

COMISION NACIONAL DEL AGUA
SUBDIRECCION GENERAL TECNICA
GERENCIA REGIONAL LERMA-SANTIAGO-PACIFICO
SUBGERENCIA REGIONAL TECNICA

ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE M3
POR EL METODO DE SMITH

SUBCUENCA J1

AREA DE LA CUENCA EN KM2 = 349

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1942	465.3	25.29	0.0079	3.68	1.28
1943	554	33.06	0.0321	17.77	6.20
1944	443.6	26.56	0.0111	4.94	1.72
1945	283.3	14.54	0.0000	0.00	0.00
1946	334.3	19.39	0.0000	0.00	0.00
1947	492.2	27.86	0.0148	7.26	2.53
1948	438	25.37	0.0081	3.55	1.24
1949	304.3	16.31	0.0000	0.00	0.00
1950	311.2	16.83	0.0000	0.00	0.00
1951	464	26.14	0.0100	4.66	1.63
1952	372.2	21.04	0.0000	0.00	0.00
1953	440.8	32.47	0.0299	13.17	4.60
1954	391	22.40	0.0018	0.71	0.25
1955	413.2	24.62	0.0063	2.62	0.91
1956	391.7	23.68	0.0043	1.69	0.59
1957	362.4	22.05	0.0012	0.44	0.15
1958	757.4	48.39	0.1030	77.99	27.22
1959	486.3	29.72	0.0204	9.93	3.47
1960	272.9	15.53	0.0000	0.00	0.00
1961	353.5	19.00	0.0000	0.00	0.00
1962	358.6	19.88	0.0000	0.00	0.00
1963	266.3	24.37	0.0058	1.54	0.54
1964	392.5	52.42	0.1248	48.99	17.10
1965	506.7	32.37	0.0295	14.96	5.22
1966	475	45.57	0.0883	41.93	14.63
1967	688.9	45.61	0.0885	60.94	21.27
1968	489.1	29.84	0.0208	10.18	3.55
1969	324.9	19.29	0.0000	0.00	0.00
1970	616.8	106.67	0.4453	274.68	95.86
1971	550.7	33.19	0.0326	17.93	6.26
1972	453.6	25.60	0.0087	3.94	1.37
1973	596.2	36.27	0.0448	26.70	9.32
1974	414.5	24.52	0.0061	2.53	0.88
1975	437.2	27.39	0.0134	5.86	2.05
1976	738.8	100.53	0.4088	302.04	105.41
1977	360.8	20.32	0.0000	0.00	0.00
1978	401.2	36.72	0.0467	18.73	6.54
1979	295.9	17.15	0.0000	0.00	0.00
1980	366.5	32.60	0.0303	11.12	3.88
1981	334.9	26.20	0.0102	3.41	1.19
1982	315.7	25.44	0.0083	2.62	0.91
1983	441.2	72.34	0.2412	106.40	37.13
1984	516	31.41	0.0261	13.47	4.70
1985	444.9	26.76	0.0117	5.20	1.81
1986	462.1	27.58	0.0139	6.44	2.25
1987	429.9	25.66	0.0088	3.79	1.32
1988	520.6	57.52	0.1536	79.98	27.91
1989	362.3	21.82	0.0000	0.00	0.00
1990	601.4	38.20	0.0530	31.89	11.13
1991	741.3	51.11	0.1176	87.18	30.42
1992	560.5	39.97	0.0610	34.19	11.93
1993	381.5	22.07	0.0012	0.47	0.16
1994	495.7	29.46	0.0196	9.71	3.39
1995	430	25.89	0.0094	4.04	1.41
1996	379.9	21.51	0.0000	0.00	0.00
1997	404.7	23.42	0.0038	1.53	0.53
1998	435.7	24.82	0.0068	2.97	1.04
1999	0	0.00	0.0000	0.00	0.00
PROMEDIO	436.62	31.24	0.04	23.86	8.33

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SUBGERENCIA REGIONAL TECNICA

ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH

SUBCUENCA J2

AREA DE LA CUENCA EN KM2 =

2320

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1942	465.3	25.29	0.0079	3.68	8.54
1943	554	33.06	0.0321	17.77	41.23
1944	443.6	26.56	0.0111	4.94	11.47
1945	283.3	14.54	0.0000	0.00	0.00
1946	334.3	19.39	0.0000	0.00	0.00
1947	492.2	27.86	0.0148	7.26	16.85
1948	438	25.37	0.0081	3.55	8.24
1949	304.3	16.31	0.0000	0.00	0.00
1950	311.2	16.83	0.0000	0.00	0.00
1951	464	26.14	0.0100	4.66	10.81
1952	372.2	21.04	0.0000	0.00	0.00
1953	440.8	32.47	0.0299	13.17	30.56
1954	391	22.40	0.0018	0.71	1.64
1955	413.2	24.62	0.0063	2.62	6.08
1956	391.7	23.68	0.0043	1.69	3.91
1957	362.4	22.05	0.0012	0.44	1.01
1958	757.4	48.39	0.1030	77.99	180.94
1959	486.3	29.72	0.0204	9.93	23.05
1960	272.9	15.53	0.0000	0.00	0.00
1961	353.5	19.00	0.0000	0.00	0.00
1962	358.6	19.88	0.0000	0.00	0.00
1963	266.3	24.37	0.0058	1.54	3.58
1964	392.5	52.42	0.1248	48.99	113.65
1965	506.7	32.37	0.0295	14.96	34.71
1966	475	45.57	0.0883	41.93	97.27
1967	688.9	45.61	0.0885	60.94	141.39
1968	489.1	29.84	0.0208	10.18	23.62
1969	324.9	19.29	0.0000	0.00	0.00
1970	616.8	106.67	0.4453	274.68	637.25
1971	550.7	33.19	0.0326	17.93	41.59
1972	453.6	25.60	0.0087	3.94	9.14
1973	596.2	36.27	0.0448	26.70	61.94
1974	414.5	24.52	0.0061	2.53	5.88
1975	437.2	27.39	0.0134	5.86	13.60
1976	738.8	100.53	0.4088	302.04	700.73
1977	360.8	20.32	0.0000	0.00	0.00
1978	401.2	36.72	0.0467	18.73	43.45
1979	295.9	17.15	0.0000	0.00	0.00
1980	366.5	32.60	0.0303	11.12	25.80
1981	334.9	26.20	0.0102	3.41	7.92
1982	315.7	25.44	0.0083	2.62	6.07
1983	441.2	72.34	0.2412	106.40	246.85
1984	516	31.41	0.0261	13.47	31.25
1985	444.9	26.76	0.0117	5.20	12.05
1986	462.1	27.58	0.0139	6.44	14.95
1987	429.9	25.66	0.0088	3.79	8.80
1988	520.6	57.52	0.1536	79.98	185.56
1989	362.3	21.82	0.0000	0.00	0.00
1990	601.4	38.20	0.0530	31.89	73.99
1991	741.3	51.11	0.1176	87.18	202.25
1992	560.5	39.97	0.0610	34.19	79.33
1993	381.5	22.07	0.0012	0.47	1.09
1994	495.7	29.46	0.0196	9.71	22.53
1995	430	25.89	0.0094	4.04	9.36
1996	379.9	21.51	0.0000	0.00	0.00
1997	404.7	23.42	0.0038	1.53	3.54
1998	435.7	24.82	0.0068	2.97	6.89
1999	0	0.00	0.0000	0.00	0.00
PROMEDIO	436.62	31.24	0.04	23.86	55.35

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ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
 POR EL METODO DE SMITH

SUBCUENCA J3

AREA DE LA CUENCA EN KM2 = 3160

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1949	442.9	23.78	0.0045	2.00	6.32
1950	350.8	18.85	0.0000	0.00	0.00
1951	609.7	32.71	0.0308	18.76	59.28
1952	503.2	45.18	0.0863	43.40	137.16
1953	501.3	27.77	0.0145	7.26	22.94
1954	633.2	75.43	0.2597	164.43	519.59
1955	440.7	23.99	0.0050	2.19	6.91
1956	529.3	29.57	0.0199	10.56	33.35
1957	370.5	19.21	0.0000	0.00	0.00
1958	774.5	43.74	0.0790	61.22	193.45
1959	558.5	30.70	0.0236	13.21	41.73
1960	403.3	22.09	0.0013	0.51	1.61
1961	435.2	23.01	0.0030	1.29	4.06
1962	505	27.33	0.0132	6.68	21.10
1963	711.8	42.21	0.0715	50.93	160.92
1964	540.7	29.88	0.0210	11.33	35.81
1965	669.6	38.40	0.0539	36.12	114.13
1966	710.8	40.53	0.0636	45.20	142.83
1967	772.6	45.63	0.0885	68.41	216.17
1968	707.1	41.32	0.0673	47.59	150.38
1969	412.4	23.57	0.0041	1.68	5.32
1970	655.1	38.11	0.0527	34.50	109.02
1971	779.3	46.98	0.0955	74.46	235.28
1972	422.3	23.08	0.0031	1.31	4.13
1973	627.3	34.94	0.0393	24.67	77.94
1974	520.6	30.80	0.0240	12.50	39.50
1975	593.1	34.64	0.0381	22.61	71.46
1976	641.7	38.42	0.0540	34.68	109.58
1977	682.9	39.36	0.0582	39.78	125.69
1978	592.2	33.73	0.0346	20.50	64.77
1979	410.4	23.17	0.0033	1.34	4.25
1980	631	70.86	0.2323	146.59	463.23
1981	490.2	42.82	0.0745	36.54	115.48
1982	398.2	26.00	0.0097	3.86	12.18
1983	502.9	28.28	0.0160	8.03	25.38
1984	626.3	37.38	0.0495	30.98	97.89
1985	576.7	33.16	0.0324	18.70	59.11
1986	725.8	43.28	0.0768	55.73	176.11
1987	585.5	34.21	0.0364	21.33	67.42
1988	561.5	35.62	0.0421	23.63	74.67
1989	366	21.10	0.0000	0.00	0.00
1990	672.9	40.75	0.0646	43.49	137.44
1991	587.6	36.85	0.0472	27.74	87.65
1992	669.4	42.37	0.0723	48.42	153.01
1993	273.9	14.65	0.0000	0.00	0.00
1994	437.2	24.57	0.0062	2.72	8.60
1995	513.3	29.56	0.0199	10.23	32.31
1996	425.5	23.09	0.0031	1.33	4.20
1997	454.4	23.71	0.0044	1.98	6.26
1998	373.7	19.75	0.0000	0.00	0.00
1999		0.00	0.0000	0.00	0.00
PROMEDIO	547.60	32.87	0.04	26.28	83.05

