Summary Table Analysis	246.4	188.8	57.6	23.4%	177.0	69.4	28.2%	142.6	103.7	42.1%
ME 4	37 55 15	2000	Above Normal	October	Used in Summary Table Analysis	814.1	776.5	37.7	4.6%	768.8	45.3	5.6%	745.9	68.2	8.4%
ME 4	37 55 15	2000	Above Normal	November	Used in Summary Table Analysis	12,079.9	12,049.8	30.1	0.2%	12,044.0	35.9	0.3%	12,025.5	54.4	0.5%
ME 4	37 55 15	2000	Above Normal	December	--	10,790.3	10,764.5	25.8	0.2%	10,759.3	31.0	0.3%	10,743.5	46.8	0.4%
ME 4	37 55 15	2000	Above Normal	January	--	28,510.4	28,487.3	23.1	0.1%	28,481.5	28.9	0.1%	28,467.6	42.8	0.2%
ME 4	37 55 15	2000	Above Normal	February	--	36,998.8	36,976.9	22.0	0.1%	36,972.2	26.6	0.1%	36,959.5	39.4	0.1%
ME 4	37 55 15	2000	Above Normal	March	--	18,303.2	18,283.6	19.7	0.1%	18,278.9	24.3	0.1%	18,266.2	37.0	0.2%
ME 4	37 55 15	2000	Above Normal	April	--	12,304.4	12,284.7	19.7	0.2%	12,281.3	23.1	0.2%	12,268.5	35.9	0.3%
ME 4	37 55 15	2000	Above Normal	May	--	7,086.5	7,044.0	42.5	0.6%	7,035.5	50.9	0.7%	7,010.2	76.3	1.1%
ME 4	37 55 15	2000	Above Normal	June	--	2,608.2	2,545.6	62.6	2.4%	2,533.2	75.0	2.9%	2,496.8	111.5	4.3%
ME 4	37 55 15	2000	Above Normal	July	--	990.3	934.8	55.5	5.6%	923.9	66.5	6.7%	891.2	99.1	10.0%
ME 4	37 55 15	2000	Above Normal	August	--	520.3	468.5	51.8	10.0%	458.2	62.1	11.9%	427.3	93.0	17.9%
ME 4	37 55 15	2000	Above Normal	September	Used in Summary Table Analysis	294.0	248.5	45.5	15.5%	239.4	54.6	18.6%	212.0	82.0	27.9%
ME 4	37 55 15	2001	Dry	October	Used in Summary Table Analysis	3,806.6	3,769.3	37.3	1.0%	3,761.7	44.9	1.2%	3,739.0	67.6	1.8%
ME 4	37 55 15	2001	Dry	November	Used in Summary Table Analysis	6,110.1	6,080.1	30.0	0.5%	6,074.1	36.0	0.6%	6,055.9	54.2	0.9%
ME 4	37 55 15	2001	Dry	December	--	8,824.4	8,798.3	26.2	0.3%	8,792.9	31.5	0.4%	8,777.0	47.5	0.5%
ME 4	37 55 15	2001	Dry	January	--	12,763.9	12,739.6	24.3	0.2%	12,735.0	28.9	0.2%	12,719.9	44.0	0.3%
ME 4	37 55 15	2001	Dry	February	--	17,454.9	17,432.9	22.0	0.1%	17,428.2	26.6	0.2%	17,415.5	39.4	0.2%
ME 4	37 55 15	2001	Dry	March	--	12,288.2	12,267.4	20.8	0.2%	12,263.9	24.3	0.2%	12,251.2	37.0	0.3%
ME 4	37 55 15	2001	Dry	April	--	10,962.7	10,919.2	43.5	0.4%	10,910.5	52.2	0.5%	10,884.6	78.1	0.7%
ME 4	37 55 15	2001	Dry	May	--	2,637.0	2,585.8	51.3	1.9%	2,575.6	61.5	2.3%	2,545.0	92.0	3.5%
ME 4	37 55 15	2001	Dry	June	--	2,642.4	2,573.5	68.9	2.6%	2,560.1	82.3	3.1%	2,520.6	121.8	4.6%
ME 4	37 55 15	2001	Dry	July	--	718.2	654.4	63.8	8.9%	641.8	76.4	10.6%	609.2	109.1	15.2%
ME 4	37 55 15	2001	Dry	August	--	171.6	109.9	61.7	36.0%	97.6	74.0	43.1%	63.3	108.3	63.1%
ME 4	37 55 15	2001	Dry	September	Used in Summary Table Analysis	94.4	40.0	54.4	57.6%	29.1	65.3	69.1%	0.1	94.3	99.9%
ME 4	37 55 15	2002	Below Normal	October	Used in Summary Table Analysis	264.0	219.0	45.0	17.0%	209.9	54.1	20.5%	182.6	81.4	30.8%
ME 4	37 55 15	2002	Below Normal	November	Used in Summary Table Analysis	12,006.9	11,972.2	34.7	0.3%	11,965.3	41.7	0.3%	11,941.0	66.0	0.5%
ME 4	37 55 15	2002	Below Normal	December	--	35,623.8	35,592.6	31.3	0.1%	35,586.8	37.0	0.1%	35,567.1	56.7	0.2%
ME 4	37 55 15	2002	Below Normal	January	--	30,840.3	30,812.5	27.8	0.1%	30,806.7	33.6	0.1%	30,789.4	50.9	0.2%
ME 4	37 55 15	2002	Below Normal	February	--	24,655.1	24,629.6	25.5	0.1%	24,623.8	31.3	0.1%	24,608.8	46.3	0.2%
ME 4	37 55 15	2002	Below Normal	March	--	17,761.6	17,737.3	24.3	0.1%	17,732.6	28.9	0.2%	17,717.6	44.0	0.2%
ME 4	37 55 15	2002	Below Normal	April	--	9,918.3	9,874.9	43.4	0.4%	9,866.3	52.0	0.5%	9,840.5	77.8	0.8%
ME 4	37 55 15	2002	Below Normal	May	--	3,317.1	3,265.9	51.3	1.5%	3,255.7	61.5	1.9%	3,225.2	91.9	2.8%
ME 4	37 55 15	2002	Below Normal	June	--	853.0	795.8	57.1	6.7%	784.6	68.4	8.0%	751.2	101.7	11.9%
ME 4	37 55 15	2002	Below Normal	July	--	361.4	304.1	57.3	15.9%	292.8	68.7	19.0%	259.7	101.7	28.2%
ME 4	37 55 15	2002	Below Normal	August	--	225.9	172.5	53.4	23.6%	161.9	64.1	28.4%	129.4	96.5	42.7%
ME 4	37 55 15	2002	Below Normal	September	Used in Summary Table Analysis	162.9	112.8	50.0	30.7%	102.9	60.0	36.8%	72.1	90.8	55.8%
ME 4	37 55 15	2003	Wet	October	Used in Summary Table Analysis	127.9	87.4	40.5	31.7%	79.2	48.7	38.1%	54.6	73.3	57.3%
ME 4	37 55 15	2003	Wet	November	Used in Summary Table Analysis	894.8	862.6	32.2	3.6%	856.0	38.8	4.3%	836.2	58.6	6.6%
ME 4	37 55 15	2003	Wet	December	--	56,679.4	56,650.5	28.9	0.1%	56,644.7	34.7	0.1%	56,627.3	52.1	0.1%
ME 4	37 55 15	2003	Wet	January	--	31,502.3	31,476.9	25.5	0.1%	31,471.1	31.3	0.1%	31,456.0	46.3	0.1%
ME 4	37 55 15	2003	Wet	February	--	20,338.0	20,314.8	23.1	0.1%	20,310.2	27.8	0.1%	20,296.3	41.7	0.2%
ME 4	37 55 15	2003	Wet	March	--	24,010.4	23,988.4	22.0	0.1%	23,983.8	26.6	0.1%	23,971.1	39.4	0.2%
ME 4	37 55 15	2003	Wet	April	--	42,855.3	42,833.3	22.0	0.1%	42,828.7	26.6	0.1%	42,816.0	39.4	0.1%
ME 4	37 55 15	2003	Wet	May	--	12,216.4	12,172.5	44.0	0.4%	12,163.2	53.2	0.4%	12,137.7	78.7	0.6%
ME 4	37 55 15	2003	Wet	June	--	3,164.6	3,110.0	54.6	1.7%	3,099.3	65.3	2.1%	3,067.8	96.8	3.1%
ME 4	37 55 15	2003	Wet	July	--	1,472.2	1,415.3	56.9	3.9%	1,404.1	68.2	4.6%	1,370.7	101.5	6.9%
ME 4	37 55 15	2003	Wet	August	--	758.4	703.1	55.3	7.3%	691.7	66.7	8.8%	656.3	102.2	13.5%
ME 4	37 55 15	2003	Wet	September	Used in Summary Table Analysis	456.5	410.4	46.1	10.1%	401.2	55.4	12.1%	372.3	84.2	18.4%
ME 4	37 55 15	2004	Wet	October	Used in Summary Table Analysis	323.6	285.8	37.8	11.7%	278.1	45.4	14.0%	255.1	68.5	21.2%
ME 4	37 55 15	2004	Wet	November	Used in Summary Table Analysis	5,788.8	5,758.3	30.4	0.5%	5,752.1	36.7	0.6%	5,733.3	55.4	1.0%
ME 4	37 55 15	2004	Wet	December	--	36,247.7	36,219.9	27.8	0.1%	36,214.1	33.6	0.1%	36,197.9	49.8	0.1%
ME 4	37 55 15	2004	Wet	January	--	31,430.6	31,406.3	24.3	0.1%	31,401.6	28.9	0.1%	31,386.6	44.0	0.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	37 55 15	2004	Wet	February	--	38,194.4	38,172.5	22.0	0.1%	38,167.8	26.6	0.1%	38,153.9	40.5	0.1%
ME 4	37 55 15	2004	Wet	March	--	16,516.2	16,495.4	20.8	0.1%	16,491.9	24.3	0.1%	16,479.2	37.0	0.2%
ME 4	37 55 15	2004	Wet	April	--	9,444.8	9,425.0	19.8	0.2%	9,420.9	23.8	0.3%	9,408.7	36.1	0.4%
ME 4	37 55 15	2004	Wet	May	--	3,415.5	3,372.8	42.7	1.3%	3,364.4	51.2	1.5%	3,339.1	76.4	2.2%
ME 4	37 55 15	2004	Wet	June	--	691.0	638.3	52.7	7.6%	627.9	63.1	9.1%	597.4	93.6	13.6%
ME 4	37 55 15	2004	Wet	July	--	354.9	298.9	55.9	15.8%	287.8	67.0	18.9%	254.9	99.9	28.2%
ME 4	37 55 15	2004	Wet	August	--	224.1	171.8	52.2	23.3%	161.4	62.7	28.0%	130.2	93.8	41.9%
ME 4	37 55 15	2004	Wet	September	Used in Summary Table Analysis	161.3	111.9	49.4	30.6%	102.1	59.2	36.7%	72.4	88.9	55.1%
ME 4	37 55 15	2005	Above Normal	October	Used in Summary Table Analysis	7,664.0	7,625.3	38.7	0.5%	7,617.6	46.4	0.6%	7,594.0	70.0	0.9%
ME 4	37 55 15	2005	Above Normal	November	Used in Summary Table Analysis	2,254.6	2,224.4	30.2	1.3%	2,218.4	36.2	1.6%	2,199.9	54.7	2.4%
ME 4	37 55 15	2005	Above Normal	December	--	20,974.5	20,947.9	26.6	0.1%	20,942.1	32.4	0.2%	20,925.9	48.6	0.2%
ME 4	37 55 15	2005	Above Normal	January	--	22,343.8	22,319.4	24.3	0.1%	22,314.8	28.9	0.1%	22,299.8	44.0	0.2%
ME 4	37 55 15	2005	Above Normal	February	--	14,004.6	13,982.6	22.0	0.2%	13,978.0	26.6	0.2%	13,965.3	39.4	0.3%
ME 4	37 55 15	2005	Above Normal	March	--	28,535.9	28,515.0	20.8	0.1%	28,511.6	24.3	0.1%	28,498.8	37.0	0.1%
ME 4	37 55 15	2005	Above Normal	April	--	21,424.8	21,405.1	19.7	0.1%	21,400.5	24.3	0.1%	21,388.9	35.9	0.2%
ME 4	37 55 15	2005	Above Normal	May	--	19,545.1	19,502.3	42.8	0.2%	19,493.1	52.1	0.3%	19,467.6	77.5	0.4%
ME 4	37 55 15	2005	Above Normal	June	--	15,842.6	15,778.9	63.7	0.4%	15,766.2	76.4	0.5%	15,728.0	114.6	0.7%
ME 4	37 55 15	2005	Above Normal	July	--	2,863.7	2,805.8	57.9	2.0%	2,794.9	68.8	2.4%	2,762.3	101.4	3.5%
ME 4	37 55 15	2005	Above Normal	August	--	981.1	929.1	52.0	5.3%	918.9	62.2	6.3%	888.3	92.9	9.5%
ME 4	37 55 15	2005	Above Normal	September	Used in Summary Table Analysis	522.8	477.3	45.6	8.7%	468.2	54.6	10.4%	441.0	81.8	15.6%
ME 4	37 55 15	2006	Wet	October	Used in Summary Table Analysis	632.4	595.9	36.5	5.8%	588.6	43.8	6.9%	566.3	66.1	10.5%
ME 4	37 55 15	2006	Wet	November	Used in Summary Table Analysis	9,281.9	9,253.1	28.8	0.3%	9,247.3	34.6	0.4%	9,229.6	52.3	0.6%
ME 4	37 55 15	2006	Wet	December	--	43,419.0	43,393.5	25.5	0.1%	43,387.7	31.3	0.1%	43,371.5	47.5	0.1%
ME 4	37 55 15	2006	Wet	January	--	46,226.9	46,202.5	24.3	0.1%	46,197.9	28.9	0.1%	46,182.9	44.0	0.1%
ME 4	37 55 15	2006	Wet	February	--	26,588.0	26,567.1	20.8	0.1%	26,562.5	25.5	0.1%	26,549.8	38.2	0.1%
ME 4	37 55 15	2006	Wet	March	--	47,101.9	47,082.2	19.7	0.0%	47,077.5	24.3	0.1%	47,064.8	37.0	0.1%
ME 4	37 55 15	2006	Wet	April	--	30,406.3	30,386.6	19.7	0.1%	30,383.1	23.1	0.1%	30,371.5	34.7	0.1%
ME 4	37 55 15	2006	Wet	May	--	14,194.4	14,167.8	26.6	0.2%	14,163.2	31.3	0.2%	14,147.0	47.5	0.3%
ME 4	37 55 15	2006	Wet	June	--	3,545.8	3,493.1	52.8	1.5%	3,482.8	63.1	1.8%	3,452.3	93.5	2.6%
ME 4	37 55 15	2006	Wet	July	--	1,277.0	1,221.8	55.2	4.3%	1,211.0	66.0	5.2%	1,178.9	98.0	7.7%
ME 4	37 55 15	2006	Wet	August	--	663.2	610.1	53.1	8.0%	599.6	63.6	9.6%	568.2	95.0	14.3%
ME 4	37 55 15	2006	Wet	September	Used in Summary Table Analysis	424.4	378.4	46.0	10.8%	369.2	55.2	13.0%	341.7	82.7	19.5%
ME 4	37 55 15	2007	Above Normal	October	Used in Summary Table Analysis	273.0	235.9	37.2	13.6%	228.4	44.6	16.4%	205.7	67.3	24.7%
ME 4	37 55 15	2007	Above Normal	November	Used in Summary Table Analysis	8,645.6	8,615.6	30.0	0.3%	8,609.5	36.1	0.4%	8,591.0	54.6	0.6%
ME 4	37 55 15	2007	Above Normal	December	--	20,368.1	20,340.3	27.8	0.1%	20,335.6	32.4	0.2%	20,319.4	48.6	0.2%
ME 4	37 55 15	2007	Above Normal	January	--	10,240.3	10,216.7	23.6	0.2%	10,211.8	28.5	0.3%	10,197.1	43.2	0.4%
ME 4	37 55 15	2007	Above Normal	February	--	30,523.1	30,501.2	22.0	0.1%	30,496.5	26.6	0.1%	30,481.5	41.7	0.1%
ME 4	37 55 15	2007	Above Normal	March	--	13,093.8	13,071.8	22.0	0.2%	13,067.1	26.6	0.2%	13,054.4	39.4	0.3%
ME 4	37 55 15	2007	Above Normal	April	--	11,527.0	11,485.2	41.8	0.4%	11,476.9	50.1	0.4%	11,452.0	75.0	0.7%
ME 4	37 55 15	2007	Above Normal	May	--	4,136.5	4,086.7	49.8	1.2%	4,076.7	59.7	1.4%	4,047.1	89.4	2.2%
ME 4	37 55 15	2007	Above Normal	June	--	1,496.2	1,437.4	58.8	3.9%	1,425.8	70.4	4.7%	1,391.4	104.7	7.0%
ME 4	37 55 15	2007	Above Normal	July	--	495.2	436.7	58.5	11.8%	425.2	70.1	14.1%	391.3	104.0	21.0%
ME 4	37 55 15	2007	Above Normal	August	--	221.9	169.7	52.2	23.5%	159.3	62.6	28.2%	127.6	94.3	42.5%
ME 4	37 55 15	2007	Above Normal	September	Used in Summary Table Analysis	149.6	100.5	49.0	32.8%	90.8	58.8	39.3%	61.4	88.2	58.9%
ME 4	37 55 15	2008	Dry	October	Used in Summary Table Analysis	3,426.4	3,386.9	39.5	1.2%	3,379.1	47.3	1.4%	3,354.9	71.5	2.1%
ME 4	37 55 15	2008	Dry	November	Used in Summary Table Analysis	3,267.9	3,237.6	30.3	0.9%	3,231.4	36.6	1.1%	3,212.7	55.2	1.7%
ME 4	37 55 15	2008	Dry	December	--	23,070.6	23,044.0	26.6	0.1%	23,038.2	32.4	0.1%	23,022.0	48.6	0.2%
ME 4	37 55 15	2008	Dry	January	--	37,478.0	37,452.5	25.5	0.1%	37,447.9	30.1	0.1%	37,431.7	46.3	0.1%
ME 4	37 55 15	2008	Dry	February	--	26,258.1	26,236.1	22.0	0.1%	26,231.5	26.6	0.1%	26,218.8	39.4	0.1%
ME 4	37 55 15	2008	Dry	March	--	11,788.2	11,768.5	19.7	0.2%	11,765.0	23.1	0.2%	11,752.3	35.9	0.3%
ME 4	37 55 15	2008	Dry	April	--	9,012.3	8,969.8	42.5	0.5%	8,961.3	50.9	0.6%	8,936.1	76.2	0.8%
ME 4	37 55 15	2008	Dry	May	--	1,360.3	1,316.0	44.3	3.3%	1,307.4	52.9	3.9%	1,281.6	78.7	5.8%
ME 4	37 55 15	2008	Dry	June	--	436.9	373.2	63.8	14.6%	360.7	76.2	17.4%	323.7	113.2	25.9%
ME 4	37 55 15	2008	Dry	July	--	255.2	193.1	62.2	24.4%	180.8	74.4	29.2%	149.1	106.1	41.6%
ME 4	37 55 15	2008	Dry	August	--	178.6	118.7	59.9	33.5%	106.8	71.8	40.2%	70.7	108.0	60.4%
ME 4	37 55 15	2008	Dry	September	Used in Summary Table Analysis	140.3	83.2	57.1	40.7%	71.8	68.5	48.8%	38.8	101.6	72.4%
ME 4	37 55 15	2009	Critical	October	Used in Summary Table Analysis	922.9	878.7	44.2	4.8%	869.8	53.1	5.8%	842.6	80.3	8.7%
ME 4	37 55 15	2009	Critical	November	Used in Summary Table Analysis	5,498.5	5,464.1	34.4	0.6%	5,457.3	41.2	0.7%	5,433.6	64.9	1.2%
ME 4	37 55 15	2009	Critical	December	--	12,137.7	12,107.6	30.1	0.2%	12,101.9	35.9	0.3%	12,083.3	54.4	0.4%
ME 4	37 55 15	2009	Critical	January	--	8,788.9	8,761.6	27.3	0.3%	8,756.0	32.9	0.4%	8,739.2	49.7	0.6%
ME 4	37 55 15	2009	Critical	February	--	22,591.4	22,567.1	24.3	0.1%	22,562.5	28.9	0.1%	22,547.5	44.0	0.2%
ME 4	37 55 15	2009	Critical	March	--	21,104.2	21,082.2	22.0	0.1%	21,077.5	26.6	0.1%	21,064.8	39.4	0.2%
ME 4	37 55 15	2009	Critical	April	--	10,095.1	10,051.2	44.0	0.4%	10,042.6	52.5	0.5%	10,016.3	78.8	0.8%
ME 4	37 55 15	2009	Critical	May	--	15,575.2	15,522.0	53.2	0.3%	15,511.6	63.7	0.4%	15,479.2	96.1	0.6%

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow Difference		Percent Difference	Flow Difference		Percent Difference	Flow Difference		Percent Difference
							Flow (cfs)	(cfs)		Flow (cfs)	(cfs)		Flow (cfs)	(cfs)	
ME 4	37 55 15	2009	Critical	June	--	3,159.1	3,091.0	68.2	2.2%	3,077.8	81.4	2.6%	3,038.7	120.5	3.8%
ME 4	37 55 15	2009	Critical	July	--	1,261.8	1,199.1	62.7	5.0%	1,186.7	75.1	6.0%	1,154.8	107.0	8.5%
ME 4	37 55 15	2009	Critical	August	--	667.7	607.4	60.2	9.0%	595.5	72.2	10.8%	561.9	105.8	15.8%
ME 4	37 55 15	2009	Critical	September	Used in Summary Table Analysis	389.1	335.9	53.2	13.7%	325.2	63.8	16.4%	294.4	94.7	24.3%
ME 4	37 55 15	2010	Below Normal	October	Used in Summary Table Analysis	6,087.0	6,042.1	44.9	0.7%	6,033.1	53.9	0.9%	6,004.7	82.3	1.4%
ME 4	37 55 15	2010	Below Normal	November	Used in Summary Table Analysis	8,281.9	8,246.5	35.4	0.4%	8,239.5	42.5	0.5%	8,215.0	66.9	0.8%
ME 4	37 55 15	2010	Below Normal	December	--	12,338.0	12,307.9	30.1	0.2%	12,302.1	35.9	0.3%	12,282.4	55.6	0.5%
ME 4	37 55 15	2010	Below Normal	January	--	36,179.4	36,151.6	27.8	0.1%	36,145.8	33.6	0.1%	36,128.5	50.9	0.1%
ME 4	37 55 15	2010	Below Normal	February	--	27,230.3	27,206.0	24.3	0.1%	27,200.2	30.1	0.1%	27,185.2	45.1	0.2%
ME 4	37 55 15	2010	Below Normal	March	--	28,824.1	28,800.9	23.1	0.1%	28,796.3	27.8	0.1%	28,782.4	41.7	0.1%
ME 4	37 55 15	2010	Below Normal	April	--	39,990.7	39,967.6	23.1	0.1%	39,963.0	27.8	0.1%	39,949.1	41.7	0.1%
ME 4	37 55 15	2010	Below Normal	May	--	20,251.2	20,204.9	46.3	0.2%	20,196.8	54.4	0.3%	20,169.0	82.2	0.4%
ME 4	37 55 15	2010	Below Normal	June	--	9,335.9	9,270.6	65.3	0.7%	9,257.8	78.1	0.8%	9,219.6	116.3	1.2%
ME 4	37 55 15	2010	Below Normal	July	--	1,453.5	1,395.1	58.3	4.0%	1,383.8	69.7	4.8%	1,350.5	103.0	7.1%
ME 4	37 55 15	2010	Below Normal	August	--	567.2	514.0	53.2	9.4%	503.5	63.7	11.2%	472.2	95.0	16.8%
ME 4	37 55 15	2010	Below Normal	September	Used in Summary Table Analysis	649.4	598.8	50.5	7.8%	588.7	60.7	9.3%	558.5	90.9	14.0%
ME 4	37 55 15	2011	Wet	October	Used in Summary Table Analysis	9,623.6	9,585.8	37.8	0.4%	9,578.1	45.5	0.5%	9,555.1	68.5	0.7%
ME 4	37 55 15	2011	Wet	November	Used in Summary Table Analysis	14,209.5	14,179.4	30.1	0.2%	14,172.5	37.0	0.3%	14,153.9	55.6	0.4%
ME 4	37 55 15	2011	Wet	December	--	33,655.1	33,628.5	26.6	0.1%	33,622.7	32.4	0.1%	33,606.5	48.6	0.1%
ME 4	37 55 15	2011	Wet	January	--	14,148.1	14,123.8	24.3	0.2%	14,119.2	28.9	0.2%	14,105.3	42.8	0.3%
ME 4	37 55 15	2011	Wet	February	--	20,759.3	20,737.3	22.0	0.1%	20,732.6	26.6	0.1%	20,718.8	40.5	0.2%
ME 4	37 55 15	2011	Wet	March	--	51,976.9	51,956.0	20.8	0.0%	51,951.4	25.5	0.0%	51,937.5	39.4	0.1%
ME 4	37 55 15	2011	Wet	April	--	24,790.5	24,769.7	20.8	0.1%	24,765.0	25.5	0.1%	24,752.3	38.2	0.2%
ME 4	37 55 15	2011	Wet	May	--	11,378.0	11,334.6	43.4	0.4%	11,325.9	52.1	0.5%	11,300.1	77.9	0.7%
ME 4	37 55 15	2011	Wet	June	--	7,051.9	6,988.0	63.9	0.9%	6,975.2	76.6	1.1%	6,938.0	113.9	1.6%
ME 4	37 55 15	2011	Wet	July	--	1,828.1	1,765.4	62.7	3.4%	1,753.0	75.1	4.1%	1,717.6	110.5	6.0%
ME 4	37 55 15	2011	Wet	August	--	775.5	722.8	52.8	6.8%	712.3	63.2	8.2%	681.1	94.4	12.2%
ME 4	37 55 15	2011	Wet	September	Used in Summary Table Analysis	432.2	384.6	47.5	11.0%	375.1	57.0	13.2%	346.8	85.4	19.8%
ME 4	37 55 15	2012	Below Normal	October	Used in Summary Table Analysis	4,536.7	4,498.0	38.7	0.9%	4,490.3	46.4	1.0%	4,466.4	70.3	1.5%
ME 4	37 55 15	2012	Below Normal	November	Used in Summary Table Analysis	8,228.0	8,197.2	30.8	0.4%	8,191.0	37.0	0.5%	8,172.0	56.0	0.7%
ME 4	37 55 15	2012	Below Normal	December	--	5,179.2	5,152.5	26.6	0.5%	5,147.1	32.1	0.6%	5,130.7	48.5	0.9%
ME 4	37 55 15	2012	Below Normal	January	--	20,086.8	20,062.5	24.3	0.1%	20,056.7	30.1	0.1%	20,041.7	45.1	0.2%
ME 4	37 55 15	2012	Below Normal	February	--	18,204.9	18,182.9	22.0	0.1%	18,178.2	26.6	0.1%	18,164.4	40.5	0.2%
ME 4	37 55 15	2012	Below Normal	March	--	45,391.2	45,369.2	22.0	0.0%	45,364.6	26.6	0.1%	45,350.7	40.5	0.1%
ME 4	37 55 15	2012	Below Normal	April	--	26,847.2	26,826.4	20.8	0.1%	26,821.8	25.5	0.1%	26,809.0	38.2	0.1%
ME 4	37 55 15	2012	Below Normal	May	--	7,480.0	7,436.7	43.3	0.6%	7,428.1	51.9	0.7%	7,402.7	77.3	1.0%
ME 4	37 55 15	2012	Below Normal	June	--	5,511.1	5,445.8	65.3	1.2%	5,433.1	78.0	1.4%	5,395.4	115.7	2.1%
ME 4	37 55 15	2012	Below Normal	July	--	2,221.1	2,160.3	60.8	2.7%	2,148.3	72.8	3.3%	2,112.6	108.4	4.9%
ME 4	37 55 15	2012	Below Normal	August	--	387.6	339.4	48.2	12.4%	329.8	57.8	14.9%	301.0	86.6	22.3%
ME 4	37 55 15	2012	Below Normal	September	Used in Summary Table Analysis	247.9	205.3	42.6	17.2%	196.8	51.1	20.6%	171.4	76.5	30.9%
ME 4	37 55 15	2013	Below Normal	October	Used in Summary Table Analysis	1,908.8	1,871.9	36.9	1.9%	1,864.4	44.4	2.3%	1,842.0	66.8	3.5%
ME 4	37 55 15	2013	Below Normal	November	Used in Summary Table Analysis	14,666.7	14,637.7	28.9	0.2%	14,631.9	34.7	0.2%	14,613.4	53.2	0.4%
ME 4	37 55 15	2013	Below Normal	December	--	59,950.2	59,922.5	27.8	0.0%	59,916.7	33.6	0.1%	59,900.5	49.8	0.1%
ME 4	37 55 15	2013	Below Normal	January	--	22,188.7	22,165.5	23.1	0.1%	22,160.9	27.8	0.1%	22,147.0	41.7	0.2%
ME 4	37 55 15	2013	Below Normal	February	--	8,839.8	8,817.6	22.2	0.3%	8,813.1	26.7	0.3%	8,799.5	40.3	0.5%
ME 4	37 55 15	2013	Below Normal	March	--	10,321.3	10,299.9	21.4	0.2%	10,295.5	25.8	0.3%	10,282.4	38.9	0.4%
ME 4	37 55 15	2013	Below Normal	April	--	8,288.4	8,247.6	40.9	0.5%	8,239.4	49.1	0.6%	8,214.9	73.5	0.9%
ME 4	37 55 15	2013	Below Normal	May	--	4,427.4	4,377.9	49.5	1.1%	4,368.1	59.4	1.3%	4,338.7	88.8	2.0%
ME 4	37 55 15	2013	Below Normal	June	--	2,109.4	2,050.7	58.7	2.8%	2,039.2	70.1	3.3%	2,004.9	104.5	5.0%
ME 4	37 55 15	2013	Below Normal	July	--	717.8	661.9	55.9	7.8%	650.8	66.9	9.3%	618.6	99.1	13.8%
ME 4	37 55 15	2013	Below Normal	August	--	339.4	287.1	52.2	15.4%	276.7	62.6	18.5%	245.0	94.4	27.8%
ME 4	37 55 15	2013	Below Normal	September	Used in Summary Table Analysis	4,781.3	4,727.3	53.9	1.1%	4,716.6	64.7	1.4%	4,684.3	97.0	2.0%
ME 4	37 55 15	2014	Critical	October	Used in Summary Table Analysis	281.2	242.4	38.8	13.8%	234.5	46.6	16.6%	211.8	69.4	24.7%
ME 4	37 55 15	2014	Critical	November	Used in Summary Table Analysis	1,535.5	1,504.4	31.1	2.0%	1,498.1	37.4	2.4%	1,479.2	56.4	3.7%
ME 4	37 55 15	2014	Critical	December	--	1,588.5	1,561.1	27.4	1.7%	1,555.6	33.0	2.1%	1,538.8	49.8	3.1%
ME 4	37 55 15	2014	Critical	January	--	2,818.9	2,794.2	24.7	0.9%	2,789.2	29.6	1.1%	2,774.1	44.8	1.6%
ME 4	37 55 15	2014	Critical	February	--	15,745.4	15,722.2	23.1	0.1%	15,717.6	27.8	0.2%	15,702.5	42.8	0.3%
ME 4	37 55 15	2014	Critical	March	--	31,475.7	31,453.7	22.0	0.1%	31,449.1	26.6	0.1%	31,435.2	40.5	0.1%
ME 4	37 55 15	2014	Critical	April	--	12,986.1	12,942.1	44.0	0.3%	12,934.0	52.1	0.4%	12,907.4	78.7	0.6%
ME 4	37 55 15	2014	Critical	May	--	5,185.9	5,133.8	52.1	1.0%	5,123.4	62.5	1.2%	5,092.1	93.8	1.8%
ME 4	37 55 15	2014	Critical	June	--	1,197.1	1,127.0	70.1	5.9%	1,113.3	83.8	7.0%	1,073.8	123.3	10.3%
ME 4	37 55 15	2014	Critical	July	--	545.6	481.6	64.0	11.7%	468.9	76.7	14.1%	435.9	109.7	20.1%
ME 4	37 55 15	2014	Critical	August	--	347.3	286.7	60.6	17.5%	274.6	72.8	20.9%	240.6	106.8	30.7%
ME 4	37 55 15	2014	Critical	September	Used in Summary Table Analysis	2,571.3	2,512.3	59.0	2.3%	2,500.7	70.6	2.7%	2,466.1	105.2	4.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	37 55 15	2015	Dry	October	Used in Summary Table Analysis	11,353.0	11,307.8	45.3	0.4%	11,299.0	54.1	0.5%	11,272.0	81.0	0.7%
ME 4	37 55 15	2015	Dry	November	Used in Summary Table Analysis	9,030.1	8,996.1	34.0	0.4%	8,989.2	40.9	0.5%	8,965.5	64.6	0.7%
ME 4	37 55 15	2015	Dry	December	--	32,583.3	32,544.4	28.9	0.1%	32,548.6	34.7	0.1%	32,528.9	54.4	0.2%
ME 4	37 55 15	2015	Dry	January	--	14,572.9	14,546.3	26.6	0.2%	14,540.5	32.4	0.2%	14,524.3	48.6	0.3%
ME 4	37 55 15	2015	Dry	February	--	27,221.1	27,196.8	24.3	0.1%	27,192.1	28.9	0.1%	27,177.1	44.0	0.2%
ME 4	37 55 15	2015	Dry	March	--	11,567.9	11,546.5	21.4	0.2%	11,542.1	25.8	0.2%	11,528.9	39.0	0.3%
ME 4	37 55 15	2015	Dry	April	--	8,378.0	8,334.6	43.4	0.5%	8,325.9	52.1	0.6%	8,299.9	78.1	0.9%
ME 4	37 55 15	2015	Dry	May	--	1,509.0	1,457.9	51.2	3.4%	1,447.8	61.2	4.1%	1,418.4	90.6	6.0%
ME 4	37 55 15	2015	Dry	June	--	652.3	587.7	64.6	9.9%	575.0	77.3	11.9%	537.5	114.8	17.6%
ME 4	37 55 15	2015	Dry	July	--	268.3	205.6	62.7	23.4%	193.2	75.1	28.0%	161.2	107.1	39.9%
ME 4	37 55 15	2015	Dry	August	--	165.8	105.6	60.2	36.3%	93.6	72.3	43.6%	60.2	105.7	63.7%
ME 4	37 55 15	2015	Dry	September	Used in Summary Table Analysis	120.3	64.3	56.0	46.5%	52.8	67.5	56.1%	19.4	100.9	83.9%
ME 4	37 55 15	2016	Above Normal	October	Used in Summary Table Analysis	85.8	39.4	46.3	54.0%	30.5	55.2	64.4%	0.0	85.8	100.0%
ME 4	37 55 15	2016	Above Normal	November	Used in Summary Table Analysis	3,858.2	3,822.9	35.3	0.9%	3,815.7	42.5	1.1%	3,790.2	68.1	1.8%
ME 4	37 55 15	2016	Above Normal	December	--	36,579.9	36,548.6	31.3	0.1%	36,542.8	37.0	0.1%	36,522.0	57.9	0.2%
ME 4	37 55 15	2016	Above Normal	January	--	57,275.5	57,246.5	28.9	0.1%	57,240.7	34.7	0.1%	57,222.2	53.2	0.1%
ME 4	37 55 15	2016	Above Normal	February	--	24,261.6	24,238.4	23.1	0.1%	24,233.8	27.8	0.1%	24,218.8	42.8	0.2%
ME 4	37 55 15	2016	Above Normal	March	--	41,758.1	41,735.0	23.1	0.1%	41,730.3	27.8	0.1%	41,716.4	41.7	0.1%
ME 4	37 55 15	2016	Above Normal	April	--	18,532.4	18,511.6	20.8	0.1%	18,506.9	25.5	0.1%	18,494.2	38.2	0.2%
ME 4	37 55 15	2016	Above Normal	May	--	5,213.4	5,186.9	26.5	0.5%	5,181.5	31.9	0.6%	5,165.4	48.0	0.9%
ME 4	37 55 15	2016	Above Normal	June	--	1,508.4	1,458.2	50.2	3.3%	1,449.4	59.0	3.9%	1,423.4	85.1	5.6%
ME 4	37 55 15	2016	Above Normal	July	--	821.9	766.5	55.5	6.7%	755.5	66.5	8.1%	723.0	98.9	12.0%
ME 4	37 55 15	2016	Above Normal	August	--	490.5	436.8	53.7	10.9%	426.1	64.4	13.1%	394.3	96.2	19.6%
ME 4	37 55 15	2016	Above Normal	September	Used in Summary Table Analysis	327.0	277.2	49.8	15.2%	267.1	59.9	18.3%	236.9	90.1	27.6%
ME 4	37 55 15	2017	Wet	October	Used in Summary Table Analysis	18,268.5	18,229.2	39.4	0.2%	18,221.1	47.5	0.3%	18,197.9	70.6	0.4%
ME 4	37 55 15	2017	Wet	November	Used in Summary Table Analysis	18,805.6	18,775.5	30.1	0.2%	18,769.7	35.9	0.2%	18,751.2	54.4	0.3%
ME 4	37 55 15	2017	Wet	December	--	24,083.3	24,056.7	26.6	0.1%	24,052.1	31.3	0.1%	24,035.9	47.5	0.2%
ME 4	37 55 15	2017	Wet	January	--	106,814.8	106,790.5	24.3	0.0%	106,785.9	28.9	0.0%	106,769.7	45.1	0.0%
ME 4	37 55 15	2017	Wet	February	--	81,788.2	81,765.0	23.1	0.0%	81,760.4	27.8	0.0%	81,746.5	41.7	0.1%
ME 4	37 55 15	2017	Wet	March	--	27,258.1	27,237.3	20.8	0.1%	27,232.6	25.5	0.1%	27,219.9	38.2	0.1%
ME 4	37 55 15	2017	Wet	April	--	22,919.0	22,899.3	19.7	0.1%	22,895.8	23.1	0.1%	22,884.3	34.7	0.2%
ME 4	37 55 15	2017	Wet	May	--	6,272.3	6,245.5	26.9	0.4%	6,240.2	32.2	0.5%	6,224.1	48.3	0.8%
ME 4	37 55 15	2017	Wet	June	--	2,113.9	2,061.7	52.2	2.5%	2,051.5	62.4	3.0%	2,021.2	92.7	4.4%
ME 4	37 55 15	2017	Wet	July	--	932.5	876.7	55.8	6.0%	865.8	66.8	7.2%	833.4	99.1	10.6%
ME 4	37 55 15	2017	Wet	August	--	504.8	451.2	53.6	10.6%	440.6	64.3	12.7%	408.8	96.0	19.0%
ME 4	37 55 15	2017	Wet	September	Used in Summary Table Analysis	321.3	272.1	49.2	15.3%	262.3	59.1	18.4%	232.7	88.6	27.6%
ME 4	37 55 15	2018	Above Normal	October	Used in Summary Table Analysis	274.2	235.6	38.6	14.1%	227.8	46.4	16.9%	204.5	69.7	25.4%
ME 4	37 55 15	2018	Above Normal	November	Used in Summary Table Analysis	10,769.2	10,739.1	30.1	0.3%	10,733.0	36.2	0.3%	10,714.6	54.6	0.5%
ME 4	37 55 15	2018	Above Normal	December	--	5,444.4	5,418.8	25.7	0.5%	5,413.5	30.9	0.6%	5,397.8	46.6	0.9%
ME 4	37 55 15	2018	Above Normal	January	--	17,741.9	17,718.8	23.1	0.1%	17,714.1	27.8	0.2%	17,699.1	42.8	0.2%
ME 4	37 55 15	2018	Above Normal	February	--	7,596.2	7,575.1	21.1	0.3%	7,570.7	25.5	0.3%	7,557.6	38.5	0.5%
ME 4	37 55 15	2018	Above Normal	March	--	20,674.8	20,655.1	19.7	0.1%	20,650.5	24.3	0.1%	20,638.9	35.9	0.2%
ME 4	37 55 15	2018	Above Normal	April	--	32,172.5	32,153.9	18.5	0.1%	32,149.3	23.1	0.1%	32,137.7	34.7	0.1%
ME 4	37 55 15	2018	Above Normal	May	--	6,987.8	6,947.0	40.9	0.6%	6,939.0	48.8	0.7%	6,914.4	73.5	1.1%
ME 4	37 55 15	2018	Above Normal	June	--	1,912.8	1,860.4	52.4	2.7%	1,850.2	62.6	3.3%	1,819.9	92.9	4.9%
ME 4	37 55 15	2018	Above Normal	July	--	780.1	724.1	55.9	7.2%	713.0	67.0	8.6%	680.1	100.0	12.8%
ME 4	37 55 15	2018	Above Normal	August	--	441.4	389.7	51.7	11.7%	379.4	62.0	14.0%	348.6	92.8	21.0%
ME 4	37 55 15	2018	Above Normal	September	Used in Summary Table Analysis	299.0	249.6	49.3	16.5%	239.8	59.2	19.8%	210.2	88.8	29.7%
ME 4	37 55 15	2019	Below Normal	October	Used in Summary Table Analysis	207.2	169.2	38.0	18.3%	161.5	45.7	22.1%	138.3	68.9	33.2%
ME 4	37 55 15	2019	Below Normal	November	Used in Summary Table Analysis	6,609.0	6,578.8	30.2	0.5%	6,572.7	36.3	0.5%	6,554.2	54.9	0.8%
ME 4	37 55 15	2019	Below Normal	December	--	14,641.2	14,614.6	26.6	0.2%	14,610.0	31.3	0.2%	14,593.8	47.5	0.3%
ME 4	37 55 15	2019	Below Normal	January	--	35,169.0	35,145.8	23.1	0.1%	35,141.2	27.8	0.1%	35,126.2	42.8	0.1%
ME 4	37 55 15	2019	Below Normal	February	--	141,863.4	141,840.3	23.1	0.0%	141,840.3	23.1	0.0%	141,828.7	34.7	0.0%
ME 4	37 55 15	2019	Below Normal	March	--	42,292.8	42,273.1	19.7	0.0%	42,268.5	24.3	0.1%	42,256.9	35.9	0.1%
ME 4	37 55 15	2019	Below Normal	April	--	15,265.0	15,245.4	19.7	0.1%	15,241.9	23.1	0.2%	15,230.3	34.7	0.2%
ME 4	37 55 15	2019	Below Normal	May	--	16,901.6	16,857.6	44.0	0.3%	16,849.5	52.1	0.3%	16,824.1	77.5	0.5%
ME 4	37 55 15	2019	Below Normal	June	--	4,243.2	4,188.1	55.1	1.3%	4,177.5	65.6	1.5%	4,146.6	96.5	2.3%
ME 4	37 55 15	2019	Below Normal	July	--	1,359.3	1,303.1	56.1	4.1%	1,292.0	67.2	4.9%	1,259.3	100.0	7.4%
ME 4	37 55 15	2019	Below Normal	August	--	594.8	541.7	53.0	8.9%	531.2	63.6	10.7%	499.9	94.8	15.9%
ME 4	37 55 15	2019	Below Normal	September	Used in Summary Table Analysis	461.4	412.3	49.1	10.6%	402.4	59.0	12.8%	372.9	88.4	19.2%
ME 4	37 55 15	2020	Dry	October	Used in Summary Table Analysis	355.0	318.5	36.5	10.3%	311.1	43.9	12.4%	288.9	66.2	18.6%
ME 4	37 55 15	2020	Dry	November	Used in Summary Table Analysis	317.5	289.0	28.5	9.0%	283.2	34.2	10.8%	265.9	51.6	16.3%
ME 4	37 55 15	2020	Dry	December	--	13,247.7	13,222.2	25.5	0.2%	13,216.4	31.3	0.2%	13,201.4	46.3	0.3%
ME 4	37 55 15	2020	Dry	January	--	22,300.9	22,277.8	23.1	0.1%	22,272.0	28.9	0.1%	22,258.1	42.8	0.2%

Table A.1

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	37 55 15	2020	Dry	February	--	7,413.8	7,392.2	21.5	0.3%	7,387.8	25.9	0.3%	7,374.7	39.1	0.5%
ME 4	37 55 15	2020	Dry	March	--	7,238.9	7,218.5	20.4	0.3%	7,214.4	24.5	0.3%	7,202.0	36.9	0.5%
ME 4	37 55 15	2020	Dry	April	--	5,477.1	5,433.9	43.2	0.8%	5,425.2	51.9	0.9%	5,399.5	77.5	1.4%
ME 4	37 55 15	2020	Dry	May	--	7,369.3	7,317.6	51.7	0.7%	7,307.3	62.0	0.8%	7,276.5	92.8	1.3%
ME 4	37 55 15	2020	Dry	June	--	2,104.6	2,039.4	65.3	3.1%	2,026.9	77.8	3.7%	1,989.7	114.9	5.5%
ME 4	37 55 15	2020	Dry	July	--	795.6	730.4	65.2	8.2%	717.5	78.2	9.8%	684.2	111.4	14.0%
ME 4	37 55 15	2020	Dry	August	--	398.3	334.5	63.8	16.0%	321.8	76.5	19.2%	286.6	111.7	28.0%
ME 4	37 55 15	2020	Dry	September	Used in Summary Table Analysis	247.8	188.5	59.3	23.9%	176.3	71.4	28.8%	140.9	106.8	43.1%
ME 4	36 55 16	2000	Above Normal	October	Used in Summary Table Analysis	814.6	775.9	38.8	4.8%	768.1	46.6	5.7%	744.5	70.1	8.6%
ME 4	36 55 16	2000	Above Normal	November	Used in Summary Table Analysis	12,093.8	12,062.5	31.3	0.3%	12,056.7	37.0	0.3%	12,038.2	55.6	0.5%
ME 4	36 55 16	2000	Above Normal	December	--	10,797.9	10,771.3	26.6	0.2%	10,766.0	31.9	0.3%	10,749.7	48.3	0.4%
ME 4	36 55 16	2000	Above Normal	January	--	28,534.7	28,510.4	24.3	0.1%	28,505.8	28.9	0.1%	28,489.6	45.1	0.2%
ME 4	36 55 16	2000	Above Normal	February	--	37,015.0	36,991.9	23.1	0.1%	36,987.3	27.8	0.1%	36,974.5	40.5	0.1%
ME 4	36 55 16	2000	Above Normal	March	--	18,309.0	18,288.2	20.8	0.1%	18,283.6	25.5	0.1%	18,270.8	38.2	0.2%
ME 4	36 55 16	2000	Above Normal	April	--	12,307.9	12,288.2	19.7	0.2%	12,284.7	23.1	0.2%	12,272.0	35.9	0.3%
ME 4	36 55 16	2000	Above Normal	May	--	7,089.7	7,046.8	42.9	0.6%	7,038.2	51.5	0.7%	7,012.6	77.1	1.1%
ME 4	36 55 16	2000	Above Normal	June	--	2,609.5	2,546.2	63.3	2.4%	2,533.7	75.8	2.9%	2,496.8	112.7	4.3%
ME 4	36 55 16	2000	Above Normal	July	--	990.8	934.3	56.5	5.7%	923.2	67.6	6.8%	890.0	100.8	10.2%
ME 4	36 55 16	2000	Above Normal	August	--	520.7	467.9	52.9	10.2%	457.3	63.4	12.2%	425.9	94.9	18.2%
ME 4	36 55 16	2000	Above Normal	September	Used in Summary Table Analysis	294.3	247.7	46.6	15.8%	238.4	55.9	19.0%	210.4	83.9	28.5%
ME 4	36 55 16	2001	Dry	October	Used in Summary Table Analysis	3,809.5	3,771.2	38.3	1.0%	3,763.4	46.1	1.2%	3,740.0	69.4	1.8%
ME 4	36 55 16	2001	Dry	November	Used in Summary Table Analysis	6,115.0	6,084.4	30.7	0.5%	6,078.1	36.9	0.6%	6,059.4	55.7	0.9%
ME 4	36 55 16	2001	Dry	December	--	8,829.5	8,802.7	26.9	0.3%	8,797.2	32.3	0.4%	8,780.8	48.7	0.6%
ME 4	36 55 16	2001	Dry	January	--	12,773.1	12,750.0	23.1	0.2%	12,744.2	28.9	0.2%	12,729.2	44.0	0.3%
ME 4	36 55 16	2001	Dry	February	--	17,460.6	17,438.7	22.0	0.1%	17,434.0	26.6	0.2%	17,420.1	40.5	0.2%
ME 4	36 55 16	2001	Dry	March	--	12,291.7	12,270.8	20.8	0.2%	12,266.2	25.5	0.2%	12,253.5	38.2	0.3%
ME 4	36 55 16	2001	Dry	April	--	10,966.1	10,922.1	44.0	0.4%	10,913.3	52.8	0.5%	10,887.2	78.9	0.7%
ME 4	36 55 16	2001	Dry	May	--	2,637.0	2,585.2	51.9	2.0%	2,574.9	62.2	2.4%	2,544.0	93.1	3.5%
ME 4	36 55 16	2001	Dry	June	--	2,644.4	2,574.8	69.7	2.6%	2,561.1	83.3	3.2%	2,521.2	123.3	4.7%
ME 4	36 55 16	2001	Dry	July	--	718.2	653.3	64.9	9.0%	640.4	77.8	10.8%	607.2	111.1	15.5%
ME 4	36 55 16	2001	Dry	August	--	171.8	108.8	63.0	36.7%	96.2	75.6	44.0%	61.2	110.6	64.4%
ME 4	36 55 16	2001	Dry	September	Used in Summary Table Analysis	94.6	38.8	55.8	59.0%	27.7	66.9	70.8%	0.0	94.6	100.0%
ME 4	36 55 16	2002	Below Normal	October	Used in Summary Table Analysis	264.1	217.8	46.3	17.5%	208.4	55.6	21.1%	180.3	83.8	31.7%
ME 4	36 55 16	2002	Below Normal	November	Used in Summary Table Analysis	12,013.9	11,976.9	37.0	0.3%	11,969.9	44.0	0.4%	11,945.6	68.3	0.6%
ME 4	36 55 16	2002	Below Normal	December	--	35,645.8	35,613.4	32.4	0.1%	35,606.5	39.4	0.1%	35,586.8	59.0	0.2%
ME 4	36 55 16	2002	Below Normal	January	--	30,854.2	30,825.2	28.9	0.1%	30,819.4	34.7	0.1%	30,802.1	52.1	0.2%
ME 4	36 55 16	2002	Below Normal	February	--	24,663.2	24,636.6	26.6	0.1%	24,631.9	31.3	0.1%	24,615.7	47.5	0.2%
ME 4	36 55 16	2002	Below Normal	March	--	17,768.5	17,743.1	25.5	0.1%	17,738.4	30.1	0.2%	17,723.4	45.1	0.3%
ME 4	36 55 16	2002	Below Normal	April	--	9,920.8	9,876.9	44.0	0.4%	9,868.2	52.7	0.5%	9,842.0	78.8	0.8%
ME 4	36 55 16	2002	Below Normal	May	--	3,317.9	3,266.1	51.9	1.6%	3,255.8	62.2	1.9%	3,224.9	93.1	2.8%
ME 4	36 55 16	2002	Below Normal	June	--	853.3	795.3	57.9	6.8%	783.9	69.4	8.1%	750.0	103.2	12.1%
ME 4	36 55 16	2002	Below Normal	July	--	361.7	303.3	58.4	16.1%	291.7	70.0	19.3%	258.0	103.7	28.7%
ME 4	36 55 16	2002	Below Normal	August	--	226.2	171.6	54.6	24.1%	160.7	65.5	29.0%	127.6	98.6	43.6%
ME 4	36 55 16	2002	Below Normal	September	Used in Summary Table Analysis	163.0	111.8	51.3	31.4%	101.6	61.5	37.7%	70.0	93.0	57.0%
ME 4	36 55 16	2003	Wet	October	Used in Summary Table Analysis	128.0	86.3	41.7	32.6%	77.9	50.1	39.1%	52.6	75.4	58.9%
ME 4	36 55 16	2003	Wet	November	Used in Summary Table Analysis	895.0	861.7	33.3	3.7%	855.0	40.1	4.5%	834.5	60.5	6.8%
ME 4	36 55 16	2003	Wet	December	--	56,730.3	56,701.4	28.9	0.1%	56,695.6	34.7	0.1%	56,677.1	53.2	0.1%
ME 4	36 55 16	2003	Wet	January	--	31,512.7	31,486.1	26.6	0.1%	31,481.5	31.3	0.1%	31,465.3	47.5	0.2%
ME 4	36 55 16	2003	Wet	February	--	20,343.8	20,320.6	23.1	0.1%	20,314.8	28.9	0.1%	20,300.9	42.8	0.2%
ME 4	36 55 16	2003	Wet	March	--	24,018.5	23,996.5	22.0	0.1%	23,991.9	26.6	0.1%	23,978.0	40.5	0.2%
ME 4	36 55 16	2003	Wet	April	--	42,876.2	42,854.2	22.0	0.1%	42,849.5	26.6	0.1%	42,836.8	39.4	0.1%
ME 4	36 55 16	2003	Wet	May	--	12,219.9	12,174.8	45.1	0.4%	12,166.7	53.2	0.4%	12,140.0	79.9	0.7%
ME 4	36 55 16	2003	Wet	June	--	3,165.5	3,110.1	55.4	1.8%	3,099.3	66.2	2.1%	3,067.4	98.1	3.1%
ME 4	36 55 16	2003	Wet	July	--	1,472.9	1,414.9	58.0	3.9%	1,403.5	69.4	4.7%	1,369.6	103.4	7.0%
ME 4	36 55 16	2003	Wet	August	--	758.9	702.5	56.4	7.4%	690.9	68.0	9.0%	654.8	104.2	13.7%
ME 4	36 55 16	2003	Wet	September	Used in Summary Table Analysis	456.9	409.6	47.3	10.4%	400.2	56.7	12.4%	370.7	86.2	18.9%
ME 4	36 55 16	2004	Wet	October	Used in Summary Table Analysis	323.9	285.0	38.9	12.0%	277.1	46.8	14.4%	253.4	70.5	21.8%
ME 4	36 55 16	2004	Wet	November	Used in Summary Table Analysis	5,794.2	5,762.7	31.5	0.5%	5,756.4	37.8	0.7%	5,737.0	57.2	1.0%
ME 4	36 55 16	2004	Wet	December	--	36,273.1	36,245.4	27.8	0.1%	36,239.6	33.6	0.1%	36,222.2	50.9	0.1%
ME 4	36 55 16	2004	Wet	January	--	31,447.9	31,423.6	24.3	0.1%	31,419.0	28.9	0.1%	31,403.9	44.0	0.1%
ME 4	36 55 16	2004	Wet	February	--	38,211.8	38,188.7	23.1	0.1%	38,184.0	27.8	0.1%	38,170.1	41.7	0.1%
ME 4	36 55 16	2004	Wet	March	--	16,519.7	16,498.8	20.8	0.1%	16,494.2	25.5	0.2%	16,481.5	38.2	0.2%
ME 4	36 55 16	2004	Wet	April	--	9,447.1	9,426.7	20.4	0.2%	9,422.6	24.5	0.3%	9,410.2	36.9	0.4%
ME 4	36 55 16	2004	Wet	May	--	3,417.4	3,374.3	43.1	1.3%	3,365.7	51.6	1.5%	3,340.2	77.2	2.3%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 55 16	2004	Wet	June	--	691.3	637.9	53.4	7.7%	627.5	63.9	9.2%	596.5	94.8	13.7%
ME 4	36 55 16	2004	Wet	July	--	355.2	298.3	56.9	16.0%	287.0	68.2	19.2%	253.5	101.7	28.6%
ME 4	36 55 16	2004	Wet	August	--	224.3	171.0	53.3	23.8%	160.4	63.9	28.5%	128.5	95.8	42.7%
ME 4	36 55 16	2004	Wet	September	Used in Summary Table Analysis	161.4	111.0	50.5	31.3%	100.9	60.6	37.5%	70.5	90.9	56.3%
ME 4	36 55 16	2005	Above Normal	October	Used in Summary Table Analysis	7,671.2	7,631.4	39.8	0.5%	7,623.4	47.8	0.6%	7,599.2	72.0	0.9%
ME 4	36 55 16	2005	Above Normal	November	Used in Summary Table Analysis	2,255.4	2,224.3	31.1	1.4%	2,218.1	37.4	1.7%	2,199.1	56.4	2.5%
ME 4	36 55 16	2005	Above Normal	December	--	20,995.4	20,968.8	26.6	0.1%	20,963.0	32.4	0.2%	20,946.8	48.6	0.2%
ME 4	36 55 16	2005	Above Normal	January	--	22,361.1	22,336.8	24.3	0.1%	22,331.0	30.1	0.1%	22,316.0	45.1	0.2%
ME 4	36 55 16	2005	Above Normal	February	--	14,006.9	13,985.0	22.0	0.2%	13,980.3	26.6	0.2%	13,966.4	40.5	0.3%
ME 4	36 55 16	2005	Above Normal	March	--	28,548.6	28,527.8	20.8	0.1%	28,523.1	25.5	0.1%	28,510.4	38.2	0.1%
ME 4	36 55 16	2005	Above Normal	April	--	21,434.0	21,413.2	20.8	0.1%	21,408.6	25.5	0.1%	21,397.0	37.0	0.2%
ME 4	36 55 16	2005	Above Normal	May	--	19,555.6	19,511.6	44.0	0.2%	19,503.5	52.1	0.3%	19,476.9	78.7	0.4%
ME 4	36 55 16	2005	Above Normal	June	--	15,855.3	15,790.5	64.8	0.4%	15,777.8	77.5	0.5%	15,739.6	115.7	0.7%
ME 4	36 55 16	2005	Above Normal	July	--	2,864.0	2,805.2	58.8	2.1%	2,794.1	69.9	2.4%	2,760.9	103.1	3.6%
ME 4	36 55 16	2005	Above Normal	August	--	981.8	928.7	53.0	5.4%	918.3	63.5	6.5%	887.0	94.7	9.6%
ME 4	36 55 16	2005	Above Normal	September	Used in Summary Table Analysis	523.3	476.7	46.6	8.9%	467.4	55.9	10.7%	439.6	83.7	16.0%
ME 4	36 55 16	2006	Wet	October	Used in Summary Table Analysis	632.9	595.4	37.5	5.9%	587.9	45.1	7.1%	565.0	68.0	10.7%
ME 4	36 55 16	2006	Wet	November	Used in Summary Table Analysis	9,291.6	9,291.6	29.6	0.3%	9,255.9	35.6	0.4%	9,237.7	53.8	0.6%
ME 4	36 55 16	2006	Wet	December	--	43,451.4	43,424.8	26.6	0.1%	43,419.0	32.4	0.1%	43,402.8	48.6	0.1%
ME 4	36 55 16	2006	Wet	January	--	46,256.9	46,232.6	24.3	0.1%	46,226.9	30.1	0.1%	46,211.8	45.1	0.1%
ME 4	36 55 16	2006	Wet	February	--	26,601.9	26,579.9	22.0	0.1%	26,575.2	26.6	0.1%	26,561.3	40.5	0.2%
ME 4	36 55 16	2006	Wet	March	--	47,126.2	47,104.2	22.0	0.0%	47,100.7	25.5	0.1%	47,086.8	39.4	0.1%
ME 4	36 55 16	2006	Wet	April	--	30,415.5	30,395.8	19.7	0.1%	30,392.4	23.1	0.1%	30,380.8	34.7	0.1%
ME 4	36 55 16	2006	Wet	May	--	14,200.2	14,173.6	26.6	0.2%	14,167.8	32.4	0.2%	14,152.8	47.5	0.3%
ME 4	36 55 16	2006	Wet	June	--	3,546.8	3,493.4	53.4	1.5%	3,483.0	63.8	1.8%	3,452.2	94.6	2.7%
ME 4	36 55 16	2006	Wet	July	--	1,277.8	1,221.8	56.0	4.4%	1,210.8	67.0	5.2%	1,178.2	99.5	7.8%
ME 4	36 55 16	2006	Wet	August	--	663.9	609.7	54.2	8.2%	599.0	64.9	9.8%	567.0	96.9	14.6%
ME 4	36 55 16	2006	Wet	September	Used in Summary Table Analysis	424.9	377.8	47.1	11.1%	368.4	56.5	13.3%	340.3	84.7	19.9%
ME 4	36 55 16	2007	Above Normal	October	Used in Summary Table Analysis	273.4	235.2	38.2	14.0%	227.5	45.9	16.8%	204.2	69.2	25.3%
ME 4	36 55 16	2007	Above Normal	November	Used in Summary Table Analysis	8,653.9	8,623.0	30.9	0.4%	8,616.8	37.2	0.4%	8,597.8	56.1	0.6%
ME 4	36 55 16	2007	Above Normal	December	--	20,385.4	20,357.6	27.8	0.1%	20,351.9	33.6	0.2%	20,335.6	49.8	0.2%
ME 4	36 55 16	2007	Above Normal	January	--	10,245.1	10,220.8	24.3	0.2%	10,215.9	29.3	0.3%	10,200.8	44.3	0.4%
ME 4	36 55 16	2007	Above Normal	February	--	30,544.0	30,519.7	24.3	0.1%	30,515.0	28.9	0.1%	30,501.2	42.8	0.1%
ME 4	36 55 16	2007	Above Normal	March	--	13,097.2	13,075.2	22.0	0.2%	13,070.6	26.6	0.2%	13,056.7	40.5	0.3%
ME 4	36 55 16	2007	Above Normal	April	--	11,530.1	11,487.8	42.2	0.4%	11,479.4	50.7	0.4%	11,454.2	75.9	0.7%
ME 4	36 55 16	2007	Above Normal	May	--	4,138.0	4,087.6	50.3	1.2%	4,077.5	60.4	1.5%	4,047.6	90.4	2.2%
ME 4	36 55 16	2007	Above Normal	June	--	1,497.2	1,437.5	59.7	4.0%	1,425.8	71.4	4.8%	1,391.0	106.3	7.1%
ME 4	36 55 16	2007	Above Normal	July	--	495.5	436.0	59.5	12.0%	424.2	71.3	14.4%	389.7	105.8	21.3%
ME 4	36 55 16	2007	Above Normal	August	--	222.2	168.9	53.3	24.0%	158.3	63.9	28.8%	125.9	96.3	43.3%
ME 4	36 55 16	2007	Above Normal	September	Used in Summary Table Analysis	149.8	99.6	50.2	33.5%	89.6	60.2	40.2%	59.6	90.2	60.2%
ME 4	36 55 16	2008	Dry	October	Used in Summary Table Analysis	3,429.2	3,388.5	40.6	1.2%	3,380.4	48.7	1.4%	3,355.6	73.6	2.1%
ME 4	36 55 16	2008	Dry	November	Used in Summary Table Analysis	3,270.7	3,239.2	31.5	1.0%	3,233.0	37.7	1.2%	3,213.7	57.1	1.7%
ME 4	36 55 16	2008	Dry	December	--	23,093.8	23,066.0	27.8	0.1%	23,060.2	33.6	0.1%	23,044.0	49.8	0.2%
ME 4	36 55 16	2008	Dry	January	--	37,500.0	37,474.5	25.5	0.1%	37,468.8	31.3	0.1%	37,452.5	47.5	0.1%
ME 4	36 55 16	2008	Dry	February	--	26,263.9	26,241.9	22.0	0.1%	26,237.3	26.6	0.1%	26,223.4	40.5	0.2%
ME 4	36 55 16	2008	Dry	March	--	11,791.7	11,770.8	20.8	0.2%	11,766.2	25.5	0.2%	11,753.5	38.2	0.3%
ME 4	36 55 16	2008	Dry	April	--	9,014.1	8,971.2	42.9	0.5%	8,962.6	51.5	0.6%	8,937.0	77.1	0.9%
ME 4	36 55 16	2008	Dry	May	--	1,360.2	1,315.3	44.9	3.3%	1,306.5	53.7	3.9%	1,280.4	79.7	5.9%
ME 4	36 55 16	2008	Dry	June	--	437.2	372.6	64.6	14.8%	360.0	77.3	17.7%	322.5	114.7	26.2%
ME 4	36 55 16	2008	Dry	July	--	255.4	192.1	63.3	24.8%	179.6	75.8	29.7%	147.2	108.2	42.4%
ME 4	36 55 16	2008	Dry	August	--	178.8	117.5	61.2	34.2%	105.4	73.4	41.1%	68.5	110.3	61.7%
ME 4	36 55 16	2008	Dry	September	Used in Summary Table Analysis	140.4	81.9	58.5	41.7%	70.3	70.2	50.0%	36.4	104.0	74.1%
ME 4	36 55 16	2009	Critical	October	Used in Summary Table Analysis	923.1	877.5	45.6	4.9%	868.4	54.7	5.9%	840.4	82.7	9.0%
ME 4	36 55 16	2009	Critical	November	Used in Summary Table Analysis	5,503.7	5,468.3	35.4	0.6%	5,461.1	42.6	0.8%	5,436.7	67.0	1.2%
ME 4	36 55 16	2009	Critical	December	--	12,149.3	12,119.2	30.1	0.2%	12,112.3	37.0	0.3%	12,093.8	55.6	0.5%
ME 4	36 55 16	2009	Critical	January	--	8,792.2	8,764.0	28.2	0.3%	8,758.2	34.0	0.4%	8,740.9	51.4	0.6%
ME 4	36 55 16	2009	Critical	February	--	22,601.9	22,576.4	25.5	0.1%	22,571.8	30.1	0.1%	22,555.6	46.3	0.2%
ME 4	36 55 16	2009	Critical	March	--	21,112.3	21,089.1	23.1	0.1%	21,084.5	27.8	0.1%	21,070.6	41.7	0.2%
ME 4	36 55 16	2009	Critical	April	--	10,096.1	10,051.5	44.6	0.4%	10,042.7	53.4	0.5%	10,016.1	80.0	0.8%
ME 4	36 55 16	2009	Critical	May	--	15,578.7	15,524.3	54.4	0.3%	15,513.9	64.8	0.4%	15,481.5	97.2	0.6%
ME 4	36 55 16	2009	Critical	June	--	3,159.7	3,090.6	69.1	2.2%	3,077.3	82.4	2.6%	3,037.5	122.2	3.9%
ME 4	36 55 16	2009	Critical	July	--	1,262.2	1,198.3	63.9	5.1%	1,185.6	76.5	6.1%	1,153.1	109.1	8.6%
ME 4	36 55 16	2009	Critical	August	--	668.0	606.4	61.6	9.2%	594.1	73.8	11.1%	559.8	108.1	16.2%
ME 4	36 55 16	2009	Critical	September	Used in Summary Table Analysis	389.3	334.6	54.7	14.0%	323.7	65.5	16.8%	292.1	97.2	25.0%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 55 16	2010	Below Normal	October	Used in Summary Table Analysis	6,087.3	6,041.0	46.3	0.8%	6,031.7	55.6	0.9%	6,002.5	84.7	1.4%
ME 4	36 55 16	2010	Below Normal	November	Used in Summary Table Analysis	8,285.4	8,248.7	36.7	0.4%	8,241.4	44.0	0.5%	8,216.3	69.1	0.8%
ME 4	36 55 16	2010	Below Normal	December	--	12,346.1	12,314.8	31.3	0.3%	12,307.9	38.2	0.3%	12,288.2	57.9	0.5%
ME 4	36 55 16	2010	Below Normal	January	--	36,206.0	36,177.1	28.9	0.1%	36,171.3	34.7	0.1%	36,153.9	52.1	0.1%
ME 4	36 55 16	2010	Below Normal	February	--	27,237.3	27,211.8	25.5	0.1%	27,207.2	30.1	0.1%	27,191.0	46.3	0.2%
ME 4	36 55 16	2010	Below Normal	March	--	28,831.0	28,806.7	24.3	0.1%	28,802.1	28.9	0.1%	28,787.0	44.0	0.2%
ME 4	36 55 16	2010	Below Normal	April	--	40,002.3	39,979.2	23.1	0.1%	39,974.5	27.8	0.1%	39,959.5	42.8	0.1%
ME 4	36 55 16	2010	Below Normal	May	--	20,260.4	20,214.1	46.3	0.2%	20,204.9	55.6	0.3%	20,178.2	82.2	0.4%
ME 4	36 55 16	2010	Below Normal	June	--	9,343.6	9,277.5	66.1	0.7%	9,264.5	79.2	0.8%	9,225.9	117.7	1.3%
ME 4	36 55 16	2010	Below Normal	July	--	1,454.1	1,394.7	59.4	4.1%	1,383.2	70.8	4.9%	1,349.2	104.9	7.2%
ME 4	36 55 16	2010	Below Normal	August	--	567.8	513.5	54.3	9.6%	502.8	65.0	11.5%	470.8	97.0	17.1%
ME 4	36 55 16	2010	Below Normal	September	Used in Summary Table Analysis	649.9	598.2	51.7	8.0%	587.8	62.0	9.5%	556.9	93.0	14.3%
ME 4	36 55 16	2011	Wet	October	Used in Summary Table Analysis	9,628.8	9,589.9	38.9	0.4%	9,582.1	46.8	0.5%	9,558.4	70.4	0.7%
ME 4	36 55 16	2011	Wet	November	Used in Summary Table Analysis	14,215.3	14,184.0	31.3	0.2%	14,178.2	37.0	0.3%	14,158.6	56.7	0.4%
ME 4	36 55 16	2011	Wet	December	--	33,681.7	33,655.1	26.6	0.1%	33,649.3	32.4	0.1%	33,631.9	49.8	0.1%
ME 4	36 55 16	2011	Wet	January	--	14,152.8	14,128.5	24.3	0.2%	14,123.8	28.9	0.2%	14,108.8	44.0	0.3%
ME 4	36 55 16	2011	Wet	February	--	20,763.9	20,741.9	22.0	0.1%	20,737.3	26.6	0.1%	20,722.2	41.7	0.2%
ME 4	36 55 16	2011	Wet	March	--	51,994.2	51,972.2	22.0	0.0%	51,967.6	26.6	0.1%	51,953.7	40.5	0.1%
ME 4	36 55 16	2011	Wet	April	--	24,796.3	24,775.5	20.8	0.1%	24,770.8	25.5	0.1%	24,758.1	38.2	0.2%
ME 4	36 55 16	2011	Wet	May	--	11,381.0	11,337.3	43.8	0.4%	11,328.5	52.5	0.5%	11,302.4	78.6	0.7%
ME 4	36 55 16	2011	Wet	June	--	7,054.7	6,990.3	64.5	0.9%	6,977.4	77.3	1.1%	6,939.7	115.0	1.6%
ME 4	36 55 16	2011	Wet	July	--	1,828.5	1,764.7	63.8	3.5%	1,752.2	76.3	4.2%	1,716.2	112.3	6.1%
ME 4	36 55 16	2011	Wet	August	--	776.0	722.2	53.8	6.9%	711.5	64.4	8.3%	679.7	96.3	12.4%
ME 4	36 55 16	2011	Wet	September	Used in Summary Table Analysis	432.5	383.9	48.6	11.2%	374.2	58.3	13.5%	345.2	87.3	20.2%
ME 4	36 55 16	2012	Below Normal	October	Used in Summary Table Analysis	4,539.2	4,499.7	39.6	0.9%	4,491.6	47.7	1.1%	4,467.1	72.1	1.6%
ME 4	36 55 16	2012	Below Normal	November	Used in Summary Table Analysis	8,233.7	8,202.1	31.6	0.4%	8,195.6	38.1	0.5%	8,176.0	57.6	0.7%
ME 4	36 55 16	2012	Below Normal	December	--	5,181.6	5,154.3	27.3	0.5%	5,148.7	32.9	0.6%	5,131.8	49.8	1.0%
ME 4	36 55 16	2012	Below Normal	January	--	20,104.2	20,078.7	25.5	0.1%	20,074.1	30.1	0.1%	20,057.9	46.3	0.2%
ME 4	36 55 16	2012	Below Normal	February	--	18,209.5	18,187.5	22.0	0.1%	18,182.9	26.6	0.1%	18,167.8	41.7	0.2%
ME 4	36 55 16	2012	Below Normal	March	--	45,410.9	45,388.9	22.0	0.0%	45,384.3	26.6	0.1%	45,370.4	40.5	0.1%
ME 4	36 55 16	2012	Below Normal	April	--	26,855.3	26,833.3	22.0	0.1%	26,829.9	25.5	0.1%	26,816.0	39.4	0.1%
ME 4	36 55 16	2012	Below Normal	May	--	7,482.1	7,438.4	43.6	0.6%	7,429.7	52.3	0.7%	7,404.1	78.0	1.0%
ME 4	36 55 16	2012	Below Normal	June	--	5,513.9	5,448.1	65.7	1.2%	5,435.2	78.7	1.4%	5,397.1	116.8	2.1%
ME 4	36 55 16	2012	Below Normal	July	--	2,222.7	2,161.1	61.6	2.8%	2,148.8	73.8	3.3%	2,112.6	110.1	5.0%
ME 4	36 55 16	2012	Below Normal	August	--	387.9	338.7	49.2	12.7%	328.9	59.0	15.2%	299.5	88.3	22.8%
ME 4	36 55 16	2012	Below Normal	September	Used in Summary Table Analysis	248.2	204.6	43.6	17.6%	195.9	52.3	21.1%	169.9	78.3	31.5%
ME 4	36 55 16	2013	Below Normal	October	Used in Summary Table Analysis	1,910.4	1,872.5	38.0	2.0%	1,864.8	45.6	2.4%	1,841.9	68.5	3.6%
ME 4	36 55 16	2013	Below Normal	November	Used in Summary Table Analysis	14,677.1	14,647.0	30.1	0.2%	14,641.2	35.9	0.2%	14,622.7	54.4	0.4%
ME 4	36 55 16	2013	Below Normal	December	--	59,974.5	59,946.8	27.8	0.0%	59,941.0	33.6	0.1%	59,923.6	50.9	0.1%
ME 4	36 55 16	2013	Below Normal	January	--	22,196.8	22,173.6	23.1	0.1%	22,167.8	28.9	0.1%	22,153.9	42.8	0.2%
ME 4	36 55 16	2013	Below Normal	February	--	8,843.3	8,820.7	22.6	0.3%	8,816.1	27.2	0.3%	8,802.2	41.1	0.5%
ME 4	36 55 16	2013	Below Normal	March	--	10,326.4	10,304.5	21.9	0.2%	10,300.1	26.3	0.3%	10,286.7	39.7	0.4%
ME 4	36 55 16	2013	Below Normal	April	--	8,289.9	8,248.5	41.4	0.5%	8,240.3	49.7	0.6%	8,215.6	74.3	0.9%
ME 4	36 55 16	2013	Below Normal	May	--	4,429.4	4,379.4	50.0	1.1%	4,369.4	60.0	1.4%	4,339.7	89.7	2.0%
ME 4	36 55 16	2013	Below Normal	June	--	2,109.8	2,050.6	59.3	2.8%	2,038.9	70.9	3.4%	2,004.2	105.7	5.0%
ME 4	36 55 16	2013	Below Normal	July	--	717.9	661.0	56.9	7.9%	649.8	68.1	9.5%	617.0	100.9	14.1%
ME 4	36 55 16	2013	Below Normal	August	--	339.6	286.3	53.3	15.7%	275.7	63.9	18.8%	243.3	96.3	28.4%
ME 4	36 55 16	2013	Below Normal	September	Used in Summary Table Analysis	4,783.8	4,728.8	55.0	1.1%	4,717.8	66.0	1.4%	4,684.8	99.0	2.1%
ME 4	36 55 16	2014	Critical	October	Used in Summary Table Analysis	281.1	241.2	39.9	14.2%	233.1	47.9	17.0%	209.8	71.3	25.4%
ME 4	36 55 16	2014	Critical	November	Used in Summary Table Analysis	1,536.8	1,504.7	32.1	2.1%	1,498.3	38.5	2.5%	1,478.7	58.1	3.8%
ME 4	36 55 16	2014	Critical	December	--	1,589.1	1,560.9	28.2	1.8%	1,555.2	33.9	2.1%	1,537.8	51.3	3.2%
ME 4	36 55 16	2014	Critical	January	--	2,820.1	2,794.9	25.2	0.9%	2,789.7	30.4	1.1%	2,774.1	46.1	1.6%
ME 4	36 55 16	2014	Critical	February	--	15,748.8	15,725.7	23.1	0.1%	15,721.1	27.8	0.2%	15,706.0	42.8	0.3%
ME 4	36 55 16	2014	Critical	March	--	31,481.5	31,459.5	22.0	0.1%	31,454.9	26.6	0.1%	31,441.0	40.5	0.1%
ME 4	36 55 16	2014	Critical	April	--	12,988.4	12,944.4	44.0	0.3%	12,936.3	52.1	0.4%	12,909.7	78.7	0.6%
ME 4	36 55 16	2014	Critical	May	--	5,187.3	5,134.5	52.8	1.0%	5,124.1	63.2	1.2%	5,092.5	94.8	1.8%
ME 4	36 55 16	2014	Critical	June	--	1,197.6	1,126.6	70.9	5.9%	1,112.7	84.8	7.1%	1,072.7	124.8	10.4%
ME 4	36 55 16	2014	Critical	July	--	545.7	480.5	65.2	11.9%	467.6	78.1	14.3%	434.0	111.7	20.5%
ME 4	36 55 16	2014	Critical	August	--	347.5	285.6	61.9	17.8%	273.2	74.3	21.4%	238.4	109.1	31.4%
ME 4	36 55 16	2014	Critical	September	Used in Summary Table Analysis	2,572.3	2,511.9	60.4	2.3%	2,500.1	72.2	2.8%	2,464.7	107.6	4.2%
ME 4	36 55 16	2015	Dry	October	Used in Summary Table Analysis	11,358.0	11,311.5	46.5	0.4%	11,302.4	55.6	0.5%	11,274.7	83.3	0.7%
ME 4	36 55 16	2015	Dry	November	Used in Summary Table Analysis	9,035.6	9,000.6	35.1	0.4%	8,993.4	42.2	0.5%	8,969.1	66.6	0.7%
ME 4	36 55 16	2015	Dry	December	--	32,605.3	32,575.2	30.1	0.1%	32,568.3	37.0	0.1%	32,549.8	55.6	0.2%
ME 4	36 55 16	2015	Dry	January	--	14,576.4	14,548.6	27.8	0.2%	14,542.8	33.6	0.2%	14,525.5	50.9	0.3%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 55 16	2015	Dry	February	--	27,229.2	27,204.9	24.3	0.1%	27,199.1	30.1	0.1%	27,184.0	45.1	0.2%
ME 4	36 55 16	2015	Dry	March	--	11,570.0	11,548.0	22.0	0.2%	11,543.5	26.5	0.2%	11,529.9	40.2	0.3%
ME 4	36 55 16	2015	Dry	April	--	8,383.6	8,339.7	43.9	0.5%	8,330.8	52.8	0.6%	8,304.5	79.1	0.9%
ME 4	36 55 16	2015	Dry	May	--	1,509.1	1,457.3	51.9	3.4%	1,447.1	62.0	4.1%	1,417.4	91.8	6.1%
ME 4	36 55 16	2015	Dry	June	--	652.4	586.9	65.5	10.0%	574.0	78.4	12.0%	536.0	116.4	17.8%
ME 4	36 55 16	2015	Dry	July	--	268.4	204.5	63.9	23.8%	191.9	76.6	28.5%	159.2	109.2	40.7%
ME 4	36 55 16	2015	Dry	August	--	166.0	104.4	61.6	37.1%	92.1	73.9	44.5%	58.0	108.0	65.1%
ME 4	36 55 16	2015	Dry	September	Used in Summary Table Analysis	120.3	63.0	57.4	47.7%	51.1	69.2	57.5%	16.9	103.4	86.0%
ME 4	36 55 16	2016	Above Normal	October	Used in Summary Table Analysis	85.7	38.1	47.7	55.6%	28.9	56.8	66.3%	0.0	85.7	100.0%
ME 4	36 55 16	2016	Above Normal	November	Used in Summary Table Analysis	3,862.8	3,826.4	36.5	0.9%	3,819.0	43.9	1.1%	3,792.5	70.4	1.8%
ME 4	36 55 16	2016	Above Normal	December	--	36,605.3	36,572.9	32.4	0.1%	36,566.0	39.4	0.1%	36,545.1	60.2	0.2%
ME 4	36 55 16	2016	Above Normal	January	--	57,302.1	57,273.1	28.9	0.1%	57,266.2	35.9	0.1%	57,247.7	54.4	0.1%
ME 4	36 55 16	2016	Above Normal	February	--	24,267.4	24,241.9	25.5	0.1%	24,237.3	30.1	0.1%	24,222.2	45.1	0.2%
ME 4	36 55 16	2016	Above Normal	March	--	41,770.8	41,746.5	24.3	0.1%	41,740.7	30.1	0.1%	41,726.9	44.0	0.1%
ME 4	36 55 16	2016	Above Normal	April	--	18,535.9	18,515.0	20.8	0.1%	18,510.4	25.5	0.1%	18,496.5	39.4	0.2%
ME 4	36 55 16	2016	Above Normal	May	--	5,214.9	5,187.8	27.1	0.5%	5,182.4	32.5	0.6%	5,165.9	49.1	0.9%
ME 4	36 55 16	2016	Above Normal	June	--	1,509.0	1,458.2	50.8	3.4%	1,449.2	59.8	4.0%	1,422.8	86.2	5.7%
ME 4	36 55 16	2016	Above Normal	July	--	822.4	766.0	56.4	6.9%	754.8	67.6	8.2%	721.8	100.6	12.2%
ME 4	36 55 16	2016	Above Normal	August	--	490.9	436.1	54.8	11.2%	425.2	65.8	13.4%	392.7	98.3	20.0%
ME 4	36 55 16	2016	Above Normal	September	Used in Summary Table Analysis	327.3	276.4	51.0	15.6%	266.0	61.3	18.7%	235.1	92.3	28.2%
ME 4	36 55 16	2017	Wet	October	Used in Summary Table Analysis	18,277.8	18,237.3	40.5	0.2%	18,229.2	48.6	0.3%	18,206.0	71.8	0.4%
ME 4	36 55 16	2017	Wet	November	Used in Summary Table Analysis	18,817.1	18,785.9	31.3	0.2%	18,780.1	37.0	0.2%	18,760.4	56.7	0.3%
ME 4	36 55 16	2017	Wet	December	--	24,100.7	24,074.1	26.6	0.1%	24,068.3	32.4	0.1%	24,052.1	48.6	0.2%
ME 4	36 55 16	2017	Wet	January	--	106,866.9	106,841.4	25.5	0.0%	106,835.6	31.3	0.0%	106,820.6	46.3	0.0%
ME 4	36 55 16	2017	Wet	February	--	81,818.3	81,795.1	23.1	0.0%	81,790.5	27.8	0.0%	81,775.5	42.8	0.1%
ME 4	36 55 16	2017	Wet	March	--	27,268.5	27,246.5	22.0	0.1%	27,241.9	26.6	0.1%	27,229.2	39.4	0.1%
ME 4	36 55 16	2017	Wet	April	--	22,929.4	22,909.7	19.7	0.1%	22,906.3	23.1	0.1%	22,893.5	35.9	0.2%
ME 4	36 55 16	2017	Wet	May	--	6,273.3	6,245.9	27.3	0.4%	6,240.5	32.8	0.5%	6,224.2	49.1	0.8%
ME 4	36 55 16	2017	Wet	June	--	2,115.4	2,062.7	52.7	2.5%	2,052.3	63.1	3.0%	2,021.6	93.8	4.4%
ME 4	36 55 16	2017	Wet	July	--	933.4	876.6	56.7	6.1%	865.5	67.9	7.3%	832.6	100.8	10.8%
ME 4	36 55 16	2017	Wet	August	--	505.5	450.8	54.7	10.8%	440.0	65.6	13.0%	407.6	97.9	19.4%
ME 4	36 55 16	2017	Wet	September	Used in Summary Table Analysis	321.8	271.5	50.3	15.6%	261.4	60.4	18.8%	231.2	90.6	28.2%
ME 4	36 55 16	2018	Above Normal	October	Used in Summary Table Analysis	274.6	234.9	39.7	14.4%	226.9	47.7	17.4%	203.0	71.6	26.1%
ME 4	36 55 16	2018	Above Normal	November	Used in Summary Table Analysis	10,780.4	10,749.4	31.0	0.3%	10,743.1	37.4	0.3%	10,724.1	56.4	0.5%
ME 4	36 55 16	2018	Above Normal	December	--	5,445.5	5,419.0	26.5	0.5%	5,413.5	31.9	0.6%	5,397.3	48.1	0.9%
ME 4	36 55 16	2018	Above Normal	January	--	17,761.6	17,737.3	24.3	0.1%	17,732.6	28.9	0.2%	17,718.8	42.8	0.2%
ME 4	36 55 16	2018	Above Normal	February	--	7,597.1	7,575.5	21.6	0.3%	7,570.9	26.2	0.3%	7,557.5	39.6	0.5%
ME 4	36 55 16	2018	Above Normal	March	--	20,687.5	20,666.7	20.8	0.1%	20,663.2	24.3	0.1%	20,650.5	37.0	0.2%
ME 4	36 55 16	2018	Above Normal	April	--	32,187.5	32,167.8	19.7	0.1%	32,164.4	23.1	0.1%	32,152.8	34.7	0.1%
ME 4	36 55 16	2018	Above Normal	May	--	6,988.8	6,947.5	41.3	0.6%	6,939.4	49.4	0.7%	6,914.5	74.3	1.1%
ME 4	36 55 16	2018	Above Normal	June	--	1,913.4	1,860.4	53.0	2.8%	1,850.1	63.3	3.3%	1,819.4	94.0	4.9%
ME 4	36 55 16	2018	Above Normal	July	--	780.6	723.7	56.9	7.3%	712.4	68.2	8.7%	678.9	101.7	13.0%
ME 4	36 55 16	2018	Above Normal	August	--	441.8	389.1	52.7	11.9%	378.5	63.2	14.3%	347.1	94.7	21.4%
ME 4	36 55 16	2018	Above Normal	September	Used in Summary Table Analysis	299.3	248.8	50.4	16.9%	238.7	60.5	20.2%	208.5	90.8	30.3%
ME 4	36 55 16	2019	Below Normal	October	Used in Summary Table Analysis	207.3	168.3	39.1	18.8%	160.4	47.0	22.7%	136.6	70.8	34.1%
ME 4	36 55 16	2019	Below Normal	November	Used in Summary Table Analysis	6,616.2	6,585.1	31.1	0.5%	6,578.7	37.5	0.6%	6,559.6	56.6	0.9%
ME 4	36 55 16	2019	Below Normal	December	--	14,653.9	14,627.3	26.6	0.2%	14,621.5	32.4	0.2%	14,605.3	48.6	0.3%
ME 4	36 55 16	2019	Below Normal	January	--	35,195.6	35,171.3	24.3	0.1%	35,166.7	28.9	0.1%	35,151.6	44.0	0.1%
ME 4	36 55 16	2019	Below Normal	February	--	141,898.1	141,875.0	23.1	0.0%	141,863.4	34.7	0.0%	141,851.9	46.3	0.0%
ME 4	36 55 16	2019	Below Normal	March	--	42,309.0	42,288.2	20.8	0.0%	42,284.7	24.3	0.1%	42,272.0	37.0	0.1%
ME 4	36 55 16	2019	Below Normal	April	--	15,269.7	15,250.0	19.7	0.1%	15,246.5	23.1	0.2%	15,235.0	34.7	0.2%
ME 4	36 55 16	2019	Below Normal	May	--	16,922.5	16,878.5	44.0	0.3%	16,869.2	53.2	0.3%	16,843.8	78.7	0.5%
ME 4	36 55 16	2019	Below Normal	June	--	4,243.6	4,187.7	55.9	1.3%	4,177.1	66.6	1.6%	4,145.8	97.8	2.3%
ME 4	36 55 16	2019	Below Normal	July	--	1,360.2	1,303.1	57.1	4.2%	1,291.8	68.4	5.0%	1,258.3	101.9	7.5%
ME 4	36 55 16	2019	Below Normal	August	--	595.4	541.3	54.1	9.1%	530.6	64.9	10.9%	498.7	96.8	16.3%
ME 4	36 55 16	2019	Below Normal	September	Used in Summary Table Analysis	461.8	411.6	50.2	10.9%	401.5	60.3	13.1%	371.4	90.4	19.6%
ME 4	36 55 16	2020	Dry	October	Used in Summary Table Analysis	355.3	317.7	37.6	10.6%	310.1	45.2	12.7%	287.2	68.1	19.2%
ME 4	36 55 16	2020	Dry	November	Used in Summary Table Analysis	318.2	288.8	29.4	9.2%	282.8	35.4	11.1%	264.8	53.3	16.8%
ME 4	36 55 16	2020	Dry	December	--	13,266.2	13,239.6	26.6	0.2%	13,235.0	31.3	0.2%	13,217.6	48.6	0.4%
ME 4	36 55 16	2020	Dry	January	--	22,316.0	22,291.7	24.3	0.1%	22,285.9	30.1	0.1%	22,270.8	45.1	0.2%
ME 4	36 55 16	2020	Dry	February	--	7,414.6	7,392.5	22.1	0.3%	7,387.8	26.7	0.4%	7,374.3	40.3	0.5%
ME 4	36 55 16	2020	Dry	March	--	7,241.4	7,220.5	20.9	0.3%	7,216.3	25.1	0.3%	7,203.5	38.0	0.5%
ME 4	36 55 16	2020	Dry	April	--	5,480.0	5,436.2	43.8	0.8%	5,427.4	52.5	1.0%	5,401.5	78.5	1.4%
ME 4	36 55 16	2020	Dry	May	--	7,372.9	7,320.6	52.3	0.7%	7,310.1	62.8	0.9%	7,278.9	94.0	1.3%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 55 16	2020	Dry	June	--	2,104.6	2,038.5	66.1	3.1%	2,025.8	78.8	3.7%	1,988.2	116.4	5.5%
ME 4	36 55 16	2020	Dry	July	--	795.9	729.5	66.4	8.3%	716.3	79.6	10.0%	682.4	113.4	14.3%
ME 4	36 55 16	2020	Dry	August	--	398.5	333.4	65.1	16.3%	320.4	78.1	19.6%	284.5	114.0	28.6%
ME 4	36 55 16	2020	Dry	September	Used in Summary Table Analysis	247.9	187.2	60.7	24.5%	174.8	73.1	29.5%	138.7	109.3	44.1%
ME 4	36 54 17	2000	Above Normal	October	Used in Summary Table Analysis	815.5	776.5	39.0	4.8%	768.6	46.9	5.7%	745.0	70.5	8.6%
ME 4	36 54 17	2000	Above Normal	November	Used in Summary Table Analysis	12,111.1	12,079.9	31.3	0.3%	12,074.1	37.0	0.3%	12,055.6	55.6	0.5%
ME 4	36 54 17	2000	Above Normal	December	--	10,807.3	10,780.6	26.7	0.2%	10,775.1	32.2	0.3%	10,758.7	48.6	0.4%
ME 4	36 54 17	2000	Above Normal	January	--	28,564.8	28,539.4	25.5	0.1%	28,534.7	30.1	0.1%	28,519.7	45.1	0.2%
ME 4	36 54 17	2000	Above Normal	February	--	37,034.7	37,011.6	23.1	0.1%	37,006.9	27.8	0.1%	36,993.1	41.7	0.1%
ME 4	36 54 17	2000	Above Normal	March	--	18,314.8	18,294.0	20.8	0.1%	18,289.4	25.5	0.1%	18,276.6	38.2	0.2%
ME 4	36 54 17	2000	Above Normal	April	--	12,313.7	12,292.8	20.8	0.2%	12,289.4	24.3	0.2%	12,276.6	37.0	0.3%
ME 4	36 54 17	2000	Above Normal	May	--	7,093.6	7,050.6	43.1	0.6%	7,041.9	51.7	0.7%	7,016.3	77.3	1.1%
ME 4	36 54 17	2000	Above Normal	June	--	2,611.0	2,547.6	63.4	2.4%	2,535.1	75.9	2.9%	2,498.0	113.0	4.3%
ME 4	36 54 17	2000	Above Normal	July	--	991.4	934.8	56.7	5.7%	923.6	67.8	6.8%	890.3	101.1	10.2%
ME 4	36 54 17	2000	Above Normal	August	--	521.4	468.3	53.1	10.2%	457.7	63.6	12.2%	426.1	95.3	18.3%
ME 4	36 54 17	2000	Above Normal	September	Used in Summary Table Analysis	294.7	247.9	46.8	15.9%	238.6	56.2	19.1%	210.5	84.3	28.6%
ME 4	36 54 17	2001	Dry	October	Used in Summary Table Analysis	3,813.4	3,774.9	38.5	1.0%	3,767.1	46.3	1.2%	3,743.6	69.8	1.8%
ME 4	36 54 17	2001	Dry	November	Used in Summary Table Analysis	6,121.6	6,090.6	31.0	0.5%	6,084.4	37.3	0.6%	6,065.5	56.1	0.9%
ME 4	36 54 17	2001	Dry	December	--	8,836.1	8,809.0	27.1	0.3%	8,803.6	32.5	0.4%	8,787.0	49.1	0.6%
ME 4	36 54 17	2001	Dry	January	--	12,785.9	12,761.6	24.3	0.2%	12,756.9	28.9	0.2%	12,741.9	44.0	0.3%
ME 4	36 54 17	2001	Dry	February	--	17,468.8	17,446.8	22.0	0.1%	17,442.1	26.6	0.2%	17,428.2	40.5	0.2%
ME 4	36 54 17	2001	Dry	March	--	12,296.3	12,274.3	22.0	0.2%	12,270.8	25.5	0.2%	12,258.1	38.2	0.3%
ME 4	36 54 17	2001	Dry	April	--	10,970.6	10,926.5	44.1	0.4%	10,917.7	52.9	0.5%	10,891.4	79.2	0.7%
ME 4	36 54 17	2001	Dry	May	--	2,637.3	2,585.2	52.1	2.0%	2,574.9	62.4	2.4%	2,543.9	93.4	3.5%
ME 4	36 54 17	2001	Dry	June	--	2,647.1	2,577.2	69.9	2.6%	2,563.7	83.4	3.2%	2,523.5	123.6	4.7%
ME 4	36 54 17	2001	Dry	July	--	718.4	653.2	65.2	9.1%	640.3	78.1	10.9%	606.9	111.5	15.5%
ME 4	36 54 17	2001	Dry	August	--	172.1	108.9	63.3	36.7%	96.3	75.9	44.1%	61.1	111.1	64.5%
ME 4	36 54 17	2001	Dry	September	Used in Summary Table Analysis	94.9	38.9	56.1	59.1%	27.7	67.2	70.8%	0.0	94.9	100.0%
ME 4	36 54 17	2002	Below Normal	October	Used in Summary Table Analysis	264.5	217.9	46.6	17.6%	208.5	56.0	21.2%	180.2	84.3	31.9%
ME 4	36 54 17	2002	Below Normal	November	Used in Summary Table Analysis	12,022.0	11,986.1	35.9	0.3%	11,978.0	44.0	0.4%	11,953.7	68.3	0.6%
ME 4	36 54 17	2002	Below Normal	December	--	35,672.5	35,640.0	32.4	0.1%	35,633.1	39.4	0.1%	35,612.3	60.2	0.2%
ME 4	36 54 17	2002	Below Normal	January	--	30,871.5	30,842.6	28.9	0.1%	30,836.8	34.7	0.1%	30,819.4	52.1	0.2%
ME 4	36 54 17	2002	Below Normal	February	--	24,673.6	24,647.0	26.6	0.1%	24,642.4	31.3	0.1%	24,626.2	47.5	0.2%
ME 4	36 54 17	2002	Below Normal	March	--	17,776.6	17,751.2	25.5	0.1%	17,746.5	30.1	0.2%	17,731.5	45.1	0.3%
ME 4	36 54 17	2002	Below Normal	April	--	9,924.1	9,880.0	44.1	0.4%	9,871.2	52.9	0.5%	9,844.9	79.2	0.8%
ME 4	36 54 17	2002	Below Normal	May	--	3,319.1	3,267.1	52.0	1.6%	3,256.7	62.4	1.9%	3,225.7	93.4	2.8%
ME 4	36 54 17	2002	Below Normal	June	--	853.7	795.6	58.1	6.8%	784.1	69.6	8.2%	750.1	103.6	12.1%
ME 4	36 54 17	2002	Below Normal	July	--	362.1	303.5	58.6	16.2%	291.8	70.2	19.4%	258.0	104.1	28.7%
ME 4	36 54 17	2002	Below Normal	August	--	226.6	171.8	54.8	24.2%	160.9	65.8	29.0%	127.6	99.0	43.7%
ME 4	36 54 17	2002	Below Normal	September	Used in Summary Table Analysis	163.4	111.9	51.5	31.5%	101.6	61.8	37.8%	70.0	93.5	57.2%
ME 4	36 54 17	2003	Wet	October	Used in Summary Table Analysis	128.4	86.4	42.0	32.7%	78.0	50.4	39.3%	52.5	75.9	59.1%
ME 4	36 54 17	2003	Wet	November	Used in Summary Table Analysis	895.6	862.1	33.5	3.7%	855.3	40.4	4.5%	834.6	61.0	6.8%
ME 4	36 54 17	2003	Wet	December	--	56,792.8	56,762.7	30.1	0.1%	56,756.9	35.9	0.1%	56,739.6	53.2	0.1%
ME 4	36 54 17	2003	Wet	January	--	31,526.6	31,500.0	26.6	0.1%	31,494.2	32.4	0.1%	31,478.0	48.6	0.2%
ME 4	36 54 17	2003	Wet	February	--	20,351.9	20,327.5	24.3	0.1%	20,322.9	28.9	0.1%	20,307.9	44.0	0.2%
ME 4	36 54 17	2003	Wet	March	--	24,030.1	24,006.9	23.1	0.1%	24,002.3	27.8	0.1%	23,988.4	41.7	0.2%
ME 4	36 54 17	2003	Wet	April	--	42,902.8	42,880.8	22.0	0.1%	42,876.2	26.6	0.1%	42,862.3	40.5	0.1%
ME 4	36 54 17	2003	Wet	May	--	12,223.4	12,179.4	44.0	0.4%	12,170.1	53.2	0.4%	12,143.5	79.9	0.7%
ME 4	36 54 17	2003	Wet	June	--	3,166.4	3,110.9	55.6	1.8%	3,100.0	66.4	2.1%	3,067.9	98.5	3.1%
ME 4	36 54 17	2003	Wet	July	--	1,473.7	1,415.6	58.1	3.9%	1,404.1	69.7	4.7%	1,370.0	103.7	7.0%
ME 4	36 54 17	2003	Wet	August	--	759.6	703.0	56.6	7.5%	691.3	68.3	9.0%	655.0	104.6	13.8%
ME 4	36 54 17	2003	Wet	September	Used in Summary Table Analysis	457.5	409.9	47.5	10.4%	400.4	57.0	12.5%	370.8	86.7	19.0%
ME 4	36 54 17	2004	Wet	October	Used in Summary Table Analysis	324.4	285.2	39.1	12.1%	277.3	47.1	14.5%	253.5	70.9	21.9%
ME 4	36 54 17	2004	Wet	November	Used in Summary Table Analysis	5,801.2	5,769.6	31.6	0.5%	5,763.1	38.1	0.7%	5,743.5	57.6	1.0%
ME 4	36 54 17	2004	Wet	December	--	36,304.4	36,276.6	27.8	0.1%	36,270.8	33.6	0.1%	36,253.5	50.9	0.1%
ME 4	36 54 17	2004	Wet	January	--	31,469.9	31,445.6	24.3	0.1%	31,441.0	28.9	0.1%	31,424.8	45.1	0.1%
ME 4	36 54 17	2004	Wet	February	--	38,232.6	38,209.5	23.1	0.1%	38,204.9	27.8	0.1%	38,191.0	41.7	0.1%
ME 4	36 54 17	2004	Wet	March	--	16,524.3	16,502.3	22.0	0.1%	16,497.7	26.6	0.2%	16,485.0	39.4	0.2%
ME 4	36 54 17	2004	Wet	April	--	9,450.0	9,429.6	20.4	0.2%	9,425.5	24.5	0.3%	9,412.8	37.2	0.4%
ME 4	36 54 17	2004	Wet	May	--	3,419.6	3,376.4	43.2	1.3%	3,367.8	51.7	1.5%	3,342.1	77.4	2.3%
ME 4	36 54 17	2004	Wet	June	--	691.7	638.2	53.6	7.7%	627.7	64.1	9.3%	596.6	95.1	13.8%
ME 4	36 54 17	2004	Wet	July	--	355.8	298.6	57.1	16.1%	287.3	68.4	19.2%	253.7	102.0	28.7%
ME 4	36 54 17	2004	Wet	August	--	224.7	171.2	53.6	23.8%	160.5	64.2	28.6%	128.6	96.2	42.8%
ME 4	36 54 17	2004	Wet	September	Used in Summary Table Analysis	161.8	111.1	50.7	31.3%	100.9	60.9	37.6%	70.4	91.4	56.5%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 54 17	2005	Above Normal	October	Used in Summary Table Analysis	7,680.2	7,640.3	39.9	0.5%	7,632.2	48.0	0.6%	7,607.9	72.3	0.9%
ME 4	36 54 17	2005	Above Normal	November	Used in Summary Table Analysis	2,256.6	2,225.2	31.4	1.4%	2,219.0	37.6	1.7%	2,199.8	56.8	2.5%
ME 4	36 54 17	2005	Above Normal	December	--	21,022.0	20,995.4	26.6	0.1%	20,989.6	32.4	0.2%	20,972.2	49.8	0.2%
ME 4	36 54 17	2005	Above Normal	January	--	22,381.9	22,357.6	24.3	0.1%	22,351.9	30.1	0.1%	22,336.8	45.1	0.2%
ME 4	36 54 17	2005	Above Normal	February	--	14,011.6	13,988.4	23.1	0.2%	13,983.8	27.8	0.2%	13,971.1	40.5	0.3%
ME 4	36 54 17	2005	Above Normal	March	--	28,564.8	28,544.0	20.8	0.1%	28,539.4	25.5	0.1%	28,526.6	38.2	0.1%
ME 4	36 54 17	2005	Above Normal	April	--	21,444.4	21,423.6	20.8	0.1%	21,420.1	24.3	0.1%	21,407.4	37.0	0.2%
ME 4	36 54 17	2005	Above Normal	May	--	19,568.3	19,524.3	44.0	0.2%	19,515.0	53.2	0.3%	19,489.6	78.7	0.4%
ME 4	36 54 17	2005	Above Normal	June	--	15,870.4	15,804.4	66.0	0.4%	15,792.8	77.5	0.5%	15,754.6	115.7	0.7%
ME 4	36 54 17	2005	Above Normal	July	--	2,864.2	2,805.2	59.0	2.1%	2,794.1	70.1	2.4%	2,760.8	103.5	3.6%
ME 4	36 54 17	2005	Above Normal	August	--	982.5	929.3	53.3	5.4%	918.8	63.7	6.5%	887.4	95.1	9.7%
ME 4	36 54 17	2005	Above Normal	September	Used in Summary Table Analysis	524.0	477.1	46.9	8.9%	467.8	56.2	10.7%	439.8	84.2	16.1%
ME 4	36 54 17	2006	Wet	October	Used in Summary Table Analysis	633.7	595.9	37.8	6.0%	588.3	45.3	7.2%	565.3	68.4	10.8%
ME 4	36 54 17	2006	Wet	November	Used in Summary Table Analysis	9,303.7	9,273.7	30.0	0.3%	9,267.7	36.0	0.4%	9,249.4	54.3	0.6%
ME 4	36 54 17	2006	Wet	December	--	43,491.9	43,464.1	27.8	0.1%	43,459.5	32.4	0.1%	43,442.1	49.8	0.1%
ME 4	36 54 17	2006	Wet	January	--	46,294.0	46,268.5	25.5	0.1%	46,263.9	30.1	0.1%	46,248.8	45.1	0.1%
ME 4	36 54 17	2006	Wet	February	--	26,618.1	26,596.1	22.0	0.1%	26,591.4	26.6	0.1%	26,577.5	40.5	0.2%
ME 4	36 54 17	2006	Wet	March	--	47,155.1	47,134.3	20.8	0.0%	47,129.6	25.5	0.1%	47,115.7	39.4	0.1%
ME 4	36 54 17	2006	Wet	April	--	30,428.2	30,408.6	19.7	0.1%	30,403.9	24.3	0.1%	30,392.4	35.9	0.1%
ME 4	36 54 17	2006	Wet	May	--	14,207.2	14,180.6	26.6	0.2%	14,174.8	32.4	0.2%	14,159.7	47.5	0.3%
ME 4	36 54 17	2006	Wet	June	--	3,547.7	3,494.2	53.5	1.5%	3,483.7	64.0	1.8%	3,452.9	94.8	2.7%
ME 4	36 54 17	2006	Wet	July	--	1,278.8	1,222.6	56.3	4.4%	1,211.5	67.4	5.3%	1,178.8	100.0	7.8%
ME 4	36 54 17	2006	Wet	August	--	664.7	610.3	54.4	8.2%	599.6	65.1	9.8%	567.5	97.3	14.6%
ME 4	36 54 17	2006	Wet	September	Used in Summary Table Analysis	425.7	378.3	47.4	11.1%	368.9	56.8	13.3%	340.5	85.1	20.0%
ME 4	36 54 17	2007	Above Normal	October	Used in Summary Table Analysis	273.9	235.5	38.5	14.0%	227.7	46.2	16.9%	204.3	69.7	25.4%
ME 4	36 54 17	2007	Above Normal	November	Used in Summary Table Analysis	8,664.6	8,633.4	31.1	0.4%	8,627.2	37.4	0.4%	8,608.0	56.6	0.7%
ME 4	36 54 17	2007	Above Normal	December	--	20,407.4	20,379.6	27.8	0.1%	20,373.8	33.6	0.2%	20,356.5	50.9	0.2%
ME 4	36 54 17	2007	Above Normal	January	--	10,251.0	10,226.5	24.5	0.2%	10,221.5	29.5	0.3%	10,206.4	44.7	0.4%
ME 4	36 54 17	2007	Above Normal	February	--	30,568.3	30,545.1	23.1	0.1%	30,539.4	28.9	0.1%	30,525.5	42.8	0.1%
ME 4	36 54 17	2007	Above Normal	March	--	13,101.9	13,079.9	22.0	0.2%	13,075.2	26.6	0.2%	13,061.3	40.5	0.3%
ME 4	36 54 17	2007	Above Normal	April	--	11,534.3	11,491.9	42.4	0.4%	11,483.3	50.9	0.4%	11,458.1	76.2	0.7%
ME 4	36 54 17	2007	Above Normal	May	--	4,139.7	4,089.4	50.3	1.2%	4,079.3	60.4	1.5%	4,049.2	90.5	2.2%
ME 4	36 54 17	2007	Above Normal	June	--	1,498.4	1,438.5	59.8	4.0%	1,426.7	71.6	4.8%	1,391.9	106.5	7.1%
ME 4	36 54 17	2007	Above Normal	July	--	495.9	436.2	59.7	12.0%	424.3	71.5	14.4%	389.7	106.1	21.4%
ME 4	36 54 17	2007	Above Normal	August	--	222.7	169.1	53.6	24.1%	158.4	64.2	28.8%	126.0	96.7	43.4%
ME 4	36 54 17	2007	Above Normal	September	Used in Summary Table Analysis	150.3	99.8	50.5	33.6%	89.8	60.5	40.3%	59.6	90.7	60.3%
ME 4	36 54 17	2008	Dry	October	Used in Summary Table Analysis	3,432.9	3,392.0	40.9	1.2%	3,383.8	49.1	1.4%	3,358.8	74.1	2.2%
ME 4	36 54 17	2008	Dry	November	Used in Summary Table Analysis	3,274.2	3,242.6	31.6	1.0%	3,236.2	38.0	1.2%	3,216.8	57.4	1.8%
ME 4	36 54 17	2008	Dry	December	--	23,122.7	23,094.9	27.8	0.1%	23,089.1	33.6	0.1%	23,071.8	50.9	0.2%
ME 4	36 54 17	2008	Dry	January	--	37,527.8	37,501.2	26.6	0.1%	37,496.5	31.3	0.1%	37,480.3	47.5	0.1%
ME 4	36 54 17	2008	Dry	February	--	26,270.8	26,248.8	22.0	0.1%	26,244.2	26.6	0.1%	26,230.3	40.5	0.2%
ME 4	36 54 17	2008	Dry	March	--	11,795.1	11,774.3	20.8	0.2%	11,769.7	25.5	0.2%	11,756.9	38.2	0.3%
ME 4	36 54 17	2008	Dry	April	--	9,016.7	8,973.6	43.1	0.5%	8,965.2	51.5	0.6%	8,939.5	77.2	0.9%
ME 4	36 54 17	2008	Dry	May	--	1,360.0	1,314.9	45.0	3.3%	1,306.1	53.8	4.0%	1,280.0	80.0	5.9%
ME 4	36 54 17	2008	Dry	June	--	437.7	372.9	64.8	14.8%	360.2	77.5	17.7%	322.6	115.0	26.3%
ME 4	36 54 17	2008	Dry	July	--	255.8	192.2	63.6	24.9%	179.6	76.1	29.8%	147.1	108.6	42.5%
ME 4	36 54 17	2008	Dry	August	--	179.1	117.6	61.5	34.3%	105.4	73.7	41.2%	68.4	110.7	61.8%
ME 4	36 54 17	2008	Dry	September	Used in Summary Table Analysis	140.8	81.9	58.8	41.8%	70.2	70.5	50.1%	36.2	104.5	74.3%
ME 4	36 54 17	2009	Critical	October	Used in Summary Table Analysis	923.7	877.8	45.9	5.0%	868.6	55.1	6.0%	840.5	83.2	9.0%
ME 4	36 54 17	2009	Critical	November	Used in Summary Table Analysis	5,510.5	5,474.8	35.8	0.6%	5,467.6	42.9	0.8%	5,442.9	67.6	1.2%
ME 4	36 54 17	2009	Critical	December	--	12,164.4	12,133.1	31.3	0.3%	12,127.3	37.0	0.3%	12,107.6	56.7	0.5%
ME 4	36 54 17	2009	Critical	January	--	8,796.3	8,767.9	28.4	0.3%	8,762.2	34.1	0.4%	8,744.7	51.6	0.6%
ME 4	36 54 17	2009	Critical	February	--	22,613.4	22,588.0	25.5	0.1%	22,583.3	30.1	0.1%	22,568.3	45.1	0.2%
ME 4	36 54 17	2009	Critical	March	--	21,121.5	21,098.4	23.1	0.1%	21,093.8	27.8	0.1%	21,079.9	41.7	0.2%
ME 4	36 54 17	2009	Critical	April	--	10,097.3	10,052.7	44.7	0.4%	10,043.9	53.5	0.5%	10,017.1	80.2	0.8%
ME 4	36 54 17	2009	Critical	May	--	15,583.3	15,528.9	54.4	0.3%	15,518.5	64.8	0.4%	15,486.1	97.2	0.6%
ME 4	36 54 17	2009	Critical	June	--	3,160.5	3,091.2	69.3	2.2%	3,077.9	82.6	2.6%	3,038.0	122.6	3.9%
ME 4	36 54 17	2009	Critical	July	--	1,262.7	1,198.5	64.2	5.1%	1,185.9	76.9	6.1%	1,153.2	109.5	8.7%
ME 4	36 54 17	2009	Critical	August	--	668.5	606.6	61.9	9.3%	594.3	74.2	11.1%	559.9	108.6	16.2%
ME 4	36 54 17	2009	Critical	September	Used in Summary Table Analysis	389.7	334.7	55.0	14.1%	323.8	65.9	16.9%	292.0	97.7	25.1%
ME 4	36 54 17	2010	Below Normal	October	Used in Summary Table Analysis	6,088.1	6,041.7	46.4	0.8%	6,032.3	55.8	0.9%	6,002.9	85.2	1.4%
ME 4	36 54 17	2010	Below Normal	November	Used in Summary Table Analysis	8,290.2	8,253.2	36.9	0.4%	8,245.7	44.4	0.5%	8,220.5	69.7	0.8%
ME 4	36 54 17	2010	Below Normal	December	--	12,355.3	12,324.1	31.3	0.3%	12,317.1	38.2	0.3%	12,297.5	57.9	0.5%
ME 4	36 54 17	2010	Below Normal	January	--	36,238.4	36,209.5	28.9	0.1%	36,203.7	34.7	0.1%	36,185.2	53.2	0.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 54 17	2010	Below Normal	February	--	27,247.7	27,221.1	26.6	0.1%	27,216.4	31.3	0.1%	27,200.2	47.5	0.2%
ME 4	36 54 17	2010	Below Normal	March	--	28,839.1	28,814.8	24.3	0.1%	28,810.2	28.9	0.1%	28,795.1	44.0	0.2%
ME 4	36 54 17	2010	Below Normal	April	--	40,017.4	39,994.2	23.1	0.1%	39,989.6	27.8	0.1%	39,974.5	42.8	0.1%
ME 4	36 54 17	2010	Below Normal	May	--	20,272.0	20,225.7	46.3	0.2%	20,216.4	55.6	0.3%	20,189.8	82.2	0.4%
ME 4	36 54 17	2010	Below Normal	June	--	9,352.8	9,286.6	66.2	0.7%	9,273.5	79.3	0.8%	9,234.8	117.9	1.3%
ME 4	36 54 17	2010	Below Normal	July	--	1,454.7	1,395.1	59.6	4.1%	1,383.6	71.2	4.9%	1,349.4	105.3	7.2%
ME 4	36 54 17	2010	Below Normal	August	--	568.6	514.0	54.6	9.6%	503.2	65.3	11.5%	471.1	97.5	17.1%
ME 4	36 54 17	2010	Below Normal	September	Used in Summary Table Analysis	650.6	598.6	51.9	8.0%	588.2	62.3	9.6%	557.2	93.4	14.4%
ME 4	36 54 17	2011	Wet	October	Used in Summary Table Analysis	9,635.8	9,596.6	39.1	0.4%	9,588.8	47.0	0.5%	9,565.0	70.7	0.7%
ME 4	36 54 17	2011	Wet	November	Used in Summary Table Analysis	14,223.4	14,192.1	31.3	0.2%	14,185.2	38.2	0.3%	14,166.7	56.7	0.4%
ME 4	36 54 17	2011	Wet	December	--	33,715.3	33,687.5	27.8	0.1%	33,681.7	33.6	0.1%	33,664.4	50.9	0.2%
ME 4	36 54 17	2011	Wet	January	--	14,159.7	14,135.4	24.3	0.2%	14,130.8	28.9	0.2%	14,115.7	44.0	0.3%
ME 4	36 54 17	2011	Wet	February	--	20,770.8	20,747.7	23.1	0.1%	20,743.1	27.8	0.1%	20,729.2	41.7	0.2%
ME 4	36 54 17	2011	Wet	March	--	52,016.2	51,994.2	22.0	0.0%	51,989.6	26.6	0.1%	51,975.7	40.5	0.1%
ME 4	36 54 17	2011	Wet	April	--	24,804.4	24,783.6	20.8	0.1%	24,778.9	25.5	0.1%	24,766.2	38.2	0.2%
ME 4	36 54 17	2011	Wet	May	--	11,385.0	11,341.0	44.0	0.4%	11,332.3	52.7	0.5%	11,306.0	78.9	0.7%
ME 4	36 54 17	2011	Wet	June	--	7,058.4	6,993.8	64.7	0.9%	6,980.9	77.5	1.1%	6,943.2	115.3	1.6%
ME 4	36 54 17	2011	Wet	July	--	1,828.8	1,764.9	63.9	3.5%	1,752.3	76.5	4.2%	1,716.2	112.6	6.2%
ME 4	36 54 17	2011	Wet	August	--	776.6	722.5	54.0	7.0%	711.9	64.7	8.3%	679.9	96.7	12.5%
ME 4	36 54 17	2011	Wet	September	Used in Summary Table Analysis	433.1	384.2	48.9	11.3%	374.4	58.6	13.5%	345.3	87.7	20.3%
ME 4	36 54 17	2012	Below Normal	October	Used in Summary Table Analysis	4,542.7	4,502.9	39.8	0.9%	4,494.8	47.9	1.1%	4,470.3	72.5	1.6%
ME 4	36 54 17	2012	Below Normal	November	Used in Summary Table Analysis	8,241.0	8,209.1	31.8	0.4%	8,202.7	38.3	0.5%	8,183.0	58.0	0.7%
ME 4	36 54 17	2012	Below Normal	December	--	5,184.8	5,157.3	27.5	0.5%	5,151.6	33.2	0.6%	5,134.7	50.1	1.0%
ME 4	36 54 17	2012	Below Normal	January	--	20,125.0	20,099.5	25.5	0.1%	20,094.9	30.1	0.1%	20,078.7	46.3	0.2%
ME 4	36 54 17	2012	Below Normal	February	--	18,216.4	18,193.3	23.1	0.1%	18,188.7	27.8	0.2%	18,173.6	42.8	0.2%
ME 4	36 54 17	2012	Below Normal	March	--	45,436.3	45,413.2	23.1	0.1%	45,408.6	27.8	0.1%	45,394.7	41.7	0.1%
ME 4	36 54 17	2012	Below Normal	April	--	26,864.6	26,843.8	20.8	0.1%	26,839.1	25.5	0.1%	26,825.2	39.4	0.1%
ME 4	36 54 17	2012	Below Normal	May	--	7,484.6	7,440.9	43.8	0.6%	7,432.1	52.5	0.7%	7,406.3	78.4	1.0%
ME 4	36 54 17	2012	Below Normal	June	--	5,517.5	5,451.5	66.0	1.2%	5,438.5	78.9	1.4%	5,400.3	117.1	2.1%
ME 4	36 54 17	2012	Below Normal	July	--	2,224.9	2,163.0	61.9	2.8%	2,150.7	74.2	3.3%	2,114.4	110.5	5.0%
ME 4	36 54 17	2012	Below Normal	August	--	388.2	338.8	49.4	12.7%	329.0	59.2	15.3%	299.5	88.7	22.9%
ME 4	36 54 17	2012	Below Normal	September	Used in Summary Table Analysis	248.7	204.9	43.8	17.6%	196.1	52.5	21.1%	170.0	78.7	31.6%
ME 4	36 54 17	2013	Below Normal	October	Used in Summary Table Analysis	1,912.6	1,874.4	38.2	2.0%	1,866.8	45.8	2.4%	1,843.6	69.0	3.6%
ME 4	36 54 17	2013	Below Normal	November	Used in Summary Table Analysis	14,691.0	14,660.9	30.1	0.2%	14,653.9	37.0	0.3%	14,635.4	55.6	0.4%
ME 4	36 54 17	2013	Below Normal	December	--	60,004.6	59,976.9	27.8	0.0%	59,971.1	33.6	0.1%	59,953.7	50.9	0.1%
ME 4	36 54 17	2013	Below Normal	January	--	22,206.0	22,182.9	23.1	0.1%	22,177.1	28.9	0.1%	22,163.2	42.8	0.2%
ME 4	36 54 17	2013	Below Normal	February	--	8,847.8	8,825.0	22.8	0.3%	8,820.4	27.4	0.3%	8,806.5	41.3	0.5%
ME 4	36 54 17	2013	Below Normal	March	--	10,333.0	10,310.9	22.1	0.2%	10,306.4	26.6	0.3%	10,293.1	39.9	0.4%
ME 4	36 54 17	2013	Below Normal	April	--	8,291.9	8,250.5	41.4	0.5%	8,242.1	49.8	0.6%	8,217.4	74.5	0.9%
ME 4	36 54 17	2013	Below Normal	May	--	4,431.9	4,381.7	50.2	1.1%	4,371.8	60.2	1.4%	4,341.9	90.0	2.0%
ME 4	36 54 17	2013	Below Normal	June	--	2,110.6	2,051.2	59.5	2.8%	2,039.5	71.2	3.4%	2,004.6	106.0	5.0%
ME 4	36 54 17	2013	Below Normal	July	--	718.1	661.1	57.1	7.9%	649.8	68.3	9.5%	616.9	101.3	14.1%
ME 4	36 54 17	2013	Below Normal	August	--	339.9	286.4	53.5	15.7%	275.8	64.2	18.9%	243.3	96.7	28.4%
ME 4	36 54 17	2013	Below Normal	September	Used in Summary Table Analysis	4,787.4	4,732.2	55.2	1.2%	4,721.1	66.3	1.4%	4,688.0	99.4	2.1%
ME 4	36 54 17	2014	Critical	October	Used in Summary Table Analysis	281.0	240.9	40.1	14.3%	232.8	48.2	17.2%	209.3	71.7	25.5%
ME 4	36 54 17	2014	Critical	November	Used in Summary Table Analysis	1,538.7	1,506.4	32.3	2.1%	1,499.9	38.8	2.5%	1,480.2	58.4	3.8%
ME 4	36 54 17	2014	Critical	December	--	1,590.0	1,561.7	28.4	1.8%	1,555.9	34.1	2.1%	1,538.5	51.5	3.2%
ME 4	36 54 17	2014	Critical	January	--	2,822.0	2,796.5	25.5	0.9%	2,791.4	30.6	1.1%	2,775.7	46.3	1.6%
ME 4	36 54 17	2014	Critical	February	--	15,754.6	15,731.5	23.1	0.1%	15,726.9	27.8	0.2%	15,711.8	42.8	0.3%
ME 4	36 54 17	2014	Critical	March	--	31,489.6	31,466.4	23.1	0.1%	31,461.8	27.8	0.1%	31,447.9	41.7	0.1%
ME 4	36 54 17	2014	Critical	April	--	12,991.9	12,946.8	45.1	0.3%	12,938.7	53.2	0.4%	12,912.0	79.9	0.6%
ME 4	36 54 17	2014	Critical	May	--	5,188.9	5,136.1	52.8	1.0%	5,125.6	63.3	1.2%	5,093.9	95.0	1.8%
ME 4	36 54 17	2014	Critical	June	--	1,198.1	1,127.0	71.1	5.9%	1,113.1	85.0	7.1%	1,073.0	125.2	10.4%
ME 4	36 54 17	2014	Critical	July	--	545.9	480.6	65.4	12.0%	467.6	78.4	14.4%	433.8	112.1	20.5%
ME 4	36 54 17	2014	Critical	August	--	347.9	285.7	62.2	17.9%	273.2	74.6	21.5%	238.3	109.5	31.5%
ME 4	36 54 17	2014	Critical	September	Used in Summary Table Analysis	2,573.8	2,513.3	60.5	2.4%	2,501.3	72.6	2.8%	2,465.7	108.1	4.2%
ME 4	36 54 17	2015	Dry	October	Used in Summary Table Analysis	11,364.8	11,317.9	46.9	0.4%	11,308.8	56.0	0.5%	11,280.9	83.9	0.7%
ME 4	36 54 17	2015	Dry	November	Used in Summary Table Analysis	9,042.7	9,007.4	35.3	0.4%	9,000.2	42.5	0.5%	8,975.7	67.0	0.7%
ME 4	36 54 17	2015	Dry	December	--	32,631.9	32,601.9	30.1	0.1%	32,594.9	37.0	0.1%	32,575.2	56.7	0.2%
ME 4	36 54 17	2015	Dry	January	--	14,581.0	14,553.2	27.8	0.2%	14,547.5	33.6	0.2%	14,530.1	50.9	0.3%
ME 4	36 54 17	2015	Dry	February	--	27,239.6	27,215.3	24.3	0.1%	27,210.6	28.9	0.1%	27,194.4	45.1	0.2%
ME 4	36 54 17	2015	Dry	March	--	11,572.7	11,550.7	22.0	0.2%	11,546.1	26.6	0.2%	11,532.4	40.3	0.3%
ME 4	36 54 17	2015	Dry	April	--	8,390.5	8,346.4	44.1	0.5%	8,337.6	52.9	0.6%	8,311.2	79.3	0.9%
ME 4	36 54 17	2015	Dry	May	--	1,509.3	1,457.3	52.0	3.4%	1,447.0	62.3	4.1%	1,417.1	92.1	6.1%

