Quality of Surface Waters of the United States 1961

Parts 9-14. Colorado River Basin to Pacific Slope Basins in Oregon and Lower Columbia River Basin

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1885

Prepared in cooperation with the States of California, New Mexico, Oregon, Utah, and Washington, U.S. Bureau of Reclamation, and with other agencies



Quality of Surface Waters of the United States 1961

Parts 9-14. Colorado River Basin to Pacific Slope Basins in Oregon and Lower Columbia River Basin

Prepared under the direction of S. K. LOVE, Chief, Quality of Water Branch

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1885

Prepared in cooperation with the States of California, New Mexico, Oregon, Utah, and Washington, U.S. Bureau of Reclamation, and with other agencies



UNITED STATES DEPARTMENT OF THE INTERIOR STEWART L. UDALL, Secretary

GEOLOGICAL SURVEY

William T. Pecora, Director

PREFACE

This report was prepared by the Geological Survey in cooperation with the States of California, New Mexico, Oregon, Utah, and Washington, U.S. Bureau of Reclamation and with other agencies by personnel of the Water Resources Division under the direction of L. B. Leopold, chief hydrologist, and S. K. Love, chief, Quality of Water Branch.

The data were collected and prepared for publication under the supervision of the following district chemists:

Eugene Brown	. Sacramento, Calif.
J. G. Connor, succeeded by R. H. Langford	. Salt Lake City, Utah
L. B. Laird	
J. M. Stow	

III

CONTENTS

[Symbols after station name designate type of data: c, chemical; t, water temperature; s, sediment.]

	Page
Introduction	1
Collection and examination of samples	3
Chemical quality	4
Temperature	4
Sediment	5
Expression of results	6
Composition of surface waters	9
Mineral constituents in solution	10
Silica	10
Aluminum	10
Iron	10
Manganese	10
Calcium	11
Magnesium	11
Strontium	11
Sodium and potassium	12
Lithium	12
Bicarbonate, carbonate and hydroxide	12
Sulfate	13
Chloride	13
Fluoride	13
Nitrate	13
Phosphate	14
Boron	14
Dissolved solids	14
Chromium	15
Nickel and cobalt	15
Copper	15
Lead	16
Zinc	16
Barium	17
Bromide	17
Iodide	17
Properties and characteristics of water	17
Hardness	17
Acidity	18
Sodium-adsorption-ratio	19
Specific conductance	19
Hydrogen-ion concentration	20
Color	20
Oxygen consumed	21
Organics	21

VI CONTENTS

Composition of surface watersContinued	
Properties and Characteristics of	
waterContinued	Page
Temperature	21
Turbidity	23
Sediment	23
Streamflow	24
Publications	26
Cooperation	27
Division of work	30
Literature cited	30
Chemical analyses, water temperatures, and	
sediment	33
Part 9. Colorado River basin	33
Colorado River at Hot Sulphur Springs,	•
Colo. (main stem) ct	33
Eagle River basin	35
Eagle River at Gypsum, Colo. ct	35
Gypsum Creek at Gypsum, Colo. c	38
Colorado River near Dotsero, Colo.	00
(main stem) cs	39
Colorado River near Glenwood Springs,	33
Colo. (main stem) ct	41
Colorado River at Glenwood Springs, Colo.	7.1
(main stom) as	43
(main stem) cs	45
Roaring Fork basin	45
Colorado River near Cameo, Colo. (main	40
colorado river near cameo, colo. (main	47
stem) ct	49
Gunnison River basin	49
Gunnison River near Cory, Colo. c	
Uncompandere River at Delta, Colo. cs	50
Gunnison River near Grand Junction,	=0
Colo, cts	52
Dolores River basin	56
Dolores River near Cisco, Utah cs	56
Colorado River near Cisco, Utah (main	
stem) cs	61
Green River basin	66
Green River near Green River, Wyo. cts	66
Blacks Fork near Marston, Wyo. ct	71
Henrys Fork at Linwood, Utah ct	73
Green River near Greendale, Utah c	76
Yampa River near Maybell, Colo. ct	78
Little Snake River above Lily, Colo. cs	80
Green River near Jensen, Utah s	85
Duchesne River near Randlett, Utah ct	89
White River near Watson, Utah ct	91
Green River near Ouray, Utah cts	93
Price River at Woodside, Utah c	100
Green River at Green River, Utah cs	102
San Rafael River near Green River Utah ct.	107
San Juan River basin	110
San Juan River near Archuleta, N. Mex. cts	110
San Juan River at Bloomfield, N. Mex. ts	116

CONTENTS VII

Colorado Pivor basin Continued	
Colorado River basinContinued	D
San Juan River basinContinued	Page
Animas River at Farmington, N. Mex. cts San Juan River at Shiprock, N. Mex. cts	120
San Juan River at Shiprock, N. Mex. cts	126
San Juan River near Bluff, Utah cts	132
Colorado River at Lees Ferry, Ariz. (main	
stem) cts	138
Paria River basin	144
Paria River at Lees Ferry, Ariz. ts	144
Little Colorado River basin	148
Little Colorado River at Cameron, Ariz. ts	148
Colorado River near Grand Canyon, Ariz.	110
(main stem) cts	152
Vincin Divon begin	158
Virgin River basin	158
Virgin River at Littlefield, Ariz. cts	198
Lake Mead at Hoover Dam, Ariz-Nev.	
(main stem) c	164
Colorado River below Hoover Dam, ArizNev.	
(main stem) ct	170
Colorado River near Topock, Ariz. (main	
stem) t	171
Colorado River below Parker Dam, Ariz	
Calif. (main stem) t	172
Colorado River below Palo Verde Dam, Ariz	
Calif. (main stem) t	173
Colorado River below Cibola Valley, Ariz.t	174
Gila River basin	175
Gila River near Gila, N. Mex. ts	175
	179
Gila River at Kelvin, Ariz. cts	185
Salt River near Roosevelt, Ariz. t	100
Salt River below Stewart Mountain Dam,	100
Ariz. ct	186
Oak Creek near Cornville, Ariz. t	188
Verde River below Bartlett Dam, Ariz. ct	189
Gila River below Gillespie Dam, Ariz. ct	191
Colorado River at Yuma, Ariz. (main	
stem) c	194
Diversions and return flows at and below	
Imperial Dam	195
Gila Gravity Main Canal at Imperial Dam,	
ArizCalif. t	195
Yuma Main Canal below Colorado River	
Siphon, at Yuma, Ariz. ct	196
Miscellaneous analyses of streams in	
Colorado River basin s	198
Part 10. The Great Basin	199
Great Salt Lake basin	199
Great Salt Lake, Utah c	199
Doen Dissen havin	200
Bear River basin	200
Bear River at Bear River Bird Refuge,	000
near Brigham City, Utah c	200
Weber River basin	202
Weber River near Oakley, Utah c	202
Weber River near Coalville, Utah c	203

VIII CONTENTS

Chemical analyses, etcContinued	
The Great BasinContinued	
Weber River basinContinued	
Chalk Creek at Coalville, Utah c	204
Weber River at Echo, Utah c	205
Weber River at Gateway, Utah c	206
Weber River near Plain City, Utah c	207
Jordan River basin	208
Jordan River at Salt Lake City, Utah	208
Jordan River at mouth, at Woods Cross,	
Utah c	210
Sevier Lake basin	212
Sevier River below Piute Dam, near	
Marysvale, Utah c	212
Sevier River near Lynndyl, Utah ct	213
Walker Lake basin	215
East Walker River near Bridgeport,	
Calif. c	215
West Walker River below Little Walker	210
River, near Coleville, Calif. c	216
	217
Carson River basin East Fork Carson River near Markleeville,	21 /
	217
Calif. C	21 /
East Fork Carson River near Gardnerville,	01.0
Nev. t	218
West Fork Carson River at Woodfords,	01.0
Calif. c	219
Humboldt River basin	220
Humboldt River near Rye Patch, Nev. ct	220
Pyramid and Winnemucca Lakes basin	221
Lake Tahoe at Bijou, Calif. c	221
Lake Tahoe near Tahoe Vista, Calif. c	222
Lake Tahoe at Tahoe, Calif. c	223
Truckee River near Truckee, Calif. c	224
Truckee River at Farad, Calif. c	225
Honey Lake basin	226
Susan River at Susanville, Calif. c	226
Part 11. Pacific slope basins in California	227
Carmel River basin	227
Carmel River near Carmel, Calif. c	227
Salinas River basin	228
Nacimiento River near Bryson, Calif. ts	228
San Antonio River at Sam Jones Bridge,	
near Lockwood, Calif. s	232
San Antonio River at Pleyto, Calif. ts	236
Salinas River near Spreckles, Calif. c	237
Pajaro River basin	238
Uvas Creek near Morgan Hill, Calif. c	238
San Benito River near Willow Creek	
School, Calif. c	239
Pajaro River at Chittenden, Calif. c	240
Soquel Creek basin	241
Soquel Creek at Soquel, Calif. c	241
San Lorenzo River basin	242
San Lorenzo River at Big Trees, Calif. c	242
ban potenzo navel at bag alcoo, curati et	

CONTENTS

Chemical analyses, etcContinued	
Pacific slope basins in CaliforniaContinued	Page
Guadalupe River basin	243
Los Gatos Creek at Los Gatos, Calif. c	243
Coyote Creek basin	244
Coyote Creek near Madrone, Calif. c	244
Alameda Creek basin	245
Arroyo Valle near Livermore, Calif. ct	245
Arroyo De La Laguna at Verona, Calif. ct	247
Alameda Creek near Niles, Calif. cts	249
Buena Vista Lake basin	253
Kern River near Kernville, Calif. ct	253
Borel Canal below Isabella Dam, Calif. t	254
Kern River below Isabella Dam, Calif. c	255
Kern River near Bakersfield, Calif. c	256
Tulare Lake basin	257
Tule River near Porterville, Calif. c	257
Middle Fork Kaweah River near Potwisha	201
	258
Camp, Calif. t	259
	260
Kings River below North Fork, Calif. c	200
Big Creek above Pine Flat Reservoir,	0.01
Calif. c	261 262
Kings River below Pine Flat Dam, Calif. c.	262
Kings River at Peoples Weir, near	000
Kingsburg, Calif. c	263
San Joaquin River basin	264
South Fork San Joaquin River near	004
Florence Lake, Calif. t	264
San Joaquin River above Big Creek,	005
Calif. t	265
Big Creek below Huntington Lake, Calif. t.	266
Willow Creek at mouth, near Auberry,	
Calif. t	267
San Joaquin River below Kerckhoff power-	000
house, Calif. t	268
San Joaquin River below Friant, Calif. c	269
San Joaquin River near Biola, Calif. ct	270
San Joaquin River near Mendota, Calif. c	272
Fresno River near Daulton, Calif. c	273
Chowchilla River at Buchanan Damsite,	
Calif. c	274
Bear Creek at Merced, Calif. c	275
Salt Slough near Los Banos, Calif. c	276
San Joaquin River at Fremont Ford Bridge,	
Calif. c	277
Merced River at Exchequer, Calif. c	278
Merced River near Stevinson, Calif. c	279
San Joaquin River near Newman, Calif. c	280
San Joaquin River near Grayson, Calif. c	281
Tuolumne River above La Grange Dam, near	
La Grange, Calif. c	282
Tuolumne River at Hickman, Calif. c	283
Tuolumne River at Tuolumne City, Calif. c.	284

X CONTENTS

Chemical analyses, etcContinued	
Pacific slope basins in CaliforniaContinued	
San Joaquin River basinContinued	
San Joaquin River at Maze Road Bridge,	Page
near Modesto, Calif. c	285
Stanislaus River at Tulloch Damsite, near	
Knights Ferry, Calif. c	286
Stanislaus River near mouth, near	
Vernalis, Calif. c	287
San Joaquin River near Vernalis,	
Calif. cts	288
San Joaquin River at Mossdale, Calif. c	294
San Joaquin River at Garwood Bridge, near	
Stockton, Calif. c	295
Calaveras River at Jenny Lind, Calif. c	296
Stockton Ship Channel near Rindge pump,	
on Rindge Tract, Calif. c	297
Old River at south tip of Fabian Tract,	
near Tracy, Calif. c	298
Delta-Mendota Canal above Tracy pumping	
plant, near Tracy Calif. c	299
Delta-Mendota Canal below Tracy pumping	
plant, near Tracy, Calif. ct	300
Delta-Mendota Canal near Mendota, Calif. c	302
Grant Line Canal at Tracy Road Bridge,	
Calif. c	303
Old River at Clifton Court Ferry, Calif. c	304
Italian Slough at mouth, near Byron,	
Calif. c	305
Indian Slough near Brentwood, Calif. c	306
Old River at Orwood Bridge, near Middle	
River, Calif. c	307
Rock Slough near Knightsen, Calif. c	308
Old River at Mandeville Island, Calif. c	309
Mokelumne River near Mokelumne Hill,	
Calif. t	310
Mokelumne River at Lancha Plana, Calif. c.	311
Mokelumne River at Woodbridge, Calif. ct	312
Cosumnes River at Michigan Bar, Calif. cs.	314
Cosumnes River at McConnell, Calif. cs	315
Delta Cross-Channel near Walnut Grove,	
Calif. c	316
Little Potato Slough near Terminous,	
Calif. c	317
San Joaquin River at Antioch, Calif. c	318
Sacramento River basin	319
Sacramento River at Delta, Calif. c	319
South Fork Pit River near Likely, Calif. c	320
Pit River near Canby, Calif. cs	321
Pit River near Bieber, Calif. c	322
Pit River near Montgomery Creek, Calif. c.	323
McCloud River above Shasta Lake, Calif. c.	324
Sacramento River at Keswick, 'Calif. c	325
Clear Creek near Igo, Calif. c	326
Cow Creek near Millville, Calif, c	327

Chamical analysis at a Continued	
Chemical analyses, etcContinued Pacific slope basins in CaliforniaContinued	
Sacramento River basinContinued	Page
Cottonwood Creek near Ono, Calif. c	328
South Fork Cottonwood Creek near Cotton-	320
wood, Calif. c	329
Cottonwood Creek near Cottonwood,	020
Calif. cs	330
Battle Creek near Cottonwood, Calif. cs	332
Sacramento River at Bend, Calif. ct	334
Paynes Creek near Red Bluff, Calif. c	336
Sacramento River near Red Bluff, Calif. t.	337
Sacramento River at Red Bluff, Calif. ts	338
Red Bank Creek near Red Bluff, Calif. c	342
Antelope Creek near Red Bluff, Calif. c	343
Antelope Creek near mouth, near Los	0 20
Molinos, Calif. c	344
Elder Creek near Paskenta, Calif. c	345
Elder Creek at Gerber, Calif. c	346
Mill Creek at mouth, near Los Molinos,	
Calif. c	347
Thomes Creek at Paskenta, Calif. c	348
Thomes Creek near mouth, near Corning,	
Calif. c	349
Sacramento River near Hamilton City,	
Calif. c	350
Big Chico Creek near Chico, Calif. c	351
Big Chico Creek at Chico, Calif. c	352
Stony Creek at Black Butte Damsite, near	252
Orland, Calif. cs	353
Stony Creek near Hamilton City, Calif. c	355 356
Sacramento River at Butte City, Calif. ct.	359
Sacramento River at Colusa, Calif. c	360
Butte Creek near Chico, Calif. c Sacramento River at Boyer's Bend, near	300
Dunnigan, Calif. ct	361
Sacramento River above Colusa Trough, at	001
Knights Landing, Calif. c	364
Colusa Trough near Colusa, Calif. c	365
Sacramento Slough near Knights Landing,	
Calif. c	366
Indian Creek near Crescent Mills,	
Calif. cs	367
Feather River near Oroville, Calif. cts	369
Yuba River near Smartville, Calif. c	374
Yuba River at Marysville, Calif. c	375
Feather River below Shanghai Bend, near	
Yuba City, Calif. c	376
Bear River near Wheatland, Calif. c	377
Bear River near mouth, near Rio Oso,	
Calif. c	378
Feather River at Nicolaus, Calif. ct	379
North Fork American River at North Fork	389
OWN INIT I	< x '

XII CONTENTS

Chemical analyses, etcContinued	
Pacific slope basins in CaliforniaContinued	
Sacramento River basinContinued	Page
Middle Fork American River near Auburn,	_
Calif. cs	383
South Fork American River near Lotus,	
Calif. cts	384
American River at Nimbus Dam, Calif. c	387
American River at Fair Oaks, Calif. ct	388
American River at Sacramento, Calif. c	390
Sacramento River at Sacramento, Calif. ts.	391
Sacramento River at Freeport, Calif. ct	395
Clear Lake at Lakeport, Calif. c	398
Cache Creek near Lower Lake, Calif. c	399
North Fork Cache Creek near Lower Lake,	
Calif. cs	400
Cache Creek above Rumsey, Calif. ts	402
Cache Creek near Capay, Calif. cs	405
Cache Creek at Yolo, Calif. ts	407
Putah Creek near Guenoc, Calif. t	411
Putah Creek near Winters, Calif. c	412
Lindsay Slough near Rio Vista, Calif. c	413
Sacramento River near Rio Vista, Calif. c.	414
Napa River basin	415
Napa River near St. Helena, Calif. cts	415
Russian River basin	420
Russian River near Hopland, Calif. c	420
Russian River near Healdsburg, Calif. c	421
Russian River at Guerneville, Calif. C	422
Gualala River basin	423
South Fork Gualala River near Annapolis,	423
Calif. c	423
Navarro River basin	424
Navarro River near Navarro, Calif. c	424
Big River basin	425
Big River near mouth, near Mendocino,	120
Calif. c	425
Noyo River basin	426
Noyo River near Fort Bragg, Calif. c	426
Mattole River basin	427
Mattole River near Petrolia, Calif. c	427
Eel River basin	428
Potter Valley powerhouse tailrace near	120
Potter Valley, Calif. c	428
Eel River near Dos Rios, Calif. c	429
Outlet Creek near Longvale, Calif. c	430
Eel River above Dos Rios, Calif. ts	431
Middle Fork Eel River at Dos Rios,	401
Calif. cts	435
Eel River at Alderpoint, Calif. t	438
Eel River at McCann, Calif. c	439
South Fork Eel River near Branscomb,	100
Calif. ts	440
South Fork Eel River near Miranda,	110
Calif. cts	442

Chemical analyses, etcContinued	
Pacific slope basins in CaliforniaContinued	
Eel River basinContinued	Page
Eel River at Scotia, Calif. cts	445
South Fork Van Duzen River near Bridge-	
ville, Calif. t	450
Van Duzen River near Bridgeville,	
Calif. cts	451
Mad River basin	454
Mad River near Forest Glen, Calif. ts	454
Mad River near Arcata, Calif. cts	456
Redwood Creek basin	461
Redwood Creek at Orick, Calif. c	461
Lower Klamath Lake basin	462
Antelope Creek near Tennant, Calif. c	462
Butte Creek near Macdoel, Calif. c	463
Klamath River basin	464
Klamath River below Fall Creek, near	
Copco, Calif. c	464
Shasta River near Yreka, Calif. cs	465
Klamath River at Klamath River School,	
near Hamburg, Calif. c	466
Scott River near Fort Jones, Calif. c	467
Klamath River near Seiad Valley, Calif. c.	468
Salmon River at Somesbar, Calif. c	469
Klamath River at Somesbar, Calif. c	470
Trinity River at Lewiston, Calif. cts	471
Trinity River near Burnt Ranch Calif. c	474
South Fork Trinity River near Hyampom,	
Calif. t	475
Hayfork Creek near Hyampom, Calif. t	476
South Fork Trinity River near Salyer,	
Calif. ts	477
Trinity River near Hoopa, Calif. cts	481
Klamath River near Klamath, Calif. c	486
Smith River basin	487
Smith River near Crescent City, Calif. c	487
Miscellaneous analyses of streams in Pacific	
slope basins in California s	488
Part 12. Pacific slope basins in Washington	
and upper Columbia River basin	493
Willapa River basin	493
Willapa River at Lebam, Wash. ct	493
Chehalis River basin	495
Newaukum River near Chehalis, Wash. c	495
Chehalis River near Grand Mound, Wash. t	496
Chehalis River at Porter, Wash. c	497
Satsop River near Satsop, Wash. c	498
Humptulips River basin	499
Humptulips River near Humptulips, Wash. c.	499
Queets River basin	500
Queets River at Queets, Wash. c	500
Hoh River basin	501
Hoh River near Forks Wash. C	501

XIV CONTENTS

Chemical analyses, etcContinued	
Pacific slope basins in Washington and upper	
Columbia River basinContinued	Page
Quillayute River basin	502
Soleduck River near Fairholm, Wash. c	502
Duckabush River basin	503
Duckabush River below Brinnon, Wash. c	503
Skokomish River basin	504
South Fork Skokomish River near Potlatch,	001
Wash. t	504
Skokomish River near Potlatch, Wash. ct	505
Nisqually River basin	507
Nisqually River near National, Wash. t	507
Puyallup River basin	508
Puyallup River at Puyallup, Wash. c	508
Duwamish River basin	509
Green River near Auburn, Wash. ct	509
Duwamish River at Tukwila, Wash. ct	511
Lake Washington basin	514
Cedar River near Landsburg, Wash. ct	514
Cedar River at Renton, Wash. c	516
Sammamish River at Bothell, Wash. c	517
Snohomish River basin	518
Wallace River at Gold Bar, Wash. t	518
Sultan River at Sultan, Wash. c	519
Tolt River at Carnation, Wash. c	520
Snohomish River at Snohomish, Wash. ct	521
Stillaguamish River basin	523
Stillaguamish River near Silvana, Wash. c.	523
Pilchuck Creek near Bryant, Wash. t	524
Skagit River basin	525
Skagit River at Marblemount, Wash. ct	525
Cascade River at Marblemount, Wash. t	527
Skagit River near Mount Vernon, Wash. c	528
Nooksack River basin	529
Nooksack River at Lawrence, Wash. c	529
Pend Oreille River basin	530
Bitterroot River near Corvallis, Mont. t	530
Clark Fork below Missoula, Mont. t	531
Pend Oreille River at Newport, Wash. c	532
Pend Oreille River at Metaline Falls,	
Wash. c	533
Columbia River at Northport, Wash.	
(main stem) ct	534
Kettle River basin	536
Kettle River near Barstow, Wash. c	536
Colville River basin	537
Colville River at Kettle Falls, Wash. c	53 7
Spokane River basin	538
Spokane River near Otis Orchards, Wash. c.	538
Little Spokane River at Dartford, Wash. c.	539
Spokane River at Long Lake, Wash. ct	540
Okanogan River basin	542
Okanogan River near Brewster, Wash. c	542

Chemical analyses, etcContinued	
Pacific slope basins in Washington and upper	
Columbia River basinContinued	Page
Methow River basin	543
Methow River at Pateros, Wash. c	543
Wenatchee River basin	544
Wenatchee River near Leavenworth, Wash. c.	544
Wenatchee River at Wenatchee, Wash. c	545
Crab Creek basin	546
Crab Creek near Smyrna, Wash. ct	546
Yakima River basin	548
Naches River at Yakima, Wash. c	548
Yakima River near Parker, Wash. ct	549
Yakima River at Kiona, Wash. ct	551
Miscellanous analyses of streams in	001
Pacific slope basins in Washington and	
upper Columbia River basin c	553
Don't 12 Spoke Division begin	560
Part 13. Snake River basin	560
Snake River near Heise, Idaho (main stem) ct	
Henrys Fork basin	562
Henrys Fork near Rexburg, Idaho t	562
Snake River at King Hill, Idaho (main	= 0.0
stem) ct	563
Boise River basin	565
Boise River at Notus, Idaho ct	565
Malheur River basin	568
Bully Creek near Vale, Oreg. ts	568
Malheur River near Ontario, Oreg. c	572
Weiser River basin	57 3
West Branch Weiser River near Tamarack,	
Idaho t	573
Weiser River near Weiser, Idaho t	574
Snake River at Weiser, Idaho (main stem) c	575
Powder River basin	576
Powder River below Baker, Oreg. c	576
Powder River near Richland, Oreg. t	577
Eagle Creek above Skull Creek, near New	
Bridge, Oreg. t	578
Snake River below Pine Creek, at Oxbow,	
Oreg. (main stem) t	57 9
Salmon River basin	580
Big Springs Creek near Leadore, Idaho t	580
Grande Ronde River basin	581
Grande Ronde River at La Grande, Oreg. t	581
Grande Ronde River near Elgin, Oreg. c	582
Wallowa River above Minam River, at	
Minam, Oreg. c	583
Grande Ronde River at Rondowa, Oreg. t	584
Snake River near Anatone, Wash. (main	
stem) t	585
Clearwater River basin	586
Selway River near Shearer guard station,	000
Idaho t	586
Bear Creek near Shearer guard station.	500
Idaho t	586

XVI CONTENTS

Chemical analyses, etcContinued	
Snake River basinContinued	
Clearwater River basinContinued	Page
North Fork Clearwater River at Ahsahka,	
Idaho t	587
Clearwater River at Spalding, Idaho t	588
Snake River near Clarkston, Wash.	
(main stem) t	589
Palouse River basin	590
Palouse River near Hooper, Wash. c	590
Snake River near Pasco, Wash. (main stem) c.	591
Part 14. Pacific slope basins in Oregon and	
lower Columbia River basin	592
Walla Walla River basin	592
South Fork Walla Walla River near	
Milton, Oreg. t	592
Walla Walla River near Touchet, Wash. ct	593
Columbia River at McNary Dam, Wash.	000
(main stem) C	596
Umatilla River basin	597
	391
Umatilla River above Meacham Creek,	597
near Gibbon, Oreg. t	598
Umatilla River at Yoakum, Oreg. c	599
Umatilla River near Umatilla, Oreg. t	
John Day River basin	600
John Day River near Mount Vernon, Oreg. c.	600
John Day River at McDonald Ferry, Oreg. t.	601
Deschutes River basin	602
Deschutes River near Culver, Oreg. t	602
Crooked River near Post, Oreg. ts	603
Crooked River near Culver, Oreg. t	607
Metolius River near Grandview, Oreg. t	608
Columbia River near The Dalles, Oreg.	
(main stem) ct	609
Klickitat River basin	611
Klickitat River near Pitt, Wash. t	611
White Salmon River basin	612
White Salmon River near Underwood, Wash. c	612
Willamette River basin	613
Middle Fork Willamette River near	
Oakridge, Oreg. t	613
Hills Creek above Hills Creek Reservoir,	
near Oakridge, Oreg. t	614
Middle Fork Willamette River above Salt	
Creek, near Oakridge, Oreg. t	615
Middle Fork Willamette River below North	
Fork, near Oakridge, Oreg. t	616
Middle Fork Willamette River near	
Dexter, Oreg. t	617
Fall Creek below Winberry Creek, near	
Fall Creek, Oreg. t	618
Middle Fork Willamette River at Jasper,	
Oreg. t	619
Coast Fork Willamette River at London,	
Oreg t	620

CONTENTS XVII

Chemical analyses, etcContinued	
Pacific slope basins in Oregon and lower	
Columbia River basinContinued	
Willamette River basinContinued	Page
South Fork McKenzie River above Cougar	
Reservoir, near Rainbow, Oreg. t	621
South Fork McKenzie River near	
Rainbow, Oreg. t	622
Blue River near Blue River, Oreg. t	623
McKenzie River near Vida, Oreg. t	623
Willamette River at Harrisburg, Oreg. t	624
North Santiam River below Boulder Creek,	
near Detroit, Oreg. t	625
Breitenbush River above Canyon Creek,	
near Detroit, Oreg. t	626
North Santiam River at Niagara, Oreg. t	627
Middle Santiam River at mouth, near	
Foster, Oreg. t	628
Willamette River at Salem, Oreg. ct	629
Lewis River basin	631
Lewis River at Ariel, Wash. t	631
East Fork Lewis River near Heisson,	
Wash. t	632
Kalama River basin	633
Kalama River below Italian Creek, near	
Kalama, Wash. t	633
Kalama River above Kalama, Wash. c	634
Cowlitz River basin	635
Cispus River near Randle, Wash. t	635
Cowlitz River near Kosmos, Wash. ct	636
West Fork Tilton River near Morton,	
Wash. t	638
Cowlitz River near Mayfield, Wash. t	639
Toutle River near Silver Lake, Wash. t	640
Toutle River near Castle Rock, Wash. c Cowlitz River at Castle Rock, Wash. t	641
Cowlitz River at Castle Rock, Wash. t	642
Coweman River near Kelso, Wash. t	643
Elochoman River basin	644
Elochoman River near Cathlamet, Wash. t	644
Grays River basin	645
West Fork Grays River near Grays River,	
Wash. t	645
Nehalem River basin	646
Nehalem River below Foss, Oreg. c	646
Wilson River basin	647
Wilson River near Tillamook, Oreg. c	647
Siletz River basin	648
Siletz River near Siletz, Oreg. c	648
Alsea River basin	649
North Fork Alsea River at Alsea, Oreg. t	649
South Fork Alsea River near Alsea, Oreg. t	650
Drift Creek near Salado, Oreg. t	651
Needle Branch near Salado, Oreg. ts	652
Flynn Creek near Salado, Oreg. ts	655
ueer Creek near Salado, Oreg. ts	658

CONTENTS

Chemical analyses, etcContinued	
Pacific slope basins in Oregon and lower	
Columbia River basinContinued	Page
Siuslaw River basin	661
Siuslaw River at Mapleton, Oreg. c	661
Coquille River basin	662
South Fork Coquille River near Powers,	
Oreg. t	662
South Fork Coquille River at Powers,	
Oreg. c	663
North Fork Coquille River at Myrtle	
Point, Oreg. c	664
Rogue River basin	665
Rogue River below South Fork Rogue River,	000
near Prospect, Oreg. c	665
Bear Creek at Central Point, Oreg. c	666
Applegate River at Applegate, Oreg. c	667
Rogue River near Merlin, Oreg. c	668
Rogue River near Agness, Oreg. t	669
	670
Illinois River at Kerby, Oreg. c	671
Index	011
TI I I I COMP A PRICA I	
ILLUSTRATION	
the state of the s	
	Page
Figure 1. Map of the conterminous United States	- 250
showing basins covered by the five water-	
supply papers on quality of surface waters	
supply papers on quality of surface waters	

QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1961

PARTS 9-14

INTRODUCTION

The quality-of-water investigations of the United States Geological Survey are concerned with chemical and physical characteristics of the surface and ground water supplies of the Nation. Most of the investigations carried on in cooperation with State and Federal agencies deal with the amounts of matter in solution and in suspension in streams.

The records of chemical analysis, suspended sediment, and temperature for surface waters given in this volume serve as a basis for determining the suitability of the waters examined for all uses. The discharge of a stream and (to a lesser extent) the chemical quality are related to variations in rainfall and other forms of precipitation. In general, lower concentrations of dissolved solids may be expected during the periods of high flow than during periods of low flow. The concentration in some streams may change materially with relatively small variations in flow, whereas for other streams the quality may remain relatively uniform throughout large ranges in discharge. The quantities of suspended sediment carried by streams are also related to discharge, and during flood periods the sediment content in streams may vary over wide ranges.

In 1941, the Geological Survey began publishing annual records of chemical quality, suspended sediment, and water temper-The records prior to 1948 were published each year in a single volume for the entire country, and in two volumes in 1948 and 1949. Beginning in 1950, the records were published in four volumes and beginning in 1959 in five volumes. The drainage basins covered in the five volumes are shown in Figure 1. The data given in this volume were collected during the water year October 1, 1960, to September 30, 1961. The records are arranged by drainage basins in downstream order according to the Geological Survey method of reporting streamflow. Stations on tributary streams are listed between stations on the main stem in the order

in which those tributaries enter the main stem.

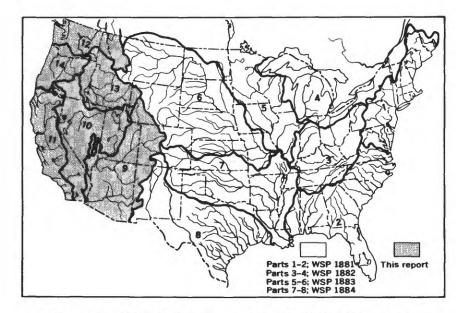


Figure 1.--Map of the conterminous United States showing basins covered by the five water-supply papers on quality of surface waters in 1961. The shaded portion represents the section of the country covered by this volume; the unshaded portion represents the section of the country covered by other water-supply papers.

A station number has been assigned as an added means of identification for each stream location where regular measurements of water quantity or quality have been made. The numbers have been assigned to conform with the standard downstream order of listing gaging stations. The numbering system consists of two digits followed by a hyphen and a six digit number. The notation to the left of the hyphen identifies the Part or hydrologic region used by the Geological Survey for reporting hydrologic data. The number to the right of the hyphen represents the position of the location in the standard downstream order listing measuring stations within each of the 14 parts. The assigned numbers are in numerical order but are not consecutive. They are so selected from the complete 6 digit number scale that intervening numbers will be available for future assignments to new locations. identification number for each station in this report is printed to the left of the station name and contains only the essential digits. For example, the number is printed as 4-100 for a station whose complete identification number is 04-0100.00.

Descriptive statements are given for each sampling station where chemical analyses, temperature measurements, or sediment determinations have been made. These statements include the location of the station, drainage area, periods of records available, extremes of dissolved solids, hardness, specific conductance, temperature, sediment loads, and other pertinent data. Records of discharge of the streams at or near the sampling station are included in most tables of analyses.

During the water year ending September 30, 1961, the Geological Survey maintained 389 stations on 249 streams for the study of chemical and physical characteristics of surface water. Samples were collected daily and monthly at 280 of these locations for chemical-quality studies. Samples were also collected less frequently at many other points. Water temperatures were measured daily at 174 stations. Not all analyses of samples of surface water collected during the year have been included. Single analyses of an incomplete nature generally have been omitted. Also, analyses made of the daily samples before compositing have not been reported. The specific conductance of almost all daily samples was determined, and as noted in the table headings this information is available for reference at the district offices listed under Division of Work, on page 30.

Quantities of suspended sediment are reported for 58 stations during the year ending September 30, 1961. Sediment samples were collected one or more times daily at most stations, depending on the rate of flow and changes in stage of the stream. Particle-size distributions of sediments were determined at 47 of the stations.

COLLECTION AND EXAMINATION OF SAMPLES

Samples for analyses are usually collected at or near points on streams where gaging stations are maintained by Surface Water Branch of U. S. Geological Survey for measurement of water discharge. The concentration of solutes and sediments at different locations in the stream-cross section may vary widely with different rates of water discharge depending on the source of the material and the turbulence and mixing of the stream. In general, the distribution of sediment in a stream section is much more variable than the distribution of solutes. It is necessary to sample some streams at several verticals across the channel and especially for sediment, to uniformly traverse the depth of flow. These measurements require special sampling equipment to adequately integrate the vertical and lateral variability of the concentration in the section. These procedures yield a velocity-weighted mean con-

centration for the section in contrast to the average concentration that existed without regard to the variable velocities of the individual fluid elements.

The near uniformly dispersed ions of the solute load move with the velocity of the transporting water. Accordingly, the mean section concentration of solutes determined from samples is a precise measure of the total solute load. The mean section concentration obtained from suspended sediment samples is a less precise measure of the total sediment load, because the sediment samplers do not traverse the bottom 0.3 foot of the sampling vertical where the concentration of suspended sediment is greatest and because a significant part of the coarser particles in many streams move in essentially continuous contact with the bed and are not represented in the suspended sediment sample. Hence, the computed sediment loads presented in this report are usually less than the total sediment loads. For most streams the difference between the computed and total sediment loads will be small, in the order of a few percent.

CHEMICAL QUALITY

The methods of collecting and compositing water samples for chemical analysis are described in a manual by Rainwater and Thatcher (1960, 301 p.). No single method of compositing samples is applicable to all problems related to the study of water quality. Although generally holding to the principle of 10 day periods or equivalent to three composite samples per month modifications are usually made on the basis of dissolved-solids content as indicated by measurements of conductivity of daily samples, supplemented by other information such as chloride content, river stage, weather conditions and other background information of the stream.

TEMPERATURE

Daily water temperatures were measured at most of the stations at the time samples were collected for chemical quality or sediment content. So far as practicable, the water temperatures were taken at about the same time each day for an individual station in order that the data would be relatively unaffected by diurnal variations in temperature. Most large, swiftly flowing streams probably have a small diurnal variation in water temperature, whereas sluggish or shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. The thermometers used for determining water temperature were accurate to plus or minus $0.5\,^{\circ}F$.

At stations where thermographs are located, the records consist of maximum and minimum temperatures for each day, and the monthly averages of maximum daily and minimum daily temperatures.

SEDIMENT

In general, suspended-sediment samples were collected daily with U.S. depth-integrating cable-suspended samplers (U.S. Interagency, 1963, p. 56-77 and U.S. Interagency, 1952, p. 86-90) from a fixed sampling point at one vertical in the cross section. The US DH-48 hand sampler was used at many stations during periods of low flow. Depth-integrated samples were collected periodically at three or more verticals in the cross section to determine the cross-sectional distribution of the concentration of suspended sediment with respect to that at the daily sampling vertical. In streams where transverse distribution of sediment concentration ranges widely, samples were taken at two or more verticals to define more accurately the average concentration of the cross section. During periods of high or rapidly changing flow, samples were taken two or more times throughout the day at most sampling stations.

Sediment concentrations were determined by filtration-evaporation method. At many stations the daily mean concentration for some days was obtained by plotting the velocity-weighted instantaneous concentrations on the gage-height chart. The plotted concentrations, adjusted, if necessary for cross-sectional distribution were connected or averaged by continuous curves to obtain a concentration graph. This graph represented the estimated velocity-weighted concentration at any time, and for most periods daily mean concentrations were determined from the graph. days were divided into shorter intervals when the concentration and water discharge were changing rapidly. During some periods of minor variation in concentration, the average concentration of the samples was used as the daily mean concentration. During extended periods of relatively uniform concentration and flow, samples for a number of days were composited to obtain average concentrations and average daily loads for each period.

For some periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately preceding and following the periods, and suspended-sediment loads for other periods of similar discharge, the estimates were further guided by weather conditions and sediment discharge for other stations.

In many instances where there were no observations for several days, the suspended-sediment loads for individual days are

not estimated, because numerous factors influencing the quantities of transported sediment made it very difficult to make accurate estimates for individual days. However, estimated loads of suspended sediment for missing days in otherwise continuous period of sampling have been included in monthly and annual totals in order to provide a complete record. For some streams, samples were collected weekly, monthly, or less frequently, and only rates of sediment discharge at the time of sampling are shown.

In addition to the records of quantities of suspended sediment transported, records of the particle sizes of sediment are included. The particle sizes of the suspended sediment for many of the stations, and the particle sizes of the bed material for some of the stations were determined periodically.

The size of particles in stream sediments commonly range from colloidal clay (finer than 0.001 mm) to coarse sand or gravel (coarser than 1.0 mm). The common methods of particle-size analyses cannot accommodate such a wide range in particle size. Hence, it was necessary to separate most samples into two parts, one coarser than 0.062 mm and one finer than 0.062 mm. The separations were made by sieve or by a tube containing a settling medium of water. The coarse fractions were classified by sieve separation or by the visual accumulation tube (U.S. Interagency, 1957). The fine fractions were classified by the pipet method (Kilmer and Alexander, 1949) or the bottom withdrawal tube method (U.S. Interagency, 1943, p. 82-90).

EXPRESSION OF RESULTS

Quantities of water for analysis are most conveniently measured in the laboratory by use of volumetric glassware. The analytical results thus obtained in this report are expressed in weights of solute in a given volume of water. To express the results in parts of solute per million (ppm) of water the data must be converted. For most waters this conversion is made by assuming that the liter of water sample weighs 1 kilogram; and thus milligrams per liter are equal to parts per million.

Equivalents per million are not reported, although the expression of analyses in equivalents per million is sometimes preferred. An equivalent per million (epm) is a unit chemical combining weight of a constituent in a million unit weights of water. Chemical equivalence in equivalents per million can be obtained by (a) dividing the concentration in parts per million by the combining weight of that ion, or (b) multiplying the concentration (in ppm) by the reciprocal of the combining weights. The following table lists the reciprocals of the combining weights of cations and anions generally reported in water analyses.

The conversion factors are computed from atomic weights based on carbon-12 (International Union of Pure and Applied Chemistry, 1961).

Conversion factors: Parts per million to equivalents per million

Ion	Multiply by	Ion	Multiply by
Aluminum (Al^{+3})	.04004 .01456 .22192 .01639 .01251 .01779 .04990 .03333 .02821 .11539 .03394 .03148	Hydroxide (OH^{-1}) Iodide (I^{-1}) Iron (Fe^{+3}) Lead (Pb^{+2}) Lithium (Li^{+1}) Magnesium (Mg^{+2}) Nickel (Ni^{+2}) Nitrate (NO_3^{-1}) Phosphate (PO_4^{-3}) . Potassium (K^{+1}) Sodium (Na^{+1}) Strontium (Sr^{+2}) Sulfate (SO_4^{-2}) Zinc (Zn^{+2})	0.05880 .00788 .05372 .00965 .14411 .08226 .03640 .03406 .01613 .03159 .02557 .04350 .02283 .02083

Results given in parts per million can be converted to grains per United States gallon by dividing by 17.12.

The hardness of water is conventionally expressed in all water analyses in terms of an equivalent quantity of calcium carbonate. Such a procedure is required because hardness is caused by several different cations, present in variable proportions. It should be remembered that hardness is an expression in conventional terms of a property of water. The actual presence of calcium carbonate in the concentration given is not to be assumed. The hardness caused by calcium and magnesium (and other cations if significant) equivalent to the carbonate and bicarbonate is called carbonate hardness; the hardness in excess of this quantity is called noncarbonate hardness. Hardness or alkalinity values expressed in parts per million as calcium carbonate may be converted to equivalents per million by dividing by 50.

The value usually reported as dissolved solids is the residue on evaporation after drying at 180°C for 1 hour. For some waters, particularly those containing moderately large quantities of soluble salts, the value reported is calculated from the quantities of the various determined constituents using the carbonate equivalent of the reported bicarbonate. The calculated sum of the constituents may be given instead of or in addition to the residue. In the

analyses of most waters used for irrigation, the quantity of dissolved solids is given in tons per acre-foot as well as in parts per million.

Specific conductance is given for most analyses and was determined by means of a conductance bridge and using a standard potassium chloride solution as reference. Specific conductance values are expressed in micromhos per centimeter at 25°C. Specific conductance in micromhos is 1 million times the reciprocal of specific resistance at 25°C. Specific resistance is the resistance in ohms of a column of water 1 centimeter long and 1 square centimeter in cross section.

The discharge of the streams is reported in cubic feet per second (see Streamflow, p. 24) and the temperature in degrees Fahrenheit. Color is expressed in units of the platinum-cobalt scale proposed by Hazen (1892, p. 427-428). A unit of color is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Hydrogen-ion concentration is expressed in terms of pH units. By definition the pH value of a solution is the negative logarithm of the concentration of gram ions of hydrogen. However, the pH meter that is generally used in Survey laboratories determines the activity of the hydrogen ions as distinguished from concentration.

An average of analyses for the water year is given for most daily sampling stations. Most of these averages are arithmetical, time-weighted, or discharge-weighted; when analyses during a year are all on 10-day composites of daily samples with no missing days, the arithmetical and time-weighted averages are equivalent. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the river each day for the water year. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all of the water passing a given station during the year after thorough mixing in the reservoir. A discharge-weighted average is computed by multiplying the discharge for the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the dis-Discharge-weighted averages are usually lower than arithmetical averages for most streams because at times of high discharge the rivers generally have lower concentrations of dissolved solids.

A program for computing these averages on an electronic digital computer was instituted in the 1962 water year. This program extended computations to include averages for pH values expressed in terms of hydrogen ion and averages for the concentration of individual constituents expressed in tons per day. Concentrations in tons per day are computed the same as daily sediment loads.

The concentration of sediment in parts per million is computed as 1,000,000 times the ratio of the weight of sediment to the weight of water-sediment mixture. Daily sediment loads are expressed in tons per day and except for subdivided days are usually obtained by multiplying daily mean sediment concentration in parts per million by the daily mean discharge, and the appropriate conversion factor, normally 0.0027.

Particle-size analyses are expressed in percentages of material finer than indicated sizes in millimeters. The size classification used in this report was recommended by the American Geophysical Union Subcommittee on Terminology (Lane and others, 1947, p. 937). Other data included as pertinent to the size analyses for many streams are the date of collection, the stream discharge, sediment concentration when sample was collected, and the method of analysis.

COMPOSITION OF SURFACE WATERS

All natural waters contain dissolved mineral matter. Water in contact with soils or rock, even for only a few hours, will dissolve some mineral matter. The quantity of dissolved mineral matter in a natural water depends primarily on the type of rocks or soils with which the water has been in contact and the length of time of contact. Some streams are fed by both surface runoff and ground water from spring or seeps. Such streams reflect the chemical character of their concentrated underground sources during dry periods and are more dilute during periods of heavy rainfall. Ground water is generally more highly mineralized than surface runoff because it remains in contact with the rocks and soils for much longer periods. The dissolved-solids content in a river is frequently increased by drainage from mines or oil fields, by the addition of industrial or municipal wastes, or--in irrigated regions--by drainage from irrigated lands.

The mineral constituents and physical properties of natural waters reported in the tables of analyses include those that have a practical bearing on the value of the waters for most purposes. The analyses generally include results for silica, iron, calcium, magnesium, sodium, potassium (or sodium and potassium together calculated as sodium), alkalinity as carbonate and bicarbonate, sulfate, chloride, fluoride, nitrate, boron, pH, dissolved solids and specific conductance. Aluminum, manganese, color, acidity, oxygen consumed, and other dissolved constituents and physical properties are reported for certain streams. Phenolic material and minor elements including strontium, chromium, nickel, copper, lead, zinc, cobalt, arsenic, cadmium, and others are occasionally determined for a few streams in connection with specific

problems in local areas and the results are reported when appropriate. The source and significance of the different constituents and properties of natural waters are discussed in the following paragraphs. The constituents are arranged in the order that they appear on standard analytical statement cards which are used to process the chemical quality data in this report.

MINERAL CONSTITUENTS IN SOLUTION

Silica (SiO₂)

Silica is dissolved from practically all rocks. Some natural surface waters contain less than 5 parts per million of silica and few contain more than 50 parts, but the more common range is from 10 to 30 parts per million. Silica affects the usefulness of a water because it contributes to the formation of boiler scale; it usually is removed from feed water for high-pressure boilers. Silica also forms troublesome deposits on the blades of steam turbines.

Aluminum (Al)

Aluminum is usually present only in negligible quantities in natural waters except in areas where the waters have been in contact with the more soluble rocks of high aluminum content such as bauxite and certain shales. Acid waters often contain large amounts of aluminum. It may be troublesome in feed waters where it tends to be deposited as a scale on boiler tubes.

Iron (Fe)

Iron is dissolved from many rocks and soils. On exposure to the air, normal basic waters that contain more than 1 part per million of iron soon become turbid with the insoluble reddish ferric oxide produced by oxidation. Surface waters, therefore, seldom contain as much as 1 part per million of dissolved iron, although some acid waters carry large quantities of iron in solution. Iron causes reddish-brown stains on white porcelain or enameled ware and fixtures and on fabrics washed in the water.

Manganese (Mn)

Manganese is dissolved in appreciable quantities from rocks in some sections of the country. It resembles iron in its chemical

behavior and in its occurrence in natural waters. However, manganese in rocks is less abundant than iron. As a result the concentration of manganese is much less than that of iron and is not regularly determined in many areas. Waters impounded in large reservoirs may contain manganese that has been dissolved from the mud on the bottom of the reservoir by action of carbon dioxide produced by anaerobic fermentation of organic matter. It is especially objectionable in water used in laundry work and in textile processing. Concentrations as low as 0.2 part per million may cause a dark-brown or black stain on fabrics and porcelain fixtures. Appreciable quantities of manganese are often found in waters containing objectionable quantities of iron.

Calcium (Ca)

Calcium is dissolved from almost all rocks and soils, but the highest concentrations are usually found in waters that have been in contact with limestone, dolomite, and gypsum. Calcium and magnesium make water hard and are largely responsible for the formation of boiler scale. Most waters associated with granite or silicious sands contain less than 10 parts per million of calcium; waters in areas where rocks are composed of dolomite and limestone contain from 30 to 100 parts per million; and waters that have come in contact with deposits of gypsum may contain several hundred parts per million.

Magnesium (Mg)

Magnesium is dissolved from many rocks, particularly from dolomitic rocks. Its effect in water is similar to that of calcium. The magnesium in soft waters may amount to only 1 or 2 parts per million, but water in areas that contain large quantities of dolomite or other magnesium-bearing rocks may contain from 20 to 100 parts per million or more of magnesium.

Strontium (Sr)

Strontium is a typical alkaline-earth element and is similar chemically to calcium. Strontium may be present in natural water in amounts up to a few parts per million much more frequently than the available data indicate. In most surface water the amount of strontium is small in proportion to calcium. However, in sea water the ratio of strontium to calcium is 1:30.

Sodium and potassium (Na and K)

Sodium and potassium are dissolved from practically all rocks. Sodium is the predominant cation in some of the more highly mineralized waters found in the western United States. Natural waters that contain only 3 or 4 parts per million of the two together are likely to carry almost as much potassium as sodium. As the total quantity of these constituents increases, the proportion of sodium becomes much greater. Moderate quantities of sodium and potassium have little effect on the usefulness of the water for most purposes, but waters that carry more than 50 or 100 parts per million of the two may require careful operation of steam boilers to prevent foaming. More highly mineralized waters that contain a large proportion of sodium salts may be unsatisfactory for irrigation.

Lithium (Li)

Data concerning the quantity of lithium in water are scarce. It is usually found in small amounts in thermal springs and saline waters. Lithium also occurs in streams where some industries dump their waste water. The scarcity of lithium in rocks is responsible more than other factors for relatively small amounts present in water.

Bicarbonate, carbonate and hydroxide (HCO₃, CO₃, OH)

Bicarbonate, carbonate, or hydroxide is sometimes reported as alkalinity. The alkalinity of a water is defined as its capacity to consume a strong acid to pH 4.5. Since the major causes of alkalinity in most natural waters are carbonate and bicarbonate ions dissolved from carbonate rocks, the results are usually reported in terms of these constituents. Although alkalinity may suggest the presence of definite amounts of carbonate, bicarbonate or hydroxide, it may not be true due to other ions that contribute to alkalinity such as silicates, phosphates, borates, possibly fluoride, and certain organic anions which may occur in colored waters. The significance of alkalinity to the domestic, agricultural, and industrial user is usually dependent upon the nature of the cations (Ca, Mg, Na, K) associated with it. However, moderate amounts of alkalinity does not adversely affect most users.

Hydroxide may occur in water that has been softened by the lime process. Its presence in streams usually can be taken as an indication of contamination and does not represent the natural chemical character of the water.

Sulfate (SO₄)

Sulfate is dissolved from many rocks and soils—in especially large quantities from gypsum and from beds of shale. It is formed also by the oxidation of sulfides of iron and is therefore present in considerable quantities in waters from mines. Sulfate in waters that contain much calcium and magnesium causes the formation of hard scale in steam boilers and may increase the cost of softening the water.

Chloride (Cl)

Chloride is dissolved from rock materials in all parts of the country. Surface waters in the humid regions are usually low in chloride, whereas streams in arid or semiarid regions may contain several hundred parts per million of chloride leached from soils and rocks, especially where the streams receive return drainage from irrigated lands or are affected by ground-water-inflow carrying appreciable quantities of chloride. Large quantities of chloride may affect the industrial use of water by increasing the corrosiveness of waters that contain large quantities of calcium and magnesium.

Fluoride (F)

Fluoride has been reported as being present in some rocks to about the same extent as chloride. However, the quantity of fluoride in natural surface waters is ordinarily very small compared to that of chloride. Investigations have proved that fluoride concentrations of about 0.6 to 1.7 ppm reduced the incidence of dental caries and that concentrations greater than 1.7 ppm also protect the teeth from cavities but cause an undesirable black stain (Durfor and Becker, 1964, p. 20). Public Health Service, 1962 (p. 8), states, "When fluoride is naturally present in drinking water, the concentration should not average more then the appropriate upper control limit (0.6 to 1.7 ppm). Presence of fluoride in average concentration greater than two times the optimum values shall constitute grounds for rejection of the supply." Concentration higher than the stated limits may cause mottled enamel in teeth, endemic cumulative fluorsis, and skeletal effects.

Nitrate (NO₃)

Nitrate in water is considered a final oxidation product of nitrogenous material and may indicate contamination by sewage or

other organic matter. The quantities of nitrate present in surface waters are generally less than 5 parts per million (as NO₃) and have no effect on the value of the water for ordinary uses.

It has been reported that as much as 2 parts per million of nitrate in boiler water tends to decrease intercrystalline cracking of boiler steel. Studies made in Illinois indicate that nitrates in excess of 70 parts per million (as NO₃) may contribute to methemoglobinemai ("blue babies") Faucett and Miller, 1946, p. 593), and more recent investigations conducted in Ohio show that drinking water containing nitrates in the range of 44 to 88 ppm (as NO₃) may cause methemoglobinemia (Waring, 1949). In a report published by the National Research Council, Maxcy (1950, p. 271) concludes that a nitrate content in excess of 44 parts per million (as NO₃) should be regarded as unsafe for infant feeding. U.S. Public Health Service (1962) sets 45 ppm as the upper limit.

Phosphate (PO₄)

Phosphorus is an essential element in the growth of plants and animals, and some sources that contribute nitrate, such as organic wastes and leaching of soils, may be important as sources for phosphate in water and its occurrence may add to the apparent alkalinity. The addition of phosphates in water treatment constitutes a possible source, although the dosage is usually small. In some areas, phosphate fertilizers may yield some phosphate to water. A more important source is the increasing use of phosphates in detergents. Domestic and industrial sewage effluents may therefore contain considerable amounts of phosphate.

Boron (B)

Boron in small quantities has been found essential for plant growth, but irrigation water containing more than 1 part per million boron is detrimental to citrus and other boron-sensitive crops. Boron is reported in Survey analyses of surface waters in arid and semiarid regions of the Southwest and West where irrigation is practiced or contemplated, but few of the surface waters analyzed have harmful concentrations of boron.

Dissolved solids

The reported quantity of dissolved solids--the residue on evaporation--consists mainly of the dissolved mineral constituents in the water. It may also contain some organic matter and water of crystallization. Waters with less than 500 parts per million of

dissolved solids are usually satisfactory for domestic and some industrial uses. Water containing several thousand parts per million of dissolved solids are sometimes successfully used for irrigation where practices permit the removal of soluble salts through the application of large volumes of water on well-drained lands, but generally water containing more than about 2,000 ppm is considered to be unsuitable for long-term irrigation under average conditions.

Chromium (Cr)

Few if any waters contain chromium from natural sources. Natural waters can probably contain only traces of chromium as a cation unless the pH is very low. When chromium is present in water, it is usually the result of pollution by industrial wastes. Fairly high concentrations of chromate anions are possible in waters having normal pH levels. Concentrations of more than 0.05 ppm of chromium in the hexavalent form constitute grounds for rejection of a water for domestic use on the basis of the standards of the U.S. Public Health Service (1962).

Nickel and cobalt (Ni, Co)

Nickel and cobalt are very similar in chemical behavior and also closely related to iron. Both are present in igneous rocks in small amounts and are more prevalent in silicic rocks. Any nickel in water is likely to be in small amounts and could be in a colloidal state. Cobalt may be taken into solution more readily than nickel. It may be taken into solution in small amounts through bacteriological activity similar to that causing solution of manganese. However, few data on the occurrence of either nickel or cobalt in natural water are available.

Copper (Cu)

Copper is a fairly common trace constituent of natural water. Small amounts may be introduced into water by solution of copper and brass water pipes and other copper-bearing equipment in contact with the water, or from copper salts added to control algae in open reservoirs. Copper salts such as the sulfate and chloride are highly soluble in waters with a low pH but in water of normal alkalinity these salts hydrolyze and the copper may be precipitated. In the normal pH range of natural water containing carbon dioxide, the copper might be precipitated as carbonate. The oxidized portions of sulfide-copper ore bodies contain other copper compounds. The presence of copper in mine water is common.

Copper imparts a disagreeable metallic taste to water. As little as 1.5 ppm can usually be detected, and 5 ppm can render the water unpalatable. Copper is not considered to be a cumulative systemic poison like lead and mercury; most copper ingested is excreted by the body and very little is retained. The pathological effects of copper are controversial, but it is generally believed very unlikely that humans could unknowingly ingest toxic quantities from palatable drinking water. The U.S. Public Health Service (1962) recommends that copper should not exceed 1.0 ppm in drinking and culinary water.

Lead (Pb)

Lead is only a minor element in most natural waters, but industrial or mine and smelter effluents may contain relatively large amounts of lead. Many of the commonly used lead salts are water soluble.

Traces of lead in water usually are the result of solution of lead pipe through which the water has passed. Amounts of lead of the order of 0.05 ppm are significant, as this concentration is the upper limit for drinking water in the standards adopted by the U.S. Public Health Service (1962). Higher concentrations may be added to water through industrial and mine-waste disposal. Lead in the form of sulfate is reported to be soluble in water to the extent of 31 ppm (Seidell, 1940, p. 1409) at 25°C. In natural water this concentration would not be approached, however, since a pH of less than 4.5 would probably be required to prevent formation of lead hydroxide and carbonate. It is reported (Pleissner, 1907) that at 18°C water free of carbon dioxide will dissolve the equivalent of 1.4 ppm of lead and the solubility is increased nearly four fold by the presence of 2.8 ppm of carbon dioxide in the solution. Presence of other ions may increase the solubility of lead.

Zinc (Zn)

Zinc is abundant in rocks and ores but is only a minor constituent in natural water because the free metal and its oxides are only sparingly soluble. In most alkaline surface waters it is present only in trace quantities, but more may be present in acid water. Chlorides and sulfates of zinc are highly soluble. Zinc is used in many commercial products, and industrial wastes may contain large amounts.