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA J4

AREA DE LA CUENCA EN KM2 = **2675**

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1970	492.3	29.08	0.0184	9.07	24.25
1971	703.4	39.36	0.0582	40.96	109.58
1972	608	32.99	0.0318	19.33	51.71
1973	603.8	34.65	0.0382	23.06	61.70
1974	548.7	31.06	0.0249	13.65	36.52
1975	648.9	37.75	0.0511	33.16	88.69
1976	712.2	43.78	0.0792	56.44	150.98
1977	832.9	49.40	0.1083	90.23	241.37
1978	739.2	43.20	0.0764	56.46	151.03
1979	579.2	65.88	0.2026	117.36	313.95
1980	613.8	51.08	0.1175	72.09	192.85
1981	510.8	32.22	0.0290	14.81	39.61
1982	547.2	31.13	0.0251	13.74	36.76
1983	583.3	33.75	0.0347	20.24	54.14
1984	736.6	42.99	0.0754	55.51	148.50
1985	546	29.88	0.0209	11.43	30.59
1986	890.9	50.80	0.1159	103.27	276.25
1987	636.9	36.72	0.0467	29.73	79.54
1988	790.6	45.09	0.0858	67.86	181.52
1989	543	30.78	0.0239	13.00	34.78
1990	930.2	56.04	0.1452	135.03	361.22
1991	659.1	37.94	0.0519	34.21	91.52
1992	775	46.65	0.0938	72.70	194.46
1993	566.8	31.63	0.0269	15.24	40.77
1994	559.2	31.03	0.0248	13.87	37.10
1995	582.6	32.46	0.0298	17.38	46.50
1996	581.3	31.25	0.0255	14.85	39.72
1997	562	30.13	0.0218	12.23	32.71
1998	653	115.26	0.4973	324.76	868.75
1999	0	0.00	0.0000	0.00	0.00
PROMEDIO	624.56	40.13	0.07	50.06	133.90

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA J5

AREA DE LA CUENCA EN KM2 =

17

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1971	1007.5	51.71	0.1209	121.79	2.07
1972	816.2	40.51	0.0635	51.84	0.88
1973	1119.5	59.41	0.1646	184.26	3.13
1974	721.6	35.89	0.0432	31.18	0.53
1975	870.8	45.52	0.0880	76.65	1.30
1976	786.7	40.00	0.0612	48.11	0.82
1977	824	40.93	0.0655	53.94	0.92
1978	941.7	47.93	0.1005	94.63	1.61
1979	673	33.24	0.0328	22.05	0.37
1980	948.9	48.20	0.1019	96.73	1.64
1981	1021.3	52.06	0.1228	125.44	2.13
1982	762.4	38.21	0.0531	40.47	0.69
1983	1003	50.97	0.1169	117.21	1.99
1984	878.3	45.06	0.0857	75.23	1.28
1985	815.4	40.55	0.0637	51.93	0.88
1986	902	44.89	0.0848	76.50	1.30
1987	1103.2	51.92	0.1221	134.68	2.29
1988	882.3	45.44	0.0876	77.28	1.31
1989	800.6	41.62	0.0687	55.04	0.94
1990	810.1	40.33	0.0627	50.77	0.86
1991	845	42.52	0.0731	61.76	1.05
1992	1092.3	59.95	0.1677	183.22	3.11
1993	733.3	36.38	0.0452	33.16	0.56
1994	668	32.81	0.0311	20.79	0.35
1995	684.3	36.44	0.0455	31.12	0.53
1996	835.5	42.56	0.0733	61.21	1.04
PROMEDIO	867.19	44.04	0.08	76.04	1.29