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 54 17	2015	Dry	June	--	652.6	586.9	65.7	10.1%	574.0	78.6	12.0%	535.8	116.8	17.9%
ME 4	36 54 17	2015	Dry	July	--	268.6	204.4	64.1	23.9%	191.7	76.8	28.6%	158.9	109.7	40.8%
ME 4	36 54 17	2015	Dry	August	--	166.2	104.4	61.9	37.2%	92.0	74.2	44.6%	57.7	108.5	65.3%
ME 4	36 54 17	2015	Dry	September	Used in Summary Table Analysis	120.5	62.8	57.7	47.9%	50.9	69.6	57.7%	16.5	104.0	86.3%
ME 4	36 54 17	2016	Above Normal	October	Used in Summary Table Analysis	85.8	37.9	48.0	55.9%	28.7	57.2	66.6%	0.0	85.8	100.0%
ME 4	36 54 17	2016	Above Normal	November	Used in Summary Table Analysis	3,868.8	3,832.1	36.7	0.9%	3,824.5	44.2	1.1%	3,797.8	70.9	1.8%
ME 4	36 54 17	2016	Above Normal	December	--	36,636.6	36,604.2	32.4	0.1%	36,597.2	39.4	0.1%	36,576.4	60.2	0.2%
ME 4	36 54 17	2016	Above Normal	January	--	57,335.6	57,305.6	30.1	0.1%	57,299.8	35.9	0.1%	57,280.1	55.6	0.1%
ME 4	36 54 17	2016	Above Normal	February	--	24,273.1	24,247.7	25.5	0.1%	24,243.1	30.1	0.1%	24,228.0	45.1	0.2%
ME 4	36 54 17	2016	Above Normal	March	--	41,785.9	41,761.6	24.3	0.1%	41,756.9	28.9	0.1%	41,741.9	44.0	0.1%
ME 4	36 54 17	2016	Above Normal	April	--	18,540.5	18,518.5	22.0	0.1%	18,515.0	25.5	0.1%	18,501.2	39.4	0.2%
ME 4	36 54 17	2016	Above Normal	May	--	5,216.6	5,189.4	27.2	0.5%	5,183.8	32.8	0.6%	5,167.2	49.3	0.9%
ME 4	36 54 17	2016	Above Normal	June	--	1,509.6	1,458.6	51.0	3.4%	1,449.5	60.1	4.0%	1,423.1	86.5	5.7%
ME 4	36 54 17	2016	Above Normal	July	--	822.9	766.3	56.6	6.9%	755.0	67.9	8.2%	721.9	101.0	12.3%
ME 4	36 54 17	2016	Above Normal	August	--	491.4	436.3	55.1	11.2%	425.4	66.1	13.4%	392.7	98.7	20.1%
ME 4	36 54 17	2016	Above Normal	September	Used in Summary Table Analysis	327.7	276.5	51.2	15.6%	266.1	61.6	18.8%	235.0	92.7	28.3%
ME 4	36 54 17	2017	Wet	October	Used in Summary Table Analysis	18,289.4	18,250.0	39.4	0.2%	18,241.9	47.5	0.3%	18,217.6	71.8	0.4%
ME 4	36 54 17	2017	Wet	November	Used in Summary Table Analysis	18,831.0	18,799.8	31.3	0.2%	18,792.8	38.2	0.2%	18,774.3	56.7	0.3%
ME 4	36 54 17	2017	Wet	December	--	24,121.5	24,094.9	26.6	0.1%	24,089.1	32.4	0.1%	24,072.9	48.6	0.2%
ME 4	36 54 17	2017	Wet	January	--	106,928.2	106,902.8	25.5	0.0%	106,898.1	30.1	0.0%	106,881.9	46.3	0.0%
ME 4	36 54 17	2017	Wet	February	--	81,856.5	81,832.2	24.3	0.0%	81,827.5	28.9	0.0%	81,813.7	42.8	0.1%
ME 4	36 54 17	2017	Wet	March	--	27,281.3	27,259.3	22.0	0.1%	27,254.6	26.6	0.1%	27,241.9	39.4	0.1%
ME 4	36 54 17	2017	Wet	April	--	22,942.1	22,922.5	19.7	0.1%	22,917.8	24.3	0.1%	22,906.3	35.9	0.2%
ME 4	36 54 17	2017	Wet	May	--	6,273.8	6,246.5	27.3	0.4%	6,241.1	32.8	0.5%	6,224.7	49.2	0.8%
ME 4	36 54 17	2017	Wet	June	--	2,116.9	2,064.1	52.8	2.5%	2,053.7	63.2	3.0%	2,022.9	94.0	4.4%
ME 4	36 54 17	2017	Wet	July	--	934.2	877.3	56.9	6.1%	866.1	68.1	7.3%	833.1	101.1	10.8%
ME 4	36 54 17	2017	Wet	August	--	506.3	451.3	54.9	10.8%	440.4	65.8	13.0%	407.9	98.3	19.4%
ME 4	36 54 17	2017	Wet	September	Used in Summary Table Analysis	322.4	271.8	50.6	15.7%	261.7	60.7	18.8%	231.4	91.0	28.2%
ME 4	36 54 17	2018	Above Normal	October	Used in Summary Table Analysis	275.1	235.2	39.9	14.5%	227.2	47.9	17.4%	203.1	72.1	26.2%
ME 4	36 54 17	2018	Above Normal	November	Used in Summary Table Analysis	10,794.3	10,763.2	31.1	0.3%	10,756.8	37.5	0.3%	10,737.6	56.7	0.5%
ME 4	36 54 17	2018	Above Normal	December	--	5,446.6	5,420.0	26.6	0.5%	5,414.6	32.1	0.6%	5,398.3	48.4	0.9%
ME 4	36 54 17	2018	Above Normal	January	--	17,785.9	17,761.6	24.3	0.1%	17,756.9	28.9	0.2%	17,741.9	44.0	0.2%
ME 4	36 54 17	2018	Above Normal	February	--	7,598.4	7,576.6	21.8	0.3%	7,572.1	26.3	0.3%	7,558.6	39.8	0.5%
ME 4	36 54 17	2018	Above Normal	March	--	20,703.7	20,682.9	20.8	0.1%	20,678.2	25.5	0.1%	20,665.5	38.2	0.2%
ME 4	36 54 17	2018	Above Normal	April	--	32,206.0	32,186.3	19.7	0.1%	32,182.9	23.1	0.1%	32,170.1	35.9	0.1%
ME 4	36 54 17	2018	Above Normal	May	--	6,989.6	6,948.1	41.4	0.6%	6,940.0	49.5	0.7%	6,915.0	74.5	1.1%
ME 4	36 54 17	2018	Above Normal	June	--	1,914.1	1,860.9	53.2	2.8%	1,850.6	63.5	3.3%	1,819.8	94.3	4.9%
ME 4	36 54 17	2018	Above Normal	July	--	781.2	724.1	57.1	7.3%	712.8	68.4	8.8%	679.1	102.1	13.1%
ME 4	36 54 17	2018	Above Normal	August	--	442.3	389.4	53.0	12.0%	378.8	63.5	14.4%	347.2	95.2	21.5%
ME 4	36 54 17	2018	Above Normal	September	Used in Summary Table Analysis	299.7	249.1	50.7	16.9%	238.9	60.8	20.3%	208.5	91.2	30.4%
ME 4	36 54 17	2019	Below Normal	October	Used in Summary Table Analysis	207.6	168.3	39.3	18.9%	160.4	47.3	22.8%	136.4	71.2	34.3%
ME 4	36 54 17	2019	Below Normal	November	Used in Summary Table Analysis	6,625.3	6,593.9	31.5	0.5%	6,587.5	37.8	0.6%	6,568.3	57.1	0.9%
ME 4	36 54 17	2019	Below Normal	December	--	14,669.0	14,642.4	26.6	0.2%	14,636.6	32.4	0.2%	14,620.4	48.6	0.3%
ME 4	36 54 17	2019	Below Normal	January	--	35,226.9	35,202.5	24.3	0.1%	35,197.9	28.9	0.1%	35,182.9	44.0	0.1%
ME 4	36 54 17	2019	Below Normal	February	--	141,932.9	141,909.7	23.1	0.0%	141,898.1	34.7	0.0%	141,886.6	46.3	0.0%
ME 4	36 54 17	2019	Below Normal	March	--	42,327.5	42,307.9	19.7	0.0%	42,303.2	24.3	0.1%	42,290.5	37.0	0.1%
ME 4	36 54 17	2019	Below Normal	April	--	15,275.5	15,255.8	19.7	0.1%	15,251.2	24.3	0.2%	15,239.6	35.9	0.2%
ME 4	36 54 17	2019	Below Normal	May	--	16,946.8	16,902.8	44.0	0.3%	16,893.5	53.2	0.3%	16,868.1	78.7	0.5%
ME 4	36 54 17	2019	Below Normal	June	--	4,243.8	4,187.7	56.0	1.3%	4,177.1	66.7	1.6%	4,145.6	98.1	2.3%
ME 4	36 54 17	2019	Below Normal	July	--	1,361.1	1,303.8	57.3	4.2%	1,292.5	68.6	5.0%	1,258.9	102.2	7.5%
ME 4	36 54 17	2019	Below Normal	August	--	596.2	541.9	54.3	9.1%	531.0	65.1	10.9%	499.0	97.2	16.3%
ME 4	36 54 17	2019	Below Normal	September	Used in Summary Table Analysis	462.4	411.9	50.5	10.9%	401.8	60.6	13.1%	371.5	90.9	19.7%
ME 4	36 54 17	2020	Dry	October	Used in Summary Table Analysis	355.6	317.8	37.8	10.6%	310.1	45.5	12.8%	287.1	68.5	19.3%
ME 4	36 54 17	2020	Dry	November	Used in Summary Table Analysis	319.1	289.5	29.6	9.3%	283.4	35.6	11.2%	265.4	53.7	16.8%
ME 4	36 54 17	2020	Dry	December	--	13,289.4	13,262.7	26.6	0.2%	13,256.9	32.4	0.2%	13,240.7	48.6	0.4%
ME 4	36 54 17	2020	Dry	January	--	22,334.5	22,309.0	25.5	0.1%	22,304.4	30.1	0.1%	22,289.4	45.1	0.2%
ME 4	36 54 17	2020	Dry	February	--	7,415.5	7,393.3	22.2	0.3%	7,388.7	26.9	0.4%	7,374.9	40.6	0.5%
ME 4	36 54 17	2020	Dry	March	--	7,244.8	7,223.7	21.1	0.3%	7,219.4	25.3	0.3%	7,206.6	38.2	0.5%
ME 4	36 54 17	2020	Dry	April	--	5,483.6	5,439.7	43.9	0.8%	5,430.9	52.7	1.0%	5,404.9	78.7	1.4%
ME 4	36 54 17	2020	Dry	May	--	7,377.5	7,325.0	52.5	0.7%	7,314.6	63.0	0.9%	7,283.2	94.3	1.3%
ME 4	36 54 17	2020	Dry	June	--	2,104.7	2,038.4	66.3	3.2%	2,025.6	79.2	3.8%	1,987.8	116.9	5.6%
ME 4	36 54 17	2020	Dry	July	--	796.3	729.6	66.7	8.4%	716.4	79.9	10.0%	682.4	113.9	14.3%
ME 4	36 54 17	2020	Dry	August	--	398.9	333.5	65.4	16.4%	320.5	78.4	19.7%	284.4	114.5	28.7%
ME 4	36 54 17	2020	Dry	September	Used in Summary Table Analysis	248.3	187.3	61.0	24.6%	174.8	73.4	29.6%	138.5	109.8	44.2%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 53 18	2000	Above Normal	October	Used in Summary Table Analysis	816.4	776.8	39.6	4.9%	768.8	47.6	5.8%	744.8	71.7	8.8%
ME 4	36 53 18	2000	Above Normal	November	Used in Summary Table Analysis	12,135.4	12,104.2	31.3	0.3%	12,097.2	38.2	0.3%	12,078.7	56.7	0.5%
ME 4	36 53 18	2000	Above Normal	December	--	10,819.6	10,792.4	27.2	0.3%	10,786.8	32.8	0.3%	10,770.1	49.4	0.5%
ME 4	36 53 18	2000	Above Normal	January	--	28,605.3	28,579.9	25.5	0.1%	28,575.2	30.1	0.1%	28,560.2	45.1	0.2%
ME 4	36 53 18	2000	Above Normal	February	--	37,060.2	37,037.0	23.1	0.1%	37,032.4	27.8	0.1%	37,018.5	41.7	0.1%
ME 4	36 53 18	2000	Above Normal	March	--	18,321.8	18,300.9	20.8	0.1%	18,296.3	25.5	0.1%	18,283.6	38.2	0.2%
ME 4	36 53 18	2000	Above Normal	April	--	12,318.3	12,297.5	20.8	0.2%	12,294.0	24.3	0.2%	12,281.3	37.0	0.3%
ME 4	36 53 18	2000	Above Normal	May	--	7,097.8	7,054.6	43.2	0.6%	7,045.9	51.9	0.7%	7,020.1	77.7	1.1%
ME 4	36 53 18	2000	Above Normal	June	--	2,612.2	2,548.5	63.7	2.4%	2,535.9	76.3	2.9%	2,498.6	113.5	4.3%
ME 4	36 53 18	2000	Above Normal	July	--	991.7	934.5	57.2	5.8%	923.3	68.5	6.9%	889.7	102.1	10.3%
ME 4	36 53 18	2000	Above Normal	August	--	521.8	468.2	53.7	10.3%	457.5	64.3	12.3%	425.5	96.3	18.5%
ME 4	36 53 18	2000	Above Normal	September	Used in Summary Table Analysis	295.2	247.7	47.4	16.1%	238.3	56.9	19.3%	209.8	85.4	28.9%
ME 4	36 53 18	2001	Dry	October	Used in Summary Table Analysis	3,818.6	3,779.5	39.1	1.0%	3,771.6	47.0	1.2%	3,747.8	70.8	1.9%
ME 4	36 53 18	2001	Dry	November	Used in Summary Table Analysis	6,130.3	6,098.8	31.5	0.5%	6,092.5	37.8	0.6%	6,073.3	57.1	0.9%
ME 4	36 53 18	2001	Dry	December	--	8,844.7	8,817.2	27.4	0.3%	8,811.6	33.1	0.4%	8,794.9	49.8	0.6%
ME 4	36 53 18	2001	Dry	January	--	12,803.2	12,778.9	24.3	0.2%	12,773.1	30.1	0.2%	12,758.1	45.1	0.4%
ME 4	36 53 18	2001	Dry	February	--	17,479.2	17,456.0	23.1	0.1%	17,451.4	27.8	0.2%	17,437.5	41.7	0.2%
ME 4	36 53 18	2001	Dry	March	--	12,299.8	12,278.9	20.8	0.2%	12,274.3	25.5	0.2%	12,261.6	38.2	0.3%
ME 4	36 53 18	2001	Dry	April	--	10,975.6	10,931.1	44.4	0.4%	10,922.3	53.2	0.5%	10,895.9	79.6	0.7%
ME 4	36 53 18	2001	Dry	May	--	2,636.5	2,584.1	52.3	2.0%	2,573.7	62.7	2.4%	2,542.5	94.0	3.6%
ME 4	36 53 18	2001	Dry	June	--	2,650.2	2,580.0	70.3	2.7%	2,566.2	84.0	3.2%	2,525.8	124.4	4.7%
ME 4	36 53 18	2001	Dry	July	--	718.2	652.4	65.8	9.2%	639.3	78.9	11.0%	605.5	112.6	15.7%
ME 4	36 53 18	2001	Dry	August	--	172.3	108.4	64.0	37.1%	95.6	76.7	44.5%	60.0	112.3	65.2%
ME 4	36 53 18	2001	Dry	September	Used in Summary Table Analysis	95.3	38.4	56.8	59.7%	27.1	68.2	71.5%	0.0	95.3	100.0%
ME 4	36 53 18	2002	Below Normal	October	Used in Summary Table Analysis	265.0	217.6	47.4	17.9%	208.0	57.0	21.5%	179.3	85.7	32.3%
ME 4	36 53 18	2002	Below Normal	November	Used in Summary Table Analysis	12,033.6	11,996.5	37.0	0.3%	11,989.6	44.0	0.4%	11,964.1	69.4	0.6%
ME 4	36 53 18	2002	Below Normal	December	--	35,708.3	35,675.9	32.4	0.1%	35,669.0	39.4	0.1%	35,648.1	60.2	0.2%
ME 4	36 53 18	2002	Below Normal	January	--	30,893.5	30,864.6	28.9	0.1%	30,858.8	34.7	0.1%	30,840.3	53.2	0.2%
ME 4	36 53 18	2002	Below Normal	February	--	24,686.3	24,659.7	26.6	0.1%	24,653.9	32.4	0.1%	24,637.7	48.6	0.2%
ME 4	36 53 18	2002	Below Normal	March	--	17,785.9	17,760.4	25.5	0.1%	17,755.8	30.1	0.2%	17,740.7	45.1	0.3%
ME 4	36 53 18	2002	Below Normal	April	--	9,927.1	9,882.6	44.4	0.4%	9,873.8	53.2	0.5%	9,847.3	79.7	0.8%
ME 4	36 53 18	2002	Below Normal	May	--	3,319.7	3,267.2	52.4	1.6%	3,256.8	62.8	1.9%	3,225.6	94.1	2.8%
ME 4	36 53 18	2002	Below Normal	June	--	853.7	795.1	58.6	6.9%	783.5	70.1	8.2%	749.3	104.4	12.2%
ME 4	36 53 18	2002	Below Normal	July	--	362.3	303.1	59.2	16.3%	291.3	70.9	19.6%	257.1	105.1	29.0%
ME 4	36 53 18	2002	Below Normal	August	--	227.0	171.6	55.5	24.4%	160.5	66.6	29.3%	126.8	100.2	44.1%
ME 4	36 53 18	2002	Below Normal	September	Used in Summary Table Analysis	163.8	111.6	52.2	31.9%	101.2	62.6	38.2%	69.1	94.7	57.8%
ME 4	36 53 18	2003	Wet	October	Used in Summary Table Analysis	128.8	86.1	42.7	33.1%	77.6	51.3	39.8%	51.6	77.2	59.9%
ME 4	36 53 18	2003	Wet	November	Used in Summary Table Analysis	896.3	862.1	34.2	3.8%	855.2	41.2	4.6%	834.2	62.2	6.9%
ME 4	36 53 18	2003	Wet	December	--	56,880.8	56,850.7	30.1	0.1%	56,844.9	35.9	0.1%	56,826.4	54.4	0.1%
ME 4	36 53 18	2003	Wet	January	--	31,542.8	31,515.0	27.8	0.1%	31,510.4	32.4	0.1%	31,493.1	49.8	0.2%
ME 4	36 53 18	2003	Wet	February	--	20,358.8	20,334.5	24.3	0.1%	20,329.9	28.9	0.1%	20,314.8	44.0	0.2%
ME 4	36 53 18	2003	Wet	March	--	24,042.8	24,019.7	23.1	0.1%	24,015.0	27.8	0.1%	24,001.2	41.7	0.2%
ME 4	36 53 18	2003	Wet	April	--	42,937.5	42,915.5	22.0	0.1%	42,910.9	26.6	0.1%	42,897.0	40.5	0.1%
ME 4	36 53 18	2003	Wet	May	--	12,226.9	12,181.7	45.1	0.4%	12,172.5	54.4	0.4%	12,145.8	81.0	0.7%
ME 4	36 53 18	2003	Wet	June	--	3,166.6	3,110.5	56.0	1.8%	3,099.7	66.9	2.1%	3,067.4	99.2	3.1%
ME 4	36 53 18	2003	Wet	July	--	1,474.2	1,415.5	58.7	4.0%	1,403.9	70.3	4.8%	1,369.4	104.7	7.1%
ME 4	36 53 18	2003	Wet	August	--	760.2	702.9	57.3	7.5%	691.1	69.1	9.1%	654.4	105.7	13.9%
ME 4	36 53 18	2003	Wet	September	Used in Summary Table Analysis	458.0	409.8	48.2	10.5%	400.1	57.8	12.6%	370.1	87.9	19.2%
ME 4	36 53 18	2004	Wet	October	Used in Summary Table Analysis	324.9	285.1	39.8	12.2%	277.1	47.8	14.7%	252.8	72.1	22.2%
ME 4	36 53 18	2004	Wet	November	Used in Summary Table Analysis	5,810.8	5,778.5	32.3	0.6%	5,771.9	38.9	0.7%	5,752.1	58.7	1.0%
ME 4	36 53 18	2004	Wet	December	--	36,348.4	36,320.6	27.8	0.1%	36,314.8	33.6	0.1%	36,296.3	52.1	0.1%
ME 4	36 53 18	2004	Wet	January	--	31,500.0	31,474.5	25.5	0.1%	31,468.8	31.3	0.1%	31,453.7	46.3	0.1%
ME 4	36 53 18	2004	Wet	February	--	38,260.4	38,237.3	23.1	0.1%	38,232.6	27.8	0.1%	38,217.6	42.8	0.1%
ME 4	36 53 18	2004	Wet	March	--	16,527.8	16,505.8	22.0	0.1%	16,501.2	26.6	0.2%	16,488.4	39.4	0.2%
ME 4	36 53 18	2004	Wet	April	--	9,452.7	9,431.9	20.7	0.2%	9,427.7	25.0	0.3%	9,414.9	37.7	0.4%
ME 4	36 53 18	2004	Wet	May	--	3,421.8	3,378.2	43.5	1.3%	3,369.7	52.1	1.5%	3,343.8	78.0	2.3%
ME 4	36 53 18	2004	Wet	June	--	691.7	637.8	53.9	7.8%	627.2	64.5	9.3%	595.9	95.8	13.8%
ME 4	36 53 18	2004	Wet	July	--	356.1	298.5	57.6	16.2%	287.1	69.1	19.4%	253.1	103.0	28.9%
ME 4	36 53 18	2004	Wet	August	--	225.1	171.0	54.2	24.1%	160.2	64.9	28.8%	127.9	97.3	43.2%
ME 4	36 53 18	2004	Wet	September	Used in Summary Table Analysis	162.2	110.8	51.4	31.7%	100.5	61.6	38.0%	69.6	92.5	57.1%
ME 4	36 53 18	2005	Above Normal	October	Used in Summary Table Analysis	7,692.8	7,652.2	40.6	0.5%	7,644.0	48.8	0.6%	7,619.2	73.6	1.0%
ME 4	36 53 18	2005	Above Normal	November	Used in Summary Table Analysis	2,257.6	2,225.8	31.8	1.4%	2,219.3	38.3	1.7%	2,199.9	57.8	2.6%
ME 4	36 53 18	2005	Above Normal	December	--	21,059.0	21,031.3	27.8	0.1%	21,025.5	33.6	0.2%	21,009.3	49.8	0.2%
ME 4	36 53 18	2005	Above Normal	January	--	22,410.9	22,385.4	25.5	0.1%	22,379.6	31.3	0.1%	22,364.6	46.3	0.2%

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 53 18	2005	Above Normal	February	--	14,015.0	13,991.9	23.1	0.2%	13,987.3	27.8	0.2%	13,973.4	41.7	0.3%
ME 4	36 53 18	2005	Above Normal	March	--	28,585.6	28,564.8	20.8	0.1%	28,560.2	25.5	0.1%	28,546.3	39.4	0.1%
ME 4	36 53 18	2005	Above Normal	April	--	21,457.2	21,436.3	20.8	0.1%	21,432.9	24.3	0.1%	21,420.1	37.0	0.2%
ME 4	36 53 18	2005	Above Normal	May	--	19,584.5	19,540.5	44.0	0.2%	19,531.3	53.2	0.3%	19,504.6	79.9	0.4%
ME 4	36 53 18	2005	Above Normal	June	--	15,890.0	15,824.1	66.0	0.4%	15,811.3	78.7	0.5%	15,773.1	116.9	0.7%
ME 4	36 53 18	2005	Above Normal	July	--	2,863.4	2,803.9	59.5	2.1%	2,792.7	70.7	2.5%	2,759.0	104.4	3.6%
ME 4	36 53 18	2005	Above Normal	August	--	983.0	929.2	53.8	5.5%	918.6	64.4	6.6%	886.8	96.2	9.8%
ME 4	36 53 18	2005	Above Normal	September	Used in Summary Table Analysis	524.6	477.1	47.5	9.1%	467.6	56.9	10.9%	439.3	85.3	16.3%
ME 4	36 53 18	2006	Wet	October	Used in Summary Table Analysis	634.5	596.1	38.4	6.0%	588.4	46.1	7.3%	565.0	69.5	10.9%
ME 4	36 53 18	2006	Wet	November	Used in Summary Table Analysis	9,320.4	9,289.9	30.4	0.3%	9,283.8	36.6	0.4%	9,265.2	55.2	0.6%
ME 4	36 53 18	2006	Wet	December	--	43,547.5	43,520.8	26.6	0.1%	43,515.0	32.4	0.1%	43,497.7	49.8	0.1%
ME 4	36 53 18	2006	Wet	January	--	46,343.8	46,318.3	25.5	0.1%	46,313.7	30.1	0.1%	46,297.5	46.3	0.1%
ME 4	36 53 18	2006	Wet	February	--	26,637.7	26,615.7	22.0	0.1%	26,611.1	26.6	0.1%	26,597.2	40.5	0.2%
ME 4	36 53 18	2006	Wet	March	--	47,194.4	47,172.5	22.0	0.0%	47,167.8	26.6	0.1%	47,155.1	39.4	0.1%
ME 4	36 53 18	2006	Wet	April	--	30,442.1	30,421.3	20.8	0.1%	30,417.8	24.3	0.1%	30,406.3	35.9	0.1%
ME 4	36 53 18	2006	Wet	May	--	14,215.3	14,187.5	27.8	0.2%	14,182.9	32.4	0.2%	14,166.7	48.6	0.3%
ME 4	36 53 18	2006	Wet	June	--	3,547.6	3,493.9	53.7	1.5%	3,483.3	64.2	1.8%	3,452.3	95.3	2.7%
ME 4	36 53 18	2006	Wet	July	--	1,279.4	1,222.7	56.7	4.4%	1,211.6	67.8	5.3%	1,178.6	100.8	7.9%
ME 4	36 53 18	2006	Wet	August	--	665.5	610.5	55.0	8.3%	599.6	65.8	9.9%	567.1	98.3	14.8%
ME 4	36 53 18	2006	Wet	September	Used in Summary Table Analysis	426.4	378.3	48.0	11.3%	368.8	57.6	13.5%	340.1	86.3	20.2%
ME 4	36 53 18	2007	Above Normal	October	Used in Summary Table Analysis	274.5	235.4	39.1	14.2%	227.5	46.9	17.1%	203.7	70.8	25.8%
ME 4	36 53 18	2007	Above Normal	November	Used in Summary Table Analysis	8,679.3	8,647.6	31.7	0.4%	8,641.1	38.2	0.4%	8,621.6	57.6	0.7%
ME 4	36 53 18	2007	Above Normal	December	--	20,437.5	20,408.6	28.9	0.1%	20,402.8	34.7	0.2%	20,385.4	52.1	0.3%
ME 4	36 53 18	2007	Above Normal	January	--	10,258.0	10,233.1	24.9	0.2%	10,228.0	30.0	0.3%	10,212.6	45.4	0.4%
ME 4	36 53 18	2007	Above Normal	February	--	30,601.9	30,577.5	24.3	0.1%	30,572.9	28.9	0.1%	30,557.9	44.0	0.1%
ME 4	36 53 18	2007	Above Normal	March	--	13,106.5	13,083.3	23.1	0.2%	13,078.7	27.8	0.2%	13,064.8	41.7	0.3%
ME 4	36 53 18	2007	Above Normal	April	--	11,538.7	11,495.9	42.7	0.4%	11,487.4	51.3	0.4%	11,462.0	76.6	0.7%
ME 4	36 53 18	2007	Above Normal	May	--	4,141.2	4,090.5	50.7	1.2%	4,080.3	60.9	1.5%	4,050.1	91.1	2.2%
ME 4	36 53 18	2007	Above Normal	June	--	1,499.3	1,439.1	60.2	4.0%	1,427.3	72.0	4.8%	1,392.1	107.2	7.1%
ME 4	36 53 18	2007	Above Normal	July	--	496.0	435.7	60.2	12.1%	423.8	72.2	14.6%	388.9	107.1	21.6%
ME 4	36 53 18	2007	Above Normal	August	--	223.1	168.9	54.2	24.3%	158.1	64.9	29.1%	125.3	97.8	43.8%
ME 4	36 53 18	2007	Above Normal	September	Used in Summary Table Analysis	150.7	99.6	51.1	33.9%	89.5	61.3	40.6%	58.9	91.8	60.9%
ME 4	36 53 18	2008	Dry	October	Used in Summary Table Analysis	3,437.8	3,396.3	41.6	1.2%	3,388.0	49.9	1.5%	3,362.6	75.2	2.2%
ME 4	36 53 18	2008	Dry	November	Used in Summary Table Analysis	3,278.8	3,246.6	32.2	1.0%	3,240.2	38.7	1.2%	3,220.4	58.4	1.8%
ME 4	36 53 18	2008	Dry	December	--	23,162.0	23,133.1	28.9	0.1%	23,127.3	34.7	0.1%	23,110.0	52.1	0.2%
ME 4	36 53 18	2008	Dry	January	--	37,564.8	37,538.2	26.6	0.1%	37,532.4	32.4	0.1%	37,516.2	48.6	0.1%
ME 4	36 53 18	2008	Dry	February	--	26,278.9	26,255.8	23.1	0.1%	26,251.2	27.8	0.1%	26,236.1	42.8	0.2%
ME 4	36 53 18	2008	Dry	March	--	11,797.5	11,776.6	20.8	0.2%	11,772.0	25.5	0.2%	11,759.3	38.2	0.3%
ME 4	36 53 18	2008	Dry	April	--	9,019.0	8,975.7	43.3	0.5%	8,967.1	51.9	0.6%	8,941.2	77.8	0.9%
ME 4	36 53 18	2008	Dry	May	--	1,358.8	1,313.4	45.4	3.3%	1,304.6	54.2	4.0%	1,278.1	80.7	5.9%
ME 4	36 53 18	2008	Dry	June	--	437.8	372.6	65.2	14.9%	359.8	78.0	17.8%	322.0	115.9	26.5%
ME 4	36 53 18	2008	Dry	July	--	256.0	191.7	64.2	25.1%	179.1	76.9	30.0%	146.2	109.8	42.9%
ME 4	36 53 18	2008	Dry	August	--	179.4	117.2	62.2	34.7%	104.8	74.6	41.6%	67.4	112.0	62.4%
ME 4	36 53 18	2008	Dry	September	Used in Summary Table Analysis	141.1	81.4	59.6	42.3%	69.6	71.5	50.7%	35.1	105.9	75.1%
ME 4	36 53 18	2009	Critical	October	Used in Summary Table Analysis	924.4	877.7	46.7	5.1%	868.4	56.1	6.1%	839.8	84.7	9.2%
ME 4	36 53 18	2009	Critical	November	Used in Summary Table Analysis	5,519.9	5,483.4	36.5	0.7%	5,476.0	43.9	0.8%	5,451.0	68.9	1.2%
ME 4	36 53 18	2009	Critical	December	--	12,184.0	12,152.8	31.3	0.3%	12,145.8	38.2	0.3%	12,126.2	57.9	0.5%
ME 4	36 53 18	2009	Critical	January	--	8,801.3	8,772.3	28.9	0.3%	8,766.4	34.8	0.4%	8,748.6	52.7	0.6%
ME 4	36 53 18	2009	Critical	February	--	22,629.6	22,604.2	25.5	0.1%	22,599.5	30.1	0.1%	22,583.3	46.3	0.2%
ME 4	36 53 18	2009	Critical	March	--	21,133.1	21,110.0	23.1	0.1%	21,105.3	27.8	0.1%	21,090.3	42.8	0.2%
ME 4	36 53 18	2009	Critical	April	--	10,097.6	10,052.5	45.0	0.4%	10,043.6	53.9	0.5%	10,016.8	80.8	0.8%
ME 4	36 53 18	2009	Critical	May	--	15,589.1	15,534.7	54.4	0.3%	15,523.1	66.0	0.4%	15,490.7	98.4	0.6%
ME 4	36 53 18	2009	Critical	June	--	3,160.4	3,090.7	69.7	2.2%	3,077.2	83.2	2.6%	3,037.0	123.4	3.9%
ME 4	36 53 18	2009	Critical	July	--	1,262.8	1,198.0	64.8	5.1%	1,185.3	77.5	6.1%	1,152.2	110.7	8.8%
ME 4	36 53 18	2009	Critical	August	--	668.9	606.2	62.7	9.4%	593.8	75.1	11.2%	558.9	110.0	16.4%
ME 4	36 53 18	2009	Critical	September	Used in Summary Table Analysis	390.0	334.2	55.8	14.3%	323.1	66.9	17.1%	290.9	99.2	25.4%
ME 4	36 53 18	2010	Below Normal	October	Used in Summary Table Analysis	6,088.9	6,041.6	47.3	0.8%	6,032.1	56.8	0.9%	6,002.3	86.6	1.4%
ME 4	36 53 18	2010	Below Normal	November	Used in Summary Table Analysis	8,296.1	8,258.3	37.7	0.5%	8,250.8	45.3	0.5%	8,225.1	70.9	0.9%
ME 4	36 53 18	2010	Below Normal	December	--	12,368.1	12,335.6	32.4	0.3%	12,329.9	38.2	0.3%	12,309.0	59.0	0.5%
ME 4	36 53 18	2010	Below Normal	January	--	36,282.4	36,253.5	28.9	0.1%	36,247.7	34.7	0.1%	36,229.2	53.2	0.1%
ME 4	36 53 18	2010	Below Normal	February	--	27,258.1	27,232.6	25.5	0.1%	27,226.9	31.3	0.1%	27,210.6	47.5	0.2%
ME 4	36 53 18	2010	Below Normal	March	--	28,848.4	28,824.1	24.3	0.1%	28,819.4	28.9	0.1%	28,804.4	44.0	0.2%
ME 4	36 53 18	2010	Below Normal	April	--	40,035.9	40,012.7	23.1	0.1%	40,008.1	27.8	0.1%	39,993.1	42.8	0.1%
ME 4	36 53 18	2010	Below Normal	May	--	20,287.0	20,240.7	46.3	0.2%	20,231.5	55.6	0.3%	20,203.7	83.3	0.4%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 53 18	2010	Below Normal	June	--	9,364.5	9,297.7	66.8	0.7%	9,284.6	79.9	0.9%	9,245.6	118.9	1.3%
ME 4	36 53 18	2010	Below Normal	July	--	1,454.6	1,394.4	60.2	4.1%	1,382.9	71.8	4.9%	1,348.4	106.3	7.3%
ME 4	36 53 18	2010	Below Normal	August	--	569.1	513.9	55.2	9.7%	503.0	66.1	11.6%	470.5	98.6	17.3%
ME 4	36 53 18	2010	Below Normal	September	Used in Summary Table Analysis	651.3	598.6	52.6	8.1%	588.1	63.1	9.7%	556.7	94.6	14.5%
ME 4	36 53 18	2011	Wet	October	Used in Summary Table Analysis	9,645.1	9,605.3	39.8	0.4%	9,597.3	47.8	0.5%	9,573.1	72.0	0.7%
ME 4	36 53 18	2011	Wet	November	Used in Summary Table Analysis	14,233.8	14,201.4	32.4	0.2%	14,195.6	38.2	0.3%	14,175.9	57.9	0.4%
ME 4	36 53 18	2011	Wet	December	--	33,760.4	33,732.6	27.8	0.1%	33,725.7	34.7	0.1%	33,709.5	50.9	0.2%
ME 4	36 53 18	2011	Wet	January	--	14,166.7	14,142.4	24.3	0.2%	14,137.7	28.9	0.2%	14,121.5	45.1	0.3%
ME 4	36 53 18	2011	Wet	February	--	20,777.8	20,754.6	23.1	0.1%	20,750.0	27.8	0.1%	20,735.0	42.8	0.2%
ME 4	36 53 18	2011	Wet	March	--	52,045.1	52,022.0	23.1	0.0%	52,018.5	26.6	0.1%	52,003.5	41.7	0.1%
ME 4	36 53 18	2011	Wet	April	--	24,812.5	24,791.7	20.8	0.1%	24,787.0	25.5	0.1%	24,774.3	38.2	0.2%
ME 4	36 53 18	2011	Wet	May	--	11,388.5	11,344.3	44.2	0.4%	11,335.5	53.0	0.5%	11,309.1	79.4	0.7%
ME 4	36 53 18	2011	Wet	June	--	7,062.4	6,997.3	65.0	0.9%	6,984.4	78.0	1.1%	6,946.4	116.0	1.6%
ME 4	36 53 18	2011	Wet	July	--	1,828.5	1,764.0	64.5	3.5%	1,751.4	77.1	4.2%	1,714.9	113.5	6.2%
ME 4	36 53 18	2011	Wet	August	--	776.9	722.3	54.6	7.0%	711.5	65.4	8.4%	679.1	97.8	12.6%
ME 4	36 53 18	2011	Wet	September	Used in Summary Table Analysis	433.5	384.0	49.5	11.4%	374.1	59.4	13.7%	344.7	88.8	20.5%
ME 4	36 53 18	2012	Below Normal	October	Used in Summary Table Analysis	4,547.2	4,506.8	40.4	0.9%	4,498.6	48.6	1.1%	4,473.7	73.5	1.6%
ME 4	36 53 18	2012	Below Normal	November	Used in Summary Table Analysis	8,250.8	8,218.4	32.4	0.4%	8,211.8	39.0	0.5%	8,191.8	59.0	0.7%
ME 4	36 53 18	2012	Below Normal	December	--	5,188.5	5,160.5	28.0	0.5%	5,154.9	33.7	0.6%	5,137.6	50.9	1.0%
ME 4	36 53 18	2012	Below Normal	January	--	20,153.9	20,128.5	25.5	0.1%	20,123.8	30.1	0.1%	20,107.6	46.3	0.2%
ME 4	36 53 18	2012	Below Normal	February	--	18,223.4	18,200.2	23.1	0.1%	18,195.6	27.8	0.2%	18,180.6	42.8	0.2%
ME 4	36 53 18	2012	Below Normal	March	--	45,471.1	45,447.9	23.1	0.1%	45,443.3	27.8	0.1%	45,428.2	42.8	0.1%
ME 4	36 53 18	2012	Below Normal	April	--	26,875.0	26,854.2	20.8	0.1%	26,849.5	25.5	0.1%	26,835.6	39.4	0.1%
ME 4	36 53 18	2012	Below Normal	May	--	7,486.3	7,442.4	44.0	0.6%	7,433.6	52.8	0.7%	7,407.5	78.8	1.1%
ME 4	36 53 18	2012	Below Normal	June	--	5,521.4	5,455.1	66.3	1.2%	5,442.1	79.3	1.4%	5,403.7	117.7	2.1%
ME 4	36 53 18	2012	Below Normal	July	--	2,227.1	2,164.7	62.4	2.8%	2,152.3	74.8	3.4%	2,115.7	111.3	5.0%
ME 4	36 53 18	2012	Below Normal	August	--	388.3	338.3	50.0	12.9%	328.4	59.9	15.4%	298.6	89.7	23.1%
ME 4	36 53 18	2012	Below Normal	September	Used in Summary Table Analysis	249.1	204.7	44.4	17.8%	195.9	53.2	21.4%	169.4	79.7	32.0%
ME 4	36 53 18	2013	Below Normal	October	Used in Summary Table Analysis	1,915.5	1,876.7	38.8	2.0%	1,869.0	46.5	2.4%	1,845.5	70.0	3.7%
ME 4	36 53 18	2013	Below Normal	November	Used in Summary Table Analysis	14,709.5	14,678.2	31.3	0.2%	14,672.5	37.0	0.3%	14,653.9	55.6	0.4%
ME 4	36 53 18	2013	Below Normal	December	--	60,046.3	60,018.5	27.8	0.0%	60,011.6	34.7	0.1%	59,994.2	52.1	0.1%
ME 4	36 53 18	2013	Below Normal	January	--	22,216.4	22,193.3	23.1	0.1%	22,187.5	28.9	0.1%	22,173.6	42.8	0.2%
ME 4	36 53 18	2013	Below Normal	February	--	8,852.4	8,829.4	23.0	0.3%	8,824.7	27.8	0.3%	8,810.5	41.9	0.5%
ME 4	36 53 18	2013	Below Normal	March	--	10,340.9	10,318.5	22.3	0.2%	10,314.0	26.9	0.3%	10,300.5	40.4	0.4%
ME 4	36 53 18	2013	Below Normal	April	--	8,293.5	8,251.9	41.7	0.5%	8,243.5	50.0	0.6%	8,218.5	75.0	0.9%
ME 4	36 53 18	2013	Below Normal	May	--	4,434.6	4,384.1	50.5	1.1%	4,374.1	60.5	1.4%	4,344.0	90.6	2.0%
ME 4	36 53 18	2013	Below Normal	June	--	2,111.0	2,051.2	59.8	2.8%	2,039.4	71.6	3.4%	2,004.3	106.7	5.1%
ME 4	36 53 18	2013	Below Normal	July	--	718.0	660.4	57.6	8.0%	649.1	69.0	9.6%	615.8	102.2	14.2%
ME 4	36 53 18	2013	Below Normal	August	--	340.2	286.1	54.1	15.9%	275.3	64.9	19.1%	242.5	97.7	28.7%
ME 4	36 53 18	2013	Below Normal	September	Used in Summary Table Analysis	4,792.1	4,736.2	55.9	1.2%	4,725.0	67.1	1.4%	4,691.6	100.6	2.1%
ME 4	36 53 18	2014	Critical	October	Used in Summary Table Analysis	280.5	239.8	40.7	14.5%	231.6	48.9	17.4%	207.7	72.8	26.0%
ME 4	36 53 18	2014	Critical	November	Used in Summary Table Analysis	1,541.0	1,508.1	32.9	2.1%	1,501.5	39.5	2.6%	1,481.5	59.5	3.9%
ME 4	36 53 18	2014	Critical	December	--	1,591.2	1,562.3	28.9	1.8%	1,556.5	34.7	2.2%	1,538.8	52.4	3.3%
ME 4	36 53 18	2014	Critical	January	--	2,824.4	2,798.5	25.9	0.9%	2,793.3	31.1	1.1%	2,777.2	47.2	1.7%
ME 4	36 53 18	2014	Critical	February	--	15,762.7	15,739.6	23.1	0.1%	15,733.8	28.9	0.2%	15,718.8	44.0	0.3%
ME 4	36 53 18	2014	Critical	March	--	31,498.8	31,476.9	22.0	0.1%	31,471.1	27.8	0.1%	31,457.2	41.7	0.1%
ME 4	36 53 18	2014	Critical	April	--	12,994.2	12,949.1	45.1	0.3%	12,941.0	53.2	0.4%	12,913.2	81.0	0.6%
ME 4	36 53 18	2014	Critical	May	--	5,190.3	5,137.2	53.1	1.0%	5,126.6	63.7	1.2%	5,094.7	95.6	1.8%
ME 4	36 53 18	2014	Critical	June	--	1,198.4	1,126.8	71.6	6.0%	1,112.8	85.6	7.1%	1,072.4	126.0	10.5%
ME 4	36 53 18	2014	Critical	July	--	546.0	480.0	66.0	12.1%	466.9	79.1	14.5%	432.7	113.2	20.7%
ME 4	36 53 18	2014	Critical	August	--	348.2	285.3	62.9	18.1%	272.7	75.5	21.7%	237.3	110.8	31.8%
ME 4	36 53 18	2014	Critical	September	Used in Summary Table Analysis	2,575.9	2,514.6	61.3	2.4%	2,502.4	73.5	2.9%	2,466.3	109.6	4.3%
ME 4	36 53 18	2015	Dry	October	Used in Summary Table Analysis	11,373.6	11,326.2	47.5	0.4%	11,316.8	56.8	0.5%	11,288.4	85.2	0.7%
ME 4	36 53 18	2015	Dry	November	Used in Summary Table Analysis	9,051.9	9,015.9	36.0	0.4%	9,008.6	43.3	0.5%	8,983.7	68.2	0.8%
ME 4	36 53 18	2015	Dry	December	--	32,669.0	32,637.7	31.3	0.1%	32,630.8	38.2	0.1%	32,611.1	57.9	0.2%
ME 4	36 53 18	2015	Dry	January	--	14,584.5	14,556.7	27.8	0.2%	14,550.9	33.6	0.2%	14,533.6	50.9	0.3%
ME 4	36 53 18	2015	Dry	February	--	27,253.5	27,228.0	25.5	0.1%	27,223.4	30.1	0.1%	27,207.2	46.3	0.2%
ME 4	36 53 18	2015	Dry	March	--	11,575.2	11,552.4	22.8	0.2%	11,547.8	27.4	0.2%	11,533.8	41.4	0.4%
ME 4	36 53 18	2015	Dry	April	--	8,399.3	8,354.9	44.4	0.5%	8,345.9	53.4	0.6%	8,319.3	80.0	1.0%
ME 4	36 53 18	2015	Dry	May	--	1,508.6	1,456.3	52.3	3.5%	1,445.9	62.6	4.2%	1,415.9	92.7	6.1%
ME 4	36 53 18	2015	Dry	June	--	652.5	586.3	66.2	10.1%	573.3	79.2	12.1%	534.8	117.7	18.0%
ME 4	36 53 18	2015	Dry	July	--	268.6	203.8	64.8	24.1%	191.0	77.7	28.9%	157.8	110.8	41.3%
ME 4	36 53 18	2015	Dry	August	--	166.5	103.9	62.6	37.6%	91.4	75.1	45.1%	56.7	109.8	66.0%
ME 4	36 53 18	2015	Dry	September	Used in Summary Table Analysis	120.7	62.2	58.5	48.5%	50.2	70.5	58.4%	15.3	105.4	87.3%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	36 53 18	2016	Above Normal	October	Used in Summary Table Analysis	86.0	37.3	48.7	56.7%	27.9	58.1	67.6%	0.0	86.0	100.0%
ME 4	36 53 18	2016	Above Normal	November	Used in Summary Table Analysis	3,877.1	3,839.6	37.5	1.0%	3,831.9	45.1	1.2%	3,804.6	72.5	1.9%
ME 4	36 53 18	2016	Above Normal	December	--	36,679.4	36,647.0	32.4	0.1%	36,640.0	39.4	0.1%	36,618.1	61.3	0.2%
ME 4	36 53 18	2016	Above Normal	January	--	57,379.6	57,349.5	30.1	0.1%	57,343.8	35.9	0.1%	57,324.1	55.6	0.1%
ME 4	36 53 18	2016	Above Normal	February	--	24,277.8	24,253.5	24.3	0.1%	24,247.7	30.1	0.1%	24,232.6	45.1	0.2%
ME 4	36 53 18	2016	Above Normal	March	--	41,805.6	41,781.3	24.3	0.1%	41,775.5	30.1	0.1%	41,761.6	44.0	0.1%
ME 4	36 53 18	2016	Above Normal	April	--	18,545.1	18,523.1	22.0	0.1%	18,518.5	26.6	0.1%	18,504.6	40.5	0.2%
ME 4	36 53 18	2016	Above Normal	May	--	5,217.5	5,189.9	27.5	0.5%	5,184.4	33.1	0.6%	5,167.6	49.9	1.0%
ME 4	36 53 18	2016	Above Normal	June	--	1,509.6	1,458.3	51.3	3.4%	1,449.2	60.4	4.0%	1,422.6	87.0	5.8%
ME 4	36 53 18	2016	Above Normal	July	--	823.2	766.1	57.2	6.9%	754.7	68.5	8.3%	721.3	101.9	12.4%
ME 4	36 53 18	2016	Above Normal	August	--	491.9	436.2	55.7	11.3%	425.1	66.8	13.6%	392.0	99.9	20.3%
ME 4	36 53 18	2016	Above Normal	September	Used in Summary Table Analysis	328.2	276.3	51.9	15.8%	265.7	62.5	19.0%	234.3	93.9	28.6%
ME 4	36 53 18	2017	Wet	October	Used in Summary Table Analysis	18,306.7	18,265.0	41.7	0.2%	18,256.9	49.8	0.3%	18,232.6	74.1	0.4%
ME 4	36 53 18	2017	Wet	November	Used in Summary Table Analysis	18,848.4	18,817.1	31.3	0.2%	18,810.2	38.2	0.2%	18,791.7	56.7	0.3%
ME 4	36 53 18	2017	Wet	December	--	24,150.5	24,122.7	27.8	0.1%	24,116.9	33.6	0.1%	24,100.7	49.8	0.2%
ME 4	36 53 18	2017	Wet	January	--	107,015.0	106,988.4	26.6	0.0%	106,983.8	31.3	0.0%	106,967.6	47.5	0.0%
ME 4	36 53 18	2017	Wet	February	--	81,905.1	81,880.8	24.3	0.0%	81,876.2	28.9	0.0%	81,861.1	44.0	0.1%
ME 4	36 53 18	2017	Wet	March	--	27,295.1	27,273.1	22.0	0.1%	27,268.5	26.6	0.1%	27,254.6	40.5	0.1%
ME 4	36 53 18	2017	Wet	April	--	22,958.3	22,937.5	20.8	0.1%	22,934.0	24.3	0.1%	22,921.3	37.0	0.2%
ME 4	36 53 18	2017	Wet	May	--	6,273.0	6,245.5	27.5	0.4%	6,239.9	33.1	0.5%	6,223.4	49.7	0.8%
ME 4	36 53 18	2017	Wet	June	--	2,118.3	2,065.2	53.1	2.5%	2,054.6	63.7	3.0%	2,023.7	94.6	4.5%
ME 4	36 53 18	2017	Wet	July	--	934.8	877.4	57.4	6.1%	866.2	68.7	7.3%	832.9	102.0	10.9%
ME 4	36 53 18	2017	Wet	August	--	507.0	451.5	55.5	11.0%	440.5	66.6	13.1%	407.6	99.4	19.6%
ME 4	36 53 18	2017	Wet	September	Used in Summary Table Analysis	323.0	271.8	51.2	15.9%	261.5	61.5	19.0%	230.8	92.2	28.5%
ME 4	36 53 18	2018	Above Normal	October	Used in Summary Table Analysis	275.8	235.2	40.5	14.7%	227.1	48.7	17.7%	202.6	73.2	26.5%
ME 4	36 53 18	2018	Above Normal	November	Used in Summary Table Analysis	10,813.9	10,782.1	31.8	0.3%	10,775.6	38.3	0.4%	10,756.1	57.8	0.5%
ME 4	36 53 18	2018	Above Normal	December	--	5,447.6	5,420.5	27.1	0.5%	5,414.9	32.6	0.6%	5,398.3	49.3	0.9%
ME 4	36 53 18	2018	Above Normal	January	--	17,819.4	17,795.1	24.3	0.1%	17,790.5	28.9	0.2%	17,775.5	44.0	0.2%
ME 4	36 53 18	2018	Above Normal	February	--	7,598.8	7,576.6	22.2	0.3%	7,572.1	26.7	0.4%	7,558.3	40.5	0.5%
ME 4	36 53 18	2018	Above Normal	March	--	20,724.5	20,703.7	20.8	0.1%	20,699.1	25.5	0.1%	20,686.3	38.2	0.2%
ME 4	36 53 18	2018	Above Normal	April	--	32,230.3	32,210.6	19.7	0.1%	32,207.2	23.1	0.1%	32,194.4	35.9	0.1%
ME 4	36 53 18	2018	Above Normal	May	--	6,989.1	6,947.5	41.7	0.6%	6,939.2	49.9	0.7%	6,914.2	74.9	1.1%
ME 4	36 53 18	2018	Above Normal	June	--	1,914.2	1,860.8	53.5	2.8%	1,850.2	64.0	3.3%	1,819.3	94.9	5.0%
ME 4	36 53 18	2018	Above Normal	July	--	781.7	724.0	57.7	7.4%	712.6	69.1	8.8%	678.6	103.0	13.2%
ME 4	36 53 18	2018	Above Normal	August	--	442.9	389.4	53.6	12.1%	378.7	64.3	14.5%	346.7	96.2	21.7%
ME 4	36 53 18	2018	Above Normal	September	Used in Summary Table Analysis	300.3	248.9	51.3	17.1%	238.7	61.6	20.5%	207.9	92.3	30.8%
ME 4	36 53 18	2019	Below Normal	October	Used in Summary Table Analysis	208.0	168.0	39.9	19.2%	159.9	48.0	23.1%	135.6	72.3	34.8%
ME 4	36 53 18	2019	Below Normal	November	Used in Summary Table Analysis	6,638.0	6,606.0	31.9	0.5%	6,599.5	38.4	0.6%	6,579.9	58.1	0.9%
ME 4	36 53 18	2019	Below Normal	December	--	14,691.0	14,663.2	27.8	0.2%	14,657.4	33.6	0.2%	14,641.2	49.8	0.3%
ME 4	36 53 18	2019	Below Normal	January	--	35,272.0	35,246.5	25.5	0.1%	35,240.7	31.3	0.1%	35,225.7	46.3	0.1%
ME 4	36 53 18	2019	Below Normal	February	--	141,979.2	141,956.0	23.1	0.0%	141,944.4	34.7	0.0%	141,932.9	46.3	0.0%
ME 4	36 53 18	2019	Below Normal	March	--	42,349.5	42,328.7	20.8	0.0%	42,325.2	24.3	0.1%	42,312.5	37.0	0.1%
ME 4	36 53 18	2019	Below Normal	April	--	15,280.1	15,260.4	19.7	0.1%	15,255.8	24.3	0.2%	15,244.2	35.9	0.2%
ME 4	36 53 18	2019	Below Normal	May	--	16,980.3	16,935.2	45.1	0.3%	16,927.1	53.2	0.3%	16,900.5	79.9	0.5%
ME 4	36 53 18	2019	Below Normal	June	--	4,242.6	4,186.2	56.4	1.3%	4,175.5	67.1	1.6%	4,143.9	98.7	2.3%
ME 4	36 53 18	2019	Below Normal	July	--	1,361.7	1,303.8	57.9	4.2%	1,292.4	69.3	5.1%	1,258.6	103.1	7.6%
ME 4	36 53 18	2019	Below Normal	August	--	596.9	541.9	54.9	9.2%	531.0	65.9	11.0%	498.6	98.3	16.5%
ME 4	36 53 18	2019	Below Normal	September	Used in Summary Table Analysis	462.9	411.8	51.1	11.0%	401.6	61.3	13.3%	370.9	92.0	19.9%
ME 4	36 53 18	2020	Dry	October	Used in Summary Table Analysis	355.9	317.5	38.4	10.8%	309.7	46.2	13.0%	286.3	69.6	19.6%
ME 4	36 53 18	2020	Dry	November	Used in Summary Table Analysis	320.3	290.1	30.2	9.4%	284.0	36.3	11.3%	265.6	54.7	17.1%
ME 4	36 53 18	2020	Dry	December	--	13,321.8	13,294.0	27.8	0.2%	13,288.2	33.6	0.3%	13,272.0	49.8	0.4%
ME 4	36 53 18	2020	Dry	January	--	22,358.8	22,333.3	25.5	0.1%	22,328.7	30.1	0.1%	22,312.5	46.3	0.2%
ME 4	36 53 18	2020	Dry	February	--	7,415.4	7,392.7	22.7	0.3%	7,388.0	27.4	0.4%	7,374.1	41.3	0.6%
ME 4	36 53 18	2020	Dry	March	--	7,248.6	7,227.2	21.4	0.3%	7,222.8	25.8	0.4%	7,209.7	38.9	0.5%
ME 4	36 53 18	2020	Dry	April	--	5,487.8	5,443.6	44.2	0.8%	5,434.8	53.0	1.0%	5,408.6	79.3	1.4%
ME 4	36 53 18	2020	Dry	May	--	7,383.3	7,330.4	52.9	0.7%	7,319.9	63.4	0.9%	7,288.4	94.9	1.3%
ME 4	36 53 18	2020	Dry	June	--	2,104.2	2,037.4	66.8	3.2%	2,024.4	79.7	3.8%	1,986.5	117.7	5.6%
ME 4	36 53 18	2020	Dry	July	--	796.5	729.2	67.3	8.5%	715.8	80.6	10.1%	681.5	115.0	14.4%
ME 4	36 53 18	2020	Dry	August	--	399.2	333.1	66.1	16.6%	320.0	79.3	19.9%	283.4	115.8	29.0%
ME 4	36 53 18	2020	Dry	September	Used in Summary Table Analysis	248.6	186.9	61.8	24.8%	174.2	74.4	29.9%	137.4	111.2	44.7%
ME 4	35 53 19	2000	Above Normal	October	Used in Summary Table Analysis	817.3	776.5	40.8	5.0%	768.3	49.0	6.0%	743.6	73.7	9.0%
ME 4	35 53 19	2000	Above Normal	November	Used in Summary Table Analysis	12,153.9	12,120.4	33.6	0.3%	12,114.6	39.4	0.3%	12,093.8	60.2	0.5%
ME 4	35 53 19	2000	Above Normal	December	--	10,829.3	10,801.2	28.1	0.3%	10,795.5	33.8	0.3%	10,778.2	51.0	0.5%
ME 4	35 53 19	2000	Above Normal	January	--	28,635.4	28,610.0	25.5	0.1%	28,604.2	31.3	0.1%	28,589.1	46.3	0.2%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	35 53 19	2000	Above Normal	February	--	37,079.9	37,056.7	23.1	0.1%	37,052.1	27.8	0.1%	37,037.0	42.8	0.1%
ME 4	35 53 19	2000	Above Normal	March	--	18,328.7	18,306.7	22.0	0.1%	18,302.1	26.6	0.1%	18,289.4	39.4	0.2%
ME 4	35 53 19	2000	Above Normal	April	--	12,322.9	12,302.1	20.8	0.2%	12,298.6	24.3	0.2%	12,285.9	37.0	0.3%
ME 4	35 53 19	2000	Above Normal	May	--	7,102.0	7,058.3	43.6	0.6%	7,049.5	52.4	0.7%	7,023.6	78.4	1.1%
ME 4	35 53 19	2000	Above Normal	June	--	2,613.8	2,549.5	64.2	2.5%	2,536.8	77.0	2.9%	2,499.2	114.6	4.4%
ME 4	35 53 19	2000	Above Normal	July	--	992.4	922.9	58.0	5.8%	922.9	69.5	7.0%	888.8	103.6	10.4%
ME 4	35 53 19	2000	Above Normal	August	--	522.5	467.8	54.7	10.5%	456.9	65.5	12.5%	424.4	98.1	18.8%
ME 4	35 53 19	2000	Above Normal	September	Used in Summary Table Analysis	295.6	247.1	48.5	16.4%	237.4	58.2	19.7%	208.3	87.3	29.5%
ME 4	35 53 19	2001	Dry	October	Used in Summary Table Analysis	3,822.6	3,782.4	40.2	1.1%	3,774.2	48.4	1.3%	3,749.8	72.8	1.9%
ME 4	35 53 19	2001	Dry	November	Used in Summary Table Analysis	6,136.9	6,104.5	32.4	0.5%	6,097.9	39.0	0.6%	6,078.1	58.8	1.0%
ME 4	35 53 19	2001	Dry	December	--	8,851.4	8,823.1	28.2	0.3%	8,817.5	33.9	0.4%	8,800.2	51.2	0.6%
ME 4	35 53 19	2001	Dry	January	--	12,816.0	12,790.5	25.5	0.2%	12,785.9	30.1	0.2%	12,769.7	46.3	0.4%
ME 4	35 53 19	2001	Dry	February	--	17,487.3	17,464.1	23.1	0.1%	17,459.5	27.8	0.2%	17,445.6	41.7	0.2%
ME 4	35 53 19	2001	Dry	March	--	12,304.4	12,283.6	20.8	0.2%	12,278.9	25.5	0.2%	12,265.0	39.4	0.3%
ME 4	35 53 19	2001	Dry	April	--	10,980.1	10,935.3	44.8	0.4%	10,926.4	53.7	0.5%	10,899.8	80.3	0.7%
ME 4	35 53 19	2001	Dry	May	--	2,636.6	2,583.8	52.8	2.0%	2,573.3	63.3	2.4%	2,541.8	94.8	3.6%
ME 4	35 53 19	2001	Dry	June	--	2,653.0	2,581.9	71.1	2.7%	2,568.1	85.0	3.2%	2,527.2	125.8	4.7%
ME 4	35 53 19	2001	Dry	July	--	718.3	651.4	66.9	9.3%	638.1	80.2	11.2%	603.7	114.6	16.0%
ME 4	35 53 19	2001	Dry	August	--	172.7	107.4	65.2	37.8%	94.4	78.2	45.3%	58.1	114.6	66.4%
ME 4	35 53 19	2001	Dry	September	Used in Summary Table Analysis	95.6	37.4	58.2	60.9%	25.8	69.8	73.0%	0.0	95.6	100.0%
ME 4	35 53 19	2002	Below Normal	October	Used in Summary Table Analysis	265.3	216.6	48.8	18.4%	206.7	58.6	22.1%	177.2	88.1	33.2%
ME 4	35 53 19	2002	Below Normal	November	Used in Summary Table Analysis	12,042.8	12,004.6	38.2	0.3%	11,996.5	46.3	0.4%	11,969.9	72.9	0.6%
ME 4	35 53 19	2002	Below Normal	December	--	35,736.1	35,701.4	34.7	0.1%	35,694.4	41.7	0.1%	35,673.6	62.5	0.2%
ME 4	35 53 19	2002	Below Normal	January	--	30,910.9	30,880.8	30.1	0.1%	30,875.0	35.9	0.1%	30,856.5	54.4	0.2%
ME 4	35 53 19	2002	Below Normal	February	--	24,696.8	24,670.1	26.6	0.1%	24,664.4	32.4	0.1%	24,647.0	49.8	0.2%
ME 4	35 53 19	2002	Below Normal	March	--	17,794.0	17,768.5	25.5	0.1%	17,762.7	31.3	0.2%	17,747.7	46.3	0.3%
ME 4	35 53 19	2002	Below Normal	April	--	9,930.3	9,885.4	44.9	0.5%	9,876.5	53.8	0.5%	9,849.7	80.7	0.8%
ME 4	35 53 19	2002	Below Normal	May	--	3,320.8	3,267.9	52.9	1.6%	3,257.3	63.5	1.9%	3,225.8	95.0	2.9%
ME 4	35 53 19	2002	Below Normal	June	--	854.2	794.8	59.3	6.9%	783.1	71.0	8.3%	748.4	105.7	12.4%
ME 4	35 53 19	2002	Below Normal	July	--	362.7	302.4	60.2	16.6%	290.5	72.2	19.9%	255.7	107.0	29.5%
ME 4	35 53 19	2002	Below Normal	August	--	227.5	170.8	56.7	24.9%	159.5	68.0	29.9%	125.2	102.3	45.0%
ME 4	35 53 19	2002	Below Normal	September	Used in Summary Table Analysis	164.2	110.7	53.5	32.6%	100.0	64.1	39.1%	67.2	97.0	59.1%
ME 4	35 53 19	2003	Wet	October	Used in Summary Table Analysis	129.1	85.2	43.9	34.0%	76.3	52.8	40.9%	49.7	79.4	61.5%
ME 4	35 53 19	2003	Wet	November	Used in Summary Table Analysis	896.8	861.5	35.3	3.9%	854.3	42.5	4.7%	832.6	64.2	7.2%
ME 4	35 53 19	2003	Wet	December	--	56,945.6	56,914.4	31.3	0.1%	56,907.4	38.2	0.1%	56,888.9	56.7	0.1%
ME 4	35 53 19	2003	Wet	January	--	31,555.6	31,527.8	27.8	0.1%	31,522.0	33.6	0.1%	31,505.8	49.8	0.2%
ME 4	35 53 19	2003	Wet	February	--	20,366.9	20,341.4	25.5	0.1%	20,336.8	30.1	0.1%	20,320.6	46.3	0.2%
ME 4	35 53 19	2003	Wet	March	--	24,054.4	24,030.1	24.3	0.1%	24,025.5	28.9	0.1%	24,011.6	42.8	0.2%
ME 4	35 53 19	2003	Wet	April	--	42,965.3	42,942.1	23.1	0.1%	42,937.5	27.8	0.1%	42,923.6	41.7	0.1%
ME 4	35 53 19	2003	Wet	May	--	12,230.3	12,185.2	45.1	0.4%	12,177.1	53.2	0.4%	12,149.3	81.0	0.7%
ME 4	35 53 19	2003	Wet	June	--	3,167.6	3,111.0	56.6	1.8%	3,099.9	67.7	2.1%	3,067.2	100.3	3.2%
ME 4	35 53 19	2003	Wet	July	--	1,475.1	1,415.5	59.6	4.0%	1,403.7	71.4	4.8%	1,368.6	106.5	7.2%
ME 4	35 53 19	2003	Wet	August	--	760.9	702.5	58.4	7.7%	690.5	70.4	9.3%	653.2	107.7	14.2%
ME 4	35 53 19	2003	Wet	September	Used in Summary Table Analysis	458.5	409.2	49.4	10.8%	399.3	59.3	12.9%	368.6	90.0	19.6%
ME 4	35 53 19	2004	Wet	October	Used in Summary Table Analysis	325.4	284.4	40.9	12.6%	276.2	49.2	15.1%	251.2	74.2	22.8%
ME 4	35 53 19	2004	Wet	November	Used in Summary Table Analysis	5,817.7	5,784.4	33.3	0.6%	5,777.7	40.0	0.7%	5,757.1	60.6	1.0%
ME 4	35 53 19	2004	Wet	December	--	36,380.8	36,351.9	28.9	0.1%	36,344.9	35.9	0.1%	36,327.5	53.2	0.1%
ME 4	35 53 19	2004	Wet	January	--	31,522.0	31,496.5	25.5	0.1%	31,490.7	31.3	0.1%	31,474.5	47.5	0.2%
ME 4	35 53 19	2004	Wet	February	--	38,282.4	38,258.1	24.3	0.1%	38,253.5	28.9	0.1%	38,238.4	44.0	0.1%
ME 4	35 53 19	2004	Wet	March	--	16,531.3	16,509.3	22.0	0.1%	16,504.6	26.6	0.2%	16,490.7	40.5	0.2%
ME 4	35 53 19	2004	Wet	April	--	9,455.7	9,434.5	21.2	0.2%	9,430.2	25.5	0.3%	9,417.1	38.5	0.4%
ME 4	35 53 19	2004	Wet	May	--	3,424.1	3,380.2	43.9	1.3%	3,371.5	52.5	1.5%	3,345.4	78.7	2.3%
ME 4	35 53 19	2004	Wet	June	--	692.1	637.7	54.5	7.9%	627.0	65.2	9.4%	595.3	96.8	14.0%
ME 4	35 53 19	2004	Wet	July	--	356.7	298.1	58.6	16.4%	286.5	70.2	19.7%	252.0	104.7	29.3%
ME 4	35 53 19	2004	Wet	August	--	225.6	170.3	55.2	24.5%	159.4	66.2	29.4%	126.4	99.2	44.0%
ME 4	35 53 19	2004	Wet	September	Used in Summary Table Analysis	162.5	110.0	52.5	32.3%	99.4	63.0	38.8%	67.9	94.6	58.2%
ME 4	35 53 19	2005	Above Normal	October	Used in Summary Table Analysis	7,702.0	7,660.2	41.8	0.5%	7,651.7	50.2	0.7%	7,626.4	75.6	1.0%
ME 4	35 53 19	2005	Above Normal	November	Used in Summary Table Analysis	2,258.8	2,226.0	32.8	1.5%	2,219.3	39.5	1.7%	2,199.3	59.5	2.6%
ME 4	35 53 19	2005	Above Normal	December	--	21,086.8	21,057.9	28.9	0.1%	21,052.1	34.7	0.2%	21,034.7	52.1	0.2%
ME 4	35 53 19	2005	Above Normal	January	--	22,431.7	22,406.3	25.5	0.1%	22,400.5	31.3	0.1%	22,384.3	47.5	0.2%
ME 4	35 53 19	2005	Above Normal	February	--	14,018.5	13,995.4	23.1	0.2%	13,990.7	27.8	0.2%	13,976.9	41.7	0.3%
ME 4	35 53 19	2005	Above Normal	March	--	28,603.0	28,581.0	22.0	0.1%	28,576.4	26.6	0.1%	28,562.5	40.5	0.1%
ME 4	35 53 19	2005	Above Normal	April	--	21,468.8	21,446.8	22.0	0.1%	21,443.3	25.5	0.1%	21,430.6	38.2	0.2%
ME 4	35 53 19	2005	Above Normal	May	--	19,598.4	19,553.2	45.1	0.2%	19,544.0	54.4	0.3%	19,517.4	81.0	0.4%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	35 53 19	2005	Above Normal	June	--	15,905.1	15,839.1	66.0	0.4%	15,826.4	78.7	0.5%	15,788.2	116.9	0.7%
ME 4	35 53 19	2005	Above Normal	July	--	2,863.9	2,803.5	60.4	2.1%	2,792.0	71.9	2.5%	2,757.9	106.0	3.7%
ME 4	35 53 19	2005	Above Normal	August	--	983.9	929.0	54.8	5.6%	918.2	65.6	6.7%	885.9	98.0	10.0%
ME 4	35 53 19	2005	Above Normal	September	Used in Summary Table Analysis	525.3	476.7	48.6	9.2%	467.1	58.2	11.1%	438.1	87.2	16.6%
ME 4	35 53 19	2006	Wet	October	Used in Summary Table Analysis	635.2	595.8	39.4	6.2%	587.9	47.3	7.5%	563.9	71.4	11.2%
ME 4	35 53 19	2006	Wet	November	Used in Summary Table Analysis	9,332.6	9,301.3	31.4	0.3%	9,294.9	37.7	0.4%	9,275.7	56.9	0.6%
ME 4	35 53 19	2006	Wet	December	--	43,589.1	43,561.3	27.8	0.1%	43,555.6	33.6	0.1%	43,537.0	52.1	0.1%
ME 4	35 53 19	2006	Wet	January	--	46,380.8	46,355.3	25.5	0.1%	46,349.5	31.3	0.1%	46,333.3	47.5	0.1%
ME 4	35 53 19	2006	Wet	February	--	26,653.9	26,631.9	22.0	0.1%	26,627.3	26.6	0.1%	26,612.3	41.7	0.2%
ME 4	35 53 19	2006	Wet	March	--	47,223.4	47,201.4	22.0	0.0%	47,196.8	26.6	0.1%	47,184.0	39.4	0.1%
ME 4	35 53 19	2006	Wet	April	--	30,453.7	30,434.0	19.7	0.1%	30,429.4	24.3	0.1%	30,417.8	35.9	0.1%
ME 4	35 53 19	2006	Wet	May	--	14,222.2	14,194.4	27.8	0.2%	14,189.8	32.4	0.2%	14,173.6	48.6	0.3%
ME 4	35 53 19	2006	Wet	June	--	3,548.6	3,494.4	54.2	1.5%	3,483.8	64.8	1.8%	3,452.4	96.2	2.7%
ME 4	35 53 19	2006	Wet	July	--	1,280.4	1,222.9	57.5	4.5%	1,211.7	68.8	5.4%	1,178.2	102.2	8.0%
ME 4	35 53 19	2006	Wet	August	--	666.4	610.4	56.0	8.4%	599.3	67.1	10.1%	566.2	100.2	15.0%
ME 4	35 53 19	2006	Wet	September	Used in Summary Table Analysis	427.1	377.9	49.2	11.5%	368.2	58.9	13.8%	338.8	88.3	20.7%
ME 4	35 53 19	2007	Above Normal	October	Used in Summary Table Analysis	275.0	234.8	40.2	14.6%	226.7	48.3	17.6%	202.2	72.8	26.5%
ME 4	35 53 19	2007	Above Normal	November	Used in Summary Table Analysis	8,689.9	8,657.2	32.8	0.4%	8,650.6	39.4	0.5%	8,630.4	59.5	0.7%
ME 4	35 53 19	2007	Above Normal	December	--	20,459.5	20,430.6	28.9	0.1%	20,424.8	34.7	0.2%	20,406.3	53.2	0.3%
ME 4	35 53 19	2007	Above Normal	January	--	10,264.0	10,238.5	25.5	0.2%	10,233.3	30.7	0.3%	10,217.4	46.6	0.5%
ME 4	35 53 19	2007	Above Normal	February	--	30,627.3	30,603.0	24.3	0.1%	30,597.2	30.1	0.1%	30,582.2	45.1	0.1%
ME 4	35 53 19	2007	Above Normal	March	--	13,111.1	13,088.0	23.1	0.2%	13,083.3	27.8	0.2%	13,069.4	41.7	0.3%
ME 4	35 53 19	2007	Above Normal	April	--	11,542.8	11,499.8	43.1	0.4%	11,491.2	51.6	0.4%	11,465.5	77.3	0.7%
ME 4	35 53 19	2007	Above Normal	May	--	4,143.2	4,092.0	51.2	1.2%	4,081.7	61.5	1.5%	4,051.2	92.0	2.2%
ME 4	35 53 19	2007	Above Normal	June	--	1,500.6	1,439.7	60.9	4.1%	1,427.7	72.9	4.9%	1,392.1	108.4	7.2%
ME 4	35 53 19	2007	Above Normal	July	--	496.4	435.2	61.2	12.3%	423.1	73.3	14.8%	387.6	108.8	21.9%
ME 4	35 53 19	2007	Above Normal	August	--	223.6	168.3	55.2	24.7%	157.3	66.2	29.6%	123.9	99.7	44.6%
ME 4	35 53 19	2007	Above Normal	September	Used in Summary Table Analysis	151.2	98.9	52.3	34.6%	88.5	62.7	41.4%	57.2	93.9	62.1%
ME 4	35 53 19	2008	Dry	October	Used in Summary Table Analysis	3,441.6	3,398.8	42.7	1.2%	3,390.3	51.3	1.5%	3,364.1	77.4	2.2%
ME 4	35 53 19	2008	Dry	November	Used in Summary Table Analysis	3,282.4	3,249.3	33.1	1.0%	3,242.6	39.8	1.2%	3,222.1	60.3	1.8%
ME 4	35 53 19	2008	Dry	December	--	23,191.0	23,162.0	28.9	0.1%	23,155.1	35.9	0.2%	23,137.7	53.2	0.2%
ME 4	35 53 19	2008	Dry	January	--	37,593.8	37,566.0	27.8	0.1%	37,560.2	33.6	0.1%	37,542.8	50.9	0.1%
ME 4	35 53 19	2008	Dry	February	--	26,285.9	26,261.6	24.3	0.1%	26,256.9	28.9	0.1%	26,243.1	42.8	0.2%
ME 4	35 53 19	2008	Dry	March	--	11,800.9	11,778.9	22.0	0.2%	11,775.5	25.5	0.2%	11,761.6	39.4	0.3%
ME 4	35 53 19	2008	Dry	April	--	9,021.6	8,977.9	43.8	0.5%	8,969.2	52.4	0.6%	8,943.1	78.6	0.9%
ME 4	35 53 19	2008	Dry	May	--	1,358.7	1,312.7	45.9	3.4%	1,303.8	54.9	4.0%	1,277.1	81.6	6.0%
ME 4	35 53 19	2008	Dry	June	--	438.3	372.3	66.0	15.1%	359.4	79.0	18.0%	321.0	117.3	26.8%
ME 4	35 53 19	2008	Dry	July	--	256.3	190.9	65.4	25.5%	178.0	78.3	30.5%	144.5	111.8	43.6%
ME 4	35 53 19	2008	Dry	August	--	179.7	116.2	63.5	35.4%	103.5	76.2	42.4%	65.4	114.4	63.6%
ME 4	35 53 19	2008	Dry	September	Used in Summary Table Analysis	141.3	80.2	61.1	43.2%	68.1	73.2	51.8%	32.8	108.5	76.8%
ME 4	35 53 19	2009	Critical	October	Used in Summary Table Analysis	924.9	876.8	48.2	5.2%	867.1	57.8	6.3%	837.7	87.3	9.4%
ME 4	35 53 19	2009	Critical	November	Used in Summary Table Analysis	5,526.6	5,488.9	37.7	0.7%	5,481.4	45.3	0.8%	5,455.6	71.1	1.3%
ME 4	35 53 19	2009	Critical	December	--	12,199.1	12,166.7	32.4	0.3%	12,159.7	39.4	0.3%	12,138.9	60.2	0.5%
ME 4	35 53 19	2009	Critical	January	--	8,805.6	8,775.8	29.7	0.3%	8,769.8	35.8	0.4%	8,751.4	54.2	0.6%
ME 4	35 53 19	2009	Critical	February	--	22,642.4	22,615.7	26.6	0.1%	22,611.1	31.3	0.1%	22,594.9	47.5	0.2%
ME 4	35 53 19	2009	Critical	March	--	21,142.4	21,119.2	23.1	0.1%	21,113.4	28.9	0.1%	21,098.4	44.0	0.2%
ME 4	35 53 19	2009	Critical	April	--	10,099.0	10,053.5	45.5	0.5%	10,044.4	54.5	0.5%	10,017.1	81.8	0.8%
ME 4	35 53 19	2009	Critical	May	--	15,593.8	15,538.2	55.6	0.4%	15,527.8	66.0	0.4%	15,494.2	99.5	0.6%
ME 4	35 53 19	2009	Critical	June	--	3,161.2	3,090.6	70.6	2.2%	3,077.1	84.1	2.7%	3,036.3	124.9	4.0%
ME 4	35 53 19	2009	Critical	July	--	1,263.5	1,197.5	66.1	5.2%	1,184.5	79.1	6.3%	1,150.7	112.9	8.9%
ME 4	35 53 19	2009	Critical	August	--	669.4	605.4	64.0	9.6%	592.7	76.7	11.5%	557.0	112.4	16.8%
ME 4	35 53 19	2009	Critical	September	Used in Summary Table Analysis	390.4	333.1	57.3	14.7%	321.8	68.6	17.6%	288.6	101.8	26.1%
ME 4	35 53 19	2010	Below Normal	October	Used in Summary Table Analysis	6,089.8	6,041.0	48.8	0.8%	6,031.1	58.7	1.0%	6,000.5	89.4	1.5%
ME 4	35 53 19	2010	Below Normal	November	Used in Summary Table Analysis	8,300.7	8,261.7	39.0	0.5%	8,253.8	46.9	0.6%	8,227.3	73.4	0.9%
ME 4	35 53 19	2010	Below Normal	December	--	12,378.5	12,344.9	33.6	0.3%	12,338.0	40.5	0.3%	12,317.1	61.3	0.5%
ME 4	35 53 19	2010	Below Normal	January	--	36,316.0	36,285.9	30.1	0.1%	36,278.9	37.0	0.1%	36,260.4	55.6	0.2%
ME 4	35 53 19	2010	Below Normal	February	--	27,268.5	27,240.7	27.8	0.1%	27,236.1	32.4	0.1%	27,218.8	49.8	0.2%
ME 4	35 53 19	2010	Below Normal	March	--	28,856.5	28,832.2	24.3	0.1%	28,826.4	30.1	0.1%	28,811.3	45.1	0.2%
ME 4	35 53 19	2010	Below Normal	April	--	40,052.1	40,027.8	24.3	0.1%	40,022.0	30.1	0.1%	40,008.1	44.0	0.1%
ME 4	35 53 19	2010	Below Normal	May	--	20,298.6	20,251.2	47.5	0.2%	20,243.1	55.6	0.3%	20,214.1	84.5	0.4%
ME 4	35 53 19	2010	Below Normal	June	--	9,373.8	9,306.5	67.4	0.7%	9,293.3	80.6	0.9%	9,253.8	120.0	1.3%
ME 4	35 53 19	2010	Below Normal	July	--	1,455.4	1,394.2	61.2	4.2%	1,382.4	73.0	5.0%	1,347.3	108.1	7.4%
ME 4	35 53 19	2010	Below Normal	August	--	569.9	513.6	56.3	9.9%	502.6	67.4	11.8%	469.4	100.5	17.6%
ME 4	35 53 19	2010	Below Normal	September	Used in Summary Table Analysis	652.0	598.3	53.8	8.2%	587.5	64.5	9.9%	555.4	96.7	14.8%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	35 53 19	2011	Wet	October	Used in Summary Table Analysis	9,652.2	9,611.3	40.9	0.4%	9,603.1	49.1	0.5%	9,578.2	74.0	0.8%
ME 4	35 53 19	2011	Wet	November	Used in Summary Table Analysis	14,241.9	14,209.5	32.4	0.2%	14,202.5	39.4	0.3%	14,181.7	60.2	0.4%
ME 4	35 53 19	2011	Wet	December	--	33,794.0	33,765.0	28.9	0.1%	33,759.3	34.7	0.1%	33,740.7	53.2	0.2%
ME 4	35 53 19	2011	Wet	January	--	14,173.6	14,148.1	25.5	0.2%	14,143.5	30.1	0.2%	14,127.3	46.3	0.3%
ME 4	35 53 19	2011	Wet	February	--	20,784.7	20,760.4	24.3	0.1%	20,755.8	28.9	0.1%	20,740.7	44.0	0.2%
ME 4	35 53 19	2011	Wet	March	--	52,067.1	52,044.0	23.1	0.0%	52,039.4	27.8	0.1%	52,025.5	41.7	0.1%
ME 4	35 53 19	2011	Wet	April	--	24,821.8	24,799.8	22.0	0.1%	24,795.1	26.6	0.1%	24,781.3	40.5	0.2%
ME 4	35 53 19	2011	Wet	May	--	11,392.6	11,348.0	44.6	0.4%	11,339.1	53.5	0.5%	11,312.5	80.1	0.7%
ME 4	35 53 19	2011	Wet	June	--	7,066.1	7,000.5	65.6	0.9%	6,987.5	78.6	1.1%	6,949.2	116.9	1.7%
ME 4	35 53 19	2011	Wet	July	--	1,828.9	1,763.5	65.4	3.6%	1,750.7	78.2	4.3%	1,713.8	115.2	6.3%
ME 4	35 53 19	2011	Wet	August	--	777.5	721.9	55.6	7.2%	710.9	66.6	8.6%	678.0	99.5	12.8%
ME 4	35 53 19	2011	Wet	September	Used in Summary Table Analysis	434.1	383.5	50.6	11.6%	373.4	60.6	14.0%	343.3	90.8	20.9%
ME 4	35 53 19	2012	Below Normal	October	Used in Summary Table Analysis	4,550.8	4,509.3	41.6	0.9%	4,500.8	50.0	1.1%	4,475.2	75.6	1.7%
ME 4	35 53 19	2012	Below Normal	November	Used in Summary Table Analysis	8,258.2	8,224.9	33.3	0.4%	8,218.2	40.0	0.5%	8,197.6	60.6	0.7%
ME 4	35 53 19	2012	Below Normal	December	--	5,191.9	5,163.2	28.7	0.6%	5,157.3	34.6	0.7%	5,139.6	52.3	1.0%
ME 4	35 53 19	2012	Below Normal	January	--	20,175.9	20,150.5	25.5	0.1%	20,144.7	31.3	0.2%	20,128.5	47.5	0.2%
ME 4	35 53 19	2012	Below Normal	February	--	18,230.3	18,206.0	24.3	0.1%	18,201.4	28.9	0.2%	18,186.3	44.0	0.2%
ME 4	35 53 19	2012	Below Normal	March	--	45,496.5	45,473.4	23.1	0.1%	45,468.8	27.8	0.1%	45,453.7	42.8	0.1%
ME 4	35 53 19	2012	Below Normal	April	--	26,885.4	26,863.4	22.0	0.1%	26,858.8	26.6	0.1%	26,844.9	40.5	0.2%
ME 4	35 53 19	2012	Below Normal	May	--	7,488.9	7,444.6	44.3	0.6%	7,435.8	53.1	0.7%	7,409.5	79.4	1.1%
ME 4	35 53 19	2012	Below Normal	June	--	5,525.1	5,458.2	66.9	1.2%	5,445.1	80.0	1.4%	5,406.4	118.8	2.1%
ME 4	35 53 19	2012	Below Normal	July	--	2,229.3	2,166.1	63.2	2.8%	2,153.6	75.7	3.4%	2,116.4	112.8	5.1%
ME 4	35 53 19	2012	Below Normal	August	--	388.8	337.8	50.9	13.1%	327.7	61.0	15.7%	297.3	91.4	23.5%
ME 4	35 53 19	2012	Below Normal	September	Used in Summary Table Analysis	249.6	204.2	45.4	18.2%	195.2	54.4	21.8%	168.1	81.5	32.7%
ME 4	35 53 19	2013	Below Normal	October	Used in Summary Table Analysis	1,917.7	1,878.0	39.7	2.1%	1,870.0	47.7	2.5%	1,845.9	71.8	3.7%
ME 4	35 53 19	2013	Below Normal	November	Used in Summary Table Analysis	14,723.4	14,691.0	32.4	0.2%	14,685.2	38.2	0.3%	14,665.5	57.9	0.4%
ME 4	35 53 19	2013	Below Normal	December	--	60,077.5	60,048.6	28.9	0.0%	60,042.8	34.7	0.1%	60,024.3	53.2	0.1%
ME 4	35 53 19	2013	Below Normal	January	--	22,226.9	22,202.5	24.3	0.1%	22,196.8	30.1	0.1%	22,181.7	45.1	0.2%
ME 4	35 53 19	2013	Below Normal	February	--	8,856.9	8,833.4	23.5	0.3%	8,828.6	28.4	0.3%	8,814.2	42.7	0.5%
ME 4	35 53 19	2013	Below Normal	March	--	10,347.5	10,324.8	22.7	0.2%	10,320.3	27.2	0.3%	10,306.4	41.1	0.4%
ME 4	35 53 19	2013	Below Normal	April	--	8,295.6	8,253.6	42.0	0.5%	8,245.1	50.5	0.6%	8,220.0	75.6	0.9%
ME 4	35 53 19	2013	Below Normal	May	--	4,437.2	4,386.2	50.9	1.1%	4,376.2	61.0	1.4%	4,345.8	91.3	2.1%
ME 4	35 53 19	2013	Below Normal	June	--	2,111.9	2,051.4	60.5	2.9%	2,039.5	72.5	3.4%	2,003.9	108.0	5.1%
ME 4	35 53 19	2013	Below Normal	July	--	718.3	659.8	58.5	8.1%	648.3	70.1	9.8%	614.5	103.8	14.5%
ME 4	35 53 19	2013	Below Normal	August	--	340.6	285.5	55.1	16.2%	274.5	66.1	19.4%	241.0	99.6	29.2%
ME 4	35 53 19	2013	Below Normal	September	Used in Summary Table Analysis	4,795.7	4,738.7	57.1	1.2%	4,727.2	68.5	1.4%	4,693.1	102.7	2.1%
ME 4	35 53 19	2014	Critical	October	Used in Summary Table Analysis	280.5	238.7	41.8	14.9%	230.2	50.2	17.9%	205.7	74.8	26.7%
ME 4	35 53 19	2014	Critical	November	Used in Summary Table Analysis	1,542.7	1,509.0	33.7	2.2%	1,502.2	40.5	2.6%	1,481.6	61.1	4.0%
ME 4	35 53 19	2014	Critical	December	--	1,592.1	1,562.5	29.6	1.9%	1,556.5	35.6	2.2%	1,538.3	53.8	3.4%
ME 4	35 53 19	2014	Critical	January	--	2,826.3	2,799.8	26.5	0.9%	2,794.3	31.9	1.1%	2,777.9	48.4	1.7%
ME 4	35 53 19	2014	Critical	February	--	15,768.5	15,744.2	24.3	0.2%	15,739.6	28.9	0.2%	15,724.5	44.0	0.3%
ME 4	35 53 19	2014	Critical	March	--	31,506.9	31,483.8	23.1	0.1%	31,479.2	27.8	0.1%	31,464.1	42.8	0.1%
ME 4	35 53 19	2014	Critical	April	--	12,997.7	12,952.5	45.1	0.3%	12,943.3	54.4	0.4%	12,915.5	82.2	0.6%
ME 4	35 53 19	2014	Critical	May	--	5,192.1	5,138.5	53.6	1.0%	5,127.8	64.4	1.2%	5,095.5	96.6	1.9%
ME 4	35 53 19	2014	Critical	June	--	1,199.1	1,126.7	72.3	6.0%	1,112.6	86.5	7.2%	1,071.7	127.4	10.6%
ME 4	35 53 19	2014	Critical	July	--	546.3	479.2	67.1	12.3%	465.9	80.4	14.7%	431.1	115.2	21.1%
ME 4	35 53 19	2014	Critical	August	--	348.5	284.4	64.1	18.4%	271.6	76.9	22.1%	235.5	113.1	32.4%
ME 4	35 53 19	2014	Critical	September	Used in Summary Table Analysis	2,577.5	2,514.7	62.8	2.4%	2,502.3	75.2	2.9%	2,465.4	112.2	4.4%
ME 4	35 53 19	2015	Dry	October	Used in Summary Table Analysis	11,380.4	11,331.5	49.0	0.4%	11,321.9	58.6	0.5%	11,292.7	87.7	0.8%
ME 4	35 53 19	2015	Dry	November	Used in Summary Table Analysis	9,059.1	9,022.0	37.2	0.4%	9,014.5	44.7	0.5%	8,988.8	70.4	0.8%
ME 4	35 53 19	2015	Dry	December	--	32,695.6	32,664.4	31.3	0.1%	32,657.4	38.2	0.1%	32,636.6	59.0	0.2%
ME 4	35 53 19	2015	Dry	January	--	14,589.1	14,560.2	28.9	0.2%	14,554.4	34.7	0.2%	14,535.9	53.2	0.4%
ME 4	35 53 19	2015	Dry	February	--	27,263.9	27,238.4	25.5	0.1%	27,233.8	30.1	0.1%	27,217.6	46.3	0.2%
ME 4	35 53 19	2015	Dry	March	--	11,577.5	11,554.6	22.9	0.2%	11,550.0	27.5	0.2%	11,535.6	41.9	0.4%
ME 4	35 53 19	2015	Dry	April	--	8,406.4	8,361.6	44.8	0.5%	8,352.5	53.8	0.6%	8,325.6	80.8	1.0%
ME 4	35 53 19	2015	Dry	May	--	1,508.8	1,455.9	52.9	3.5%	1,445.5	63.3	4.2%	1,415.0	93.8	6.2%
ME 4	35 53 19	2015	Dry	June	--	652.8	585.7	67.0	10.3%	572.5	80.2	12.3%	533.6	119.2	18.3%
ME 4	35 53 19	2015	Dry	July	--	268.8	202.8	66.0	24.5%	189.8	79.1	29.4%	155.9	112.9	42.0%
ME 4	35 53 19	2015	Dry	August	--	166.8	102.9	63.9	38.3%	90.1	76.7	46.0%	54.6	112.2	67.3%
ME 4	35 53 19	2015	Dry	September	Used in Summary Table Analysis	120.9	60.9	60.0	49.6%	48.6	72.3	59.8%	12.9	108.0	89.4%
ME 4	35 53 19	2016	Above Normal	October	Used in Summary Table Analysis	86.1	36.0	50.2	58.2%	26.3	59.8	69.5%	0.0	86.1	100.0%
ME 4	35 53 19	2016	Above Normal	November	Used in Summary Table Analysis	3,883.2	3,844.3	38.9	1.0%	3,836.5	46.8	1.2%	3,808.2	75.0	1.9%
ME 4	35 53 19	2016	Above Normal	December	--	36,711.8	36,677.1	34.7	0.1%	36,670.1	41.7	0.1%	36,648.1	63.7	0.2%
ME 4	35 53 19	2016	Above Normal	January	--	57,414.4	57,383.1	31.3	0.1%	57,376.2	38.2	0.1%	57,356.5	57.9	0.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 4	35 53 19	2016	Above Normal	February	--	24,284.7	24,258.1	26.6	0.1%	24,253.5	31.3	0.1%	24,237.3	47.5	0.2%
ME 4	35 53 19	2016	Above Normal	March	--	41,821.8	41,796.3	25.5	0.1%	41,791.7	30.1	0.1%	41,775.5	46.3	0.1%
ME 4	35 53 19	2016	Above Normal	April	--	18,549.8	18,527.8	22.0	0.1%	18,523.1	26.6	0.1%	18,509.3	40.5	0.2%
ME 4	35 53 19	2016	Above Normal	May	--	5,219.3	5,191.3	28.0	0.5%	5,185.6	33.7	0.6%	5,168.6	50.7	1.0%
ME 4	35 53 19	2016	Above Normal	June	--	1,510.3	1,458.4	51.9	3.4%	1,449.3	61.0	4.0%	1,422.2	88.1	5.8%
ME 4	35 53 19	2016	Above Normal	July	--	823.9	765.8	58.1	7.0%	754.3	69.6	8.4%	720.3	103.6	12.6%
ME 4	35 53 19	2016	Above Normal	August	--	492.5	435.6	56.9	11.5%	424.3	68.2	13.8%	390.6	101.9	20.7%
ME 4	35 53 19	2016	Above Normal	September	Used in Summary Table Analysis	328.7	275.6	53.1	16.2%	264.8	63.9	19.5%	232.6	96.1	29.2%
ME 4	35 53 19	2017	Wet	October	Used in Summary Table Analysis	18,319.4	18,276.6	42.8	0.2%	18,268.5	50.9	0.3%	18,243.1	76.4	0.4%
ME 4	35 53 19	2017	Wet	November	Used in Summary Table Analysis	18,862.3	18,829.9	32.4	0.2%	18,822.9	39.4	0.2%	18,803.2	59.0	0.3%
ME 4	35 53 19	2017	Wet	December	--	24,172.5	24,143.5	28.9	0.1%	24,137.7	34.7	0.1%	24,120.4	52.1	0.2%
ME 4	35 53 19	2017	Wet	January	--	107,078.7	107,052.1	26.6	0.0%	107,046.3	32.4	0.0%	107,030.1	48.6	0.0%
ME 4	35 53 19	2017	Wet	February	--	81,942.1	81,917.8	24.3	0.0%	81,913.2	28.9	0.0%	81,898.1	44.0	0.1%
ME 4	35 53 19	2017	Wet	March	--	27,307.9	27,284.7	23.1	0.1%	27,280.1	27.8	0.1%	27,266.2	41.7	0.2%
ME 4	35 53 19	2017	Wet	April	--	22,971.1	22,950.2	20.8	0.1%	22,945.6	25.5	0.1%	22,934.0	37.0	0.2%
ME 4	35 53 19	2017	Wet	May	--	6,274.1	6,246.1	28.0	0.4%	6,240.5	33.6	0.5%	6,223.6	50.5	0.8%
ME 4	35 53 19	2017	Wet	June	--	2,120.1	2,066.6	53.6	2.5%	2,055.9	64.2	3.0%	2,024.7	95.5	4.5%
ME 4	35 53 19	2017	Wet	July	--	935.9	877.7	58.2	6.2%	866.2	69.7	7.4%	832.4	103.4	11.1%
ME 4	35 53 19	2017	Wet	August	--	508.0	451.4	56.6	11.1%	440.2	67.8	13.3%	406.7	101.3	19.9%
ME 4	35 53 19	2017	Wet	September	Used in Summary Table Analysis	323.7	271.3	52.3	16.2%	260.8	62.8	19.4%	229.5	94.2	29.1%
ME 4	35 53 19	2018	Above Normal	October	Used in Summary Table Analysis	276.4	234.7	41.6	15.1%	226.3	50.0	18.1%	201.2	75.2	27.2%
ME 4	35 53 19	2018	Above Normal	November	Used in Summary Table Analysis	10,828.1	10,795.3	32.9	0.3%	10,788.5	39.6	0.4%	10,768.4	59.7	0.6%
ME 4	35 53 19	2018	Above Normal	December	--	5,449.1	5,421.1	28.0	0.5%	5,415.4	33.7	0.6%	5,398.1	50.9	0.9%
ME 4	35 53 19	2018	Above Normal	January	--	17,844.9	17,819.4	25.5	0.1%	17,813.7	31.3	0.2%	17,798.6	46.3	0.3%
ME 4	35 53 19	2018	Above Normal	February	--	7,600.2	7,577.4	22.8	0.3%	7,572.8	27.4	0.4%	7,558.7	41.6	0.5%
ME 4	35 53 19	2018	Above Normal	March	--	20,740.7	20,718.8	22.0	0.1%	20,714.1	26.6	0.1%	20,701.4	39.4	0.2%
ME 4	35 53 19	2018	Above Normal	April	--	32,248.8	32,229.2	19.7	0.1%	32,225.7	23.1	0.1%	32,213.0	35.9	0.1%
ME 4	35 53 19	2018	Above Normal	May	--	6,990.2	6,948.1	42.0	0.6%	6,939.9	50.2	0.7%	6,914.6	75.6	1.1%
ME 4	35 53 19	2018	Above Normal	June	--	1,915.0	1,861.0	54.1	2.8%	1,850.5	64.6	3.4%	1,819.1	95.9	5.0%
ME 4	35 53 19	2018	Above Normal	July	--	782.5	723.9	58.6	7.5%	712.2	70.2	9.0%	677.7	104.7	13.4%
ME 4	35 53 19	2018	Above Normal	August	--	443.6	388.9	54.6	12.3%	378.0	65.5	14.8%	345.4	98.1	22.1%
ME 4	35 53 19	2018	Above Normal	September	Used in Summary Table Analysis	300.8	248.3	52.5	17.4%	237.8	63.0	20.9%	206.4	94.4	31.4%
ME 4	35 53 19	2019	Below Normal	October	Used in Summary Table Analysis	208.3	167.2	41.1	19.7%	158.9	49.4	23.7%	133.9	74.4	35.7%
ME 4	35 53 19	2019	Below Normal	November	Used in Summary Table Analysis	6,647.2	6,614.1	33.1	0.5%	6,607.4	39.8	0.6%	6,587.2	60.1	0.9%
ME 4	35 53 19	2019	Below Normal	December	--	14,707.2	14,678.2	28.9	0.2%	14,672.5	34.7	0.2%	14,655.1	52.1	0.4%
ME 4	35 53 19	2019	Below Normal	January	--	35,304.4	35,278.9	25.5	0.1%	35,273.1	31.3	0.1%	35,256.9	47.5	0.1%
ME 4	35 53 19	2019	Below Normal	February	--	142,013.9	141,990.7	23.1	0.0%	141,979.2	34.7	0.0%	141,967.6	46.3	0.0%
ME 4	35 53 19	2019	Below Normal	March	--	42,368.1	42,347.2	20.8	0.0%	42,342.6	25.5	0.1%	42,329.9	38.2	0.1%
ME 4	35 53 19	2019	Below Normal	April	--	15,285.9	15,265.0	20.8	0.1%	15,261.6	24.3	0.2%	15,248.8	37.0	0.2%
ME 4	35 53 19	2019	Below Normal	May	--	17,005.8	16,960.6	45.1	0.3%	16,951.4	54.4	0.3%	16,924.8	81.0	0.5%
ME 4	35 53 19	2019	Below Normal	June	--	4,243.1	4,186.1	56.9	1.3%	4,175.2	67.8	1.6%	4,143.2	99.9	2.4%
ME 4	35 53 19	2019	Below Normal	July	--	1,362.8	1,304.1	58.8	4.3%	1,292.4	70.5	5.2%	1,258.0	104.9	7.7%
ME 4	35 53 19	2019	Below Normal	August	--	597.8	541.8	56.0	9.4%	530.6	67.1	11.2%	497.6	100.1	16.8%
ME 4	35 53 19	2019	Below Normal	September	Used in Summary Table Analysis	463.6	411.3	52.2	11.3%	400.9	62.7	13.5%	369.5	94.0	20.3%
ME 4	35 53 19	2020	Dry	October	Used in Summary Table Analysis	356.3	316.7	39.5	11.1%	308.7	47.6	13.3%	284.7	71.6	20.1%
ME 4	35 53 19	2020	Dry	November	Used in Summary Table Analysis	321.3	290.1	31.2	9.7%	283.7	37.5	11.7%	264.7	56.6	17.6%
ME 4	35 53 19	2020	Dry	December	--	13,344.9	13,317.1	27.8	0.2%	13,311.3	33.6	0.3%	13,294.0	50.9	0.4%
ME 4	35 53 19	2020	Dry	January	--	22,377.3	22,351.9	25.5	0.1%	22,346.1	31.3	0.1%	22,329.9	47.5	0.2%
ME 4	35 53 19	2020	Dry	February	--	7,416.4	7,393.2	23.3	0.3%	7,388.3	28.1	0.4%	7,374.0	42.5	0.6%
ME 4	35 53 19	2020	Dry	March	--	7,252.1	7,230.1	22.0	0.3%	7,225.6	26.5	0.4%	7,212.2	39.9	0.6%
ME 4	35 53 19	2020	Dry	April	--	5,491.7	5,447.0	44.7	0.8%	5,438.1	53.6	1.0%	5,411.5	80.2	1.5%
ME 4	35 53 19	2020	Dry	May	--	7,388.2	7,334.7	53.5	0.7%	7,324.1	64.1	0.9%	7,292.1	96.1	1.3%
ME 4	35 53 19	2020	Dry	June	--	2,104.3	2,036.7	67.6	3.2%	2,023.6	80.7	3.8%	1,985.2	119.1	5.7%
ME 4	35 53 19	2020	Dry	July	--	797.0	728.5	68.4	8.6%	715.0	82.0	10.3%	680.0	117.0	14.7%
ME 4	35 53 19	2020	Dry	August	--	399.7	332.2	67.4	16.9%	318.8	80.8	20.2%	281.6	118.1	29.5%
ME 4	35 53 19	2020	Dry	September	Used in Summary Table Analysis	249.0	185.8	63.2	25.4%	172.9	76.1	30.6%	135.3	113.7	45.7%
ME 5	33 52 21	2000	Above Normal	October	Used in Summary Table Analysis	821.6	779.4	42.2	5.1%	770.8	50.8	6.2%	745.2	76.3	9.3%
ME 5	33 52 21	2000	Above Normal	November	Used in Summary Table Analysis	12,211.8	12,177.1	34.7	0.3%	12,170.1	41.7	0.3%	12,149.3	62.5	0.5%
ME 5	33 52 21	2000	Above Normal	December	--	10,860.0	10,830.8	29.2	0.3%	10,824.9	35.1	0.3%	10,807.1	52.9	0.5%
ME 5	33 52 21	2000	Above Normal	January	--	28,731.5	28,704.9	26.6	0.1%	28,699.1	32.4	0.1%	28,682.9	48.6	0.2%
ME 5	33 52 21	2000	Above Normal	February	--	37,142.4	37,118.1	24.3	0.1%	37,113.4	28.9	0.1%	37,098.4	44.0	0.1%
ME 5	33 52 21	2000	Above Normal	March	--	18,347.2	18,325.2	22.0	0.1%	18,320.6	26.6	0.1%	18,306.7	40.5	0.2%
ME 5	33 52 21	2000	Above Normal	April	--	12,338.0	12,317.1	20.8	0.2%	12,312.5	25.5	0.2%	12,299.8	38.2	0.3%
ME 5	33 52 21	2000	Above Normal	May	--	7,114.4	7,070.4	44.0	0.6%	7,061.5	52.9	0.7%	7,035.2	79.2	1.1%

Table A.1

**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow Difference		Percent Difference	Flow Difference		Percent Difference	Flow Difference		Percent Difference
							Flow (cfs)	(cfs)		Flow (cfs)	(cfs)		Flow (cfs)	(cfs)	
ME 5	33 52 21	2000	Above Normal	June	--	2,619.0	2,554.1	64.9	2.5%	2,541.2	77.8	3.0%	2,503.2	115.7	4.4%
ME 5	33 52 21	2000	Above Normal	July	--	995.4	936.3	59.1	5.9%	924.6	70.8	7.1%	889.8	105.6	10.6%
ME 5	33 52 21	2000	Above Normal	August	--	525.8	469.9	55.9	10.6%	458.7	67.0	12.7%	425.5	100.3	19.1%
ME 5	33 52 21	2000	Above Normal	September	Used in Summary Table Analysis	298.7	248.8	49.8	16.7%	238.9	59.8	20.0%	209.0	89.7	30.0%
ME 5	33 52 21	2001	Dry	October	Used in Summary Table Analysis	3,836.8	3,795.3	41.6	1.1%	3,786.8	50.0	1.3%	3,761.6	75.2	2.0%
ME 5	33 52 21	2001	Dry	November	Used in Summary Table Analysis	6,159.1	6,125.5	33.7	0.5%	6,118.8	40.4	0.7%	6,098.3	60.9	1.0%
ME 5	33 52 21	2001	Dry	December	--	8,873.6	8,844.4	29.2	0.3%	8,838.5	35.1	0.4%	8,820.7	52.9	0.6%
ME 5	33 52 21	2001	Dry	January	--	12,857.6	12,832.2	25.5	0.2%	12,826.4	31.3	0.2%	12,810.2	47.5	0.4%
ME 5	33 52 21	2001	Dry	February	--	17,513.9	17,489.6	24.3	0.1%	17,485.0	28.9	0.2%	17,469.9	44.0	0.3%
ME 5	33 52 21	2001	Dry	March	--	12,318.3	12,296.3	22.0	0.2%	12,291.7	26.6	0.2%	12,277.8	40.5	0.3%
ME 5	33 52 21	2001	Dry	April	--	10,994.3	10,949.1	45.3	0.4%	10,940.0	54.3	0.5%	10,913.1	81.3	0.7%
ME 5	33 52 21	2001	Dry	May	--	2,637.3	2,583.9	53.4	2.0%	2,573.3	64.0	2.4%	2,541.4	95.8	3.6%
ME 5	33 52 21	2001	Dry	June	--	2,662.6	2,590.6	72.0	2.7%	2,576.5	86.1	3.2%	2,535.1	127.5	4.8%
ME 5	33 52 21	2001	Dry	July	--	720.1	651.8	68.3	9.5%	638.2	81.9	11.4%	603.0	117.1	16.3%
ME 5	33 52 21	2001	Dry	August	--	175.3	108.5	66.8	38.1%	95.2	80.1	45.7%	58.0	117.4	66.9%
ME 5	33 52 21	2001	Dry	September	Used in Summary Table Analysis	98.5	38.5	60.0	60.9%	26.6	71.9	73.0%	0.0	98.5	100.0%
ME 5	33 52 21	2002	Below Normal	October	Used in Summary Table Analysis	268.6	218.0	50.6	18.8%	207.8	60.8	22.6%	177.2	91.4	34.0%
ME 5	33 52 21	2002	Below Normal	November	Used in Summary Table Analysis	12,072.9	12,032.4	40.5	0.3%	12,024.3	48.6	0.4%	11,997.7	75.2	0.6%
ME 5	33 52 21	2002	Below Normal	December	--	35,821.8	35,787.0	34.7	0.1%	35,780.1	41.7	0.1%	35,756.9	64.8	0.2%
ME 5	33 52 21	2002	Below Normal	January	--	30,965.3	30,934.0	31.3	0.1%	30,927.1	38.2	0.1%	30,908.6	56.7	0.2%
ME 5	33 52 21	2002	Below Normal	February	--	24,729.2	24,701.4	27.8	0.1%	24,695.6	33.6	0.1%	24,677.1	52.1	0.2%
ME 5	33 52 21	2002	Below Normal	March	--	17,819.4	17,792.8	26.6	0.1%	17,787.0	32.4	0.2%	17,770.8	48.6	0.3%
ME 5	33 52 21	2002	Below Normal	April	--	9,940.0	9,894.4	45.6	0.5%	9,885.4	54.6	0.5%	9,858.2	81.8	0.8%
ME 5	33 52 21	2002	Below Normal	May	--	3,324.7	3,271.1	53.6	1.6%	3,260.3	64.4	1.9%	3,228.4	96.3	2.9%
ME 5	33 52 21	2002	Below Normal	June	--	856.5	796.2	60.3	7.0%	784.3	72.2	8.4%	749.0	107.4	12.5%
ME 5	33 52 21	2002	Below Normal	July	--	365.3	303.8	61.5	16.8%	291.6	73.7	20.2%	256.0	109.3	29.9%
ME 5	33 52 21	2002	Below Normal	August	--	230.6	172.5	58.1	25.2%	160.9	69.7	30.2%	125.7	104.9	45.5%
ME 5	33 52 21	2002	Below Normal	September	Used in Summary Table Analysis	167.2	112.1	55.1	32.9%	101.2	66.1	39.5%	67.4	99.8	59.7%
ME 5	33 52 21	2003	Wet	October	Used in Summary Table Analysis	132.1	86.6	45.6	34.5%	77.4	54.7	41.4%	49.8	82.3	62.3%
ME 5	33 52 21	2003	Wet	November	Used in Summary Table Analysis	900.6	863.7	36.8	4.1%	856.2	44.4	4.9%	833.6	66.9	7.4%
ME 5	33 52 21	2003	Wet	December	--	57,149.3	57,116.9	32.4	0.1%	57,110.0	39.4	0.1%	57,089.1	60.2	0.1%
ME 5	33 52 21	2003	Wet	January	--	31,596.1	31,567.1	28.9	0.1%	31,561.3	34.7	0.1%	31,544.0	52.1	0.2%
ME 5	33 52 21	2003	Wet	February	--	20,387.7	20,362.3	25.5	0.1%	20,356.5	31.3	0.2%	20,340.3	47.5	0.2%
ME 5	33 52 21	2003	Wet	March	--	24,088.0	24,063.7	24.3	0.1%	24,059.0	28.9	0.1%	24,044.0	44.0	0.2%
ME 5	33 52 21	2003	Wet	April	--	43,048.6	43,025.5	23.1	0.1%	43,019.7	28.9	0.1%	43,005.8	42.8	0.1%
ME 5	33 52 21	2003	Wet	May	--	12,240.7	12,195.6	45.1	0.4%	12,186.3	54.4	0.4%	12,158.6	82.2	0.7%
ME 5	33 52 21	2003	Wet	June	--	3,170.3	3,112.8	57.4	1.8%	3,101.6	68.6	2.2%	3,068.5	101.7	3.2%
ME 5	33 52 21	2003	Wet	July	--	1,478.6	1,417.7	60.9	4.1%	1,405.7	72.9	4.9%	1,369.9	108.7	7.4%
ME 5	33 52 21	2003	Wet	August	--	764.4	704.6	59.8	7.8%	692.3	72.1	9.4%	654.1	110.2	14.4%
ME 5	33 52 21	2003	Wet	September	Used in Summary Table Analysis	461.9	411.0	50.9	11.0%	400.8	61.1	13.2%	369.2	92.7	20.1%
ME 5	33 52 21	2004	Wet	October	Used in Summary Table Analysis	328.7	286.2	42.4	12.9%	277.7	51.0	15.5%	251.8	76.9	23.4%
ME 5	33 52 21	2004	Wet	November	Used in Summary Table Analysis	5,841.8	5,807.1	34.7	0.6%	5,800.0	41.8	0.7%	5,778.7	63.1	1.1%
ME 5	33 52 21	2004	Wet	December	--	36,485.0	36,453.7	31.3	0.1%	36,447.9	37.0	0.1%	36,429.4	55.6	0.2%
ME 5	33 52 21	2004	Wet	January	--	31,591.4	31,564.8	26.6	0.1%	31,559.0	32.4	0.1%	31,541.7	49.8	0.2%
ME 5	33 52 21	2004	Wet	February	--	38,349.5	38,324.1	25.5	0.1%	38,319.4	30.1	0.1%	38,303.2	46.3	0.1%
ME 5	33 52 21	2004	Wet	March	--	16,542.8	16,519.7	23.1	0.1%	16,515.0	27.8	0.2%	16,501.2	41.7	0.3%
ME 5	33 52 21	2004	Wet	April	--	9,464.4	9,442.7	21.6	0.2%	9,438.3	26.0	0.3%	9,424.9	39.5	0.4%
ME 5	33 52 21	2004	Wet	May	--	3,431.4	3,387.0	44.3	1.3%	3,378.2	53.1	1.5%	3,351.9	79.5	2.3%
ME 5	33 52 21	2004	Wet	June	--	694.3	639.1	55.2	7.9%	628.3	66.0	9.5%	596.2	98.1	14.1%
ME 5	33 52 21	2004	Wet	July	--	359.7	300.0	59.7	16.6%	288.2	71.6	19.9%	253.0	106.8	29.7%
ME 5	33 52 21	2004	Wet	August	--	228.6	172.0	56.6	24.7%	160.8	67.8	29.7%	127.0	101.6	44.4%
ME 5	33 52 21	2004	Wet	September	Used in Summary Table Analysis	165.4	111.4	54.0	32.6%	100.6	64.8	39.2%	68.2	97.2	58.8%
ME 5	33 52 21	2005	Above Normal	October	Used in Summary Table Analysis	7,733.0	7,689.6	43.4	0.6%	7,680.9	52.1	0.7%	7,654.6	78.4	1.0%
ME 5	33 52 21	2005	Above Normal	November	Used in Summary Table Analysis	2,263.8	2,229.6	34.1	1.5%	2,222.8	41.0	1.8%	2,201.9	61.9	2.7%
ME 5	33 52 21	2005	Above Normal	December	--	21,173.6	21,143.5	30.1	0.1%	21,137.7	35.9	0.2%	21,119.2	54.4	0.3%
ME 5	33 52 21	2005	Above Normal	January	--	22,500.0	22,473.4	26.6	0.1%	22,467.6	32.4	0.1%	22,450.2	49.8	0.2%
ME 5	33 52 21	2005	Above Normal	February	--	14,031.3	14,006.9	24.3	0.2%	14,002.3	28.9	0.2%	13,987.3	44.0	0.3%
ME 5	33 52 21	2005	Above Normal	March	--	28,653.9	28,631.9	22.0	0.1%	28,627.3	26.6	0.1%	28,612.3	41.7	0.1%
ME 5	33 52 21	2005	Above Normal	April	--	21,502.3	21,480.3	22.0	0.1%	21,475.7	26.6	0.1%	21,463.0	39.4	0.2%
ME 5	33 52 21	2005	Above Normal	May	--	19,637.7	19,592.6	45.1	0.2%	19,583.3	54.4	0.3%	19,556.7	81.0	0.4%
ME 5	33 52 21	2005	Above Normal	June	--	15,952.5	15,886.6	66.0	0.4%	15,872.7	79.9	0.5%	15,834.5	118.1	0.7%
ME 5	33 52 21	2005	Above Normal	July	--	2,864.6	2,803.1	61.5	2.1%	2,791.4	73.1	2.6%	2,756.6	108.0	3.8%
ME 5	33 52 21	2005	Above Normal	August	--	987.2	931.2	56.1	5.7%	920.1	67.1	6.8%	887.0	100.2	10.1%
ME 5	33 52 21	2005	Above Normal	September	Used in Summary Table Analysis	528.8	478.9	49.9	9.4%	468.9	59.8	11.3%	439.2	89.6	16.9%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 52 21	2006	Wet	October	Used in Summary Table Analysis	639.2	598.5	40.8	6.4%	590.3	49.0	7.7%	565.4	73.8	11.5%
ME 5	33 52 21	2006	Wet	November	Used in Summary Table Analysis	9,373.0	9,340.5	32.5	0.3%	9,333.9	39.1	0.4%	9,313.9	59.1	0.6%
ME 5	33 52 21	2006	Wet	December	--	43,719.9	43,689.8	30.1	0.1%	43,684.0	35.9	0.1%	43,665.5	54.4	0.1%
ME 5	33 52 21	2006	Wet	January	--	46,497.7	46,471.1	26.6	0.1%	46,465.3	32.4	0.1%	46,449.1	48.6	0.1%
ME 5	33 52 21	2006	Wet	February	--	26,703.7	26,680.6	23.1	0.1%	26,674.8	28.9	0.1%	26,660.9	42.8	0.2%
ME 5	33 52 21	2006	Wet	March	--	47,316.0	47,294.0	22.0	0.0%	47,289.4	26.6	0.1%	47,275.5	40.5	0.1%
ME 5	33 52 21	2006	Wet	April	--	30,489.6	30,468.8	20.8	0.1%	30,464.1	25.5	0.1%	30,451.4	38.2	0.1%
ME 5	33 52 21	2006	Wet	May	--	14,243.1	14,215.3	27.8	0.2%	14,209.5	33.6	0.2%	14,193.3	49.8	0.3%
ME 5	33 52 21	2006	Wet	June	--	3,550.9	3,496.2	54.7	1.5%	3,485.4	65.5	1.8%	3,453.7	97.2	2.7%
ME 5	33 52 21	2006	Wet	July	--	1,284.1	1,225.6	58.6	4.6%	1,214.1	70.0	5.5%	1,180.1	104.1	8.1%
ME 5	33 52 21	2006	Wet	August	--	670.3	613.0	57.3	8.6%	601.6	68.7	10.2%	567.7	102.6	15.3%
ME 5	33 52 21	2006	Wet	September	Used in Summary Table Analysis	430.8	380.2	50.6	11.7%	370.2	60.7	14.1%	339.9	90.9	21.1%
ME 5	33 52 21	2007	Above Normal	October	Used in Summary Table Analysis	278.3	236.7	41.6	15.0%	228.3	50.0	18.0%	203.0	75.4	27.1%
ME 5	33 52 21	2007	Above Normal	November	Used in Summary Table Analysis	8,725.7	8,691.6	34.1	0.4%	8,684.7	41.0	0.5%	8,663.8	61.9	0.7%
ME 5	33 52 21	2007	Above Normal	December	--	20,531.3	20,500.0	31.3	0.2%	20,494.2	37.0	0.2%	20,475.7	55.6	0.3%
ME 5	33 52 21	2007	Above Normal	January	--	10,282.8	10,256.3	26.5	0.3%	10,250.9	31.8	0.3%	10,234.5	48.3	0.5%
ME 5	33 52 21	2007	Above Normal	February	--	30,706.0	30,681.7	24.3	0.1%	30,675.9	30.1	0.1%	30,660.9	45.1	0.1%
ME 5	33 52 21	2007	Above Normal	March	--	13,123.8	13,100.7	23.1	0.2%	13,096.1	27.8	0.2%	13,081.0	42.8	0.3%
ME 5	33 52 21	2007	Above Normal	April	--	11,555.8	11,512.3	43.5	0.4%	11,503.5	52.3	0.5%	11,477.4	78.4	0.7%
ME 5	33 52 21	2007	Above Normal	May	--	4,149.2	4,097.3	51.9	1.2%	4,087.0	62.2	1.5%	4,056.0	93.2	2.2%
ME 5	33 52 21	2007	Above Normal	June	--	1,505.2	1,443.5	61.7	4.1%	1,431.4	73.8	4.9%	1,395.3	110.0	7.3%
ME 5	33 52 21	2007	Above Normal	July	--	498.9	436.6	62.3	12.5%	424.2	74.7	15.0%	388.0	111.0	22.2%
ME 5	33 52 21	2007	Above Normal	August	--	226.7	170.1	56.5	24.9%	158.9	67.8	29.9%	124.6	102.1	45.0%
ME 5	33 52 21	2007	Above Normal	September	Used in Summary Table Analysis	154.3	100.6	53.7	34.8%	89.9	64.4	41.7%	57.8	96.6	62.6%
ME 5	33 52 21	2008	Dry	October	Used in Summary Table Analysis	3,455.2	3,411.0	44.2	1.3%	3,402.1	53.1	1.5%	3,375.1	80.1	2.3%
ME 5	33 52 21	2008	Dry	November	Used in Summary Table Analysis	3,295.4	3,260.9	34.5	1.0%	3,253.9	41.4	1.3%	3,232.6	62.7	1.9%
ME 5	33 52 21	2008	Dry	December	--	23,283.6	23,253.5	30.1	0.1%	23,246.5	37.0	0.2%	23,229.2	54.4	0.2%
ME 5	33 52 21	2008	Dry	January	--	37,681.7	37,652.8	28.9	0.1%	37,647.0	34.7	0.1%	37,629.6	52.1	0.1%
ME 5	33 52 21	2008	Dry	February	--	26,305.6	26,282.4	23.1	0.1%	26,276.6	28.9	0.1%	26,261.6	44.0	0.2%
ME 5	33 52 21	2008	Dry	March	--	11,810.2	11,788.2	22.0	0.2%	11,783.6	26.6	0.2%	11,770.8	39.4	0.3%
ME 5	33 52 21	2008	Dry	April	--	9,029.7	8,985.5	44.2	0.5%	8,976.7	53.0	0.6%	8,950.2	79.5	0.9%
ME 5	33 52 21	2008	Dry	May	--	1,358.4	1,311.9	46.5	3.4%	1,302.9	55.6	4.1%	1,275.7	82.8	6.1%
ME 5	33 52 21	2008	Dry	June	--	440.9	374.0	67.0	15.2%	360.8	80.1	18.2%	321.9	119.1	27.0%
ME 5	33 52 21	2008	Dry	July	--	258.9	192.1	66.8	25.8%	178.9	80.0	30.9%	144.6	114.3	44.2%
ME 5	33 52 21	2008	Dry	August	--	182.5	117.3	65.2	35.7%	104.3	78.2	42.8%	65.2	117.3	64.3%
ME 5	33 52 21	2008	Dry	September	Used in Summary Table Analysis	144.1	81.2	63.0	43.7%	68.7	75.5	52.4%	32.3	111.8	77.6%
ME 5	33 52 21	2009	Critical	October	Used in Summary Table Analysis	928.7	878.6	50.1	5.4%	868.6	60.1	6.5%	838.0	90.7	9.8%
ME 5	33 52 21	2009	Critical	November	Used in Summary Table Analysis	5,550.2	5,510.9	39.4	0.7%	5,502.9	47.3	0.9%	5,476.0	74.2	1.3%
ME 5	33 52 21	2009	Critical	December	--	12,246.5	12,213.0	33.6	0.3%	12,206.0	40.5	0.3%	12,185.2	61.3	0.5%
ME 5	33 52 21	2009	Critical	January	--	8,819.6	8,788.8	30.8	0.3%	8,782.5	37.0	0.4%	8,763.4	56.1	0.6%
ME 5	33 52 21	2009	Critical	February	--	22,682.9	22,655.1	27.8	0.1%	22,650.5	32.4	0.1%	22,633.1	49.8	0.2%
ME 5	33 52 21	2009	Critical	March	--	21,172.5	21,148.1	24.3	0.1%	21,142.4	30.1	0.1%	21,127.3	45.1	0.2%
ME 5	33 52 21	2009	Critical	April	--	10,102.4	10,056.3	46.2	0.5%	10,047.1	55.3	0.5%	10,019.4	83.0	0.8%
ME 5	33 52 21	2009	Critical	May	--	15,610.0	15,553.2	56.7	0.4%	15,542.8	67.1	0.4%	15,509.3	100.7	0.6%
ME 5	33 52 21	2009	Critical	June	--	3,163.8	3,092.1	71.6	2.3%	3,078.4	85.4	2.7%	3,036.9	126.9	4.0%
ME 5	33 52 21	2009	Critical	July	--	1,266.2	1,198.7	67.5	5.3%	1,185.4	80.8	6.4%	1,150.8	115.4	9.1%
ME 5	33 52 21	2009	Critical	August	--	672.5	606.7	65.7	9.8%	593.7	78.8	11.7%	557.0	115.4	17.2%
ME 5	33 52 21	2009	Critical	September	Used in Summary Table Analysis	393.4	334.2	59.1	15.0%	322.5	70.9	18.0%	288.3	105.1	26.7%
ME 5	33 52 21	2010	Below Normal	October	Used in Summary Table Analysis	6,094.2	6,043.4	50.8	0.8%	6,033.2	61.0	1.0%	6,001.4	92.8	1.5%
ME 5	33 52 21	2010	Below Normal	November	Used in Summary Table Analysis	8,316.9	8,276.0	40.9	0.5%	8,267.9	49.0	0.6%	8,240.4	76.5	0.9%
ME 5	33 52 21	2010	Below Normal	December	--	12,409.7	12,375.0	34.7	0.3%	12,368.1	41.7	0.3%	12,346.1	63.7	0.5%
ME 5	33 52 21	2010	Below Normal	January	--	36,421.3	36,388.9	32.4	0.1%	36,383.1	38.2	0.1%	36,363.4	57.9	0.2%
ME 5	33 52 21	2010	Below Normal	February	--	27,297.5	27,269.7	27.8	0.1%	27,263.9	33.6	0.1%	27,246.5	50.9	0.2%
ME 5	33 52 21	2010	Below Normal	March	--	28,881.9	28,856.5	25.5	0.1%	28,850.7	31.3	0.1%	28,834.5	47.5	0.2%
ME 5	33 52 21	2010	Below Normal	April	--	40,098.4	40,074.1	24.3	0.1%	40,068.3	30.1	0.1%	40,053.2	45.1	0.1%
ME 5	33 52 21	2010	Below Normal	May	--	20,334.5	20,287.0	47.5	0.2%	20,277.8	56.7	0.3%	20,250.0	84.5	0.4%
ME 5	33 52 21	2010	Below Normal	June	--	9,402.8	9,334.6	68.2	0.7%	9,321.2	81.6	0.9%	9,281.3	121.5	1.3%
ME 5	33 52 21	2010	Below Normal	July	--	1,457.6	1,395.4	62.3	4.3%	1,383.2	74.4	5.1%	1,347.5	110.2	7.6%
ME 5	33 52 21	2010	Below Normal	August	--	573.4	515.8	57.6	10.0%	504.4	69.0	12.0%	470.5	102.9	18.0%
ME 5	33 52 21	2010	Below Normal	September	Used in Summary Table Analysis	655.8	600.6	55.2	8.4%	589.5	66.3	10.1%	556.5	99.3	15.1%
ME 5	33 52 21	2011	Wet	October	Used in Summary Table Analysis	9,676.0	9,633.8	42.2	0.4%	9,625.2	50.8	0.5%	9,599.5	76.5	0.8%
ME 5	33 52 21	2011	Wet	November	Used in Summary Table Analysis	14,268.5	14,235.0	33.6	0.2%	14,226.9	41.7	0.3%	14,206.0	62.5	0.4%
ME 5	33 52 21	2011	Wet	December	--	33,900.5	33,870.4	30.1	0.1%	33,864.6	35.9	0.1%	33,846.1	54.4	0.2%
ME 5	33 52 21	2011	Wet	January	--	14,193.3	14,166.7	26.6	0.2%	14,162.0	31.3	0.2%	14,145.8	47.5	0.3%