Zinc in water does not cause serious effects on health, but produces undesirable esthetic effects. The U. S. Public Health Service (1962, p. 55) recommends that the zinc content not exceed 5 ppm in drinking and culinary water.

Barium (Ba)

Barium may replace potassium in some of the igneous rock minerals, especially feldspar and barium sulfate (barite) is a common barium mineral of secondary origin. Only traces of barium are present in surface water and sea water. Because natural water contains sulfate, barium will dissolve only in trace amounts. Barium sometimes occurs in brines from oil-well wastes.

The U.S. Public Health Service (1962) states that water containing concentrations of parium in excess of 1 ppm is not suitable for drinking and culinary use because of the serious toxic effects of barium on heart, blood vessels, and nerves.

Bromide (Br)

Bromine is a very minor element in the earth's crust and is normally present in surface waters in only minute quantities. Measurable amounts may be found in some streams that receive industrial wastes, and some natural brines may contain rather high concentrations. It resembles chloride in that it tends to be concentrated in sea water.

Iodide (I)

Iodide is considerably less abundant both in rocks and water than bromine. Measurable amounts may be found in some streams that receive industrial wastes, and some natural brines may contain rather high concentrations. It occurs in sea water to the extent of less than 1 ppm. Rankama and Sahama (1950, p. 767) report iodide present in rainwater to the extent of 0.001 to 0.003 ppm and in river water in about the same amount. Few waters will contain over 2.0 ppm.

PROPERTIES AND CHARACTERISTICS OF WATER

Hardness

Hardness is the characteristic of water that receives the most attention in industrial and domestic use. It is commonly recognized by the increased quantity of soap required to produce lather. The use of hard water is also objectionable because it contributes to the formation of scale in boilers, water heaters, radiators, and pipes, with the resultant decrease in rate of heat transfer, possibility of boiler failure, and loss of flow.

Hardness is caused almost entirely by compounds of calcium and magnesium. Other constituents—such as iron, manganese, aluminum, barium, strontium, and free acid—also cause hardness, although they usually are not present in quantities large enough to have any appreciable effect.

Generally, bicarbonate and carbonate determine the proportions of "carbonate" hardness of water. Carbonate hardness is the amount of hardness chemically equivalent to the amount of bicarbonate and carbonate in solution. Carbonate hardness is approximately equal to the amount of hardness that is removed from water by boiling.

Noncarbonate hardness is the difference between the hardness calculated from the total amount of calcium and magnesium in solution and the carbonate hardness. If the carbonate hardness (expressed as calcium carbonate) equal the amount of calcium and magnesium hardness (also expressed as calcium carbonate) there is no noncarbonate hardness. Noncarbonate hardness is about equal to the amount of hardness remaining after water is boiled. The scale formed at high temperatures by the evaporation of water containing noncarbonate hardness commonly is tough, heat resistant, and difficult to remove.

Although many people talk about soft water and hard water, there has been no firm line of demarcation. Water that seems hard to an easterner may seem soft to a westerner. In this report hardness of water is classified as follows:

Hardness range (calcium carbonate in ppm)	Hardness description
0-60	Soft
61-120	Moderately hard
121-180	Hard
more than 180	Very hard

For public use, water with hardness above 200 parts per million generally requires softening treatment (Durfor and Becker, 1964, p. 23-27).

Acidity (H⁺¹)

The use of the terms acidity and alkalinity is widespread in the literature of water analysis and is a cause of confusion to those who are more accustomed to seeing a pH of 7.0 used as a neutral point. Acidity of a natural water represents the content of free carbon dioxide and other uncombined gases, organic acids and salts of strong acids and weak bases that hydrolyze to give hydrogen ions. Sulfates of iron and aluminum in mine and industrial

wastes are common sources of acidity. The presence of acidity is reported in those waters which have a pH below 4.5.

Sodium-adsorption-ratio (SAR)

The term "sodium-adsorption-ratio (SAR)" was introduced by the U.S. Salinity Laboratory Staff (1954). It is a ratio expressing the relative activity of sodium ions in exchange reaction with soil and is an index of the sodium or alkali hazard to the soil. Sodium-adsorption-ratio is expressed by the equation:

$$SAR = \frac{Na^+}{\frac{Ca^{++} + Mg^{++}}{2}}$$

where the concentrations of the ions are expressed in milliequivalents per liter (or equivalents per million for most irrigation waters).

Waters are divided into four classes with respect to sodium or alkali hazard: low, medium, high, and very high, depending upon the SAR and the specific conductance. At a conductance of 100 micromhos per centimeter the dividing points are at SAR values of 10, 18, and 26, but at 5,000 micromhos the corresponding dividing points are SAR values of approximately 2.5, 6.5, and 11. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Specific conductance (micromhos per centimeter at 25°C)

Specific conductance is a convenient, rapid determination used to estimate the amount of dissolved solids in water. It is a measure of the ability of water to transmit a small electrical current (see p. 8). The more dissolved solids in water that can transmit electricity the greater the specific conductance of the water. Commonly, the amount of dissolved solids (in parts per million) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream or from well to well and it may even vary in the same source with changes in the composition of the water (Durfor and Becker, 1964, p. 27-29).

Specific conductance of most waters in the eastern United States is less than 1,000 micromhos, but in the arid western parts of the country, a specific conductance of more than 1,000 micromhos is common.

Hydrogen-ion concentration (pH)

Hydrogen-ion concentration is expressed in terms of pH units (see p. 8). The values of pH often are used as a measure of the solvent power of water or as an indicator of the chemical behavior certain solutions may have toward rock minerals.

The degree of acidity or alkalinity of water, as indicated by the hydrogen-ion concentration, expressed as pH, is related to the corrosive properties of water and is useful in determining the proper treatment for coagulation that may be necessary at water-treatment plants. A pH of 7.0 indicates that the water is neither acid nor alkaline. pH readings progressively lower than 7.0 denote increasing acidity and those progressively higher than 7.0 denote increasing alkalinity. The pH of most natural surface waters ranges between 6 and 8. Some alkaline surface waters have pH values greater than 8.0, and waters containing free mineral acid or organic matter usually have pH values less than 4.5.

The investigator who utilizes pH data in his interpretations of water analyses should be careful to place pH values in their proper perspective.

Color

In water analysis the term "color" refers to the appearance of water that is free from suspended solids. Many turbid waters that appear yellow, red, or brown when viewed in the stream show very little color after the suspended matter has been removed. The yellow-to-brown color of some waters is usually caused by organic matter extracted from leaves, roots, and other organic substances in the ground. In some areas objectionable color in water results from industrial wastes and sewage. Clear deep water may appear blue as the result of a scattering of sunlight by the water molecules. Water for domestic use and some industrial uses should be free from any perceptible color. A color less than 15 units generally passes unnoticed (U. S. Public Health Service, 1962). Some swamp waters have natural color in excess of 300 units.

The extent to which a water is colored by material in solution is commonly reported as a part of a water analysis because a significant color in water may indicate the presence of organic material that may have some bearing on the dissolved solids content. Color in water is expressed in terms of units between 0 and 500 or more based on the above standard (see p. 8).

Oxygen consumed

Oxygen consumed is a measure of the amount of oxygen required to oxidize unstable materials in water and may be correlated with natural-water color or with some carbonaceous organic pollution from sewage or industrial wastes.

Tolerances for oxygen consumed in feed water for low-and high-pressure boilers are 15 and 3 ppm, respectively (Northeast Water Works Association, 1940). Wash water containing more than 8 ppm has been reported to import a bad odor to textiles; concentrations for water used in beverages and brewing range from 0.5 to 5.0 ppm (California State Water Pollution Control Board, 1952, 1954).

Organics

Phenols. --Phenolic material in water resources is invariably the result of pollution. Phenols are widely used as disinfectants and in the synthesis of many organic compounds. Waste products from oil refineries, coke areas, and chemical plants may contain high concentrations. Fortunately, phenols decompose in the presence of oxygen and organic material, and their persistence downstream from point of entry is relatively short lived. The rate of decomposition is dependent on the environment.

Very low concentrations impart such a disagreeable taste to water that it is highly improbable that harmful amounts could be consumed unknowingly. Reported thresholds of detection of taste and odor range from 0.001 to 0.01 ppm.

Detergents (ABS). -- The chief surfactant in commercial detergents is anionic alkylbenzenesulfonate (ABS). ABS and other anionic surfactants resist chemical oxidation and biological breakdown. Their persistence in water over long periods of time contributes to pollution of both ground water and surface water. Some of the effects produced from detergent pollution are unpleasant taste, odor, and foaming (Wyman, Robertson, and Page, 1962). Although the physiological implications of ABS to human beings is unknown, prolonged ingestion of this material by rats is believed to be nontoxic (Paynter, 1960). The U.S. Public Health Service (1962) recommends that ABS should not exceed 0.5 ppm in drinking and culinary waters.

Temperature

Temperature is an important factor in property determining the quality of water. This is very evident for such a direct use as an industrial coolant. Temperature is also important, but perhaps not so evident, for its indirect influence upon aquatic biota, concentrations of dissolved gases, and distribution of chemical solutes in lakes and reservoirs as a consequence of thermal stratification and variation.

Surface water temperatures tend to change seasonally and daily with air temperatures, except for the outflow of large springs. Superimposed upon the annual temperature cycle is a daily fluctuation of temperature which is greater in warm seasons than in cold and greater in sunny periods than with a cloud cover. Natural warming is due mainly to absorption of a solar radiation by the water and secondarily to transfer of heat from the air or from the bottom. Condensation of water vapor at the water surface is reported to furnish measurable quantities of heat. Heat loss takes place largely through radiation, with further losses through evaporation and conduction to the air and bottom. Thus the temperature of a small stream generally reaches a maximum in mid-to late afternoon due to solar heating and reaches a minimum from early to mid-morning after nocturnal radiation.

Temperature variations which commonly occur during summer in lakes and reservoirs of temperate regions results in a separation of the water volume into a circulating upper portion and a non-circulating lower portion. Separating the two is a stratum of water of variable vertical thickness in which the temperature decreases rapidly with increasing depth. This physical division of the water mass into a circulating and a stagnant portion is the result of density differences in the water column associated with the temperature distribution. Knowledge of the stratification in a body of water may result in increased utility by locating strata of more suitable characteristics. For example, the elevation of an intake pipe may be changed to obtain water of lower temperature, higher pH, less dissolved iron, or other desirable properties.

Temperature is a major factor in determining the effect of pollution on aquatic organisms. The resistance of fish to certain toxin substances has been shown to vary widely with temperature. The quantity of dissolved oxygen which the water can contain is also temperature dependent. Oxygen is more soluble in cold water than in warm water, hence the reduction of oxygen concentrations by pollution is especially serious during periods of high temperature when oxygen levels are already low. Increased temperatures also accelerate biological activity including that of the oxygen-utilizing bacteria which decompose organic wastes. These pollutional effects may be especially serious when low flow conditions coincide with high temperatures. Summary temperature data of water are essential for planning multiple uses of water resources.

Turbidity

Turbidity is the optical property of a suspension with reference to the extent to which the penetration of light is inhibited by the presence of insoluble material. Turbidity is a function on both the concentration and particle size of the suspended material. Although it is reported in terms of parts per million of silica, it is only partly synonymous with the weight of sediment per unit volume of water.

Turbid water is abrasive in pipes, pumps, and turbine blades. In process water, turbidities much more than 1 ppm are not tolerated by several industries, but others permit up to 50 ppm higher (Rainwater, Thatcher, 1960, p. 289). Although turbidity does not directly measure the safety of drinking water, it is related to the consumers acceptance of the water. A level of 5 units of turbidity becomes objectionable to a considerable number of people (U.S. Public Health, 1962).

SEDIMENT

Fluvial sediment is generally regarded as that sediment which is transported by, suspended in, or deposited by water. Suspended sediment is that part of it which remains in suspension in water owing to the upward components of turbulent currents or by colloidal suspension. Much fluvial sediment results from the natural process of erosion, which in turn is part of the geologic cycle of rock transformation. This natural process may be accelerated by agricultural practices. Sediment is also contributed by a number of industrial and construction activities. In certain sections, waste materials from mining, logging, oil-field, and other industrial operations introduce large quantities of suspended as well as dissolved material.

The quantity of sediment, transported or available for transportation, is affected by climatic conditions, form or nature of precipitation, character of the solid mantle, plant cover, topography, and land use. The mode and rate of sediment erosion, transport, and deposition is determined largely by the size distribution of the particles or more precisely by the fall velocities of the particles in water. Sediment particles in the sandsize (larger than 0.062 mm) range do not appear to be affected by floculation or dispersion resulting from the mineral constituents in solution. In contrast, the sedimentation diameter of clay and silt particles in suspension may vary considerably from point to point in a stream or reservoir, depending on the mineral matter in solution and in suspension and the degree of turbulence present. The size of sediment particles in transport at any point depends on the type of erodible and soluble material in the drainage area, the

degree of flocculation present, time in transport, and characteristics of the transporting flow. The flow characteristics include velocity of water, turbulence, and the depth, width, and roughness of the channel. As a result of these variable characteristics, the size of particles transported, as well as the total sediment load, is in constant adjustment with the characteristics and physical features of the stream and drainage area.

STREAMFLOW

Most of the records of stream discharge, used in conjunction with the chemical analyses and in the computation of sediment loads in this volume, are published in Geological Survey State reports on the surface-water supply of the United States. The discharge reported for a composite sample is usually the average of daily mean discharges for the composite period. The discharges reported in the tables of single analyses are either daily mean discharges or discharges for the time at which samples were collected, computed from a stage-discharge relation or from a discharge measurement.

State reports containing more complete records of stream discharge may be obtained by writing to the responsible District Engineer, Surface Water Branch, U.S. Geological Survey. For the area covered in this volume, the States, drainage basins, and locations of the district engineers are listed below.

State	Drainage basin	Surface Water Branch district office
Arizona	Colorado River basin	P.O. Box 4070 Tucson, Ariz. 85717
California	The Great Basin Pacific slope basins in California	345 Middlefield Road Menlo Park, Calif. 94025
Colorado	Colorado River	Denver Federal Center Denver, Colo. 80225
Idaho	Snake River basin	Room 215 914 Jefferson Street Boise, Idaho 83702
Montana	Pacific slope basins in Washington and upper Columbia River.	P.O. Box 1696 409 Federal Bldg. Helena, Mont. 59601

State	Drainage basin	Surface Water Branch district office
New Mexico	Colorado River basin	P.O. Box 1750 Greer Bldg. 113 Washington Avenue Santa Fe, N. Mex. 87501
Nevada	Colorado River basin The Great Basin	222 E. Washington St. Carson City, Nev. 89701
Oregon	Snake River basin Pacific slope basins in Oregon and lower Columbia River	P.O. Box 3621 1002 NE Halladay St. Portland, Oreg. 97208
Utah	Columbia River basin The Great Basin	Room 8209 Federal Bldg. 125 S. State St. Salt Lake City, Utah 84111
Washington	Snake River basin Pacific slope basins in Washington and upper Columbia River	Room 300 1305 Tacoma Ave., S. Tacoma, Wash. 98402

PUBLICATIONS

Reports giving records of chemical quality and temperatures of surface waters and suspended-sediment loads of streams in the area covered by this volume for the water years 1941-61, are listed below:

Numbers of water-supply papers containing records for	r
Parts 9-14, 1941-61	

Year	WSP	Year	WSP	Year	WSP	Year	WSP
1941 1942 1943 1944 1945 1946	942 950 970 1022 1030 1050	1947 1948 1949 1950 1951 1952	1102 1133 1163 1189 1200 1253	1953 1954 1955 1956 1957 1958	1293 1353 1403 1453 1523 1574	1959 1960 1961	1645 1745 1885

Geological Survey reports containing chemical quality, temperature, and sediment data obtained before 1941 are listed below. Publications dealing largely with the quality of ground-water supplies and only incidentally covering the chemical composition of surface waters are not included. Publications that are out of print are preceded by an asterisk.

PROFESSIONAL PAPER

*135. Composition of river and lake waters of the United States, 1924.

BULLETINS

- *479. The geochemical interpretation of water analyses, 1911.
 - 770. The data of geochemistry, 1924.

WATER-SUPPLY PAPERS

- *108. Quality of water in the Susquehanna River drainage basin, with an introductory chapter on physiographic features, 1904.
- *161. Quality of water in the upper Ohio River basin and at Erie, Pa., 1906.
- *193. The quality of surface waters in Minnesota, 1907.
- *236. The quality of surface waters in the United States, Part 1,
 Analyses of waters east of the one hundredth meridian,
 1909.

- *237. The quality of the surface waters of California, 1910.
- *239. The quality of the surface waters of Illinois, 1910.
- *273. Quality of the water supplies of Kansas, with a preliminary report on stream pollution by mine waters in southeastern Kansas, 1911.
- *274. Some stream waters of the western United States, with chapters on sediment carried by the Rio Grande and the industrial application of water analyses, 1911.
- *339. Quality of the surface waters of Washington, 1914.
- *363. Quality of the surface waters of Oregon, 1914.
- *418. Mineral springs of Alaska, with a chapter on the chemical character of some surface waters of Alaska, 1917.
- *596-B. Quality of water of Colorado River in 1925-26, 1928.
- *596-D. Quality of water of Pecos River in Texas, 1928.
- *596-E. Quality of the surface waters of New Jersey, 1928.
- *636-A. Quality of water of the Colorado River in 1926-28, 1930.
- *636-B. Suspended matter in the Colorado River in 1925-28, 1930.
- *638-D. Quality of water of the Colorado River in 1928-30, 1932.
- *839. Quality of water of the Rio Grande basin above Fort Quitman, Tex., 1938.
- *889-E. Chemical character of surface water of Georgia, 1944.
- *998. Suspended sediment in the Colorado River, 1925-41, 1947.
- 1048. Discharge and sediment loads in the Boise River drainage basin, Idaho, 1939-40, 1948.
- 1110-C. Quality of water of Conchas Reservoir, New Mexico, 1939-49, 1952.

Many of the reports listed are available for consultation in the larger public and institutional libraries. Copies of Geological Survey publications still in print may be purchased at a nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, who will, upon request, furnish lists giving prices.

COOPERATION

Many municipal, State, and Federal agencies gave assistance in collecting records for chemical-quality and sediment investigations. The table on page 28 lists the State and local agencies that cooperated in water-quality investigations in the drainage basins included in this volume and the locations of the quality-of-water district offices responsible for the data collected.

28	QUALITY OF	SURFACE	WATERS,	1961
District office	Room 8042 Federal Bldg. U.S. Court House 650 Capitol Avenue Sacramento, Calif. 95814	Geology Bldg. University of New Mexico P.O. Box 4217 Albuquerque, N. Mex. 87106	P.O. Box 3202 830 N.E. Halladay Portland, Oreg. 97208	8209 Federal Bldg. 125 S. State Street Salt Lake City, Utah 84111
Drainage basin	The Great Basin Pacific slope basins in California	Colorado River	Snake River Pacific slope basins in Oregon and lower Columbia River	Colorado River The Great Basin
Cooperating agency	California Department of Water Resources, William Warne, director. California Water Pollution Control Board, Paul R. Bonderson, executive officer. Monterey County Flood Control and Water Conservation District, Loran Bunte, Jr., district engineer	New Mexico Interstate Stream Commission, S. E. Reynolds, secretary	Oregon State Board of Higher Education, Dr. J.C. Richards, chancellor.	University of Utah, College of Mines and Mineral Industries, A. J. Eardley, dean. Utah State Engineer, Wayne D. Criddle.
State	California	New Mexico	Oregon	Utah

District office	Pacific slope basins in Washington and upper 830 N. E. Halladay Columbia River Portland, Oreg. 97208
Drainage basin	Pacific slope basins in Washington and upper Columbia River
Cooperating agency	Washington Department of Conservation and Development, E. T. Coe, director. Washington State Pollution Control Commission, W. W. Burgerson, director.
State	Washington

The Bureau of Reclamation, United States Department of the Interior, continued financial assistance for the operation of some chemical-quality and sediment investigations in the Colorado River basin in Arizona, Colorado, New Mexico, Utah, and Wyoming, for chemical-quality investigations at Lake Mead and below Hoover Dam on the Colorado River, and for water-quality investigations in the Pacific slope basins in Oregon and lower Columbia River basin.

Assistance was also provided by the Metropolitan Water District of southern California at La Verne, Calif., in the analyses of samples for the chemical-quality program at Lake Mead.

In addition to the cooperative programs, many stations were operated from funds appropriated directly to the Geological Survey. Chemical-quality and sediment load investigations in the Colorado River basin in Arizona, Colorado, New Mexico, and Utah have been a continuing Federal project since 1925.

DIVISION OF WORK

The quality-of-water program was conducted by the Water Resources Division of the Geological Survey, L.B. Leopold, chief Hydrologist, and S.K. Love, chief, Quality of Water Branch. The records were collected and prepared for publication under the supervision of district chemists as follows: In California and Nevada, Eugene Brown; Colorado, Wyoming, Utah, Hoover Dam, and the Virgin River basin in Arizona, J.G. Connor, succeeded by R.H. Langford; Idaho, Montana, Oregon, and Washington, L.B. Laird; and in Arizona and New Mexico, J.M. Stow. Any additional information on file may be obtained by writing or visiting the responsible quality-of-water district office.

LITERATURE CITED

- American Society for Testing Materials, 1954, Manual on industrial water: Am. Soc. for Testing Mat., Philadelphia, Pa., p. 356.
- Baker, M. N., 1949, The quest for pure water: Am. Water Works Assoc., New York, N. Y.
- Brandt, H. J., 1948, Intensified injurious effects on fish, especially the increased toxic effect produced by a combination of sewage poisons: Chem. abs. 42, p. 9015.
- Busch, Werner, 1927, The applicability of electrometric titration to the determination of the solubility of slightly soluble oxides; Zeitsche. Anorg. Chem., v. 161, p. 161-179.

- California State Water Pollution Control Board, 1952, Waterquality criteria: California State Water Pollution Control Board, pub. 3., p. 291-292, 377-378.
- Durfor, C. N. and Becker, E., 1964, Public water supplies of the 100 largest cities in the United States; 1962: U. S. Geol. Survey, Water-Supply Paper 1812, p. 17-29.
- Eriksson, E., 1952, Composition of atmospheric precipitation II; sulfur, chloride, iodine compounds, bibliography: Tellus, v. 4, p. 280-303.
- Faucett, R. L. and Miller, H. C., 1946, Methemoglobinemia occurring in infants fed milk diluted with well waters of high nitrate content: Jour. Pediatrics, v. 29, p. 593.
- Hazen, Allen, 1892, A new color standard for natural waters: Am. Chem. Jour., v. 12, p. 427-428.
- International Union of Pure and Applied Chemistry, 1961, Table of Atomic weights based on carbon-12: Chem. and Eng. News, v. 39, no. 42, Nov. 20, 1961, p. 43.
- Kilmer, V. J. and Alexander, L. T., 1949, Methods of making mechanical analyses of soils: Soil Sci., v. 68, p. 15-24.
- Lackey, J. B., and Sawyer, C. N., 1946, Plankton productivity of certain southeastern Wisconsin lakes as related to fertilization: Sewage Works Jour., v. 17, p. 573.
- Lane, E. W., and others, 1947, Report of the Subcommittee on Terminology: Am. Geophys. Union Trans., v. 28, p. 937.
- Magistad, O. C., and Christiansen, J. E., 1944, Saline Soils, their nature and management: U. S. Dept., Agriculture Circ. 707, p. 8-9.
- Maxcy, K. F., 1950, Report on the relation of nitrate concentrations in well waters to the occurrence of methemoglobinemia: Natl. Research Council, Bull. Sanitary Eng. and Environment, App. D., p. 271.
- Moore, E. W., 1950, The desalting of saline waters, a review of the present status: Natl. Research Council Comm. on Sanitary Eng. and Environment, Rept. to Subcomm. on Water Supply.
- National Research Council, 1954, Sodium restricted diets: Natl. Research Council, pub. 325.
- Northeastern Water Works Association, 1940, Progress report, Committee on quality Tolerances of Water for Industrial Uses: Northeast Water Works Assoc. Jour., v. 54.
- Paynter, O. E., 1960, The chronic toxicity of dodecylbenzene sodium sulfonate: U. S. Public Health Conference on Physiological Aspects of Water Quality Proc., Washington, D.C., Sept. 8-9, 1960, p. 175-179.
- Pleissner, M., 1907, Arb. Kais. Gesundheitsamt, v. 26, p. 384-443.

- Rainwater, F. H., and Thatcher, L. L., 1960, Methods for collection and analysis of water samples: U. S. Geol. Survey Water-Supply Paper 1454, 301 p.
- Rankama, K., and Sahama, T. G., 1950, Geochemistry: Chicago Univ. Press, Chicago, Ill., p. 767.
- Riffenburg, H. B., 1925, Chemical character of ground waters of the northern Great Plains: U. S. Geol. Survey Water-Supply Paper 560-B, p. 31-52.
- Seidell, Atherton, 1940, Solubilities of inorganic and metal organic compounds, 3d ed., v. 1, D. Van Nostrand, New York.
- U.S. Inter-Agency Committee on Water Resources, A study of methods used in measurement and analysis of sediment loads in streams:
 - Report 6, 1952, The design of improved types of suspendedsediment samplers: St. Anthony Falls Hydraulic Lab., Minneapolis, Minn., p. 86-90.
 - Report 7, 1943, A study of new methods of size analysis of suspended-sediment samplers: St. Anthony Falls, Hydraulic Lab., Minneapolis, Minn., p. 82-90.
 - Report 11, 1957, The development and calibration of the visual-accumulation tube: St. Anthony Falls Hydraulic Lab., Minneapolis, Minn., p. 1-109.
 - Report 14, 1963, Fluvial sediment discharge: U. S. Gov. Printing Office, Washington, D.C. 20402, p. 57-77.
- U. S. Public Health Service, 1962, Drinking water standards: U. S. Dept. Health, Education, and Welfare, Public Health Service: Pub. no. 956.
- U. S. Salinity Laboratory Staff, 1954, Diagnosis and improvement of saline and alkali soils: U.S. Dept. Agriculture, Agriculture Handb. 60, p. 1-160.
- Waring, F. H., 1949, Significance of nitrates in water supplies: Am. Water Works Assoc. Jour., v. 41, no. 2., p. 147-150.
- Wayman, C. H., 1962, Limitations of the methylene blue method for ABS determinations: U. S. Geol. Survey, Prof. paper 450-B, art. 49, p. B117-B120.
- Wayman, C.H., Robertson, J.B., and Page, H.G., 1962, Foaming characteristics of synthetic-detergent solutions: U.S. Geol. Survey, Prof. paper 450D, art. 178, p. D198.

CHEMICAL ANALYSES, WATER TEMPERATURES, AND SEDIMENT

PART 9. COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM

9-345, COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.

LOCATION.—At bridge at Hot Sulphur Springs, Grand County, 1 mile downstream from gaging station and 3.5 miles upstream from Beaver Creek.

BRAINAGE AREA.—782 square miles upstream from gaging station and 3.5 miles upstream from Beaver Creek.

BRAINAGE AREA.—782 square miles upstream from gaging station and 3.5 miles upstream from Beaver Creek.

BRAINAGE AREA.—783 square miles partial 1947 to September 1961.

Water temperatures: April 1949 to September 1961.

FRATEMERS, 1960-611——Dissolved solids: Maximum, 104 ppm May 1-31; minimum, 68 ppm June 1, 3-5.

Hardness: Maximum, 73 ppm July 1-31; minimum, 199 ppm May 1-31; minimum daily, 76 micrombos May 28.

FREMENS: 1960-611——Dissolved solids (1947-50, 1952-61): Maximum, 132 ppm July 16-31, 1955; minimum, 38 ppm June 21-30, 1947.

FRYEMES: 1947-611—Dissolved solids (1947-60, 1952-61): Maximum, 270 ppm June 21-30, 1947.

FRATEMES: 1947-61): Maximum, 60 ppm Aug. 1-10, 1955; minimum, 270 ppm June 21-30, 1947.

FRATEMES: 1949-61): Maximum, 75°F Aug. 6, 1957; minimum, freezing point on many days during winter months.

FREMARKS.—Records of specific conductance of daily samples available in district office at Salf Lake City, Utah.

1		Hg.	7.6	7.7	9.7	4.7	7:7	2.5	7.3	7.3	2.3
	Specific	duct- ance (micro- mhos at 25°C)	140	154	155	150 7.4	139	96	127	100	166 7.3
İ		ad- ad- sorp-(tion ratio	4.4	9.	۲.	۲. ۹	4.	u, n		ů.	4.4.
		Non- car- bon-	00	00	0	00	0	0 -	1 0	0	00
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	55	59	22	50	55	39	52	44	3 82
	solids 180°C)	Tons per day	18.5			14.3	36.9	63.4	71.5	78.3	53.9
1961	Dissolved solids (residue at 180°	Tons per acre- foot	0.13	.14	.14	.13	.12	010	. 1	01.	1.4
September 1961	Dis (resid	Parts per million	94	100	100	86	91	72			103
1960 to		Fon (B)	0.02		10.	.02	ខេ	2.0	.02		.16
r 196		Ni- trate (NO,)	0.2	.5.	• 5	4.	. 4.	ທີ່ແ	. 4		. 2.
ctobe		Fluo- ride (F)	0.4	4.4.	4.			ıı, a			
water year October		Chloride (C1)	2.0	4.4	5.0	4.0	2.5	1.0	מו	1.0	1.5
		Sulfate (SO ₄)	6.4	8.8	8.0	8.6	9	1.0	. 4	3.3	. 4 . 5
mill1on,	-0	(CO)	00					00			-
ts per	Bi-	car- bon- ate (HCO ₂)	80					50			100
in parts		tas- sium (K)	0.9	1.2	1.4			6.			 . 4.
lyses, 1		Sodium (Na)	6.9	120	12			4 4 0 0		4.2	7.1
Chemical analyses,	;	Mag- ns- sium (Mg)	3.2	2.9	2.9	2.4	2.4	1.7	1.9	2.4	4.4.
Chemic		Cal- (Ca)	171			16	2 22	25	18	14	5 2
		Iron (Fe)	88.	88	.01	9.8		8.5	.02	5.0	20.
Chemi		Silica (SiO ₂)	21	11	12	21	9.6	8. E	1 1	6,3	12
		Mean discharge (cfs) (SiO ₂)	72.9 10 102 11			54.1 10					308 192
		Date of collection	Oct. 1-31, 1960	Nov. 22-30	Jan. 1-31, 1961	Feb. 1-28	Apr. 1-30	May 1-31	June 2, 6-20.	June 21-23	July 1-31

COLORADO RIVER MAIN STEM--Continued

9-345. COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO. -- Continued

			Chemit	al an	llyses,	in part	s per	m 1111	on,	ater yes	Chemical analyses, in parts per million, water year October 1960 to September 1961 Continued	r 1960	to	Pepten	ber 1961	Cont	lnued					
					7		Ė	-HB	į						Dis. (resi	olved a	Dissolved solids (residue at 180°C)	Hardness as CaCO ₂	Hardness as CaCO ₂	8	So- Specific	
Date of collection	Mean discharge (SiO ₂) (cfs)	8111ca (810 ₂)	(Fe)	Caul- Caul- (Ca)	ne- sium (Mg)	Sodium (Na)		car- bon- ate HCO,	3 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Sulfate (SO ₄)	Chloride ride trate ron (Ci) (F) (NO ₂) (B)	0 (4) (4)	NO.	8 5 <u>(a)</u>	Parts per million	Tons per acre- foot	Tons per day	Cal- ctum, Mag- ne- stum	Non- car- bon-	a de de la contra	duct- ance (micro- mhos at 25°C)	H
Aug. 1-31, 1961 Sept. 1-30	101 186	##	11	23	3.2		6.1 1.9	86	00	4.5	1.0	6.0	0.7	1.0 0.3 0.7 0.19 1.0 .3 .6 .22	96 85	96 0.13 85 .12	26.2	71	00	0 0.4	160 7.5 139 7.5	7.5
Weighted average		11	0.02 18	18	2.6	6.6	6.6 1.4	75	0	5.7	1,8	1.8 0.4 0.6 0.07	9.0	0.07	88	88 0,12	34	22	٥	0 0.4	l	134 7.4
Time-weighted average	141 11	11	0.01	18	2.8	8.0	1.4	79	0	6.6		0.4	0.5	2.6 0.4 0.5 0.07	93	ł	1	57	°	0.5		144 7.5
Tons per day		4.1	4.1 0.01 6.8 1.0	8.9	1.0	2.5	0.5		28 0	2.2		0.1	0.2	0.7 0.1 0.2 0.03	1	1	1	1	1	T	1	ł

Temperature ('F) of water, water year October 1960 to September 1961 Dav	September 1961	
Temperature ('f') of water, water year October 1960 Dav	밁	
Temperature ('F) of water, water year October Dav	1960	
Temperature ('F) of water, water year Dav	October	
Temperature ('F) of water, water ye	ä	yav.
Temperature ('F) of water, water	2	Ц
Temperature ('F) of water,	Water	
Temperature ('F') of wat	r.	
Temperature ('F) of	18	
Temperature ('F)	8	
Temperature (*)		
Temperature		
	Temperature	

ler.	age				
۶	ar	976	322	6 T O	6.9 5.2
Г	3	36	32 32	12	331
	္က	32	32	5.5 5.5 6.2	85 83 83
	29	32	32	58 58 62	52
	28	38 32 32	32 32	32 57 62	66 74 51
	27	3.5 3.2 3.2	322	35 57 62	63 72 48
	56	45 32	32 32	36 56 52	6.9 6.9 5.5
3	25	46 32 32	32 32	38 56 62	66 69 69
Day	24	45 32 32	32	35 56 60	65 68
	23	41%	32	56	65 72 43
	22	322	323	32 56 65	64 71 45
5	21	32	32	32 57 62	65 72 45
3	20	32	32	525	64 67 47
1	61	32.5	32	56	64 67 57
	18	33	322	32 56 62	64 69 52
3	17	333	32	32 51 62	64 71 64
Pa A	16	336	32	52	5.0 5.9
	15	34	32	32 51 62	63 59
	14	35 45	32	25	62 71 57
;	13	33	35	56	62 71 56
	12	57 33	323	6 56 2	60 62 67 72 50 56
3	11	34	32	32 56 64	60 67 50
1	10	35 33	323	56 52	65 59
,	6	33	32	32 55 62	6.5 5.9
	8	55 44 32	32	45	65 59
	7	55 33	32	32 42 55	65 72 52
	9	54 33	32	552	63 70 56
	2	34	32	3.5 5.5 5.5	65 70 55
	4	26 63 65	32	53	65 72 54
	3	26 64 95	32	32 52 55	65 67 42
	2	54 37 32	32	22 22	531
	-	54 37 32	32	32 48 57	67
Month		October November December	January February March	April May June	July August September

EAGLE RIVER BASIN

9-690. EAGLE RIVER AT GYPSUM, COLO.

LOCATION .-- at bridge at Gypsum, Eagle County, about 400 feet upstream from Gypsum Creek, about 520 feet upstream from bridge on U.S. Highways 6 and 24, and about 550 feet upstream from gaging station,

AREA. --844 square miles. DRAINAGE

RECORDS AVAILABLE, --Chemical analyses: April 1947 to September 1961. Water temperatures: April 1949 to September 1961. TETREMES, 1960-611, --Dissolved solids: Maximum, 865 ppm Oct. 1-31; minimum, 102 ppm May 26-31.

Hardness: Maximum, 478 ppm Oct. 1-31; minimum, 71 ppm May 26-31.

Specific conductance: Maximum daily, 1,360 micrombos Nov. 1; minimum, 102 mpm May 26-31, 1961.

Water temperatures: Maximum, 70°F May. 2; minimum, 10°F ppm May 26-31, 1961.

EXTREMES, 1947-80, 1957-61): Maximum, 1370 ppm Aug. 11-12, 1952; minimum, 10° ppm May 26-31, 1961.

Hardness (1947-80, 1957-61): Maximum, 1370 ppm Aug. 23, 1957.

Specific conductance: Maximum, 56°F May. 24, 1949; minimum, 17-pexing point on many days during winter months.

Water temperatures (1949-61): Maximum, 76°F May. 24, 1949; minimum, freezing point on many days during winter months.

Water temperatures (1949-61): Maximum, 76°F May. 24, 1949; minimum, freezing point on many days during winter months.

Water temperatures (1940-61): Maximum, 76°F May. 24, 1949; minimum, freezing point on many days during winter months.

Water temperatures (1940-61): Maximum, 76°F May. 24, 1949; minimum, freezing point on many days during winter months.

Water temperatures (1940-61): Maximum, 76°F May. 24, 1949; minimum, freezing point on many days during winter months.

Water temperatures (1940-61): Maximum, 76°F May. 24, 1949; minimum, freezing point on many days during winter months.

Water temperatures (1940-61): Maximum, 76°F May. 24, 1949; minimum, freezing point on many days during winter months.

Water temperatures (1940-61): Maximum, 76°F May. 24, 1949; minimum, freezing point on many days during winter months.

1	Hď	7.8	7.8	. t		7.4	7.7	7.1	. 8.	7.8	7.6	7.3	468 7.5	7.6	9.1	966 7.7
Specific	ance micro- mbos at 25°C)	1,310 7.8	1,240	1,220	1,170	1,090	1,020	775	332	203	168	208	468			
	ration of the	2.0	1.9	7		1.5			9 40	6	N.	w. r		1.0	1.2	1.6
	Non- rate ate	309	296	298	287	276	252	182	22	58	25	34	98.0	133	195	202
Hardness as CaCO ₃	Cal- cfum, Mag- ne- stum	478	460	460	440	416	390	583	134	98	11	8	182	257	342	362
Dissolved solids residue at 180°C)	Tons per day	416 498	432	366	333	314	310	330	382	490	545	208	424 424	420	406	398
ber 1961 Dissolved solids sgidue at 180°	Tons per acre- foot	1.18	1,13	1.11	1.06	.98	.91	88.	28	.17	.14	.17	.39	.57	.74	8.8
1960 to September 1961 Dissolved (residue a	Parts per million	865				723	667	200	203	125	102	124	284	420	545	612
to	8 5 B	40.0	10	8	\$	2	8	2.8	3.2				.02	-		3.5
	Lrate (NO.)	0.2	6	1.2	9.	9.	4	4.	4.00	9	8.		, r.	.1	4.	- 10
tober	Fluo- ride (F)															
water year October	Chloride (C1)	148	130	125	120	105	92	63	19	0.6	6.0	e 6	32.0	55	12:	90
اہ	Po- Bi- Car- bon- Sulfate state (SO ₄) (CO ₂) (CO ₂)		304	599	286	275	265	186	104 83	31	22	8	91	139	193	221
			0	0	•	۰	•	0 (•	•	0	•	00	0	0	•
Bi-			200	198	187	171	166	143	94	70	56	62	113	151	179	191
part	F to the second	9.6	8	6,0	2.7	3.0	2.6	7.5	1.0				7.7	1.6	2.2	2.0
	Sodium (Na)			88	18	69	99	44	13				22		46	4.8
Chemical analyses,	Mag- ne- stum (Mg)			56	92	56	24	18	7.3	4	3.6	4.1	22	13	18	18
hemica	Call Call	146	142	142	134	124	117	06	428	27	22	22	5.5	. 83	107	116
	Iron (Fe)	0.00	1	8	i	1	8	20.	11	1	1	1	10.	.01	.01	
	Silica (SiQ.)	9.6	9.7	8.7	7.0	9.1	7.4	9	7.6	4	3.5	5.2	ກຸຄຸ	6.5	7.5	
	Mean discharge (cfs)	178	193	166	158				400 697		1,978	1,518	740 553			241
	Date of collection	Oct. 1-31, 1960	Dec. 1-31	Jan. 1-31, 1961	Feb. 1-26	Mar. 1-31	Apr. 1-19	Apr. 20-30	May 1-11	Nev 21-25	May 26-31.	June 1-26	June 27-30.	July 8-11, 13-16	July 17-31	Aug. 7, 9-31

EAGLE RIVER BASIN--Continued

9-690. EAGLE RIVER AT GYPSUM, COLO. --Continued

١		Hď	7.6	7.7	7.8	7.6	7.5	9.7	
	Specific con-	duct- ance (micro- mhos at 25°C)	412 7.6 821 7.9	493	669	524	583 7.5	909 7.6	1
		dum ad- sorp- tion ratio	8.0	.7	1.0	۲.	6.0	1.3	;
	ness iCO ₃	Non- car- bon-	72 198	106	161	128	130	214	-
	Hardness as CaCOs	Cal- ctum, Mag- ne- stum	154 344	203	280	224	228	346	1
ned	Dissolved solids (residue at 160°C)	Tons per day	177 558				416	-	1
Contin	Dissolved solids residue at 160°	Tons per acre- foot	0.32	.41	9.	.44	0.51	!	l
r 1961	Dus (resi	Parts per million	a 236 527	300	439	322	377	596	:
tembe		. Bo. (B)	0.07	. 6	.07	.02	0.5 0.07	0.6 0.06	0.5 0.06
o Sep		Fluo- Ni- ride trate (F) (NO ₂)	0.6	9.	۲.	6.	0.5	9.0	0.5
960 t		Fluo- ride (F)							
Chemical analyses, in parts per million, water year October 1960 to September 1961 Continued		Chloride (C1)	29 26	30	53	32	20	88	55.0
er year		Sulfate (SO ₄)	76 202	109	171	128	133	219	147
, wat	0	CO = 5	00	0	•	•	0	0	0
111100	Bi-	car- bon- ate (HCO ₃)	100 178	118	145	117	119	162	132
per n	·	tas- sium (K)	2.3	1.2	2.0	1.4	1.7	2.4	1.9
n parts		Sodium (Na)	22				35	61	39.0
ses, 1	**	Mag- ne- stum (Mg)	9.2	=	12	13	13	20	14.0
analy		Cal- (Ca)	46 108				17	107	78.0
emical		Fe)	11	!	1	1	1	1	-
ਰ ਹ		Silica (SiO ₂)	4.7	7.2	7.8	6.9	6.6	7.7	7.2
		Mean discharge (cfs)	278 392				1	408	-
		Date of collection	Aug. 8, 1961 Sept. 1-6	Sept. 7-14	Sept. 15-19	Sept. 20-30	Weighted average	Time-weighted average	Tons per day

7.5	8.7	8.1	7.4	7.7	7.4	7.0	7.6	6.7	7.6	7.2
1 7 7	ᅥᆏ								831 7.6	
1.7	200	1,3	9,	4.	ı,	6	1.0	1,2	1,3	1.0
337	285	250	35	33	36	99	131	188	187	183
540	456	376	100	98	92	146	248	328	322	336
									396	
1.23	1.10	8.	. 20	.17	19	.32	.53	.74	.73	17.
		ದ		ಷ	ಡ	ಹ			535	
1	1 1	1	İ	ŀ	1	ł	0.04	•	.05	.05
9.0	5.1	1.9	1.7	2.0	1.9	1:1	'n.	4.	.5	ů.
117	124	89	12	10	10	28	20	69	72	9
355	306	263	43	35	43	75	131	189	191	186
1									۰	
248	208	154	79	65	68	86	143	171	165	187
									52	44
27	242	22	4.9	5.8	4.4	7.3	9.7	17	16	13
172	143	114	32	25	30	46	83	103	103	113
9.6	12	13	8.8	6.3	5.6	6.5	0.9	8.2	7.9	01
b 172	b 172	b 167	1,030	1,510	1,450	b 804	p 381	b 246	b 274	p 301
Oct. 14, 1960	Jan. 14, 1961	12	May 21 b	June 3 b	June 16 b	June 27	July 11	July 25	Aug. 8	Aug. 27

Analyses of additional samples

a Calculated from determined constituente. b Discharge at time of sampling.

EAGLE RIVER BASIN -- Continued

EAGLE RIVER BASIN---CONTINUED 9-690. EAGLE RIVER AT GYPSUM, COLO.---Continued

Aver-	age	4 6 6 8 9 6 9 9	34 35 70	4 to 1	61
	3	35	96 17	181	52
	30	35	37	4 to to	92
	29	43 32 32	4 104	512	65
	28	46 32 33	333	545	62
	27	41 38 34	669	4 10 1	6.0
	26	50 40 36	35	441	69
	25	52 41 32	999	521	9 79
	24	51 32 35	6 8 3 6 4 0	53	200
	23	388	4 08	1 33	6.5
	22	35	3336	525	57
	21	32 32	888	4 0 0	209
	20	3000	933	500	57
	61	32 4	350	500	63
	8	42 37	34	24 4 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	099
		3404	200	56 6 6	90
Day	16	38	999	400	80.0
ш	15	33	33.55	4 4 6 5 6 6 1 6 6 6	209
	4	40 39	8 8 8 8 8 8	5 1 4	90
	13	43 32 3	32.4	5 4 4 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6	09
	12	54 32	939	503	63
	=	50 5 37 4	37 23	57 27	61
	0	51 41 36	35	55	28
	6	51 5	37 37 37	53.4	63
	ω	57 35	6 8 9 8 9 9 8 9 9 9	543	63
	7	32 3	8 8 4 8 4 0	37	63
	9	55 32	33	2 8 4	61
	2	32 2 2	33.22	53 4 6	59
	4	52 35 35	9333	4466	60
	က	45 4	35 3	2 6 6	59
	2	52 44 34	32	4 1 53	29
	-	34 4	33.2	5345	63
Month	MOHOL	October November December	January February March	April May	July

|00000 ← 00000

EAGLE RIVER BASIN--Continued

9-699. GYPSUM CREEK AT GYPSUM, COLO.

LOCATION. --At mouth near bridge on U.S. Highways 6 and 24 at Gypsum, Eagle County. RECORDS VALLABLE.--Chemical analyses: January to August 1961 (discontinued). REMARS.--No discharge records available.

		쪞	7.9	. 8.	7.8	8.1	8.0	: 8	7.8		7.6	7.7	7.8	:
i	Specific con-	duct- since micro- nhos at 25°C)	747	935	674	609	646 8.0	1,680	1,450	1,530	1,510 7.6	1,430	1,450	1,150
	&;	tion of the contract of the co	0.2	4	es.	ų.	- ا	<u> </u>	ů.	4.	e,	e.	₹.	e.
		Non- Pon- te	218	448	197	210	222	812	813	168	674	638	615	506
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	412	200	374	320	358	1.060	890	945	950	905	880	675
	solids tted)	Tons per day												
	Dissolved solids (calculated)	Tons per acre- foot	0.70	1.02	.64	. 29	.61				1.70	1.58	1.60	1.23
61	3	Parts per million	514	753	474	432	446	1,410	1,230	1,290	1,250	1,160	1,180	905
ıst 1961		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.24		-	11.				80.	-	-	-
to August		Trate (NO ₂)	2.7	3.5	2.3	6.	2,0	7.5	6.4	9	4.0	ь 5	3.6	3.6
		Fluo- ride (F)												
million, January		Chloride (CI)	2.0	7.0	3.0	4.0	3.0	5.5	5.5	7.0	6.0	9.0	10	6.5
		Sulfate (SO.)	221	461	202	216	213	812	806	9//	683	630	634	209
parts per		1 2 2 C	00	•	0	0	0	•	0	0	0	0	0	0
11	븀	bon- ate (HCO ₂)	237	99	216	134	166	302	46	216	336	326	323	206
yses,	Ė	S I I I												
Chemical analyses,		Sodium (Na)	7.8	22	0.6	=	2.5	22	18	97	22	14	28	17
Chem	ş	stum (Mg)	88	32	18	18	21	202	47	5	41	45	စ္က	40
		20 g (20)	127	139	121	6	109	343	279	608	313	569	8	204
		Iron (Fe)												
		Suica (SiQ,)	13	21	13	12	13	17	23	2	15	16	12	24
		Mean discharge (cfs)												
		Date of collection	Nov. 12, 1958	Sept. 3, 1960	Jan. 14, 1961	Feb. 15	Mar. 23	June 3.	June 16	June Zi	July 11	July 25	Aug. 8	Aug. 27

COLORADO RIVER MAIN STEM

9-705, COLORADO RIVER NEAR DOTSERO, COLO.

LOCATION: --At gaging station about 500 feet south of U.S. Highways 6 and 24, 1.5 miles west of Dotsero, Eagle County, and 1.5 miles downstream from Eagle River. DRAIMAG ARRA. -, 390 quare miles, approximately. RECORDS ANALARIE. --Chemical analyses: May 1969 to August 1961 (discontinued).

1		Hď	7.4	8.3	8.2	7.6	8.3	7.2	7.0	4.	,,	
pecific	5	ance (micro- mhos at 25°C)	557	683	525	269	241	290	422	0.0	770	269
	_	4 6 5 4	1:3	7.	ا .	ĸ,	ø,	10	ø.	e .		; ,
\vdash	_	P P P P P	8	120	3	28	30	4	63	22	8	2 2
Hardness	as caco,	Cal- clum, Mag-	204	250	167	116	102	124	163	202	36	222
olids	180,0)	Tons per day	968	873	761	2020	1780	1490	1170	026	0021	933
Dissolved solids	(residue at 180°C)	Tons per acre- foot	0.46	9	.46	8	.21	.25	.36	9.	G	34
TOTAL STATE	resid	Parts per million	340	440	a 335	170	a 153	a 182	a 265	332	200	357
VanE		사 년(B)	T							_		0.05
2 2	_	F F S	0.3	1.1	7	1.4	6	7.	۲.	ų,	ů.	i ai
		1 5 E	T									
Chemical analyses, in parts per million, October 1960 to August 1961		Chloride r (Cl) (46	63	38	97	0.6	13	22	98	22.5	38
		Sulfate (SO.)	122	139	108	41	41	2	18	601	CII	107
118	į	1 1 2 3 3 3 3 3 3 3 3 3 3	•	9	0	0	0	0	0	0	0	•
n D	Bį-	Pon- Bon- HCO.	132	142	134	101	88	97	122	158	142	160
yses	Š	1 1 2	Ī									
Cal ana		Sodfum (Na)					12	71	26	\$!	200	4 K
	Medi	Sign (X)	12	14	=	6.3	6.3	7.8	9	6.7	2:	9.0
		3 8 8	62	22	26	36	30	37	49	99	5 6	55
		(Fe)										
		Silica (SiO ₂)	6.3	15	14	=	::	7.9	9.3	80	9 0	10.5
		Discharge (Silic (cfs) (SiO,	976	735	841	4400	4320		1640	1050	1390	896
		Date of collection	ct. 14, 1960	ov. 1	ar. 23, 1961	ay 22	June 4	une 16	une 27	uly 11	cz árn	Aug. 27.

a Calculated from determined comstituents.

COLORADO RIVER MAIN STEM--Continued

9-705. COLORADO RIVER NEAR DOTSERO, COLO.--Continued

Periodic determinations of suspended-sediment discharge, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

	l	ŀ	1-2-3-1	1, (2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2	the fact of the country of the count										-	-
Water tem- Sam-		i		Sediment	Sediment				S	nspen	es pel	Suspended sediment				
	<u> </u>	Discharge (cfs)		concen- tration	discharge		-	Percen	t finer	than si	ze indi	cated,	illim n	Percent finer than size indicated, in millimeters		
				(mdd)	(cons per day)	0.002	0.004	800.0	0.016	0.031	0.062	0,125	0.250	005.0	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	.000 analysis
926	926	926	\vdash	18	47											_
735	735	735	_	27	24	_										
841	841	841	_	31	10		_									
4400	4400	4400	_	409	4860	_						_	_		_	
4320	4320	4320		94	1100											
3030	3030	3030	_	42	344											
1640	1640	1640		12	53											_
1050	1050	1050		53	150											
1390	1390	1390		66	372											
834	834	834		34	1.1											_
896	896	896		716	1870											

COLORADO RIVER MAIN STEM--Continued

9-711. COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.

LOCATION.—At Shoshone powerplant, 6 miles upstream from gaging station at Glenwood Springs, Garfield County, and 6.5 miles upstream from Raping Fork.

RECORDS AVAILABLE.—Chemical analyses: October 1941 to September 1961.

RECORDS AVAILABLE.—Chemical analyses: October 1941 to September 1961.

Water temperatures: May 1969 to September 1961.

EXTREMES. 1960-61.—Dissolved colldes: Maximum, 459 ppm Oct. 1-31; minimum, 169 ppm May 22-31.

Rardness: Maximum, 226 ppm Nov. 1-30; minimum, 479 ppm June 1-14.

Rardness: Maximum, 92 F Ang. 19; minimum, freezing point on many days during November to March.

Rardness: Maximum, 1,460 ppm Ang. 10; 1947; minimum, 105 ppm June 1-10, 1942.

RARDESS: Maximum, 1,460 ppm Ang. 10; 1947; minimum, 72 ppm June 1-20, 1942.

Rardness: Maximum, 1,460 ppm Ang. 10; 1947; minimum, freezing point on many days during winter months.

Water temperatures (1949-61): Maximum, 27: 2,560 mincrombos Ang. 10, 1947; minimum, freezing point on many days during winter months.

REMARES.—Records of September of daily samples available in district office at Salt Lake City, Utah. Records of discharge are given for Colorado

River at Glenwood Springs, Colo.

		Нq	7.6	7.6	9.0	7.5	7.6	8.1	7.7	7.5	7.6	7.6	7.7
	Specific	duct- ance micro- mhos at 25°C)	771	762	653 7.8	674	730	299	376 7.6	280	299	402 561	717 7.7
	$\overline{}$	dum de de de ratto ratto			0 6		2.1	1.9	4.6	9.		1.6	2.0
	ess CO ₃	Non- car- bon-	110	110	2 4	78	93	81	99	58	31	71	96
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	222	226	176	176	200	188	135	109	107	132	223
	Dissolved solids (residue at 180°C)	Tons per day	1,240	1,160	1,090	1,080	1,040	1,190	1,450	2,590	2,280	1,690	1,560
1961	Dissolved solids residue at 180	Tons per acre-	0.62	.62	22	.53	. 59	25	31.	. 23	.24	2.4.	5.59
tember :	Dis. (resi	Parts per million	459	458	382	393	434	396	310	169	178	333	432
to Ser		용 5 E(B)				.03	.03	2.	3 2	2	.17	119	88
1960		Ni- trate (NO ₂)	0.5	æ.,		۰.	.2	2.0	, n	۳.	6.		2, 6
ober		Fluo- ride (F)											
water year October 1960 to September 1961		Chloride (Cl)	102	86	g 8	66	66	82	3 8	18	23	8 99 90	85 83 83
		Sulfate (SO4)	121	122	262	83	106	8 8	49	32	32	6 8	113
11110	-	4 de 100	٥	0 0	0	0	•	0	0	•	0	00	00
per m	Bi-	car- bon- ate (HCO ₂)	136	142	124	120	131	131	110	86	93	128	152 144
parts	É	fas- Stum (K)	2,1	200	2 2	2.0	2.6	4.1	1.6	1.1	1.2	20.7	4.6.
Chemical analyses, in parts per million,		Sodium (Na.)	74	73	83	89			24 1				29 69
analy	7,0	magerine- ne- stum (Mg)	15	9 6	1.6	10	12	7	7.6	5.1	5.6	11.8.3	211
emica]		Cal- ctum (Ca)	65	99	200	54	9	28	4 4 2 2	32	34	51.5	67
ਉ		Iron (Fe)	0.01		18	1	1	8.		1	ŀ		<u>1</u>
		Silica (SiO ₂)	8.3	0.6	9.6	9.3	11	I;	31	0.6	81	8.8	9.4
		Mean discharge (SiO ₂) (cfs)	1	936	1.054	1,014	886	1,113	2,849	5,682			1,341
		Date of collection	Oct. 1-31, 1960	Nov. 1-30	Jan. 1-31, 1961	Feb. 1-28	Mar. 1-31	Apr. 1-30	May 12-21	May 22-31	June 1-14	June 24-30	July 1-31

COLORADO RIVER MAIN STEM -- Continued

9-711. COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO. --Continued

	<u>g</u> .	異	636 7.6 523 7.6	567 7.6	650 7.7	
	<u> </u>	duct- ance (micro- mhos at 25°C)				·
			1.6	72 1.5	84 1.8	
	Hardness as CaCO,	Non- car- bon- ate	93			1
	Hard	Cal- cium, Mag- ne- stum	205 183	173	191	+
penu	Dissolved solids (residue at 180°C)	Tons per day	1,740 2,230	337 0.46 1,390	l	1
-Conti	Dissolved solids residue at 180°	Tons per acre- foot	0.52	0.46	1	
er 1961-	PHC (res	Parts per million	379 312		386	
temp		- Po B)	0.6 0.05	0.3 0.06	0.3 0.05	1.4 0.26
80.0		F P S	0.6 6.	0.3	0.3	1.4
1960		Fluo- Ni- Bo- ride trate ron (F) (NO ₂) (B)				
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride (C1)	69 46	67	82	912
ter year		bon- Sulfate ate (SO ₂)	107 88	19	94	332
	J	(CO)	00	٥	0	0
11110	Bi-	Cer- bon- ate (HCO ₂)	136 128	123 0	130 0	504
per	i		1.9	1.9	2.1	6.7
in parts		Sodium fau- car- car- (Na.) Sium ate (K) (HCO ₂) (CO ₂)	36	46	29	961
yses,	,,	stum (Mg)	11 12	10	11	41.0
ana .		- II (3)	82	53	58	217
emica]		fron (Fe)	11	Т	!	
ខ		Suice (SiQ.)	10.3	9.5	9.7	39.0
		Mean discharge (cfs)	1,703	1	1,520	
		Date of collection	Sept. 1-26, 1961 Sept. 27-30	Weighted average	Time-weighted average	Tons per day

	۱.		l			
	Aver	38	37.2	1 2 2	583	2 9 E
		31	211	112	121	971
		30	3538	32	54 62	66
		29	32	113	51	900
		28	322	143	540	1 200
		27	33.5	327	5 2 2	67 67
		26	211	131	46 53 62	66 66 47
19		25	346	1 4 9	\$15	64 64 45
19		24	3242	1 4 9	240	64 66 47
ě		23	346	9 4 4 9 4 9 4 9 4 9 4 9 4 9 9 9 9 9 9 9	500	64 66 48
apte		22	36	1 4 9	# # °	64 66 47
Ö		21	32.2	1 ##	3 7 3	62 66 53
8		20	32 2	1 4 5	5 2 2	64 67 53
Š		19	32	1 2 5	348	\$ 62
ĕ		18	181	183	\$ 4.3	588
8		17	32	1 4 3	320	5 8 8 5 8 5 8 8 5 8 8 8 8 8 8 8 8 8 8 8
ä	Day	16	47 34 32	33	52	65 67 56
of water, water year October 1960 to September 1961		15	47 36 32	18%	42 52 56	65 67 56
Wat		14	48 37 32	1 ##	43 54 57	64 68 56
ř.		13	32	34	47 53 57	66 67 54
ž		12	53	32	47 55 56	66 65 56
ö		ш	881	32	\$ 7.00 0.00	66 56 56
•		01	32 32	323	2%	66 58 58
ę		6	333	32	188	 66 56
remperature		7 8	32.13	222	127	6 6 5 8 8
ě		7	425	928	45 49 52	68 66 56
를		9	357	323	400	2 7 4 5
		2	32.55	322	502	500
		4	448	32	52 22	66 51 51
		3	33 33	32 33	244	 66 52
		2	40%	32	22.20	181
		-	3387	32	55 53	63 66 62
	Month	TATO IN	October November December	January February March	April May June	July August September

COLORADO RIVER MAIN STEM--Continued

9-725. COLORADO RIVER AT GLENWOOD SPRINGS, COLO.