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA V1

AREA DE LA CUENCA EN KM2 =

1834

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1963	168	11.09	0.0000	0.00	0.00
1964	173.9	10.01	0.0000	0.00	0.00
1965	507.7	31.13	0.0251	12.75	23.39
1966	634.4	39.56	0.0592	37.53	68.82
1967	518.4	31.71	0.0271	14.07	25.81
1968	447.6	26.99	0.0123	5.50	10.09
1969	178.9	9.68	0.0000	0.00	0.00
1971	682.5	42.50	0.0730	49.80	91.33
1972	341	18.76	0.0000	0.00	0.00
1973	531.1	33.26	0.0328	17.44	31.98
1974	223.2	12.70	0.0000	0.00	0.00
1975	333.9	20.68	0.0000	0.00	0.00
1976	474.9	30.76	0.0239	11.33	20.77
1977	185.8	9.90	0.0000	0.00	0.00
1978	359.1	21.32	0.0000	0.00	0.00
1979	307.9	19.13	0.0000	0.00	0.00
1980	94.6	5.43	0.0000	0.00	0.00
1981	251.4	15.46	0.0000	0.00	0.00
1982	217.3	11.96	0.0000	0.00	0.00
1983	495.4	29.76	0.0206	10.19	18.69
1984	262.5	15.61	0.0000	0.00	0.00
1985	332.2	19.10	0.0000	0.00	0.00
1986	452.5	26.03	0.0097	4.41	8.09
1987	318.5	18.36	0.0000	0.00	0.00
1988	473	28.04	0.0153	7.22	13.25
1989	364.7	21.09	0.0000	0.00	0.00
1990	470.8	27.54	0.0138	6.51	11.94
1991	712.5	46.27	0.0918	65.43	120.00
1992	553.3	37.25	0.0489	27.07	49.65
1993	312.9	17.23	0.0000	0.00	0.00
1994	396	22.35	0.0017	0.68	1.25
1995	321.9	18.15	0.0000	0.00	0.00
1996	293.5	16.37	0.0000	0.00	0.00
1997	285.9	16.00	0.0000	0.00	0.00
1998	301.1	17.90	0.0000	0.00	0.00
1999	0	0.00	0.0000	0.00	0.00
PROMEDIO	360.51	21.64	0.01	7.50	13.75

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ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH

SUBCUENCA V2

AREA DE LA CUENCA EN KM2 =

587

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1942	465.3	25.29	0.0079	3.68	2.16
1943	554	33.06	0.0321	17.77	10.43
1944	443.6	26.56	0.0111	4.94	2.90
1945	283.3	14.54	0.0000	0.00	0.00
1946	334.3	19.39	0.0000	0.00	0.00
1947	492.2	27.86	0.0148	7.26	4.26
1948	438	25.37	0.0081	3.55	2.08
1949	304.3	16.31	0.0000	0.00	0.00
1950	311.2	16.83	0.0000	0.00	0.00
1951	464	26.14	0.0100	4.66	2.74
1952	372.2	21.04	0.0000	0.00	0.00
1953	440.8	32.47	0.0299	13.17	7.73
1954	391	22.40	0.0018	0.71	0.42
1955	413.2	24.62	0.0063	2.62	1.54
1956	391.7	23.68	0.0043	1.69	0.99
1957	362.4	22.05	0.0012	0.44	0.26
1958	757.4	48.39	0.1030	77.99	45.78
1959	486.3	29.72	0.0204	9.93	5.83
1960	272.9	15.53	0.0000	0.00	0.00
1961	353.5	19.00	0.0000	0.00	0.00
1962	358.6	19.88	0.0000	0.00	0.00
1963	266.3	24.37	0.0058	1.54	0.91
1964	392.5	52.42	0.1248	48.99	28.76
1965	506.7	32.37	0.0295	14.96	8.78
1966	475	45.57	0.0883	41.93	24.61
1967	688.9	45.61	0.0885	60.94	35.77
1968	489.1	29.84	0.0208	10.18	5.98
1969	324.9	19.29	0.0000	0.00	0.00
1970	616.8	106.67	0.4453	274.68	161.24
1971	550.7	33.19	0.0326	17.93	10.52
1972	453.6	25.60	0.0087	3.94	2.31
1973	596.2	36.27	0.0448	26.70	15.67
1974	414.5	24.52	0.0061	2.53	1.49
1975	437.2	27.39	0.0134	5.86	3.44
1976	738.8	100.53	0.4088	302.04	177.30
1977	360.8	20.32	0.0000	0.00	0.00
1978	401.2	36.72	0.0467	18.73	10.99
1979	295.9	17.15	0.0000	0.00	0.00
1980	366.5	32.60	0.0303	11.12	6.53
1981	334.9	26.20	0.0102	3.41	2.00
1982	315.7	25.44	0.0083	2.62	1.54
1983	441.2	72.34	0.2412	106.40	62.46
1984	516	31.41	0.0261	13.47	7.91
1985	444.9	26.76	0.0117	5.20	3.05
1986	462.1	27.58	0.0139	6.44	3.78
1987	429.9	25.66	0.0088	3.79	2.23
1988	520.6	57.52	0.1536	79.98	46.95
1989	362.3	21.82	0.0000	0.00	0.00
1990	601.4	38.20	0.0530	31.89	18.72
1991	741.3	51.11	0.1176	87.18	51.17
1992	560.5	39.97	0.0610	34.19	20.07
1993	381.5	22.07	0.0012	0.47	0.28
1994	495.7	29.46	0.0196	9.71	5.70
1995	430	25.89	0.0094	4.04	2.37
1996	379.9	21.51	0.0000	0.00	0.00
1997	404.7	23.42	0.0038	1.53	0.90
1998	435.7	24.82	0.0068	2.97	1.74
1999	0	0.00	0.0000	0.00	0.00
PROMEDIO	436.62	31.24	0.04	23.86	14.00