Table A.1

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 52 21	2011	Wet	February	--	20,804.4	20,780.1	24.3	0.1%	20,774.3	30.1	0.1%	20,759.3	45.1	0.2%
ME 5	33 52 21	2011	Wet	March	--	52,136.6	52,113.4	23.1	0.0%	52,108.8	27.8	0.1%	52,093.8	42.8	0.1%
ME 5	33 52 21	2011	Wet	April	--	24,843.8	24,821.8	22.0	0.1%	24,817.1	26.6	0.1%	24,803.2	40.5	0.2%
ME 5	33 52 21	2011	Wet	May	--	11,403.8	11,358.8	45.0	0.4%	11,349.8	54.1	0.5%	11,322.8	81.0	0.7%
ME 5	33 52 21	2011	Wet	June	--	7,077.7	7,011.3	66.3	0.9%	6,998.1	79.5	1.1%	6,959.4	118.3	1.7%
ME 5	33 52 21	2011	Wet	July	--	1,830.7	1,764.1	66.6	3.6%	1,751.2	79.5	4.3%	1,713.5	117.1	6.4%
ME 5	33 52 21	2011	Wet	August	--	780.6	723.7	56.8	7.3%	712.5	68.1	8.7%	678.8	101.8	13.0%
ME 5	33 52 21	2011	Wet	September	Used in Summary Table Analysis	437.2	385.3	51.9	11.9%	375.0	62.3	14.2%	344.0	93.2	21.3%
ME 5	33 52 21	2012	Below Normal	October	Used in Summary Table Analysis	4,563.5	4,520.6	42.9	0.9%	4,511.9	51.6	1.1%	4,485.5	78.0	1.7%
ME 5	33 52 21	2012	Below Normal	November	Used in Summary Table Analysis	8,283.0	8,248.5	34.5	0.4%	8,241.4	41.6	0.5%	8,220.1	62.8	0.8%
ME 5	33 52 21	2012	Below Normal	December	--	5,203.0	5,173.4	29.6	0.6%	5,167.4	35.6	0.7%	5,149.1	53.9	1.0%
ME 5	33 52 21	2012	Below Normal	January	--	20,245.4	20,218.8	26.6	0.1%	20,213.0	32.4	0.2%	20,196.8	48.6	0.2%
ME 5	33 52 21	2012	Below Normal	February	--	18,250.0	18,224.5	25.5	0.1%	18,219.9	30.1	0.2%	18,204.9	45.1	0.2%
ME 5	33 52 21	2012	Below Normal	March	--	45,577.5	45,553.2	24.3	0.1%	45,548.6	28.9	0.1%	45,533.6	44.0	0.1%
ME 5	33 52 21	2012	Below Normal	April	--	26,914.4	26,891.2	23.1	0.1%	26,886.6	27.8	0.1%	26,872.7	41.7	0.2%
ME 5	33 52 21	2012	Below Normal	May	--	7,495.6	7,450.9	44.7	0.6%	7,442.0	53.6	0.7%	7,415.5	80.1	1.1%
ME 5	33 52 21	2012	Below Normal	June	--	5,536.7	5,469.2	67.5	1.2%	5,455.9	80.8	1.5%	5,416.8	119.9	2.2%
ME 5	33 52 21	2012	Below Normal	July	--	2,236.9	2,172.6	64.4	2.9%	2,159.8	77.1	3.4%	2,122.0	114.9	5.1%
ME 5	33 52 21	2012	Below Normal	August	--	391.2	339.1	52.1	13.3%	328.7	62.4	16.0%	297.7	93.5	23.9%
ME 5	33 52 21	2012	Below Normal	September	Used in Summary Table Analysis	252.7	206.1	46.6	18.5%	196.8	55.9	22.1%	169.0	83.8	33.1%
ME 5	33 52 21	2013	Below Normal	October	Used in Summary Table Analysis	1,926.5	1,885.5	41.0	2.1%	1,877.2	49.3	2.6%	1,852.4	74.1	3.8%
ME 5	33 52 21	2013	Below Normal	November	Used in Summary Table Analysis	14,768.5	14,735.0	33.6	0.2%	14,729.2	39.4	0.3%	14,708.3	60.2	0.4%
ME 5	33 52 21	2013	Below Normal	December	--	60,177.1	60,147.0	30.1	0.1%	60,140.0	37.0	0.1%	60,121.5	55.6	0.1%
ME 5	33 52 21	2013	Below Normal	January	--	22,254.6	22,229.2	25.5	0.1%	22,223.4	31.3	0.1%	22,208.3	46.3	0.2%
ME 5	33 52 21	2013	Below Normal	February	--	8,870.4	8,846.2	24.2	0.3%	8,841.3	29.1	0.3%	8,826.5	43.9	0.5%
ME 5	33 52 21	2013	Below Normal	March	--	10,368.4	10,345.1	23.3	0.2%	10,340.5	27.9	0.3%	10,326.3	42.1	0.4%
ME 5	33 52 21	2013	Below Normal	April	--	8,302.2	8,259.7	42.5	0.5%	8,251.2	51.0	0.6%	8,225.7	76.5	0.9%
ME 5	33 52 21	2013	Below Normal	May	--	4,445.7	4,394.3	51.4	1.2%	4,384.0	61.7	1.4%	4,353.4	92.4	2.1%
ME 5	33 52 21	2013	Below Normal	June	--	2,115.3	2,053.9	61.3	2.9%	2,041.9	73.4	3.5%	2,005.9	109.4	5.2%
ME 5	33 52 21	2013	Below Normal	July	--	720.4	660.8	59.6	8.3%	649.0	71.4	9.9%	614.6	105.9	14.7%
ME 5	33 52 21	2013	Below Normal	August	--	343.4	287.0	56.4	16.4%	275.8	67.7	19.7%	241.6	101.9	29.7%
ME 5	33 52 21	2013	Below Normal	September	Used in Summary Table Analysis	4,808.8	4,750.3	58.4	1.2%	4,738.7	70.1	1.5%	4,703.6	105.2	2.2%
ME 5	33 52 21	2014	Critical	October	Used in Summary Table Analysis	281.7	238.5	43.2	15.3%	229.8	51.9	18.4%	204.4	77.3	27.4%
ME 5	33 52 21	2014	Critical	November	Used in Summary Table Analysis	1,550.2	1,515.3	35.0	2.3%	1,508.2	42.0	2.7%	1,486.9	63.3	4.1%
ME 5	33 52 21	2014	Critical	December	--	1,597.0	1,566.4	30.6	1.9%	1,560.2	36.8	2.3%	1,541.3	55.7	3.5%
ME 5	33 52 21	2014	Critical	January	--	2,833.9	2,806.7	27.2	1.0%	2,801.0	32.9	1.2%	2,784.0	49.9	1.8%
ME 5	33 52 21	2014	Critical	February	--	15,789.4	15,765.0	24.3	0.2%	15,759.3	30.1	0.2%	15,743.1	46.3	0.3%
ME 5	33 52 21	2014	Critical	March	--	31,533.6	31,509.3	24.3	0.1%	31,504.6	28.9	0.1%	31,489.6	44.0	0.1%
ME 5	33 52 21	2014	Critical	April	--	13,005.8	12,959.5	46.3	0.4%	12,951.4	54.4	0.4%	12,923.6	82.2	0.6%
ME 5	33 52 21	2014	Critical	May	--	5,197.9	5,143.6	54.3	1.0%	5,132.9	65.0	1.3%	5,100.2	97.7	1.9%
ME 5	33 52 21	2014	Critical	June	--	1,202.0	1,128.7	73.2	6.1%	1,114.4	87.6	7.3%	1,072.9	129.1	10.7%
ME 5	33 52 21	2014	Critical	July	--	548.6	480.2	68.4	12.5%	466.6	82.0	14.9%	431.0	117.6	21.4%
ME 5	33 52 21	2014	Critical	August	--	351.4	285.8	65.6	18.7%	272.6	78.8	22.4%	235.5	115.9	33.0%
ME 5	33 52 21	2014	Critical	September	Used in Summary Table Analysis	2,584.5	2,519.9	64.6	2.5%	2,507.2	77.3	3.0%	2,469.1	115.4	4.5%
ME 5	33 52 21	2015	Dry	October	Used in Summary Table Analysis	11,403.5	11,352.8	50.7	0.4%	11,342.8	60.6	0.5%	11,312.5	91.0	0.8%
ME 5	33 52 21	2015	Dry	November	Used in Summary Table Analysis	9,082.6	9,044.1	38.5	0.4%	9,036.2	46.4	0.5%	9,009.6	73.0	0.8%
ME 5	33 52 21	2015	Dry	December	--	32,783.6	32,750.0	33.6	0.1%	32,743.1	40.5	0.1%	32,722.2	61.3	0.2%
ME 5	33 52 21	2015	Dry	January	--	14,601.9	14,571.8	30.1	0.2%	14,566.0	35.9	0.2%	14,547.5	54.4	0.4%
ME 5	33 52 21	2015	Dry	February	--	27,298.6	27,272.0	26.6	0.1%	27,266.2	32.4	0.1%	27,250.0	48.6	0.2%
ME 5	33 52 21	2015	Dry	March	--	11,585.6	11,561.8	23.8	0.2%	11,556.9	28.7	0.2%	11,542.1	43.5	0.4%
ME 5	33 52 21	2015	Dry	April	--	8,428.8	8,383.4	45.4	0.5%	8,374.3	54.5	0.6%	8,347.0	81.8	1.0%
ME 5	33 52 21	2015	Dry	May	--	1,509.8	1,456.4	53.5	3.5%	1,445.7	64.1	4.2%	1,414.8	95.0	6.3%
ME 5	33 52 21	2015	Dry	June	--	654.7	586.7	68.0	10.4%	573.3	81.4	12.4%	533.7	121.0	18.5%
ME 5	33 52 21	2015	Dry	July	--	271.1	203.6	67.5	24.9%	190.3	80.8	29.8%	155.6	115.5	42.6%
ME 5	33 52 21	2015	Dry	August	--	169.6	104.0	65.6	38.7%	90.9	78.7	46.4%	54.4	115.2	67.9%
ME 5	33 52 21	2015	Dry	September	Used in Summary Table Analysis	123.4	61.6	61.8	50.1%	48.9	74.5	60.4%	12.1	111.3	90.2%
ME 5	33 52 21	2016	Above Normal	October	Used in Summary Table Analysis	88.6	36.6	52.0	58.7%	26.6	62.0	70.0%	0.0	88.6	100.0%
ME 5	33 52 21	2016	Above Normal	November	Used in Summary Table Analysis	3,904.4	3,863.9	40.5	1.0%	3,855.6	48.8	1.3%	3,826.2	78.2	2.0%
ME 5	33 52 21	2016	Above Normal	December	--	36,814.8	36,778.9	35.9	0.1%	36,770.8	44.0	0.1%	36,747.7	67.1	0.2%
ME 5	33 52 21	2016	Above Normal	January	--	57,519.7	57,487.3	32.4	0.1%	57,480.3	39.4	0.1%	57,459.5	60.2	0.1%
ME 5	33 52 21	2016	Above Normal	February	--	24,299.8	24,273.1	26.6	0.1%	24,268.5	31.3	0.1%	24,251.2	48.6	0.2%
ME 5	33 52 21	2016	Above Normal	March	--	41,870.4	41,844.9	25.5	0.1%	41,839.1	31.3	0.1%	41,824.1	46.3	0.1%
ME 5	33 52 21	2016	Above Normal	April	--	18,562.5	18,539.4	23.1	0.1%	18,534.7	27.8	0.1%	18,520.8	41.7	0.2%
ME 5	33 52 21	2016	Above Normal	May	--	5,224.1	5,195.5	28.6	0.5%	5,189.7	34.4	0.7%	5,172.2	51.9	1.0%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 52 21	2016	Above Normal	June	--	1,512.8	1,460.3	52.5	3.5%	1,451.0	61.8	4.1%	1,423.5	89.4	5.9%
ME 5	33 52 21	2016	Above Normal	July	--	826.9	767.7	59.2	7.2%	756.0	70.9	8.6%	721.3	105.6	12.8%
ME 5	33 52 21	2016	Above Normal	August	--	495.7	437.5	58.3	11.8%	425.8	69.9	14.1%	391.3	104.5	21.1%
ME 5	33 52 21	2016	Above Normal	September	Used in Summary Table Analysis	331.9	277.2	54.7	16.5%	266.1	65.8	19.8%	233.0	98.9	29.8%
ME 5	33 52 21	2017	Wet	October	Used in Summary Table Analysis	18,360.0	18,316.0	44.0	0.2%	18,306.7	53.2	0.3%	18,281.3	78.7	0.4%
ME 5	33 52 21	2017	Wet	November	Used in Summary Table Analysis	18,906.3	18,872.7	33.6	0.2%	18,865.7	40.5	0.2%	18,844.9	61.3	0.3%
ME 5	33 52 21	2017	Wet	December	--	24,240.7	24,211.8	28.9	0.1%	24,204.9	35.9	0.1%	24,187.5	53.2	0.2%
ME 5	33 52 21	2017	Wet	January	--	107,278.9	107,251.2	27.8	0.0%	107,245.4	33.6	0.0%	107,229.2	49.8	0.0%
ME 5	33 52 21	2017	Wet	February	--	82,056.7	82,032.4	24.3	0.0%	82,026.6	30.1	0.0%	82,011.6	45.1	0.1%
ME 5	33 52 21	2017	Wet	March	--	27,342.6	27,319.4	23.1	0.1%	27,314.8	27.8	0.1%	27,299.8	42.8	0.2%
ME 5	33 52 21	2017	Wet	April	--	23,009.3	22,988.4	20.8	0.1%	22,983.8	25.5	0.1%	22,971.1	38.2	0.2%
ME 5	33 52 21	2017	Wet	May	--	6,274.9	6,246.4	28.5	0.5%	6,240.7	34.1	0.5%	6,223.6	51.3	0.8%
ME 5	33 52 21	2017	Wet	June	--	2,125.5	2,071.3	54.2	2.5%	2,060.6	64.8	3.0%	2,029.1	96.4	4.5%
ME 5	33 52 21	2017	Wet	July	--	939.6	880.4	59.2	6.3%	868.7	70.9	7.5%	834.3	105.3	11.2%
ME 5	33 52 21	2017	Wet	August	--	511.8	454.0	57.9	11.3%	442.5	69.4	13.6%	408.2	103.6	20.2%
ME 5	33 52 21	2017	Wet	September	Used in Summary Table Analysis	327.2	273.4	53.8	16.4%	262.6	64.6	19.7%	230.4	96.8	29.6%
ME 5	33 52 21	2018	Above Normal	October	Used in Summary Table Analysis	279.9	236.9	43.1	15.4%	228.2	51.8	18.5%	202.1	77.8	27.8%
ME 5	33 52 21	2018	Above Normal	November	Used in Summary Table Analysis	10,874.8	10,840.6	34.1	0.3%	10,833.7	41.1	0.4%	10,812.7	62.0	0.6%
ME 5	33 52 21	2018	Above Normal	December	--	5,453.8	5,424.8	29.1	0.5%	5,418.9	35.0	0.6%	5,400.9	52.9	1.0%
ME 5	33 52 21	2018	Above Normal	January	--	17,923.6	17,897.0	26.6	0.1%	17,892.4	31.3	0.2%	17,876.2	47.5	0.3%
ME 5	33 52 21	2018	Above Normal	February	--	7,604.1	7,580.7	23.4	0.3%	7,575.8	28.2	0.4%	7,561.2	42.8	0.6%
ME 5	33 52 21	2018	Above Normal	March	--	20,791.7	20,769.7	22.0	0.1%	20,765.0	26.6	0.1%	20,751.2	40.5	0.2%
ME 5	33 52 21	2018	Above Normal	April	--	32,307.9	32,288.2	19.7	0.1%	32,283.6	24.3	0.1%	32,270.8	37.0	0.1%
ME 5	33 52 21	2018	Above Normal	May	--	6,991.9	6,949.4	42.5	0.6%	6,941.1	50.8	0.7%	6,915.4	76.5	1.1%
ME 5	33 52 21	2018	Above Normal	June	--	1,917.8	1,863.0	54.9	2.9%	1,852.3	65.5	3.4%	1,820.5	97.3	5.1%
ME 5	33 52 21	2018	Above Normal	July	--	785.8	726.0	59.7	7.6%	714.2	71.6	9.1%	678.9	106.8	13.6%
ME 5	33 52 21	2018	Above Normal	August	--	447.0	391.1	56.0	12.5%	379.9	67.2	15.0%	346.4	100.6	22.5%
ME 5	33 52 21	2018	Above Normal	September	Used in Summary Table Analysis	304.1	250.2	53.9	17.7%	239.4	64.7	21.3%	207.1	97.1	31.9%
ME 5	33 52 21	2019	Below Normal	October	Used in Summary Table Analysis	211.1	168.6	42.5	20.1%	160.0	51.1	24.2%	134.1	77.0	36.5%
ME 5	33 52 21	2019	Below Normal	November	Used in Summary Table Analysis	6,678.4	6,644.0	34.4	0.5%	6,636.9	41.4	0.6%	6,615.9	62.5	0.9%
ME 5	33 52 21	2019	Below Normal	December	--	14,758.1	14,729.2	28.9	0.2%	14,723.4	34.7	0.2%	14,704.9	53.2	0.4%
ME 5	33 52 21	2019	Below Normal	January	--	35,407.4	35,380.8	26.6	0.1%	35,376.2	31.3	0.1%	35,358.8	48.6	0.1%
ME 5	33 52 21	2019	Below Normal	February	--	142,118.1	142,094.9	23.1	0.0%	142,094.9	23.1	0.0%	142,071.8	46.3	0.0%
ME 5	33 52 21	2019	Below Normal	March	--	42,421.3	42,400.5	20.8	0.0%	42,395.8	25.5	0.1%	42,381.9	39.4	0.1%
ME 5	33 52 21	2019	Below Normal	April	--	15,300.9	15,280.1	20.8	0.1%	15,275.5	25.5	0.2%	15,262.7	38.2	0.2%
ME 5	33 52 21	2019	Below Normal	May	--	17,083.3	17,038.2	45.1	0.3%	17,028.9	54.4	0.3%	17,002.3	81.0	0.5%
ME 5	33 52 21	2019	Below Normal	June	--	4,243.1	4,185.4	57.6	1.4%	4,174.3	68.8	1.6%	4,141.9	101.2	2.4%
ME 5	33 52 21	2019	Below Normal	July	--	1,366.6	1,306.6	60.0	4.4%	1,294.8	71.8	5.3%	1,259.6	106.9	7.8%
ME 5	33 52 21	2019	Below Normal	August	--	601.5	544.2	57.3	9.5%	532.8	68.7	11.4%	499.0	102.5	17.0%
ME 5	33 52 21	2019	Below Normal	September	Used in Summary Table Analysis	467.0	413.3	53.7	11.5%	402.5	64.4	13.8%	370.3	96.6	20.7%
ME 5	33 52 21	2020	Dry	October	Used in Summary Table Analysis	359.1	318.1	41.0	11.4%	309.8	49.3	13.7%	284.9	74.2	20.7%
ME 5	33 52 21	2020	Dry	November	Used in Summary Table Analysis	326.2	293.7	32.5	10.0%	287.0	39.1	12.0%	267.2	58.9	18.1%
ME 5	33 52 21	2020	Dry	December	--	13,420.1	13,391.2	28.9	0.2%	13,385.4	34.7	0.3%	13,366.9	53.2	0.4%
ME 5	33 52 21	2020	Dry	January	--	22,436.3	22,409.7	26.6	0.1%	22,403.9	32.4	0.1%	22,387.7	48.6	0.2%
ME 5	33 52 21	2020	Dry	February	--	7,418.9	7,394.9	24.0	0.3%	7,389.9	28.9	0.4%	7,375.0	43.9	0.6%
ME 5	33 52 21	2020	Dry	March	--	7,263.2	7,240.6	22.6	0.3%	7,236.0	27.2	0.4%	7,222.2	41.0	0.6%
ME 5	33 52 21	2020	Dry	April	--	5,504.1	5,458.8	45.3	0.8%	5,449.8	54.3	1.0%	5,422.8	81.3	1.5%
ME 5	33 52 21	2020	Dry	May	--	7,404.1	7,349.9	54.2	0.7%	7,339.1	64.9	0.9%	7,306.7	97.3	1.3%
ME 5	33 52 21	2020	Dry	June	--	2,105.4	2,036.8	68.6	3.3%	2,023.6	81.8	3.9%	1,984.5	120.9	5.7%
ME 5	33 52 21	2020	Dry	July	--	799.7	729.8	69.8	8.7%	716.0	83.7	10.5%	680.2	119.5	14.9%
ME 5	33 52 21	2020	Dry	August	--	402.6	333.6	69.1	17.1%	319.8	82.8	20.6%	281.7	121.0	30.0%
ME 5	33 52 21	2020	Dry	September	Used in Summary Table Analysis	252.0	187.0	65.0	25.8%	173.7	78.3	31.1%	135.1	116.9	46.4%
ME 5	33 51 22	2000	Above Normal	October	Used in Summary Table Analysis	822.2	779.9	42.3	5.2%	771.3	50.9	6.2%	745.7	76.6	9.3%
ME 5	33 51 22	2000	Above Normal	November	Used in Summary Table Analysis	12,221.1	12,187.5	33.6	0.3%	12,180.6	40.5	0.3%	12,159.7	61.3	0.5%
ME 5	33 51 22	2000	Above Normal	December	--	10,865.6	10,836.3	29.3	0.3%	10,830.3	35.3	0.3%	10,812.4	53.2	0.5%
ME 5	33 51 22	2000	Above Normal	January	--	28,747.7	28,721.1	26.6	0.1%	28,716.4	31.3	0.1%	28,699.1	48.6	0.2%
ME 5	33 51 22	2000	Above Normal	February	--	37,153.9	37,129.6	24.3	0.1%	37,125.0	28.9	0.1%	37,110.0	44.0	0.1%
ME 5	33 51 22	2000	Above Normal	March	--	18,351.9	18,329.9	22.0	0.1%	18,325.2	26.6	0.1%	18,311.3	40.5	0.2%
ME 5	33 51 22	2000	Above Normal	April	--	12,341.4	12,320.6	20.8	0.2%	12,316.0	25.5	0.2%	12,303.2	38.2	0.3%
ME 5	33 51 22	2000	Above Normal	May	--	7,117.4	7,073.3	44.1	0.6%	7,064.4	53.0	0.7%	7,038.1	79.3	1.1%
ME 5	33 51 22	2000	Above Normal	June	--	2,620.5	2,555.4	65.0	2.5%	2,542.6	77.9	3.0%	2,504.6	115.9	4.4%
ME 5	33 51 22	2000	Above Normal	July	--	996.2	937.0	59.2	5.9%	925.3	70.9	7.1%	890.5	105.7	10.6%
ME 5	33 51 22	2000	Above Normal	August	--	526.4	470.4	56.0	10.6%	459.3	67.1	12.8%	425.9	100.5	19.1%
ME 5	33 51 22	2000	Above Normal	September	Used in Summary Table Analysis	299.1	249.2	50.0	16.7%	239.2	59.9	20.0%	209.2	89.9	30.1%

Table A.1

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 51 22	2001	Dry	October	Used in Summary Table Analysis	3,839.1	3,797.5	41.7	1.1%	3,789.0	50.1	1.3%	3,763.7	75.5	2.0%
ME 5	33 51 22	2001	Dry	November	Used in Summary Table Analysis	6,162.8	6,129.2	33.7	0.5%	6,122.5	40.4	0.7%	6,101.9	61.0	1.0%
ME 5	33 51 22	2001	Dry	December	--	8,877.5	8,848.3	29.3	0.3%	8,842.4	35.2	0.4%	8,824.4	53.1	0.6%
ME 5	33 51 22	2001	Dry	January	--	12,865.7	12,839.1	26.6	0.2%	12,833.3	32.4	0.3%	12,817.1	48.6	0.4%
ME 5	33 51 22	2001	Dry	February	--	17,518.5	17,495.4	23.1	0.1%	17,489.6	28.9	0.2%	17,475.7	42.8	0.2%
ME 5	33 51 22	2001	Dry	March	--	12,321.8	12,298.6	23.1	0.2%	12,294.0	27.8	0.2%	12,281.3	40.5	0.3%
ME 5	33 51 22	2001	Dry	April	--	10,997.6	10,952.2	45.4	0.4%	10,943.2	54.4	0.5%	10,916.2	81.4	0.7%
ME 5	33 51 22	2001	Dry	May	--	2,638.0	2,584.5	53.5	2.0%	2,573.8	64.1	2.4%	2,542.0	95.9	3.6%
ME 5	33 51 22	2001	Dry	June	--	2,664.5	2,592.4	72.1	2.7%	2,578.2	86.2	3.2%	2,536.8	127.7	4.8%
ME 5	33 51 22	2001	Dry	July	--	720.5	652.1	68.4	9.5%	638.5	82.0	11.4%	603.2	117.3	16.3%
ME 5	33 51 22	2001	Dry	August	--	175.7	108.8	66.9	38.1%	95.5	80.2	45.7%	58.1	117.6	66.9%
ME 5	33 51 22	2001	Dry	September	Used in Summary Table Analysis	98.8	38.7	60.1	60.8%	26.7	72.1	72.9%	0.1	98.7	99.9%
ME 5	33 51 22	2002	Below Normal	October	Used in Summary Table Analysis	268.9	218.1	50.7	18.9%	207.8	61.0	22.7%	177.2	91.7	34.1%
ME 5	33 51 22	2002	Below Normal	November	Used in Summary Table Analysis	12,077.5	12,037.0	40.5	0.3%	12,028.9	48.6	0.4%	12,001.2	76.4	0.6%
ME 5	33 51 22	2002	Below Normal	December	--	35,836.8	35,802.1	34.7	0.1%	35,794.0	42.8	0.1%	35,772.0	64.8	0.2%
ME 5	33 51 22	2002	Below Normal	January	--	30,975.7	30,944.4	31.3	0.1%	30,937.5	38.2	0.1%	30,919.0	56.7	0.2%
ME 5	33 51 22	2002	Below Normal	February	--	24,736.1	24,708.3	27.8	0.1%	24,702.5	33.6	0.1%	24,684.0	52.1	0.2%
ME 5	33 51 22	2002	Below Normal	March	--	17,825.2	17,798.6	26.6	0.1%	17,792.8	32.4	0.2%	17,776.6	48.6	0.3%
ME 5	33 51 22	2002	Below Normal	April	--	9,942.8	9,897.1	45.7	0.5%	9,888.1	54.7	0.6%	9,860.8	82.1	0.8%
ME 5	33 51 22	2002	Below Normal	May	--	3,326.0	3,272.3	53.7	1.6%	3,261.6	64.5	1.9%	3,229.5	96.5	2.9%
ME 5	33 51 22	2002	Below Normal	June	--	857.2	796.8	60.4	7.0%	784.9	72.3	8.4%	749.6	107.6	12.6%
ME 5	33 51 22	2002	Below Normal	July	--	365.8	304.2	61.6	16.8%	291.9	73.8	20.2%	256.3	109.5	29.9%
ME 5	33 51 22	2002	Below Normal	August	--	231.0	172.8	58.2	25.2%	161.2	69.8	30.2%	125.9	105.1	45.5%
ME 5	33 51 22	2002	Below Normal	September	Used in Summary Table Analysis	167.5	112.3	55.2	33.0%	101.3	66.2	39.5%	67.5	100.1	59.7%
ME 5	33 51 22	2003	Wet	October	Used in Summary Table Analysis	132.4	86.7	45.7	34.5%	77.5	54.9	41.5%	49.8	82.6	62.4%
ME 5	33 51 22	2003	Wet	November	Used in Summary Table Analysis	900.9	863.9	37.0	4.1%	856.4	44.5	4.9%	833.7	67.2	7.5%
ME 5	33 51 22	2003	Wet	December	--	57,182.9	57,150.5	32.4	0.1%	57,143.5	39.4	0.1%	57,122.7	60.2	0.1%
ME 5	33 51 22	2003	Wet	January	--	31,605.3	31,576.4	28.9	0.1%	31,570.6	34.7	0.1%	31,552.1	53.2	0.2%
ME 5	33 51 22	2003	Wet	February	--	20,393.5	20,366.9	26.6	0.1%	20,362.3	31.3	0.2%	20,346.1	47.5	0.2%
ME 5	33 51 22	2003	Wet	March	--	24,094.9	24,070.6	24.3	0.1%	24,064.8	30.1	0.1%	24,049.8	45.1	0.2%
ME 5	33 51 22	2003	Wet	April	--	43,063.7	43,040.5	23.1	0.1%	43,035.9	27.8	0.1%	43,020.8	42.8	0.1%
ME 5	33 51 22	2003	Wet	May	--	12,245.4	12,199.1	46.3	0.4%	12,189.8	55.6	0.5%	12,162.0	83.3	0.7%
ME 5	33 51 22	2003	Wet	June	--	3,171.8	3,114.2	57.5	1.8%	3,103.0	68.8	2.2%	3,069.9	101.9	3.2%
ME 5	33 51 22	2003	Wet	July	--	1,479.6	1,418.6	61.0	4.1%	1,406.6	73.0	4.9%	1,370.7	108.9	7.4%
ME 5	33 51 22	2003	Wet	August	--	765.1	705.2	59.9	7.8%	692.9	72.2	9.4%	654.7	110.4	14.4%
ME 5	33 51 22	2003	Wet	September	Used in Summary Table Analysis	462.4	411.4	51.0	11.0%	401.2	61.2	13.2%	369.5	92.9	20.1%
ME 5	33 51 22	2004	Wet	October	Used in Summary Table Analysis	329.1	286.6	42.6	12.9%	278.0	51.2	15.5%	252.1	77.1	23.4%
ME 5	33 51 22	2004	Wet	November	Used in Summary Table Analysis	5,845.7	5,810.9	34.8	0.6%	5,803.8	41.9	0.7%	5,782.3	63.4	1.1%
ME 5	33 51 22	2004	Wet	December	--	36,502.3	36,472.2	30.1	0.1%	36,465.3	37.0	0.1%	36,446.8	55.6	0.2%
ME 5	33 51 22	2004	Wet	January	--	31,604.2	31,577.5	26.6	0.1%	31,571.8	32.4	0.1%	31,555.6	48.6	0.2%
ME 5	33 51 22	2004	Wet	February	--	38,362.3	38,336.8	25.5	0.1%	38,332.2	30.1	0.1%	38,316.0	46.3	0.1%
ME 5	33 51 22	2004	Wet	March	--	16,546.3	16,523.1	23.1	0.1%	16,518.5	27.8	0.2%	16,504.6	41.7	0.3%
ME 5	33 51 22	2004	Wet	April	--	9,467.0	9,445.3	21.8	0.2%	9,440.9	26.2	0.3%	9,427.4	39.6	0.4%
ME 5	33 51 22	2004	Wet	May	--	3,433.3	3,388.9	44.4	1.3%	3,380.1	53.2	1.6%	3,353.7	79.6	2.3%
ME 5	33 51 22	2004	Wet	June	--	695.0	639.8	55.3	7.9%	628.9	66.1	9.5%	596.8	98.3	14.1%
ME 5	33 51 22	2004	Wet	July	--	360.3	300.5	59.8	16.6%	288.6	71.7	19.9%	253.4	106.9	29.7%
ME 5	33 51 22	2004	Wet	August	--	229.0	172.3	56.7	24.7%	161.1	67.9	29.7%	127.2	101.8	44.4%
ME 5	33 51 22	2004	Wet	September	Used in Summary Table Analysis	165.7	111.6	54.1	32.7%	100.8	64.9	39.2%	68.3	97.4	58.8%
ME 5	33 51 22	2005	Above Normal	October	Used in Summary Table Analysis	7,738.0	7,694.6	43.4	0.6%	7,685.8	52.2	0.7%	7,659.4	78.6	1.0%
ME 5	33 51 22	2005	Above Normal	November	Used in Summary Table Analysis	2,264.7	2,230.4	34.3	1.5%	2,223.6	41.1	1.8%	2,202.7	62.0	2.7%
ME 5	33 51 22	2005	Above Normal	December	--	21,188.7	21,158.6	30.1	0.1%	21,151.6	37.0	0.2%	21,133.1	55.6	0.3%
ME 5	33 51 22	2005	Above Normal	January	--	22,511.6	22,485.0	26.6	0.1%	22,479.2	32.4	0.1%	22,463.0	48.6	0.2%
ME 5	33 51 22	2005	Above Normal	February	--	14,034.7	14,010.4	24.3	0.2%	14,005.8	28.9	0.2%	13,990.7	44.0	0.3%
ME 5	33 51 22	2005	Above Normal	March	--	28,663.2	28,641.2	22.0	0.1%	28,636.6	26.6	0.1%	28,622.7	40.5	0.1%
ME 5	33 51 22	2005	Above Normal	April	--	21,509.3	21,487.3	22.0	0.1%	21,482.6	26.6	0.1%	21,469.9	39.4	0.2%
ME 5	33 51 22	2005	Above Normal	May	--	19,645.8	19,600.7	45.1	0.2%	19,591.4	54.4	0.3%	19,564.8	81.0	0.4%
ME 5	33 51 22	2005	Above Normal	June	--	15,961.8	15,894.7	67.1	0.4%	15,881.9	79.9	0.5%	15,842.6	119.2	0.7%
ME 5	33 51 22	2005	Above Normal	July	--	2,865.5	2,803.9	61.6	2.1%	2,792.2	73.3	2.6%	2,757.4	108.1	3.8%
ME 5	33 51 22	2005	Above Normal	August	--	988.1	931.9	56.2	5.7%	920.9	67.2	6.8%	887.7	100.4	10.2%
ME 5	33 51 22	2005	Above Normal	September	Used in Summary Table Analysis	529.4	479.4	50.0	9.4%	469.5	60.0	11.3%	439.6	89.8	17.0%
ME 5	33 51 22	2006	Wet	October	Used in Summary Table Analysis	639.8	598.9	40.9	6.4%	590.7	49.1	7.7%	565.8	74.0	11.6%
ME 5	33 51 22	2006	Wet	November	Used in Summary Table Analysis	9,379.7	9,347.1	32.6	0.3%	9,340.4	39.4	0.4%	9,320.4	59.4	0.6%
ME 5	33 51 22	2006	Wet	December	--	43,741.9	43,711.8	30.1	0.1%	43,706.0	35.9	0.1%	43,687.5	54.4	0.1%
ME 5	33 51 22	2006	Wet	January	--	46,518.5	46,491.9	26.6	0.1%	46,486.1	32.4	0.1%	46,469.9	48.6	0.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 51 22	2006	Wet	February	--	26,714.1	26,691.0	23.1	0.1%	26,686.3	27.8	0.1%	26,671.3	42.8	0.2%
ME 5	33 51 22	2006	Wet	March	--	47,333.3	47,311.3	22.0	0.0%	47,306.7	26.6	0.1%	47,291.7	41.7	0.1%
ME 5	33 51 22	2006	Wet	April	--	30,497.7	30,476.9	20.8	0.1%	30,472.2	25.5	0.1%	30,460.6	37.0	0.1%
ME 5	33 51 22	2006	Wet	May	--	14,247.7	14,219.9	27.8	0.2%	14,215.3	32.4	0.2%	14,197.9	49.8	0.3%
ME 5	33 51 22	2006	Wet	June	--	3,552.4	3,497.6	54.9	1.5%	3,486.8	65.6	1.8%	3,455.2	97.2	2.7%
ME 5	33 51 22	2006	Wet	July	--	1,285.3	1,226.7	58.6	4.6%	1,215.2	70.1	5.5%	1,181.1	104.2	8.1%
ME 5	33 51 22	2006	Wet	August	--	671.2	613.8	57.5	8.6%	602.4	68.8	10.3%	568.4	102.8	15.3%
ME 5	33 51 22	2006	Wet	September	Used in Summary Table Analysis	431.5	380.8	50.7	11.8%	370.7	60.8	14.1%	340.4	91.1	21.1%
ME 5	33 51 22	2007	Above Normal	October	Used in Summary Table Analysis	278.8	237.1	41.7	15.0%	228.7	50.1	18.0%	203.3	75.6	27.1%
ME 5	33 51 22	2007	Above Normal	November	Used in Summary Table Analysis	8,731.6	8,697.3	34.3	0.4%	8,690.4	41.2	0.5%	8,669.4	62.2	0.7%
ME 5	33 51 22	2007	Above Normal	December	--	20,542.8	20,512.7	30.1	0.1%	20,505.8	37.0	0.2%	20,487.3	55.6	0.3%
ME 5	33 51 22	2007	Above Normal	January	--	10,286.8	10,260.3	26.5	0.3%	10,254.9	31.9	0.3%	10,238.3	48.5	0.5%
ME 5	33 51 22	2007	Above Normal	February	--	30,721.1	30,695.6	25.5	0.1%	30,689.8	31.3	0.1%	30,674.8	46.3	0.2%
ME 5	33 51 22	2007	Above Normal	March	--	13,127.3	13,104.2	23.1	0.2%	13,099.5	27.8	0.2%	13,084.5	42.8	0.3%
ME 5	33 51 22	2007	Above Normal	April	--	11,558.9	11,515.3	43.6	0.4%	11,506.6	52.3	0.5%	11,480.4	78.5	0.7%
ME 5	33 51 22	2007	Above Normal	May	--	4,150.9	4,099.1	51.9	1.2%	4,088.7	62.3	1.5%	4,057.6	93.3	2.2%
ME 5	33 51 22	2007	Above Normal	June	--	1,506.4	1,444.6	61.8	4.1%	1,432.4	74.0	4.9%	1,396.3	110.1	7.3%
ME 5	33 51 22	2007	Above Normal	July	--	499.5	437.0	62.4	12.5%	424.7	74.8	15.0%	388.3	111.1	22.3%
ME 5	33 51 22	2007	Above Normal	August	--	227.1	170.5	56.6	24.9%	159.2	67.9	29.9%	124.8	102.3	45.0%
ME 5	33 51 22	2007	Above Normal	September	Used in Summary Table Analysis	154.7	100.9	53.8	34.8%	90.2	64.5	41.7%	57.9	96.8	62.6%
ME 5	33 51 22	2008	Dry	October	Used in Summary Table Analysis	3,457.3	3,413.0	44.3	1.3%	3,404.1	53.2	1.5%	3,376.9	80.4	2.3%
ME 5	33 51 22	2008	Dry	November	Used in Summary Table Analysis	3,297.5	3,263.0	34.5	1.0%	3,255.9	41.6	1.3%	3,234.6	62.8	1.9%
ME 5	33 51 22	2008	Dry	December	--	23,299.8	23,268.5	31.3	0.1%	23,262.7	37.0	0.2%	23,244.2	55.6	0.2%
ME 5	33 51 22	2008	Dry	January	--	37,696.8	37,669.0	27.8	0.1%	37,663.2	33.6	0.1%	37,645.8	50.9	0.1%
ME 5	33 51 22	2008	Dry	February	--	26,311.3	26,287.0	24.3	0.1%	26,282.4	28.9	0.1%	26,267.4	44.0	0.2%
ME 5	33 51 22	2008	Dry	March	--	11,813.7	11,791.7	22.0	0.2%	11,787.0	26.6	0.2%	11,773.1	40.5	0.3%
ME 5	33 51 22	2008	Dry	April	--	9,031.9	8,987.7	44.2	0.5%	8,978.8	53.1	0.6%	8,952.3	79.6	0.9%
ME 5	33 51 22	2008	Dry	May	--	1,359.0	1,312.4	46.6	3.4%	1,303.4	55.7	4.1%	1,276.2	82.9	6.1%
ME 5	33 51 22	2008	Dry	June	--	441.5	374.5	67.1	15.2%	361.3	80.2	18.2%	322.3	119.2	27.0%
ME 5	33 51 22	2008	Dry	July	--	259.3	192.4	66.9	25.8%	179.2	80.2	30.9%	144.8	114.5	44.2%
ME 5	33 51 22	2008	Dry	August	--	182.9	117.5	65.4	35.7%	104.5	78.4	42.9%	65.3	117.6	64.3%
ME 5	33 51 22	2008	Dry	September	Used in Summary Table Analysis	144.4	81.3	63.1	43.7%	68.7	75.6	52.4%	32.3	112.1	77.6%
ME 5	33 51 22	2009	Critical	October	Used in Summary Table Analysis	929.1	878.8	50.3	5.4%	868.8	60.3	6.5%	838.1	91.0	9.8%
ME 5	33 51 22	2009	Critical	November	Used in Summary Table Analysis	5,553.9	5,514.5	39.5	0.7%	5,506.5	47.5	0.9%	5,479.5	74.4	1.3%
ME 5	33 51 22	2009	Critical	December	--	12,254.6	12,221.1	33.6	0.3%	12,214.1	40.5	0.3%	12,192.1	62.5	0.5%
ME 5	33 51 22	2009	Critical	January	--	8,822.2	8,791.3	30.9	0.4%	8,785.1	37.2	0.4%	8,765.9	56.4	0.6%
ME 5	33 51 22	2009	Critical	February	--	22,689.8	22,663.2	26.6	0.1%	22,657.4	32.4	0.1%	22,640.0	49.8	0.2%
ME 5	33 51 22	2009	Critical	March	--	21,178.2	21,153.9	24.3	0.1%	21,148.1	30.1	0.1%	21,133.1	45.1	0.2%
ME 5	33 51 22	2009	Critical	April	--	10,104.1	10,057.9	46.2	0.5%	10,048.7	55.3	0.5%	10,020.9	83.1	0.8%
ME 5	33 51 22	2009	Critical	May	--	15,613.4	15,556.7	56.7	0.4%	15,546.3	67.1	0.4%	15,511.6	101.9	0.7%
ME 5	33 51 22	2009	Critical	June	--	3,164.9	3,093.2	71.8	2.3%	3,079.4	85.5	2.7%	3,038.0	127.0	4.0%
ME 5	33 51 22	2009	Critical	July	--	1,267.0	1,199.3	67.7	5.3%	1,186.0	81.0	6.4%	1,151.3	115.7	9.1%
ME 5	33 51 22	2009	Critical	August	--	673.0	607.1	65.9	9.8%	594.1	78.9	11.7%	557.3	115.7	17.2%
ME 5	33 51 22	2009	Critical	September	Used in Summary Table Analysis	393.7	334.4	59.3	15.1%	322.7	71.1	18.1%	288.4	105.4	26.8%
ME 5	33 51 22	2010	Below Normal	October	Used in Summary Table Analysis	6,094.8	6,043.9	50.9	0.8%	6,033.6	61.2	1.0%	6,001.7	93.1	1.5%
ME 5	33 51 22	2010	Below Normal	November	Used in Summary Table Analysis	8,319.7	8,278.8	40.9	0.5%	8,270.5	49.2	0.6%	8,242.9	76.7	0.9%
ME 5	33 51 22	2010	Below Normal	December	--	12,415.5	12,379.6	35.9	0.3%	12,372.7	42.8	0.3%	12,350.7	64.8	0.5%
ME 5	33 51 22	2010	Below Normal	January	--	36,438.7	36,407.4	31.3	0.1%	36,400.5	38.2	0.1%	36,380.8	57.9	0.2%
ME 5	33 51 22	2010	Below Normal	February	--	27,303.2	27,275.5	27.8	0.1%	27,269.7	33.6	0.1%	27,252.3	50.9	0.2%
ME 5	33 51 22	2010	Below Normal	March	--	28,887.7	28,862.3	25.5	0.1%	28,856.5	31.3	0.1%	28,840.3	47.5	0.2%
ME 5	33 51 22	2010	Below Normal	April	--	40,107.6	40,083.3	24.3	0.1%	40,077.5	30.1	0.1%	40,062.5	45.1	0.1%
ME 5	33 51 22	2010	Below Normal	May	--	20,342.6	20,295.1	47.5	0.2%	20,285.9	56.7	0.3%	20,256.9	85.6	0.4%
ME 5	33 51 22	2010	Below Normal	June	--	9,408.9	9,340.5	68.4	0.7%	9,327.1	81.8	0.9%	9,287.2	121.8	1.3%
ME 5	33 51 22	2010	Below Normal	July	--	1,458.8	1,396.4	62.4	4.3%	1,384.3	74.5	5.1%	1,348.4	110.4	7.6%
ME 5	33 51 22	2010	Below Normal	August	--	574.3	516.5	57.7	10.1%	505.2	69.1	12.0%	471.1	103.1	18.0%
ME 5	33 51 22	2010	Below Normal	September	Used in Summary Table Analysis	656.4	601.1	55.3	8.4%	590.0	66.4	10.1%	556.9	99.5	15.2%
ME 5	33 51 22	2011	Wet	October	Used in Summary Table Analysis	9,680.0	9,637.6	42.4	0.4%	9,629.1	50.9	0.5%	9,603.2	76.7	0.8%
ME 5	33 51 22	2011	Wet	November	Used in Summary Table Analysis	14,273.1	14,239.6	33.6	0.2%	14,232.6	40.5	0.3%	14,210.6	62.5	0.4%
ME 5	33 51 22	2011	Wet	December	--	33,919.0	33,888.9	30.1	0.1%	33,881.9	37.0	0.1%	33,863.4	55.6	0.2%
ME 5	33 51 22	2011	Wet	January	--	14,197.9	14,171.3	26.6	0.2%	14,166.7	31.3	0.2%	14,150.5	47.5	0.3%
ME 5	33 51 22	2011	Wet	February	--	20,807.9	20,783.6	24.3	0.1%	20,778.9	28.9	0.1%	20,763.9	44.0	0.2%
ME 5	33 51 22	2011	Wet	March	--	52,149.3	52,126.2	23.1	0.0%	52,121.5	27.8	0.1%	52,106.5	42.8	0.1%
ME 5	33 51 22	2011	Wet	April	--	24,850.7	24,827.5	23.1	0.1%	24,822.9	27.8	0.1%	24,809.0	41.7	0.2%
ME 5	33 51 22	2011	Wet	May	--	11,407.1	11,362.0	45.0	0.4%	11,353.0	54.1	0.5%	11,326.0	81.0	0.7%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 51 22	2011	Wet	June	--	7,080.6	7,014.1	66.4	0.9%	7,000.9	79.6	1.1%	6,962.0	118.5	1.7%
ME 5	33 51 22	2011	Wet	July	--	1,831.5	1,764.9	66.6	3.6%	1,751.9	79.6	4.3%	1,714.2	117.2	6.4%
ME 5	33 51 22	2011	Wet	August	--	781.3	724.3	56.9	7.3%	713.1	68.2	8.7%	679.3	102.0	13.1%
ME 5	33 51 22	2011	Wet	September	Used in Summary Table Analysis	437.8	385.7	52.0	11.9%	375.4	62.4	14.3%	344.4	93.4	21.3%
ME 5	33 51 22	2012	Below Normal	October	Used in Summary Table Analysis	4,565.6	4,522.6	43.1	0.9%	4,513.9	51.7	1.1%	4,487.4	78.2	1.7%
ME 5	33 51 22	2012	Below Normal	November	Used in Summary Table Analysis	8,287.2	8,252.7	34.5	0.4%	8,245.6	41.6	0.5%	8,224.2	63.0	0.8%
ME 5	33 51 22	2012	Below Normal	December	--	5,205.2	5,175.5	29.7	0.6%	5,169.4	35.8	0.7%	5,151.0	54.2	1.0%
ME 5	33 51 22	2012	Below Normal	January	--	20,256.9	20,230.3	26.6	0.1%	20,224.5	32.4	0.2%	20,208.3	48.6	0.2%
ME 5	33 51 22	2012	Below Normal	February	--	18,253.5	18,229.2	24.3	0.1%	18,224.5	28.9	0.2%	18,209.5	44.0	0.2%
ME 5	33 51 22	2012	Below Normal	March	--	45,592.6	45,568.3	24.3	0.1%	45,563.7	28.9	0.1%	45,548.6	44.0	0.1%
ME 5	33 51 22	2012	Below Normal	April	--	26,920.1	26,898.1	22.0	0.1%	26,893.5	26.6	0.1%	26,879.6	40.5	0.2%
ME 5	33 51 22	2012	Below Normal	May	--	7,498.3	7,453.4	44.9	0.6%	7,444.4	53.8	0.7%	7,417.9	80.3	1.1%
ME 5	33 51 22	2012	Below Normal	June	--	5,539.4	5,471.8	67.6	1.2%	5,458.4	80.9	1.5%	5,419.3	120.0	2.2%
ME 5	33 51 22	2012	Below Normal	July	--	2,238.5	2,174.2	64.4	2.9%	2,161.3	77.2	3.4%	2,123.5	115.0	5.1%
ME 5	33 51 22	2012	Below Normal	August	--	391.7	339.6	52.2	13.3%	329.2	62.6	16.0%	298.0	93.7	23.9%
ME 5	33 51 22	2012	Below Normal	September	Used in Summary Table Analysis	253.2	206.4	46.7	18.5%	197.1	56.1	22.1%	169.2	83.9	33.2%
ME 5	33 51 22	2013	Below Normal	October	Used in Summary Table Analysis	1,927.8	1,886.7	41.1	2.1%	1,878.4	49.4	2.6%	1,853.6	74.2	3.8%
ME 5	33 51 22	2013	Below Normal	November	Used in Summary Table Analysis	14,775.5	14,743.1	32.4	0.2%	14,736.1	39.4	0.3%	14,715.3	60.2	0.4%
ME 5	33 51 22	2013	Below Normal	December	--	60,194.4	60,163.2	31.3	0.1%	60,157.4	37.0	0.1%	60,138.9	55.6	0.1%
ME 5	33 51 22	2013	Below Normal	January	--	22,260.4	22,236.1	24.3	0.1%	22,230.3	30.1	0.1%	22,214.1	46.3	0.2%
ME 5	33 51 22	2013	Below Normal	February	--	8,873.8	8,849.7	24.2	0.3%	8,844.7	29.2	0.3%	8,829.9	44.0	0.5%
ME 5	33 51 22	2013	Below Normal	March	--	10,372.6	10,349.3	23.3	0.2%	10,344.7	27.9	0.3%	10,330.4	42.1	0.4%
ME 5	33 51 22	2013	Below Normal	April	--	8,304.1	8,261.5	42.6	0.5%	8,253.0	51.0	0.6%	8,227.4	76.6	0.9%
ME 5	33 51 22	2013	Below Normal	May	--	4,447.7	4,396.2	51.5	1.2%	4,385.9	61.8	1.4%	4,355.2	92.5	2.1%
ME 5	33 51 22	2013	Below Normal	June	--	2,116.1	2,054.7	61.3	2.9%	2,042.6	73.5	3.5%	2,006.6	109.5	5.2%
ME 5	33 51 22	2013	Below Normal	July	--	720.8	661.1	59.7	8.3%	649.3	71.5	9.9%	614.8	106.0	14.7%
ME 5	33 51 22	2013	Below Normal	August	--	343.8	287.3	56.5	16.4%	276.0	67.8	19.7%	241.7	102.1	29.7%
ME 5	33 51 22	2013	Below Normal	September	Used in Summary Table Analysis	4,810.9	4,752.2	58.7	1.2%	4,740.5	70.4	1.5%	4,705.4	105.4	2.2%
ME 5	33 51 22	2014	Critical	October	Used in Summary Table Analysis	281.9	238.6	43.3	15.4%	229.9	52.0	18.5%	204.4	77.5	27.5%
ME 5	33 51 22	2014	Critical	November	Used in Summary Table Analysis	1,551.3	1,516.2	35.1	2.3%	1,509.1	42.1	2.7%	1,487.7	63.5	4.1%
ME 5	33 51 22	2014	Critical	December	--	1,597.6	1,566.9	30.7	1.9%	1,560.6	36.9	2.3%	1,541.8	55.8	3.5%
ME 5	33 51 22	2014	Critical	January	--	2,835.1	2,807.6	27.4	1.0%	2,802.1	33.0	1.2%	2,785.0	50.1	1.8%
ME 5	33 51 22	2014	Critical	February	--	15,792.8	15,768.5	24.3	0.2%	15,762.7	30.1	0.2%	15,746.5	46.3	0.3%
ME 5	33 51 22	2014	Critical	March	--	31,538.2	31,513.9	24.3	0.1%	31,509.3	28.9	0.1%	31,494.2	44.0	0.1%
ME 5	33 51 22	2014	Critical	April	--	13,008.1	12,963.0	45.1	0.3%	12,953.7	54.4	0.4%	12,925.9	82.2	0.6%
ME 5	33 51 22	2014	Critical	May	--	5,199.4	5,145.0	54.4	1.0%	5,134.3	65.2	1.3%	5,101.5	97.9	1.9%
ME 5	33 51 22	2014	Critical	June	--	1,202.7	1,129.3	73.3	6.1%	1,115.0	87.7	7.3%	1,073.4	129.2	10.7%
ME 5	33 51 22	2014	Critical	July	--	549.0	480.4	68.5	12.5%	466.8	82.1	15.0%	431.1	117.8	21.5%
ME 5	33 51 22	2014	Critical	August	--	351.7	285.9	65.8	18.7%	272.8	79.0	22.4%	235.6	116.2	33.0%
ME 5	33 51 22	2014	Critical	September	Used in Summary Table Analysis	2,585.3	2,520.7	64.6	2.5%	2,507.9	77.4	3.0%	2,469.7	115.6	4.5%
ME 5	33 51 22	2015	Dry	October	Used in Summary Table Analysis	11,407.2	11,356.5	50.7	0.4%	11,346.4	60.8	0.5%	11,316.0	91.2	0.8%
ME 5	33 51 22	2015	Dry	November	Used in Summary Table Analysis	9,086.8	9,048.1	38.7	0.4%	9,040.3	46.5	0.5%	9,013.5	73.3	0.8%
ME 5	33 51 22	2015	Dry	December	--	32,797.5	32,765.0	32.4	0.1%	32,758.1	39.4	0.1%	32,736.1	61.3	0.2%
ME 5	33 51 22	2015	Dry	January	--	14,605.3	14,575.2	30.1	0.2%	14,569.4	35.9	0.2%	14,549.8	55.6	0.4%
ME 5	33 51 22	2015	Dry	February	--	27,305.6	27,278.9	26.6	0.1%	27,273.1	32.4	0.1%	27,256.9	48.6	0.2%
ME 5	33 51 22	2015	Dry	March	--	11,588.0	11,564.2	23.7	0.2%	11,559.4	28.6	0.2%	11,544.6	43.4	0.4%
ME 5	33 51 22	2015	Dry	April	--	8,433.3	8,387.8	45.5	0.5%	8,378.7	54.6	0.6%	8,351.3	82.1	1.0%
ME 5	33 51 22	2015	Dry	May	--	1,510.4	1,456.8	53.6	3.5%	1,446.2	64.2	4.3%	1,415.3	95.1	6.3%
ME 5	33 51 22	2015	Dry	June	--	655.1	587.0	68.1	10.4%	573.6	81.5	12.4%	533.9	121.2	18.5%
ME 5	33 51 22	2015	Dry	July	--	271.3	203.7	67.6	24.9%	190.3	81.0	29.8%	155.6	115.8	42.7%
ME 5	33 51 22	2015	Dry	August	--	169.8	104.0	65.8	38.7%	90.9	78.9	46.5%	54.4	115.4	68.0%
ME 5	33 51 22	2015	Dry	September	Used in Summary Table Analysis	123.5	61.5	62.0	50.2%	48.8	74.7	60.5%	11.9	111.6	90.3%
ME 5	33 51 22	2016	Above Normal	October	Used in Summary Table Analysis	88.6	36.5	52.1	58.8%	26.4	62.2	70.2%	0.0	88.6	100.0%
ME 5	33 51 22	2016	Above Normal	November	Used in Summary Table Analysis	3,907.5	3,866.9	40.6	1.0%	3,858.6	49.0	1.3%	3,828.9	78.6	2.0%
ME 5	33 51 22	2016	Above Normal	December	--	36,831.0	36,795.1	35.9	0.1%	36,788.2	42.8	0.1%	36,765.0	66.0	0.2%
ME 5	33 51 22	2016	Above Normal	January	--	57,538.2	57,505.8	32.4	0.1%	57,498.8	39.4	0.1%	57,478.0	60.2	0.1%
ME 5	33 51 22	2016	Above Normal	February	--	24,305.6	24,278.9	26.6	0.1%	24,273.1	32.4	0.1%	24,255.8	49.8	0.2%
ME 5	33 51 22	2016	Above Normal	March	--	41,880.8	41,854.2	26.6	0.1%	41,848.4	32.4	0.1%	41,833.3	47.5	0.1%
ME 5	33 51 22	2016	Above Normal	April	--	18,567.1	18,544.0	23.1	0.1%	18,539.4	27.8	0.1%	18,524.3	42.8	0.2%
ME 5	33 51 22	2016	Above Normal	May	--	5,225.8	5,197.2	28.6	0.5%	5,191.4	34.4	0.7%	5,174.0	51.9	1.0%
ME 5	33 51 22	2016	Above Normal	June	--	1,513.7	1,461.1	52.5	3.5%	1,451.7	61.9	4.1%	1,424.2	89.5	5.9%
ME 5	33 51 22	2016	Above Normal	July	--	827.5	768.2	59.3	7.2%	756.5	71.0	8.6%	721.7	105.8	12.8%
ME 5	33 51 22	2016	Above Normal	August	--	496.2	437.8	58.4	11.8%	426.2	70.0	14.1%	391.5	104.7	21.1%
ME 5	33 51 22	2016	Above Normal	September	Used in Summary Table Analysis	332.2	277.4	54.8	16.5%	266.3	66.0	19.9%	233.1	99.2	29.9%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 51 22	2017	Wet	October	Used in Summary Table Analysis	18,366.9	18,322.9	44.0	0.2%	18,313.7	53.2	0.3%	18,287.0	79.9	0.4%
ME 5	33 51 22	2017	Wet	November	Used in Summary Table Analysis	18,914.4	18,880.8	33.6	0.2%	18,873.8	40.5	0.2%	18,853.0	61.3	0.3%
ME 5	33 51 22	2017	Wet	December	--	24,253.5	24,223.4	30.1	0.1%	24,217.6	35.9	0.1%	24,199.1	54.4	0.2%
ME 5	33 51 22	2017	Wet	January	--	107,313.7	107,285.9	27.8	0.0%	107,280.1	33.6	0.0%	107,263.9	49.8	0.0%
ME 5	33 51 22	2017	Wet	February	--	82,079.9	82,055.6	24.3	0.0%	82,049.8	30.1	0.0%	82,034.7	45.1	0.1%
ME 5	33 51 22	2017	Wet	March	--	27,351.9	27,327.5	24.3	0.1%	27,322.9	28.9	0.1%	27,309.0	42.8	0.2%
ME 5	33 51 22	2017	Wet	April	--	23,018.5	22,996.5	22.0	0.1%	22,991.9	26.6	0.1%	22,979.2	39.4	0.2%
ME 5	33 51 22	2017	Wet	May	--	6,276.6	6,248.1	28.5	0.5%	6,242.4	34.3	0.5%	6,225.2	51.4	0.8%
ME 5	33 51 22	2017	Wet	June	--	2,127.1	2,072.8	54.3	2.6%	2,062.2	64.9	3.1%	2,030.4	96.6	4.5%
ME 5	33 51 22	2017	Wet	July	--	940.5	881.2	59.3	6.3%	869.5	71.0	7.5%	835.1	105.5	11.2%
ME 5	33 51 22	2017	Wet	August	--	512.6	454.6	58.0	11.3%	443.1	69.5	13.6%	408.7	103.8	20.3%
ME 5	33 51 22	2017	Wet	September	Used in Summary Table Analysis	327.7	273.8	53.9	16.4%	263.0	64.7	19.7%	230.7	97.0	29.6%
ME 5	33 51 22	2018	Above Normal	October	Used in Summary Table Analysis	280.3	237.1	43.2	15.4%	228.4	51.9	18.5%	202.3	78.0	27.8%
ME 5	33 51 22	2018	Above Normal	November	Used in Summary Table Analysis	10,882.4	10,848.1	34.3	0.3%	10,841.2	41.2	0.4%	10,820.1	62.3	0.6%
ME 5	33 51 22	2018	Above Normal	December	--	5,455.0	5,425.8	29.2	0.5%	5,419.9	35.1	0.6%	5,401.9	53.1	1.0%
ME 5	33 51 22	2018	Above Normal	January	--	17,937.5	17,910.9	26.6	0.1%	17,905.1	32.4	0.2%	17,888.9	48.6	0.3%
ME 5	33 51 22	2018	Above Normal	February	--	7,605.6	7,582.1	23.5	0.3%	7,577.2	28.4	0.4%	7,562.5	43.1	0.6%
ME 5	33 51 22	2018	Above Normal	March	--	20,800.9	20,777.8	23.1	0.1%	20,774.3	26.6	0.1%	20,760.4	40.5	0.2%
ME 5	33 51 22	2018	Above Normal	April	--	32,319.4	32,298.6	20.8	0.1%	32,295.1	24.3	0.1%	32,282.4	37.0	0.1%
ME 5	33 51 22	2018	Above Normal	May	--	6,993.5	6,950.9	42.6	0.6%	6,942.5	51.0	0.7%	6,916.8	76.7	1.1%
ME 5	33 51 22	2018	Above Normal	June	--	1,918.8	1,863.9	54.9	2.9%	1,853.1	65.6	3.4%	1,821.3	97.5	5.1%
ME 5	33 51 22	2018	Above Normal	July	--	786.4	726.6	59.8	7.6%	714.7	71.7	9.1%	679.4	107.0	13.6%
ME 5	33 51 22	2018	Above Normal	August	--	447.5	391.4	56.1	12.5%	380.2	67.3	15.0%	346.7	100.8	22.5%
ME 5	33 51 22	2018	Above Normal	September	Used in Summary Table Analysis	304.5	250.4	54.0	17.7%	239.6	64.9	21.3%	207.2	97.3	31.9%
ME 5	33 51 22	2019	Below Normal	October	Used in Summary Table Analysis	211.3	168.7	42.6	20.2%	160.1	51.3	24.3%	134.1	77.2	36.5%
ME 5	33 51 22	2019	Below Normal	November	Used in Summary Table Analysis	6,683.2	6,648.7	34.5	0.5%	6,641.7	41.6	0.6%	6,620.6	62.6	0.9%
ME 5	33 51 22	2019	Below Normal	December	--	14,767.4	14,737.3	30.1	0.2%	14,731.5	35.9	0.2%	14,713.0	54.4	0.4%
ME 5	33 51 22	2019	Below Normal	January	--	35,425.9	35,399.3	26.6	0.1%	35,393.5	32.4	0.1%	35,377.3	48.6	0.1%
ME 5	33 51 22	2019	Below Normal	February	--	142,141.2	142,118.1	23.1	0.0%	142,106.5	34.7	0.0%	142,094.9	46.3	0.0%
ME 5	33 51 22	2019	Below Normal	March	--	42,434.0	42,413.2	20.8	0.0%	42,408.6	25.5	0.1%	42,394.7	39.4	0.1%
ME 5	33 51 22	2019	Below Normal	April	--	15,305.6	15,284.7	20.8	0.1%	15,280.1	25.5	0.2%	15,267.4	38.2	0.2%
ME 5	33 51 22	2019	Below Normal	May	--	17,098.4	17,052.1	46.3	0.3%	17,044.0	54.4	0.3%	17,016.2	82.2	0.5%
ME 5	33 51 22	2019	Below Normal	June	--	4,244.1	4,186.5	57.6	1.4%	4,175.3	68.8	1.6%	4,142.9	101.2	2.4%
ME 5	33 51 22	2019	Below Normal	July	--	1,367.6	1,307.6	60.0	4.4%	1,295.7	71.9	5.3%	1,260.5	107.1	7.8%
ME 5	33 51 22	2019	Below Normal	August	--	602.3	544.8	57.4	9.5%	533.4	68.8	11.4%	499.5	102.7	17.1%
ME 5	33 51 22	2019	Below Normal	September	Used in Summary Table Analysis	467.5	413.7	53.8	11.5%	402.9	64.6	13.8%	370.6	96.9	20.7%
ME 5	33 51 22	2020	Dry	October	Used in Summary Table Analysis	359.4	318.4	41.1	11.4%	310.0	49.4	13.7%	285.0	74.4	20.7%
ME 5	33 51 22	2020	Dry	November	Used in Summary Table Analysis	326.7	294.1	32.6	10.0%	287.5	39.2	12.0%	267.6	59.1	18.1%
ME 5	33 51 22	2020	Dry	December	--	13,432.9	13,402.8	30.1	0.2%	13,397.0	35.9	0.3%	13,379.6	53.2	0.4%
ME 5	33 51 22	2020	Dry	January	--	22,446.8	22,419.0	27.8	0.1%	22,414.4	32.4	0.1%	22,397.0	49.8	0.2%
ME 5	33 51 22	2020	Dry	February	--	7,420.4	7,396.2	24.2	0.3%	7,391.2	29.2	0.4%	7,376.3	44.1	0.6%
ME 5	33 51 22	2020	Dry	March	--	7,265.6	7,242.9	22.7	0.3%	7,238.3	27.3	0.4%	7,224.4	41.2	0.6%
ME 5	33 51 22	2020	Dry	April	--	5,506.5	5,461.1	45.4	0.8%	5,452.1	54.4	1.0%	5,425.1	81.4	1.5%
ME 5	33 51 22	2020	Dry	May	--	7,406.9	7,352.7	54.3	0.7%	7,341.8	65.2	0.9%	7,309.5	97.5	1.3%
ME 5	33 51 22	2020	Dry	June	--	2,105.8	2,037.2	68.6	3.3%	2,024.0	81.8	3.9%	1,984.7	121.1	5.7%
ME 5	33 51 22	2020	Dry	July	--	800.1	730.2	70.0	8.7%	716.3	83.8	10.5%	680.4	119.7	15.0%
ME 5	33 51 22	2020	Dry	August	--	403.0	333.8	69.2	17.2%	320.0	82.9	20.6%	281.8	121.2	30.1%
ME 5	33 51 22	2020	Dry	September	Used in Summary Table Analysis	252.2	187.0	65.2	25.8%	173.8	78.4	31.1%	135.0	117.2	46.5%
ME 5	33 50 23	2000	Above Normal	October	Used in Summary Table Analysis	824.4	781.7	42.7	5.2%	773.1	51.3	6.2%	747.2	77.1	9.4%
ME 5	33 50 23	2000	Above Normal	November	Used in Summary Table Analysis	12,250.0	12,215.3	34.7	0.3%	12,208.3	41.7	0.3%	12,187.5	62.5	0.5%
ME 5	33 50 23	2000	Above Normal	December	--	10,880.6	10,851.2	29.4	0.3%	10,845.1	35.4	0.3%	10,827.0	53.6	0.5%
ME 5	33 50 23	2000	Above Normal	January	--	28,795.1	28,768.5	26.6	0.1%	28,762.7	32.4	0.1%	28,746.5	48.6	0.2%
ME 5	33 50 23	2000	Above Normal	February	--	37,184.0	37,159.7	24.3	0.1%	37,155.1	28.9	0.1%	37,140.0	44.0	0.1%
ME 5	33 50 23	2000	Above Normal	March	--	18,360.0	18,338.0	22.0	0.1%	18,333.3	26.6	0.1%	18,319.4	40.5	0.2%
ME 5	33 50 23	2000	Above Normal	April	--	12,348.4	12,327.5	20.8	0.2%	12,322.9	25.5	0.2%	12,309.0	39.4	0.3%
ME 5	33 50 23	2000	Above Normal	May	--	7,123.0	7,078.8	44.2	0.6%	7,069.9	53.1	0.7%	7,043.5	79.5	1.1%
ME 5	33 50 23	2000	Above Normal	June	--	2,622.7	2,557.5	65.2	2.5%	2,544.7	78.0	3.0%	2,506.5	116.2	4.4%
ME 5	33 50 23	2000	Above Normal	July	--	997.4	938.0	59.5	6.0%	926.2	71.2	7.1%	891.2	106.2	10.6%
ME 5	33 50 23	2000	Above Normal	August	--	527.9	471.6	56.3	10.7%	460.4	67.5	12.8%	426.9	101.0	19.1%
ME 5	33 50 23	2000	Above Normal	September	Used in Summary Table Analysis	300.6	250.3	50.2	16.7%	240.3	60.3	20.1%	210.1	90.4	30.1%
ME 5	33 50 23	2001	Dry	October	Used in Summary Table Analysis	3,846.3	3,804.3	42.0	1.1%	3,795.7	50.6	1.3%	3,770.1	76.2	2.0%
ME 5	33 50 23	2001	Dry	November	Used in Summary Table Analysis	6,174.0	6,139.9	34.0	0.6%	6,133.1	40.9	0.7%	6,112.4	61.6	1.0%
ME 5	33 50 23	2001	Dry	December	--	8,888.5	8,859.0	29.5	0.3%	8,853.0	35.5	0.4%	8,835.1	53.5	0.6%
ME 5	33 50 23	2001	Dry	January	--	12,885.4	12,858.8	26.6	0.2%	12,854.2	31.3	0.2%	12,838.0	47.5	0.4%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 50 23	2001	Dry	February	--	17,531.3	17,508.1	23.1	0.1%	17,502.3	28.9	0.2%	17,488.4	42.8	0.2%
ME 5	33 50 23	2001	Dry	March	--	12,327.5	12,305.6	22.0	0.2%	12,300.9	26.6	0.2%	12,287.0	40.5	0.3%
ME 5	33 50 23	2001	Dry	April	--	11,004.3	10,958.9	45.4	0.4%	10,949.8	54.5	0.5%	10,922.8	81.5	0.7%
ME 5	33 50 23	2001	Dry	May	--	2,638.0	2,584.4	53.6	2.0%	2,573.7	64.2	2.4%	2,541.8	96.2	3.6%
ME 5	33 50 23	2001	Dry	June	--	2,669.1	2,596.8	72.3	2.7%	2,582.6	86.5	3.2%	2,541.0	128.1	4.8%
ME 5	33 50 23	2001	Dry	July	--	721.2	652.5	68.7	9.5%	638.8	82.4	11.4%	603.3	117.9	16.3%
ME 5	33 50 23	2001	Dry	August	--	176.9	109.7	67.2	38.0%	96.3	80.6	45.6%	58.7	118.2	66.8%
ME 5	33 50 23	2001	Dry	September	Used in Summary Table Analysis	100.2	39.7	60.5	60.3%	27.7	72.5	72.4%	0.8	99.4	99.2%
ME 5	33 50 23	2002	Below Normal	October	Used in Summary Table Analysis	270.5	219.4	51.1	18.9%	209.0	61.5	22.7%	178.1	92.4	34.1%
ME 5	33 50 23	2002	Below Normal	November	Used in Summary Table Analysis	12,092.6	12,052.1	40.5	0.3%	12,044.0	48.6	0.4%	12,016.2	76.4	0.6%
ME 5	33 50 23	2002	Below Normal	December	--	35,879.6	35,843.8	35.9	0.1%	35,836.8	42.8	0.1%	35,813.7	66.0	0.2%
ME 5	33 50 23	2002	Below Normal	January	--	31,001.2	30,969.9	31.3	0.1%	30,964.1	37.0	0.1%	30,944.4	56.7	0.2%
ME 5	33 50 23	2002	Below Normal	February	--	24,751.2	24,723.4	27.8	0.1%	24,717.6	33.6	0.1%	24,699.1	52.1	0.2%
ME 5	33 50 23	2002	Below Normal	March	--	17,836.8	17,810.2	26.6	0.1%	17,804.4	32.4	0.2%	17,788.2	48.6	0.3%
ME 5	33 50 23	2002	Below Normal	April	--	9,947.1	9,901.4	45.7	0.5%	9,892.2	54.9	0.6%	9,864.8	82.3	0.8%
ME 5	33 50 23	2002	Below Normal	May	--	3,327.5	3,273.6	53.9	1.6%	3,262.8	64.7	1.9%	3,230.8	96.8	2.9%
ME 5	33 50 23	2002	Below Normal	June	--	858.1	797.5	60.6	7.1%	785.5	72.5	8.5%	750.1	108.0	12.6%
ME 5	33 50 23	2002	Below Normal	July	--	366.9	305.0	61.9	16.9%	292.7	74.2	20.2%	256.9	110.0	30.0%
ME 5	33 50 23	2002	Below Normal	August	--	232.5	173.9	58.6	25.2%	162.2	70.2	30.2%	126.8	105.7	45.5%
ME 5	33 50 23	2002	Below Normal	September	Used in Summary Table Analysis	169.0	113.5	55.6	32.9%	102.4	66.6	39.4%	68.4	100.7	59.6%
ME 5	33 50 23	2003	Wet	October	Used in Summary Table Analysis	133.9	87.9	46.0	34.4%	78.6	55.3	41.3%	50.7	83.2	62.1%
ME 5	33 50 23	2003	Wet	November	Used in Summary Table Analysis	903.0	865.6	37.3	4.1%	858.0	44.9	5.0%	835.1	67.8	7.5%
ME 5	33 50 23	2003	Wet	December	--	57,283.6	57,250.0	33.6	0.1%	57,243.1	40.5	0.1%	57,223.4	60.2	0.1%
ME 5	33 50 23	2003	Wet	January	--	31,625.0	31,594.9	30.1	0.1%	31,589.1	35.9	0.1%	31,571.8	53.2	0.2%
ME 5	33 50 23	2003	Wet	February	--	20,402.8	20,377.3	25.5	0.1%	20,371.5	31.3	0.2%	20,355.3	47.5	0.2%
ME 5	33 50 23	2003	Wet	March	--	24,111.1	24,086.8	24.3	0.1%	24,081.0	30.1	0.1%	24,066.0	45.1	0.2%
ME 5	33 50 23	2003	Wet	April	--	43,105.3	43,081.0	24.3	0.1%	43,076.4	28.9	0.1%	43,061.3	44.0	0.1%
ME 5	33 50 23	2003	Wet	May	--	12,248.8	12,202.5	46.3	0.4%	12,193.3	55.6	0.5%	12,166.7	82.2	0.7%
ME 5	33 50 23	2003	Wet	June	--	3,172.5	3,114.8	57.6	1.8%	3,103.5	69.0	2.2%	3,070.3	102.2	3.2%
ME 5	33 50 23	2003	Wet	July	--	1,481.0	1,419.7	61.3	4.1%	1,407.5	73.5	5.0%	1,371.6	109.4	7.4%
ME 5	33 50 23	2003	Wet	August	--	766.6	706.4	60.2	7.9%	694.1	72.6	9.5%	655.6	111.0	14.5%
ME 5	33 50 23	2003	Wet	September	Used in Summary Table Analysis	464.0	412.6	51.4	11.1%	402.3	61.6	13.3%	370.4	93.5	20.2%
ME 5	33 50 23	2004	Wet	October	Used in Summary Table Analysis	330.7	287.8	42.9	13.0%	279.2	51.6	15.6%	253.0	77.7	23.5%
ME 5	33 50 23	2004	Wet	November	Used in Summary Table Analysis	5,857.8	5,822.6	35.2	0.6%	5,815.4	42.4	0.7%	5,793.8	64.0	1.1%
ME 5	33 50 23	2004	Wet	December	--	36,553.2	36,523.1	30.1	0.1%	36,516.2	37.0	0.1%	36,496.5	56.7	0.2%
ME 5	33 50 23	2004	Wet	January	--	31,637.7	31,611.1	26.6	0.1%	31,605.3	32.4	0.1%	31,588.0	49.8	0.2%
ME 5	33 50 23	2004	Wet	February	--	38,394.7	38,369.2	25.5	0.1%	38,363.4	31.3	0.1%	38,348.4	46.3	0.1%
ME 5	33 50 23	2004	Wet	March	--	16,550.9	16,527.8	23.1	0.1%	16,523.1	27.8	0.2%	16,509.3	41.7	0.3%
ME 5	33 50 23	2004	Wet	April	--	9,470.8	9,449.0	21.9	0.2%	9,444.6	26.3	0.3%	9,431.0	39.8	0.4%
ME 5	33 50 23	2004	Wet	May	--	3,436.5	3,392.0	44.4	1.3%	3,383.1	53.4	1.6%	3,356.6	79.9	2.3%
ME 5	33 50 23	2004	Wet	June	--	695.8	640.4	55.4	8.0%	629.5	66.3	9.5%	597.2	98.6	14.2%
ME 5	33 50 23	2004	Wet	July	--	361.6	301.6	60.1	16.6%	289.6	72.0	19.9%	254.2	107.4	29.7%
ME 5	33 50 23	2004	Wet	August	--	230.4	173.4	57.0	24.7%	162.1	68.3	29.6%	128.1	102.3	44.4%
ME 5	33 50 23	2004	Wet	September	Used in Summary Table Analysis	167.1	112.7	54.4	32.6%	101.8	65.3	39.1%	69.1	98.0	58.6%
ME 5	33 50 23	2005	Above Normal	October	Used in Summary Table Analysis	7,753.5	7,709.6	43.9	0.6%	7,700.8	52.7	0.7%	7,674.2	79.3	1.0%
ME 5	33 50 23	2005	Above Normal	November	Used in Summary Table Analysis	2,267.0	2,232.5	34.5	1.5%	2,225.6	41.4	1.8%	2,204.5	62.5	2.8%
ME 5	33 50 23	2005	Above Normal	December	--	21,231.5	21,200.2	31.3	0.1%	21,194.4	37.0	0.2%	21,175.9	55.6	0.3%
ME 5	33 50 23	2005	Above Normal	January	--	22,544.0	22,517.4	26.6	0.1%	22,511.6	32.4	0.1%	22,495.4	48.6	0.2%
ME 5	33 50 23	2005	Above Normal	February	--	14,039.4	14,015.0	24.3	0.2%	14,010.4	28.9	0.2%	13,995.4	44.0	0.3%
ME 5	33 50 23	2005	Above Normal	March	--	28,688.7	28,666.7	22.0	0.1%	28,662.0	26.6	0.1%	28,647.0	41.7	0.1%
ME 5	33 50 23	2005	Above Normal	April	--	21,524.3	21,503.5	20.8	0.1%	21,498.8	25.5	0.1%	21,485.0	39.4	0.2%
ME 5	33 50 23	2005	Above Normal	May	--	19,665.5	19,620.4	45.1	0.2%	19,611.1	54.4	0.3%	19,583.3	82.2	0.4%
ME 5	33 50 23	2005	Above Normal	June	--	15,985.0	15,917.8	67.1	0.4%	15,905.1	79.9	0.5%	15,865.7	119.2	0.7%
ME 5	33 50 23	2005	Above Normal	July	--	2,865.4	2,803.6	61.8	2.2%	2,791.8	73.6	2.6%	2,756.8	108.6	3.8%
ME 5	33 50 23	2005	Above Normal	August	--	989.4	933.0	56.4	5.7%	921.9	67.6	6.8%	888.6	100.9	10.2%
ME 5	33 50 23	2005	Above Normal	September	Used in Summary Table Analysis	531.0	480.7	50.3	9.5%	470.7	60.3	11.4%	440.6	90.3	17.0%
ME 5	33 50 23	2006	Wet	October	Used in Summary Table Analysis	641.8	600.6	41.2	6.4%	592.3	49.5	7.7%	567.2	74.6	11.6%
ME 5	33 50 23	2006	Wet	November	Used in Summary Table Analysis	9,399.8	9,366.8	33.0	0.4%	9,360.2	39.6	0.4%	9,339.9	59.8	0.6%
ME 5	33 50 23	2006	Wet	December	--	43,805.6	43,776.6	28.9	0.1%	43,769.7	35.9	0.1%	43,751.2	54.4	0.1%
ME 5	33 50 23	2006	Wet	January	--	46,575.2	46,548.6	26.6	0.1%	46,542.8	32.4	0.1%	46,525.5	49.8	0.1%
ME 5	33 50 23	2006	Wet	February	--	26,737.3	26,714.1	23.1	0.1%	26,708.3	28.9	0.1%	26,694.4	42.8	0.2%
ME 5	33 50 23	2006	Wet	March	--	47,378.5	47,355.3	23.1	0.0%	47,350.7	27.8	0.1%	47,336.8	41.7	0.1%
ME 5	33 50 23	2006	Wet	April	--	30,513.9	30,493.1	20.8	0.1%	30,489.6	24.3	0.1%	30,476.9	37.0	0.1%
ME 5	33 50 23	2006	Wet	May	--	14,256.9	14,229.2	27.8	0.2%	14,223.4	33.6	0.2%	14,207.2	49.8	0.3%

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Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 50 23	2006	Wet	June	--	3,552.9	3,497.9	55.0	1.5%	3,487.2	65.7	1.9%	3,455.4	97.5	2.7%
ME 5	33 50 23	2006	Wet	July	--	1,286.7	1,227.9	58.8	4.6%	1,216.3	70.4	5.5%	1,182.1	104.6	8.1%
ME 5	33 50 23	2006	Wet	August	--	672.9	615.1	57.7	8.6%	603.7	69.2	10.3%	569.6	103.3	15.4%
ME 5	33 50 23	2006	Wet	September	Used in Summary Table Analysis	433.2	382.2	51.0	11.8%	372.0	61.2	14.1%	341.5	91.7	21.2%
ME 5	33 50 23	2007	Above Normal	October	Used in Summary Table Analysis	280.4	238.3	42.1	15.0%	229.9	50.5	18.0%	204.2	76.1	27.2%
ME 5	33 50 23	2007	Above Normal	November	Used in Summary Table Analysis	8,749.3	8,714.8	34.5	0.4%	8,707.8	41.6	0.5%	8,686.6	62.7	0.7%
ME 5	33 50 23	2007	Above Normal	December	--	20,577.5	20,547.5	30.1	0.1%	20,540.5	37.0	0.2%	20,522.0	55.6	0.3%
ME 5	33 50 23	2007	Above Normal	January	--	10,295.6	10,268.9	26.7	0.3%	10,263.4	32.2	0.3%	10,246.8	48.8	0.5%
ME 5	33 50 23	2007	Above Normal	February	--	30,759.3	30,733.8	25.5	0.1%	30,729.2	30.1	0.1%	30,713.0	46.3	0.2%
ME 5	33 50 23	2007	Above Normal	March	--	13,133.1	13,110.0	23.1	0.2%	13,105.3	27.8	0.2%	13,090.3	42.8	0.3%
ME 5	33 50 23	2007	Above Normal	April	--	11,565.0	11,521.3	43.8	0.4%	11,512.5	52.5	0.5%	11,486.3	78.7	0.7%
ME 5	33 50 23	2007	Above Normal	May	--	4,153.5	4,101.5	52.0	1.3%	4,091.1	62.4	1.5%	4,060.0	93.5	2.3%
ME 5	33 50 23	2007	Above Normal	June	--	1,508.3	1,446.4	61.9	4.1%	1,434.1	74.2	4.9%	1,397.9	110.4	7.3%
ME 5	33 50 23	2007	Above Normal	July	--	500.5	437.8	62.7	12.5%	425.4	75.1	15.0%	388.9	111.6	22.3%
ME 5	33 50 23	2007	Above Normal	August	--	228.5	171.6	56.9	24.9%	160.3	68.2	29.9%	125.7	102.8	45.0%
ME 5	33 50 23	2007	Above Normal	September	Used in Summary Table Analysis	156.2	102.1	54.1	34.7%	91.3	64.9	41.5%	58.9	97.4	62.3%
ME 5	33 50 23	2008	Dry	October	Used in Summary Table Analysis	3,464.1	3,419.4	44.7	1.3%	3,410.5	53.6	1.5%	3,383.1	81.0	2.3%
ME 5	33 50 23	2008	Dry	November	Used in Summary Table Analysis	3,303.9	3,269.1	34.8	1.1%	3,262.0	41.9	1.3%	3,240.5	63.4	1.9%
ME 5	33 50 23	2008	Dry	December	--	23,344.9	23,314.8	30.1	0.1%	23,307.9	37.0	0.2%	23,289.4	55.6	0.2%
ME 5	33 50 23	2008	Dry	January	--	37,740.7	37,711.8	28.9	0.1%	37,706.0	34.7	0.1%	37,688.7	52.1	0.1%
ME 5	33 50 23	2008	Dry	February	--	26,320.6	26,296.3	24.3	0.1%	26,291.7	28.9	0.1%	26,276.6	44.0	0.2%
ME 5	33 50 23	2008	Dry	March	--	11,818.3	11,795.1	23.1	0.2%	11,790.5	27.8	0.2%	11,777.8	40.5	0.3%
ME 5	33 50 23	2008	Dry	April	--	9,035.8	8,991.3	44.4	0.5%	8,982.5	53.2	0.6%	8,955.9	79.9	0.9%
ME 5	33 50 23	2008	Dry	May	--	1,358.4	1,311.8	46.6	3.4%	1,302.7	55.8	4.1%	1,275.3	83.1	6.1%
ME 5	33 50 23	2008	Dry	June	--	442.6	375.3	67.3	15.2%	362.1	80.5	18.2%	323.0	119.6	27.0%
ME 5	33 50 23	2008	Dry	July	--	260.5	193.3	67.3	25.8%	180.0	80.5	30.9%	145.4	115.1	44.2%
ME 5	33 50 23	2008	Dry	August	--	184.2	118.5	65.7	35.7%	105.4	78.8	42.8%	66.0	118.2	64.2%
ME 5	33 50 23	2008	Dry	September	Used in Summary Table Analysis	145.8	82.3	63.5	43.6%	69.7	76.1	52.2%	33.0	112.8	77.4%
ME 5	33 50 23	2009	Critical	October	Used in Summary Table Analysis	931.1	880.4	50.7	5.4%	870.2	60.8	6.5%	839.3	91.7	9.9%
ME 5	33 50 23	2009	Critical	November	Used in Summary Table Analysis	5,565.7	5,525.8	39.9	0.7%	5,517.7	48.0	0.9%	5,490.6	75.1	1.3%
ME 5	33 50 23	2009	Critical	December	--	12,278.9	12,244.2	34.7	0.3%	12,237.3	41.7	0.3%	12,215.3	63.7	0.5%
ME 5	33 50 23	2009	Critical	January	--	8,829.2	8,797.9	31.3	0.4%	8,791.6	37.6	0.4%	8,772.2	56.9	0.6%
ME 5	33 50 23	2009	Critical	February	--	22,710.6	22,682.9	27.8	0.1%	22,677.1	33.6	0.1%	22,659.7	50.9	0.2%
ME 5	33 50 23	2009	Critical	March	--	21,192.1	21,167.8	24.3	0.1%	21,163.2	28.9	0.1%	21,147.0	45.1	0.2%
ME 5	33 50 23	2009	Critical	April	--	10,105.4	10,059.0	46.4	0.5%	10,049.9	55.6	0.5%	10,022.0	83.4	0.8%
ME 5	33 50 23	2009	Critical	May	--	15,620.4	15,564.8	55.6	0.4%	15,553.2	67.1	0.4%	15,519.7	100.7	0.6%
ME 5	33 50 23	2009	Critical	June	--	3,165.7	3,093.9	71.9	2.3%	3,080.0	85.8	2.7%	3,038.3	127.4	4.0%
ME 5	33 50 23	2009	Critical	July	--	1,268.1	1,200.1	67.9	5.4%	1,186.7	81.4	6.4%	1,151.8	116.2	9.2%
ME 5	33 50 23	2009	Critical	August	--	674.4	608.1	66.2	9.8%	595.0	79.4	11.8%	558.0	116.3	17.3%
ME 5	33 50 23	2009	Critical	September	Used in Summary Table Analysis	395.1	335.4	59.7	15.1%	323.6	71.6	18.1%	289.0	106.1	26.9%
ME 5	33 50 23	2010	Below Normal	October	Used in Summary Table Analysis	6,097.3	6,045.9	51.4	0.8%	6,035.5	61.8	1.0%	6,003.5	93.9	1.5%
ME 5	33 50 23	2010	Below Normal	November	Used in Summary Table Analysis	8,327.8	8,286.5	41.3	0.5%	8,278.2	49.5	0.6%	8,250.3	77.4	0.9%
ME 5	33 50 23	2010	Below Normal	December	--	12,430.6	12,395.8	34.7	0.3%	12,388.9	41.7	0.3%	12,365.7	64.8	0.5%
ME 5	33 50 23	2010	Below Normal	January	--	36,490.7	36,458.3	32.4	0.1%	36,451.4	39.4	0.1%	36,431.7	59.0	0.2%
ME 5	33 50 23	2010	Below Normal	February	--	27,317.1	27,289.4	27.8	0.1%	27,283.6	33.6	0.1%	27,266.2	50.9	0.2%
ME 5	33 50 23	2010	Below Normal	March	--	28,900.5	28,873.8	26.6	0.1%	28,868.1	32.4	0.1%	28,851.9	48.6	0.2%
ME 5	33 50 23	2010	Below Normal	April	--	40,130.8	40,106.5	24.3	0.1%	40,100.7	30.1	0.1%	40,085.6	45.1	0.1%
ME 5	33 50 23	2010	Below Normal	May	--	20,360.0	20,311.3	48.6	0.2%	20,302.1	57.9	0.3%	20,274.3	85.6	0.4%
ME 5	33 50 23	2010	Below Normal	June	--	9,422.3	9,353.9	68.4	0.7%	9,340.4	81.9	0.9%	9,300.2	122.1	1.3%
ME 5	33 50 23	2010	Below Normal	July	--	1,459.4	1,396.6	62.7	4.3%	1,384.5	74.9	5.1%	1,348.5	110.9	7.6%
ME 5	33 50 23	2010	Below Normal	August	--	575.7	517.7	58.0	10.1%	506.2	69.5	12.1%	472.0	103.7	18.0%
ME 5	33 50 23	2010	Below Normal	September	Used in Summary Table Analysis	658.2	602.5	55.7	8.5%	591.4	66.8	10.2%	558.1	100.1	15.2%
ME 5	33 50 23	2011	Wet	October	Used in Summary Table Analysis	9,692.0	9,649.3	42.7	0.4%	9,640.6	51.4	0.5%	9,614.6	77.4	0.8%
ME 5	33 50 23	2011	Wet	November	Used in Summary Table Analysis	14,285.9	14,252.3	33.6	0.2%	14,245.4	40.5	0.3%	14,223.4	62.5	0.4%
ME 5	33 50 23	2011	Wet	December	--	33,971.1	33,941.0	30.1	0.1%	33,934.0	37.0	0.1%	33,915.5	55.6	0.2%
ME 5	33 50 23	2011	Wet	January	--	14,207.2	14,180.6	26.6	0.2%	14,174.8	32.4	0.2%	14,158.6	48.6	0.3%
ME 5	33 50 23	2011	Wet	February	--	20,818.3	20,794.0	24.3	0.1%	20,788.2	30.1	0.1%	20,773.1	45.1	0.2%
ME 5	33 50 23	2011	Wet	March	--	52,184.0	52,160.9	23.1	0.0%	52,156.3	27.8	0.1%	52,141.2	42.8	0.1%
ME 5	33 50 23	2011	Wet	April	--	24,861.1	24,838.0	23.1	0.1%	24,833.3	27.8	0.1%	24,819.4	41.7	0.2%
ME 5	33 50 23	2011	Wet	May	--	11,411.9	11,366.8	45.1	0.4%	11,357.8	54.2	0.5%	11,330.7	81.3	0.7%
ME 5	33 50 23	2011	Wet	June	--	7,085.8	7,019.2	66.6	0.9%	7,006.0	79.7	1.1%	6,967.0	118.8	1.7%
ME 5	33 50 23	2011	Wet	July	--	1,831.9	1,765.2	66.8	3.6%	1,752.0	80.0	4.4%	1,714.2	117.7	6.4%
ME 5	33 50 23	2011	Wet	August	--	782.5	725.3	57.2	7.3%	714.0	68.6	8.8%	680.1	102.5	13.1%
ME 5	33 50 23	2011	Wet	September	Used in Summary Table Analysis	439.2	386.9	52.3	11.9%	376.4	62.8	14.3%	345.3	93.9	21.4%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 50 23	2012	Below Normal	October	Used in Summary Table Analysis	4,572.0	4,528.6	43.4	0.9%	4,519.9	52.1	1.1%	4,493.2	78.8	1.7%
ME 5	33 50 23	2012	Below Normal	November	Used in Summary Table Analysis	8,299.4	8,264.7	34.7	0.4%	8,257.5	41.9	0.5%	8,236.0	63.4	0.8%
ME 5	33 50 23	2012	Below Normal	December	--	5,210.5	5,180.7	29.9	0.6%	5,174.5	36.0	0.7%	5,156.0	54.5	1.0%
ME 5	33 50 23	2012	Below Normal	January	--	20,291.7	20,265.0	26.6	0.1%	20,259.3	32.4	0.2%	20,241.9	49.8	0.2%
ME 5	33 50 23	2012	Below Normal	February	--	18,263.9	18,238.4	25.5	0.1%	18,233.8	30.1	0.2%	18,218.8	45.1	0.2%
ME 5	33 50 23	2012	Below Normal	March	--	45,631.9	45,607.6	24.3	0.1%	45,603.0	28.9	0.1%	45,588.0	44.0	0.1%
ME 5	33 50 23	2012	Below Normal	April	--	26,934.0	26,912.0	22.0	0.1%	26,907.4	26.6	0.1%	26,892.4	41.7	0.2%
ME 5	33 50 23	2012	Below Normal	May	--	7,500.8	7,455.8	45.0	0.6%	7,446.9	53.9	0.7%	7,420.3	80.6	1.1%
ME 5	33 50 23	2012	Below Normal	June	--	5,544.7	5,477.0	67.7	1.2%	5,463.7	81.0	1.5%	5,424.3	120.4	2.2%
ME 5	33 50 23	2012	Below Normal	July	--	2,242.0	2,177.3	64.7	2.9%	2,164.5	77.5	3.5%	2,126.5	115.5	5.2%
ME 5	33 50 23	2012	Below Normal	August	--	392.7	340.3	52.4	13.4%	329.8	62.9	16.0%	298.5	94.2	24.0%
ME 5	33 50 23	2012	Below Normal	September	Used in Summary Table Analysis	254.6	207.6	47.0	18.5%	198.2	56.4	22.1%	170.2	84.4	33.2%
ME 5	33 50 23	2013	Below Normal	October	Used in Summary Table Analysis	1,932.2	1,890.7	41.4	2.1%	1,882.4	49.8	2.6%	1,857.4	74.8	3.9%
ME 5	33 50 23	2013	Below Normal	November	Used in Summary Table Analysis	14,798.6	14,765.0	33.6	0.2%	14,758.1	40.5	0.3%	14,737.3	61.3	0.4%
ME 5	33 50 23	2013	Below Normal	December	--	60,243.1	60,213.0	30.1	0.0%	60,206.0	37.0	0.1%	60,187.5	55.6	0.1%
ME 5	33 50 23	2013	Below Normal	January	--	22,273.1	22,247.7	25.5	0.1%	22,243.1	30.1	0.1%	22,226.9	46.3	0.2%
ME 5	33 50 23	2013	Below Normal	February	--	8,879.7	8,855.4	24.3	0.3%	8,850.5	29.3	0.3%	8,835.5	44.2	0.5%
ME 5	33 50 23	2013	Below Normal	March	--	10,382.6	10,359.3	23.4	0.2%	10,354.5	28.1	0.3%	10,340.2	42.5	0.4%
ME 5	33 50 23	2013	Below Normal	April	--	8,307.1	8,264.5	42.6	0.5%	8,255.9	51.2	0.6%	8,230.3	76.7	0.9%
ME 5	33 50 23	2013	Below Normal	May	--	4,451.6	4,400.0	51.6	1.2%	4,389.7	61.9	1.4%	4,358.9	92.7	2.1%
ME 5	33 50 23	2013	Below Normal	June	--	2,117.7	2,056.0	61.7	2.9%	2,044.0	73.7	3.5%	2,007.9	109.8	5.2%
ME 5	33 50 23	2013	Below Normal	July	--	721.7	661.7	60.0	8.3%	649.9	71.9	10.0%	615.2	106.5	14.8%
ME 5	33 50 23	2013	Below Normal	August	--	345.1	288.3	56.8	16.5%	277.0	68.1	19.7%	242.5	102.6	29.7%
ME 5	33 50 23	2013	Below Normal	September	Used in Summary Table Analysis	4,817.5	4,758.6	58.9	1.2%	4,746.8	70.7	1.5%	4,711.5	106.0	2.2%
ME 5	33 50 23	2014	Critical	October	Used in Summary Table Analysis	282.4	238.8	43.6	15.4%	230.0	52.4	18.5%	204.4	78.0	27.6%
ME 5	33 50 23	2014	Critical	November	Used in Summary Table Analysis	1,555.0	1,519.7	35.3	2.3%	1,512.6	42.4	2.7%	1,491.0	64.0	4.1%
ME 5	33 50 23	2014	Critical	December	--	1,600.0	1,569.2	30.8	1.9%	1,562.8	37.2	2.3%	1,543.8	56.3	3.5%
ME 5	33 50 23	2014	Critical	January	--	2,839.0	2,811.5	27.5	1.0%	2,805.8	33.2	1.2%	2,788.5	50.5	1.8%
ME 5	33 50 23	2014	Critical	February	--	15,804.4	15,778.9	25.5	0.2%	15,773.1	31.3	0.2%	15,756.9	47.5	0.3%
ME 5	33 50 23	2014	Critical	March	--	31,550.9	31,527.8	23.1	0.1%	31,522.0	28.9	0.1%	31,506.9	44.0	0.1%
ME 5	33 50 23	2014	Critical	April	--	13,011.6	12,966.4	45.1	0.3%	12,957.2	54.4	0.4%	12,929.4	82.2	0.6%
ME 5	33 50 23	2014	Critical	May	--	5,202.0	5,147.5	54.5	1.0%	5,136.6	65.4	1.3%	5,103.8	98.1	1.9%
ME 5	33 50 23	2014	Critical	June	--	1,203.8	1,130.3	73.5	6.1%	1,115.9	87.9	7.3%	1,074.3	129.5	10.8%
ME 5	33 50 23	2014	Critical	July	--	550.0	481.2	68.8	12.5%	467.5	82.5	15.0%	431.6	118.4	21.5%
ME 5	33 50 23	2014	Critical	August	--	353.1	287.0	66.1	18.7%	273.8	79.4	22.5%	236.3	116.8	33.1%
ME 5	33 50 23	2014	Critical	September	Used in Summary Table Analysis	2,588.9	2,523.8	65.0	2.5%	2,511.0	77.9	3.0%	2,472.6	116.3	4.5%
ME 5	33 50 23	2015	Dry	October	Used in Summary Table Analysis	11,418.9	11,367.7	51.2	0.4%	11,357.6	61.2	0.5%	11,327.0	91.9	0.8%
ME 5	33 50 23	2015	Dry	November	Used in Summary Table Analysis	9,098.4	9,059.4	39.0	0.4%	9,051.5	46.9	0.5%	9,024.5	73.8	0.8%
ME 5	33 50 23	2015	Dry	December	--	32,840.3	32,806.7	33.6	0.1%	32,799.8	40.5	0.1%	32,778.9	61.3	0.2%
ME 5	33 50 23	2015	Dry	January	--	14,611.1	14,581.0	30.1	0.2%	14,575.2	35.9	0.2%	14,555.6	55.6	0.4%
ME 5	33 50 23	2015	Dry	February	--	27,321.8	27,295.1	26.6	0.1%	27,289.4	32.4	0.1%	27,273.1	48.6	0.2%
ME 5	33 50 23	2015	Dry	March	--	11,591.4	11,567.5	24.0	0.2%	11,562.6	28.8	0.2%	11,547.7	43.8	0.4%
ME 5	33 50 23	2015	Dry	April	--	8,444.0	8,398.4	45.6	0.5%	8,389.2	54.7	0.6%	8,361.8	82.2	1.0%
ME 5	33 50 23	2015	Dry	May	--	1,510.6	1,456.8	53.8	3.6%	1,446.2	64.5	4.3%	1,415.2	95.5	6.3%
ME 5	33 50 23	2015	Dry	June	--	655.9	587.6	68.3	10.4%	574.1	81.8	12.5%	534.3	121.6	18.5%
ME 5	33 50 23	2015	Dry	July	--	272.3	204.4	67.9	24.9%	191.0	81.4	29.9%	156.0	116.4	42.7%
ME 5	33 50 23	2015	Dry	August	--	171.1	105.0	66.1	38.6%	91.8	79.3	46.4%	55.0	116.1	67.8%
ME 5	33 50 23	2015	Dry	September	Used in Summary Table Analysis	124.8	62.4	62.4	50.0%	49.6	75.2	60.2%	12.5	112.3	90.0%
ME 5	33 50 23	2016	Above Normal	October	Used in Summary Table Analysis	89.9	37.4	52.5	58.4%	27.2	62.7	69.7%	0.5	89.4	99.5%
ME 5	33 50 23	2016	Above Normal	November	Used in Summary Table Analysis	3,918.2	3,877.1	41.1	1.0%	3,868.8	49.4	1.3%	3,838.9	79.3	2.0%
ME 5	33 50 23	2016	Above Normal	December	--	36,881.9	36,846.1	35.9	0.1%	36,838.0	44.0	0.1%	36,814.8	67.1	0.2%
ME 5	33 50 23	2016	Above Normal	January	--	57,590.3	57,556.7	33.6	0.1%	57,549.8	40.5	0.1%	57,528.9	61.3	0.1%
ME 5	33 50 23	2016	Above Normal	February	--	24,312.5	24,285.9	26.6	0.1%	24,280.1	32.4	0.1%	24,262.7	49.8	0.2%
ME 5	33 50 23	2016	Above Normal	March	--	41,905.1	41,878.5	26.6	0.1%	41,872.7	32.4	0.1%	41,856.5	48.6	0.1%
ME 5	33 50 23	2016	Above Normal	April	--	18,571.8	18,548.6	23.1	0.1%	18,544.0	27.8	0.1%	18,530.1	41.7	0.2%
ME 5	33 50 23	2016	Above Normal	May	--	5,227.5	5,198.8	28.7	0.5%	5,192.9	34.6	0.7%	5,175.3	52.2	1.0%
ME 5	33 50 23	2016	Above Normal	June	--	1,514.6	1,461.8	52.8	3.5%	1,452.4	62.2	4.1%	1,424.8	89.8	5.9%
ME 5	33 50 23	2016	Above Normal	July	--	828.8	769.2	59.5	7.2%	757.4	71.3	8.6%	722.5	106.3	12.8%
ME 5	33 50 23	2016	Above Normal	August	--	497.7	439.0	58.7	11.8%	427.3	70.4	14.1%	392.4	105.3	21.1%
ME 5	33 50 23	2016	Above Normal	September	Used in Summary Table Analysis	333.8	278.6	55.1	16.5%	267.4	66.4	19.9%	234.0	99.8	29.9%
ME 5	33 50 23	2017	Wet	October	Used in Summary Table Analysis	18,386.6	18,342.6	44.0	0.2%	18,333.3	53.2	0.3%	18,307.9	78.7	0.4%
ME 5	33 50 23	2017	Wet	November	Used in Summary Table Analysis	18,936.3	18,901.6	34.7	0.2%	18,894.7	41.7	0.2%	18,873.8	62.5	0.3%
ME 5	33 50 23	2017	Wet	December	--	24,287.0	24,256.9	30.1	0.1%	24,250.0	37.0	0.2%	24,231.5	55.6	0.2%
ME 5	33 50 23	2017	Wet	January	--	107,412.0	107,384.3	27.8	0.0%	107,378.5	33.6	0.0%	107,361.1	50.9	0.0%

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	33 50 23	2017	Wet	February	--	82,135.4	82,110.0	25.5	0.0%	82,104.2	31.3	0.0%	82,089.1	46.3	0.1%
ME 5	33 50 23	2017	Wet	March	--	27,366.9	27,343.8	23.1	0.1%	27,339.1	27.8	0.1%	27,324.1	42.8	0.2%
ME 5	33 50 23	2017	Wet	April	--	23,035.9	23,015.0	20.8	0.1%	23,010.4	25.5	0.1%	22,997.7	38.2	0.2%
ME 5	33 50 23	2017	Wet	May	--	6,276.2	6,247.6	28.6	0.5%	6,241.8	34.4	0.5%	6,224.7	51.5	0.8%
ME 5	33 50 23	2017	Wet	June	--	2,129.2	2,074.8	54.4	2.6%	2,064.0	65.2	3.1%	2,032.3	96.9	4.5%
ME 5	33 50 23	2017	Wet	July	--	942.0	882.5	59.6	6.3%	870.8	71.3	7.6%	836.1	105.9	11.2%
ME 5	33 50 23	2017	Wet	August	--	514.3	456.0	58.3	11.3%	444.4	69.8	13.6%	409.9	104.3	20.3%
ME 5	33 50 23	2017	Wet	September	Used in Summary Table Analysis	329.3	275.1	54.2	16.5%	264.2	65.1	19.8%	231.7	97.6	29.6%
ME 5	33 50 23	2018	Above Normal	October	Used in Summary Table Analysis	282.0	238.5	43.5	15.4%	229.7	52.3	18.5%	203.4	78.6	27.9%
ME 5	33 50 23	2018	Above Normal	November	Used in Summary Table Analysis	10,905.6	10,871.1	34.5	0.3%	10,864.0	41.6	0.4%	10,842.8	62.7	0.6%
ME 5	33 50 23	2018	Above Normal	December	--	5,457.3	5,427.9	29.4	0.5%	5,421.9	35.4	0.6%	5,403.7	53.6	1.0%
ME 5	33 50 23	2018	Above Normal	January	--	17,975.7	17,949.1	26.6	0.1%	17,943.3	32.4	0.2%	17,927.1	48.6	0.3%
ME 5	33 50 23	2018	Above Normal	February	--	7,607.2	7,583.4	23.7	0.3%	7,578.6	28.6	0.4%	7,563.8	43.4	0.6%
ME 5	33 50 23	2018	Above Normal	March	--	20,825.2	20,803.2	22.0	0.1%	20,798.6	26.6	0.1%	20,784.7	40.5	0.2%
ME 5	33 50 23	2018	Above Normal	April	--	32,348.4	32,327.5	20.8	0.1%	32,324.1	24.3	0.1%	32,311.3	37.0	0.1%
ME 5	33 50 23	2018	Above Normal	May	--	6,993.6	6,951.0	42.6	0.6%	6,942.6	51.0	0.7%	6,916.8	76.9	1.1%
ME 5	33 50 23	2018	Above Normal	June	--	1,919.7	1,864.6	55.1	2.9%	1,853.8	65.9	3.4%	1,821.9	97.8	5.1%
ME 5	33 50 23	2018	Above Normal	July	--	787.8	727.7	60.1	7.6%	715.8	72.1	9.1%	680.3	107.5	13.6%
ME 5	33 50 23	2018	Above Normal	August	--	449.1	392.7	56.4	12.6%	381.5	67.6	15.1%	347.8	101.3	22.6%
ME 5	33 50 23	2018	Above Normal	September	Used in Summary Table Analysis	306.1	251.7	54.4	17.8%	240.8	65.3	21.3%	208.2	97.9	32.0%
ME 5	33 50 23	2019	Below Normal	October	Used in Summary Table Analysis	212.8	169.8	43.0	20.2%	161.1	51.7	24.3%	135.0	77.8	36.6%
ME 5	33 50 23	2019	Below Normal	November	Used in Summary Table Analysis	6,698.8	6,664.0	34.8	0.5%	6,656.8	42.0	0.6%	6,635.5	63.3	0.9%
ME 5	33 50 23	2019	Below Normal	December	--	14,792.8	14,762.7	30.1	0.2%	14,756.9	35.9	0.2%	14,738.4	54.4	0.4%
ME 5	33 50 23	2019	Below Normal	January	--	35,476.9	35,449.1	27.8	0.1%	35,443.3	33.6	0.1%	35,427.1	49.8	0.1%
ME 5	33 50 23	2019	Below Normal	February	--	142,199.1	142,164.4	34.7	0.0%	142,164.4	34.7	0.0%	142,152.8	46.3	0.0%
ME 5	33 50 23	2019	Below Normal	March	--	42,459.5	42,437.5	22.0	0.1%	42,432.9	26.6	0.1%	42,419.0	40.5	0.1%
ME 5	33 50 23	2019	Below Normal	April	--	15,311.3	15,290.5	20.8	0.1%	15,285.9	25.5	0.2%	15,273.1	38.2	0.2%
ME 5	33 50 23	2019	Below Normal	May	--	17,135.4	17,090.3	45.1	0.3%	17,081.0	54.4	0.3%	17,054.4	81.0	0.5%
ME 5	33 50 23	2019	Below Normal	June	--	4,243.4	4,185.5	57.9	1.4%	4,174.5	68.9	1.6%	4,141.9	101.5	2.4%
ME 5	33 50 23	2019	Below Normal	July	--	1,369.0	1,308.7	60.3	4.4%	1,296.8	72.2	5.3%	1,261.5	107.5	7.9%
ME 5	33 50 23	2019	Below Normal	August	--	603.8	546.1	57.7	9.6%	534.7	69.2	11.5%	500.6	103.2	17.1%
ME 5	33 50 23	2019	Below Normal	September	Used in Summary Table Analysis	469.1	414.9	54.1	11.5%	404.1	65.0	13.9%	371.6	97.4	20.8%
ME 5	33 50 23	2020	Dry	October	Used in Summary Table Analysis	360.8	319.4	41.4	11.5%	311.0	49.8	13.8%	285.8	75.0	20.8%
ME 5	33 50 23	2020	Dry	November	Used in Summary Table Analysis	329.1	296.2	32.9	10.0%	289.5	39.6	12.0%	269.4	59.7	18.1%
ME 5	33 50 23	2020	Dry	December	--	13,469.9	13,439.8	30.1	0.2%	13,434.0	35.9	0.3%	13,415.5	54.4	0.4%
ME 5	33 50 23	2020	Dry	January	--	22,475.7	22,447.9	27.8	0.1%	22,442.1	33.6	0.1%	22,425.9	49.8	0.2%
ME 5	33 50 23	2020	Dry	February	--	7,421.1	7,396.8	24.3	0.3%	7,391.8	29.3	0.4%	7,376.7	44.3	0.6%
ME 5	33 50 23	2020	Dry	March	--	7,270.9	7,248.1	22.8	0.3%	7,243.4	27.5	0.4%	7,229.4	41.6	0.6%
ME 5	33 50 23	2020	Dry	April	--	5,512.4	5,466.9	45.5	0.8%	5,457.9	54.5	1.0%	5,430.8	81.6	1.5%
ME 5	33 50 23	2020	Dry	May	--	7,414.7	7,360.3	54.4	0.7%	7,349.4	65.3	0.9%	7,316.9	97.8	1.3%
ME 5	33 50 23	2020	Dry	June	--	2,106.1	2,037.3	68.9	3.3%	2,024.0	82.2	3.9%	1,984.7	121.4	5.8%
ME 5	33 50 23	2020	Dry	July	--	801.3	731.0	70.3	8.8%	717.1	84.2	10.5%	681.0	120.3	15.0%
ME 5	33 50 23	2020	Dry	August	--	404.4	334.8	69.5	17.2%	321.0	83.4	20.6%	282.5	121.8	30.1%
ME 5	33 50 23	2020	Dry	September	Used in Summary Table Analysis	253.7	188.1	65.6	25.8%	174.8	78.9	31.1%	135.8	117.9	46.5%
ME 5	32 50 24	2000	Above Normal	October	Used in Summary Table Analysis	825.8	782.0	43.8	5.3%	773.2	52.6	6.4%	746.7	79.1	9.6%
ME 5	32 50 24	2000	Above Normal	November	Used in Summary Table Analysis	12,267.4	12,232.6	34.7	0.3%	12,224.5	42.8	0.3%	12,203.7	63.7	0.5%
ME 5	32 50 24	2000	Above Normal	December	--	10,890.3	10,860.1	30.2	0.3%	10,853.8	36.5	0.3%	10,835.3	55.0	0.5%
ME 5	32 50 24	2000	Above Normal	January	--	28,825.2	28,797.5	27.8	0.1%	28,791.7	33.6	0.1%	28,775.5	49.8	0.2%
ME 5	32 50 24	2000	Above Normal	February	--	37,203.7	37,178.2	25.5	0.1%	37,173.6	30.1	0.1%	37,158.6	45.1	0.1%
ME 5	32 50 24	2000	Above Normal	March	--	18,366.9	18,343.8	23.1	0.1%	18,339.1	27.8	0.2%	18,325.2	41.7	0.2%
ME 5	32 50 24	2000	Above Normal	April	--	12,353.0	12,332.2	20.8	0.2%	12,327.5	25.5	0.2%	12,313.7	39.4	0.3%
ME 5	32 50 24	2000	Above Normal	May	--	7,127.2	7,082.8	44.4	0.6%	7,073.7	53.5	0.8%	7,047.1	80.1	1.1%
ME 5	32 50 24	2000	Above Normal	June	--	2,624.7	2,559.0	65.6	2.5%	2,545.9	78.7	3.0%	2,507.5	117.1	4.5%
ME 5	32 50 24	2000	Above Normal	July	--	998.6	938.3	60.3	6.0%	926.4	72.3	7.2%	890.9	107.8	10.8%
ME 5	32 50 24	2000	Above Normal	August	--	529.1	471.9	57.2	10.8%	460.5	68.6	13.0%	426.5	102.7	19.4%
ME 5	32 50 24	2000	Above Normal	September	Used in Summary Table Analysis	301.7	250.4	51.3	17.0%	240.2	61.5	20.4%	209.4	92.3	30.6%
ME 5	32 50 24	2001	Dry	October	Used in Summary Table Analysis	3,850.7	3,807.6	43.1	1.1%	3,799.0	51.7	1.3%	3,772.7	78.0	2.0%
ME 5	32 50 24	2001	Dry	November	Used in Summary Table Analysis	6,180.8	6,145.9	34.8	0.6%	6,139.0	41.8	0.7%	6,117.7	63.1	1.0%
ME 5	32 50 24	2001	Dry	December	--	8,895.4	8,865.3	30.1	0.3%	8,859.1	36.2	0.4%	8,840.7	54.6	0.6%
ME 5	32 50 24	2001	Dry	January	--	12,898.1	12,871.5	26.6	0.2%	12,865.7	32.4	0.3%	12,849.5	48.6	0.4%
ME 5	32 50 24	2001	Dry	February	--	17,539.4	17,510.4	24.3	0.1%	17,510.4	28.9	0.2%	17,495.4	44.0	0.3%
ME 5	32 50 24	2001	Dry	March	--	12,332.2	12,309.0	23.1	0.2%	12,304.4	27.8	0.2%	12,290.5	41.7	0.3%
ME 5	32 50 24	2001	Dry	April	--	11,008.8	10,963.1	45.7	0.4%	10,953.9	54.9	0.5%	10,926.7	82.1	0.7%
ME 5	32 50 24	2001	Dry	May	--	2,638.5	2,584.5	54.1	2.0%	2,573.7	64.8	2.5%	2,541.6	97.0	3.7%

Table A.1

**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	32 50 24	2001	Dry	June	--	2,672.3	2,599.2	73.1	2.7%	2,584.8	87.5	3.3%	2,542.8	129.5	4.8%
ME 5	32 50 24	2001	Dry	July	--	722.0	652.1	69.9	9.7%	638.2	83.7	11.6%	602.0	119.9	16.6%
ME 5	32 50 24	2001	Dry	August	--	178.0	109.5	68.4	38.5%	95.9	82.1	46.1%	57.6	120.4	67.7%
ME 5	32 50 24	2001	Dry	September	Used in Summary Table Analysis	101.3	39.5	61.8	61.0%	27.2	74.1	73.2%	0.0	101.3	100.0%
ME 5	32 50 24	2002	Below Normal	October	Used in Summary Table Analysis	271.6	219.1	52.5	19.3%	208.5	63.1	23.2%	176.8	94.8	34.9%
ME 5	32 50 24	2002	Below Normal	November	Used in Summary Table Analysis	12,100.7	12,059.0	41.7	0.3%	12,050.9	49.8	0.4%	12,023.1	77.5	0.6%
ME 5	32 50 24	2002	Below Normal	December	--	35,906.3	35,869.2	37.0	0.1%	35,862.3	44.0	0.1%	35,839.1	67.1	0.2%
ME 5	32 50 24	2002	Below Normal	January	--	31,018.5	30,986.1	32.4	0.1%	30,979.2	39.4	0.1%	30,959.5	59.0	0.2%
ME 5	32 50 24	2002	Below Normal	February	--	24,761.6	24,732.6	28.9	0.1%	24,726.9	34.7	0.1%	24,708.3	53.2	0.2%
ME 5	32 50 24	2002	Below Normal	March	--	17,844.9	17,817.1	27.8	0.2%	17,812.5	32.4	0.2%	17,795.1	49.8	0.3%
ME 5	32 50 24	2002	Below Normal	April	--	9,950.3	9,904.2	46.2	0.5%	9,895.0	55.3	0.6%	9,867.4	83.0	0.8%
ME 5	32 50 24	2002	Below Normal	May	--	3,329.1	3,274.8	54.3	1.6%	3,263.9	65.2	2.0%	3,231.4	97.7	2.9%
ME 5	32 50 24	2002	Below Normal	June	--	859.1	797.8	61.3	7.1%	785.7	73.4	8.5%	749.8	109.3	12.7%
ME 5	32 50 24	2002	Below Normal	July	--	368.0	305.1	62.9	17.1%	292.6	75.4	20.5%	256.2	111.8	30.4%
ME 5	32 50 24	2002	Below Normal	August	--	233.6	174.0	59.7	25.5%	162.0	71.6	30.6%	125.9	107.7	46.1%
ME 5	32 50 24	2002	Below Normal	September	Used in Summary Table Analysis	170.1	113.3	56.8	33.4%	102.0	68.1	40.0%	67.3	102.9	60.5%
ME 5	32 50 24	2003	Wet	October	Used in Summary Table Analysis	134.9	87.7	47.3	35.0%	78.2	56.8	42.1%	49.6	85.4	63.3%
ME 5	32 50 24	2003	Wet	November	Used in Summary Table Analysis	904.1	865.6	38.4	4.3%	857.8	46.3	5.1%	834.3	69.8	7.7%
ME 5	32 50 24	2003	Wet	December	--	57,346.1	57,311.3	34.7	0.1%	57,304.4	41.7	0.1%	57,283.6	62.5	0.1%
ME 5	32 50 24	2003	Wet	January	--	31,637.7	31,607.6	30.1	0.1%	31,600.7	37.0	0.1%	31,582.2	55.6	0.2%
ME 5	32 50 24	2003	Wet	February	--	20,409.7	20,383.1	26.6	0.1%	20,377.3	32.4	0.2%	20,361.1	48.6	0.2%
ME 5	32 50 24	2003	Wet	March	--	24,121.5	24,096.1	25.5	0.1%	24,091.4	30.1	0.1%	24,076.4	45.1	0.2%
ME 5	32 50 24	2003	Wet	April	--	43,130.8	43,106.5	24.3	0.1%	43,101.9	28.9	0.1%	43,086.8	44.0	0.1%
ME 5	32 50 24	2003	Wet	May	--	12,252.3	12,206.0	46.3	0.4%	12,196.8	55.6	0.5%	12,169.0	83.3	0.7%
ME 5	32 50 24	2003	Wet	June	--	3,173.7	3,115.5	58.2	1.8%	3,104.2	69.6	2.2%	3,070.5	103.2	3.3%
ME 5	32 50 24	2003	Wet	July	--	1,482.4	1,420.1	62.3	4.2%	1,407.9	74.5	5.0%	1,371.3	111.1	7.5%
ME 5	32 50 24	2003	Wet	August	--	768.0	706.7	61.2	8.0%	694.1	73.8	9.6%	655.1	112.9	14.7%
ME 5	32 50 24	2003	Wet	September	Used in Summary Table Analysis	465.2	412.7	52.5	11.3%	402.2	63.0	13.5%	369.6	95.6	20.5%
ME 5	32 50 24	2004	Wet	October	Used in Summary Table Analysis	331.9	287.9	44.0	13.3%	279.0	52.9	15.9%	252.2	79.7	24.0%
ME 5	32 50 24	2004	Wet	November	Used in Summary Table Analysis	5,865.0	5,828.9	36.1	0.6%	5,821.5	43.5	0.7%	5,799.3	65.7	1.1%
ME 5	32 50 24	2004	Wet	December	--	36,585.6	36,553.2	32.4	0.1%	36,547.5	38.2	0.1%	36,526.6	59.0	0.2%
ME 5	32 50 24	2004	Wet	January	--	31,659.7	31,631.9	27.8	0.1%	31,626.2	33.6	0.1%	31,608.8	50.9	0.2%
ME 5	32 50 24	2004	Wet	February	--	38,415.5	38,388.9	26.6	0.1%	38,384.3	31.3	0.1%	38,368.1	47.5	0.1%
ME 5	32 50 24	2004	Wet	March	--	16,554.4	16,531.3	23.1	0.1%	16,526.6	27.8	0.2%	16,511.6	42.8	0.3%
ME 5	32 50 24	2004	Wet	April	--	9,473.8	9,451.6	22.2	0.2%	9,447.1	26.7	0.3%	9,433.3	40.5	0.4%
ME 5	32 50 24	2004	Wet	May	--	3,439.1	3,394.3	44.8	1.3%	3,385.4	53.7	1.6%	3,358.8	80.3	2.3%
ME 5	32 50 24	2004	Wet	June	--	696.8	640.8	56.0	8.0%	629.8	67.0	9.6%	597.2	99.6	14.3%
ME 5	32 50 24	2004	Wet	July	--	362.8	301.8	61.0	16.8%	289.7	73.1	20.1%	253.8	109.1	30.1%
ME 5	32 50 24	2004	Wet	August	--	231.5	173.5	58.0	25.0%	162.0	69.5	30.0%	127.4	104.1	45.0%
ME 5	32 50 24	2004	Wet	September	Used in Summary Table Analysis	168.1	112.6	55.5	33.0%	101.5	66.6	39.6%	68.1	100.0	59.5%
ME 5	32 50 24	2005	Above Normal	October	Used in Summary Table Analysis	7,763.0	7,717.9	45.0	0.6%	7,708.9	54.1	0.7%	7,681.6	81.4	1.0%
ME 5	32 50 24	2005	Above Normal	November	Used in Summary Table Analysis	2,268.6	2,233.3	35.3	1.6%	2,226.2	42.5	1.9%	2,204.4	64.2	2.8%
ME 5	32 50 24	2005	Above Normal	December	--	21,258.1	21,226.9	31.3	0.1%	21,221.1	37.0	0.2%	21,201.4	56.7	0.3%
ME 5	32 50 24	2005	Above Normal	January	--	22,566.0	22,538.2	27.8	0.1%	22,532.4	33.6	0.1%	22,515.0	50.9	0.2%
ME 5	32 50 24	2005	Above Normal	February	--	14,044.0	14,018.5	25.5	0.2%	14,013.9	30.1	0.2%	13,998.8	45.1	0.3%
ME 5	32 50 24	2005	Above Normal	March	--	28,704.9	28,681.7	23.1	0.1%	28,677.1	27.8	0.1%	28,662.0	42.8	0.1%
ME 5	32 50 24	2005	Above Normal	April	--	21,534.7	21,512.7	22.0	0.1%	21,508.1	26.6	0.1%	21,495.4	39.4	0.2%
ME 5	32 50 24	2005	Above Normal	May	--	19,678.2	19,631.9	46.3	0.2%	19,622.7	55.6	0.3%	19,596.1	82.2	0.4%
ME 5	32 50 24	2005	Above Normal	June	--	16,000.0	15,932.9	67.1	0.4%	15,919.0	81.0	0.5%	15,879.6	120.4	0.8%
ME 5	32 50 24	2005	Above Normal	July	--	2,866.1	2,803.4	62.7	2.2%	2,791.6	74.5	2.6%	2,756.0	110.1	3.8%
ME 5	32 50 24	2005	Above Normal	August	--	990.9	933.5	57.4	5.8%	922.2	68.7	6.9%	888.3	102.5	10.3%
ME 5	32 50 24	2005	Above Normal	September	Used in Summary Table Analysis	532.3	481.0	51.3	9.6%	470.8	61.5	11.6%	440.2	92.2	17.3%
ME 5	32 50 24	2006	Wet	October	Used in Summary Table Analysis	643.2	601.0	42.2	6.6%	592.5	50.7	7.9%	566.8	76.4	11.9%
ME 5	32 50 24	2006	Wet	November	Used in Summary Table Analysis	9,412.2	9,378.5	33.7	0.4%	9,371.5	40.6	0.4%	9,350.7	61.5	0.7%
ME 5	32 50 24	2006	Wet	December	--	43,846.1	43,816.0	30.1	0.1%	43,809.0	37.0	0.1%	43,790.5	55.6	0.1%
ME 5	32 50 24	2006	Wet	January	--	46,611.1	46,584.5	26.6	0.1%	46,578.7	32.4	0.1%	46,561.3	49.8	0.1%
ME 5	32 50 24	2006	Wet	February	--	26,752.3	26,729.2	23.1	0.1%	26,723.4	28.9	0.1%	26,709.5	42.8	0.2%
ME 5	32 50 24	2006	Wet	March	--	47,406.3	47,384.3	22.0	0.0%	47,378.5	27.8	0.1%	47,364.6	41.7	0.1%
ME 5	32 50 24	2006	Wet	April	--	30,525.5	30,504.6	20.8	0.1%	30,500.0	25.5	0.1%	30,487.3	38.2	0.1%
ME 5	32 50 24	2006	Wet	May	--	14,263.9	14,236.1	27.8	0.2%	14,230.3	33.6	0.2%	14,214.1	49.8	0.3%
ME 5	32 50 24	2006	Wet	June	--	3,554.1	3,498.7	55.3	1.6%	3,487.8	66.2	1.9%	3,455.8	98.3	2.8%
ME 5	32 50 24	2006	Wet	July	--	1,288.3	1,228.6	59.7	4.6%	1,216.9	71.4	5.5%	1,182.2	106.1	8.2%
ME 5	32 50 24	2006	Wet	August	--	674.4	615.6	58.8	8.7%	604.0	70.4	10.4%	569.3	105.1	15.6%
ME 5	32 50 24	2006	Wet	September	Used in Summary Table Analysis	434.6	382.4	52.1	12.0%	372.1	62.5	14.4%	340.9	93.7	21.6%