LOCATION.--At cableway, 0.2 mile downstream from gaging station at Glenwood Springs, Garfield County, 10 feet from U.S. Highways 6 and 24, and 0.2 mile upstream from Razing Pork.

Tree Roaring Pork.

**Tree Roaring Por

I		Ħ	7.5	9.0		0.0	8.2	7.7					7.4	1070 7.5 789 7.7
	Specific	duct- ance micro- mhos at 25°C)	984	1340	8	881	890	356	326	434	644	972	850	1070
	8:	to the	3.8	0.0	m e	4	3.1	1.3	0.	1.7	4	3.1	2.7	
		Non- car- ate	6	120	69	9	9	23	36	4	89	101	100	127
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	206	264	176	168	212	116	116	128	168	234	220	199
	Dissolved solids (residue at 180°C)	Tons per day						2550	2420	2070	1730	1770		1790
	Dissolved solids esidue at 180°	Tons per acre- foot	0.78	1.8	8	9.	.71	.30	. 27	.36	.51	.78	.70	.63
October 1960 to August 1961	Dis (res)	Parts per million	571	796	477	8 495	a 522	219	a 200	a 264	æ		514	639 465
Augu		- 8 <u>18</u> 8	1	1	ī	ŀ	1	1	1	1		0.05	-	ន់ន់
960 to		rate (NO.)	0.3	9	6.	1.0	e.	1.2	1.2	9.	e.	1.6	.7	ц
ber 1		Fluo 11de (F)												
		Chloride (Cl)	177	260	137	154	141	31	31	23	98	155	121	168 117
per million,		Sulfate (80.)	109	150	8	20	117	47	44	8	79	113	124	143 98
parts	,	Car- bon- ate (90 (CO ₂)		0	•	0	٥	۰						••
d ut	Bi-	car- bon- ate (HCO ₃)	144	176	130	134	142	115	97	106	122	162	146	165
lyses	å	in (g)												
Chemical analyses, in		Sodium (Ng.)	126	185	86	106	5						92	120 83
Chem	Ž	(Mg)	12	15	6.4	7	14	4.9	7.6	9.9	8.8	9.2	Ξ	13
		- 45°C	64	8	88	8	3	38	34	40	63	79	20	2 83
		Fron (Pe)												
		Silica (SiO ₂)	9.1	213	2	23	7.1	12	6.3	8.6	6.	9.5	91	9.5
		Discharge Sili (cfs) (Si	1100	708	1130	1180	1130	4310	4480	2900	1700	1150	1350	1040
		Date of collection	Oct. 14, 1960	Nov. 2	Jan. 14, 1961	ren. 10.	Har. 23	May 22	June 4	June 17	June 27	July 11	July 25	Aug. 8

a Calculated from determined constituents.

COLORADO RIVER MAIN STEM--Continued

9-725. COLORADO RIVER AT GLENWOOD SPRINGS, COLO. --Continued

Periodic determinations of suspended-sediment discharge, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

	Mothod	jo	analysis														
			2,000														
			1,000														
		meters	0.500	L													
		in milli	0.250	L													
	diment	cated,	0,125														
	es pep	ize indi	0.062														
	Suspended sediment	Percent finer than size indicated, in millimeters	6 0.03	L												_	
d water		nt finer	8 0.01													_	
distille		Perce	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	L		_											
; W, in			00.0	 												_	
on tube				_		_									_		
sual accumulati	Sodiment	discharge	(tons per day)	68	21	104	102	171	3760	1190	219	64	165		ect	219	2950
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sediment	concen- tration	(mdd)	30	#	34	32	26	323	86	58	14	53	ç	3	282	781
P, pipet		Discharge (cfs)	Ì	1100	708	1130	1180	1130	4310	4480	2900	1700	1150	6	OreT	1040	1400
	Same																
	Water	per-	(F)												_		
		Time (24 hour)		L	_			1210			0730	1015	1330			1315	
		Date of collection		Oct. 14, 1960	Nov. 2	Jan. 14, 1961	Feb. 16	Mar. 23	May 22	June 4	June 17	June 27	July 11	30 45	To	Aug. 8	Aug. 27

ROARING FORK BASIN

9-850. ROARING FORK AT GLENWOOD SPRINGS, COLO.

LOCATION --At gaging station at Glenwood Springs, Garfield County, 1,500 feet upstream from mouth. DRAINAGE AREA.--1,460 square on miles, approximately: RECORDS RAILABLE, --Chemical analyses: November 1958 to August 1961.

		Hq	7.7	7.4	7.3	6.9	8.1	7.9	8.0	8.0	8.2	8.1	501 7.3	7.6	7.5	7.5
	Specific con-	duct- ance (micro- mhos at 25°C)	714	658	625	664	650	393	245	248	248	332	501	629	673	715
		ad- sorp- tion ratio	0.8		œ.	6	œ.	ı,	e.	es.	e.	4.	۲.	1.0	6.	<u>«</u> ا
		Non- car- bon-	142	143	153	139	135	70	37	42	41	55	87	113	123	133
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	313	295	274	292	284	168	112	114	116	120	218	272	280	304
	solids : 180°C)	Tons per day	614					718	1120	1250	1250	1220	826	609	623	625
	Dissolved solids (residue at 180°	Tons per acre- foot	0.62	.58	.57	. 59	.58	.33	.21	. 21	. 21	. 29	44	. 58	. 58	.62
st 1961	Diss (resi	Parts per million	457	426	417	a 436	a 427	a 244	156	a 154	a 155	a 210	322	425	429	454
Augu		- 10 Bo												2		0.04
360 to		Ni- trate (NO ₃)	9.0	œ.	1.6	6	1.6	۰.	1.0	1.1	-	1.4	۳.	8.	۳.	1.4
ber 19		Fluo- ride (F)									_					
million, October 1960 to August 1961		Chloride (C1)	39	30	31	30	56	15	7.0	7.0	8.0	10	22	39	41	40
per milli		Sulfate (SO ₄)	151	153	165	162	162	79	43	46	44	65	105	137	137	140
in parts per	į	\$ 2 2 3 3 3 3 3 3 3 3 3 3	0	0	ö	0	•	۰	0	<u> </u>	•	•	0	0	•	0
in p	Bi-	car- bon- ate (HCO ₂)	208	182	148	187	182	120	91	88	91	116	160	194	192	208
analyses,	ě	K in the State of														
cal ana		Sodium (Na.)	32	27	30	33	33	16	8.5	7.8	7.6	13	25	39	36	32
Chemical	-	mag- ne- stum (Mg)	17	17	18	17	15	8.8	6.3	8.9	7.8	7.3	11	14	16	12
		- in (c. c.)	97	90	8	68	68	53	34	34	34	48	69	98	98	103
		Iron (Fe)														
		Silica (SiO ₂)	12	13	15	12	11	12		9.			7.5	11	11	13
i		Discharge (cfs)	498	498	425	328	336					2150		531		
		Date of collection	Oct. 14, 1960	Nov. 2	Jan. 14, 1961	Feb. 16	Mar. 23	May 17	Kay 22	June 4	June 16	June 27	July 11	July 25	Aug. 8	Aug. 27

a Calculated from determined constituents.

ROARING FORK BASIN--Continued

9-850, ROARING FORK AT GLENWOOD SPRINGS, COLO, --Continued

analysis Method 뻥 0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000 Percent finer than size indicated, in millimeters Periodic determinations of suspended-sediment discharge, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipei; S, sieve; V, visual accumulation tube; W, in distilled water) Suspended sediment Sediment discharge (tons per day) 561 291 291 38 335 224 69 36 17 15 Sediment 20220 (ppm) concen-Discharge (cfs) 498 425 328 336 2650 3010 2990 2150 950 Sam-pling point temsture (°F) per-Time (24 bour) 1450 0900 1800 0930 1415 1145 0800 1330 0830 May 22.
June 4.
June 16.
June 27. Oct. 14, 1960..... 14, 1961..... Feb. 16.....g 27..... Date of collection July Aug. <u>.</u>

COLORADO RIVER MAIN STEN

9-955, COLORADO RIVER NEAR CAMEO, COLO,

LOCATION. --At Grand Valley project diversion dam, 3.7 miles upstream from Cameo, Mesa County, 0.4 mile upstream from Plateau Creek, and 5.9 miles downstream from gaging station.

RECORDS AVAILAGE AGENCY Conductants approximately, upstream from gaging station.

RECORDS AVAILAGE AGENCY CONTINUE.—Charactal analyses: October 1961.

RECORDS AVAILAGE.—Charactal analyses: October 1961.

RATERIES APAIL 1949 to September 1961.

RATERIES APAIL 1949 to September 1961.

EXTREMES, 1960-61.—Dissolved solids: Maximum, 813 ppm Apr. 1-4; minimum, 1-16.

RECORD AND ARTHURS, 1960-61.—Dissolved solids: Maximum, 1960 ppm June 1-16.

Record Conductance: Maximum, 1970 ppm Apr. 2; minimum daily, 303 minimum, 143 ppm June 11-20, 1935.

RATERIES, 1933-61.—Dissolved solids (1933-43, 1960-61); Maximum, 1960 ppm Duc. 21-31, 1999; minimum, 143 ppm June 11-20, 1935.

Record Conductance (1941-61); Maximum daily, 1,860 minimum, 1969 ppm June 21-30, 1953.

Specific conductance (1941-61); Maximum daily, 1,860 minimum, 1969 ppm June 21-30, 1954, ully 22, 1965; minimum, freezing point on many days during winter months.

Refer remperatures (1949-61); Maximum, 75°F ully 27, 1963, July 12, 29, 31, 1964, July 28, 1965; minimum, freezing point on many days during winter months.

-		Ħď	2.5	7.7	7.7	9.	9.	7.6	9.			9.	7.7	9.	.5	9.	9.	7.3	۳.
	Specific con-	duct- ancs micro- nhos at 25°C)	1,200	1,290	1,230	1,190	1,160	1,300	1,360	1,090	946	747	551	357	367 7.5	453	610	086	1,080
	å;		3,6	3.7	3,7	80	3.9	3.8	3.9	3,1	2.9	1.7	1,2	'n	1.2	1.5	2.0	2.9	3.2
		Non- car- bon-	151	168	154	143	140	177	185	146	123	122	84	55	37	46	63	112	128
	Hardness as CaCO	Cal- ctum, Mag- ne- stum	289	306	286	266	256	302	316	271	242	229	193	145	119	135	166	251	272
	180°C)	Tons c	3,430	3,480	3,260	3,080	2,870	2,940	3,130	3,100	3,760	3,540	4,520	2,990	5,170	4,520	4,200	3,610	3,320
1961	Dissolved solids (residue at 180°C)	Tons per acre- foot	1.00	1.05	1.01	. 97	.94	1.06	1.11	. 68	.76	9.	.45	. 29	. 29	.36	.48	.81	68
in parts per million, water year October 1960 to September 1961	Diss (resi	Parts per million	734	775	742	710	694	782	813	646	262	438	328	214	213	266	356	593	656
to S		8 <u>8</u> (8)	1	;	1	0.03	90.	1	l	1	1	!	1	1	.17	.17	.18	1	1
1960		rate (NO ₂)	4.3	5,6	6.4	6,3	8.3	6.7	5.5	4.1	3.1	2.4	1.9	1.0	e.	۳.	.2	1,1	3.2
tober		Fluo- ride (F)																	
r year Oc		Chloride (C1)	190	202	195	202	195	218	235	172	148	108	65	32	38	22	78	144	166
on, wate		Sulfate (SO4)	183	192	176	162	165	186	187	152	128	96	89	40	45	29	18	130	120
m1111	į	(C)	0	0	0	0	•	•	0	0	0	0	0	0	0	0	•	0	0
s per	Bi-	car- bon- ate (HCO ₂)	168	166	161	120	141	153	160	153	145	130	133	110	200	106	126	170	175
part	Ė	(K) In the last of	1	1	ļ	4.2	4.2	1	ŀ	1	¦	ļ	ł	1	1	1	1	1	1
yses, in		Sodium (Na)	143	148	142	1.3	142	152	159	119	102	61			29			105	121
Chemical analyses,	200	stum (Mg)	21	21	20	16	17	25	22	22	18	22	15	10	8.8	8.0	8.8	16	18
hemica		Can (Can	81	88	83	22	75	8	98	2	67	26	22	41	36	41	52	7.5	79
ច		fron (Fe)	1	1	1	0.0	.03	ю.	6.	10.	.02	10.	10.	5	1	1	Ι	1	!
		Silter (SiQ,)	8.6	7,9	9.0	8.2	8.0	8.5	8.7	6.9	7.6	80	8.2	6.3	7.2	9.9	4.	9.6	6.6
		Mean Sill discharge (Sil	1,732	1,664	1,627	1,606	1,532	1,393	1,428	1,777	2,477	2,991	5,106	10,370	8,989	6,300	4,374	2,252	1,875
		Date of collection	Oct. 1-31, 1960	Now. 1-30	Dec. 1-31	Jan. 1-31, 1961	Feb. 1-28	Mar. 1-31	Apr. 1-4	Apr. 5-30	May 1-3	May 4-12	May 13-22	May 23-31	June 1-16	June 17-21	June 22-30	July 1-31	Aug. 1-31

COLORADO RIVER MAIN STEM--Continued

9-955. COLORADO RIVER NEAR CAMEO, COLO.--Continued

		Hq	7.2	7.5	7.5	
	Specific	duct- ance (micro- mhos at 25°C)	941 7.2	844 7.5	131 3.1 1,040 7.5	-
	ò.	Borp- Borp- tion ratto	2.0	106 2.5	3.1	1
		Non- car- bon-	119	106	131	1
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	248	221	256	;
pen	Dissolved solids (residue at 180°C)	Tons per day	4,080	3,560	1	1
Contin	Dissolved solids esidue at 180°	Tons per acre- foot	0.78	69.0	1	1
r 1961	Diss (resi	Parts per million	572 450	506	626	1
tembe		- 10 Bo	11	1	1	1
to Sep		Ni- trate (NO ₃)	3.1	3.1	4.3	22.0
1960		Fluo- ride (F)				
Chemical analyses, in parts per million, water year October 1960 to September 1961 Continued		Chloride ride trate (Ci) (F) (NO ₂)	130 83	124	162	870
er year		bon-Sulfate ate (SO ₄)	144	117	148	826
ı, wat	,	(C) # (S)	00	۰	0	0
1111or	Bi-	car- bon- ate (HCO ₂)	157	140	153	987
per m	ď	A the state of the	11	1	1	1
in parts		Sodium (Na)	100 69	89	116	623
yses,	7,7	nage ne- stum (Mg)	16 14	15	18	108
l anal		Cal- clum (Ca)	73 62	63	73	445
emica		Iron (Fe)	11	1	1	
ម		Silica (SiQ ₂)	9.9	8.1	8.5	57.0
		Mean discharge (Silica (cfs)	2,642 3,913	-	2,606	1
		Date of collection	Sept. 1-23, 1961 Sept. 24-30	Weighted average	Time-weighted average	Tons per day

Temperature ('F) of water, water year October 1960 to September 1961

Aver-	age	51 38 33	32 42	55 59	68 69 56
	_	43	32	121	181
	30 3				
	29 3	33 33 32 33	32 32	53 54 65 65 65	71 71 68 67 52 51
	_				
	7 28	3 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	5 8 3 8 4 5 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5 5 2 1 5 6 5 4 2 1	528
	27	346	36	44 54 65	69 68 51
	56	3 4 8	132	4 4 4 4 4 4	8 9 4
	25	94 34 32	32 35 48	54 64 64	69 47
	24	4 6 6 8 7 5	2 6 4 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	4 C 0	8 4 0 4 0 8
	23	3.5 3.5 3.2	32 36 47	4 5 6 4 5 5	68 70 49
	22	4 6 6 2 5 5	32 47	51 64 64	68 70 53
	7	36.93	33	52	68 70 55
	20	48 36	32 35 46	50 57 62	69 70 57
	19	48 37	32	52 57 64	5 5
	18	38	32 35	50 54 60	21 63
	17	9 8 8 9 9 8	32	54	70 68 62
Day	16	3380	2 6 4 6 5 6	4 v v 4 4 8	68 70 62
1	15	335	4 3 2 0	525	69
	14	33.63	32	45 52 57	69
	13	200	2320	3 2 7	69
	12	35 32	32 45 45	46 54 56	67 58
	11	3295	32 32 3	57 6	70 62
	10	3505	32	57	8009
	6	33 34	3332	54 40	69
	8	33.56	3332	4 4 6	69
	7	345	32 3	400	68 70 55 5
	. 9				
	5 (56 56 43 43 34 34	32 33 33 38 38	50 54 54 50 54 55	67 68 70 70 51 52
	4	4 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4	2 32 7 38 4 38	51 52 56 57 54 54	65 67 69 69 55 58
1	က	344	32		
	2	34 4	2 32	4 0 0 9 0 0	6 1 6 6 7 5
	_	. 56 . 34 . 34	32.	4 W W	65
Month	MOHEN	October November December	January February March	April May	JulyAugust

GUNNISON RIVER BASIN

9-1375. GUNNISON RIVER NEAR CORY, COLO.

LOCATION.--At highway bridge, 0.5 mile upstream from Tongue Creek and 1.5 miles southwest of Cory, Delta County. DRAINAGE AREA.--5, 410 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: May 1959 to August 1961 (discontinued).

REMARKS.--Records of discharge are estimated.

		Нq	7.6	7.5	6.7	8,1	7.6	6.7	7.5	8,3	7.5	7.4	7.8	7.4
	Specific	duct- ance micro- mhos at 25°C)	1990	869	881	565	262	237	277	491	729	1260	983	006
		ad- ad- Borp- tion ratio	3.1	1.5	1.8	1.2	ĸ.	Ġ	œ.	1.0	1.4	2.5	1.8	1.6
		Non- car- bon-	564	198	193	97	35	31	38	88	141	297	236	202
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	776	356	336	216	109	86	1117	196	284	464	380	344
	Dissolved solids (residue at 180°C)	Tons per day	1090				2430	2120	1640	694	603		765	
	solved	Tons per acre- foot	2.20				.23	. 22	.25	.45	.67		96.	
ıst 1961	Dis (res	Parts per million	1620	625	a 629	a 381	a 170	a 160	a 184	a 331	496		708	
Augr		Po B B												0.15
360 to		Ni- trate (NO ₂)	3.5	3.1	6.2	2.4	2.0	7.7	۲.	6.	4.	1.6	1.3	6.
ber 19		Fluo- ride (F)												
Chemical analyses, in parts per million, October 1960 to August 196		Chloride (C1)	30	19	13	0.6	5.5	3.5	3.0	7.0	9.0	52	18	14
ber milli		Sulfate (SO ₄)	910	599	322	163	51	51	8	144	233	202	370	319
rts	Č		00					٥					0	
in ps	Bi-	car- bon- ate (HCO ₃)	258 183	193	174	145	96	82	96	124	174	204	176	110
yses,	i	sium (X)												
cal anal		Sodium (Na)	198 82	99	75	40		13				122	81	89
Chemi	;	mage- ne- sium (Mg)	85	32	33	19	6.0	6.8	8.0	16	22	46	36	22
		Cad- Ctum (Ca)	171 91	06	88	22	30	28	34	53	78	111	93	93
		Fron (Fe)												
		Silica (SiO ₂)	13	21	17	22	16	15	14	12	12	9.6	13	12
		Mean discharge (cfs)	250 450				5300					300	400	450
		Date of collection	Oct. 13, 1960	Jan. 13, 1961	Feb. 15	Mar. 23	May 23	June 3	June 15	June 26	July 10	July 24	Aug. 7	Aug. 26

a Calculated from determined constituents.

GUNNISON RIVER BASIN--Continued

9-1495. UNCOMPABGRE RIVER AT DELTA, COLO.

LOCATION .--At gaging station at west edge of Delta, Delta County, 1.2 miles upstream from mouth. DRAIMAGE AREA.--1.10 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: Movember 1888 to August 1961 (discontinued).

		Hď	7.6	6.1	9.	6.	7.8	7.5	7.8	8.0	7.5	7.6	7.7	7.6	7.6
	Specific	duct- ance (micro- mhos at 25°C)	1890	1780	2740	2730	2330	1070	1260	1620	1920	2290	2260	2160	2070
		tion of the contract of the co	2.5	20.00	4.2	4.		1.5	0.0	2.4	2.6	6,0	2.9	9.0	4.
		Non- car- bon-	617	292	867	832	730	297	364	202	619	808	792	712	729
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	824	694	1110	1060	950	450	220	069	840	1040	1010	930	960
	solids ited)	Tons per day	1720	1290	1020	805	171					751		1030	
	Dissolved solids (calculated)	Tons per acre- foot					2.62			_		2.67		2.46	_
ust 1961	1 00	Parts per million	1520	1420	2360	2330	1930	771	196	1290	1580	1960	1920	1810	
Aug		. B. B.													0.29
960 t		Ni- trate (NO ₂)	9.3	12	ន	13	14	5.	6.4	7.9	=	12	=	=	2
ber 1		ride (F)				_				_					
Chemical analyses, in parts per million, October 1960 to August 1961		Chloride (C1)	14	16	35	30	22	9.0	01	13	17	20	20	17	17
per milli		Sulfate (SO ₄)	907	106	1440	1430	1170	421	551	758	927	1190	1170	1090	1020
arts	Ę	1 1 1 0 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1	٥	•	0	0	•	•	٥	0	0	•	•	•	•
d ut	Ę	Car- bon- (HCO)	253	121	296	276	268	166	190	226	270	282	266	266	262
lyses	Å	stun (X)													
ical ana		Sodium (Na)	163	172	320	328	246	73	105	142	175	215	213	210	166
Chem	, j	Mg)	72	2	107	102	99	34	36	49	61	78	78	99	99
		Ctum (Ca)	212	157	569	257	236	124	148	196	236	289	277	261	277
		Fe)													
		Silica (SiO ₂)	17	28	13	52	16	13	18	17	18	18	19	2	61
		Discharge Sili (cfs) (SiC			Œ		148					142		210	258
		Date of collection	Oct. 13, 1960	Nov. 1	Jan. 13, 1961	Feb. 15	Mar. 23	May 23.	June 3	June 16	June 26	July 10	July 24	Aug. 7	Aug. 26

a Daily mean discharge.

GUNNISON RIVER BASIN--Continued

9-1495, UNCOMPAHGRE RIVER AT DELTA, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

	Method	y .		VPWC	MdA	VPWC												
			0.002 0.004 0.006 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000											-				
			1,000															
		nsters	0.500	100	100	ł	1	ŀ	;	ł	;	1	1	1	1	1	!	!
		n millin	0,250	86	86	100	;	;	;	1	1	;	1	ŀ	1	1	ŀ	1
	Iment	ated, in	0,125	06	6	96	;	ł	!	1	:	!	1	;	1	;	;	1
	led sec	ss indic	0.062	09	8	85	1	1	;	;	1	ł	1	;	;	1	١	1
	Suspended sediment	Percent finer than sizs indicated, in millimsters	0.031				_											
water)		t finer	0.016	63	26	49	1	1	;	ŀ	:	ŀ		ı	-	ŀ	ŀ	1
stilled		Percen	0.006															
v, in d			0,004	39	'n	39	;	1	;	<u></u>	1	;	;	ŀ	!	;	1	1
tube:			0,002															
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sediment	discharge	(tons per day)		1	421	126	40	65	125	2270	1790	1460	235	46	22	88	127
; S, Sleve; V, V	Sediment	concen- tration	(ppm)	2000	2000	371	113	93	246	312	1450	1050	096	316	120	26	157	182
P, piper		Discharge (cfs)		535	535	420	414	d 160	128	146	579	632	596	275	142	104	210	258
	Sam-	pling	pome															
	Water tem-	per-	(°F)	55	55	22	1	1	:	ł	!	1	1	1	;	;	!	1
		Time (24 hour)	,	ı				1300					0715				1500	
		Date of collection		Apr. 15, 1960	Apr. 15	0ct. 13	Nov. 1	Jan 13, 1961	Feb. 15	Mar. 23	May 23	June 3	June 16	June 26	July 10	July 24	Aug. 7	Aug. 26

d Daily mean discharge.

GUNNISON RIVER BASIN--Continued

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO.

ATION .--At bridge on State Highway 141, 180 feet downstream from gaging station, 0.4 mile downstream from Whitewater Creek, 0.5 mile south of Whitewater, and 8 miles southeast of Grand Junction, Mesa County.

DMAINAGE AREA, --7,870 square miles, approximately, upstream from gaging station. RECORS VAVILABLE. --116mical analyses: October 1931 to September 1961. Water temperature-s: April 1949 to September 1961.

EXTREMES, 1960-61. --Dissolved solids: Maximum, 1,720 ppm Oct. 1-31; minimum, 299 ppm May 24-31.

Applications and the statement of the part of the statement of the stateme

Part Part					•										
Mean Silica Iron charal analyses, in parts per million, water year October 1960 to September 1961 Mean Silica Iron charal san yeas, in parts per million, water year October 1960 to September 1961 Mag- Mean Silica Iron charal salura (SiO) Mean Silica Iron charal salura (Mean Silic	Į			7.7	8.0	8.0				7.5	7:3	7.4	7.8	7.7	7:7
Mean Silica Iron Cal Mag- Sodium Ear Dav- Car Cal Mag- Sodium Ear Dav- Car Cal Cal Mag- Sodium Ear Dav- Car Cal		Specific	duct- ance micro- nhos at 25°C)	2000	1520	1450	1410	1500	895	778	902	603 821	570	578	1280
Mean Silica Properties Pr				40	0.0	2	2.5	0	. r.	T.	1.5	. T	œ, œ	6.	19
Mean Silica Iron Challe Iron				684	414	396	391	438	222	178	216	128 210	129	123	393
Mean Silica Iron Cal Mag- Sodium Sium		Hardr as Ca	Cal- cium, Mag- ne- stum	900	604	576	558	610	366	317	375	334	236	231	84.0
Mean Silica Iron Cal- Mag- Sodium tag- Sodium		solids : 180°C)	Tons per day	3830 3280	2630	2190	2240	2770	2440	2540	3850	3580 3260	4230	5010	2890
Mean Silica Iron Cal- Mag- Sodium tag- Sodium	r 1961	Jolved due at	Tons per acre- foot	2.34	1.59	1.55	1.51	1.62	.88	.76	. 63	.56	.52	53	1.33
Mean Silica Iron clum sium Cal- Mag- Sodium tas Po- car- Dom Sulfate (SiO ₂) (Fe) (Ca) Mag- Sodium tas Cal- Mag- Sodium tas Cal- Dom Sulfate (SiO ₂) (Fe) (Ca) (Ca) (Mg) Sium Sium sium (Mg) Sium Sium sium sium sium sium sium sium sium s	Septembe	Dist (resi	Parts per million				1110	1190	648	557	612	410 598	384	391	980
Mean Silica Iron Cal- Mag- Sodium tas- Do. Cal- Mag- Cal- Mag- Cal- Mag- Cal- Mag- Cal- Mag- Cal- Mag- Cal- Cal- Mag- Cal-	\$		- 0 10 (a)	0.27	25	18	17	60.	18	90.	19	88			
Mean Silica Iron Cal Mag- Sodtum tas Don- Car Cal	er 196			6.8	2.8	5.6	0.4	6.5	1.2	80.0	2.0.	œ.w.	40	, e	1.0
Mean Silica Iron Cal Mag- Sodtum tas Don- Car Cal	ctob		Fluo- ride (F)												
Mean Silica Iron Chemical analyses, in parts per million. Mean Giso, Fe (Ca) Mag- Sodium tas- Don- Don- Sulfidecharge (SiO ₂) Fe (Ca) (Mg)			Chloride (Cl)	20 16	16	22	19	18	27	01;	# #	6.0 10		2.0	13.0
Mean Silica Iron Cal- Machecharge (SiO ₂) (Fe) (Ca) (Ca	- 4		Sulfate (SO ₄)	996 672	630	620	603	650	328	265	308	161 307	178	182	549
Mean Silica Iron Cal- Machecharge (SiO ₂) (Fe) (Ca) (Ca	m11.	į	2 a a S	00	00	0	00	00	•	0	0	00	00	00	•
Mean Silica Iron Cal- Machecharge (SiO ₂) (Fe) (Ca) (Ca	ts per	Bi-	car- bon- ate (HCO ₂)	264	232	217	204	210	175	169	194	154	131	132	189
Mean Silica Iron Cal- Machecharge (SiO ₂) (Fe) (Ca) (Ca	n par	ż		5.4	9.4	3.	4.1	4. C	2.0	8.0	2 60	2.5	1.6	2.2	9.6
Mean Silica Iron Cal- Machecharge (SiO ₂) (Fe) (Ca) (Ca	llyses, 1			168	114	121	121	125	63	940	5.5	30 51	3.8	90	98
Mean Silica Evon (rfs) (780,1) (Fe) (76) (76) (76) (76) (76) (76) (76) (76		Š	stum (Mg)	83	58	26	80 80	15	33.	20	26.	16 23	15	12	4.5
Mean discharge (SICa (Cfs) (SICa (SICa (Cfs) (SICa (Cfs) (Cf	Chemi		Crail (Ca)	224 160	146	139	127	144	92	94			71	896	149
Mean discharge (cfs) (cf			Fe)	0.02	18	3 1		13	.65	9.	<u> </u>		11		-
Mean discharge (cfs) (cf			Silica (SiO ₂)	15 16	17	12	12	4.	91	15	12	13	12	212	13
Date of collection of collection oct 1.31, 1960 Nov 1.30 Dec 1.31 Dec 1.31 Dec 1.31 Mar 1.17 Apr 15, 9-21 Apr 22-26 Apr 22-30 Apr 22-31			Mean discharge (cfs)				747	862	1393				4076	4741	1092
				Oct. 1-31, 1960	Dec. 1-31.	Feb. 1-28	Mar. 1-17.	Mar. 30-31	Apr. 6-8	Apr. 22-26	May 1	May 9-11	May 12-23	June 1-17	June 25-30

7.8	7.7	7.7	1
1730 7.7 2030 7.8 1820 7.4 1710 7.8 1240 7.8	1090	1420 7.7	-
12220	1.5	1.9	;
577 717 603 557 354	307	426	1
750 905 800 760 522	457	109	-
2500 2160 2950 5410 5900	3180	1	ì
1.88 2.27 2.07 1.89 1.27	1.14	l	1
1380 1670 1520 1390 935	839	1130	1
233 230 119 13	0.13	0.18	0.50
24404 27482	2.9	4.5 0.18	11.0 0.50
20 24 18 16 18	12	16	45.0
814 989 861 789 511	449	624	1700
00000	0	0	0
211 229 240 248 205	183	213	693
23.00.0	3.2	4.1	12.0
128 151 137 129 96	7.7	108	293
58 74 75 39	38	53	144
01 240 01 240 196 211	121	153	458
99111			
9.3 14 16 16	14	15	53.0
672 480 718 1442 2338	1	1403	-
July 1-12, 1961 July 13-31. Aug. 1-31. Sept. 1-32. Sept. 23-30	Weighted average	Time-weighted average	Tons per day

Analyses of additional samples

7.5	8.2	8,2	7.4	8.3	00	8	.3	7.9	8	7.6	7.1	7.5	7.4	7.5
										1410 7.6				
2.6	2.3	2.6	2.5	2.7	0	0	00	1.1	1.9	2,3	2,3	2,1	2,3	2.8
										408				
924	604	528	280	200	300	188	192	256	476	580	882	755	610	1050
3700	3250	1980	2220	2080	2040	5020	4920	4200	3280	2370	2130	2500	1940	4490
2,42	1.65	1.47	1.55	1.41	-	44	42	.59	1.19	1.56	2.24	1.88	1.60	2.79
1780	1210	b 1080	b 1140	b 1040	h 740	b 325	b 311	b 433	b 873	1140	1650	1380	1180	2050
!	ï	ī		1		;	1	1	1	61.0	.26	. 24	. 26	.32
4.9	6.7	7.9	6.9	5.8	ď	8	2.4	2.7	4.2	4.7 0.	1.8	3.5	4.3	7.3
											_			
20	14	19	19	119	i.	20.0	4.0	6.0	12	16	20	15	17	26
1040	728	636	643	613	301	152	136	210	488	628	2967	784	623	1190
0	0	0	0	4					14		0	0	0	•
252	126	158	226	120	15.9	100	118	138	156	210	238	246	271	274
183	130	137	141	138	87	. 5	22	40	94	125	159	132	132	210
82	63	51	54	49	98	2 2	9.7	19	32	34	44	57	36	81
231	138	128	144	120	œ	46	61	71	138	176	283	208	184	287
17	22	56	20	21	- 0	12	12	16	15	14	12	18	15	18
a 770	æ	æ	æ	a 740	1020	a 5720	a 5860	a 3590	a 1390	a 770	æ	a 672	æ	œ
Oct. 13, 1960	Nov. 1	Jan. 14, 1961	Feb. 15	Feb. 17	Mar 24	Nav 22	June 3	June 16	June 26	July 10	July 24	Aug. 7	Aug. 25	Aug. 26

a Discharge at time of sampling. b Calculated from determined constituents.

GUNNISON RIVER BASIN -- Continued

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO. --- Continued

-					J.	aper	a tu	re O	°F)	ö	Temperature ('F) of water, water year October 1960 to September 1961	г,	rate	r ye	ar (Octo	ber	196	t to	Sej	ptem	ber	1961			-				
														-	Day															Aver-
	7	3	4	5	9	7	8	6	10	11	12	13	7	15	61 81 21 91 51	17	18		20 2	21 2	22 2	23 24		25 26	6 27	7 28	29	30	31	age
841	61 	96	72 1	56 48 35	57	56 49 32	 55	57 44 32	54 	04 95	53 32	211	51 41 32	711	337	48 47		916	211	36 5	0011	48 52 32		49 49 32	8	9 6 6 9 9 9 9 9	311	33.5	4.2	51
32	#	1 8 3	113	111	1 20	111	33	32	1 20	32	115	335	111	286	111	134	113	111	5 m 3	188		32 34		1 1 3 1 1 1	32 41	111	3	113	113	111
4 60 60	0 50 E	2 4 5	222	3 4 8	4 N N	300	644	40.0	52.0	53 68	4 9 4	544	4 4 4 6 6 6	533	404	55.5	9 2 2 0	525	9 7 8	52 5 7 6 5 5	550	58 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		45 52 52 54 64 64	750	70 22	58	737	1 8 1	\$ 4 4 4 4 8
0 0 4	70 70 72 70 64 61		71 70 71 74 55 53	72	5 4 5	72 73 62	223	72 73 62	523	72 17 29	229	607	70	70 72 71 69 63 63		72 71 69 69 62 62		69 68 70 70 61 59		74 75 71 71 56 53		70 70 73 71 50 53		75 70 71 72 53 54		71 72 75 70 59 55	75 72 56 56	2632	121	717

GUNNISON RIVER BASIN--Continued

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO. -- Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawai tube; C, chemically dispersed; D, decantation; N, in native water;

	Method	jo	analysis	VPWC	VPN										_	_			VPWC		
			2,000																		
			1,000																		
		neters	0.500	100	100	1	1	ł	1	1	;	ï	1	ŀ	;	;	ł	1	ł	1	1
		millin	0,250	86	86	1	1	1	1	1	ł	ł	1	1	1	ŀ	ł	1	1	1	1
	ment	ıted, in	0,125	98	86	1	ŀ	ŀ	1	1	1	i	;	ŀ	1	;	;	ł	ŀ	ł	1
	Suspended sediment	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	77	11	ŀ	ŀ	;	1	1	1	I	1	ŀ	ł	į	1	ł	100	1	1
	spende	han siz	0.031	_		_															
vater)	S	finer t	910.0	51	42	ĺ	!	!	i	;	ŀ	ŀ	1	1	1	;	1	1	66	1	!
stilled		ercent	800.0			_															
, in di		1	0.004	34	16	1	ł	1	;	1	ł	ł	1	1	1	;	ŀ	1	8	1	1
tube; W			0.002														_				
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sadiment	discharge	(tons per day)	1	1	216	126	33	74	48	366	8390	6030	1860	199	40	22	470	ı	;	2430
S, sieve; V, vis	Sediment	concen- tration	(mdd)	832	832	104	47	18	38	24	133	543	381	192	53	19	19	229	14000	1080	407
P, pipet;		Discharge (cfs)	((5500	5500	770	966	089 P	720	740	1020	5720	5860	3590	1390	770	478	672	609	812	d 2210
	Sam-																				
	Water tem-	per-	ature (°F)	20	20	1	ŀ	!	1	!	;	1	ł	ł	;	!	ł	1	72	1	
		Time (24 hour)		1800	1800			_	0820	0815			1035	0935	1415	1415	1415	1340	1815	1800	1000
		Date of collection		Apr. 14, 1960	Apr. 14	Oct. 13	Nov. 1	Jan. 1, 1961	Feb. 15	Feb. 17	Mar. 24	May 22	June 3	June 16	June 26	July 10	July 24	Aug. 7	Aug. 25	Aug. 26	Oct. 11

d Daily mean discharge.

ë

DOLORES RIVER BASIN

UTAH 9-1800, DOLORES RIVER NEAR CISCO,

DOCATION. --At gaging station, 9 miles upstream from mouth, 13.5 miles downstream from Colorado-Utah State line, and 14 miles southeast of Cisco, Grand County. REMINGE REMINGE REM.--4, 806 square miles, approximately.

RECORDS ALMABLE.--Chemical analyses: March 1961 to September 1961.

Water temperatures; March 1951 to September 1959.

NEMARKS. -- Records of specific conductance of daily samples available in district office at Sait Lake City, Utah. Flow affected by ice Dec. 7-9, Dec. 15 to Jan. 6, Jan. 8 to Peb. 8. Sediment records: March 1951 to September 1961.

SETTREMES, 1860-61.—Dissolved Solids: Maximum, 4,070 ppm Oct. 14-16; minimum, 263 ppm June 1-16.

BYTREMES, 1860-61.—Dissolved Solids: Maximum, 4,070 ppm Oct. 15. minimum daily, 354 mine may 31.

Byecific conductance: Maximum, 48,070 ppm Oct. 15. minimum daily, 354 minimum daily, 354 minimum daily, 354 minimum daily, 354 minimum, 200 ppm on several days during July.

Sediment loads: Maximum, 48,000 tons Sept. 20; minimum daily, 0 tons on several days during July.

Sediment loads: Maximum, 1,000 tons Sept. 20; minimum, 132 ppm May 1-31, 1956.

Byecific conductance: Maximum daily, 12,700 micrombos Oct. 7, 1956; minimum daily, 0 ppm on several days in 1956-58, 1960-61.

Sediment concentrations: Maximum daily, 22,700 micrombos Oct. 7, 1956; minimum daily, 0 ppm on several days in 1956-58, 1960-61.

Sediment loads: Maximum daily, 460,000 tons Apr. 21, 1956; minimum daily, 0 tons on several days in 1956-58, 1960-61.

ı			1 ∞	00	œ	7	က	0	ω.	₹"		o o	4	_	9	io.	9
	요.	Hg date	, 0 6	80 6.8	30 6.	10/7.	5.	6.	30 6.2	9	9	<u>.</u>	3,940 7.4	<u>8</u>	38 7.	38 7.	35/7.
	Specific con-	duct- ance (micro- mhos at 25°C)	4.73	6,380	3,8	2,7	, ,		5,080				3,94	1,1	iñ	4	4
	å,	Sorp- fron ratto	10	17,	6.7	7.1	7.2	9.3	14	12	12	5.6	10	2.8	1.1	1.0	1.0
		Non- car- bon-	785	820	691	470	718	665	617	263	677	207	595	246	99	77	73
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	815	850	720	554	720	670	099	594	684	555	625	332	216	166	154
	solids ted)	Tons per day	515	1,080	6,400	395	682	719	962	1,030	1,070	1,120	1,440	1,150	1,730	1,600	1,140
1961	Dissolved solids (calculated)	Tons per acre- foot	I	5.54				3,26	4.13	4.13	4.45	2.08	3.22				
ptember	Big (c)	Parts per million	2.950	4,070	2,430	1,700	2,160	2,400	3,040	3,040	3,270	1,530	2,370	730	358	278	263
to Ser		ron (B)	0.13	24	.13	60.	.15	.13	32	Ξ.	Ξ.	.07	-	-	8	-	-
1960		Ni- frate (NO ₃)	20	9.6	31	32	09	30	19	59	30	35	35	16	7.8	5.5	4.0
ober		Fluo- ride (F)															_
water year October 1960 to September 1961		Chloride (C1)	915	1,450	700	240	282	795	1,220	1,270	1,360	450	006	160	45	38	32
		Sulfate (SO ₄)	1.020	1,160	875	489	602	765	682	649	726	209	298	260	101	82	81
1110		1 to 20 to 3 to 3 to 3 to 3 to 3 to 3 to 3 to	۰	0	0	0	0	0	0	0	0	0	0	0	0	0	0
per million,	Bi-	car- bon- ate (HCO ₂)	37	36	35	102	က	9	22	14	00	26	36	106	156	108	66
parts	ŕ	situs (K)	27	47	56	17	22	27	41	42	42	16	27	6.5	3.4	5.0	2.5
Chemical analyses, in parts		Sodium (Na)	667	1,110	536	384	443	553	828	848	881	304	583	117			_
analy	Yes	mag- ne- stum (Mg)	100	107	83	61	80	78	73	69	82	26	64	31	12	9.7	7.5
emical		Cal- ctum (Ca)	162	164	152	122	156	140	144	124	135	130	144	83	67	51	49
ยี		Iron (Fe)	0.01	ł	.01	!	-	ŀ	.01	;	ŀ	ł	.0	.02	.05	!	ł
		Silica (SiQ ₂)	5.0	4.9	6.7	8.1	7.6	5.6					4.5	4.9	9.9	5.4	6.1
		Mean discharge (SiO ₂) (cis)		98.3				111					225				
		Date of collection	Oct. 1-13, 17-18, 1960.	0ct. 14-16	Oct. 19-24, 26-31.	Oct. 25	Nov. 1-30	Dec. 1-31	Jan. 1-31, 1961	Feb. 1-28	Mar. 1-15	Mar. 16-31	Apr. 1-5	Apr. 6-19	Apr. 20-30	May 1-31	June 1-16

7.6 6.9 5.9 6.6	5.2	7.8.2 7.6 7.6	9.6	6.1	
756 1,060 1,990 3,060 3,500	6,310 5.2	2,270 7.5 1,680 8.2 2,340 7.6 1,450 7.6	1,220 6.6	2,930	1
45.08.0	15	4.6.4.2 1.0.0.0	6.9	7.1	-
133 181 351 659 756	875	579 359 402 379	211	465	1
182 224 362 666 785	880	640 430 496 502	290	530	-
994 802 736 390 905	3,620	917 459 831 924	964	1	-
.58 1.56 2.57 3.06	5.26	2.03 1.40 2.14 1.32	1.02	1	1
427 616 1,150 1,890 2,250	3,870	1,490 1,030 1,570 972	747	1,800	
4.65.51.80	1	44.11.21	0.09	0.12	0.12
7.2 7.3 21 20 28	40	30 35 9.0	12	24	15.0 0.12
109 185 375 520 595	1,590	300 230 300 128	197	583	254
134 186 352 729 869	829	637 387 672 450	235	551	303
00000	0	0000	۰	0	0
93 33	9	74 86 115 150	96	55	123
4.6 8.1 14 21 23	48	15 11 13 7.9	8.1	21	10.0
73 121 256 369 453	1,030	241 175 245 116	141	411	182
12 17 31 66		47 29 58 35	24	54	30.0
53 61 94 159 188	218	160 124 188 143	78	125	101
11991	1	1111	1	1	1
446.00	4.9	5.4 6.0 5.8 7.1	5.6	5.5	7.2
862 482 237 76.4 149	346	228 165 196 352	1	478	1
June 17-24, 1961 June 25-30 July 1-20 July 21-31 Aug. 1-4, 14	Aug. 5-6	Aug. 7-11, 13, 13- Aug. 12. Sept. 1-8.	Weighted average	Time-weighted average	Tons per day

DOLORES RIVER BASIN--Continued

9-1800. DOLORES RIVER NEAR CISCO, UTAH -- Continued

Suspended sediment, water year October 1960 to September 1961
/Where no concentrations are reported, loads are estimated/

		OCTOBER			NOVEMBE	R		OECEMBER	
		Suspend	led sediment		Suspen	ded sediment		Suspende	ed sedimen
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	52		1	91	8	2	109	34	10
2	56	7	1	86		2	104		10
3	59 59	13	2	86 95		2	118 118		10 10
5	48	12	2	91		2 2	127		27
	٠		_			_			25
6	48 56	15	2 1	95		2 9	132 110		35 9
7 8	56	7	1	109 127		27	90		ź
9	59		1	160		150	95		3
10	63	6	1	143		48	114		16
11	71	5	1	138		48	127		16
12	71		1	132		48	127		16
13	95	16	4	138	129	48 12	114		16 16
14 15	109 91	20	4 5	123 109		12	114 C 110] =]	10
				l				1	
16 17	95 91	12	4	104 104		12 12	C 110 C 110	27	8
18	86		ž	118		12	C 110		8
19	86	4	1	123		12	C 110		8
20	123		1	127		22	C 110		8
21	143	3	1	127		22	C 110		8
22	118		1	127		22	C 110		8
23	100	7	2	123		22	C 110		8
24 25	100 86		2 1	123 123		22 22	C 110 C 110		ě
26	82			ì		22	C 110		8
27 	82	9	2	118 114		12			8
28	82		2 2	114		12	C 110	27	8
29	78	9	2	114		12	C 100	==	8
30 31	82 95	16	3 4	114		12	C 100 C 100	=	ě
otal	2522		62	3496		664	3439		332
		JANUARY			FEBRUAR	Y		MARCH	
1	C 100	T	4	C 110	67	20	104	32	9
2	C 100		4	C 110		20	109		9
3	C 100		4	C 110	==	20 20	114 123		11
5	78		1	C 110 C 110 C 110	[]	20	132	==	11
		1 1		H					
6	75	1 1	1	C 110 C 110		20 20	127 138		11 11
7 8	78 90	1	1 4	C 110		20	138		11
9	C 100		4	118		20	132		13
10	C 100		4	114		20	123		11
11	C 100	1 1	4	123		20	114		9
12	C 100	1 1	4	127		20	118		9
13	C 100		4	132		24	118	==	9
14 15	C 100 C 100		4	138 148		24 28	109 118	31	15
				1				1	
16	C 100	15	4	170	70	32	176		110
17 18	C 100 C 100		12 12	148 165		24 24	220 368		300 3900
19	C 100		12	154		24	376		4200
20	c 100		12	143		24	311		1600
21	C 100		12	132		15	296		1300
22	C 100		12	127		15	259	==	700
23	C 100	1	12	127		15	220	452	300 260
24 25	C 100		12 12	127 123		15 15	213 267	492	800
				l			li .		
26	C 100] !	12	104		10 10	359 320	==	3300 1900
27 28	C 100	1 1	12 12	104 118		10	290	==	1200
29	C 100		12	1::-			250		580
30	C 100		12				220		300
31	C 100	ļl	12				200		170
	3012		235	3522		553	6162		21075

DOLORES RIVER BASIN--Continued

9-1800, DOLORES RIVER NEAR CISCO, UTAH -- Continued

T		APRIL	re no concent		MAY		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		JUNE		
H			ded sediment		Suspen	ded	sediment		Suspen	ded	sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
1	180		72	2490	1640		11000	2290	890		5500
2	180		72	2810	2240	В	17000	2300	934	A	5800
3	187	143	72	2910	2420	8	19000	2210	888	A	5300
4	226		130	2890	2430	8	19000	1960 1950	680 442	l	3600 1850
5	351		260	2850	2340	-	18000	1990	442	ļ	1000
6	598		600	2290	1360	В	8400	1340	290	A	1050
7	811		960	1910	892	В	4600	1320	269		960
8	746		840	1500	469	В	1900	1270	207	A	710
200	692		740	1360	381 323	8	1400 1100	1360 1490	221 236	A	810 950
0	608		610	1260	323	Р.	1100	1490	236	^	750
11	529		490	1370	378	В	1400	1500	237	A	960
12	588		590	1580	539		2300	1490	236	A	950
13	510		460	2010	682	A	3700	1530	242	Α.	1000
4	510		460	2440	835	A	5500 4500	1460 1310	233 232		920 820
15	529		460	2210	754	^	4500	1510	232		020
16	491		460	1720	581	A	2700	1240	203	A	680
17	418	296	334	1490	497	A	2000	1080	158	A	460
18	418		340	1330	457	١.	1640	982	130	١.	345
9	724 1290		1200 4200	1530 2090	581 957	A	2400 5400	970 845	126 79	A	330 180
	1290		4200	2090	957		5400	649	/ / /		100
21	1940		10500	2490	892	A	6000	856	80	A	185
22	2090		12500	2420	903	1	5900	811	68		150
23	2290		15500	2490	892	Α	6000	724	56	Α.	110
24	2290 1990		15500	2530	893 938	A	6100 5700	629 578	45		76 51
	1990		11000	2250	730		5700	,,,,	"	^	,,
6	1570	1560	6600	2110	825	A	4700	549	28		41
27	1200		4800	2060	773		4300	500	20	١.	27
28	1340		5500	2230	930	A	5600	464	20 19	A	25
30	1680 2040	==	7100 8800	2510 2590	1180	A	8000 9000	418 384	19	Â	21 20
31	2040			2420	979	^	6400	707		^	
otal	29016		111150	66140			200640	35410		H	33881
		JULY			AUGUST	-			SEPTEMBE	R	
1	376	19	A 19	109	31	Г	9	287	2450		1900
2	368	19	19	104	7	A	2	170	675	A	310
3	359	19	A 18	127	9		3	170	684	١.	314
4	343 319	0	A 0	220	620	A	52 600	160 187	787 238	A	340 120
5	319	١	1*	359	620		800	10,	236	}	120
6	311	0	0	334	610	A	550	194	382	A	200
7	296	0	A 0	282	473		360	187	238	١.	120
8	282	0	. 0	226	524 499	Â	320 360	215 439	4650 9280	J	2700 11000
9	274 252	0	A 0	267 239	511	^	330	600	13000	Ä	21000
1				1	1			1	}	``	
11	226	0	A 0	200	426	A	230	350	11600	A	11000
12	206	0	. 0	165	337	١,	150	280	6350	A	4800
13	194 176	0 4	A 0 2	154 187	236 614	A	98 310	250 239	4000 3670	Α.	2700 2370
5	176 170	4	A 2	132	34	A	12	226	1970	A	1200
- 1			A	#						l	
16	160	5	A 2	302	6400	S	5220	226	1970	١.	1200
1700	138	8	A 3	194	200		105	334	11100	A	10000 14000
18	123 91	9	A 2	359 334	5570 3880	Â	5400 3500	407 569	13000	A	20000
20	82	5		282	1510	Â	1150	418	13300	Â	15000
- 1		1	_					1		١.	
1	82 78	5	A 1	246	723	A	480	384 351	12500	A	13000
22	78 82	5	A 1	213 165	330 269		190 120	351	10700	A	9400
24	86	2	1^ ÷	138	236	1^	88	359	12400	Â	12000
25	78	i	ا ز	280	7510	J	5680	392	12300	A	13000
26	67	1	Т .	218	2380	A	1400	376	11800	A	12000
27	59	2	i	274	5950	A	4400	326	10700	A	9400
28	59	2	L	200	1520	l	820	304	9020	A	7400
29	63	1	L	187	1470	A	740	296	8010	A	6400
30	91 95	94 113	A 23 29	176 176	1390 1390		660 660	282	6570	A	5000
\rightarrow	5586		128	6849	1370	A	33999	9304	-		218874
otal	2200	1	120	00-7	1	17	22777	,,,,,,		1	- 400/4

B Computed from estimated-concentration graph.

DOLORES RIVER BASIN--Continued

9-1800. DOLORES RIVER NEAR CISCO, UTAH .- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis B, bottom withdrawal tube, C, chemically dispersed, D, decamidation, M, in mative water; P, cinet: S, sieve: V visual accumulation tube: W. in distilled water)

Method	of o	analysis	VBWC	VPWC	SPN	SPWC	SPN	VPWC	VPWC	PWC	VPWC
		2.000									
		0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	100								
	Percent finer than size indicated, in millimeters	0.500			_	_	001		!	!	!
	n milli	0.250	83	86	96	66	66	-	9	!	!
diment	ated, 1	0.125						100	_	!	
Suspended sediment	ze indic	0.062	51	55	55	66	66	86	86	8	86
	than si	0.031	94								
	ıt finer	0.016	33	39	31	90	06	79	92	66	92
	Percei	0.008	88							_	
		0.004	22	24	13	28	œ	46	82	75	79
_		_	17								
Sediment Codiment	discharge	(tons per day)									
Sediment	concen- tration	(mdd)	288	968	896	920	029	408	3680	9450	0966
	Discharge (cfs)	Ì	1330	2080	2080	376	376	900	239	206	319
	ber-		61	64	49	75	75	26	89	99	92
	ling	Point									
	Time (24 hour)	Ì	1200	1130	1130	1030	1030	1900	1200	1115	1200
	Date of collection		May 18, 1961	May 25	Мау 25	Aug. 5	Aug. 5	Aug. 17	Sept. 14	Sept. 16	Sept. 18

COLORADO RIVER MAIN STEM

9-1805. COLORADO RIVER NEAR CISCO, UTAH

LOCATION. --At gaging station, 1 mile downstream from Dolores River, 11 miles south of Cisco, Grand County, 36 miles downstream from Colorado-Utah State line, 97 miles upstream from Green River, and 235 miles upstream from San Juan River.

DAMINAGE AREA. --24,100 square miles, approximately, RECONDS ANALIABLE. --Chemical manipses: August 1928 to September 1961 Water temperatures: May 1949 to September 1959.

Sediment records: May 1930 to September 1961.

EXTREMES, 1860-61.—Assolved solids: Maximum, 1,900 ppm Aug. 19; minimum, 316 ppm May 22-31.

Hardness: Maximum, 865 ppm Aug. 19; minimum, 1940 ppm June 1-17.

Specific conductance: Maximum, 865 ppm Aug. 19; minimum daily, 437 micrombos May 29.

Specific conductance: Maximum daily, 2,630 micrombos Aug. 19; minimum daily, 9 ppm Jan. 3, 4, 8.

Sediment concentrations: Maximum daily, 16,200 ppm Sept. 9; minimum daily, 9 ppm Jan. 3, 4, 8.

Sediment concentrations: Maximum daily, 184-000 ppm Sept. 9; minimum daily, 9 ppm Aug. 11-20, 1940; minimum, 202 ppm June 11-20, 1953.

Sediment concentrations (1928-52, 1953-61): Maximum, 1,000 ppm Sept. 1-10, 1984; minimum, 131 ppm June 11-20, 1952.

Specific conductance (1941-52, 1953-61): Maximum daily, 4,820 micrombos Dec. 13, 1957; minimum daily, 291 micrombos May 31, 1958.

Sediment concentrations (1930-61): Maximum daily, 4,820 micrombos Dec. 13, 1957; minimum daily, 291 micrombos May 31, 1958.

Sediment loads (1930-61): Maximum daily, 2,790,000 tons Oct. 14, 1941; minimum daily, 14 tons Aug. 22, 1960.

Sediment concentrations (1930-61): Maximum daily samples available in district office at Salt Lake City, Utah.