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA V3

AREA DE LA CUENCA EN KM2 =

3109

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1979	106.50	6.87	0.0000	0.00	0.00
1980	165.50	9.04	0.0000	0.00	0.00
1981	280.00	15.98	0.0000	0.00	0.00
1982	289.00	16.03	0.0000	0.00	0.00
1983	506.50	28.33	0.0161	8.16	25.38
1984	409.70	23.24	0.0034	1.39	4.33
1985	524.00	30.87	0.0242	12.70	39.48
1986	499.10	29.15	0.0186	9.29	28.90
1987	413.50	24.18	0.0054	2.22	6.90
1988	82.50	4.37	0.0000	0.00	0.00
1989	223.00	11.99	0.0000	0.00	0.00
1990	52.80	2.95	0.0000	0.00	0.00
1991	771.00	49.56	0.1092	84.20	261.79
1992	594.70	40.40	0.0630	37.47	116.50
1993	307.00	16.26	0.0000	0.00	0.00
1994	317.80	16.89	0.0000	0.00	0.00
1995	377.00	20.27	0.0000	0.00	0.00
1996	416.00	22.57	0.0021	0.89	2.76
1997	391.50	20.77	0.0000	0.00	0.00
1998	249.50	12.65	0.0000	0.00	0.00
1999	55.00	2.64	0.0000	0.00	0.00
PROMEDIO	334.84	19.29	0.01	7.44	23.14

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA V4

AREA DE LA CUENCA EN KM2 =

2357

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIENTO ANUAL V	CP
1961	500.40	30.32	0.0224	11.20	26.39
1962	476.00	27.90	0.0149	7.07	16.68
1963	665.00	42.23	0.0717	47.67	112.36
1964	534.00	33.31	0.0330	17.63	41.54
1965	529.50	33.82	0.0350	18.51	43.63
1966	795.20	51.71	0.1209	96.16	226.65
1967	805.00	53.45	0.1305	105.08	247.68
1968	469.00	27.02	0.0124	5.81	13.69
1969	291.25	15.78	0.0000	0.00	0.00
1970	475.80	29.04	0.0183	8.69	20.49
1971	504.80	32.76	0.0310	15.63	36.83
1972	526.80	30.39	0.0226	11.92	28.09
1973	612.50	37.40	0.0496	30.36	71.57
1974	451.10	26.95	0.0122	5.50	12.96
1975	570.30	35.54	0.0418	23.83	56.16
1976	786.70	52.93	0.1277	100.45	236.76
1977	459.50	26.48	0.0109	5.02	11.84
1978	573.50	33.97	0.0355	20.37	48.02
1979	388.80	22.42	0.0019	0.72	1.70
1980	271.11	15.32	0.0000	0.00	0.00
1981	376.20	23.09	0.0031	1.17	2.76
1982	439.00	26.28	0.0104	4.57	10.77
1983	426.50	24.76	0.0067	2.84	6.71
1984	547.00	33.51	0.0338	18.47	43.52
1985	493.50	29.26	0.0190	9.35	22.05
1986	459.60	27.79	0.0145	6.69	15.76
1987	415.60	24.42	0.0059	2.45	5.77
PROMEDIO	512.73	31.40	0.03	21.38	50.38

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA V5

AREA DE LA CUENCA EN KM2 = **2791**

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1961	560.7	31.74	0.0273	15.29	42.68
1962	492.4	26.91	0.0121	5.94	16.59
1963	852.3	51.40	0.1192	101.58	283.50
1964	787.4	46.65	0.0938	73.86	206.13
1965	868.7	52.26	0.1239	107.66	300.48
1966	693.6	40.17	0.0619	42.96	119.90
1967	903.5	55.10	0.1399	126.36	352.67
1968	665	40.33	0.0627	41.69	116.35
1969	459.5	26.07	0.0099	4.53	12.65
1970	796.5	48.28	0.1024	81.54	227.57
1971	781.1	47.12	0.0963	75.19	209.86
1972	805	48.67	0.1044	84.08	234.67
1973	946.7	59.19	0.1633	154.61	431.51
1974	623.1	36.78	0.0469	29.24	81.61
1975	577.7	34.32	0.0369	21.30	59.46
1976	786.4	47.66	0.0991	77.91	217.43
1977	630.8	35.88	0.0432	27.23	75.99
1978	695	39.93	0.0608	42.28	118.01
1979	543.6	31.48	0.0264	14.33	39.98
1980	285.7	15.18	0.0000	0.00	0.00
1981	766.2	75.83	0.2621	200.79	560.39
1982	416.7	26.91	0.0121	5.04	14.05
1983	796.2	46.69	0.0940	74.88	208.98
1986	677.2	39.73	0.0599	40.59	113.28
1987	31.5	1.97	0.0000	0.00	0.00
PROMEDIO	657.70	40.25	0.07	57.95	161.75