Table A.1

**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	32 50 24	2007	Above Normal	October	Used in Summary Table Analysis	281.6	238.5	43.1	15.3%	229.8	51.8	18.4%	203.5	78.1	27.7%
ME 5	32 50 24	2007	Above Normal	November	Used in Summary Table Analysis	8,760.2	8,724.8	35.4	0.4%	8,717.6	42.6	0.5%	8,695.7	64.5	0.7%
ME 5	32 50 24	2007	Above Normal	December	--	20,600.7	20,568.3	32.4	0.2%	20,562.5	38.2	0.2%	20,542.8	57.9	0.3%
ME 5	32 50 24	2007	Above Normal	January	--	10,301.5	10,274.3	27.2	0.3%	10,268.8	32.8	0.3%	10,251.7	49.8	0.5%
ME 5	32 50 24	2007	Above Normal	February	--	30,784.7	30,758.1	26.6	0.1%	30,753.5	31.3	0.1%	30,737.3	47.5	0.2%
ME 5	32 50 24	2007	Above Normal	March	--	13,137.7	13,113.4	24.3	0.2%	13,108.8	28.9	0.2%	13,093.8	44.0	0.3%
ME 5	32 50 24	2007	Above Normal	April	--	11,569.2	11,525.0	44.2	0.4%	11,516.2	53.0	0.5%	11,489.8	79.4	0.7%
ME 5	32 50 24	2007	Above Normal	May	--	4,155.7	4,103.2	52.4	1.3%	4,092.7	63.0	1.5%	4,061.5	94.2	2.3%
ME 5	32 50 24	2007	Above Normal	June	--	1,510.2	1,447.5	62.7	4.2%	1,435.1	75.1	5.0%	1,398.5	111.7	7.4%
ME 5	32 50 24	2007	Above Normal	July	--	501.6	438.0	63.6	12.7%	425.3	76.2	15.2%	388.3	113.3	22.6%
ME 5	32 50 24	2007	Above Normal	August	--	229.7	171.8	57.9	25.2%	160.3	69.4	30.2%	125.1	104.6	45.6%
ME 5	32 50 24	2007	Above Normal	September	Used in Summary Table Analysis	157.3	102.1	55.2	35.1%	91.1	66.2	42.1%	58.0	99.4	63.1%
ME 5	32 50 24	2008	Dry	October	Used in Summary Table Analysis	3,468.3	3,422.6	45.7	1.3%	3,413.3	55.0	1.6%	3,385.3	83.0	2.4%
ME 5	32 50 24	2008	Dry	November	Used in Summary Table Analysis	3,307.9	3,272.1	35.8	1.1%	3,264.9	42.9	1.3%	3,242.8	65.0	2.0%
ME 5	32 50 24	2008	Dry	December	--	23,373.8	23,342.6	31.3	0.1%	23,335.6	38.2	0.2%	23,316.0	57.9	0.2%
ME 5	32 50 24	2008	Dry	January	--	37,767.4	37,738.4	28.9	0.1%	37,732.6	34.7	0.1%	37,714.1	53.2	0.1%
ME 5	32 50 24	2008	Dry	February	--	26,327.5	26,302.1	25.5	0.1%	26,297.5	30.1	0.1%	26,282.4	45.1	0.2%
ME 5	32 50 24	2008	Dry	March	--	11,820.6	11,798.6	22.0	0.2%	11,794.0	26.6	0.2%	11,780.1	40.5	0.3%
ME 5	32 50 24	2008	Dry	April	--	9,038.4	8,993.6	44.8	0.5%	8,984.7	53.7	0.6%	8,957.9	80.6	0.9%
ME 5	32 50 24	2008	Dry	May	--	1,358.8	1,311.6	47.2	3.5%	1,302.4	56.4	4.1%	1,274.9	83.9	6.2%
ME 5	32 50 24	2008	Dry	June	--	443.7	375.6	68.1	15.3%	362.3	81.5	18.4%	322.7	121.0	27.3%
ME 5	32 50 24	2008	Dry	July	--	261.5	193.1	68.4	26.2%	179.6	81.9	31.3%	144.3	117.2	44.8%
ME 5	32 50 24	2008	Dry	August	--	185.2	118.2	67.0	36.2%	104.9	80.4	43.4%	64.7	120.5	65.1%
ME 5	32 50 24	2008	Dry	September	Used in Summary Table Analysis	146.8	81.8	64.9	44.2%	68.9	77.9	53.0%	31.4	115.3	78.6%
ME 5	32 50 24	2009	Critical	October	Used in Summary Table Analysis	932.2	880.1	52.1	5.6%	869.7	62.6	6.7%	837.9	94.3	10.1%
ME 5	32 50 24	2009	Critical	November	Used in Summary Table Analysis	5,572.9	5,531.8	41.1	0.7%	5,523.5	49.4	0.9%	5,495.5	77.4	1.4%
ME 5	32 50 24	2009	Critical	December	--	12,294.0	12,258.1	35.9	0.3%	12,251.2	42.8	0.3%	12,229.2	64.8	0.5%
ME 5	32 50 24	2009	Critical	January	--	8,833.6	8,801.6	31.9	0.4%	8,795.1	38.4	0.4%	8,775.3	58.2	0.7%
ME 5	32 50 24	2009	Critical	February	--	22,722.2	22,694.4	27.8	0.1%	22,688.7	33.6	0.1%	22,670.1	52.1	0.2%
ME 5	32 50 24	2009	Critical	March	--	21,201.4	21,177.1	24.3	0.1%	21,171.3	30.1	0.1%	21,155.1	46.3	0.2%
ME 5	32 50 24	2009	Critical	April	--	10,106.6	10,059.8	46.8	0.5%	10,050.6	56.0	0.6%	10,022.5	84.1	0.8%
ME 5	32 50 24	2009	Critical	May	--	15,625.0	15,568.3	56.7	0.4%	15,557.9	67.1	0.4%	15,523.1	101.9	0.7%
ME 5	32 50 24	2009	Critical	June	--	3,166.8	3,094.1	72.7	2.3%	3,080.0	86.8	2.7%	3,038.0	128.8	4.1%
ME 5	32 50 24	2009	Critical	July	--	1,269.2	1,200.1	69.1	5.4%	1,186.5	82.8	6.5%	1,150.8	118.4	9.3%
ME 5	32 50 24	2009	Critical	August	--	675.5	608.0	67.5	10.0%	594.6	81.0	12.0%	556.9	118.7	17.6%
ME 5	32 50 24	2009	Critical	September	Used in Summary Table Analysis	396.2	335.1	61.1	15.4%	322.9	73.3	18.5%	287.5	108.7	27.4%
ME 5	32 50 24	2010	Below Normal	October	Used in Summary Table Analysis	6,098.4	6,045.6	52.8	0.9%	6,035.0	63.4	1.0%	6,002.0	96.4	1.6%
ME 5	32 50 24	2010	Below Normal	November	Used in Summary Table Analysis	8,332.6	8,290.0	42.6	0.5%	8,281.5	51.2	0.6%	8,252.8	79.9	1.0%
ME 5	32 50 24	2010	Below Normal	December	--	12,441.0	12,403.9	37.0	0.3%	12,397.0	44.0	0.4%	12,373.8	67.1	0.5%
ME 5	32 50 24	2010	Below Normal	January	--	36,523.1	36,489.6	33.6	0.1%	36,482.6	40.5	0.1%	36,461.8	61.3	0.2%
ME 5	32 50 24	2010	Below Normal	February	--	27,326.4	27,297.5	28.9	0.1%	27,291.7	34.7	0.1%	27,273.1	53.2	0.2%
ME 5	32 50 24	2010	Below Normal	March	--	28,907.4	28,880.8	26.6	0.1%	28,875.0	32.4	0.1%	28,858.8	48.6	0.2%
ME 5	32 50 24	2010	Below Normal	April	--	40,145.8	40,120.4	25.5	0.1%	40,114.6	31.3	0.1%	40,099.5	46.3	0.1%
ME 5	32 50 24	2010	Below Normal	May	--	20,371.5	20,322.9	48.6	0.2%	20,313.7	57.9	0.3%	20,284.7	86.8	0.4%
ME 5	32 50 24	2010	Below Normal	June	--	9,431.8	9,362.6	69.2	0.7%	9,349.1	82.8	0.9%	9,308.6	123.3	1.3%
ME 5	32 50 24	2010	Below Normal	July	--	1,460.5	1,396.9	63.7	4.4%	1,384.6	75.9	5.2%	1,347.9	112.6	7.7%
ME 5	32 50 24	2010	Below Normal	August	--	577.1	518.1	59.0	10.2%	506.5	70.7	12.2%	471.6	105.5	18.3%
ME 5	32 50 24	2010	Below Normal	September	Used in Summary Table Analysis	659.6	602.9	56.7	8.6%	591.5	68.1	10.3%	557.5	102.0	15.5%
ME 5	32 50 24	2011	Wet	October	Used in Summary Table Analysis	9,699.2	9,655.4	43.8	0.5%	9,646.6	52.5	0.5%	9,619.9	79.3	0.8%
ME 5	32 50 24	2011	Wet	November	Used in Summary Table Analysis	14,294.0	14,259.3	34.7	0.2%	14,252.3	41.7	0.3%	14,230.3	63.7	0.4%
ME 5	32 50 24	2011	Wet	December	--	34,003.5	33,973.4	30.1	0.1%	33,966.4	37.0	0.1%	33,947.9	55.6	0.2%
ME 5	32 50 24	2011	Wet	January	--	14,213.0	14,186.3	26.6	0.2%	14,180.6	32.4	0.2%	14,164.4	48.6	0.3%
ME 5	32 50 24	2011	Wet	February	--	20,824.1	20,799.8	24.3	0.1%	20,794.0	30.1	0.1%	20,778.9	45.1	0.2%
ME 5	32 50 24	2011	Wet	March	--	52,204.9	52,181.7	23.1	0.0%	52,175.9	28.9	0.1%	52,160.9	44.0	0.1%
ME 5	32 50 24	2011	Wet	April	--	24,868.1	24,844.9	23.1	0.1%	24,840.3	27.8	0.1%	24,826.4	41.7	0.2%
ME 5	32 50 24	2011	Wet	May	--	11,415.7	11,370.3	45.5	0.4%	11,361.1	54.6	0.5%	11,333.9	81.8	0.7%
ME 5	32 50 24	2011	Wet	June	--	7,089.6	7,022.6	67.0	0.9%	7,009.3	80.3	1.1%	6,969.9	119.7	1.7%
ME 5	32 50 24	2011	Wet	July	--	1,832.8	1,765.2	67.6	3.7%	1,751.9	80.9	4.4%	1,713.5	119.2	6.5%
ME 5	32 50 24	2011	Wet	August	--	783.8	725.6	58.2	7.4%	714.1	69.7	8.9%	679.6	104.2	13.3%
ME 5	32 50 24	2011	Wet	September	Used in Summary Table Analysis	440.4	387.1	53.3	12.1%	376.4	64.0	14.5%	344.6	95.8	21.7%
ME 5	32 50 24	2012	Below Normal	October	Used in Summary Table Analysis	4,575.9	4,531.6	44.3	1.0%	4,522.6	53.4	1.2%	4,495.3	80.7	1.8%
ME 5	32 50 24	2012	Below Normal	November	Used in Summary Table Analysis	8,307.1	8,271.4	35.6	0.4%	8,264.1	42.9	0.5%	8,242.1	64.9	0.8%
ME 5	32 50 24	2012	Below Normal	December	--	5,214.1	5,183.6	30.6	0.6%	5,177.3	36.8	0.7%	5,158.4	55.7	1.1%
ME 5	32 50 24	2012	Below Normal	January	--	20,313.7	20,285.9	27.8	0.1%	20,280.1	33.6	0.2%	20,262.7	50.9	0.3%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	32 50 24	2012	Below Normal	February	--	18,269.7	18,244.2	25.5	0.1%	18,239.6	30.1	0.2%	18,223.4	46.3	0.3%
ME 5	32 50 24	2012	Below Normal	March	--	45,657.4	45,631.9	25.5	0.1%	45,627.3	30.1	0.1%	45,612.3	45.1	0.1%
ME 5	32 50 24	2012	Below Normal	April	--	26,943.3	26,920.1	23.1	0.1%	26,915.5	27.8	0.1%	26,901.6	41.7	0.2%
ME 5	32 50 24	2012	Below Normal	May	--	7,503.2	7,458.0	45.3	0.6%	7,449.0	54.3	0.7%	7,422.2	81.0	1.1%
ME 5	32 50 24	2012	Below Normal	June	--	5,548.6	5,480.3	68.3	1.2%	5,466.9	81.7	1.5%	5,427.3	121.3	2.2%
ME 5	32 50 24	2012	Below Normal	July	--	2,244.7	2,179.2	65.5	2.9%	2,166.1	78.6	3.5%	2,127.5	117.1	5.2%
ME 5	32 50 24	2012	Below Normal	August	--	393.8	340.5	53.3	13.5%	329.8	63.9	16.2%	298.0	95.8	24.3%
ME 5	32 50 24	2012	Below Normal	September	Used in Summary Table Analysis	255.8	207.9	47.9	18.7%	198.3	57.5	22.5%	169.7	86.1	33.7%
ME 5	32 50 24	2013	Below Normal	October	Used in Summary Table Analysis	1,935.0	1,892.6	42.4	2.2%	1,884.1	50.8	2.6%	1,858.6	76.4	3.9%
ME 5	32 50 24	2013	Below Normal	November	Used in Summary Table Analysis	14,811.3	14,777.8	33.6	0.2%	14,770.8	40.5	0.3%	14,750.0	61.3	0.4%
ME 5	32 50 24	2013	Below Normal	December	--	60,273.1	60,241.9	31.3	0.1%	60,235.0	38.2	0.1%	60,216.4	56.7	0.1%
ME 5	32 50 24	2013	Below Normal	January	--	22,282.4	22,256.9	25.5	0.1%	22,251.2	31.3	0.1%	22,235.0	47.5	0.2%
ME 5	32 50 24	2013	Below Normal	February	--	8,884.1	8,859.5	24.7	0.3%	8,854.5	29.6	0.3%	8,839.4	44.8	0.5%
ME 5	32 50 24	2013	Below Normal	March	--	10,389.2	10,365.5	23.7	0.2%	10,360.8	28.5	0.3%	10,346.3	42.9	0.4%
ME 5	32 50 24	2013	Below Normal	April	--	8,309.3	8,266.3	42.9	0.5%	8,257.6	51.6	0.6%	8,231.9	77.3	0.9%
ME 5	32 50 24	2013	Below Normal	May	--	4,454.5	4,402.5	52.0	1.2%	4,392.1	62.4	1.4%	4,361.1	93.4	2.1%
ME 5	32 50 24	2013	Below Normal	June	--	2,119.0	2,056.7	62.3	2.9%	2,044.4	74.5	3.5%	2,008.0	111.0	5.2%
ME 5	32 50 24	2013	Below Normal	July	--	722.6	661.7	60.9	8.4%	649.7	72.9	10.1%	614.5	108.1	15.0%
ME 5	32 50 24	2013	Below Normal	August	--	346.2	288.4	57.8	16.7%	276.9	69.3	20.0%	241.9	104.3	30.1%
ME 5	32 50 24	2013	Below Normal	September	Used in Summary Table Analysis	4,821.5	4,761.5	60.1	1.2%	4,749.4	72.1	1.5%	4,713.4	108.1	2.2%
ME 5	32 50 24	2014	Critical	October	Used in Summary Table Analysis	282.9	238.3	44.6	15.8%	229.4	53.6	18.9%	203.1	79.9	28.2%
ME 5	32 50 24	2014	Critical	November	Used in Summary Table Analysis	1,557.4	1,521.3	36.1	2.3%	1,514.0	43.4	2.8%	1,491.9	65.5	4.2%
ME 5	32 50 24	2014	Critical	December	--	1,601.6	1,570.0	31.6	2.0%	1,563.7	38.0	2.4%	1,544.1	57.5	3.6%
ME 5	32 50 24	2014	Critical	January	--	2,841.3	2,813.3	28.0	1.0%	2,807.5	33.8	1.2%	2,789.8	51.5	1.8%
ME 5	32 50 24	2014	Critical	February	--	15,810.2	15,783.6	26.6	0.2%	15,778.9	31.3	0.2%	15,761.6	48.6	0.3%
ME 5	32 50 24	2014	Critical	March	--	31,559.0	31,534.7	24.3	0.1%	31,530.1	28.9	0.1%	31,513.9	45.1	0.1%
ME 5	32 50 24	2014	Critical	April	--	13,015.0	12,968.8	46.3	0.4%	12,959.5	55.6	0.4%	12,931.7	83.3	0.6%
ME 5	32 50 24	2014	Critical	May	--	5,204.1	5,149.1	55.0	1.1%	5,138.2	65.9	1.3%	5,105.1	99.0	1.9%
ME 5	32 50 24	2014	Critical	June	--	1,205.1	1,130.8	74.3	6.2%	1,116.2	88.9	7.4%	1,074.1	131.0	10.9%
ME 5	32 50 24	2014	Critical	July	--	550.9	481.0	69.9	12.7%	467.1	83.8	15.2%	430.5	120.4	21.9%
ME 5	32 50 24	2014	Critical	August	--	354.2	286.9	67.3	19.0%	273.4	80.8	22.8%	235.2	119.0	33.6%
ME 5	32 50 24	2014	Critical	September	Used in Summary Table Analysis	2,591.1	2,524.7	66.4	2.6%	2,511.6	79.5	3.1%	2,472.2	118.9	4.6%
ME 5	32 50 24	2015	Dry	October	Used in Summary Table Analysis	11,425.7	11,373.3	52.4	0.5%	11,362.8	62.8	0.6%	11,331.3	94.4	0.8%
ME 5	32 50 24	2015	Dry	November	Used in Summary Table Analysis	9,105.7	9,065.6	40.0	0.4%	9,057.5	48.1	0.5%	9,029.9	75.8	0.8%
ME 5	32 50 24	2015	Dry	December	--	32,868.1	32,833.3	34.7	0.1%	32,826.4	41.7	0.1%	32,803.2	64.8	0.2%
ME 5	32 50 24	2015	Dry	January	--	14,615.7	14,584.5	31.3	0.2%	14,578.7	37.0	0.3%	14,559.0	56.7	0.4%
ME 5	32 50 24	2015	Dry	February	--	27,332.2	27,305.6	26.6	0.1%	27,299.8	32.4	0.1%	27,282.4	49.8	0.2%
ME 5	32 50 24	2015	Dry	March	--	11,593.8	11,569.7	24.1	0.2%	11,564.7	29.1	0.3%	11,549.4	44.3	0.4%
ME 5	32 50 24	2015	Dry	April	--	8,451.3	8,405.3	45.9	0.5%	8,396.1	55.2	0.7%	8,368.3	83.0	1.0%
ME 5	32 50 24	2015	Dry	May	--	1,511.2	1,457.1	54.2	3.6%	1,446.3	64.9	4.3%	1,414.9	96.3	6.4%
ME 5	32 50 24	2015	Dry	June	--	656.8	587.6	69.2	10.5%	574.0	82.8	12.6%	533.7	123.1	18.7%
ME 5	32 50 24	2015	Dry	July	--	273.3	204.2	69.1	25.3%	190.5	82.8	30.3%	154.8	118.5	43.4%
ME 5	32 50 24	2015	Dry	August	--	172.2	104.8	67.4	39.2%	91.3	80.9	47.0%	53.7	118.4	68.8%
ME 5	32 50 24	2015	Dry	September	Used in Summary Table Analysis	125.7	62.0	63.8	50.7%	48.9	76.9	61.1%	10.9	114.9	91.4%
ME 5	32 50 24	2016	Above Normal	October	Used in Summary Table Analysis	90.8	36.9	53.9	59.3%	26.5	64.3	70.8%	0.0	90.8	100.0%
ME 5	32 50 24	2016	Above Normal	November	Used in Summary Table Analysis	3,924.8	3,882.5	42.2	1.1%	3,873.7	51.0	1.3%	3,843.1	81.7	2.1%
ME 5	32 50 24	2016	Above Normal	December	--	36,913.2	36,876.2	37.0	0.1%	36,868.1	45.1	0.1%	36,843.8	69.4	0.2%
ME 5	32 50 24	2016	Above Normal	January	--	57,622.7	57,589.1	33.6	0.1%	57,581.0	41.7	0.1%	57,560.2	62.5	0.1%
ME 5	32 50 24	2016	Above Normal	February	--	24,317.1	24,289.4	27.8	0.1%	24,283.6	33.6	0.1%	24,266.2	50.9	0.2%
ME 5	32 50 24	2016	Above Normal	March	--	41,919.0	41,892.4	26.6	0.1%	41,886.6	32.4	0.1%	41,870.4	48.6	0.1%
ME 5	32 50 24	2016	Above Normal	April	--	18,576.4	18,553.2	23.1	0.1%	18,547.5	28.9	0.2%	18,533.6	42.8	0.2%
ME 5	32 50 24	2016	Above Normal	May	--	5,229.4	5,200.5	28.9	0.6%	5,194.4	35.0	0.7%	5,176.6	52.8	1.0%
ME 5	32 50 24	2016	Above Normal	June	--	1,515.7	1,462.5	53.2	3.5%	1,453.0	62.7	4.1%	1,425.0	90.7	6.0%
ME 5	32 50 24	2016	Above Normal	July	--	830.0	769.6	60.4	7.3%	757.6	72.4	8.7%	722.1	107.9	13.0%
ME 5	32 50 24	2016	Above Normal	August	--	498.9	439.1	59.8	12.0%	427.2	71.7	14.4%	391.7	107.2	21.5%
ME 5	32 50 24	2016	Above Normal	September	Used in Summary Table Analysis	334.9	278.6	56.3	16.8%	267.2	67.8	20.2%	233.0	101.9	30.4%
ME 5	32 50 24	2017	Wet	October	Used in Summary Table Analysis	18,399.3	18,354.2	45.1	0.2%	18,344.9	54.4	0.3%	18,317.1	82.2	0.4%
ME 5	32 50 24	2017	Wet	November	Used in Summary Table Analysis	18,950.2	18,914.4	35.9	0.2%	18,907.4	42.8	0.2%	18,885.4	64.8	0.3%
ME 5	32 50 24	2017	Wet	December	--	24,307.9	24,277.8	30.1	0.1%	24,270.8	37.0	0.2%	24,252.3	55.6	0.2%
ME 5	32 50 24	2017	Wet	January	--	107,474.5	107,445.6	28.9	0.0%	107,439.8	34.7	0.0%	107,422.5	52.1	0.0%
ME 5	32 50 24	2017	Wet	February	--	82,171.3	82,145.8	25.5	0.0%	82,140.0	31.3	0.0%	82,123.8	47.5	0.1%
ME 5	32 50 24	2017	Wet	March	--	27,378.5	27,354.2	24.3	0.1%	27,349.5	28.9	0.1%	27,335.6	42.8	0.2%
ME 5	32 50 24	2017	Wet	April	--	23,048.6	23,026.6	22.0	0.1%	23,022.0	26.6	0.1%	23,009.3	39.4	0.2%
ME 5	32 50 24	2017	Wet	May	--	6,277.0	6,248.1	28.8	0.5%	6,242.4	34.6	0.6%	6,224.9	52.1	0.8%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	32 50 24	2017	Wet	June	--	2,131.4	2,076.5	54.9	2.6%	2,065.7	65.6	3.1%	2,033.7	97.7	4.6%
ME 5	32 50 24	2017	Wet	July	--	943.6	883.2	60.4	6.4%	871.4	72.2	7.7%	836.2	107.4	11.4%
ME 5	32 50 24	2017	Wet	August	--	515.8	456.5	59.2	11.5%	444.8	71.0	13.8%	409.7	106.1	20.6%
ME 5	32 50 24	2017	Wet	September	Used in Summary Table Analysis	330.6	275.3	55.3	16.7%	264.2	66.4	20.1%	231.1	99.6	30.1%
ME 5	32 50 24	2018	Above Normal	October	Used in Summary Table Analysis	283.3	238.7	44.6	15.7%	229.7	53.6	18.9%	202.8	80.5	28.4%
ME 5	32 50 24	2018	Above Normal	November	Used in Summary Table Analysis	10,919.9	10,884.4	35.5	0.3%	10,877.2	42.7	0.4%	10,855.3	64.6	0.6%
ME 5	32 50 24	2018	Above Normal	December	--	5,458.9	5,428.7	30.2	0.6%	5,422.6	36.3	0.7%	5,403.9	55.0	1.0%
ME 5	32 50 24	2018	Above Normal	January	--	18,001.2	17,973.4	27.8	0.2%	17,967.6	33.6	0.2%	17,951.4	49.8	0.3%
ME 5	32 50 24	2018	Above Normal	February	--	7,608.4	7,584.4	24.1	0.3%	7,579.4	29.1	0.4%	7,564.4	44.1	0.6%
ME 5	32 50 24	2018	Above Normal	March	--	20,841.4	20,818.3	23.1	0.1%	20,813.7	27.8	0.1%	20,799.8	41.7	0.2%
ME 5	32 50 24	2018	Above Normal	April	--	32,366.9	32,346.1	20.8	0.1%	32,341.4	25.5	0.1%	32,328.7	38.2	0.1%
ME 5	32 50 24	2018	Above Normal	May	--	6,994.6	6,951.6	42.9	0.6%	6,943.1	51.5	0.7%	6,917.1	77.4	1.1%
ME 5	32 50 24	2018	Above Normal	June	--	1,920.9	1,865.4	55.6	2.9%	1,854.4	66.6	3.5%	1,822.1	98.8	5.1%
ME 5	32 50 24	2018	Above Normal	July	--	789.2	728.2	61.0	7.7%	716.0	73.2	9.3%	680.0	109.2	13.8%
ME 5	32 50 24	2018	Above Normal	August	--	450.4	393.0	57.4	12.7%	381.5	68.9	15.3%	347.2	103.2	22.9%
ME 5	32 50 24	2018	Above Normal	September	Used in Summary Table Analysis	307.3	251.8	55.5	18.1%	240.7	66.6	21.7%	207.4	99.9	32.5%
ME 5	32 50 24	2019	Below Normal	October	Used in Summary Table Analysis	213.8	169.7	44.1	20.6%	160.8	53.0	24.8%	134.0	79.8	37.3%
ME 5	32 50 24	2019	Below Normal	November	Used in Summary Table Analysis	6,708.3	6,672.6	35.8	0.5%	6,665.2	43.2	0.6%	6,643.3	65.0	1.0%
ME 5	32 50 24	2019	Below Normal	December	--	14,809.0	14,777.8	31.3	0.2%	14,772.0	37.0	0.3%	14,752.3	56.7	0.4%
ME 5	32 50 24	2019	Below Normal	January	--	35,508.1	35,481.5	26.6	0.1%	35,475.7	32.4	0.1%	35,458.3	49.8	0.1%
ME 5	32 50 24	2019	Below Normal	February	--	142,222.2	142,199.1	23.1	0.0%	142,199.1	23.1	0.0%	142,175.9	46.3	0.0%
ME 5	32 50 24	2019	Below Normal	March	--	42,476.9	42,454.9	22.0	0.1%	42,450.2	26.6	0.1%	42,436.3	40.5	0.1%
ME 5	32 50 24	2019	Below Normal	April	--	15,317.1	15,295.1	22.0	0.1%	15,290.5	26.6	0.2%	15,277.8	39.4	0.3%
ME 5	32 50 24	2019	Below Normal	May	--	17,160.9	17,114.6	46.3	0.3%	17,105.3	55.6	0.3%	17,078.7	82.2	0.5%
ME 5	32 50 24	2019	Below Normal	June	--	4,244.0	4,185.5	58.4	1.4%	4,174.3	69.7	1.6%	4,141.4	102.5	2.4%
ME 5	32 50 24	2019	Below Normal	July	--	1,370.6	1,309.5	61.1	4.5%	1,297.3	73.3	5.3%	1,261.5	109.1	8.0%
ME 5	32 50 24	2019	Below Normal	August	--	605.4	546.7	58.7	9.7%	535.0	70.4	11.6%	500.3	105.1	17.4%
ME 5	32 50 24	2019	Below Normal	September	Used in Summary Table Analysis	470.4	415.2	55.2	11.7%	404.1	66.3	14.1%	371.0	99.4	21.1%
ME 5	32 50 24	2020	Dry	October	Used in Summary Table Analysis	361.9	319.4	42.5	11.7%	310.8	51.1	14.1%	284.9	76.9	21.3%
ME 5	32 50 24	2020	Dry	November	Used in Summary Table Analysis	330.8	296.9	33.9	10.2%	290.0	40.8	12.3%	269.4	61.4	18.6%
ME 5	32 50 24	2020	Dry	December	--	13,493.1	13,463.0	30.1	0.2%	13,456.0	37.0	0.3%	13,437.5	55.6	0.4%
ME 5	32 50 24	2020	Dry	January	--	22,494.2	22,466.4	27.8	0.1%	22,460.6	33.6	0.1%	22,443.3	50.9	0.2%
ME 5	32 50 24	2020	Dry	February	--	7,422.1	7,397.3	24.8	0.3%	7,392.1	30.0	0.4%	7,376.9	45.3	0.6%
ME 5	32 50 24	2020	Dry	March	--	7,274.5	7,251.3	23.3	0.3%	7,246.5	28.0	0.4%	7,232.3	42.2	0.6%
ME 5	32 50 24	2020	Dry	April	--	5,516.4	5,470.6	45.8	0.8%	5,461.5	55.0	1.0%	5,434.0	82.4	1.5%
ME 5	32 50 24	2020	Dry	May	--	7,419.7	7,364.8	54.9	0.7%	7,353.8	65.9	0.9%	7,320.9	98.7	1.3%
ME 5	32 50 24	2020	Dry	June	--	2,106.7	2,037.0	69.7	3.3%	2,023.6	83.1	3.9%	1,983.8	122.9	5.8%
ME 5	32 50 24	2020	Dry	July	--	802.4	731.0	71.4	8.9%	716.8	85.6	10.7%	680.1	122.3	15.2%
ME 5	32 50 24	2020	Dry	August	--	405.5	334.7	70.8	17.5%	320.6	84.9	20.9%	281.4	124.1	30.6%
ME 5	32 50 24	2020	Dry	September	Used in Summary Table Analysis	254.7	187.8	67.0	26.3%	174.2	80.6	31.6%	134.4	120.3	47.2%
ME 5	32 49 25	2000	Above Normal	October	Used in Summary Table Analysis	827.4	783.6	43.8	5.3%	774.7	52.7	6.4%	748.2	79.2	9.6%
ME 5	32 49 25	2000	Above Normal	November	Used in Summary Table Analysis	12,281.3	12,245.4	35.9	0.3%	12,238.4	42.8	0.3%	12,217.6	63.7	0.5%
ME 5	32 49 25	2000	Above Normal	December	--	10,898.1	10,867.8	30.3	0.3%	10,861.7	36.5	0.3%	10,843.1	55.1	0.5%
ME 5	32 49 25	2000	Above Normal	January	--	28,847.2	28,820.6	26.6	0.1%	28,814.8	32.4	0.1%	28,797.5	49.8	0.2%
ME 5	32 49 25	2000	Above Normal	February	--	37,218.8	37,194.4	24.3	0.1%	37,189.8	28.9	0.1%	37,173.6	45.1	0.1%
ME 5	32 49 25	2000	Above Normal	March	--	18,372.7	18,349.5	23.1	0.1%	18,344.9	27.8	0.2%	18,331.0	41.7	0.2%
ME 5	32 49 25	2000	Above Normal	April	--	12,357.6	12,335.6	22.0	0.2%	12,332.2	25.5	0.2%	12,318.3	39.4	0.3%
ME 5	32 49 25	2000	Above Normal	May	--	7,131.1	7,086.6	44.6	0.6%	7,077.7	53.5	0.7%	7,051.0	80.1	1.1%
ME 5	32 49 25	2000	Above Normal	June	--	2,626.7	2,561.1	65.6	2.5%	2,548.0	78.7	3.0%	2,509.6	117.1	4.5%
ME 5	32 49 25	2000	Above Normal	July	--	1,000.1	939.7	60.4	6.0%	927.8	72.3	7.2%	892.3	107.8	10.8%
ME 5	32 49 25	2000	Above Normal	August	--	530.6	473.3	57.2	10.8%	461.9	68.6	12.9%	427.8	102.7	19.4%
ME 5	32 49 25	2000	Above Normal	September	Used in Summary Table Analysis	303.0	251.7	51.3	16.9%	241.4	61.6	20.3%	210.7	92.3	30.5%
ME 5	32 49 25	2001	Dry	October	Used in Summary Table Analysis	3,854.5	3,811.5	43.1	1.1%	3,802.7	51.9	1.3%	3,776.5	78.0	2.0%
ME 5	32 49 25	2001	Dry	November	Used in Summary Table Analysis	6,186.6	6,151.7	34.8	0.6%	6,144.7	41.9	0.7%	6,123.4	63.2	1.0%
ME 5	32 49 25	2001	Dry	December	--	8,901.2	8,871.1	30.1	0.3%	8,864.9	36.2	0.4%	8,846.4	54.7	0.6%
ME 5	32 49 25	2001	Dry	January	--	12,908.6	12,881.9	26.6	0.2%	12,876.2	32.4	0.3%	12,860.0	48.6	0.4%
ME 5	32 49 25	2001	Dry	February	--	17,547.5	17,522.0	25.5	0.1%	17,517.4	30.1	0.2%	17,502.3	45.1	0.3%
ME 5	32 49 25	2001	Dry	March	--	12,335.6	12,313.7	22.0	0.2%	12,309.0	26.6	0.2%	12,295.1	40.5	0.3%
ME 5	32 49 25	2001	Dry	April	--	11,013.1	10,967.4	45.7	0.4%	10,958.2	54.9	0.5%	10,930.9	82.2	0.7%
ME 5	32 49 25	2001	Dry	May	--	2,639.6	2,585.5	54.1	2.0%	2,574.8	64.8	2.5%	2,542.5	97.1	3.7%
ME 5	32 49 25	2001	Dry	June	--	2,675.2	2,602.1	73.1	2.7%	2,587.7	87.5	3.3%	2,545.6	129.6	4.8%
ME 5	32 49 25	2001	Dry	July	--	723.1	653.2	69.9	9.7%	639.3	83.8	11.6%	603.1	120.0	16.6%
ME 5	32 49 25	2001	Dry	August	--	179.2	110.7	68.5	38.2%	97.0	82.2	45.9%	58.7	120.5	67.3%
ME 5	32 49 25	2001	Dry	September	Used in Summary Table Analysis	102.5	40.6	61.9	60.4%	28.3	74.2	72.4%	1.1	101.4	98.9%

Table A.1

**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	32 49 25	2002	Below Normal	October	Used in Summary Table Analysis	272.8	220.3	52.6	19.3%	209.6	63.2	23.2%	177.9	94.9	34.8%
ME 5	32 49 25	2002	Below Normal	November	Used in Summary Table Analysis	12,108.8	12,067.1	41.7	0.3%	12,057.9	50.9	0.4%	12,030.1	78.7	0.6%
ME 5	32 49 25	2002	Below Normal	December	--	35,927.1	35,890.0	37.0	0.1%	35,881.9	45.1	0.1%	35,858.8	68.3	0.2%
ME 5	32 49 25	2002	Below Normal	January	--	31,032.4	31,000.0	32.4	0.1%	30,993.1	39.4	0.1%	30,973.4	59.0	0.2%
ME 5	32 49 25	2002	Below Normal	February	--	24,770.8	24,740.7	30.1	0.1%	24,735.0	35.9	0.1%	24,717.6	53.2	0.2%
ME 5	32 49 25	2002	Below Normal	March	--	17,851.9	17,825.2	26.6	0.1%	17,819.4	32.4	0.2%	17,802.1	49.8	0.3%
ME 5	32 49 25	2002	Below Normal	April	--	9,953.7	9,907.5	46.2	0.5%	9,898.4	55.3	0.6%	9,870.7	83.0	0.8%
ME 5	32 49 25	2002	Below Normal	May	--	3,330.9	3,276.5	54.4	1.6%	3,265.6	65.3	2.0%	3,233.2	97.7	2.9%
ME 5	32 49 25	2002	Below Normal	June	--	860.4	799.1	61.3	7.1%	786.9	73.5	8.5%	751.0	109.4	12.7%
ME 5	32 49 25	2002	Below Normal	July	--	369.2	306.3	63.0	17.1%	293.8	75.5	20.4%	257.3	111.9	30.3%
ME 5	32 49 25	2002	Below Normal	August	--	234.9	175.2	59.7	25.4%	163.3	71.6	30.5%	127.1	107.8	45.9%
ME 5	32 49 25	2002	Below Normal	September	Used in Summary Table Analysis	171.4	114.5	56.8	33.2%	103.2	68.2	39.8%	68.4	103.0	60.1%
ME 5	32 49 25	2003	Wet	October	Used in Summary Table Analysis	136.2	88.8	47.3	34.8%	79.3	56.9	41.8%	50.7	85.5	62.8%
ME 5	32 49 25	2003	Wet	November	Used in Summary Table Analysis	905.5	867.0	38.5	4.3%	859.1	46.4	5.1%	835.5	70.0	7.7%
ME 5	32 49 25	2003	Wet	December	--	57,392.4	57,357.6	34.7	0.1%	57,350.7	41.7	0.1%	57,329.9	62.5	0.1%
ME 5	32 49 25	2003	Wet	January	--	31,648.1	31,618.1	30.1	0.1%	31,612.3	35.9	0.1%	31,593.8	54.4	0.2%
ME 5	32 49 25	2003	Wet	February	--	20,416.7	20,388.9	27.8	0.1%	20,384.3	32.4	0.2%	20,366.9	49.8	0.2%
ME 5	32 49 25	2003	Wet	March	--	24,130.8	24,105.3	25.5	0.1%	24,100.7	30.1	0.1%	24,084.5	46.3	0.2%
ME 5	32 49 25	2003	Wet	April	--	43,151.6	43,127.3	24.3	0.1%	43,121.5	30.1	0.1%	43,107.6	44.0	0.1%
ME 5	32 49 25	2003	Wet	May	--	12,256.9	12,209.5	47.5	0.4%	12,200.2	56.7	0.5%	12,172.5	84.5	0.7%
ME 5	32 49 25	2003	Wet	June	--	3,175.3	3,117.1	58.2	1.8%	3,105.8	69.6	2.2%	3,072.1	103.2	3.3%
ME 5	32 49 25	2003	Wet	July	--	1,484.0	1,421.8	62.3	4.2%	1,409.4	74.7	5.0%	1,372.8	111.2	7.5%
ME 5	32 49 25	2003	Wet	August	--	769.5	708.2	61.3	8.0%	695.6	73.9	9.6%	656.5	113.0	14.7%
ME 5	32 49 25	2003	Wet	September	Used in Summary Table Analysis	466.6	414.0	52.5	11.3%	403.5	63.1	13.5%	370.9	95.7	20.5%
ME 5	32 49 25	2004	Wet	October	Used in Summary Table Analysis	333.3	289.2	44.1	13.2%	280.3	53.0	15.9%	253.4	79.8	23.9%
ME 5	32 49 25	2004	Wet	November	Used in Summary Table Analysis	5,871.2	5,835.0	36.2	0.6%	5,827.5	43.6	0.7%	5,805.2	66.0	1.1%
ME 5	32 49 25	2004	Wet	December	--	36,610.0	36,577.5	32.4	0.1%	36,571.8	38.2	0.1%	36,550.9	59.0	0.2%
ME 5	32 49 25	2004	Wet	January	--	31,677.1	31,649.3	27.8	0.1%	31,643.5	33.6	0.1%	31,626.2	50.9	0.2%
ME 5	32 49 25	2004	Wet	February	--	38,431.7	38,406.3	25.5	0.1%	38,400.5	31.3	0.1%	38,384.3	47.5	0.1%
ME 5	32 49 25	2004	Wet	March	--	16,559.0	16,535.9	23.1	0.1%	16,531.3	27.8	0.2%	16,516.2	42.8	0.3%
ME 5	32 49 25	2004	Wet	April	--	9,477.0	9,454.7	22.2	0.2%	9,450.2	26.7	0.3%	9,436.5	40.5	0.4%
ME 5	32 49 25	2004	Wet	May	--	3,441.8	3,397.0	44.8	1.3%	3,388.1	53.7	1.6%	3,361.3	80.4	2.3%
ME 5	32 49 25	2004	Wet	June	--	698.1	642.1	56.0	8.0%	631.1	67.1	9.6%	598.4	99.7	14.3%
ME 5	32 49 25	2004	Wet	July	--	364.2	303.1	61.1	16.8%	291.0	73.2	20.1%	255.0	109.2	30.0%
ME 5	32 49 25	2004	Wet	August	--	232.8	174.8	58.0	24.9%	163.2	69.6	29.9%	128.6	104.2	44.8%
ME 5	32 49 25	2004	Wet	September	Used in Summary Table Analysis	169.3	113.7	55.6	32.8%	102.6	66.7	39.4%	69.3	100.1	59.1%
ME 5	32 49 25	2005	Above Normal	October	Used in Summary Table Analysis	7,770.6	7,725.6	45.0	0.6%	7,716.6	54.1	0.7%	7,689.1	81.5	1.0%
ME 5	32 49 25	2005	Above Normal	November	Used in Summary Table Analysis	2,270.5	2,235.1	35.4	1.6%	2,227.9	42.6	1.9%	2,206.1	64.4	2.8%
ME 5	32 49 25	2005	Above Normal	December	--	21,277.8	21,246.5	31.3	0.1%	21,240.7	37.0	0.2%	21,222.2	55.6	0.3%
ME 5	32 49 25	2005	Above Normal	January	--	22,582.2	22,554.4	27.8	0.1%	22,548.6	33.6	0.1%	22,531.3	50.9	0.2%
ME 5	32 49 25	2005	Above Normal	February	--	14,047.5	14,023.1	24.3	0.2%	14,017.4	30.1	0.2%	14,002.3	45.1	0.3%
ME 5	32 49 25	2005	Above Normal	March	--	28,717.6	28,694.4	23.1	0.1%	28,689.8	27.8	0.1%	28,675.9	41.7	0.1%
ME 5	32 49 25	2005	Above Normal	April	--	21,544.0	21,522.0	22.0	0.1%	21,517.4	26.6	0.1%	21,503.5	40.5	0.2%
ME 5	32 49 25	2005	Above Normal	May	--	19,688.7	19,642.4	46.3	0.2%	19,633.1	55.6	0.3%	19,606.5	82.2	0.4%
ME 5	32 49 25	2005	Above Normal	June	--	16,011.6	15,944.4	67.1	0.4%	15,930.6	81.0	0.5%	15,891.2	120.4	0.8%
ME 5	32 49 25	2005	Above Normal	July	--	2,867.2	2,804.5	62.7	2.2%	2,792.6	74.7	2.6%	2,757.1	110.2	3.8%
ME 5	32 49 25	2005	Above Normal	August	--	992.4	935.0	57.4	5.8%	923.6	68.8	6.9%	889.7	102.7	10.3%
ME 5	32 49 25	2005	Above Normal	September	Used in Summary Table Analysis	533.8	482.4	51.4	9.6%	472.2	61.6	11.5%	441.5	92.3	17.3%
ME 5	32 49 25	2006	Wet	October	Used in Summary Table Analysis	644.7	602.4	42.3	6.6%	593.9	50.8	7.9%	568.2	76.5	11.9%
ME 5	32 49 25	2006	Wet	November	Used in Summary Table Analysis	9,422.0	9,388.2	33.8	0.4%	9,381.3	40.7	0.4%	9,360.4	61.6	0.7%
ME 5	32 49 25	2006	Wet	December	--	43,876.2	43,846.1	30.1	0.1%	43,839.1	37.0	0.1%	43,820.6	55.6	0.1%
ME 5	32 49 25	2006	Wet	January	--	46,640.0	46,612.3	27.8	0.1%	46,606.5	33.6	0.1%	46,589.1	50.9	0.1%
ME 5	32 49 25	2006	Wet	February	--	26,766.2	26,741.9	24.3	0.1%	26,737.3	28.9	0.1%	26,722.2	44.0	0.2%
ME 5	32 49 25	2006	Wet	March	--	47,429.4	47,406.3	23.1	0.0%	47,401.6	27.8	0.1%	47,386.6	42.8	0.1%
ME 5	32 49 25	2006	Wet	April	--	30,535.9	30,513.9	22.0	0.1%	30,510.4	25.5	0.1%	30,497.7	38.2	0.1%
ME 5	32 49 25	2006	Wet	May	--	14,269.7	14,241.9	27.8	0.2%	14,236.1	33.6	0.2%	14,219.9	49.8	0.3%
ME 5	32 49 25	2006	Wet	June	--	3,555.8	3,500.3	55.4	1.6%	3,489.5	66.3	1.9%	3,457.4	98.4	2.8%
ME 5	32 49 25	2006	Wet	July	--	1,289.9	1,230.2	59.7	4.6%	1,218.5	71.4	5.5%	1,183.8	106.1	8.2%
ME 5	32 49 25	2006	Wet	August	--	676.0	617.2	58.8	8.7%	605.6	70.4	10.4%	570.8	105.2	15.6%
ME 5	32 49 25	2006	Wet	September	Used in Summary Table Analysis	436.1	383.9	52.2	12.0%	373.5	62.6	14.3%	342.3	93.8	21.5%
ME 5	32 49 25	2007	Above Normal	October	Used in Summary Table Analysis	283.0	239.8	43.2	15.3%	231.1	51.9	18.3%	204.8	78.2	27.6%
ME 5	32 49 25	2007	Above Normal	November	Used in Summary Table Analysis	8,769.0	8,733.4	35.5	0.4%	8,726.3	42.7	0.5%	8,704.4	64.6	0.7%
ME 5	32 49 25	2007	Above Normal	December	--	20,616.9	20,585.6	31.3	0.2%	20,578.7	38.2	0.2%	20,560.2	56.7	0.3%
ME 5	32 49 25	2007	Above Normal	January	--	10,306.9	10,279.6	27.3	0.3%	10,274.1	32.9	0.3%	10,256.9	50.0	0.5%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	32 49 25	2007	Above Normal	February	--	30,803.2	30,777.8	25.5	0.1%	30,772.0	31.3	0.1%	30,755.8	47.5	0.2%
ME 5	32 49 25	2007	Above Normal	March	--	13,142.4	13,118.1	24.3	0.2%	13,113.4	28.9	0.2%	13,098.4	44.0	0.3%
ME 5	32 49 25	2007	Above Normal	April	--	11,573.3	11,529.1	44.2	0.4%	11,520.3	53.0	0.5%	11,493.9	79.4	0.7%
ME 5	32 49 25	2007	Above Normal	May	--	4,158.0	4,105.6	52.4	1.3%	4,095.0	63.0	1.5%	4,063.7	94.3	2.3%
ME 5	32 49 25	2007	Above Normal	June	--	1,511.9	1,449.3	62.6	4.1%	1,436.9	75.0	5.0%	1,400.2	111.7	7.4%
ME 5	32 49 25	2007	Above Normal	July	--	502.8	439.1	63.7	12.7%	426.5	76.3	15.2%	389.4	113.4	22.6%
ME 5	32 49 25	2007	Above Normal	August	--	231.0	173.1	58.0	25.1%	161.5	69.5	30.1%	126.3	104.7	45.3%
ME 5	32 49 25	2007	Above Normal	September	Used in Summary Table Analysis	158.6	103.3	55.3	34.9%	92.3	66.3	41.8%	59.2	99.5	62.7%
ME 5	32 49 25	2008	Dry	October	Used in Summary Table Analysis	3,472.0	3,426.2	45.8	1.3%	3,416.9	55.1	1.6%	3,388.8	83.2	2.4%
ME 5	32 49 25	2008	Dry	November	Used in Summary Table Analysis	3,311.5	3,275.7	35.8	1.1%	3,268.4	43.1	1.3%	3,246.3	65.2	2.0%
ME 5	32 49 25	2008	Dry	December	--	23,395.8	23,363.4	32.4	0.1%	23,357.6	38.2	0.2%	23,338.0	57.9	0.2%
ME 5	32 49 25	2008	Dry	January	--	37,788.2	37,759.3	28.9	0.1%	37,753.5	34.7	0.1%	37,735.0	53.2	0.1%
ME 5	32 49 25	2008	Dry	February	--	26,334.5	26,309.0	25.5	0.1%	26,304.4	30.1	0.1%	26,288.2	46.3	0.2%
ME 5	32 49 25	2008	Dry	March	--	11,824.1	11,802.1	22.0	0.2%	11,797.5	26.6	0.2%	11,783.6	40.5	0.3%
ME 5	32 49 25	2008	Dry	April	--	9,041.3	8,996.5	44.8	0.5%	8,987.6	53.7	0.6%	8,960.8	80.6	0.9%
ME 5	32 49 25	2008	Dry	May	--	1,359.6	1,312.4	47.2	3.5%	1,303.2	56.4	4.1%	1,275.7	83.9	6.2%
ME 5	32 49 25	2008	Dry	June	--	445.0	376.9	68.1	15.3%	363.5	81.5	18.3%	323.9	121.1	27.2%
ME 5	32 49 25	2008	Dry	July	--	262.7	194.3	68.5	26.1%	180.7	82.0	31.2%	145.4	117.3	44.7%
ME 5	32 49 25	2008	Dry	August	--	186.4	119.3	67.1	36.0%	106.0	80.4	43.1%	65.8	120.6	64.7%
ME 5	32 49 25	2008	Dry	September	Used in Summary Table Analysis	148.0	82.9	65.0	43.9%	70.0	77.9	52.7%	32.5	115.5	78.0%
ME 5	32 49 25	2009	Critical	October	Used in Summary Table Analysis	933.6	881.4	52.2	5.6%	871.0	62.7	6.7%	839.2	94.5	10.1%
ME 5	32 49 25	2009	Critical	November	Used in Summary Table Analysis	5,578.9	5,537.6	41.3	0.7%	5,529.3	49.7	0.9%	5,501.3	77.7	1.4%
ME 5	32 49 25	2009	Critical	December	--	12,305.6	12,269.7	35.9	0.3%	12,262.7	42.8	0.3%	12,240.7	64.8	0.5%
ME 5	32 49 25	2009	Critical	January	--	8,837.6	8,805.7	31.9	0.4%	8,799.1	38.5	0.4%	8,779.3	58.3	0.7%
ME 5	32 49 25	2009	Critical	February	--	22,732.6	22,703.7	28.9	0.1%	22,697.9	34.7	0.2%	22,680.6	52.1	0.2%
ME 5	32 49 25	2009	Critical	March	--	21,209.5	21,184.0	25.5	0.1%	21,179.4	30.1	0.1%	21,163.2	46.3	0.2%
ME 5	32 49 25	2009	Critical	April	--	10,108.7	10,061.8	46.9	0.5%	10,052.5	56.1	0.6%	10,024.3	84.4	0.8%
ME 5	32 49 25	2009	Critical	May	--	15,629.6	15,572.9	56.7	0.4%	15,561.3	68.3	0.4%	15,527.8	101.9	0.7%
ME 5	32 49 25	2009	Critical	June	--	3,168.4	3,095.6	72.8	2.3%	3,081.6	86.8	2.7%	3,039.5	128.9	4.1%
ME 5	32 49 25	2009	Critical	July	--	1,270.6	1,201.4	69.2	5.4%	1,187.7	82.9	6.5%	1,152.1	118.5	9.3%
ME 5	32 49 25	2009	Critical	August	--	676.9	609.3	67.6	10.0%	595.8	81.0	12.0%	558.1	118.8	17.6%
ME 5	32 49 25	2009	Critical	September	Used in Summary Table Analysis	397.5	336.2	61.2	15.4%	324.1	73.4	18.5%	288.7	108.8	27.4%
ME 5	32 49 25	2010	Below Normal	October	Used in Summary Table Analysis	6,100.1	6,047.2	52.9	0.9%	6,036.6	63.5	1.0%	6,003.6	96.5	1.6%
ME 5	32 49 25	2010	Below Normal	November	Used in Summary Table Analysis	8,337.2	8,294.4	42.7	0.5%	8,285.9	51.3	0.6%	8,257.2	80.0	1.0%
ME 5	32 49 25	2010	Below Normal	December	--	12,449.1	12,412.0	37.0	0.3%	12,405.1	44.0	0.4%	12,381.9	67.1	0.5%
ME 5	32 49 25	2010	Below Normal	January	--	36,547.5	36,513.9	33.6	0.1%	36,508.1	39.4	0.1%	36,487.3	60.2	0.2%
ME 5	32 49 25	2010	Below Normal	February	--	27,334.5	27,305.6	28.9	0.1%	27,299.8	34.7	0.1%	27,281.3	53.2	0.2%
ME 5	32 49 25	2010	Below Normal	March	--	28,915.5	28,887.7	27.8	0.1%	28,883.1	32.4	0.1%	28,865.7	49.8	0.2%
ME 5	32 49 25	2010	Below Normal	April	--	40,157.4	40,131.9	25.5	0.1%	40,127.3	30.1	0.1%	40,111.1	46.3	0.1%
ME 5	32 49 25	2010	Below Normal	May	--	20,380.8	20,332.2	48.6	0.2%	20,322.9	57.9	0.3%	20,294.0	86.8	0.4%
ME 5	32 49 25	2010	Below Normal	June	--	9,439.6	9,370.4	69.2	0.7%	9,356.7	82.9	0.9%	9,316.2	123.4	1.3%
ME 5	32 49 25	2010	Below Normal	July	--	1,462.0	1,398.4	63.7	4.4%	1,386.0	76.0	5.2%	1,349.3	112.7	7.7%
ME 5	32 49 25	2010	Below Normal	August	--	578.6	519.6	59.1	10.2%	507.9	70.7	12.2%	473.1	105.6	18.2%
ME 5	32 49 25	2010	Below Normal	September	Used in Summary Table Analysis	661.1	604.3	56.8	8.6%	592.9	68.2	10.3%	558.9	102.2	15.5%
ME 5	32 49 25	2011	Wet	October	Used in Summary Table Analysis	9,705.3	9,661.6	43.8	0.5%	9,652.7	52.7	0.5%	9,625.9	79.4	0.8%
ME 5	32 49 25	2011	Wet	November	Used in Summary Table Analysis	14,300.9	14,266.2	34.7	0.2%	14,259.3	41.7	0.3%	14,237.3	63.7	0.4%
ME 5	32 49 25	2011	Wet	December	--	34,028.9	33,998.8	30.1	0.1%	33,991.9	37.0	0.1%	33,972.2	56.7	0.2%
ME 5	32 49 25	2011	Wet	January	--	14,218.8	14,192.1	26.6	0.2%	14,186.3	32.4	0.2%	14,170.1	48.6	0.3%
ME 5	32 49 25	2011	Wet	February	--	20,829.9	20,805.6	24.3	0.1%	20,799.8	30.1	0.1%	20,784.7	45.1	0.2%
ME 5	32 49 25	2011	Wet	March	--	52,222.2	52,197.9	24.3	0.0%	52,193.3	28.9	0.1%	52,178.2	44.0	0.1%
ME 5	32 49 25	2011	Wet	April	--	24,875.0	24,851.9	23.1	0.1%	24,847.2	27.8	0.1%	24,833.3	41.7	0.2%
ME 5	32 49 25	2011	Wet	May	--	11,419.6	11,374.1	45.5	0.4%	11,364.9	54.6	0.5%	11,337.7	81.8	0.7%
ME 5	32 49 25	2011	Wet	June	--	7,093.4	7,026.2	67.2	0.9%	7,012.8	80.6	1.1%	6,973.6	119.8	1.7%
ME 5	32 49 25	2011	Wet	July	--	1,834.0	1,766.4	67.6	3.7%	1,753.0	81.0	4.4%	1,714.7	119.3	6.5%
ME 5	32 49 25	2011	Wet	August	--	785.2	727.0	58.2	7.4%	715.5	69.7	8.9%	680.9	104.3	13.3%
ME 5	32 49 25	2011	Wet	September	Used in Summary Table Analysis	441.8	388.4	53.4	12.1%	377.7	64.1	14.5%	345.9	95.9	21.7%
ME 5	32 49 25	2012	Below Normal	October	Used in Summary Table Analysis	4,579.5	4,535.1	44.4	1.0%	4,526.0	53.5	1.2%	4,498.7	80.8	1.8%
ME 5	32 49 25	2012	Below Normal	November	Used in Summary Table Analysis	8,313.4	8,277.8	35.6	0.4%	8,270.5	42.9	0.5%	8,248.4	65.0	0.8%
ME 5	32 49 25	2012	Below Normal	December	--	5,217.5	5,186.9	30.6	0.6%	5,180.7	36.8	0.7%	5,161.7	55.8	1.1%
ME 5	32 49 25	2012	Below Normal	January	--	20,329.9	20,302.1	27.8	0.1%	20,296.3	33.6	0.2%	20,278.9	50.9	0.3%
ME 5	32 49 25	2012	Below Normal	February	--	18,275.5	18,250.0	25.5	0.1%	18,245.4	30.1	0.2%	18,229.2	46.3	0.3%
ME 5	32 49 25	2012	Below Normal	March	--	45,677.1	45,651.6	25.5	0.1%	45,647.0	30.1	0.1%	45,631.9	45.1	0.1%
ME 5	32 49 25	2012	Below Normal	April	--	26,951.4	26,928.2	23.1	0.1%	26,923.6	27.8	0.1%	26,909.7	41.7	0.2%
ME 5	32 49 25	2012	Below Normal	May	--	7,506.0	7,460.9	45.1	0.6%	7,451.9	54.2	0.7%	7,425.0	81.0	1.1%

Table A.1

**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	32 49 25	2012	Below Normal	June	--	5,552.2	5,483.9	68.3	1.2%	5,470.5	81.7	1.5%	5,430.8	121.4	2.2%
ME 5	32 49 25	2012	Below Normal	July	--	2,247.1	2,181.6	65.5	2.9%	2,168.6	78.5	3.5%	2,130.0	117.1	5.2%
ME 5	32 49 25	2012	Below Normal	August	--	395.0	341.6	53.4	13.5%	331.0	64.0	16.2%	299.2	95.8	24.3%
ME 5	32 49 25	2012	Below Normal	September	Used in Summary Table Analysis	257.1	209.1	48.0	18.7%	199.5	57.5	22.4%	170.9	86.2	33.5%
ME 5	32 49 25	2013	Below Normal	October	Used in Summary Table Analysis	1,937.5	1,895.1	42.4	2.2%	1,886.6	50.9	2.6%	1,861.0	76.5	3.9%
ME 5	32 49 25	2013	Below Normal	November	Used in Summary Table Analysis	14,822.9	14,788.2	34.7	0.2%	14,781.3	41.7	0.3%	14,760.4	62.5	0.4%
ME 5	32 49 25	2013	Below Normal	December	--	60,296.3	60,265.0	31.3	0.1%	60,258.1	38.2	0.1%	60,239.6	56.7	0.1%
ME 5	32 49 25	2013	Below Normal	January	--	22,290.5	22,265.0	25.5	0.1%	22,259.3	31.3	0.1%	22,243.1	47.5	0.2%
ME 5	32 49 25	2013	Below Normal	February	--	8,888.4	8,863.8	24.7	0.3%	8,858.7	29.7	0.3%	8,843.6	44.8	0.5%
ME 5	32 49 25	2013	Below Normal	March	--	10,395.0	10,371.3	23.7	0.2%	10,366.4	28.6	0.3%	10,352.0	43.1	0.4%
ME 5	32 49 25	2013	Below Normal	April	--	8,311.8	8,268.8	43.1	0.5%	8,260.2	51.6	0.6%	8,234.5	77.3	0.9%
ME 5	32 49 25	2013	Below Normal	May	--	4,457.3	4,405.3	52.0	1.2%	4,394.9	62.4	1.4%	4,363.9	93.4	2.1%
ME 5	32 49 25	2013	Below Normal	June	--	2,120.5	2,058.2	62.3	2.9%	2,045.9	74.5	3.5%	2,009.4	111.1	5.2%
ME 5	32 49 25	2013	Below Normal	July	--	723.8	662.8	60.9	8.4%	650.8	73.0	10.1%	615.6	108.2	14.9%
ME 5	32 49 25	2013	Below Normal	August	--	347.4	289.6	57.8	16.6%	278.1	69.3	20.0%	243.0	104.4	30.1%
ME 5	32 49 25	2013	Below Normal	September	Used in Summary Table Analysis	4,825.1	4,764.9	60.2	1.2%	4,752.9	72.2	1.5%	4,716.9	108.2	2.2%
ME 5	32 49 25	2014	Critical	October	Used in Summary Table Analysis	283.9	239.2	44.7	15.7%	230.2	53.6	18.9%	203.9	80.0	28.2%
ME 5	32 49 25	2014	Critical	November	Used in Summary Table Analysis	1,559.6	1,523.5	36.1	2.3%	1,516.2	43.4	2.8%	1,494.0	65.6	4.2%
ME 5	32 49 25	2014	Critical	December	--	1,603.2	1,571.6	31.6	2.0%	1,565.3	38.0	2.4%	1,545.6	57.6	3.6%
ME 5	32 49 25	2014	Critical	January	--	2,843.8	2,815.5	28.2	1.0%	2,809.8	33.9	1.2%	2,792.1	51.6	1.8%
ME 5	32 49 25	2014	Critical	February	--	15,814.8	15,789.4	25.5	0.2%	15,784.7	30.1	0.2%	15,767.4	47.5	0.3%
ME 5	32 49 25	2014	Critical	March	--	31,566.0	31,541.7	24.3	0.1%	31,537.0	28.9	0.1%	31,520.8	45.1	0.1%
ME 5	32 49 25	2014	Critical	April	--	13,018.5	12,972.2	46.3	0.4%	12,963.0	55.6	0.4%	12,935.2	83.3	0.6%
ME 5	32 49 25	2014	Critical	May	--	5,206.3	5,151.3	55.0	1.1%	5,140.3	66.0	1.3%	5,107.3	99.0	1.9%
ME 5	32 49 25	2014	Critical	June	--	1,206.5	1,132.1	74.4	6.2%	1,117.5	89.0	7.4%	1,075.3	131.1	10.9%
ME 5	32 49 25	2014	Critical	July	--	552.0	482.1	70.0	12.7%	468.2	83.9	15.2%	431.5	120.5	21.8%
ME 5	32 49 25	2014	Critical	August	--	355.3	288.0	67.3	18.9%	274.5	80.8	22.8%	236.3	119.1	33.5%
ME 5	32 49 25	2014	Critical	September	Used in Summary Table Analysis	2,593.2	2,526.7	66.4	2.6%	2,513.5	79.6	3.1%	2,474.2	119.0	4.6%
ME 5	32 49 25	2015	Dry	October	Used in Summary Table Analysis	11,431.7	11,379.2	52.5	0.5%	11,368.8	63.0	0.6%	11,337.2	94.6	0.8%
ME 5	32 49 25	2015	Dry	November	Used in Summary Table Analysis	9,111.8	9,071.8	40.0	0.4%	9,063.7	48.1	0.5%	9,035.9	75.9	0.8%
ME 5	32 49 25	2015	Dry	December	--	32,887.7	32,854.2	33.6	0.1%	32,846.1	41.7	0.1%	32,824.1	63.7	0.2%
ME 5	32 49 25	2015	Dry	January	--	14,619.2	14,589.1	30.1	0.2%	14,582.2	37.0	0.3%	14,562.5	56.7	0.4%
ME 5	32 49 25	2015	Dry	February	--	27,341.4	27,313.7	27.8	0.1%	27,309.0	32.4	0.1%	27,291.7	49.8	0.2%
ME 5	32 49 25	2015	Dry	March	--	11,597.2	11,572.7	24.5	0.2%	11,567.7	29.5	0.3%	11,552.4	44.8	0.4%
ME 5	32 49 25	2015	Dry	April	--	8,457.3	8,411.2	46.1	0.5%	8,402.0	55.3	0.7%	8,374.3	83.0	1.0%
ME 5	32 49 25	2015	Dry	May	--	1,512.3	1,458.1	54.2	3.6%	1,447.3	64.9	4.3%	1,415.9	96.4	6.4%
ME 5	32 49 25	2015	Dry	June	--	657.9	588.7	69.2	10.5%	575.0	82.9	12.6%	534.7	123.2	18.7%
ME 5	32 49 25	2015	Dry	July	--	274.3	205.2	69.2	25.2%	191.4	82.9	30.2%	155.7	118.6	43.2%
ME 5	32 49 25	2015	Dry	August	--	173.3	105.8	67.5	38.9%	92.3	81.0	46.7%	54.8	118.6	68.4%
ME 5	32 49 25	2015	Dry	September	Used in Summary Table Analysis	126.8	62.9	63.8	50.4%	49.8	77.0	60.7%	11.8	115.0	90.7%
ME 5	32 49 25	2016	Above Normal	October	Used in Summary Table Analysis	91.8	37.8	54.0	58.8%	27.4	64.4	70.2%	0.8	91.0	99.1%
ME 5	32 49 25	2016	Above Normal	November	Used in Summary Table Analysis	3,930.0	3,887.6	42.4	1.1%	3,878.9	51.0	1.3%	3,848.1	81.8	2.1%
ME 5	32 49 25	2016	Above Normal	December	--	36,937.5	36,899.3	38.2	0.1%	36,892.4	45.1	0.1%	36,868.1	69.4	0.2%
ME 5	32 49 25	2016	Above Normal	January	--	57,648.1	57,613.4	34.7	0.1%	57,606.5	41.7	0.1%	57,585.6	62.5	0.1%
ME 5	32 49 25	2016	Above Normal	February	--	24,322.9	24,295.1	27.8	0.1%	24,289.4	33.6	0.1%	24,272.0	50.9	0.2%
ME 5	32 49 25	2016	Above Normal	March	--	41,931.7	41,905.1	26.6	0.1%	41,899.3	32.4	0.1%	41,883.1	48.6	0.1%
ME 5	32 49 25	2016	Above Normal	April	--	18,581.0	18,556.7	24.3	0.1%	18,552.1	28.9	0.2%	18,537.0	44.0	0.2%
ME 5	32 49 25	2016	Above Normal	May	--	5,231.6	5,202.5	29.1	0.6%	5,196.6	35.0	0.7%	5,178.7	52.9	1.0%
ME 5	32 49 25	2016	Above Normal	June	--	1,517.1	1,463.8	53.4	3.5%	1,454.3	62.8	4.1%	1,426.3	90.9	6.0%
ME 5	32 49 25	2016	Above Normal	July	--	831.3	770.9	60.5	7.3%	758.9	72.5	8.7%	723.3	108.0	13.0%
ME 5	32 49 25	2016	Above Normal	August	--	500.3	440.4	59.9	12.0%	428.5	71.8	14.4%	392.9	107.3	21.5%
ME 5	32 49 25	2016	Above Normal	September	Used in Summary Table Analysis	336.2	279.8	56.4	16.8%	268.3	67.9	20.2%	234.1	102.1	30.4%
ME 5	32 49 25	2017	Wet	October	Used in Summary Table Analysis	18,409.7	18,363.4	46.3	0.3%	18,354.2	55.6	0.3%	18,327.5	82.2	0.4%
ME 5	32 49 25	2017	Wet	November	Used in Summary Table Analysis	18,960.6	18,925.9	34.7	0.2%	18,917.8	42.8	0.2%	18,895.8	64.8	0.3%
ME 5	32 49 25	2017	Wet	December	--	24,324.1	24,294.0	30.1	0.1%	24,287.0	37.0	0.2%	24,268.5	55.6	0.2%
ME 5	32 49 25	2017	Wet	January	--	107,520.8	107,491.9	28.9	0.0%	107,486.1	34.7	0.0%	107,468.8	52.1	0.0%
ME 5	32 49 25	2017	Wet	February	--	82,200.2	82,174.8	25.5	0.0%	82,169.0	31.3	0.0%	82,152.8	47.5	0.1%
ME 5	32 49 25	2017	Wet	March	--	27,388.9	27,364.6	24.3	0.1%	27,360.0	28.9	0.1%	27,344.9	44.0	0.2%
ME 5	32 49 25	2017	Wet	April	--	23,059.0	23,037.0	22.0	0.1%	23,032.4	26.6	0.1%	23,019.7	39.4	0.2%
ME 5	32 49 25	2017	Wet	May	--	6,278.5	6,249.7	28.8	0.5%	6,243.9	34.6	0.6%	6,226.4	52.1	0.8%
ME 5	32 49 25	2017	Wet	June	--	2,133.4	2,078.6	54.9	2.6%	2,067.8	65.6	3.1%	2,035.8	97.7	4.6%
ME 5	32 49 25	2017	Wet	July	--	945.2	884.8	60.4	6.4%	872.9	72.3	7.7%	837.7	107.5	11.4%
ME 5	32 49 25	2017	Wet	August	--	517.3	458.0	59.3	11.5%	446.2	71.1	13.7%	411.1	106.2	20.5%
ME 5	32 49 25	2017	Wet	September	Used in Summary Table Analysis	332.0	276.6	55.4	16.7%	265.5	66.5	20.0%	232.3	99.7	30.0%

Table A.1

**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 5	32 49 25	2018	Above Normal	October	Used in Summary Table Analysis	284.7	240.0	44.6	15.7%	231.0	53.6	18.8%	204.0	80.6	28.3%
ME 5	32 49 25	2018	Above Normal	November	Used in Summary Table Analysis	10,931.1	10,895.5	35.6	0.3%	10,888.3	42.8	0.4%	10,866.4	64.7	0.6%
ME 5	32 49 25	2018	Above Normal	December	--	5,460.9	5,430.7	30.2	0.6%	5,424.4	36.5	0.7%	5,405.8	55.1	1.0%
ME 5	32 49 25	2018	Above Normal	January	--	18,019.7	17,991.9	27.8	0.2%	17,986.1	33.6	0.2%	17,969.9	49.8	0.3%
ME 5	32 49 25	2018	Above Normal	February	--	7,610.5	7,586.3	24.2	0.3%	7,581.4	29.2	0.4%	7,566.3	44.2	0.6%
ME 5	32 49 25	2018	Above Normal	March	--	20,854.2	20,831.0	23.1	0.1%	20,826.4	27.8	0.1%	20,812.5	41.7	0.2%
ME 5	32 49 25	2018	Above Normal	April	--	32,381.9	32,360.0	22.0	0.1%	32,356.5	25.5	0.1%	32,343.8	38.2	0.1%
ME 5	32 49 25	2018	Above Normal	May	--	6,996.2	6,953.2	42.9	0.6%	6,944.7	51.5	0.7%	6,918.8	77.4	1.1%
ME 5	32 49 25	2018	Above Normal	June	--	1,922.3	1,866.8	55.6	2.9%	1,855.8	66.6	3.5%	1,823.5	98.8	5.1%
ME 5	32 49 25	2018	Above Normal	July	--	790.6	729.5	61.1	7.7%	717.3	73.2	9.3%	681.3	109.3	13.8%
ME 5	32 49 25	2018	Above Normal	August	--	451.8	394.3	57.4	12.7%	382.8	68.9	15.3%	348.5	103.3	22.9%
ME 5	32 49 25	2018	Above Normal	September	Used in Summary Table Analysis	308.6	253.0	55.5	18.0%	241.9	66.7	21.6%	208.6	100.0	32.4%
ME 5	32 49 25	2019	Below Normal	October	Used in Summary Table Analysis	214.9	170.8	44.1	20.5%	161.9	53.1	24.7%	135.0	79.9	37.2%
ME 5	32 49 25	2019	Below Normal	November	Used in Summary Table Analysis	6,716.0	6,680.0	36.0	0.5%	6,672.7	43.3	0.6%	6,650.7	65.3	1.0%
ME 5	32 49 25	2019	Below Normal	December	--	14,820.6	14,790.5	30.1	0.2%	14,783.6	37.0	0.2%	14,765.0	55.6	0.4%
ME 5	32 49 25	2019	Below Normal	January	--	35,532.4	35,505.8	26.6	0.1%	35,498.8	33.6	0.1%	35,482.6	49.8	0.1%
ME 5	32 49 25	2019	Below Normal	February	--	142,256.9	142,233.8	23.1	0.0%	142,222.2	34.7	0.0%	142,210.6	46.3	0.0%
ME 5	32 49 25	2019	Below Normal	March	--	42,491.9	42,469.9	22.0	0.1%	42,465.3	26.6	0.1%	42,451.4	40.5	0.1%
ME 5	32 49 25	2019	Below Normal	April	--	15,321.8	15,299.8	22.0	0.1%	15,296.3	25.5	0.2%	15,282.4	39.4	0.3%
ME 5	32 49 25	2019	Below Normal	May	--	17,179.4	17,133.1	46.3	0.3%	17,123.8	55.6	0.3%	17,097.2	82.2	0.5%
ME 5	32 49 25	2019	Below Normal	June	--	4,245.1	4,186.7	58.4	1.4%	4,175.5	69.7	1.6%	4,142.5	102.7	2.4%
ME 5	32 49 25	2019	Below Normal	July	--	1,372.3	1,311.0	61.3	4.5%	1,298.8	73.5	5.4%	1,263.0	109.4	8.0%
ME 5	32 49 25	2019	Below Normal	August	--	606.9	548.1	58.8	9.7%	536.4	70.5	11.6%	501.7	105.2	17.3%
ME 5	32 49 25	2019	Below Normal	September	Used in Summary Table Analysis	471.7	416.5	55.3	11.7%	405.4	66.3	14.1%	372.2	99.5	21.1%
ME 5	32 49 25	2020	Dry	October	Used in Summary Table Analysis	363.1	320.5	42.5	11.7%	311.9	51.2	14.1%	286.0	77.0	21.2%
ME 5	32 49 25	2020	Dry	November	Used in Summary Table Analysis	332.4	298.5	33.9	10.2%	291.6	40.8	12.3%	270.9	61.5	18.5%
ME 5	32 49 25	2020	Dry	December	--	13,511.6	13,480.3	31.3	0.2%	13,474.5	37.0	0.3%	13,454.9	56.7	0.4%
ME 5	32 49 25	2020	Dry	January	--	22,508.1	22,480.3	27.8	0.1%	22,474.5	33.6	0.1%	22,457.2	50.9	0.2%
ME 5	32 49 25	2020	Dry	February	--	7,423.8	7,399.0	24.9	0.3%	7,393.9	30.0	0.4%	7,378.5	45.4	0.6%
ME 5	32 49 25	2020	Dry	March	--	7,278.0	7,254.7	23.3	0.3%	7,249.9	28.1	0.4%	7,235.5	42.5	0.6%
ME 5	32 49 25	2020	Dry	April	--	5,520.0	5,474.2	45.8	0.8%	5,464.9	55.1	1.0%	5,437.6	82.4	1.5%
ME 5	32 49 25	2020	Dry	May	--	7,424.1	7,369.1	55.0	0.7%	7,358.1	66.0	0.9%	7,325.2	98.8	1.3%
ME 5	32 49 25	2020	Dry	June	--	2,107.8	2,038.1	69.7	3.3%	2,024.5	83.2	3.9%	1,984.7	123.0	5.8%
ME 5	32 49 25	2020	Dry	July	--	803.6	732.1	71.5	8.9%	718.0	85.6	10.7%	681.2	122.4	15.2%
ME 5	32 49 25	2020	Dry	August	--	406.7	335.8	70.8	17.4%	321.7	85.0	20.9%	282.5	124.2	30.5%
ME 5	32 49 25	2020	Dry	September	Used in Summary Table Analysis	255.9	188.9	67.0	26.2%	175.2	80.7	31.5%	135.4	120.5	47.1%
ME 6	32 49 25	2000	Above Normal	October	Used in Summary Table Analysis	827.4	783.6	43.8	5.3%	774.7	52.7	6.4%	748.2	79.2	9.6%
ME 6	32 49 25	2000	Above Normal	November	Used in Summary Table Analysis	12,281.3	12,245.4	35.9	0.3%	12,238.4	42.8	0.3%	12,217.6	63.7	0.5%
ME 6	32 49 25	2000	Above Normal	December	--	10,898.1	10,867.8	30.3	0.3%	10,861.7	36.5	0.3%	10,843.1	55.1	0.5%
ME 6	32 49 25	2000	Above Normal	January	--	28,847.2	28,820.6	26.6	0.1%	28,814.8	32.4	0.1%	28,797.5	49.8	0.2%
ME 6	32 49 25	2000	Above Normal	February	--	37,218.8	37,194.4	24.3	0.1%	37,189.8	28.9	0.1%	37,173.6	45.1	0.1%
ME 6	32 49 25	2000	Above Normal	March	--	18,372.7	18,349.5	23.1	0.1%	18,344.9	27.8	0.2%	18,331.0	41.7	0.2%
ME 6	32 49 25	2000	Above Normal	April	--	12,357.6	12,335.6	22.0	0.2%	12,332.2	25.5	0.2%	12,318.3	39.4	0.3%
ME 6	32 49 25	2000	Above Normal	May	--	7,131.1	7,086.6	44.6	0.6%	7,077.7	53.5	0.7%	7,051.0	80.1	1.1%
ME 6	32 49 25	2000	Above Normal	June	--	2,626.7	2,561.1	65.6	2.5%	2,548.0	78.7	3.0%	2,509.6	117.1	4.5%
ME 6	32 49 25	2000	Above Normal	July	--	1,000.1	939.7	60.4	6.0%	927.8	72.3	7.2%	892.3	107.8	10.8%
ME 6	32 49 25	2000	Above Normal	August	--	530.6	473.3	57.2	10.8%	461.9	68.6	12.9%	427.8	102.7	19.4%
ME 6	32 49 25	2000	Above Normal	September	Used in Summary Table Analysis	303.0	251.7	51.3	16.9%	241.4	61.6	20.3%	210.7	92.3	30.5%
ME 6	32 49 25	2001	Dry	October	Used in Summary Table Analysis	3,854.5	3,811.5	43.1	1.1%	3,802.7	51.9	1.3%	3,776.5	78.0	2.0%
ME 6	32 49 25	2001	Dry	November	Used in Summary Table Analysis	6,186.6	6,151.7	34.8	0.6%	6,144.7	41.9	0.7%	6,123.4	63.2	1.0%
ME 6	32 49 25	2001	Dry	December	--	8,901.2	8,871.1	30.1	0.3%	8,864.9	36.2	0.4%	8,846.4	54.7	0.6%
ME 6	32 49 25	2001	Dry	January	--	12,908.6	12,881.9	26.6	0.2%	12,876.2	32.4	0.3%	12,860.0	48.6	0.4%
ME 6	32 49 25	2001	Dry	February	--	17,547.5	17,522.0	25.5	0.1%	17,517.4	30.1	0.2%	17,502.3	45.1	0.3%
ME 6	32 49 25	2001	Dry	March	--	12,335.6	12,313.7	22.0	0.2%	12,309.0	26.6	0.2%	12,295.1	40.5	0.3%
ME 6	32 49 25	2001	Dry	April	--	11,013.1	10,967.4	45.7	0.4%	10,958.2	54.9	0.5%	10,930.9	82.2	0.7%
ME 6	32 49 25	2001	Dry	May	--	2,639.6	2,585.5	54.1	2.0%	2,574.8	64.8	2.5%	2,542.5	97.1	3.7%
ME 6	32 49 25	2001	Dry	June	--	2,675.2	2,602.1	73.1	2.7%	2,587.7	87.5	3.3%	2,545.6	129.6	4.8%
ME 6	32 49 25	2001	Dry	July	--	723.1	653.2	69.9	9.7%	639.3	83.8	11.6%	603.1	120.0	16.6%
ME 6	32 49 25	2001	Dry	August	--	179.2	110.7	68.5	38.2%	97.0	82.2	45.9%	58.7	120.5	67.3%
ME 6	32 49 25	2001	Dry	September	Used in Summary Table Analysis	102.5	40.6	61.9	60.4%	28.3	74.2	72.4%	1.1	101.4	98.9%
ME 6	32 49 25	2002	Below Normal	October	Used in Summary Table Analysis	272.8	220.3	52.6	19.3%	209.6	63.2	23.2%	177.9	94.9	34.8%
ME 6	32 49 25	2002	Below Normal	November	Used in Summary Table Analysis	12,108.8	12,067.1	41.7	0.3%	12,057.9	50.9	0.4%	12,030.1	78.7	0.6%
ME 6	32 49 25	2002	Below Normal	December	--	35,927.1	35,890.0	37.0	0.1%	35,881.9	45.1	0.1%	35,858.8	68.3	0.2%
ME 6	32 49 25	2002	Below Normal	January	--	31,032.4	31,000.0	32.4	0.1%	30,993.1	39.4	0.1%	30,973.4	59.0	0.2%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 49 25	2002	Below Normal	February	--	24,770.8	24,740.7	30.1	0.1%	24,735.0	35.9	0.1%	24,717.6	53.2	0.2%
ME 6	32 49 25	2002	Below Normal	March	--	17,851.9	17,825.2	26.6	0.1%	17,819.4	32.4	0.2%	17,802.1	49.8	0.3%
ME 6	32 49 25	2002	Below Normal	April	--	9,953.7	9,907.5	46.2	0.5%	9,898.4	55.3	0.6%	9,870.7	83.0	0.8%
ME 6	32 49 25	2002	Below Normal	May	--	3,330.9	3,276.5	54.4	1.6%	3,265.6	65.3	2.0%	3,233.2	97.7	2.9%
ME 6	32 49 25	2002	Below Normal	June	--	860.4	799.1	61.3	7.1%	786.9	73.5	8.5%	751.0	109.4	12.7%
ME 6	32 49 25	2002	Below Normal	July	--	369.2	306.3	63.0	17.1%	293.8	75.5	20.4%	257.3	111.9	30.3%
ME 6	32 49 25	2002	Below Normal	August	--	234.9	175.2	59.7	25.4%	163.3	71.6	30.5%	127.1	107.8	45.9%
ME 6	32 49 25	2002	Below Normal	September	Used in Summary Table Analysis	171.4	114.5	56.8	33.2%	103.2	68.2	39.8%	68.4	103.0	60.1%
ME 6	32 49 25	2003	Wet	October	Used in Summary Table Analysis	136.2	88.8	47.3	34.8%	79.3	56.9	41.8%	50.7	85.5	62.8%
ME 6	32 49 25	2003	Wet	November	Used in Summary Table Analysis	905.5	867.0	38.5	4.3%	859.1	46.4	5.1%	835.5	70.0	7.7%
ME 6	32 49 25	2003	Wet	December	--	57,392.4	57,357.6	34.7	0.1%	57,350.7	41.7	0.1%	57,329.9	62.5	0.1%
ME 6	32 49 25	2003	Wet	January	--	31,648.1	31,618.1	30.1	0.1%	31,612.3	35.9	0.1%	31,593.8	54.4	0.2%
ME 6	32 49 25	2003	Wet	February	--	20,416.7	20,388.9	27.8	0.1%	20,384.3	32.4	0.2%	20,366.9	49.8	0.2%
ME 6	32 49 25	2003	Wet	March	--	24,130.8	24,105.3	25.5	0.1%	24,100.7	30.1	0.1%	24,084.5	46.3	0.2%
ME 6	32 49 25	2003	Wet	April	--	43,151.6	43,127.3	24.3	0.1%	43,121.5	30.1	0.1%	43,107.6	44.0	0.1%
ME 6	32 49 25	2003	Wet	May	--	12,256.9	12,209.5	47.5	0.4%	12,200.2	56.7	0.5%	12,172.5	84.5	0.7%
ME 6	32 49 25	2003	Wet	June	--	3,175.3	3,117.1	58.2	1.8%	3,105.8	69.6	2.2%	3,072.1	103.2	3.3%
ME 6	32 49 25	2003	Wet	July	--	1,484.0	1,421.8	62.3	4.2%	1,409.4	74.7	5.0%	1,372.8	111.2	7.5%
ME 6	32 49 25	2003	Wet	August	--	769.5	708.2	61.3	8.0%	695.6	73.9	9.6%	656.5	113.0	14.7%
ME 6	32 49 25	2003	Wet	September	Used in Summary Table Analysis	466.6	414.0	52.5	11.3%	403.5	63.1	13.5%	370.9	95.7	20.5%
ME 6	32 49 25	2004	Wet	October	Used in Summary Table Analysis	333.3	289.2	44.1	13.2%	280.3	53.0	15.9%	253.4	79.8	23.9%
ME 6	32 49 25	2004	Wet	November	Used in Summary Table Analysis	5,871.2	5,835.0	36.2	0.6%	5,827.5	43.6	0.7%	5,805.2	66.0	1.1%
ME 6	32 49 25	2004	Wet	December	--	36,610.0	36,577.5	32.4	0.1%	36,571.8	38.2	0.1%	36,550.9	59.0	0.2%
ME 6	32 49 25	2004	Wet	January	--	31,677.1	31,649.3	27.8	0.1%	31,643.5	33.6	0.1%	31,626.2	50.9	0.2%
ME 6	32 49 25	2004	Wet	February	--	38,431.7	38,406.3	25.5	0.1%	38,400.5	31.3	0.1%	38,384.3	47.5	0.1%
ME 6	32 49 25	2004	Wet	March	--	16,559.0	16,535.9	23.1	0.1%	16,531.3	27.8	0.2%	16,516.2	42.8	0.3%
ME 6	32 49 25	2004	Wet	April	--	9,477.0	9,454.7	22.2	0.2%	9,450.2	26.7	0.3%	9,436.5	40.5	0.4%
ME 6	32 49 25	2004	Wet	May	--	3,441.8	3,397.0	44.8	1.3%	3,388.1	53.7	1.6%	3,361.3	80.4	2.3%
ME 6	32 49 25	2004	Wet	June	--	698.1	642.1	56.0	8.0%	631.1	67.1	9.6%	598.4	99.7	14.3%
ME 6	32 49 25	2004	Wet	July	--	364.2	303.1	61.1	16.8%	291.0	73.2	20.1%	255.0	109.2	30.0%
ME 6	32 49 25	2004	Wet	August	--	232.8	174.8	58.0	24.9%	163.2	69.6	29.9%	128.6	104.2	44.8%
ME 6	32 49 25	2004	Wet	September	Used in Summary Table Analysis	169.3	113.7	55.6	32.8%	102.6	66.7	39.4%	69.3	100.1	59.1%
ME 6	32 49 25	2005	Above Normal	October	Used in Summary Table Analysis	7,770.6	7,725.6	45.0	0.6%	7,716.6	54.1	0.7%	7,689.1	81.5	1.0%
ME 6	32 49 25	2005	Above Normal	November	Used in Summary Table Analysis	2,270.5	2,235.1	35.4	1.6%	2,227.9	42.6	1.9%	2,206.1	64.4	2.8%
ME 6	32 49 25	2005	Above Normal	December	--	21,277.8	21,246.5	31.3	0.1%	21,240.7	37.0	0.2%	21,222.2	55.6	0.3%
ME 6	32 49 25	2005	Above Normal	January	--	22,582.2	22,554.4	27.8	0.1%	22,548.6	33.6	0.1%	22,531.3	50.9	0.2%
ME 6	32 49 25	2005	Above Normal	February	--	14,047.5	14,023.1	24.3	0.2%	14,017.4	30.1	0.2%	14,002.3	45.1	0.3%
ME 6	32 49 25	2005	Above Normal	March	--	28,717.6	28,694.4	23.1	0.1%	28,689.8	27.8	0.1%	28,675.9	41.7	0.1%
ME 6	32 49 25	2005	Above Normal	April	--	21,544.0	21,522.0	22.0	0.1%	21,517.4	26.6	0.1%	21,503.5	40.5	0.2%
ME 6	32 49 25	2005	Above Normal	May	--	19,688.7	19,642.4	46.3	0.2%	19,633.1	55.6	0.3%	19,606.5	82.2	0.4%
ME 6	32 49 25	2005	Above Normal	June	--	16,011.6	15,944.4	67.1	0.4%	15,930.6	81.0	0.5%	15,891.2	120.4	0.8%
ME 6	32 49 25	2005	Above Normal	July	--	2,867.2	2,804.5	62.7	2.2%	2,792.6	74.7	2.6%	2,757.1	110.2	3.8%
ME 6	32 49 25	2005	Above Normal	August	--	992.4	935.0	57.4	5.8%	923.6	68.8	6.9%	889.7	102.7	10.3%
ME 6	32 49 25	2005	Above Normal	September	Used in Summary Table Analysis	533.8	482.4	51.4	9.6%	472.2	61.6	11.5%	441.5	92.3	17.3%
ME 6	32 49 25	2006	Wet	October	Used in Summary Table Analysis	644.7	602.4	42.3	6.6%	593.9	50.8	7.9%	568.2	76.5	11.9%
ME 6	32 49 25	2006	Wet	November	Used in Summary Table Analysis	9,422.0	9,388.2	33.8	0.4%	9,381.3	40.7	0.4%	9,360.4	61.6	0.7%
ME 6	32 49 25	2006	Wet	December	--	43,876.2	43,846.1	30.1	0.1%	43,839.1	37.0	0.1%	43,820.6	55.6	0.1%
ME 6	32 49 25	2006	Wet	January	--	46,640.0	46,612.3	27.8	0.1%	46,606.5	33.6	0.1%	46,589.1	50.9	0.1%
ME 6	32 49 25	2006	Wet	February	--	26,766.2	26,741.9	24.3	0.1%	26,737.3	28.9	0.1%	26,722.2	44.0	0.2%
ME 6	32 49 25	2006	Wet	March	--	47,429.4	47,406.3	23.1	0.0%	47,401.6	27.8	0.1%	47,386.6	42.8	0.1%
ME 6	32 49 25	2006	Wet	April	--	30,535.9	30,513.9	22.0	0.1%	30,510.4	25.5	0.1%	30,497.7	38.2	0.1%
ME 6	32 49 25	2006	Wet	May	--	14,269.7	14,241.9	27.8	0.2%	14,236.1	33.6	0.2%	14,219.9	49.8	0.3%
ME 6	32 49 25	2006	Wet	June	--	3,555.8	3,500.3	55.4	1.6%	3,489.5	66.3	1.9%	3,457.4	98.4	2.8%
ME 6	32 49 25	2006	Wet	July	--	1,289.9	1,230.2	59.7	4.6%	1,218.5	71.4	5.5%	1,183.8	106.1	8.2%
ME 6	32 49 25	2006	Wet	August	--	676.0	617.2	58.8	8.7%	605.6	70.4	10.4%	570.8	105.2	15.6%
ME 6	32 49 25	2006	Wet	September	Used in Summary Table Analysis	436.1	383.9	52.2	12.0%	373.5	62.6	14.3%	342.3	93.8	21.5%
ME 6	32 49 25	2007	Above Normal	October	Used in Summary Table Analysis	283.0	239.8	43.2	15.3%	231.1	51.9	18.3%	204.8	78.2	27.6%
ME 6	32 49 25	2007	Above Normal	November	Used in Summary Table Analysis	8,769.0	8,733.4	35.5	0.4%	8,726.3	42.7	0.5%	8,704.4	64.6	0.7%
ME 6	32 49 25	2007	Above Normal	December	--	20,616.9	20,585.6	31.3	0.2%	20,578.7	38.2	0.2%	20,560.2	56.7	0.3%
ME 6	32 49 25	2007	Above Normal	January	--	10,306.9	10,279.6	27.3	0.3%	10,274.1	32.9	0.3%	10,256.9	50.0	0.5%
ME 6	32 49 25	2007	Above Normal	February	--	30,803.2	30,777.8	25.5	0.1%	30,772.0	31.3	0.1%	30,755.8	47.5	0.2%
ME 6	32 49 25	2007	Above Normal	March	--	13,142.4	13,118.1	24.3	0.2%	13,113.4	28.9	0.2%	13,098.4	44.0	0.3%
ME 6	32 49 25	2007	Above Normal	April	--	11,573.3	11,529.1	44.2	0.4%	11,520.3	53.0	0.5%	11,493.9	79.4	0.7%
ME 6	32 49 25	2007	Above Normal	May	--	4,158.0	4,105.6	52.4	1.3%	4,095.0	63.0	1.5%	4,063.7	94.3	2.3%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 49 25	2007	Above Normal	June	--	1,511.9	1,449.3	62.6	4.1%	1,436.9	75.0	5.0%	1,400.2	111.7	7.4%
ME 6	32 49 25	2007	Above Normal	July	--	502.8	439.1	63.7	12.7%	426.5	76.3	15.2%	389.4	113.4	22.6%
ME 6	32 49 25	2007	Above Normal	August	--	231.0	173.1	58.0	25.1%	161.5	69.5	30.1%	126.3	104.7	45.3%
ME 6	32 49 25	2007	Above Normal	September	Used in Summary Table Analysis	158.6	103.3	55.3	34.9%	92.3	66.3	41.8%	59.2	99.5	62.7%
ME 6	32 49 25	2008	Dry	October	Used in Summary Table Analysis	3,472.0	3,426.2	45.8	1.3%	3,416.9	55.1	1.6%	3,388.8	83.2	2.4%
ME 6	32 49 25	2008	Dry	November	Used in Summary Table Analysis	3,311.5	3,275.7	35.8	1.1%	3,268.4	43.1	1.3%	3,246.3	65.2	2.0%
ME 6	32 49 25	2008	Dry	December	--	23,395.8	23,363.4	32.4	0.1%	23,357.6	38.2	0.2%	23,338.0	57.9	0.2%
ME 6	32 49 25	2008	Dry	January	--	37,788.2	37,759.3	28.9	0.1%	37,753.5	34.7	0.1%	37,735.0	53.2	0.1%
ME 6	32 49 25	2008	Dry	February	--	26,334.5	26,309.0	25.5	0.1%	26,304.4	30.1	0.1%	26,288.2	46.3	0.2%
ME 6	32 49 25	2008	Dry	March	--	11,824.1	11,802.1	22.0	0.2%	11,797.5	26.6	0.2%	11,783.6	40.5	0.3%
ME 6	32 49 25	2008	Dry	April	--	9,041.3	8,996.5	44.8	0.5%	8,987.6	53.7	0.6%	8,960.8	80.6	0.9%
ME 6	32 49 25	2008	Dry	May	--	1,359.6	1,312.4	47.2	3.5%	1,303.2	56.4	4.1%	1,275.7	83.9	6.2%
ME 6	32 49 25	2008	Dry	June	--	445.0	376.9	68.1	15.3%	363.5	81.5	18.3%	323.9	121.1	27.2%
ME 6	32 49 25	2008	Dry	July	--	262.7	194.3	68.5	26.1%	180.7	82.0	31.2%	145.4	117.3	44.7%
ME 6	32 49 25	2008	Dry	August	--	186.4	119.3	67.1	36.0%	106.0	80.4	43.1%	65.8	120.6	64.7%
ME 6	32 49 25	2008	Dry	September	Used in Summary Table Analysis	148.0	82.9	65.0	43.9%	70.0	77.9	52.7%	32.5	115.5	78.0%
ME 6	32 49 25	2009	Critical	October	Used in Summary Table Analysis	933.6	881.4	52.2	5.6%	871.0	62.7	6.7%	839.2	94.5	10.1%
ME 6	32 49 25	2009	Critical	November	Used in Summary Table Analysis	5,578.9	5,537.6	41.3	0.7%	5,529.3	49.7	0.9%	5,501.3	77.7	1.4%
ME 6	32 49 25	2009	Critical	December	--	12,305.6	12,269.7	35.9	0.3%	12,262.7	42.8	0.3%	12,240.7	64.8	0.5%
ME 6	32 49 25	2009	Critical	January	--	8,837.6	8,805.7	31.9	0.4%	8,799.1	38.5	0.4%	8,779.3	58.3	0.7%
ME 6	32 49 25	2009	Critical	February	--	22,732.6	22,703.7	28.9	0.1%	22,697.9	34.7	0.2%	22,680.6	52.1	0.2%
ME 6	32 49 25	2009	Critical	March	--	21,209.5	21,184.0	25.5	0.1%	21,179.4	30.1	0.1%	21,163.2	46.3	0.2%
ME 6	32 49 25	2009	Critical	April	--	10,108.7	10,061.8	46.9	0.5%	10,052.5	56.1	0.6%	10,024.3	84.4	0.8%
ME 6	32 49 25	2009	Critical	May	--	15,629.6	15,572.9	56.7	0.4%	15,561.3	68.3	0.4%	15,527.8	101.9	0.7%
ME 6	32 49 25	2009	Critical	June	--	3,168.4	3,095.6	72.8	2.3%	3,081.6	86.8	2.7%	3,039.5	128.9	4.1%
ME 6	32 49 25	2009	Critical	July	--	1,270.6	1,201.4	69.2	5.4%	1,187.7	82.9	6.5%	1,152.1	118.5	9.3%
ME 6	32 49 25	2009	Critical	August	--	676.9	609.3	67.6	10.0%	595.8	81.0	12.0%	558.1	118.8	17.6%
ME 6	32 49 25	2009	Critical	September	Used in Summary Table Analysis	397.5	336.2	61.2	15.4%	324.1	73.4	18.5%	288.7	108.8	27.4%
ME 6	32 49 25	2010	Below Normal	October	Used in Summary Table Analysis	6,100.1	6,047.2	52.9	0.9%	6,036.6	63.5	1.0%	6,003.6	96.5	1.6%
ME 6	32 49 25	2010	Below Normal	November	Used in Summary Table Analysis	8,337.2	8,294.4	42.7	0.5%	8,285.9	51.3	0.6%	8,257.2	80.0	1.0%
ME 6	32 49 25	2010	Below Normal	December	--	12,449.1	12,412.0	37.0	0.3%	12,405.1	44.0	0.4%	12,381.9	67.1	0.5%
ME 6	32 49 25	2010	Below Normal	January	--	36,547.5	36,513.9	33.6	0.1%	36,508.1	39.4	0.1%	36,487.3	60.2	0.2%
ME 6	32 49 25	2010	Below Normal	February	--	27,334.5	27,305.6	28.9	0.1%	27,299.8	34.7	0.1%	27,281.3	53.2	0.2%
ME 6	32 49 25	2010	Below Normal	March	--	28,915.5	28,887.7	27.8	0.1%	28,883.1	32.4	0.1%	28,865.7	49.8	0.2%
ME 6	32 49 25	2010	Below Normal	April	--	40,157.4	40,131.9	25.5	0.1%	40,127.3	30.1	0.1%	40,111.1	46.3	0.1%
ME 6	32 49 25	2010	Below Normal	May	--	20,380.8	20,332.2	48.6	0.2%	20,322.9	57.9	0.3%	20,294.0	86.8	0.4%
ME 6	32 49 25	2010	Below Normal	June	--	9,439.6	9,370.4	69.2	0.7%	9,356.7	82.9	0.9%	9,316.2	123.4	1.3%
ME 6	32 49 25	2010	Below Normal	July	--	1,462.0	1,398.4	63.7	4.4%	1,386.0	76.0	5.2%	1,349.3	112.7	7.7%
ME 6	32 49 25	2010	Below Normal	August	--	578.6	519.6	59.1	10.2%	507.9	70.7	12.2%	473.1	105.6	18.2%
ME 6	32 49 25	2010	Below Normal	September	Used in Summary Table Analysis	661.1	604.3	56.8	8.6%	592.9	68.2	10.3%	558.9	102.2	15.5%
ME 6	32 49 25	2011	Wet	October	Used in Summary Table Analysis	9,705.3	9,661.6	43.8	0.5%	9,652.7	52.7	0.5%	9,625.9	79.4	0.8%
ME 6	32 49 25	2011	Wet	November	Used in Summary Table Analysis	14,300.9	14,266.2	34.7	0.2%	14,259.3	41.7	0.3%	14,237.3	63.7	0.4%
ME 6	32 49 25	2011	Wet	December	--	34,028.9	33,998.8	30.1	0.1%	33,991.9	37.0	0.1%	33,972.2	56.7	0.2%
ME 6	32 49 25	2011	Wet	January	--	14,218.8	14,192.1	26.6	0.2%	14,186.3	32.4	0.2%	14,170.1	48.6	0.3%
ME 6	32 49 25	2011	Wet	February	--	20,829.9	20,805.6	24.3	0.1%	20,799.8	30.1	0.1%	20,784.7	45.1	0.2%
ME 6	32 49 25	2011	Wet	March	--	52,222.2	52,197.9	24.3	0.0%	52,193.3	28.9	0.1%	52,178.2	44.0	0.1%
ME 6	32 49 25	2011	Wet	April	--	24,875.0	24,851.9	23.1	0.1%	24,847.2	27.8	0.1%	24,833.3	41.7	0.2%
ME 6	32 49 25	2011	Wet	May	--	11,419.6	11,374.1	45.5	0.4%	11,364.9	54.6	0.5%	11,337.7	81.8	0.7%
ME 6	32 49 25	2011	Wet	June	--	7,093.4	7,026.2	67.2	0.9%	7,012.8	80.6	1.1%	6,973.6	119.8	1.7%
ME 6	32 49 25	2011	Wet	July	--	1,834.0	1,766.4	67.6	3.7%	1,753.0	81.0	4.4%	1,714.7	119.3	6.5%
ME 6	32 49 25	2011	Wet	August	--	785.2	727.0	58.2	7.4%	715.5	69.7	8.9%	680.9	104.3	13.3%
ME 6	32 49 25	2011	Wet	September	Used in Summary Table Analysis	441.8	388.4	53.4	12.1%	377.7	64.1	14.5%	345.9	95.9	21.7%
ME 6	32 49 25	2012	Below Normal	October	Used in Summary Table Analysis	4,579.5	4,535.1	44.4	1.0%	4,526.0	53.5	1.2%	4,498.7	80.8	1.8%
ME 6	32 49 25	2012	Below Normal	November	Used in Summary Table Analysis	8,313.4	8,277.8	35.6	0.4%	8,270.5	42.9	0.5%	8,248.4	65.0	0.8%
ME 6	32 49 25	2012	Below Normal	December	--	5,217.5	5,186.9	30.6	0.6%	5,180.7	36.8	0.7%	5,161.7	55.8	1.1%
ME 6	32 49 25	2012	Below Normal	January	--	20,329.9	20,302.1	27.8	0.1%	20,296.3	33.6	0.2%	20,278.9	50.9	0.3%
ME 6	32 49 25	2012	Below Normal	February	--	18,275.5	18,250.0	25.5	0.1%	18,245.4	30.1	0.2%	18,229.2	46.3	0.3%
ME 6	32 49 25	2012	Below Normal	March	--	45,677.1	45,651.6	25.5	0.1%	45,647.0	30.1	0.1%	45,631.9	45.1	0.1%
ME 6	32 49 25	2012	Below Normal	April	--	26,951.4	26,928.2	23.1	0.1%	26,923.6	27.8	0.1%	26,909.7	41.7	0.2%
ME 6	32 49 25	2012	Below Normal	May	--	7,506.0	7,460.9	45.1	0.6%	7,451.9	54.2	0.7%	7,425.0	81.0	1.1%
ME 6	32 49 25	2012	Below Normal	June	--	5,552.2	5,483.9	68.3	1.2%	5,470.5	81.7	1.5%	5,430.8	121.4	2.2%
ME 6	32 49 25	2012	Below Normal	July	--	2,247.1	2,181.6	65.5	2.9%	2,168.6	78.5	3.5%	2,130.0	117.1	5.2%
ME 6	32 49 25	2012	Below Normal	August	--	395.0	341.6	53.4	13.5%	331.0	64.0	16.2%	299.2	95.8	24.3%
ME 6	32 49 25	2012	Below Normal	September	Used in Summary Table Analysis	257.1	209.1	48.0	18.7%	199.5	57.5	22.4%	170.9	86.2	33.5%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 49 25	2013	Below Normal	October	Used in Summary Table Analysis	1,937.5	1,895.1	42.4	2.2%	1,886.6	50.9	2.6%	1,861.0	76.5	3.9%
ME 6	32 49 25	2013	Below Normal	November	Used in Summary Table Analysis	14,822.9	14,788.2	34.7	0.2%	14,781.3	41.7	0.3%	14,760.4	62.5	0.4%
ME 6	32 49 25	2013	Below Normal	December	--	60,296.3	60,265.0	31.3	0.1%	60,258.1	38.2	0.1%	60,239.6	56.7	0.1%
ME 6	32 49 25	2013	Below Normal	January	--	22,290.5	22,265.0	25.5	0.1%	22,259.3	31.3	0.1%	22,243.1	47.5	0.2%
ME 6	32 49 25	2013	Below Normal	February	--	8,888.4	8,863.8	24.7	0.3%	8,858.7	29.7	0.3%	8,843.6	44.8	0.5%
ME 6	32 49 25	2013	Below Normal	March	--	10,395.0	10,371.3	23.7	0.2%	10,366.4	28.6	0.3%	10,352.0	43.1	0.4%
ME 6	32 49 25	2013	Below Normal	April	--	8,311.8	8,268.8	43.1	0.5%	8,260.2	51.6	0.6%	8,234.5	77.3	0.9%
ME 6	32 49 25	2013	Below Normal	May	--	4,457.3	4,405.3	52.0	1.2%	4,394.9	62.4	1.4%	4,363.9	93.4	2.1%
ME 6	32 49 25	2013	Below Normal	June	--	2,120.5	2,058.2	62.3	2.9%	2,045.9	74.5	3.5%	2,009.4	111.1	5.2%
ME 6	32 49 25	2013	Below Normal	July	--	723.8	662.8	60.9	8.4%	650.8	73.0	10.1%	615.6	108.2	14.9%
ME 6	32 49 25	2013	Below Normal	August	--	347.4	289.6	57.8	16.6%	278.1	69.3	20.0%	243.0	104.4	30.1%
ME 6	32 49 25	2013	Below Normal	September	Used in Summary Table Analysis	4,825.1	4,764.9	60.2	1.2%	4,752.9	72.2	1.5%	4,716.9	108.2	2.2%
ME 6	32 49 25	2014	Critical	October	Used in Summary Table Analysis	283.9	239.2	44.7	15.7%	230.2	53.6	18.9%	203.9	80.0	28.2%
ME 6	32 49 25	2014	Critical	November	Used in Summary Table Analysis	1,559.6	1,523.5	36.1	2.3%	1,516.2	43.4	2.8%	1,494.0	65.6	4.2%
ME 6	32 49 25	2014	Critical	December	--	1,603.2	1,571.6	31.6	2.0%	1,565.3	38.0	2.4%	1,545.6	57.6	3.6%
ME 6	32 49 25	2014	Critical	January	--	2,843.8	2,815.5	28.2	1.0%	2,809.8	33.9	1.2%	2,792.1	51.6	1.8%
ME 6	32 49 25	2014	Critical	February	--	15,814.8	15,789.4	25.5	0.2%	15,784.7	30.1	0.2%	15,767.4	47.5	0.3%
ME 6	32 49 25	2014	Critical	March	--	31,566.0	31,541.7	24.3	0.1%	31,537.0	28.9	0.1%	31,520.8	45.1	0.1%
ME 6	32 49 25	2014	Critical	April	--	13,018.5	12,972.2	46.3	0.4%	12,963.0	55.6	0.4%	12,935.2	83.3	0.6%
ME 6	32 49 25	2014	Critical	May	--	5,206.3	5,151.3	55.0	1.1%	5,140.3	66.0	1.3%	5,107.3	99.0	1.9%
ME 6	32 49 25	2014	Critical	June	--	1,206.5	1,132.1	74.4	6.2%	1,117.5	89.0	7.4%	1,075.3	131.1	10.9%
ME 6	32 49 25	2014	Critical	July	--	552.0	482.1	70.0	12.7%	468.2	83.9	15.2%	431.5	120.5	21.8%
ME 6	32 49 25	2014	Critical	August	--	355.3	288.0	67.3	18.9%	274.5	80.8	22.8%	236.3	119.1	33.5%
ME 6	32 49 25	2014	Critical	September	Used in Summary Table Analysis	2,593.2	2,526.7	66.4	2.6%	2,513.5	79.6	3.1%	2,474.2	119.0	4.6%
ME 6	32 49 25	2015	Dry	October	Used in Summary Table Analysis	11,431.7	11,379.2	52.5	0.5%	11,368.8	63.0	0.6%	11,337.2	94.6	0.8%
ME 6	32 49 25	2015	Dry	November	Used in Summary Table Analysis	9,111.8	9,071.8	40.0	0.4%	9,063.7	48.1	0.5%	9,035.9	75.9	0.8%
ME 6	32 49 25	2015	Dry	December	--	32,887.7	32,854.2	33.6	0.1%	32,846.1	41.7	0.1%	32,824.1	63.7	0.2%
ME 6	32 49 25	2015	Dry	January	--	14,619.2	14,589.1	30.1	0.2%	14,582.2	37.0	0.3%	14,562.5	56.7	0.4%
ME 6	32 49 25	2015	Dry	February	--	27,341.4	27,313.7	27.8	0.1%	27,309.0	32.4	0.1%	27,291.7	49.8	0.2%
ME 6	32 49 25	2015	Dry	March	--	11,597.2	11,572.7	24.5	0.2%	11,567.7	29.5	0.3%	11,552.4	44.8	0.4%
ME 6	32 49 25	2015	Dry	April	--	8,457.3	8,411.2	46.1	0.5%	8,402.0	55.3	0.7%	8,374.3	83.0	1.0%
ME 6	32 49 25	2015	Dry	May	--	1,512.3	1,458.1	54.2	3.6%	1,447.3	64.9	4.3%	1,415.9	96.4	6.4%
ME 6	32 49 25	2015	Dry	June	--	657.9	588.7	69.2	10.5%	575.0	82.9	12.6%	534.7	123.2	18.7%
ME 6	32 49 25	2015	Dry	July	--	274.3	205.2	69.2	25.2%	191.4	82.9	30.2%	155.7	118.6	43.2%
ME 6	32 49 25	2015	Dry	August	--	173.3	105.8	67.5	38.9%	92.3	81.0	46.7%	54.8	118.6	68.4%
ME 6	32 49 25	2015	Dry	September	Used in Summary Table Analysis	126.8	62.9	63.8	50.4%	49.8	77.0	60.7%	11.8	115.0	90.7%
ME 6	32 49 25	2016	Above Normal	October	Used in Summary Table Analysis	91.8	37.8	54.0	58.8%	27.4	64.4	70.2%	0.8	91.0	99.1%
ME 6	32 49 25	2016	Above Normal	November	Used in Summary Table Analysis	3,930.0	3,887.6	42.4	1.1%	3,878.9	51.0	1.3%	3,848.1	81.8	2.1%
ME 6	32 49 25	2016	Above Normal	December	--	36,937.5	36,899.3	38.2	0.1%	36,892.4	45.1	0.1%	36,868.1	69.4	0.2%
ME 6	32 49 25	2016	Above Normal	January	--	57,648.1	57,613.4	34.7	0.1%	57,606.5	41.7	0.1%	57,585.6	62.5	0.1%
ME 6	32 49 25	2016	Above Normal	February	--	24,322.9	24,295.1	27.8	0.1%	24,289.4	33.6	0.1%	24,272.0	50.9	0.2%
ME 6	32 49 25	2016	Above Normal	March	--	41,931.7	41,905.1	26.6	0.1%	41,899.3	32.4	0.1%	41,883.1	48.6	0.1%
ME 6	32 49 25	2016	Above Normal	April	--	18,581.0	18,556.7	24.3	0.1%	18,552.1	28.9	0.2%	18,537.0	44.0	0.2%
ME 6	32 49 25	2016	Above Normal	May	--	5,231.6	5,202.5	29.1	0.6%	5,196.6	35.0	0.7%	5,178.7	52.9	1.0%
ME 6	32 49 25	2016	Above Normal	June	--	1,517.1	1,463.8	53.4	3.5%	1,454.3	62.8	4.1%	1,426.3	90.9	6.0%
ME 6	32 49 25	2016	Above Normal	July	--	831.3	770.9	60.5	7.3%	758.9	72.5	8.7%	723.3	108.0	13.0%
ME 6	32 49 25	2016	Above Normal	August	--	500.3	440.4	59.9	12.0%	428.5	71.8	14.4%	392.9	107.3	21.5%
ME 6	32 49 25	2016	Above Normal	September	Used in Summary Table Analysis	336.2	279.8	56.4	16.8%	268.3	67.9	20.2%	234.1	102.1	30.4%
ME 6	32 49 25	2017	Wet	October	Used in Summary Table Analysis	18,409.7	18,363.4	46.3	0.3%	18,354.2	55.6	0.3%	18,327.5	82.2	0.4%
ME 6	32 49 25	2017	Wet	November	Used in Summary Table Analysis	18,960.6	18,925.9	34.7	0.2%	18,917.8	42.8	0.2%	18,895.8	64.8	0.3%
ME 6	32 49 25	2017	Wet	December	--	24,324.1	24,294.0	30.1	0.1%	24,287.0	37.0	0.2%	24,268.5	55.6	0.2%
ME 6	32 49 25	2017	Wet	January	--	107,520.8	107,491.9	28.9	0.0%	107,486.1	34.7	0.0%	107,468.8	52.1	0.0%
ME 6	32 49 25	2017	Wet	February	--	82,200.2	82,174.8	25.5	0.0%	82,169.0	31.3	0.0%	82,152.8	47.5	0.1%
ME 6	32 49 25	2017	Wet	March	--	27,388.9	27,364.6	24.3	0.1%	27,360.0	28.9	0.1%	27,344.9	44.0	0.2%
ME 6	32 49 25	2017	Wet	April	--	23,059.0	23,037.0	22.0	0.1%	23,032.4	26.6	0.1%	23,019.7	39.4	0.2%
ME 6	32 49 25	2017	Wet	May	--	6,278.5	6,249.7	28.8	0.5%	6,243.9	34.6	0.6%	6,226.4	52.1	0.8%
ME 6	32 49 25	2017	Wet	June	--	2,133.4	2,078.6	54.9	2.6%	2,067.8	65.6	3.1%	2,035.8	97.7	4.6%
ME 6	32 49 25	2017	Wet	July	--	945.2	884.8	60.4	6.4%	872.9	72.3	7.7%	837.7	107.5	11.4%
ME 6	32 49 25	2017	Wet	August	--	517.3	458.0	59.3	11.5%	446.2	71.1	13.7%	411.1	106.2	20.5%
ME 6	32 49 25	2017	Wet	September	Used in Summary Table Analysis	332.0	276.6	55.4	16.7%	265.5	66.5	20.0%	232.3	99.7	30.0%
ME 6	32 49 25	2018	Above Normal	October	Used in Summary Table Analysis	284.7	240.0	44.6	15.7%	231.0	53.6	18.8%	204.0	80.6	28.3%
ME 6	32 49 25	2018	Above Normal	November	Used in Summary Table Analysis	10,931.1	10,895.5	35.6	0.3%	10,888.3	42.8	0.4%	10,866.4	64.7	0.6%
ME 6	32 49 25	2018	Above Normal	December	--	5,460.9	5,430.7	30.2	0.6%	5,424.4	36.5	0.7%	5,405.8	55.1	1.0%
ME 6	32 49 25	2018	Above Normal	January	--	18,019.7	17,991.9	27.8	0.2%	17,986.1	33.6	0.2%	17,969.9	49.8	0.3%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 49 25	2018	Above Normal	February	--	7,610.5	7,586.3	24.2	0.3%	7,581.4	29.2	0.4%	7,566.3	44.2	0.6%
ME 6	32 49 25	2018	Above Normal	March	--	20,854.2	20,831.0	23.1	0.1%	20,826.4	27.8	0.1%	20,812.5	41.7	0.2%
ME 6	32 49 25	2018	Above Normal	April	--	32,381.9	32,360.0	22.0	0.1%	32,356.5	25.5	0.1%	32,343.8	38.2	0.1%
ME 6	32 49 25	2018	Above Normal	May	--	6,996.2	6,953.2	42.9	0.6%	6,944.7	51.5	0.7%	6,918.8	77.4	1.1%
ME 6	32 49 25	2018	Above Normal	June	--	1,922.3	1,866.8	55.6	2.9%	1,855.8	66.6	3.5%	1,823.5	98.8	5.1%
ME 6	32 49 25	2018	Above Normal	July	--	790.6	729.5	61.1	7.7%	717.3	73.2	9.3%	681.3	109.3	13.8%
ME 6	32 49 25	2018	Above Normal	August	--	451.8	394.3	57.4	12.7%	382.8	68.9	15.3%	348.5	103.3	22.9%
ME 6	32 49 25	2018	Above Normal	September	Used in Summary Table Analysis	308.6	253.0	55.5	18.0%	241.9	66.7	21.6%	208.6	100.0	32.4%
ME 6	32 49 25	2019	Below Normal	October	Used in Summary Table Analysis	214.9	170.8	44.1	20.5%	161.9	53.1	24.7%	135.0	79.9	37.2%
ME 6	32 49 25	2019	Below Normal	November	Used in Summary Table Analysis	6,716.0	6,680.0	36.0	0.5%	6,672.7	43.3	0.6%	6,650.7	65.3	1.0%
ME 6	32 49 25	2019	Below Normal	December	--	14,820.6	14,790.5	30.1	0.2%	14,783.6	37.0	0.2%	14,765.0	55.6	0.4%
ME 6	32 49 25	2019	Below Normal	January	--	35,532.4	35,505.8	26.6	0.1%	35,498.8	33.6	0.1%	35,482.6	49.8	0.1%
ME 6	32 49 25	2019	Below Normal	February	--	142,256.9	142,233.8	23.1	0.0%	142,222.2	34.7	0.0%	142,210.6	46.3	0.0%
ME 6	32 49 25	2019	Below Normal	March	--	42,491.9	42,469.9	22.0	0.1%	42,465.3	26.6	0.1%	42,451.4	40.5	0.1%
ME 6	32 49 25	2019	Below Normal	April	--	15,321.8	15,299.8	22.0	0.1%	15,296.3	25.5	0.2%	15,282.4	39.4	0.3%
ME 6	32 49 25	2019	Below Normal	May	--	17,179.4	17,133.1	46.3	0.3%	17,123.8	55.6	0.3%	17,097.2	82.2	0.5%
ME 6	32 49 25	2019	Below Normal	June	--	4,245.1	4,186.7	58.4	1.4%	4,175.5	69.7	1.6%	4,142.5	102.7	2.4%
ME 6	32 49 25	2019	Below Normal	July	--	1,372.3	1,311.0	61.3	4.5%	1,298.8	73.5	5.4%	1,263.0	109.4	8.0%
ME 6	32 49 25	2019	Below Normal	August	--	606.9	548.1	58.8	9.7%	536.4	70.5	11.6%	501.7	105.2	17.3%
ME 6	32 49 25	2019	Below Normal	September	Used in Summary Table Analysis	471.7	416.5	55.3	11.7%	405.4	66.3	14.1%	372.2	99.5	21.1%
ME 6	32 49 25	2020	Dry	October	Used in Summary Table Analysis	363.1	320.5	42.5	11.7%	311.9	51.2	14.1%	286.0	77.0	21.2%
ME 6	32 49 25	2020	Dry	November	Used in Summary Table Analysis	332.4	298.5	33.9	10.2%	291.6	40.8	12.3%	270.9	61.5	18.5%
ME 6	32 49 25	2020	Dry	December	--	13,511.6	13,480.3	31.3	0.2%	13,474.5	37.0	0.3%	13,454.9	56.7	0.4%
ME 6	32 49 25	2020	Dry	January	--	22,508.1	22,480.3	27.8	0.1%	22,474.5	33.6	0.1%	22,457.2	50.9	0.2%
ME 6	32 49 25	2020	Dry	February	--	7,423.8	7,399.0	24.9	0.3%	7,393.9	30.0	0.4%	7,378.5	45.4	0.6%
ME 6	32 49 25	2020	Dry	March	--	7,278.0	7,254.7	23.3	0.3%	7,249.9	28.1	0.4%	7,235.5	42.5	0.6%
ME 6	32 49 25	2020	Dry	April	--	5,520.0	5,474.2	45.8	0.8%	5,464.9	55.1	1.0%	5,437.6	82.4	1.5%
ME 6	32 49 25	2020	Dry	May	--	7,424.1	7,369.1	55.0	0.7%	7,358.1	66.0	0.9%	7,325.2	98.8	1.3%
ME 6	32 49 25	2020	Dry	June	--	2,107.8	2,038.1	69.7	3.3%	2,024.5	83.2	3.9%	1,984.7	123.0	5.8%
ME 6	32 49 25	2020	Dry	July	--	803.6	732.1	71.5	8.9%	718.0	85.6	10.7%	681.2	122.4	15.2%
ME 6	32 49 25	2020	Dry	August	--	406.7	335.8	70.8	17.4%	321.7	85.0	20.9%	282.5	124.2	30.5%
ME 6	32 49 25	2020	Dry	September	Used in Summary Table Analysis	255.9	188.9	67.0	26.2%	175.2	80.7	31.5%	135.4	120.5	47.1%
ME 6	32 48 26	2000	Above Normal	October	Used in Summary Table Analysis	829.1	784.7	44.4	5.4%	775.7	53.4	6.4%	748.8	80.3	9.7%
ME 6	32 48 26	2000	Above Normal	November	Used in Summary Table Analysis	12,306.7	12,270.8	35.9	0.3%	12,263.9	42.8	0.3%	12,241.9	64.8	0.5%
ME 6	32 48 26	2000	Above Normal	December	--	10,911.5	10,880.8	30.7	0.3%	10,874.5	36.9	0.3%	10,855.7	55.8	0.5%
ME 6	32 48 26	2000	Above Normal	January	--	28,890.0	28,862.3	27.8	0.1%	28,856.5	33.6	0.1%	28,839.1	50.9	0.2%
ME 6	32 48 26	2000	Above Normal	February	--	37,246.5	37,221.1	25.5	0.1%	37,216.4	30.1	0.1%	37,200.2	46.3	0.1%
ME 6	32 48 26	2000	Above Normal	March	--	18,380.8	18,357.6	23.1	0.1%	18,353.0	27.8	0.2%	18,338.0	42.8	0.2%
ME 6	32 48 26	2000	Above Normal	April	--	12,364.6	12,342.6	22.0	0.2%	12,338.0	26.6	0.2%	12,324.1	40.5	0.3%
ME 6	32 48 26	2000	Above Normal	May	--	7,136.3	7,091.7	44.7	0.6%	7,082.6	53.7	0.8%	7,056.0	80.3	1.1%
ME 6	32 48 26	2000	Above Normal	June	--	2,628.8	2,562.8	66.0	2.5%	2,549.7	79.2	3.0%	2,511.0	117.8	4.5%
ME 6	32 48 26	2000	Above Normal	July	--	1,001.2	940.3	60.9	6.1%	928.3	72.9	7.3%	892.5	108.7	10.9%
ME 6	32 48 26	2000	Above Normal	August	--	531.7	474.0	57.7	10.9%	462.5	69.2	13.0%	428.1	103.6	19.5%
ME 6	32 48 26	2000	Above Normal	September	Used in Summary Table Analysis	304.1	252.2	51.8	17.0%	241.9	62.2	20.5%	210.8	93.3	30.7%
ME 6	32 48 26	2001	Dry	October	Used in Summary Table Analysis	3,860.6	3,817.0	43.6	1.1%	3,808.1	52.5	1.4%	3,781.6	79.1	2.0%
ME 6	32 48 26	2001	Dry	November	Used in Summary Table Analysis	6,196.2	6,160.9	35.3	0.6%	6,153.8	42.4	0.7%	6,132.2	64.0	1.0%
ME 6	32 48 26	2001	Dry	December	--	8,910.8	8,880.3	30.4	0.3%	8,874.1	36.7	0.4%	8,855.4	55.3	0.6%
ME 6	32 48 26	2001	Dry	January	--	12,927.1	12,899.3	27.8	0.2%	12,894.7	32.4	0.3%	12,877.3	49.8	0.4%
ME 6	32 48 26	2001	Dry	February	--	17,557.9	17,533.6	24.3	0.1%	17,528.9	28.9	0.2%	17,512.7	45.1	0.3%
ME 6	32 48 26	2001	Dry	March	--	12,341.4	12,319.4	22.0	0.2%	12,313.7	27.8	0.2%	12,299.8	41.7	0.3%
ME 6	32 48 26	2001	Dry	April	--	11,019.2	10,973.3	45.9	0.4%	10,964.1	55.1	0.5%	10,936.7	82.5	0.7%
ME 6	32 48 26	2001	Dry	May	--	2,639.6	2,585.3	54.3	2.1%	2,574.5	65.0	2.5%	2,542.1	97.5	3.7%
ME 6	32 48 26	2001	Dry	June	--	2,679.3	2,605.7	73.6	2.7%	2,591.2	88.1	3.3%	2,548.8	130.4	4.9%
ME 6	32 48 26	2001	Dry	July	--	723.5	653.0	70.5	9.7%	639.0	84.5	11.7%	602.4	121.1	16.7%
ME 6	32 48 26	2001	Dry	August	--	180.0	110.9	69.1	38.4%	97.1	82.9	46.1%	58.4	121.7	67.6%
ME 6	32 48 26	2001	Dry	September	Used in Summary Table Analysis	103.4	40.9	62.5	60.5%	28.4	75.0	72.5%	0.8	102.6	99.2%
ME 6	32 48 26	2002	Below Normal	October	Used in Summary Table Analysis	274.0	220.7	53.3	19.4%	209.9	64.1	23.4%	177.8	96.2	35.1%
ME 6	32 48 26	2002	Below Normal	November	Used in Summary Table Analysis	12,121.5	12,078.7	42.8	0.4%	12,070.6	50.9	0.4%	12,041.7	79.9	0.7%
ME 6	32 48 26	2002	Below Normal	December	--	35,965.3	35,927.1	38.2	0.1%	35,920.1	45.1	0.1%	35,895.8	69.4	0.2%
ME 6	32 48 26	2002	Below Normal	January	--	31,055.6	31,023.1	32.4	0.1%	31,016.2	39.4	0.1%	30,996.5	59.0	0.2%
ME 6	32 48 26	2002	Below Normal	February	--	24,784.7	24,754.6	30.1	0.1%	24,748.8	35.9	0.1%	24,730.3	54.4	0.2%
ME 6	32 48 26	2002	Below Normal	March	--	17,863.4	17,835.6	27.8	0.2%	17,829.9	33.6	0.2%	17,812.5	50.9	0.3%
ME 6	32 48 26	2002	Below Normal	April	--	9,957.8	9,911.3	46.4	0.5%	9,902.1	55.7	0.6%	9,874.3	83.4	0.8%
ME 6	32 48 26	2002	Below Normal	May	--	3,332.3	3,277.7	54.6	1.6%	3,266.8	65.5	2.0%	3,234.1	98.1	2.9%