		Ħ	8,0	8.1	8.0	8.2	8.0					7.9	7.7			7.7
	Specific	duct- ance micro- nhos at 25°C)	1970	1650	1620	1740	1630	1570	923	895	726	505	548	715	1000	1550
	8:	ad- fron ratto	3.2	, m	3.4	4.0	3.6	3,3	1.7	1.7	1.4	6.		1.5	1.9	2.6
		Non- car- bon-	539	354	324	334	325	332	181	198	152	96	96	142	217	386
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	705	505	475	468	458	466	330	314	264	197	194	242	329	236
	solids .ted)	Tons per day	9590	7880	7220	7600	7540	8030	7420	10920	12160	14710	13090	10260	8100	7480
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1.94	1.48	1,43	1.52	1.44	1,39	. 82	80	.64	.43	.45	.61	98.	1.41
September 196	Dis (c	Parts per million	1430	1090	1050	1120	1060	1020	601	588	470	316	333	450	634	1040
to		- 100 (B)	0.13	97	8.	80.					9					
r 1960		Ni- trate (NO,)	15	13	12	11	16	13	9,1	9.1	4.7	3.7	۳.	ж. ж.	4.9	9.9
October		Fluo- ride (F)														_
year		Chloride (Cl)	155	170	185	215	200	160	62	2	20	28	56	20	19	130
ion, water		Sulfate (SO ₄)	710	465	410	437	420	430	239	254	190	115	128	185	277	486
m111		(0) (0)	00	•	0	•	۰	0	0	•	0	0				_
parts per million,	Bi-	car- bon- ate (HCO ₂)	202	184	184	164	162	164	182	141	136	123	120	122	136	171
in par	É	Eta Situa (X)	6.3	5.7	5.9	7.1	6.2	5.8	3.8	3.2	2.6	2.0	2.1	7		- -
analyses, i		Sodium (Na)	193	169	172	199	178	165	20	69	23	59	32	23	81	137
	3	stum (Mg)	67	46	41	43	43	43	18	22	21	14	12	2	56	46
Chemical		Cal- cium (Ca)	172	126	122	117	112	115	100	82	7.1	55	20	9	68	139
		Iron (Fe)	0.01	-	1	1				1			1	1	18	10.
		SHICE (SiO ₂)	10	9.7	12	10	9.6	œ.	6	6	=	9.2	9,0	8.1	80.0	• •
		Mean discharge (cfs)	2485				2634					17240				
		Date of collection	Oct. 1-31, 1960	Dec. 1-31	Jan. 1-31, 1961	Feb. 1-28	Mar. 1-31	Apr. 1-20	Apr. 21-30	May 1-12	May 13-21	May 22-31	June 1-17	June 18-24	June 25-30	1-14-1-1 ATDC

COLORADO RIVER MAIN STEM -- Continued

9-1805. COLORADO RIVER NEAR CISCO, UTAH -- Continued

ı		핊	1970 7.6	8.	8	7.9	7.7	1220 7.8	1540 7.9	1
	Specific	ance (micro- mbos at 25°C)	1970	2010	2630	1930	1430			Ţ
	& ;	and and and and and and and and and and	3.0					2.3	2.8	ŀ
	co,	Non- car- bon-	546	573	206	266	362	279	364	
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	869	740	865	740	520	409	507	
tinued	solids ted)	Tons per day	6330	8820	12160	17000	15160	9400	-	ł
ICon	Dissolved solids (calculated)	Tons per acre- foot	1.90	1.99	2.58	1.93	1.36	1,11		-
1960 to September 1961 Continued	ald (c	Parts per million	1400					818	1050	1
Septer		B 5 8	0.12	.15	6	.14	.12	8.7 0.08	0.09	100 0.91
0 to		Trate (NO.)	7.8	133	19	11	=	8.7	11	100
r 196		Fluo- Ni- ride trate (F) (NO ₂)								
Chemical analyses, in parts per million, water year October		Chloride (CI)	155	130	280	130	82	101	139	1170
water yes		Sulfate (SO ₄)	711	755	903	733	487	363	474	4170
ion,		oste CO CO	٥	0	0	0	•	٥	0	0
r m111	Bi-	car- bon- ate (HCO ₃)	185			212	193	159	174	1830
ts pe		Signatura (F)	6.3	6.2	12	6.0	4.1	4.2	5.3	48.0
, in par		Sodium (Na)	184	186	278	166	123	111	150	1280
alyses	ļ	sium (Mg)	92	62	73	22	4	34	44	393
al ar		Cal- Can (Ca)	173	195	526	202	143	107	130	1240
Chemi		Iron (Fe)	0.01	1	ł	i	ŀ	1	-	I
		Silica (SiO ₂)	8.9	12	9	13	1	10	10	116
		Mean discharge (cfs)	1674					1	4260	!
		Date of collection	July 15-31, 1961	Aug. 1-18, 20-31	Aug. 19	Sept. 1-7, 9	Sept. 8, 10-30	Weighted average	Time-weighted average	Tons per day

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM -- Continued

9-1805, COLORADO RIVER NEAR CISCO, UTAH -- Continued

Suspended sediment, water year October 1960 to September 1961 / There no concentrations are reported, loads are estimated 7

Ļ		OCTOBE			NOVEMBE				DECEMBER		
- 1		Suspen	ded sediment		Suspen	ded	sediment		Suspen	ded	sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
		(ррии)			(ppin)				(ppiii)	L_	
1	1930	89	464	3010	88		715	2460	44		290
2	2020	80	436	2920	57		449	2430	44	A	290
3	1920	78	404	2920	61	}	481	2690	40	A	290
4	1890	99	505	3090	192	. A	1600	2800	40	A	300
5	1860	114	573	2950	201	A	1600	3060	36	A	300
6	1840	100	497	3010	197	l a	1600	3200	35	A	300
7	1860	56	281	3110	191	Ä	1600	2880	39	A	300
8	1920	90	A 470	3130	189	A	1600	2420	43	A	280
9	1980	1300	6950	3260	182	A	1600	2320	45	A .	280
10	2240	2520	15200	3200	185	Α	1600	2520	41	A	280
11	2190	1290	7630	3090	192		1600	2900	38		300
12	2260	700	4270	2980	199	2	1600	3080	36	I Â	300
13	2380	205	1320	2950	207	ļ^_	1600	2960	38	Â	300
14	2540	300	2060	2950	151	A	1200	2800	40	\Â	300
15	2640	215	1530	3030	147	Ä	1200	2740	41	Ä	300
		l				١.			l		
16	2790	206	1550	3010	148		1200	2600	43		300
17	2920 2950	162 156	1280	2950 2900	151 153	A	1200 1200	2310	16	A	100 100
19	2790	151	1140	2840	156	Â	1200	2300	16	1	100
20	2850	126	970	2880	154	Ã	1200	2610	51	Ã	360
- 1				ı					1		
21	2930	155	1230	3010	148	A	1200	2760	48	A .	360
22	2960	110	879	3140	142	A	1200	2790	48	A .	360
23	2880		1000	2900	153	A	1200	2880	46	A	360
24	2870 2850	155 96	1200	2840 2850	156 156	^	1200 1200	2960 2880	45	A	360 360
2300	2850	76	139	2050	150	ı^_	1200	2000	••	^	300
26	2720	87	639	2850	156	A	1200	2800	48	Α	360
27	2820	97	739	2850	156	A	1200	2690	50	Α	360
28	2690	93	675	2820	158	A	1200	2710	49	l	360
29	2770		410	2880	154	A	1200	2640	20	В	140
30	2850 2920	18	139 662	2840	156	A	1200	2420 2300	21	В	140 140
Total	77030		57082	89160		┼	38045	83000		-	8670
	77030	<u></u>		07100	L		30043	69000		<u> </u>	
		JANUAR	Υ		FEBRUAR	Y			MARCH		
1	2160	10	B 58	2690	54	1	390	2200	71		420
2	2160	10	B 58	2900	50	A	390	2260	69	A	420
3	2250	9	B 55	2740	53	A	390	2360	66	A	420
4	2280	9	B 55	2710	53	A	390	2430	64	A	420
5	2060	10	B 56	2850	51	В	390	2440	64	A	420
6	2070	10	B 56	2900	50	В	390	2440	64	A .	420
7	1950	11	B 58	2880	50	В	390	2480	63	Ā	420
8	2260	1 6	B 55	2610	55	В	390	2360	66	A	420
9	2490	36	A 240	2500	58	В	390	2260	69	l A	420
10	2540	35	A 240	2640	55	В	390	2190	71	A	420
11	2680		A 240	3440	82	В	540	2100	74	A	420
	2710	33 33		2440	88		540	2180	71	A	420
12	2710	33	A 240 A 240	2280 2300	88	A	540	2310	67	Â	420
14	2610	34	A 240	2310	87	Â	540	2370	66	1	420
15	2610	34	A 240	2310	87	Â	540	2220	70	A	420
- 1		1			1	l			١	1	
16	2720	54	400	2280	88	١.	540	2370	66	l .	420
17	2880	51	A 400	2310	87	Â	540 540	2710	137 163	B	1000 1400
	2870	52 52	A 400	2540 2580	79 78	Â	540 540	3180 3380	153	В	1400
18		: 26	17 400	II 2360		I A	540	3280	158	В	1400
18	2870 2840	52	A 400	2440	82						
19	2840	52		2440		``				-	
19	2840 2800	52 53	A 400	2490	80	A	540	2980	137	В	1100
20	2840 2800 2660	52 53 28	A 400 B 200	2490 2420	80 83	A	540 540	2980 2850	137 143	B	1100
18 19 20 21 22	2840 2800 2660 2520	52 53 28 29	A 400 B 200 B 200	2490 2420 2480	80 83 81	A A B	540 540 540	2980 2850 2840	137 143 143	В	1100 1100
21 22 23 24	2840 2800 2660	52 53 28	A 400 B 200	2490 2420	80 83	A	540 540	2980 2850	137 143	B	1100
18 19 20 21 22 23 24 25	2840 2800 2660 2520 2380 2430	52 53 28 29 31 30	A 400 B 200 B 200 B 200 B 200	2490 2420 2480 2430 2430	80 83 81 82 82	A A B B	540 540 540 540 540	2980 2850 2840 2710 3030	137 143 143 150 134	BAAA	1100 1100 1100 1100
18 19 20 21 22 23 24 25	2840 2800 2660 2520 2380 2430 2740	52 53 28 29 31 30	A 400 B 200 B 200 B 200 B 200 B 200	2490 2420 2480 2430 2430	80 83 81 82 82	A A B B B B	540 540 540 540 540 540	2980 2850 2840 2710 3030 3180	137 143 143 150 134	B A A A	1100 1100 1100 1100
18 19 20 21 22 23 24 25	2840 2800 2660 2520 2380 2430	52 53 28 29 31 30 27 28	A 400 B 200 B 200 B 200 B 200 B 200 B 200	2490 2420 2480 2430 2430 2300 2300 2280	80 83 81 82 82 87 88	A A B B B B B	540 540 540 540 540 540	2980 2850 2840 2710 3030	137 143 143 150 134 151	BAAAAA	1100 1100 1100 1100 1300
18 19 20 21 22 23 24 25 26 27 28	2840 2800 2660 2520 2380 2430 2740 2630 2920	52 53 28 29 31 30 27 28 41	A 400 B 200 B 200 B 200 B 200 B 200 B 200 B 200 B 320	2490 2420 2480 2430 2430	80 83 81 82 82	A A B B B B	540 540 540 540 540 540	2980 2850 2840 2710 3030 3180 3200 3200	137 143 143 150 134 151 150	B A A A A A A	1100 1100 1100 1100 1300
18 19 20 21 22 23 24 25 26 27 28 29 30	2840 2800 2660 2520 2380 2430 2740 2630 2920 2790 2660	52 53 28 29 31 30 27 28 41 42 45	A 400 B 200 B 200 B 200 B 200 B 200 B 200 B 320 B 320 B 320	2490 2420 2480 2430 2430 2300 2300 2280	80 83 81 82 82 87 88	A A B B B B B	540 540 540 540 540 540 540	2980 2850 2840 2710 3030 3180 3200 3200 2950 2660	137 143 143 150 134 151 150 150 163 134	B A A A A A A A	1100 1100 1100 1100 1300 1300 1300 1300
18 19 20 21 22 23 24 25 26 27 28	2840 2800 2660 2520 2380 2430 2740 2630 2920 2790	52 53 28 29 31 30 27 28 41	A 400 B 200 B 200 B 200 B 200 B 200 B 200 B 320 B 320	2490 2420 2480 2430 2430 2300 2300 2280	80 83 81 82 82 87 88 85	A A B B B B B	540 540 540 540 540 540 540	2980 2850 2840 2710 3030 3180 3200 3200 2950	137 143 143 150 134 151 150 150 163	B A A A A A A A	1100 1100 1100 1100 1300 1300 1300

A Computed from partly estimated concentration graph. B Computed from estimated-concentration graph.

COLORADO RIVER MAIN STEM--Continued

9-1805. COLORADO RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1960 to September 1961--Continued /Where no concentrations are reported, loads are estimated?

		7 1110	re no concent	1	. Toporto	,		1			
		APRIL			MAY				JUNE		
		Suspen	ded sediment		Suspen	ded	sediment		Suspen	ded a	ediment
Day	Mean dis-	Mean		Mean	Mean	Γ		Mean	Mean		
,	charge	concen-	Tons	dis- charge	concen-		Tons	dis- charge	concen-		Tons
	(cfs)	tration	per day	(cfs)	tration	1	per day	(cfs)	tration		per day
	\ /	(ppm)	uay	(3.3)	(ppm)		uay	(3.3)	(ppm)	ļ	uay
1	2500	193	A 1300	4870	837		11000	20200	766		41800
2	2430	193	A 1300	6380	337	A	5800	20200	644	1	35100
3	2380	202	1300	7660	532	A	11000	19500			28000
4	2480	194	A 1300	18970	743	Α	18000	16900	458		20900
5	2660	181	A 1300	9850	940	A	25000	13800	388	ŀ	14500
6	3110	333	A 2800	8970	743	A	18000	11900	378	1	12100
7	3910	540	B 5700	7680	530	A	11000	11500	354		11000
8	3930	537	B 5700	6400	347	Α.	6000	11700	345		10900
9	3840 3640	550 580	B 5700 B 5700	5580 4850	252 168	A	3800 2200	12500 14300	149		5030 12000
		i	ļ.		100	1				1	
11	3160	258	A 2200	4700	165	A	2100	15900	443		19000
12	3090	264	A 2200	6640	374	1.	6700	15500	383		16000
13	2870	284	A 2200	10100	990	A	27000	15200	405		16600
14	2760 2740	295 297	A 2200 A 2200	11900 10470	1460	A	47000 30000	13800 12400	229 232		8530 7770
)		ļ.,				j	
16	2800	291	A 2200	8640	729	A	17000	11500 10700	271 214		8410
17	2550 2320	174 192	1200 A 1200	7460 7280	550 432		11000 8490	10100	205		6180 5590
19	2320	192	A 1200	7780	363		7630	9600	185	1	4800
20	2820	263	A 2000	9910	630	1	16900	8940	160	l	3860
21	4200	679	A 7700	12700	1260		43200	8430	160		3640
22	5540	1270	A 19000	12700	1170	1	40800	8020	169		3660
23	5780	1220	A 19000	14300	1110	1	42900	7460	154	1	3100
24	5490	1280	A 19000	16200	1600		70000	6550	137	ļ	2420
25	5400	1300	A 19000	16800	1440		65300	5800	118	Ì	1850
26	4850	916	12000	16600	900		40300	5400	103	ļ	1500
27	3880	449	A 4700	17200	722	ŀ	33500	5000	69	1	932
28	3480	500	A 4700	18600	964		48400	4500	74	1	899
29 • • 1	3450	505	A 4700	20000	889		48000	4000	63		680
30	3680	473	A 4700	19300	828		43100	3700	60	l	599
31				20500	682	-	37700				
Total	104060		165400	341190			798820	335000			307350
1		JULY			AUGUST				SEPTEMBE	R	
1	3400		470	2000	300		1620	2950	1200		9560
2	3330		350	2360	1150	1	7330	2520	7800	1	53100
3	3250	25	219	2490	1750	İ	11800	2740	1650	1	12200
4	3080	27	225	3420	9320	S	90300	3300	890		7930
5	2920	192	1510	3160	3400		29000	4220	1430		16300
6	2770	447	3340	3000	2800	ĺ	22700	4330	1360		15900
7	2540	104	713	2500	1230		8300	4310	970	1	11300
8	2490	83	558	2160			4700	4590	1000		12400
9	2460	84	558	1840	226		1120	11100	16200	S A	524000
10	2580	80	557	1660	271		1210	6570	3000		53000
11	2460	l 	430	1590	202		867	5300	3000	A	43000
12	2190	52	307	1660	424	1	1900	5200	2900	A	41000
13	2000 1840	44 38	238 189	1630 1690	146 105	ļ	643 479	4800 4400	1900 1010	A .	25000 12000
15	1670	44	189	1710	110		508	4000	620		6700
16	1550	55	230	2100	5110	5	35400	3900	540		5690
17	1520	41	230 168	2100 1850	1000	3	5000	3770	730		7430
18	1590	53	228	2100	3500		19800	5420	13100	s	217000
19	1630	66	290	2370	1200		7680	5270	11000		157000
20	1590	76	326	2200	1700		10100	4550	6000	l	73700
21	1620	62	271	2120	920		5270	4680	6300		79600
22	1660	66	296	2020	300		1640	5450	5150		75800
23	1710	63	291	1860	280		1410	6740	7850		156000
24	1760	49	233	1780	900	-	4330	8860	12200		292000
25	1950		250	2850	3700	5	32500	8040	10700	1	232000
26	1820	56	275	2660	1200	A	8600	7030	6000		114000
27	1660	50	224	2480	700	A	4700	6300	1600		27200
28	1520	50	A 200	2500	650	١.	4390	6200	1300	١.	21800
29	1470	50	A 200	2690	1830	s	14700	6240	1000	A	17000
30	1850 1890	940 3510	J 7600 S 19100	2640 2380	1000	1	21400 6430	6360	1200	1	50600
				. 2500							
Total	65770		40044	69470			365827	159140		-	340210

COLORADO RIVER MAIN STEM--Continued

9-1805, COLORADO RIVER NEAR CISCO, UTAH -- Continued

Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; particle-size analyses of suspended sediment, water year October 1960 to September 1961 P, pipet; S, sleve; V, visual accumulation tube; W, in distilled water)

of analysis PHOCO APMC O APMC O APMC O APMC O APMC O APMC O APM O 8 ď 8 001 0.500 11188 88111 11111 !!!!! 111111 Percent finer than size indicated, in millimeters 0.250 1116 95 11111 11881 881118 0, 125 Suspended sediment 87 85 28811 11811 1 188 1 866698 0.062 99999 976 99699 0.031 0.016 146 40 31 98 87 87 94 93 93 87 82 60 60 00 63 85 85 85 87 0.008 0.004 84 25 1 $\frac{60}{1}$ 39 46 39 39 411 62 64 64 64 64 64 64 80 3 tons per day) Sediment discharge Sediment concen-tration (ppm) 1100 7880 2270 2270 14400 12100 1670 4360 16600 16600 35000 1100 27000 9940 4980 11200 2460 2460 1160 1210 1210 786 786 339 520 2590 Discharge (cfs) temper-ature 4 8 8 8 8 8 8 8 58 58 63 63 63 73 76 76 55555 23 20 69 69 69 63 Sampling Point Time (24 hour) 1250 1250 1000 1830 0930 0930 0745 0920 0920 1030 0745 0745 0730 1235 0930 0800 1415 1845 1845 Oct. 11.
May 21, 1961.... May 31.
May 31.
July 6.
July 31. • • • • • • • • • • • • 1960.... Date of collection 9 9 9 Sept. Sept. Sept. Aug. Aug. Aug. Aug.

d Daily mean discharge.

GREEN RIVER BASIN

9-2170, GREEN RIVER NEAR GREEN RIVER, WYO.

Green LOCATION.--At bridge on State Highway 530, about 1 mile upstream from gaging station, 0.8 mile upstream from Bitter Creek, at southeast edge of town of (RAM-STA) and 5 miles upstream from high waterline of proposed Flaming Gorge Reservoir.

BARINAGE AREA.--10,000 square miles, approximately, upstream from gaging station, of which 300 square miles is probably noncontributing.

BECORDS AVAILABLE.--Chemical analyses: Way 1951 to September 1961.

Records Animals, — Comparatives: May 1981 to September 1961.

Records Animals and 1981 to September 1961.

Records May 1981 to September 1961.

Records May 1981 to September 1961.

Records May 1981 to September 1961.

Records Maximum, 270 ppm Dec. 1 to Jan. 18; minimum, 188 ppm June 1-24.

Record Maximum and 197 minimum, 188 ppm June 1-24.

Record Maximum and 197 minimum, 188 ppm June 1-28.

Record to Conductance: Maximum and Maximum and 197 minimum and 197 minimum and 1981.

Reform temperatures: Maximum and 1981 ppm Apr. 5 minimum and 197 minimum, 188 ppm July 7, 28.

Sediment concentrations: Maximum and 1981 ppm Apr. 5 minimum, 188 ppm July 7, 28.

Sediment concentrations: Maximum and 1881 ppm Apr. 1882 ppm May 23-21, 1983.

Record Maximum and 197 July 8, 22; 1981; minimum, 1893 ppm May 23-21, 1983.

Record Maximum and 197 July 8, 22; 1981; minimum, 1893 ppm May 23-31, 1988.

Record Maximum and Maximum and 197 ppm May. 1893 ppm May 23-31, 1988.

Record Maximum and Maximum and 197 ppm May. 28; 1986; minimum and 197 ppm May. 23; 1980.

Record Maximum and Maximum and 197 ppm May. 28; 1986; minimum and 197 ppm May. 28; 1986 ppm May 29; 1986, January 1989, January 1989, January 1989.

Sediment concentrations: Maximum and 198 ppm May 29-1986; minimum and 198 ppm May. 28; 1980.

Sediment concentrations was maximum and 1988 ppm May 29-1986, January 1989, January 1980, January 1989, Jan

1		Ħ	8.1	8.1	8.0	8.7 7.8 8.1 8.1
	Specific	duct- ance micro- nhos at 25°C)	642 7.7 553 8.1	714 8.1	634 8.0 625 7.8	854 8.0 681 8.1 340 7.8 312 7.8 389 8.1 505 8.1
	- os ;		1.2	1.5	1.5	4.0.00 1.00 4.
	888 ()	Non- car-	808	88	78	86 31 119 24 37
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	212	270	222	242 248 133 126 151
	()	Tons c	775	538	383 536	987 708 1290 1550 1010
1981	Dissolved solids eeidue at 180°	Tons per acre- foot	0.57	99.	.56	86 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
September	Dis.	Parts per million	418 362	488	416	434 457 223 191 241 310
0 to		- Pa B (B)	80.0	.10	80.0	115 115 113 113 05 06
r 196		Mi- trate (NO ₂)	1,1	٠.	1.0	111089
ctobe		ride (F)				0.6
million, water year October 1960 to September 1981		Chloride (Cl)	12 9.5	12	9.0	10 10 4.0 3.0 7.5
ion, wat		Sulfate (SO ₄)	167 132	193	180 174	173 190 67 50 71
m111	0	1 1 1 1 1 1 1 1 1 1	00	۰	00	00000
ts per	Bi-	car- bon- ate (HCO)	192 185	222	173 167	198 124 131 131 162
n par	ě	S in the second	1.7	1.7	1.9	4000
Chemical analyses, in parts per		Sodium (Na)	59 40	99	52 51	51 20 17 26 41
al ana	1	stum (Mg)	20 19	24	18	22 10 10 12 18
Chemic		chan (co)	55	89	57 56	88 63 86 44 45 63
		Iron (Fe)	0.01	1	H	ध्।।।।ध
		Silica (SiO ₂)	121	8.7	9.9	5.00.00
		Mean discharge (SiO ₂) (cfs)	887 791	408	341	842 574 2140 3011 1545 757
		Date of collection	Oct. 1-31, 1960 Nov. 1-30	1961	1-28	Apr. 1-30. May 1-23. May 24-31. June 1-24. June 25-30. July 1-31.

512 7.8 518 8.0	506 7.9	579 7.9	:
m 01	2.	4.	-
49 1.3 64 1.2	52 1.2	64 1.4	+
178 190	186	508	1
584	706	1	-
44.	0.44	ł	
322	327	379	
8.2	90.0 9.0	90.08	71.0
4.6	9.0	0.5 0.08	1.3 0.17
7.5	4° 4	8.9	16.0
126	1.8 165 0 122	150	263
00	0	0	0
157 154	165	177	355
1.9	1.8	1.9	3.9
41 39	38	46	82.0
220	17	61	36.0
34 8	47	25	102
11	:	1	1
6.6	8.3	0.9	18.0
575 655	1	799	ŀ
Aug. 1-31, 1961 Sept. 1-30	Weighted average	Time-weighted average	Tons per day

'er-	age				
Αv	ag	111	111	8 1 8	73
	31	111	111	111	251
	30	111	113	21 5	27
	29	113	1 18	58	2 4 2
	28	111	332	55	72
	27	111	113	50	73 72
	26	111	39	4 1 5	6.8
	25	111	39	50 48 70 73	220
	24	111	333	60	72
	23	111	311	165	52 4
	22	191	35	9 6 8 9	92
	21	111	1 18	2.4	244
	20	111	35	52	225
	19	121	32	57	78
	18	111	118	0 4 0 0 0 0 0	73
	17	111	311	57.0	5 5
Day	16	111	37	5 4 6 6 9	F19
_	15	0.01	35	44 58 76	223
	14	111	111	42 57 65	68
	13	111	111	47 58 67	123
	12	151	111	4 8 4 7 2 7 2	185
	=	111	111	4 % 8 8 8	22.73
	0	111	111	583	543
	6	111	111	4 5 8	551
	8	42	111	42 58 66	52 23
	7	111	111	113	229
	9	11	111	6 1 3	123
	2	41	111	200	52.2
	4	111	111	4 % I	27.5
	9	32	111	57	223
	7	111	111	58 58 61	52 5
	_	43	111	52	72
1	Month	October November December	January Rebruary March	April May	July 71 75 August 72 73

9-2170. GREEN RIVER NEAR GREEN RIVER, WYO .-- Continued

Suspended sediment, water year October 1960 to September 1961
/Where no concentrations are reported, loads are estimated?

Charge Concentration (cfs) Concentrati			OCTOBE	₹	l	NOVEMBE	R			DECEMBER		
	Ĩ		Suspen	ded sediment		Suspen	ded	sediment		Suspen	ded	sedimen
	Day	dis-	concen-		dis-	Mean concen-		Tons	dis-	concen-		
2. 488												
3.* 482 15 8 20 750 33 8 67 600 32 52 52 52 52 52 52 52	1											
4 488				B 25	703	29			440		В	
5 482	3										1	
6 482 46 B 70 879 42 B 100 640 33 B 377 7 482 61 B 70 888 42 B 110 600 33 B 377 7 482 61 B 70 888 42 B 110 600 31 B 247 9 482 77 B 110 879 55 B 110 500 31 B 247 9 482 77 B 150 879 55 B 130 500 29 B 39 11. 951 80 205 774 45 B 94 480 27 B 38 12. 1010 11 B 220 788 48 B 110 460 27 B 38 12. 1010 11 B 220 788 48 B 110 460 27 B 38 12. 1010 11 B 220 788 48 B 110 460 27 B 38 12. 1010 11 B 220 788 48 B 110 460 27 B 38 12. 1010 11 B 220 788 48 B 110 460 27 B 38 12. 1010 11 B 220 788 48 B 110 460 27 B 38 12. 1010 11 B 220 788 48 B 110 460 27 B 38 12. 1010 11 B 20 788 48 B 110 460 27 B 38 12. 1010 11 B 20 788 48 B 110 460 27 B 38 12. 1010 11 B 20 78 B 110 862 75 B 175 400 25 B 27 12. 1010 11 B 350 850 49 B 110 400 25 B 27 12. 1010 11 B 350 850 49 B 110 400 25 B 27 12. 1010 11 B 350 850 49 B 110 400 25 B 27 12. 1010 11 B 350 850 49 B 110 400 25 B 27 12. 1010 11 B 350 850 49 B 110 400 25 B 27 12. 1010 11 B 350 850 49 B 110 400 25 B 27 12. 1010 11 B 350 850 49 B 110 400 25 B 27 12. 1010 11 B 350 850 49 B 110 400 25 B 27 12. 1010 11 B 350 850 49 B 100 400 25 B 27 12. 1010 11 B 350 850 49 B 100 400 25 B 27 12. 1010 11 B 350 850 49 B 100 400 25 B 27 12. 1010 11 B 350 850 49 B 100 400 25 B 27 12. 1010 11 B 350 850 49 B 100 400 25 B 27 12. 1010 11 B 350 850 49 B 100 400 25 B 27 12. 1010 11 B 350 850 49 B 100 400 25 B 27 12. 1010 11 B 350 850 49 B 100 400 25 B 27 12. 1010 11 B 350 850 49 B 130 400 25 B 27 12. 1010 11 B 350 850 49 B 130 400 25 B 27 12. 1010 11 B 350 850 49 B 130 400 25 B 27 12. 1010 11 B 350 850 49 B 350 400 25 B 27 12. 1010 11 B 350 850 49 B 350 850 850 850 850 850 850 850 850 850 8	4						В					
7 482 61 8 79 888 46 8 110 600 32 8 32 8 99. 9 528 77 8 110 879 55 8 130 540 31 8 447 80. 1 951 80 205 77, 8 120 888 88 8 210 450 27 8 34 4. 3 969 80 8 210 888 88 8 8 210 450 27 8 34 4. 3 969 80 8 120 888 88 8 8 210 450 27 8 34 4. 3 969 80 8 130 130 80 27 7 8 111 8 200 420 26 8 29 51. 3 969 80 8 130 130 80 27 7 8 111 8 200 420 26 8 29 51. 3 969 80 8 10 210 888 88 88 8 210 450 27 8 34 4. 3 969 80 8 10 210 888 88 88 8 210 450 27 8 34 4. 3 969 80 8 10 210 888 88 88 8 10 20 450 27 8 34 4. 3 969 80 8 82 10 888 88 88 80 210 450 27 8 34 4. 3 969 80 8 82 10 880 87 111 8 200 420 26 8 29 8 20 8 20 8 20 8 20 8 20 8 20 8 20	5	482	31	B 40	862	42	1	98	660	34	В	6,1
7	6	482	46	B 60	879	42	В	100	640	33	В	57
8.				B 79							В	52
9 528 77 B 110 879 55 B 130 540 30 B 480 1 951 80 205 774 45 B 94 480 29 B 39 2 1010 81 B 220 778 47 101 440 27 B 34 3 969 80 B 210 688 68 B 210 450 27 B 34 4 897 198 8 480 933 111 B 220 420 26 B 29 5 838 614 1390 862 75 175 400 25 B 26 6 774 167 8 350 830 49 B 110 390 25 B 26 7 742 45 B 170 830 49 B 110 400 25 B 27 8 718 40 B 176 862 77 B 110 400 25 B 27 9 703 33 B 63 838 51 1 703 33 B 63 838 51 1 703 33 B 63 838 51 1 703 33 B 63 766 49 B 110 400 25 B 27 1 703 33 B 63 766 49 B 100 400 25 B 27 1 703 33 B 63 766 49 B 100 380 24 B 25 3 7110 39 B 75 694 46 B 66 390 25 B 26 4 734 66 B 130 766 63 B 130 400 25 B 27 5 726 51 B 100 774 62 B 130 400 25 B 27 7 718 40 B 78 790 69 B 150 380 24 B 22 9 718 40 B 78 790 69 B 150 380 24 B 22 9 718 40 B 78 790 69 B 150 380 24 B 22 9 718 40 B 78 790 69 B 150 380 24 B 22 9 718 40 B 78 790 69 B 150 380 24 B 22 9 718 40 B 78 790 69 B 150 380 24 B 22 9 718 40 B 78 790 69 B 150 380 24 B 22 9 718 40 B 78 790 69 B 150 380 24 B 22 9 718 40 B 78 790 69 B 150 370 22 B 19 9 718 40 B 78 790 69 B 150 370 24 B 24 9 718 40 B 78 790 69 B 150 370 24 B 24 9 718 40 B 78 790 40 40 40 40 25 B 27 9 718 40 B 78 790 40 40 40 40 25 B 27 9 718 40 B 78 790 40 40 40 40 40 40 40	8	488						120	560	31	В	47
0 726 77 B 150 879 55 B 130 500 29 B 39 21. 1010 81 B 200 778 45 B 94 480 29 B 38 21. 1010 81 B 220 778 47 B 101 460 27 B 33 4. 897 198 B 480 933 111 B 280 420 26 B 23 5. 838 614 1390 862 75 175 400 25 B 27 6 774 167 B 550 850 49 B 110 390 25 B 26 6 774 167 B 550 850 49 B 110 400 25 B 27 6 778 43 B 778 83 B 13 B 63 766 49 B 110 400 25 B 27 6 703 33 B 63 766 49 B 100 380 24 B 25 2. 703 33 B 63 766 49 B 100 380 25 B 27 2. 703 33 B 63 766 49 B 100 380 25 B 26 3. 703 33 B 63 766 49 B 100 380 25 B 26 3. 703 33 B 63 766 49 B 100 380 25 B 26 3. 718 40 B 78 80 179 80 100 380 25 B 26 3. 718 40 B 78 80 179 80 100 380 25 B 26 3. 718 40 B 78 80 100 786 68 B 100 380 25 B 26 3. 718 40 B 78 80 100 786 68 B 100 380 25 B 26 3. 718 40 B 78 80 100 36 B 100 380 24 B 25 3. 718 40 B 78 80 100 36 B 100 380 24 B 25 3. 718 40 B 78 80 60 100 30 100 25 B 26 3. 718 40 B 78 80 100 36 B 100 380 25 B 26 3. 718 40 B 78 80 100 36 B 100 380 25 B 26 3. 718 40 B 78 80 100 36 B 100 380 25 B 26 3. 718 40 B 78 80 100 36 B 100 380 25 B 26 3. 718 40 B 78 80 60 32 B 100 380 25 B 26 3. 718 40 B 78 80 20 B 100 380 24 B 25 3. 718 40 B 78 80 20 B 100 380 24 B 25 3. 718 40 B 78 80 20 B 100 380 24 B 25 3. 718 40 B 78 80 20 B 100 380 24 B 25 3. 718 40 B 78 80 20 B 100 380 24 B 25 3. 718 40 B 78 80 20 B 100 380 24 B 25 3. 300 22 B 20 300 22 B 10 300 21 B 17 380 24 B 22 3. 300 22 B 20 300 22 B 10 300 21 B 17 380 24 B 22 3. 300 22 B 20 300 22 B 18 370 24 B 24 3. 300 22 B 20 300 22 B 18 370 24 B 24 4. 310 22 B 18 300 22 B 18 300 24 B 22 3. 300 22 B 19 300 22 B 18 370 24 B 24 4. 310 22 B 18 300 24 B 25 400 379 B 400 379 B 400 3. 300 22 B 20 300 22 B 16 370 24 B 24 3. 300 22 B 20 300 22 B 18 370 24 B 24 3. 300 22 B 20 300 22 B 18 370 24 B 24 3. 300 22 B 20 300 22 B 16 370 24 B 24 3. 300 22 B 20 300 24 B 24 300 379 B 400 3. 300 22 B 20 300 24 B 24 300 379 B 400 3. 300 22 B 20 300 24 B 24 300 379 B 400 3. 300 22 B 20 300 24 B 24 300 379 B 400 3. 300 22 B 20 300 24 B 24 300 379 B 400 3. 300 24 B 23 370 24 B 24 300 379 B 400 3. 300 24 B 23 370 24 B 24 300 370	9	528	77	B 110	879	55		130				
2 1010 8 81 8 220 798 47 101 460 27 8 34 3 969 80 8 210 888 88 88 82 210 450 27 8 33 3 969 80 8 210 888 87 8 8 210 450 27 8 33 3 969 80 8 210 888 88 88 87 8 8 210 450 27 8 33 3 969 80 8 210 888 88 88 88 88 88 88 88 88 88 82 210 450 27 8 83 3 969 80 8 210 888 210 450 27 8 838 3 969 80 8 210 888 210 450 27 8 838 3 969 80 8 210 889 49 8 110 40 25 8 27 8 9718 40 8 78 882 77 8 180 410 25 8 28 9 903 33 8 63 88 85 1 115 400 25 8 28 9 903 33 8 63 766 49 8 100 400 25 8 27 8 9703 33 8 63 766 49 8 100 400 25 8 27 8 9703 33 8 63 766 49 8 100 380 24 8 25 2 9703 33 8 63 766 49 8 100 380 24 8 25 2 9703 33 8 63 766 49 8 100 400 25 8 27 8 9703 33 8 63 766 49 8 100 400 25 8 27 8 9703 33 8 63 766 49 8 100 380 24 8 25 2 9703 33 8 63 766 49 8 100 380 24 8 25 2 9703 33 8 63 766 49 8 100 380 24 8 25 2 9703 33 8 63 766 49 8 100 380 24 8 25 2 9704 30 9 8 63 669 446 8 130 400 25 8 27 8 9704 40 8 78 822 77 8 170 390 25 8 27 8 9708 80 8 78 822 77 8 170 390 25 8 27 8 9708 80 8 78 8 822 77 8 170 390 25 8 27 8 9708 80 8 78 8 78 8 80 130 400 25 8 27 8 9708 80 8 78 8 80 130 400 25 8 27 8 9708 80 8 78 8 80 130 20 8 130 400 25 8 27 8 9708 80 8 78 80 80 80 80 80 80 80 80 80 80 80 80 80	0	726	77	B 150	879	55	В	130	500	29	В	39
2 1010 8 81 8 220 798 47 101 460 27 8 34 3 969 80 8 210 888 88 88 82 210 450 27 8 33 3 969 80 8 210 888 87 8 8 210 450 27 8 33 3 969 80 8 210 888 88 88 87 8 8 210 450 27 8 33 3 969 80 8 210 888 88 88 88 88 88 88 88 88 88 82 210 450 27 8 83 3 969 80 8 210 888 210 450 27 8 838 3 969 80 8 210 888 210 450 27 8 838 3 969 80 8 210 889 49 8 110 40 25 8 27 8 9718 40 8 78 882 77 8 180 410 25 8 28 9 903 33 8 63 88 85 1 115 400 25 8 28 9 903 33 8 63 766 49 8 100 400 25 8 27 8 9703 33 8 63 766 49 8 100 400 25 8 27 8 9703 33 8 63 766 49 8 100 380 24 8 25 2 9703 33 8 63 766 49 8 100 380 24 8 25 2 9703 33 8 63 766 49 8 100 400 25 8 27 8 9703 33 8 63 766 49 8 100 400 25 8 27 8 9703 33 8 63 766 49 8 100 380 24 8 25 2 9703 33 8 63 766 49 8 100 380 24 8 25 2 9703 33 8 63 766 49 8 100 380 24 8 25 2 9703 33 8 63 766 49 8 100 380 24 8 25 2 9704 30 9 8 63 669 446 8 130 400 25 8 27 8 9704 40 8 78 822 77 8 170 390 25 8 27 8 9708 80 8 78 822 77 8 170 390 25 8 27 8 9708 80 8 78 8 822 77 8 170 390 25 8 27 8 9708 80 8 78 8 78 8 80 130 400 25 8 27 8 9708 80 8 78 8 80 130 400 25 8 27 8 9708 80 8 78 8 80 130 20 8 130 400 25 8 27 8 9708 80 8 78 80 80 80 80 80 80 80 80 80 80 80 80 80	1	951	80	205	774	45	B	94	480	29	В	38
3.							1					
4 8977 198 B 460 933 111 B 280 420 26 B 29 5 838 614 1390 862 75 175 400 25 B 27 6 774 167 B 350 800 49 B 110 390 25 B 26 6 774 167 B 350 800 49 B 110 390 25 B 26 6 774 16 6 774 16 7 745 16 7		969					В			27	В	
5 638 614 1390 862 75 175 400 25 8 27 6 774 167 8 30 830 830 49 8 110 390 25 8 26 6 774 167 8 30 830 49 8 110 390 25 8 26 7 748 48 8 170 830 49 8 110 400 25 8 26 9 703 33 8 63 768 49 8 100 400 25 8 27 1 703 33 8 63 768 49 8 100 380 24 8 25 2 703 33 8 63 689 46 86 390 25 8 26 3 710 39 8 75 654 41 8 72 390 25 8 26 4 734 66 8 130 766 63 8 130 400 25 8 27 5 718 40 8 78 822 77 8 170 390 25 8 26 6 718 40 8 78 822 77 8 170 390 25 8 26 6 718 40 8 78 806 69 8 150 350 24 8 25 8 710 39 8 75 806 69 8 150 350 22 8 12 9 718 40 78 600 32 8 52 320 22 8 19 9 718 40 78 600 32 8 52 320 22 8 19 1 710 39 8 75 400 27 8 33 30 22 8 22 8 19 1 710 39 8 75 400 27 8 33 30 22 8 22 8 19 1 710 39 8 75 400 27 8 33 320 22 8 19 1 710 39 8 75 400 27 8 33 320 22 8 19 1 710 39 8 75 400 27 8 32 20 22 8 19 1 710 39 8 75 400 27 8 32 20 22 8 19 1 710 39 8 75 400 27 8 32 20 22 8 19 1 710 39 8 75 400 27 8 32 20 22 8 19 1 710 39 8 75 400 27 8 32 20 22 8 19 1 710 39 8 75 400 27 8 30 20 22 8 19 1 710 39 8 75 400 27 8 30 20 22 8 19 1 710 39 8 75 400 27 8 30 20 22 8 19 1 710 39 8 75 400 27 8 30 20 22 8 19 1 710 39 8 75 400 27 8 30 20 22 8 19 1 710 39 8 75 400 27 8 30 20 22 8 19 1 300 22 8 20 310 22 8 18 300 24 8 25 2 330 22 8 20 310 22 8 18 300 24 8 24 2 330 22 8 20 310 22 8 18 300 24 8 24 2 330 22 8 20 310 22 8 18 300 24 8 24 2 330 22 8 20 310 22 8 18 300 24 8 24 2 330 22 8 20 310 22 8 16 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 340 22 8 20 330 24 8 24 2 340 22 8 21 300 24 8 24 2 340 22 8 21 300 2	4	897	198								В	29
7	5	838	614	1390	862	75		175	400	25	В	27
8. 718	6	774	167	B 350	830	49	В	110	390	25	В	26
8. 718	7	742	85	B 170	830	49	В				В	27
1 703 33 8 63 766 49 8 100 400 25 8 27 1 703 33 8 63 766 49 8 100 380 24 8 25 2 703 33 8 63 63 689 46 86 390 25 8 26 3 710 39 8 75 654 41 8 72 390 25 8 26 3 710 39 8 75 654 41 8 72 390 25 8 26 4 714 66 8 1100 766 63 8 130 400 25 8 27 5 726 51 8 100 774 62 8 130 400 25 8 27 6 718 40 8 78 8 222 77 8 170 390 25 8 26 7 718 40 8 78 8 222 77 8 170 390 25 8 26 8 710 39 8 75 806 69 8 140 380 24 8 25 9 718 40 78 8 600 32 8 52 320 22 8 19 9 718 40 78 8 600 32 8 52 320 22 8 19 1 710 39 8 75 450 27 8 33 320 22 8 19 1 710 39 8 75 450 27 8 33 320 22 8 19 1 710 39 8 75 450 27 8 33 320 22 8 19 1 710 39 8 75 450 27 8 33 320 22 8 19 1 310 22 8 19 310 22 8 18 390 24 8 25 4 320 22 8 19 310 22 8 18 390 24 8 26 4 310 22 8 19 310 22 8 18 390 24 8 24 4 310 22 8 19 310 22 8 18 390 24 8 24 4 310 22 8 19 310 22 8 18 370 24 8 24 6 310 22 8 19 20 310 22 8 18 370 24 8 24 7 320 22 8 19 20 310 22 8 18 370 24 8 24 7 320 22 8 19 310 22 8 18 370 24 8 24 7 320 22 8 19 310 22 8 18 370 24 8 24 7 320 22 8 29 310 22 8 18 370 24 8 24 7 320 22 8 29 340 23 8 22 370 24 8 24 7 320 22 8 29 310 22 8 18 370 24 8 24 7 320 22 8 29 340 23 8 22 370 24 8 24 7 330 22 8 20 340 23 8 22 390 25 8 26 2 330 22 8 20 340 23 8 22 390 25 8 26 2 330 22 8 20 340 23 8 22 370 24 8 24 3 330 22 8 20 340 23 8 22 390 25 8 26 3 340 23 8 21 370 24 8 24 430 379 8 400 3 340 23 8 21 370 24 8 24 430 379 8 400 3 340 23 8 21 370 24 8 24 450 46 86 3 340 23 8 21 370 24 8 24 450 46 86 3 350 23 8 22 370 24 8 24 450 46 89 3 350 23 8 22 370 24 8 24 450 46 89 3 350 23 8 22 370 24 8 24 450 46 319 3 350 23 8 22 370 24 8 24 450 46 319 3 350 23 8 22 370 24 8 24 450 46 319 3 350 23 8 22 370 24 8 24 450 46 319 3 350 23 8 22 370 24 8 24 450 46 319 3 350 23 8 22 370 24 8 24 450 46 319 3 350 23 8 22 370 24 8 24 450 46 319 3 350 23 8 22 370 24 8 24 450 46 319 3 350 23 8 22 370 24 8 25 560 164 3 360 24 8 23 370 24 8 25 560 164 3 360 24 8 23 370 24 8 24 500 310	8	718		B 78	862		В		410			
1 703 33 8 63 766 49 8 100 380 24 8 25 2 703 33 8 63 689 46 86 390 25 8 26 3 710 39 8 75 654 41 8 72 390 25 8 26 4 734 66 8 130 766 63 8 130 400 25 8 27 5 726 51 8 100 774 62 8 130 400 25 8 27 6 718 40 8 78 822 77 8 170 390 25 8 26 7 718 40 8 78 822 77 8 170 390 25 8 26 8 710 39 8 75 806 69 8 150 350 22 8 22 9 718 40 8 78 806 69 8 150 350 22 8 22 9 718 40 8 78 806 69 8 150 350 22 8 12 9 718 40 8 78 800 27 8 32 32 22 8 19 1 710 39 8 75 450 2- 8 32 32 22 8 19 1 710 39 8 75 450 2- 8 32 32 22 8 19 1 710 39 8 75 450 2- 8 32 22 8 19 1 710 39 8 75 450 2- 8 32 22 8 19 1 710 39 8 75 450 2- 8 32 22 8 19 1 710 39 8 75 450 2- 8 32 22 8 19 1 710 39 8 75 450 2- 8 32 22 8 19 1 710 39 8 75 450 2- 8 32 22 8 19 1 710 39 8 75 450 2- 8 32 32 32 22 2 8 19 1 710 39 8 75 450 2- 8 32 22 8 20 1 710 39 8 75 450 2- 8 32 22 8 20 1 320 22 8 19 310 22 8 18 370 24 8 24 1 320 22 8 19 310 22 8 18 370 24 8 24 1 310 22 8 18 300 21 8 17 370 24 8 24 1 310 22 8 18 300 21 8 17 370 24 8 24 1 310 22 8 18 300 21 8 17 370 24 8 24 1 320 22 8 19 20 310 22 8 18 370 24 8 24 1 330 22 8 20 310 22 8 18 370 24 8 24 1 330 22 8 20 310 22 8 18 370 24 8 24 1 330 22 8 20 310 22 8 18 370 24 8 24 1 330 22 8 20 310 22 8 18 370 24 8 24 1 330 22 8 20 310 22 8 18 370 24 8 24 1 330 22 8 20 310 22 8 18 370 24 8 24 1 330 22 8 20 380 24 8 22 370 24 8 24 1 330 22 8 20 380 24 8 22 370 24 8 24 430 379 8 440 1 330 22 8 22 370 24 8 24 430 379 8 440 1 340 23 8 21 370 24 8 24 430 379 8 440 1 340 23 8 21 370 24 8 24 450 46 59 60 1 340 23 8 21 370 24 8 24 450 46 59 60 1 340 23 8 21 370 24 8 24 450 46 59 60 1 340 23 8 21 370 24 8 24 450 46 59 60 1 340 23 8 21 370 24 8 24 450 46 59 60 1 340 23 8 21 370 24 8 24 450 46 59 60 1 340 23 8 21 370 24 8 24 450 46 59 60 1 340 23 8 21 370 24 8 24 450 46 59 60 1 340 23 8 21 370 24 8 24 450 46 59 60 1 340 23 8 21 370 24 8 24 450 89 108 1 340 23 8 21 370 24 8 24 55 400 116 232 2 350 23 8 22 370 24 8 24 50 300 216 223 460 2 360 24 8 23 370 24 8 24 50	9			B 63					420	26		29
2 703 33 B 63 689 46 86 390 25 B 26 4 710 39 B 75 654 41 B 72 390 25 B 26 4 734 66 B 130 766 63 B 130 400 25 B 27 5 726 51 B 100 774 62 B 130 400 25 B 27 6 718 40 B 78 822 77 B 170 390 25 B 26 8 710 39 B 75 806 69 B 150 350 23 B 22 9 718 40 B 78 600 69 B 150 350 23 B 22 9 718 40 B 78 600 69 B 150 350 23 B 22 9 718 40 78 600 69 B 150 350 22 B 19 11. 710 39 B 75 450 27 B 33 320 22 B 19 11. 710 39 B 75 450 27 B 33 320 22 B 19 11. 710 39 B 75 450 27 B 33 320 22 B 19 11. 710 39 B 75 450 27 B 33 320 22 B 19 11. 710 39 B 75 450 27 B 33 320 22 B 19 11. 710 39 B 75 450 27 B 33 320 22 B 19 11. 710 39 B 75 450 27 B 37 370 24 B 24 11. 320 22 B 19 310 22 B 18 370 24 B 24 12. 320 22 B 19 310 22 B 18 370 24 B 24 13. 320 22 B 18 300 21 B 17 370 24 B 24 14. 310 22 B 18 300 21 B 17 370 24 B 24 15. 300 21 B 17 280 20 B 15 370 24 B 24 16. 310 22 B 18 280 20 B 15 370 24 B 24 17. 320 22 B 19 290 20 B 16 370 24 B 24 18. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 310 22 B 18 370 24 B 24 19. 330 22 B 20 340 23 B 21 380 25 B 25 11. 380 22 B 20 380 24 B 25 440 30 379 B 440 11. 390 22 B 23 370 24 B 24 450 379 B 440 11. 390 23 B 21 380 24 B 25 440 116 138 11. 340 23 B 21 370 24 B 24 450 460 219 21. 340 23 B 21 380 24 B 25 460 219 22. 350 23 B 22 370 24 B 24 450 460 219 23. 340 23 B 21 380 24 B 25 580 560 164 24. 350 23 B 22 370 24 B 24 50 0117 23 25. 360 24 B 23 370 24 B 24 50 0117 23 26. 360 24 B 23 370 24 B 24 50 0117 23 27. 360 24 B 23 370 24 B 24 50 0117 23 28. 360 24 B 23 370 24 B 24 50 0117 23 29. 360 24 B 23 370 24 B 24 50 0116 320 300 360 24 B 23 370 24 B 24 50 0117 300 360 24 B 23 370 24 B 24 50 0117 300 360 25 B 26 25 360 24 B 25 360 24 B 25 360 164	0	703	33	B 63	766	49	В	100	400	25	В	27
3 710 39 B 75 654 41 B 72 390 25 B 26 4 734 66 B 130 776 66 63 B 130 400 25 B 27 5 726 51 B 100 774 62 B 130 400 25 B 27 6 718 40 B 78 790 66 B 140 390 25 B 26 7 718 40 B 78 790 66 B 140 380 24 B 25 8 710 39 B 75 806 69 B 150 350 23 B 22 9 718 40 78 600 32 B 52 320 22 B 19 1 710 39 B 75 450 27 B 33 320 22 B 19 1 710 39 B 75 450 27 B 33 320 22 B 19 1 710 39 B 75 450 27 B 33 320 22 B 19 1 710 39 B 75 450 27 B 33 320 22 B 19 1 710 39 B 75 450 27 B 33 320 22 B 19 2 330 22 B 19 300 21 B 17 380 24 B 25 3 320 22 B 19 310 22 B 18 390 25 B 26 3 320 22 B 19 310 22 B 18 390 25 B 26 3 320 22 B 19 310 22 B 18 370 24 B 24 4 310 22 B 18 300 21 B 17 370 24 B 24 6 310 22 B 19 290 20 B 15 370 24 B 24 6 310 22 B 19 290 20 B 15 370 24 B 24 8 330 22 B 20 330 22 B 20 330 22 B 19 9 330 22 B 20 330 22 B 20 300 21 B 17 370 24 B 24 8 330 22 B 20 330 22 B 20 300 21 B 17 370 24 B 24 8 330 22 B 20 380 21 B 15 370 24 B 24 8 330 22 B 20 380 20 B 15 370 24 B 24 8 330 22 B 20 380 20 B 15 370 24 B 24 8 330 22 B 20 380 22 B 20 380 22 B 20 370 24 B 24 8 330 22 B 20 380 22 B 20 380 24 B 25 370 24 B 24 9 330 22 B 20 380 22 B 20 380 24 B 25 370 24 B 24 9 330 22 B 20 380 24 B 22 370 24 B 24 9 330 22 B 20 380 24 B 24 430 379 B 440 9 330 22 B 20 380 24 B 24 430 379 B 440 9 330 22 B 20 380 24 B 24 430 379 B 440 9 330 22 B 22 370 24 B 24 440 30 379 B 440 9 330 22 B 22 370 24 B 24 440 450 86 108 8 350 23 B 22 370 24 B 24 450 86 108 8 350 23 B 22 370 24 B 24 450 86 108 8 350 23 B 22 370 24 B 24 450 86 108 8 350 23 B 22 370 24 B 24 450 86 108 8 350 23 B 22 370 24 B 24 450 86 108 8 350 23 B 22 370 24 B 24 450 86 108 8 350 23 B 22 370 24 B 24 500 216 23 8 360 24 B 23 370 24 B 24 500 216 23 8 360 24 B 23 370 24 B 24 500 216 23 8 360 24 B 23 370 24 B 24 500 216 23 8 360 24 B 23 370 24 B 24 500 216 23 8 360 24 B 23 370 24 B 24 500 216 22 8 360 24 B 23 370 24 B 24 500 217 8 360 24 B 23 370 24 B 24 500 217 8 360 24 B 23 370 24 B 24 500 217 8 360 24 B 23 370 24 B 24	1		33		766		В					
4 73.4 66 B 130 766 63 B 130 400 25 B 27 5 726 51 B 100 774 62 B 130 400 25 B 27 6 718 40 B 78 822 77 B 170 390 25 B 26 7 718 40 B 78 790 66 B 140 380 24 B 25 9 710 399 B 75 806 69 B 150 350 23 B 22 9 718 40 B 78 600 32 B 52 320 22 B 19 1 710 39 B 75 450 27 B 33 320 22 B 19 1 710 39 B 75 450 27 B 33 320 22 B 19 1 710 39 B 75 450 27 B 33 320 22 B 19 1 710 39 B 75 450 27 B 33 320 22 B 19 1 710 39 B 75 450 27 B 33 320 22 B 19 1 710 39 B 75 450 27 B 36 B 52 320 22 B 19 1 710 39 B 75 450 27 B 36 B 52 320 22 B 19 1 320 22 B 19 300 21 B 17 380 24 B 25 3 320 22 B 19 310 22 B 18 370 24 B 24 4 310 22 B 18 300 21 B 17 370 24 B 24 4 310 22 B 18 300 21 B 17 370 24 B 24 6 310 22 B 18 280 20 B 15 370 24 B 24 8 330 22 B 20 310 22 B 18 370 24 B 24 8 330 22 B 20 310 22 B 18 370 24 B 24 8 330 22 B 20 310 22 B 18 370 24 B 24 8 330 22 B 20 330 22 B 20 310 22 B 18 370 24 B 24 8 330 22 B 20 330 22 B 20 310 22 B 18 370 24 B 24 8 330 22 B 20 330 22 B 20 390 20 B 15 370 24 B 24 8 330 22 B 20 330 22 B 20 390 25 B 26 6 310 22 B 18 280 20 B 15 370 24 B 24 8 330 22 B 20 380 22 B 20 390 25 B 26 8 330 22 B 20 380 22 B 20 390 25 B 26 8 330 22 B 20 380 22 B 20 390 25 B 26 8 330 22 B 20 380 22 B 20 390 25 B 26 8 330 22 B 20 380 22 B 20 390 25 B 26 8 330 22 B 20 380 22 B 20 390 25 B 26 8 330 22 B 22 370 24 B 24 450 46 19 8 330 22 B 22 370 24 B 24 450 46 19 8 330 23 B 21 380 24 B 24 450 46 19 8 340 23 B 21 380 24 B 24 450 46 19 8 340 23 B 21 380 24 B 25 460 219 2 340 23 B 21 380 24 B 25 560 164 28 8 350 23 B 22 370 24 B 24 50 69 117 234 8 340 23 B 21 380 24 B 25 560 164 28 8 350 24 B 23 370 24 B 24 50 69 117 234 8 340 23 B 21 380 24 B 25 560 164 28 8 350 23 B 22 370 24 B 24 50 60 219 2 340 23 B 21 380 24 B 25 560 164 28 8 350 23 B 22 370 24 B 24 50 60 219 2 340 23 B 21 380 24 B 25 560 164 28 8 350 24 B 23 370 24 B 24 50 60 319 8 360 24 B 23 370 24 B 24 50 60 319 8 360 24 B 23 370 24 B 24 50 60 319 8 360 24 B 23 370 24 B 24 50 60 319 8 360 24 B 23	2		33	B 63	689	46	l		390	25	В	
5 726 51 8 100 774 62 8 130 400 25 8 27 6 718 40 8 78 78 790 66 8 140 380 24 8 25 8 710 39 8 75 806 69 8 150 350 23 8 22 9 718 40 78 600 32 8 52 320 22 8 19 1 710 39 8 75 450 27 8 33 320 22 8 19 1 710 39 8 75 3488 13850 1030 JANUARY FEBRUARY MARCH												
6 718	4	734 726										
7.			1								-	
8 710 39 B 75 806 99 B 150 350 23 B 22 90 1 718 40 78 600 32 B 52 320 22 B 19 0 710 39 B 75 450 27 B 33 320 22 B 19 19 1 710 39 B 75 450 27 B 33 320 22 B 19 19 19 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1												
9 718 40 78 800 32 8 52 320 22 8 19 1 710 39 8 75 450 8 33 320 22 8 19 1 710 39 8 75 450 8 33 320 22 8 19 1 710 39 8 75 450 8 320 22 8 19 1 710 39 8 75 450 8 320 22 8 19 1 710 39 8 75 450 8 320 22 8 19 1 710 39 8 75 450 8 320 22 8 19 1 320 22 8 19 300 21 8 17 380 22 8 18 390 25 8 26 2 330 22 8 19 310 22 8 18 300 21 8 17 370 24 8 24 2 310 22 8 18 300 21 8 17 370 24 8 24 2 320 22 8 19 20 310 22 8 15 370 24 8 24 2 330 21 8 17 280 20 8 15 370 24 8 24 2 330 22 8 20 30 20 8 15 370 24 8 24 2 330 22 8 20 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 330 22 8 20 370 24 8 24 2 330 22 8 20 350 23 8 21 380 25 8 25 1 330 22 8 20 380 24 8 25 410 172 8 190 2 330 22 8 20 380 24 8 25 410 172 8 190 2 330 22 8 20 380 24 8 25 440 172 8 190 2 330 22 8 20 380 24 8 25 440 172 8 190 2 330 22 8 20 380 24 8 24 430 379 8 440 2 350 23 8 22 370 24 8 24 430 379 8 440 2 350 23 8 22 370 24 8 24 430 379 8 440 2 350 23 8 22 370 24 8 24 450 86 104 2 360 24 8 23 370 24 8 24 450 86 104 2 360 24 8 23 370 24 8 24 450 86 104 2 350 23 8 22 360 24 8 24 450 86 104 2 350 23 8 22 360 24 8 24 450 86 104 2 350 23 8 22 370 24 8 24 450 86 104 2 350 23 8 22 370 24 8 24 450 86 104 2 350 23 8 22 370 24 8 24 450 86 104 2 350 23 8 22 370 24 8 24 450 86 104 2 350 23 8 22 370 24 8 24 450 86 104 2 350 23 8 22 370 24 8 24 450 86 104 2 350 23 8 22 360 24 8 25 540 117 2 360 24 8 23 370 24 8 24 450 86 104 2 350 23 8 22 380 24 8 25 50 503 706 2 350 23 8 22 380 24 8 25 50 503 706 2 350 23 8 22 380 24 8 25 50 503 706 2 360 24 8 23 370 24 8 24 500 216 292 2 350 23 8 22 380 24 8 25 500 503 706 2 360 24 8 23 370 24 8 24 500 216 292 2 350 23 8 22 380 24 8 25 500 503 706 2 360 24 8 23 370 24 8 24 500 216 292 2 350 23 8 22 380 24 8 25 500 503 706 2 360 24 8 23 370 24 8 24 500 503 706 2 360 24 8 23 370 24 8 24	7							140				
0 710 39 B 75 B 33 320 22 B 19 19 19 10 tal 21299 4743 23716 3488 13850 1030 JANUARY FEBRUARY MARCH	8	710			600	22	B	52	320			
1. 710 39 B 75 320 22 B 19	0	710	39			27	la	33	320	22	В	
JANUARY	1				1		Γ					
1 320	otal	21299		4743	23716			3488	13850			1030
2 330			JANUARY	•		FEBRUAR	4			MARCH		
3 320 22 B 19 310 22 B 18 24 24 B 24 450 379 B 440 116 138 3 320 22 B 20 370 24 B 24 450 36 10. 340 23 B 21 380 24 B 24 450 36 10. 340 23 B 21 380 24 B 24 450 36 10. 340 23 B 21 380 24 B 24 450 36 10. 340 23 B 21 380 24 B 25 540 117 254 8 24 450 36 10. 340 23 B 21 380 24 B 25 540 117 254 8 24 450 36 10. 340 23 B 21 380 24 B 25 540 117 254 8 24 450 36 10. 340 23 B 21 380 24 B 25 540 117 254 8 24 450 36 10. 340 23 B 21 380 24 B 24 450 36 10. 340 23 B 21 380 24 B 24 450 36 10. 340 25 B 25 25 25 26 26 27 27 27 28 28 29 29 20 20 20 20 20 20 20 20 20 20 20 20 20	1							17				
310 22 B 16 300 21 B 17 370 24 B 24 5 300 21 B 17 280 20 B 15 370 24 B 24 6 310 22 B 18 280 20 B 15 370 24 B 24 7 320 22 B 19 290 20 B 16 370 24 B 24 8 330 22 B 20 310 22 B 18 370 24 B 24 9 330 22 B 20 350 23 B 21 360 25 B 25 1 330 22 B 20 350 23 B 22 390 25 B 25 1 340 23 B	2				310							
5 300	3	320	22		310	22		18				
6 310 22 B 18 290 20 B 15 370 24 B 24 8 24 8 24 8 20 310 22 B 20 310 24 B 24 430 379 B 440 41 350 23 B 22 370 24 B 24 430 379 B 440 51 360 24 B 23 370 24 B 24 450 382 444 450 86 B 20 444 450 86 B 20 444 450 86 B 20 444 450 86 B 20 444 450 86 B 20 444 450 86 B 20 44 450 86 B 20 44 450 86 B 20 44 450 B 86 B 20 44 450 B 86 B 20 44 450 B 86 B 20 44 450 B 90 B 108 B 20 310 22 B 22 360 24 B 24 450 B 90 B 108 B 21 370 24 B 24 450 B 90 B 108 B 21 370 24 B 24 450 B 90 B 108 B 21 370 24 B 24 450 B 90 B 108 B 21 370 24 B 24 450 B 90 B 108 B 21 370 24 B 24 450 B 90 B 108 B 21 370 24 B 25 450 96 B 108 B 21 370 24 B 25 450 96 B 108 B 22 350 23 B 22 380 24 B 25 450 96 B 108 B 25 560 B 16 22 370 24 B	4					21						
7. 320 22 B 19 290 20 B 16 370 24 B 24 8 24 8 24 8 20 370 24 B 24 8 24 8 24 8 24 8 24 8 24 8 24 8	"		21	B 17	280		P					
8 330	6											
9 330	7	320		B 19		20	В	16	370	24		24
0 330	8											
1 330	0											25
2.					l.		1		200	25		24
3 340												
4 350	2		22					22				
5 360		350				24	B	24		379		
7. 360	5										ľ	
7. 360	6	360	24	B 23	370	24	B	24	440	116		138
8 350 23 8 22 360 24 8 23 450 96 117 0 340 23 8 22 360 24 8 24 450 96 117 0 340 23 8 21 370 24 8 24 450 96 117 2 350 23 8 22 380 24 8 25 460 219 2 350 23 8 22 380 24 8 25 490 117 234 2 350 23 8 22 380 24 8 25 450 117 234 2 350 23 8 22 380 24 8 25 50 216 292 2 350 24 8 25 50 16 20 216 292 2 360 24 8 23 370 24 24 520 503 70 2 360 24 8 23 370 24 24 520 503 70 2 360 24 8 23 380 24 8 25 560 164 248 2 360 24 8 23 380 24 8 25 560 164 248 2 360 24 8 23 380 24 8 25 560 164 248 2 360 24 8 23 360 24 8 25 560 164 248 2 360 24 8 23 360 24 8 25 560 164 248 2 360 24 8 23 360 24 8 25 560 152 230 2 360 24 8 23 560 152 230 2 360 24 8 23 560 152 230 2 360 24 8 23 560 152 230 2 360 24 8 23 560 541 847 2 360 20 8 15		360									1	104
9 350 23 B 21 370 24 B 23 450 96 117 340 23 B 21 370 24 B 24 450 89 108 1 340 23 B 21 380 24 B 25 460 219 272 2 350 23 B 22 380 24 B 25 490 117 234 3 350 23 B 22 370 24 B 24 500 216 292 4 360 24 B 23 370 24 B 24 500 216 292 5 360 24 B 23 380 24 B 25 560 164 248 6 360 24 B 23 380 24 B 25 560 164 248 6 360 24 B 23 380 24 B 25 560 164 248 6 360 24 B 23 380 24 B 25 560 164 248 6 360 24 B 23 380 24 B 25 560 164 248 6 360 24 B 23 360 24 B 23 560 152 230 7 300 21 B 17 350 23 B 22 550 541 847 8 280 20 B 15 360 24 B 23 640 319 551 9 280 20 B 15 760 223 458 0 290 20 B 16 876 97 229 20 B 16 876 97 229	8					24	В	24	450	44	1	53
0 340	9	350	23			24	В	23	450			
2.	0	340	23	B 21	370	24	В					
3 350 23 B 22 370 24 B 24 500 216 292 4 360 24 B 23 370 24 B 25 560 164 248 5 360 24 B 23 380 24 B 25 560 164 248 6 360 24 B 23 360 24 B 25 560 164 248 7 300 21 B 17 350 23 B 22 580 541 847 8 280 20 B 15 360 24 B 23 640 319 551 9 280 20 B 15 760 223 458 0 290 20 B 16 876 97 229	1	340		B 21								
4 360	3	350			370	24		24	500			292
6 360 24 B 23 360 24 B 23 560 152 230 7 300 21 B 17 350 23 B 22 580 541 847 8 280 20 B 15 360 24 B 23 640 319 551 9. 280 20 B 15 760 223 458 0 290 20 B 16 930 110 276 1 290 20 B 16 876 97 229	4	360	24	B 23	370	24	_	24	520	503		706
7 300 21 B 17 350 23 B 22 580 541 847 84. 280 20 B 15 360 24 B 23 640 319 551 9 280 20 B 15 760 223 458 0 290 20 B 16 930 110 276 1 290 20 B 16 876 97 229	5	360	24	B 23	380	24	В	25	560	164		248
8. 280 20 B 15 360 24 B 23 640 319 551 9. 280 20 B 15 760 223 458 0. 290 20 B 16 930 110 276 1. 290 20 B 16 876 97 229	6											
280 20 8 15 760 223 458 0 290 20 8 16 930 110 276 1 290 20 8 16 876 97 229	7	300	21									
0 290 20 B 16 930 110 276 1 290 20 B 16 876 97 229	8			B 15	360		В	23		319		
1 290 20 B 16 876 97 229	9									223		
	0	290										
			20		ļ		-				├	