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA V6

AREA DE LA CUENCA EN KM2 =

772

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1979	125.2	7.73	0.0000	0.00	0.00
1980	188.6	9.99	0.0000	0.00	0.00
1981	283.5	16.11	0.0000	0.00	0.00
1982	401	22.61	0.0022	0.88	0.68
1983	455.5	25.82	0.0092	4.21	3.25
1984	580	34.50	0.0376	21.80	16.83
1985	567	33.54	0.0339	19.22	14.83
1986	698.5	41.03	0.0659	46.05	35.55
1987	624.5	36.15	0.0443	27.66	21.35
1988	498.1	28.38	0.0163	8.10	6.25
1989	523.5	30.85	0.0242	12.65	9.76
1990	671.7	39.87	0.0606	40.67	31.40
1991	653	41.94	0.0703	45.88	35.42
1992	638	41.56	0.0685	43.68	33.72
1993	522.5	30.29	0.0223	11.65	8.99
1994	360.2	20.40	0.0000	0.00	0.00
1995	400.1	22.14	0.0014	0.54	0.42
1996	411.6	23.04	0.0030	1.24	0.96
1997	121.2	6.22	0.0000	0.00	0.00
1998	186.2	10.71	0.0000	0.00	0.00
1999	0	0.00	0.0000	0.00	0.00
PROMEDIO	424.28	24.90	0.02	13.53	10.45

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA V7

AREA DE LA CUENCA EN KM2 =

316

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1961	433.6	23.36	0.0036	1.58	0.50
1962	576.2	31.72	0.0272	15.66	4.95
1963	806.9	49.43	0.1085	87.56	27.67
1964	588.9	33.51	0.0338	19.88	6.28
1965	710.5	41.40	0.0677	48.09	15.20
1966	534.2	31.73	0.0272	14.55	4.60
1967	377.5	24.68	0.0065	2.45	0.77
1968	464	27.53	0.0138	6.40	2.02
1969	214.5	11.76	0.0000	0.00	0.00
1970	555.7	35.95	0.0434	24.14	7.63
1971	677.9	43.08	0.0758	51.37	16.23
1972	354	20.29	0.0000	0.00	0.00
1973	805.8	50.30	0.1132	91.23	28.83
1974	509.3	31.62	0.0268	13.67	4.32
1975	635.3	39.86	0.0605	38.43	12.14
1976	389	22.81	0.0026	1.00	0.32
1977	372.2	20.20	0.0000	0.00	0.00
1978	650.5	37.78	0.0512	33.30	10.52
1979	369.9	20.91	0.0000	0.00	0.00
1980	214.2	10.94	0.0000	0.00	0.00
1981	601.1	53.33	0.1299	78.07	24.67
1982	483.7	32.62	0.0304	14.72	4.65
1983	535.5	31.10	0.0250	13.40	4.23
1984	629.6	38.72	0.0554	34.86	11.01
1985	501.3	29.09	0.0185	9.25	2.92
1986	778.6	62.15	0.1806	140.58	44.42
1987	585.4	35.67	0.0423	24.77	7.83
PROMEDIO	531.68	33.02	0.04	28.33	8.95

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE M3
POR EL METODO DE SMITH**

SUBCUENCA V8

AREA DE LA CUENCA EN KM2 = **2488**

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1961	429.7	24.06	0.0051	2.19	5.45
1962	556	31.53	0.0265	14.74	36.67
1963	784.2	47.33	0.0973	76.34	189.93
1964	452.7	25.54	0.0085	3.86	9.61
1965	557.6	32.81	0.0311	17.36	43.18
1966	565.9	33.09	0.0322	18.22	45.32
1967	1004.5	63.23	0.1870	187.81	467.27
1968	700.7	41.85	0.0699	48.95	121.79
1969	468.1	26.25	0.0103	4.84	12.03
1970	707.1	42.32	0.0721	50.98	126.84
1971	760.3	45.76	0.0892	67.83	168.77
1972	398.5	21.70	0.0000	0.00	0.00
1973	994.4	62.77	0.1842	183.20	455.80
1974	607.2	36.64	0.0463	28.12	69.97
1975	618.3	38.45	0.0542	33.50	83.34
1976	832.9	53.56	0.1312	109.25	271.81
1977	553.1	33.06	0.0321	17.73	44.12
1978	708.2	42.81	0.0745	52.74	131.23
1979	373.1	21.62	0.0000	0.00	0.00
1980	289	16.24	0.0000	0.00	0.00
1981	485.4	46.72	0.0942	45.72	113.75
1982	429.8	31.53	0.0265	11.39	28.35
1983	581.1	34.24	0.0366	21.24	52.85
1984	638.3	39.40	0.0584	37.29	92.77
1985	541.5	31.85	0.0276	14.97	37.25
1986	752.8	55.05	0.1395	105.04	261.34
1987	641.7	38.97	0.0565	36.23	90.13
PROMEDIO	608.60	37.72	0.06	44.06	109.61