Table A.1

**Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency**

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 48 26	2002	Below Normal	June	--	861.1	799.4	61.7	7.2%	787.2	73.9	8.6%	751.0	110.1	12.8%
ME 6	32 48 26	2002	Below Normal	July	--	370.1	306.6	63.5	17.2%	294.0	76.1	20.6%	257.2	112.9	30.5%
ME 6	32 48 26	2002	Below Normal	August	--	236.0	175.7	60.3	25.6%	163.7	72.3	30.7%	127.2	108.8	46.1%
ME 6	32 48 26	2002	Below Normal	September	Used in Summary Table Analysis	172.4	114.9	57.5	33.3%	103.5	68.9	40.0%	68.3	104.1	60.4%
ME 6	32 48 26	2003	Wet	October	Used in Summary Table Analysis	137.2	89.2	48.0	35.0%	79.6	57.6	42.0%	50.5	86.7	63.2%
ME 6	32 48 26	2003	Wet	November	Used in Summary Table Analysis	906.9	867.8	39.1	4.3%	859.8	47.1	5.2%	835.9	71.0	7.8%
ME 6	32 48 26	2003	Wet	December	--	57,482.6	57,447.9	34.7	0.1%	57,441.0	41.7	0.1%	57,419.0	63.7	0.1%
ME 6	32 48 26	2003	Wet	January	--	31,666.7	31,635.4	31.3	0.1%	31,629.6	37.0	0.1%	31,610.0	56.7	0.2%
ME 6	32 48 26	2003	Wet	February	--	20,425.9	20,398.1	27.8	0.1%	20,392.4	33.6	0.2%	20,376.2	49.8	0.2%
ME 6	32 48 26	2003	Wet	March	--	24,145.8	24,120.4	25.5	0.1%	24,114.6	31.3	0.1%	24,099.5	46.3	0.2%
ME 6	32 48 26	2003	Wet	April	--	43,188.7	43,164.4	24.3	0.1%	43,158.6	30.1	0.1%	43,143.5	45.1	0.1%
ME 6	32 48 26	2003	Wet	May	--	12,260.4	12,214.1	46.3	0.4%	12,204.9	55.6	0.5%	12,177.1	83.3	0.7%
ME 6	32 48 26	2003	Wet	June	--	3,176.3	3,117.7	58.6	1.8%	3,106.3	70.0	2.2%	3,072.3	103.9	3.3%
ME 6	32 48 26	2003	Wet	July	--	1,485.3	1,422.5	62.8	4.2%	1,410.1	75.2	5.1%	1,373.1	112.2	7.6%
ME 6	32 48 26	2003	Wet	August	--	770.7	708.9	61.9	8.0%	696.1	74.6	9.7%	656.7	114.0	14.8%
ME 6	32 48 26	2003	Wet	September	Used in Summary Table Analysis	467.8	414.6	53.1	11.4%	404.0	63.8	13.6%	371.0	96.8	20.7%
ME 6	32 48 26	2004	Wet	October	Used in Summary Table Analysis	334.4	289.8	44.7	13.4%	280.8	53.7	16.1%	253.6	80.9	24.2%
ME 6	32 48 26	2004	Wet	November	Used in Summary Table Analysis	5,881.6	5,844.8	36.8	0.6%	5,837.4	44.2	0.8%	5,814.7	66.9	1.1%
ME 6	32 48 26	2004	Wet	December	--	36,656.3	36,622.7	33.6	0.1%	36,616.9	39.4	0.1%	36,596.1	60.2	0.2%
ME 6	32 48 26	2004	Wet	January	--	31,707.2	31,679.4	27.8	0.1%	31,673.6	33.6	0.1%	31,656.3	50.9	0.2%
ME 6	32 48 26	2004	Wet	February	--	38,460.6	38,435.2	25.5	0.1%	38,429.4	31.3	0.1%	38,413.2	47.5	0.1%
ME 6	32 48 26	2004	Wet	March	--	16,563.7	16,539.4	24.3	0.1%	16,534.7	28.9	0.2%	16,520.8	42.8	0.3%
ME 6	32 48 26	2004	Wet	April	--	9,480.7	9,458.2	22.5	0.2%	9,453.6	27.1	0.3%	9,439.8	40.9	0.4%
ME 6	32 48 26	2004	Wet	May	--	3,444.8	3,399.8	45.0	1.3%	3,390.7	54.1	1.6%	3,364.0	80.8	2.3%
ME 6	32 48 26	2004	Wet	June	--	698.8	642.4	56.4	8.1%	631.4	67.4	9.7%	598.5	100.3	14.4%
ME 6	32 48 26	2004	Wet	July	--	365.3	303.7	61.6	16.9%	291.5	73.8	20.2%	255.2	110.1	30.1%
ME 6	32 48 26	2004	Wet	August	--	233.9	175.3	58.6	25.0%	163.6	70.2	30.0%	128.6	105.2	45.0%
ME 6	32 48 26	2004	Wet	September	Used in Summary Table Analysis	170.3	114.1	56.2	33.0%	102.9	67.4	39.6%	69.2	101.1	59.4%
ME 6	32 48 26	2005	Above Normal	October	Used in Summary Table Analysis	7,784.1	7,738.4	45.7	0.6%	7,729.3	54.9	0.7%	7,701.5	82.6	1.1%
ME 6	32 48 26	2005	Above Normal	November	Used in Summary Table Analysis	2,272.5	2,236.5	36.0	1.6%	2,229.2	43.3	1.9%	2,207.2	65.3	2.9%
ME 6	32 48 26	2005	Above Normal	December	--	21,317.1	21,284.7	32.4	0.2%	21,278.9	38.2	0.2%	21,259.3	57.9	0.3%
ME 6	32 48 26	2005	Above Normal	January	--	22,612.3	22,583.3	28.9	0.1%	22,578.7	33.6	0.1%	22,561.3	50.9	0.2%
ME 6	32 48 26	2005	Above Normal	February	--	14,052.1	14,027.8	24.3	0.2%	14,023.1	28.9	0.2%	14,006.9	45.1	0.3%
ME 6	32 48 26	2005	Above Normal	March	--	28,740.7	28,717.6	23.1	0.1%	28,711.8	28.9	0.1%	28,697.9	42.8	0.1%
ME 6	32 48 26	2005	Above Normal	April	--	21,559.0	21,535.9	23.1	0.1%	21,532.4	26.6	0.1%	21,518.5	40.5	0.2%
ME 6	32 48 26	2005	Above Normal	May	--	19,706.0	19,659.7	46.3	0.2%	19,650.5	55.6	0.3%	19,623.8	82.2	0.4%
ME 6	32 48 26	2005	Above Normal	June	--	16,032.4	15,964.1	68.3	0.4%	15,951.4	81.0	0.5%	15,912.0	120.4	0.8%
ME 6	32 48 26	2005	Above Normal	July	--	2,867.2	2,804.1	63.2	2.2%	2,792.1	75.1	2.6%	2,756.3	111.0	3.9%
ME 6	32 48 26	2005	Above Normal	August	--	993.6	935.7	57.9	5.8%	924.2	69.3	7.0%	890.0	103.5	10.4%
ME 6	32 48 26	2005	Above Normal	September	Used in Summary Table Analysis	535.0	483.1	51.9	9.7%	472.8	62.2	11.6%	441.8	93.2	17.4%
ME 6	32 48 26	2006	Wet	October	Used in Summary Table Analysis	646.2	603.4	42.8	6.6%	594.8	51.4	8.0%	568.7	77.5	12.0%
ME 6	32 48 26	2006	Wet	November	Used in Summary Table Analysis	9,439.7	9,405.4	34.3	0.4%	9,398.5	41.2	0.4%	9,377.3	62.4	0.7%
ME 6	32 48 26	2006	Wet	December	--	43,934.0	43,903.9	30.1	0.1%	43,897.0	37.0	0.1%	43,877.3	56.7	0.1%
ME 6	32 48 26	2006	Wet	January	--	46,691.0	46,663.2	27.8	0.1%	46,657.4	33.6	0.1%	46,640.0	50.9	0.1%
ME 6	32 48 26	2006	Wet	February	--	26,787.0	26,762.7	24.3	0.1%	26,758.1	28.9	0.1%	26,743.1	44.0	0.2%
ME 6	32 48 26	2006	Wet	March	--	47,469.9	47,446.8	23.1	0.0%	47,442.1	27.8	0.1%	47,427.1	42.8	0.1%
ME 6	32 48 26	2006	Wet	April	--	30,550.9	30,528.9	22.0	0.1%	30,525.5	25.5	0.1%	30,512.7	38.2	0.1%
ME 6	32 48 26	2006	Wet	May	--	14,278.9	14,251.2	27.8	0.2%	14,245.4	33.6	0.2%	14,228.0	50.9	0.4%
ME 6	32 48 26	2006	Wet	June	--	3,556.5	3,500.8	55.7	1.6%	3,489.9	66.6	1.9%	3,457.8	98.7	2.8%
ME 6	32 48 26	2006	Wet	July	--	1,291.3	1,231.1	60.2	4.7%	1,219.3	72.0	5.6%	1,184.4	106.9	8.3%
ME 6	32 48 26	2006	Wet	August	--	677.5	618.1	59.3	8.8%	606.4	71.1	10.5%	571.3	106.2	15.7%
ME 6	32 48 26	2006	Wet	September	Used in Summary Table Analysis	437.5	384.7	52.8	12.1%	374.2	63.3	14.5%	342.6	94.8	21.7%
ME 6	32 48 26	2007	Above Normal	October	Used in Summary Table Analysis	284.2	240.4	43.8	15.4%	231.6	52.6	18.5%	205.0	79.2	27.9%
ME 6	32 48 26	2007	Above Normal	November	Used in Summary Table Analysis	8,784.6	8,748.5	36.1	0.4%	8,741.2	43.4	0.5%	8,719.1	65.5	0.7%
ME 6	32 48 26	2007	Above Normal	December	--	20,648.1	20,616.9	31.3	0.2%	20,610.0	38.2	0.2%	20,590.3	57.9	0.3%
ME 6	32 48 26	2007	Above Normal	January	--	10,314.8	10,287.2	27.7	0.3%	10,281.6	33.2	0.3%	10,264.4	50.5	0.5%
ME 6	32 48 26	2007	Above Normal	February	--	30,839.1	30,812.5	26.6	0.1%	30,806.7	32.4	0.1%	30,790.5	48.6	0.2%
ME 6	32 48 26	2007	Above Normal	March	--	13,148.1	13,123.8	24.3	0.2%	13,118.1	30.1	0.2%	13,103.0	45.1	0.3%
ME 6	32 48 26	2007	Above Normal	April	--	11,578.7	11,534.5	44.2	0.4%	11,525.6	53.1	0.5%	11,499.1	79.6	0.7%
ME 6	32 48 26	2007	Above Normal	May	--	4,160.4	4,107.6	52.8	1.3%	4,097.1	63.3	1.5%	4,065.6	94.8	2.3%
ME 6	32 48 26	2007	Above Normal	June	--	1,513.8	1,450.6	63.2	4.2%	1,438.2	75.6	5.0%	1,401.3	112.5	7.4%
ME 6	32 48 26	2007	Above Normal	July	--	503.6	439.5	64.2	12.7%	426.8	76.9	15.3%	389.3	114.3	22.7%
ME 6	32 48 26	2007	Above Normal	August	--	232.1	173.6	58.5	25.2%	162.0	70.1	30.2%	126.4	105.7	45.5%
ME 6	32 48 26	2007	Above Normal	September	Used in Summary Table Analysis	159.7	103.8	55.9	35.0%	92.7	67.0	41.9%	59.2	100.5	62.9%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 48 26	2008	Dry	October	Used in Summary Table Analysis	3,477.8	3,431.4	46.4	1.3%	3,422.0	55.8	1.6%	3,393.5	84.3	2.4%
ME 6	32 48 26	2008	Dry	November	Used in Summary Table Analysis	3,316.9	3,280.7	36.2	1.1%	3,273.3	43.6	1.3%	3,250.8	66.1	2.0%
ME 6	32 48 26	2008	Dry	December	--	23,436.3	23,403.9	32.4	0.1%	23,398.1	38.2	0.2%	23,378.5	57.9	0.2%
ME 6	32 48 26	2008	Dry	January	--	37,827.5	37,797.5	30.1	0.1%	37,791.7	35.9	0.1%	37,773.1	54.4	0.1%
ME 6	32 48 26	2008	Dry	February	--	26,342.6	26,317.1	25.5	0.1%	26,312.5	30.1	0.1%	26,296.3	46.3	0.2%
ME 6	32 48 26	2008	Dry	March	--	11,828.7	11,805.6	23.1	0.2%	11,800.9	27.8	0.2%	11,787.0	41.7	0.4%
ME 6	32 48 26	2008	Dry	April	--	9,044.7	8,999.8	44.9	0.5%	8,990.9	53.8	0.6%	8,963.9	80.8	0.9%
ME 6	32 48 26	2008	Dry	May	--	1,359.3	1,311.8	47.5	3.5%	1,302.5	56.7	4.2%	1,274.8	84.5	6.2%
ME 6	32 48 26	2008	Dry	June	--	445.9	377.3	68.6	15.4%	363.8	82.0	18.4%	323.9	121.9	27.3%
ME 6	32 48 26	2008	Dry	July	--	263.6	194.5	69.1	26.2%	180.8	82.8	31.4%	145.1	118.5	44.9%
ME 6	32 48 26	2008	Dry	August	--	187.4	119.6	67.8	36.2%	106.1	81.3	43.4%	65.5	121.8	65.0%
ME 6	32 48 26	2008	Dry	September	Used in Summary Table Analysis	148.9	83.1	65.8	44.2%	70.1	78.9	53.0%	32.1	116.8	78.5%
ME 6	32 48 26	2009	Critical	October	Used in Summary Table Analysis	935.0	882.0	53.0	5.7%	871.4	63.6	6.8%	839.2	95.9	10.3%
ME 6	32 48 26	2009	Critical	November	Used in Summary Table Analysis	5,589.1	5,547.2	41.9	0.7%	5,538.8	50.3	0.9%	5,510.3	78.8	1.4%
ME 6	32 48 26	2009	Critical	December	--	12,326.4	12,290.5	35.9	0.3%	12,283.6	42.8	0.3%	12,260.4	66.0	0.5%
ME 6	32 48 26	2009	Critical	January	--	8,843.5	8,811.2	32.3	0.4%	8,804.6	38.9	0.4%	8,784.5	59.0	0.7%
ME 6	32 48 26	2009	Critical	February	--	22,750.0	22,721.1	28.9	0.1%	22,715.3	34.7	0.2%	22,697.9	52.1	0.2%
ME 6	32 48 26	2009	Critical	March	--	21,222.2	21,196.8	25.5	0.1%	21,192.1	30.1	0.1%	21,175.9	46.3	0.2%
ME 6	32 48 26	2009	Critical	April	--	10,109.8	10,062.8	47.0	0.5%	10,053.5	56.4	0.6%	10,025.1	84.7	0.8%
ME 6	32 48 26	2009	Critical	May	--	15,636.6	15,579.9	56.7	0.4%	15,568.3	68.3	0.4%	15,533.6	103.0	0.7%
ME 6	32 48 26	2009	Critical	June	--	3,169.2	3,095.9	73.3	2.3%	3,081.7	87.5	2.8%	3,039.4	129.9	4.1%
ME 6	32 48 26	2009	Critical	July	--	1,271.5	1,201.6	69.9	5.5%	1,187.8	83.7	6.6%	1,151.8	119.7	9.4%
ME 6	32 48 26	2009	Critical	August	--	677.9	609.6	68.3	10.1%	596.1	81.9	12.1%	557.9	120.0	17.7%
ME 6	32 48 26	2009	Critical	September	Used in Summary Table Analysis	398.5	336.5	62.0	15.6%	324.2	74.3	18.6%	288.3	110.2	27.6%
ME 6	32 48 26	2010	Below Normal	October	Used in Summary Table Analysis	6,102.0	6,048.3	53.7	0.9%	6,037.4	64.6	1.1%	6,003.9	98.0	1.6%
ME 6	32 48 26	2010	Below Normal	November	Used in Summary Table Analysis	8,344.1	8,300.7	43.4	0.5%	8,292.0	52.1	0.6%	8,262.8	81.3	1.0%
ME 6	32 48 26	2010	Below Normal	December	--	12,463.0	12,425.9	37.0	0.3%	12,417.8	45.1	0.4%	12,394.7	68.3	0.5%
ME 6	32 48 26	2010	Below Normal	January	--	36,593.8	36,560.2	33.6	0.1%	36,553.2	40.5	0.1%	36,532.4	61.3	0.2%
ME 6	32 48 26	2010	Below Normal	February	--	27,347.2	27,318.3	28.9	0.1%	27,312.5	34.7	0.1%	27,294.0	53.2	0.2%
ME 6	32 48 26	2010	Below Normal	March	--	28,925.9	28,899.3	26.6	0.1%	28,893.5	32.4	0.1%	28,876.2	49.8	0.2%
ME 6	32 48 26	2010	Below Normal	April	--	40,178.2	40,152.8	25.5	0.1%	40,147.0	31.3	0.1%	40,131.9	46.3	0.1%
ME 6	32 48 26	2010	Below Normal	May	--	20,397.0	20,348.4	48.6	0.2%	20,338.0	59.0	0.3%	20,309.0	88.0	0.4%
ME 6	32 48 26	2010	Below Normal	June	--	9,452.0	9,382.4	69.6	0.7%	9,368.8	83.2	0.9%	9,328.0	124.0	1.3%
ME 6	32 48 26	2010	Below Normal	July	--	1,462.7	1,398.5	64.2	4.4%	1,386.1	76.6	5.2%	1,349.1	113.7	7.8%
ME 6	32 48 26	2010	Below Normal	August	--	579.9	520.3	59.6	10.3%	508.5	71.4	12.3%	473.4	106.5	18.4%
ME 6	32 48 26	2010	Below Normal	September	Used in Summary Table Analysis	662.5	605.1	57.4	8.7%	593.6	68.9	10.4%	559.3	103.2	15.6%
ME 6	32 48 26	2011	Wet	October	Used in Summary Table Analysis	9,715.9	9,671.5	44.3	0.5%	9,662.5	53.4	0.5%	9,635.4	80.4	0.8%
ME 6	32 48 26	2011	Wet	November	Used in Summary Table Analysis	14,312.5	14,277.8	34.7	0.2%	14,269.7	42.8	0.3%	14,247.7	64.8	0.5%
ME 6	32 48 26	2011	Wet	December	--	34,076.4	34,045.1	31.3	0.1%	34,038.2	38.2	0.1%	34,018.5	57.9	0.2%
ME 6	32 48 26	2011	Wet	January	--	14,226.9	14,200.2	26.6	0.2%	14,194.4	32.4	0.2%	14,177.1	49.8	0.3%
ME 6	32 48 26	2011	Wet	February	--	20,838.0	20,813.7	24.3	0.1%	20,807.9	30.1	0.1%	20,792.8	45.1	0.2%
ME 6	32 48 26	2011	Wet	March	--	52,253.5	52,229.2	24.3	0.0%	52,224.5	28.9	0.1%	52,209.5	44.0	0.1%
ME 6	32 48 26	2011	Wet	April	--	24,885.4	24,862.3	23.1	0.1%	24,857.6	27.8	0.1%	24,842.6	42.8	0.2%
ME 6	32 48 26	2011	Wet	May	--	11,424.3	11,378.6	45.7	0.4%	11,369.4	54.9	0.5%	11,342.1	82.2	0.7%
ME 6	32 48 26	2011	Wet	June	--	7,098.3	7,030.8	67.5	1.0%	7,017.4	80.9	1.1%	6,977.9	120.4	1.7%
ME 6	32 48 26	2011	Wet	July	--	1,834.5	1,766.3	68.2	3.7%	1,752.9	81.6	4.4%	1,714.2	120.3	6.6%
ME 6	32 48 26	2011	Wet	August	--	786.3	727.5	58.7	7.5%	715.9	70.3	8.9%	681.1	105.2	13.4%
ME 6	32 48 26	2011	Wet	September	Used in Summary Table Analysis	442.9	388.9	53.9	12.2%	378.2	64.7	14.6%	346.0	96.9	21.9%
ME 6	32 48 26	2012	Below Normal	October	Used in Summary Table Analysis	4,585.0	4,539.9	45.0	1.0%	4,530.9	54.1	1.2%	4,503.1	81.8	1.8%
ME 6	32 48 26	2012	Below Normal	November	Used in Summary Table Analysis	8,324.2	8,288.1	36.1	0.4%	8,280.7	43.5	0.5%	8,258.3	65.9	0.8%
ME 6	32 48 26	2012	Below Normal	December	--	5,222.2	5,191.2	31.0	0.6%	5,185.0	37.3	0.7%	5,165.7	56.5	1.1%
ME 6	32 48 26	2012	Below Normal	January	--	20,361.1	20,332.2	28.9	0.1%	20,326.4	34.7	0.2%	20,309.0	52.1	0.3%
ME 6	32 48 26	2012	Below Normal	February	--	18,283.6	18,258.1	25.5	0.1%	18,253.5	30.1	0.2%	18,237.3	46.3	0.3%
ME 6	32 48 26	2012	Below Normal	March	--	45,713.0	45,687.5	25.5	0.1%	45,682.9	30.1	0.1%	45,667.8	45.1	0.1%
ME 6	32 48 26	2012	Below Normal	April	--	26,964.1	26,941.0	23.1	0.1%	26,936.3	27.8	0.1%	26,921.3	42.8	0.2%
ME 6	32 48 26	2012	Below Normal	May	--	7,508.7	7,463.2	45.5	0.6%	7,454.2	54.5	0.7%	7,427.3	81.4	1.1%
ME 6	32 48 26	2012	Below Normal	June	--	5,557.1	5,488.4	68.6	1.2%	5,475.0	82.1	1.5%	5,435.2	121.9	2.2%
ME 6	32 48 26	2012	Below Normal	July	--	2,250.2	2,184.1	66.1	2.9%	2,171.1	79.2	3.5%	2,132.2	118.1	5.2%
ME 6	32 48 26	2012	Below Normal	August	--	395.8	342.0	53.8	13.6%	331.2	64.5	16.3%	299.1	96.7	24.4%
ME 6	32 48 26	2012	Below Normal	September	Used in Summary Table Analysis	258.2	209.7	48.5	18.8%	200.0	58.1	22.5%	171.1	87.1	33.7%
ME 6	32 48 26	2013	Below Normal	October	Used in Summary Table Analysis	1,941.1	1,898.3	42.8	2.2%	1,889.7	51.4	2.6%	1,863.8	77.3	4.0%
ME 6	32 48 26	2013	Below Normal	November	Used in Summary Table Analysis	14,842.6	14,807.9	34.7	0.2%	14,800.9	41.7	0.3%	14,780.1	62.5	0.4%
ME 6	32 48 26	2013	Below Normal	December	--	60,340.3	60,309.0	31.3	0.1%	60,302.1	38.2	0.1%	60,282.4	57.9	0.1%
ME 6	32 48 26	2013	Below Normal	January	--	22,302.1	22,275.5	26.6	0.1%	22,270.8	31.3	0.1%	22,254.6	47.5	0.2%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow
							(cfs)	Difference (cfs)	Percent Difference	(cfs)	Difference (cfs)	Percent Difference	(cfs)	Difference (cfs)	Percent Difference
ME 6	32 48 26	2013	Below Normal	February	--	8,894.0	8,869.1	24.9	0.3%	8,864.0	30.0	0.3%	8,848.8	45.1	0.5%
ME 6	32 48 26	2013	Below Normal	March	--	10,404.1	10,380.1	24.0	0.2%	10,375.3	28.7	0.3%	10,360.6	43.4	0.4%
ME 6	32 48 26	2013	Below Normal	April	--	8,314.5	8,271.3	43.2	0.5%	8,262.7	51.7	0.6%	8,236.8	77.7	0.9%
ME 6	32 48 26	2013	Below Normal	May	--	4,460.9	4,408.6	52.3	1.2%	4,398.1	62.7	1.4%	4,367.0	93.9	2.1%
ME 6	32 48 26	2013	Below Normal	June	--	2,121.8	2,059.1	62.6	3.0%	2,046.8	75.0	3.5%	2,010.0	111.8	5.3%
ME 6	32 48 26	2013	Below Normal	July	--	724.4	662.9	61.4	8.5%	650.8	73.6	10.2%	615.3	109.1	15.1%
ME 6	32 48 26	2013	Below Normal	August	--	348.3	290.0	58.3	16.7%	278.4	70.0	20.1%	243.0	105.3	30.2%
ME 6	32 48 26	2013	Below Normal	September	Used in Summary Table Analysis	4,830.7	4,770.0	60.6	1.3%	4,757.9	72.8	1.5%	4,721.5	109.1	2.3%
ME 6	32 48 26	2014	Critical	October	Used in Summary Table Analysis	284.1	238.9	45.2	15.9%	229.8	54.3	19.1%	203.1	80.9	28.5%
ME 6	32 48 26	2014	Critical	November	Used in Summary Table Analysis	1,562.6	1,526.0	36.6	2.3%	1,518.6	44.0	2.8%	1,496.2	66.4	4.3%
ME 6	32 48 26	2014	Critical	December	--	1,605.1	1,573.1	31.9	2.0%	1,566.7	38.4	2.4%	1,546.8	58.3	3.6%
ME 6	32 48 26	2014	Critical	January	--	2,846.9	2,818.4	28.5	1.0%	2,812.6	34.3	1.2%	2,794.7	52.2	1.8%
ME 6	32 48 26	2014	Critical	February	--	15,824.1	15,798.6	25.5	0.2%	15,792.8	31.3	0.2%	15,776.6	47.5	0.3%
ME 6	32 48 26	2014	Critical	March	--	31,577.5	31,553.2	24.3	0.1%	31,547.5	30.1	0.1%	31,532.4	45.1	0.1%
ME 6	32 48 26	2014	Critical	April	--	13,020.8	12,974.5	46.3	0.4%	12,965.3	55.6	0.4%	12,937.5	83.3	0.6%
ME 6	32 48 26	2014	Critical	May	--	5,208.4	5,153.2	55.2	1.1%	5,142.2	66.2	1.3%	5,109.0	99.4	1.9%
ME 6	32 48 26	2014	Critical	June	--	1,207.4	1,132.6	74.8	6.2%	1,117.9	89.5	7.4%	1,075.5	131.9	10.9%
ME 6	32 48 26	2014	Critical	July	--	552.8	482.2	70.6	12.8%	468.2	84.6	15.3%	431.1	121.6	22.0%
ME 6	32 48 26	2014	Critical	August	--	356.3	288.3	68.0	19.1%	274.7	81.6	22.9%	236.0	120.3	33.8%
ME 6	32 48 26	2014	Critical	September	Used in Summary Table Analysis	2,596.1	2,528.8	67.2	2.6%	2,515.5	80.6	3.1%	2,475.7	120.4	4.6%
ME 6	32 48 26	2015	Dry	October	Used in Summary Table Analysis	11,441.7	11,388.4	53.2	0.5%	11,377.9	63.8	0.6%	11,345.8	95.8	0.8%
ME 6	32 48 26	2015	Dry	November	Used in Summary Table Analysis	9,122.0	9,081.4	40.6	0.4%	9,073.1	48.8	0.5%	9,045.0	77.0	0.8%
ME 6	32 48 26	2015	Dry	December	--	32,925.9	32,891.2	34.7	0.1%	32,884.3	41.7	0.1%	32,862.3	63.7	0.2%
ME 6	32 48 26	2015	Dry	January	--	14,625.0	14,593.8	31.3	0.2%	14,586.8	38.2	0.3%	14,567.1	57.9	0.4%
ME 6	32 48 26	2015	Dry	February	--	27,356.5	27,328.7	27.8	0.1%	27,322.9	33.6	0.1%	27,305.6	50.9	0.2%
ME 6	32 48 26	2015	Dry	March	--	11,599.5	11,575.2	24.3	0.2%	11,570.5	29.1	0.3%	11,555.1	44.4	0.4%
ME 6	32 48 26	2015	Dry	April	--	8,466.9	8,420.7	46.2	0.5%	8,411.5	55.4	0.7%	8,383.6	83.3	1.0%
ME 6	32 48 26	2015	Dry	May	--	1,512.5	1,458.0	54.5	3.6%	1,447.1	65.4	4.3%	1,415.5	97.0	6.4%
ME 6	32 48 26	2015	Dry	June	--	658.4	588.8	69.7	10.6%	575.0	83.4	12.7%	534.4	124.1	18.8%
ME 6	32 48 26	2015	Dry	July	--	275.0	205.2	69.8	25.4%	191.3	83.7	30.4%	155.2	119.8	43.6%
ME 6	32 48 26	2015	Dry	August	--	174.2	106.0	68.2	39.1%	92.4	81.8	47.0%	54.4	119.8	68.8%
ME 6	32 48 26	2015	Dry	September	Used in Summary Table Analysis	127.6	63.0	64.6	50.6%	49.7	77.9	61.0%	11.2	116.3	91.2%
ME 6	32 48 26	2016	Above Normal	October	Used in Summary Table Analysis	92.5	37.9	54.7	59.1%	27.3	65.2	70.5%	0.3	92.3	99.7%
ME 6	32 48 26	2016	Above Normal	November	Used in Summary Table Analysis	3,939.1	3,896.1	43.1	1.1%	3,887.3	51.9	1.3%	3,856.0	83.1	2.1%
ME 6	32 48 26	2016	Above Normal	December	--	36,982.6	36,944.4	38.2	0.1%	36,936.3	46.3	0.1%	36,912.0	70.6	0.2%
ME 6	32 48 26	2016	Above Normal	January	--	57,694.4	57,659.7	34.7	0.1%	57,652.8	41.7	0.1%	57,630.8	63.7	0.1%
ME 6	32 48 26	2016	Above Normal	February	--	24,329.9	24,302.1	27.8	0.1%	24,296.3	33.6	0.1%	24,277.8	52.1	0.2%
ME 6	32 48 26	2016	Above Normal	March	--	41,953.7	41,925.9	27.8	0.1%	41,921.3	32.4	0.1%	41,903.9	49.8	0.1%
ME 6	32 48 26	2016	Above Normal	April	--	18,586.8	18,562.5	24.3	0.1%	18,557.9	28.9	0.2%	18,542.8	44.0	0.2%
ME 6	32 48 26	2016	Above Normal	May	--	5,233.4	5,204.2	29.3	0.6%	5,198.1	35.3	0.7%	5,180.2	53.2	1.0%
ME 6	32 48 26	2016	Above Normal	June	--	1,517.9	1,464.4	53.6	3.5%	1,454.7	63.2	4.2%	1,426.6	91.3	6.0%
ME 6	32 48 26	2016	Above Normal	July	--	832.4	771.4	61.0	7.3%	759.3	73.1	8.8%	723.5	108.9	13.1%
ME 6	32 48 26	2016	Above Normal	August	--	501.4	441.0	60.4	12.1%	428.9	72.5	14.5%	393.0	108.4	21.6%
ME 6	32 48 26	2016	Above Normal	September	Used in Summary Table Analysis	337.3	280.3	57.0	16.9%	268.7	68.6	20.3%	234.1	103.2	30.6%
ME 6	32 48 26	2017	Wet	October	Used in Summary Table Analysis	18,427.1	18,380.8	46.3	0.3%	18,371.5	55.6	0.3%	18,343.8	83.3	0.5%
ME 6	32 48 26	2017	Wet	November	Used in Summary Table Analysis	18,980.3	18,944.4	35.9	0.2%	18,936.3	44.0	0.2%	18,914.4	66.0	0.3%
ME 6	32 48 26	2017	Wet	December	--	24,354.2	24,322.9	31.3	0.1%	24,317.1	37.0	0.2%	24,297.5	56.7	0.2%
ME 6	32 48 26	2017	Wet	January	--	107,608.8	107,581.0	27.8	0.0%	107,574.1	34.7	0.0%	107,556.7	52.1	0.0%
ME 6	32 48 26	2017	Wet	February	--	82,251.2	82,224.5	26.6	0.0%	82,218.8	32.4	0.0%	82,203.7	47.5	0.1%
ME 6	32 48 26	2017	Wet	March	--	27,403.9	27,379.6	24.3	0.1%	27,375.0	28.9	0.1%	27,360.0	44.0	0.2%
ME 6	32 48 26	2017	Wet	April	--	23,076.4	23,054.4	22.0	0.1%	23,049.8	26.6	0.1%	23,035.9	40.5	0.2%
ME 6	32 48 26	2017	Wet	May	--	6,278.6	6,249.5	29.1	0.5%	6,243.6	35.0	0.6%	6,226.2	52.4	0.8%
ME 6	32 48 26	2017	Wet	June	--	2,135.5	2,080.4	55.1	2.6%	2,069.6	66.0	3.1%	2,037.4	98.1	4.6%
ME 6	32 48 26	2017	Wet	July	--	946.6	885.7	60.9	6.4%	873.7	72.8	7.7%	838.3	108.3	11.4%
ME 6	32 48 26	2017	Wet	August	--	518.8	458.9	59.8	11.5%	447.0	71.7	13.8%	411.6	107.2	20.7%
ME 6	32 48 26	2017	Wet	September	Used in Summary Table Analysis	333.3	277.3	55.9	16.8%	266.1	67.2	20.2%	232.6	100.7	30.2%
ME 6	32 48 26	2018	Above Normal	October	Used in Summary Table Analysis	285.9	240.7	45.2	15.8%	231.6	54.3	19.0%	204.3	81.7	28.6%
ME 6	32 48 26	2018	Above Normal	November	Used in Summary Table Analysis	10,951.6	10,915.5	36.1	0.3%	10,908.1	43.5	0.4%	10,886.0	65.6	0.6%
ME 6	32 48 26	2018	Above Normal	December	--	5,462.7	5,432.1	30.7	0.6%	5,425.8	36.9	0.7%	5,406.8	55.9	1.0%
ME 6	32 48 26	2018	Above Normal	January	--	18,054.4	18,026.6	27.8	0.2%	18,020.8	33.6	0.2%	18,003.5	50.9	0.3%
ME 6	32 48 26	2018	Above Normal	February	--	7,611.8	7,587.4	24.4	0.3%	7,582.4	29.4	0.4%	7,567.1	44.7	0.6%
ME 6	32 48 26	2018	Above Normal	March	--	20,876.2	20,853.0	23.1	0.1%	20,848.4	27.8	0.1%	20,834.5	41.7	0.2%
ME 6	32 48 26	2018	Above Normal	April	--	32,407.4	32,386.6	20.8	0.1%	32,381.9	25.5	0.1%	32,369.2	38.2	0.1%
ME 6	32 48 26	2018	Above Normal	May	--	6,996.5	6,953.4	43.2	0.6%	6,944.8	51.7	0.7%	6,918.6	77.9	1.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 48 26	2018	Above Normal	June	--	1,923.3	1,867.2	56.0	2.9%	1,856.3	67.0	3.5%	1,823.7	99.5	5.2%
ME 6	32 48 26	2018	Above Normal	July	--	791.7	730.2	61.6	7.8%	717.9	73.9	9.3%	681.5	110.2	13.9%
ME 6	32 48 26	2018	Above Normal	August	--	453.0	395.0	58.0	12.8%	383.4	69.6	15.4%	348.7	104.3	23.0%
ME 6	32 48 26	2018	Above Normal	September	Used in Summary Table Analysis	309.7	253.6	56.1	18.1%	242.3	67.4	21.8%	208.7	101.1	32.6%
ME 6	32 48 26	2019	Below Normal	October	Used in Summary Table Analysis	215.9	171.2	44.7	20.7%	162.1	53.8	24.9%	134.9	81.0	37.5%
ME 6	32 48 26	2019	Below Normal	November	Used in Summary Table Analysis	6,729.5	6,693.1	36.5	0.5%	6,685.6	43.9	0.7%	6,663.3	66.2	1.0%
ME 6	32 48 26	2019	Below Normal	December	--	14,843.8	14,812.5	31.3	0.2%	14,805.6	38.2	0.3%	14,787.0	56.7	0.4%
ME 6	32 48 26	2019	Below Normal	January	--	35,578.7	35,550.9	27.8	0.1%	35,544.0	34.7	0.1%	35,527.8	50.9	0.1%
ME 6	32 48 26	2019	Below Normal	February	--	142,303.2	142,280.1	23.1	0.0%	142,268.5	34.7	0.0%	142,256.9	46.3	0.0%
ME 6	32 48 26	2019	Below Normal	March	--	42,515.0	42,493.1	22.0	0.1%	42,488.4	26.6	0.1%	42,473.4	41.7	0.1%
ME 6	32 48 26	2019	Below Normal	April	--	15,327.5	15,306.7	20.8	0.1%	15,302.1	25.5	0.2%	15,289.4	38.2	0.2%
ME 6	32 48 26	2019	Below Normal	May	--	17,214.1	17,167.8	46.3	0.3%	17,158.6	55.6	0.3%	17,130.8	83.3	0.5%
ME 6	32 48 26	2019	Below Normal	June	--	4,244.9	4,186.1	58.8	1.4%	4,174.8	70.1	1.7%	4,141.7	103.2	2.4%
ME 6	32 48 26	2019	Below Normal	July	--	1,373.6	1,311.9	61.7	4.5%	1,299.7	74.0	5.4%	1,263.4	110.2	8.0%
ME 6	32 48 26	2019	Below Normal	August	--	608.3	549.0	59.3	9.7%	537.2	71.1	11.7%	502.1	106.1	17.4%
ME 6	32 48 26	2019	Below Normal	September	Used in Summary Table Analysis	473.0	417.1	55.8	11.8%	405.9	67.0	14.2%	372.4	100.5	21.3%
ME 6	32 48 26	2020	Dry	October	Used in Summary Table Analysis	364.0	320.9	43.1	11.8%	312.2	51.8	14.2%	286.0	78.0	21.4%
ME 6	32 48 26	2020	Dry	November	Used in Summary Table Analysis	334.3	299.8	34.4	10.3%	292.8	41.4	12.4%	271.8	62.5	18.7%
ME 6	32 48 26	2020	Dry	December	--	13,544.0	13,512.7	31.3	0.2%	13,506.9	37.0	0.3%	13,487.3	56.7	0.4%
ME 6	32 48 26	2020	Dry	January	--	22,533.6	22,505.8	27.8	0.1%	22,500.0	33.6	0.1%	22,482.6	50.9	0.2%
ME 6	32 48 26	2020	Dry	February	--	7,424.5	7,399.4	25.1	0.3%	7,394.2	30.3	0.4%	7,378.7	45.8	0.6%
ME 6	32 48 26	2020	Dry	March	--	7,282.6	7,259.1	23.5	0.3%	7,254.3	28.4	0.4%	7,239.8	42.8	0.6%
ME 6	32 48 26	2020	Dry	April	--	5,525.2	5,479.2	46.1	0.8%	5,469.9	55.3	1.0%	5,442.4	82.9	1.5%
ME 6	32 48 26	2020	Dry	May	--	7,430.9	7,375.6	55.3	0.7%	7,364.6	66.3	0.9%	7,331.6	99.3	1.3%
ME 6	32 48 26	2020	Dry	June	--	2,108.0	2,037.7	70.3	3.3%	2,024.2	83.8	4.0%	1,984.0	124.0	5.9%
ME 6	32 48 26	2020	Dry	July	--	804.5	732.4	72.1	9.0%	718.1	86.4	10.7%	680.9	123.6	15.4%
ME 6	32 48 26	2020	Dry	August	--	407.7	336.1	71.5	17.5%	321.9	85.8	21.0%	282.3	125.4	30.8%
ME 6	32 48 26	2020	Dry	September	Used in Summary Table Analysis	256.9	189.1	67.8	26.4%	175.3	81.5	31.7%	135.1	121.8	47.4%
ME 6	32 47 27	2000	Above Normal	October	Used in Summary Table Analysis	831.0	786.1	45.0	5.4%	777.0	54.0	6.5%	749.7	81.3	9.8%
ME 6	32 47 27	2000	Above Normal	November	Used in Summary Table Analysis	12,332.2	12,296.3	35.9	0.3%	12,289.4	42.8	0.3%	12,266.2	66.0	0.5%
ME 6	32 47 27	2000	Above Normal	December	--	10,925.3	10,894.3	31.0	0.3%	10,888.0	37.4	0.3%	10,868.8	56.6	0.5%
ME 6	32 47 27	2000	Above Normal	January	--	28,932.9	28,905.1	27.8	0.1%	28,899.3	33.6	0.1%	28,881.9	50.9	0.2%
ME 6	32 47 27	2000	Above Normal	February	--	37,274.3	37,248.8	25.5	0.1%	37,244.2	30.1	0.1%	37,228.0	46.3	0.1%
ME 6	32 47 27	2000	Above Normal	March	--	18,388.9	18,365.7	23.1	0.1%	18,361.1	27.8	0.2%	18,346.1	42.8	0.2%
ME 6	32 47 27	2000	Above Normal	April	--	12,370.4	12,348.4	22.0	0.2%	12,343.8	26.6	0.2%	12,331.0	39.4	0.3%
ME 6	32 47 27	2000	Above Normal	May	--	7,142.0	7,097.2	44.8	0.6%	7,088.2	53.8	0.8%	7,061.3	80.7	1.1%
ME 6	32 47 27	2000	Above Normal	June	--	2,631.1	2,564.8	66.3	2.5%	2,551.6	79.5	3.0%	2,512.7	118.4	4.5%
ME 6	32 47 27	2000	Above Normal	July	--	1,002.5	941.1	61.4	6.1%	929.0	73.5	7.3%	892.9	109.6	10.9%
ME 6	32 47 27	2000	Above Normal	August	--	533.2	475.0	58.2	10.9%	463.4	69.8	13.1%	428.7	104.5	19.6%
ME 6	32 47 27	2000	Above Normal	September	Used in Summary Table Analysis	305.4	253.1	52.4	17.1%	242.6	62.8	20.6%	211.2	94.3	30.9%
ME 6	32 47 27	2001	Dry	October	Used in Summary Table Analysis	3,867.1	3,822.9	44.2	1.1%	3,814.0	53.1	1.4%	3,787.2	80.0	2.1%
ME 6	32 47 27	2001	Dry	November	Used in Summary Table Analysis	6,206.1	6,170.5	35.6	0.6%	6,163.3	42.8	0.7%	6,141.4	64.7	1.0%
ME 6	32 47 27	2001	Dry	December	--	8,920.8	8,890.0	30.8	0.3%	8,883.8	37.0	0.4%	8,864.9	55.9	0.6%
ME 6	32 47 27	2001	Dry	January	--	12,945.6	12,917.8	27.8	0.2%	12,912.0	33.6	0.3%	12,895.8	49.8	0.4%
ME 6	32 47 27	2001	Dry	February	--	17,570.6	17,545.1	25.5	0.1%	17,540.5	30.1	0.2%	17,524.3	46.3	0.3%
ME 6	32 47 27	2001	Dry	March	--	12,348.4	12,325.2	23.1	0.2%	12,320.6	27.8	0.2%	12,305.6	42.8	0.3%
ME 6	32 47 27	2001	Dry	April	--	11,025.7	10,979.6	46.1	0.4%	10,970.4	55.3	0.5%	10,942.9	82.8	0.8%
ME 6	32 47 27	2001	Dry	May	--	2,639.9	2,585.4	54.5	2.1%	2,574.5	65.4	2.5%	2,542.0	97.9	3.7%
ME 6	32 47 27	2001	Dry	June	--	2,683.6	2,609.5	74.1	2.8%	2,595.0	88.5	3.3%	2,552.3	131.3	4.9%
ME 6	32 47 27	2001	Dry	July	--	724.3	653.2	71.2	9.8%	639.0	85.3	11.8%	602.0	122.3	16.9%
ME 6	32 47 27	2001	Dry	August	--	181.2	111.4	69.8	38.5%	97.5	83.7	46.2%	58.4	122.8	67.8%
ME 6	32 47 27	2001	Dry	September	Used in Summary Table Analysis	104.7	41.5	63.2	60.4%	28.9	75.8	72.4%	0.8	103.9	99.2%
ME 6	32 47 27	2002	Below Normal	October	Used in Summary Table Analysis	275.4	221.4	54.0	19.6%	210.5	64.9	23.6%	178.0	97.4	35.4%
ME 6	32 47 27	2002	Below Normal	November	Used in Summary Table Analysis	12,135.4	12,092.6	42.8	0.4%	12,083.3	52.1	0.4%	12,054.4	81.0	0.7%
ME 6	32 47 27	2002	Below Normal	December	--	36,003.5	35,965.3	38.2	0.1%	35,958.3	45.1	0.1%	35,934.0	69.4	0.2%
ME 6	32 47 27	2002	Below Normal	January	--	31,079.9	31,047.5	32.4	0.1%	31,040.5	39.4	0.1%	31,019.7	60.2	0.2%
ME 6	32 47 27	2002	Below Normal	February	--	24,798.6	24,769.7	28.9	0.1%	24,762.7	35.9	0.1%	24,744.2	54.4	0.2%
ME 6	32 47 27	2002	Below Normal	March	--	17,873.8	17,846.1	27.8	0.2%	17,841.4	32.4	0.2%	17,824.1	49.8	0.3%
ME 6	32 47 27	2002	Below Normal	April	--	9,962.3	9,915.6	46.6	0.5%	9,906.4	55.9	0.6%	9,878.4	83.9	0.8%
ME 6	32 47 27	2002	Below Normal	May	--	3,334.0	3,279.2	54.9	1.6%	3,268.2	65.9	2.0%	3,235.4	98.6	3.0%
ME 6	32 47 27	2002	Below Normal	June	--	862.2	800.0	62.2	7.2%	787.7	74.5	8.6%	751.2	110.9	12.9%
ME 6	32 47 27	2002	Below Normal	July	--	371.3	307.2	64.1	17.3%	294.5	76.8	20.7%	257.4	113.9	30.7%
ME 6	32 47 27	2002	Below Normal	August	--	237.4	176.5	60.9	25.6%	164.3	73.0	30.8%	127.5	109.9	46.3%
ME 6	32 47 27	2002	Below Normal	September	Used in Summary Table Analysis	173.7	115.6	58.1	33.4%	104.1	69.7	40.1%	68.5	105.2	60.6%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 47 27	2003	Wet	October	Used in Summary Table Analysis	138.5	89.9	48.6	35.1%	80.2	58.4	42.1%	50.8	87.8	63.4%
ME 6	32 47 27	2003	Wet	November	Used in Summary Table Analysis	908.6	869.0	39.7	4.4%	860.9	47.8	5.3%	836.6	72.0	7.9%
ME 6	32 47 27	2003	Wet	December	--	57,574.1	57,539.4	34.7	0.1%	57,531.3	42.8	0.1%	57,509.3	64.8	0.1%
ME 6	32 47 27	2003	Wet	January	--	31,685.2	31,653.9	31.3	0.1%	31,647.0	38.2	0.1%	31,628.5	56.7	0.2%
ME 6	32 47 27	2003	Wet	February	--	20,435.2	20,407.4	27.8	0.1%	20,401.6	33.6	0.2%	20,385.4	49.8	0.2%
ME 6	32 47 27	2003	Wet	March	--	24,160.9	24,135.4	25.5	0.1%	24,129.6	31.3	0.1%	24,114.6	46.3	0.2%
ME 6	32 47 27	2003	Wet	April	--	43,226.9	43,201.4	25.5	0.1%	43,196.8	30.1	0.1%	43,181.7	45.1	0.1%
ME 6	32 47 27	2003	Wet	May	--	12,265.0	12,218.8	46.3	0.4%	12,209.5	55.6	0.5%	12,180.6	84.5	0.7%
ME 6	32 47 27	2003	Wet	June	--	3,177.5	3,118.5	59.0	1.9%	3,107.1	70.5	2.2%	3,072.9	104.6	3.3%
ME 6	32 47 27	2003	Wet	July	--	1,486.8	1,423.5	63.3	4.3%	1,410.9	75.9	5.1%	1,373.7	113.1	7.6%
ME 6	32 47 27	2003	Wet	August	--	772.3	709.9	62.4	8.1%	697.0	75.2	9.7%	657.3	115.0	14.9%
ME 6	32 47 27	2003	Wet	September	Used in Summary Table Analysis	469.3	415.5	53.7	11.5%	404.8	64.5	13.7%	371.4	97.8	20.8%
ME 6	32 47 27	2004	Wet	October	Used in Summary Table Analysis	335.9	290.7	45.2	13.5%	281.5	54.4	16.2%	254.0	81.9	24.4%
ME 6	32 47 27	2004	Wet	November	Used in Summary Table Analysis	5,892.5	5,855.2	37.3	0.6%	5,847.6	44.9	0.8%	5,824.7	67.8	1.2%
ME 6	32 47 27	2004	Wet	December	--	36,702.5	36,669.0	33.6	0.1%	36,662.0	40.5	0.1%	36,642.4	60.2	0.2%
ME 6	32 47 27	2004	Wet	January	--	31,738.4	31,710.6	27.8	0.1%	31,703.7	34.7	0.1%	31,686.3	52.1	0.2%
ME 6	32 47 27	2004	Wet	February	--	38,490.7	38,465.3	25.5	0.1%	38,459.5	31.3	0.1%	38,443.3	47.5	0.1%
ME 6	32 47 27	2004	Wet	March	--	16,568.3	16,545.1	23.1	0.1%	16,539.4	28.9	0.2%	16,525.5	42.8	0.3%
ME 6	32 47 27	2004	Wet	April	--	9,484.7	9,462.0	22.7	0.2%	9,457.4	27.3	0.3%	9,443.5	41.2	0.4%
ME 6	32 47 27	2004	Wet	May	--	3,448.0	3,402.9	45.1	1.3%	3,393.9	54.2	1.6%	3,366.9	81.1	2.4%
ME 6	32 47 27	2004	Wet	June	--	699.8	643.1	56.7	8.1%	631.9	67.9	9.7%	598.8	100.9	14.4%
ME 6	32 47 27	2004	Wet	July	--	366.6	304.5	62.1	16.9%	292.2	74.4	20.3%	255.6	111.0	30.3%
ME 6	32 47 27	2004	Wet	August	--	235.2	176.1	59.1	25.1%	164.3	70.9	30.1%	129.0	106.2	45.2%
ME 6	32 47 27	2004	Wet	September	Used in Summary Table Analysis	171.6	114.8	56.8	33.1%	103.5	68.1	39.7%	69.4	102.2	59.5%
ME 6	32 47 27	2005	Above Normal	October	Used in Summary Table Analysis	7,798.0	7,751.9	46.2	0.6%	7,742.6	55.4	0.7%	7,714.5	83.6	1.1%
ME 6	32 47 27	2005	Above Normal	November	Used in Summary Table Analysis	2,274.7	2,238.3	36.3	1.6%	2,230.9	43.8	1.9%	2,208.6	66.1	2.9%
ME 6	32 47 27	2005	Above Normal	December	--	21,355.3	21,324.1	31.3	0.1%	21,317.1	38.2	0.2%	21,297.5	57.9	0.3%
ME 6	32 47 27	2005	Above Normal	January	--	22,642.4	22,613.4	28.9	0.1%	22,607.6	34.7	0.2%	22,590.3	52.1	0.2%
ME 6	32 47 27	2005	Above Normal	February	--	14,057.9	14,032.4	25.5	0.2%	14,027.8	30.1	0.2%	14,012.7	45.1	0.3%
ME 6	32 47 27	2005	Above Normal	March	--	28,763.9	28,740.7	23.1	0.1%	28,735.0	28.9	0.1%	28,721.1	42.8	0.1%
ME 6	32 47 27	2005	Above Normal	April	--	21,574.1	21,550.9	23.1	0.1%	21,546.3	27.8	0.1%	21,532.4	41.7	0.2%
ME 6	32 47 27	2005	Above Normal	May	--	19,724.5	19,678.2	46.3	0.2%	19,669.0	55.6	0.3%	19,641.2	83.3	0.4%
ME 6	32 47 27	2005	Above Normal	June	--	16,053.2	15,986.1	67.1	0.4%	15,972.2	81.0	0.5%	15,932.9	120.4	0.7%
ME 6	32 47 27	2005	Above Normal	July	--	2,867.6	2,803.9	63.7	2.2%	2,791.8	75.8	2.6%	2,755.7	111.9	3.9%
ME 6	32 47 27	2005	Above Normal	August	--	995.1	936.7	58.4	5.9%	925.1	69.9	7.0%	890.6	104.4	10.5%
ME 6	32 47 27	2005	Above Normal	September	Used in Summary Table Analysis	536.6	484.2	52.4	9.8%	473.7	62.9	11.7%	442.4	94.2	17.6%
ME 6	32 47 27	2006	Wet	October	Used in Summary Table Analysis	648.0	604.7	43.3	6.7%	596.0	52.0	8.0%	569.6	78.4	12.1%
ME 6	32 47 27	2006	Wet	November	Used in Summary Table Analysis	9,457.9	9,423.1	34.7	0.4%	9,416.1	41.8	0.4%	9,394.7	63.2	0.7%
ME 6	32 47 27	2006	Wet	December	--	43,993.1	43,961.8	31.3	0.1%	43,956.0	37.0	0.1%	43,936.3	56.7	0.1%
ME 6	32 47 27	2006	Wet	January	--	46,743.1	46,715.3	27.8	0.1%	46,709.5	33.6	0.1%	46,691.0	52.1	0.1%
ME 6	32 47 27	2006	Wet	February	--	26,809.0	26,784.7	24.3	0.1%	26,780.1	28.9	0.1%	26,765.0	44.0	0.2%
ME 6	32 47 27	2006	Wet	March	--	47,511.6	47,488.4	23.1	0.0%	47,483.8	27.8	0.1%	47,468.8	42.8	0.1%
ME 6	32 47 27	2006	Wet	April	--	30,567.1	30,545.1	22.0	0.1%	30,541.7	25.5	0.1%	30,527.8	39.4	0.1%
ME 6	32 47 27	2006	Wet	May	--	14,288.2	14,260.4	27.8	0.2%	14,254.6	33.6	0.2%	14,237.3	50.9	0.4%
ME 6	32 47 27	2006	Wet	June	--	3,557.6	3,501.6	56.0	1.6%	3,490.6	67.0	1.9%	3,458.3	99.3	2.8%
ME 6	32 47 27	2006	Wet	July	--	1,293.1	1,232.4	60.6	4.7%	1,220.5	72.6	5.6%	1,185.2	107.9	8.3%
ME 6	32 47 27	2006	Wet	August	--	679.2	619.3	59.9	8.8%	607.5	71.7	10.6%	572.0	107.2	15.8%
ME 6	32 47 27	2006	Wet	September	Used in Summary Table Analysis	439.1	385.8	53.3	12.1%	375.2	64.0	14.6%	343.3	95.9	21.8%
ME 6	32 47 27	2007	Above Normal	October	Used in Summary Table Analysis	285.6	241.3	44.3	15.5%	232.4	53.2	18.6%	205.4	80.2	28.1%
ME 6	32 47 27	2007	Above Normal	November	Used in Summary Table Analysis	8,800.6	8,764.1	36.5	0.4%	8,756.7	43.9	0.5%	8,734.3	66.3	0.8%
ME 6	32 47 27	2007	Above Normal	December	--	20,680.6	20,648.1	32.4	0.2%	20,641.2	39.4	0.2%	20,621.5	59.0	0.3%
ME 6	32 47 27	2007	Above Normal	January	--	10,323.1	10,295.3	27.9	0.3%	10,289.6	33.6	0.3%	10,272.2	50.9	0.5%
ME 6	32 47 27	2007	Above Normal	February	--	30,875.0	30,848.4	26.6	0.1%	30,842.6	32.4	0.1%	30,826.4	48.6	0.2%
ME 6	32 47 27	2007	Above Normal	March	--	13,153.9	13,128.5	25.5	0.2%	13,123.8	30.1	0.2%	13,108.8	45.1	0.3%
ME 6	32 47 27	2007	Above Normal	April	--	11,584.5	11,540.3	44.2	0.4%	11,531.4	53.1	0.5%	11,504.7	79.7	0.7%
ME 6	32 47 27	2007	Above Normal	May	--	4,163.1	4,110.2	52.9	1.3%	4,099.5	63.5	1.5%	4,067.9	95.1	2.3%
ME 6	32 47 27	2007	Above Normal	June	--	1,515.7	1,452.3	63.4	4.2%	1,439.7	76.0	5.0%	1,402.5	113.2	7.5%
ME 6	32 47 27	2007	Above Normal	July	--	504.8	440.1	64.7	12.8%	427.2	77.5	15.4%	389.5	115.3	22.8%
ME 6	32 47 27	2007	Above Normal	August	--	233.4	174.4	59.0	25.3%	162.7	70.8	30.3%	126.8	106.7	45.7%
ME 6	32 47 27	2007	Above Normal	September	Used in Summary Table Analysis	161.1	104.7	56.4	35.0%	93.4	67.7	42.0%	59.5	101.6	63.0%
ME 6	32 47 27	2008	Dry	October	Used in Summary Table Analysis	3,484.0	3,436.9	47.1	1.4%	3,427.4	56.6	1.6%	3,398.6	85.4	2.5%
ME 6	32 47 27	2008	Dry	November	Used in Summary Table Analysis	3,322.8	3,286.0	36.8	1.1%	3,278.6	44.2	1.3%	3,255.8	67.0	2.0%
ME 6	32 47 27	2008	Dry	December	--	23,478.0	23,445.6	32.4	0.1%	23,438.7	39.4	0.2%	23,419.0	59.0	0.3%
ME 6	32 47 27	2008	Dry	January	--	37,866.9	37,836.8	30.1	0.1%	37,831.0	35.9	0.1%	37,812.5	54.4	0.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 47 27	2008	Dry	February	--	26,351.9	26,326.4	25.5	0.1%	26,321.8	30.1	0.1%	26,305.6	46.3	0.2%
ME 6	32 47 27	2008	Dry	March	--	11,833.3	11,810.2	23.1	0.2%	11,805.6	27.8	0.2%	11,790.5	42.8	0.4%
ME 6	32 47 27	2008	Dry	April	--	9,048.5	9,003.5	45.0	0.5%	8,994.4	54.1	0.6%	8,967.4	81.1	0.9%
ME 6	32 47 27	2008	Dry	May	--	1,359.1	1,311.5	47.7	3.5%	1,302.1	57.1	4.2%	1,274.2	85.0	6.3%
ME 6	32 47 27	2008	Dry	June	--	447.0	378.0	69.1	15.5%	364.4	82.6	18.5%	324.2	122.8	27.5%
ME 6	32 47 27	2008	Dry	July	--	264.8	195.0	69.8	26.4%	181.2	83.6	31.6%	145.1	119.7	45.2%
ME 6	32 47 27	2008	Dry	August	--	188.6	120.2	68.5	36.3%	106.5	82.1	43.5%	65.5	123.1	65.2%
ME 6	32 47 27	2008	Dry	September	Used in Summary Table Analysis	150.1	83.6	66.5	44.3%	70.4	79.7	53.1%	32.0	118.2	78.7%
ME 6	32 47 27	2009	Critical	October	Used in Summary Table Analysis	936.7	883.0	53.7	5.7%	872.3	64.5	6.9%	839.6	97.2	10.4%
ME 6	32 47 27	2009	Critical	November	Used in Summary Table Analysis	5,599.7	5,557.2	42.5	0.8%	5,548.6	51.0	0.9%	5,519.8	79.9	1.4%
ME 6	32 47 27	2009	Critical	December	--	12,348.4	12,311.3	37.0	0.3%	12,304.4	44.0	0.4%	12,281.3	67.1	0.5%
ME 6	32 47 27	2009	Critical	January	--	8,849.9	8,817.2	32.6	0.4%	8,810.5	39.4	0.4%	8,790.2	59.7	0.7%
ME 6	32 47 27	2009	Critical	February	--	22,768.5	22,739.6	28.9	0.1%	22,733.8	34.7	0.2%	22,715.3	53.2	0.2%
ME 6	32 47 27	2009	Critical	March	--	21,236.1	21,210.6	25.5	0.1%	21,204.9	31.3	0.1%	21,188.7	47.5	0.2%
ME 6	32 47 27	2009	Critical	April	--	10,111.5	10,064.2	47.2	0.5%	10,054.9	56.6	0.6%	10,026.4	85.1	0.8%
ME 6	32 47 27	2009	Critical	May	--	15,644.7	15,586.8	57.9	0.4%	15,575.2	69.4	0.4%	15,540.5	104.2	0.7%
ME 6	32 47 27	2009	Critical	June	--	3,170.4	3,096.5	73.8	2.3%	3,082.3	88.1	2.8%	3,039.6	130.8	4.1%
ME 6	32 47 27	2009	Critical	July	--	1,272.7	1,202.2	70.5	5.5%	1,188.3	84.4	6.6%	1,151.8	120.8	9.5%
ME 6	32 47 27	2009	Critical	August	--	679.3	610.3	69.0	10.2%	596.6	82.7	12.2%	558.0	121.3	17.9%
ME 6	32 47 27	2009	Critical	September	Used in Summary Table Analysis	399.7	337.0	62.7	15.7%	324.6	75.2	18.8%	288.3	111.5	27.9%
ME 6	32 47 27	2010	Below Normal	October	Used in Summary Table Analysis	6,104.2	6,049.7	54.5	0.9%	6,038.8	65.4	1.1%	6,004.9	99.3	1.6%
ME 6	32 47 27	2010	Below Normal	November	Used in Summary Table Analysis	8,351.5	8,307.4	44.1	0.5%	8,298.6	52.9	0.6%	8,269.1	82.4	1.0%
ME 6	32 47 27	2010	Below Normal	December	--	12,476.9	12,438.7	38.2	0.3%	12,431.7	45.1	0.4%	12,407.4	69.4	0.6%
ME 6	32 47 27	2010	Below Normal	January	--	36,640.0	36,606.5	33.6	0.1%	36,599.5	40.5	0.1%	36,578.7	61.3	0.2%
ME 6	32 47 27	2010	Below Normal	February	--	27,360.0	27,331.0	28.9	0.1%	27,325.2	34.7	0.1%	27,306.7	53.2	0.2%
ME 6	32 47 27	2010	Below Normal	March	--	28,937.5	28,910.9	26.6	0.1%	28,905.1	32.4	0.1%	28,887.7	49.8	0.2%
ME 6	32 47 27	2010	Below Normal	April	--	40,200.2	40,173.6	26.6	0.1%	40,169.0	31.3	0.1%	40,152.8	47.5	0.1%
ME 6	32 47 27	2010	Below Normal	May	--	20,413.2	20,363.4	49.8	0.2%	20,354.2	59.0	0.3%	20,325.2	88.0	0.4%
ME 6	32 47 27	2010	Below Normal	June	--	9,464.9	9,394.9	70.0	0.7%	9,381.1	83.8	0.9%	9,340.2	124.8	1.3%
ME 6	32 47 27	2010	Below Normal	July	--	1,463.7	1,399.0	64.7	4.4%	1,386.5	77.2	5.3%	1,349.2	114.5	7.8%
ME 6	32 47 27	2010	Below Normal	August	--	581.5	521.3	60.1	10.3%	509.4	72.0	12.4%	474.0	107.5	18.5%
ME 6	32 47 27	2010	Below Normal	September	Used in Summary Table Analysis	664.2	606.3	57.9	8.7%	594.7	69.5	10.5%	560.0	104.2	15.7%
ME 6	32 47 27	2011	Wet	October	Used in Summary Table Analysis	9,726.7	9,681.9	44.8	0.5%	9,672.8	53.9	0.6%	9,645.4	81.4	0.8%
ME 6	32 47 27	2011	Wet	November	Used in Summary Table Analysis	14,325.2	14,289.4	35.9	0.3%	14,281.3	44.0	0.3%	14,259.3	66.0	0.5%
ME 6	32 47 27	2011	Wet	December	--	34,123.8	34,092.6	31.3	0.1%	34,085.6	38.2	0.1%	34,066.0	57.9	0.2%
ME 6	32 47 27	2011	Wet	January	--	14,236.1	14,208.3	27.8	0.2%	14,202.5	33.6	0.2%	14,186.3	49.8	0.3%
ME 6	32 47 27	2011	Wet	February	--	20,847.2	20,822.9	24.3	0.1%	20,817.1	30.1	0.1%	20,800.9	46.3	0.2%
ME 6	32 47 27	2011	Wet	March	--	52,284.7	52,260.4	24.3	0.0%	52,255.8	28.9	0.1%	52,240.7	44.0	0.1%
ME 6	32 47 27	2011	Wet	April	--	24,895.8	24,872.7	23.1	0.1%	24,866.9	28.9	0.1%	24,853.0	42.8	0.2%
ME 6	32 47 27	2011	Wet	May	--	11,429.4	11,383.6	45.8	0.4%	11,374.3	55.1	0.5%	11,346.9	82.5	0.7%
ME 6	32 47 27	2011	Wet	June	--	7,103.5	7,035.6	67.8	1.0%	7,022.2	81.3	1.1%	6,982.5	120.9	1.7%
ME 6	32 47 27	2011	Wet	July	--	1,835.3	1,766.7	68.6	3.7%	1,753.1	82.2	4.5%	1,714.1	121.2	6.6%
ME 6	32 47 27	2011	Wet	August	--	787.6	728.4	59.2	7.5%	716.7	70.9	9.0%	681.5	106.1	13.5%
ME 6	32 47 27	2011	Wet	September	Used in Summary Table Analysis	444.3	389.8	54.5	12.3%	378.9	65.3	14.7%	346.5	97.8	22.0%
ME 6	32 47 27	2012	Below Normal	October	Used in Summary Table Analysis	4,590.7	4,545.3	45.5	1.0%	4,536.1	54.6	1.2%	4,508.1	82.6	1.8%
ME 6	32 47 27	2012	Below Normal	November	Used in Summary Table Analysis	8,335.4	8,298.8	36.6	0.4%	8,291.4	44.0	0.5%	8,268.8	66.7	0.8%
ME 6	32 47 27	2012	Below Normal	December	--	5,227.2	5,195.9	31.3	0.6%	5,189.6	37.6	0.7%	5,170.3	56.9	1.1%
ME 6	32 47 27	2012	Below Normal	January	--	20,392.4	20,363.4	28.9	0.1%	20,357.6	34.7	0.2%	20,340.3	52.1	0.3%
ME 6	32 47 27	2012	Below Normal	February	--	18,292.8	18,267.4	25.5	0.1%	18,261.6	31.3	0.2%	18,245.4	47.5	0.3%
ME 6	32 47 27	2012	Below Normal	March	--	45,750.0	45,724.5	25.5	0.1%	45,719.9	30.1	0.1%	45,703.7	46.3	0.1%
ME 6	32 47 27	2012	Below Normal	April	--	26,976.9	26,953.7	23.1	0.1%	26,949.1	27.8	0.1%	26,934.0	42.8	0.2%
ME 6	32 47 27	2012	Below Normal	May	--	7,511.6	7,466.1	45.5	0.6%	7,456.9	54.6	0.7%	7,430.0	81.6	1.1%
ME 6	32 47 27	2012	Below Normal	June	--	5,562.4	5,493.4	69.0	1.2%	5,479.9	82.5	1.5%	5,439.7	122.7	2.2%
ME 6	32 47 27	2012	Below Normal	July	--	2,253.6	2,187.0	66.6	3.0%	2,173.8	79.7	3.5%	2,134.7	118.9	5.3%
ME 6	32 47 27	2012	Below Normal	August	--	396.9	342.5	54.3	13.7%	331.7	65.1	16.4%	299.3	97.5	24.6%
ME 6	32 47 27	2012	Below Normal	September	Used in Summary Table Analysis	259.5	210.6	49.0	18.9%	200.8	58.7	22.6%	171.6	88.0	33.9%
ME 6	32 47 27	2013	Below Normal	October	Used in Summary Table Analysis	1,945.1	1,901.7	43.4	2.2%	1,893.1	52.1	2.7%	1,866.9	78.2	4.0%
ME 6	32 47 27	2013	Below Normal	November	Used in Summary Table Analysis	14,863.4	14,827.5	35.9	0.2%	14,820.6	42.8	0.3%	14,799.8	63.7	0.4%
ME 6	32 47 27	2013	Below Normal	December	--	60,384.3	60,353.0	31.3	0.1%	60,346.1	38.2	0.1%	60,326.4	57.9	0.1%
ME 6	32 47 27	2013	Below Normal	January	--	22,314.8	22,288.2	26.6	0.1%	22,282.4	32.4	0.1%	22,266.2	48.6	0.2%
ME 6	32 47 27	2013	Below Normal	February	--	8,900.0	8,874.9	25.1	0.3%	8,869.8	30.2	0.3%	8,854.4	45.6	0.5%
ME 6	32 47 27	2013	Below Normal	March	--	10,413.4	10,389.5	24.0	0.2%	10,384.6	28.8	0.3%	10,369.9	43.5	0.4%
ME 6	32 47 27	2013	Below Normal	April	--	8,317.6	8,274.3	43.3	0.5%	8,265.6	52.0	0.6%	8,239.7	77.9	0.9%
ME 6	32 47 27	2013	Below Normal	May	--	4,464.7	4,412.3	52.4	1.2%	4,401.7	63.0	1.4%	4,370.5	94.2	2.1%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 47 27	2013	Below Normal	June	--	2,123.3	2,060.3	63.0	3.0%	2,047.8	75.5	3.6%	2,010.9	112.4	5.3%
ME 6	32 47 27	2013	Below Normal	July	--	725.3	663.3	61.9	8.5%	651.1	74.2	10.2%	615.3	110.0	15.2%
ME 6	32 47 27	2013	Below Normal	August	--	349.5	290.7	58.8	16.8%	279.0	70.6	20.2%	243.3	106.3	30.4%
ME 6	32 47 27	2013	Below Normal	September	Used in Summary Table Analysis	4,836.7	4,775.3	61.3	1.3%	4,763.1	73.6	1.5%	4,726.4	110.3	2.3%
ME 6	32 47 27	2014	Critical	October	Used in Summary Table Analysis	284.6	238.9	45.7	16.1%	229.7	54.9	19.3%	202.7	81.9	28.8%
ME 6	32 47 27	2014	Critical	November	Used in Summary Table Analysis	1,566.0	1,529.1	36.9	2.4%	1,521.5	44.4	2.8%	1,498.7	67.2	4.3%
ME 6	32 47 27	2014	Critical	December	--	1,607.3	1,575.0	32.3	2.0%	1,568.4	38.9	2.4%	1,548.4	58.9	3.7%
ME 6	32 47 27	2014	Critical	January	--	2,850.3	2,821.6	28.7	1.0%	2,815.7	34.6	1.2%	2,797.7	52.7	1.8%
ME 6	32 47 27	2014	Critical	February	--	15,834.5	15,807.9	26.6	0.2%	15,802.1	32.4	0.2%	15,785.9	48.6	0.3%
ME 6	32 47 27	2014	Critical	March	--	31,589.1	31,564.8	24.3	0.1%	31,560.2	28.9	0.1%	31,544.0	45.1	0.1%
ME 6	32 47 27	2014	Critical	April	--	13,025.5	12,979.2	46.3	0.4%	12,969.9	55.6	0.4%	12,941.0	84.5	0.6%
ME 6	32 47 27	2014	Critical	May	--	5,211.1	5,155.6	55.6	1.1%	5,144.6	66.6	1.3%	5,111.1	100.0	1.9%
ME 6	32 47 27	2014	Critical	June	--	1,208.7	1,133.4	75.3	6.2%	1,118.6	90.1	7.5%	1,075.9	132.8	11.0%
ME 6	32 47 27	2014	Critical	July	--	553.8	482.6	71.2	12.9%	468.4	85.3	15.4%	431.0	122.7	22.2%
ME 6	32 47 27	2014	Critical	August	--	357.6	289.0	68.6	19.2%	275.2	82.4	23.0%	236.1	121.4	34.0%
ME 6	32 47 27	2014	Critical	September	Used in Summary Table Analysis	2,599.2	2,531.3	67.9	2.6%	2,517.8	81.4	3.1%	2,477.5	121.6	4.7%
ME 6	32 47 27	2015	Dry	October	Used in Summary Table Analysis	11,452.2	11,398.4	53.8	0.5%	11,387.7	64.5	0.6%	11,355.2	97.0	0.8%
ME 6	32 47 27	2015	Dry	November	Used in Summary Table Analysis	9,132.6	9,091.6	41.1	0.4%	9,083.1	49.5	0.5%	9,054.6	78.0	0.9%
ME 6	32 47 27	2015	Dry	December	--	32,965.3	32,930.6	34.7	0.1%	32,922.5	42.8	0.1%	32,900.5	64.8	0.2%
ME 6	32 47 27	2015	Dry	January	--	14,630.8	14,599.5	31.3	0.2%	14,592.6	38.2	0.3%	14,572.9	57.9	0.4%
ME 6	32 47 27	2015	Dry	February	--	27,372.7	27,344.9	27.8	0.1%	27,339.1	33.6	0.1%	27,320.6	52.1	0.2%
ME 6	32 47 27	2015	Dry	March	--	11,603.0	11,578.7	24.3	0.2%	11,573.8	29.2	0.3%	11,558.3	44.7	0.4%
ME 6	32 47 27	2015	Dry	April	--	8,477.1	8,430.7	46.4	0.5%	8,421.3	55.8	0.7%	8,393.3	83.8	1.0%
ME 6	32 47 27	2015	Dry	May	--	1,512.8	1,458.1	54.7	3.6%	1,447.2	65.6	4.3%	1,415.5	97.3	6.4%
ME 6	32 47 27	2015	Dry	June	--	659.3	589.1	70.2	10.6%	575.3	84.0	12.7%	534.3	125.0	19.0%
ME 6	32 47 27	2015	Dry	July	--	276.0	205.5	70.5	25.5%	191.5	84.5	30.6%	155.0	121.0	43.8%
ME 6	32 47 27	2015	Dry	August	--	175.4	106.5	68.9	39.3%	92.8	82.6	47.1%	54.4	121.0	69.0%
ME 6	32 47 27	2015	Dry	September	Used in Summary Table Analysis	128.6	63.3	65.3	50.8%	49.9	78.7	61.2%	11.0	117.7	91.5%
ME 6	32 47 27	2016	Above Normal	October	Used in Summary Table Analysis	93.6	38.2	55.3	59.1%	27.5	66.1	70.6%	0.1	93.5	99.9%
ME 6	32 47 27	2016	Above Normal	November	Used in Summary Table Analysis	3,948.6	3,905.0	43.6	1.1%	3,896.1	52.5	1.3%	3,864.4	84.3	2.1%
ME 6	32 47 27	2016	Above Normal	December	--	37,028.9	36,989.6	39.4	0.1%	36,981.5	47.5	0.1%	36,957.2	71.8	0.2%
ME 6	32 47 27	2016	Above Normal	January	--	57,741.9	57,707.2	34.7	0.1%	57,699.1	42.8	0.1%	57,677.1	64.8	0.1%
ME 6	32 47 27	2016	Above Normal	February	--	24,336.8	24,309.0	27.8	0.1%	24,302.1	34.7	0.1%	24,284.7	52.1	0.2%
ME 6	32 47 27	2016	Above Normal	March	--	41,975.7	41,947.9	27.8	0.1%	41,943.3	32.4	0.1%	41,925.9	49.8	0.1%
ME 6	32 47 27	2016	Above Normal	April	--	18,592.6	18,568.3	24.3	0.1%	18,563.7	28.9	0.2%	18,547.5	45.1	0.2%
ME 6	32 47 27	2016	Above Normal	May	--	5,235.5	5,206.1	29.4	0.6%	5,200.1	35.4	0.7%	5,181.9	53.6	1.0%
ME 6	32 47 27	2016	Above Normal	June	--	1,519.0	1,465.2	53.8	3.5%	1,455.4	63.5	4.2%	1,427.1	91.9	6.0%
ME 6	32 47 27	2016	Above Normal	July	--	833.7	772.2	61.5	7.4%	760.0	73.7	8.8%	723.9	109.8	13.2%
ME 6	32 47 27	2016	Above Normal	August	--	502.8	441.8	61.0	12.1%	429.6	73.2	14.6%	393.4	109.5	21.8%
ME 6	32 47 27	2016	Above Normal	September	Used in Summary Table Analysis	338.7	281.1	57.6	17.0%	269.4	69.4	20.5%	234.4	104.3	30.8%
ME 6	32 47 27	2017	Wet	October	Used in Summary Table Analysis	18,445.6	18,399.3	46.3	0.3%	18,390.0	55.6	0.3%	18,361.1	84.5	0.5%
ME 6	32 47 27	2017	Wet	November	Used in Summary Table Analysis	19,000.0	18,963.0	37.0	0.2%	18,956.0	44.0	0.2%	18,934.0	66.0	0.3%
ME 6	32 47 27	2017	Wet	December	--	24,385.4	24,354.2	31.3	0.1%	24,347.2	38.2	0.2%	24,327.5	57.9	0.2%
ME 6	32 47 27	2017	Wet	January	--	107,699.1	107,670.1	28.9	0.0%	107,664.4	34.7	0.0%	107,645.8	53.2	0.0%
ME 6	32 47 27	2017	Wet	February	--	82,302.1	82,275.5	26.6	0.0%	82,270.8	31.3	0.0%	82,254.6	47.5	0.1%
ME 6	32 47 27	2017	Wet	March	--	27,419.0	27,394.7	24.3	0.1%	27,390.0	28.9	0.1%	27,375.0	44.0	0.2%
ME 6	32 47 27	2017	Wet	April	--	23,093.8	23,070.6	23.1	0.1%	23,067.1	26.6	0.1%	23,053.2	40.5	0.2%
ME 6	32 47 27	2017	Wet	May	--	6,278.9	6,249.8	29.2	0.5%	6,243.9	35.1	0.6%	6,226.3	52.7	0.8%
ME 6	32 47 27	2017	Wet	June	--	2,138.0	2,082.6	55.3	2.6%	2,071.6	66.3	3.1%	2,039.2	98.7	4.6%
ME 6	32 47 27	2017	Wet	July	--	948.2	886.9	61.3	6.5%	874.8	73.4	7.7%	839.1	109.1	11.5%
ME 6	32 47 27	2017	Wet	August	--	520.5	460.1	60.4	11.6%	448.1	72.4	13.9%	412.3	108.2	20.8%
ME 6	32 47 27	2017	Wet	September	Used in Summary Table Analysis	334.8	278.3	56.5	16.9%	267.0	67.8	20.3%	233.1	101.7	30.4%
ME 6	32 47 27	2018	Above Normal	October	Used in Summary Table Analysis	287.5	241.8	45.7	15.9%	232.5	55.0	19.1%	204.8	82.7	28.7%
ME 6	32 47 27	2018	Above Normal	November	Used in Summary Table Analysis	10,972.7	10,936.0	36.7	0.3%	10,928.6	44.1	0.4%	10,906.1	66.6	0.6%
ME 6	32 47 27	2018	Above Normal	December	--	5,464.9	5,433.9	31.0	0.6%	5,427.5	37.4	0.7%	5,408.3	56.6	1.0%
ME 6	32 47 27	2018	Above Normal	January	--	18,089.1	18,061.3	27.8	0.2%	18,055.6	33.6	0.2%	18,038.2	50.9	0.3%
ME 6	32 47 27	2018	Above Normal	February	--	7,613.5	7,589.0	24.5	0.3%	7,583.9	29.6	0.4%	7,568.5	45.0	0.6%
ME 6	32 47 27	2018	Above Normal	March	--	20,899.3	20,876.2	23.1	0.1%	20,871.5	27.8	0.1%	20,856.5	42.8	0.2%
ME 6	32 47 27	2018	Above Normal	April	--	32,434.0	32,413.2	20.8	0.1%	32,408.6	25.5	0.1%	32,395.8	38.2	0.1%
ME 6	32 47 27	2018	Above Normal	May	--	6,997.2	6,953.9	43.3	0.6%	6,945.4	51.9	0.7%	6,919.1	78.1	1.1%
ME 6	32 47 27	2018	Above Normal	June	--	1,924.4	1,868.1	56.4	2.9%	1,856.9	67.5	3.5%	1,824.2	100.2	5.2%
ME 6	32 47 27	2018	Above Normal	July	--	793.2	731.1	62.1	7.8%	718.7	74.5	9.4%	682.0	111.2	14.0%
ME 6	32 47 27	2018	Above Normal	August	--	454.5	396.0	58.5	12.9%	384.2	70.3	15.5%	349.2	105.3	23.2%
ME 6	32 47 27	2018	Above Normal	September	Used in Summary Table Analysis	311.2	254.5	56.7	18.2%	243.1	68.1	21.9%	209.1	102.1	32.8%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 6	32 47 27	2019	Below Normal	October	Used in Summary Table Analysis	217.1	171.9	45.2	20.8%	162.7	54.4	25.1%	135.2	82.0	37.8%
ME 6	32 47 27	2019	Below Normal	November	Used in Summary Table Analysis	6,743.5	6,706.6	36.9	0.5%	6,699.1	44.4	0.7%	6,676.4	67.1	1.0%
ME 6	32 47 27	2019	Below Normal	December	--	14,866.9	14,835.6	31.3	0.2%	14,828.7	38.2	0.3%	14,809.0	57.9	0.4%
ME 6	32 47 27	2019	Below Normal	January	--	35,625.0	35,596.1	28.9	0.1%	35,590.3	34.7	0.1%	35,572.9	52.1	0.1%
ME 6	32 47 27	2019	Below Normal	February	--	142,349.5	142,326.4	23.1	0.0%	142,326.4	23.1	0.0%	142,303.2	46.3	0.0%
ME 6	32 47 27	2019	Below Normal	March	--	42,539.4	42,516.2	23.1	0.1%	42,511.6	27.8	0.1%	42,497.7	41.7	0.1%
ME 6	32 47 27	2019	Below Normal	April	--	15,334.5	15,312.5	22.0	0.1%	15,307.9	26.6	0.2%	15,295.1	39.4	0.3%
ME 6	32 47 27	2019	Below Normal	May	--	17,248.8	17,202.5	46.3	0.3%	17,193.3	55.6	0.3%	17,165.5	83.3	0.5%
ME 6	32 47 27	2019	Below Normal	June	--	4,244.9	4,185.8	59.1	1.4%	4,174.4	70.5	1.7%	4,141.1	103.8	2.4%
ME 6	32 47 27	2019	Below Normal	July	--	1,375.2	1,313.0	62.3	4.5%	1,300.7	74.5	5.4%	1,264.1	111.1	8.1%
ME 6	32 47 27	2019	Below Normal	August	--	609.9	550.1	59.8	9.8%	538.2	71.7	11.8%	502.8	107.1	17.6%
ME 6	32 47 27	2019	Below Normal	September	Used in Summary Table Analysis	474.5	418.1	56.4	11.9%	406.8	67.7	14.3%	372.9	101.6	21.4%
ME 6	32 47 27	2020	Dry	October	Used in Summary Table Analysis	365.3	321.6	43.6	11.9%	312.8	52.5	14.4%	286.2	79.0	21.6%
ME 6	32 47 27	2020	Dry	November	Used in Summary Table Analysis	336.4	301.5	34.9	10.4%	294.4	42.0	12.5%	273.1	63.3	18.8%
ME 6	32 47 27	2020	Dry	December	--	13,578.7	13,546.3	32.4	0.2%	13,540.5	38.2	0.3%	13,520.8	57.9	0.4%
ME 6	32 47 27	2020	Dry	January	--	22,560.2	22,532.4	27.8	0.1%	22,525.5	34.7	0.2%	22,508.1	52.1	0.2%
ME 6	32 47 27	2020	Dry	February	--	7,425.6	7,400.2	25.3	0.3%	7,395.0	30.6	0.4%	7,379.3	46.3	0.6%
ME 6	32 47 27	2020	Dry	March	--	7,287.7	7,264.0	23.7	0.3%	7,259.1	28.6	0.4%	7,244.4	43.3	0.6%
ME 6	32 47 27	2020	Dry	April	--	5,530.8	5,484.6	46.2	0.8%	5,475.2	55.6	1.0%	5,447.6	83.2	1.5%
ME 6	32 47 27	2020	Dry	May	--	7,438.1	7,382.5	55.6	0.7%	7,371.4	66.7	0.9%	7,338.3	99.8	1.3%
ME 6	32 47 27	2020	Dry	June	--	2,108.4	2,037.7	70.7	3.4%	2,024.1	84.4	4.0%	1,983.7	124.8	5.9%
ME 6	32 47 27	2020	Dry	July	--	805.6	732.9	72.7	9.0%	718.5	87.2	10.8%	680.9	124.7	15.5%
ME 6	32 47 27	2020	Dry	August	--	408.9	336.7	72.2	17.7%	322.4	86.6	21.2%	282.4	126.6	30.9%
ME 6	32 47 27	2020	Dry	September	Used in Summary Table Analysis	258.2	189.7	68.5	26.5%	175.8	82.4	31.9%	135.1	123.0	47.7%
ME 7	32 44 30	2000	Above Normal	October	Used in Summary Table Analysis	838.1	790.3	47.8	5.7%	780.6	57.5	6.9%	751.6	86.5	10.3%
ME 7	32 44 30	2000	Above Normal	November	Used in Summary Table Analysis	12,409.7	12,371.5	38.2	0.3%	12,363.4	46.3	0.4%	12,339.1	70.6	0.6%
ME 7	32 44 30	2000	Above Normal	December	--	10,967.0	10,934.1	32.9	0.3%	10,927.4	39.6	0.4%	10,907.1	60.0	0.5%
ME 7	32 44 30	2000	Above Normal	January	--	29,061.3	29,031.3	30.1	0.1%	29,025.5	35.9	0.1%	29,006.9	54.4	0.2%
ME 7	32 44 30	2000	Above Normal	February	--	37,357.6	37,332.2	25.5	0.1%	37,326.4	31.3	0.1%	37,310.2	47.5	0.1%
ME 7	32 44 30	2000	Above Normal	March	--	18,415.5	18,391.2	24.3	0.1%	18,386.6	28.9	0.2%	18,371.5	44.0	0.2%
ME 7	32 44 30	2000	Above Normal	April	--	12,392.4	12,369.2	23.1	0.2%	12,364.6	27.8	0.2%	12,350.7	41.7	0.3%
ME 7	32 44 30	2000	Above Normal	May	--	7,160.4	7,114.6	45.8	0.6%	7,105.3	55.1	0.8%	7,077.9	82.5	1.2%
ME 7	32 44 30	2000	Above Normal	June	--	2,639.9	2,571.2	68.8	2.6%	2,557.5	82.4	3.1%	2,517.1	122.8	4.7%
ME 7	32 44 30	2000	Above Normal	July	--	1,008.2	943.8	64.3	6.4%	931.1	77.0	7.6%	893.2	114.9	11.4%
ME 7	32 44 30	2000	Above Normal	August	--	539.1	478.0	61.1	11.3%	465.8	73.3	13.6%	429.4	109.7	20.4%
ME 7	32 44 30	2000	Above Normal	September	Used in Summary Table Analysis	310.9	255.5	55.4	17.8%	244.4	66.4	21.4%	211.2	99.7	32.1%
ME 7	32 44 30	2001	Dry	October	Used in Summary Table Analysis	3,887.2	3,840.3	46.9	1.2%	3,830.8	56.4	1.5%	3,802.2	85.0	2.2%
ME 7	32 44 30	2001	Dry	November	Used in Summary Table Analysis	6,236.7	6,199.0	37.7	0.6%	6,191.3	45.4	0.7%	6,168.1	68.6	1.1%
ME 7	32 44 30	2001	Dry	December	--	8,951.4	8,919.0	32.4	0.4%	8,912.4	39.0	0.4%	8,892.4	59.0	0.7%
ME 7	32 44 30	2001	Dry	January	--	13,002.3	12,973.4	28.9	0.2%	12,967.6	34.7	0.3%	12,949.1	53.2	0.4%
ME 7	32 44 30	2001	Dry	February	--	17,606.5	17,581.0	25.5	0.1%	17,575.2	31.3	0.2%	17,559.0	47.5	0.3%
ME 7	32 44 30	2001	Dry	March	--	12,366.9	12,343.8	23.1	0.2%	12,338.0	28.9	0.2%	12,324.1	42.8	0.3%
ME 7	32 44 30	2001	Dry	April	--	11,046.2	10,999.2	47.0	0.4%	10,989.8	56.4	0.5%	10,961.7	84.5	0.8%
ME 7	32 44 30	2001	Dry	May	--	2,642.5	2,586.5	56.0	2.1%	2,575.2	67.2	2.5%	2,541.8	100.7	3.8%
ME 7	32 44 30	2001	Dry	June	--	2,697.9	2,620.5	77.4	2.9%	2,605.3	92.6	3.4%	2,560.6	137.3	5.1%
ME 7	32 44 30	2001	Dry	July	--	728.1	653.2	74.9	10.3%	638.3	89.8	12.3%	599.0	129.1	17.7%
ME 7	32 44 30	2001	Dry	August	--	186.1	112.7	73.4	39.4%	98.0	88.1	47.3%	56.6	129.5	69.6%
ME 7	32 44 30	2001	Dry	September	Used in Summary Table Analysis	109.8	42.8	67.0	61.0%	29.4	80.4	73.2%	0.0	109.8	100.0%
ME 7	32 44 30	2002	Below Normal	October	Used in Summary Table Analysis	280.8	223.3	57.6	20.5%	211.6	69.3	24.7%	176.9	104.0	37.0%
ME 7	32 44 30	2002	Below Normal	November	Used in Summary Table Analysis	12,175.9	12,129.6	46.3	0.4%	12,120.4	55.6	0.5%	12,089.1	86.8	0.7%
ME 7	32 44 30	2002	Below Normal	December	--	36,119.2	36,077.5	41.7	0.1%	36,069.4	49.8	0.1%	36,044.0	75.2	0.2%
ME 7	32 44 30	2002	Below Normal	January	--	31,152.8	31,118.1	34.7	0.1%	31,111.1	41.7	0.1%	31,089.1	63.7	0.2%
ME 7	32 44 30	2002	Below Normal	February	--	24,843.8	24,812.5	31.3	0.1%	24,805.6	38.2	0.2%	24,785.9	57.9	0.2%
ME 7	32 44 30	2002	Below Normal	March	--	17,909.7	17,880.8	28.9	0.2%	17,875.0	34.7	0.2%	17,856.5	53.2	0.3%
ME 7	32 44 30	2002	Below Normal	April	--	9,977.1	9,929.3	47.8	0.5%	9,919.8	57.3	0.6%	9,891.1	86.0	0.9%
ME 7	32 44 30	2002	Below Normal	May	--	3,341.1	3,284.6	56.5	1.7%	3,273.3	67.8	2.0%	3,239.5	101.6	3.0%
ME 7	32 44 30	2002	Below Normal	June	--	867.0	801.9	65.1	7.5%	789.0	78.0	9.0%	750.8	116.2	13.4%
ME 7	32 44 30	2002	Below Normal	July	--	376.3	308.9	67.4	17.9%	295.5	80.8	21.5%	256.4	119.9	31.9%
ME 7	32 44 30	2002	Below Normal	August	--	242.8	178.6	64.2	26.4%	165.8	77.0	31.7%	127.0	115.9	47.7%
ME 7	32 44 30	2002	Below Normal	September	Used in Summary Table Analysis	179.0	117.5	61.6	34.4%	105.2	73.8	41.2%	67.6	111.4	62.2%
ME 7	32 44 30	2003	Wet	October	Used in Summary Table Analysis	143.7	91.9	51.7	36.0%	81.5	62.2	43.3%	50.2	93.5	65.1%
ME 7	32 44 30	2003	Wet	November	Used in Summary Table Analysis	914.7	872.2	42.5	4.7%	863.5	51.2	5.6%	837.4	77.3	8.5%
ME 7	32 44 30	2003	Wet	December	--	57,843.8	57,805.6	38.2	0.1%	57,797.5	46.3	0.1%	57,773.1	70.6	0.1%
ME 7	32 44 30	2003	Wet	January	--	31,739.6	31,707.2	32.4	0.1%	31,700.2	39.4	0.1%	31,679.4	60.2	0.2%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 7	32 44 30	2003	Wet	February	--	20,465.3	20,436.3	28.9	0.1%	20,430.6	34.7	0.2%	20,412.0	53.2	0.3%
ME 7	32 44 30	2003	Wet	March	--	24,208.3	24,180.6	27.8	0.1%	24,175.9	32.4	0.1%	24,158.6	49.8	0.2%
ME 7	32 44 30	2003	Wet	April	--	43,338.0	43,312.5	25.5	0.1%	43,307.9	30.1	0.1%	43,291.7	46.3	0.1%
ME 7	32 44 30	2003	Wet	May	--	12,281.3	12,232.6	48.6	0.4%	12,223.4	57.9	0.5%	12,194.4	86.8	0.7%
ME 7	32 44 30	2003	Wet	June	--	3,183.3	3,121.8	61.6	1.9%	3,109.7	73.6	2.3%	3,074.1	109.3	3.4%
ME 7	32 44 30	2003	Wet	July	--	1,493.3	1,426.7	66.6	4.5%	1,413.5	79.7	5.3%	1,374.4	118.9	8.0%
ME 7	32 44 30	2003	Wet	August	--	778.6	713.0	65.5	8.4%	699.5	79.0	10.1%	657.9	120.7	15.5%
ME 7	32 44 30	2003	Wet	September	Used in Summary Table Analysis	475.2	418.1	57.0	12.0%	406.7	68.4	14.4%	371.4	103.8	21.8%
ME 7	32 44 30	2004	Wet	October	Used in Summary Table Analysis	341.6	293.5	48.1	14.1%	283.8	57.9	16.9%	254.5	87.2	25.5%
ME 7	32 44 30	2004	Wet	November	Used in Summary Table Analysis	5,925.5	5,885.5	39.9	0.7%	5,877.4	48.0	0.8%	5,852.8	72.7	1.2%
ME 7	32 44 30	2004	Wet	December	--	36,840.3	36,804.4	35.9	0.1%	36,797.5	42.8	0.1%	36,775.5	64.8	0.2%
ME 7	32 44 30	2004	Wet	January	--	31,831.0	31,800.9	30.1	0.1%	31,795.1	35.9	0.1%	31,776.6	54.4	0.2%
ME 7	32 44 30	2004	Wet	February	--	38,581.0	38,553.2	27.8	0.1%	38,548.6	32.4	0.1%	38,531.3	49.8	0.1%
ME 7	32 44 30	2004	Wet	March	--	16,585.6	16,560.2	25.5	0.2%	16,555.6	30.1	0.2%	16,539.4	46.3	0.3%
ME 7	32 44 30	2004	Wet	April	--	9,498.4	9,475.0	23.4	0.2%	9,470.1	28.2	0.3%	9,455.7	42.7	0.4%
ME 7	32 44 30	2004	Wet	May	--	3,459.7	3,413.4	46.3	1.3%	3,404.3	55.4	1.6%	3,376.6	83.1	2.4%
ME 7	32 44 30	2004	Wet	June	--	704.5	645.2	59.2	8.4%	633.6	70.9	10.1%	599.0	105.5	15.0%
ME 7	32 44 30	2004	Wet	July	--	372.2	307.0	65.2	17.5%	294.1	78.1	21.0%	255.6	116.6	31.3%
ME 7	32 44 30	2004	Wet	August	--	240.6	178.4	62.2	25.9%	166.0	74.6	31.0%	128.8	111.7	46.5%
ME 7	32 44 30	2004	Wet	September	Used in Summary Table Analysis	176.7	116.7	60.0	34.0%	104.7	72.0	40.8%	68.7	108.0	61.1%
ME 7	32 44 30	2005	Above Normal	October	Used in Summary Table Analysis	7,840.0	7,790.9	49.2	0.6%	7,781.0	59.0	0.8%	7,751.0	89.0	1.1%
ME 7	32 44 30	2005	Above Normal	November	Used in Summary Table Analysis	2,282.3	2,243.6	38.7	1.7%	2,235.8	46.5	2.0%	2,211.9	70.4	3.1%
ME 7	32 44 30	2005	Above Normal	December	--	21,471.1	21,437.5	33.6	0.2%	21,430.6	40.5	0.2%	21,409.7	61.3	0.3%
ME 7	32 44 30	2005	Above Normal	January	--	22,732.6	22,702.5	30.1	0.1%	22,696.8	35.9	0.2%	22,678.2	54.4	0.2%
ME 7	32 44 30	2005	Above Normal	February	--	14,075.2	14,049.8	25.5	0.2%	14,044.0	31.3	0.2%	14,027.8	47.5	0.3%
ME 7	32 44 30	2005	Above Normal	March	--	28,833.3	28,809.0	24.3	0.1%	28,804.4	28.9	0.1%	28,789.4	44.0	0.2%
ME 7	32 44 30	2005	Above Normal	April	--	21,619.2	21,596.1	23.1	0.1%	21,591.4	27.8	0.1%	21,577.5	41.7	0.2%
ME 7	32 44 30	2005	Above Normal	May	--	19,778.9	19,731.5	47.5	0.2%	19,722.2	56.7	0.3%	19,694.4	84.5	0.4%
ME 7	32 44 30	2005	Above Normal	June	--	16,118.1	16,047.5	70.6	0.4%	16,033.6	84.5	0.5%	15,993.1	125.0	0.8%
ME 7	32 44 30	2005	Above Normal	July	--	2,870.5	2,803.9	66.6	2.3%	2,791.2	79.3	2.8%	2,753.2	117.2	4.1%
ME 7	32 44 30	2005	Above Normal	August	--	1,001.3	940.0	61.3	6.1%	928.0	73.4	7.3%	891.7	109.6	10.9%
ME 7	32 44 30	2005	Above Normal	September	Used in Summary Table Analysis	542.8	487.4	55.4	10.2%	476.4	66.4	12.2%	443.3	99.5	18.3%
ME 7	32 44 30	2006	Wet	October	Used in Summary Table Analysis	654.7	608.7	46.0	7.0%	599.5	55.3	8.4%	571.4	83.3	12.7%
ME 7	32 44 30	2006	Wet	November	Used in Summary Table Analysis	9,512.5	9,475.6	36.9	0.4%	9,468.1	44.4	0.5%	9,445.3	67.2	0.7%
ME 7	32 44 30	2006	Wet	December	--	44,165.5	44,133.1	32.4	0.1%	44,126.2	39.4	0.1%	44,105.3	60.2	0.1%
ME 7	32 44 30	2006	Wet	January	--	46,898.1	46,868.1	30.1	0.1%	46,862.3	35.9	0.1%	46,843.8	54.4	0.1%
ME 7	32 44 30	2006	Wet	February	--	26,876.2	26,850.7	25.5	0.1%	26,846.1	30.1	0.1%	26,829.9	46.3	0.2%
ME 7	32 44 30	2006	Wet	March	--	47,635.4	47,611.1	24.3	0.1%	47,606.5	28.9	0.1%	47,591.4	44.0	0.1%
ME 7	32 44 30	2006	Wet	April	--	30,615.7	30,593.8	22.0	0.1%	30,589.1	26.6	0.1%	30,576.4	39.4	0.1%
ME 7	32 44 30	2006	Wet	May	--	14,317.1	14,288.2	28.9	0.2%	14,282.4	34.7	0.2%	14,265.0	52.1	0.4%
ME 7	32 44 30	2006	Wet	June	--	3,563.0	3,505.0	58.0	1.6%	3,493.6	69.3	1.9%	3,460.0	103.0	2.9%
ME 7	32 44 30	2006	Wet	July	--	1,299.9	1,236.3	63.5	4.9%	1,223.8	76.0	5.8%	1,186.8	113.1	8.7%
ME 7	32 44 30	2006	Wet	August	--	686.1	623.1	63.0	9.2%	610.6	75.5	11.0%	573.3	112.9	16.5%
ME 7	32 44 30	2006	Wet	September	Used in Summary Table Analysis	445.6	389.1	56.5	12.7%	377.8	67.8	15.2%	344.0	101.6	22.8%
ME 7	32 44 30	2007	Above Normal	October	Used in Summary Table Analysis	291.4	244.2	47.2	16.2%	234.7	56.7	19.5%	205.9	85.5	29.3%
ME 7	32 44 30	2007	Above Normal	November	Used in Summary Table Analysis	8,848.8	8,809.8	39.0	0.4%	8,801.9	47.0	0.5%	8,777.8	71.1	0.8%
ME 7	32 44 30	2007	Above Normal	December	--	20,775.5	20,740.7	34.7	0.2%	20,733.8	41.7	0.2%	20,713.0	62.5	0.3%
ME 7	32 44 30	2007	Above Normal	January	--	10,349.2	10,319.8	29.4	0.3%	10,313.8	35.4	0.3%	10,295.4	53.8	0.5%
ME 7	32 44 30	2007	Above Normal	February	--	30,981.5	30,953.7	27.8	0.1%	30,947.9	33.6	0.1%	30,930.6	50.9	0.2%
ME 7	32 44 30	2007	Above Normal	March	--	13,172.5	13,147.0	25.5	0.2%	13,142.4	30.1	0.2%	13,126.2	46.3	0.4%
ME 7	32 44 30	2007	Above Normal	April	--	11,604.2	11,558.3	45.8	0.4%	11,549.2	55.0	0.5%	11,521.9	82.3	0.7%
ME 7	32 44 30	2007	Above Normal	May	--	4,172.8	4,118.4	54.4	1.3%	4,107.6	65.2	1.6%	4,075.0	97.8	2.3%
ME 7	32 44 30	2007	Above Normal	June	--	1,523.6	1,457.3	66.3	4.4%	1,444.2	79.4	5.2%	1,405.3	118.3	7.8%
ME 7	32 44 30	2007	Above Normal	July	--	509.6	441.8	67.8	13.3%	428.4	81.3	15.9%	388.6	121.0	23.7%
ME 7	32 44 30	2007	Above Normal	August	--	238.9	176.8	62.1	26.0%	164.5	74.4	31.2%	126.7	112.2	47.0%
ME 7	32 44 30	2007	Above Normal	September	Used in Summary Table Analysis	166.6	106.9	59.6	35.8%	95.1	71.5	42.9%	59.2	107.3	64.4%
ME 7	32 44 30	2008	Dry	October	Used in Summary Table Analysis	3,503.2	3,453.1	50.1	1.4%	3,443.1	60.2	1.7%	3,412.4	90.9	2.6%
ME 7	32 44 30	2008	Dry	November	Used in Summary Table Analysis	3,341.0	3,301.9	39.1	1.2%	3,294.0	47.0	1.4%	3,269.6	71.4	2.1%
ME 7	32 44 30	2008	Dry	December	--	23,601.9	23,567.1	34.7	0.1%	23,560.2	41.7	0.2%	23,539.4	62.5	0.3%
ME 7	32 44 30	2008	Dry	January	--	37,985.0	37,953.7	31.3	0.1%	37,946.8	38.2	0.1%	37,928.2	56.7	0.1%
ME 7	32 44 30	2008	Dry	February	--	26,380.8	26,354.2	26.6	0.1%	26,349.5	31.3	0.1%	26,332.2	48.6	0.2%
ME 7	32 44 30	2008	Dry	March	--	11,847.2	11,822.9	24.3	0.2%	11,818.3	28.9	0.2%	11,803.2	44.0	0.4%
ME 7	32 44 30	2008	Dry	April	--	9,061.3	9,015.2	46.2	0.5%	9,006.0	55.3	0.6%	8,978.2	83.1	0.9%
ME 7	32 44 30	2008	Dry	May	--	1,360.6	1,311.3	49.3	3.6%	1,301.7	58.9	4.3%	1,272.8	87.8	6.5%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 7	32 44 30	2008	Dry	June	--	452.1	379.7	72.4	16.0%	365.5	86.6	19.2%	323.5	128.7	28.5%
ME 7	32 44 30	2008	Dry	July	--	269.7	196.0	73.7	27.3%	181.5	88.2	32.7%	143.1	126.6	47.0%
ME 7	32 44 30	2008	Dry	August	--	193.7	121.3	72.4	37.4%	106.9	86.8	44.8%	63.6	130.1	67.2%
ME 7	32 44 30	2008	Dry	September	Used in Summary Table Analysis	155.1	84.4	70.6	45.6%	70.4	84.7	54.6%	29.6	125.5	80.9%
ME 7	32 44 30	2009	Critical	October	Used in Summary Table Analysis	942.9	885.3	57.6	6.1%	873.8	69.1	7.3%	838.7	104.2	11.0%
ME 7	32 44 30	2009	Critical	November	Used in Summary Table Analysis	5,631.8	5,586.2	45.6	0.8%	5,577.0	54.9	1.0%	5,546.2	85.6	1.5%
ME 7	32 44 30	2009	Critical	December	--	12,412.0	12,373.8	38.2	0.3%	12,365.7	46.3	0.4%	12,341.4	70.6	0.6%
ME 7	32 44 30	2009	Critical	January	--	8,869.7	8,835.2	34.5	0.4%	8,828.0	41.7	0.5%	8,806.4	63.3	0.7%
ME 7	32 44 30	2009	Critical	February	--	22,822.9	22,792.8	30.1	0.1%	22,785.9	37.0	0.2%	22,767.4	55.6	0.2%
ME 7	32 44 30	2009	Critical	March	--	21,276.6	21,250.0	26.6	0.1%	21,244.2	32.4	0.2%	21,226.9	49.8	0.2%
ME 7	32 44 30	2009	Critical	April	--	10,117.9	10,069.4	48.5	0.5%	10,059.7	58.2	0.6%	10,030.4	87.5	0.9%
ME 7	32 44 30	2009	Critical	May	--	15,666.7	15,607.6	59.0	0.4%	15,596.1	70.6	0.5%	15,560.2	106.5	0.7%
ME 7	32 44 30	2009	Critical	June	--	3,175.3	3,098.1	77.2	2.4%	3,083.2	92.1	2.9%	3,038.5	136.8	4.3%
ME 7	32 44 30	2009	Critical	July	--	1,278.0	1,203.6	74.4	5.8%	1,188.9	89.1	7.0%	1,150.1	127.9	10.0%
ME 7	32 44 30	2009	Critical	August	--	684.8	611.9	72.9	10.6%	597.4	87.4	12.8%	556.5	128.3	18.7%
ME 7	32 44 30	2009	Critical	September	Used in Summary Table Analysis	405.0	338.2	66.8	16.5%	324.9	80.1	19.8%	286.2	118.8	29.3%
ME 7	32 44 30	2010	Below Normal	October	Used in Summary Table Analysis	6,111.3	6,053.1	58.2	1.0%	6,041.4	69.9	1.1%	6,005.2	106.1	1.7%
ME 7	32 44 30	2010	Below Normal	November	Used in Summary Table Analysis	8,374.1	8,326.7	47.3	0.6%	8,317.2	56.8	0.7%	8,285.6	88.4	1.1%
ME 7	32 44 30	2010	Below Normal	December	--	12,519.7	12,480.3	39.4	0.3%	12,471.1	48.6	0.4%	12,445.6	74.1	0.6%
ME 7	32 44 30	2010	Below Normal	January	--	36,780.1	36,743.1	37.0	0.1%	36,736.1	44.0	0.1%	36,713.0	67.1	0.2%
ME 7	32 44 30	2010	Below Normal	February	--	27,400.5	27,369.2	31.3	0.1%	27,363.4	37.0	0.1%	27,343.8	56.7	0.2%
ME 7	32 44 30	2010	Below Normal	March	--	28,973.4	28,944.4	28.9	0.1%	28,938.7	34.7	0.1%	28,921.3	52.1	0.2%
ME 7	32 44 30	2010	Below Normal	April	--	40,265.0	40,237.3	27.8	0.1%	40,231.5	33.6	0.1%	40,215.3	49.8	0.1%
ME 7	32 44 30	2010	Below Normal	May	--	20,461.8	20,412.0	49.8	0.2%	20,401.6	60.2	0.3%	20,372.7	89.1	0.4%
ME 7	32 44 30	2010	Below Normal	June	--	9,505.1	9,432.4	72.7	0.8%	9,418.2	86.9	0.9%	9,375.5	129.6	1.4%
ME 7	32 44 30	2010	Below Normal	July	--	1,468.8	1,400.9	67.8	4.6%	1,387.7	81.0	5.5%	1,348.6	120.1	8.2%
ME 7	32 44 30	2010	Below Normal	August	--	587.9	524.8	63.1	10.7%	512.3	75.6	12.9%	475.0	112.9	19.2%
ME 7	32 44 30	2010	Below Normal	September	Used in Summary Table Analysis	670.8	609.8	61.0	9.1%	597.5	73.3	10.9%	561.0	109.8	16.4%
ME 7	32 44 30	2011	Wet	October	Used in Summary Table Analysis	9,759.8	9,712.5	47.3	0.5%	9,702.8	57.1	0.6%	9,673.7	86.1	0.9%
ME 7	32 44 30	2011	Wet	November	Used in Summary Table Analysis	14,361.1	14,322.9	38.2	0.3%	14,316.0	45.1	0.3%	14,291.7	69.4	0.5%
ME 7	32 44 30	2011	Wet	December	--	34,265.0	34,232.6	32.4	0.1%	34,224.5	40.5	0.1%	34,203.7	61.3	0.2%
ME 7	32 44 30	2011	Wet	January	--	14,262.7	14,235.0	27.8	0.2%	14,229.2	33.6	0.2%	14,211.8	50.9	0.4%
ME 7	32 44 30	2011	Wet	February	--	20,876.2	20,849.5	26.6	0.1%	20,843.8	32.4	0.2%	20,827.5	48.6	0.2%
ME 7	32 44 30	2011	Wet	March	--	52,378.5	52,353.0	25.5	0.0%	52,348.4	30.1	0.1%	52,332.2	46.3	0.1%
ME 7	32 44 30	2011	Wet	April	--	24,928.2	24,903.9	24.3	0.1%	24,899.3	28.9	0.1%	24,884.3	44.0	0.2%
ME 7	32 44 30	2011	Wet	May	--	11,446.3	11,399.7	46.6	0.4%	11,390.3	56.0	0.5%	11,362.3	84.0	0.7%
ME 7	32 44 30	2011	Wet	June	--	7,120.8	7,050.7	70.1	1.0%	7,036.8	84.0	1.2%	6,995.6	125.2	1.8%
ME 7	32 44 30	2011	Wet	July	--	1,839.4	1,767.9	71.4	3.9%	1,753.8	85.5	4.7%	1,713.2	126.2	6.9%
ME 7	32 44 30	2011	Wet	August	--	793.3	731.4	61.9	7.8%	719.1	74.1	9.3%	682.4	110.9	14.0%
ME 7	32 44 30	2011	Wet	September	Used in Summary Table Analysis	450.0	392.5	57.5	12.8%	381.0	69.0	15.3%	346.7	103.3	22.9%
ME 7	32 44 30	2012	Below Normal	October	Used in Summary Table Analysis	4,609.0	4,561.0	48.0	1.0%	4,551.3	57.8	1.3%	4,521.6	87.4	1.9%
ME 7	32 44 30	2012	Below Normal	November	Used in Summary Table Analysis	8,369.4	8,330.8	38.7	0.5%	8,322.8	46.6	0.6%	8,298.8	70.6	0.8%
ME 7	32 44 30	2012	Below Normal	December	--	5,243.3	5,210.5	32.8	0.6%	5,203.8	39.5	0.8%	5,183.6	59.7	1.1%
ME 7	32 44 30	2012	Below Normal	January	--	20,485.0	20,454.9	30.1	0.1%	20,449.1	35.9	0.2%	20,430.6	54.4	0.3%
ME 7	32 44 30	2012	Below Normal	February	--	18,320.6	18,294.0	26.6	0.1%	18,288.2	32.4	0.2%	18,272.0	48.6	0.3%
ME 7	32 44 30	2012	Below Normal	March	--	45,858.8	45,832.2	26.6	0.1%	45,827.5	31.3	0.1%	45,811.3	47.5	0.1%
ME 7	32 44 30	2012	Below Normal	April	--	27,016.2	26,993.1	23.1	0.1%	26,987.3	28.9	0.1%	26,972.2	44.0	0.2%
ME 7	32 44 30	2012	Below Normal	May	--	7,522.5	7,475.9	46.5	0.6%	7,466.7	55.8	0.7%	7,439.0	83.4	1.1%
ME 7	32 44 30	2012	Below Normal	June	--	5,579.7	5,508.2	71.5	1.3%	5,494.2	85.5	1.5%	5,452.7	127.1	2.3%
ME 7	32 44 30	2012	Below Normal	July	--	2,265.3	2,195.8	69.4	3.1%	2,182.1	83.2	3.7%	2,141.2	124.1	5.5%
ME 7	32 44 30	2012	Below Normal	August	--	401.7	344.7	57.0	14.2%	333.3	68.3	17.0%	299.3	102.4	25.5%
ME 7	32 44 30	2012	Below Normal	September	Used in Summary Table Analysis	265.1	213.4	51.7	19.5%	203.0	62.0	23.4%	172.1	93.0	35.1%
ME 7	32 44 30	2013	Below Normal	October	Used in Summary Table Analysis	1,958.0	1,912.2	45.8	2.3%	1,902.9	55.1	2.8%	1,875.2	82.8	4.2%
ME 7	32 44 30	2013	Below Normal	November	Used in Summary Table Analysis	14,923.6	14,886.6	37.0	0.2%	14,878.5	45.1	0.3%	14,856.5	67.1	0.4%
ME 7	32 44 30	2013	Below Normal	December	--	60,516.2	60,482.6	33.6	0.1%	60,475.7	40.5	0.1%	60,454.9	61.3	0.1%
ME 7	32 44 30	2013	Below Normal	January	--	22,351.9	22,325.2	26.6	0.1%	22,319.4	32.4	0.1%	22,302.1	49.8	0.2%
ME 7	32 44 30	2013	Below Normal	February	--	8,919.6	8,893.6	25.9	0.3%	8,888.3	31.3	0.4%	8,872.5	47.1	0.5%
ME 7	32 44 30	2013	Below Normal	March	--	10,442.9	10,418.2	24.8	0.2%	10,413.1	29.9	0.3%	10,397.8	45.1	0.4%
ME 7	32 44 30	2013	Below Normal	April	--	8,328.1	8,284.0	44.1	0.5%	8,275.2	52.9	0.6%	8,248.7	79.4	1.0%
ME 7	32 44 30	2013	Below Normal	May	--	4,477.8	4,424.0	53.8	1.2%	4,413.2	64.6	1.4%	4,381.0	96.8	2.2%
ME 7	32 44 30	2013	Below Normal	June	--	2,129.5	2,063.7	65.9	3.1%	2,050.7	78.8	3.7%	2,012.2	117.4	5.5%
ME 7	32 44 30	2013	Below Normal	July	--	729.5	664.5	65.0	8.9%	651.6	77.9	10.7%	614.0	115.5	15.8%
ME 7	32 44 30	2013	Below Normal	August	--	354.6	292.8	61.8	17.4%	280.4	74.2	20.9%	243.0	111.6	31.5%
ME 7	32 44 30	2013	Below Normal	September	Used in Summary Table Analysis	4,855.3	4,790.9	64.5	1.3%	4,778.0	77.3	1.6%	4,739.4	116.0	2.4%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 7	32 44 30	2014	Critical	October	Used in Summary Table Analysis	287.4	239.0	48.4	16.8%	229.2	58.2	20.2%	200.5	86.8	30.2%
ME 7	32 44 30	2014	Critical	November	Used in Summary Table Analysis	1,577.1	1,538.0	39.1	2.5%	1,530.1	47.0	3.0%	1,505.9	71.2	4.5%
ME 7	32 44 30	2014	Critical	December	--	1,614.8	1,580.9	33.9	2.1%	1,574.0	40.9	2.5%	1,552.7	62.2	3.8%
ME 7	32 44 30	2014	Critical	January	--	2,861.7	2,831.6	30.1	1.1%	2,825.5	36.2	1.3%	2,806.3	55.4	1.9%
ME 7	32 44 30	2014	Critical	February	--	15,862.3	15,835.6	26.6	0.2%	15,829.9	32.4	0.2%	15,812.5	49.8	0.3%
ME 7	32 44 30	2014	Critical	March	--	31,625.0	31,599.5	25.5	0.1%	31,593.8	31.3	0.1%	31,577.5	47.5	0.2%
ME 7	32 44 30	2014	Critical	April	--	13,038.2	12,990.7	47.5	0.4%	12,981.5	56.7	0.4%	12,952.5	85.6	0.7%
ME 7	32 44 30	2014	Critical	May	--	5,220.3	5,163.2	57.1	1.1%	5,151.9	68.4	1.3%	5,117.5	102.8	2.0%
ME 7	32 44 30	2014	Critical	June	--	1,214.0	1,135.4	78.6	6.5%	1,120.0	94.0	7.7%	1,075.4	138.6	11.4%
ME 7	32 44 30	2014	Critical	July	--	558.2	483.4	74.8	13.4%	468.5	89.7	16.1%	428.8	129.4	23.2%
ME 7	32 44 30	2014	Critical	August	--	362.6	290.5	72.2	19.9%	275.9	86.7	23.9%	234.6	128.1	35.3%
ME 7	32 44 30	2014	Critical	September	Used in Summary Table Analysis	2,609.6	2,537.8	71.8	2.7%	2,523.6	86.0	3.3%	2,480.9	128.7	4.9%
ME 7	32 44 30	2015	Dry	October	Used in Summary Table Analysis	11,483.8	11,426.5	57.3	0.5%	11,415.2	68.6	0.6%	11,380.3	103.5	0.9%
ME 7	32 44 30	2015	Dry	November	Used in Summary Table Analysis	9,164.8	9,121.2	43.6	0.5%	9,112.3	52.5	0.6%	9,081.9	82.9	0.9%
ME 7	32 44 30	2015	Dry	December	--	33,081.0	33,044.0	37.0	0.1%	33,035.9	45.1	0.1%	33,011.6	69.4	0.2%
ME 7	32 44 30	2015	Dry	January	--	14,648.1	14,615.7	32.4	0.2%	14,608.8	39.4	0.3%	14,588.0	60.2	0.4%
ME 7	32 44 30	2015	Dry	February	--	27,419.0	27,390.0	28.9	0.1%	27,384.3	34.7	0.1%	27,365.7	53.2	0.2%
ME 7	32 44 30	2015	Dry	March	--	11,615.7	11,590.3	25.5	0.2%	11,584.5	31.3	0.3%	11,568.5	47.2	0.4%
ME 7	32 44 30	2015	Dry	April	--	8,508.4	8,461.0	47.5	0.6%	8,451.5	56.9	0.7%	8,422.8	85.6	1.0%
ME 7	32 44 30	2015	Dry	May	--	1,516.0	1,459.6	56.4	3.7%	1,448.4	67.6	4.5%	1,415.6	100.3	6.6%
ME 7	32 44 30	2015	Dry	June	--	663.5	590.0	73.5	11.1%	575.5	88.0	13.3%	532.6	130.9	19.7%
ME 7	32 44 30	2015	Dry	July	--	280.4	206.0	74.4	26.5%	191.2	89.1	31.8%	152.3	128.0	45.7%
ME 7	32 44 30	2015	Dry	August	--	180.3	107.6	72.7	40.3%	93.1	87.3	48.4%	52.3	128.0	71.0%
ME 7	32 44 30	2015	Dry	September	Used in Summary Table Analysis	133.2	63.9	69.3	52.0%	49.7	83.6	62.7%	8.3	124.9	93.8%
ME 7	32 44 30	2016	Above Normal	October	Used in Summary Table Analysis	98.0	39.0	58.9	60.2%	27.5	70.4	71.9%	0.0	98.0	100.0%
ME 7	32 44 30	2016	Above Normal	November	Used in Summary Table Analysis	3,977.7	3,931.0	46.6	1.2%	3,921.3	56.4	1.4%	3,887.4	90.3	2.3%
ME 7	32 44 30	2016	Above Normal	December	--	37,164.4	37,123.8	40.5	0.1%	37,114.6	49.8	0.1%	37,088.0	76.4	0.2%
ME 7	32 44 30	2016	Above Normal	January	--	57,880.8	57,844.9	35.9	0.1%	57,836.8	44.0	0.1%	57,813.7	67.1	0.1%
ME 7	32 44 30	2016	Above Normal	February	--	24,360.0	24,329.9	30.1	0.1%	24,324.1	35.9	0.1%	24,305.6	54.4	0.2%
ME 7	32 44 30	2016	Above Normal	March	--	42,042.8	42,013.9	28.9	0.1%	42,008.1	34.7	0.1%	41,990.7	52.1	0.1%
ME 7	32 44 30	2016	Above Normal	April	--	18,611.1	18,585.6	25.5	0.1%	18,581.0	30.1	0.2%	18,564.8	46.3	0.2%
ME 7	32 44 30	2016	Above Normal	May	--	5,243.9	5,213.5	30.3	0.6%	5,207.3	36.6	0.7%	5,188.5	55.3	1.1%
ME 7	32 44 30	2016	Above Normal	June	--	1,524.3	1,468.1	56.3	3.7%	1,458.0	66.3	4.4%	1,428.1	96.2	6.3%
ME 7	32 44 30	2016	Above Normal	July	--	839.4	774.8	64.5	7.7%	762.0	77.4	9.2%	724.0	115.4	13.7%
ME 7	32 44 30	2016	Above Normal	August	--	508.6	444.3	64.4	12.7%	431.4	77.2	15.2%	393.1	115.5	22.7%
ME 7	32 44 30	2016	Above Normal	September	Used in Summary Table Analysis	344.3	283.3	61.0	17.7%	270.9	73.4	21.3%	233.9	110.4	32.1%
ME 7	32 44 30	2017	Wet	October	Used in Summary Table Analysis	18,501.2	18,451.4	49.8	0.3%	18,441.0	60.2	0.3%	18,410.9	90.3	0.5%
ME 7	32 44 30	2017	Wet	November	Used in Summary Table Analysis	19,059.0	19,020.8	38.2	0.2%	19,012.7	46.3	0.2%	18,988.4	70.6	0.4%
ME 7	32 44 30	2017	Wet	December	--	24,476.9	24,443.3	33.6	0.1%	24,436.3	40.5	0.2%	24,415.5	61.3	0.3%
ME 7	32 44 30	2017	Wet	January	--	107,964.1	107,932.9	31.3	0.0%	107,927.1	37.0	0.0%	107,907.4	56.7	0.1%
ME 7	32 44 30	2017	Wet	February	--	82,456.0	82,429.4	26.6	0.0%	82,423.6	32.4	0.0%	82,406.3	49.8	0.1%
ME 7	32 44 30	2017	Wet	March	--	27,468.8	27,443.3	25.5	0.1%	27,437.5	31.3	0.1%	27,422.5	46.3	0.2%
ME 7	32 44 30	2017	Wet	April	--	23,147.0	23,123.8	23.1	0.1%	23,119.2	27.8	0.1%	23,105.3	41.7	0.2%
ME 7	32 44 30	2017	Wet	May	--	6,282.5	6,252.5	30.0	0.5%	6,246.5	36.0	0.6%	6,228.2	54.3	0.9%
ME 7	32 44 30	2017	Wet	June	--	2,147.3	2,089.8	57.5	2.7%	2,078.5	68.9	3.2%	2,044.8	102.5	4.8%
ME 7	32 44 30	2017	Wet	July	--	955.1	890.8	64.3	6.7%	878.2	76.9	8.1%	840.7	114.4	12.0%
ME 7	32 44 30	2017	Wet	August	--	527.3	463.9	63.4	12.0%	451.2	76.1	14.4%	413.6	113.7	21.6%
ME 7	32 44 30	2017	Wet	September	Used in Summary Table Analysis	340.9	281.3	59.6	17.5%	269.3	71.6	21.0%	233.5	107.4	31.5%
ME 7	32 44 30	2018	Above Normal	October	Used in Summary Table Analysis	293.5	244.9	48.6	16.6%	235.1	58.4	19.9%	205.6	87.9	29.9%
ME 7	32 44 30	2018	Above Normal	November	Used in Summary Table Analysis	11,035.4	10,996.3	39.1	0.4%	10,988.3	47.1	0.4%	10,964.2	71.2	0.6%
ME 7	32 44 30	2018	Above Normal	December	--	5,472.5	5,439.5	33.0	0.6%	5,432.6	39.8	0.7%	5,412.2	60.3	1.1%
ME 7	32 44 30	2018	Above Normal	January	--	18,195.6	18,165.5	30.1	0.2%	18,159.7	35.9	0.2%	18,141.2	54.4	0.3%
ME 7	32 44 30	2018	Above Normal	February	--	7,620.3	7,594.3	25.9	0.3%	7,589.0	31.3	0.4%	7,572.9	47.3	0.6%
ME 7	32 44 30	2018	Above Normal	March	--	20,968.8	20,944.4	24.3	0.1%	20,938.7	30.1	0.1%	20,923.6	45.1	0.2%
ME 7	32 44 30	2018	Above Normal	April	--	32,513.9	32,491.9	22.0	0.1%	32,487.3	26.6	0.1%	32,473.4	40.5	0.1%
ME 7	32 44 30	2018	Above Normal	May	--	7,001.3	6,956.9	44.3	0.6%	6,948.1	53.1	0.8%	6,921.2	80.1	1.1%
ME 7	32 44 30	2018	Above Normal	June	--	1,929.7	1,870.9	58.8	3.0%	1,859.4	70.4	3.6%	1,825.1	104.6	5.4%
ME 7	32 44 30	2018	Above Normal	July	--	799.2	733.9	65.2	8.2%	720.9	78.3	9.8%	682.3	116.9	14.6%
ME 7	32 44 30	2018	Above Normal	August	--	460.5	398.9	61.6	13.4%	386.5	74.0	16.1%	349.5	111.0	24.1%
ME 7	32 44 30	2018	Above Normal	September	Used in Summary Table Analysis	316.9	257.0	59.9	18.9%	244.9	72.0	22.7%	208.9	108.0	34.1%
ME 7	32 44 30	2019	Below Normal	October	Used in Summary Table Analysis	222.1	173.9	48.2	21.7%	164.1	58.0	26.1%	134.8	87.4	39.3%
ME 7	32 44 30	2019	Below Normal	November	Used in Summary Table Analysis	6,785.6	6,746.2	39.5	0.6%	6,738.1	47.6	0.7%	6,713.8	71.9	1.1%
ME 7	32 44 30	2019	Below Normal	December	--	14,936.3	14,902.8	33.6	0.2%	14,895.8	40.5	0.3%	14,875.0	61.3	0.4%
ME 7	32 44 30	2019	Below Normal	January	--	35,761.6	35,731.5	30.1	0.1%	35,725.7	35.9	0.1%	35,707.2	54.4	0.2%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 7	32 44 30	2019	Below Normal	February	--	142,500.0	142,465.3	34.7	0.0%	142,465.3	34.7	0.0%	142,442.1	57.9	0.0%
ME 7	32 44 30	2019	Below Normal	March	--	42,613.4	42,589.1	24.3	0.1%	42,584.5	28.9	0.1%	42,569.4	44.0	0.1%
ME 7	32 44 30	2019	Below Normal	April	--	15,356.5	15,333.3	23.1	0.2%	15,328.7	27.8	0.2%	15,316.0	40.5	0.3%
ME 7	32 44 30	2019	Below Normal	May	--	17,354.2	17,306.7	47.5	0.3%	17,297.5	56.7	0.3%	17,268.5	85.6	0.5%
ME 7	32 44 30	2019	Below Normal	June	--	4,247.2	4,185.5	61.7	1.5%	4,173.6	73.6	1.7%	4,138.8	108.4	2.6%
ME 7	32 44 30	2019	Below Normal	July	--	1,382.3	1,316.9	65.4	4.7%	1,303.8	78.5	5.7%	1,265.5	116.8	8.4%
ME 7	32 44 30	2019	Below Normal	August	--	616.6	553.8	62.9	10.2%	541.2	75.4	12.2%	504.0	112.6	18.3%
ME 7	32 44 30	2019	Below Normal	September	Used in Summary Table Analysis	480.5	421.0	59.5	12.4%	409.1	71.4	14.9%	373.3	107.2	22.3%
ME 7	32 44 30	2020	Dry	October	Used in Summary Table Analysis	370.4	323.9	46.5	12.5%	314.5	55.9	15.1%	286.2	84.2	22.7%
ME 7	32 44 30	2020	Dry	November	Used in Summary Table Analysis	344.2	306.8	37.4	10.9%	299.1	45.0	13.1%	276.2	67.9	19.7%
ME 7	32 44 30	2020	Dry	December	--	13,678.2	13,644.7	33.6	0.2%	13,637.7	40.5	0.3%	13,616.9	61.3	0.4%
ME 7	32 44 30	2020	Dry	January	--	22,638.9	22,608.8	30.1	0.1%	22,603.0	35.9	0.2%	22,583.3	55.6	0.2%
ME 7	32 44 30	2020	Dry	February	--	7,430.6	7,403.9	26.6	0.4%	7,398.4	32.2	0.4%	7,381.7	48.8	0.7%
ME 7	32 44 30	2020	Dry	March	--	7,304.3	7,279.4	24.9	0.3%	7,274.2	30.1	0.4%	7,258.8	45.5	0.6%
ME 7	32 44 30	2020	Dry	April	--	5,548.7	5,501.4	47.3	0.9%	5,491.8	56.9	1.0%	5,463.3	85.4	1.5%
ME 7	32 44 30	2020	Dry	May	--	7,460.5	7,403.4	57.2	0.8%	7,391.9	68.6	0.9%	7,357.5	103.0	1.4%
ME 7	32 44 30	2020	Dry	June	--	2,111.3	2,037.3	74.1	3.5%	2,022.9	88.4	4.2%	1,980.6	130.8	6.2%
ME 7	32 44 30	2020	Dry	July	--	810.6	734.0	76.6	9.4%	718.8	91.8	11.3%	679.0	131.7	16.2%
ME 7	32 44 30	2020	Dry	August	--	414.1	338.1	76.0	18.4%	323.0	91.2	22.0%	280.7	133.4	32.2%
ME 7	32 44 30	2020	Dry	September	Used in Summary Table Analysis	263.3	190.8	72.5	27.5%	176.1	87.2	33.1%	133.1	130.2	49.5%
ME 7	32 43 31	2000	Above Normal	October	Used in Summary Table Analysis	840.9	791.8	49.1	5.8%	781.8	59.0	7.0%	752.0	88.8	10.6%
ME 7	32 43 31	2000	Above Normal	November	Used in Summary Table Analysis	12,436.3	12,397.0	39.4	0.3%	12,388.9	47.5	0.4%	12,364.6	71.8	0.6%
ME 7	32 43 31	2000	Above Normal	December	--	10,981.7	10,948.1	33.6	0.3%	10,941.2	40.5	0.4%	10,920.4	61.3	0.6%
ME 7	32 43 31	2000	Above Normal	January	--	29,104.2	29,074.1	30.1	0.1%	29,068.3	35.9	0.1%	29,049.8	54.4	0.2%
ME 7	32 43 31	2000	Above Normal	February	--	37,387.7	37,361.1	26.6	0.1%	37,355.3	32.4	0.1%	37,338.0	49.8	0.1%
ME 7	32 43 31	2000	Above Normal	March	--	18,424.8	18,400.5	24.3	0.1%	18,395.8	28.9	0.2%	18,380.8	44.0	0.2%
ME 7	32 43 31	2000	Above Normal	April	--	12,400.5	12,377.3	23.1	0.2%	12,372.7	27.8	0.2%	12,358.8	41.7	0.3%
ME 7	32 43 31	2000	Above Normal	May	--	7,167.4	7,121.2	46.2	0.6%	7,111.8	55.6	0.8%	7,084.1	83.2	1.2%
ME 7	32 43 31	2000	Above Normal	June	--	2,643.5	2,573.6	69.9	2.6%	2,559.7	83.8	3.2%	2,518.6	124.9	4.7%
ME 7	32 43 31	2000	Above Normal	July	--	1,010.6	944.9	65.6	6.5%	932.0	78.6	7.8%	893.3	117.3	11.6%
ME 7	32 43 31	2000	Above Normal	August	--	541.5	479.2	62.4	11.5%	466.7	74.8	13.8%	429.5	112.0	20.7%
ME 7	32 43 31	2000	Above Normal	September	Used in Summary Table Analysis	313.1	256.4	56.7	18.1%	245.1	68.0	21.7%	211.1	102.0	32.6%
ME 7	32 43 31	2001	Dry	October	Used in Summary Table Analysis	3,894.4	3,846.3	48.1	1.2%	3,836.6	57.9	1.5%	3,807.2	87.3	2.2%
ME 7	32 43 31	2001	Dry	November	Used in Summary Table Analysis	6,247.5	6,208.9	38.5	0.6%	6,201.0	46.4	0.7%	6,177.2	70.3	1.1%
ME 7	32 43 31	2001	Dry	December	--	8,962.4	8,929.3	33.1	0.4%	8,922.5	39.9	0.4%	8,902.1	60.3	0.7%
ME 7	32 43 31	2001	Dry	January	--	13,020.8	12,991.9	28.9	0.2%	12,986.1	34.7	0.3%	12,967.6	53.2	0.4%
ME 7	32 43 31	2001	Dry	February	--	17,619.2	17,593.8	25.5	0.1%	17,588.0	31.3	0.2%	17,571.8	47.5	0.3%
ME 7	32 43 31	2001	Dry	March	--	12,375.0	12,350.7	24.3	0.2%	12,346.1	28.9	0.2%	12,329.9	45.1	0.4%
ME 7	32 43 31	2001	Dry	April	--	11,053.9	11,006.5	47.5	0.4%	10,997.1	56.8	0.5%	10,968.8	85.2	0.8%
ME 7	32 43 31	2001	Dry	May	--	2,644.1	2,587.4	56.7	2.1%	2,576.0	68.1	2.6%	2,542.0	102.1	3.9%
ME 7	32 43 31	2001	Dry	June	--	2,703.2	2,624.2	79.1	2.9%	2,608.7	94.6	3.5%	2,563.2	140.0	5.2%
ME 7	32 43 31	2001	Dry	July	--	729.9	653.3	76.6	10.5%	638.0	91.8	12.6%	597.7	132.2	18.1%
ME 7	32 43 31	2001	Dry	August	--	188.1	113.1	75.0	39.9%	98.1	90.0	47.8%	55.7	132.4	70.4%
ME 7	32 43 31	2001	Dry	September	Used in Summary Table Analysis	111.9	43.2	68.7	61.4%	29.5	82.4	73.7%	0.0	111.9	100.0%
ME 7	32 43 31	2002	Below Normal	October	Used in Summary Table Analysis	283.1	223.9	59.2	20.9%	211.9	71.2	25.2%	176.2	106.8	37.7%
ME 7	32 43 31	2002	Below Normal	November	Used in Summary Table Analysis	12,189.8	12,142.4	47.5	0.4%	12,131.9	57.9	0.5%	12,100.7	89.1	0.7%
ME 7	32 43 31	2002	Below Normal	December	--	36,158.6	36,116.9	41.7	0.1%	36,107.6	50.9	0.1%	36,081.0	77.5	0.2%
ME 7	32 43 31	2002	Below Normal	January	--	31,178.2	31,142.4	35.9	0.1%	31,135.4	42.8	0.1%	31,113.4	64.8	0.2%
ME 7	32 43 31	2002	Below Normal	February	--	24,858.8	24,827.5	31.3	0.1%	24,820.6	38.2	0.2%	24,800.9	57.9	0.2%
ME 7	32 43 31	2002	Below Normal	March	--	17,922.5	17,893.5	28.9	0.2%	17,886.6	35.9	0.2%	17,869.2	53.2	0.3%
ME 7	32 43 31	2002	Below Normal	April	--	9,983.0	9,934.7	48.3	0.5%	9,925.1	57.9	0.6%	9,896.1	86.9	0.9%
ME 7	32 43 31	2002	Below Normal	May	--	3,344.1	3,287.0	57.1	1.7%	3,275.6	68.5	2.0%	3,241.3	102.8	3.1%
ME 7	32 43 31	2002	Below Normal	June	--	869.2	802.6	66.5	7.7%	789.5	79.7	9.2%	750.5	118.7	13.7%
ME 7	32 43 31	2002	Below Normal	July	--	378.5	309.6	68.9	18.2%	295.9	82.6	21.8%	255.9	122.6	32.4%
ME 7	32 43 31	2002	Below Normal	August	--	245.1	179.4	65.7	26.8%	166.3	78.8	32.1%	126.6	118.5	48.4%
ME 7	32 43 31	2002	Below Normal	September	Used in Summary Table Analysis	181.2	118.1	63.1	34.8%	105.5	75.7	41.8%	67.0	114.2	63.0%
ME 7	32 43 31	2003	Wet	October	Used in Summary Table Analysis	145.8	92.6	53.2	36.5%	81.9	63.9	43.8%	49.7	96.0	65.9%
ME 7	32 43 31	2003	Wet	November	Used in Summary Table Analysis	917.2	873.4	43.8	4.8%	864.5	52.7	5.7%	837.7	79.5	8.7%
ME 7	32 43 31	2003	Wet	December	--	57,934.0	57,894.7	39.4	0.1%	57,886.6	47.5	0.1%	57,862.3	71.8	0.1%
ME 7	32 43 31	2003	Wet	January	--	31,759.3	31,725.7	33.6	0.1%	31,718.8	40.5	0.1%	31,697.9	61.3	0.2%
ME 7	32 43 31	2003	Wet	February	--	20,476.9	20,446.8	30.1	0.1%	20,441.0	35.9	0.2%	20,422.5	54.4	0.3%
ME 7	32 43 31	2003	Wet	March	--	24,224.5	24,196.8	27.8	0.1%	24,192.1	32.4	0.1%	24,174.8	49.8	0.2%
ME 7	32 43 31	2003	Wet	April	--	43,377.3	43,350.7	26.6	0.1%	43,346.1	31.3	0.1%	43,329.9	47.5	0.1%
ME 7	32 43 31	2003	Wet	May	--	12,287.0	12,238.4	48.6	0.4%	12,229.2	57.9	0.5%	12,200.2	86.8	0.7%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 7	32 43 31	2003	Wet	June	--	3,186.0	3,123.3	62.7	2.0%	3,110.9	75.1	2.4%	3,074.4	111.6	3.5%
ME 7	32 43 31	2003	Wet	July	--	1,496.1	1,428.1	67.9	4.5%	1,414.7	81.4	5.4%	1,374.7	121.4	8.1%
ME 7	32 43 31	2003	Wet	August	--	781.1	714.2	66.9	8.6%	700.5	80.7	10.3%	658.0	123.1	15.8%
ME 7	32 43 31	2003	Wet	September	Used in Summary Table Analysis	477.6	419.2	58.4	12.2%	407.5	70.1	14.7%	371.3	106.3	22.3%
ME 7	32 43 31	2004	Wet	October	Used in Summary Table Analysis	344.0	294.6	49.4	14.4%	284.6	59.4	17.3%	254.4	89.5	26.0%
ME 7	32 43 31	2004	Wet	November	Used in Summary Table Analysis	5,936.9	5,896.1	40.9	0.7%	5,887.6	49.3	0.8%	5,862.3	74.7	1.3%
ME 7	32 43 31	2004	Wet	December	--	36,886.6	36,850.7	35.9	0.1%	36,843.8	42.8	0.1%	36,820.6	66.0	0.2%
ME 7	32 43 31	2004	Wet	January	--	31,863.4	31,833.3	30.1	0.1%	31,826.4	37.0	0.1%	31,806.7	56.7	0.2%
ME 7	32 43 31	2004	Wet	February	--	38,612.3	38,584.5	27.8	0.1%	38,578.7	33.6	0.1%	38,561.3	50.9	0.1%
ME 7	32 43 31	2004	Wet	March	--	16,591.4	16,567.1	24.3	0.1%	16,561.3	30.1	0.2%	16,546.3	45.1	0.3%
ME 7	32 43 31	2004	Wet	April	--	9,503.9	9,480.2	23.7	0.2%	9,475.3	28.6	0.3%	9,460.6	43.3	0.5%
ME 7	32 43 31	2004	Wet	May	--	3,464.4	3,417.6	46.8	1.3%	3,408.3	56.0	1.6%	3,380.4	83.9	2.4%
ME 7	32 43 31	2004	Wet	June	--	706.6	646.1	60.5	8.6%	634.2	72.4	10.2%	599.0	107.6	15.2%
ME 7	32 43 31	2004	Wet	July	--	374.5	308.0	66.6	17.8%	294.7	79.8	21.3%	255.4	119.2	31.8%
ME 7	32 43 31	2004	Wet	August	--	242.8	179.2	63.6	26.2%	166.5	76.3	31.4%	128.6	114.2	47.0%
ME 7	32 43 31	2004	Wet	September	Used in Summary Table Analysis	178.8	117.3	61.4	34.4%	105.1	73.7	41.2%	68.2	110.6	61.8%
ME 7	32 43 31	2005	Above Normal	October	Used in Summary Table Analysis	7,854.6	7,804.2	50.5	0.6%	7,794.0	60.6	0.8%	7,763.2	91.4	1.2%
ME 7	32 43 31	2005	Above Normal	November	Used in Summary Table Analysis	2,285.5	2,245.8	39.7	1.7%	2,237.7	47.8	2.1%	2,213.3	72.2	3.2%
ME 7	32 43 31	2005	Above Normal	December	--	21,510.4	21,475.7	34.7	0.2%	21,468.8	41.7	0.2%	21,447.9	62.5	0.3%
ME 7	32 43 31	2005	Above Normal	January	--	22,762.7	22,733.8	28.9	0.1%	22,726.9	35.9	0.2%	22,708.3	54.4	0.2%
ME 7	32 43 31	2005	Above Normal	February	--	14,082.2	14,055.6	26.6	0.2%	14,050.9	31.3	0.2%	14,033.6	48.6	0.3%
ME 7	32 43 31	2005	Above Normal	March	--	28,858.8	28,833.3	25.5	0.1%	28,828.7	30.1	0.1%	28,812.5	46.3	0.2%
ME 7	32 43 31	2005	Above Normal	April	--	21,636.6	21,612.3	24.3	0.1%	21,607.6	28.9	0.1%	21,592.6	44.0	0.2%
ME 7	32 43 31	2005	Above Normal	May	--	19,798.6	19,751.2	47.5	0.2%	19,741.9	56.7	0.3%	19,713.0	85.6	0.4%
ME 7	32 43 31	2005	Above Normal	June	--	16,141.2	16,069.4	71.8	0.4%	16,054.4	86.8	0.5%	16,012.7	128.5	0.8%
ME 7	32 43 31	2005	Above Normal	July	--	2,872.2	2,804.3	67.9	2.4%	2,791.3	80.9	2.8%	2,752.7	119.6	4.2%
ME 7	32 43 31	2005	Above Normal	August	--	1,004.0	941.5	62.5	6.2%	929.1	74.9	7.5%	892.2	111.8	11.1%
ME 7	32 43 31	2005	Above Normal	September	Used in Summary Table Analysis	545.4	488.7	56.7	10.4%	477.4	68.0	12.5%	443.5	101.8	18.7%
ME 7	32 43 31	2006	Wet	October	Used in Summary Table Analysis	657.4	610.3	47.1	7.2%	600.8	56.6	8.6%	572.0	85.4	13.0%
ME 7	32 43 31	2006	Wet	November	Used in Summary Table Analysis	9,531.4	9,493.6	37.7	0.4%	9,485.9	45.5	0.5%	9,462.4	69.0	0.7%
ME 7	32 43 31	2006	Wet	December	--	44,224.5	44,191.0	33.6	0.1%	44,184.0	40.5	0.1%	44,162.0	62.5	0.1%
ME 7	32 43 31	2006	Wet	January	--	46,951.4	46,921.3	30.1	0.1%	46,915.5	35.9	0.1%	46,895.8	55.6	0.1%
ME 7	32 43 31	2006	Wet	February	--	26,900.5	26,873.8	26.6	0.1%	26,869.2	31.3	0.1%	26,853.0	47.5	0.2%
ME 7	32 43 31	2006	Wet	March	--	47,678.2	47,653.9	24.3	0.1%	47,648.1	30.1	0.1%	47,633.1	45.1	0.1%
ME 7	32 43 31	2006	Wet	April	--	30,634.3	30,611.1	23.1	0.1%	30,606.5	27.8	0.1%	30,593.8	40.5	0.1%
ME 7	32 43 31	2006	Wet	May	--	14,328.7	14,299.8	28.9	0.2%	14,292.8	35.9	0.3%	14,275.5	53.2	0.4%
ME 7	32 43 31	2006	Wet	June	--	3,565.6	3,506.6	59.0	1.7%	3,494.9	70.7	2.0%	3,460.6	105.0	2.9%
ME 7	32 43 31	2006	Wet	July	--	1,302.9	1,238.0	64.9	5.0%	1,225.2	77.7	6.0%	1,187.3	115.6	8.9%
ME 7	32 43 31	2006	Wet	August	--	688.9	624.5	64.4	9.4%	611.8	77.2	11.2%	573.6	115.4	16.7%
ME 7	32 43 31	2006	Wet	September	Used in Summary Table Analysis	448.2	390.3	57.9	12.9%	378.8	69.4	15.5%	344.1	104.2	23.2%
ME 7	32 43 31	2007	Above Normal	October	Used in Summary Table Analysis	293.8	245.3	48.4	16.5%	235.6	58.2	19.8%	205.9	87.8	29.9%
ME 7	32 43 31	2007	Above Normal	November	Used in Summary Table Analysis	8,865.6	8,825.5	40.2	0.5%	8,817.4	48.3	0.5%	8,792.5	73.1	0.8%
ME 7	32 43 31	2007	Above Normal	December	--	20,807.9	20,772.0	35.9	0.2%	20,765.0	42.8	0.2%	20,743.1	64.8	0.3%
ME 7	32 43 31	2007	Above Normal	January	--	10,358.8	10,328.8	30.0	0.3%	10,322.7	36.1	0.3%	10,303.8	55.0	0.5%
ME 7	32 43 31	2007	Above Normal	February	--	31,017.4	30,989.6	27.8	0.1%	30,983.8	33.6	0.1%	30,966.4	50.9	0.2%
ME 7	32 43 31	2007	Above Normal	March	--	13,180.6	13,153.9	26.6	0.2%	13,149.3	31.3	0.2%	13,133.1	47.5	0.4%
ME 7	32 43 31	2007	Above Normal	April	--	11,611.1	11,565.3	45.8	0.4%	11,556.1	55.0	0.5%	11,528.6	82.5	0.7%
ME 7	32 43 31	2007	Above Normal	May	--	4,176.9	4,121.9	55.0	1.3%	4,110.9	66.0	1.6%	4,077.9	99.0	2.4%
ME 7	32 43 31	2007	Above Normal	June	--	1,526.9	1,459.1	67.7	4.4%	1,445.7	81.1	5.3%	1,406.1	120.7	7.9%
ME 7	32 43 31	2007	Above Normal	July	--	511.8	442.6	69.2	13.5%	428.9	82.9	16.2%	388.3	123.5	24.1%
ME 7	32 43 31	2007	Above Normal	August	--	241.2	177.8	63.4	26.3%	165.1	76.1	31.5%	126.5	114.7	47.6%
ME 7	32 43 31	2007	Above Normal	September	Used in Summary Table Analysis	168.8	107.8	61.0	36.2%	95.6	73.2	43.3%	58.9	109.9	65.1%
ME 7	32 43 31	2008	Dry	October	Used in Summary Table Analysis	3,510.1	3,458.7	51.4	1.5%	3,448.4	61.7	1.8%	3,416.8	93.3	2.7%
ME 7	32 43 31	2008	Dry	November	Used in Summary Table Analysis	3,347.6	3,307.5	40.0	1.2%	3,299.4	48.1	1.4%	3,274.4	73.1	2.2%
ME 7	32 43 31	2008	Dry	December	--	23,643.5	23,608.8	34.7	0.1%	23,600.7	42.8	0.2%	23,579.9	63.7	0.3%
ME 7	32 43 31	2008	Dry	January	--	38,025.5	37,993.1	32.4	0.1%	37,987.3	38.2	0.1%	37,967.6	57.9	0.2%
ME 7	32 43 31	2008	Dry	February	--	26,392.4	26,365.7	26.6	0.1%	26,360.0	32.4	0.1%	26,342.6	49.8	0.2%
ME 7	32 43 31	2008	Dry	March	--	11,853.0	11,828.7	24.3	0.2%	11,824.1	28.9	0.2%	11,809.0	44.0	0.4%
ME 7	32 43 31	2008	Dry	April	--	9,066.4	9,019.9	46.5	0.5%	9,010.6	55.8	0.6%	8,982.6	83.8	0.9%
ME 7	32 43 31	2008	Dry	May	--	1,361.8	1,311.8	50.0	3.7%	1,302.1	59.7	4.4%	1,272.7	89.1	6.5%
ME 7	32 43 31	2008	Dry	June	--	454.3	380.3	74.1	16.3%	365.8	88.6	19.5%	322.8	131.6	29.0%
ME 7	32 43 31	2008	Dry	July	--	271.8	196.4	75.5	27.8%	181.4	90.4	33.2%	142.0	129.8	47.8%
ME 7	32 43 31	2008	Dry	August	--	195.8	121.6	74.2	37.9%	106.8	88.9	45.4%	62.5	133.2	68.1%
ME 7	32 43 31	2008	Dry	September	Used in Summary Table Analysis	157.1	84.6	72.5	46.1%	70.2	86.9	55.3%	28.3	128.9	82.0%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 7	32 43 31	2009	Critical	October	Used in Summary Table Analysis	945.4	886.0	59.3	6.3%	874.2	71.2	7.5%	838.1	107.3	11.3%
ME 7	32 43 31	2009	Critical	November	Used in Summary Table Analysis	5,643.1	5,596.2	46.9	0.8%	5,586.6	56.5	1.0%	5,554.9	88.2	1.6%
ME 7	32 43 31	2009	Critical	December	--	12,434.0	12,394.7	39.4	0.3%	12,386.6	47.5	0.4%	12,361.1	72.9	0.6%
ME 7	32 43 31	2009	Critical	January	--	8,877.0	8,841.8	35.2	0.4%	8,834.6	42.4	0.5%	8,812.4	64.6	0.7%
ME 7	32 43 31	2009	Critical	February	--	22,842.6	22,811.3	31.3	0.1%	22,804.4	38.2	0.2%	22,784.7	57.9	0.3%
ME 7	32 43 31	2009	Critical	March	--	21,291.7	21,263.9	27.8	0.1%	21,258.1	33.6	0.2%	21,240.7	50.9	0.2%
ME 7	32 43 31	2009	Critical	April	--	10,120.9	10,072.0	49.0	0.5%	10,062.3	58.7	0.6%	10,032.8	88.2	0.9%
ME 7	32 43 31	2009	Critical	May	--	15,674.8	15,614.6	60.2	0.4%	15,603.0	71.8	0.5%	15,567.1	107.6	0.7%
ME 7	32 43 31	2009	Critical	June	--	3,177.8	3,099.0	78.8	2.5%	3,083.7	94.1	3.0%	3,038.0	139.8	4.4%
ME 7	32 43 31	2009	Critical	July	--	1,280.3	1,204.2	76.2	5.9%	1,189.1	91.2	7.1%	1,149.3	131.1	10.2%
ME 7	32 43 31	2009	Critical	August	--	687.1	612.5	74.6	10.9%	597.7	89.4	13.0%	555.7	131.4	19.1%
ME 7	32 43 31	2009	Critical	September	Used in Summary Table Analysis	407.2	338.6	68.6	16.8%	324.9	82.2	20.2%	285.1	122.1	30.0%
ME 7	32 43 31	2010	Below Normal	October	Used in Summary Table Analysis	6,114.4	6,054.5	59.8	1.0%	6,042.4	72.0	1.2%	6,005.1	109.3	1.8%
ME 7	32 43 31	2010	Below Normal	November	Used in Summary Table Analysis	8,382.3	8,333.6	48.7	0.6%	8,323.7	58.6	0.7%	8,291.3	91.0	1.1%
ME 7	32 43 31	2010	Below Normal	December	--	12,534.7	12,494.2	40.5	0.3%	12,485.0	49.8	0.4%	12,459.5	75.2	0.6%
ME 7	32 43 31	2010	Below Normal	January	--	36,827.5	36,790.5	37.0	0.1%	36,782.4	45.1	0.1%	36,759.3	68.3	0.2%
ME 7	32 43 31	2010	Below Normal	February	--	27,415.5	27,383.1	32.4	0.1%	27,377.3	38.2	0.1%	27,356.5	59.0	0.2%
ME 7	32 43 31	2010	Below Normal	March	--	28,986.1	28,957.2	28.9	0.1%	28,951.4	34.7	0.1%	28,932.9	53.2	0.2%
ME 7	32 43 31	2010	Below Normal	April	--	40,287.0	40,259.3	27.8	0.1%	40,254.6	32.4	0.1%	40,237.3	49.8	0.1%
ME 7	32 43 31	2010	Below Normal	May	--	20,480.3	20,429.4	50.9	0.2%	20,419.0	61.3	0.3%	20,388.9	91.4	0.4%
ME 7	32 43 31	2010	Below Normal	June	--	9,519.3	9,445.4	74.0	0.8%	9,430.9	88.4	0.9%	9,387.5	131.8	1.4%
ME 7	32 43 31	2010	Below Normal	July	--	1,471.2	1,402.0	69.2	4.7%	1,388.4	82.8	5.6%	1,348.5	122.7	8.3%
ME 7	32 43 31	2010	Below Normal	August	--	590.6	526.1	64.4	10.9%	513.4	77.2	13.1%	475.3	115.2	19.5%
ME 7	32 43 31	2010	Below Normal	September	Used in Summary Table Analysis	673.5	611.1	62.3	9.3%	598.6	74.9	11.1%	561.2	112.2	16.7%
ME 7	32 43 31	2011	Wet	October	Used in Summary Table Analysis	9,771.5	9,723.0	48.5	0.5%	9,713.2	58.3	0.6%	9,683.2	88.3	0.9%
ME 7	32 43 31	2011	Wet	November	Used in Summary Table Analysis	14,373.8	14,335.6	38.2	0.3%	14,327.5	46.3	0.3%	14,303.2	70.6	0.5%
ME 7	32 43 31	2011	Wet	December	--	34,312.5	34,280.1	32.4	0.1%	34,272.0	40.5	0.1%	34,251.2	61.3	0.2%
ME 7	32 43 31	2011	Wet	January	--	14,273.1	14,245.4	27.8	0.2%	14,239.6	33.6	0.2%	14,221.1	52.1	0.4%
ME 7	32 43 31	2011	Wet	February	--	20,886.6	20,860.0	26.6	0.1%	20,854.2	32.4	0.2%	20,838.0	48.6	0.2%
ME 7	32 43 31	2011	Wet	March	--	52,410.9	52,386.6	24.3	0.0%	52,380.8	30.1	0.1%	52,364.6	46.3	0.1%
ME 7	32 43 31	2011	Wet	April	--	24,939.8	24,915.5	24.3	0.1%	24,910.9	28.9	0.1%	24,895.8	44.0	0.2%
ME 7	32 43 31	2011	Wet	May	--	11,453.0	11,405.9	47.1	0.4%	11,396.5	56.5	0.5%	11,368.3	84.7	0.7%
ME 7	32 43 31	2011	Wet	June	--	7,127.4	7,056.0	71.4	1.0%	7,041.9	85.5	1.2%	7,000.0	127.4	1.8%
ME 7	32 43 31	2011	Wet	July	--	1,841.4	1,768.6	72.8	4.0%	1,754.3	87.2	4.7%	1,712.8	128.6	7.0%
ME 7	32 43 31	2011	Wet	August	--	795.7	732.5	63.1	7.9%	720.0	75.7	9.5%	682.6	113.1	14.2%
ME 7	32 43 31	2011	Wet	September	Used in Summary Table Analysis	452.3	393.6	58.8	13.0%	381.8	70.5	15.6%	346.7	105.6	23.3%
ME 7	32 43 31	2012	Below Normal	October	Used in Summary Table Analysis	4,615.6	4,566.4	49.2	1.1%	4,556.5	59.1	1.3%	4,526.0	89.6	1.9%
ME 7	32 43 31	2012	Below Normal	November	Used in Summary Table Analysis	8,381.4	8,341.9	39.5	0.5%	8,333.8	47.6	0.6%	8,309.3	72.1	0.9%
ME 7	32 43 31	2012	Below Normal	December	--	5,249.3	5,216.0	33.3	0.6%	5,209.1	40.2	0.8%	5,188.4	60.9	1.2%
ME 7	32 43 31	2012	Below Normal	January	--	20,517.4	20,486.1	31.3	0.2%	20,480.3	37.0	0.2%	20,461.8	55.6	0.3%
ME 7	32 43 31	2012	Below Normal	February	--	18,329.9	18,303.2	26.6	0.1%	18,297.5	32.4	0.2%	18,281.3	48.6	0.3%
ME 7	32 43 31	2012	Below Normal	March	--	45,895.8	45,869.2	26.6	0.1%	45,864.6	31.3	0.1%	45,848.4	47.5	0.1%
ME 7	32 43 31	2012	Below Normal	April	--	27,031.3	27,006.9	24.3	0.1%	27,002.3	28.9	0.1%	26,986.1	45.1	0.2%
ME 7	32 43 31	2012	Below Normal	May	--	7,527.1	7,480.2	46.9	0.6%	7,470.8	56.3	0.7%	7,442.9	84.1	1.1%
ME 7	32 43 31	2012	Below Normal	June	--	5,586.2	5,513.5	72.7	1.3%	5,499.3	86.9	1.6%	5,457.1	129.2	2.3%
ME 7	32 43 31	2012	Below Normal	July	--	2,269.9	2,199.1	70.8	3.1%	2,185.1	84.8	3.7%	2,143.3	126.6	5.6%
ME 7	32 43 31	2012	Below Normal	August	--	403.8	345.6	58.2	14.4%	334.0	69.8	17.3%	299.3	104.5	25.9%
ME 7	32 43 31	2012	Below Normal	September	Used in Summary Table Analysis	267.4	214.5	52.9	19.8%	203.9	63.5	23.7%	172.3	95.1	35.6%
ME 7	32 43 31	2013	Below Normal	October	Used in Summary Table Analysis	1,962.8	1,915.9	47.0	2.4%	1,906.5	56.4	2.9%	1,878.0	84.8	4.3%
ME 7	32 43 31	2013	Below Normal	November	Used in Summary Table Analysis	14,944.4	14,906.3	38.2	0.3%	14,899.3	45.1	0.3%	14,876.2	68.3	0.5%
ME 7	32 43 31	2013	Below Normal	December	--	60,561.3	60,527.8	33.6	0.1%	60,520.8	40.5	0.1%	60,498.8	62.5	0.1%
ME 7	32 43 31	2013	Below Normal	January	--	22,365.7	22,338.0	27.8	0.1%	22,332.2	33.6	0.2%	22,314.8	50.9	0.2%
ME 7	32 43 31	2013	Below Normal	February	--	8,927.1	8,900.8	26.3	0.3%	8,895.5	31.6	0.4%	8,879.3	47.8	0.5%
ME 7	32 43 31	2013	Below Normal	March	--	10,453.6	10,428.6	25.0	0.2%	10,423.5	30.1	0.3%	10,408.1	45.5	0.4%
ME 7	32 43 31	2013	Below Normal	April	--	8,332.5	8,288.1	44.4	0.5%	8,279.2	53.4	0.6%	8,252.5	80.0	1.0%
ME 7	32 43 31	2013	Below Normal	May	--	4,482.9	4,428.4	54.5	1.2%	4,417.5	65.4	1.5%	4,385.1	97.8	2.2%
ME 7	32 43 31	2013	Below Normal	June	--	2,132.2	2,065.0	67.1	3.1%	2,051.7	80.4	3.8%	2,012.4	119.8	5.6%
ME 7	32 43 31	2013	Below Normal	July	--	731.5	665.1	66.4	9.1%	651.9	79.5	10.9%	613.5	118.0	16.1%
ME 7	32 43 31	2013	Below Normal	August	--	356.7	293.6	63.2	17.7%	281.0	75.8	21.2%	242.7	114.0	32.0%
ME 7	32 43 31	2013	Below Normal	September	Used in Summary Table Analysis	4,862.2	4,796.2	66.0	1.4%	4,783.0	79.2	1.6%	4,743.5	118.6	2.4%
ME 7	32 43 31	2014	Critical	October	Used in Summary Table Analysis	288.8	239.3	49.5	17.2%	229.3	59.6	20.6%	199.8	89.0	30.8%
ME 7	32 43 31	2014	Critical	November	Used in Summary Table Analysis	1,581.3	1,541.3	39.9	2.5%	1,533.2	48.0	3.0%	1,508.4	72.8	4.6%
ME 7	32 43 31	2014	Critical	December	--	1,617.8	1,583.2	34.6	2.1%	1,576.2	41.7	2.6%	1,554.4	63.4	3.9%
ME 7	32 43 31	2014	Critical	January	--	2,866.0	2,835.4	30.6	1.1%	2,829.2	36.8	1.3%	2,809.6	56.4	2.0%