B Computed from estimated-concentration graph.

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

9-2170. GREEN RIVER NEAR GREEN RIVER, WYO .-- Continued

Suspended sediment, water year October 1960 to September 1961--Continued Where no concentrations are reported, loads are estimated?

		APRIL			MAY			JUNE	
		Suspend	ded sediment		Suspen	ded sediment		Suspend	ed sedimen
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	867	114	267	515	24	33	4060	405	4440
2	921	95	236	530	27	39	4110	340	3770
3	1100		910	545	38	56	3820		3400
4	1360	430	1580	550	13	19	3820		2900
5	1570	653	2770	555	31	46	3990	221	2380
6	1630	644	2830	550		42	3790	110	1130
7	1490	044	1600	550		38	3430	128	1190
8	1200	139	450	550	23	34	3130	121	1020
9	950	93	239	525	29	41	2860	111	857
0	885	56	134	502	27	37	2760		760
. '		48	108		19		2960	84	4.73
1	832			474		24		84	671 377
3	772 702	50 53	104 100	458 497	16 21	20 28	3170 3320	116	1040
4	667	61	110	540	79	115	3220	121	1050
5	660	37	66	634	43	74	3110	23	193
		1 1			1 1				
6	654	38	67	688	24	45	2920	14	110
7	615	42	70	654	28	49	2760	25	186
3	605	22	36	660	28	50	2480	58	388
9	615	46 45	76 81	667	16	29 30	2340 2270	35 16	22 1 98
0	667	45	81	667		30	2210	10	98
1	772	56	117	660	17	30	2170		88
2	832	104	234	628	12	20	2030	14	77
3	755	36	73	595	12	19	1900	32	164
4	695	20	38	634		200	1850		110
5	660	35	62	798		380	1780	13	62
6	628	18	31	1220		560	1720	14	65
7	585	15	24	1760	156	741	1600	11	48
3	550	21	31	2450	321	2120	1470	10	40
9	520	22	31	3110		2700	1390	10	38
0	510	21	29	3540		3300	1310	18	64
1				3610		3900			
otal	25269		12504	30316		14819	81540		26937
		JULY			AUGUST			SEPTEMBER	
								T	
1	1220	33	109	555	10	15	545	505	743
2	1130	38	116	575	150	233	520	150	211 195
3	1080	11	32 28	565	24 24	37 34	520 530	139	180
5	1030 970	14	37	530 520	21	29	555	66	99
•••	770	1 14	ا '' ا	520		27	, ,,,	00	,,
6	912		28	510	15	21	595	76	122
7	912	8	20	506	14	19	615	55	91
B	940	29	74	502	10	14	595	75	120
9	903	31	76	540	20	29	580		93
0	930	107	269	648	19	33	565	43	66
1	921	17	42	654	25	44	545	41	60
2	912		32	660	23	41	570	43	66
3	849	10	23	660	19	34	580	109	171
	798	14	30	628	108	183	585	105	166
5	740	11	22	667	32	58	595	105	169
	702	236	447	654		52	610	101	166
6 • • · · · · · · · · · · · · · · · · ·	660	302	538	641		48	600	99	160
8	610	330	544	600		44	634	71	122
9	575	224	348	570	26	40	725	75	147
0	555	210	315	555	21	31	695	75	141
									138
1	560	295	446	550	20	30	680	75	
2 • •	555	226	339	545 530	18 15	26 21	789 858	111	151 257
3	560 560	13	615 20	530 520	20	21 28	858 894	1 111	220
• • •	560 575	13	20	530	82	117	876	74	175
•••	,,,,	*	٤٠	230	""		1	1 1	
6	565	13	20	560	155	234	832	76	171
7	555	11	16	680	213	391	789	64	136
8	555	12	18	580	180	A 280	740	74	148
9	545	8	12	520	225	316	718	66	128
0	545	11	16	492		A 213	702	66	125
1	545	47	69	565	147	224			
	23469		4721	17812		2919	19637		4937
otal		_	(cfs-days)						291764

A Computed from partly estimated concentration graph.

GREEN RIVER BASIN--Continued

9-2170, GREEN RIVER NEAR GREEN RIVER, WYO. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube: C, chemically dispersed, D, decanation; N, in native water; D p inter: S elsee: V view of control occurrent of the water of the control occurrent of the control occurrent.

Method	j		VPWC	BMC	VBWC	APWC	20	VBWC	PWC
		.000 2.0					100		
	eters	0.500	1	1	100	100	86	100	;
	millin	0,250	100	ļ	97	46	91	88	1
iment	ated, ir	0,125	66				79	67	!
Suspended sediment	ze indic	0.062		•		69	69		I
uspend	than si	0.031	;	66	82	i	1	43	1
62	t finer	0.016	98	97	74	53	1	40	100
	Sediment Sediment concentration (tons per day) on not on a long of the contentration (tons per day) on not on a long		-	93	63	i	1	33	1
		0.004	89	82	20	34	1	59	92
		0.002	1	71	40	1	1	22	!
Sodiment	discharge	(tons per day)							
			202	43	136	295	292	53	258
	Discharge (cfs)		d 760	260	1720	3990	3990	2500	515
Water tem-	Water tem-Sam- per-pling ature point		38	57	4	19	61	69	64
	Time (24 hour)		ł		1200			1130	
	Date of collection		Mar. 29, 1961	May 14	May 27.	June 2	June 2	June 18	Aug. 29

d Daily mean discharge.

9-2249. BLACKS FORK NEAR MARSTON. WYO.

LOCATION .--At Bonome ranch near Marston, Sweetwater County, about 5 miles south of U.S. Highway 30, about 12 miles west of town of Green River, and 12 miles

upstream from gaging station.

BRACAROS AVAILABLE. 5. CO square miles, approximately, upstream from gaging station.

BRACAROS AVAILABLE. 5. CO square miles, approximately, upstream from gaging station.

BRACAROS AVAILABLE. 5. Constitute miles, among the state of th

Fork near Green River.

er 1961	
r 196	
ptembe	
to Se	
1960	
October	
r year	
Water	
million,	
3 per	
parts	
analy	•
Chemical	

		ı		_	- # # # # # # # # # # # # # # # # # # #	
	-8	E	8.8	8.3	88888	1000000
	Specific	duct- ance (micro- mhos at 25°C)	2,740 8.3 1,980 8.2	2,250	3,070 8.7 1,860 8.2 2,610 8.0 2,060 8.0 1,500 8.0	1,200 1,070 1,560 2,130 1,760
	ģ;	ad- ad- sorp- tion ratio	4.4	43.4	21 4 . t. t. s. 6 . a. 4 . a.	0,00,440, 0,00,00,00
	Sess CO.	Non- car- bon-	648	255	246 3998 353 555 555	201 125 261 261 436 323 287
	Hardness as CaCO ₂	Cal- ctum, Mag- ne- stum	802 598	522 145	488 534 720 755	362 314 628 526 506
	solids ted)	Tons per day	0.57	25.4	31.52 31.52 30.99	269 424 257 235 237 214
1961	Dissolved solids (calculated)	Tons per acre- foot	1.99	4.32	3.02 1.82 2.14 1.48	1.10 .96 1.47 2.15 1.70
1960 to September 1961	10	Parts per million	2,110	3,180	2,220 1,340 1,940 1,570	810 704 1,080 1,280
to 8		9 5 <u>e</u>	0.44	1.0	25. 28. 29. 19. 19.	5142 E 64 8 E 5 E 6 E 6 E 6 E 6 E 6 E 6 E 6 E 6 E 6
		Trate NO.	2.5	8.6	6 d 10 10 F	47.7.6.
October		Fluo- ride (F)				
water year Oc		Chloride (C1)	117	2 8	103 63 82 67 50	57 65 97 135 110
		Sulfate (SO4)	1,260	862 840	1,090 679 1,050 595	392 283 513 821 606
million,		1 2 3 (S)	40	685	80000	00000
parts per	Bi-	car- bon- ate (HCO ₂)	180	314	489 347 400 305 211	196 230 247 234 248 267
	í	S P P P P P P P P P P P P P P P P P P P	ε.4 ε.σ.	9.60	40400	9.00.00
Chemical analyses, in		Sodium (Na)	369	338	592 247 355 214 149	127 113 179 280 209
l anal		Mag- stum (Mg)	88.4	30	76 64 73 46	30 44 54 54 54 54
hemics		ctum (Ca)	177 135	88.0	55 109 150 182 135	96 109 145 123
٥		Fe)		11	11881	188111
		Silica (SiQ ₆)	4.0 6.0	9.8	8.8 7.6 19.2 9.2	7.4 116 110 8.4 118
		Mean discharge (cfs)	1.2	.α. α.υ.	6.5 6.5 7.3 10.6	123 223 16 88.2 10 55.0 8.4 70.3 12 65.0 18
		Date of collection	Nov. 1-4, 6-7, 10, 1960. Nov. 8-9, 11-30	13-14	Dec. 12, 15-19, 27, 29, 31 Dec. 20-26, 28, 30 Jan. 1-5, 1961 Jan. 6-31 Feb. 1-28	Mar. 1-31. Apr. 1-12. Apr. 13-30 May. 1-6. May 7-31. June 1-11.

GREEN RIVER BASIN--Continued

9-2249. BLACKS FORK NEAR MARSTON, WYO. --Continued

2,170 8.3 3,010 8.1 3,190 8.1 1,440 8.0 띥 Specific ance mhos at 25°C) 1 conmicro-3.4 tion ŀ 413 781 878 242 ł Hardness as CaCO, Cal-clum, Mag-ne-stum 620 925 995 430 ŀ 131 72.0 2.71 ļ Tons day 128 Dissolved solids (calculated) in parts per million, water year October 1960 to September 1961 -- Continued Tons per acre-foot 1.38 ł 1,000 1,560 2,320 2,510 Parts per million 1 1.2 0.45 1.5 .55 1.2 .59 0.25 0.03 8 5 (B) Fluo-Ni-ride trate (F) (NO₂) 0.2 Chloride 7 (CI) 10.0 145 152 155 8 Sulfate (SO₄) 61.0 790 1,380 1,510 480 car-bon-bon-ate (HCO₃) 000 0 Bi-car-bon-249 176 145 229 53 Po-tas-(K) 7.1 7.6 8.4 5.0 9.0 21.0 Sodium (Na) 271 380 417 164 5.3 Mag-ne-stum (Mg) Chemical analyses. 201 201 201 201 4 13.0 를 함 (8 (8) 142 206 234 105 118 ! fron (Fe) Silica (SiQ_e) 31.2 15 11.5 10 .4 8.8 1.4 35.0 11 Mean discharge (cfs) ŀ ಡ June 12-15, 1961...
June 16-30..... Weighted average Tons per day.... Date of collection

a Mean discharge based on 365 days; mean discharge for 252 days of chemical analyses 47.3 cfs.

	Aver-	age	o rc			
1	<		9.0	111	51	111
		31	34	4	111	111
		30	3 4 8	36	21 29	111
		29	36	1 %	915	111
		28	9.00 17.00	111	58 60 71 75	111
		27	3 4	1 8 1	58 71	
1201		26	33	114	12 2	111
10		25	35	35	52	111
		24	39	1 6 4	0.80	111
dec		23	35	37	1892	111
Temperature ('F) of water, water year October 1980 to September		17 18 19 20 21 22 23 24 25 26 27 28	37	1 4 9	56 51 64 71 74	111
		21	37	111	35	111
ä		20	43 44	3 4 5 5	55 55 66 58 73 72	:::
CODE		19	36	111	55 66 73	111
3		18	9.6	37	54 57 72	111
ear		17	3 6	38	1 80 1	111
er	Day	16	35	8	53	111
Wat	_	14 15 16	36	37	13	111
er,		14	36	111	312	111
Wat		13	46	196	48 17 17 19 19	111
o		12	33	911	52 20 20	
(* F)		10 11	35	37	14 1 68	111
re		10	35	35 36 41	59	111
atn		6	3.9	35 35 36 41	48 61 64	111
mpe		8	38	333	7 5 0 6 0 6 0	111
Ie		7	36	137	57	111
		9	38	35	4.6 5.3 6.3	111
		5	32	113	5 4 8 5 5 8	2
1		4	45	#	0.80.00	611
		3	40	34	50.00	72 69
		2	45	37	58 59	211
		-	43 34	36	46 59 62	75
	Mend	MOIN	October 43 November 43 December 34	January February March	April May. June	July August September

9-2295. HENRYS FORK AT LINWOOD,

LOCATION.—About 1 mile downstream from gaging station, 0.4 mile north of Wyoming-Utah State line, in Sweetwater County, Wyo., 2 miles upstream from State BRAINGE AREA.—About Linwood, 4 miles northeast of Manila, and 7 miles upstream from mouth.

DRAINGE AREA.—520 square miles upstream from gaging station.

RECORDS AVAILABLE.—Chemical analyses: March 1951 to September 1961.

Water temperatures: March 1951 to September 1961.

RATERES, 1606-61.—10. Seoluted solids: Maximum, 2,460 ppm Aug. 1, 5; minimum, 391 ppm May 28-31.

Hardness: Maximum, 1,460 ppm Aug. 1, 5; minimum, 2.66 ppm May 28-31.

Hardness: Maximum, 1,460 ppm Aug. 1, 5; minimum, 2.960 ppm May 28-31.

Farteness: Maximum, 1,470 ppm May 30.

Farteness: Maximum, 78°F July 3; minimum, freezing point on many days during November to March.

EXTREMES, 1951-61.—10. Seoluted solids: Maximum, 2.960 ppm May 1.6. 31.999 minimum, 312 ppm June 1-6, 9-10, 1952.

Factific conductance: Maximum May 28°F July 3; minimum, 2.960 ppm June 1-6, 9-10, 1952.

Specific conductance: Maximum May 28°F July 390 micromhos Sept. 23, 1999; minimum Mally, 395 micromhos May 15, June 2, 1952.

Specific conductance: Maximum May 81°F Aug. 6, 1960; minimum, freezing point on many days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Salt Lake City, Urah.

		Hd	8.1	8.8	8.1			7.9	7.9	2.8	7.8	.3 8	8.6	8.1
	Specific con-	duct- ance (micro- mhos at 25°C)	2520	1690	1560 1560	1500	1200	1080 753	1380	1390 1840	1070	848	1030	2050
		ad- Borp- tion ratto	2.0	1.4	1.2				1.2	4 4	1.1	<u>«</u>		1.7
	ess CO ₃	Non- car- bon-	1050	634	543	515	362	310	434	472	286 104	183	386	783
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	1290	840 1160	795	750	566	316	672	686	488 266	390	468 626	995
	solids ted)	Tons per day	8.67	6.82	85.5 99.6	78.5	139	137 2 8 9	43.8	18.3	90.8	174	34.7	4.32
r 1961	Dissolved solids (calculated)	Tons per acre- foot	2.91	1.81	1.62	1.55	1.19	1.07	1.41	1.96	1.05	.80	1.02	2,18
Septembe	Dise (c:	Parts per million	2140	1330	1190	1140	877	787	1040	1060	391	591	750	1600
0 to		Bo-	0.54	.37	. 29	.22	15	. 20	. 29	39	.17	.16	.21	.42
r 196		Fluo- Ni- ride trate (F) (NO ₂)	0.5	r. 0	20,00	4,1	v. 00.	2.2	1.6	4.1	1.9	ω.	8.7.	9.
ctobe		Fluo- ride (F)	1	11	7.1	T	П	11	1	11	11	- 1	11	1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	99	41 54	32	34	28 28 28 28	26 16	32	34 34 34	24 10	16	30.4	48
lion, wat		Sulfate (SO ₄)	1300	767	653 644	617	553 454	389	540	571 824	380	248	371 490	935
r m111	į	2 to # 50	٥	00	00			00			00		60	
ts per	Bi-	car- bon- ate (HCO ₃)	289		307			242			246 197		209	
in par	É	stura (K)	13	11	9.4	80.0	7.8	7.7 8.8	9.0	10.2	5.7	7.0	9.0	12
alyses,		Sodium (Na)	169	130		20	99	56 44	72	106	22	37	54 66	123
cal an		ne- ne- sium (Mg)	150	101	88	86	5 19	28	92	103	23	35	50	109
Chemi		Cal (Ca)	271	170 250	168 174	168	127	107 81	144	135 196	109 68	66	106 141	218
		(Fe)	0.00	8.1	11	.01	1 1	0.0	.01	11	11	- 1	1 1	ł
		Silica (SiO ₂)	56	23	23	13	11	21 26	19	916	19	24	24 26	22
		Mean discharge (cfs)	1.5	1.9 23	31.0			64.7 21 206 26			43,4 22 198 19	109	13.2	1.0
		Date of collection	Oct. 1-19, 22-26, 28-29, 1960	30-31	Nov. 6, 8-30	Jan. 1-31, 1961	Mar. 1-31	Apr. 1-2, 9-25	Apr. 26-30	May 9-13, 19-20	May 14-18, 21-27	June 1-12	June 13-15	June 22-30

GREEN RIVER BASIN .- Continued

9-2295. HENRYS FORK AT LINWOOD, UTAH--Continued

1		Ħ	8.1		۲.	۲.	٠.	œ, ı	٠.	. i		۱:	5	
- 6	1		2750 8,				8 091	370 7	000	8 082	1050 8.2	1220 8.1	1590 8.1	-
Specif	<u>, </u>	ance (micro- mhoe at 25°C)											, ,	
	ģ,	add to the state of the state o	2.1								¥.6	1.1	1.3	-
999	င္ပ	Non- car- bon-	1150	1220	248	226	514	432	206	413	301	379	566	-
Hardness	28 C2	Cal- cium, Mag- ne- stum	1410	1460	742	436	708	648	11/0	616	288	586	788	-
spilos	ted)	Tons per day	1.25	2,66	4.98	5.10	39.0	124	907	116	193	06	1	-
Dissolved solids	alcula	Tons per acre- foot	3.16	3.35	1.67	1.12	1.52	1.41	7.43	1.25	1.90	1,23	1	1
Dis	၁	Parts per million	2320	2460	1230	822	1120	1040	1790	920	753	806	1240	
100		- 10 Po (B)	0.55				•	•	٠	٠	2,0	1.1 0.24	0.9 0.30	0.1 0.02
3		Na- (NO)	0.5	6	1.9	e. 80	1.0	1.6	9	1.2	1.7	1.1	6.0	0.1
199		Fluoritde (F)	0.7	: [!	1	1	!	ľ	I	П	1	1	1
maryses, in parts per million, water year October 1990 to September 1991-Continued		Chloride (C1)	67	17	34	22	28	21	77	21	183	25	35	2.5
1012		Sulfate (90.)	1420	1520	694	382	629	551	1080	482	363	470	969	47.0
OII	į	8 2 2 3	00	0	0	0	0	0	-	0	00	•	۰	٥
1111	Bi-	car- bon- ate (HCO ₂)	319	304	236	256					252	254	270	25
n De	Š	A THE	15	14	12	12	12	2	77	6.5	7.5	9.0	10	6.0
		Sodium (Na)	181	198	90	88	73	89	99	22	43	60	67	6.0
T J Ses	2	astum (Mg)	167	156	29	32	76	49	90	9	41	61	29	6,1
		ctum (Ca)	291	331	168	122	159	180	2	147	204	135	173	13.0
	*****	Iron (Fe)	0.02	!!	!	!	1	Т	Ī	ī		1	i	-
		Silica (SiO ₂)	22	23	31	31	25	31	3	22	13	21	22	2,1
		Mean discharge (cfs)	0.0	4.	1.5	2.3	12.9	44.0	42.5	46.8	95.0	21	36.7 22	
		Date of collection	July 1-29, 1961	Aug. 1, 5	Aug. 2-4, 8, 10-15	Aug. 6-7, 9	Aug. 16-24	Aug. 25-27, 30-31.	Aug. 28-29.	Sept. 1-17	Sept. 18-24, 27-30	Weighted average	Time-weighted average	Tons per day

GREEN RIVER BASIN -- Continued

9-2295, HENRYS FORK AT LINWOOD, UTAH -- Continued

		- 1		F	Temperature ('F) of water, water year October 1960 to September 1961	ratt	ıre	(F)	of 1	rate	*	ater	yes	i o	ctob	er 1	0961	\$	Sep	temp	Per	1961			İ				
													Δ	Day															Aver-
2 3 4	_	4		2 (2 9	8	0	10	11	12	13	14 1	15 1	16	17 18		19 2	20 2	21 22		23 24		25 26	6 27	7 28	3 29	30	31	age
54 56 57		5.7	-	95 60	09 0		53	4 8	45	94	404	9 54	46 4	48 4	45 4	48 4	48 47	_	45 50		50 48	3 54	4 50	05 0	0 45	37	45	04	64
38	38 38	38	_	37 38	8 37	7 36	_	36	32 35	35	34 (:		36 3			38 3	35 33	_	34 32	_	32 37		36 36	32	5 32	36	32	1	36
37 36 32	36 35	35		35			32	35	32	32	32	32	32	32	32		32 3		3		3		2 32	32	2 32	32	35	32	33
32 32 32	32	32		32 32		32 32		32 32	32 32	32	32	32	32 3	32 -	32		32		1		32		32		32		32	1	;
32		!	_	32	_	32	1	32	İ	i	32		32 -	-	32 -	-	1 3		32		33 32	_	35 34	_	32 33	;	1	!	;
32 32 32		32		32 32	_	32 34	32	35	35	35	45	04	1	04	44	37 3	37 40		45 4		50	_	45 43	_	42 43	45	2,	4	33
48 51 50		9		47 47	7 47		47	4	45 45	45	52	60	454	4.5	55	53 5	55 55		55 55	_	52 48	2	1 52	58	8 28	9	55	1	51
58		55		50 5		09		69	69	65	9		57 5			_	9	_	62 65	_	9		9 55	65	5 65			_	9
61 64 56		26		64 65	5 65	5 65	69	65	65	63	65	99	63	67 7	70 7	70 7	74 75		75 75		66 75		65 70	70	0 75	2	9	!	67
10 10	7.0	- 2		11		4	_ 1	- 1			4	10	7.6 7	70	75 76	_	75	_	70 72		73 67	_	43 47	, ,	7.5	7,6	4	4	7
	-	•	-	3	_	,	_				:	_	•		•	-	•	_	;	-	,	_		-	<u>`</u>	_		-	•
74 70 75 75	75 75	25	_	16 69	_	70 65	65	2	75	89	65	74	707	2	2	75	25		72 71		70 72		67 60	79	, 65	65	65	63	69
6,3	42 64	3	-	46.	_			4	9	4.5	04	_	4 6 6	_	200	_	4	_	0	_	8	_		_	7 55	_		-	ď
8	70	t	_	3	_	-	_	3	5	3	3	-	3		-	_	<u> </u>		<u>-</u>	_		_		_	<u>`</u>	-		_	2

UTAH 9-2345. GREEN RIVER NEAR GREENDALE.

LOCATION.--At gaging station, 0.5 mile downstream from Flaming Gorge dam, 2 miles south of Dutch John, 4 miles northeast of Greendale, Daggett County, and 13 miles southeast of Linwood.

DRANAGE ARRA.--15,100 quare miles, approximately.

RECORDS ANIALMEL.-Chemical analyses: October 1956 to September 1956.

RECORDS ANIALMEL.-Chemical analyses: October 1956 to September 1956.

Sediment records: October 1956 to September 1959.

Sediment records: October 1956 to September 1959.

Sediment records: October 1956 to September 1959.

Sediment records: October 1956 to September 1959.

Sediment records: October 1956 to September 1959.

Randness: Maximum, 844 ppm Dec 1-9; minimum, 145 ppm Mar. 18-23; minimum, 236 ppm June 1-6, 1958.

EXTREMES, 1956-548, 1959-641.--Dissolved colids: Maximum, 865 ppm Mar. 18-23; 1968; minimum, 204 ppm June 1-6, 1958.

Barchiess: Maximum daily, 1,430 micromhos Ang. 30; minimum daily, 325 micromhos June 2, 1961.

Sectific conductance: Maximum daily, 1,430 micromhos Ang. 30; 1961; minimum daily, 1325 micromhos June 2, 1961.

Sectific conductance: Maximum daily, 1,430 micromhos Ang. 30; 1961; minimum daily, 1,430 micromhos Ang. 30; 1961; minimum daily, 1,430 micromhos Ang. 30; 1961; minimum daily, 1,440 micromhos Ang. 30; 1961; minimum daily, 1,440 micromhos Ang. 30; 1961; minimum daily, 1,440 micromhos Ang. 30; 1961; minimum daily, 1,440 micromhos Ang. 30; 1961; minimum daily, 1,440 micromhos Ang. 30; 1961; minimum daily, 1,440 micromhos Ang. 30; 1961; minimum daily, 1,440 micromhos Ang. 30; 1,441, 1,440 micromhos Ang. 30; 1,441, 1,440 micromhos Ang. 30; 1,441, 1,440 micromhos Ang. 30; 1,441, 1,441, 1,440 micromhos Ang. 30; 1,441, 1,440 micromhos Ang. 30; 1,441, 1,441, 1,440 micromhos Ang. 30; 1,441, 1,441

		Hď	8.2	8.3	7.9310	7.9 7.9 7.8 8.0	7.9
	Specific con-	duct- ance (micro- mhos at 25°C)	720 718 1100	784 819	806 1110 828 754	1020 643 438 376	624 1240
		ad- ad- forp- tion ratio	2.0	1.6	1.2.2	2.5.0.0	3.0
		Non- car- bon-	101 105 191	127	131 182 103 99 106	157 81 43 33	67 204
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	254 266 424	304	280 320 270 270 262	346 215 170 145	368
	Dissolved solids (residue at 180°C)	Tons per day	1030 1200 941	634 749	1370 2980 2290 1750 1260	2290 1430 2500 2060 800	751 1590
r 1961	Dissolved solids residue at 180°	Tons per acre- foot	0.65	.73	1.18 1.78 .78 .69	1.01 .58 .39 .32	1.13
Septembe	Dis (resi	Parts per million	479 491 812	535 567	558 866 570 508	744 425 289 236 326	399 828
to to		ron (B)	0.10	.07	8811001	90000	33
r 196		Ni- trate (NO ₂)	0.0	8.6	4 8 H H	4-12-1 20040	3.7
ctobe		Fluo- ride (F)	6.0	44	E F.E.E.	10000	6.0
in parts per million, water year October 1960 to September 1961		Chloride (Cl)	18 15 28	15	24 68 19 22	36 17 9.5 7.5	16
lion, wat		Sulfate (SO ₄)	209 205 362	229	248 362 222 203 221	299 173 88 72 121	161 390
r m11.		4 4 5 C	000	00	00000	00000	••
ts pe	Bi-	car- bon- ate (HCO ₃)	187 196 284	216 200	182 168 200 209 190	230 163 155 136	172 200
n par	Ė	K Strange (K)	3.2.6	2.1	4.6.000	4.2.2. 0.4.1.0. 0.4.1.0.	7.3
Chemical analyses, i		Sodium (Na)	60 55 97	56 65	70 130 75 60 68	95 27 422	132
cal ans	7,0	Mag. ne- stum (Mg)	24 25 41	26 27	25 23 25 4	31 18 12 11	35
Chem1		Cal (Ca)	62 66 103	80 75	68 74 71 66 66	88 56 49 46	52 91
		Fe)	0.00 0.00	200.	91888	15000	!!
		Silica (SiO ₂)	9.5	8.1	6.5 6.7 14 14	15 8.6 15 9.8 6.2	5.9
		Mean Sil discharge (Sil (cfs)	795 908 429	439	908 1273 1487 1274 890	1140 1246 3210 3227 909	697 712
		Date of collection	Oct. 1-31, 1960 Nov. 1-30. Dec. 1-9.	1961	Mar. 1-17, 24-28 Mar. 18-23 Mar. 29-31 Apr. 1-30	May 16 Nay 21-27. Nay 28-31. June 1-30.	Aug. 1-29

6.2	6.7	0:	
924 7.9	636 7.9	713 8.0	1
1.7	84 1.4	1.6	1
162	84	101	1
324 250	228	256	ł
1220 1230	1190		1
. 65	0.58	1	1
628 476	425	482	1
3.6 0.15	0.11	0,13	0.29
3.6	0,3 1,3 0,11	1.1	3.7
. v.	0,3	0.3	6.0
32 18	16	18 0.3 1.1 0.13	45.0 0.9 3.7 0.29
286	0 171	201	476
00		0	0
198 178	176	189	489
3.1	2,3	2.4	6.4
83	20	28	140
28	20	23	56.0
84 66	0.01 58	65	163
11	0,01	0.01	0.04 163
11 9.6	9.4	8.8	26.0
720 958		1032	:
Sept. 1-5, 1961 Sept. 6-30	Weighted average	Time-weighted average	Tons per day

9-2510. YAMPA RIVER NEAR MAYBELL. COLO.

LOCATION.--At county bridge, I mile north of Maybell, Moffat County, and about 3.5 miles downstream from gaging station. DRAINAGE ARE..-3.410 square miles, approximately, upstream from gaging station.

RECORDS AVAILAGLE.-Chemical analyses: Movember 1960 to September 1961.

Rater temperatures: Movember 1960 to September 1961.

Rater temperatures: Movember 1960 to May 1958.

EXTREMES 1960-61.--Dissolved solids: Maximum, 394 ppm Aug. 13-27; minimum, 82 ppm June 1-21.

Ratchess: Maximum, 194 ppm Dec. 1-31; minimum, 32 ppm June 1-21.

Ratchess: Maximum, 94 ppm Dec. 1-31; minimum, 35 ppm June 1-21.

Ratchess: Maximum, 80°F Aug. 22, 25.

Ratchess: Maximum, 288 ppm Dec. 1-0, 1962; minimum, 43 ppm June 1-21, 1969.

Specific conductance: Maximum and 19, 1962; minimum, 43 ppm June 1-21, 1969.

Specific conductance: Maximum and 19, 1962; minimum, 43 ppm June 1-21, 1969.

Specific conductance: Maximum and 19, 1962; minimum, freezing point on many days during winter months.

RECORDS AREA RECORDS AND ACC. 1960; minimum, freezing point on many days during winter months.

REMARKS.-Records of specific conductance of daily samples available in district office at Salt Lake City, Utah.

١		Hq	8.0			7.9	0	6.7	2.5	. r.	7.5	7.1	7.7	7.7
	Specific con-	duct- ance (micro- mhos at 25°C)	532					344			184	321	513	656 7.7 362 8.1
		ad- ad- Borp- tion ratio	1.5		1: ₀	4.1	121	. 2	4.0	, ii	1.1	0,1	1.5	1.0
		Non- car- bon-	15	200	30	4.6	26	17	11	e ro	7	10	14	100
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	174	179	168	187	193	137	88	52	110	110	167	130
	solids 180°C)	Tons per day	168	183	182	270	691	1,120	1,350	1,400 892	958 416	259	163	91.7
1961	Dissolved solids (residue at 180	Tons per acre- foot	0.43	94.	.43	.47	.46	22.30	.18	2:1	.15	255	.4.	.29
September 1961	Dis.	Parts per million	316 340	352	314	348	336	164	133	82	200	186	30.	394
to Se		- P. B. B.	0.10			86				2.2	68	2,8	32.	14.
1960	·	rate (NO ₂)	1,1	1:1		2.6	1.8	1.7	2.0	1.3	1.8	1,1	, co	1.6
coher		Fluo- ride (F)												
water year Octoher		Chloride (Cl)	52 58 58	28	97	22	19	5.0	2.5	2.6	19 8.0	17	27	14
		Sulfate (SO ₄)	78 84	871	8 0	113	117	34.	56	113	40 18	37	74	103
million,		1 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m	011	10	>	00	0	00	0	00	• •	00	0	••
per m	Bi-	car- bon- ate (HCO ₂)	204			175	163	131	88	57	126 73	122	186	207
in parts per	-	Estin (X)	1.9	2.38	2.5	3.0	6.0	1.2			1.6		3.7	4.2
ses, in		Sodlum (Na)	51	6 O i	47			11	9.9	5.7	27 12			22
analyses,	;	Mag- ne- stum (Mg)	16 18	18	16	18	17	7.5	5.6		9.4	6.	15	11
Chemical		Cal- ctum (Ca)	41					8 3			18	28	42	34
ខ		Fe)	0.0	18	-		-	.17	1		11	8.5	!!	
		Silica (SiQ,)	5.3	213	2	9.5	0.6	2 4	11	0 & 0 &	4.6	9.0	4.1	4.0 6.0
		Mean discharge (Si (cfs)	197	199	212			1,269 2,535			1,774			99.5
		Date of collection	Oct. 1-31, 1960	Jan. 1-31, 1961	ep. 1-28	Mar. 1-17, 25-31	Apr. 1-19.	Apr. 20-30	ay 14-22.	ay 23-31	June 22-23, 30	July 1-15	ug. 1-12	Aug. 13-27
	1		Oź	וכם	•	# #	4	< *	*	* 5	ر د		₹	4 4

8.5 7.9 7.8	7.3	454 7.6	ł
556 564 400 315	261	454	1
1.6	0.7	1.3	1
15 9 13 26	13	16	Τ
186 160 144 130	96	154	-
84.0 240 225 562	390		
84.8 22.2 72.	0.23	-	1
338 337 237 199	166	279	l
<u>6184</u>	1.6 0.05	1.4 0.07	3.7 0.11
2444	1.6	1.4	3.7
28 30 18 8.5	8.6	21	20.0
55 25	37	0.2	67.0
8000	0	-	0
192 208 160 127	103	166	241
22.32	1.6	2.4	3.8
50 30 17	17	38	40.0
19 13 11	8.0	14	19.0
44 46 33	26	38	61.0
1111	1	1	1
5.4 5.4 5.1	8.6	8.9	23.0
92.0 264 352 1,046	1	869	-
Aug. 30-31, 1961 Sept. 1-9 Sept. 10-21	Weighted average	Time-weighted average	Tons per day

Temperature ("F) of water, water year October 1960 to September 1961 Aver-	21 22 23 24 25 26 27 28 29 30 31 age	35	35 36 36 37 40 40 40 40 40 40 40 40 41 40 40 40 40 40 40 40 40 40 40 40 40 40	49 51 50 51 52 49 51 52 54 55 46 56 60 59 59 58 58 58 58 58 55 56 70 70 70 68 70 70 70 70 68 70 70 70 70 62	18 73 71 72 78 76 76 73 74 75 76 74 74 80 78 76 69 71 72 71 73 63 45 47 45 51 55 57 57 45 60
1960	19 20	115	39	53 50	73 69 69 76 65 63
per	18	96	3381	60 60 60 60 60 60 60 60 60 60 60 60 60 6	12.04
Set 2	17.1	111	8	181	69 19
Day	16	11#	111	400	79 69 67
Pr y	15	111	111	300	69 71 11
Wat	14	88	# 13	2 4 5 0	73
er,	13	111	131	440	69 2
Wat	12	11%	111	4 6 6	2 6 6
8	=	39	181	59 67	76 69 62
	10	111	813	1,28	512
2	٥	115	111	3 2 6	71
ratt	8	211	111	348	72 69
a be	7	51	481	180	75
۴	9	111	118	524	22 22 2
	5	34	111	386	78 75 65
	4	121	189	37.6	248
	3	111	#11	8 50 50 5 7 4	78 74 62
	2	59 36	111	35%	2 2 3
	-	111	111	4 w w 0 % w	2 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
	Month	October November December	January February	April May. June	July

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.

LOCATION. --At bridge on State Highway 318, about 6 miles upstream from gaging station, about 10 miles northeast of Lily, Woffat County, and 16 miles upstream from

upstream from gaging station. DRAINACE AREA. --3,730 square miles, approximately, upstream from gaging RECORDS AVAILABLE. --Chemical analyses: December 1950 to September 1961.

Water temperatures: December 1950 to September 1960. Sediment records: May 1958 to September 1961.

EXTREES, 1960-61.—Dissolved solids: Maximum, 2,180 ppm Aug. 16; minimum, 139 ppm May 15 to June 19.

Hardness: Maximum, 475 ppm Aug. 16; minimum, 78 ppm Oct. 12-20.

Hardness: Maximum daily, 3,160 micromhos Aug. 16; minimum daily, 171 micromhos May 25,

Sediment concentrations: Maximum daily, 3,160 micromhos Aug. 16; minimum daily, 171 micromhos May 25,

Sediment concentrations: Maximum daily, 3,160 ppm Oct. 12; minimum daily, 10 to 100 ppm Minimum, 109 ppm Min

Records of discharge are given for Little Snake River near Lily, Colo. Flow affected by ice Nov. 11 to Mar. 7.

		Hď	20.00.00	8.1	8.88	88.22
	Specific	duct- ance (micro- mhos at 25°C)	1,860 1,030 1,140 652	526	715 417 581 377 461	335 301 256 207 217
	Š:	ad- ad- sorp- tion ratio	10.2	2.7	8 4 8 6 1 H	00000
		Non- car- bon-	8000	•	£1 0 111	F0440
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	294 78 222 172	120	170 134 114 134	123 111 102 85 84
	solids 180°C)	Tons per day	94.0 141 60,1 55.0	325	747 254 301 252 175	222 336 363 465 418
1961	Dissolved s (residue at	Tons per acre- foot	1.73	.44	.36 .33 .40	.30 .27 .23 .19
September 1961	Dus (resid	Parts per million	1,270 665 752 420	325	264 264 368 242 242	218 196 170 139 139
to Se		Pon (B)	0.15 .10 .11 .08		0.07 0.07 0.05 0.05	80000
1960. to		Ni- trate (NO ₂)	0.7 2.8 1.2	1.3	6.11.2	8.1111
ober		Fluo- ride (F)				
water year October		Chloride (Cl)	135 65 58 27	28	26 12 28 9.5	7.0 9.0 9.0 8.0 8.0
		Sulfate (SO ₄)	558 214 292 127	68	172 73 91 58 77	48 37 27 19
m1111on,	,,,	(C)	0212	0	00000	00000
per m	Bi-	car- bon- ate (HCO ₃)	276 258 249 216	172	192 153 194 150 169	141 135 120 101 109
parts	ŕ	(K)	2.5	2.2	72636	11111
analyses, in parts per		Sodium (Na)	325 206 172 79	89	92 38 81 27 39	22 12 13 13 13
	76.2	sium (Mg)	23 119 129 120	8.9	9.7 8.5 7.1 8.0	6.3 8.4 8.1 8.1 8.1
Chemical		Cium (C)	80 25 57 48	37	52 40 44 47	33 33 24 27 28
f		Iron (Fe)	9.0	1	11888	21111
		Silica (SiQ ₂)	16 18 19	15	4112 118 119	120 15 15
		Mean discharge (SiQ ₆) (cfs)	27.4 16 78.8 24 29.6 18	370	558 357 303 222	378 634 791 1,238 1,114
		Date of collection	Oct. 11, 21-31, 1960. Oct. 12-20. Nov. 9-30.	Mar. 15-18, 20,	Mar. 19 Mar. 21-31. Apr. 1-5. Apr. 6-12.	Apr. 22-30. May 1-4. May 5-14. May 15-31. June 1-19.

7.7 8.1 8.0	7.8	7.8 7.9 8.1 8.1	8.0		
311 454 667	1,540	1,060 1,010 1,430 964 540	315 8.0	1	
1.0	4.7	3.1 7.8 5.0 7.0	1.1	1	
160	117	58 132 0 0	e e	ŀ	
105 140 196	400	324 306 209 172 134	104	1	
178 104 28.5	44.6 165	26.1 14.8 19.3 230 139	198	1	
39	1.50	1.01 .96 1.31 .86	0,28	1	
196 287 433	1,100	744 704 964 630 342	205	i	
999	.15	.02 117 117 09	90.0	90.0	
0.1	3.2	914.0.6	1.2 0.06	1,1 0,06	
					cfs.
7.0 14 22	73 375	36 38 80 18	8.7	8.4	357
41 77 138	462	278 318 389 225 93	44	43.0	days of chemical analyses,
000	00	00000	۰	0	hemic
133 173 219	345 576	324 212 294 262 207	129	124	s of c
3.9	7.2	0.0440 84000	1.4	1,3	212 day
26 44 68	214 595	129 114 245 152 71	28	27	mean discharge for 2
7.3 9.0	20	17 15 11 8.5 7.1	5,6	5.4	scharg
30 41 58	127 160		32	31.0	ean di
118	11	11111	ŀ	1	days; n
13 16 16	22 21	20 20 18 13	15	15.0	
336 13 134 16 24.4 16	15.0 22 28 21	13 7.8 15 7.4 20 135 18 150	в 225		based on
June 20-25, 1961 June 26-30 July 1-5	Aug. 14-15, 17-23, 25-31	Aug. 24 Sept. 1-2. Sept. 3-19. Sept. 20-24. Sept. 25-30	Weighted average	Tons per day	a Mean discharge based on 365

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.--Continued

Suspended sediment, water year October 1960 to September 1981

		OCTOBER	re no concent		NOVEMBER				ECEMBER		
ļ			ded sediment		Suspen	ded	sediment		Suspen	ded	sedimen
Day	Mean dis- charge	Mean concen- tration	Tons per	Mean dis- charge	Mean concen- tration		Tons per	Mean dis- charge	Mean concen- tration		Tons per
	(cfs)	(ppm)	day	(cfs)	(ppm)	1	day	(cfs)	(ppm)	ĺ	day
1	0		0	18	329	A	16	46			48
2	0		0	19	370		19	48	i		50
3	0		0	20	444	Α	24	46			48
400 l	. 0		0	23	483	A	30	46		1	48
5	0		0	23	483		30	46			48
6	0			29	575	A	45	40			40
7	ō		0	45	749	A	91	44			45
8	0		0	60	926	Α	150	46			48
	0		0	56	860		130	48			50
0	0		0	55	808	Α	120	50			53
ı	181	23900	5 21200	50	667	A	90	50			53
2	182	33000	16800	50	622	ľ	84	48		1	50
3	194	29000	15200	55	808	A	120	46			48
	197	11700	6220	55	808	la	120	46			48
	42	9500	1080	50	622	A	84	46			48
.	26	8500	597	46	507	l _A	63	44			45
7	18	6300	306	46	507	ľ	63	42		l	43
:::	17	4000	A 180	46	507	A	63	44		l	45
:::	16	2200	95	44	530		63	48			50
· .	17	1200	A 55	44	530	A	63	44			45
		i		44	520		63	40			40
1 • •	15	650 350	A 26		530 772	١.	100	40	1		43
200	12 10	210	A 11	48 50	889	A	120	44	i		45
•••	9.9		A 6	50	889	Â	120	44		1	45
::	10	160 150	^ 4	50	904	<u> </u> ^	122	44	1		45
- 1						١.			l		43
•••	13	180	A 6	48	671	١.	87	42 38	1	1	43 38
7	17 17	260 270	12 A 12	46 44	507 379	A	63 45	36	ĺ		36
		270	A 12	44	379	A	45	34	1	1	34
2	16 13	260	A 12	46	386	IŽ.	48	34	1		34
1	15	280	A 11	==		r		36		l	36
otal	1037.9		61846	1304		T	2281	1352			1392
		JANUARY	1		FEBRUAR	r			MARCH	_	
		r	34	30		Т		120	432	В	140
2	34	1	34	32		1	29 31	130	456	В	160
	34 34	1	34	34		1	34	120	432	В	140
3 4	34		34	36		1	36	130	456	В	160
5	32		31	38			38	140	450	В	170
- 1					ŀ					_	200
6	30		29	40	1	1	40 40	160	463 479	В	200 220
7	32		31	40	1	1	40 38	170		B	230
	34 36		34 36	38 40	1		40	179 185	476 480	В	240
	36 38	1	38	40	1		43	188	473	8	240
1									!	В	
	40		40	44	1		45	194	477		250 230
2	42	1	43	46	I		48 50	179 203	476 474	B	230
3	42 42		43 43	48 46	I		48	212	489	B	280
5	42	1	43	46			50	236	390	٦	249
			1	· .							
7	40		40	50	1		53	254	880	l	604
	38	1	38	55	1	1	59 65	330 420	2100 4970	s	1870 6430
	36	l	36 36	60	I	1	65 59	558	4700	٦	7080
3				55 60		1	65	610	5600		9220
9	36 36		36	∥ 60		1		1	4000		5180
9	36 36				1		71				2160
9	36 36 36		36	65			71 77	480 321			1200
3 3 1	36 36 36 38		36 38	65 70			71 77 84	321	1380		1200
8	36 36 36		36	65			77 84 77	321 317 285	1380 1350 2020		1200 1160 1550
8	36 36 36 38 38		36 38 38	65 70 75			77 84	321 317	1380 1350		1200 1160
8 9 0 1 2 3 4 5	36 36 38 38 40 42		36 38 38 40 43	65 70 75 70 80			77 84 77 90	321 317 285	1380 1350 2020 906		1200 1160 1550 670
8 9 0 1 2 3 4 5	36 36 36 38 38 40		36 38 38 40	65 70 75 70			77 84 77	321 317 285 274	1380 1350 2020		1200 1160 1550
8 9 0 1 2 3 4 5 6	36 36 38 38 38 40 42		36 38 38 40 43 40	65 70 75 70 80 90			77 84 77 90 100	321 317 285 274 395 610	1380 1350 2020 906 2850		1200 1160 1550 670
8 9 0 1 2 3 4 5 6 7	36 36 38 38 40 42 40 38		36 38 38 40 43	65 70 75 70 80			77 84 77 90	321 317 285 274 395 610 426 317	1380 1350 2020 906 2850 1870		1200 1160 1550 670 3040 3080 1230
8 9 0 1 2 3 4 5 6	36 36 38 38 40 42 40 38 38		36 38 38 40 43 40 38 34	65 70 75 70 80 90			77 84 77 90 100	321 317 285 274 395 610 426	1380 1350 2020 906 2850 1870 1070		1200 1160 1550 670 3040 3080 1230 650
2	36 36 38 38 40 42 40 38 34 30		36 38 38 40 43 40 38 34	65 70 75 70 80 90			77 84 77 90 100 90 120	321 317 285 274 395 610 426 317	1380 1350 2020 906 2850 1870 1070 759		1200 1160 1550 670 3040 3080 1230

S Computed by subdividing day.
A Computed from partly estimated concentration graph.
B Computed from estimated-concentration graph.