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE M3
POR EL METODO DE SMITH**

SUBCUENCA V9

AREA DE LA CUENCA EN KM2 = **966**

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1961	429.7	24.06	0.0051	2.19	2.12
1962	556	31.53	0.0265	14.74	14.24
1963	784.2	47.33	0.0973	76.34	73.74
1964	452.7	25.54	0.0085	3.86	3.73
1965	557.6	32.81	0.0311	17.36	16.77
1966	565.9	33.09	0.0322	18.22	17.60
1967	1004.5	63.23	0.1870	187.81	181.42
1968	700.7	41.85	0.0699	48.95	47.29
1969	468.1	26.25	0.0103	4.84	4.67
1970	707.1	42.32	0.0721	50.98	49.25
1971	760.3	45.76	0.0892	67.83	65.53
1972	398.5	21.70	0.0000	0.00	0.00
1973	994.4	62.77	0.1842	183.20	176.97
1974	607.2	36.64	0.0463	28.12	27.17
1975	618.3	38.45	0.0542	33.50	32.36
1976	832.9	53.56	0.1312	109.25	105.54
1977	553.1	33.06	0.0321	17.73	17.13
1978	708.2	42.81	0.0745	52.74	50.95
1979	373.1	21.62	0.0000	0.00	0.00
1980	289	16.24	0.0000	0.00	0.00
1981	485.4	46.72	0.0942	45.72	44.16
1982	429.8	31.53	0.0265	11.39	11.01
1983	581.1	34.24	0.0366	21.24	20.52
1984	638.3	39.40	0.0584	37.29	36.02
1985	541.5	31.85	0.0276	14.97	14.46
1986	752.8	55.05	0.1395	105.04	101.47
1987	641.7	38.97	0.0565	36.23	35.00
PROMEDIO	608.60	37.72	0.06	44.06	42.56

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA V10

AREA DE LA CUENCA EN KM2 = **1085**

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1961	585.2	34.98	0.0395	23.12	25.09
1962	823.5	49.39	0.1083	89.17	96.75
1963	902.6	55.46	0.1419	128.08	138.97
1964	773.5	45.67	0.0888	68.67	74.51
1965	803.8	48.40	0.1030	82.80	89.84
1966	661.1	37.66	0.0507	33.50	36.35
1967	1055.1	65.86	0.2025	213.63	231.79
1968	815.5	48.71	0.1046	85.34	92.59
1969	368.4	20.59	0.0000	0.00	0.00
1970	754.2	46.09	0.0909	68.57	74.40
1971	803.4	49.95	0.1113	89.41	97.01
1972	608.5	36.26	0.0447	27.23	29.54
1973	998.2	63.86	0.1906	190.31	206.48
1974	553.9	33.06	0.0321	17.76	19.26
1975	568.8	33.77	0.0348	19.77	21.45
1976	748.7	47.53	0.0984	73.68	79.95
1977	746.7	46.16	0.0913	68.16	73.96
1978	658.9	39.04	0.0568	37.42	40.60
1979	379.9	22.22	0.0015	0.57	0.62
1980	367.1	21.62	0.0000	0.00	0.00
1981	394.9	24.88	0.0069	2.74	2.97
1982	352.4	20.31	0.0000	0.00	0.00
1983	778.5	48.18	0.1018	79.28	86.02
1984	747.1	46.63	0.0937	70.02	75.98
1985	664.2	40.96	0.0656	43.57	47.28
1986	919.6	60.50	0.1709	157.18	170.54
1987	641.1	38.21	0.0531	34.03	36.93
PROMEDIO	684.25	41.70	0.08	63.11	68.48

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**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA V11