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At Surface Water Depletion Locations of Interest
Eel River Valley Groundwater Sustainability Plan
Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 7	32 43 31	2014	Critical	February	--	15,872.7	15,846.1	26.6	0.2%	15,840.3	32.4	0.2%	15,821.8	50.9	0.3%
ME 7	32 43 31	2014	Critical	March	--	31,637.7	31,612.3	25.5	0.1%	31,606.5	31.3	0.1%	31,590.3	47.5	0.1%
ME 7	32 43 31	2014	Critical	April	--	13,042.8	12,995.4	47.5	0.4%	12,986.1	56.7	0.4%	12,957.2	85.6	0.7%
ME 7	32 43 31	2014	Critical	May	--	5,224.1	5,166.4	57.6	1.1%	5,154.9	69.2	1.3%	5,120.0	104.1	2.0%
ME 7	32 43 31	2014	Critical	June	--	1,216.3	1,136.2	80.1	6.6%	1,120.5	95.8	7.9%	1,075.0	141.4	11.6%
ME 7	32 43 31	2014	Critical	July	--	560.2	483.8	76.5	13.6%	468.5	91.7	16.4%	427.7	132.5	23.6%
ME 7	32 43 31	2014	Critical	August	--	364.8	291.0	73.8	20.2%	276.1	88.7	24.3%	233.7	131.1	35.9%
ME 7	32 43 31	2014	Critical	September	Used in Summary Table Analysis	2,613.5	2,540.0	73.5	2.8%	2,525.5	88.1	3.4%	2,481.6	131.9	5.0%
ME 7	32 43 31	2015	Dry	October	Used in Summary Table Analysis	11,495.0	11,436.3	58.7	0.5%	11,424.5	70.5	0.6%	11,388.7	106.4	0.9%
ME 7	32 43 31	2015	Dry	November	Used in Summary Table Analysis	9,176.4	9,131.7	44.7	0.5%	9,122.5	53.9	0.6%	9,091.4	85.0	0.9%
ME 7	32 43 31	2015	Dry	December	--	33,120.4	33,082.2	38.2	0.1%	33,075.2	45.1	0.1%	33,049.8	70.6	0.2%
ME 7	32 43 31	2015	Dry	January	--	14,656.3	14,622.7	33.6	0.2%	14,615.7	40.5	0.3%	14,593.8	62.5	0.4%
ME 7	32 43 31	2015	Dry	February	--	27,436.3	27,406.3	30.1	0.1%	27,400.5	35.9	0.1%	27,381.9	54.4	0.2%
ME 7	32 43 31	2015	Dry	March	--	11,620.4	11,594.9	25.5	0.2%	11,589.1	31.3	0.3%	11,572.9	47.5	0.4%
ME 7	32 43 31	2015	Dry	April	--	8,519.7	8,472.0	47.7	0.6%	8,462.3	57.4	0.7%	8,433.3	86.3	1.0%
ME 7	32 43 31	2015	Dry	May	--	1,517.6	1,460.5	57.1	3.8%	1,449.2	68.4	4.5%	1,416.0	101.6	6.7%
ME 7	32 43 31	2015	Dry	June	--	665.4	590.2	75.2	11.3%	575.4	90.0	13.5%	531.6	133.8	20.1%
ME 7	32 43 31	2015	Dry	July	--	282.3	206.1	76.1	27.0%	191.0	91.3	32.3%	151.0	131.3	46.5%
ME 7	32 43 31	2015	Dry	August	--	182.4	108.0	74.5	40.8%	93.1	89.4	49.0%	51.3	131.2	71.9%
ME 7	32 43 31	2015	Dry	September	Used in Summary Table Analysis	135.2	64.1	71.1	52.6%	49.4	85.7	63.4%	6.9	128.2	94.9%
ME 7	32 43 31	2016	Above Normal	October	Used in Summary Table Analysis	99.8	39.3	60.5	60.6%	27.5	72.4	72.5%	0.0	99.8	100.0%
ME 7	32 43 31	2016	Above Normal	November	Used in Summary Table Analysis	3,987.8	3,939.9	47.9	1.2%	3,929.9	58.0	1.5%	3,895.0	92.8	2.3%
ME 7	32 43 31	2016	Above Normal	December	--	37,210.6	37,169.0	41.7	0.1%	37,159.7	50.9	0.1%	37,131.9	78.7	0.2%
ME 7	32 43 31	2016	Above Normal	January	--	57,929.4	57,892.4	37.0	0.1%	57,884.3	45.1	0.1%	57,860.0	69.4	0.1%
ME 7	32 43 31	2016	Above Normal	February	--	24,369.2	24,339.1	30.1	0.1%	24,332.2	37.0	0.2%	24,312.5	56.7	0.2%
ME 7	32 43 31	2016	Above Normal	March	--	42,066.0	42,037.0	28.9	0.1%	42,031.3	34.7	0.1%	42,013.9	52.1	0.1%
ME 7	32 43 31	2016	Above Normal	April	--	18,619.2	18,593.8	25.5	0.1%	18,588.0	31.3	0.2%	18,571.8	47.5	0.3%
ME 7	32 43 31	2016	Above Normal	May	--	5,247.6	5,216.8	30.8	0.6%	5,210.5	37.0	0.7%	5,191.4	56.1	1.1%
ME 7	32 43 31	2016	Above Normal	June	--	1,526.6	1,469.4	57.2	3.7%	1,459.1	67.5	4.4%	1,428.6	98.0	6.4%
ME 7	32 43 31	2016	Above Normal	July	--	841.8	775.9	65.9	7.8%	762.8	79.0	9.4%	723.9	117.9	14.0%
ME 7	32 43 31	2016	Above Normal	August	--	511.0	445.2	65.8	12.9%	432.0	79.0	15.5%	392.8	118.2	23.1%
ME 7	32 43 31	2016	Above Normal	September	Used in Summary Table Analysis	346.6	284.1	62.5	18.0%	271.4	75.2	21.7%	233.5	113.1	32.6%
ME 7	32 43 31	2017	Wet	October	Used in Summary Table Analysis	18,520.8	18,468.8	52.1	0.3%	18,458.3	62.5	0.3%	18,428.2	92.6	0.5%
ME 7	32 43 31	2017	Wet	November	Used in Summary Table Analysis	19,079.9	19,040.5	39.4	0.2%	19,031.3	48.6	0.3%	19,006.9	72.9	0.4%
ME 7	32 43 31	2017	Wet	December	--	24,508.1	24,474.5	33.6	0.1%	24,467.6	40.5	0.2%	24,445.6	62.5	0.3%
ME 7	32 43 31	2017	Wet	January	--	108,054.4	108,023.1	31.3	0.0%	108,016.2	38.2	0.0%	107,996.5	57.9	0.1%
ME 7	32 43 31	2017	Wet	February	--	82,509.3	82,481.5	27.8	0.0%	82,475.7	33.6	0.0%	82,458.3	50.9	0.1%
ME 7	32 43 31	2017	Wet	March	--	27,486.1	27,460.6	25.5	0.1%	27,454.9	31.3	0.1%	27,439.8	46.3	0.2%
ME 7	32 43 31	2017	Wet	April	--	23,165.5	23,142.4	23.1	0.1%	23,137.7	27.8	0.1%	23,123.8	41.7	0.2%
ME 7	32 43 31	2017	Wet	May	--	6,284.7	6,254.4	30.3	0.5%	6,248.3	36.5	0.6%	6,229.9	54.9	0.9%
ME 7	32 43 31	2017	Wet	June	--	2,151.2	2,092.6	58.6	2.7%	2,081.0	70.1	3.3%	2,046.8	104.4	4.9%
ME 7	32 43 31	2017	Wet	July	--	958.0	892.4	65.6	6.8%	879.4	78.5	8.2%	841.2	116.8	12.2%
ME 7	32 43 31	2017	Wet	August	--	530.1	465.2	64.8	12.2%	452.3	77.7	14.7%	413.9	116.2	21.9%
ME 7	32 43 31	2017	Wet	September	Used in Summary Table Analysis	343.4	282.4	61.0	17.8%	270.1	73.3	21.3%	233.5	109.9	32.0%
ME 7	32 43 31	2018	Above Normal	October	Used in Summary Table Analysis	295.9	246.1	49.8	16.8%	236.0	59.9	20.3%	205.8	90.2	30.5%
ME 7	32 43 31	2018	Above Normal	November	Used in Summary Table Analysis	11,056.9	11,016.9	40.0	0.4%	11,008.7	48.3	0.4%	10,983.8	73.1	0.7%
ME 7	32 43 31	2018	Above Normal	December	--	5,475.7	5,441.9	33.8	0.6%	5,435.0	40.7	0.7%	5,414.0	61.7	1.1%
ME 7	32 43 31	2018	Above Normal	January	--	18,231.5	18,200.2	31.3	0.2%	18,194.4	37.0	0.2%	18,175.9	55.6	0.3%
ME 7	32 43 31	2018	Above Normal	February	--	7,623.3	7,597.0	26.3	0.3%	7,591.6	31.7	0.4%	7,575.1	48.1	0.6%
ME 7	32 43 31	2018	Above Normal	March	--	20,991.9	20,967.6	24.3	0.1%	20,963.0	28.9	0.1%	20,946.8	45.1	0.2%
ME 7	32 43 31	2018	Above Normal	April	--	32,541.7	32,519.7	22.0	0.1%	32,515.0	26.6	0.1%	32,500.0	41.7	0.1%
ME 7	32 43 31	2018	Above Normal	May	--	7,003.6	6,958.8	44.8	0.6%	6,949.9	53.7	0.8%	6,922.8	80.8	1.2%
ME 7	32 43 31	2018	Above Normal	June	--	1,932.3	1,872.2	60.1	3.1%	1,860.3	72.0	3.7%	1,825.3	106.9	5.5%
ME 7	32 43 31	2018	Above Normal	July	--	801.7	735.1	66.6	8.3%	721.8	80.0	10.0%	682.3	119.5	14.9%
ME 7	32 43 31	2018	Above Normal	August	--	463.0	400.0	63.0	13.6%	387.3	75.7	16.3%	349.5	113.4	24.5%
ME 7	32 43 31	2018	Above Normal	September	Used in Summary Table Analysis	319.2	257.9	61.3	19.2%	245.5	73.7	23.1%	208.7	110.5	34.6%
ME 7	32 43 31	2019	Below Normal	October	Used in Summary Table Analysis	224.2	174.7	49.5	22.1%	164.7	59.5	26.6%	134.5	89.7	40.0%
ME 7	32 43 31	2019	Below Normal	November	Used in Summary Table Analysis	6,800.2	6,759.7	40.5	0.6%	6,751.4	48.8	0.7%	6,726.4	73.8	1.1%
ME 7	32 43 31	2019	Below Normal	December	--	14,959.5	14,925.9	33.6	0.2%	14,917.8	41.7	0.3%	14,897.0	62.5	0.4%
ME 7	32 43 31	2019	Below Normal	January	--	35,809.0	35,777.8	31.3	0.1%	35,772.0	37.0	0.1%	35,752.3	56.7	0.2%
ME 7	32 43 31	2019	Below Normal	February	--	142,546.3	142,523.1	23.1	0.0%	142,511.6	34.7	0.0%	142,500.0	46.3	0.0%
ME 7	32 43 31	2019	Below Normal	March	--	42,638.9	42,614.6	24.3	0.1%	42,610.0	28.9	0.1%	42,594.9	44.0	0.1%
ME 7	32 43 31	2019	Below Normal	April	--	15,364.6	15,341.4	23.1	0.2%	15,336.8	27.8	0.2%	15,322.9	41.7	0.3%
ME 7	32 43 31	2019	Below Normal	May	--	17,390.0	17,342.6	47.5	0.3%	17,332.2	57.9	0.3%	17,304.4	85.6	0.5%

Table A.1

Change in Monthly Average Stream Flow Due to Groundwater Extraction
 At Surface Water Depletion Locations of Interest
 Eel River Valley Groundwater Sustainability Plan
 Humboldt County Groundwater Sustainability Agency

Surface Water Depletion Area Area of Interest	Model Cell (Row, Column, Surface Water Reach)	Water Year	Water Year Type	Month	Note	Flow Without Pumping (cfs)	400% Pumping Increase			500% Pumping Increase			800% Pumping Increase		
							Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference	Flow (cfs)	Flow Difference (cfs)	Percent Difference
ME 7	32 43 31	2019	Below Normal	June	--	4,248.8	4,185.9	63.0	1.5%	4,173.8	75.0	1.8%	4,138.2	110.6	2.6%
ME 7	32 43 31	2019	Below Normal	July	--	1,385.2	1,318.4	66.8	4.8%	1,305.2	80.0	5.8%	1,266.0	119.2	8.6%
ME 7	32 43 31	2019	Below Normal	August	--	619.4	555.2	64.2	10.4%	542.4	77.0	12.4%	504.4	115.0	18.6%
ME 7	32 43 31	2019	Below Normal	September	Used in Summary Table Analysis	483.0	422.2	60.9	12.6%	409.9	73.1	15.1%	373.3	109.7	22.7%
ME 7	32 43 31	2020	Dry	October	Used in Summary Table Analysis	372.6	324.9	47.7	12.8%	315.2	57.4	15.4%	286.1	86.5	23.2%
ME 7	32 43 31	2020	Dry	November	Used in Summary Table Analysis	347.2	308.8	38.4	11.1%	300.9	46.3	13.3%	277.3	69.8	20.1%
ME 7	32 43 31	2020	Dry	December	--	13,713.0	13,678.2	34.7	0.3%	13,671.3	41.7	0.3%	13,649.3	63.7	0.5%
ME 7	32 43 31	2020	Dry	January	--	22,666.7	22,635.4	31.3	0.1%	22,628.5	38.2	0.2%	22,610.0	56.7	0.3%
ME 7	32 43 31	2020	Dry	February	--	7,433.1	7,406.0	27.1	0.4%	7,400.3	32.8	0.4%	7,383.3	49.8	0.7%
ME 7	32 43 31	2020	Dry	March	--	7,310.5	7,285.3	25.2	0.3%	7,280.1	30.4	0.4%	7,264.2	46.3	0.6%
ME 7	32 43 31	2020	Dry	April	--	5,555.4	5,507.6	47.8	0.9%	5,497.9	57.5	1.0%	5,469.2	86.2	1.6%
ME 7	32 43 31	2020	Dry	May	--	7,468.8	7,410.8	58.0	0.8%	7,399.2	69.6	0.9%	7,364.5	104.3	1.4%
ME 7	32 43 31	2020	Dry	June	--	2,112.8	2,037.2	75.7	3.6%	2,022.6	90.3	4.3%	1,979.3	133.6	6.3%
ME 7	32 43 31	2020	Dry	July	--	812.8	734.5	78.3	9.6%	718.9	93.9	11.5%	678.1	134.8	16.6%
ME 7	32 43 31	2020	Dry	August	--	416.3	338.6	77.7	18.7%	323.1	93.2	22.4%	279.8	136.5	32.8%
ME 7	32 43 31	2020	Dry	September	Used in Summary Table Analysis	265.4	191.1	74.3	28.0%	176.0	89.4	33.7%	132.0	133.4	50.3%



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**Land Use Inventory Technical Memorandum
(TM-6)**



Land Use Inventory for the Eel River Valley Groundwater Basin

**Prepared for:
Eel River Valley Groundwater Basin GSP,
2022**

HUMBOLDT COUNTY DPW

January 04, 2022

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1. Introduction

The Eel River Valley Groundwater Basin (ERVB), as defined by California Department of Water Resources (DWR), occurs at the downstream end of the Eel River watershed (Figure 1). This Land Use Inventory/Geodatabase Technical Memorandum used the best available information to develop an inventory of land use for the water balance in the ERVB for use in the Eel River Valley Groundwater Sustainability Plan (GSP). Multiple datasets and information are presented and evaluated in this technical memo to support development of an accurate land use inventory/geodatabase for the ERVB.

The purpose of this technical memorandum is to summarize the analysis completed to determine the number of acres for six different land use types with distinctive evapotranspiration rates within the ERVB groundwater basin: (1) irrigated lands, (2) impervious areas, (3) open water, (4) riparian areas, (5) areas with natural vegetation, and (6) urban landscapes. These land use categories are utilized by DWR and are applied in this Technical Memorandum for consistency with DWR's current standard practice. It's important to note that non-irrigated agricultural land will be grouped within the "natural vegetation" category. It is necessary to attribute all lands within the ERVB groundwater basin to the most appropriate land use category in order to complete the water budget. This technical memorandum also compares resulting values with DWR's 2018 land use database and discusses possible explanations for differences between the two land use databases.

1.1 Datasets Used in Land Use Analysis

The datasets applied in land use analysis include data sources from partner agencies and other partners. The data used for compiling the land use inventory was collected by the County of Humboldt (County), Humboldt County Resource Conservation District (HCRCD), DWR, Stillwater Sciences, and GHD. The following list summarizes the sources used by each agency for developing the separate parts of the land use inventory database. More information on the development of the database can be found in Section 2.1- ERVB Irrigated Land Use Acreages.

- Irrigated Acreage 2021 Geodatabase was developed by the County and HCRCD using the following sources:
 - Department of Water Resources (DWR) Groundwater Basin 1-10 boundary GIS polygon (updated October 2018)
 - 2020 NAIP aerial imagery
 - Interviews with agricultural producers
 - Consultations with current and previous owners of North Coast Pumphouse and Jeff Stackhouse, University California Cooperative Extension
 - ESRI Shapefiles from Irrigation Water Use Study, dated December 8, 2016 and included as an appendix in the County's Groundwater Sustainability Plan Alternative (Humboldt County, 2016)
- County and Municipal Parcel Geodatabase was developed by Julia Clark of GHD using the following sources:
 - Parcel data was received from the County of Humboldt in January 2021
 - Community Services District boundaries were downloaded from the county GIS data portal and dated August 2020
 - Del Oro Water Company and Riverside CSD boundaries were provided by Humboldt County in March 2021
 - Bear River Band Rancheria (BRB) parcels were identified by a former BRB employee
 - City boundaries were downloaded from the county GIS data portal and dated July 2019
 - A spatial dataset of building outlines was provided by the County in March 2021 as a GIS layer

- Groundwater Dependent Ecosystems Geodatabase was developed by Stillwater Sciences, and was divided into two sub-sections, Vegetation Communities and Special-Status Species, using the following sources:

Vegetation Communities:

- USDA (U.S. Department of Agriculture) 2014. Classification and Assessment with Landsat of Visible Ecological Groupings (CalVeg). Region 1: North Coast: Imagery date: 2000–2007. <https://www.fs.usda.gov/detail/r5/landmanagement/resourcemanagement/?cid=stelprdb5347192> [Accessed March 2021].
- USDA (U.S. Department of Agriculture) FSA Aerial Photography Field Office. 2020. National Agriculture Imagery Program. Mosaicked County Image for Humboldt, CA.
- USDA (U.S. Department of Agriculture) FSA Aerial Photography Field Office. 2020. National Agriculture Imagery Program. Mosaicked County Image for Humboldt, CA.
- H.T. Harvey & Associates. 2015. 2015 Quantitative habitat monitoring for the Salt River Ecosystem Restoration Project. Final Report. Prepared for Humboldt County Resource Conservation District, Eureka, California.
- United States Department of Agriculture-Natural Resources Conservation Service (NRCS). 2016. Web Soil Survey. Available online at https://soilseries.sc.egov.usda.gov/OSD_Docs/F/FERNDALE.html/, accessed November 4, 2020.

Special-Status Species

- CDFW (California Department of Fish and Wildlife). 2020a. California Natural Diversity Database. RareFind 5 [Internet], Version 5.1.1. [accessed: November 2020].
- eBird. 2021. eBird: An online database of bird distribution and abundance. Website [accessed November 2020]. eBird, Cornell Lab of Ornithology, Ithaca, New York.
- TNC (The Nature Conservancy). Freshwater species list for Eel River Valley Groundwater Basins. <https://groundwaterresourcehub.org/sgma-tools/environmental-surface-water-beneficiaries>. [Accessed March 2021]
- NMFS (National Marine Fisheries Service). 2021. California Species List Tools. http://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html [Accessed May 2021]
- Consortium of California Herbaria (CCH) (queried from CCH1 Berkeley Mapper and CalFlora 2021)
- The ET Land Use Geodatabase was developed by GHD using the following sources:
 - Polygons of irrigated areas provided by Humboldt County in November 2021
 - Polygons of groundwater dependent ecosystems (GDEs), provided by Stillwater Sciences in April 2021
 - Parcel dataset from the water/wastewater demand calculations created by GHD in March 2021
 - Image classification developed by GHD in May 2021
 - A spatial dataset of building outlines was provided by the County in March 2021 as a GIS layer
- The CADWR Land Use Geodatabase was developed by Land IQ under contract for CADWR. The application is defined by the following information:
 - Title: i15_Crop_Mapping_2018
 - Publication Date: 2021-02-08
 - Edition: 2021.02.08
 - Presentation Formats: digital map
 - FGDC Geospatial Presentation Format: vector digital data
 - Other Citation Details:
 CDWR Land Use Viewer: <https://gis.water.ca.gov/app/CADWRLandUseViewer/> Statewide Crop Mapping on California Natural Resources Agency (CRNA) Open Data Portal:

2. Database Development

The five datasets summarized in Section 1 were used to assign land use attributes to all lands within the ERVB groundwater basin. Different land use types require different quantities of consumptive water. Additionally, variability in land use results in differences in infiltration (pervious versus impervious surfaces) and evapotranspiration. To understand the numeric implications of these differences, identifying land uses for the entire groundwater basin is necessary to determine the associated total water consumption of all land use types and complete the water budget.

2.1 Inventory of Irrigated Land Areas

The Humboldt County Resource Conservation District (HCRCD) developed an inventory of irrigated land areas in 2016 to assist the County of Humboldt (County) in the quantification of extracted groundwater within the ERVB for agricultural irrigation use. The results were published as a Technical Memorandum (Irrigation Water Use Study, dated December 8, 2016) and included as an appendix in the County's Groundwater Sustainability Plan Alternative (Humboldt County, 2016). In 2016, a total of 13,558 acres were irrigated by groundwater, primarily for pasture (including grazed pasture, hay production, and silage production).

In 2018, DWR updated their land use dataset to incorporate current data provided by HCRCD (Alternative Plan 2016) as part of DWR's basin reprioritization. In 2021, the HCRCD updated the inventory of irrigated lands by identifying and characterizing irrigated lands within the basin for 2021. Factors used to classify land as irrigated included: 1) Land being irrigated in 2021; and 2) Land with irrigation equipment infrastructure in place that would allow for irrigation. This process is similar to that used in the 2016 study with one exception. The 2016 study also considered if the land was irrigated anytime during the previous 5 years. Since 2016, the number of irrigated acres decreased by 593 acres. This includes 80 acres of land that was not irrigated in 2016, but due to recently installed new irrigation equipment, now allows for additional irrigated acres. There was no noted change in surface water use for irrigation purposes. Factors leading to the decrease in irrigated acres are related to coastal dune erosion and winter storm events causing seawater flooding of adjacent agriculture fields, chloride content in wells, and well failure. Below is an explanation of decreased irrigated acres by Assessor's Parcel Number (APN):

- APNs 100-143-002, 100-143-003, and 100-143-004: total decrease of 200 acres due to coastal dune erosion and winter storm events causing seawater flooding of agriculture fields.
- APNs 100-142-003 and 100-142-012: total decrease of 94 acres due to well capacity limitation and inability to meet irrigation pumping needs, well failure and a change in land management priorities.
- APNs 310-051-006 and 310-071-007: total decrease of 63 acres due to chloride content in groundwater well. Chloride test results indicate 320 mg/L in October 2020.
- APNs 309-161-005 and 309-161-004: total decrease of 94 acres due to land management change to dry farming. Neighboring wells showed elevated chloride concentrations of 1,600 mg/L in March 2017 and 1,500 mg/L in April 2021.
- APN 309-191-004: total decrease of 23 acres due to lack of proper winter drainage causing excessive seasonal flooding and ponding, which eliminates the need to irrigate due to retained soil moisture. Corn has been a primary crop on this parcel for the past 2 years.
- APN 308-141-020: total decrease of 119 acres due to slough levee erosion, winter storm events causing seawater flooding of agriculture fields, and salt content in groundwater well. Chloride test results indicate 260 mg/L in October 2020 and 330 mg/L in April 2021.
- APN 201-322-030: total decrease of 30 acres due to a change in land management. Area is now dry farmed.

- APN 203-181-045: total decrease of 13 acres due to change in land management. In 2016, quinoa was grown. Area is now dry farmed and grazed.
- APN 204-271-031: total decrease of 11 acres due to land management change to dry farmed and grazed.
- APNs 204-360-012, 204-360-011, 204-360-019, 204-360-010: total decrease of 26 acres due to a change in land management. Area is now dry farmed and grazed.

The 2021 updated study estimates the total area of irrigated land using groundwater, surface water, and reclaimed wastewater in the ERVB (Figure 1). Table 1 describes the amount of estimated irrigated land (acres) and sources of water used. Several pasture sites in the Ferndale, Fernbridge, Rio Dell/Metropolitan, and Scotia areas are irrigated using reclaimed wastewater from treatment plants (e.g., City of Ferndale, City of Rio Dell, Town of Scotia wastewater treatment plants) or from a milk production facility (i.e., Humboldt Creamery). Pastures where irrigation water is sourced from springs or surface water diversions are characterized as irrigated by surface water.

Groundwater is the principal irrigation water source in the basin, accounting for 12,952 of the total 13,430 acres irrigated, or 96% of the acres irrigated in 2021. Explanation of water use estimates in the basin are provided in the Agriculture Water Use Technical Memorandum 2021 and Water Budget Technical Memorandum 2021.

Table 1 Irrigated Land Use by water source in the Eel River Valley Groundwater Basin (2021).

Irrigation Water Source	Acres
Groundwater	12,952
Surface Water	126
Reclaimed Wastewater	352
Total	13,430

A geographical area was designated based on the proximity of an area to the nearest city or town. These designations include: Alton, Carlotta, Fernbridge, Ferndale, Fortuna, Hydesville, Loleta, Metropolitan, Rohnerville, Rio Dell, and Scotia (Table 2).

Table 2 Irrigated lands by geographic area

Irrigated Lands by Geographical Area	Acres
ALTON	870
CARLOTA	436
FERNBRIDGE	160
FERNDALE	10,020
FORTUNA	13
HYDESVILLE	85
LOLETA	1,164
METROPOLITAN	566
SCOTIA	116
ROHNERVILLE	0
Total	13,430

There are five types of irrigation equipment systems commonly used throughout the basin: handline; traveling gun; center pivot; K-line; and wheel-line. The use of other irrigation equipment, such as hoses, drip irrigation, and flood

irrigation, was infrequent and uncommon and therefore classified as other (Table 3). A description of each equipment system is included in the Agriculture Water Use Technical Memorandum 2021. The City of Fortuna and Rio Dell flood irrigate crop lands to dispose of reclaimed wastewater. Within the area where groundwater is the principal irrigation water source, handlines and traveling guns are the primary irrigation equipment types used.

Table 3 Equipment type used for irrigation in Eel River Valley Groundwater Basin

Equipment Type (Includes acres where groundwater, reclaimed wastewater and surface water is applied)	Acres	Percent of total acres irrigated with equipment type
Handline	6,856	51%
Traveling Gun	4,271	32%
Wheel Line	1,147	9%
K-Line	713	5%
Center Pivot	272	2%
Other	171	1%
Total	13,430	100%

There are five main crop types grown throughout the basin, which include: corn; alfalfa; grazed pasture; hay or silage; quinoa; and row crops. However, quinoa is a dry farm crop (Table 4). Grazed pasture accounts for approximately 90% of the irrigated crop type in the basin.

Table 4 Crop types grown in 2021

DWR Crop Type Classification Grown in 2021	Acres
Field Crop (Corn)	917
Grain/Hay-Pasture (Grazed pasture/Hay or Silage Crop)	12,037
Grain/Hay (Alfalfa/clover)	27
Grain/Hay (Quinoa)	327
Truck Crop (Row)	122
Total	13,430

This estimate of land use was developed as an update to a previous inventory of land use in the basin (HCRCD, 2016) and is based on using the best available science and information to accurately capture on-the-ground conditions and reflects local data and professionals’ knowledge of the basin. The accuracy of inventory of irrigated lands is considered high. The County is currently working with DWR Northern Region office to provide a land use update to DWR’s land use dataset.

2.2 Water Year Classification

Water year classification was completed using a 30-year period of record as summarized in the *Agriculture Water Use Technical Memorandum for the Eel River Valley Groundwater Basin* (County et al. 2021). The results from applying this methodology to the Ferndale rainfall data for the 30-year period from 1992 through 2021 are summarized on Table 5 and depicted in Image 1.

Table 5 Water year types with annual precipitation, index values and ranking (1992-2021).

Water Year	Annual Precipitation (inches)	Water Year Index	Index Rank (30 = highest #, 1 =lowest #)	Water Year Type
2017	67.2	61.9	30	Wet
1998	66.2	61.8	29	Wet
1999	53.3	57.2	28	Wet
2003	61.6	55.3	27	Wet
2006	58.0	54.5	26	Wet
1995	56.4	49.2	25	Wet
1997	51.5	49.0	24	Wet
2004	43.1	48.6	23	Wet
2011	47.8	47.8	22	Wet
2000	45.1	47.6	21	Above Normal
1996	43.3	47.2	20	Above Normal
2016	49.6	46.0	19	Above Normal
2005	46.1	45.2	18	Above Normal
2018	34.8	44.5	17	Above Normal
2007	38.0	44.0	16	Above Normal
2019	47.9	43.9	15	Below Normal
2010	47.9	42.7	14	Below Normal
2012	39.7	42.1	13	Below Normal
1993	45.1	38.6	12	Below Normal
2013	36.2	37.3	11	Below Normal
2002	40.7	36.9	10	Below Normal
2020	31.7	36.5	9	Dry
1994	32.4	36.2	8	Dry
2008	33.7	35.0	7	Dry
2001	28.0	33.1	6	Dry
2015	37.5	32.2	5	Dry
2009	30.5	31.5	4	Critical
2021	30.3	30.7	3	Critical
2014	19.9	24.8	2	Critical
1992	23.3	23.7	1	Critical

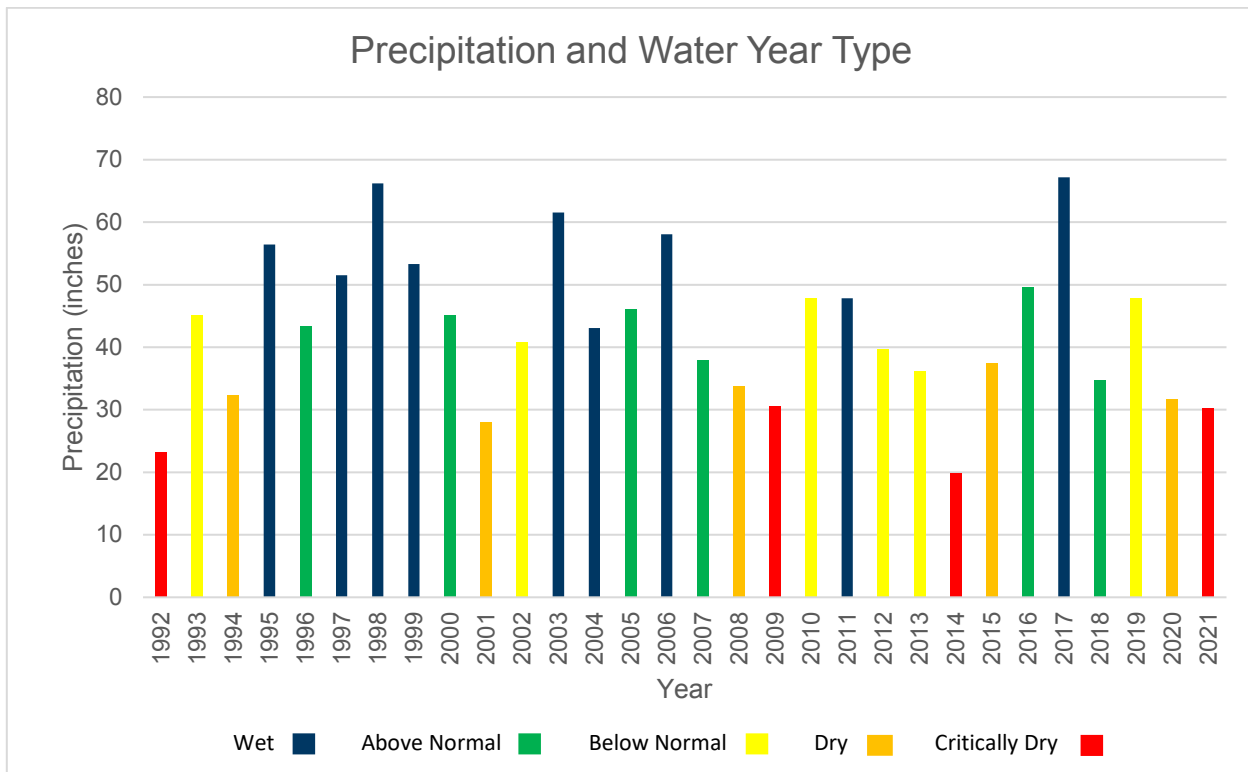


Image 1. Water year types (1992-2021), based on rainfall data collected in Ferndale

2.3 County and Municipal Parcel Geodatabase

Six GIS datasets were used to develop the County and municipal parcel geodatabase, as listed above in Section 1.1. The geodatabase was used to determine which agricultural parcels in the Irrigated Acreage Database draw water from municipal systems. The geodatabase was also used to distinguish between irrigated urban and un-irrigated wild open spaces. These distinctions were used for the irrigated acreage inventory, as well as for determining the source of groundwater pumping for use in the water budget.

City, Community Service District, and tribal boundaries were spatially joined to the County assessor parcel data based on the center point of each assessor parcel boundary. For example, if the center point of a parcel fell within a city boundary, even though the entire boundary was not contained in the city boundary, then the parcel was considered within the city. In places where a CSD and city boundary overlapped, both entities were listed. This produced a GIS layer of parcels that noted which local agency may be providing water or wastewater services.

The total square footage of buildings within each parcel was calculated by dissolving the GIS building outlines layer provided by the County by the assessor parcel number (APN) and then joined to the parcel layer by APN. This gave a general sense of building sizes within each parcel. It should be noted that the buildings layer provided by the County was generated by AI software and may not include some buildings that do exist and may also include buildings that no longer exist. Once all the layers were joined, the data was exported from GIS to excel to support additional analysis regarding water demand.

2.4 Groundwater Dependent Ecosystems Geodatabase

Groundwater Dependent Ecosystems (GDE) are ecosystems which are dependent on groundwater for survival. Potential GDE units in the ERVB were identified using the DWR indicators of groundwater-dependent ecosystems (iGDE) database, which includes vegetation and wetland natural communities, is published online, and is referred to as the Natural Communities Commonly Associated with Groundwater dataset (DWR 2020). These data were reviewed

and augmented with additional vegetation mapping datasets to produce a map of final GDE Units; additional information on vegetation community composition, aerial imagery, depth to groundwater, species distributions, salinity tolerance, and rooting depths was also reviewed to support this determination.

The GDE Geodatabase was created by Stillwater Sciences, and provides an inventory of GDE's within the ERVB. Stillwater Sciences used the iGDE database (Klausmeyer et al. 2018) to generate a preliminary map to serve as a guide for initial identification of potential GDEs in the ERVB. Before further analysis, The GDE Geodatabase was subdivided into two categories; Vegetation Communities and Special-status Species, to provide a more detailed method of conducting inventory of the ecosystems within the basin.

2.4.1 Vegetation Communities Database

For more precise identification of potential Vegetation Communities GDEs, a refined vegetation map was developed by adjusting Classification and Assessment with Landsat of Visible Ecology Groupings (CalVeg) to better match current imagery (USDA 2020). The refined vegetation map incorporates the following datasets:

- Classification and Assessment with Landsat of Visible Ecological Groupings (CalVeg) – United States Department of Agriculture - Forest Service (USDA 2014). North Coast region: Imagery date: 2000-2007; Minimum mapping unit (MMU): 2.5-acre.
- National Agriculture Imagery Program (NAIP) – United States Department of Agriculture (USDA 2020). Humboldt County: Imagery date: 2020; Resolution: 1 meter.

In addition, other available vegetation assessments (H.T. Harvey & Associates 2015, Golec and Miller 2017) were reviewed to further refine vegetation boundaries. The geomorphic description classification from the USDA-NRCS Soil Survey Geographic Database (SSURGO) was subsequently incorporated to assess the landscape position and likelihood of groundwater dependence for select vegetation types.

2.4.2 Special-status Species Database

Special-status species and sensitive natural communities that are potentially associated with GDEs in the Lower Eel Valley Groundwater Basin were identified as part of the ecological inventory. For the purposes of this document, special-status species are defined as those:

- Listed, proposed, or under review as endangered or threatened under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA);
- Designated by California Department of Fish and Wildlife (CDFW) as a Species of Special Concern;
- Designated by CDFW as Fully Protected under the California Fish and Game Code (Sections 3511, 4700, 5050, and 5515);
- Designated by Bureau of Land Management (BLM) as a sensitive species;
- Designated as endangered or rare under the California Native Plant Protection Act (CNPPA); and/or
- Taxa that meet the criteria for listing as described in Section 15380 of the CEQA Guidelines, including species listed on CDFW's Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2021) or plants with a California Rare Plant Rank (CRPR) of 1, 2, 3, or 4

Sensitive natural communities are defined as those natural community types (i.e., legacy natural communities in CDFW's California Natural Diversity Database [CNDDDB], vegetation alliances and/or associations) with a state ranking of S1 (critically imperiled), S2 (imperiled), S3 (vulnerable), or an unranked association that is considered sensitive on CDFW's California Sensitive Natural Communities List (CDFW 2020) or in the California Natural Diversity Database (CDFW 2021b).

The following spatial database were queried to assess potential GDEs and included a 1-mile buffer surrounding the potential site:

- California Natural Diversity Database (CNDDDB) (CDFW 2020);

- eBird (2021);
- The Nature Conservancy freshwater species lists generated from the California Freshwater Species Database (CAFSD) (TNC 2021);
- National Marine Fisheries Service California Species List tools (NMFS 2021); and
- Consortium of California Herbaria (CCH) (queried from CCH1 Berkeley Mapper and CalFlora 2021)

2.5 Evapotranspiration (ET) Land Use Geodatabase

The Evapotranspiration (ET) Land Use Geodatabase was created by GHD for use in the DWR Cal-SIMETAW evapotranspiration model. The purpose of this analysis was to develop a general approach to quantifying land use types for use in an evapotranspiration analysis for the basin.

More information on the Cal-SIMETAW model can be found in the Water Use Technical Memorandum 2021. The ET Land Use Geodatabase was developed in ArcGIS as a land use layer that covered the entire ERVB extent. Please see Section 1.1 for a list of the data sources utilized in the ET Land Use Geodatabase. The goal for the database was to produce a seamless shapefile of land use polygons within the Eel River groundwater basin and identify total acres of each land use type within each parcel boundary. Land use was broken into six categories with significant differences in evapotranspiration:

1. Irrigation
2. Impervious
3. Open Water
4. Riparian
5. Natural vegetation
6. Urban Landscape

To fit mixed land use polygons (polygons that included more than one of the six land uses) into one of the six land use categories, a prioritized rule matrix was applied using the following criteria:

- Anything falling within the “Irrigated areas” data were considered irrigated regardless of whether any other dataset overlapped.
- Excluding areas already covered by the previous step, all building outline polygons were considered impervious.
- Excluding areas already covered by the previous steps, any GDE polygon with a cover type attribute that included the following values: Intermittent lake or pond, Ocean, Perennial lake or pond, Reservoir, River/stream/canal, was considered open water.
- Excluding areas already covered by the previous steps, any GDE polygon with a non-open water cover type attribute was considered riparian. Excluding areas already covered by the previous steps, any Parcel with a center point within a City/Community Service District/tribal boundary was considered urban landscape.

Once the above steps were completed, any remaining unclassified areas were passed through an image classification exercise to assign an appropriate land use type. The steps for completing and image classification exercise include:

Step 1: The image classification system used was performed on 4-band multispectral imagery provided by the 2020 USDA NAIP. Imagery tiles were downloaded from the U.S. Geologic Service Geospatial Data server. Approximately 325 individual imagery tiles were downloaded for the Eel River Valley Groundwater Basin, as defined by the CA Bulletin 118 Groundwater Basins shapefile for the ERVB. The individual tiles were combined to create a single multiband orthomosaic of the entire extent of the ERVB. The areas to be classified within the boundary were defined by the GHD shapefile that defines the area for classification (AreaforImageClassification_20210429.shp shapefile). This shapefile was created by excluding Urban and City boundaries, as well as omitting most buildings and roads within the ERVB.

Step 2: The single multiband orthomosaic (NAIP20_4B_Pro_SPC.tif) was clipped with areas defined for image classification (AreaforImageClassification_20210429). This resulted in a single multiband orthomosaic containing only the areas selected for image classification.

Step 3: Spectral differences were observed in the individual tiles used to create the single orthomosaic, and therefore it was necessary to segment the project area into five different regions. Each region was determined by combining areas of similar land cover and area with similar spectral detail. The regions include:

Step 4: A false color composite image was created for each region to use for Image Classification by changing the band number assignment in the Symbology settings in ArcGIS Pro Version 2.7.2. The band number was changed as follows:

- Red was updated to Band_4
- Green was updated to Band_3
- Blue was updated to Band_2

Step 5:

A Supervised, object-based Image Classification was performed in ArcGIS Pro Version 2.7.2 using the Classification Wizard. A custom classification schema was developed for the classification. The following classes were used as the basis of the classification schema:

- Impervious
 - Asphalt
 - Buildings
- Pervious
 - Deciduous
 - Evergreen
 - Wetlands
 - Bush –Vegetation
 - River Bar
 - Bare Ground
 - Pasture
 - Turf
 - Beach Sand
 - Water

Step 6:

The following settings were determined to be the most appropriate for the dataset by evaluating the different spectral and spatial segmentation of the multiband raster:

- Spectral Detail: 15
- Spatial Detail: 14
- Minimum Segment Size in Pixels: 10

The segmentation settings were used to create a segmented image for each unique area. Training samples were created using the training sample manager in ArcGIS Pro Version 2.7.2 by using the segment picker tool and by drawing polygons in unique areas within the multiband mosaic with many samples for each class in the classification schema.

Step 7:

The training samples were used to train the classifier. Results were evaluated, training samples adjusted and the classifier ran various times. Any incorrectly classified areas were re-classified using the reclassify tools inside the Image Classification Wizard. Once classified, the resulting classes were merged into two main classes:

1. Pervious
2. Impervious

Areas of vegetation that were within urban boundaries were classified as “Urban Vegetation.” Areas of vegetation outside urban vegetation were classified as “Natural Vegetation.” Areas of non-irrigated agricultural land were classified as “Natural Vegetation.”

Additionally, the image classification exercise output seven categories of land type: Asphalt, beachsand, pervious, riverbar, water, and wetlands. All “asphalt” areas were assigned a land use of “impervious,” all “water” and “wetlands” were assigned a land use category of “open water,” and all “pervious”, “beachsand” and “riverbar” areas were assigned a land use of “natural vegetation.”

At this point, all areas within the ERVB were assigned a land use category. To ensure the acreage values were accurate, the sum of the parcel boundary areas was compared to the total area of the ERVB. The parcel dataset included some areas with gaps between parcels, such as around roads, highways, the ocean, or rivers. Pseudo-parcels for the gaps were created and each parcel was assigned a unique identification so that the acreage could be calculated for these gaps. The pseudo-parcels were then rejoined to the original dataset, providing the land use acreage totals for each parcel.

The ET Land Use Geodatabase assumes some amount of error such as not all areas mapped reflect what is on the ground due to the nature of aerial imagery and remote sensing.

2.6 Evapotranspiration (ET) Land Use Geodatabase Summary

Resulting land use types are summarized by area in Table 6 and Figure 3. Natural vegetation was the largest land use within the Basin, followed by urban, irrigated, and riparian areas.

Table 6 ERVB GSP acreages

ERVB GSP Category	New Category	Acres
Impervious	Urban	1,916
Irrigated	Irrigated	13,430
Natural Vegetation	Natural Vegetation	29,722
Open Waters	Open Waters	3,824
Riparian	Riparian	11,529
Urban Landscape	Urban	12,072
Total		72,492

3. Comparison of DWR Land Use with ERVB Irrigated Acres

The California Department of Water Resources developed a statewide mapping system for classifying land use for developing Groundwater Sustainability Plans (GSPs) (DWR 2014). This mapping was used in developing the estimates of irrigation water use. The land use classification system is periodically updated as new or more current data is available. DWR incorporates land use datasets provided by local agencies. The local datasets were reviewed by DWR subject matter experts for accuracy and if the datasets were determined to be better, local data for the basin was then utilized instead of the statewide dataset.

The basin prioritization conducted in 2015 used the CASGEM 2014 Basin Prioritization Land Use mapping data to determine the estimated irrigated acres and water use. This system was developed by Land IQ. The system used remote sensing and multiple data sets to identify irrigated parcels and was used to create an Irrigated Acreage Database. The data sets include current and historical land use, land use forecasting and trend analysis, landscape evapotranspiration data, permanent crop age, irrigation method on a field-by-field basis, root zone depth on a field-by-field basis, and groundwater recharge suitability.

The HCRCD used the original LandIQ database to develop 2016 Irrigated Acreage Database and updated irrigated acreage database for all irrigated parcels within the basin. The update incorporated actual irrigated crop areas from field survey and local input. This work was done as part of the Irrigation Water Use Study published in the County’s Groundwater Sustainability Plan Alternative in 2016. The updated Irrigated Acreage Database was reviewed and accepted by DWR and used to perform the basin re-prioritization in 2018.

During the development of the Eel River Valley Basin GSP, the 2016 Irrigated Acreage Database was updated in 2021 and used in the water use estimates for the GSP.

Table 7 Irrigated Land use acreage comparison

Land Use	DWR 2014 (LandIQ) Acres	ERVB 2016 Acres	ERVB 2021 Acres
Irrigated Acreage	23,287	13,558	13,430

As shown on Table 7, DWR 2014 Irrigated Acres database has mapped far more irrigated areas than the ERVB GSP. Figure 2 compares the irrigated parcels identified in the DWR 2014 Irrigated Acres and the 2021 ERVB GSP Irrigated Acres database. Parcels that were identified in the DWR 2014 Irrigated Acres that are not identified the 2021 ERVB GSP Irrigated Acres database are shown in red, parcels that are in both databases are shown in tan, and parcels that are only in the 2021 ERVB GSP Irrigated Acres database are shown in green.

The primary reason DWR’s 2014 inventory significantly over-estimated irrigated acreage is that their methods did not ground-truth actual land management practices and assumed that all agricultural land was irrigated. Another factor for the difference in the assigned irrigated acreage has to do with the amount of area of an individual parcel that is actually irrigated. The DWR 2014 database assigned the entire parcel area as irrigated area. The 2021 ERVB GSP database assigned the actual irrigated area for fields on individual parcels. The HCRCD updated the database based upon field visits, producer input and local input.

DWR land use categories were different than the land use categories used by the ERVB GSP. DWR included more detailed breakdown of crop types and less information on other land use types. The land use types were consolidated into similar categories.

The DWR Land Use database did not include data that covered the entire extent of the groundwater basin area and left out a significant portion of the basin that had to be considered “no data.” Because of this, and because the 2018 DWR data did not include any mapped areas of Riparian, Natural Vegetation, or Open Waters, these values were estimated using aerial imagery and remote sensing. The estimation of the areas associated with these categories is used in evaluating the water demands due to evapotranspiration.

The DWR Land Use also included one category of “Urban” and did not break down into either “Impervious” or “Urban Landscape;” as the ERVB GSP does. Assuming the DWR’s Urban category includes both Impervious and Urban Landscape, then by combining the ERVB GSP’s Impervious and Urban Landscape impervious areas of DWR’s Urban category were reclassified as impervious.

Additionally, the ERVB GSP mapped all paved and gravel roads, and paved parking areas as impervious. Within city boundaries, lands that were not attributed as riparian, agricultural, or open water were also mapped as urban lands. Table 8 and Figure 3 present the breakdown of ERVB GSP land use acres.

Table 8 ERVB GSP land use acreages

Cal-SIMETAW / DWR Crop Type	ERVB GSP Category	GSP Acres
Corn	Corn	942
Pasture	Grazed pasture/Hay or Silage Crop	12,015
Safflower	Quinoa	327
Truck Crops	Row Crops	7
Alfalfa	Alfalfa/Clover	27
Native Vegetation	Tree/Row	116
Total Irrigated Land		13,430
Riparian	Riparian	11,529
Native Vegetation	Natural Vegetation (non-tree farm)	29,722
Open Waters	Open Waters	3,824
Urban Landscape	Urban Landscape	12,072
Non-Irrigated Vegetated/Open Water Area		57,146
Impervious	Impervious	1,916
Total Basin		72,492

4. Electronic Deliverable Summary

The following electronic deliverables are attached as digital databases:

- Irrigated Acreage 2021 Geodatabase
- County and Municipal Parcels Geodatabase
- Groundwater Dependent Ecosystems Geodatabase
- ET Land Use Geodatabase
- CADWR Land Use Geodatabase metadata

5. References

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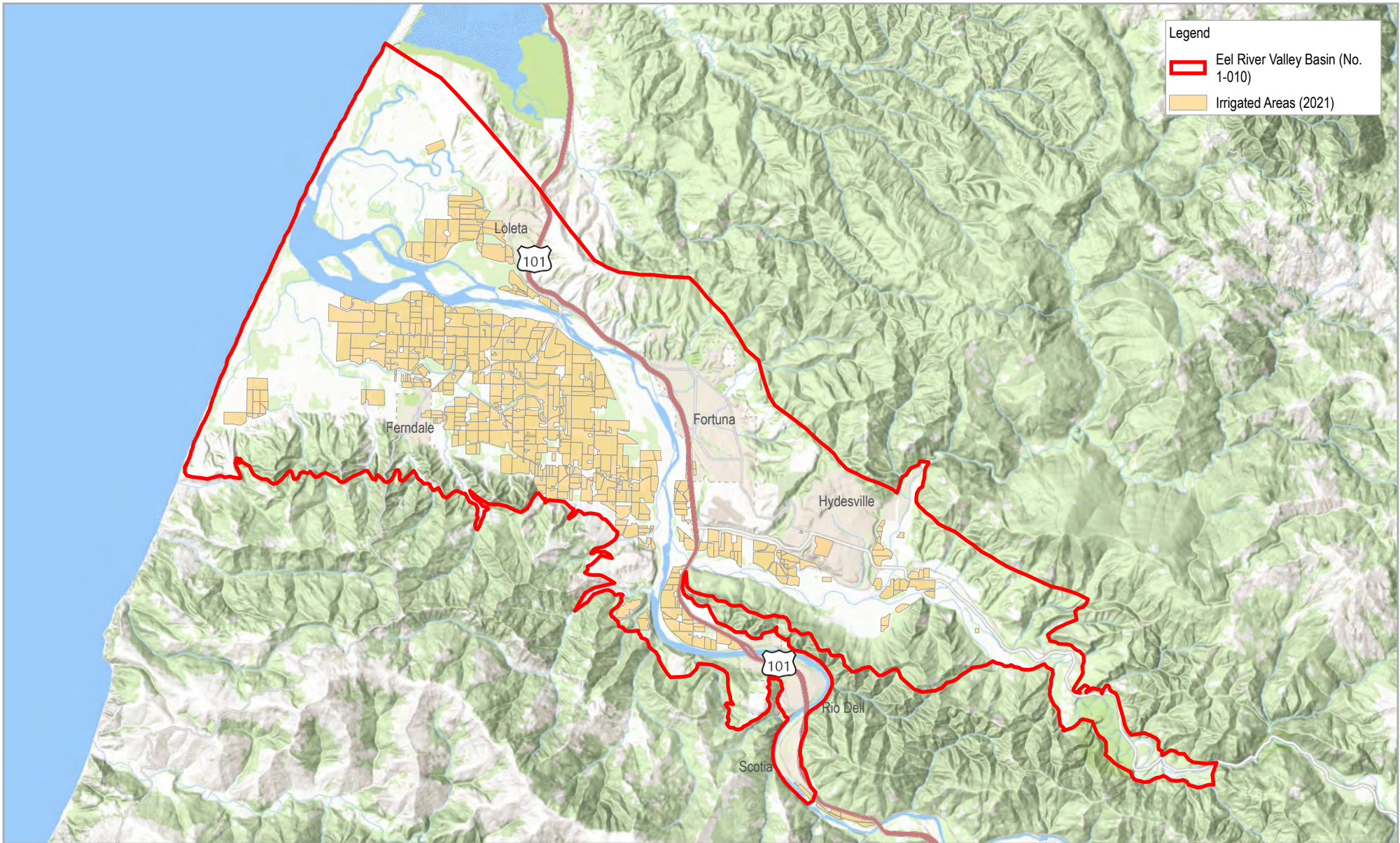
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Attachments

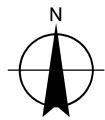
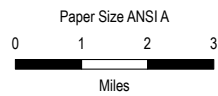
Attachment 1

Figures



Legend

- Eel River Valley Basin (No. 1-010)
- Irrigated Areas (2021)



Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

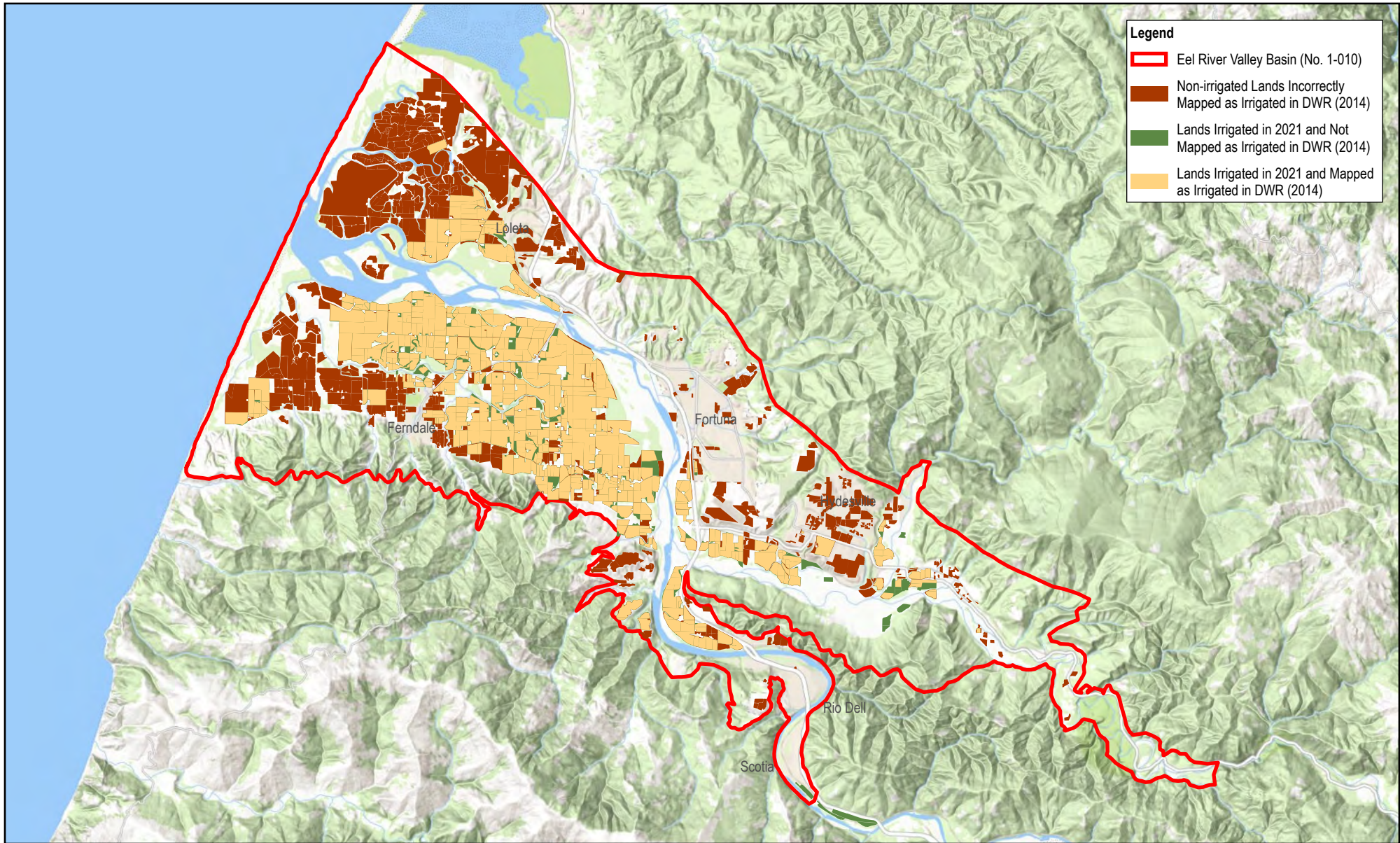


**Humboldt County Department of Public Works
 Eel River Valley Groundwater
 Sustainability Plan**

Project No. 11217388
 Revision No. -
 Date November 2021

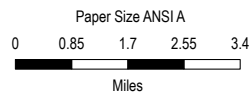
Irrigated Areas

FIGURE 1



Legend

- Eel River Valley Basin (No. 1-010)
- Non-irrigated Lands Incorrectly Mapped as Irrigated in DWR (2014)
- Lands Irrigated in 2021 and Not Mapped as Irrigated in DWR (2014)
- Lands Irrigated in 2021 and Mapped as Irrigated in DWR (2014)



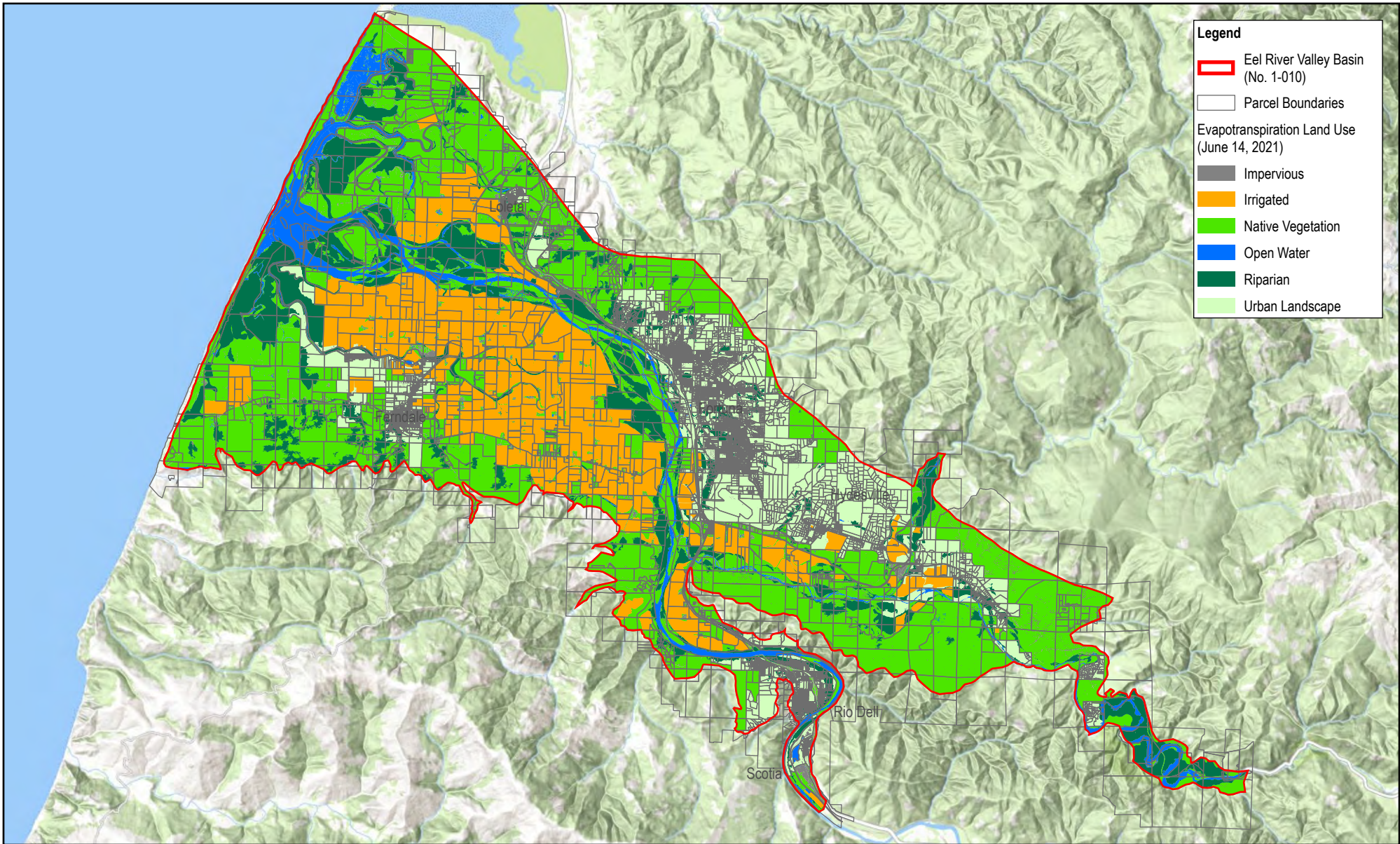
Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Humboldt County Department of Public Works
 Eel River Valley Groundwater
 Sustainability Plan

Project No. 11217388
 Revision No. -
 Date Jan 2022

**Comparison of Land Use
 Designations between DWR (2014)
 and Humboldt County (2021)**

FIGURE 2

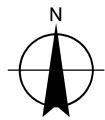
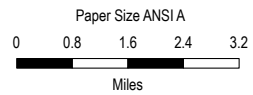


Legend

- Eel River Valley Basin (No. 1-010)
- Parcel Boundaries

Evapotranspiration Land Use (June 14, 2021)

- Impervious
- Irrigated
- Native Vegetation
- Open Water
- Riparian
- Urban Landscape



Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane California I FIPS 0401 Feet



Humboldt County Department of Public Works
 Eel River Valley Groundwater
 Sustainability Plan

Project No. 11217388
 Revision No. -
 Date Jan 2022

Land Use Classification

FIGURE 3

**Preliminary Analysis of 2020/2021 Surface Water and
Groundwater Interaction Studies
(TM-7)**



Technical Memorandum

SHN Reference: 020091.232
GHD Reference: 11217388. 2.3.1
Date: January 24, 2022
To: Summer Daugherty, Senior Environmental Analyst
Humboldt County Department of Public Works-Environmental Services
Copy To: Hank Seemann, Deputy Director
Humboldt County Department of Public Works-Environmental Services
From: SHN: Jason Buck and Alyssa Troia
Subject: **Preliminary Analysis of 2020/2021 Surface Water and
Groundwater Interaction Studies-Eel River Valley Groundwater
Basin**

1.0 Introduction

1.1 Overview

This technical memorandum summarizes work and preliminary findings associated with studies focused on evaluating the surface water and groundwater interactions within the Eel River Valley Groundwater Basin, for inclusion in the Humboldt County Department of Public Works' Eel River Valley Groundwater Sustainability Plan (GSP).

The groundwater-surface water interactions within the Eel and Van Duzen rivers are complex and heavily influenced by the dynamic nature of the channel morphology. Relatively high flows and the resulting redistribution of channel deposits can significantly alter the locations of pools and riffles year to year. The river channels are primarily underlain by coarse alluvial deposits which are in good hydrologic connection with the shallow alluvial aquifers. Exchange of surface water and shallow groundwater below and surrounding the channel is easily accommodated by these conditions. Underflow, or shallow water flowing within the porous sediment below the channel, is a significant component of the flow system, and the topography of the channel can directly affect the complexity of this exchange.

The continuous water level data presented herein has only recently been initiated (at the time of this writing) and this memorandum is focused on presenting data that are considered the highest priority. Additional insight into the spatial and temporal relationships between these two systems will be afforded by the data collection that will continue under the GSP monitoring plan and will be reviewed during the development of annual reports and the 5-year update of the GSP.

1.2 Previous Work

This memorandum provides a preliminary look at the data collected within the Eel and Van Duzen rivers over the 2020 and 2021 low-flow seasons, building on previous work conducted as part of the



2016 “Eel River Valley Groundwater Basin, Sustainability Plan Alternative” (SHN, 2016) and monitoring since that time, which has been summarized in a 2019 Technical Memorandum titled “Preliminary Analysis of Surface Water/Groundwater Interaction Monitoring; Eel River Valley Groundwater Basin” (SHN, 2019).

The first broad-based surface-flow study within the Eel and Van Duzen rivers was conducted in 2016 by Thomas Gast & Associates Environmental Consultant (TGAEC). The results of that study are summarized on Figure 1.

2.0 2020/2021 Surface Flow Studies

Surface flow studies were conducted by TGAEC on selected sites on the Eel and Van Duzen Rivers in Fall 2020 and 2021 to provide empirical data to support the refinement of the hydrogeologic conceptual model and the development/calibration of the integrated groundwater surface water model, and improve the understanding of the groundwater-surface water interactions along the Eel and Van Duzen Rivers. Details of the data collection methods and results of the 2020 and 2021 surface flow studies are provided in technical memorandums prepared by TGAEC (2022, 2022a).

2.1 Site Selection

Ten locations were identified for the collection of surface water discharge measurements (three measurements at each location over the low-flow season) and each site was outfitted with a continuous surface water level monitoring station nearby to facilitate the development of a stage-discharge rating curve. Some sites were selected to provide a distribution of measurements within the Eel and Van Duzen Rivers, while a subset of locations was concentrated within the reach of the Eel River that traverses the head of the Lower Eel River Valley beginning at its confluence with the Van Duzen River extending downstream to the confluence with Palmer Creek (upstream of Fernbridge). This reach is of interest because it has the greatest potential for impact from groundwater use and was chosen as the focus for evaluating the sustainability indicator that relates to impacts to interconnected surface waters.

Locations within the river channels where surface discharge measurements can be made over a broad range of flow conditions requires specific channel configurations that have adequate water column depth and sufficient flow velocity to allow accurate measurements. Locations like this are limited within the Eel and Van Duzen Rivers. Final locations selected for these studies were adjusted based on field reconnaissance.

2.2 2020 Surface Flow Discharge Measurements

Three Eel River locations between the confluence with the Van Duzen River and Fernbridge were measured in 2020 and are shown on Figure 2. The results from three separate measurement campaigns at low flow, middle flow, and high flow conditions are provided on Table 1 (on the next page).



Table 1. Calibration Flows and USGS Gage Readings from the Same Time^{ab}

Discharge Measurement Locations	Time	Measured Discharge (cfs) ^c	USGS ^d Scotia Discharge (cfs) 11477000	USGS Van Duzen Discharge (cfs) 11478500	Sum USGS (cfs)
Low Flow 9/23/2020					
QM-5	12:50	39.4	60.9	6.75	67.65
QM -2	16:20	33.1	60.9	6.75	67.65
Low Flow 9/25/2020					
QM -3	14:20	38.5	60.9	7.21	68.11
Middle Flow 11/16/2020					
QM -5	8:37	139.9	149	32.8	181.8
QM -2	10:37	144.2	147	31.7	178.7
QM -3	14:00	153.4	159	31.7	190.7
High Flow 12/14/2020					
QM -5	11:38	1235.47	623	501	1124
QM -2	12:52	1563.2	650	458	1108
QM -3	13:11	1596.97	657	453	1110

^a Flows were changing during the middle and high flows and there is travel time for water to reach each location.

^b Source: TGAEC (2022) showing the 2020 surface discharge measurements.

^c cfs: cubic feet per second

^d USGS: United States Geological Survey

2.3 2021 Surface Flow Discharge Measurements

In 2021, seven locations were added to the three measured in 2020 for a total of ten locations for surface flow measurements over the 2021 low-flow season. The 10 discharge measurement locations are shown on Figure 3, and measured surface flow discharges are shown on Table 2 (on the following page).



Table 2. Measured Discharge Values at each Discharge Measurement Location Over the 2021 Low-Flow Season and Discharge Reported by Nearby USGS^a Gauging Stations^b (cfs)^c

Site	Date	Time	Measured Discharge (cfs)
QM-2	6/25/2021	8:50	175.084
	7/23/2021	9:30	43.50
	8/26/2021	12:43	8.81
QM -3	6/11/2021	13:42	299.03
	7/21/2021	13:45	51.87
	8/25/2021	14:06	22.09
QM -5	6/25/2021	9:52	189.347
	7/23/2021	11:50	49.96
	8/26/2021	15:38	13.95
QM-SW-1	6/25/2021	7:45	168.706
	7/21/2021	9:55	49.05
	8/25/2021	9:30	27.51
QM-SW-2	6/10/2021	10:15	6.98
	7/22/2021	13:00	2.26
	8/18/2021	11:45	0.09
QM-SW-3	6/4/2021	13:32	32.73
	7/22/2021	10:55	7.16
	8/18/2021	10:12	3.44
QM-SW-4	6/10/2021	13:27	44.53
	7/22/2021	14:20	7.71
	8/18/2021	13:30	5.05
QM-SW-5	6/11/2021	15:28	298.31
	7/23/2021	8:11	44.91
	8/25/2021	15:00	12.63
QM-SW-6	6/11/2021	12:17	261.93
	7/22/2021	9:00	54.04
	8/26/2021	10:43	25.15
QM-SW-7	6/11/2021	11:01	293.86
	7/21/2021	11:30	55.67
	8/25/2021	10:45	27.23
USGS Site #11478500 (Van Duzen near Bridgeville)	6/4/2021	13:30	34.4 ^{Pd}
	7/22/2021	11:00	6.24 ^P
	8/18/2021	10:15	3.44 ^P
USGS Site # 11477000 (Eel at Scotia)	6/11/2021	12:15	233 ^{Ae}
	7/22/2021	9:00	57.9 ^A
	8/26/2021	10:45	26.3 ^A

^a USGS: United States Geological Survey

^b Source: TGAEC (2022a) showing the 2021 surface discharge measurements.

^c cfs: cubic feet per second

^d USGS provisional value

^e USGS-accepted value



2.4 Preliminary Analysis of 2020/2021 Discharge Measurements

In general, the results indicate that during low-flow conditions, Eel River surface flows decrease in the downstream direction through the upper and middle portions of the study area and then increase in the lower portion. This condition was observed in the 2016 surface flow studies (SHN, 2016) and is interpreted to be in part due to the geomorphology of the Eel River channel and the sediments that form the underlying channel substrate.

The channel profile of the Eel River, taken from the project Digital Elevation Model (DEM; GHD, 2021), is shown on Figure 4 and illustrates that the upper portion of the Eel River through this reach has a series of steps, which often occurs as a sequence of pools and riffles. This stepped profile of the surface water results in a complex pattern of interaction with the groundwater, which is generally planar, and easily flows through the thick sequence of coarse deposits underlying the channel. In general, areas where the surface water is above the groundwater promote losing stream conditions or discharge losses to underflow along the profile. The areas where the surface water is below the groundwater promote gaining stream conditions or discharge gains from emergent underflow.

Both the QM-2 and QM-3 locations are positioned on the downstream end of pools at an inflection point (change in slope) of the profile, which is an environment that can see increased underflow. QM-2 is located where a section of the Eel River went completely subsurface in 2014. According to reports, surface flows picked back up downstream where underflow emerged back onto the surface (Times Standard, 2014).

3.0 Surface Water and Groundwater Interactions

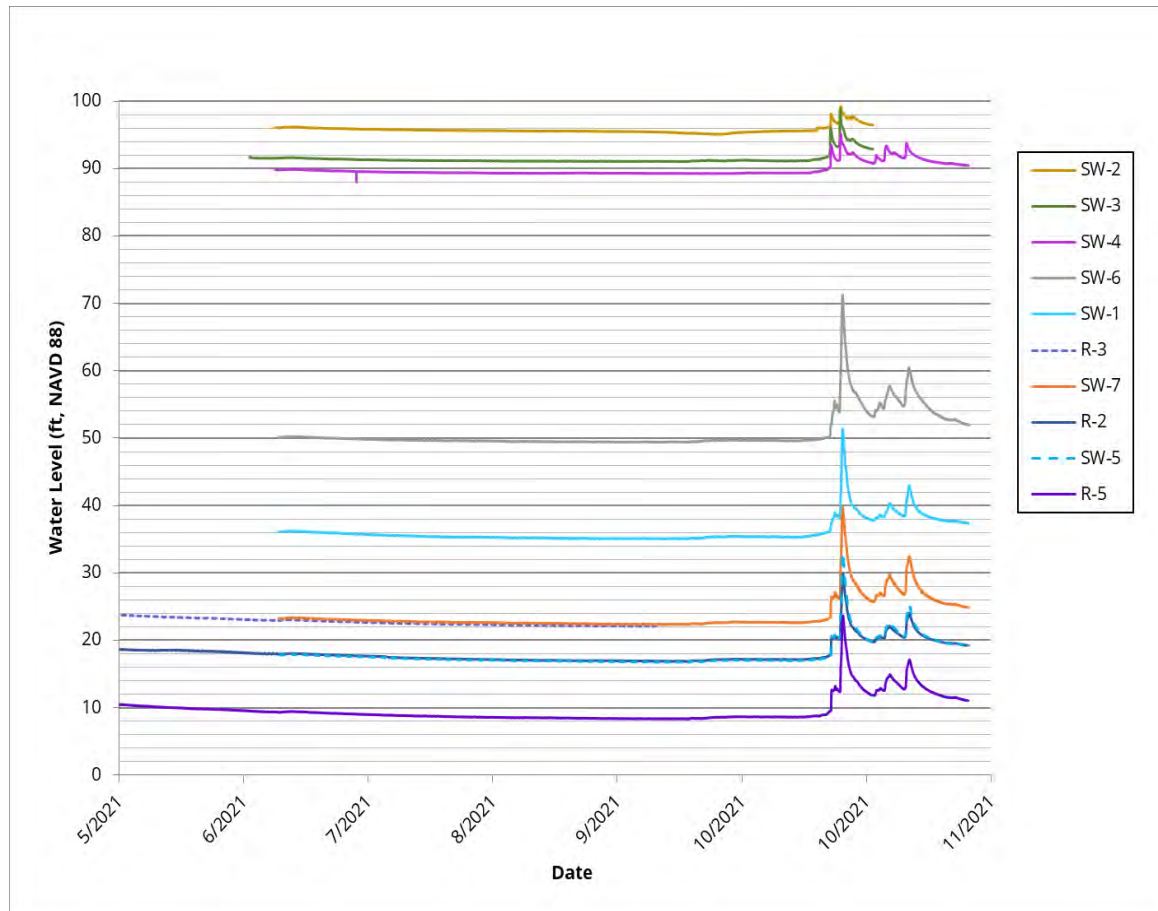
Continuous water level monitoring in the river channels and nearby County monitoring wells over the course of the 2021 low-flow season provides the opportunity to assess the relationship between surface water and groundwater and identify the spatial and temporal patterns of gaining and losing stream conditions. Figure 5 shows locations where continuous water level data has been collected within and near the Eel and Van Duzen rivers over the 2021 low flow season. The data collected as of November 2021 is reviewed and discussed below, and a focused review of the data is made for the 5-mile section of the Eel River between its confluence with the Van Duzen River extending downstream to the intertidal reach near Fernbridge (Figures 5-1, 5-2, and 5-3).

3.1 Surface Water Level Monitoring

As part of TGAEC's 2020 and 2021 surface water monitoring studies, continuous surface water level data was collected using pressure transducers at each of the ten study sites. Transducer R-3 has been collecting data since 2017 and two additional transducers (R-2 and R-5) were installed in September 2020. As part of the 2021 surface water monitoring studies, seven additional transducers were installed in June 2021 (SW-1 through SW-7) and recorded water levels through the 2021 dry season and into the wet season before they were pulled at the end of November 2021. Three transducers (R-2, R-3, and R-5) have been left in place to continue collecting surface water level data along the Lower Eel River into the future.

A composite graph of the continuous surface water level data that was collected in 2021 is provided as Graph 1, below.



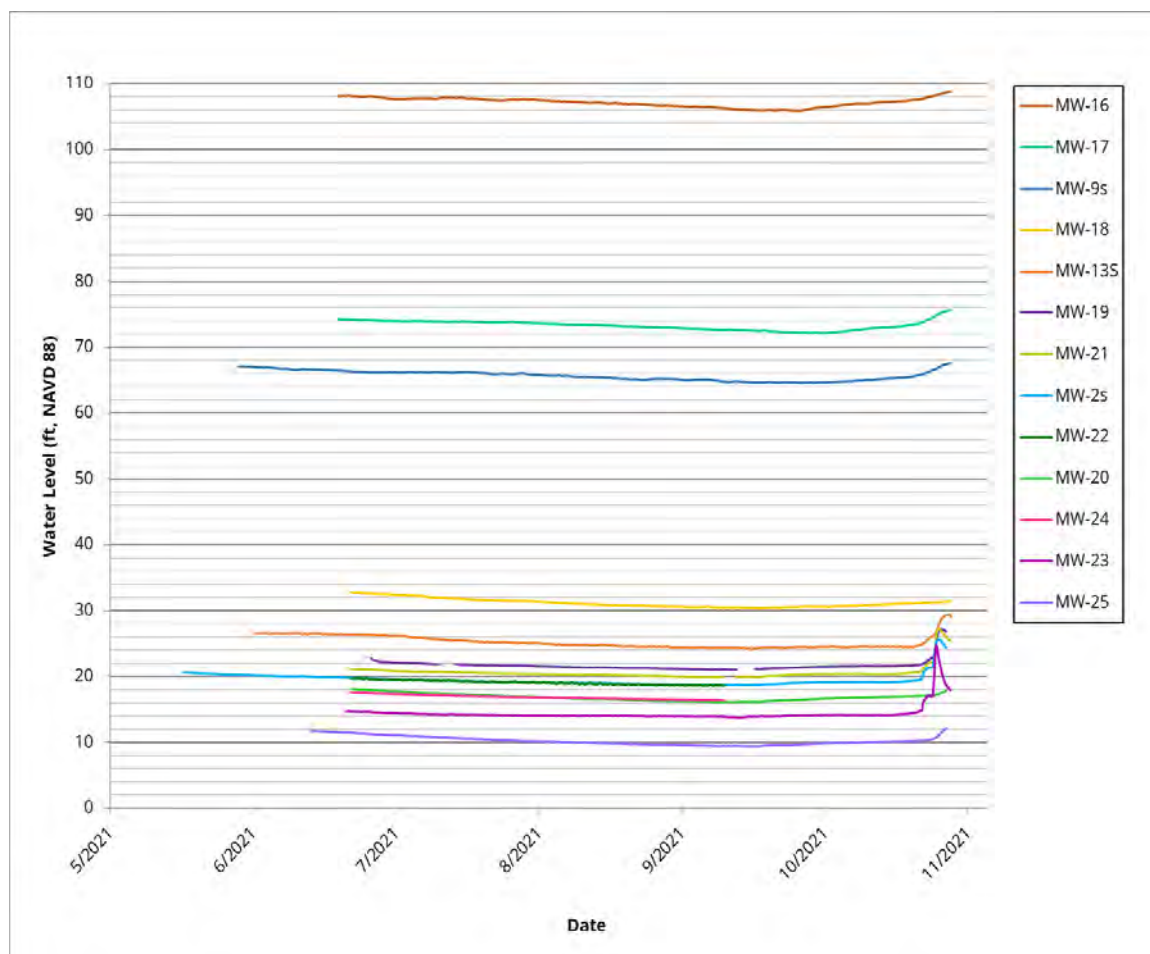


Graph 1. Continuous Surface Water Level Data Collected Over the 2021 Dry Season.

3.2 Groundwater Level Monitoring

The collection of continuous water level data was initiated in all the 37 active County monitoring wells beginning in June/July 2021. A subset of these wells was specifically located to provide groundwater level data near the rivers. County monitoring wells near the Eel and Van Duzen Rivers, and the surface water stations that were monitored over the course of the 2021 dry season are shown on Figure 5. A composite hydrograph showing the continuous groundwater level data collected in 2021 from the County monitoring wells shown on Figure 5 is provided as Graph 2, below.





Graph 2. Continuous Groundwater Level Data Collected Near the Eel and Van Duzen Rivers Over the 2021 Dry Season (see Figure 5 for locations).

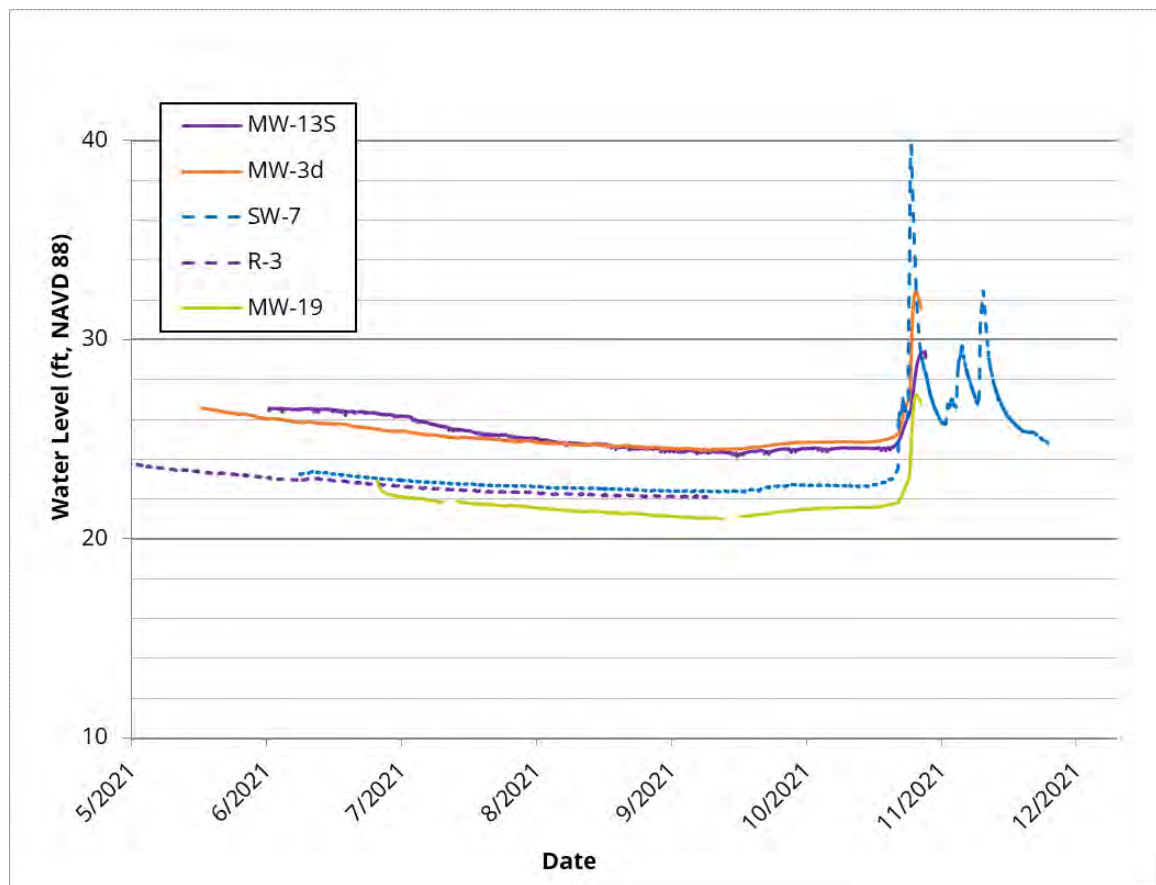
3.3 Surface Water and Groundwater Conditions along the Lower Eel River

A focused look at the gaining and losing conditions along the Lower Eel River during the low-flow season is discussed below. The lowest water levels within the groundwater and surface water systems occurred in mid- to late-September, just prior to the first rains of the wet season. The water level elevations during this lowest point are plotted on Figures 5-1 through 5-3. It's important to note that surface water level elevations have been tied to surveyed benchmarks (high accuracy), whereas the groundwater elevations are tied to ground surface elevations pulled from the Project DEM (lower accuracy).

3.3.1 Conditions near the Confluence with the Van Duzen

Figure 5-1 shows the continuous monitoring locations in the vicinity of the Eel River's confluence with the Van Duzen River. A plot of the water levels recorded at these locations is provided on Graph 3, below.





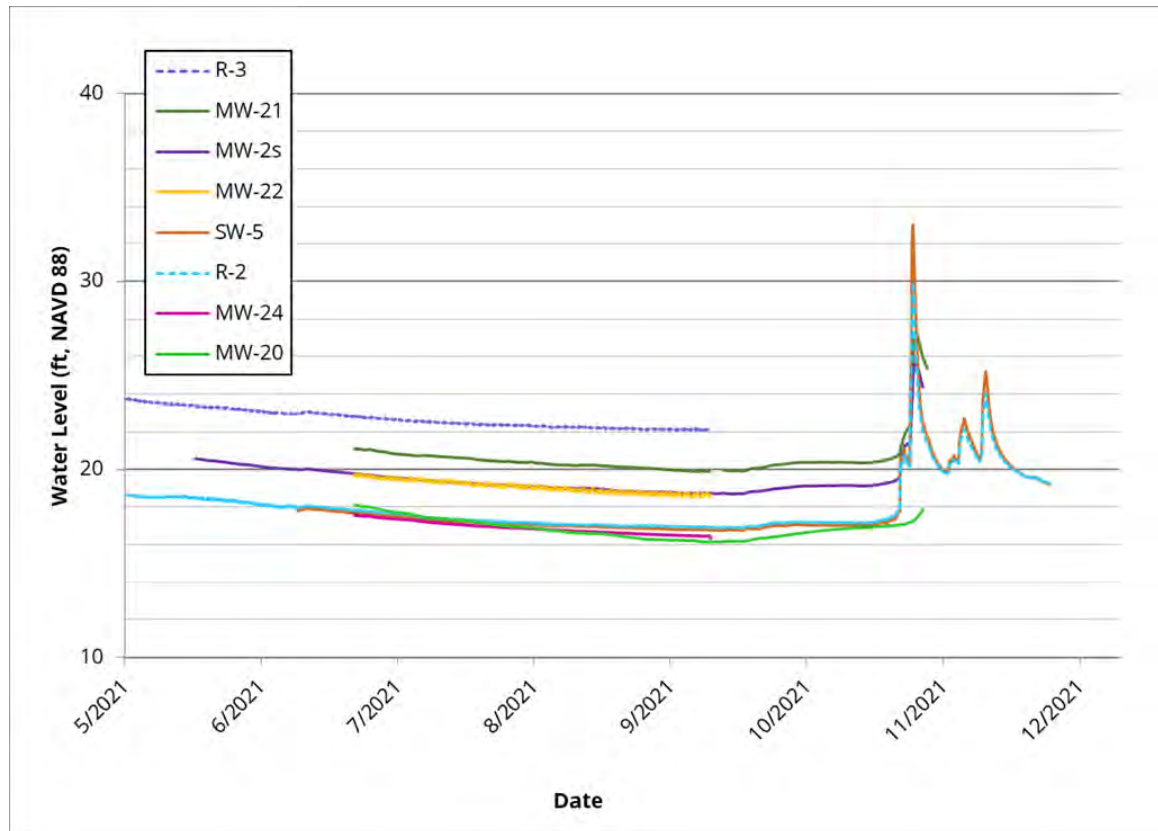
Graph 3. Surface Water (Dashed) and Groundwater Elevations Near the Confluence of the Eel and Van Duzen Rivers (see Figure 5-1 for locations).

A review of the relationship of the water levels between MW-13s and SW-7 indicate that the right bank of the Eel River is a gaining stream throughout the low-flow season with a persistent head difference of approximately 2 feet. The relationship between SW-7 and MW-19 indicates that the left bank is in a losing stream condition with approximately 1 foot of head difference.

MW-3d is positioned near the base of the Wildcat hills off the left bank of the Eel River where it enters into the Lower Eel River Valley. The Eel River channel drops in elevation through a series of steps as it enters the valley and surface waters are higher than those recorded at the SW-7 location (see Figure 4). The relationship between groundwater levels in MW-3d and adjacent surface water levels has been shown in previous studies (SHN, 2019) to represent losing conditions throughout the low flow season.

3.3.2 Conditions Downstream of the Eel/Van Duzen Confluence (Figure 5-2)

Figure 5-2 shows the continuous monitoring locations downstream of the Eel River’s confluence with the Van Duzen River and upstream of the 12th Street pool. A plot of the water levels recorded at these locations is provided on Graph 4, below.



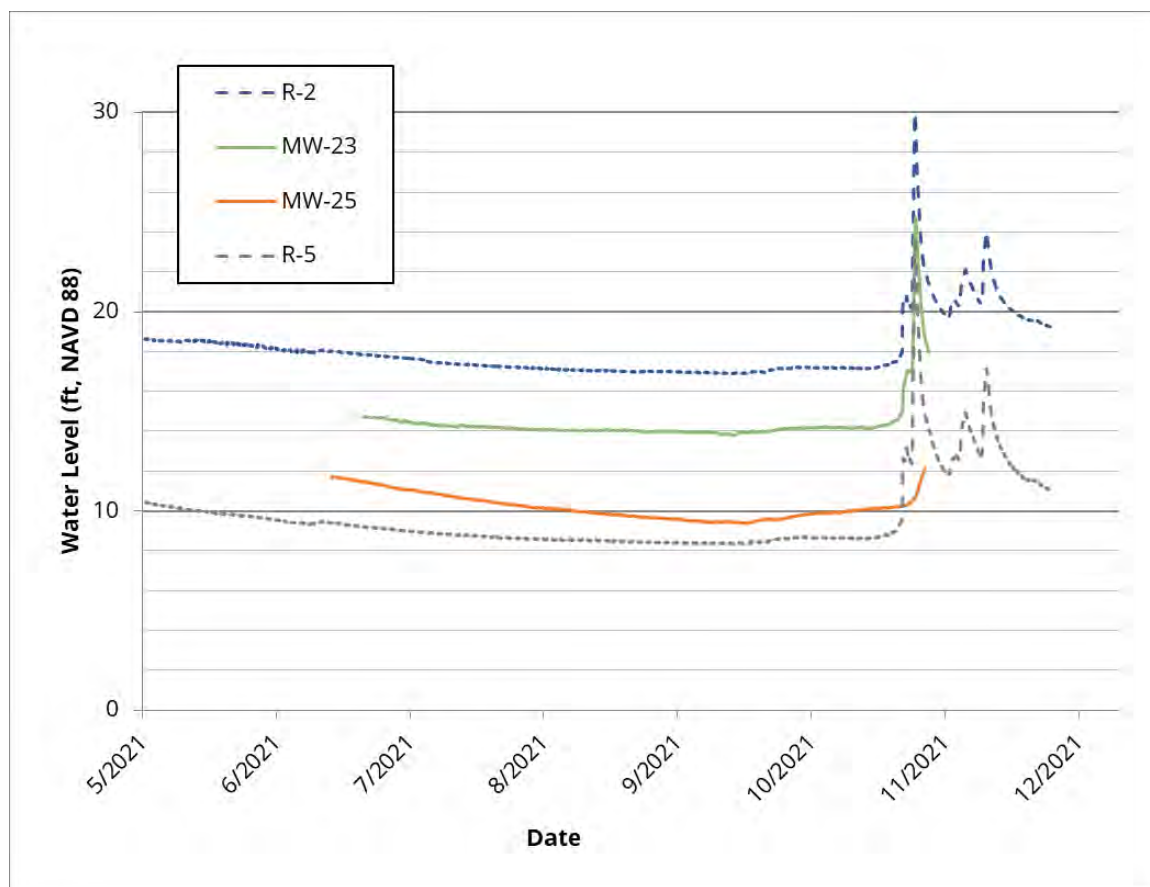
Graph 4. Surface Water (Dashed) and Groundwater Elevations Above the 12th Street Pool on the Lower Eel River (See Figure 5-2 for Locations).

This section has a complex gaining and losing pattern based on the stepped profile of the channel (see Figure 4). Approximately 7 feet of elevation difference occurs between the R-3 pool and the SW-5 pool (12th Street pool). This section has the only known right bank losing stream condition, which begins just downstream of the R-3 location with a transition to a gaining stream condition somewhere near the location of SW-5 at the bottom of a long riffle. The right bank losing conditions help explain the reduction in measured surface flows between QM-3 and SW-5 (Figure 3). Left bank losing conditions are interpreted to exist along this entire section during the low flow season.

3.3.3 Conditions Between 12th Street Pool and Palmer Creek (Figure 5-3)

Figure 5-3 shows the continuous monitoring locations between the 12th Street pool and the confluence with Palmer Creek. A plot of the water levels recorded at these locations is provided on Graph 5, below.





Graph 5. Surface Water (Dashed) and Groundwater Elevations Downstream of the 12th Street Pool on the Lower Eel River (See Figure 5-3 for Locations).

This reach includes a section of the river channel that widens significantly into a braided series of side channels, many of which have been abandoned as vegetation is established and the active channel remains along the right bank. Limited groundwater data exists within this reach, but based on previous groundwater contouring through this area, left bank losing conditions are interpreted along much of the reach, with a gaining condition interpreted as the river swings more toward the west. More than 8 feet of surface water elevation change occurs between R-2 and R-5. Previous studies indicate that the groundwater flow direction through this area is generally to the northwest (sub-parallel to the river), which can result in a higher potential for underflow conditions that affect the surface flows. In Fall 2014, surface water was observed to go completely subsurface near the downstream end of the 12th Street pool, with corresponding emergent flows further downstream.

MW-25 is the closest groundwater monitoring location along the left bank as the river bends westward. The relationship between groundwater levels in MW-25 and surface water levels at R-5 suggest a left bank gaining condition exists through the low-flow season and may be partially responsible for the downstream increases in surface flows observed in 2016, 2020, and 2021 (see Figures 1, 2, and 3).



4.0 Impacts of Groundwater Pumping

4.1 Surface Flow Discharge Measurements

Surface flow discharge measurements collected in the low flow seasons in 2016, 2020, and 2021 all show a pattern of decreasing surface flows in the downstream direction on the Eel River as it traverses the eastern edge of the Lower Eel River Valley and then increasing surface flows in the lower portion of the study area. Our preliminary evaluation of these surface flow declines is considerate of a variety of potential influences on surface water flow, including:

1. channel morphology and the potential for underflow,
2. natural groundwater elevations and the dominant flow pattern from east to west, and
3. influence of groundwater pumping.

Channel morphology plays an important role, particularly where grade controls form long pools that result in a stepped profile of the surface water. This stepped profile (see Figure 4) is in contrast to the relatively planar surface of the groundwater and the downstream ends of these steps have the potential to sustain surface waters above the adjacent groundwater levels, which leads to a stronger potential for losing stream conditions and/or promotes underflow. This condition is evident at the downstream end of the R-3 pool (Figure 5-2) where losing stream conditions occur on both sides of the river and is considered partially responsible for the reduction in surface flows between the QM-3 and the QM-SW-5 locations. A similar condition is interpreted to be affecting the reduced surface flows at QM-2, as discussed in Section 3.3.3, above.

A persistent groundwater gradient toward the west has been mapped within the Van Duzen alluvial valley, and groundwater flowing into and beneath the Eel River near the confluence provide significant recharge to both the surface water (right bank gaining conditions) and groundwater within the Lower Eel River Valley. As the Eel traverses northward from the confluence, the groundwater recharge from the Van Duzen alluvial valley is reduced and groundwater conditions are dominated by the inflow from the older upland units that underly the Rohnerville Terrace and the City of Fortuna. A reduction of surface flows downstream of the confluence with the Van Duzen can be expected as the groundwater inputs along the right bank are reduced. In addition, the left bank losing stream conditions will tend to increase over the course of the low-flow season as groundwater levels continue to lower.

4.2 Influence of Pumping on Groundwater Levels

The effect of groundwater pumping in the basin is expected to be detectable in monitoring wells through either a localized effect (when a monitoring location is within the cone of depression of a nearby pumping well), or a more regional effect that would correspond to a broad water level lowering, typically during the irrigation season. Localized effects typically appear as daily fluctuations in water levels that reflect the schedule of pumping for a nearby well. Regional effects are expected to be more subtle and would appear as an inflection in the water levels that correspond to the irrigation season. Previous studies have identified localized effects and potentially minor regional effects on groundwater levels in MW-9, on River Bar Road near the Van Duzen River (SHN, 2019). Preliminary review of data collected from the 2021 County monitoring wells over the summer/fall season indicates that localized effects may be interpreted in many of the hydrographs with cyclic water level changes typically less than 0.5 feet. A record of water levels over a complete irrigation season is not yet available for the 2021 County monitoring wells, so the ability to analyze the more regional effects of pumping is limited. Some hydrographs, such as MW-13s, show a slight downward



inflection that occurs in the profile in mid-July, and may be reflective of cumulative impacts from pumping in the vicinity. The collection of continuous water level data over the coming years will provide an opportunity to better understand groundwater fluctuations in the vicinity of the rivers and evaluate potential impacts associated with groundwater use.

4.3 Influence of Pumping on Surface Water Levels

A signature of the irrigation season is not immediately discernable from surface water hydrographs. Based on the consistency of the hydrographs associated with surface water and nearby groundwater levels, the more regional effects associated with pumping is expected to be subtle and will be better evaluated after collection of groundwater level data over the coming years.

4.4 City of Fortuna Municipal Well Field

The City of Fortuna municipal supply wells are located approximately 1,600 feet east of the right bank of the Eel River within the eastern margin of the alluvial valley (see Figure 5-2 for location). Based on the proximity to the active channel, the potential impact that pumping has on the surface water is of special interest. MW-22 (located approximately 800 feet south of the well field) was specifically located to provide the opportunity to monitor water levels within the vicinity of the well field. Water levels in MW-22 from late June through early September remain approximately 2 feet above the surface water level at SW-5. The hydrograph for MW-22 has a water level profile nearly identical in form to MW-21 (located upstream of the well field) and MW-2s (located on the opposite side of the Eel River) and doesn't appear to reflect the signature of pumping that could be interpreted as derived from the well field. The collection of additional data over the coming years will provide an opportunity to more closely review potential impacts associated with the Fortuna well field.