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO. -- Continued

		APRIL	re no concent		MAY	d, loads are	estimated/	JUNE	
ļ			ded sediment			dad andimort			ded eadiment
Day	Mean dis- charge (cfs)	Mean concen- tration	ded sediment Tons per	Mean dis- charge (cfs)	Mean concen- tration	ded sediment Tons per	Mean dis- charge (cfs)	Mean concen- tration	Tons
	(CIS)	(ppm)	day	(CIS)	(ppm)	day	(CIS)	(ppm)	day
1	246	1180	784	317	330	282	1640	1320	5840
2	334	10100	9110	565	1980	3020	1580	1220	5200
3	325	7620	6690	681	1950	3590	1530	1140	4710
4	285	2110	1620	975	3260	8580	1520	103U	4230
5	325	4490	3940	984	2630	6990	1380	827	3080
6	649	2570	4500	826	1650	3680	1260	728	2480
7	515	1870	2600	756	1120	2290	1220	742	2440
8	415	681	763	588	672	1070	1250	667	2250
9	330 285	518 428	462 329	474 395	522 416	668 444	1150 1130	738 690	2290 2110
10	200	420	329	272	410	1	1130	0,0	2110
11	264	509	363	334	473	427	1110	872	2610
12	240	456	295	665	1320	2370	1090	680	2000
13	222	415	249	1470	4420	17500	1030	493 525	1370
15	209 206	442	249 239	1420 1190	2850 1620	10900 5210	928 826	579	1320 1290
		1					1		
16	271	595	435	899	1040	2520	739	550	1100
17	226 185	399 320	243 160	975 1070	1050 1220	2760 3520	673 595	404 350	734 562
18	185	320	174	937	940	2380	508	271	372
20	197	403	214	918	898	2230	438	158	187
ì		1 1		1				ا بور ا	
21	285	1110	854	1120	1110	3360 5860	395 356	156 135	166 130
22	543 456	2060 1250	3020 1540	1270 1240	1710 1620	5420	334	124	112
24	370	863	862	1370	2020	7470	278	116	87
25	450	1060	1290	1340		6000	212	47	27
26	420	801	908	1250	1330	4490	173	42	20
27	348	510	479	1330	1990	7150	161	45	20
28	297	394	316	1530	1930	7970	138	42	16
29	268	425	308	1540	1540	6400	114	28	9
30	250	958	647	1530	1400	5780 6030	82	28	6
31				1530	1460	-			
Total	9610		43643	31489		146361	23840		46768
		JULY			AUGUST			SEPTEMBER	
1	51	47	6	0		0	.2.5	1700	A 11
2	29	17	1	0		0	13	3900	137
3	19 13	9 17	•5 •6	16 0	15000	K 1700	16 8•8	3400 3800	147 A 90
5	10	1 10	•3	ŏ		0	12	17500	567
		''							
6	6.0		•2	0		0	12 7•7	17000	A 551 A 250
7	2.9	==	•2			1 6	2.9	8100	A 63
9	1.7		i	Ö		Ö	6.6	5400	96
10	1.4		•1	0		0	8 • 8	2630	62
11	1.0		•1				7.7	880	18
12	1.1		•1	0		o	6.0	425	7
13	1.0		•1	0		o o	5.5	575	9
14	1.4		•1	44	24100	S 7100	6.0	13500	219
15	1.4		•1	-4	500	1	4.8	21300	276
16	-4		т	28	20200	5 2730	3.6	17700	172
17	•3		Ť	19	7500	385	4.0	8200	89
18	•2		Ţ	5.5	2300	A 34	4.4	3300	39
19	0.1		T 0	1.2	1100	A 4	8 • 2 10	1100	31 A 30
					-				
21	0		0	62	26000	J 150000	46	1920	5 645
22	0		0	35 5.1	11900 11300	S 3830 S 410	173 173	7800 16100	3640 S 10700
24	ő		0	13	21000	737	271	22900	16800
25	ŏ		ő	5.1	17000	234	197	10700	5690
26	o		0	26	22900	S 1740	158	4700	2010
27	ő		ŏ	8.8	1500	36	140	3000	1130
28 i	ō		ō	2.5	230	A 2	128	2400	829
29	0		0	1.4	80	A .3	132	2800	998
30	0		0	21	17500 1800	S 5780 A 17	142	2700	1040
31				3.6	1000		+ · · · · ·		
Total	145.3	_ =	9•7	297.8		39740.6	1710.5		46346
Total	discharge	for year	(cfs-days).						62066.5

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decanation; N, in native water; P miner: S sieve: V visual accumulation tube: W, in distilled water)

	Method	of of	analysis	VPWC	VPWC	DWC	PWC	VPWC	i	SPN	VPWC	VPWC	VPWC	VPWC	D.	ZM CA) I I	N CAL	VPWC	?	VPN	VPWC	PWC	PWC	PWC	Contact) []	Z AGA	DWC	DMC.		PWC	PWC	VPWC	VPWC	Ø		VP#C	V.P.W.C
			2,000																					-											_				_
			0.250 0.500 1.000		1	¦	i	1	,	90	ł	1	100	1	۶	35	3 5	3 5	3 1		ł	1	;	!			!		-	ŀ		1	!	!	1	;		;	ŀ
		meters	0.500	100	1	!	;	100	į	66	100	1	6	001	00	8	6 6	66	9 !		1	!	1	1	1		:			;		1	ŀ	!	100	901		1	1
		n milli	0,250	66	: :	ł	ļ	6	į	96	97	100	S (85	8	88	9 0	7 0	۱ ۹		ŀ	;	1	í	1					;		1	ŀ	ł	66	66	,	3 5	3
	liment	ated, i	0,125	96	1	i	1	94	;	94	92	06	5 6	6/	42	2 2	0 0		3 1		1	1	!	ł	1		!	! !	1	;		ŧ	ŀ	90	86	97	8	8 8	22
	led sed	ze indic	0.062	86	100	:	100	92	ç	85	80	2 5	9.	70	2	2 5	3 5	7 7	‡ 0	}	100	100	: 1	100	100	,	3	1 2	3 1	100		100	100	66	96	96	8	2 2	š
	Suspended sediment	Percent finer than size indicated, in millimeters	0.008 0.016 0.031 0.062 0.125															66	ે																				
water	-	nt finer	0.016	26	86	2	66	77	ţ	29	11	6.	89 !	47	 	00	0 6	4 6	9 6	3	66	66	100	95	8	8	9 6	86	9 5	86		97	92	91	90	!	ĕ	2 0	36
fistille		Percel	0.008															90	9																				
w, in			0.002 0.004	80	86	95	97	49	_	4, i	4.	4.	2 2	8	-	20	2 5	2 6	2 28	;	9	88	16	49	28	ŝ	3 6	2 5	6	78		77	99	75	73	!	0	18	:
n tube;				L														ç	3					_									_						
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sediment	discharge	(tons per day)																																				
S, sieve; V, vi	Sediment	concen- tration	(mdd)	41700	31600	15800	9270	685	200	083	2840	407	490	1420	1420	1780	1780	3 5	42300		42300	17200	3000	00099	066	02000	12000	32000	4410	5790		1720	7360	2680	32400	32400	17200	3370	2
P, pipet		Discharge (cfs)	<u>[</u>	352	203	103	26	282	c	787	262	218	313	689	689	1670	1670	200	51		51	28	13	164	10	9	9 10	47	21	37		10	736	92	375	375	236	148	747
	ES.	pling	od Dillog																																				
	Water tem-	per-	(°F)	49	47	47	46	37	,	2 5	ş, (4. r	6	70	62	62	8	2 00	83 83	:	83	67	75	70	80	2	200	62	89	49		29	5 .	42	45	45	2	8 9	3
		Time (24 hour)		L		0035	2200	1740	7770			2000	1915	CTOT					1400		1400			0100	2400					2330	_	1900						2100	
		Date of collection		Oct. 11, 1960		Oct. 14	0ct. 14	Mar. 15, 1961		Man 10		Apr. 13	More 10	THE TOTAL TOTAL CO.	May 12	May 28	May 28	June 21	Aug. 16		Aug. 16	Aug. 17	Aug. 17	Aug. 22		A110 23	Aug. 25	Aug. 26		Sept. 2			oept. 41	Sept. 22	Sept. 23	Sept. 23	Sept. 24	Sept. 26	

9-2810, GREEN RIVER NEAR JENSEN, UTAH

LOCATION. --At gaging station, 1 mile downstream from Cub Creek and Chew Ranch, 4 miles southeast of Dinosaur National Monument headquarters, 6,5 miles northeast of Jensen, Uintah County, and 12 miles upstream from Brush Creek.

RRIORDS AVAILABLE, --Chemical analyses: June 1947 to September 1952.

Water temperatures: March 1949 to September 1959.

Sediment records: May 1948 to September 1961.

EXTREMES, 1960-61. --Sediment concentrations: Maximum daily, 25,300 ppm Aug. 31; minimum daily, 20 ppm Feb. 8.

Sediment loads: Maximum daily, 84,000 tons Aug. 31; minimum daily, 37 tons Feb. 8.

EXTREMES, 1948-61. --Sediment concentrations: Maximum daily, 39,800 ppm Aug. 23, 1960; minimum daily, 9 ppm Oct. 7-11, 1953.

Sediment loads: Maximum daily, 567,000 tons Apr. 9, 1952; minimum daily, 19 tons Oct. 7-11, 1953.

REMARKS,--Flow affected by ice Dec. 2-5, Dec. 8 to Feb. 7.

Suspended sediment, water year October 1960 to September 1961

		OCTOBE	R			NOVEMBE	R		-		DECEMBER		
		Suspen	ded a	ediment		Suspen	ded	sediment		Mean	Suspen	ded	sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day		Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
1	693	69	Α	130	1080	86	Α	250		985	102		270
2	681	82	A	150	1100	84		250		880	82		195
3	669	89	1	160	1070	80	A	230	1	860	82	A	190
4	669	55	1	99	1080	82		240	1	840	84	A	190
5	669	55	A	99	1070	80	A	230	1	730	91	A	180
6	669	55	A	99	1120	89	A	270		588	101	A	160
7	675	54	A	98	1220	112	A	370	ı	384	127	1	132
8	681	52	1	96	1300	134	A	470	1	380	127	A	130
9	748	94	A	190	1370	153		566	1	430	71		82
10	814	155	A	340	1420	170	A	650		500	57	A	77
11	1120	926	1	2800	1370	130		480	c	650	40	A	70
12	961	424	A	1100	1320	126	Α	450	C	650	40	A	70
13	1080	857	A	2500	1400	148	A	560	C	650	40	A	70
14	1290	1440	ł	5000	1450	230		900	C	650	40	l	70
15	1460	2080	A	8200	1360	68	A	250	c	650	80	A	140
16	1400	1800	A	6800	1430	155	ŀ	600	c	650	119		209
17	1340	1600	A	5800	1510	147	Α	600	C	650	120	A	210
18	1290	1440	A	5000	1400	124		470		700	127	A	240
19	1240	795		2660	1360	117	A	430		750	138	A	280
20	1210	551	A .	1800	1370	124	A	460	c	800	148	A	320
21	1190	389		1250	1430	132	A	510	c	800	147		318
22	1170	206	Α .	650	1310	107	A	380	c	800	100		216
23	1180	314	A	1000	1280	104		360		850	44		101
24	1170	206	A	650	1320	109	Α	390	C	900	62	Α	150
25	1170	206	A	650	1320	109		390	c	900	62	A	150
26	1160	145		454	1290	103	A	360	c	900	62	A	150
27	1160	144	A	450	1370	124	A	460	C	900	62	A	150
28	1130	85	1	259	1390	123	A	460	C	900	62		151
29	1130	85	A	260	1380	123	A	460	C	900	74	A	180
30	1120	86	A	260	1180	94	1	300	C	900	89	١.	216
31	1190	84	A	270						850	70	A	160
Total	32129			49274	39070			12796		22977			5227

Computed from partly estimated concentration graph. Composite period.

9-2610. GREEN RIVER NEAR JENSEN, UTAH--Continued

Suspended sediment, water year October 1960 to September 1961--Continued

		JANUARY		I	FEBRUAR'	Y			MARCH		
		Suspen	ded sediment		Suspen	ded	sediment		Suspen	ded	sedimen
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
1	800	56	A 120	C 700	33		62	1120	66	A	200
2	760	43	A 88	C 700	29	A	55	1110	67	A	200
3	720	34	A 66	C 700	25	A	47	1130	66	١.	200
4	690	29	54	C 700 C 700	22	١.	42	1050	46	<u>^</u>	130
5	670	**	A 80	ii .	25	^	47	1040	43	^	120
6	650	69	121	C 700	29	A	55	1080	58	A	170
7	680	76	A 140	C 700	33		62	1020	41	ļ	113
8	720	82	A 160	693	20	١.	37	1000	36		97
9	770	87	A 180	711	31		60	1060	49	^	140
10	C 800	93	A 200	723	42		82	1110	57		170
11	C 800	95	205	761	47	A	97	1110	57	A	170
12	C 800	120	A 260	794	47	[*	100	1150	61	A	190
13	C 800	142	307	794	47	A	100	1170	63	A	200
14	C 800	125	A 270	814	50	١.	110	1240	84		280
13	C 800	111	A 240	678	59	^	140	1360	150	^	550
16	C 800	93	Á 200	915	65	A	160	1480	350	١.	1400
17	C 800	79	171	993	75	١.	200	1530	387	A	1600
18	C 800	84 79	181	1010	62	!	170	1720	452	١.	2100
19 20	C 800	71	A 170	953 993	54	1	140 160	2130 2900	1080	^	6200 29000
		1	1		•••	^			3700	^	
21	C 800	69	A 150	1040	64	1	180	2800	3170	l	24000
22	C 700	63	A 120	1080	72	ı,	210	2640 2470	2100	A	15000
23	C 700	53	A 100	1030	65	^	180	2470 2380	2400 2650		16000
24 25	C 700 C 700	42 32	A 79 60	930 1060	60 70		150 200	2540	2190	^	17000 15000
		37	A 70	1		į	200	l .	2030		
26		43		1140	65	^	200	2920 3440	2150	^	16000
27 28	C 700	41	A 77	977 930	76	^	190	3520	2530		24000
29	C 700	39	A 74	730	1			3240	1830	1	16000
30	C 700	37	A 70			1		2900	1530	A	12000
31	C 700	35	A 66					2490	1250	"	8400
otal [23060		4313	24119			3436	57850			226630
		APRIL		1	MAY				JUNE		
1	2420	1190	A 7800	2200	168		1000	12000	2190	A	71000
2	2280	1120	A 6900	2510	236	A	1600	11700	2150	١.	68000
3	2320	990	6200	3290	473	١.	4200	11600	2140	٠.	67000
5	2630 2890	1970 3200	A 14000 25000	4020 4850	1300	^	8900 17000	11700 11100	2150 1700	^	68000 51000
		l	1	ii .	l			Î	1980	١.	
6	3240 4000	2860 2310	A 25000 25000	4810	1310	١.	17000 15000	10300	1620	A	55000 44200
7	3930	2170	A 23000	4670 4190	972	٨	11000	10100 9870	1050		28000
9	3550	1880	A 18000	3580	641		6200	9900	1100	ľ	29400
Ó	3200	1720	14900	3170	467	"	4000	9870	1160		31000
11	2750	1310	A 9700	2930	354		2800	9760	1400		37000
12	2490	1100	7400	3130	461		3900	9680	1490		39000
3	2360	628	A 4000	4920	1050	A	14000	9450	1060	A	27000
4	2300	514	3190	7050	2210	A	42000	9370	909	l	23000
5	2270	424	A 2600	7080	2250		43000	9120	690	^	17000
6	2270	424	A 2600	5630	1450	A	22000	8650	599		14000
17	2210	281	1680	5290	1240	1	17700	7890	516	A	11000
18	2180	289	A 1700	5420	1370	A .	20000	7520	542	٨	11000
9	2150	261	1630	5190	1180	١.	16500	7000	466	l	8800
0	2100	282	A 1600	4910	1130	A	15000	6450	293		5100
1	2260	279 796	1700 A 6600	5310	1260	A	18000 27000	5860	475		7520
2	3070 3440	1180		6520	1530		28000	5600 5470	450	^	6800
3	3080	806	A 11000 6700	7160 7630	1450 1360	^	28000	5060	359		4900
25	2970	723	A 5800	8050	1610	A	35000	4650	279	Â	3500
26	3010	406	3300	7860	1600		34000	A23 0	210		2400
27	2790	372	A 2800	7780	1570	"	33000	3960	168	ŀ	1800
8	2510	310	2100	8700	1700		40000	3680	171		1700
29	2340	222	A 1400	9450	1760	Ι"	45000	3360	176	A	1600
30	2280	211	A 1300	10300	1940	A	54000	3070	169		1400
31				10900	2040		60000				

A Computed from partly estimated concentration graph. C Composite period.

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

9-2610. GREEN RIVER NEAR JENSEN, UTAH--Continued

Suspended sediment, water year October 1960 to September 1961--Continued

					AUGUST				SEPTEMBE	R	
		Suspen	ded sediment		Suspen	ded	sediment		Suspen	ded	sediment
Day		Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
1	2900	128	A 1000	1020	123	A	340	1100	14100		41900
2	2680	105	A 760	1060	108	ļ	310	1070	3810	A	11000
3	2560	93	640	1010	660	A	1800	1040	3350	Α	9400
4	2430	81	A 530	985	1390		3700	1060	2720	İ	7780
5	2320	73	457	1000	1520	A	4100	1050	1060	ļ	3000
6	2200	69	A 410	985	1390	A	3700	1040	712		2000
7	2050	64	354	930	1040		2600	1100	943	A	2800
8	1930	61	A 320	900	576	Α	1400	1160	1250	1	3900
9	1820	59	A 290	892	498		1200	1400	2010		7600
10	1720	57	265	892	498	A	1200	1430	2540	A	9800
11	1640	54	A 240	849	279		640	1480	3500		14000
12	1580	54	230	814	173	A	380	1430	2540	A	9800
13	1520	49	A 200	870	230	A	540	1380	1340	i	5000
14	1490	44	177	1160	734	1	2300	1310	1360	A	4800
15	1450	46	A 180	1020	1710	A	4700	1220	1310		4300
16	1380	48	A 180	1030	1780		4950	1200	1300	A	4200
17	1300	51	179	1020	1710	A	4700	1160	1280	A	4000
18	1240	134	A 450	985	1470		3900	1230	2020		6700
19	1180	381	1210	1020	1710	A	4700	1220	2000	A	6600
20	1130	386	1180	961	1040	A	2700	1350	357		1300
21	1080	168	490	930	259		650	1650	831	A	3700
22	1030	108	A 300	900	453	A	1100	2210	3020		18000
23	990	71	A 190	870	979	J	2300	2310	3050	A	19000
24	960	54	140	870	979	Α	2300	2310	3050	A	19000
25	940	43	A 110	835	843		1900	2660	2780		20000
26	950	49	126	1250	7410	A	25000	2580	2830		19700
27	1060	66	A 190	1280	8680	A	30000	2470	2850	1	19000
28	1010	40	109	1190	5550		17800	2340	1420	A	9000
29	1000	44	A 120	1160	3510	A	11000	2250	905	1	5500
30	953	183	A 470	1130	2100	1	6400	2310	1060	A	6600
31	969	214	560	1230	25300	A	84000				
Total	47462		12057	31048			232310	47520			299380

622995 2518343

GREEN RIVER BASIN--Continued

9-2610, GREEN RIVER NEAR JENSEN, UTAH -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis B, bottom withdrawal tube, C, chemically dispersed; D, decandation, N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

	Mothod	jo .	analysis	SPWC	SBWC	SBWC	20	VPWC	VPWC	SPN	VPWC	VPWC	VPWC	VPWC	Ø	VPWC	VPN	VPWC	VWC	VPWC	SO :	VBWC	2	VPWC	VPN	SPWC	SPWC	ο M.C.	VPWC	VPWC	VPWC	V.PWC	VPWC
			2,000																														
			1.000	1	ŀ	ļ	t	1	i	100	!	13	100	!	100	!	H	100	1	100	100	100	!	1	ł	!	!	1	1	!	1	<u> </u>	!
		ted, in millimeters	0.500	1	1	100	ŀ	100	100	66	100	9	66	100	66	100	8	82	100	87	82	66	201	1	!	!	!	1	1	1	!	!	;
			0.250	1	100	66	100	66	86	86	66	86	86	86	96	81	81	28	94	92	75	600	200	!	1	1	!	¦	ł	13	100	1 8	100
	liment		0,125	100	86	95	86	86	26	97	66	97	92	81	78	54	54	38	80	86	89	800	90	100	100	ļ	I	9	100	8	86	100	35
	ded sed	e indica	0.062	66	97	91	94	86	96	96	97	94	87	67	67	43	43	30	67	62	62	98	96	66	66	100	100	96	66	66	94	5 I	6
	Suspended sediment	Percent finer than size indicated, in millimeters	0.031	1	93	79	1	1	!	ŀ	l	ŀ	!	1	1	1	!	l	52	l	ŀ	81	!	;	!	!	ł	1	1	1	!	ŀ	l
water,			0.016	84	88	71	!	94	06	91	91	83	72	46	1	56	23	17	41	38	!	71	c .	92	83	86	94	200	94	95	81	96	82
Istilled			0,008	1	28	09	1	!		1	1	!		1	!	!	ŀ	!	31	ı	!	09	}	1	!	!	ł	!	ŀ	ŀ	1	1	ł
w, m			90.00	53	89	52	1	79	73	9	72	73	26	30	1	16	9	=	26	22	L	52	ò	67	9 [6/	62	63	71	29	20	8 6	2
tabe;			0.002	!	58	41	;	1	ŀ		1	ł	;	1	1	!	!	!	19	ł	ł	41		ł	!	!	!	!	!	ł	ŀ	!	ŀ
F, piper; S, sleve; V, Visual accumulation tube; w, in distinct water/	Sediment discharge (tons per day)																																
	Sediment concen- tration (ppm)			662	82	120	73	2670	1200	1200	3270	495	291	2210	2210	2100	2100	822	229	146	146	150	601	869	869	2670	1190	0771	3480	977	3290	2290	1030
	Discharge (cfs)			1070	1130	1390	1260	2380	2380	2380	2900	d 2300	2460	7210	7210	10700	10700	9200	6380	3130		d 1490	926	1210	1210	1280	1100	1380	1490	1230	2290	2580	2270
	Water tem-	Water tem- per- ature (°F)			20	38	36	44	45	45	48	48	22	55	22	61	19	29	75	69	69	2,73	ť	72	72	7.7	2,5	9	61	9	2	22	20
	Samp- ling point																																
	Time (24 hour)			1115	1430	1045	1415	1230	1400	1400	1030	1100	1200	1015	1015	1000	1000	1300	1700	0220	0230	0830	000	1000	1000	1720	1015	1130	0060	0830	1000	1100	0830
		Date of collection		Oct. 11, 1960	0ct. 28	Nov. 11	Nov. 30	Mar. 23, 1961	Mar. 31	Mar. 31	Apr. 5	Apr. 14	Apr. 28	May 15	May 15	May 31	May 31	June 14	June 20	June 30	June 30	July 14		Aug. 14	Aug. 14	Aug. 28	Aug. 30	Sept. 9	Sept. 11	Sept. 15	Sept. 22	Sept. Z6	Sept. 29

d Daily mean discharge.

9-3020. DUCHESNE RIVER NEAR RANDLETT, UTAH

LOCATION .--At gaging station, 0.2 mile downstream from Unita River, 1.2 miles southeast of Randlett, Unitah County, and 6.5 miles southeast of Fort Duchesne.

PRAINAGE MEE. 3.50.0 Square miles, approximately.

RECORDS AFAILERE.—Chemical analyses: December 1960 to September 1961 to November 1966 to September 1961.

RECORDS AFAILERE.—Chemical analyses: December 1960 to September 1965 to September 1961.

EXTREMES: December 1960 to September 1965 to September 1965 to September 1961.

EXTREMES: 1960-61.—Dissolved solids: Maximum a, 298 ppm Sept. 16-26, 29-30; minimum, 592 ppm Sept. 19-25.

Ratchess: Maximum, 1.090 ppm May 1-21; minimum, freezing point Dec. 8, 12.

EXTREMES: 1960-61. 1965-61. Maximum daily, 440 micromobs May 28, 1967.

Sepcific conductance (1965-62); Maximum daily, 440 micromobs May 24, 1960; minimum daily, 291 micrombos May 29, 1961.

Mater temperatures: Maximum, 74°F July 29, 30, 1966; minimum, freezing point on many days during winter months.

RECORD SEPTEMBER SEPTEM

1961	
ber 1	
Septem	
ţ	
1960	
October	
vear C	
water	
1111on.	
s per millio	
parts	
t u	
vses.	
anal	
emical	
Che	

		뛾	8.8		6.7	8.0	7.9	6.6		7.7		::	6.7	7.9	7.7	7.5
	Specific	duct- ance (micro- mhos at 25°C)	3380	1430	1470	1340	3060	3570	010#	3240	2030	2200	3010	3530 7.9 4140 7.8	4620 7.7 3640 7.5	1480 7.5 2860 7.5
	.	ad- gorp- ratto	5.0	4. W.	 	3.5	6.0	0.0		8	4.0	0.0	6.3	8.1	7.8	3.1
		Non- car- bon-	364	212	218	198	809	684	210	594	233	369	528	669	846	124 497
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	830 626	472	482	540	900	1000	CACT	882	276	624	810	935	1060	444
	solids	Tons per day	400 405	525 721	718	611 436	569	508	OCT	292	201	388	300	96.0	56.6 29.3	291 52.1
r 1961	Dissolved solids (calculated)	Tons per acre- foot	3.41	1.33	1.36	1.24	3.10	3.69	4.	3.32	1.97	2,15	2.96	3.45	3.51	2.71
Septembe	Dise (ca	Parts per million	2510 1580			913					1450	1580	2180	2540 3010	3330 2580	938 1990
٥ د		ron (B)	1.6 0.98 2.1 1.0	1.0	. 55	1.3 .63	1.3	5.0	٥.1	1.7	1.1	7 1.2	1.5	.3 .93	2.9 1.2	3.3 1.7
ır 196		Ni- trate (NO ₃)	2.1	H H	2.2	1.3	1.1	ů.	;	ı.	4.	* 1	œ.	w. oc	2.9	3.3
ctobe		Fluo- ride (F)														
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	310 128	129 68	9	62 84	225	270	282	235	105	132	222	345 430	545 370	69 278
lion, wat		Sulfate (SO ₄)	1230 778	806 428	439	409 558	1170	1400	OVOT	1260	737	784	1100	1230 1470	1600	344 936
L mil		2 a a c c c c c c c c c c c c c c c c c	00			00					_	-		••	••	••
rts pe	Bi-	car- bon- ate (HCO ₂)	322			295 310						311		324 315	261 276	390
in pa	Ė	stum Stum (K)	0.00 4.4.	1.8.7		2.2	3.0	4.0		4.	3.2	3.6	4.9	5.5	5.0	5.3
alyses,		Sodium (Na)	521 289	153	157	137	412	200	600	462	760	282	409	494 599	709 527	149 384
cal an	Ž	nag- ne- sium (Mg)	103	54	22	45	190	122	071	112	69	68	96	119	147	95
Chemi		Cal- cium (Ca)	162	136	103	102	180	200	977	171	118	139	166	178 228	162 156	103 140
		Iron (Fe)	0.01	11	1	11	1	.01	ŀ	-	1	1 1	I	18.	11	11
		Silica (SiO ₂)	17 16	91 4	133	4.6	8.5	9.5	1	14	2 :	2 2	14	10.7	8.3	7.6
		Mean discharge (SiO ₂)	59.0 17 94.9 16	273	566	248	43.7	28.5	14.1			91.0 15		14.0 10	6.4 8.6	9.7 25
		Date of collection	Oct. 1-10, 1960	Nov. 15-30.	Dec. 1-15	Mar. 1-15, 1961	Mar. 23-31	Apr. 1-30	May 1-21	May 22-24	May 25-28.	June 1-3	June 4-26	June 27-30	Aug. 1-6, 9-26, 29-30	Aug. 27

GREEN RIVER BASIN--Continued

9-3020. DUCHESNE RIVER NEAR RANDLETT, UTAH .- Continued

1		Hď	8.2	6.	8.0	7.9	7.8	8.1	7.9	
	Specific	duct- ance (micro- mhos at 25°C)	3320	3790	1350	2520	904	1120	4140 7.9	1
		ad- ad- Borp- tion ratio	7.0	8	8	5.4	7.7	2.5	3.9	T
		Non- car- bon-	583	677	182	424	114	157	289	7
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	855	950	384	710	298	360	569	1
cinued	solids ted)	Tons per day	183	325	672	473	826	571	098	1
TCon	Dissolved solids (calculated)	Tons per acre- foot	3,26						4.34	1
Der 190	2 5	Parts per million	2400						3190	1
septe		Bo- ron (B)	1.2	1.0	. 54	1.1	.41	. 54	1.6 0.77	0.4 0.21
100		Ni- trate (NO ₂)	1.2	1.4	3.3	1.6	1.3	1.2	1.6	0.4
r 190		Fluo- ride (F)								
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride (C1)	292	378	61	162	33	46	107	29.0
#ater yes		Sulfate (SO.)	1160	1340	423	902	246	320	604	163
lon,	į	1 to 100	٥	0	•	0	•	•	0	0
r milli	岩	car- bon- ate (BCO ₃)						248	302	18
ts pe	Ġ	State (X)	5.2	4.6	5.0	4.7	2.8	2.3	2.8	2.0
, in par		Sodfum (Na)	469	269	157	333	8	110	218	59.0
alyses		stum (Mg)	107	122	37	28	30	37	114	31.0
38.1 ST		Ca)	166	180	63	156	20	83	115	31.0
Chemi		fron (Fe)				7	ł	1	1	1
		Silica (SilO ₂)	I≍	7.9	H	15	15	13	13	3.5
		Mean discharge (cfs)	1			95.7			a 147 13	
		Date of collection	Sept. 1-3, 1961	Sept. 4-9	Sept. 10-12	Sept. 13-18	Sept. 19-25	Sept. 26-30	Weighted average	Tons per day

a Mean discharge based on 385 days; mean discharge for 290 days of chemical analyses, 99.8 cfs.

	Aver-	age	111	111	4 2 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	69 68 54
		31	35	113	121	187
		30	111	117	54 58 64	72 63 44
		29	111	117	50 61 70	72 68 54
		28	33	113	220	73 69 51
		27	245	1 1 4	7 0 4 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0	49 49
		25 26	111	11	46 64 69	73 69 47
61			34	45	44 62 66	6 7 8 8 9
: 19		24	47	1-	44 62 68	5 6 4 6 9 4
Temperature (°F) of water, water year October 1960 to September 1961		23	111	41 47	42 61 70	67 64 84
pte		22	111	40 41	51 58 72	67 68 67 70 50 48
98 0		2	1%!	113	322	67 67 50
30 t		20	21	1 41	43 57 68	70 71 68 69 55 50
196		19	411	111	53	70 68 55
ber		18	111	43 44	54 59 68	73 68 60
0ctc		17	333	1 - 1	4 6 6 9 6 9	67 68 68 60 60
ar.	Day	15 16	42 42	45 44	41 43 58 54 64 65	66 68 66 67 56 60
rye		15		4.5	41 58 64	66 56
rate		14	39	1-1-47	48 44 53 48 63 65	67 67 70 67 56 55
r, 1		13	47 51 42	38	48 53 63	67 70 56
rate		12		111	4.5 56 66	67 67 66 70 56 58
of 1		11	50 45	111	41 57 57 69 69	67 67 66 70 56 58
F)		10	37	111	4 v 4 v 8 v	66 68 54
ر و		8 9 10	37	33	56 58 67 65	66 63
ıtur			32	111	44 40 51 54 61 63	70 69 68 69 59 60
pers		7	53	111	44 40 51 54 61 63	70 68 59
Tem		9	111	33	45 50 62	71 72 57
		5	33	111	50	68 71 56
		4	52	111	52 54 69	11 71 52
		3	42	111	50 54 61	70 71 68 71 58 52
		2	111	111	48 49 54 57 63 59	56 58
		1	33	111		63 63
	Month	Month	October November December	January February March	April	July 67 August 68 September 63

9-3065. WHITE RIVER NEAR WATSON, UTAH

OCATION .--At bridge on State Highway 45, 350 feet upstream from gaging station, about 1 mile downstream from Evacuation Creek, and 7 miles north of Watson, Uintah County.

DRAIMER AREA—4,020 square miles, approximately.

BRECHOS (ALIABLE.—Chemical maniyes: December 1950 to September 1961.

BRECHERS (ARIABLE.—Chemical maniyes: December 1950 to September 1950.

BRITHERS (1960-61,—1945001000 double 1, 1860 ppm Aug. 13; minimum, 250 ppm June 1-10.

BRITHERS (1960-61,—1945001000 double 1, 1860 minimum, 1, 1860 ppm Aug. 13; minimum daily, 344 micromhos June 14.

Specific conductance: Maximum daily, 1, 1890 minimum, irresing point to many days during November to March.

Fatter temperatures: Maximum, 78° 7 July 18, 26, 28; minimum, irresing point to many days during November to March.

BRITHERS, 1550-61.—Dissolved Solde: Maximum, 1, 740 ppm Aug. 20, 1595; minimum, 230 ppm June 21-30, 1951, June 1-10, 1956, Specific conductance: Maximum daily, 4,50 micrombos Aug. 4, 1955; minimum daily, 319 micrombos June 29, 1951, Maximum, 1, 400 micrombos Aug. 4, 1955; minimum daily, 319 micrombos June 29, 1951.

Fatter temperatures: Maximum adaily, 4,50 micrombos Aug. 4, 1955; minimum daily, 319 micrombos June 29, 1951.

Fatter Emperatures Maximum adaily, 4,80 micrombos Aug. 4, 1955; minimum daily, 319 micrombos June 29, 1951.

Fatter Emperatures Maximum adaily, 4,80 micrombos Aug. 4, 1955; minimum daily, 319 micrombos June 29, 1951.

Fatter Emperatures Maximum adaily, 4,80 micrombos Aug. 4, 1955; minimum daily, 319 micrombos June 29, 1951.

į		Hď	8.4	8.2	8.1	8.5	8.1	8.0	8.0	8.0	0.4	8.8	7.9	7.7	7:7	7.8
	Specific con-	duct- since (micro- mhos at 25°C)	896	971	942	924	945	768	637			405		833	931	1030 7.6
	å,		2.2	9 6	2.7	20	2 0	1.9	1.5	1.1	. 6	۲. «	1.2	8.0		2.1
•		Non- car- bon-	100 88	801	82	88	102	16	9.	47	57	37	99	108	129	154
	Hardness as Caco _s	Cal- cium, Mag- ne- sium	269 262	302	272	272	288	244	212	182	216	166	215	285	307	352
	Dissolved solids (residue at 180°C)	Tons per day	509 565			290	620 620	697	780			1030		429	384	529
r 1961	Dissolved solids residue at 180°	Tons per acre- foot	0.74	.85	.81	.79	8.85	89.	. 55	4.	552	£. 8	.51	.72	. 8.	8.
Septembe	Dia (res	Parts per million	546 585	623	594	583	624	200	408	324	380	250		530		658
0 to		8 5 B	•	2.2		8.	96	6	.04	90.	5 2	9.6		90.		07.
r 196		NO.	l	8.1	1:1	1.1	4.9	1.0	1.5	8:1	. 8	1.5	6.	۲. ه		1.4
ctobe		Fluo- ride (F)	0.2													
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	88	68 G	66	8	88	46	44	58	3 8	2.5	38	4 2	92	80
ion, wat		Sulfate (SO ₄)	168 176	202	169	173	198	120	111	84	74	4.8	103	169	194	222
m111	,	1 2 2 3 3 3 3 3 3 3 3 3 3	00			0	•	•	•	•	•	•	•	•	•	•
ts per	-ţg	car- bon- ate (HCO ₂)	208				227			165		157		202		241
n par	, L	K in the State of Sta	2.1	2 2	2.3	2.2	2 2	1.7	8:	1.4	1.8	1.4	2:1	8,6	 	4.6
lyses, 1		Sodium (Ng)	88 98	001 100	103	94	96	66	g.	32	32	23	\$	9 5	8	68
al ans	7,0	stum (Mg)	23	5 4 2	22	21	242	18	12	13	3 2	==	12	25	22	34
hemic		Call (Ca)	71 68	81	73	4.5	4.6	66	61	22	6.4	48	62	4 4 4	83	88
		Iron (Fe)	0.01	18	1	1	18	!	1	1		11	1	8.5	.18	1
		Siltes (SiO ₂)	15 17	12	19	4:	12	919	97	19	22	15	16	17	16	15
		Mean discharge (cfs)	345 358	303	323		368					1528	510	300	240	298
		Date of collection	Oct. 1-31, 1960	Jan. 1-31, 1961	Feb. 1-15	Feb. 16-28	Apr. 1-30.	May 1-3	ESY 4-12	May 13-20.	May 26.	June 1-10.	June 20-30	July 1-10	July 21-31	21-31

9-3065, WHITE RIVER NEAR WATSON, UTAH -- Continued GREEN RIVER BASIN -- Continued

-		Hd.	7.4	7.7	7.9	7.6	8.4	7.9	7.9	
	Specific con-	duct- ance (micro- mhos at 25°C)	1980 7.4	1310	895	1200	1260	765 7.9	871 7.9	1
	& .	ad- ad- Borp- tion ratio	3.1	4.4	2.0	3.3	2.9	1.8	2.2	1
		Non- car- bon-	479	22	107	100	211	84	86	1
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	700	320	302	336	390	250	275	-
tinued	Dissolved solids (residue at 180°C)	Tons per day	1660					631	ł	1
1Con	Diss ol ved solids esidue at 180°	Tons per acre- foot	2,01					0.67	1	
nber 196	Dis (res	Parts per million	1480					490	559	
Septer		Bo- ron (B)	0.30					1.2 0.08	1.1 0.09	1.6 0.10
0 to		Fluo- Ni- ride trate (F) (NO ₃)	1.8	2.0	2.0	1.1	6.0	1,2	1.1	1.6
r 196		Fluo- ride (F)								
water year October 1960 to September 1961Continued		Chloride (Cl)	195	106	28	105	142	09	73	0.77
water ye		Sulfate (SO ₄)	209	249	196	255	286	146	173	189
	,	bon- gete (CO ₂)	0	0	0	0	œ	0	1	0
r mill;	Bi-	car- bon- ate (ECO ₃)	270					201	215	259
ts pe	۾	tas- sium (K)	9,3	ი ი	3.0	4.4	4.3	2.2	2.5	2.8
Chemical analyses, in parts per million,		Sodium (Na)	188	179	42	141	132	69	83	89.0
alyses	Max	mag- ne- sium (Mg)	54	30	19	22	29	19	. 22	25.0
al an		Cal- cium (Ca)	192	13			108	89	73	88.0
Chemic		Iron (Fe)	ı	1	!	1	1	;	-	
		Silica (SiO ₂)	16	17	16	16	ដ	16	16	21.0
		Mean discharge (cfs)	415					1	478	-
		Date of collection	Aug. 13, 1961	Aug. 20	Sept. 1-8, 10-29	Sept. 9	Sept. 30	Weighted average	Time-weighted average	Tons per day

Temperature (°F) of water, water year October 1960 to September 1961

	Aver-	age	37	38	50	73
		23	37	32 + 1 + 1	141	121
i		30	39 32 32	1 1 7 1	5.8	69
		29	32	117	55	77 70 56
		28	32	32 42	55	78 75 55
	i	27	47 36 32	32	53 61	76 71 53
		26	33	32 32 45	51 63 67	78 73 52
		25	4 8	32	50 62 67	73
lemperature (f) or water, water year occoper 1900 to be tember 1901		24	50	1 4 6 4	404	71
3		23	48	32	50 62 73	70 44 44
3		22	51	35 43 43	53 75	68 75 44
2		21	4.8	33	26	73
3		20	35	32 32 44	56 73	76 72 53
200		6	48 38 32	33	55 63 75	1209
į,		18	48 32 32	32 32 40	55 60 68	78 74 61
5		17	46 36 32	32	51 57 65	78 72 74 62 61
	Day	16	49 36 32	32	43 55 66	10 70 62
2		15	44 38 32	35 32	43 55 62	73 62
1		14	47 38 32	35	4 50 4 6 50 50	74 73 60
•		13	49 37 32	32	4 9 5 6 5 5	73 74 61
1001		12	48 37 32	32 32 38	47 60 65	72 76 61
*		=	52 37 32	32 33 35	46 62 11	73 75 61
		10	53 37 32	32 32 35	40 60 64	75 77 59
-		6	37	32 32 32	47 59 61	72 76 63
1		8	41 32	32	41 53 65	75 76 59
5		7	55	32	42 55 60	75 72 62
T C		۰	32	32 32 34	4 5 6 7 6 7	70 74
		ა	33	32 33 36	50.0	5 59
		4	56 43 	32 34 32	5.5 5.8 5.8	73 75 56
		ო	56 42 32	32 32	55 61 60	75 73 56
		7	65 46 32	32	1 22	129
		-	937 32	333	6 4 6 6 2 6 9 6 9 6 9 9 9 9 9 9 9 9 9 9 9 9	1 69
	Month	Montn	October November December	January February March	April May	July August

9-3070. GREEN RIVER NEAR OURAY, UTAH

2.8 miles upstream from Willow Creek and 3 miles southwest of Ouray. Unitah County, LOCATION. --At gaging station, 2.8 miles upstream fro DRAINAGE AREA. --35,500 square miles, approximately.

RECORDS AVAILABLE.—-Chemical analyses: December 1950 to September 1952, November 1956 to September 1961.

Water temperatures: December 1950 to September 1952, Ovember 1956 to September 1961 (discontinued).

Sediment records: December 1950 to September 1955, October 1956 to September 1961.

EXTREMES, 1960-61.—-Dissolved solids: Maximum, 854 ppm Aug. 30-31; minimum, 212 ppm June 1-30.

ARTARMES: Maximum, 494 ppm Aug. 30-31 minimum, 125 ppm June 1-30.

Specific conductance: Maximum daily, 1370 micromhos Aug. 30; minimum daily, 268 micromhos June 6.

Specific conductance: Maximum daily, 1370 micromhos Aug. 30; minimum daily, 28 micromhos June 6.

Rater temperatures: Maximum daily, 16,200 ppm Sept. 21; minimum daily, 47 ppm July 21.

Sediment concentrations: Maximum daily, 16,200 ppm Sept. 31; minimum daily, 47 ppm June 1-30, 1961.

Rater temperatures: Maximum daily, 16,200 ppm Aug. 30-31, 1961; minimum daily, 268 minimum, 212 ppm June 1-30, 1961.

Rater temperatures (1958-61): Maximum, 434 ppm Aug. 30-31, 1961; minimum, 212 ppm June 1-30, 1961.

Specific conductance (1958-61): Maximum, 434 ppm Aug. 30-31, 1961; minimum, 212 ppm June 1-30, 1961.

Specific conductance (1958-61): Maximum, 434 ppm Aug. 30-31, 1961; minimum, 431, 268 minimum, 434 ppm Aug. 30-31, 1961; minimum, 434 ppm Aug. 30-31, 1961; minimum, 434 ppm Aug. 30-31, 1961; minimum, 434 ppm Aug. 30-31, 1961; minimum, 434 ppm Aug. 30-31, 1961; minimum, 434 ppm Aug. 30-31, 1961; minimum, 434 ppm Aug. 30-31, 1961; minimum, 434 ppm Aug. 30-31, 1962; minimum, 434 ppm Aug. 31, 1962; minimum, 434 ppm Aug. 31, 1962; minimum, 434 ppm Aug. 31, 1962; minimum, 434 ppm Aug. 31, 1963; minimum, 434 ppm Aug. 31, 1963; minimum, 434 ppm Aug. 31, 1963; minimum, 434 ppm Aug. 31, 1963; minimum, 434 ppm Aug. 31, 1963; minimum daily, 100 tons Dec. 31, 1968, to Jan. 7, 1959.

Sediment loade: Maximum daily, 1,100,000 tons Aug. 31, 1967; minimum daily, 100 tons Dec. 31, 1968, to Jan. 7, 1959.

REWARKS.--Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Plow affected by 1ce Dec. 80.

		Hq	8,5	8.6	8.5	8.3	8.4	8.2	8,3	8.0	8,1	7.9	7.8	471 7.7	7.8
	Specific con-	duct- ance micro- mhos at 25°C)	. 850	1060	832	926	866	840	862	751	630	412	334	471	618
	å:	ad- sorp- tion ratio	2.6	6	2.1	2,3	2.1	1.9	2,1	1,8	1.5	1.0		1.2	
	ess CO ₃	Non- car- bon- ate	96	172	101	126	109	102	111	88	64	34	23	42	61
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	253	320	267	308	282	278	278	244	217	151	125	172	209
	solids 180°C)	Tons per day	2290	3090	2740	2160	1900	2460	3770	4150	3190	4970	5530	2110	1430
r 1961	Dissolved solids (residue at 180°	Tons per acre- foot	0.76	1.00	.75	.88	•78	.74	.78	.67	. 56	.36			
Septembe	Dis (resi	Parts per million	561	733	552	649	570	541	570	496	410	265	212	294	390
0 to		B)					.15					90.		.08	
r 196		Ni- trate (NO ₂)					1.0					2.4		φ.	
ctobe		Fluo- ride (F)	0.4	۳.		4.	е.	4.	e.	۳.	2	ı,	4.	.2	2.
water year October 1960 to September 1961		Chloride (C1)	49	63	42	20	46	44	44	32	59	16	10	22	35
		Sulfate (SO.)	221	325	215	259	219	202	224	188	136	74	54	88	131
million,		date (CO)		00								•	۰	0	•
s per	Bi-	car- bon- ate (HCO ₂)	178	165	192	218	199	215	194	189	186	143	124	158	181
n par	i	Situas (K)	2.2	3.4	ري د	2.5	2.4	2.4	2.5	3,5	2.5	2.0	1.5	2.1	2.4
analyses, in parts per		Sodium (Na)	94	120	8	93	80	75	81	99	51	59	21	35	22
al ana	,	nag- ne- stum (Mg)	24	27	22	33	30	56	28	22	18	11	8.3	14	17
Chemical		Cal- clum (Ca)	62	84	62	69	64	89	65	61	22	42	36	46	57
•		Fe)	0.00	0.	8	.01	0.	.01	.02	.02	00.	80.	.02	.01	.01
		Silica (SiO ₂)	13	14	13	12	12	9.1	97	12	14	12	13	91	9.3
		Mean discharge (cfs)	1513	1560	1839	1233	1235	1682	2451	3099	2886	6951	9663	2657	1355
		Date of collection	Oct. 1-9, 14, 16-31, 1960	oct. 10-13, 15	Nov. 1-30	Dec. 1-31	Jan. 1-31, 1961	Feb. 1-28	Mar. 1-31	Apr. 1-30	May 1-5	May 6-31	June 1-30	July 1-11	July 12-31

GREEN RIVER BASIN--Continued

9-3070. GREEN RIVER NEAR OURAY, UTAH -- Continued

1		Б	8.0	8.1.	8.4	7.9	8.0	œ.	7:3	8.0	758 8.1	
	Specific	duct- ance (micro- mhos at 25°C)	939	1090	802	1180			783 7.7	613	Ì	;
	. k	ration p-	2.3		2	N N	2.1	0.0	2.0	1.5	1.9	1
		Non- car- bon-	107	214	86	240	165	6	70	89	91	
	Kardness as CaCO ₃	Cal- clum, Mag- ne- stum	304	414	255	434	345	249	240	206	248	
inued	Dissolved solids (residue at 180°C)	Tons per day	1990	2140	1620	3910	4040	3250	2060	3120	1	-
Cont	Dissolved solids esidue at 180°	Tons per acre- foot	28.5	1.02	.71	1.16	96.	60.	20.	0.55	1	
September 1961 Continued	Dis (resi	Parts per million	620	8 748	520	854	706	208	512	401	500	
eptem		8 5 8 8 8		21.					12	0.13	1.5 0.16	13.0 0.99
\$		NI- frate (NO ₂)	4.3	2 6	3.5	2.6	4.1	6.	2.8	1.6		13.0
1960		Fluo- ride (F)	0.5	ŧ œ	4.	œ.	r.	ů.	9.	0.4	0.4	3.0
year October		Chloride (C1)	48	22	42	43	45	38	32	28	38	217
water yea		Sulfate (SO ₄)	240	323	200	403	298	189	196	142	189	1110
		1 1 1 1 (°C)	0	-	6	•			•	1	8	80
million,	描	car- bon- ate (HCO ₂)	240	244	174	236			207	167	187	1300
ts per	į		4.3	5.0	4.0	6.4	5.0	ю. п	3.0	2.4	2.7	19.0
in parts per		Sodium (Na)	85	7.8	73	<u>\$</u>	06	7	92	53	69	409
analyses,		ne- grum (Mg)	88 8	32	21	78	24	22	19	81	23	137
al an		- 1 m (8 0)	76	108	67	128	66	67	65	54	62	417
Chemical		Iron (Fe)	1	1 1	Τ	1	ï	1	П	0.03	0.03	0.21
		Stlica (StO ₂)	12	12	12	12	14	* :	16	13	12	100
		Mean discharge (cfs)		1060					3661	1	2885	
		Date of collection	Aug. 1-3, 1961	Aug. 15	Aug. 16-29	Aug. 30-31	Sept. 1-14	Sept. 15-20	Sept. 22-30	Weighted average	Time-weighted average	Tons per day

a Calculated from determined constituents.

GREEN RIVER BASIN -- Continued

9-3070. GREEN RIVER NEAR OURAY, UTAE--Continued

						1
	Aver-	age	111	111	52 61	229
		31	34	113	121	6.8
		30	37	1 64	54 60 70	171
		29	111	1 1 3	53 63 73	78 73 55
	ı	28	53 36 32	34 35 36 45	56 59 68 73 72	73 75 71 73 61 53
		27	36	35	56 68 73	73 17 61
		25 26	54 1	34	54 54 63 64 76	70 73 78 54 56
61		25	411	34	54 63	5 1 5 4 5
r 19		24	38 34	37	50 62 63 75 75	74 75 50
abe:		22 23	38 1 34	37	62 75	74
epte		22	52 55	35 36 47 49	1 6 1 1	70 80 72 74 54 50
Temperature ('F) of water, water year October 1960 to September 1961		12	52	35 36 47 49	1 59	70 72 54
30 t		20	1 13	111	57	73 70 74 75 60 56
18		61	604	111	52	73 74 60
oper		18	34	1 35	57	70 73 64 60
S		17	11.4	110	56	10.4
ear	Day	15 16 17 18	138	118	50 45	70 73 72 72 59 64
ry			50	34	900	70 72 59
wate		14	53 50	1 1 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	55 60	73 71 70 78 60 60
r,		13	53	112	55	
wate		12	55 54	£34 111	50 50 63 55 67	72 79 68 75 67 60
벙		=	11.55	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	50 63 67	
F		10	42	1 1 4 4 4 4 3 1	4 6 8 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4	80 72 73 73
9		6	33	113	49 62 65	73
atu		8	111	1 404	45 60 70	73 62
per		^	4.5 3.5 3.5	913	609	74 78 78
Te.		9	1 1 1	39:11	53 62	62 23
		5	65	111	53 60 60	70 74 68
		4	191	33 33 38	56 53 57 64	77 74 78 79 63 65
		က	141	3 1 1 8	5 1 49	77 78 63
		2	34 65	35 1	53 55 62 61 65	76 74 75 73 65 64
		_		1 604	53 55 61	
	Mead	MODICII	October November December	January February March	April May. June	July August September

9-3070. GREEN RIVER NEAR OURAY, UTAH--Continued

Suspended sediment, water year October 1960 to September 1961

Day	1	Mean	Suspen	ded	sediment	i –		Sumen	ded	sediment	1		Suenen	dad	sediment
Day								Dusper	ucu	Bearineire	1	_	Dusperi	ueu	seumen
i	d	dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day		Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day		Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
1		1070	249	A	720		1610	276	A	1100		1850	260	A	1300
2		1070	249	A	720	l .	1580	281	A	1100	1	1670	266		1200
3		1050 1030	212 201	A	600		1590	253		1090 1100	1	1690 1660	263 268	A	1200 1200
5		1030	200	^	560 556	1	1610 1580	253 234	Â	1000		1640	248	Â	1100
6		1030	201	A	560	ì	1570	212	A	900		1540	265	A	1100
7		1020	174	1	479	1	1590	196		841	1	861	250	ł	581
8		1030	201	A	560	1	1660	221	A	990	ı	750	257	A	52C
9		1130 1440	393 2470	A	1200 9600		1760 1880	253 296	^	1200 1500		650 500	264 304	A	463 410
11		1470	1390	i	5500	į	1920	309	A	1600		700	254	A	480
12		1500	1480		6000	Ĭ.	1900	312	A	1600	ľ	780	237	A	50€
13		1710	1300		6000		1850	300	A	1500	1	900	218	ĺ	530
14		1610 1680	644 3090	l	2800 14000	1	1840 2000	302 278	A	1500 1500	ł	1100 1050	182 190	A	540 540
16		1870	6930	A	35000	Ï	2000	278		1500	c	1000	196		530
17		2060	14000	A	78000	1	1940	286	A	1500	č	1000	197	<u> </u>	532
18		2000	11500	A	62000		2030	292	A	1600	c	1000	196	Α	530
19		1910	3300	1	17000	1	2070	304		1700	c	1000	196	A	530
20		1870	1700		8600		1980	299	A	1600		1080	202	A	590
21		1800	864	ł	4200		1960	302	A	1600	ł	1150	206	ì	640
22		1770	649	1	3100		1970	301	A	1600	ŀ	1270	198	A	680
23		1730	432	A	2000	1	1970	301	١.	1600	1	1390	192	A	720
24		1720 1720	409 409		1900 1900		1910 1890	291 274	A	1500 1400	c	1500 1500	185 170	A	749 690
26		1680	309	A	1400	l	1880	276	A	1400	c	1500	156	A	630
27		1660	290		1300		1890	274		1400	c	1500 1500	141	A	570
28		1640	248	A	1100	1	1890	274	A	1400	C	1500	138	١.	559
29		1630 1600	227 199	A	1000 860	1	1930 1920	249 251	^	1300 1300	c	1500 1500	128 131	A	520 530
31		1620	219	^	960		1920	251		1500	č	1500	133	^	530
Total		47150			270175		55170			40921		38231			21203
			JANUAR	Y				FEBRUAR	Y				MARCH		
1		1440	129	A	500	c	1350	89		324		1800	247		1207
2		1370 1300	124	A	460	c	1350	93 96	A	340 350	li .	1870	353 315		1787 1707
3		1240	120 116	^	420 388	c	1350 1350	101	^	368	l l	2000 1990	290		1560
5		1160	115	A	360	č	1350	99	A	360		1960			1669
6		1100	114	A	340	c	1350	96	A	350	1	1890	342	1	1759
7		1030	112		311		1350	96	A	350		1870	304		1537
8		960	108	Α	280	c	1350	95		346	Į.	1850	300	ļ	1507
9		1000 1050	111	A	300 320	c	1350 1400	110 122	A	400 460		1770 1770	265 304		1277 1459
11		1140	113		348		1500	136		551		1810	301		1470
12		1200	111	A	360		1580	178	A	760	1	1870	1 - 12		1900
13		1270	96	A	380	1	1650	213	A	950	Į.	1900	452		2320
	c	1300 1300	110	A	386 360		1720 1800	258 320	A	1200 15 6 0		1900 1890	348 362		1790 1850
1	c	1300	97	A	340		1900	351	A	1800		1960	407	1	2150
17	c	1300	91	Â	320	c	1950	380	Â	2000		2120	598		3420
18	č	1300	83	1	293	č	1950	384	_	2020	ľ	2230	871	l	5240
19	c	1300	94	A	330	li c	1950	380	A	2000		2210	==		5200
20	c	1300	105	A	370	c	1950	380	A	2000	ł	2290			5300
	c c	1300 1300	117 117	A	411 410		1960 1990	397 428	A	2100 2300		2790 3440	1300 1410		9790 13100
23	c	1300	117	Ä	410	1	2020	361		1970	ľ	3390	1980		18100
24	-	1160 1000	105	Ā	330		1980	300 269	A	1600		3100 2900	2440		20400 19000
25					238		1930								
26		1150 1300	87 88	A	270 310		1940 1910	267 271	A	1400 1400		2880 3120	1790		17000 15100
28	c	1350	87	1	317	i	1880	256		1300		3720	1770		19000
	č	1350	88	A	320	1				~-		4080	2000		22000
29															
29	č	1350 1350	88 88	A	320 320							3950 3660	1640 1520	ĺ	17500 15000

A Computed from partly estimated concentration graph. C Composite period.

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

9-3070, GREEN RIVER NEAR OURAY, UTAH -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued

A Computed from partly estimated concentration graph.

GREEN RIVER BASIN--Continued

9-3070. GREEN RIVER NEAR OURAY, UTAH .- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B. bothom withdrawal tube; C. chemically dispersed; D. decantidon; N. in maiive water; D. nined: S. stace: V. visual permunistion tube: W. in diefiliad water)

٠																														
	Vertex	of	analysis	VPWC	, so	VBWC	VPWC	VPWC	NG.	VPWC	VPWC	Capaci		Spw	VPWC	VPWC	VPWC	ø	VPWC	ADMIC		BIC	SPWC	SPWC	VPWC	<u>:</u>	SPWC	SPEC	SPWC	SPWC
			2,000								-																			
			1.000								_																			
		eters	0.500	1	8	1	I	8	8	1 5	3 1		1 5	38	8	8	100	8	100	!	l	I	I	1			ł	1 1	1	1
		millim	0.250	1 5	8	1	100	97	97	88	18	9	38	0 C	8	66	66	86	66	88	3	I	1	ı			1			!
	ment	ted, in		18	8 2	8	98	84	84	8 6	18	8	3 6	2 6	80	06	68	87	86	66 0	6	l	I	1		!	ł	! !	1	ŀ
	led sed	indica	0.062 0.125	2 2 2 3	9 22	91	2	20	2	8 8	83	-	9 8	9 9	92	82	75	22	70	7.9	3	66	8	100	1 8	3	8	88	8	100
	Suspended sediment	an size	0.031	12	5 1	74	1	ı	1			_	ł	1 1	1	1	ı	ı	!	16	?	88	1	1		}	ı	1 1		ŀ
rater)		Percent finer than size indicated, in millimeters	0.018	95	d 1	8	22	55	49	82	34	-	20 10	9 9	55	53	46	1	£	38	8	92	6	8 8	36		95	96	. 6	97
stilled		ercent	900.0	12	3	26	!	1	!	1			!		ŀ	!		ı	1	! :	2	64			1		1			1
, is d		14	0.004	5 4	2	41	24	38	œ	21	57.	•	9 6	9 9	9 6	34	27	1	98	22	;	22	92	82	٥.	2	49	84	2 8	92
tube; W			0.002	15	₽	45	1	ı	1	!			1		!	1	1	ŀ	1	18	Ď,	42	1	;	1 1	1	1	1 1		1
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sodiment	discharge	(tons per day)																											
S, sieve; V, vi	Sediment	concen- tration	(mdd)	3950	279	250	379	1430	1430	2430	2630		222	1570	2440	1430	1640	1640	875	398	967	87	169	6530	0000	200	4170	2900	5510	2770
P, pipet;		Discharge (cfs)]	1540	1970	917	1900	3100	3100	3070	4040		2400	5130	8060	9380	14100	14100	11600	5340	2000	1850	1170	1260	1180	2011	1060	1280	1100	1170
	Water		36	26	8 8	35	49	47	47	49	4	-	9	7 2	20	88	49	49	2	78	•	79	78	28	9 9	•	78	6 5	2 5	2
			point																						_					
		Time (24 hour)		1800	1725	1720	1800	1800	1800	1810	1200	1	1815	1720	0540	1430	1500	1200	1510	1830	0201	1820	1535	1840	1840	ALOH TOTAL	1820	1830	0645	0705
		Date of collection	i	Oct. 10, 1960	Now 16	Dec. 7	Mar. 14, 1961	Mar. 21	Mar. 21	Mar. 24	Apr. 8	. ;	May 2	May 6	May 16.	May 27	June 3.	June 3.	June 10	June 26	*********************************	July 12	July 29	Aug. 3	Aug. 3		Aug. 14	Aug. 16	Aug. 27	Aug. 28

SPWC	SPWC	VPWC	VPWC	VPWC	VPWC	VPWC	VPWC	VPWC
		-		-	1	-	-	!
	_	· ·	<u>.</u>	<u>.</u>	<u>.</u>	_	8	_
11	1		8	8	8	_		
88	88	38		_	_	_	97	
11		11	ı	1	ŀ	1	1	1
94 96	92	96	87	29	29	96	64	61
11	1 1	1	ŀ	:	ŀ	ŀ	ł	ŀ
88	22	72	64	21	67	2	63	53
11	1 1	1	1	1	1	ł	ŀ	1
13300	3590	13000	1270	7790	6810	16000	16100	00611
1610	1650	3100	1900	3000	4 2800	4 2750	3200	d 4300
65	4 6	67	69	9	8	54	20	20
						_		
1755 0645	1500	1750	1835	0630	1730	0620	1735	1350
Aug. 30, 1961	Sept. 2	lept. 11	Sept. 15	apt. 18	ept. 19	ept. 21	ept. 22	ept. 23

d Daily mean discharge.