AREA DE LA CUENCA EN KM2 =

716

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1969	468.7	25.02	0.0073	3.41	2.44
1970	765.3	43.43	0.0775	59.31	42.47
1971	1013.7	59.45	0.1648	167.07	119.63
1972	715.4	39.39	0.0583	41.74	29.89
1973	1098.3	65.33	0.1993	218.94	156.76
1974	701.2	40.12	0.0617	43.27	30.98
1975	762.6	44.67	0.0837	63.84	45.71
1976	939.8	56.07	0.1454	136.62	97.82
1977	980	56.85	0.1498	146.79	105.10
1978	876.2	50.19	0.1126	98.68	70.66
1979	22.3	1.13	0.0000	0.00	0.00
1980	834.5	47.45	0.0980	81.79	58.56
1981	650.3	36.37	0.0452	29.39	21.05
1982	563	31.42	0.0261	14.71	10.53
1983	934.4	52.93	0.1276	119.27	85.40
1984	652.8	36.53	0.0458	29.93	21.43
1985	909	52.01	0.1226	111.41	79.77
1986	932.3	52.03	0.1227	114.35	81.87
1987	775.4	43.23	0.0765	59.34	42.48
PROMEDIO	768.17	43.87	0.09	81.05	58.03

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SUBCUENCA V12

AREA DE LA CUENCA EN KM2 =

2197

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1961	392.7	22.17	0.0014	0.55	1.21
1962	461.1	25.14	0.0076	3.49	7.67
1963	504	30.55	0.0232	11.67	25.64
1964	690.1	42.08	0.0710	48.97	107.59
1965	833.6	51.93	0.1221	101.81	223.68
1966	783.9	49.02	0.1063	83.32	183.06
1967	1211.6	80.43	0.2896	350.83	770.78
1968	628.6	38.95	0.0564	35.44	77.86
1969	385.2	22.88	0.0027	1.04	2.29
1970	767.5	48.33	0.1026	78.76	173.03
1971	918.7	58.52	0.1594	146.45	321.76
1972	649.2	38.65	0.0551	35.74	78.52
1973	953	61.03	0.1740	165.85	364.38
1974	540.6	32.85	0.0313	16.92	37.17
1975	548.6	34.69	0.0383	21.04	46.22
1976	747	48.66	0.1044	77.96	171.27
1977	659	40.20	0.0621	40.89	89.85
1978	620.1	37.52	0.0501	31.05	68.21
1979	328.8	18.85	0.0000	0.00	0.00
1980	283	16.39	0.0000	0.00	0.00
1981	325.5	19.52	0.0000	0.00	0.00
1982	461	28.05	0.0153	7.06	15.50
1983	611.9	36.95	0.0476	29.15	64.04
1984	697	43.96	0.0801	55.85	122.69
1985	450.7	26.03	0.0098	4.40	9.67
1986	532.9	32.40	0.0296	15.79	34.68
1987	595.3	35.56	0.0418	24.90	54.71
PROMEDIO	614.10	37.83	0.06	51.44	113.02

**COMISION NACIONAL DEL AGUA
SUBDIRECCION GENERAL TECNICA
GERENCIA REGIONAL LERMA-SANTIAGO-PACIFICO
SUBGERENCIA REGIONAL TECNICA**

**ESTIMACION DEL ESCURRIMIENTO ANUAL EN M DE m3
POR EL METODO DE SMITH**

SUBCUENCA V13

AREA DE LA CUENCA EN KM2 = **1432**

AÑO	PRECIPITACION ANUAL EN MM	INDICE CLIMATICO BCI	COEFICIENTE DE ESCURRIMIENTO ANUAL C	VOLUMEN DE ESCURRIMIENTO ANUAL V	CP
1969	475.8	25.45	0.0083	3.95	5.66
1970	760.7	43.15	0.0761	57.90	82.92
1971	1015	59.54	0.1653	167.78	240.26
1972	715.5	39.39	0.0584	41.77	59.81
1973	1098.3	65.33	0.1993	218.94	313.52
1974	701.2	40.12	0.0617	43.27	61.96
1975	763.3	44.71	0.0839	64.05	91.71
1976	939.6	56.06	0.1453	136.53	195.50
1977	980	56.85	0.1498	146.79	210.20
1978	876.2	50.19	0.1126	98.68	141.32
1979	570	97.24	0.3894	221.95	317.83
1980	835.3	47.49	0.0982	82.01	117.43
1981	860.7	47.64	0.0990	85.19	121.99
1982	563	31.40	0.0261	14.67	21.01
1983	934.4	52.87	0.1273	118.99	170.40
1984	925.7	53.38	0.1302	120.50	172.55
1985	896.4	51.14	0.1178	105.57	151.18
1986	968.3	54.25	0.1351	130.79	187.29
1987	771.9	42.99	0.0754	58.17	83.30
1988	880.2	50.75	0.1157	101.80	145.77
1989	557.4	30.75	0.0238	13.29	19.03
1990	845.7	47.23	0.0968	81.88	117.25
1991	674.1	39.99	0.0611	41.18	58.97
1992	792	48.04	0.1011	80.06	114.64
1993	831.1	47.15	0.0964	80.14	114.76
1994	863.9	109.50	0.4623	399.40	571.95
PROMEDIO	811.37	51.25	0.12	104.43	149.55