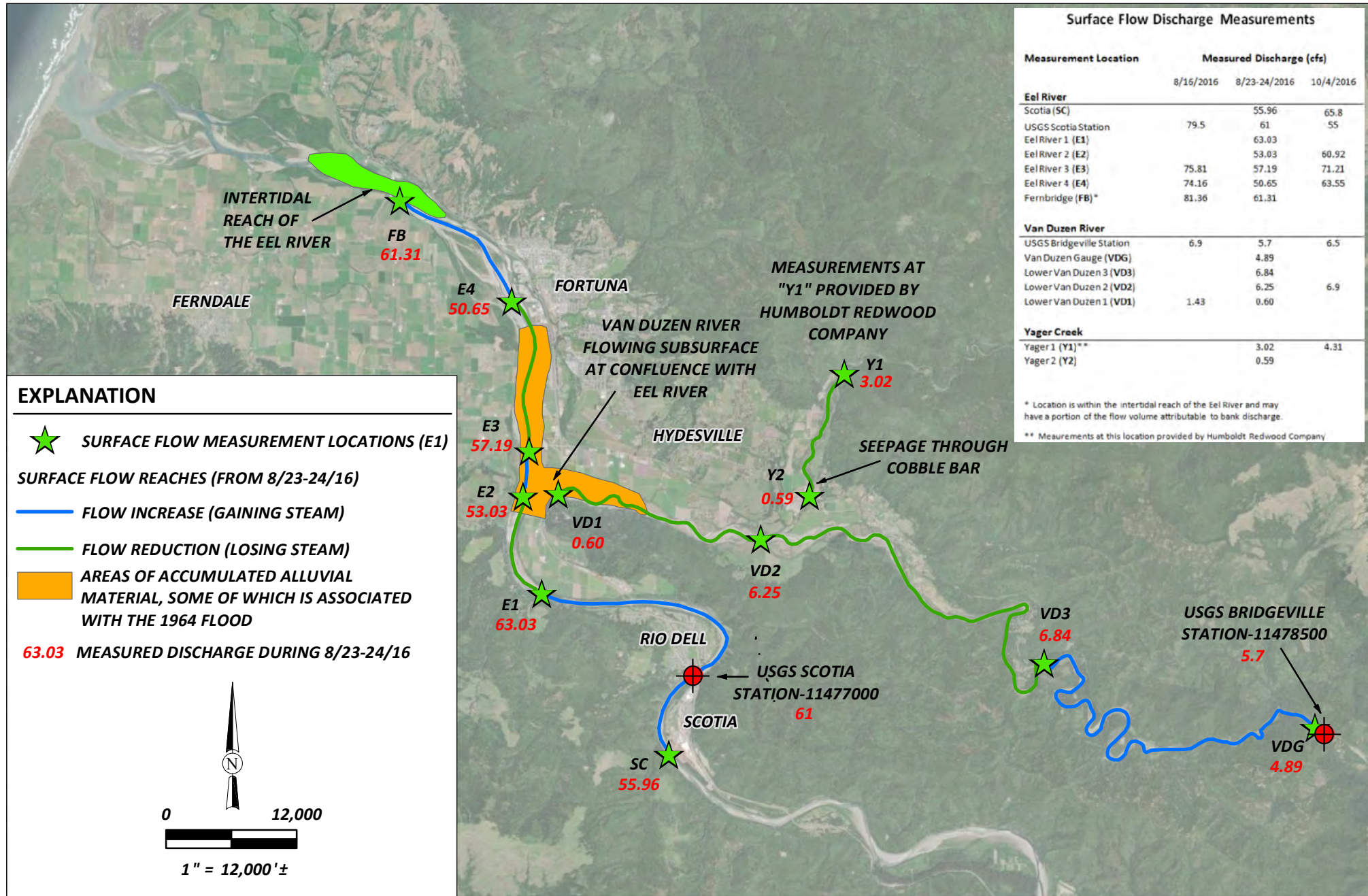
5.0 References

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- Thomas Gast & Associates Environmental Consultants. (2022). "Surface Water Monitoring in the Eel River Valley Basin." Arcata, CA:TGAEC.
- . (2022a). "Surface Water Discharge Measurements Tech Memo 09-23-2020 to 12-21-2020." Arcata, CA:TGAEC.
- Times Standard. (September 14, 2014; updated July 30, 2018). "Lower Eel River Appears Dry Near Fortuna." Accessed at: <https://www.times-standard.com/2014/09/14/lower-eel-river-appears-dry-near-fortuna/>

Appendix 1: Figures

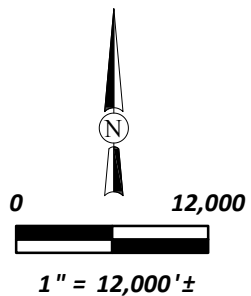


Figures 1



EXPLANATION

- ★ SURFACE FLOW MEASUREMENT LOCATIONS (E1)
- SURFACE FLOW REACHES (FROM 8/23-24/16)
- FLOW INCREASE (GAINING STEAM)
- FLOW REDUCTION (LOSING STEAM)
- AREAS OF ACCUMULATED ALLUVIAL MATERIAL, SOME OF WHICH IS ASSOCIATED WITH THE 1964 FLOOD
- 63.03 MEASURED DISCHARGE DURING 8/23-24/16

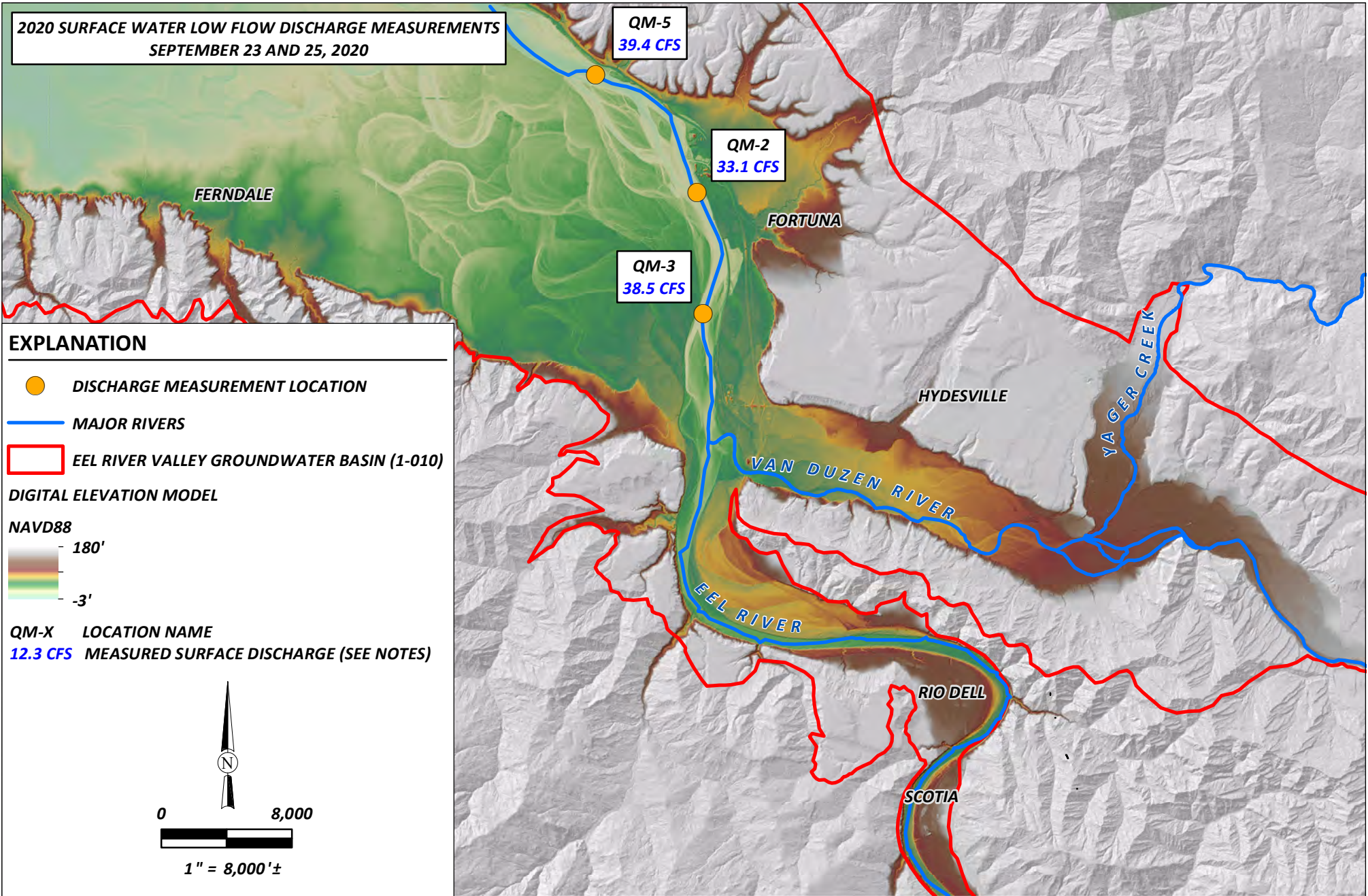


NOTES: FLOW STUDY PERFORMED BY THOMAS GAST & ASSOCIATES ENVIRONMENTAL CONSULTANTS



Humboldt County Public Works
Eel River Basin (1-010)
Humboldt County, California

2016 Surface Flow Discharge
Measurement Locations and Results
SHN 020091.232

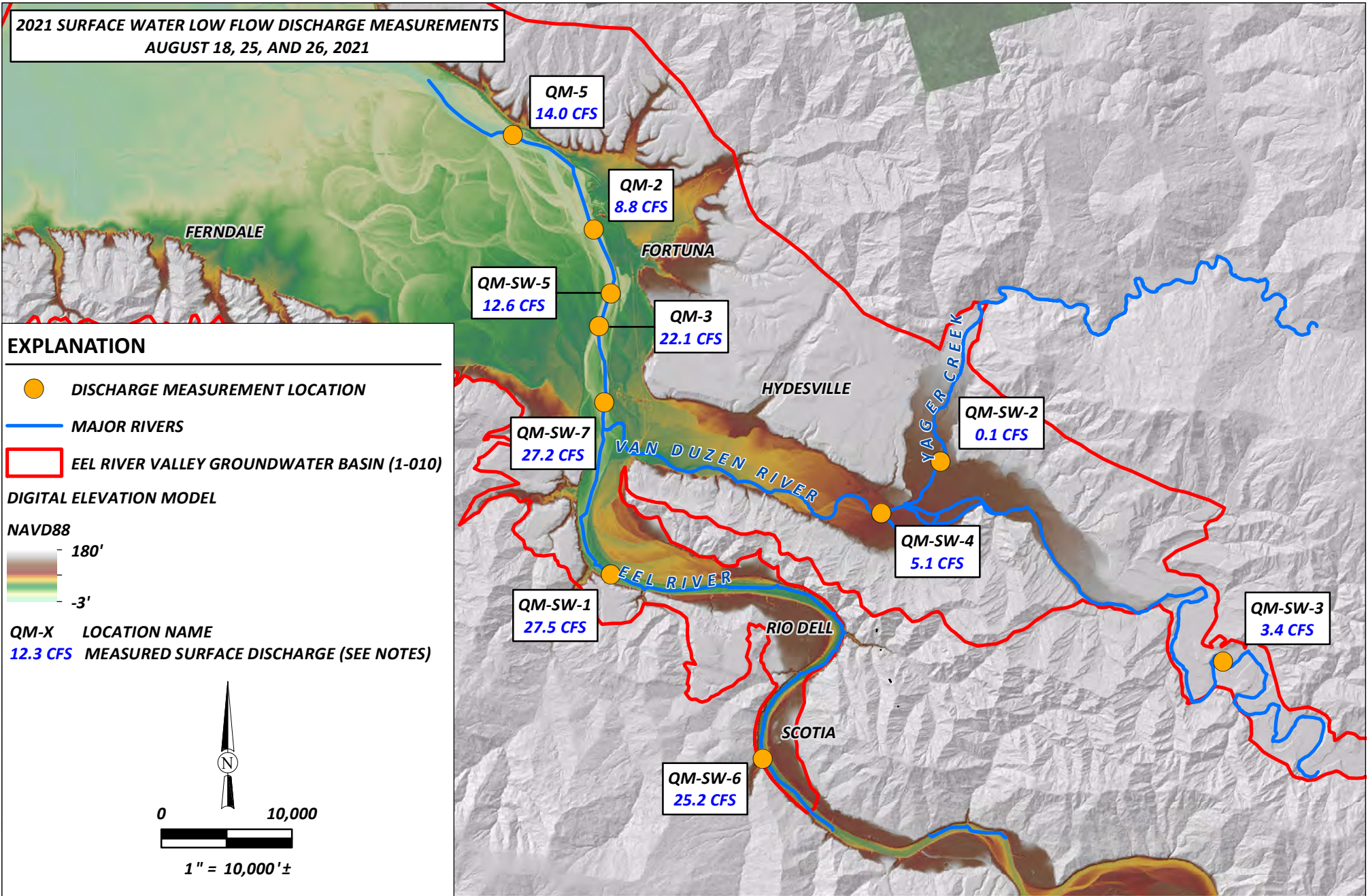


NOTES: DIGITAL ELEVATION MODEL DERIVED FROM: USGS, 2019;
IMAGE SOURCE FROM: ESRI, MAXAR, 2021;
LOW FLOW SURFACE DISCHARGE MEASURED ON 9/23/2020 AND 9/25/2020



Humboldt County Public Works
Eel River Basin (1-010)
Humboldt County, California

2020 Surface Water Discharge
Measurement Locations
SHN 020091.232



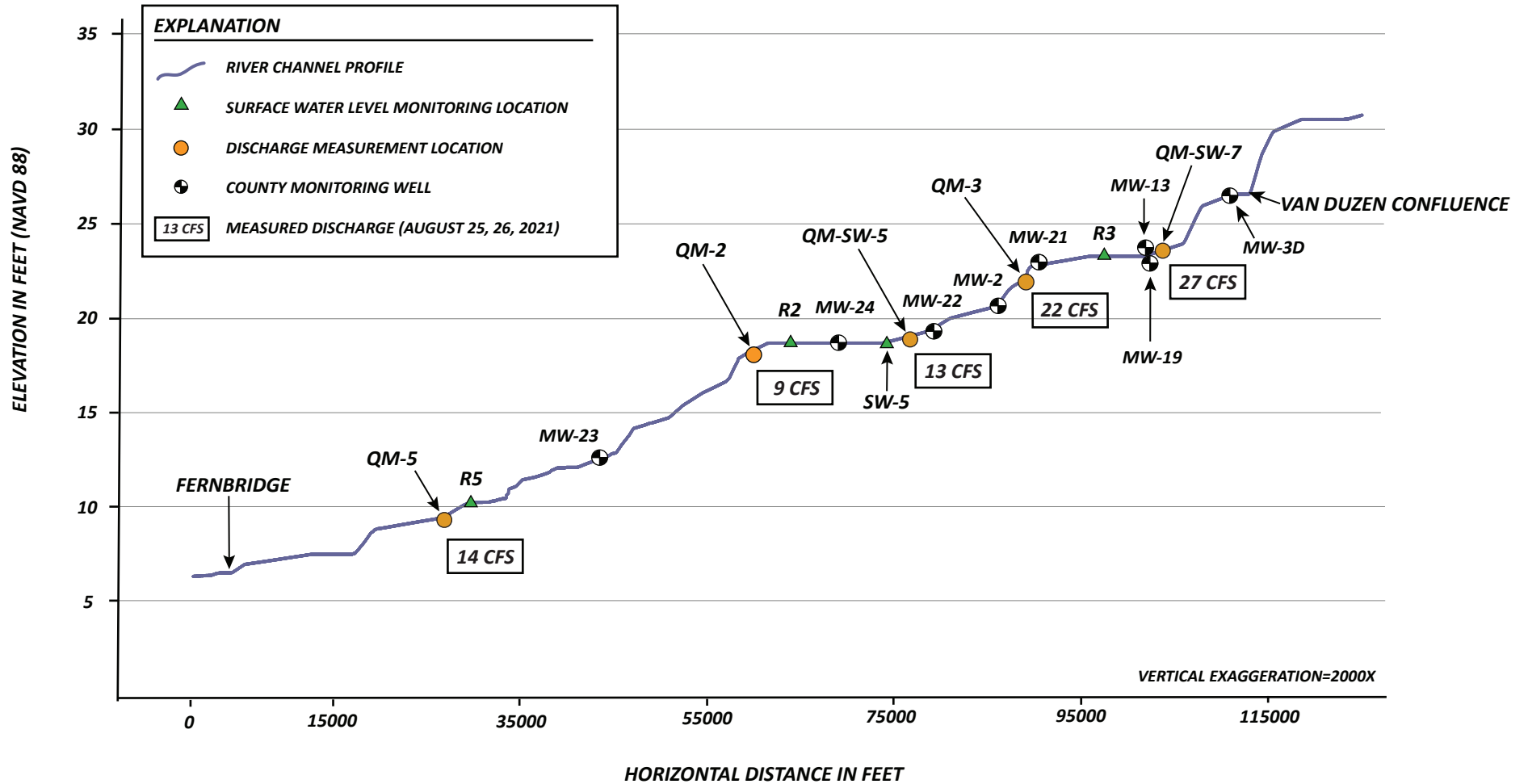
NOTES: DIGITAL ELEVATION MODEL DERIVED FROM: USGS, 2019;
IMAGE SOURCE FROM: ESRI, MAXAR, 2021;
LOW FLOW SURFACE DISCHARGE MEASURED ON 8/18/2021, 8/25, 2021, AND 8/26/2021



Humboldt County Public Works
Eel River Basin (1-010)
Humboldt County, California

2021 Surface Water Discharge
Measurement Locations
SHN 020091.232

EEL RIVER CHANNEL PROFILE WITH MONITORING LOCATIONS



NOTE: THE RIVER CHANNEL WAS TAKEN FROM THE PROJECT DEM (GHD, 2021), WHICH IS LARGELY BASED ON LIDAR COLLECTED BY THE USGS IN 2018.



Humboldt County Public Works
Eel River Basin (1-010)
Humboldt County, California

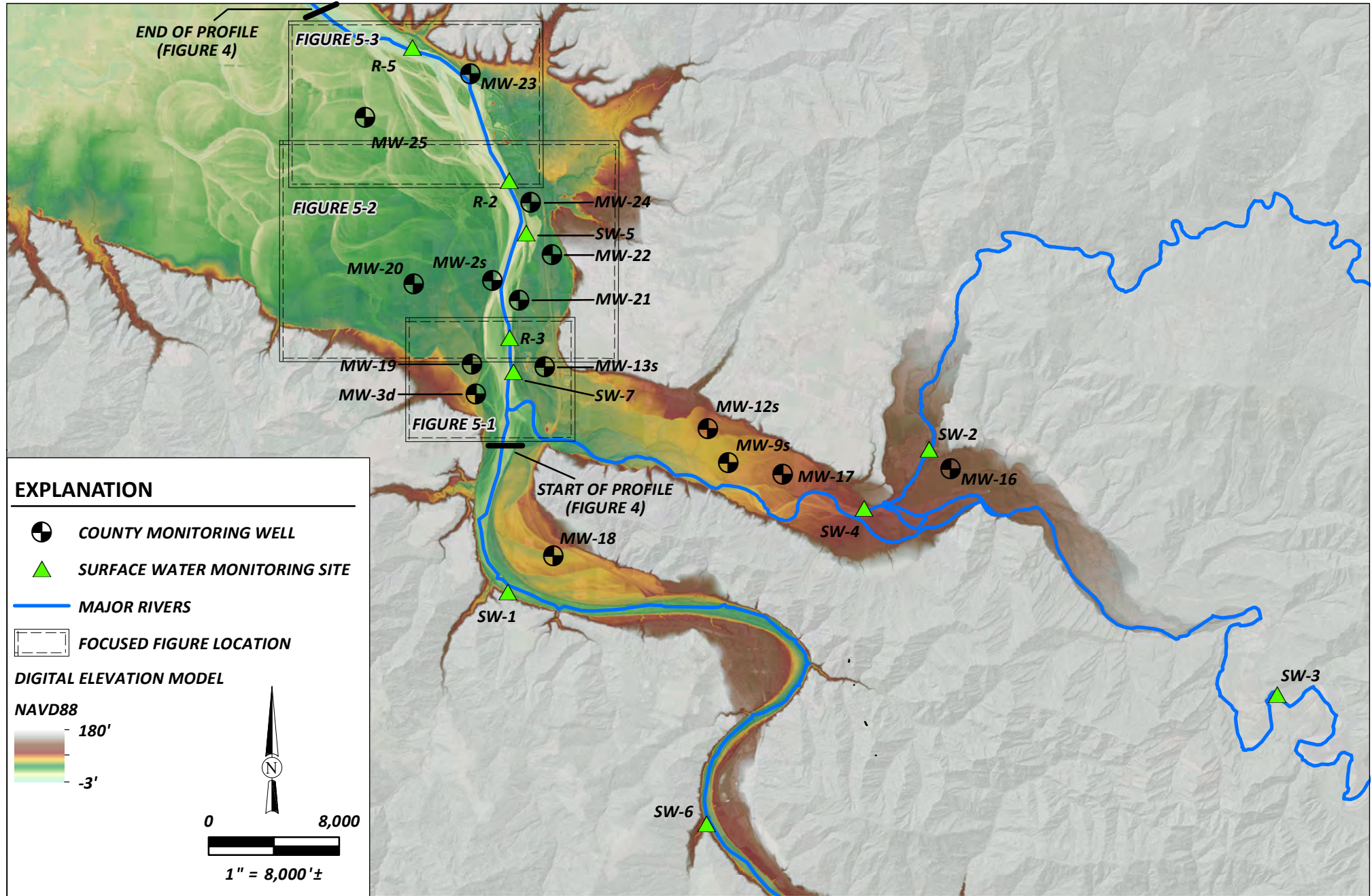
Eel River Channel Profile

SHN 020091.232





January 2022

Figure4_ChannelProfile

Figure 4

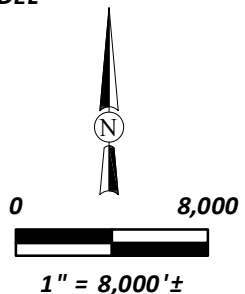


EXPLANATION

-  COUNTY MONITORING WELL
-  SURFACE WATER MONITORING SITE
-  MAJOR RIVERS
-  FOCUSED FIGURE LOCATION

DIGITAL ELEVATION MODEL

NAVD88
 180'
 -3'

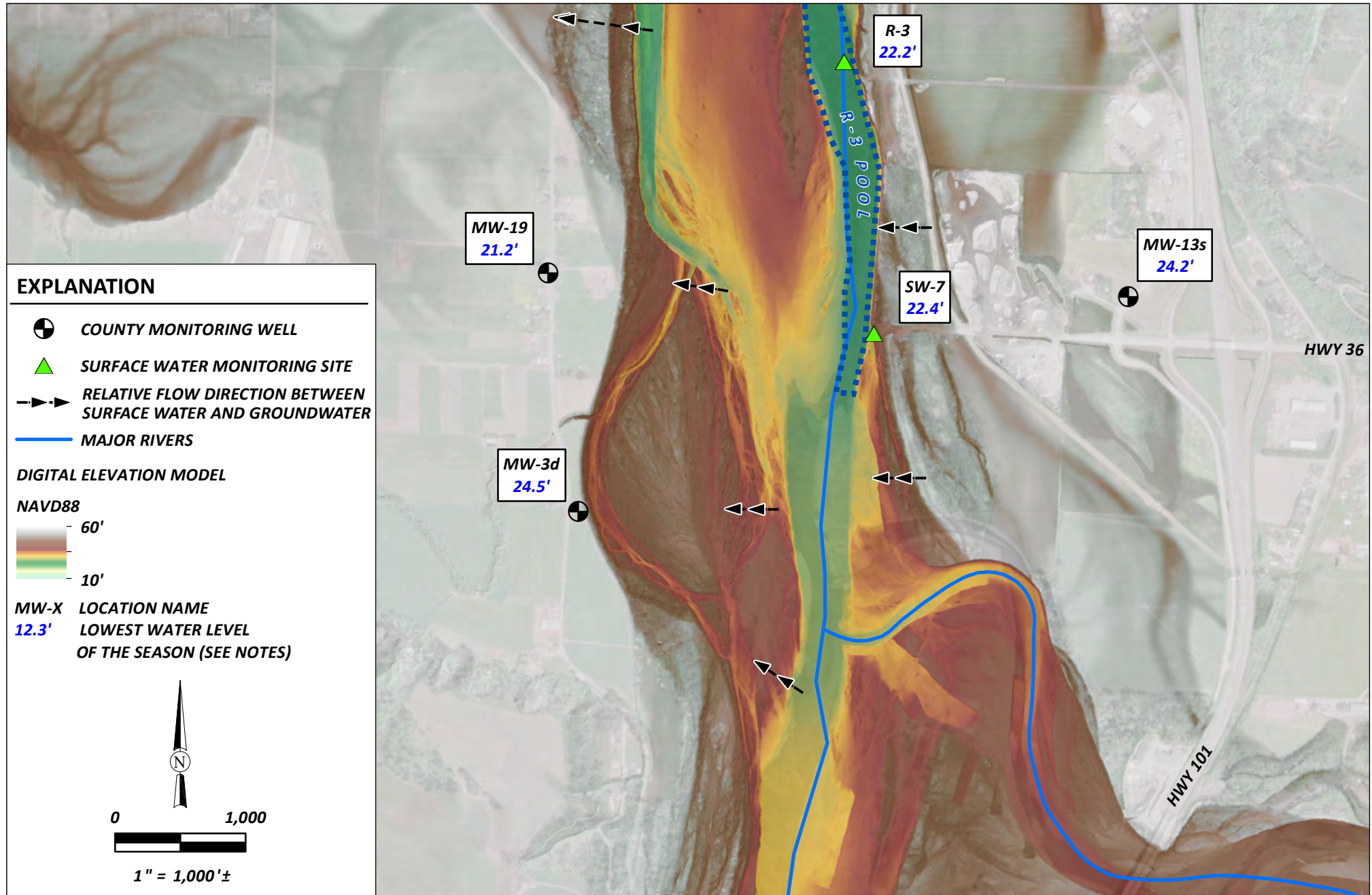


NOTES: DIGITAL ELEVATION MODEL DERIVED FROM: USGS, 2019
IMAGE SOURCE FROM: ESRI, MAXAR, 2021



Humboldt County Public Works
 Eel River Basin (1-010)
 Humboldt County, California

2021 Surface Water &
 Groundwater Monitoring Locations
 SHN 020091.232



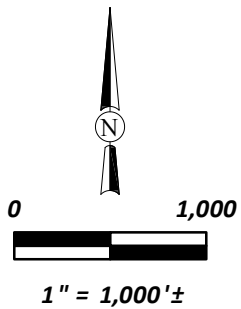
EXPLANATION

- COUNTY MONITORING WELL
- SURFACE WATER MONITORING SITE
- RELATIVE FLOW DIRECTION BETWEEN SURFACE WATER AND GROUNDWATER
- MAJOR RIVERS

DIGITAL ELEVATION MODEL

- NAVD88
- 60'
 - 10'

MW-X LOCATION NAME
 12.3' LOWEST WATER LEVEL
 OF THE SEASON (SEE NOTES)

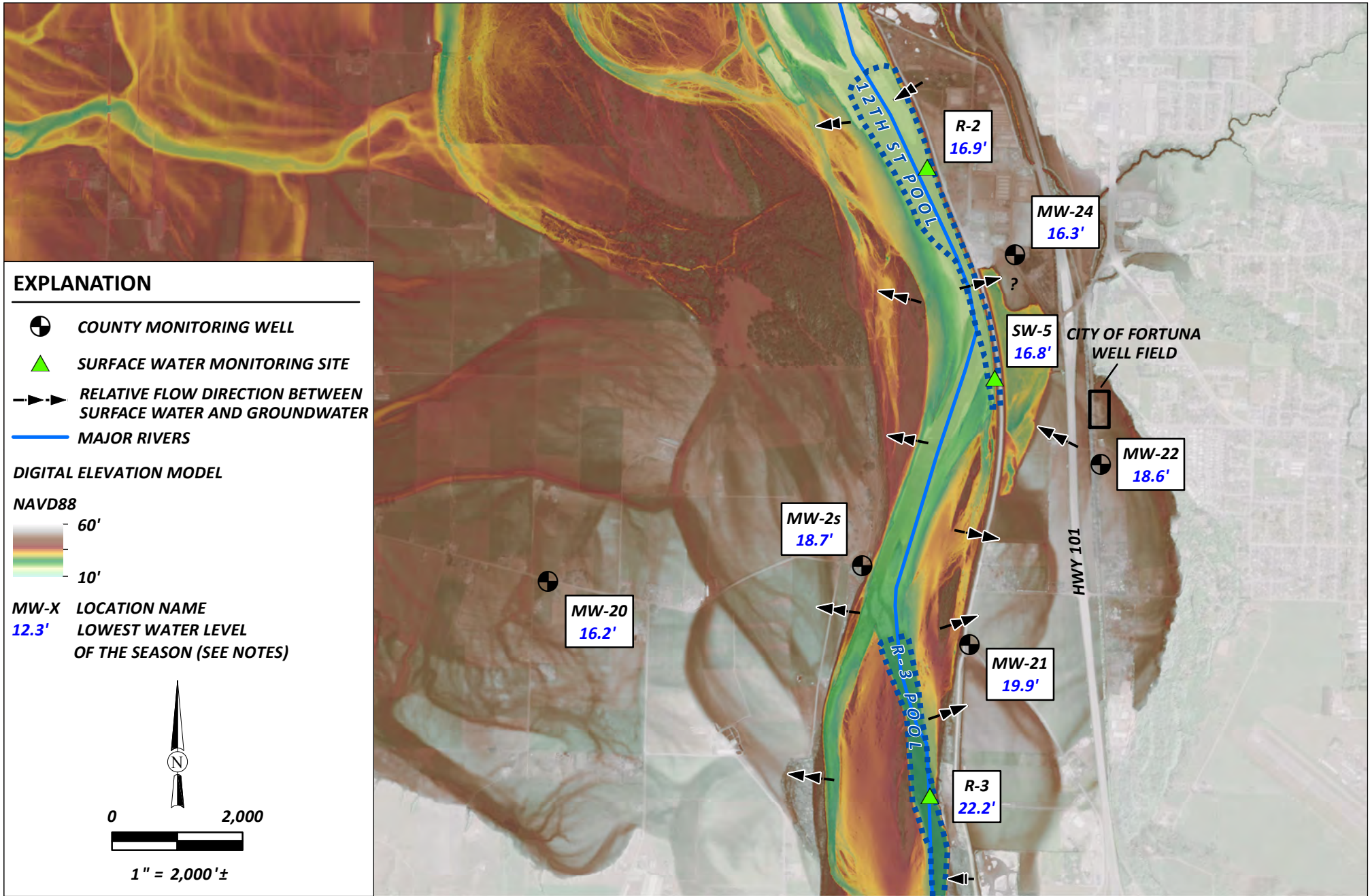


NOTES: DIGITAL ELEVATION MODEL DERIVED FROM: USGS, 2019;
 IMAGE SOURCE FROM: ESRI, MAXAR, 2021;
 GROUNDWATER AND SURFACE WATER ELEVATION SHOWN REPRESENT THE LOWEST LEVELS IN THE FALL WHICH OCCURRED ON OR AROUND 9/17/2021



Humboldt County Public Works
 Eel River Basin (1-010)
 Humboldt County, California

2021 Surface Water &
 Groundwater Monitoring Locations
 SHN 020091.232



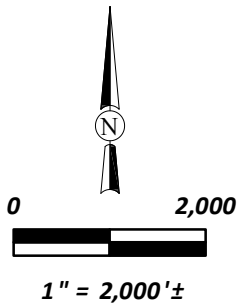
EXPLANATION

- COUNTY MONITORING WELL
- SURFACE WATER MONITORING SITE
- RELATIVE FLOW DIRECTION BETWEEN SURFACE WATER AND GROUNDWATER
- MAJOR RIVERS

DIGITAL ELEVATION MODEL

NAVD88
 60'
 10'

MW-X LOCATION NAME
 12.3' LOWEST WATER LEVEL
 OF THE SEASON (SEE NOTES)

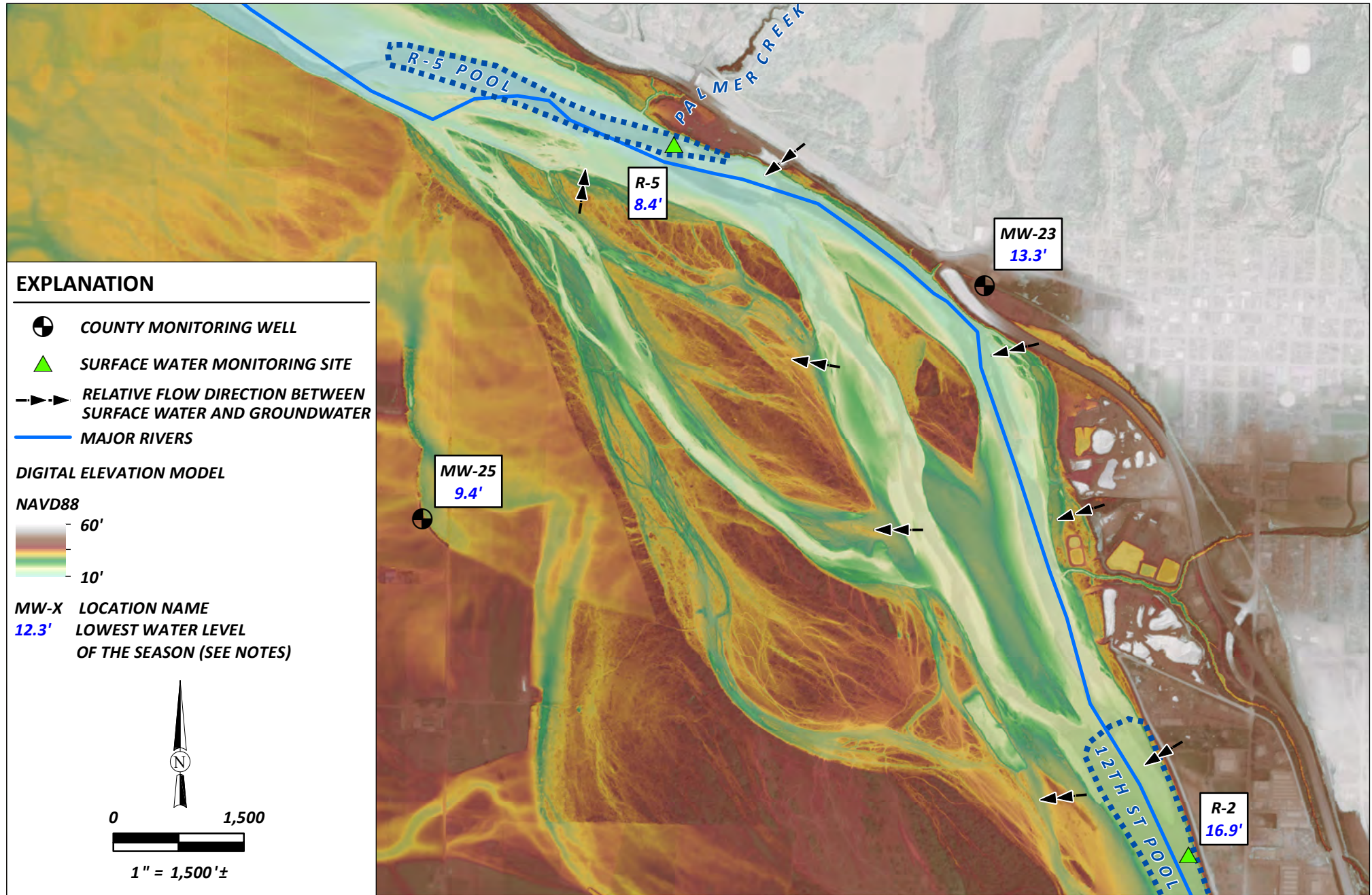


NOTES: DIGITAL ELEVATION MODEL DERIVED FROM: USGS, 2019;
 IMAGE SOURCE FROM: ESRI, MAXAR, 2021;
 GROUNDWATER AND SURFACE WATER ELEVATION SHOWN REPRESENT THE LOWEST LEVELS IN THE FALL WHICH OCCURRED ON OR AROUND 9/17/2021



Humboldt County Public Works
 Eel River Basin (1-010)
 Humboldt County, California

2021 Surface Water &
 Groundwater Monitoring Locations
 SHN 020091.232



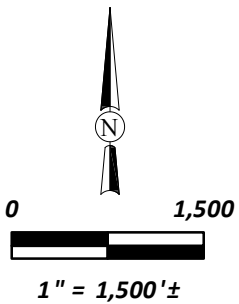
EXPLANATION

- COUNTY MONITORING WELL
- SURFACE WATER MONITORING SITE
- RELATIVE FLOW DIRECTION BETWEEN SURFACE WATER AND GROUNDWATER
- MAJOR RIVERS

DIGITAL ELEVATION MODEL

NAVD88
 60'
 10'

MW-X LOCATION NAME
 12.3' LOWEST WATER LEVEL
 OF THE SEASON (SEE NOTES)



NOTES: DIGITAL ELEVATION MODEL DERIVED FROM: USGS, 2019;
 IMAGE SOURCE FROM: ESRI, MAXAR, 2021;
 GROUNDWATER AND SURFACE WATER ELEVATION SHOWN REPRESENT THE LOWEST LEVELS IN THE FALL WHICH OCCURRED ON OR AROUND 9/17/2021



Humboldt County Public Works
 Eel River Basin (1-010)
 Humboldt County, California

2021 Surface Water &
 Groundwater Monitoring Locations
 SHN 020091.232

**Saltwater Intrusion Technical Memorandum
(TM-8)**



Technical Memorandum

SHN Reference: 020091.170
GHD Reference: 11217388. 2.3.1
Date: September 8, 2021
To: Summer Daugherty, Senior Environmental Analyst, Humboldt County Department of Public Works-Environmental Services
Copy To: Hank Seemann, Deputy Director, Humboldt County Department of Public Works-Environmental Services
From: SHN: Mindi Curran and Jason Buck
GHD: Patrick Sullivan
Subject: Saltwater Intrusion Technical Memorandum

1.0 Introduction

1.1 Overview

Humboldt County Department of Public Works (County) is leading the effort to develop a groundwater sustainability plan (GSP) for the Eel River Valley groundwater basin (ERVB; Appendix 1, Figure 1), due January 31, 2022, for compliance with the Sustainable Groundwater Management Act (SGMA). This technical memorandum describes the data collection and analysis to support the delineation and evaluation of saltwater intrusion in the ERVB as defined in the scope of work for Subtask 1.7 of the County's SGMA. The specific scope of work includes:

1. Identification of data gaps from previous sampling efforts and solicitation of volunteer wells within the vicinity of the freshwater-seawater transition zone to fill those data gaps
2. Field sampling and laboratory testing of chloride concentrations at a minimum of 30 locations in Fall 2020 and again in Spring 2021 within the vicinity of the saltwater intrusion zone
3. Compilation, review, and analysis of laboratory results
4. Preparation of this technical memorandum outlining the methods, results, analysis and findings with supporting data tables and maps plotting the results

The purpose of this work is to build upon previous studies, evaluate the current position of the freshwater-seawater transition zone, and develop a better understanding of the transition zone within deeper aquifers.

1.2 Summary of Previous Work and Existing Saltwater Intrusion Data

The United States Geological Survey (USGS) published the study "Groundwater Conditions in the Eureka Area, Humboldt County, California 1975," which included an assessment of the freshwater-seawater transition zone in the Lower Eel River groundwater basin (defined as the 100 milligrams per liter [mg/L] iso-concentration line). The study concluded that the position of the freshwater-



seawater transition zone in the alluvial aquifer in 1975 was approximately the same as the position of the transition zone as documented in 1952 (USGS, 1978). The approximate location of the freshwater-seawater transition zone as mapped in 1975 is shown on Figure 2.

Almost all of the alluvial aquifer located north of the Eel River, between the Eel River and Table Bluff, is naturally degraded by seawater (USGS, 1978). This area adjoins the stretch of the Eel River that is tidally influenced and seawater in the alluvial aquifer is expected in these areas. Between the Eel River and the Salt River, the alluvial material is composed of coarse sand and gravel, which extends to the southeast to the confluence of the Eel and Van Duzen Rivers, and the freshwater-seawater transition zone in this section is moderated by the hydraulic head and subsequent recharge of the Eel River. South of the Salt River, the alluvial deposits are of low permeability (silt and clay), which deflects westward flowing groundwater to the northwest and impedes seawater movement inland.

Most of the wells sampled in the Eel River Valley in 1975 were screened within the shallow alluvial aquifer with depths generally less than 50 feet. As is expected in an unconfined coastal aquifer, it was noted that chloride concentrations at a given depth decrease with distance from the coast and generally increased with depth along the freshwater-seawater transition line (USGS, 1978). Localized temporary shifts in concentrations were observed seasonally, and this variation was attributed to the change in groundwater levels from summer to winter.

In 2016, as part of a Proposition 1 Sustainable Groundwater Planning Grant, two large-scale chloride sampling campaigns were carried out, one in the Fall of 2016 and one in the Spring of 2017. The results of those studies indicated that the freshwater-seawater interface had not moved significantly since 1975. The results from the Fall 2016 and Spring 2017 are provided as Figures 3 and 4, respectively. As part of the commitments made in the 2016 Groundwater Sustainability Plan Alternative biannual chloride sampling was continued within two of the paired County monitoring well locations (MW-5s/d and MW-7s/d; SHN, 2016).

2.0 Fall 2020 and Spring 2021 Chloride Sampling

2.1 Well Selection

SHN collaborated with the County and the Humboldt County Resource Conservation District (HCRCD) to develop a list of at least 30 wells for chloride sampling. Four municipal wells and five existing County monitoring wells within the vicinity of the freshwater-seawater transition zone were selected. The County and HCRCD reached out and coordinated with volunteer landowners for access to private irrigation and domestic wells. A similar chloride sampling campaign had been carried out in Fall 2016 and Spring 2017, and to maintain consistency with previous work, a special effort was made to include the wells that had been sampled during those events.

The geographic area of interest for data collection on saltwater intrusion was generally focused on the western half of the lower Eel River Valley within the vicinity of the mapped 100 mg/L iso-concentration line. Most wells within the alluvial valley are shallow and historical data useful for understanding the saltwater intrusion conditions has primarily come from the shallow alluvial aquifer. The configuration of the freshwater-seawater transition at depth is a known data gap and deeper wells that are screened within confined or semi-confined portions of the lower alluvial



aquifer or the Carlotta were sought out to gain better understanding of the conditions at depth. Two new additional volunteer wells were identified and two of the new County monitoring wells installed in 2021 were specifically located to explore saltwater intrusion conditions at depth.

2.2 Field Methods

Two chloride sampling campaigns were carried out, one in Fall 2020 and one in Spring 2021. The campaigns were scheduled to coincide with the water levels field effort and as closely as possible with the Division of Water Resources (DWR) field measurements of California Statewide Groundwater Elevation (CASGEM) wells. In preparation for the fieldwork, a tabulated list of wells was developed that included information on location, ownership and contact information, access and coordination needs, and any known well attributes. Many of the locations had been sampled in the 2016/2017 campaigns and information from those efforts was reviewed and included.

County monitoring wells and private wells with open casing were sampled using either a peristaltic pump or a downhole Grundfos pump and clean polyethylene tubing. Open wells were sampled following low-flow sampling protocols outlined in the U.S. Environmental Protection Agency (EPA) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells. As described in the guidelines, temperature, pH, electrical conductivity, and turbidity were measured every two to five minutes depending on the purge rate. Each team documented the sampling methods and field parameter measurements on "Groundwater Monitoring Forms" and "Daily Field Forms." The municipal wells and many of the private wells were sealed and samples were collected from a nearby spigot or hose following a flushing routine.

Equipment used during the field program consisted of dedicated single-use disposable items, select hand tools, and mechanized equipment. Groundwater sampling equipment was cleaned prior to its use and between each monitoring well using the triple-wash system (a Liquinox® solution wash followed by two distilled water rinses).

Groundwater samples were collected in containers supplied by the analytical laboratory, placed in an iced cooler, and sent to the analytical laboratory under appropriate chain-of-custody documentation. Groundwater samples were analyzed for chloride using EPA method 300.0 Rev 2.1 (1993). Chloride analysis was conducted by North Coast Laboratories, a State of California-certified analytical laboratory located in Arcata, California.

2.3 Fall 2020 Chloride Sampling Results

The Fall 2020 chloride sampling event was conducted during the week of October 26, 2020, in tandem with the water levels measurement campaign. A total of 30 wells were sampled for chloride, including 5 County monitoring wells, 4 municipal wells, and 21 private wells. A map of all wells sampled along with the results from the Fall 2020 sampling event is shown on Figure 5 (Appendix 1) and tabulated details of the wells, sampling dates and results are provided in Table 1 (Appendix 2).

For the purposes of mapping chloride concentrations at depth, it was necessary to separate wells screened within the shallow interconnected aquifers from those screened within deeper, confined to semi-confined water bearing units of the lower alluvium or the underlying Carlotta formation. Chloride concentrations associated with the Fall 2020 sampling event for wells screened in the shallow interconnected alluvial aquifers (alluvial and near-surface, unconfined Carlotta) are



presented on Figure 6 (Appendix 1). Chloride concentrations associated with the Fall 2020 sampling event for wells that are screened within deeper confined to semi-confined aquifers are presented on Figure 7 (Appendix 1).

2.4 Spring 2021 Chloride Sampling Results

The Spring 2021 chloride sampling event was conducted during the week of April 5, 2021, in tandem with the water levels measurement campaign. A total of 30 locations were sampled for chloride, including 6 County monitoring wells, 2 municipal wells, and 22 private wells. In addition to the Spring 2021 sampling event, chloride samples were also collected from a subset of the newly constructed County monitoring wells during the groundwater quality sampling event that occurred July 8-13, 2021 (SHN, 2021). A map of all wells sampled along with the results from the Spring 2021 and July 2021 sampling events is shown on Figure 8 (Appendix 1) and tabulated details of the wells, sampling dates and results are provided in Table 1 (Appendix 2).

Chloride concentrations associated with the Spring 2021 sampling event for wells screened in the shallow interconnected alluvial aquifers (alluvial and near-surface, unconfined Carlotta) are presented on Figure 9 (Appendix 1). Chloride concentrations associated with the Spring 2021 sampling event for wells that are screened within deeper confined to semi-confined aquifers are presented on Figure 10 (Appendix 1).

3.0 Summary of Findings

The 100 mg/L iso-concentration line was used to define the landward edge of the freshwater-seawater transition zone in 1975 (USGS, 1978) (Figure 2). Prior to 2016, this was the last time that a broad sampling of chlorides suitable enough to map the transition zone was completed. A comparison of the current position of the transition zone with that was mapped in 1975 provides the best opportunity to assess any long-term changes that may have occurred over that timeframe (45 years). Figures 3 and 4 show the chloride concentrations from wells sampled during the Fall 2016 and Spring 2017 campaigns, respectively. A review of the chloride concentrations indicates that the 100 mg/L iso-concentration line developed in 1975 remains applicable, with the only value on the east side of the line above 100 mg/L is private well #25 at the edge of the alluvial valley in Loleta. Continued sampling of this well has consistently maintained chloride concentrations indicative of an intruded condition with values ranging from 280 to 320 mg/L.

Figures 6 and 9 show the chloride concentrations from shallow wells sampled during the Fall 2020 and Spring 2021 sampling campaigns, respectively. In addition to plotting the 100 mg/L and 30 mg/L iso-concentration lines from 1975, a more refined interpretation of the 100mg/L and 30 mg/L lines are plotted for this study. The revised 100 mg/L lines plotted for each do not show significant variation from that mapped in 1975, with the exception of moving the northern extent of the line eastward near Loleta to encompass private wells #24 and #25. The revised 30 mg/L lines plotted for the current study extend further eastward based on results from private well J and the new County monitoring well MW-14s.

MW-28 is a new County monitoring well screened from 35-45 feet below grade that was sampled in July 2021. The chloride concentration measured at that location was 94 mg/L, which is anomalous for the location of MW-28 relative to other nearby shallow concentrations (see Figure 9). Water quality sampling results from MW-28 (SHN, 2021) indicate detections of fluoride and other



constituents that may be attributed to the Ferndale wastewater treatment plant (WWTP), located 1,500 feet to the east. An additional consideration is the recently restored intertidal channels of the Salt River, located approximately 300 feet to the north. It's feasible that the renewed tidal exchanges in this area could have an influence on chloride concentrations within the shallow aquifer. At this time, until further evaluation, the chloride concentration is not considered reflective of the influence of seawater, and is, therefore, not used in our contour mapping.

The most recent sampling campaigns conducted in the Fall 2016/Spring 2017 and the Fall 2020/Spring 2021 provide an opportunity to look at the range of fluctuation that occurs between subsequent seasons (fall and spring) and water year types (dry, normal, wet). Spring of 2017 was a wet season, with a major flood occurring only three months prior to the sampling campaign, whereas the sampling campaign conducted in Spring of 2021 was on the heels of two consecutive seasons of drought conditions. Table 2 (Appendix 2) provides a comparison of chloride concentrations in Fall (2016-2020) and in Spring (2017-2021). Changes in concentrations over the 4-year period range from a decrease of 450 mg/L at private well #29 (Fall season comparison) to an increase of 500 mg/L for private well #2s (Spring season comparison). Five private well locations that show increases greater than 100 mg/L are plotted on Figure 11. Of the five locations, three occur on the south side of, and in close proximity to, the Salt River (H, #2, and #5), one is on Cock Robin Island (#29), and one is near Loleta (#24). Two of the locations (#2 and #5) are deep screened wells. It is not clear if these increases are related to the natural fluctuations associated with extreme wet and dry water year types or if they record a more permanent advancement of the freshwater-seawater transition zone in those areas. A longer period of record under varying water year types will be necessary to make that assessment.

It's important to note that the data sets discussed above are largely derived from shallow wells. To date, the mapping of the orientation and vertical profile of the freshwater-seawater transition zone at depth has yet to be completed. The results from this study provide valuable insight into what's happening at depth, but data remains limited and the stratigraphy and aquifer conditions at depth are complex, particularly in the vicinity of Ferndale, where most available data exist. Figures 7 and 10 show the chloride concentrations from deep-screened wells that have been sampled during the Fall 2020 and Spring 2021 campaigns, respectively. A plot of the 100 mg/L iso-concentration line on both maps indicates that the interface extends furthest inland along the general alignment of the Salt River. Relatively low chloride concentrations along the foothills to the south and west in private wells #52 (35 mg/L) and G (37 mg/L) and in the Riverside CSD municipal well (47 mg/L) may be associated with freshwater recharge from the Carlotta underlying the Wildcat Hills. Not enough data exists at this time to map the 100 mg/L line north of MW-5D.

Two sets of paired County monitoring wells (MW-5s/d and MW-7s/d) were installed in 2016 for the purposes of monitoring the freshwater-seawater transition zone. Two new paired County monitoring wells and three single wells (MW-14s/d, MW-15s/d, MW-26, MW-27, and MW-28) were added to the saltwater monitoring well network in 2021. All seven of these wells are shown on Figure 12 and are good candidate wells for regular chloride monitoring into the future.



4.0 References

SHN Consulting Engineers & Geologists, Inc. (2016). "Eel River Valley Groundwater Basin, Sustainability Plan Alternative." Eureka, CA:SHN.

SHN. (2021). "Groundwater Quality Tech Memo." Eureka, CA:SHN.

United States Geological Survey. (1978). "Ground-water Conditions in the Eureka Area, Humboldt County, California, 1975." U.S. Geological Survey Water Resources Investigations 78-127.

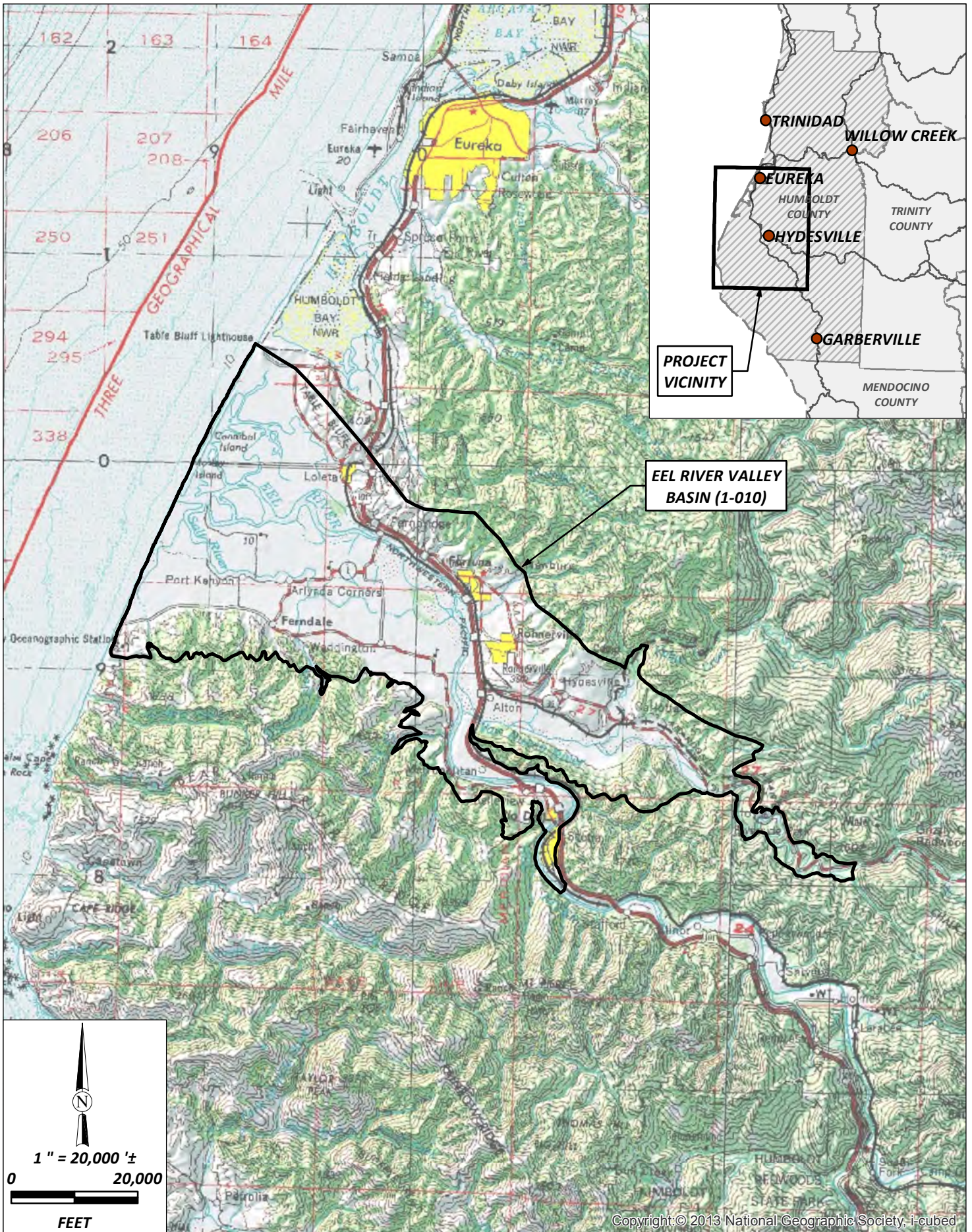
Appendices: 1. Figures
 2. Tables



Figures

1

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Humboldt County Public Works
 Eel River Valley Basin (1-010)
 Humboldt County, California

September 2021

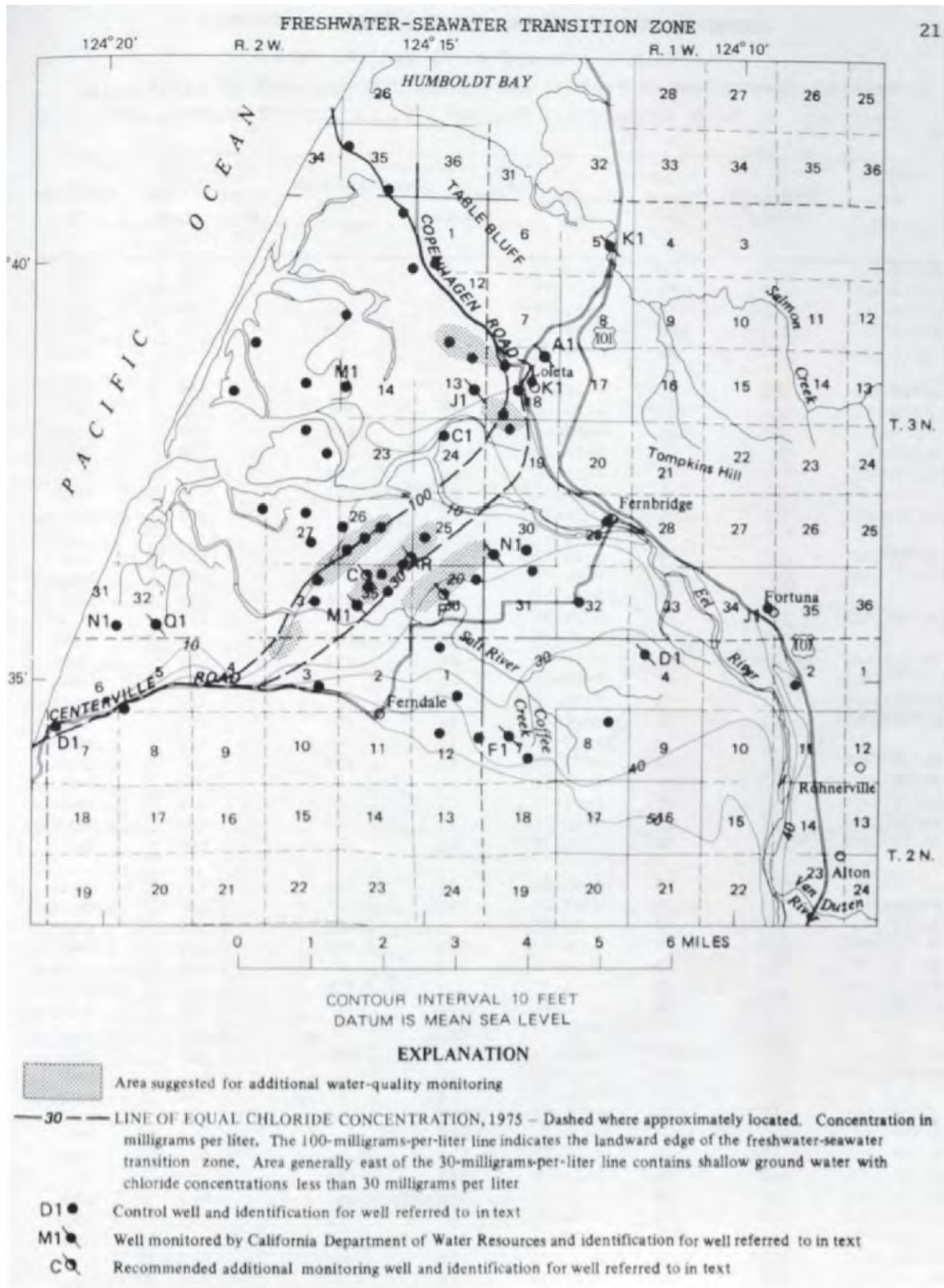
Project Location

SHN 020091.170

Figure1_ProjectLocationMap

Figure 1

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NOTE: FROM USGS, 1978



Humboldt County Public Works
Eel River Valley Basin (1-010)
Humboldt County, California





Freshwater/Seawater Transition Zone
in Alluvial Aquifer, Eel River Valley-1975
SHN 020091.170

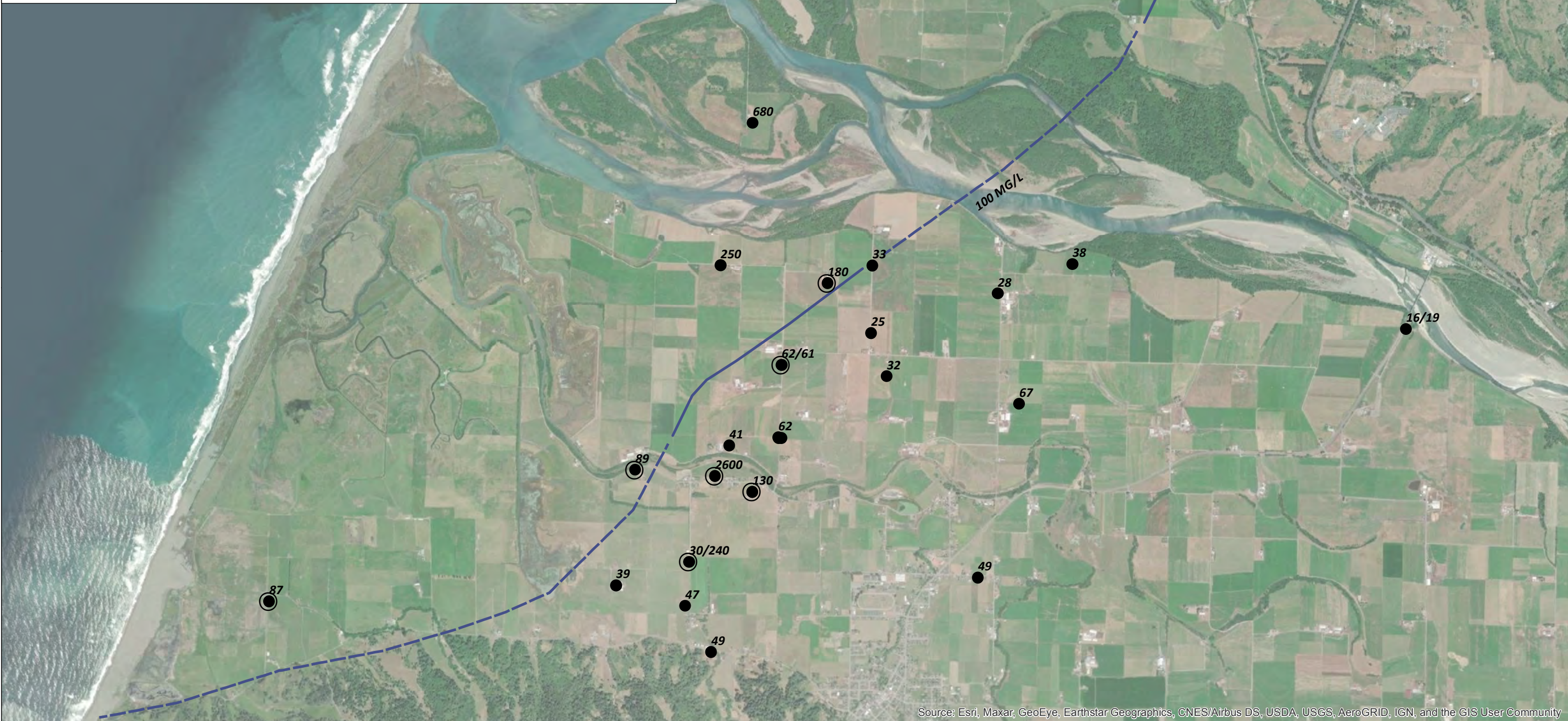
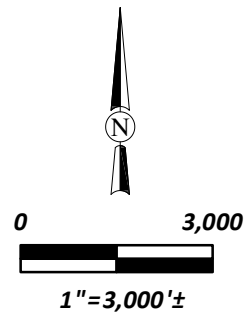
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Figure2_FreshwaterSeawaterTransitionZone

Figure 2

EXPLANATION

-  CERTAIN LINE OF EQUAL CONCENTRATION (JOHNSON, 1975)
-  APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
-  2016 CHLORIDE DATA VALUES (MG/L)
-  INDICATES WELL DEPTH >100 FEET
- 23/20** INDICATES SHALLOW/DEEP CONCENTRATIONS



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





NOTE: FIGURE TAKEN FROM SHN, 2017

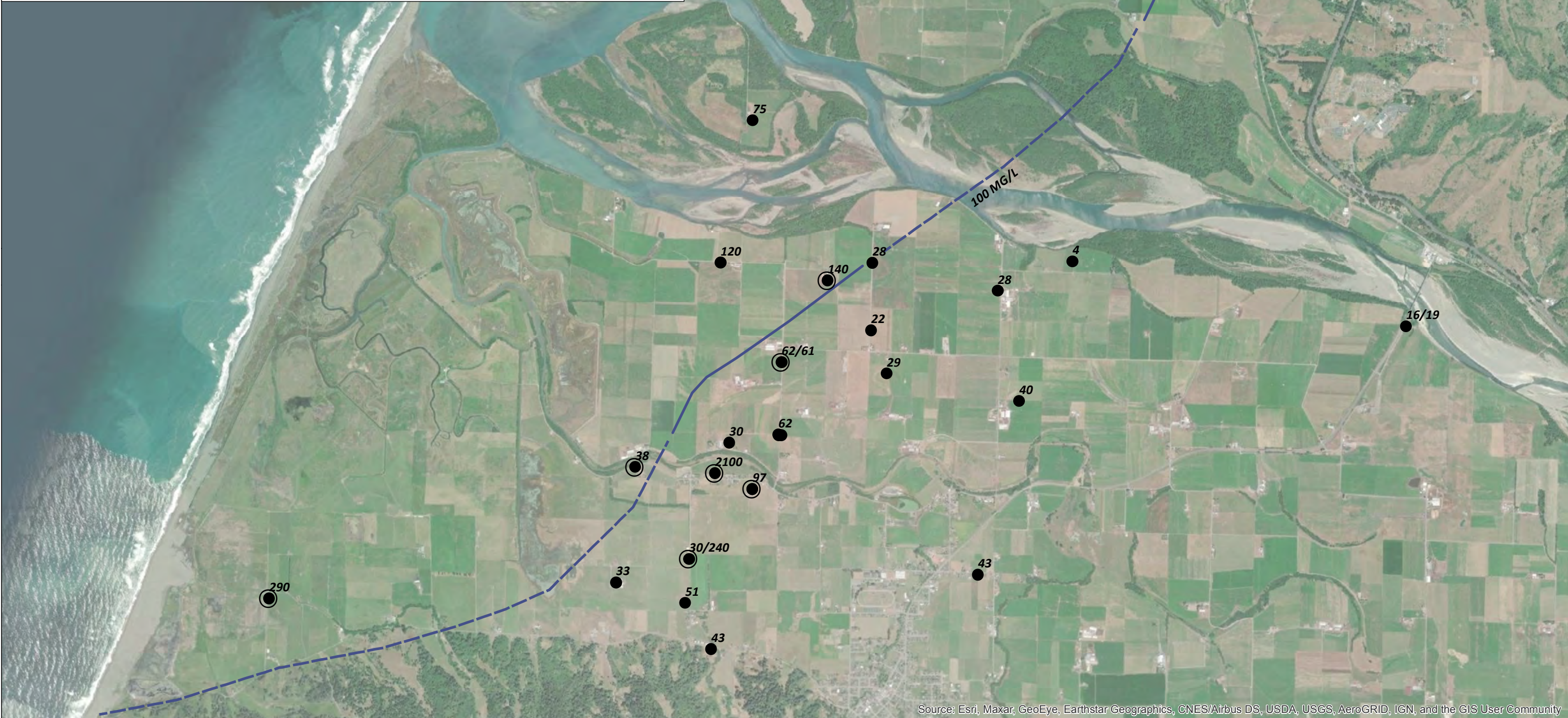
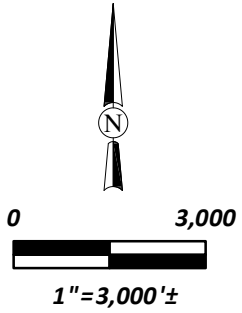


Humboldt County Public Works Eel River Valley Basin (1-010) Humboldt County, California		Fall 2016 Chloride Concentration SHN 020091.170
September 2021	Figure3_Fall2016_ChlorideConcentrations	Figure 3

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EXPLANATION

-  CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
-  APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
-  SPRING 2017 CHLORIDE DATA VALUES (MG/L)
-  INDICATES WELL DEPTH >100 FEET
- 23/20** INDICATES SHALLOW/DEEP CONCENTRATIONS



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

NOTE: FIGURE TAKEN FROM SHN, 2017



Humboldt County Public Works
Eel River Valley Basin (1-010)
Humboldt County, California

Spring 2017 Chloride Concentrations

SHN 020091.170

September 2021

Figure4_Spring2017_ChlorideConcentrations

Figure 4

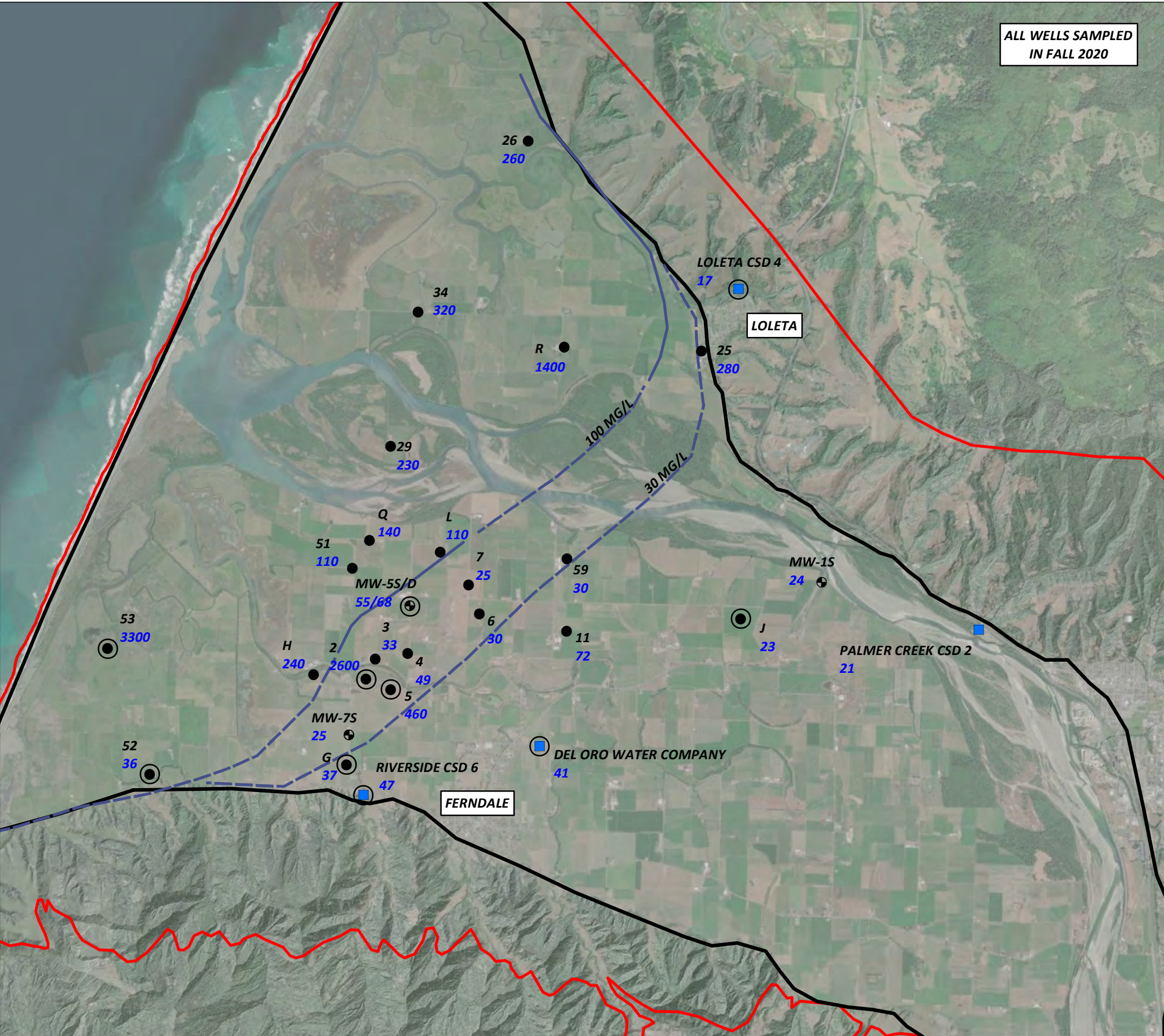
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ALL WELLS SAMPLED
IN FALL 2020

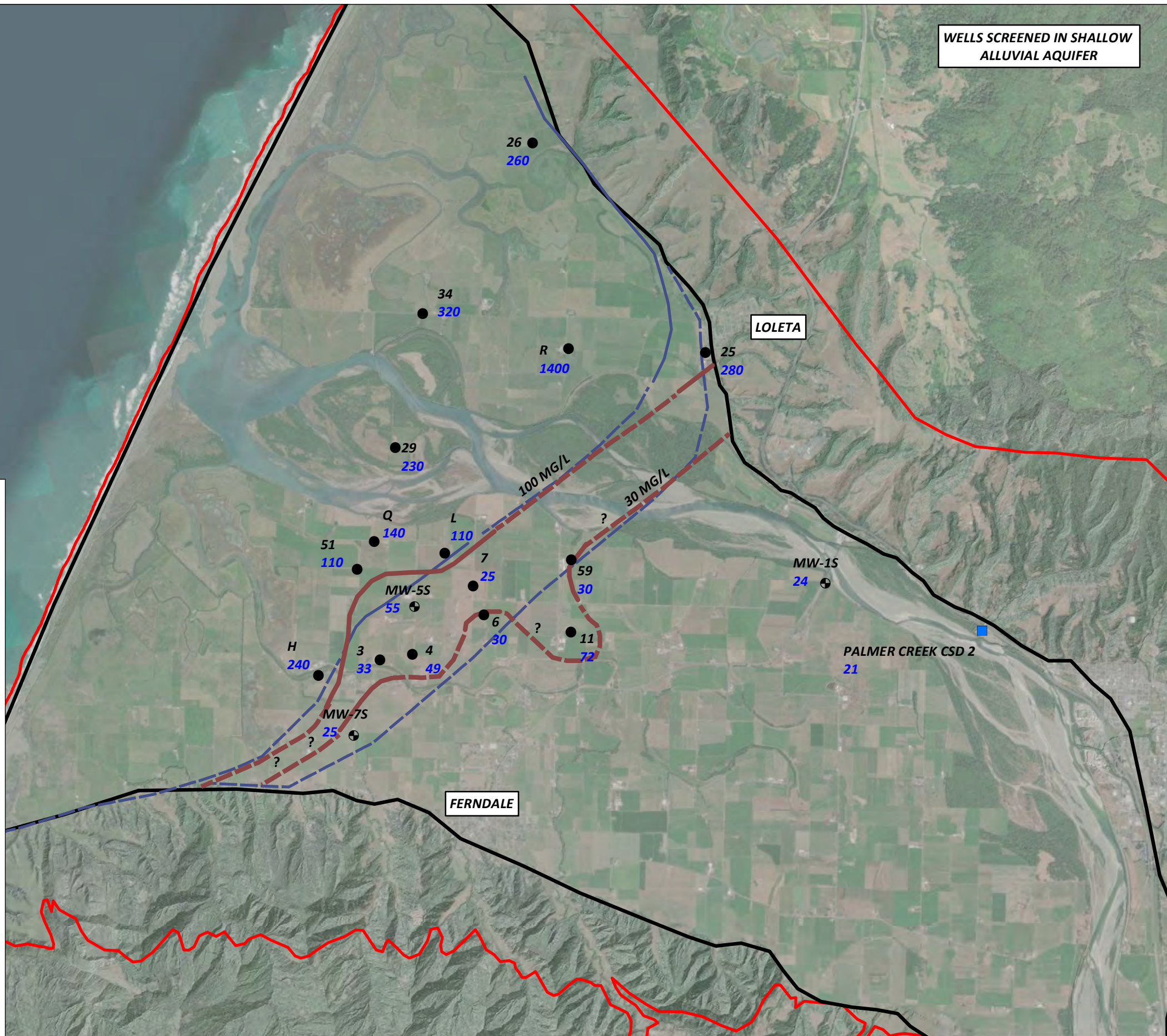
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EXPLANATION

- COUNTY MONITORING WELLS
- MUNICIPAL WELLS
- PRIVATE WELLS
- INDICATES WELLS SCREENED IN DEEPER, CONFINED AQUIFERS
- - - APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
- CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
- ▭ ALLUVIAL VALLEY/TARGETED AREA OF INTEREST
- ▭ EEL RIVER VALLEY GROUNDWATER BASIN (1-010)
- WELL ID
● CHLORIDE CONCENTRATION (MG/L)
55/68 INDICATES SHALLOW/DEEP CONCENTRATIONS AT PAIRED WELLS

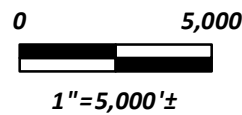


WELLS SCREENED IN SHALLOW ALLUVIAL AQUIFER



EXPLANATION

- COUNTY MONITORING WELLS
- MUNICIPAL WELLS
- PRIVATE WELLS
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- CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (THIS STUDY)
- APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
- CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
- ALLUVIAL VALLEY/TARGETED AREA OF INTEREST
- EEL RIVER VALLEY GROUNDWATER BASIN (1-010)
- WELL ID
- CHLORIDE CONCENTRATION (MG/L)












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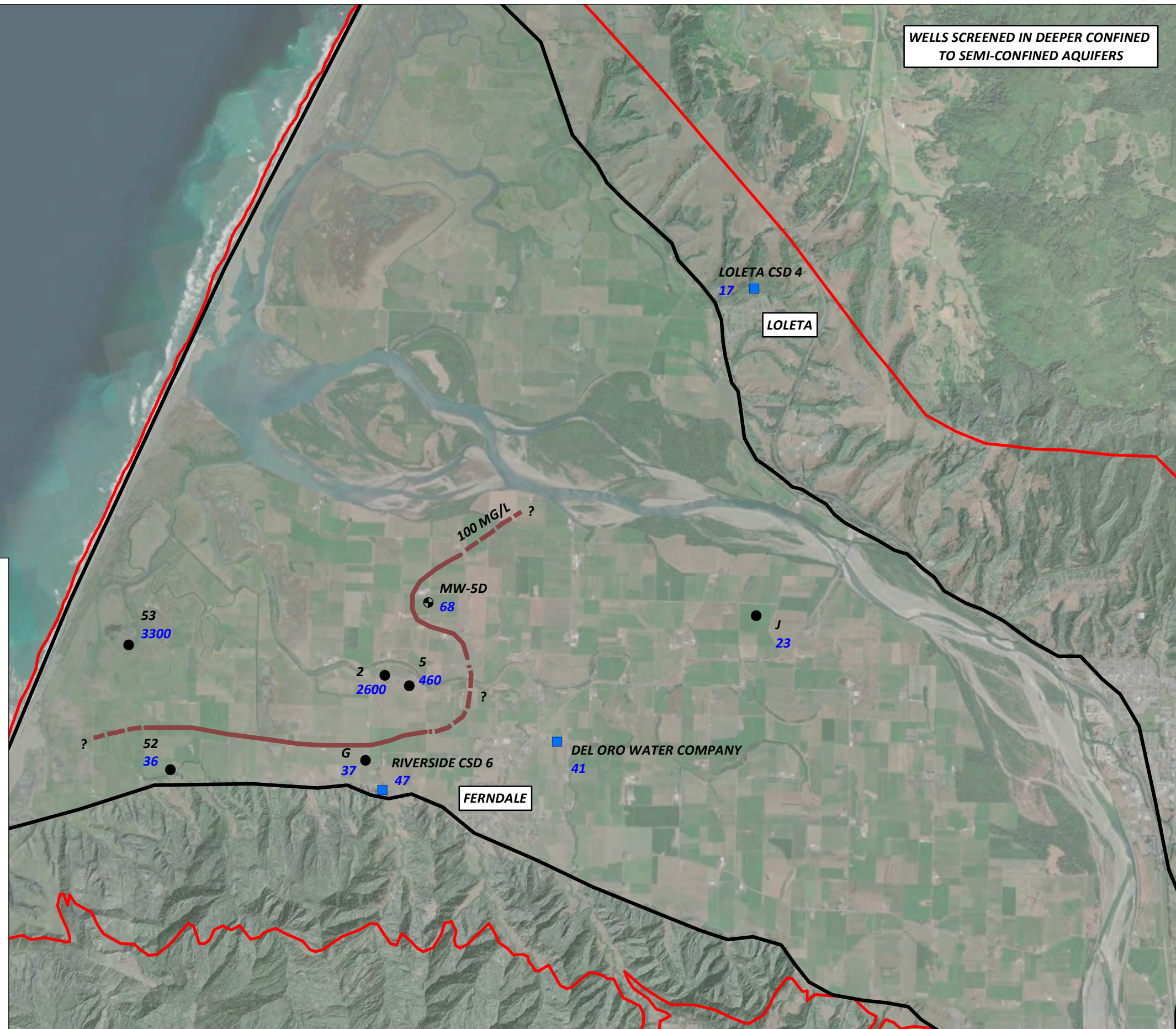
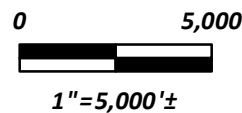


WELLS SCREENED IN DEEPER CONFINED TO SEMI-CONFINED AQUIFERS

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EXPLANATION

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-  MUNICIPAL WELLS
-  PRIVATE WELLS
-  APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATION (THIS STUDY)
-  CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (THIS STUDY)
-  ALLUVIAL VALLEY/TARGETED AREA OF INTEREST
-  EEL RIVER VALLEY GROUNDWATER BASIN (1-010)
-  WELL ID
-  CHLORIDE CONCENTRATION (MG/L)



Humboldt County Public Works
Eel River Valley Basin (1-010)
Humboldt County, California

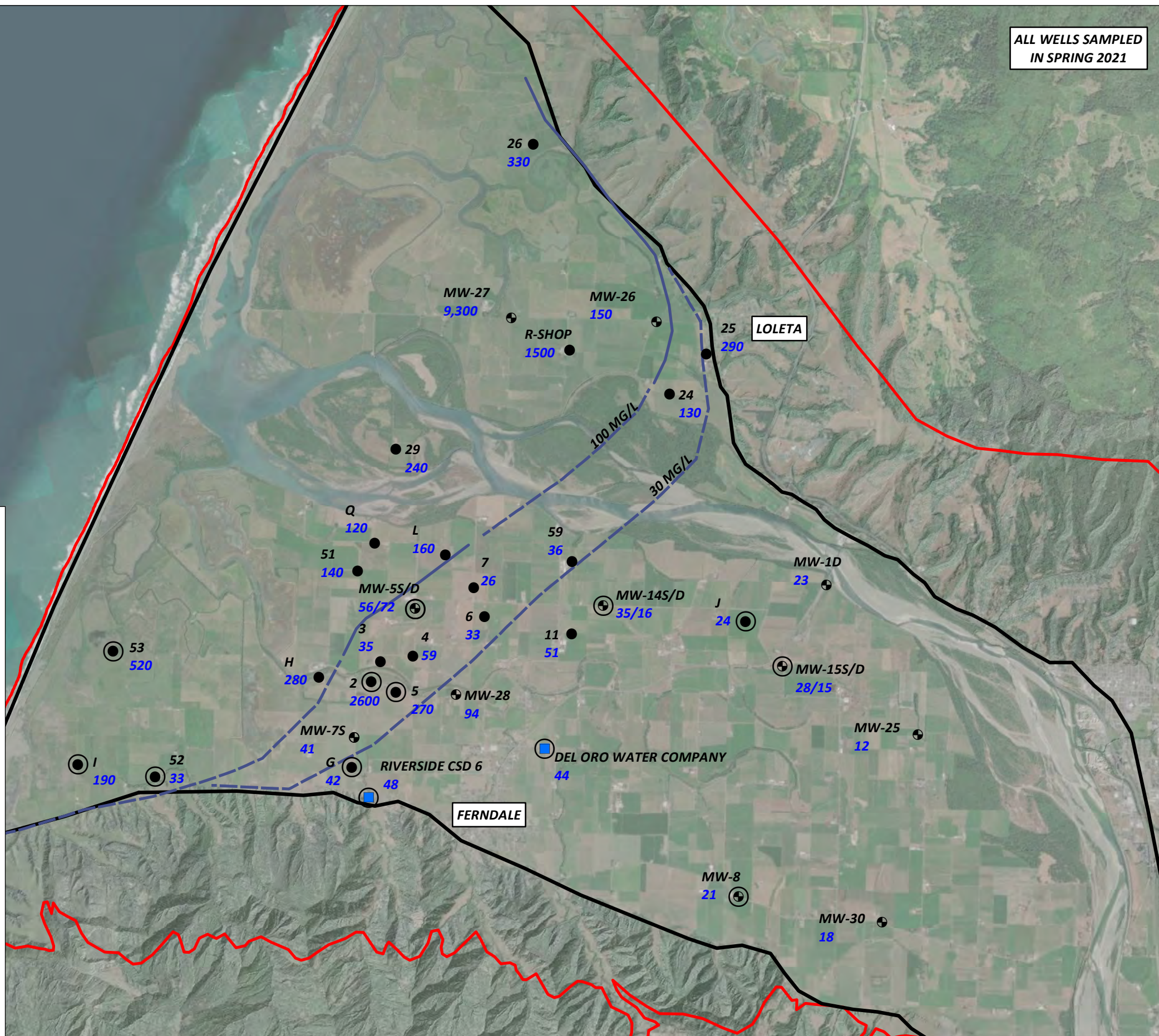
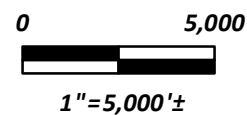
Fall 2020 Chloride Concentration Map
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SHN 020091.170

ALL WELLS SAMPLED
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EXPLANATION

- ⊕ COUNTY MONITORING WELLS
- MUNICIPAL WELLS
- PRIVATE WELLS
- INDICATES WELLS SCREENED IN DEEPER, CONFINED AQUIFERS
- - - APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
- CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
- ▭ ALLUVIAL VALLEY/TARGETED AREA OF INTEREST
- ▭ EEL RIVER VALLEY GROUNDWATER BASIN (1-010)
- WELL ID
● CHLORIDE CONCENTRATION (MG/L)
55/68 INDICATES SHALLOW/DEEP CONCENTRATIONS AT PAIRED WELLS













Humboldt County Public Works
Eel River Valley Basin (1-010)
Humboldt County, California

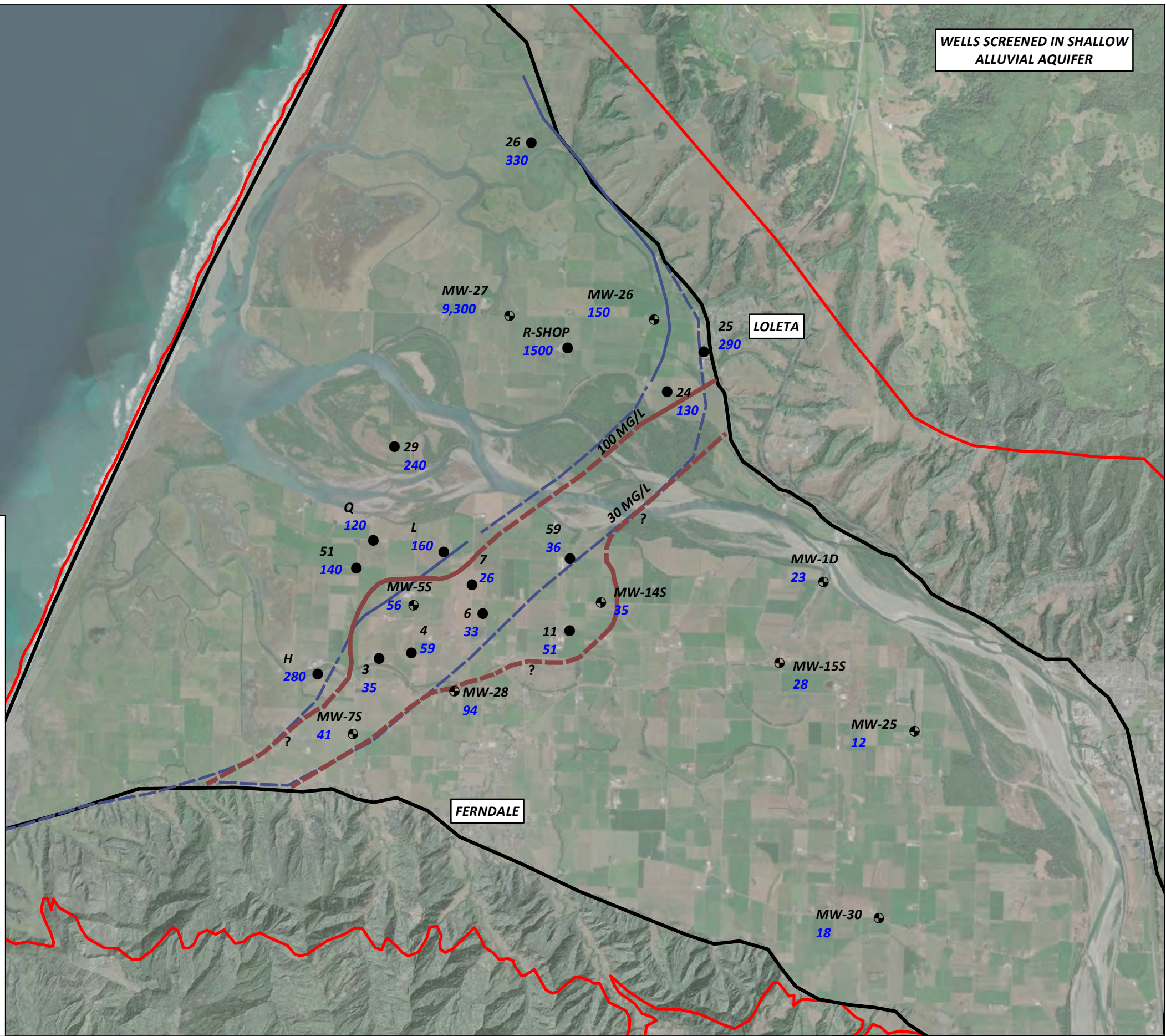
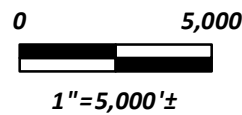
Spring 2021 Chloride Concentration Map
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WELLS SCREENED IN SHALLOW ALLUVIAL AQUIFER

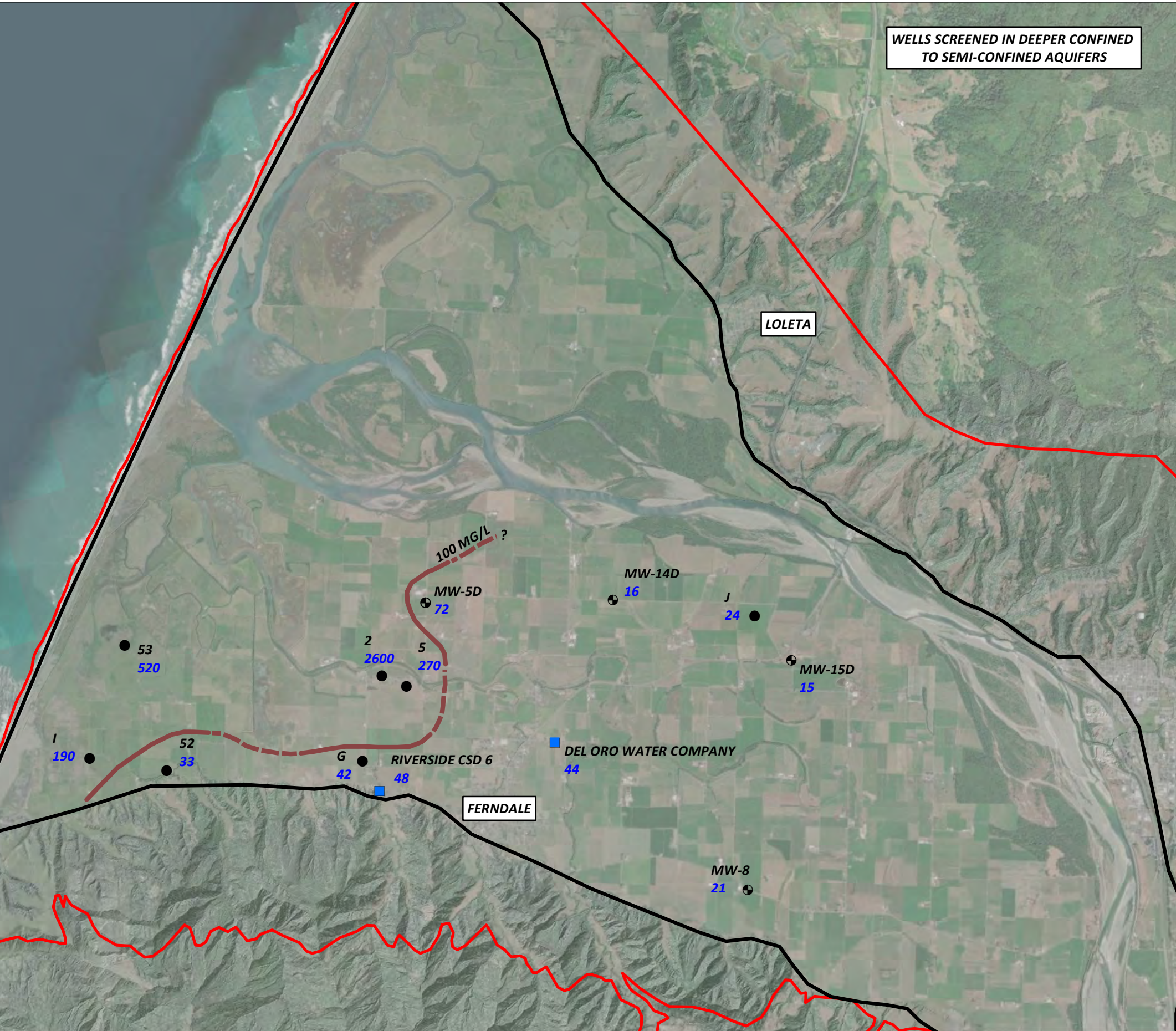
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EXPLANATION










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-  PRIVATE WELLS
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-  CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (THIS STUDY)
-  APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
-  CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
-  ALLUVIAL VALLEY/TARGETED AREA OF INTEREST
-  EEL RIVER VALLEY GROUNDWATER BASIN (1-010)
-  WELL ID
-  CHLORIDE CONCENTRATION (MG/L)

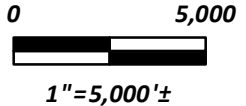


WELLS SCREENED IN DEEPER CONFINED TO SEMI-CONFINED AQUIFERS



EXPLANATION

-  COUNTY MONITORING WELLS
-  MUNICIPAL WELLS
-  PRIVATE WELLS
-  APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATION (THIS STUDY)
-  CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (THIS STUDY)
-  ALLUVIAL VALLEY/TARGETED AREA OF INTEREST
-  EEL RIVER VALLEY GROUNDWATER BASIN (1-010)
-  WELL ID
-  CHLORIDE CONCENTRATION (MG/L)



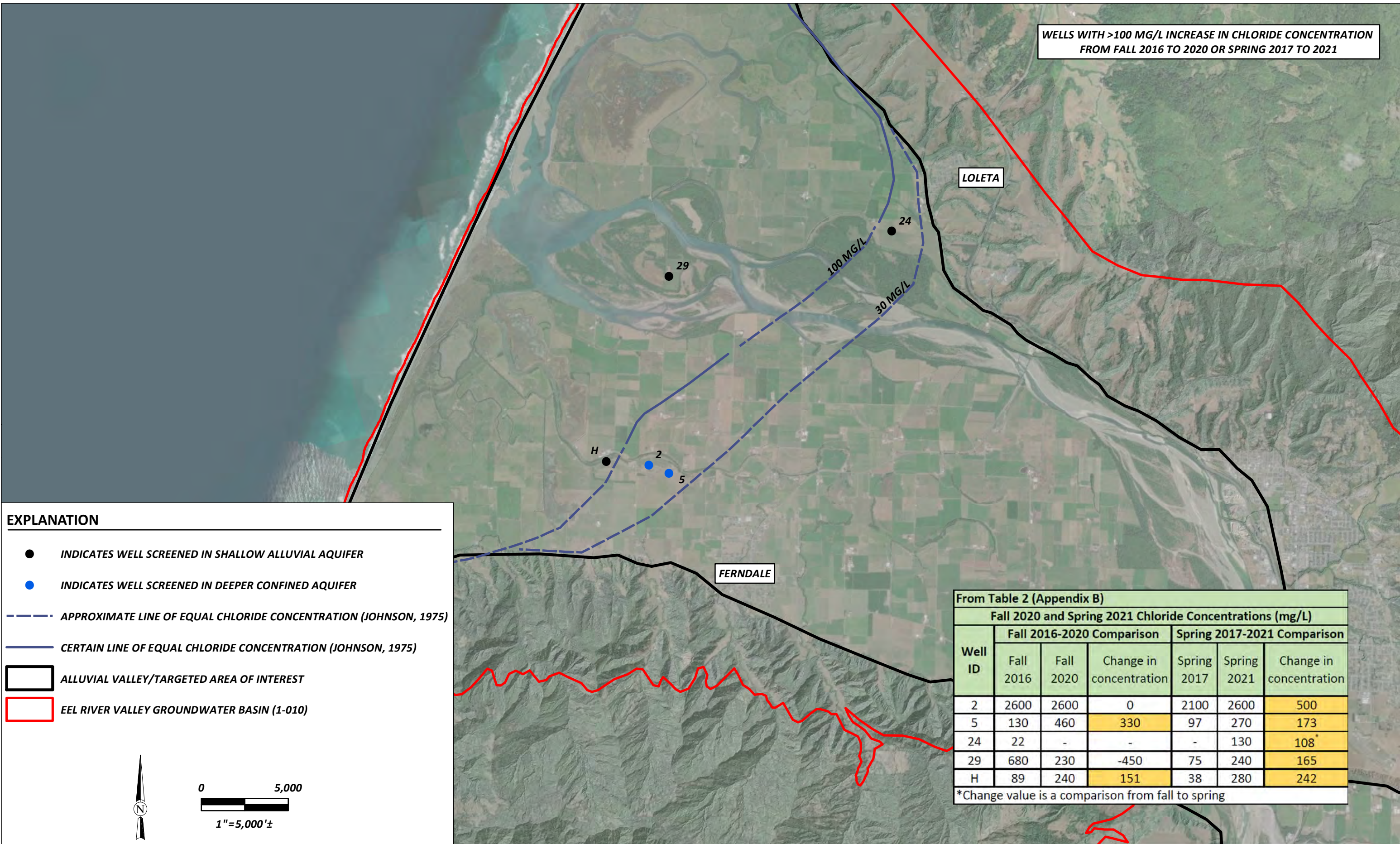
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Humboldt County Public Works
Eel River Valley Basin (1-010)
Humboldt County, California

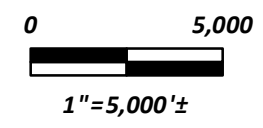
Spring 2021 Chloride Concentration Map
(Deeper Aquifer)
SHN 020091.170

WELLS WITH >100 MG/L INCREASE IN CHLORIDE CONCENTRATION FROM FALL 2016 TO 2020 OR SPRING 2017 TO 2021



EXPLANATION

- INDICATES WELL SCREENED IN SHALLOW ALLUVIAL AQUIFER
- INDICATES WELL SCREENED IN DEEPER CONFINED AQUIFER
- APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
- CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
- ▭ ALLUVIAL VALLEY/TARGETED AREA OF INTEREST
- ▭ EEL RIVER VALLEY GROUNDWATER BASIN (1-010)



From Table 2 (Appendix B)

Well ID	Fall 2020 and Spring 2021 Chloride Concentrations (mg/L)					
	Fall 2016-2020 Comparison			Spring 2017-2021 Comparison		
	Fall 2016	Fall 2020	Change in concentration	Spring 2017	Spring 2021	Change in concentration
2	2600	2600	0	2100	2600	500
5	130	460	330	97	270	173
24	22	-	-	-	130	108
29	680	230	-450	75	240	165
H	89	240	151	38	280	242

*Change value is a comparison from fall to spring

NOTE: SEE TABLE 2 FOR CONCENTRATION COMPARISONS



Humboldt County Public Works
Eel River Valley Basin (1-010)
Humboldt County, California






Fall 2020 and Spring 2021 Chloride
Concentration Comparison
SHN 020091.170

Path: \\leureka\projects\2020\020091-Eel-River-Gsp\GIS\PROJ_MXD\170-SaltWaterIntrusion\Figure11_ChlorideConcentrationChange.mxd User Name: p1x4d DATE: 9/1/21 3:34PM

ALL WELLS SAMPLED
IN SPRING 2021

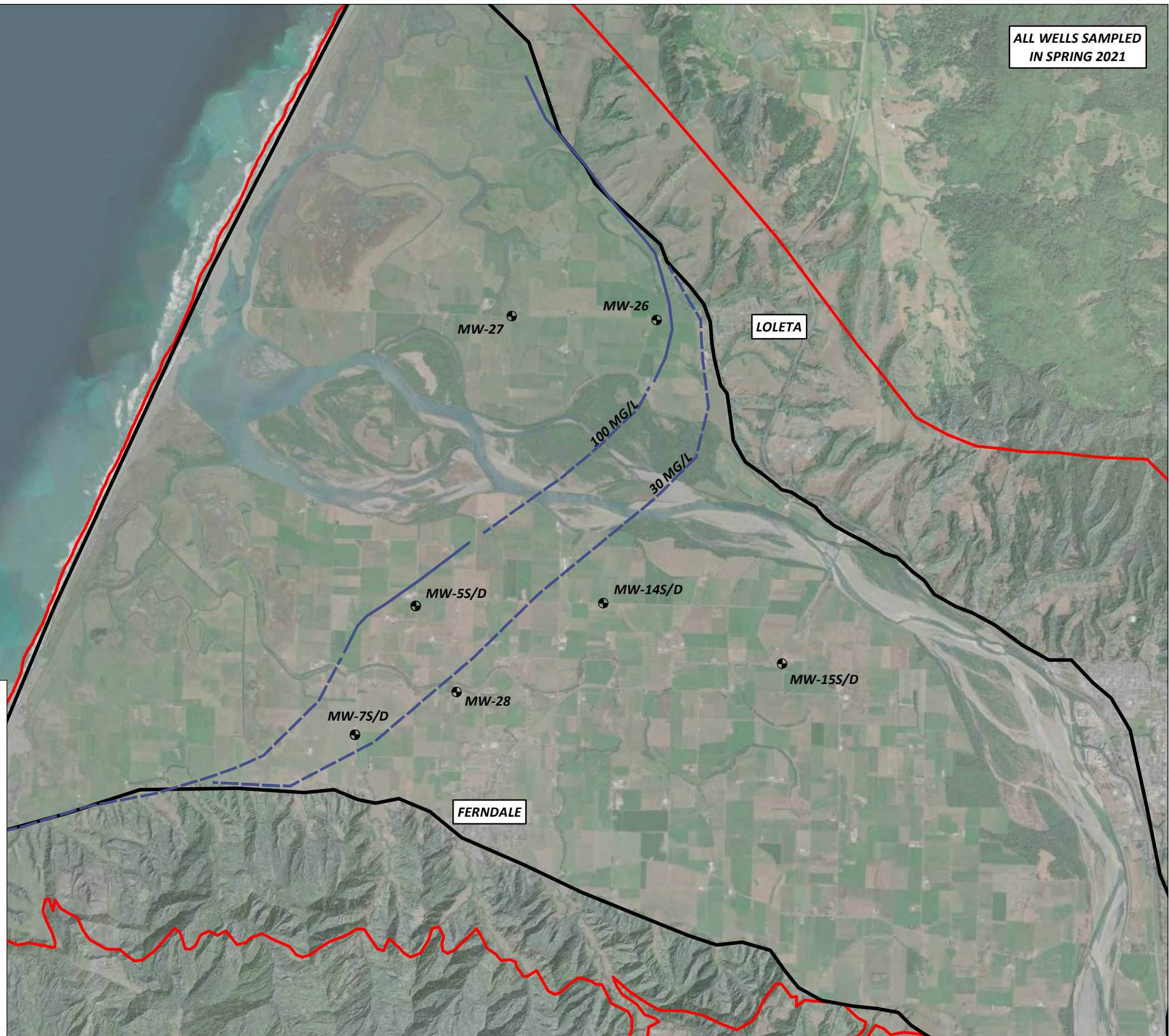
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EXPLANATION

-  COUNTY MONITORING WELLS
-  APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
-  CERTAIN LINE OF EQUAL CHLORIDE CONCENTRATION (JOHNSON, 1975)
-  ALLUVIAL VALLEY/TARGETED AREA OF INTEREST
-  EEL RIVER VALLEY GROUNDWATER BASIN (1-010)



0 5,000
1" = 5,000' ±



Humboldt County Public Works
Eel River Valley Basin (1-010)
Humboldt County, California

County Monitoring Wells for Saltwater Intrusion

SHN 020091.170

September 2021

Figure12_CountyMonitoringWells

Figure 12

Tables **2**

Appendix 2
Explanations
Eel River Valley Basin, Humboldt County, California

Glossary

Term	Definition
BGS	below ground surface
mg/L	milligrams per liter

Explanations

For Table 1:

- *Total depth (TD) is listed where screened depth is not known
- **Result invalidated based on erroneous sample collection depth
- ***Chloride value may not be reflective of seawater

For Table 2:

- *Change value is a comparison from fall to spring

Table 1
Fall 2020 and Spring 2021 Chloride Concentrations

Well ID	Screened Depth* (ft. BGS)	Screened Aquifer	Fall Sampling Date	Chloride Concentration (mg/L)	Spring Sampling Date	Chloride Concentration (mg/L)
County Monitoring Wells						
MW-1s	30-35	Alluvial	10/28/2020	24	-	-
MW-1d	55-60	Alluvial	-	-	4/7/2021	23
MW-5s	100-110	L. Alluvial	10/28/2020	55	4/7/2021	56
MW-5d	200-210	L. Alluvial/Carlotta	10/28/2020	68	4/7/2021	72
MW-7s	30-40	Alluvial	10/30/2020	25	4/6/2021	41
MW-7d	240-250	L. Alluvial/Carlotta	10/29/2020	120**	4/6/2021	120**
MW-8	140-150	L. Alluvial/Carlotta	-	-	4/6/2021	21
MW-14s	55-65	Alluvial	-	-	7/12/2021	35
MW-14d	225-235	Alluvial	-	-	7/12/2021	16
MW-15s	40-50	Alluvial	-	-	7/12/2021	28
MW-15d	225-235	L. Alluvial/Carlotta	-	-	7/12/2021	15
MW-25	40-45	Alluvial	-	-	7/8/2021	12
MW-26	30-40	Alluvial	-	-	7/8/2021	150
MW-27	45-50	Alluvial	-	-	7/8/2021	9,300
MW-28	35-45	Alluvial	-	-	7/8/2021	94***
MW-30	50-55	Alluvial	-	-	7/13/2021	18
Municipal Wells						
Del Oro	146-166	L. Alluvial/Carlotta	10/26/2020	41	4/7/2021	44
Riverside Well 6	105 (TD)	Carlotta	10/28/2020	47	4/5/2021	48
Palmer Creek Well 2	55-65	Alluvial	10/27/2020	21	-	-
Loleta Well 4	-	Carlotta	10/28/2020	17	-	-
Private Wells						
2	250-260	Carlotta	10/29/2020	2,600	4/6/2021	2,600
3	-	Alluvial	10/27/2020	33	4/5/2021	35
4	60-80	Alluvial	10/27/2020	49	4/5/2021	59
5	>196 (TD)	L. Alluvial/Carlotta	10/27/2020	460	4/5/2021	270
6	-	Alluvial	10/27/2020	30	4/5/2021	33
7	24-35	Alluvial	10/27/2020	25	4/5/2021	26
11	69 (TD)	Alluvial	10/27/2020	72	4/5/2021	51
24	60-80	Alluvial	-	-	4/7/2021	130
25	43 (TD)	Alluvial	10/29/2020	280	4/7/2021	290
26	26-36	Alluvial	10/28/2020	260	4/7/2021	330
29	23 (TD)	Alluvial	10/29/2020	230	4/6/2021	240
34	26 (TD)	Alluvial	10/28/2020	320	-	-
51	40-60	Alluvial	10/26/2020	110	4/5/2021	140
52	250-260	L. Alluvial/Carlotta	10/28/2020	36	4/6/2021	33
53	265 (TD)	Carlotta	10/26/2020	3,300	4/7/2021	520
59	71 (TD)	Alluvial	10/26/2020	30	4/5/2021	36
G	140-160	Carlotta	10/27/2020	37	4/6/2021	42
H	60-70	Alluvial	10/26/2020	240	4/5/2021	280
I	180-200	Carlotta	-	-	4/7/2021	190
J	100-120	Alluvial	10/28/2020	23	4/5/2021	24
L	45 (TD)	Alluvial	10/27/2020	110	4/6/2021	160
Q	43 (TD)	Alluvial	10/30/2020	140	4/5/2021	120
R_Shop	-	Alluvial	-	-	4/6/2021	1,500
R	40 (TD)	Alluvial	10/28/2020	1,400	-	-

Table 2
Seasonal Chloride Concentration Comparisons

Well ID	Screened Aquifer	Fall Chloride Concentrations (mg/L)			Spring Chloride Concentrations (mg/L)		
		Fall 2016	Fall 2020	Change in concentration	Spring 2017	Spring 2021	Change in concentration
County Monitoring Wels							
MW-1s	Alluvial	23	24	1	16	-	-
MW-1d	Alluvial	20	-	-20	19	23	4
MW-5s	L. Alluvial	-	55	-	62	56	-6
MW-5d	L. Alluvial/Carlotta	63	68	5	61	72	11
MW-7s	Alluvial	36	25	-11	30	41	11
Municipal Wells							
Del Oro	L. Alluvial/Carlotta	49	41	-8	43	44	1
Riverside Well 6	Carlotta	49	47	-2	43	48	5
Palmer Creek Well 2	Alluvial	-	21	-	-	-	-
Loleta Well 4	Carlotta	-	17	-	-	-	-
Private Wells							
1	Alluvial	39	-	-	33	-	-
2	Carlotta	2,600	2,600	0	2,100	2,600	500
3	Alluvial	41	33	-8	30	35	94***
4	Alluvial	62	49	-13	62	59	-3
5	L. Alluvial/Carlotta	130	460	330	97	270	173
6	Alluvial	32	30	-2	29	33	4
7	Alluvial	25	25	0	22	26	4
8	Alluvial	33	-	-	28	-	-
9	Alluvial	28	-	-	28	-	-
10	Alluvial	38	-	-	4	-	-
11	Alluvial	67	72	5	40	51	11
12	Alluvial	-	-	-	27	-	-
24	Alluvial	22	-	-	-	130	108*
25	Alluvial	320	280	-40	280	290	10
26	Alluvial	450	260	-190	-	330	-
29	Alluvial	680	230	-450	75	240	165
G	Carlotta	47	37	-10	51	42	-9
H	Alluvial	89	240	151	38	280	242
I	Carlotta	87	-	-	290	190	-100
J	Alluvial	-	23	-	20	24	4
L	Alluvial	180	110	-70	140	160	20
Q	Alluvial	250	140	-110	120	120	0
R_Shop	Alluvial	1,500	-	-	1,600	1,500	-100
R	Alluvial	-	1,400	-	-	-	-
Decrease (mg/L)				Increase (mg/L)			
0-50				0-50			
50-100				50-100			
>100				>100			



**Surface Water Beneficial Use Assessment
(TM-9)**

TECHNICAL APPENDIX ◦ SEPTEMBER 2021

Eel River Valley Basin Surface Water Beneficial Use Assessment



P R E P A R E D F O R

GHD

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P R E P A R E D B Y

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Suggested citation:

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Cover photos clockwise from upper left: Van Duzen River near Carlotta (2020); Eel River downstream of the mouth of the Van Duzen River (2020); Van Duzen River alcove near Alton (2014); south abutment of Fernbridge (2017). All photographs taken by Stillwater Sciences.

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1 INTRODUCTION

This Technical Appendix for the Eel River Valley Groundwater Sustainability Plan (GSP) addresses the baseline conditions for surface water beneficial uses in the Eel River Valley Basin (ERVB) (Basin 1-010). The Sustainable Groundwater Management Act (SGMA) requires Groundwater Sustainability Agencies (GSAs) to consider the interests of all beneficial uses and users of groundwater, including surface water users if there is a hydrologic connection between surface and groundwater bodies (Water Code 10723.2). Furthermore, sustainable management criteria developed by the Humboldt County Groundwater Sustainability Agency (Humboldt County GSA) should avoid significant and unreasonable effects on beneficial uses of groundwater and interconnected surface water in the ERVB. Beneficial uses of surface water are listed in the Water Quality Control Plan (Basin Plan) for the North Coast Region (North Coast Regional Water Quality Control Board [NCRWQCB] 2018).

The information contained within this technical memorandum—when used in combination with the mapped groundwater dependent ecosystems (GDEs) (Stillwater Sciences 2021a), surface and groundwater hydrology, and hydraulic modeling—can be used to inform the development of sustainable management criteria for the ERVB. Because this memorandum and the groundwater model were developed concurrently, they will be synthesized in the final GSP, where the sustainable management criteria will be presented.

1.1 Groundwater Basin Setting

The ERVB is a coastal basin in western Humboldt County, located at the downstream end of the Eel River watershed and extending from the Pacific Ocean upstream through the lower reaches of the Eel and Van Duzen river valleys (Figure 1). The valley floor comprises the majority of the basin's 72,957-acre surface area and ranges in elevation from 0 to 30 feet above sea level (ft asl). The foothills that mark the basin's inland perimeter reach elevations of up to 300 ft asl.

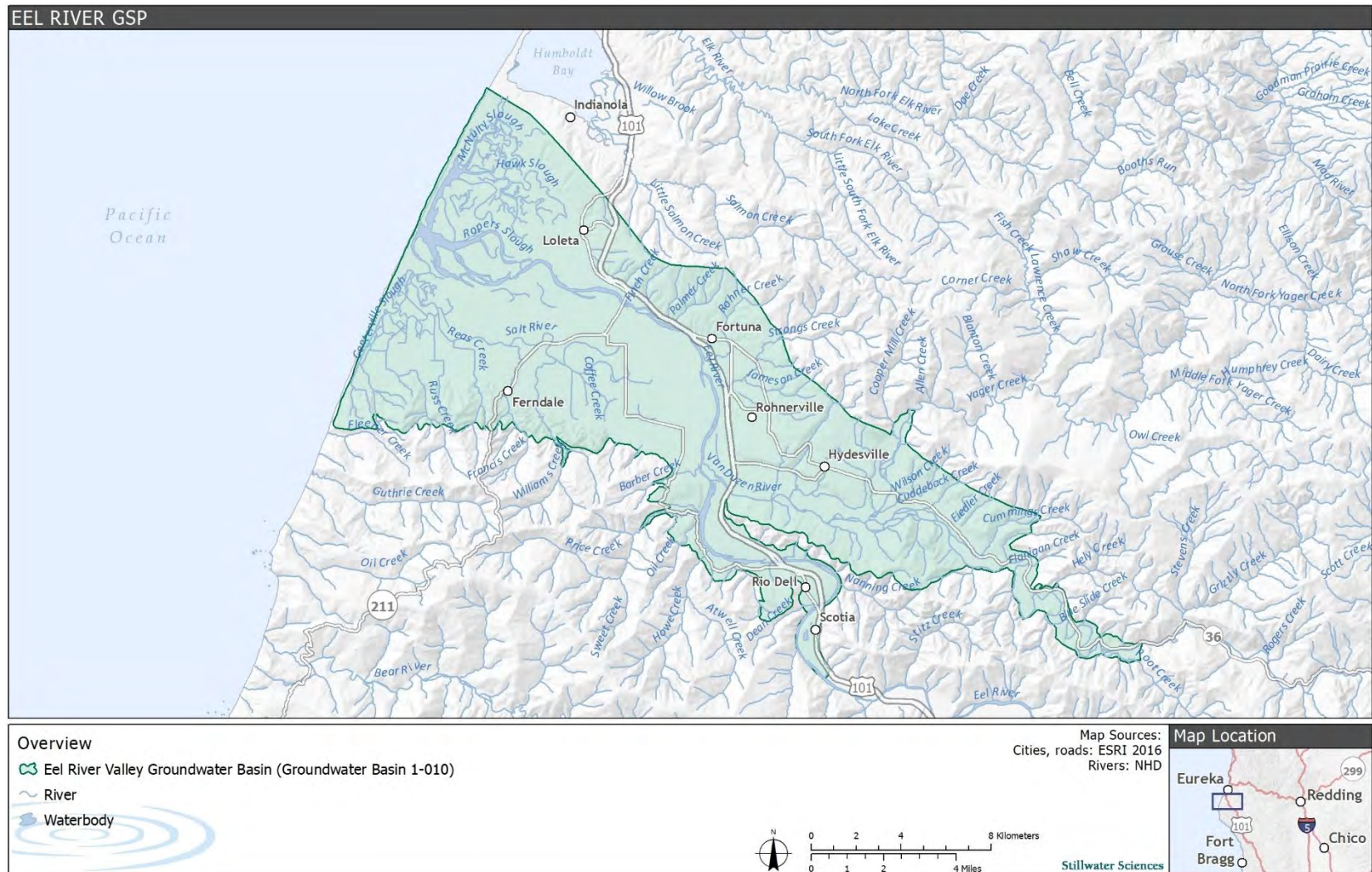


Figure 1. Eel River Valley Basin.

1.2 Hydrology

The Eel River is the third largest watershed in California, draining 3,684 square miles (California Department of Fish & Wildlife [CDFW] 2014). The mainstem Eel River is approximately 197 miles long, with headwaters in Mendocino County, 10 miles north of Lake Pillsbury. Upstream of the basin, the river is dammed at the Scott and Cape Horn dams, forming Lake Pillsbury and Van Arsdale Reservoir, respectively. Between 2010 and 2019, average annual discharge in the Lower Eel River near Scotia (U.S. Geological Survey [USGS] gage 11477000) ranged between 1,619 and 12,150 cubic feet per second (cfs); monthly average discharge ranged between 32 cfs (August 2014) and 54,201 cfs (February 2017) (USGS 2019). The Van Duzen River drains into the Eel River about 14 miles upstream of the Pacific Ocean. Other major tributaries include Yager Creek, which joins the Van Duzen below the Town of Carlotta.

The Eel River experiences very high levels of sedimentation (CDFW 2014). Sedimentation has significantly impacted the Salt River, a remnant channel of the Eel River; many of the Salt River's low-gradient tributaries have filled with sediment and do not convey significant surface flow. As of 2019, restoration efforts by the Humboldt County Resource Conservation District (HCRCD) have opened portions of the Salt River to tidal inundation and partial freshwater inputs (HCRCD 2021).

The primary aquifers in the basin are the Carlotta formation in the Upper Wildcat group and the sequence of overlying unconsolidated alluvial deposits. Groundwater in the Carlotta formation is typically confined or semi-confined by silt and clay interbeds. The Carlotta formation is typically over 1,500 ft thick and may be up to 4,000 ft thick locally, but the maximum productive depth is not well defined. Wells tapping the Carlotta formation are between 200 and 400 ft deep; artesian conditions occur in wells near the foothills (GHD 2021a). The alluvial aquifer is up to 200 ft thick and unconfined, with high conductivity. Most wells in the alluvial aquifer are about 70 ft deep. Hydrologic connectivity between the alluvial aquifer and the Carlotta formation is not well understood, but there is likely some connection between the two in the central part of the basin (GHD 2021a). The extent of interconnected surface water is currently being mapped using a combination of historical field observations and a groundwater hydrology model also in development.

The alluvial aquifer is the primary water source for most agricultural wells (GHD 2021a). Irrigation is the primary groundwater use sector. In 2016, the Humboldt County Resource Conservation District (HCRCD) estimated that annual groundwater extraction from the basin for irrigation ranges from 10,265 acre-ft to 16,680 acre-ft. This estimate is currently being updated (Humboldt County et al, 2021). Average annual extraction for municipal, cannabis cultivation, and other uses is approximately 1,733 acre-ft, 98 acre-ft, and 414 acre-ft, respectively (GHD 2021b).

Groundwater in the basin flows east to west, down the Eel and Van Duzen river valleys to the coast. Groundwater discharge occurs at springs and seeps in the upland areas and by subsurface flow to the tidal estuary (GHD 2021b). Since the completion of a 1975 USGS study, there has been no evidence to suggest that the location of freshwater-seawater transition zone is migrating landward, except for modest salinity increases near the Salt River and Loleta (SHN 2021). Most of the alluvial aquifer located north of the Eel River, adjacent to the tidally influenced reach of the river, is naturally degraded by seawater (USGS 1978). South of Eel River, elevated chloride concentrations (>100 mg/L) were detected in the alluvium along the coast where ground elevation was less than 10 ft asl. Chloride concentration increased with depth at a given distance from the

coast. Substantial recharge to the groundwater system from the Eel River upstream of the tidally influenced reach sustains a seaward hydraulic gradient that moderates seawater intrusion in the area (USGS 1978). During the dry season, tidal cycles produce fluctuations in surface water levels of as much as 1.5 ft, causing localized transitions between gaining and losing stream conditions (SHN 2019).

Surface water systems are strongly connected to the shallow alluvial aquifer (SHN 2019). Preliminary groundwater model river discharge results provided by GHD show gaining conditions on the Van Duzen River upstream of Yager Creek. Downstream of Yager Creek, losing conditions are more prevalent. For example, the Van Duzen goes dry most years in the vicinity of Highway 101, a losing reach. Continuous coupled groundwater and surface water monitoring initiated by Humboldt County in 2016 indicates that subsurface contributions from the Van Duzen strongly influence surface-groundwater connections on the east bank of the Eel River downstream of the Van Duzen confluence (SHN 2019). Due to the steep groundwater gradient toward the Eel River from the east, gaining stream conditions are thought to occur year-round in this reach, consistent with preliminary model results. Monitoring on the west bank of the Eel River between the Van Duzen River confluence and Fortuna shows losing conditions near the confluence, particularly during the dry season, transitioning to gaining conditions downstream that typically occur during the wet season (SHN 2019). Preliminary model results indicate that a slight gaining reach occurs downstream at Fortuna due to subsurface contributions from Strongs Creek and Rohner Creek. Gaining conditions also occur at Fernbridge and along much of the Salt River. Model results show slight losing conditions on some tributaries of the Van Duzen River (Fox Creek) and Salt River (Williams, Francis, and Reas creeks).

The shallow aquifer is hydraulically connected with the ocean along approximately 10 miles of coastline. In the Eel River, tidal influence extends upstream of Fernbridge, approximately 12 miles inland from the river mouth (SHN 2021).

2 BASIN PLAN AND BENEFICIAL USES OF WATER

The Basin Plan for the North Coast Region (NCRWQCB 2018) defines beneficial uses as “the waters of the state that may be protected against water quality degradation,” which “include, but are not necessarily limited to, domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.” The ERVB is contained within the Lower Eel River and Van Duzen River hydrologic areas (HA) delineated by the NCRWQCB (2018). Because the shallow aquifer and surface water are interconnected in parts of the ERVB (SHN 2019), surface water beneficial uses could be impacted by groundwater management. The extent and degree to which groundwater management may affect surface water flows will be explored once the groundwater model is finalized. This will therefore be addressed in the final GSP.

The Basin Plan (NCRWQCB 2018) designates multiple beneficial uses for surface and groundwater within the ERVB. The HA share many of the same beneficial uses (Table 1), which include:

- MUN (Municipal and Domestic Supply) – Uses of water for community, military, or individual water supply systems, including, but not limited to, drinking water supply
- AGR (Agricultural Supply) – Uses of water for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing

- IND (Industrial Service Supply) – Uses of water for industrial activities that do not depend primarily on water quality, including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization
- GWR (Groundwater Recharge) – Uses of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers
- FRSH (Freshwater Replenishment) – Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity)
- NAV (Navigation) – Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels
- REC-1 (Water Contact Recreation) – Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible, including, but not limited to, swimming, wading, water skiing, skin and scuba diving, surfing, whitewater activities, fishing, or use of natural hot springs
- REC-2 (Non-Contact Water Recreation) – Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible, including, but not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities
- COMM (Commercial and Sport Fishing) – Uses of water for commercial and recreational (sport) collection of fish, shellfish, or other aquatic organisms, including, but not limited to, uses involving organisms intended for human consumption or bait purposes
- COLD (Cold Freshwater Habitat) – Uses of water that support cold water ecosystems, such as preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates
- WILD (Wildlife Habitat) – Uses of water that support terrestrial ecosystems, including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources
- RARE (Rare, Threatened, or Endangered Species) – Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under State or federal law as rare, threatened, or endangered
- MIGR (Migration of Aquatic Organisms) – Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish
- SPWN (Spawning, Reproduction, and/or Early Development) – Uses of water that support high-quality aquatic habitats suitable for reproduction and early development of fish
- CUL (Native American Culture) – Uses of water that support the cultural and/or traditional rights of indigenous people, such as subsistence fishing and shellfish gathering, basket weaving and jewelry material collection, navigation to traditional ceremonial locations, and ceremonial uses

Additional beneficial uses for the Lower Eel River HA comprise:

- SHELL (Shellfish Harvesting) – Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes
- EST (Estuarine Habitat) – Uses of water that support estuarine ecosystems, including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds)

Potential beneficial uses in the Lower Eel River HA include:

- PRO (Industrial Process Supply) – Uses of water for industrial activities that depend primarily on water quality
- POW (Hydropower Generation) – Uses of water for hydropower generation
- MAR (Marine Habitat) – Uses of water that support marine ecosystems, including, but not limited to, preservation or enhancement of marine habitats and vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds)
- AQUA (Aquaculture) – Uses of water for aquaculture or mariculture operations, including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes

Additional beneficial uses for the Van Duzen River HA include:

- WARM (Warm Freshwater Habitat) – Uses of water that support warm water ecosystems, such as preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates

Additional potential beneficial uses for the Van Duzen River HA comprise PRO, POW, and AQUA.

Beneficial uses the NCRWQCB (2018) did not designate in the ERVB include:

- ASBS (Preservation of Areas of Special Biological Significance [ASBS]) – Includes marine life refuges, ecological reserves, and designated ASBS, such as areas where kelp propagation and maintenance are features of the marine environment, requiring special protection
- SAL (Inland Saline Water Habitat) – Uses of water that support inland saline water ecosystems, such as preservation or enhancement of aquatic saline habitats, vegetation, fish, or wildlife, including invertebrates
- FLD (Flood Peak Attenuation/Flood Water Storage) – Uses of riparian wetlands in flood plain areas and other wetlands that receive natural surface drainage and buffer its passage to receiving waters
- WET (Wetland Habitat) – Uses of water that support natural and man-made wetland ecosystems, including, but not limited to, preservation or enhancement of unique wetland functions, vegetation, fish, shellfish, invertebrates, insects, and wildlife habitat
- WQE (Water Quality Enhancement) – Uses of waters, including wetlands and other waterbodies, that support natural enhancement or improvement of water quality in or downstream of a waterbody, such as erosion control, filtration and purification of naturally occurring water pollutants, streambank stabilization, maintenance of channel integrity, and siltation control

Table 1. Beneficial uses in the Eel River Valley Basin (NCRWQCB 2018)

Hydrologic area	MUN	AGR	IND	GWR	FRSH	NAV		REC 1	REC 2	COMM	COLD	WILD	RARE	MIGR	SPWN	CUL	SHELL	EST	PRO	POW	MAR	AQUA	WAR M
Lower Eel	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	P	P	P	P	
Van Duzen	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X			P	X		P	X

X = Designated beneficial use
 P = Potential beneficial use

3 ASSESSMENT

No studies of minimum instream flow requirements within the ERVB were found for any of the beneficial uses identified above or discussed below. However, there has been an ongoing long-term (2005–2020) instream habitat monitoring program within the ERVB conducted by the local instream gravel miners in compliance with their local, state, and federal permits. This monitoring program collected data within the lower Eel River (mouth of Van Duzen River to Fernbridge; approximately 6.7 river miles) and at selected sites in the Van Duzen River downstream of Carlotta (approximately 3.9 river miles). Data collected include pool, riffle, and flatwater ratios; preferred holding, spawning, and rearing habitats for adult and juvenile salmonid; and pool and riffle depths (Stillwater Sciences 2020b). Summary results from the monitoring program are reported below in Section 3.2.

3.1 Groundwater Dependent Ecosystem Units

SGMA defines GDEs as “ecological communities of species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface” (23 CCR § 351(m)). As described in The Nature Conservancy’s guidance for GDE analysis (Rohde et al. 2018), a GDE’s dependence on groundwater refers to reliance of GDE species and/or ecological communities on groundwater for all or a portion of their water needs. Stillwater Sciences (2021a) identified four GDE Units within the ERVB based on hydrologic characteristics within the basin (Table 2, Figure 2). These are:

- Intertidal Zone and Tributaries: Intertidal reach downstream of Fernbridge
- Middle Eel River: Fernbridge to Eel/Van Duzen rivers’ confluence
- Upper Eel River: Eel/Van Duzen rivers’ confluence to Scotia
- Van Duzen River and Tributaries: Lower Van Duzen River

Table 2. GDE unit acreages in the ERVB

GDE unit	Area (acres)
Intertidal Zone and Tributaries	5,981
Middle Eel River	3,809
Upper Eel River	1,136
Van Duzen River and Tributaries	2,878
Total	13,804

¹ Totals may not appear to sum exactly due to rounding error.

These GDE units provide a spatial framework for the beneficial uses discussion below.

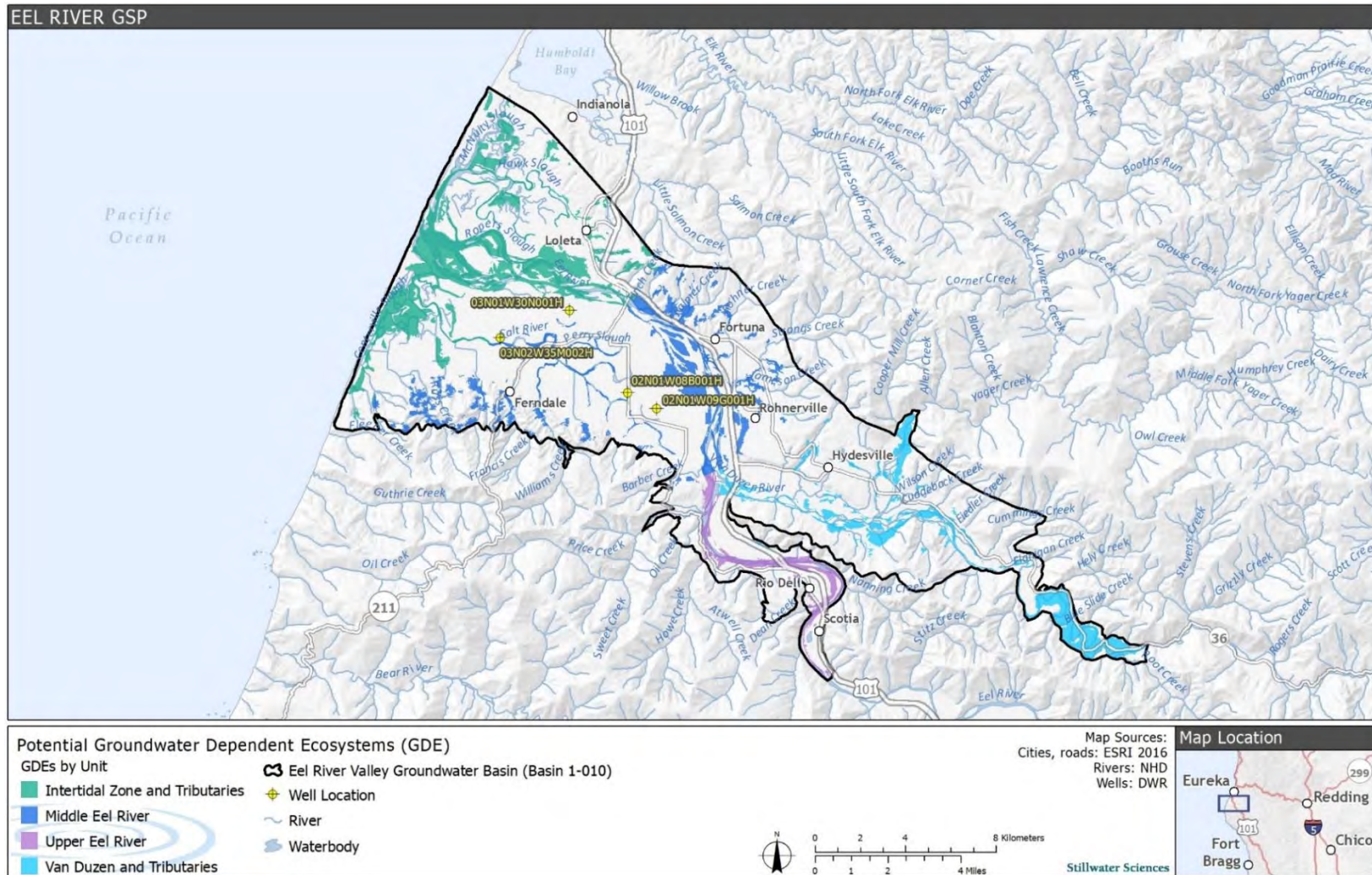


Figure 2. GDE units in the ERVB

3.2 Beneficial Uses Conditions

The Basin Plan (NCRWQCB 2018) identifies the surface waters of the ERVB as having a variety of beneficial uses pertaining to fish, wildlife, and GDEs. Beneficial uses within the ERVB linked to GDEs include COLD, WILD, RARE, MIGR, SPWN, and EST. Each of these contain biological attributes, some unique and others common, which illustrate the linkages between beneficial uses (Table 3).

Table 3. Attributes supported by beneficial uses in the ERVB

Beneficial uses	Attributes supported by beneficial uses									
	Aquatic habitat	Vegetation	Fish	Wildlife	Migration	Terrestrial habitat	Food sources	Water sources	Shellfish	Estuarine habitat
COLD	x	x	x	x						
MIGR	x		x		x					
RARE	x	x	x	x		x				x
WILD		x		x		x	x	x		
SPWN	x		x							
EST		x	x	x					x	x

The ERVB also supports beneficial uses REC-1 and REC-2. The recreational attributes supported by REC-1 include swimming, wading, skin and scuba diving, and fishing. The recreational attributes supported by REC-2 include picnicking, sunbathing, hiking, boating, hunting, sightseeing, and aesthetic enjoyment.