9-3145, PRICE RIVER AT WOODSIDE, UTAH

LOCATION.--At gaging station at bridge on U.S. Highways 50 and 6 at Woodside, Emery County, 20 miles upstream from mouth. DALNIAGE AREA.-1,500 geare miles, approximately. RECORDS ARAILABLE,--Chemical analyses: December 1946 to September 1949, February 1951 to September 1961.

RECORDS AVAILABLE. --Chemical analyses: December 1946 to September 1949, February 1951 to September 1961.

Water temperatures: February 1951 to September 1959.

EXTREMES, 1960-61. --Dissolved solids: Maximum, 7.730 ppm May 1-31; minimum, 1,040 ppm Aug. 16-17.

Bardness: Maximum, 2,730 ppm May 1-31; minimum, 530 ppm Aug. 16-17.

Bardness: Maximum, 2,730 ppm May 1-31; minimum, 9,230 ppm Aug. 16-17.

EXTREMES, 1951-61. --Dissolved solids: Maximum, 8,220 ppm May 28-31; minimum, 532 ppm May 21-30, 1952.

Hardness: Maximum, 3,010 ppm Dec. 11, 1951; minimum, 353 ppm June 1-3, 6-10, 1952.

Bardness: Maximum, 310 ppm Dec. 11, 1951; minimum daily, 8,540 micromhos Dec. 11, 1951; minimum daily, 8,540 micromhos Dec. 11, 1951; minimum daily, 8,540 micromhos Dec. 11, 1951; minimum daily, 8,540 micromhos Dec. 11, 1951; minimum daily, 8,540 micromhos Dec. 11, 1952, 100 minimum daily, 8,540 micromhos Dec. 11, 1952, 100 minimum daily, 8,540 micromhos Dec. 11, 1951; minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1952, 8,540 micromhos Dec. 11, 1951, minimum daily, 8,540 micromhos Dec. 11, 1952, 8,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 11, 1952, 9,540 micromhos Dec. 1

		Hď	7.8							8.1 7.8		8.0		1480 8.2 1970 7.6 3100 7.9
	Specific con-	duct- ance (micro- mhos at 25°C)	5720	5270	909	4950	5920	5270	7.220	7360	4820	3490	3010 2140	1480 1970 3100
	ģ.	adum ad- sorp- tion ratio	0.0	8.2	8.8	7.9	8.4	7.5	6	9.8	5.4	3.7	6. 60 6. 70	22.4
		Non- car- bon- ate	1650	1500	1740	1350	1860	1640	2450	2460	1850	1250	1090	223 561 1050
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	1920	1790	2090	1620	2120	1910	2710	2540	1980	1560	1300	530 800 1240
	Bolids ted)	Tons per day	2640	248	157	261	370	309	102	101 39.4	114	196	220 1600	455 801 941
r 1961	Dissolved solids (calculated)	Tons per acre- foot	7.00	6.36	7.40	5.82	7.28	6.35	9.32	9,60	5.88	4.07	3.47	1.41 2.14 3.64
1960 to September 1961	Dis (c	Parts per million	5150	4680	5440	4280	5350	4670	6850	7060	4320	2990	2550	1040 1570 2680
30 to		ron (B)	0.58	.51	.58	.35				.53		.32		. 20
er 196		Ni- trate (NO ₂)	5.4	9.4	10	9.7	5.4	4.0	9.	1.4	3.2	3.0	3.5	1.6 1.9
Octobe		Fluo- ride (F)												
water year October		Chloride (C1)	105	96	115	90	113	104	154	165	80	56	41 34	29 44
million, wa		Sulfate (SO ₄)	3370	3030	3520	2780	3530	3050	4540	4570	2880	1840	1620 835	477 910 1720
r mil	į	5 t a 8	00							00		•	00	000
ts pe	Bi-	car- bon- ate (HCO ₂)	334	356	431	322	313	324	321	355	162	375	244 472	374 291 220
in par	Ę	Stun Stun (K)	8.0	8.5	8.2	7.7	8.4	9.1	77	13	16	17	12,8	6.3 8.3
Chemical analyses, in parts per		Sodium (Na)	894	798	928	733				1180	549	332	275 226	141 182 349
cal an	Ş	nag- ne- stum (Mg)	272 270	255	304	233	328	287	421	338	159	134	83	39 52 103
Chemi		Cal- ctum (Ca)	321 305	297	337	263				437	533	405	373	148 234 325
		Iron (Fe)	90.0	1	.02	;	ł	200	?	1 1	!	. 25	11	111
		Silica (SiO ₂)	5.1	7	9	6	5.9	00 0	7 7	114.1	16	16	14	16 14 12
		Mean Sill discharge (Signature) (Cfs)	190							2.1 11	9.8 16		31.9 14	162 189 130
		Date of collection	Oct. 1-31, 1960	Dec. 1-31	Jan. 1-31, 1961	Feb. 1-28	Mar. 1-31	Apr. 1-15	Most 1 24	June 1-4, 7-14	June 5-6	July 5-14, 31	Aug. 1-3, 5-15, 18-21	Aug. 16-17 Aug. 22-29, 31 Aug. 30

7.7	8.4 7.6	7.7	7.9	1
1950	3100	3290 7.7	5230 7.9	1
6.0	2.1	4.6	7.5	
	1010	1020	1600	
1380	1160 820	1240	1860	
	59.5 2500	627		1
	3.70	3.89		1
	2720	2860	4700	1
	.19	3.2 0.29	5.4 0.42	0.7 0.06
1.1	1.3	3.2	5.4	0.7
27	50 18	51	86	11.0
974	1730 924	0 1820	3060	399
00	90	٥	0	0
	172	260	323	57
8.5	12 9.6	9,5	10	2.1
157	373 139	416	771	91.0
133	15	117	251	26.0
244	429 305	303	334	67.0
11	11	1		
.3 14	13	11	8.3	2.4
91	8 609		a 73.2	
Sept. 1-3, 1961	Sept. 5-8.	Weighted average	Time-weighted average	Tons per day

a Mean discharge based on 365 days; mean discharge for 329 days of actual flow, 81.2 cfs.

ī,

GREEN RIVER BASIN--Continued

9-3150, GREEN RIVER AT GREEN RIVER, UTAH

LOCATION. --At bridge on U.S. Highways 50 and 6 in town of Green River, Emery County, 1 mile upstream from gaging station. DRAINAGE ARRA. --40,800 square miles, approximately, upstream from gaging station.
RECORDS ARRALES. --Chemical analyses: August 1928 to September 1961.
Rater temperatures: May 1949 to September 1959.

EXTREMENS, 1960-61.—Dissolved solides [Maximum, 1,120 ppm Aug. 27, 30; minimum, 226 ppm June 1-30.

EXTREMENS, 1960-61.—Dissolved solides [Maximum, 1,120 ppm Aug. 27, 30; minimum, 28 ppm June 1-30.

EXTREMENS, 1960-61.—Dissolved solides [Maximum, 1,120 ppm June 1-30.

Specific conductance: Maximum daily, 4, 800 tons Sept. 10; minimum daily, 28 ppm July 27, 28.

Sediment concentrations: Maximum daily, 4, 8, 900 tons Sept. 10; minimum daily, 28 ppm July 27.

EXTREMENS, 1925-61.—Dissolved solides: Maximum daily, 2, 420 minimum, 126 ppm July, 21, 1965, minimum daily, 27 micromhos May 1, 1956.

Specific conductance (1941-61): Maximum daily, 2, 420 minimum daily, 29, 1943; minimum daily, 20 ppm Sept. 27, 1956.

Sediment concentrations (1930-61): Maximum daily, 2, 230, 900 tons July 11, 11936; minimum daily, 20 ppm Sept. 27, 1956.

Sediment loades (1930-61): Maximum daily, 2, 230, 900 tons July 11, 11936; minimum daily, 20 ppm Sept. 27, 1956.

REMARKS.—Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Flow affected by toe Jan. 4 to Feb. 1

		뜊	8.4	7.9	8.4	8 3	8.2	8.0	7.8	7:7	7.8	7.9	8.0	7.9	7.8	8.0	7.6
	Specific con-	ance (micro- mhos at 25°C)	961	1320	988 8.4	1150	1070	196	947	970	865	574 7.9	402 8.0	363	408	296	423
	_	ad-fight	2.6	2.9	2.5	2.8	6.3	2.2	2,3	2	2.2	1.3	6	∞.	1.0	1.4	1.0
		Non- car- bon-	121	271	130	163	144	134	129	121	102	99	37	77	34	70	28
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	290	436	312	378	382	320	304	296	272	200	149	136	152	214	148
	Dissolved solids (residue at 180°C)	Tons per day	2500	4890	3160	2750	2510	2580	3320	3930	4830	4040	5070	5560	2440	1740	772
r 1961	Dissolved solids esidue at 180°	Tons per acre- foot	0.87	1.30	96.	1.06	86.	88.	98.	68.	. 79	.50	.35	31	.35	.51	.35
Septembe	Dilsi (rest	Parts per million	638	959	663	780	720	645	634	655	578	370	254	226	254	375	260
0 to		- 10 B	0.18	23	.17	119	1.4 .17	.16	.25	.25	23	60.	90	90.	80.	.07	8
r 196		rate (NO ₂)	1.6	1.7	6.	1.3	1.4	1,1	1.0	ū	1.6	1:1	2.4	1.4	1.0	1.0	6.
ctobe		Fluo- ride (F)													_		_
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	54	20	47	22	49	45	43	46	39	22	14	12	15	28	18
ion, wat		Sulfate (SO ₄)	281	476	283	333	293	263	263	273	231	125	73	54	72	127	20
m111		# # OC	4	0	2	4	0	•	0	0	0	0	0	0	0	0	0
ts per	Bi-	car- bon- ate (HCO)	198	201	212	254	266	227	213	213	202	171	137	140	144	175	146
n par	Ė		3.0	4.5	2,3	2.3	2.6	2.2	2.9	3,51	3.5	2.7	1.7	1.8	1,8	2.2	1.8
lyses, 1		Sodium (Na.)	101	139	103	116	100	89	16	001	25	43	26	22	78	48	59
al ana	7,7	Stum Stum (Mg)	27	35	32	38	38	31	32	59	22	17	11	8.5	1	21	9.7
Chemic		Cal- ctum (Ca)	7.1	118	73	88	87	77	2	7	89	22	42	40	42	25	43
		Fe)	0.00	8	1	1	8	1	!	1	.02	ł	ŀ	ł	ŀ	.0	!
		Silica (SiQ _b)	2	0.6	11	13	12	9.5		8.6	==	14	13	13	8.6	8.6	10
		Mean discharge (cfs)	1453	1888	1768	1307	1292	1480	1938	2221	3098	4041	7393	9110	3565	1716	1100
**************************************		Date of collection	Oct. 1-8, 13, 18-	Oct. 9-12, 14-17	Nov. 1-30	Dec. 1-31	Jan. 1-31, 1961	Feb. 1-14, 17	Feb. 15-16, 18-28.	Mar. 1-31	Apr. 1-30	May 1-17	May 18-31	June 1-30	July 1-2	July 3-30	July 31

6.7.	4. 6.4.	6.7	6.7	
905 1220 1240	994 7.6 1400 7.4	714 7.9	874 7.9	1
00.00	4.2.1	1.7	2.0	1
131		06	611	:
302 408 476	320	240	288	
2090 4170 3510	5290 10360	3590		-
1.22	1.92	0,65	1	ŀ
610 898 922	680	475	587	-
2111	.17	1.5 0.13	1.5 0.16	66*0
8900	1.6	1.5	1.5	12.0 0.99
4 4 8 0	30 30	30	68	230
244 435 481	299 596	184	240	1390
0000	• • •	п	ī	80
500 800 800 800 800 800	232 200 188	182	204	1380
9,000	6.30	2,8	3,1	21,0 1380
80 125 103	132 92 95	69	82	476
88 93 60 8	8 9 9	12	87	182
67 91 91	82 144	19	70	461
111		:	1	1
113	1 33	12	11	0.68
1272	2879 3553	;	2799	١
Aug. 1-3, 5-16, 18-26, 28-29, 31, 1961	Nug. 21, 30 Sept. 1-17, 21-30. Sept. 18-20	Weighted average	Time-weighted average	Tons per day

9-3150. GREEN RIVER AT GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1960 to September 1961

			re	no concent	rations are	reporte	d,	loads are	estimated7			
		OCTOBE	R			NOVEMBE	R			DECEMBER		
		Suspen	ded	sediment		Suspen	de	d sediment		Suspen	ded	sediment
Day	Mean dis- charge	Mean concen- tration		Tons per	Mean dis- charge	Mean concen- tration		Tons per	Mean dis- charge	Mean concen- tration		Tons per
	(cfs)	(ppm)	_	day	(cfs)	(ppm)		day	(cfs)	(ppm)		day
1	991 976	330 328		883 864	1490	229 229	A		1940 1920	191 193	A	1000
3	991	340	В	910	1490 1470	252	^	1000	1920	193	Â	1000
4	1010	200	-	545	1450	255	A	1000	1710	182	A	840
5	1010	204		556	1450	255	٨	1000	1660	178		800
6 · ·	991 976	218 220		583 580	1490 1540	249 240	A	1000 10 00	1620 1540	185 188	A	810 780
8	976	220	Â	580	1520	269	A		1190	209	Â	670
9	1210	650	ر	2710	1520	269		1100	798	246		530
10	3600	26200	S	259000	1600	273	A	1180	544	286	Α	420
11	2220	11400	١.	68300	1680	278	A		524	290	Α	410
12	1830 1640	5000 2100	A	25000 9300	1770	280		1340 1200	745 798	266 260	A	535 560
13	1520	890	A	3700	1880 1880	236 220	Â		991	247	Ã	660
15	1580	710	"	3030	1850	220	"	1100	1020	247	Ä	680
16	1560	730	A	3100	1810	242	l	1180	1170	253	A	800
17	1580	770	١.	3280	1900	234	A		1140	247	A	760
18	1730 1960	850 980	A	4000 5200	1960 1920	246 241	A	1300 1250	1040 1040	242 242	A	680 680
20	1940	1000	Â	5200	1980	262	A		1080	247	^	720
21	1830	970		4790	2040	278	A	1530	1040	242	A	680
22	1810	920	A	4500	1960	255	A		1170	253	A	800
23	1750 1730	850 730		4020 3400	1940 1940	247 246	A	1290	1270 1400	257 259	A	880 980
25	1680	600	Â	2700	1980	251	^	1340	1520	258	Â	1060
26	1640	460		2040	1920	222	A		1560	261	A	1100
27	1620 1600	441 370	A	1930 1600	1900	215 215	A	1100 1100	1600 1660	231 223		1000
29	1540	289	Â	1200	1900 1900	215	A		1640	226	,	1000
30	1520 1500	256 235	A	1050 950	1900	215		1100	1640 1620	226 251		1000 1100
Total	48511		r	425501	53030		-	35000	40510		H	24935
		JANUAR	Y			FEBRUAR	Y			MARCH	_	
1	1580		Γ	1050	1440	102	Γ	397	1790	118		570
2	1470	239	l	950 880	1400	87	A		1750	116	A	550
3	1410 1350			800	1360 1380	76 80	^	298	1730 1750	113 116	Ã	530 550
5	1280		ì	700	1400	78	A	295	1900	131	A	670
6	1220			600	1400	78		295	1900	131	A	670
7	1170			540	1430	254	A		1880	130	١.	660
9	1100	129	ļ	450 348	1400 1380	222 215	A	840	1790 1750	103 95	A	500 450
10	1000	143		386	1410	158	A		1730	101	Â	470
11	1030	126		350	1430	142	A	550	1690	94	A	430
12	1080			450	1520	88	A	360	1680	95	A	430
13	1150 1200	174		540	1580	63 85		270 390	1690 1730	94 101	A	430 470
14	1270			510 470	1690 1770	110	^	526	1790	103	^	500
16	1350		1	430	1900	172	A		1830	107	A	530
17	1380			470	1980	224	Ι.	1200	1850	108	A	540
18	1400			410	2040	200	A		1920	114	A	590
19	1410 1420	==		410 410	2040 2090	200 177	^	1100 1000	2060 2150	126 134	^	700 780
21	1430		ĺ	400	2060	189	A	1050	2170	171	A	1000
22	1450			390 400	2060 1960	189 180	A	1050 950	2220 2630	374 718	A	2240 5100
24	1430 1420	=	1	410	1880	118	A		3160	1410	^	12000
25	1300			460	1900	131		672	3180	1400		12000
26	1150			540	1880	130	4		3000	1120	A	9100
27	1050 1250		l	370 480	1830 1790	123 118	A		2800 2820	926 959	A	70 0 0 73 0 0
29	1400	==		410	1/90	119	^	. 570	3130	1240	Â	10500
30	1450 1450			390 390	==				3550 3820	1560 1840		15000 19000
Total	40050	<u> </u>	-	15794	47400		-	18653	68840		r	111260
i otai	40050	L	L_	12/74	4/400		L	10033	00040		<u> </u>	111200

S Computed by subdividing day.
A Computed from partly estimated concentration graph.

B Computed from estimated-concentration graph.
J Computed from partly estimated concentration graph and subdividing day.

105

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued 9-3150. GREEN RIVER AT GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1960 to September 1961--Continued
Where no concentrations are reported, loads are estimated?

		7,1110	re no concent	Lations are	reporte	ч,	TORGE ATC	T CS CIMA CCG/			
		APRIL			MAY				JUNE		
		Suspen	ded sediment		Suspen	ded	sediment		Suspen	ded	sediment
Day	Mean dis- charge (cfs)	Mean concen- tration	Tons per day	Mean dis- charge (cfs)	Mean concen- tration		Tons per	Mean dis- charge (cfs)	Mean concen- tration		Tons per day
	(0.0)	(ppm)	day	(6.2)	(ppm)		day	(6.5)	(ppm)		day
1	3710	1700	A 17000	2980	435		3500	10900	1750		51500
2	3420	1460	A 13500	2700	370		2700	11800	2550		81200
3	3050	1170	9600	2510	406	1	2750	12900	2800	Α	98000
4	2900	1050	A 8200	2480	343	В	2300	13100	1900	A	67000
5	2820	959	A 7300	2630	387	A	2750	12800	1550		53600
6	2650	741	A 5300	3240	560	A	4900	12800	1680		58100
7	2780	906	A 6800	4110	847	A	9400	12300	1900		63100
8	3080	1180	A 9800	5050	1220	İ	16700	11400	1600	A	49000
9	3390	1420	A 13000	5270	1290	A	18400	10900	1130	ı	33300
10	3960	1920	20500	5050	1320	A	18000	10500	980	A	28000
11	4160	2140	A 24000	4640	1510		18900	10500	920		26000
12	4020	2120	A 23000	4080	980		10800	10500	850	''	24100
13	3770	1870	A 19000	3630	710	A	7000	10500	830	l	23500
14	3340	1550	A 14000	3550	500		4790	10500	820	A	23000
15	3030	1340	11000	3910	420		4430	10300	800	A	22000
16	2800	926	A 7000	5500	1400		21000	10100	800		22000
17	2700	796	A 5800	7370	2610		51900	9750	800	A	21000
18	2580	574	A 4000	7030	2430	1	46100	9280	800	Ä	20000
19	2560	564	A 3900	6120	1850	ĺ	30600	8570	760	''	17600
20	2580	574	4000	5840	1350		21300	8000	520		11200
21	2480	612	B 4100	5880	1100		17000	7530	470		9600
22	2310	593	B 3700	5810	1100	Â	17000	6950	510	A	9600
23	2260	590	B 3600	5880	1100	A	17000	6400	550	l ''	9500
24	2420	612	B 4000	6440	1070	^	18600	5910	510	A	8100
25	2950	628	A 5000	7450	1400	A	28000	5740	440	A	6800
26	3630	663	6500	8080	1790		39100	5440	325		4770
27	3630	643	A 6300	8570	1840		42600	5080	220	A	3000
28	3370	560	A 5100	8740	1800	۵ ا	42000	4670	300	^	3780
29	3340	543	A 4900	8570	1710	l	39600	4250	380		4360
30	3240	514	A 4500	8990	1440		35000	3940	325		3460
31				10100	1630		44500				
otal	92930		274400	172200			638620	273310			856170
		JULY			AUGUST				SEPTEMBE	R	
1	3710	270	2700	1290	2200		7660	2020	23000	J	133000
2	3420	250	2310	1320	2640	s	11800	1920	6400	١ -	33200
3	3130	230	1940	1400	4010	5	19000	1660	7000		31000
4	2950	200	A 1600	1720	7750	s	39900	1500	8000	^	32400
5	2750	1100	A 8200	1600	8200	-	35400	1380	7500	A	28000
6	2680	4800	34700	1750	5300		25000	1290	6800		23700
7	2440	2240	14800	1660	2700		12100	1250	4000		13500
8	2310	800	4990	1430	3780		14600	2070	9380	s	66800
9	2150	237	1380	1360	3550	l	13000	4860	32600	s	481000
10	2020	348	1900	1200	1920		6220	4920	34000	Ĵ	510000
11	1940	277	1450	1100	1400		4160	3180	19000		160000
12	1850	168	839	1050	980		2780	3500	24000	Â	230000
13	1790	126	609	1020	650		1800	2720	14500	"	106000
14	1710	132	609	1010	640	_	1750	2260	10400		63500
15	1660	107	480	1010	670		1830	2090	9200		51900
16	1580	89	380	1270	1120		3840	2000	5000		27000
17	1560	78	329	1410	10400		39600	2060	4800	A	27000
18	1520	68	279	1270	5900		20200	4170	26700	ŝ	352000
19	1470	63	250	1290	2100	1	7310	3770	29500		300000
20	1410	64	244	1190	1820		5850	2720	21000	A	150000
21	1410	58	221	1170	1400		4420	3240	10200		89200
22	1270	42	144	1120	4900		14800	3470	14300		134000
23	1170	40	126	1100	1440		4280	3050	11000	A	91000
24	1120	38	115	1100	820		2440	4190	28000	A	320000
	1070	37	107	1120	820		2480	4610	29000	A	360000
25		35	99	1360	3200		11600	4050	20000	A	220000
25	1050				15700	1	56000	3740	17000	A	170000
26 27	1050 1050	28	79	1320	1 1000						
26 27 28	1050 1020	28 28	77	1020	6700		18500	3660	8700		86000
26 27 28 29	1050 1020 991	28 28 29	77 78	1020 1170	6700 11300	s	18500 45000	3660 3600	8700 6600		86000 64200
26 27 28 29	1050 1020 991 976	28 28 29 55	77 78 145	1020 1170 1290	6700 11300 22900	-	18500 45000 79800	3660	8700		
26 27 28	1050 1020 991	28 28 29	77 78	1020 1170	6700 11300	s s	18500 45000	3660 3600	8700 6600		86000 64200

GREEN RIVER BASIN--Continued

9-3150, GREEN RIVER AT GREEN RIVER, UTAH .- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis B, bothom withdrawal tube; C, chemically dispersed; D, decandin; N, in mative water; P, pipet; S, sieve; V, visual accumulation tube; W. in distilled water)

		-		F, piper;	S, Sleve; V, VI	P, pipet; S, sieve; V, visual accumulation tibe; W, in distilled water/	tage;	B 15	SCILLED	Watter)								
		Gaman	Water tem-		Sediment	Sodiment					Suspend	Suspended sediment	ment					Mathod
Date of collection	Time (24 hour)	III	per-	Discharge (cfs)	concen- tration	discharge		_	Percent	finer t	han size	Percent finer than size indicated, in millimeters	ted, in	millim	eters			jo.
		Point	C.F.	Ì	(mdd)	(tons per day)	0.002	0.004	0.008	0.016	0.031	0.004 0.008 0.016 0.031 0.062 0.125 0.250	0.125	0.250	0.500	1.000	2,000	analysis
1960			55	4110	30000		:	20	;	84	!	8	100	1				VPWC
			26	2580	13600		1	53	;	85	1	100	1	1				VPWC
. 1961			49	3210	1340		1	45	;	22	1	92	86	100				VPWC
			49	3210	1340		1	9	;	49	1	92	86	100				SPN
Apr. 10			49	4020	1990		ŀ	21	;	92	ı	93	96	001				VPNC
	1345		2	3000	1280		ŀ	78	1	94	1	100	1	1				PWC
			22	3710	829		44	28	74	87	96	20	1	1				BMC
			63	5240	1300		1	43	1	92	1	907	ł	ł				PWC
			2	3880	412		51	64	28	88	97	100	ı	ł				BWC
May 27			71	8740	1820		ı	44	1	22	!	66	001	1				SPWC
-			67	12800	2030		ł	33	;	15	ł	22	94	100				VPWC
			67	12800	2030		!	22	;	46	ı	77	94	8				VPN
			29	2370	1420		1	2	!	46	;	66	901	ŀ				SPWC
			28	1640	7280		1	2	!	92	1	901	ł	ı				PWC
Aug. 5			80	1450	9430		!	73	1	86	1	100	1	1				PMC
			80	1450	9430		ŀ	7	1	86	ı	100	1	1				PN
			82	1770	4480		1	62	ļ	8	ł	8	1	!				PWC
			83	1300	1850		!	89	1	92	1	100	1	ı				PWC
			80	991	2680		1	67	1	88	1	8	1	1				PWC
Sept. 8			65	2460	12200		1	28	ı	16	1	100	ł	1				D.
3	1630		75	2510	12000		1	20	1	92	1	66	100	1				VPWC
Sept. 28	1620		9	3660	6550		ł	22	1	2	ŀ	96	86	100				VPWC
		-					_					-						

9-3285, SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH

juet downstream from bridge on State Highway 24, 15 miles southwest of Green River, Emery County, and 35 miles upstream from mouth. LCCATION.--At gaging station, just downstream from bridge on State Highway 24, 15 miles southwest of Gree DRAINAGE ARRA.--1, 800 square miles, approximately. RECORDS AVAILABLE.--Chemical analyses: November 1864 to September 1969, November 1950 to September 1961.

Water temperatures: July to September 1949, October 1950 to September 1961.

Sediment records: March 1948 to September 1949, October 1950 to September 1999.

EXTREMES; 1960-61.—Dissolved solids: Maximum, 4,900 ppm Apr. 23; minimum, 1,100 ppm May 29-31.

Hardness: Maximum, 2,010 ppm July 1-31; minimum, 380 ppm Sept. 8.

Factores: Maximum, 2,010 ppm July 1-31; minimum, 190 ppm Sept. 33; minimum dally, 1,360 micromlos May 31.

Factores: Maximum, 85°F June 25; minimum, freezing point on many days during December to March.

Factores: Maximum, 9,280 ppm July 11, 13-18, 1984; minimum, 487 ppm June 21-30, 1987.

Hardness: Maximum, 2,280 ppm July 11, 13-18, 1984; minimum, minimum, 487 ppm June 21-30, 1987.

Factores: Maximum dally, 7,280 micromlos July 11, 1984; minimum dally, 689 micromhos June 22, 1987.

Factor temperatures (1949, 1950-61): Maximum gel? Fully 11, 1964; minimum, freezing point on many days during winter months.

Factor temperatures (1949, 1950-61): Maximum gel? July 11, 1964; minimum, freezing point on many days during winter months.

Factor temperatures (1949, 1950-61): Maximum gel? July 11, 1964; minimum, freezing point on many days during winter months.

		Ħ	1.001.0	8.0 7.9 8.7 8.8	7.98 0.08 7.88 1.88	9.88.99 9.11.22
	Specific	duct- ance micro- nhos at 25°C)	2160 3570 3720 3610 3670	2910 2870 3650 4420 4550	2110 3320 4430 5480 4700	3670 3140 1950 1940
		tfon contraction of the contract	8 0 0 0 4 8 0 0 4 0	44000	6.27.2	8 4 8 8 8 8 4 8 8 8
		S C C C C C C C C C C C C C C C C C C C	659 1120 1110 11100	825 815 1090 1310 1360	514 942 1390 1710 1540	1170 954 510 365 530
	Hardness as CaCO ₃	Cal- clum, Mag- ne- stum	810 1310 1340 1370	1140 1020 1290 1560	735 1180 1650 1970 1790	1410 1180 722 572 725
	solids ted)	Tons per day	908 3004 247 239	226 233 4436 505	274 314 201 198 220	211 476 485 437 337
r 1961	Dissolved solids (calculated)	Tons per acre- foot	2.4 4.20 4.34 4.19	3.21 3.20 4.20 5.14 5.32	2.19 3.79 5.22 6.66 5.60	3.55 2.05 2.05 2.04
water year October 1960 to September 1961	Diam (c	Parts per million	1770 3090 3190 3080 3150	2360 2350 3090 3780 3910	1610 2790 3840 4900 4120	3120 2610 1510 1100 1500
10 to		8 5 (g)	0.13 22 22 22 22 23	71. 71. 72. 88.	22 22 28 75	28.202.
er 196		NO.	4.1.2.2	1.9	2.7 1.3 1.0 1.5	4.4.0.0.
Octobe		Fluo- ride (F)				
er year		Chloride (CI)	26 60 70 70	53 48 72 78	8 4 8 9 9 9 8 4 8 9 9 9 9 9 9 9 9 9 9 9	71 27 20 28
million, wat		Sulfate (SO ₄)	1100 2000 2050 1950 1950	1420 1480 2020 2470 2570	950 1750 2490 3230 2680	1980 1670 900 618 899
. m111	į	1 2 2 3 S	00000	00000	00000	00000
in parts per	Bi-	car- bon- HCO ₂)	184 228 277 327	378 248 303 244 295 395	270 290 311 318 304	294 276 258 252 238
n par	20		8.1 7.9 7.5 8.4	9 9 7 9 9	5.8 7.0 10.8	0 00 TO 44 TO
Chemical analyses, i		Sodium (Na.)	237 469 504 446 433	316 352 459 573 592	233 417 575 784 607	456 369 202 138
al ans	,	elum (Mg)	52 156 175 175 185	141 129 163 195 212	85 97 265 285 232	184 161 88 70 98
Chemic		e de la companya de l	238 269 246 261 283	222 196 248 303 295	154 313 305 353 335	265 208 145 115
		Fe)	20.110.	इ।।।इ	22211	11111
		Silica (SiO ₂)	10 13 13 13 13 13 13 13 13 13 13 13 13 13	0.4.0.4.0	8.00.00 6.00.00	9 8 9 8 51 8 6 6 6 6 7
		Mean discharge (SiO ₂) (cfs)	190 10 43.6 9.5 34.8 9.1 29.7 10 28.1 13	3465.5 4423.5 472.7	63.0 41.7 19.4 15.8	25.0 67.5 119 147 83.2
		Date of collection	Oct. 1-14, 19-21, 1960. Oct. 15-18, 22-31. Nov. 1-30. Dec. 1-31. Jan. 1-16, 1961	Jan. 17-31. Feb. 1-28. Mar. 1-24. Mar. 25-31.	Apr. 6-9 Apr. 10-12 Apr. 13-22, 24-30. Apr. 23	May 17-20. May 23-24. May 25-28. May 29-31. June 1-6.

GREEN RIVER BASIN--Continued

9-3285. SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH -- Continued

		HZ.	8.1 8.0 7.7	8.1	7.8 7.9 7.7 7.9	8.1 7.7 8.0 7.7 8.0	7.9	3510 8.0	1
	Specific	duct- ance (micro- mhos at 25°C)	2760 3600 4400 5050	3200 8.1	2100 1630 3380 2300 3080	1700 2450 2960 2350 3110	2720		1
		ad- ad- aorp- tion ratio	5.5		7.7.4. 1.3.1.	2.2.2.4. 4.2.4.	3,5	5.0	-
		Non- car- bon-	767 1070 1490	1230	881 368 1280 1110 1220	216 1070 1130 889 972	949	1110	-
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	965 1260 1710 2010	1440	1040 594 1440 1290 1380	380 1200 1260 1040 1170	1130	1340	-
inued	solids ted)	Tons per day	298 172 34.1 3.63	382	1640 482 271 2140 230	167 6370 319 2160 516	438		
Cont	Dissolved solids (calculated)	Tons per acre- foot	2.99 4.05 5.21	3.82	1.69 1.69 4.09 2.80 3.62	1.62 2.91 3.45 3.54	3,14	-	:
ber 1961	Dis (c	Parts per million	2200 2980 3830 4480	2810	1740 1240 3010 2060 2660	1190 2140 2540 1970 2600	2310	3000	-
Septer		ron (B)	0.26	.21	16 19 19 19 19	.30 19 18 18	0.20	1.9 0.24	0.5 0.04
o to		Fluo- Ni- ride trate (F) (NO ₃)	0.8 2.1 4.1	2,1	4.0.0.0.0	22.1	2.7	1.9	0.5
r 196		Fluo- ride (F)							
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride (C1)	42 62 93	48	38 20 18 18 50 50	24 45 45 48 48	38	62	7.3
water yes		Sulfate (SO ₄)	1390 1940 2480 2870	1800	1090 691 1950 1310 1720	677 1390 1670 1260 1660	1470	1920	279
ion,	1	를 다 되 (S)	0000	•	00000	00000	٥	0	0
r mill:	Bi-	car- bon- ate (HCO ₃)	242 228 269 384		194 278 197 219 190	200 164 164 178 242	222	280	42
ts pe	Ę	tas- sium (X)	7.0 9.7 10	14	11 5.7 13 13	6.6 9.2 11 8.8 8.4	8.8	8.8	1.7
in par		Sodium (Na)	331 448 540 630		126 152 360 109 268	228 169 278 189 354	274	423	52.0
alyses	ļ	nag- ne- sium (Mg)	131 171 199 221	108	34 34 35 83 83	25 56 98 55 113	95	153	18,0
al an		Call Call (Call	170 222 357 441	397	297 182 435 427 417	111 391 345 325 283	297	286	56.0
Chemic		Iron (Fe)	1111	1	11111	11111	1	-	
		Silica (SiO ₂)	1123	13	11 2 2 2 2 4 1	16 13 15 11	11	10	2,1
		Mean discharge (cfs)	50.2 11 21.4 11 3.3 12	50.3 13	349 11 144 16 33.4 13 384 13 32.0 14	1103 146.5 15 406 12 73.5		70.3 10	•
		Date of collection	June 7-10, 1961 June 11-21 June 22-30. July 1-31.	Aug. 1-3, 5, 7-12, 14-15, 19-21	Aug. 4, 6, 13 Aug. 16-18 Aug. 22-25, 28-30. Aug. 26-27, 31 Sept. 1-7	Sept. 8	Weighted average	Time-weighted average	Tons per day

GREEN RIVER BASIN--Continued

9-3285. SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH .- Continued

	Aver-	e.				
į	Av	ag	111	32	6 5 9	73
		31	 87	32	1 4 1	99
		30	41 36 	32 32 34 34	65	71 72 59
		29	33	32	58	71 59
		28	53 58	32 32 33	55	59
		27	53	32	5. 6.6 1	78 54
		26	35	32 32	46 54 66 66 85 71	57
196		25	54 34	32		80 56
Temperature (°F) of water, water year October 1960 to September 1961		24	3.8	32 33 34 34	55 42 61 67 72 73	72 51
eque		23	111	32 33 34	55 61 72	79 50
epte		22	50	333	51 55	52
to S		21	52 36 33	33 3 4	51 	76
60 1		20	52 40 	32	5 5 5 6 8 9 5	1 1 8
r 19		16	52 45	32	57 71 70	1 09
ope		18	52 35	32	54 72 64	71 63
Oct		17	51 34 	32	54 20 70	4 1 8 6 8 1 8
ear	Day	16	36	32 32 32 32 33	1 28	70
er j		15	44		4 0 0 0 0 0	75
wat		<u>-</u>	32	32 32 33	6 4 8	124
er,		-13	49 45 32		52	82 60
wat		12	42 40 32	1 1 3	4 6 9 4 4 4 4	74 74 55
of		=	38	3311	34	
(°F)		2	- 52 38	33 1 3	4 4 1	73 60 58
re		٥	41	332	63	
ratu		8	47	3331	68 68	1 72
mpe		_	50	332	60	(3
£		9	32 32	32 32 32 32 33	3 61	4 64
		5			58	72 64
		4	39 61	32 32 32 32 32	34 34 55 60 61	74 69
		8	35			
		-	43 47	32 32 32 32 32 32	70 62	1 8 8 9 9
		_				1 1 89
	Month	MOILLI	October November December	January February March	April May June	July August September

SAN JUAN RIVER BASIN

9-3555, SAN JUAN RIVER NEAR ARCHULETA, N. MEX.

OCATION .--At gaging station in right bank, 0.5 mile upstream from Governador Canyon, I mile north of Archuleta, San Juan County, and 6.8 miles downstream from

DRAINAGE AREA .--3,260 square miles, approximately. RECORDS AVAILABLE.--Chemical analyses: December 1954 to September 1961.

December 1954 to September 1961, Water temperatures:

Refer temperatures: December 1997.

Sediment records: December 1994 to September 1991.

EXTREMENS 1960-61.——Dissolved solids: Marimum, 362 ppm Sept. 19; minimum, 46 ppm May 30 to June 3.

Hardness: Maximum, 250 ppm Sept. 19; minimum, 46 ppm May 30 to June 3.

Hardness: Maximum, 717 on several days during July and Angueris; minimum, freezing point on several days during July and Angueris; minimum daily, 94, 900 tons Sept. 19; minimum daily, 21 ppm Jan. 24.

Sediment concentrations: Maximum, 717 on several days during July minimum daily, 21 ppm Jan. 24.

Sediment concentrations: Maximum, 72 ppm Jan. 5, 1960; minimum daily, 25 ppm June 14 to July 11, 1957.

Hardness (1966-61): Maximum, 250 ppm Sept. 19; minimum, 472 ppm Jan. 5, 1960; minimum daily, 20; ppm Jan. 5, 1960; minimum daily, 91 ppm Dec. 22, 1965.

Hardness (1966-61): Maximum, 72 ppm Jan. 5, 1960; minimum daily, 101 minimum daily, 2, 1957.

Hardness (1966-61): Maximum daily, 958 minimum, 70 ppm July 1-11, 1857.

Hardness (1966-61): Maximum daily, 858 minimum, 70 ppm July 1-11, 1857.

Sediment concentrations: Maximum daily, 32, 500 ppm Max, 77, 1967; minimum daily, 5 tons Dec. 22, 1966, minimum daily, 61, 909.

Sediment concentrations: Maximum daily, 77, 1967; minimum daily, 5 tons Dec. 22, 1966, minimum daily, 61, 909.

Sediment loads: Maximum daily, 82, 900 tons 3019 27, 1967; minimum daily, 5 tons Dec. 22, 1966, minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000 ppm Max, 77, 1967; minimum daily, 61, 000

available in district office at Albuquerque, N. Mex. Flow affected by ice Dec. 20-27, 30, Jan. 21-23, Jan. 27 to Feb. 2.

Chemical analyses, in parts per million, water year October 1960 to September 1961

	Ä	7.4	4.	4.	9. 1.0	٠.	9.	9.7	4.4	2	4.	2.2	7.5	7.5	8.	4.7	7.1
specific	duct- ance micro- nhos at 25°C)	428	480	499	550	88	224	471	216	224	450	526	455	230	450	356	253
å;	Part of the last o	1.3	1.3	1.4	5.5	2	1.3	1.3	1.4	.5	0.	1.3	1.0	1.	æ	۲.	s.
		-	_	_	_			35	-	_	_	$\overline{}$		69	62	35	23
Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	145	163	166	186	171	180	155	169	170	160	182	166	196	176	138	100
Dissolved solids (residue at 180°C)	Tons per day												862				
solved 1due a	Tons per acre- foot	0.37	.42	.44	4.	44.	.46	.41	.45	.47	€.	.46	14.	.48	4 .	.32	.22
res (res	Parts per million								330	342	293	336	296	320	293	236	164
	8 5 8 8 8	0.0	l	1	١	!	١	ł	.05					!	1	ł	1
	NOS.	1.7	Į.	1	1.	Į,	!	1	1.7	l	!	1	1	ŀ	ł	١	1
	Fluo ride (F)	_		_	_			1				1				1	
,	Chloride (C1)	8.8	1	ŀ	Į,	1	ŀ	1	11.	!	ļ	1	1	1	1	1	1
	Sulfate (SO ₄)	83	1	1	1	!	1	ı	120	1	1	ł	ł	ļ	ł	ł	1
į	1 1 1 1 C	۰	0	•	0	•	•	۰	•	0	•	•	0	0	•	0	•
-i8	car- bon- ate (HCO ₂)	152	160	161	175	161	168	146	154	129	141	152	145	155	139	125	94
i	F # E E	3.8	ŀ	.	1	1	I	1	4.1	I	1	ł	١	١	1	ŀ	1
	Sodium (Na)	35	39	42	46	6	41	88	43	44	8	8	8	32	25	18	12
	mag. ne- stum (Mg)	7.3	7.5	7.7	6.8	8	9.8	8.9	9.6	8.6	9.1	9	10	#	표	8.0	4.9
	Cap (Ca)	46	53	Z	09	8	8	51	22	22	48	8	25	8	25	42	32
	fron (Fe)	90.0	ł	1	ł	ł	l	i	.03	;	i	ł	i	ł	1	ł	i
	8111ca (810 ₂)	Г	1		!			_	13	ŀ	!	1	_!	;	!	!	1
	Mean discharge (cfs)				206				296								2115
	Date of collection	Oct. 1-31, 1960.	Nov. 1-30	Dec. 1-15	Dec. 16-27	Dec. 28-31	Jan. 1-23, 1961	Jan. 24-Feb. 18.	Feb. 19-28	Mar. 1-17	Mar. 18-20	Mar. 21-23	Mar. 24-31	Apr. 1	Apr. 2-4	Apr. 5-17	Apr. 18-19

7.7.7	7.7.0.7. 2.4.6.4.6.	D. E. D. 4. C.	7.7.7.8 8.4.8.4	0.000
214 173 183 148 187	210 7 157 7 177 6 141 7	212 7 212 7 248 7 268 7 372 7	278 7 317 7 354 7 330 7	318 7 408 7 277 7 329 7
10410410	04044	10.00 t 00 ti	<u> </u>	00000
12 8 11 12 11	22022	E 0 1 4 E	96798	22 22 22 2
882 71 71		00000		
	4 55 55 5	29 76 89 128	103 112 127 126 145	
818000	48000		0 00 == 01 00	NO 8-1-4
882 768 1200 1040 839	751 918 790 1040 1040	749 529 409 416 516	40000 278 291 432 449	445 1050 519 471 314
81. 81. 81. 81.	20 11 14 13	23 25 33 33	8 8 8 8 8	8 8 8 8 9
141 120 133 112 135	149 1114 124 104 95	117 143 172 181 239	192 206 246 209 268	206 268 166 210 188
81111	11111	11111	18111	11111
31111	11111	11111	1.6	11111
e.	11111	11111	16,11	11111
*;	11111	11111	w	11111
\$	11111	11111	18 1	11111
00000	00000	00000	00000	00000
882 789 789 73	82 84 67 59	68 85 100 112 152	118 126 140 142 136	138 168 116 136
6.	filli	1+111	12111	11111
10 8.1 10. 6.9	11 7.7 9.7 7.2 6.7	9.3 115 115 28	22 22 26 26 27	22 23 18 19 19
20000 20000	4 211 8 8 4 6 6	01 02 40 40 40 40 40 40 40 40 40 40 40 40 40	ຄະນະ ຄະນະ ຕໍ່ 4 ຄໍ 4 ຄໍ	8 11 2 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
75 75 75 75 75 75 75 75 75 75 75 75 75 7	23 18 18 19	119 22 32 44	33 36 35 44	38 39 38 38
9	11111	11111	14111	11111
21111	11111	11111	12111	11111
	1867 2983 2360 3692 4050	2371 1369 880 851 800	772 500 438 765 620	800 1455 1158 831 619
Apr. 20-28, 1961. Apr. 29-30. May 1-2. May 3-5.	May 9-11 May 12-14 May 15-18 May 19-29 May 30-June 3	June 4-18 June 19-25 June 26-30 July 1-6	July 8-13 July 14-22. July 23-31. Aug. 1-12	Aug. 14-16 Aug. 17-18 Aug. 19-22 Aug. 23-27 Aug. 28-8ept. 9

SAN JUAN RIVER BASIN--Continued

9-3555, SAN JUAN RIVER NEAR ARCHULETA, N. MEX.--Continued

1		Hq	7.4	6.7	7.7	7.5	7.3	7.4	7.4	ļ
	Specific	duct- ance (micro- mhos at 25°C)	252	309	222	261	- 1	274	374	ŀ
İ		ad- ad- Borp-(tion ratio	8.0	9.	9.	9.	.7	7.0	1.0	ł
		Non- car- bon-	2	10	26	9	2	10	24	ł
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	98	120	220	101	82	101	131	1
	Dissolved solids (residue at 180°C)	Tons per day	442	448	2250	852	424	1	1	ł
1961	Dissolved solids esidue at 180°	Tons per acre- foot	0.23	.27	64.	.23	.21	1	I	1
September		Parts per million	166	201	362	172	152	187	244	1120
o to		Po- (B)	ŀ	i	ł	1	1	1	ł	1
r 196(Fluo- Ni- Bo- ride trate ron (F) (NO ₂) (B)	ŀ	ł	l	1	l	-	I	
ctobe		Fluo- ride (F)	ì	1	١	١	1	1	1	١
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	1	1	ŀ	1	ł	i	-	ŀ
on, wate		Sulfate (SO.)	1	l	ł	١	ł	1	l	ł
m1111		CO)	0	0	0	0	•	0	۰	8
ts per		car- bon- ate (HCO ₃)	102	134	236	116	94	111	131	665
par'		Fo- tas- Sium (K)	!	ì	1	1	1	1	l	1
lyses, 1		Sodium (Na)	16	16	23	14	14	17	27	102
al ana		Mag- ne- sium (Mg)	4.5	6.1	15	6.3	4.1	5.1	8.9	30
Chemic		Cal. (Ca)	27	88	75	8	56	32	14	193
		Iron (Fe)	1	ł	1	ì	ŀ	1	i	ł
		Silica Ir	1	ı	1	ı	1		L	ı
		Mean discharge (cfs)	987	626	2300	1835	1034	ŧ	2226.3	ı
		Date of collection	Sept, 10-16, 1961	Sept. 17-18	Sept. 19	Sept. 20-21	Sept. 22-30	Weighted average	Time weighted average	Tons per day

Temperature (°F) of water, water year October 1960 to September 1961 [Once-daily measurement, generally 8:00 a.m. to 8:00 p.m.]

	÷	u				
	Aver-	ag	36 36	337	527	74 74 . 64
		31	33 1 5	133	-1 60 74	4 t 6 8 1 1
		30	33 33	43 33	51 60 76	77 70 58
		29	39 33	33	58 56 75	52
		28	50 37 33	4 6 4	57 59 75	77 73 62
		27	338	34	53 62 73	77 73 61
		26	54 40 33	4 8 4 4 4 8 4	50 75	72 77 74 74 50 61
		25	54 37 33	400	49 55 72	72 74 60
_		24	3 8 8	5 B B	59	76 75 59
Ė		23	488	333	758	75 75 62
Ö.		22	3.8 3.4 4.0	6 4 3 5 2 3	54 76	74 77 59
ö		21	8 4 5 8 3 8 5 8	33 40 49	59 57 73	69 75 58
£		20	4 4 9 9 3 3	413	55 59 70	73 75 58
B. B.		19	48 38 34	333	52 60 67	76 75 60
0		18	388	46 33	54 50 70	75 73 65
œ ×		17	49 38 33	33 39 47	54 61 66	75 73 69
ra]]	Day	91	3.6 3.4 3.4	4 9 5 5 5	49 65 65	75 71 69
eneı		15	46 34	6 6 4 6 8 8	42 57 68	76 73 67
Once-daily measurement, generally 8:00 a.m. to 8:00 p.m.		7	54 42 33	33 47	48 50 67	74 75 67
men		13	58 44 34	8 9 8 9 8 9	51 47 66	74 74 67
sure		12	35	6 6 4 6 7 4	553 68 8	74 75 66
mea		1.1	20 4 60 20 20 70	6 6 4 6 8 3	50	74 74 66
11y		2	3 4 6 3 3 4 6	8 8 4 8 8 5	48 61 67	74 77 66
-da		٥	60 46 33	32 37 43	8 4 8 0 5 5 7 5	75 76 67
Once		8	35	6 6 4 6 5 0	45 53 67	76 66
_		7	50 35	32 34 47	4 4 4 8 6 7	71 77 69
		9	4 4 5 9	999	4 60 5 2 8 6 3 5 8	67 65 65
		2	60 84 36	32	48 52 62	75 77 65
		4	59 56	4 9 8 9 8 9	8 4 8 4 0	74 75 62
		3	57 47 49	32 34 40	55	74 72 58
		2	64 47 46	32 45 42	53	73 77 68
		1	61 47 33	32 44 1	4 0 0 0 0 0	75 75 70
	Moneh	THOUSE THE	October November December	January February March	April May June	July August September

9-3555. SAN JUAN RIVER NEAR ARCHULETA, N. MEX.--Continued

Suspended sediment, water year October 1960 to September 1961

		OCTOBER	:		NOVEMBER	:		DECEMBER	
Ī		Suspend	led sediment	-	Suspen	ded sediment			ed sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	252	79	54	300	69	56	191	33	17
2	265	56	40	290	69	54	235	46	29
3	278	76	57	285	53	41	248	49	33
4	292	53	42	320	89	77	292	56	44
5	283	45	34	350	73	69	250	36	24
6	278	42	32	330	62	55	176	41	19
7	274	43	32	355	58	56	128	95	33
8	269	42	31	409	220	243	283	81	62
9	278 350	43 81	32 77	392 325	740	709 649	320 278	49	42 34
- 1		1				047		""	34
11	360	58	56	292	150	118	278	59	44
12	365	50	49	265	94	67	280	120	91
14	376 350	43	44 43	265 252	56 72	40 49	292 301	52	41 33
15	360	41	40	252	57	39	269	69	50
			1						
16	663	258	498	252	38	26	226	85	52
17	814 1600	420 2220	923 S 10300	243 206	28 27	18	199 170	40	21 15
19	910	1270	3120	206	48	15 29	140	80	30
20	545	685	1010	239	37	24	187	40	20
		1 1			1		\	1 1	
21	409 404	400	442	243	38	25	226	39	24
22	360	238 107	260 104	239 235	47 50	30 32	146 222	30	12 21
24	350	91	86	222	33	20	235	37	23
25	365	65	64	218	48	28	226	33	20
26	360	60	58	218	50	29	252	53	36
27	335	52	47	218	62	40	252	24	16
28	320	58	50	260	41	29	230	110	68
29	330	56	50	235	32	20	248	45	30
30	325	42	37	199	32	17	218	25	15
31	310	51	43				210	31	18
Total	13030		17755	8156		2704	7204		1017
		JANUARY	·		FEBRUARY	•		MARCH	
1	190	69	35	214	38	22	243	90	59
2	150	42	17	210	37	21	243	66	43
3	140	44	17	218	42	25	274	75	55
5	150 140	36 54	15 20	218	42 33	25	330 330	210	187 211
•••	140	24	20	218	33	19	330	231	211
6	152	26	11	203	27	15	315	187	159
7	162	30	13	199	40	21	274	210	155
8	170 180	30	14	191	38	20	269	133	97
9	195	28	14 14	210 210	70 67	40 38	248 292	100	55 79
1									
11	206	32	18	260	55	39	414	400	447
12	191	28	14	270	104	76	558	1040	1570
13	203 184	34	19	269 387	89 174	65	680	1650	3030 3710
15	184	23 24	11 12	409	294	182 325	715 782	1920 2550	5380
- 1								i i	
16	195	23	12	444	263	315	1050	2880	8160
17	191 184	22	11	432 370	454 372	530 372	1000 910	2540 1950	6860 4790
19	191	36	19	297	270	217	790	1750	3730
20	191	31	16	274		в 160	743	1120	2250
21	199	31	17	287	145	112	846	1110	2540
22	203	33	18	306	160	132	894	1300	3140
23	214	25	14	360	378	367	991	1290	3450
24	218 218	21 28	12 16	320 278	465 340	402 255	1230 1310	1700 2400	5650 8490
26	218	40	24	274	240	178	964	1400	3640
27	230	64	40	274	140	178	701	400	757
28	226	30	18	269	113	82	624	470	792
29	195	55	29				902	1300 E	
30	214	39	23				1490 1350	3120	12600 10900
23 1									
31 Total	214 5894	29	17 547	7894		4167	21762	2980	96186

S Computed by subdividing day.
B computed from estimated-concentration graph.

9-3555. SAN JUAN RIVER NEAR ARCHULETA, N. MEX.--Continued

Suspended sediment, water year October 1960 to September 1961--Continued

L		APRIL			MAY			JUNE	
1		Suspend	ded sediment		Suspend	ded sediment		Suspend	ed sedime
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	1100	2480	7370	3150	445	3780	4270	68	784
2	1040	1990	5590	3520	508	4830	4000	72	778
3	1110	1560	4680	3660	312	3080	3490	55	518
4	1590	2350	10100	3520	188	1790	2960	47	376
5	2480	3870	25900	3180	215	1850	2620	82	580
6	2140	2150	12400	2670	127	916	2480	94	629
7	1620	830	3630	2260	138	842	2360	84	535
8	2740	2700	21900	1980	153	818	2310	77	480
9	2460	1820	12100	1730	145	677	2310	71	443
.0	1610	1070	4650	1720	162	752	2370	45	288
1	1430	540	2080	2150	118	685	2440	44	290
2	1220	320	1050	2740	140	1040	2420	34	222
13	1430	310	1200	3180	124	1060	2380	64	411
4	1540	435	1810	3030	80	654	2360	56	357
5	1230	240	797	2540	91	624	2110	122	695
6	1080	390	1140	2240	84	508	2300	156	969
7	1360	335	1230	2160	57	332	2220	72	432
8	1870	390	1970	2500	70	472	1930	95	495
9	2360	510	3250	3030	89	728	1670	111	500
20	2520	510	3470	3620	145	1420	1620	180	787
21	2640	350	2490	3730	143	1440	1470	115	456
22	2660	260	1870	3620	132	1290	1330	97	348
3	2610	235	1660	3890	170	1790	1250	104	351
24	2730	350	2580	3930	112	1190	1160	118	370
25	2430	240	1570	3690	88	877	1080	104	303
6	1890	150	765		82	810	982	132	350
7	1680	133	603	3660 3710	71	711	937	136	344
8	1690	210	958	3820	65	670	878	153	363
9	2100	272	1540	3910	55	581	806	157	342
10	2640	300	2140	4060	83	910	798	156	336
31				4430	127	1520			
Total	57000		142493	97030		38647	61311		14132
		JULY			AUGUST			SEPTEMBER	
1	806	96	209	460	239	297	578	230	359
2	790	61	130	558	160	241	538	305	443
3	830	84	188	1060	2880	8241	536	170	241
4	982	51	135	1160	4830	15100	631	133	227
5	878	80	190	1100	1380	4100	722	165	322
6	820	69	153	1190	350	1120	708	112	214
7	800	1400	3020	900	1900	4620	701	93	176
8	720	600	B 1200	564	279	425	617	113	188
9	820	86	190	506	162	221	617	122	203
0	860	310	720	450	144	175	1240	682	2630
1	820	298	660	624	169	285	1340	760	2750
12	729	184	362	604	4650	7580	1040	340	955
3	680	163	299	620	4800	8040	910	170	416
4	620	175	293	700	1100	2080	782	150	317
5	560	144	218	854	1500	3460	798	412	5 947
6	460	116	144	846	2450	5600	798	505	1090
7	390	147	155	1190	10600	S 35600	758	650	1330
18	440	266	316	1720	9300	43200	894	2310	5 6200
900	526	76	108	1670	3350	15100	2300	14100	94900
20	493	121	161	1180	780	2490	2130	4680	5 29700
1	490	118	156	937	480	1210	1540	1170	4860
22	520	103	145	846	340	777	1290	630	2190
23	540	264	385	937	5500	13900	1230	395	1310
4	440	401	476	840	1050	2380	1170	560	1770
25	387	252	263	780	4480	9430	1080	365	1060
26	387	135	141	820	900	1990	1020	226	620
27	365	143	141	780	2790	5880	973	160	420
28	330	135	120	680	3410	6260	894	150	362
29	÷95	80	107	590	1380	2200	830	185	415
30	520 480	460 492	646 638	578 564	260 265	406 404	822	155	344
		772			203	202811	29477		156961
otal	18978		12069	26308					

S Computed by subdividing day.
B computed from estimated-concentration graph.