3.2.1 COLD

The Cold Freshwater Habitat (COLD) beneficial uses support cold water ecosystems for the preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. The GDE units within the ERVB are cold water systems and support habitat for a variety of cold-water-dependent species, including, but not limited to, Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), steelhead (*Oncorhynchus mykiss*), longfin smelt (*Spirinchus thaleichthys*), green sturgeon (*Acipenser medirostris*), and Pacific lamprey (*Entosphenus tridentatus*), which are described below in the RARE section. Several other fish and wildlife species also occupy the groundwater basin and will be described in other beneficial uses sections below.

COLD beneficial uses are a function of available habitat, including the extent of pools, riffles, and flatwater within a given reach. This section therefore summarizes available habitat to assess whether there are any temporal trends in habitat distribution and to help ascertain whether current groundwater and interconnected surface water management could be affecting habitat availability.

3.2.1.1 Pool, riffle, and flatwaters

The relative proportions of pool, riffle, and flatwater habitat in the lower Eel River Valley between the mouth of the Van Duzen River and Fernbridge have varied between 2005 and 2020 in response to winter flow patterns, changes in thalweg locations, sediment depositional patterns, and presence or absence of significant secondary channels. In general, the pool and flatwater

percentages have been inversely proportional while the riffles have varied by about five percent (Figure 3).

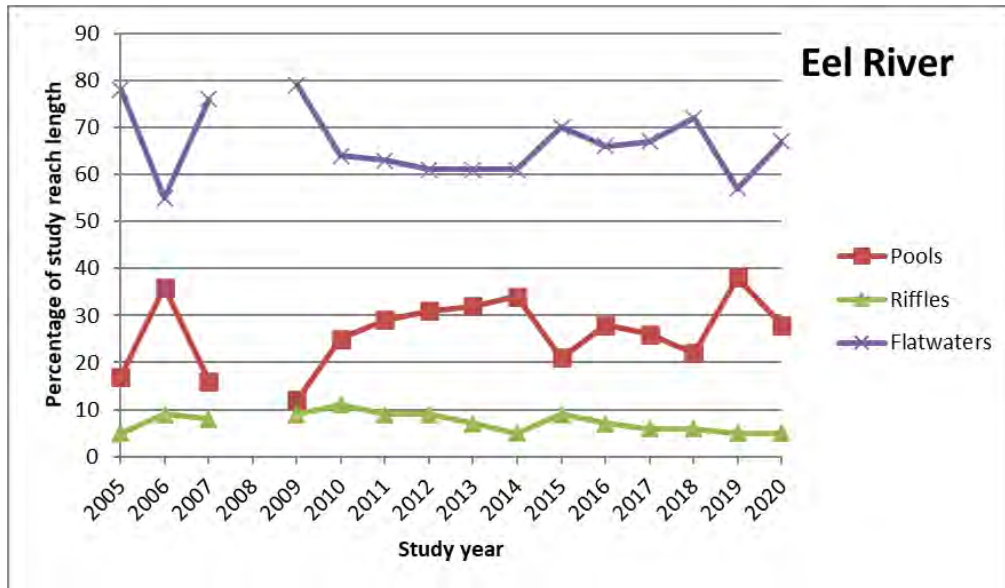


Figure 3. Pool, riffle, and flatwater percentages in the Middle Eel River GDE Unit 2005-2020 (Stillwater Sciences 2021b)

Similarly, in the Middle Eel River GDE Unit, the pool and flatwater percentages in the Van Duzen River and Tributaries GDE Unit have been generally inversely proportional while the riffles have varied by about 10 percent (Figure 4). However, some locations in the Van Duzen River go dry or have extremely low flows during the summer period, which also affect the pool, riffle, and flatwater percentages. The jump in the pool percentage during 2013 may have been due in part to the inclusion of an additional area (County of Humboldt’s PALCO Bar), which contains a higher percentage of pools than the more downstream alluvial flats area between Carlotta and the mouth of the Van Duzen River.

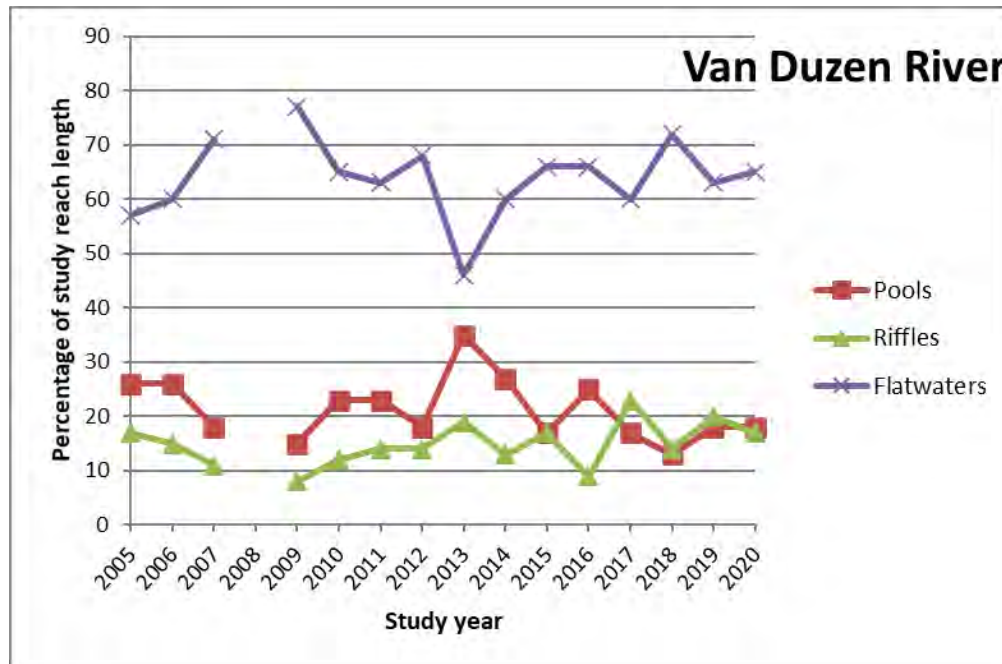


Figure 4. Pool, riffle, and flatwater percentages in the Van Duzen River and Tributaries GDE Unit 2005-2020 (Stillwater Sciences 2021b)

3.2.1.2 Instream habitat area

The preferred instream habitat areas for salmonid spawning, steelhead (age 2+) rearing, alcoves, juvenile coho salmon rearing, and adult holding in the Middle Eel River GDE Unit, from the mouth of the Van Duzen River to Fernbridge, and the Van Duzen River and Tributaries GDE Unit, from the confluence of the Eel River to Carlotta, have been mapped on a near-annual basis from 2005–2020 (Stillwater Sciences 2021b). Preferred holding habitat for adult Chinook salmon generally consists of pools with water velocities ranging from 0.5–1.5 ft per second (fps) and depths greater than 3 ft. In both reaches, spawning habitat typically occurs in pool tailouts, riffles, or runs where the water is 0.75–2.5 ft deep, flowing at 1–3 fps, over a small gravel to small cobble substrate. Juvenile coho salmon generally utilize the margins of pool and flatwater habitat units with relatively slow (0.5–1.5 fps) water velocities that contain overhanging and submerged vegetation and cool water seeps. Coho salmon have also been observed in alcoves containing cool water during the late summer and early fall. Age 2+ steelhead prefer to reside in run habitats where the water velocity is between 0.75 and 1.5 fps near the bottom, in depths of 1–3 ft, and have a cobble/small boulder substrate. Age 2+ steelhead also prefer head-of-pool habitats below the entry point of riffles. Alcoves are off-channel habitats located on the downstream end of gravel bars and may provide velocity refuge for juvenile salmonids during high flows, as well as potential thermal refuge during the summer season.

Due to the nearly annual changes to natural river thalweg, monitoring reach lengths during these years have varied considerably, which required normalizing the instream habitat metrics to square ft of habitat per linear ft of stream length. Adult holding habitat for all three salmonids is the most common habitat mapped within the Middle Eel River GDE Unit monitoring reach (Figure 5). Juvenile coho salmon habitat is non-existent due to the lack of pools formed by woody debris and warm water temperatures. Spawning habitat for all three salmonids is relatively scarce due to the relatively small substrate size and significant bedload transport. Alcoves are also relatively rare in

the Middle Eel GDE Unit, particularly since 2013. The presence of alcoves is a function of gravel scour that occurs during high flow events in secondary channels located along the back side of gravel bars. The upstream ends of alcoves are generally at higher elevations than the downstream areas that may stay watered the entire year.

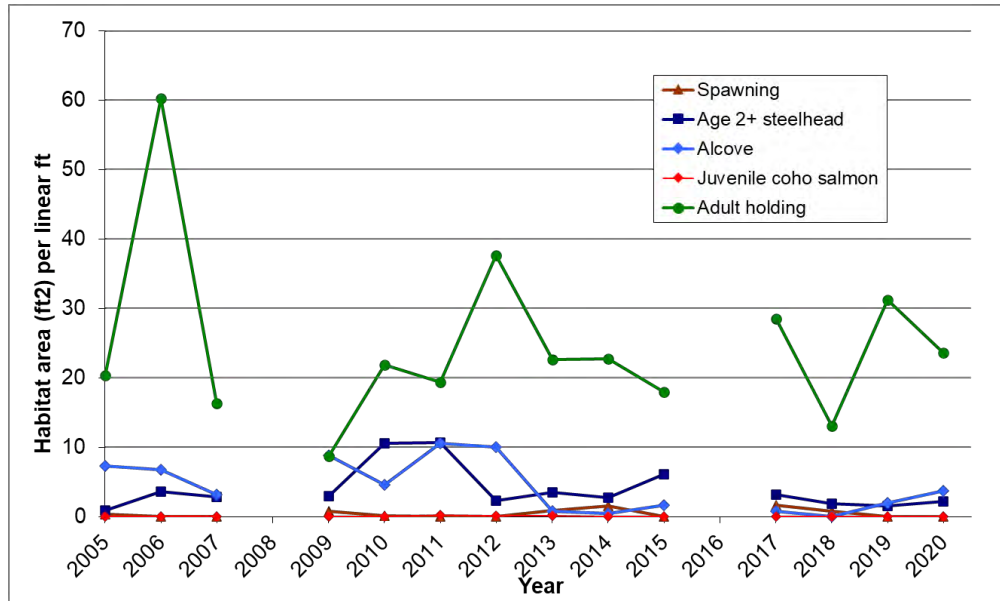


Figure 5. Preferred instream habitat area for Chinook salmon holding and spawning, age 2+ steelhead rearing, alcoves, and juvenile coho salmon rearing from 2005 to 2020 in the Middle Eel River GDE Unit (Stillwater Sciences 2021b)

The preferred instream habitat areas for salmonid spawning, age 2+ steelhead rearing, alcoves, juvenile coho salmon rearing, and adult holding in the Van Duzen River monitoring reaches have also varied considerably on an annual basis (Figure 6). In general, water years with high sustained winter flows have resulted in increases in pools and associated holding and age 2+ steelhead habitat. These high flows have also mobilized and sorted instream sediment deposits, which rejuvenated spawning gravel. Juvenile coho salmon habitat has been limited by a relative lack of woody debris and high water temperatures. Because the width of the Van Duzen River is so much narrower than the Eel River, the habitat areas are smaller per unit length of channel.

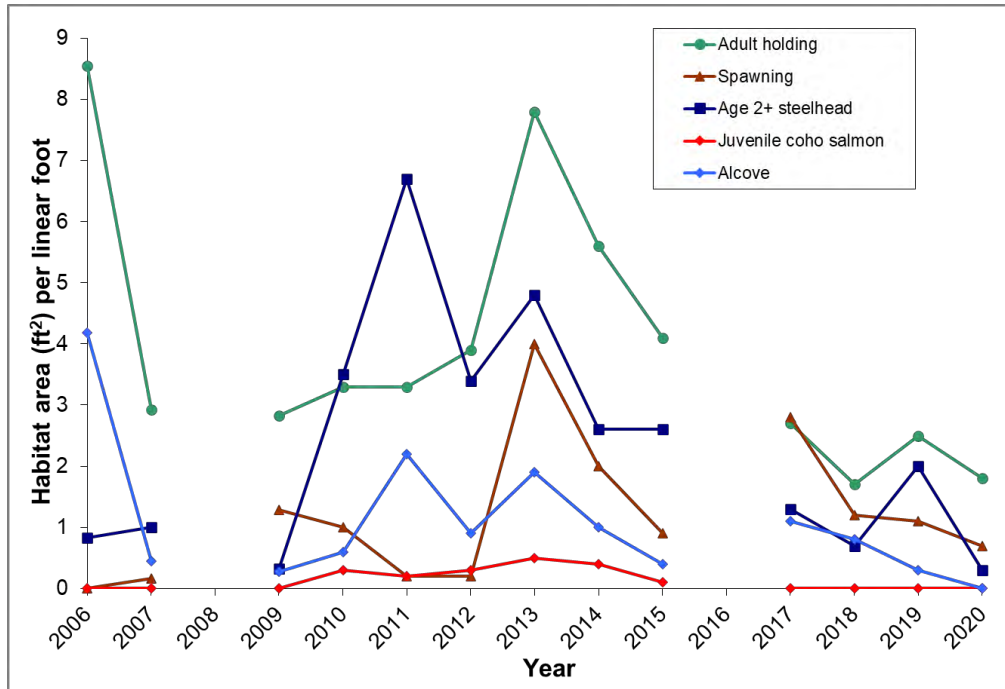


Figure 6. Preferred instream habitat area for salmonid spawning, age 2+ steelhead rearing, alcoves, juvenile coho salmon rearing, and adult holding 2006–2020 in the Van Duzen River and Tributaries GDE Unit (Stillwater Sciences 2021b)

Tributaries to the Middle Eel, Upper Eel, and Van Duzen River and Tributaries GDE units within the ERVB contain cold water habitat and support anadromous fish and other aquatic biota. CDFW and its predecessor, California Department of Fish and Game (CDFG), periodically conducted instream habitat inventories within the watercourses that are tributary to the GDE units using the Flosi et al. (1998) protocol. Instream habitat data collected as part of this protocol included, but was not limited to, flow (cfs), pool, riffle, flatwater lengths, and water temperatures. Selected instream habitat data are presented below for several tributaries that flow into the GDE units (Table 4). Although the CDFW/CDFG-inventoried streams flow into the GDE units, most of their lengths extend into the steeper areas outside GDE boundaries. These steeper reaches are not likely to be affected by floodplain groundwater management due to generally being within forested landscapes and due to the lack of wells.

Table 4. Tributary instream habitat data collected by CDFW during instream habitat inventories within the GDE units

Watercourse	GDE unit	Survey dates	Habitat attributes				
			Flow (cfs)	Pool %	Riffle %	Flatwater %	Temperature Celsius (°C)
Francis Creek	Intertidal	June 2–20, 2003	1.1	47	34	19	12–16
Barber Creek ¹	Middle Eel	July 22–28, 2008	-	47	38	7	12–13
Howe Creek	Upper Eel	August 13–18, 1998	0.5	6	66	28	14–19
Howe Creek	Upper Eel	June 21–29, 2017	4.8	17	48	35	12–18
Price Creek	Upper Eel	September 15, October 18–20 and 25–26, and November 2–3, 1999	-	12	57	30	7–15
Price Creek	Upper Eel	June 20–July 17, 2017	2	16	23	60	13–18
Oil Creek	Upper Eel	June 25–29, 2002	-	42	28	31	13–16
Monument Creek	Upper Eel	July 6–7, 2010	1.9	33	47	20	12–14
Hely Creek ²	Van Duzen River	June 5–19, 2006	2.1	23	37	37	12–14
Hely Creek	Van Duzen River	September 25–October 4, 2017	1.4	22	28	37	10–13

¹ Additional Level II Habitat: 1% culvert, 1% dry

² Additional Level II Habitat: 3% dry

3.2.1.3 Water temperatures

Sufficiently cool water temperatures is a habitat requirement for salmonids. Water temperatures above 20 °C stress Chinook salmon and steelhead; those above 25°C can be lethal. Coho salmon have lower water temperature tolerances and tend not to be present in waters with maximum temperatures exceeding 18°C unless there are cool water refuges available. Water temperatures tend to be higher in the summer when air temperatures are highest, and lowest during the winter due to lower air temperatures and greater inflows. Water temperatures in wide mainstem river reaches tend to be warmer than smaller tributary streams during the summer due to sunlight heating the substrate, lack of shade canopy, and relatively high air temperatures. Water temperatures are typically lower in tributaries outside of the ERVB where more confined channels and increased vegetative shading are present. Groundwater management may affect stream temperatures in reaches with interconnected surface water by increasing the relative flux of cooler groundwater to warm streams, but the degree to which this occurs in the ERVB has not been investigated.

Water temperature monitoring was conducted in 1998 within the Eel River from the mouth of the Van Duzen River to Fernbridge (Table 5). Monitoring was also conducted at three locations in the Van Duzen River between Carlotta and Highway 101. The data analysis included calculating the average daily and average maximum water temperatures for the warmest week. The data showed that water temperatures within the lower Eel and Van Duzen rivers exceed stressful levels (>18–20°C) for anadromous salmonids, as well as that water temperatures cooled slightly the closer the river was to the coast and zone of marine influence.

Table 5. Mainstem Eel and Van Duzen rivers’ water temperatures for the warmest week of the summer, 1998 (Halligan 1998, unpub. data)

Location	Lat/long (deg min sec)	GDE Unit	Average daily (°C)	Average maximum (°C)
Eel/VD river confluence	40°32’17”N, 124°09’15”W	Middle Eel	22.2	24.1
Hauck/Hansen	40°32’52”N, 124°09’13”W	Middle Eel	21.3	23.1
Drake	40°36’10”N, 124°10’30”W	Middle Eel	21.7	22.8
Worswick	40°36’20”N, 124°11’20”W	Middle Eel	21.3	22.3
Bess	40°31’30”N, 124°03’10”W	Van Duzen River	20.8	24.1
Noble	40°31’25”N, 124°05’40”W	Van Duzen River	20.7	23.7
Leland	40°32’07”N, 124°08’20”W	Van Duzen River	20.4	23.1
Fernbridge	40°36’57”N, 124°12’05”W	Intertidal	21.4	22.7

As part of their Habitat Conservation Plan monitoring program, Humboldt Redwood Company (HRC) has been collecting water temperature data in selected tributary watercourses to the Upper Eel River and Van Duzen River GDE units. HRC analyzes their data and reports the temperature information as a maximum weekly average temperature (MWAT; Table 6). Water temperatures for the watercourses below do not exceed the 16.8°C threshold for coho salmon.

Table 6. 2019 Maximum weekly average water temperatures at selected site within tributaries that flow into the Upper Eel River and Van Duzen River GDE units (HRC 2020)

ATM site/number	GDE unit	Year	MWAT (°C)
Monument 106	Upper Eel	2019	16.1
Atwell/242	Upper Eel	2019	16.7
Hely/112	Van Duzen River	2019	15.2
Cummings/108	Van Duzen River	2019	15.7

The Eel River Recovery Project (ERRP) conducted water temperature monitoring in 2012 and 2013 on the lower Eel River to check for suitability for holding adult Chinook salmon (ERRP 2013, 2014). Water temperatures in the lower Eel River were coolest at Fernbridge and warmed progressively upstream, with a substantial jump between the 12th Street pool (Fortuna) and Howe Creek, upstream of the Van Duzen River. The floating weekly water temperatures of the lower Eel River reaches accessible to Chinook salmon remained above stressful until the first week of September in 2012 (Figure 7). However, in 2013, the river was significantly warmer (3–5°F), but an early rain reduced water temperatures to more suitable ranges by the second week of September (ERRP 2014). Figure 7 also shows that water temperatures decreased in a downstream direction as the river entered the zone of coastal influence.

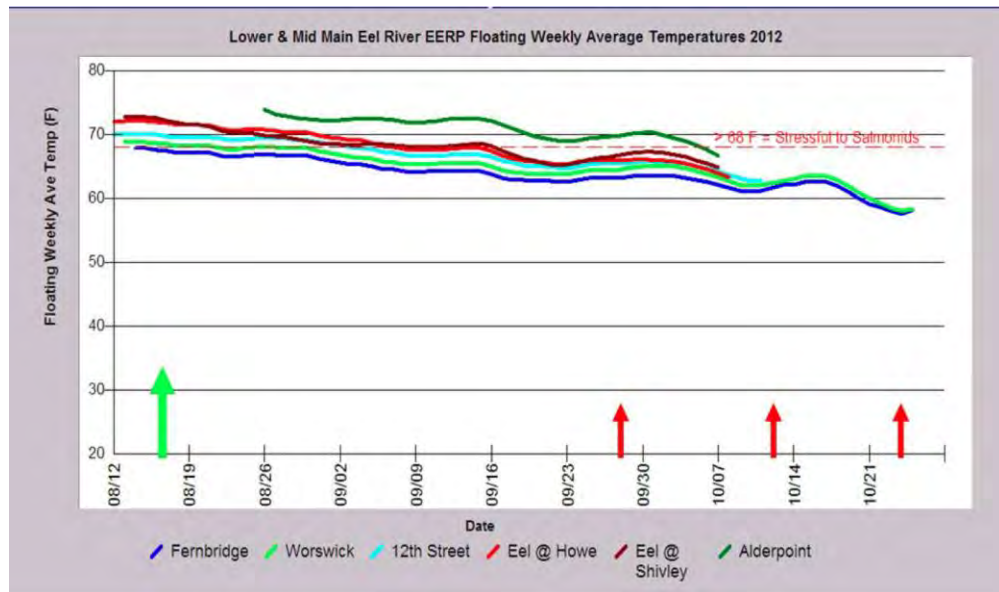


Figure 7. Lower Eel River water temperatures at several locations in the Middle Eel and Upper Eel GDE units, and in locations farther upstream (Shivley and Alderpoint), indicating stressful conditions for adult Chinook salmon at the time of first entry (green arrow) until mid-September; red arrows indicate underwater survey dates by the ERRP (ERRP 2013); salmonids experience stress at temperatures greater than 68°F (20°C)

Water temperatures in the Eel River Estuary vary depending on the season, location, channel depth, heights of tides, and river discharge. Seasonal water temperatures in the Intertidal GDE Unit can range from ambient sea water (~50–55°F) to ambient river water (~38–75°F) (Puckett 1977 and Cannata 1994–95 field notes, as cited in CDFG 2010). During the winter, the coldest water is usually found on the surface when river flows exposed to cold air flow into the estuary. Conversely in summer as river flows decline, the coldest water is delivered by ocean tides. Tides push a wedge of cold seawater up the main estuarine channel that mixes with the warmer fresh or brackish water of the middle and upper estuary zones (CDFG 2010).

In summary, water temperatures within the Middle Eel, Upper Eel, and Van Duzen River GDE units are generally too warm during the summer to support adult salmonids. Nearly all juvenile Chinook salmon would have migrated to the estuary and ocean prior to the onset of warmer water temperatures. In addition, water temperatures are too warm to support juvenile coho salmon and are stressful for juvenile steelhead. Water temperatures in the Intertidal Zone and Tributaries GDE Unit are moderated by the influences of the marine climate and tidal flux.

3.2.2 WILD

The wildlife habitat beneficial uses of water support (preserve and enhance) terrestrial ecosystems and habitat for vegetation, wildlife (e.g., mammals, birds, reptiles, and amphibians), or wildlife water and food sources. Several special-status wildlife species that are dependent on the GDEs in the ERVB (see Section 3.2.3, below).

3.2.3 RARE

The ERVB supports several threatened, endangered, and species of special concern (Figure 8), including fish, avian, amphibian, and reptile species. These species are briefly described below. The following species summaries are adapted from the format contained in the Critical Species LookBook (Rohde et al. 2019).

3.2.3.1 Fish

The following special-status fish species are present in the ERVB on a seasonal or permanent basis.

California Coast ESU Chinook salmon (*Oncorhynchus tshawytscha*)

Status: Federally threatened

Reliance on groundwater: Direct. Chinook salmon are reliant on groundwater-fed rivers to provide adequate water quality, temperature, and volume for upstream migration (in the fall before rainfall elevates river flows), as well as for spawning and freshwater residency.

Habitat: Chinook salmon in the Eel River spend a relatively short time in freshwater as juveniles before heading to estuaries or marine environments for the bulk of this phase of their lives. Adult Chinook spawn in larger rivers and streams, where they require sufficient flows for migration and largely sediment-free gravel for spawning. Juveniles need areas of refuge from high water velocities during the wet season (e.g., in floodplains, backwaters). Water quality, including temperature and dissolved oxygen, is important for juveniles living in estuaries.

Presence in the ERVB: Chinook salmon in the Eel River are primarily fall-run, although a small number of spring-run fish do spawn and rear in the Middle Fork Eel River. They can be found in the Eel River Valley during the fall adult upstream migration, early juvenile rearing, and spring downstream smolt migration periods. Fall-run juvenile Chinook salmon generally do not rear in freshwater during the summer and fall. Spring-run juveniles will rear for a year prior to migrating downstream to the estuary and the ocean.

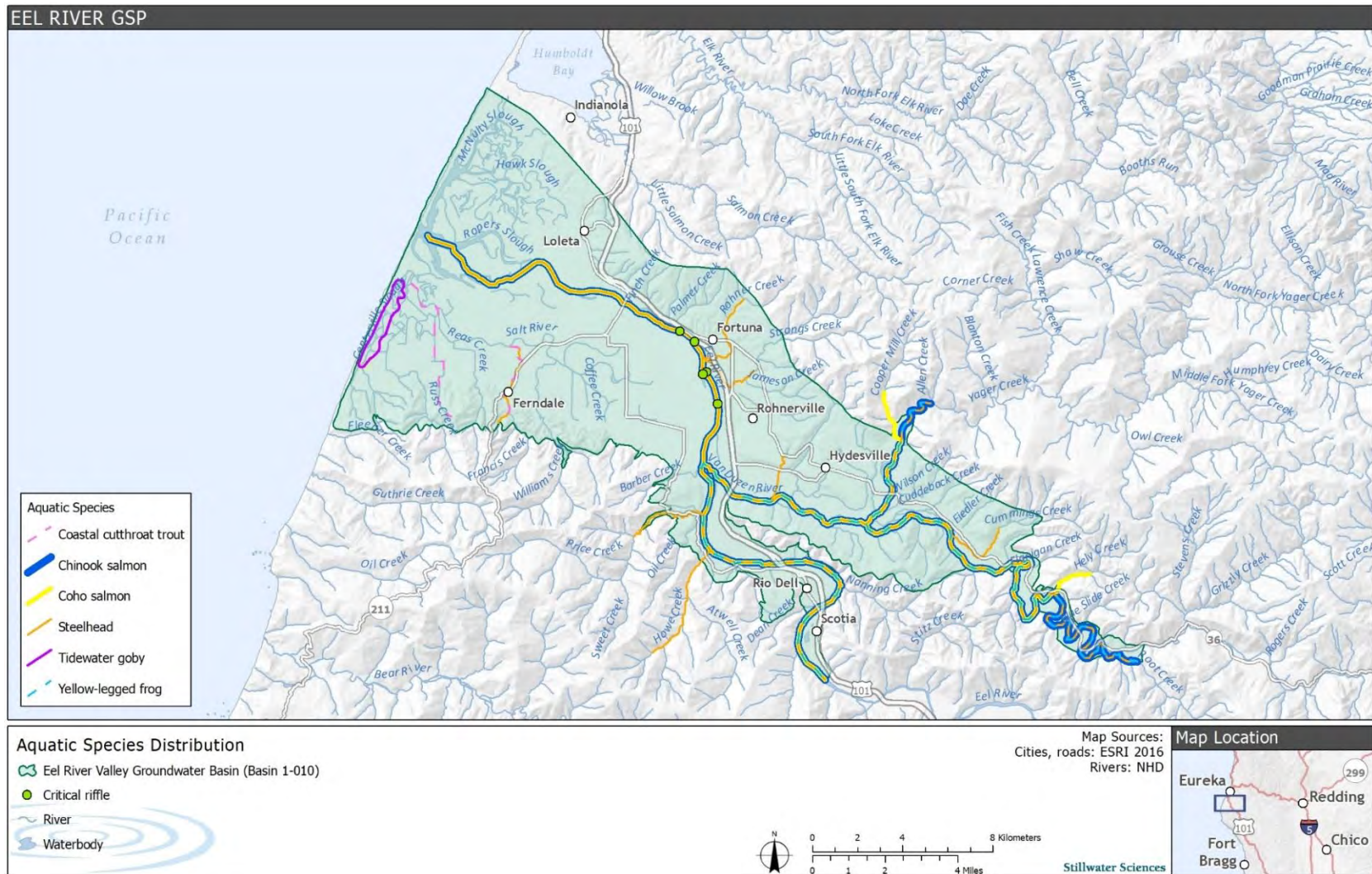


Figure 8. Aquatic species distribution in the ERVB; green circles indicate the general locations of critical riffles observed from 2006 to 2020 (Stillwater Sciences 2021b)

Southern Oregon Northern California Coast ESU Coho salmon (*Oncorhynchus kisutch*)

Status: Federally threatened; State threatened

Reliance on groundwater: Direct. Coho salmon are reliant on groundwater-fed rivers to provide adequate water quality, temperature, and volume for upstream migration (in the fall before rainfall elevates river flows), as well as for spawning and freshwater residency. Juvenile salmonids generally require cold, clear, well-oxygenated water and adequate streamflow volume during their time in freshwater. Adult salmon similarly require adequate water quality and volume during their upstream migration. Juveniles can rear in mainstem rivers but are dependent on locations that contain cold water tributary inflow, bank seeps, or subsurface flow upwelling. Backwater alcoves with stratified water temperatures also provide habitat during the warm summer months.

Habitat: Juveniles spend one year in freshwater prior to migrating to the estuary and ocean during the spring. Juveniles require deep pools with cool water temperatures, slow water velocities, and abundant instream cover during their rearing phase. Juveniles are associated with native riparian vegetation that provides instream cover and food resources from insect drop. Adults return to freshwater to spawn in the mid-fall to early winter of their third year. They primarily spawn in tributaries to rivers but would spawn in larger rivers during drought years when tributary flows are low.

Presence in the ERVB: The mainstem Eel (upstream of Fernbridge) and Van Duzen rivers are used for migration only due to high summer water temperatures and general lack of habitat. Juveniles have been found in Yager, Price, Williams, Francis, and Howe creeks.

Northern California Coast steelhead (*Oncorhynchus mykiss*)

Status: Federally threatened

Reliance on groundwater: Direct. Steelhead are reliant on rivers and streams that are likely supported by groundwater. Juvenile steelhead generally require cold, clear, well oxygenated water and adequate streamflow volume while residing in freshwater. Adult steelhead also require adequate water quality and instream flows during their upstream and downstream migration, which can be limited by streamflow depletion. However, adult steelhead typically conduct upstream migrations in the winter and spring when streamflow are usually adequate. Cold groundwater inputs can provide local areas of water temperature refugia in which rearing juvenile steelhead are less susceptible to stress or mortality that can otherwise result from elevated water temperatures during warm, dry months when stream flows are typically lowest.

Habitat: While steelhead are generally more adaptable to habitat extremes than either coho or Chinook salmon, they nevertheless require cold water and complex instream habitat during their freshwater juvenile residency, which generally lasts at least one year, including at least one dry season. Juveniles outmigrate during the spring and early summer. A smaller outmigration occurs in the late fall after water temperatures cool. Estuaries can provide important rearing habitat for steelhead, with opportunities for rapid growth prior to entering the marine environment. For upstream migration to spawning grounds, all adult salmonids require sufficient flow and suitably cool water temperature, followed by streambeds with clean gravel, free of excessive fine sediment deposition, in which to spawn. Some adult steelhead will survive to spawn a second or third time; thus, adequate stream flows are required for post-spawn adult steelhead to migrate downstream during spring.

Presence in the ERVB: Present in the mainstem Eel and Van Duzen rivers and tributaries. Small numbers of juvenile steelhead have been observed rearing in the lower Eel and Van Duzen rivers in alcoves and heads of pools (immediately downstream of riffles) during the summer and fall months (D. Halligan, Stillwater Sciences, pers. comm. 2021).

Coastal cutthroat trout (*Oncorhynchus clarkii clarkii*)

Status: State species of concern

Reliance on groundwater: Direct. Coastal cutthroat trout are reliant on groundwater-fed rivers, creeks, and sloughs to provide adequate water quality, temperature, and volume for upstream migration. Juvenile salmonids generally require cold, clear, well-oxygenated water and adequate streamflow volume during their time in fresh water.

Habitat: Prefer cool, clean water with ample cover and deep pools for holding in summer. They prefer small, low gradient coastal streams and estuarine habitats, including lagoons. This species' range overlaps with steelhead, but they tend to occupy smaller streams and can be found upstream of barriers to anadromous salmonids. Spawning occurs in December to February, but could extend further into the year. Juveniles rear in upstream reaches of streams for one year before moving downstream to the estuary. These fish may move back and forth from estuarine to freshwater environments.

Presence in the Eel River Valley groundwater basin: Present in the Intertidal GDE Unit within the Salt River drainage. Found in Barber Creek (Middle Eel GDE Unit) in 1992 by CDFG. The Van Duzen River is the southern-most range of this species.

Longfin smelt (*Spirinchus thaleichthys*)

Status: State threatened

Reliance on groundwater: Direct. These fish rely directly on groundwater discharge that supports estuarine wetlands and sloughs used by the species for spawning, feeding, and rearing. Longfin smelt have a low tolerance for warm waters.

Habitat: The smelt depend on a diverse range of habitats, such as offshore areas, coastal lagoons, bays, estuaries, sloughs, and freshwater rivers and streams. Longfin smelt are euryhaline, meaning they can tolerate a variety of salinity in their habitats, from completely freshwater to marine, though spawning occurs preferentially in freshwater and areas of low salinity.

Presence in the ERVB: Longfin smelt are known to be present downstream of Fernbridge in the Salt River area. The last recorded sighting upstream of Fernbridge was near the mouth of the Van Duzen River in 1956 when several individuals were collected in a beach seine by the USFWS.

Green sturgeon (*Acipenser medirostris*)

Status: Southern DPS – federally threatened; Northern DPS – federal species of concern; State species of special concern

Reliance on groundwater: Direct. This species relies on surface water flows that may be supported by groundwater.

Habitat: This anadromous species spends most of its life at sea but returns to freshwater to spawn. Young fish may remain in freshwater for up to two years. Adults spawn in fast, deep water during the first half of the year. Post-spawn adults then move back down the river during the fall and re-enter the ocean.

Presence in the ERVB: Green sturgeon are known to inhabit the lower Eel River and have been frequently observed upstream of Fernbridge in the 12th Street pool adjacent to Riverwalk during fall salmon surveys. Sturgeon have also been observed holding in the intertidal area downstream of Fernbridge. Finally, Northern DPS sturgeon are presumed to spawn in the mainstem Upper Eel River, based on observations at Fort Seward, approximately 80 miles upstream of the ERVB. Spawning does not occur in the ERVB. The Southern DPS green sturgeon likely enter the Eel River Estuary but are known to spawn only in the Sacramento River.

Tidewater goby (*Eucyclogobius newberryi*)

Status: Federal endangered

Reliance on groundwater: Direct. Tidewater gobies rely on surface waters in coastal areas that are likely to be supported by groundwater discharge.

Habitat: These fish live in lagoons and estuaries with submerged and emergent aquatic vegetation that can provide protection from predators and flooding. They also occupy locations

characterized by muted tidal flow in areas subject to tides, and can be found in backwater marshes and freshwater tributaries to estuarine environments. Food sources comprise macroinvertebrates (e.g., amphipods, aquatic insects).

Presence in the ERVB: Gobies are present in the sloughs of the Eel River Delta and the Salt River restoration area. They are not present upstream of Fernbridge.

Pacific lamprey (*Entosphenus tridentatus*)

Status: California species of special concern

Reliance on groundwater: Direct. This species relies on surface water flows that may be supported by groundwater.

Habitat: Spawning typically takes place from March through July depending on water temperature and local conditions, such as seasonal flow regimes. Spawning occurs both in the mainstem of medium-sized rivers and smaller tributaries and generally takes place in pool and run tailouts and low gradient riffles. Both males and females build nests (redds), which are approximately 1.25 square ft and constructed in gravel and cobble substrate. After about 30 days, the eyeless larvae (ammocoetes) emerge from the gravel and begin drifting downstream. Eventually they settle out of the water column and burrow into fine silt and sand substrate in low-velocity, depositional areas such as pools, alcoves, and side channels where they may spend between four and 10 years prior to migrating to the ocean, where they reside for approximately 18–40 months before returning to freshwater.

Presence in the ERVB: The ERVB is primarily used by adult lamprey as an upstream migration corridor. However, lamprey ammocoetes may be found within the basin rearing in backwater areas containing organic silty deposits or in the fine substrate between cobbles in the mainstem river.

3.2.3.2 Birds

Bank swallow (*Riparia riparia*)

Status: Federal species of concern; State threatened

Reliance on groundwater: Indirect. This species relies on surface water that may be supported by groundwater. Bank swallows' diet consists of aquatic and terrestrial insects caught over nearby water bodies and associated floodplain grasslands. On the Sacramento River, bank swallow reproductive success appears to be positively associated with the previous winter's streamflow, and nesting burrows are more common in actively meandering reaches. This suggests that higher flows in winter (prior to the initiation of nesting) improve nesting habitat and foraging conditions. However, high stream flows or rapid drawdowns during their nesting season (April to June) may increase the risk of nest failure due to inundation, bank slumping, or bank erosion.

Habitat: Bank swallows primarily live along bodies of water, such as rivers, streams, ocean coasts, and reservoirs. This species is highly colonial and breeds in nesting burrows up to 3.3 ft deep and constructed in near-vertical banks greater than 6.6 ft tall and generally more than 80 ft long.

Presence in the ERVB: This species has established breeding colonies on the Lower Eel River, upstream of Fernbridge, and reportedly on the Van Duzen River.

Yellow-billed cuckoo (*Coccyzus americanus*)

Status: Federal threatened; State endangered

Reliance on groundwater: Indirect. This species is reliant on groundwater-dependent riparian vegetation for habitat.

Habitat: This riparian obligate species uses riparian evergreen and deciduous woodland and southwestern North American wash/scrub complexes, selecting young stands of colonizing vegetation or mature riparian forests for foraging and nesting. Cottonwood and willow trees are

an important foraging habitat in areas where the species has been studied in California. Cuckoos appear to require large blocks (25 to 100 acres) of riparian habitat for nesting.

Presence in the ERVB: Yellow-billed cuckoos have been observed in the lower Eel River Valley downstream of Fernbridge.

Snowy plover (*Charadrius alexandrinus nivosus*)

Status: Federally threatened

Reliance on groundwater: Indirect. Western snowy plovers primarily congregate on coastal beaches but can nest near wetlands that may be supported by groundwater.

Habitat: These plovers breed above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. They tend to nest near the shore, but also near freshwater or brackish wetlands (e.g., river mouths, estuaries, and tidal marshes). They also utilize use dry river gravel bars that are relatively close to the coast for breeding.

Presence in the ERVB: Confirmed breeding has been observed on gravel bars along the lower Eel River between Fernbridge and the mouth of the Van Duzen River.

3.2.3.3 Amphibians

Foothill yellow-legged frog (*Rana boylei*)

Status: State species of special concern

Reliance on groundwater: Direct. This species relies on surface water flows that may be supported by groundwater.

Habitat: Perennial streams or rivers and intermittent creeks with pools comprise this species' habitat. Breeds during May/June in low-gradient sections of rivers and large streams near junctions with tributaries due to proximity to adult overwintering habitat in tributaries and the presence of cobbles in these locations. Tadpoles show affinity to the oviposition site, remaining in edgewater habitat with interstices, vegetation, and/or detritus for cover.

Presence in the ERVB: Common within the Middle Eel, Upper Eel, and Van Duzen River and Tributaries GDE units.

Northern red-legged frog (*Rana aurora*)

Status: State species of special concern

Reliance on groundwater: Direct. This species relies on surface water that may be supported by groundwater.

Habitat: Ponds, wetlands, seeps, and upland dispersal, as well as foraging areas between those aquatic features, comprise this species' habitat. Upland habitat may be grasslands and/or woody vegetation, and even intensive croplands. Breeding occurs in ponds or quiet backwaters of watercourses. Individuals may disperse to other locations away from breeding areas.

Presence in the ERVB: Common throughout the ERVB.

3.2.3.4 Reptile

Western pond turtle (*Emys marmorata*)

Status: State species of special concern

Reliance on groundwater: Direct. This species relies on surface water flows that may be supported by groundwater.

Habitat: Ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches with basking sites comprise this species' habitat. Western pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, and occasionally frogs and fish.

Presence in the ERVB: This species has been observed in the Intertidal Zone and Tributaries and Van Duzen River and Tributaries GDE units.

3.2.4 SPWN

The ERVB supports high-quality aquatic habitats suitable for reproduction and early development of fish. The lower Eel and Van Duzen rivers commonly experience very high winter flows that mobilize the gravel bed and destroy salmonid redds in these reaches. Therefore, a more successful population survival strategy is to spawn in the good quality spawning habitat located within the upstream reaches of the Upper Eel and Van Duzen GDE units and their tributaries (e.g., Yager, Howe, Francis, Price, Monument, and Hely creeks). However, spawning of anadromous salmonids may occur within the lower mainstem reaches of the Middle Eel, Upper Eel, and Van Duzen River GDE units during dry water years when flows remain low and access to tributary streams may be limited (D. Halligan, Stillwater Sciences, pers. comm. 2021).

The amount of spawning habitat within the mainstems of the lower Eel and Van Duzen rivers varies from year to year, dependent on the previous runoff season's hydrology (Figures 5 and 6). In general, water years with relatively low intensity and short duration runoff events appear to result in lower amounts of suitable spawning habitat. This may be due less to bedload transport and gravel sorting, and more to increased deposition of sand and small gravel. Water years with high intensity and long duration runoff events result in greater bedload movement, gravel sorting, and flushing of sand from the substrate, but high flow events can also result in larger clasts depositing in what may have been suitable spawning areas in previous years, thereby rendering them too coarse for use by salmonids.

CDFW (formerly CDFG) conducted instream habitat inventories in several tributaries within the ERVB between 1992 and 2018. The stream habitat inventory protocol (Flosi et al. 1998) used an ocular estimate of the depth of embeddedness of the cobbles in pool tailout areas as an indication of spawning habitat quality. To do this, a surveyor would sample at least five small cobbles (2.5–5.0 inches in diameter) and estimate the amount of the stone buried in the sediment. The values are recorded using the following ranges: 0–25 percent (value 1), 26–50 percent (value 2), 51–75 percent (value 3) and 76–100 percent (value 4). Additionally, a value of 5 was assigned to tailouts deemed unsuitable for spawning due to inappropriate substrate like bedrock, log sills, boulders, or other considerations. Cobble embeddedness measured to be 25 percent or less (value of 1) indicates good-quality spawning substrate for salmon and steelhead. The percentage of sites with each cobble embeddedness rating recorded by CDFW for several tributaries within the ERVB is shown in Table 7. Because these measurements of habitat quality only rely on cobble embeddedness and not suitable flow, depth, water velocity, and usage, they are only a proxy for available spawning habitat.

The embeddedness values in Table 7 indicate that, for the survey years, Price and Oil creeks contained a large percentage of relatively high-quality spawning habitat. It must be noted that the values contained in Table 7 were just a snapshot in time. Embeddedness conditions in these streams could have changed in later years due to a host of factors, such as hydraulic and hydrologic, mass wasting, road, and bank stabilization conditions.

Table 7. Cobble embeddedness ratings for fish bearing tributaries to the ERVB (CDFG/CDFW 1998-2017)

Watercourse	GDE unit	Year surveyed	Embeddedness value (percentage of sites)				
			1	2	3	4	5
Howe Creek	Upper Eel	1998	0	12	73	15	0
Howe Creek	Upper Eel	2017	4	45	41	3	7
Price Creek	Upper Eel	1999	12	38	25	20	5
Price Creek	Upper Eel	2017	50	24	18	0	8
Oil Creek	Upper Eel	2002	73	14	13	0	0
Monument Creek	Upper Eel	2010	18	27	30	25	0
Barber Creek	Middle Eel	2008	1	5	19	58	17
Francis Creek	Intertidal	2003	2	19	43	32	4
Hely Creek	Van Duzen River	2006	0	14	44	17	25
Hely Creek	Van Duzen River	2017	9	21	52	10	8

3.2.5 EST

The Eel River Estuary is a sand-bar-built estuary that typically remains open to tidal exchange year-round, extending inland to at least Fernbridge where salinities of 2–11 parts per thousand (ppt) have been measured (Cannata 1994–1995 field notes, as cited in CDFG 2010).

The estuary contains five freshwater tributaries connected to 30 miles of named slough channels, not counting the Salt River watershed (CDFG 2010). Another 30 miles of unnamed sloughs (shown on USGS topographic maps) meander throughout its floodplain. Tidal flows are contained on major sloughs by levees and tide gates built by settlers to the area in the latter 1800s and early 1900s. This has resulted in the alteration of the natural tidal connectivity and drainage patterns between slough channels, freshwater streams, and their adjacent wetlands (CDFG 2010).

The ERVB Intertidal Zone and Tributaries GDE Unit supports a rich estuarine ecosystem downstream of Fernbridge. A host of mammals, waterfowl, shorebirds, fish, and shellfish utilize this GDE unit on an annual or seasonal basis. The GDE Unit also contains designated critical habitat for western snowy plover (71 acres), Chinook salmon (12 acres), coho salmon (3 acres), steelhead (3 acres), and tidewater goby (21 acres).

3.2.6 MIGR

The ERVB supports habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish. As discussed above, the lower Eel and Van Duzen rivers experience elevated water temperatures during the summer and early fall months, which significantly limits the amount of cold water habitat suitable for rearing special-status fish species. As such, these reaches are primarily used by adult and juvenile salmonids and other special-status fish species as migratory corridors for adult and juvenile life history stages.

Upstream spawning migration of adult salmon and steelhead generally begins in the fall but may be inhibited by shallow riffles until there is enough flow to allow passage (Figure 8). Chinook salmon enter the Eel River in August or early September. Steelhead also begin showing in September, followed by coho salmon generally appearing in October. A review of migration timing and riffle depth data collected from 2010 to 2020 (Stillwater Sciences 2011-2021a) showed that upstream migration by adult Chinook salmon in the Lower Eel River during the early fall is blocked by riffle depths 0.4 ft or less and inhibited by riffles that are 0.5–0.6 ft deep. Adult

Chinook salmon have generally been observed in the pool at the confluence of the Eel/Van Duzen rivers when riffle depths met or exceeded 0.7 ft deep. In addition, for most years, entry by adult anadromous salmonids into the Van Duzen River is blocked by a dry reach at the mouth of the river until there is enough runoff to breach the barrier.

Depth of water over riffles is dependent on flow, but also on riffle morphology, which can change from year to year depending on the previous winter’s high flow characteristics. In general, long oblique riffles will have shallower depths than those that have a narrower wetted cross-section. For any given flow, riffle depths will vary within a reach. For example, riffle ME-1 (first riffle downstream of the mouth of the Van Duzen River; narrow) tends to be deeper than ME-4 (downstream end of 12th Street pool; narrow to oblique), which in turn is deeper than ME-6, which is near the Boxcars (near Highway 101 southbound Mainstreet Fortuna exit; oblique) (Figure 9). The degree to which groundwater management affects critical riffle depths will be explored in the final GSP.

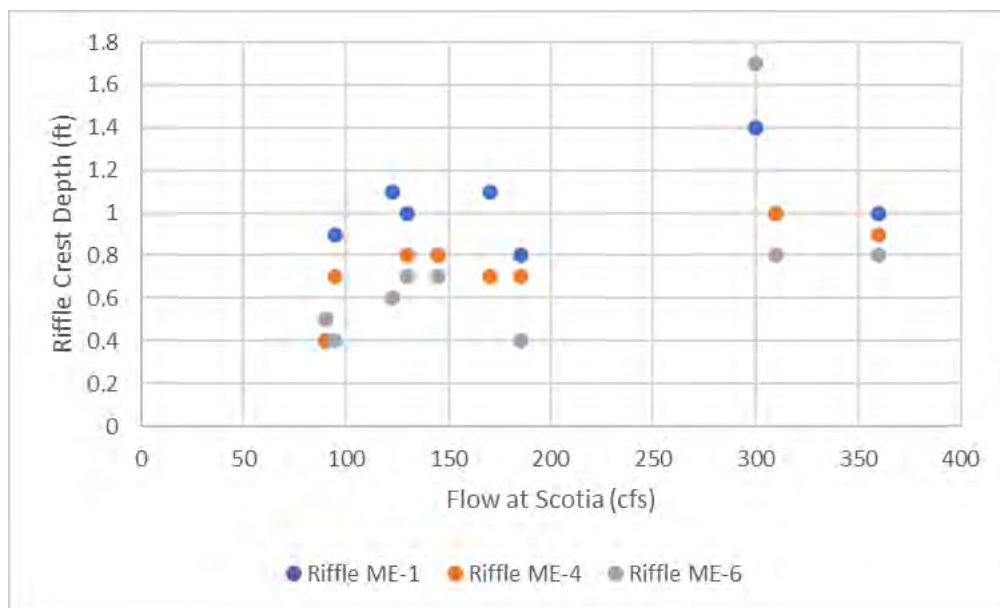


Figure 9. Riffle crest depths at selected riffle locations and flows, 2010–2020

Downstream migration by salmon and steelhead smolts occurs during late winter, spring, and early summer, when river flows are relatively high. The body depth of smolts is about 0.1 ft, which allows for relatively unencumbered passage over riffles and other shallow locations. However, low flows experienced during dry water years reduces the relatively high turbidity levels that afford smolts protection from predators.

Upstream migration by longfin smelt typically runs from the late fall and winter with spawning occurring in February through April over sandy or gravel substrate. Larvae hatch in about 40 days and are moved downstream to estuaries by high flows, but may also spend considerable time in freshwater. These upstream and downstream migration periods tend to occur outside of the agricultural groundwater extraction season and when Lower Eel River flows are relatively high. Therefore, migration by longfin smelt may not be limited by flow unless the rains are late in arriving.

Adult Northern DPS green sturgeon generally return to spawn in rivers in late winter through early summer and spawn every two to six years, with spawning intervals of three to four years being the most common. Some adult Northern DPS sturgeon move back downstream to the estuary and ocean soon after spawning when river flows are still elevated by snowmelt, but others have been observed to hold in the river until the fall when temperatures decrease and flows increase with precipitation (McCovey 2011).

Juvenile green sturgeon in the mainstem Eel River were trapped by CDFG in May through September in 1967 and 1968 during periodic downstream migrant trapping at McCann and Fort Seward (Puckett 1976). The timing corresponds to the general downstream juvenile migration that occurs primarily during summer through fall (Emmett et al. 1991 Allen et al. 2009, as cited in Moyle et al. 2018).

In general, juvenile and adult fish species that migrate through the ERVB during the summer and fall months could be affected by groundwater management (Table 8). Those that migrate during the late fall through spring would likely experience minimal groundwater management effects due to the relatively high flows that occur during those seasons.

Table 8. Fish migration timing and potential for groundwater management effects

Species	Juvenile migration timing	Juveniles potentially affected by groundwater management (Yes/No)	Adult migration timing	Adults potentially affected by groundwater management (Yes/No)
Chinook salmon	Spring to early summer	No	Late summer and fall	Yes
Coho salmon	Spring	No	Fall	Yes
Steelhead	Spring to early summer; late fall	Late fall only	Fall and winter	Yes
Longfin smelt	Winter to spring	No	Late fall to winter	No
Green sturgeon	Summer to fall	Yes	Late winter to early summer	Yes

3.2.7 REC-1

Attributes associated with REC-1 include swimming, wading, skin and scuba diving, and fishing. Recreational use of Eel River is limited, largely because there are very few access points. However, the public can access the Middle Eel River GDE Unit through East Ferry Road east of Ferndale, which connects to a web of four-wheel drive roads that run along the west bank of the river between the mouth of the Van Duzen River and Fernbridge. Swimming, wading, skin and scuba diving, and fishing are not necessarily tied to flow levels, but can be influenced by other factors.

County (Swimmers Delight and Pamplin Grove) and State (Grizzley Creek Redwoods) parks are present at the upstream end of the Van Duzen River and Tributaries GDE Unit. These parks provide public access for swimming, wading, and fishing activities.

Swimming, wading, skin, and scuba diving within the Middle Eel River GDE unit occur on a more limited basis during the summer and fall seasons due to the presence of “swimmer’s itch,” which develops through skin contact with a waterborne parasite that lives in shoreside algae. In addition, REC-1 activities are dependent on blue-green algae growth, which has increased in recent years spurred by a combination of upstream nutrient loading from land use, low flows, and warm weather. Accidental or purposeful ingestion of algae-laden water can result in illness or death of an individual. This has led to the County issuing warnings regarding contact recreation in the ERVB and upstream areas (CDFW 2014).

Principle recreational use during the fall, winter, and spring comprises recreational fishing for salmon and steelhead. In general, salmon and steelhead fishing occurs when the fall flows increase, allowing fish passage over downriver riffles. Fishing is not allowed after October 1, however, until flows are high enough to lift the CDFW-regulated low flow closure, which is set at 350 cfs for the Eel River and 150 cfs for the Van Duzen River.

3.2.8 REC-2

Attributes associated with REC-2 include picnicking, sunbathing, hiking, boating, hunting, sightseeing, and aesthetic enjoyment. Most of these activities (picnicking, sunbathing, hiking, hunting, sightseeing, and aesthetic enjoyment) are not related to flow levels in the river.

Much of the land bordering the Upper Eel and Middle Eel GDE units are private properties with limited public access, though the public can access the Middle Eel River GDE Unit through East Ferry Road, which connects to a web of four-wheel drive roads that run along the west bank of the river. In addition, drift boaters may be able to take out at the confluence of the Eel and Van Duzen rivers through access provided by Eureka Ready Mix. Paddle boarders also use the Middle Eel River GDE Unit, some of whom monitor salmon migration patterns in the fall as part of a citizens monitoring program started by the ERRP.

Boating in the ERVB is generally tied to flow levels in the rivers but can occur any time of year. Different types of watercraft require different minimum depths to allow for unobstructed passage. For example, a shallow-draft kayak may only require 0.4 ft of depth while a loaded drift boat would need more water to pass a shallow riffle.

The Intertidal Zone and Tributaries GDE Unit is frequently used by boaters, sightseers, and waterfowl hunters who access the river via the existing recreational boat ramp on the Lower Eel River at Pedrazzini Park, near Loleta.

Much of the Van Duzen River and Tributaries GDE Unit within the ERVB is bordered by private land, which limits access by the public. Residents adjacent to the river are able to enjoy its recreational benefits. There is a gated access point for hikers located underneath the north side of the Highway 101 bridge crossing the Van Duzen River. County (Swimmers Delight and Pamplin Grove) and State (Grizzly Creek Redwoods) parks are present at the upstream end of the GDE unit. These parks provide public access for picnicking, sunbathing, hiking, boating, sightseeing, and aesthetic enjoyment. Hunting is not allowed.

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Surface Water Discharge Measurements Tech Memo
09-23-2020 to 12-21-2020
(TM-10)

Surface Water Discharge Measurements Tech Memo 09-23-2020 to 12-21-2020

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Project: Eel River Groundwater Assessment

Client: Humboldt County, GHD

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Summary

Thomas Gast & Associates Environmental Consultants (TGAEC) collected streamflow and stage measurements at three locations in 2020 in the Eel River Basin. Streamflow was measured manually and with the Acoustic Doppler Current Profiler (ADCP) during three monitoring events. Level loggers were installed to collect continuous stage data at two of the three locations (R-2 and R-5). SHN maintains a level logger at a third site (R-3). This task will support development of the water budget and calibration of the surface water portion of the hydrologic model.

The locations of the streamflow measurements were chosen to best inform the hydrologic modeling. The primary interest will be summer/fall low flow period and transition to the winter wet season. The measurements occurred during the late summer/fall of 2020. Additional loggers and calibration flows will be installed and conducted in 2021. Water level transducers and barometer loggers installed for the 2020 measurement season will remain in operation for the wet season and summer/fall of 2021. Temperature and conductivity are important water quality parameters. Temperature was recorded by the level loggers and TGAEC collected conductivity data at the discharge sites. Conductivity and water temperature can help determine areas of GW inflow to the surface water. This technical memorandum details the measurements and presents the rating curves for the sites R-2 and R-5.

A site reconnaissance trip was conducted by Thomas Gast, Jason Buck (SHN), and Mindi Curran (SHN) on September 9, 2020 during which the calibration flow discharge sites and level logger sites were established.

Monitoring Locations

Level Loggers and Discharge Sites

River stage was continuously monitored throughout the 2020 low flow season using three water level data loggers (Table 1; Figure 1). These devices are combination pressure transducer-data logger. R-3 was installed in 2017 and is maintained by SHN. Two additional HOBO U20-I4 water level loggers and one barometric pressure recorder were installed by TGAEC on the east bank, downstream of the existing device. The barometric pressure recorder provides the necessary compensation data to accurately calculate the depth of water above the in-stream level loggers.

Each of the installed devices continuously measures water level and water temperature at 15-minute intervals. The barometric pressure logger continuously measures atmospheric pressure and air temperature at 15-minute intervals.



Tech Memo – Eel River Surface Water Discharge Measurements 2020

At the time of installation, elevation surveys were conducted to measure the relative elevations of water level loggers, water surfaces, and stage of zero flow (SZF) at each monitoring location, and all associated benchmarks. Subsequently, a CRTN-corrected GNSS Survey Antenna was used to collect true elevations. To ensure the accuracy of stage data, TGAEC downloaded data from R-1 and R-2 and performed elevation surveys of the water surface during each flow measurement site visit.

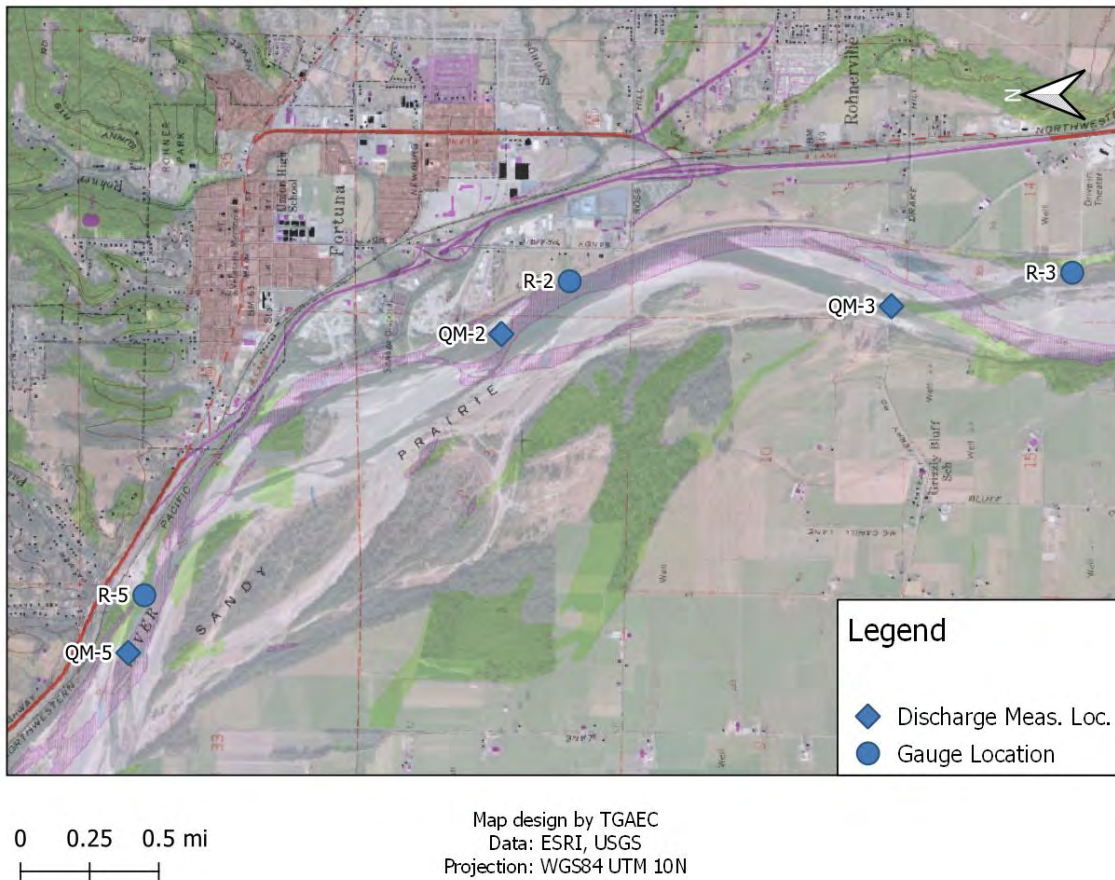


Figure 1. Location map of stream gauges and discharge measurements. Basemap imagery is not representative of streamflow conditions at the time of survey.

Results

Detailed reports of each calibration flow are included in the Attachments. Water quality parameters (temperature, dissolve oxygen, and conductivity) are reported in those field reports.

Calibration Flows

The low and middle calibration flows were measured with calibrated USGS cup style mini or AA current meters. The high flow was measured with a manned vessel and the ADCP. The calibration flows along with concurrent USGS gage readings are tabulated in Table 1. Note that during changing flows that there will be a time difference between the times a flow pulse reaches each location. This is particularly pertinent for the high flow measurement when a sharp flow pulse occurred in the Van Duzen River. The high calibration measurements were taken near the peak of the pulse at those sites; however, the flow was receding at the USGS gage at the same time. The Van Duzen River was disconnected on the surface at the confluence during the low calibration flow.

Table 1. Calibration flows and USGS Gage readings from the same time. Note that flows were changing during the middle and high flows and that there is travel time for water to reach each location.

<i>Discharge Measurement Locations</i>	<i>Time</i>	<i>Measured Discharge (cfs)</i>	<i>USGS Scotia Discharge (cfs)</i> 11477000	<i>USGS Van Duzen Discharge (cfs)</i> 11478500	<i>Sum USGS (cfs)</i>
Low Flow 9/23/2020					
QM-5	12:50	39.4	60.9	6.75	67.65
QM -2	16:20	33.1	60.9	6.75	67.65
Low Flow 9/25/2020					
QM -3	14:20	38.5	60.9	7.21	68.11
Middle Flow 11/16/2020					
QM -5	8:37	139.9	149	32.8	181.8
QM -2	10:37	144.2	147	31.7	178.7
QM -3	14:00	153.4	159	31.7	190.7
High Flow 12/14/2020					
QM -5	11:38	1235.47	623	501	1124
QM -2	12:52	1563.2	650	458	1108
QM -3	13:11	1596.97	657	453	1110

Surveyed Elevations

RTK Survey

TGAEC completed a survey of benchmarks and water surface elevations at each of the gauging sites (Table 2). Each point was measured using a Hemisphere S321 RTK GNSS antenna connected to the California Real Time Network (CRTN), utilizing station P160 at Hydesville. Data for each position was collected using the average value of 300 points recorded over a 5-minute period.



Table 2. Collected positional data from RTK survey

<i>Gauge Site</i>	<i>Meas.</i>	<i>Time</i>	<i>Latitude</i> ¹	<i>Longitude</i> ¹	<i>Elevation (m)</i> ²
R-2	BM1	13:15	40.58073892	-124.1567164	6.44
	BM3	13:07	40.58077255	-124.1565612	12.13
	WS ³	13:23	40.58067829	-124.1566954	5.37
R-3	BM	14:01	40.554774	-124.1553519	16.92
	WS ³	14:09	40.55545276	-124.1559563	7.05
R-5	BM2	10:36	40.60304516	-124.178862	4.66
	WS ³	10:50	40.60302669	-124.1788315	2.83

Notes: ¹ NAD83 horizontal datum, ² NAVD88 vertical datum, ³ water surface

Rating Curves

R-2

The rating equation for R-2 is Equation 1 and Figure 2, where Q is the discharge. The Stage is the water surface elevation (ft) corrected to true elevation and 17.082 is the true elevation of the stage of zero flow (SZF) in feet.

Equation 1. R-2 Rating Equation $Q = 507.124 * (Stage - 17.082)^{1.956}$

The standard error is 0.097% and R Squared is 1.0000.



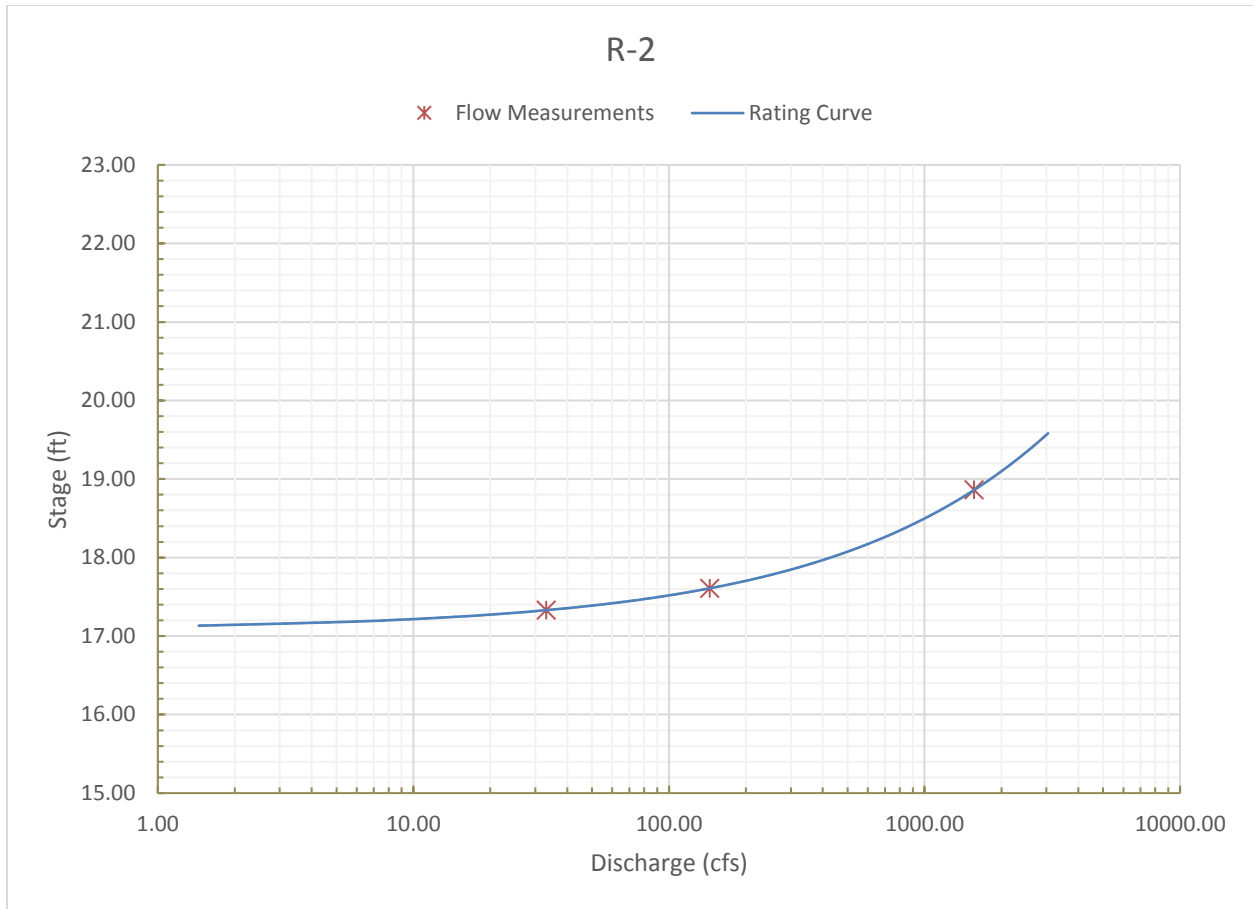


Figure 2. Rating curve for R-2.

The rating curve for R2 will be different above the highest measured flow since a side channel at the hydraulic control became active and will influence the SZF at higher discharge. Normal wintertime movement of the gravel in the channel will require recalibration of the stage/discharge relationship.

R-5

The rating equation for R-5 is Equation 2 and Figure 3, where Q is the discharge. The Stage is the water surface elevation (ft) corrected to true elevation and 8.482 is true elevation of the SZF in feet.

Equation 2. R-5 rating equation. $Q = 221.301 * (Stage - 8.482)^{2.277}$

The standard error is 0.002% and the R Squared is 1.0000.



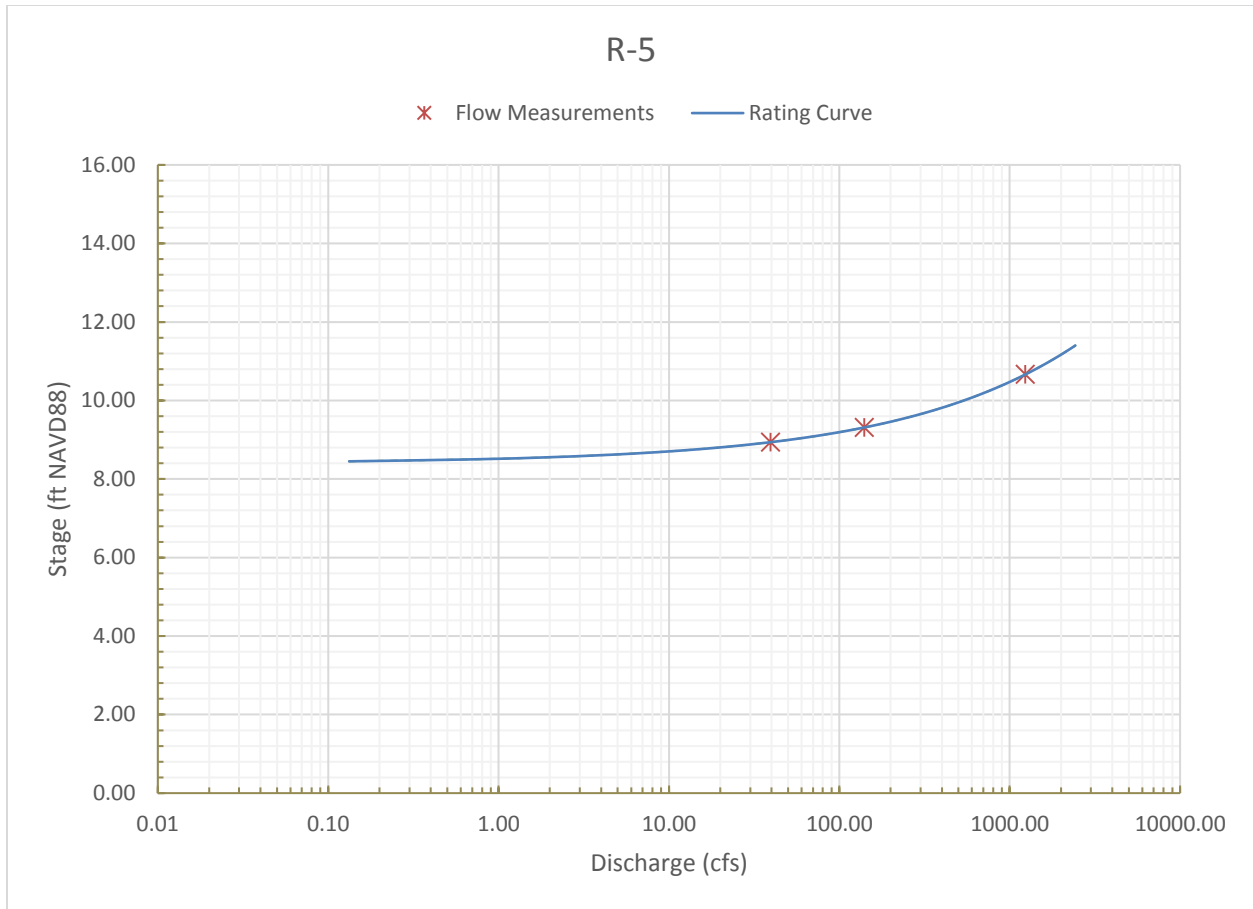


Figure 3. Rating curve for R-5.

The rating curve for R-5 will be better than R-2 at higher flows since there is no opportunity for a side channel to form in the control. The useful high range of this rating curve will be approximately 2.5 times the high calibration flow (approximately 3000 cfs). Normal wintertime movement of the gravel in the channel will require recalibration of the stage/discharge relationship.

Attachment A: Excel file of R-5 Stage and Discharge

Attachment B: Excel file of R-2 Stage and Discharge

Attachment C: Excel file comparing R-2 and R-5

Attachment D: Field Reports of Calibration Flows

**Raw data (Attachments A, B, and C) are available on the Humboldt County Groundwater website:
<https://humboldt.gov/2820/Eel-River-Valley-Groundwater-Basin-Resou>**



Surface Water Measurements – Field Report 09-23-2020/09-25-2020

Memo # and Date: 09/28/2020

Project: Eel River Groundwater Assessment

Client: Humboldt County, GHD

Office: GHD
718 3rd St
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Summary

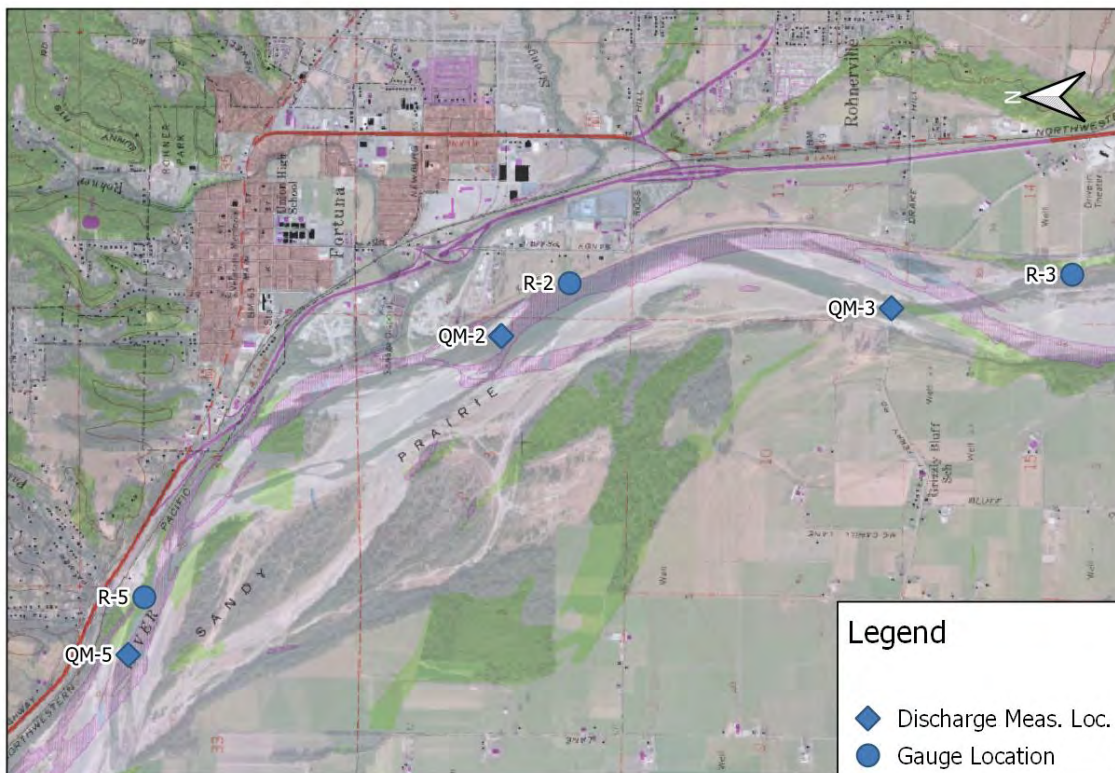
Dates: 23 September 2020 and 25 September 2020

Personnel: Tom Gast and Edward Davis

Objectives:

- Installation of two HOBO pressure transducer/data loggers in Eel River
- Installation of one HOBO pressure transducer/data logger as barometer
- Level survey of pressure transducer/data loggers, water surface elevations, and associated benchmarks
- Streamflow measurement at each measurement site
- Conductivity measurements at each measurement site

Gauge Installations



0 0.25 0.5 mi
|-----|-----|

Map design by TGAEC
Data: ESRI, USGS
Projection: WGS84 UTM 10N

Figure 1. Location map of stream gauges and discharge measurements. Basemap imagery not representative of streamflow conditions at time of survey.



Field Report – Eel River SW Measurements

Two HOBO pressure transducer/data loggers were installed in the Eel River at two gauging sites, R-5 and R-2 (Figure 1; Table 1). The locations of the loggers were determined at a previous site reconnaissance visit on 9 September 2020.

Table 1. Approximate coordinates of gauge installations

Gauge	Latitude	Longitude
R-5	40.6030000	-124.1786917
R-2	40.5807694	-124.1568222

R-5

R-5 is located on the north bank of the river and is accessed through the former gravel plant at the Palmer Boulevard exit on Highway 101 (Figure 3). The device is housed in a PVC housing anchored to a concrete slab with concrete anchor bolts and is camouflaged with paint and vegetation to deter opportunistic vandalism. Three benchmarks were established in this location: a blaze orange spot on a rip-rap slab, the upstream top concrete anchor bolt, and a nail in the base of an alder tree upslope from the gauge.

Table 2. Level survey at R-5

Date: 9/23/2020		Level: TG			
Units: meters		Rod: ED			
STA	BS	FS	HI	EL	Note
BM3	0.091		100.091	100.000	Nail in tree
BM2		1.614		98.477	Spot on concrete slab
BM1		3.090		97.001	Upstream top anchor bolt
PT Bolt		3.918		96.173	
WSEL		3.580		96.511	
Level Loop					
BM2	0.403		98.880	98.477	
BM1		1.879		97.001	
Closure error (m)				0.000	

R-2

R-2 is located on the east bank of the river and is accessed from the Fortuna Riverwalk trail (Figure 8). The device is housed in a PVC housing secured to two tee posts with an additional tee post used as a horizontal reinforcement and is camouflaged with paint and hidden in vegetation to deter vandalism. The pressure transducer/data logger used for barometric



Field Report – Eel River SW Measurements

compensation is located in an alder tree near R-2, above the high-water mark. Three benchmarks were established in this location: the top of the tee-post holding the data logger housing, a blaze orange spot on a rip-rap boulder, and a blaze orange spot on a boulder upslope from the gauge.

Table 3. Level survey at R-2

Date: 9/23/2020			Level: TG		
Units: meters			Rod: ED		
STA	BS	FS	HI	EL	Note
BM1	6.018		106.018	100.000	Boulder spot
BM2		6.022		99.996	Top of fence post
BM3		0.329		105.689	Boulder
PT Bolt		7.400		98.618	
WSEL		7.162		98.856	
Level Loop					
BM3	0.393		106.082	105.689	
BM1		6.071		100.011	
		Closure error (m)		0.011	

Relative elevations of the pressure transducers, water surfaces, and benchmarks were measured using an auto-level and stadia survey (Table 3; Table 2). Future surveying with an RTK device will provide real elevations.

Discharge Measurements

Two discharge measurements were made on 23 September 2020: one below the R-5 gauge at QM-5 (Table 5; Figure 7) and one below the R-2 gauge at QM-2 (Table 6; Figure 12). The measurement at QM-3 (below R-3) was made on 25 September 2020 (Table 7; Figure 13). QM-3 was accessed via East Ferry Road in Fortuna. Velocities at QM-5 and QM-3 were made using a Gurley Mini-type current meter, and velocities at QM-2 were made using a Price AA-type current meter. All velocity calculations were made using the USGS standard rating equations.

River stage was stable for the duration of all three flow measurements. The streamflow measurement at QM-3 was made at a split channel and discharge was calculated as the sum of the flow in the main channel and the flow in side channel.

On 23 September, the streamflow at QM-5 was 39.42 cfs—6.33 cfs more than at QM-2, which had a streamflow of 33.09 cfs. On 25 September, streamflow at QM-3 was 38.50 cfs.



Field Report – Eel River SW Measurements

The nearest USGS stream gage (11477000) is located in Scotia, approximately 7.7 river miles upstream of R-3. On 23 September, the gage reported a discharge of 60.9 cfs (Figure 2). A rain event occurred on 24 September and a CoCoRaHS station located in Fortuna (CA-HM-94) recorded 0.19 in of rainfall. The Scotia gauge did not report a significant increase in streamflow resulting from this event. On 25 September, the Scotia gage reported a streamflow of 60.9 cfs at the time we made a measurement at QM-3.

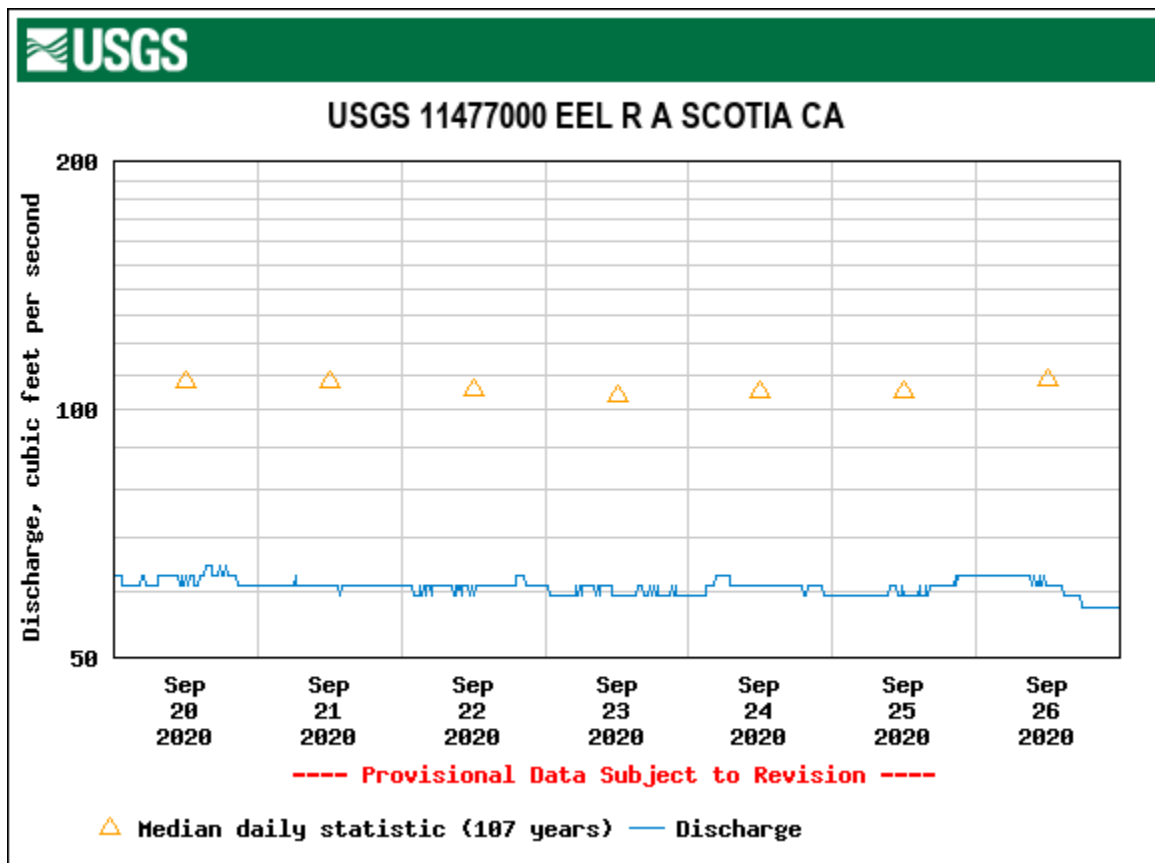


Figure 2. USGS hydrograph for Eel River at Scotia; 20 Sep 2020 – 26 Sep 2020

The most recent field measurement made by USGS at the Scotia gage was on 16 September 2020. Technicians measured a discharge of 57.1 cfs at a stage height of 8.01 ft and rated the quality of the measurement “fair.” Using the current stage-discharge rating, a stage height of 8.01 ft is equivalent to a discharge of 60.9 cfs.

Conductivity Measurements

Water quality measurements, including conductivity, were made at each site on 25 September (Table 4) using a YSI 2030 Pro handheld water quality meter. No significant differences were observed in conductivity between sites. The dissolved oxygen sensor was calibrated twice. The high DO was likely due to algal growth in the river and sunshine. R-5 and R-3 were sampled in

Field Report – Eel River SW Measurements

moving water, while R-2 was in still water at the logger which explains the difference in water temperature.

Table 4. Water quality measurements by site

Parameter	R-5	R-2	R-3
Time	11:00	12:55	14:30
Temperature (deg. C)	21.4	24.2	22.0
Dissolved O2 (mg/L)	11.50	11.91	10.76
Dissolved O2 (% sat.)	130.2	142.1	123.0
Conductivity ($\mu\text{S}/\text{cm}$)	253.9	255.7	252.5
Specific Cond. ($\mu\text{S}/\text{cm}$)	272.6	259.5	268.0

Site Photos

R-5



Figure 3. Gauge in housing at R-5. Additional vegetation was added later for increased camouflage.

Field Report – Eel River SW Measurements



Figure 4. BM1 at R-5: upstream (left) anchor bolt



Figure 5. BM2 at R-5: blaze spot on concrete rip-rap



Field Report – Eel River SW Measurements



Figure 6. BM3 at R-5: nail in base of alder



Figure 7. Streamflow measurement at QM-5

R-2



Figure 8. Gauge in housing at R-2



Figure 9. Barometric pressure data logger installed in alder tree



Figure 10. BM2 at R-2: blaze spot on boulder



Figure 11. BM3 at R-2: blaze spot on boulder

Field Report – Eel River SW Measurements



Figure 12. Streamflow measurement at QM-2

R-3



Figure 13. Streamflow measurement at QM-3



Appendix 1

Discharge Measurements

Table 5. Discharge measurement and calculation for R-5

Station	Depth (ft)	Rev.	Time (s)	Velocity (ft/s)	Cell Width (ft)	Q (cfs)
6	WE					
7	0.2	9	43.28	0.231	2.5	0.115
11	0.3	14	41.6	0.354	4	0.425
15	0.35	24	41.47	0.587	4	0.822
19	0.6	34	41.41	0.820	3	1.476
21	0.6	34	40.5	0.837	2	1.005
23	0.65	47	40.72	1.140	2	1.482
25	0.95	47	41.37	1.122	2	2.132
27	1	44	40.47	1.075	2	2.151
29	0.9	49	41.31	1.170	2	2.107
31	0.8	46	40.97	1.110	2	1.775
33	0.8	36	40.63	0.882	2	1.411
35	0.7	36	41.38	0.867	3	1.820
39	0.8	21	41.43	0.518	4	1.658
43	0.65	26	41.38	0.635	4	1.650
47	0.5	33	41.03	0.804	4	1.607
51	0.6	26	41.19	0.637	4	1.530
55	0.75	25	41.31	0.612	4	1.837
59	0.65	37	40.94	0.899	4	2.338
63	0.65	42	42.5	0.980	4	2.549
67	0.65	29	40.63	0.717	4	1.863
71	0.7	32	41.19	0.777	4	2.177
75	0.5	25	42.13	0.601	4	1.202
79	0.5	22	43.57	0.516	4	1.032
83	0.4	24	43.19	0.565	4	0.904
87	0.45	16	40.88	0.407	4	0.733
91	0.3	9	43.5	0.230	4	0.276
95	0.3	11	43.85	0.272	4	0.327
99	0.2	19	48.38	0.408	4	0.327
103	0.2	10	45.72	0.241	4	0.193
107	0.15	20	41.29	0.496	4	0.298
111	0.15	14	43.78	0.338	4	0.203
115	we					
Total Q						39.424



Field Report – Eel River SW Measurements

Table 6. Discharge measurement and calculation for R-2

Station	Depth (ft)	Rev.	Time (s)	Velocity (ft/s)	Cell Width (ft)	Q (cfs)
2	WE					
4	0.2	1.25	43.06	0.082	2	0.033
6	0.4	0.5	40	0.045	2	0.036
8	0.7	1.25	41.24	0.085	2	0.118
10	0.9	1	41.59	0.071	2	0.127
12	1.1	1	40.9	0.072	2	0.158
14	1.3	5	45.8	0.258	1.5	0.504
15	1.4	7	43.06	0.376	1	0.527
16	1.5	13	42.85	0.687	1	1.030
17	1.5	22	41.34	1.191	1	1.787
18	1.6	30	41.3	1.619	1	2.591
19	1.6	35	40.84	1.907	0.75	2.289
19.5	1.7	33	41.5	1.771	0.5	1.505
20	1.8	37	41.16	2.000	0.5	1.800
20.5	1.8	37	41.06	2.005	0.5	1.804
21	1.8	32	41.3	1.726	0.75	2.330
22	1.8	23	40.59	1.267	1	2.281
23	1.8	20	42.44	1.057	1	1.902
24	1.8	20	42.87	1.046	1	1.884
25	1.7	20	41.47	1.081	1	1.838
26	1.55	21	42.06	1.119	1	1.734
27	1.55	20	42.37	1.059	1	1.641
28	1.45	18	40.69	0.993	1	1.440
29	1.3	18	43	0.941	1	1.223
30	1.2	18	42.53	0.951	1	1.141
31	1.1	11	44.19	0.567	1	0.623
32	0.9	8	41.7	0.441	1	0.397
33	0.6	8	48.1	0.385	1	0.231
34	0.4	4	40.88	0.234	1.25	0.117
35.5	WE					
Total Q						33.090



Field Report – Eel River SW Measurements

Table 7. Discharge measurement and calculation for R-3

Station	Depth (ft)	Rev.	Time (s)	Velocity (ft/s)	Cell Width (ft)	Q (cfs)
Main Channel						
4.5	WE					
6	0.4	2	43.28	0.076	1.75	0.053
8	0.7	11	41.72	0.284	2	0.398
10	1	10	41.75	0.261	2	0.522
12	1.1	11	43.57	0.274	2	0.602
14	1.15	18	42.5	0.438	2	1.007
16	1.25	17	42.13	0.419	2	1.047
18	1.3	21	41.97	0.512	2	1.331
20	1.45	19	42.7	0.459	2	1.330
22	1.5	21	41.44	0.518	2	1.554
24	1.5	23	41.8	0.560	2	1.679
26	1.6	25	42.13	0.601	2	1.924
28	1.6	24	40.4	0.602	2	1.926
30	1.6	28	42.4	0.665	2	2.129
32	1.7	27	42.15	0.646	2	2.198
34	1.7	27	42.38	0.643	2	2.186
36	1.65	30	40.6	0.741	2	2.445
38	1.6	32	42.15	0.760	2	2.433
40	1.6	29	43.25	0.675	2	2.161
42	1.55	28	40.97	0.688	2	2.131
44	1.6	23	42.97	0.545	2	1.745
46	1.6	23	42	0.557	2	1.783
48	1.5	16	43.02	0.388	2	1.165
50	0.85	11	42.3	0.281	3	0.716
54	0.7	8	44.97	0.202	4	0.566
58	0.6	7	43.05	0.187	4	0.450
62	0.9	2.5	45.09	0.084	4	0.304
66	0.85	0.75	41.87	0.048	4	0.165
70	0.3	0.75	41.87	0.048	4	0.058
74	0.85	0.75	41.87	0.048	5	0.206
80	0.8	0.75	41.87	0.048	6	0.232
86	0.5	0.01	40	0.031	7	0.110
94	0.4	5	44.59	0.139	5	0.278
96	0.5	12	41.38	0.310	2	0.310
98	0.3	13	41.19	0.334	2	0.201
100	0.4	4	43.6	0.119	2	0.095



Field Report – Eel River SW Measurements

102	0.45	3	48.65	0.090	2	0.081
104	0.5	5	52.75	0.122	1.625	0.099
105.25	WE					
				Main Channel Q		37.619
Side Channel						
5.25						
6	0.4	15	41.12	0.38	0.875	0.134
7	0.4	27	40.69	0.67	1	0.267
8	0.4	21	40.46	0.53	1	0.212
9	0.3	18	40.89	0.45	1	0.136
10	0.25	7	43.09	0.19	1	0.047
11	0.2	17	40.6	0.43	1	0.087
12	WE					
				Side Channel Q		0.882
Total Q (cfs)						38.501



Surface Water Measurements – Field Report 11/16/2020

Memo # and Date: 12/4/2020

Project: Eel River Groundwater Assessment

Client: Humboldt County, GHD

Office: GHD
718 3rd St
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Submitted by: Thomas Gast & Associates Environmental Consultants
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Summary

Dates: 16 November 2020

Personnel: Tom Gast and Edward Davis

Objectives:

- Streamflow measurement at each measurement site
- Conductivity measurements at each measurement site
- RTK survey of benchmarks and water surface elevations
- Download data loggers at R-5 and R-2

Discharge Measurements

Discharge measurements were made below each gauging location on 16 November 2020 (Table 1; Figures 3, 4, 6). Velocities were measured using a Price AA-type current meter and the USGS standard rating equation. River stage at each location was stable for the duration of the measurement, but the stage in Eel River rose slowly throughout the day.

Table 1. Eel River discharge on 16 November 2020

<i>Gauge Site</i>	<i>Time</i>	<i>Measured Discharge (cfs)</i>	<i>USGS Scotia Discharge (cfs)</i>
R-5	8:37	139.9	149
R-2	10:37	144.2	147
R-3	14:00	153.4	159

The nearest USGS stream gage (11477000) is located in Scotia, approximately 7.7 river miles upstream of R-3 (Figure 1). Measured discharge at R-2 and R-3 do not vary greatly from the reported values from the Scotia gauge (Table 1). Discharge at R-5 varied by a greater amount (9.1 cfs), but this may be explained by its greater distance from the USGS gauge.



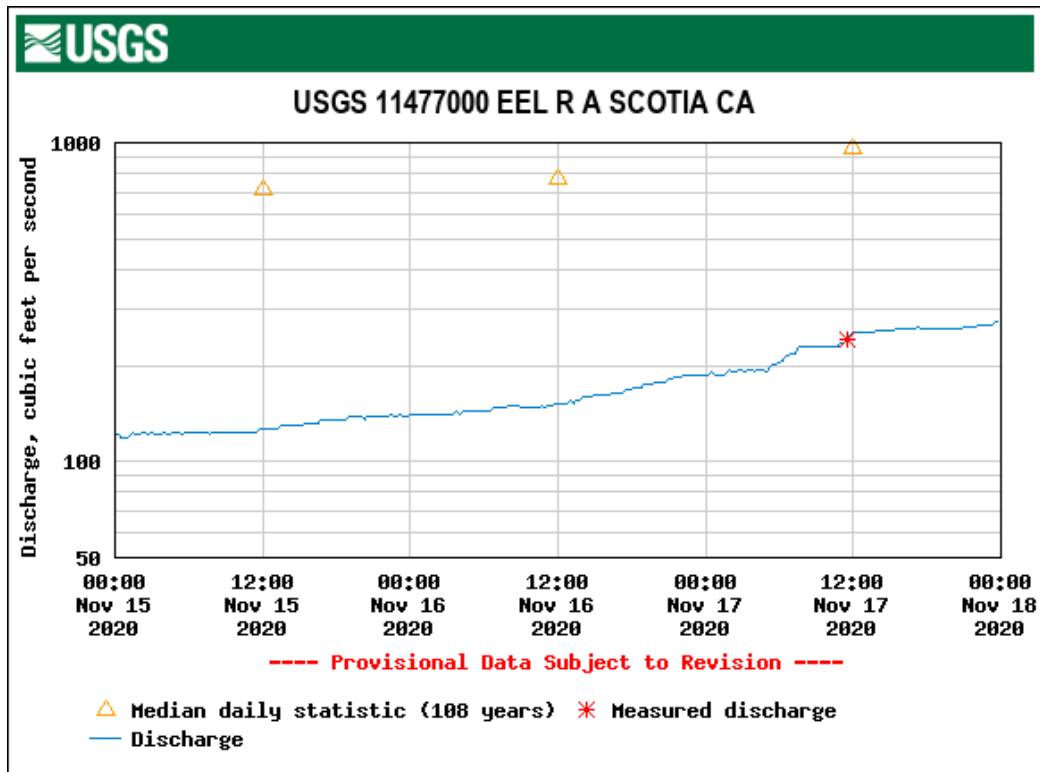


Figure 1. USGS hydrograph for Eel River at Scotia; 15 Nov 2020 – 17 Nov 2020

Conductivity Measurements

Water quality measurements, including conductivity, were made at each site on 16 November (Table 2) using a YSI 2030 Pro handheld water quality meter. No significant differences were observed in conductivity between sites. The dissolved oxygen sensor was calibrated prior to measurement. The high DO was likely due to algal growth in the river and sunshine. All water quality data was collected in fast moving water.

Table 2. Water quality measurements by site

Parameter	R-5	R-2	R-3
Time	09:30	11:40	15:00
Temperature (deg. C)	13.2	14.0	14.2
Dissolved O2 (mg/L)	10.41	10.97	11.7
Dissolved O2 (% sat.)	99.3	106.4	114.1
Conductivity (µS/cm)	225.2	230.4	229.5
Specific Cond. (µS/cm)	290.7	291.1	289.1

RTK Survey

TGAEC completed a survey of benchmarks and water surface elevations at each of the gauging sites (Table 3). Each point was measured using a Hemisphere S321 RTK GNSS antenna connected to the California Real Time Network (CRTN), utilizing station P160 at Hydesville. Data for each position was collected using the average value of 300 points recorded over a 5-minute period.

Table 3. Collected positional data from RTK survey

<i>Gauge Site</i>	<i>Meas.</i>	<i>Time</i>	<i>Latitude</i> ¹	<i>Longitude</i> ¹	<i>Elevation (m)</i> ²
R-2	BM1	13:15	40.58073892	-124.1567164	6.839
	BM3	13:07	40.58077255	-124.1565612	12.529
	WS ³	13:23	40.58067829	-124.1566954	5.775
R-3	BM	14:01	40.554774	-124.1553519	17.318
	WS ³	14:09	40.55545276	-124.1559563	7.452
R-5	BM2	10:36	40.60304516	-124.178862	5.065
	WS ³	10:50	40.60302669	-124.1788315	3.236

Notes: ¹ NAD83 horizontal datum, ² NAVD88 vertical datum, ³ water surface

Preliminary Stage Data

RTK surveyed water surface elevations were paired with stage data downloaded from the installed HOBO data loggers to calculate a time series of water surface elevations at each gauging site. To compare values between sites, elevations were normalized by subtracting the minimum value at each gauge from all values at that gauge so that the minimum value is set to zero (Figure 2).

The river stage shows some diurnal variation, which is more pronounced prior to 15 October. Small diurnal variations are seen throughout the record—generally ± 1 cm each day. Over the entire record, the difference between the smallest and largest stage values is 9.7 cm at R-2 and 13.1 cm at R-5.

Values at R-5 were examined for potential tidal influence. Stage values from the USGS gauge at Fernbridge were converted to NAVD88 elevations and compared to water elevation values at R-5. During the king tides of 15-16 November 2020, river stage at Fernbridge remained approx. 0.75 meters below the elevations at R-5, suggesting that the gauging site is free of tidal influence.



Field Report – Eel River SW Measurements

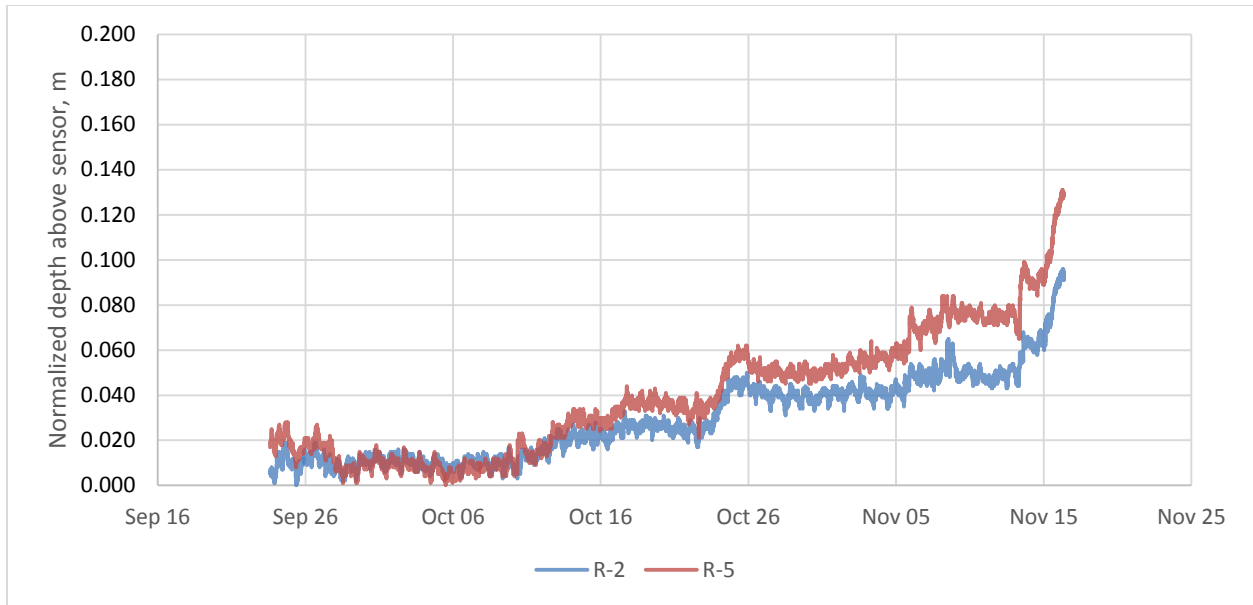


Figure 2. Normalized stage data at R-2 and R-5 from 23 Sep 2020 - 16 Nov 2020

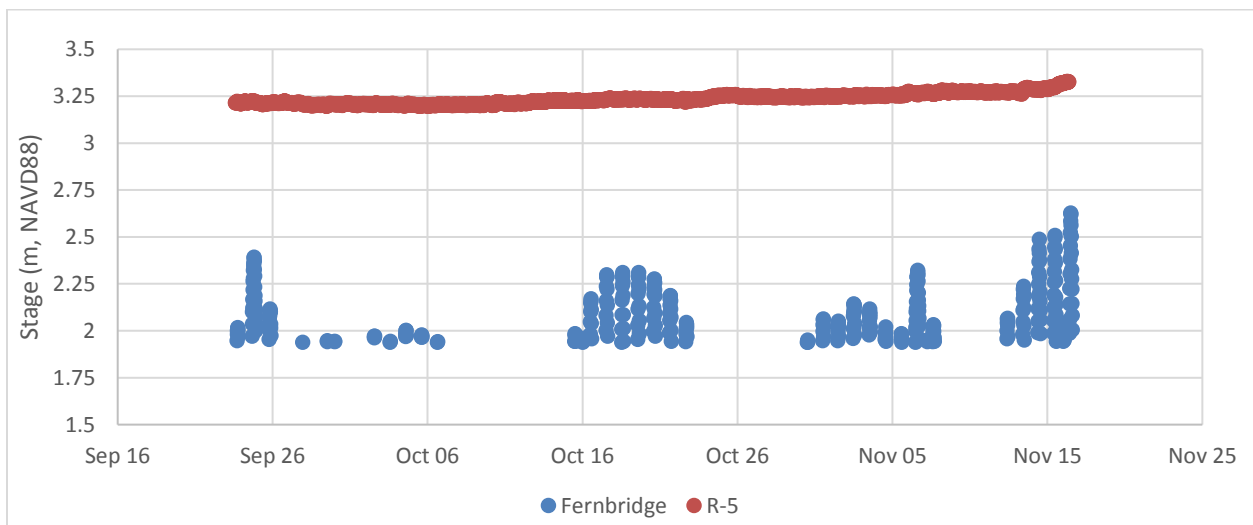


Figure 3. Stage data from Fernbridge (USGS 11479560) converted to NAVD88 elevations



Site Photos



Figure 4. Discharge measurement below R-5

Field Report – Eel River SW Measurements



Figure 5. Discharge measurement below R-2



Figure 6. RTK survey of water surface elevation at R-2

Field Report – Eel River SW Measurements



Figure 7. Discharge measurement below R-3

Surface Water Measurements – Field Report 12/14/2020

Memo # and Date: 12/16/2020

Project: Eel River Groundwater Assessment

Client: Humboldt County, GHD

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Summary

Dates: 16 December 2020

Personnel: Tom Gast and Edward Davis

Objectives:

- Streamflow measurement at each measurement site
- Conductivity measurements at each measurement site
- Download data loggers at R-5 and R-2

Discharge Measurements

Discharge measurements were made below each gauging location on 14 December 2020 (Table 1). Measurements were made with a TRDI RiverPro ADCP mounted to a boat. River stage was unstable and rose rapidly over the course of the day.

Table 1. Eel River discharge on 14 December 2020

<i>Gauge Site</i>	<i>Time</i>	<i>Measured Discharge (cfs)</i>	<i>USGS Scotia Discharge (cfs)</i>	<i>USGS Van Duzen Discharge (cfs)</i>	<i>Sum USGS (cfs)</i>
R-5	11:38	1235.47	623	501	1124
R-2	12:52	1563.20	650	458	1108
R-3	13:11	1596.97	657	453	1110

The nearest USGS stream gage (11477000) is located in Scotia, approximately 7.7 river miles upstream of R-3 (Figure 1). Measured discharge at all 3 locations are greater than the sum of the reported discharge from USGS. The USGS stream gage on the Van Duzen River (11478500) is located upstream from Yager Creek, which may explain some of the difference in the measured and reported discharges (Figure 2).



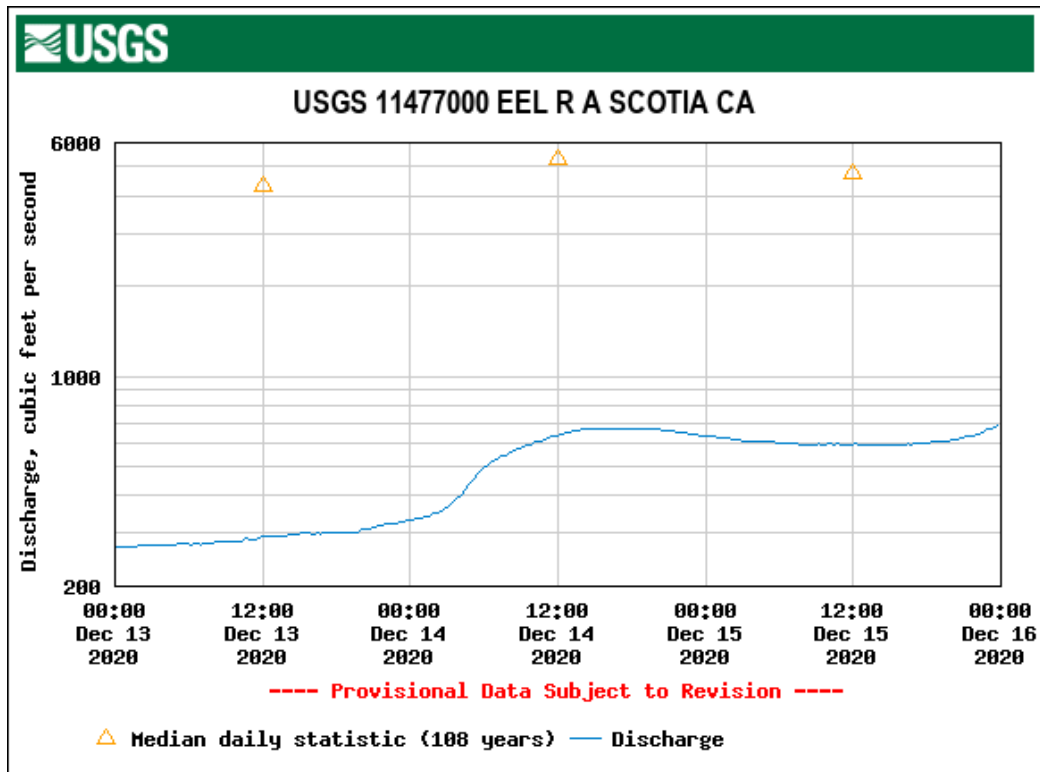


Figure 1. USGS hydrograph for Eel River at Scotia; 13 Dec 2020 – 16 Dec 2020

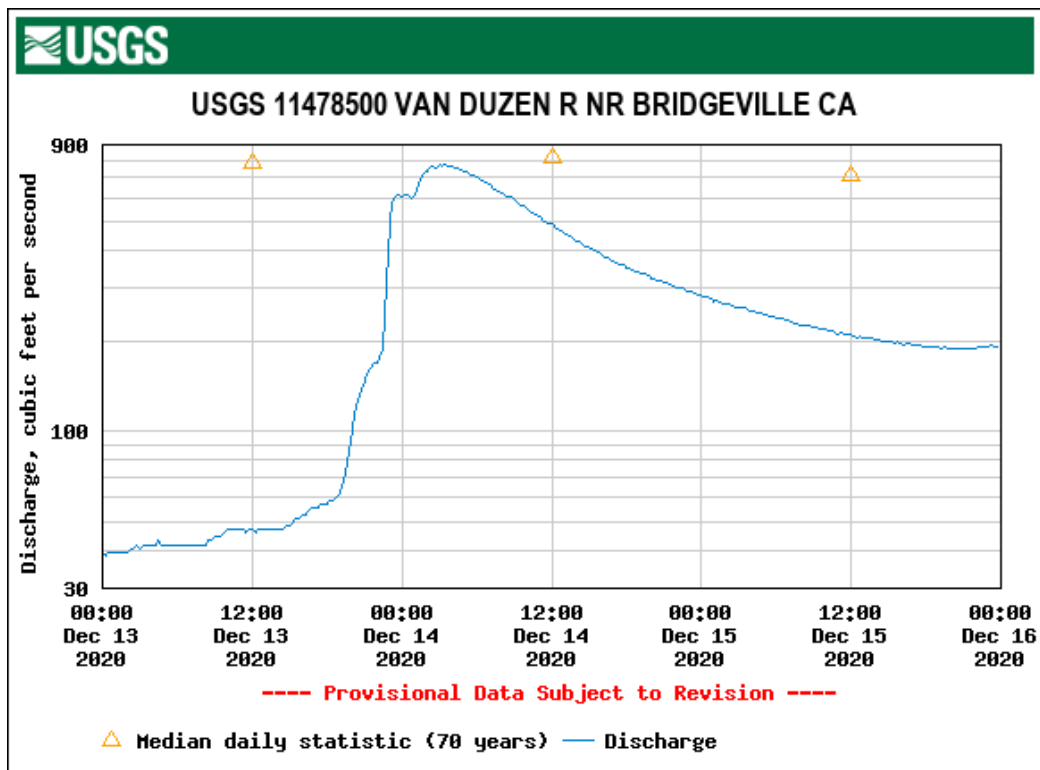


Figure 2. USGS hydrograph for Van Duzen River near Bridgeville; 13 Dec 2020 – 16 Dec 2020

Conductivity Measurements

Water quality measurements, including conductivity, were made at each site on 14 December (Table 2) using a YSI 2030 Pro handheld water quality meter. No significant differences were observed in conductivity between sites. The dissolved oxygen sensor was calibrated prior to measurement. The high DO was likely due to algal growth in the river and sunshine. All water quality data was collected in fast moving water.

Table 2. Water quality measurements by site

Parameter	R-5	R-2	R-3
Time	09:45	12:15	
Temperature (deg. C)	10.2	9.9	
Dissolved O2 (mg/L)	12.11	12.21	DATA
Dissolved O2 (% sat.)	107.9	107.9	MISSING
Conductivity ($\mu\text{S}/\text{cm}$)	212.2	198.1	
Specific Cond. ($\mu\text{S}/\text{cm}$)	296.0	278.6	



**Surface Water Monitoring in the Eel River Valley Basin
(TM-11)**

Technical Memorandum

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1. Introduction

1.1 Summary

This technical memorandum describes surface water elevation and discharge data within the Eel River Valley Basin (ERVB) collected by Thomas Gast & Associated Environmental Consultants (TGAEC) to assist the development of the Eel River Valley Groundwater Sustainability Plan (GSP).

A total of ten streamflow monitoring sites were established in Eel River and Van Duzen River, with continuous records beginning in Fall 2020 for three sites and June 2021 for all remaining sites. Discharge was calculated for each site using continuous water level data records and routine discharge measurements. This data will support the development of a water budget and calibration of hydrologic models in the ERVB.

1.2 Surface Water Elevation Monitoring Locations

In the Fall of 2020, two water level loggers were deployed in Eel River to record continuous water level records at sites R-2, and R-5 by TGAEC. SHN has maintained water level logger R-3 since 2016. In addition to these stations, seven more sites were established in June of 2021 by TGAEC in Eel River and Van Duzen River (Figure 1, Appendix A; Table 1, Appendix B). All sites established by TGAEC were equipped with HOBO U20L-04 pressure transducer data loggers to record water levels every 15-minutes. Three locations (R-2, SW-2, and SW-7) were also equipped with barometric pressure transducers that were deployed in the air to measure atmospheric pressure. This barometric pressure record was later used to compensate data to determine the depth of water above the in-stream loggers. All loggers except R-2 and R-5 (maintained by TGAEC) and R-3 were removed in the end of November 2021.

1.3 Discharge Measurement Locations

Calibration discharge measurements were conducted near the logger, generally at the hydraulic control for the pool in which the level loggers were installed (Figure 2, Appendix A). The exception was ERB SW-5 where the discharge was conducted upstream of the logger due to the distance to the downstream control.

2. Methods

2.1 Field Procedures

Water level loggers were housed in camouflaged PVC, mounted to a studded T-post, and were driven into the stream bed in a stable location. In June 2021, an elevation survey was conducted at all sites using an auto-level to determine the relative elevations of the water level loggers, benchmarks, and the stage of zero flow. This elevation survey was used in performing quality control on collected data, verifying that the sensor position was stable over the entire collection period.

At the end of the data collection period (November 2021), an additional survey was conducted of the water level logger, water surface elevation, and established benchmarks using a Hemisphere S321 Real-Time Kinematic (RTK) GNSS antenna connected to the California Real Time Network (CRTN). The location of each benchmark was determined using the average of 180 collected points and water surface elevation was averaged from ten points. This survey was used to determine precise locations of sites in NAD83 horizontal datum (Table 1, Appendix B) and elevations in the NAVD88 vertical datum (Table 3, Appendix B). Due to poor reception at sites SW-2 and SW-3, an RTK survey of benchmarks and water level was not completed. An arbitrary elevation was used to develop water surface records at these sites.

Calibration discharge measurements were conducted over the data collection period, with a focus on low-flow conditions during the summer of 2021. A total of three discharge measurements were collected at each site and were used to develop rating curves for each monitoring location. Discharge was measured using either a USGS Mini Current Meter, USGS Cup Style AA Current Meter, or an Acoustic Doppler Current Profiler (ADCP), depending on stream size and flow conditions.

2.2 Data Processing Procedures

Raw data collected from in-stream pressure transducers were processed in HOBOWare Pro version 3.7.23 to determine water depth over the observation period. Data was processed using the Barometric Compensation Assistant in HOBOWare Pro and nearby barometric loggers (Table 2, Appendix B). Using RTK-survey data, water depth records were converted into water surface elevations and reported in NAVD88 vertical datum.

Three discharge measurements at each site were used to develop a rating curve to determine the relationship between stage and discharge (Table 4, Appendix B). Over the 2021 data collection period, discharge was measured once at the beginning of the low-flow season (June 4th, 10th, 11th), in the middle (July 21st – 23rd), and near peak low-flow conditions (August 18th, 25th – 26th). Discharge was measured using a USGS Mini Current Meter, a Cup Style AA meter, or using an ADCP, depending on what flow conditions allowed. Quality control was performed on all discharge measurements by comparing to nearby USGS streamflow gauges.

3. Results

3.1 RTK Survey

A survey of benchmarks and water surface elevations in November 2021 (Table 3, Appendix B) were used to develop a continuous record of water surface elevations at each site (Attachments 1 -10). Of the sites surveyed, the lowest-elevation site was R-5, located on the Eel River near Palmer Blvd, at which the water surface elevation was at 11.065 ft. on November 24, 2021. The highest water surface elevation was at SW-4 (Van Duzen River near Fischer Rd), which was at 90.332 ft. on November 29, 2021.

3.2 Calibration Flows

Discharge measurements conducted at each monitoring site that were used to create rating curves are summarized in Table 4 (Appendix B). Measurements were compared with reported discharge values at nearby USGS streamflow stations # 11477000 (Eel at Scotia) and # 11478500 (Van Duzen near Bridgeville).

3.3 Rating Curves

Table 5 (Appendix B) summarizes rating curves that were used to determine discharge records at each monitoring location for the 2021 low-flow period. Rating curves relate water level observations to discharge and are expressed as:

Equation 1. Generalized Rating Equation.

$$Q = C(stage - offset)^n$$

Where Q is discharge (cfs) and stage is the observed water level (ft.). C and n are rating curve constants. The offset is a datum correction or “stage at zero flow” (SZF). Table 5 summarizes each component of the rating equation, but it is recommended to use the values with complete significant digits (provided in Attachments 1-10) to calculate discharge values, as rounding may alter estimates. Rating curves are generally valid between 0.4 of the low calibration flows to 2.5 times the high calibration flow. Confidence in the relationship of stage to discharge diminishes outside of this range.

3.4 Streamflow Discharge

Using respective rating curves, discharge was calculated for each monitoring site (Attachments 1-10). Water level records began at most sites in June 2021, at the onset of the low-flow season. A series of precipitation events in late October caused a sharp increase in streamflow. Based on the confidence interval of each rating curve, discharge records end at the onset of these high-flow events when the discharge values exceed 2.5 times the highest calibration flow at each site. High flows likely change stream geomorphology and alter the hydraulic control, making the low-flow rating curve unreliable after large storm events.

A summary of discharge at each monitoring site are presented in Table 6 (Appendix B). Over the 2021 low-flow season, QM-2 (Yager Creek) was the only site that reached a flow of 0 cfs. Van Duzen River near Pamplin Grove (QM-3) came close to drying, with a minimum discharge value of 0.09 cfs on Sept. 17th. Most sites experienced minimum discharge levels in mid- to late-September.

A spatial examination of minimum discharge values observed over the season indicate a decrease in streamflow with distance downstream. For example, site QM-6 (Eel River at Scotia) had a minimum discharge value of 20.46 cfs over the observed season. The furthest-

downstream site, R-5, had a minimum discharge value at 3.76 cfs, with a general decreasing trend moving from upstream to downstream. A sharp drop in minimum surface discharge values occurs near QM-5 (Eel River upstream of the River Lodge Pool), where minimum discharge observations drop from 16.05 cfs at QM-3 to 3.90 cfs at QM-5. These observations can be used in addition with other data to provide insight on the water budget and support the development of the Eel River Valley GSP.

Appendix A: Figures

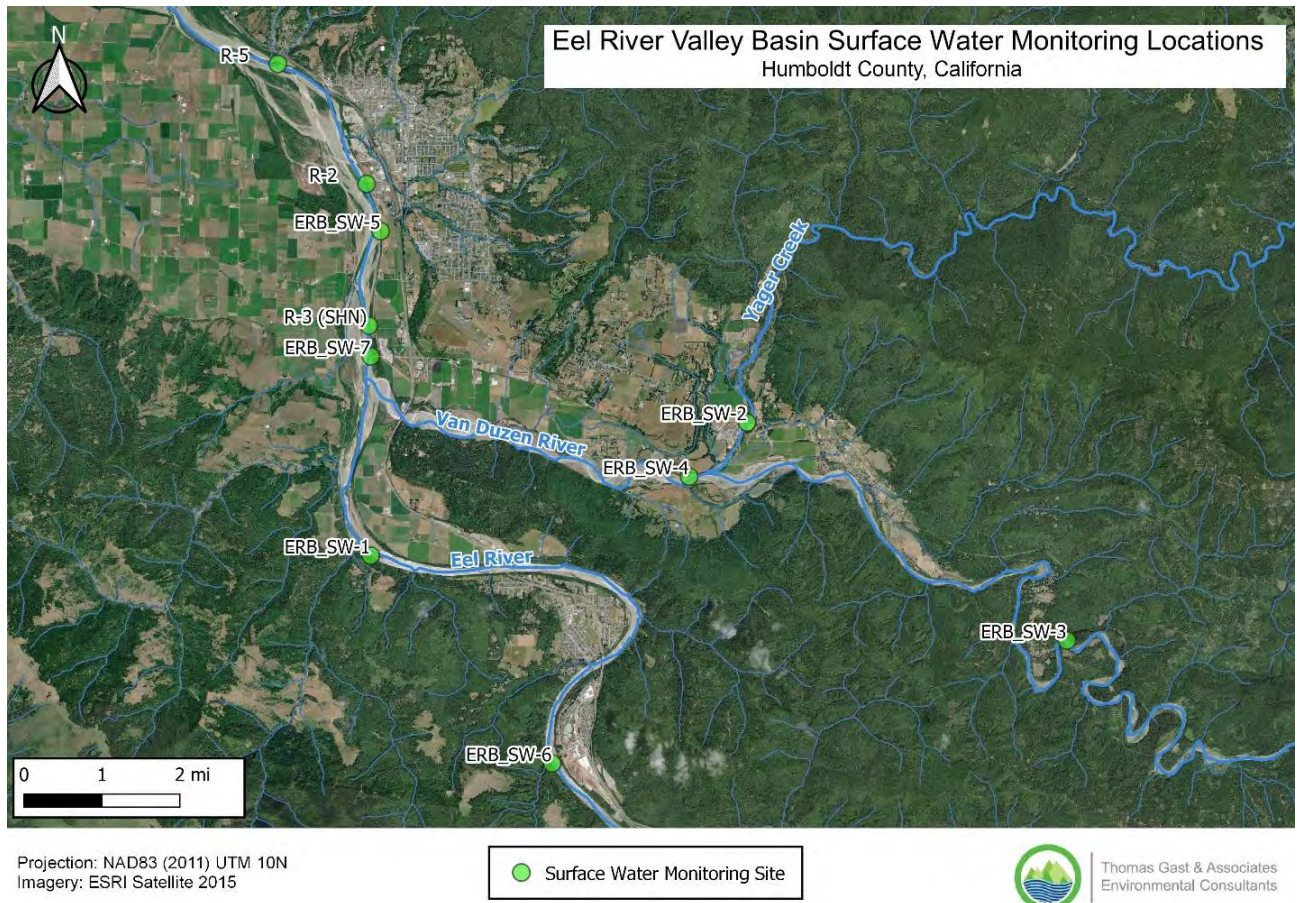


Figure 1: Water level monitoring locations established in the ERVB

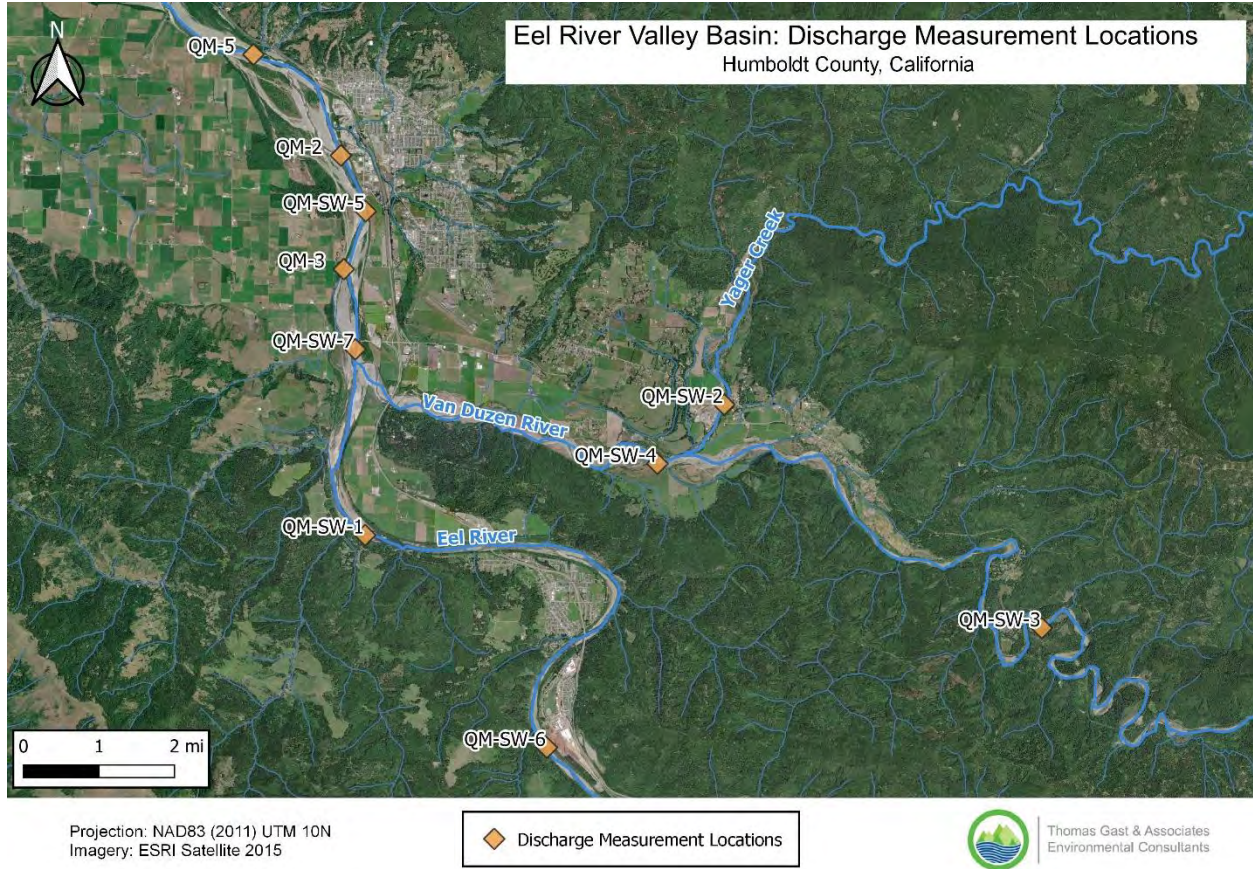


Figure 2: Discharge measurement locations established in the ERVB

Appendix B: Tables

Table 1: Latitude, longitude, and descriptions of surface water monitoring sites. Latitude and longitude reported in NAD83 horizontal datum

Site ID	Latitude	Longitude	Site Description
R-5	40.60302669	-124.1788315	Eel near Palmer Blvd
R-2	40.58067829	-124.1566954	River Lodge Pool
R-3	40.55545276	-124.1559563	Eel near E Ferry Rd
ERB_SW-1	40.5116449	-124.1545231	Eel near Metropolitan Rd
ERB_SW-2	40.537298	-124.0629661	Yager Creek
ERB_SW-3	40.49742499	-123.9846423	Pamplin Grove
ERB_SW-4	40.5270873	-124.0771716	Van Duzen River near Fischer Rd
ERB_SW-5	40.5720043	-124.1531466	Head of River Lodge Pool
ERB_SW-6	40.47343476	-124.1096759	Eel River near Scotia
ERB_SW-7	40.54869029	-124.1551344	Eel River downstream of Van Duzen

Table 2: Location of barometric data logger used to determine water depth at each surface water monitoring location. Data from monitoring site R-3 are collected by SHN

Surface Water Monitoring Site	Barometer Location
R-5	R-2
R-2	R-2
R-3	N/A
ERB_SW-1	SW-7
ERB_SW-2	SW-2
ERB_SW-3	SW-2
ERB_SW-4	SW-2
ERB_SW-5	R-2
ERB_SW-6	SW-7
ERB_SW-7	SW-7

Table 3: Water surface elevations measured by RTK in November 2021

Surface Water Monitoring Site	Description	Water Surface Elevation, NAVD88 (ft.)	Date / Time (GMT-07:00)
R-5	Eel near Palmer Blvd	11.065	24 Nov 2021 / 11:44
R-2	Eel at River Lodge Pool	19.264	24 Nov 2021 / 12:21
ERB_SW-5	Head of River Lodge Pool	19.183	24 Nov 2021 / 12:50
ERB_SW-7	Eel River downstream of Van Duzen	24.853	24 Nov 2021 / 13:38
ERB_SW-1	Eel near Metropolitan Rd	37.363	24 Nov 2021 / 14:12
ERB_SW-6	Eel River near Scotia	51.931	24 Nov 2021 / 15:26
ERB_SW-4	Van Duzen River near Fischer Rd	90.332	29 Nov 2021 / 12:12