SAN JUAN RIVER BASIN---Continued

9-3555. SAN JUAN RIVER NEAR ARCHULETA, N. MEX. -- Continued

Particle-size analyses of suspended sediment, water year October 1980 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, rebenically dispersed, D, decandation; M, in native water; P. rince; S, sieve; V, visual accumulation tube; W, in distilled water)

		tem-	Sam-		Sediment	Sediment				Sa	Suspended sediment	d sed1	ment				Metho
Date of collection	Time (24 hour)	per-	guild	Discharge (cfs)	concen- tration	discharge		E4	ercent	Percent finer than size indicated, in millimeters	an size	Indicat	ed, in 1	nillimet	ers		of.
	,	(°F)	роши		(mdd)	(wns per day)	0.002	0.002 0.004 0.008 0.018 0.031 0.082 0.125 0.250 0.500 1.000 2.000	800.0	0.018	.031	.082	.125 0	.250 0.	500 1	.000 2.	
Oct. 16, 1960	1430	49		673	264			1		-	_	001	<u> </u>	1	1	1	20
Nov. 8	1400	47		409	383		1	1		1			_		-	1	20
Jan. 27, 1961	1500	34		d 230	93		1	1		1		_	_	100		1	200
Mar. 16	1700	45		1300	3160		28	78		16		46			66	001	VPWC
Anr. 20	0200	48		2370	418			1	_				100	1	-	-	702
Kay 1	1400	54		3180	382		1	1	_	1			8			8	202
May 21	080	52		3770	180		!	1	_	1			8		_	-	202
May 31	1700	80		4580	180		1	1		;		8	82		97	8	מס
July 7	1800	17		900 p	2990		88	88		66		100	1	;	-	-	PWC
Aug. 4	1730	75		1110	6580		73	83		66		100	1	1	!	1	PWC
Aug. 18	1730	73		1860	9480		84	77		81		1	1	1	;	!	PWC
Sept. 19.	1800	90		2900	19200		84	74		86		100	1		1	:	PWC

9-3570, SAN JUAN RIVER AT BLOOMFIELD, N. MEX.

LOCATION.—At gaging station at bridge on State Highway 44, 0.8 mile south of Bloomfield, San Juan County, 3 miles upstream from Kutz Canyon, and 10 miles dewnstream from Canyon Largo.

RECENS ANALIABLE.—Square miles, approximately.

RECENS AVALIABLE.—Water temperatures: November 1955 to September 1961.

Scollant recens. November 1955 to September 1961.

EXTREMES, 1960-61.—Mater temperatures: Maximum, 82°F July 16, 28, Aug. 7; minimum, freezing point on many days during December and

January.

Sediment concentrations: Maximum daily, 73,700 ppm Sept. 19; minimum daily, 19 ppm Oct. 7.
Sediment loads.--Maximum daily, 881,000 tons Sept. 19; minimum daily, 9 tons Oct. 9.
SETREMES, 1955-61.--Mare temperatures: Maximum 85°F 191y 23, 1959; minimum, freezing point on many days during winter months.
Sediment concentrations: Maximum daily, 101,000 ppm Aug. 1, 1956; minimum daily, 19 ppm Oct. 7, 1960.
Sediment loads: Maximum daily, 1,900,000 tons Mar. 9, 1960; minimum daily, 19 ppm Oct. 7, 1960.

VEMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex.

Temperature ('F) of water, water year October 1960 to September 1961 Once-daily measurement, generally between 8:00 a.m. to 8:00 n.m.]

						_	5		111	1	Isa		;	Belle	Lar	once-daily measurement, generally between 6:00 a.m. to 6:00 p.m.	2	9	0	4	į	2	3	ď								
Memb													!			Day																Aver
Month	-	2	3	4	5	9	7	8	6	10	=	12	13	14	15	91	17	18	61	20	21	22	23	24	25	26	27	28	29	30	31	age
October November December	65 41	65 51	500 100 110	388	36	300	333	53 36	60 48 35	60 47 33	62 47 36	62 47 36	61 37	3403	33	51 42 32	3330	333	0.46	8 4 6 8 4 6	33	325	846	40	30	56 43 33	33	388	38 4	48	42	80 45 EV 40 87 EV
January February March	32 36 46	32 40 47	382	32	32	32 40 42	E 4 4 E 0 4	32 39 46	32 39	32 40 53	32 45 50	32 40 48	33	32 44 53	35 45 45 45	32	32 40 50	6 4 4 6 0 4	E 44 E 84	32 45 50	33 47 52	32 48 54	5 2 2 2 2 2 2	8 4 8 8 2 8	6 4 4 5 5 5	404	4 4 4 6 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	443	33	36	213	644
April May June	53 57	4.5 5.8 6.2	6 55 7 7 5 6	55	0.00	52 53	4 4 6 9	45 73	52 59 69	48 58 61	50 58 70	56 70	52 50 69	48 58 71	50 59 67	55 60 71	55 59 74	55 62 70	56 62 72	57	58 61 79	59 63 76	55 61 78	0 4 9 9	54 65 65	56 57 76	58 78	61 62 79	992	59	121	59
July August September	76 75 78 78 74 62	75 78 62	4 L 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	70 79 55	67 69	65 78 72	75 82 78	78 79 68	76 81 72	75 70 68	75 77 68	75	77 75 69	78	81 72 67	82 73 71	69 73	78 74 65	77 77 63	75 74 61	72 79 61	1 8 3	0 0 0	79 77 58	25 26 49	80 72 65	77	82 77 66	11.13	75	75	76 76 65

COLORADO RIVER BASIN

SAN JUAN RIVER BASIN--Continued

9-3570. SAN JUAN RIVER AT BLOOMFIELD, N. MEX.--Continued

Suspended sediment, water year October 1960 to September 1961

L		OCTOBER	₹		NOVEMBER			DECEMBER	
		Suspen	ded sediment		Suspen	ded sediment		Suspend	led sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	200	52	28	285	59	45	183	22	11
2	183	44	22	268	51	37	200	51	28
3	204	25	14	268	48	35	227	28	17
4	218	88	52	285	46	35	274	43	32
5	209	22	12	338	56	51	302	79	64
6	215	20	12	314	49	42	200	51	28
7	196	19	10	314	50	42	160	62	27
8	183	20	10	332	110	99	270	88	64
9	179	19	9	399	420	452	285	98	75
10	241	185	120	320	570	492	290	92	72
11	302	195	159	290	830	650	280	48	36
12	332	105	94	268	127	92	290	49	38
13	371	70	70	252	53	36	310	50	42
14	344	51	47	236	48	31	300	65	53
15	449		5 13900	232	53	33	280	72	54
16	924	25200	5 73200	236	39	25	260	46	32
17	1050	11000	31200 5 117000	236	36	23	220	45	27
18	1880 1220	21500 7200	S 117000 23700	214 214	25	14	200 170	43	23 20
20	580	1220	1910	236	24	14 14	160	62	27
20	560	1220	1710	230	22	14	100	02	21
21	427	630	726	227	33	20	220	74	44
22	357	410	395	214	37	21	130	75	26
23	357	236	227	204	33	18	150	141	57
24	357	150	145	200	21	11	210		B 55
2500	392	101	107	196	30	16	240	51	33
26	350	120	113	196	18	10	270	4.8	35
27	320	90	78	214	82	47	265	69	49
28	320	92	79	236	66	42	260	43	30
29	314	112	95	258	44	31	250	44	30
30	308	83	69	214	28	16	240	31	20
31	296	62	50				230	27	17
Total	13278		263653	7696		2494	7326		1166
		JANUARY	1		FEBRUARY	,		MARCH	
			[
2	200 150	49 82	26 33	220 220	145 79	86 47	247 227	92 80	61 49
3	140	54	20	190	58	30	247	72	48
4	140	49	19	200	56	30	332	108	97
5	140	55	21	190	93	48	344	160	149
		l							
6	150	70	28	180	64	31	320	170	147
7	160	100	43	170	40	18	296	200	160
8	170 180	156 163	72 79	225	61 73	37	268 252	165 110	119 75
10	200	145	78	236	84	45 54	258	67	47
		'*'		[238	34) -		"	71
11	210	132	75	252	126	86	364	125	S 133
12	210	123	70	263	108	77	538	1900	2760
13	205	120	66	252	113	77	680	2800	5140
14	205	110	61	296	335	S 306	730	4000	7880
15	215	125	73	371	287	287	866	7160	16700
16	220	124	74	498	474	637	942	5700	14500
17	220	138	82	562	508	771	942	5200	13200
18	210	127	72	506	483	660	794	2800	6000
19	215	110	64	371	334	335	760	1750	3590
20	220	100	59	285	262	202	740	1560	3120
21	225	87	53	290	162	127	854	1780	4100
22	230	193	120	302	112	91	878	1700	4030
23	240	150	97	326	180	158	968	1800	4700
24	250	94	63	357	280	270	1180	2840	9050
25	250	120	81	279	420	316	1210	3850	12600
	250	150	101	258	310	216	1060	2350	6730
26			100	274	240	178	854	1400	3230
26	260					94	854 750	840	1700
26 · · · · · · · · · · · · · · · · · · ·	260 280	320	242	li 274	1 17/1				
27		142 320 500	242 297	274	127		830	1500	S 3700
27 28 29 30	280 220 230	500 396	297 246	274			830 1380	6200	23100
27 28 29	280 220	500	297	274 			830		

S Computed by subdividing day.
B Computed from estimated-concentration graph.

9-3570. SAN JUAN RIVER AT BLOOMFIELD, N. MEX. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued

ŀ		APRIL	ded sediment		Suspen	ded sediment		JUNE	ded sedimer
_	Mean		ded seamlent	Mean	Suspen	ded seatment	Mean	Suspen	ueu seamiei
Day	dis- charge	Mean concen-	Tons per	dis- charge	Mean concen-	Tons per	dis- charge	Mean concen-	Tons per
	(cfs)	tration (ppm)	day	(cfs)	tration (ppm)	day	(cfs)	(ppm)	day
1	1010	5420	14800	3030	930	7610	4290	400	4630
2	981	3850	10200	3460	1120	10500	4120	325	3620
3	942 1450	2720	6920	3560	890	8550	3610	430	4190
4		3150	12300	3510	710	6730	3050		B 2500
5••	2380	6820	43800	3270	520	4590	2600	140	983
6	2600	5380	37800	2670	360	2600	2440	128	843
7••	1650	1800	8020	2130	250	1440	2280	115	708
9	2620	3220	S 26200	1860	195	979	2220	106	635
٠ ا	2750 1740	4350 1700	32300 7990	1620 1540	205 205	897 852	2210 2260	103	615 653
- 1		1						1	
2	1500 · 1360	850 770	3440 2830	1820	230	1130	2340 2280	140	885
3	1410	520	1980	2460 3210	385 570	2560 4940	2280	203	634 1250
4	1540	460	1910	3230	450	3920	2280	170	1050
5	1380	440	1640	2600	660	4630	2080	900	5050
6	1280	660	2280	2170	320	1870	2130	800	4600
7	1330	410	1470	1950	135	711	2170	240	1410
8	1620	710	3110	2210	170	1010	1790	148	715
9	2220	1320	7910	2830	370	2830	1570	137	581
0	2500	1400	9450	3460	570	5320	1420	234	897
1	2710	1420	10400	3830	700	7240	1350	158	576
2	2810	1280	9710	3560	440	4230	1290	139	484
3	2690	1010	7340	3830	570	5890	1220	130	428
4	2830	970	7410	3880	630	6600	1120	117	354
5••	2540	730	5010	3630	440	4310	1030	108	300
6	1900	430	2210	3510	350	3320	929	98	246
7	1650	270	1200	3510	305	2890	830	111	249
8	1570 1750	205	869	3610	310	3020	750	115	233
9••	1750	660	3120	3750	330	3340	818	121	267
			4.000	1					
	2340	680	4300	3910 4230	330 450	3480 5140	680	109	200
0 1 otal	2340 57053		4300 287919	3910 4230 93840	330			109	200 39786
1				4230	330	5140	59437	109 SEPTEMBER	39786
otal				93840	330 450	5140	59437		39786
1	57053 670 680	JULY 111 153	287919	93840 9385	330 450 AUGUST	5140 123129	59437	SEPTEMBER	39786
1	57053 670 680 680	JULY 111 153 307	287919 201 281 564	93840 9385 469 770	330 450 —— AUGUST 955 7800 22000	5140 123129 993 9880 45700	59437 413 399 364	890 890 890 820	39 786 39 786 992 959 806
1 otal	57053 670 680 680 750	JULY 111 153 307 448	287919 201 281 564 907	93840 93840 385 469 770 770	955 7800 22000 5100	993 9880 45700 10600	59437 413 399 364 448	890 890 890 820 930	39 786 39 786 992 959 806 1120
1 otal	57053 670 680 680	JULY 111 153 307	287919 201 281 564	93840 9385 469 770	330 450 —— AUGUST 955 7800 22000	5140 123129 993 9880 45700	59437 413 399 364	890 890 890 820	39 786 39 786 992 959 806 1120
1 otal	57053 670 680 680 750 710	JULY 111 153 307 448 158 10600	287919 201 281 564 907 303 5 22100	93840 93840 385 469 770 770 860 806	930 450 AUGUST 955 7800 22000 5100 9050 4600	993 9880 45700 10600 5 26500	59437 59437 413 399 364 448 620 530	SEPTEMBER 890 890 820 930 1340	39786 39786 992 959 806 1120 2240
1 otal 1 2 3 4 5	57053 670 680 680 750 710 700 680	JULY 111 153 307 448 158 10600 2800	201 281 564 907 303 5 22100 5140	93840 93840 385 469 770 770 860 806 680	955 7800 22000 5100 9050 4600 772	993 9880 45700 10600 5 26500 10000 1420	59437 413 399 364 448 620 530 600	SEPTEMBER 890 890 820 930 1340 950	39786 39786 992 959 806 1120 2240 1360
1 otal 1 2 3 4 5	57053 670 680 680 750 710 700 680 690	JULY 111 153 307 448 158 10600 2800	287919 201 281 564 907 303 5 22100 5140 559	93840 93840 385 469 770 770 860 806 680 590	930 450 AUGUST 7800 22000 5100 9050 4600 772 2100	993 9880 45700 10600 5 26500 10000 1420 3350	680 59437 413 399 364 448 620 530 600 530	890 890 890 820 930 1340 950 950	39786 992 959 806 1120 2240 1360 1540
1 otal	57053 670 680 680 750 710 700 680	JULY 111 153 307 448 158 10600 2800 300 320	201 281 564 907 303 5 22100 5140 559 686	93840 93840 385 469 770 770 860 806 680 590 506	955 7800 22000 5100 9050 4600 772 2100	993 9880 45700 10600 5 26500 10000 1420 3350 582	59437 413 399 364 448 620 530 600	890 890 890 930 1340 950 950 970	992 959 808 1120 2240 1360 1390
1 2 3 4 5 6 7 8	57053 670 680 680 750 710 700 680 690 794 818	JULY 111 153 307 448 158 10600 2800 300 320 480	201 281 564 907 303 5 22100 5100 559 686 1060	93840 93840 385 469 770 770 860 806 680 590 506 469	930 450 AUGUST 955 7800 22000 5100 9050 4600 772 2100 426 290	993 9880 45700 10600 5 26500 10000 1420 3350 562 367	59437 413 399 364 448 620 530 600 530 506 830	890 890 890 930 1340 950 950 970 913 11700	39786 992 959 806 1120 2240 1540 1390 1250 5 31700
1 2 3 4 5 6 7 8 9 0	57053 670 680 680 750 710 700 680 690 794 818	JULY 111 153 307 448 158 10600 2800 300 320 480 750	287919 201 281 564 907 303 5 22100 5140 559 686 1060	93840 93840 385 469 770 770 860 806 680 590 506 469	955 7800 22000 5100 9050 4600 772 2100 426 290	993 9880 45700 10600 5 26500 10000 1420 3350 582 367 238	59437 413 399 364 448 620 530 600 530 506 830 1060	SEPTEMBER 890 890 820 930 1340 950 970 913 11700	39786 992 959 806 1120 2240 1360 1390 1250 5 31770
1 2 2 5 6 7 8 9 1	57053 670 680 680 750 710 700 680 690 794 818 770 650	JULY 111 153 307 448 158 10600 2800 320 480 750 750 209	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367	93840 93840 385 469 770 770 860 806 680 590 506 469 610	930 450 AUGUST 955 7800 22000 22000 9050 4600 772 2100 426 290 188 14400	993 9880 45700 10600 5 26500 10000 1420 3350 562 367 238 5 28200	59437 413 399 364 448 620 530 600 530 506 830 1060	890 890 890 820 930 1340 950 970 913 11700	39786 39786 39786 39786 1120 2240 1340 1390 1250 5 31700 5 158000
1 2 3 4 5 6 7 8 9 0	57053 670 680 680 750 710 700 680 690 794 818 770 650 610	JULY 111 153 307 448 158 10600 2800 300 320 480 750 209 180	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367 296	93840 93840 385 469 770 770 860 806 680 590 506 469	330 450 AUGUST 955 7800 5100 9050 4600 772 2100 426 290 188 14400 5700	993 9880 45700 10600 5 26500 10000 1420 3350 582 367 238 5 28200 9390	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150	SEPTEMBER 890 890 820 930 1340 950 970 913 11700	39786 992 959 806 1120 2240 1350 1350 1250 5 31700 5 158000 16100
1 22 34 55 66 99 00	57053 670 680 680 750 710 700 680 690 794 818 770 650	JULY 111 153 307 448 158 10600 2800 320 480 750 750 209	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367	93840 93840 385 469 770 770 860 806 680 590 506 469 610	930 450 AUGUST 955 7800 22000 22000 9050 4600 772 2100 426 290 188 14400	993 9880 45700 10600 5 26500 10000 1420 3350 562 367 238 5 28200	59437 413 399 364 448 620 530 600 530 506 830 1060	890 890 820 930 930 950 970 913 11700 6700 91300 5200	39786 39786 992 959 806 1120 2240 1360 1540 1250 5 31700 5 158000 16100 5870
1 22 33 44 55	57053 670 680 680 750 710 700 680 794 818	JULY 111 153 307 448 158 10600 2800 300 320 480 0 750 209 180 136	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367 296 192 119	93840 93840 385 469 770 860 806 680 590 506 469 469 610 610 710 782	330 450 AUGUST 955 7800 22000 5100 9050 4600 772 2100 426 290 188 14400 5700 2350 2600	993 9880 45700 10600 5 26500 10000 1420 3350 562 367 238 5 28200 9390 4500 5490	680 	890 890 890 820 930 1340 950 970 913 11700 6700 31300 5200 2070 15800	39786 992 959 800 112 2244 1366 1544 1399 1255 31700 11200 518000 5876 52000
1 2 3 4 5 6 9 2 3 4 5	57053 670 680 680 680 750 710 700 680 690 794 818 770 650 610 522 462	JULY 111 153 307 448 158 10600 2800 300 320 480 0 750 209 180 136 95	287919 201 281 564 907 303 \$ 22100 5140 559 686 1060 1560 367 296 192 119 101 777	93840 93840 385 469 770 770 860 806 680 590 506 469 610 710 782	930 450 2000 9050 4600 772 2100 4600 772 2100 426 290 188 14400 2350 2600 22700	993 9880 45700 10600 5 26500 10000 1420 3350 562 367 238 5 28200 9390 4500 5 134000	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1050 1220 1100	890 890 890 820 930 1340 950 970 913 11700 6700 313900 2070 15800	39786 992 995 800 1120 2244 1396 1340 1397 1250 5 158000 16100 5 158000 16100 19000
1 22 3 4 5 6 7 8 9 1 2 3 4 5	57053 670 680 680 680 710 700 680 690 794 818 770 650 610 522 462 392 350 308	JULY 111 153 307 448 158 10600 2800 3200 480 750 209 180 1366 95	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367 296 192 119 101 77 50	4230 93840 385 469 770 770 860 806 680 590 506 469 610 710 710 712 1120 1080 1610	330 450 AUGUST 7800 22000 5100 9050 4600 772 2100 426 290 188 14400 2350 2600 22700 32000 40100	993 9880 45700 10600 5 26500 10000 1420 3350 567 238 5 28200 9390 4500 5 4500 5 134000 96800 5 201000	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1220 1100 1070 1910	890 890 890 820 930 1340 950 970 913 11700 6700 5200 2070 2070 2070 2070 3000 32000	39786 992 9959 800 1120 1240 1360 1390 1250 5 158000 181000 5877 52000 19000 8670 5 328000
1 22 33 44 55 66 77 89 66 77 89 66 77 89 8	57053 670 680 680 680 750 710 700 680 690 794 818 770 650 610 522 462 392 350 308	JULY 111 153 3077 448 158 10600 2800 320 480 750 209 180 750 209 180 60 750 754	287919 201 281 564 907 303 \$ 22100 5140 559 686 1060 1560 367 296 192 119 101 77 50 66	93840 93840 385 469 770 860 806 680 590 506 469 610 610 710 782 1120 1080 1610 3170	330 450 2000 22000 5100 9050 4600 772 2100 426 290 188 1440 2350 2600 22700 4200 4200 4200 4200 4200 4200 4	993 9880 45700 10600 5 26500 10000 1420 3350 582 367 238 5 28200 9390 4500 5 201000 5 262000	59437 413 399 364 448 620 530 530 1060 1490 1150 1220 1100 1070 1910 4270	890 890 890 950 950 950 970 913 11700 6700 31390 5200 2070 15800	397868 992 9595 806 1122 2246 1397 1256 5 31700 16100 5877 52000 19000 86707 5 328000 861000
1 22 33 66 70 11 22 34 55	57053 670 680 680 680 710 700 680 690 794 818 770 650 610 522 462 392 350 308	JULY 111 153 307 448 158 10600 2800 3200 480 750 209 180 136 95	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367 296 192 119 101 77 50	4230 93840 385 469 770 770 860 806 680 590 506 469 610 710 710 712 1120 1080 1610	330 450 AUGUST 7800 22000 5100 9050 4600 772 2100 426 290 188 14400 2350 2600 22700 32000 40100	993 9880 45700 10600 5 26500 10000 1420 3350 567 238 5 28200 9390 4500 5 4500 5 134000 96800 5 201000	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1220 1100 1070 1910	890 890 890 820 930 1340 950 970 913 11700 6700 5200 2070 2070 2070 2070 3000 32000	397868 992 9595 806 1122 2246 1397 1256 5 31700 16100 5877 52000 19000 86707 5 328000 861000
1 22 33 45 78 99 11 22 33 45	57053 670 680 680 680 790 710 700 680 690 794 818 770 650 610 522 350 308 332 364	JULY 111 153 307 486 158 10600 2800 300 320 480 750 209 186 95 95 81 60 74 65 68	287919 201 281 564 907 303 5 22100 5140 559 686 1000 1560 367 296 192 119 101 77 50 66 64	93840 93840 385 469 770 860 806 680 590 506 469 610 610 710 782 1120 1080 1610 3170	330 450 2000 22000 5100 9050 4600 772 2100 426 290 188 1440 2350 2600 22700 4200 4200 4200 4200 4200 4200 4	993 9880 45700 10600 5 26500 10000 1420 3350 562 367 238 5 28200 9390 4500 5 490 5 134000 96800 5 201000 5 682000 17700	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1050 1220 1100 1070 1910 4270 2580	890 890 890 930 1340 950 950 970 913 11700 6700 2070 13800 2070 15800 6400 32000 16500 8000	39786 992 9596 800 1122 2246 1346 1349 1256 5 31700 19200 5 156000 19000 86770 5 328000 115000
10.00 tall 10.00 tall	57053 670 680 680 680 750 710 700 680 690 794 818 770 650 610 522 462 392 350 308 332 364	JULY 111 153 3077 448 158 10600 2800 320 4800 136 750 289 1860 744 65	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367 296 192 119 101 77 50 66 64 67	93840 93840 385 469 770 860 806 680 590 506 469 610 610 710 782 1120 1080 1610 9170 1110	330 450 2000 22000 5100 9050 4600 4266 2290 426 290 2350 2400 40100 62300 40100 62300 5900 22700	993 9880 45700 10600 5 26500 10000 1420 3350 562 367 238 5 28200 9390 4500 5490 5 134000 96800 5 201000 5 682000 17700 5390	59437 413 399 364 448 620 530 500 500 1050 1150 1220 1100 1070 1910 4270 2580 2000 1500	SEPTEMBER 890 890 890 930 1340 950 970 913 11700 6700 31300 5200 2070 15600 6400 32000 73700 16500 8000	39786 992 9596 806 1122 2244 1397 1256 5 31700 16100 5877 52000 19000 861000 115000 43200 43200 22400
1	57053 670 680 680 680 790 710 700 680 690 794 818 770 650 610 522 350 308 332 364 467 434	JULY 111 153 307 448 158 10600 2800 300 320 480 750 209 186 67 95 81 600 74 65 68 60 59	287919 201 281 564 907 303 5 22100 5140 559 686 1000 1560 367 276 192 119 101 77 50 66 64 67 8 70	4230 93840 385 469 770 860 806 680 590 506 469 469 1120 1080 1610 3170 1110 900 710 730	330 450 250 22000 5100 9050 4600 772 2100 426 290 188 14400 2350 2600 22700 32000 40100 62300 5500 2220	123129 993 9880 45700 10600 5 26500 10000 1420 3350 582 367 238 5 28200 9390 4500 5 201000 5 862000 17700 5390 2990 4340	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1220 1100 1070 1910 4270 2580 2000 1500 1500	890 890 890 1340 950 950 970 913 11700 6700 2070 13800 2070 15800 8400 32000 16500 8000 5040	397868 9922 1222 1222 1360 1360 1540 1590 1920 1920 1920 1910 51800 18100 18100 18100 18100 18100 18100 18200 19200 19200 19200 19200 19200 19200 19200 19200 19200 19200
1 · · · · · · · · · · · · · · · · · · ·	57053 670 680 680 680 750 710 700 680 690 794 818 770 650 610 522 462 392 350 308 392 364 364 364 364 326	JULY 111 153 3077 448 158 10600 2800 300 300 300 136 95 95 91 60 674 65 686 699 130	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367 296 192 119 101 77 50 66 64 67 8 70 69 114	93840 93840 385 469 770 860 806 680 590 506 469 610 610 710 782 1120 1080 1610 9170 1110 900 710 730 782	330 450 250 22000 2100 905 4600 772 2100 426 290 3700 2350 2600 22700 62300 62300 5900 22700 62300 5900 22700 62300 5900 22700	993 9880 45700 10600 5 26500 10000 1420 3350 582 367 238 5 28200 9390 4500 5 490 5 134000 96800 5 201000 5 682000 17700 5390 2990 4340 5 64300	59437 413 399 364 448 620 530 506 830 1060 1490 1150 1220 1100 1070 1910 4270 2580 2000 1300 1250	SEPTEMBER 890 890 890 930 1340 950 970 913 11700 6700 31300 5200 2070 15600 6400 32000 73700 16500 8000 5040 3540	397868 992 9596 8066 1320 2240 1360 1540 1399 1250 5 31700 16100 581000 15900 115000 43200 204000 124000
1 22 4 55 66 78 89 1 23 44 55	57053 670 680 680 680 750 710 700 680 690 794 818 770 650 610 522 462 392 350 308 332 364 364 364 27 434 326	JULY 111 153 307 448 158 10600 28000 300 3200 480 750 209 180 1366 95 95 811 60 744 65 68 600 59 1300 1020	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367 296 192 119 101 77 50 66 64 67 8 70 69 114 799	4230 93840 385 469 770 860 806 680 590 506 469 469 1120 1080 1610 3170 1110 900 710 730 782 690	330 450 250 22000 2100 9050 4600 772 2100 426 290 3700 2350 22700 40100 62300 5700 5700 22700 62300 5700 5700 5700 5700 5700 5700 5700 5	993 9880 45700 10000 10600 5 26500 10000 1420 3350 562 367 238 5 28200 9390 4500 5 490 5 682000 17700 5390 2990 4340 5 64300 9690	59437 413 399 364 448 620 530 500 530 1060 1490 1150 1220 1100 1070 1910 4270 2580 2000 1500 1250 1250 1250	SEPTEMBER 890 890 890 930 1340 950 970 913 11700 6700 31300 5200 2070 15800 6400 32000 73700 16900 8000 9040 9540 9540 9540	39786 992 9596 806 1122 2244 1397 1255 5 31700 16100 5877 52000 19000 861000 115000 49200 20400 12400 12400 12400 12400 9430
1 · · · · · · · · · · · · · · · · · · ·	57053 670 680 680 680 750 710 700 680 690 794 818 770 650 610 522 462 392 350 308 332 364 427 434 326 290	JULY 111 153 307 484 158 10600 2800 300 300 300 130 136 750 295 81 60 74 655 68 60 599 130 1020	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1500 367 2269 119 101 77 50 66 64 67 8 70 69 114 799	4230 93840 385 469 770 860 806 680 590 506 469 610 610 710 782 1120 1080 1610 3170 1110 900 710 730 782 690 690 690	330 450 250 22000 5100 9050 4600 772 2100 426 290 188 14400 2350 2600 22700 32000 40100 62300 5900 2220 1560 2200 6350 6350	123129 993 9880 45700 10600 5 26500 10000 1420 3350 582 367 238 5 28200 9390 4500 5 201000 5 682000 17700 5390 2990 4340 5 64300 9660	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1220 1100 1070 270 2580 2000 1300 1250 1200 1100	## SEPTEMBER ## 890 ## 890 ## 890 ## 890 ## 890 ## 890 ## 890 ## 950 ##	397868 9922 1222 1222 1360 1360 1540 1540 1550 1750 1920 1920 1910 5870 1900 88100 11500 4320 20400 12400 12400 12400 12400 7220
1 · · · · · · · · · · · · · · · · · · ·	57053 670 680 680 680 750 710 700 680 690 794 818 770 650 610 522 462 392 350 308 332 364 427 434 326 290 279	JULY 111 153 307 448 158 10600 28000 300 3200 480 750 209 180 1366 60 754 65 68 60 0 59 130 1020 201	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367 296 192 119 101 77 50 66 64 67 8 70 69 114 799	4230 93840 385 469 770 860 806 680 590 506 469 610 610 710 782 1120 1080 1610 900 710 730 782 690 690 660	330 450 250 22000 2100 905 4600 426 290 426 290 3700 23500 40100 62300 5900 22700 22700 63300 2500 6350 2500 6350 2500	993 9880 45700 10600 5 26500 10000 1420 3350 562 367 238 5 28200 9390 4500 5490 5 134000 96800 5 201000 5 682000 17700 5390 2990 4340 5 64300 9690 11800 53110	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1250 1200 1300 1250 1250 1200 1100 1001	SEPTEMBER 890 890 890 930 1340 950 970 913 11700 6700 31300 5200 2070 15800 6400 32000 73700 6900 8000 9040 9540 9540 9540 9540 9540 9540 9	397868 992 9598 8066 1360 1360 1360 1540 1399 1255 5 31700 16100 58707 52000 19000 861000 115000 43200 204000 124000 124000 124000 128000 9430 7570
11 22 33 44 77 88 99 11 22 34 55 66 77 88 99 90 90 90 90 90 90 90 90	57053 670 680 680 680 750 7710 700 680 690 794 818 770 650 610 522 462 392 350 308 332 364 427 434 326 290 279 247 258	JULY 111 153 307 484 158 10600 2800 300 300 300 180 750 209 180 60 74 65 68 60 74 65 68 60 29 100 20 201 112	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1500 367 296 192 119 101 77 50 66 64 67 8 70 69 114 799 151 75 5 319	4230 93840 385 469 770 860 806 680 590 506 469 610 610 710 710 710 710 710 730 730 782 690 690 660	330 450 250 22000 5100 9050 4600 772 2100 426 290 188 14400 2350 2600 22700 32000 40100 2250 2500 2500 2500 2500 2500 2500	123129 993 9880 45700 10600 5 26500 10000 1420 3350 582 367 238 5 28200 9390 4500 5490 5 134000 96800 5 201000 5 682000 17700 5390 2990 4340 5 64300 9669	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1220 1100 1070 270 2580 2000 1300 1250 1200 1100 1020 968		397868 99295960611222240 1360159406159606061596061596060615960606159606061596060615960606159606060606060000000000
1	57053 670 680 680 680 750 710 700 680 690 794 818 770 650 610 522 462 392 350 308 392 364 427 434 326 290 279 247 258 314	JULY 111 153 307 484 158 10600 2800 300 300 300 180 750 209 180 60 74 65 68 60 74 65 68 60 29 100 20 201 112	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367 276 192 119 101 77 50 66 64 67 8 70 69 114 779 151 75 5 319 5 10900 36900	4230 93840 385 469 770 860 806 680 590 506 469 610 610 710 782 1120 1080 1610 9170 1110 900 710 730 782 690 690 690 690 690 670 690	330 450 500 5100 9050 6600 772 2100 9050 6200 188 1400 5700 22100 22100 22100 22100 5000 5000 500	123129 993 9880 45700 10600 5 26500 10000 1422 3350 582 367 238 5 28200 9390 4500 5 134000 96800 5 201000 5 682000 17700 17700 5390 2990 4340 5 64300 9650 11800 5510 6080 1820	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1220 1100 1270 2580 2000 1300 1250 1200 1100 1020 968 916	890 890 890 820 930 1340 950 970 913 11700 6700 31390 5200 2070 15800 8000 32090 900 73790 8000 3790 2910	99.786 99.786 1127 2244 1360 1540 1397 1255 31700 19200 16100 5877 52000 19000 861000 112600 12600 12600 79430
too btal	57053 670 680 680 680 750 7710 700 680 690 794 818 770 650 610 522 462 392 350 308 332 364 427 434 326 290 279 247 258	JULY 111 153 307 448 158 10600 2800 320 4800 136 750 209 136 95 81 600 674 65 68 69 130 1020 201 112 375 9560	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1500 367 296 192 119 101 77 50 66 64 67 8 70 69 114 799 151 75 5 319	4230 93840 385 469 770 860 806 680 590 506 469 610 610 710 710 710 710 710 730 730 782 690 690 660	330 450 250 22000 5100 9050 4600 772 2100 426 290 188 14400 2350 2600 22700 32000 40100 2250 2500 2500 2500 2500 2500 2500	123129 993 9880 45700 10600 5 26500 10000 1420 3350 582 367 238 5 28200 9390 4500 5490 5 134000 96800 5 201000 5 682000 17700 5390 2990 4340 5 64300 9669	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1220 1100 1070 270 2580 2000 1300 1250 1200 1100 1020 968		397868 99295960611222240 1360159406159606061596060615960606159606061596060615960606159606060606060606060000000000
otal	57053 670 680 680 680 750 710 700 680 690 794 818 770 650 610 922 462 392 350 308 332 364 427 434 326 290 279 247 258 314 427	JULY 111 153 307 484 158 10600 2800 300 300 300 180 750 209 180 750 68 60 74 65 68 60 71 111 12 375 9560 25700	287919 201 281 564 907 303 5 22100 5140 559 686 1060 1560 367 276 192 119 101 77 50 66 64 67 8 70 69 114 779 151 75 5 319 5 10900 36900	4230 93840 385 469 770 860 806 680 590 506 469 610 610 710 710 710 710 710 710 730 730 782 690 690 660 690 660 690 660 690 69	330 450 500 5100 9050 9050 9050 9050 9050 2100 4600 772 2100 426 290 2300 5700 22700 32000 40100 2220 250 250 250 250 250 250 250 250	123129 993 9880 45700 10600 5 26500 10000 1420 3350 582 367 238 5 28200 95800 5 134000 96800 5 201000 5 862000 17700 5390 2990 4340 5 64300 9669 11800 5310 6080 1820	59437 413 399 364 448 620 530 600 530 506 830 1060 1490 1150 1220 1100 1270 2580 2000 1300 1250 1200 1100 1020 968 916	890 890 890 820 930 1340 950 970 913 11700 6700 31390 5200 2070 15800 8000 32090 900 73790 8000 3790 2910	99:3 99:3 808 1121 2244 1366 1544 139:9 55:31700 19:0000 19:000 19:000 19:000 19:000 19:000 19:000 19:000 19:000 19:0000 19:000 19:000 19:000 19:000 19:000 19:000 19:000 19:000 19:0000

S Computed by subdividing day.
B Computed from estimated-concentration graph.

1181

8128

77 64 88

88 32 32 59

57 27 53

1 2 45

1 58

1 4 3

7620 3320 818 103

2810 2480 3800 2130

52 52 72 72 72

0845 1800 1800 1530

Mar. 13..... 24..... June 8..... July 12.....

eb.

11111

11111

18111

18 188

16 | 66

91 62 42

82 176 188 38

36 34

34200 217 1900 107000 93200

690 640 364 3850 2260

65 74 77 67 65

1800 1255 1945 0630

Aug. 19.

SPWC

RIO GRANDE BASIN--Continued

9-3570, SAN JUAN RIVER AT BLOOMFIELD, N. MEX. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

11111 11111 Percent finer than size indicated, in millimeters 18881 186889 Suspended sediment 0,888.66 99 93 94 81118 15 | | | 8 1 | | 8 63 Sediment discharge (tons per day) concen-tration (ppm) 39900 413 183 624 1540 Sediment Discharge (cfs) pling point Sam per-ature (°F) tem-84844 Time (24 hour) 0930 1730 1715 1200 0725 Oct. 16, 1960.... 14..... Date of collection

analysis

October 1960 to September 1961	illy dispersed; D, decantation; N, in native water;	on tubo. III in dietilled moton)
Particle-size of bed material, water year October 196	(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N	To what G stone II with a taken and a second and a second

	Mothod	jo	analysis	S	S
			4.000	100	1
			0.062 0.125 0.250 0.500 1.000 2.000 4.000 8.00046.00032.00064.000	98 99 09 89	1
		neters	16,000	99	100
		Percent finer than size indicated, in millimeters	8,000	09	86
	1a1	ated, i	4,000	28	92
	Bed material	ze indic	2.000	99	88
	Bec	than si	1,000	45	19
Water		nt finer	0 0.500	20	6
district		Perce	5 0.25	2	7
, w,			2 0.12		_
on mo			90.0		4
r, pipet, s, sieve, v, visual accumulation tube, w, in distined water)	Sodimont	discharge	(wns per day)		
o, oleve, v, v	Sediment	concen- tration	(mdd)		
r, puber		Discharge (cfs)		3800	2130
	Sam-	pling	1	2	8
	Water Sam-	per-	(°F)	90	72
		Time (24 hour)		1955	1630
		Date of collection		May 24, 1961	June 8

				P, pipet;	S, sleve; V, Vi	P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	n tube; w,	, in dist	uled wat	jr)							
		Water tem-	ater		Sediment	Juomibos				Be	Bed material	1a1					Mathod
te of collection	Time (24 hour)	per-	pling	Discharge (cfs)	concen- tration	discharge		Pe	Percent finer than size indicated, in millimeters	er than s	ize indic	ated, in	millim	eters			jo
		(°F)	N N		(mdd)	(wns per day)	0,062	0,125 0,	3.062 0.125 0.250 0.500 1.000 2.000 4.000 8.00046.00032.00054.000	00 1 00	q 2.000	4,000	8.000	6.0003	2,0006		analysis
24, 1961	1955	9	2	3800					2	20 45 56 58	26	28	90	99	60 66 86 100	100	S
8	1630	72	8	2130					2	9 61	88	92	8	100	1	I	S

9-3645. ANIMAS RIVER AT FARMINGTON, N. MEX,

LOCATION.--At gaging station at bridge on former State Highway 17, 0.6 mile southeast of Farmington, San Juan County, and 1.3 miles upstream from mouth. DRAINAGE AREA.--1,360 square miles, approximately.

June 1940 to September 1961 Water temperatures: December 1950 to September 1961. RECORDS AVAILABLE .-- Chemical analyses:

Sediment records: December 1950 to September 1961.

EXTREMES, 1900-61.—Issolved solds: Maximum, 1040 ppm July 30; minimum, 136 ppm May 23 to June 3.

Barchess: Maximum, 608 ppm July 30; minimum, freezing point on Dec. 6.

Barchess: Maximum daily, 1340 minimum, freezing point on Dec. 6.

Barchest maximum daily, 1340 minimum, freezing point on Dec. 6.

Barche temperatures: Maximum daily, 19 1900 ppm Aug. 19; minimum daily, 20 minimum daily, 20 minimum daily, 30 ppm Peb. 3.

Sediment loads: Maximum daily, 19 1900 ppm Aug. 19; minimum daily, 30 ppm Aug. 19; 1949; minimum, 111 ppm June 11-17, 19-20, 1944.

EXTREMES, 1940-61.—Instante, 608 ppm July 30, 1961; minimum, 60 ppm July 19, 1949; minimum, 111 ppm June 11-17, 19-20, 1944.

Sediment loads: Maximum, 608 ppm July 30, 1961; minimum, freezing point on many days during winter months.

Sediment concentrations: (1950-61): Maximum daily, 36, 1961; minimum, freezing point on many days during September 1956. September 1958.

Sediment concentrations (1950-61): Maximum daily, 36, 1961; minimum, freezing point on many days during September 1956. September 1958.

Sediment concentrations (1950-61): Maximum daily, 36, 1961; minimum, freezing minimum daily, 1 ppm on several days during September 1958.

Sediment concentrations (1950-61): Maximum daily, 36, 1964; minimum daily, 1 ppm on many days during September 1956.

Sediment concentrations (1950-61): Maximum daily, 36, 1964; minimum daily, 1 ppm on many days during September 1956.

Sediment concentrations (1950-61): Maximum daily and do not include poteassium (K). Records of gaily samples

available in district office at Albuquerque, N. Mex.

	ļ	Hď	7.7	œ.	œ. (<u>.</u>			٠. ت	7.7	9.	7.5	9.	٠.	9.	7	9.	9.	9.4	7.9
	Specific con-	duct- ance (micro- mhos at 25°C)		_	1080	_			_		_	1010		-	_		_	_		465
	—	Sorp- form from mh	1.6			٠. د		1,4			1.5			1.2			9.	۲.		, w
			236							85	13	216					79	97	82	8 8
	Hardness as CaCO,	Non- car- bon-						_			_	_		_					~	D =#
	Har as (Cal- cium, Mag- ne- sium	396	34	37	ਲੋ : -	32	322	36.	35	35	373	35	29	5 7	24	19	22	700	194
1961	Dissolved solids (residue at 160°C)	Tons per day	241	468	1000	619	427	421	363	361	365	406	442	216	209	877	402	593	740	656
mber 19	Dissolved solids residue at 160°	Tons per acre- foot	96.0	.80	1.04	.74	.77	.78	68.	77.	98.	.92	99.	69.	.65	. 20	98.	.46	4.	38.
to Septe	Dids (res:	Parts per million	706	589	762	542	267	573	653	566	632	099	499	208	460	364	288	335	8	288
. 0961		. Bo-	6	1	l	ŀ	ŀ	ł	1	80.	1	1	I	ł	1	I	Ī	1	1 8	3 1
ber 1		Ni- trate (NO ₃)		ŀ	1	i	Ī	ŀ	1	1.6	i	l	1	ļ,	I	ł	ŀ	I	1;	:
Octo		Fluo- ride t (F)	0.5	i i	Ţ	ł	Ŧ	Î	I	9	ì	ŀ	ŀ	-	ľ	ľ	1	1	T	:1
Trof. removed analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	42	1	l	I	!	ł	İ	35	!	1	ł	i	1	1	1	ī	1 %	a 1
illion, v		Sulfate (SO4)	324	1	1	i	!	1	ŀ	243	!	ì	ł	ļ	!	ŧ	1	1	6	e
er m		(C)																_		
parts p		car- bon- ate (HCO ₃)	196		200	177	169	174	182			191	190	176	174	158	143	155		139
, tn	Ė	K it it is i	5.2	1	1	1	1	!	ł	4.7	1	i	Į.		!	l	ŀ	1	17	:1
nalyses		Sodium (Na)	74	09	86	54	26	29	99	53	99	74	09	48	39	22	20	22	6,	20
Chemical ana	į	mag- ne- sium (Mg)	17	15	9;	14	1.5	14	12	13	16	15	16	14	14	10	8.3	9.6	8	7.2
Che		Cal- cium (Ca)	130	11	122	102	105	109	121	110	116	125	105	96	92	23	65	74	67	99
		Iron (Fe)		-		I	1	1	1	.01	l	i	i	i		1	1	l	Ļ	<u>.</u> 1
		Silica SiO ₂)	10	1	ì	ļ	ŀ	ł	Ì	9,1	ł	1	ł	ł	ì	ŧ	ł	ŀ	1	:1
		Mean discharge (SiO ₂) (cfs)	126							236	214	221	328	420	468	892	912	656	914	644
		Date of collection	Oct. 1-10, 1960	Oct. 11-14	oct. 15-16	Oct. 1/-31	Nov. 1-30	Dec. 1-31	Jan. 1-8, 1961	Jan. 9-27	Jan. 28-Feb. 28	Mar. 1-13	Mar. 14-15	Mar. 16-31	Apr. 1-4	Apr. 5	Apr. 6-9	Apr. 10-18	Apr. 19	Apr. 27-29

7777	7.9	7.7.7.7.7.3	7.5	8.7 7.8 7.9
380 340 302 377 458	357 294 374 268 222	272 250 303 371 490	603 819 927 1340 948	600 749 631 749 686
4.0.4.0.	ம் வர் 4 வ	က် 4 က က ဆ	0.6.6.6	04.0 sit
65 51 43 64 78	56 48 63 34 34	844 807 807 807	113 172 204 436 196	122 140 133 138 137
170 156 130 160 187	150 128 158 113 92	106 102 116 145 190	236 316 350 608 360	236 274 247 289 268
892 1220 1130 764 799	1190 912 878 1250 1290	1060 991 841 647 556	478 201 118 508 278	665 437 585 347 544
88.88 88.84 14.	23.25 18.23 18.23	22223	.75 .87 1.41 .89	8 8 8 8
243 224 192 246 298	240 187 241 167 136	168 151 182 233 312	397 552 639 1040 652	393 509 403 504
11111,	11112	11111	11111	11111
11111	∞	11111	11111	11111
11111		ППП	11111	11111
11111	11110.9	11111	11111	11111
11111	#	HH	11111	(()()
128 128 106 118 133	114 98 116 91 71	77 72 77 92 118	150 176 178 209 200	139 163 139 184 160
11111	1.6	11.111		11111
8.7 9.3 15	13. 8.8 14 8.7	8.8 14 17 27	35 66 71 68	33 36 40 40
8.4.6.8 8.6.2.7	84687	00047	10 13 16 20 9.8	7.7 111 9.1 11
57 55 54 64 64	54 44 39 34	37 35 50 64	78 105 114 211 128	84 98 98 98
[1111	[]]]8	11111	ŢŢĦĦ	11111
11111	11118	11111		11111
1360 2015 2172 1150 993		2346 2430 1712 1029 660		
Apr. 30, 1961 May 1-2 May 3-6 May 7-8	May 12 May 13-15. May 16-18. May 19-22. May 23-June 3	June 4-10 June 11-14 June 15-23 June 24-28 June 29-July 6	July 7-15. July 16-24. July 25-29, 31. July 30.	Aug. 3-8. Aug. 9-17. Aug. 18-23. Aug. 24-Sept. 4 Sept. 5-10.

SAN JUAN RIVER BASIN---Continued

9-3645, ANIMAS RIVER AT FARMINGTON, N. MEX. -- Continued

		Hď	8.0	7.8	7.6	7.7	7.8	7.4	7.6	ï
	Specific	duct- ance (micro- mhos at 25°C)	533					476	708	1
		ad- ad- borp- tion ratio	8.0	0.1	ا	œ	œ.	0.7	1.2	1
		Non- car- bon- ate	102	130	138	128	106	8	147	1
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	210	255	303	248	208	188	274	1
tnued	Dissolved solids (residue at 180°C)	Tons per day	676	265	1360	974	705	ı	1	1
Cont	Dissolved solids residue at 180°	Tons per acre- foot	0.47	85.	.73	.53	.46	0,42	I	ł
ber 1961	Dis (res:	Parts per million				392	341	308	470	559
eptem		Bo-	`	l.			1.	ŀ	1	1
to S		Fluo- Ni- ride trate (F) (NO ₂)	1	Ī	ŀ	ŀ	ł	1	I	I
1960		Fluo- ride (F)	1	I	1	1	1	l	l	١
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride (C1)	1	ļ	1	1	1	ì	!	1
ater yea		Sulfate (SO4)	i	ł	ł	ł	ŀ	!	1	1
w , no.		2 d a S								
m1111	B1-	car- bon- ate (HCO ₃)	132	152	202	146	124	120	155	217
s per	2	State (F)	I	1	ł	i	1	1	1	i
in part		Sodtum (Na.)	28	36	25	58	27	25.0	44.0	45.0
lyses,	7,00	Mag- ne- sium (Mg)					6.3	0.7	0.11	13.0
al ana		ctum (Ca)	72			88	73	64	91	116
hemic		Iron (Fe)	1	1	1	i	1		1	1
J		Silica (SiO ₂)	ī	ŀ	ļ	ŀ	1	ı	ı	1
		Mean discharge (cfs)	730	495	938	920	766	1	671.8	I
		Date of collection	Sept. 11-14, 1961.	Sept. 15-17	Sept. 18-19	Sept. 20-21	Sept. 22-30	Weighted average	Time-weighted average	Tons per day

Temperature (°F) of water, water year October 1960 to September 1961

	-					ı [Day										-					Aver-
2		en	4	2	٥	^	8	6	2	=	12	13 14	15	91	-	18	6	2	7	22	23	24	25 26	6 27	7 28	3	္က	3	age
61 60 60 63 48 49 50 49 43 42 43 40	000 000 000			352	321	9.52 3.6 3.6	38 38 38	3746	36	58 60 47 47 37 37		58 53 46 47 38 38	0 4 6	3501	50 74 36	48 42 33	4 4 5 3 5 3 5	949	33 2 5	32.0	57 33 34 57	3224	55 54 41 45 34 34	204	200	52 40 36	44 35 35	37	3 4 5 5 3 6 5 5
34 34 34 34 42 40 42 43 47 48 45 44	4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5			4 f d d	363	33 41 42	4 43 43	6 4 4 6 7 0	6 4 6	33 33 47 46 50 50		33 33 48 51 51 55	500	50 23	64 50 4 50 70	34 43 51	34 44 51	2 4 8 4 5 4 5 4 5 4 5 4 5 4 5 6 5 4 5 6 5 6 6 6 6	4000	34 51 51	55 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	35 35 45 44 47 50	44 4 8 8 8	0 t t 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	38	0 1 4	47 52	35 45 49
54 54 60 59 56 58 55 55 59 58 58 57	500			522	440	2000	49 58 61	55	5330	53 57 64 52 62 61		54 51 49 54 62 62	59	61 65	63	59 61 62	56 58 66	50	655	55 58 71	55 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	61881	53 55 50 55 67 72	72	40.0	62 55 76	59 52 75	59	54 57 64
71 72 69 68 78 79 76 77 74 72 67 65	69 76 67			69 76 67	68 77 75	64 79 72	70 77 68	79 70	70 80 80 70	72 73 80 82 68 70		69 77 77 68 70	67 76 69	74 73 70 70	73 73	81 72 67	82 68 63	76 78 62	77 79 62	75 79 61	80 8 80 7 63 6	81 79 61	78 82 78 79 61 63	77 63	2 8 4 8 6 3 6 3	83 75 62	6 4 4 9	73	74 77 67

9-3645. ANINAS RIVER AT FARMINGTON, N. MEX. -- Continued

Suspended sediment, water year October 1960 to September 1961

		OCTOBER			NOVEMBER		DECEMBER					
		Suspen	Mean		ded sediment		Suspend	ed sediment				
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day			
1	118	14	4	303	C 14	12	269	18	13			
3	124 115	20 C 37	7	310 279	C 14	12 26	269 274	17 16	12 12			
4	115	c 37	11	279	19	14	328	25	22			
5	112	C 21	6	279	18	14	322	26	23			
6	115	C 21	7	279	19	14	263	41	29			
7	115	C 32	11	279	10	8	237	38	24			
8	136	C 32	12	316	154	131	279	35	26			
9	153 153	56 45	23 19	316 291	55 106	47 83	322 310	26 53	23 44			
1000	1,,,	•	• * *	271	108		310	"	**			
11	235	160	102	279	C 27	20	310	29	24			
12	302 324	120 103	98 90	274 2 7 4	C 27	20 22	291 269	30	19 22			
14	314	45	38	279	C 29	22	303	37	30			
15	442	825	S 1080	279	C 29	22	279	45	34			
16	534	1350	1950	274	c 20	15	269	40	29			
17	559	1850	2790	274	c 20	15	243	32	21			
18	830	7750	S 18300	269	18	13	222	67	40			
19 • •	595 478	2600 540	4180 697	269 274	C 19	14 14	22 7 269	36 59	22 43			
21 • •	421 386	240 125	273 130	279 274	16 C 19	12 14	269 269	45 54	33 39			
23	368	91	90	269	C 19	14	269	58	42			
24 • •	361	81	79	279	C 19	14	279	53	40			
25 • •	347	73	68	269	C 19	14	279	45	34			
26.4	340	77	71	269	C 17	12	269	39	28			
27	347	105	98	269	C 17	12	263	26	18			
28 • •	334 328	32 27	29 24	274 253	19	14 8	253 258	19 16	13 11			
30	328	C 15	13	269	18	13	243	29	19			
31	316	C 15	13				237	29	19			
Total	9745		30324	8380		665	8443		808			
		JANUARY			FEBRUARY			MARCH				
1	218	29	17	218	20	12	182	24	12			
2 • •	191 191	39	20	209	14	8	178	44	21			
3	174	45 82	23 39	218 204	9 16	5 9	178 204	15 28	7 15			
5	218	89	52	200	17	ý	232	57	36			
6	200	56	30	196	23	12	227	54	33			
7	222	78	47	178	19	9	218	180	106			
8	237	101	65	196	15	8	218	180	106			
9	253 253	110 107	75 73	209 214	18 49	10 28	200 204	425 390	230 215			
			· -	1								
11	237 237	39 79	25	218	59	35	232	375	235			
13	237	62	51 39	227 218	121 10	74 6	279 316	580 860	437 734			
14	237	56	36	218	90	53	310	1140	954			
15	237	59	38	237	240	154	347	1530	1430			
16	232	68	43	237	300	192	389	2170	2280			
17	222	53	32	248	310	208	396	1870	2000			
18	227 222	49	30 26	258 227	390	272 251	396 403	1030 980	1100 1060			
20	222	35	21	214	410	251 246	389	680	714			
21	222	43	26	196			375	600	608			
22	222	38	26	209	240 210	127 119	375 375	790	800			
23	227	39	24	218	210	124	389	600	630			
24 • • 25 • •	227	39 35	24 24	209	250	141	426	850	978 1 70 0			
	258			191	125	64	466	1350	1700			
26	237	22	14	191	43	22	450	750	911			
27 • •	279 269	50 31	38 22	191 191	34 27	18 14	396 389	325 210	347 221			
29	218	22	13				466	300	377			
30	218	25	15 8			==	522	1100	1550			
Total	7044	14	1013	5940		2230	10250	1320	21617			
LOCAL	1044	<u> </u>	1013	2940		2230	10250		21011			

S Computed by subdividing day. C Composite period.

9-3645. ANIMAS RIVER AT FARMINGTON, N. MEX.--Continued

Suspended sediment, water year October 1960 to September 1961--Continued

- 1	Suspended sediment			C	led sediment	Suspended sedime					
- 1	Mean	Suspena	ea seaiment	Mean	Suspend	iea seaiment	Mean	Suspend	ed sedimer		
Day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day		
1	458	1310	1620	1830	2140	10600	3630	495	4850		
2	434	1040	1220	2200	2180	12900	3560	260	2500		
3	434	1080	1270	2540	1700	11700	3100	160	1340		
•••	546	1650	2430	2520	1150	7820	2410	170	1110		
•••	892	3090	7440	2090	710	4010	2030	170	932		
	947	1700	4350	1540	520	2160	2160	165	962		
	815	800	1760	1260	400	1360	2160	149	869		
3	1060	3730	10700	1040	300	844	2390	185	1190		
	826	1140	2540	881	200	476	2580	163	1140		
•••	710	450	863	859	180	417	2690	159	1150		
	700	370	699	1240	473	1580	2650	156	1120		
	642	250	433	1840	800	3970	2540	128	878		
	651	280	492	2200	600	3560	2390	111	716		
	700	350	662	1860	470	2360	2140	90	520		
	642	220	381	1360	320	1180	2030	94	515		
.	579	190	297		200	(03	2000				
	579 570	200	297 308	1180	300	637	2000 1810	201	1090 645		
	710	380	308 728	1270 1600	595	1030 2570	1790	132 105	50 7		
	914	900	2220	2290	710	4390	1730	103	476		
	1060	1080	3090	2990	980	7910	1640	109	483		
					1						
ا ••ا	1240	1550	5190	2870	580	4490	1600	82	354		
2 4 4	1220	1220	4020	2970	580	4650	1490	75	302		
3	1230	1000	3320	3330	540	4860	1320	72	257		
5	1330 1240	1170 860	4200 2880	3140 3120	350 450	2970 3790	1200 1100	71 56	230 166		
							i				
•••	980	500	1320	3390	790	7230	1030	33	92		
•••	826	350	781	3740	800	8080	947	43	110		
••	771	300	625	4010	790	8550	870	31	73		
?••	936	500	1260	3940	620	6600	740	26	51		
•••	1360	1260	4630	3710	500	5010	660	15	27		
••				3600	480	4670					
otal	25423		71729	72410		142374	58387		24655		
		JULY			AUGUST			SEPTEMBER			
	660	31	55	131	130	46	243	24	16		
	642	47	81	184	542		232	24	15		
3	660	35	62	793	4050	S 1340 S 9800	253	59	40		
	642	113	196	804	2000	4340	328	65	58		
••	651	41	72	670	530	959	382	79	81		
	624	43	72	597	374	603	368	44	44		
	546	46	68	514	332	461	354	385	368		
	530	53	76	382	231	238	340	475	436		
	506	44	60	316	231 152	130	375	485	491		
••	498	99	133	258	112	78	774	8650 S			
	482	54		100				1 1.00	3500		
	403	40	70 44	196 196	72 48	38 25	925 826	1400	1340		
	382	45	46	258	93	s 90	624	390	657		
	354	29	28	354	373	357	546	600	885		
	310	27	23	310	218	182	482	430	560		
	246						1				
	248 186	21 38	14 19	361	415	405 S 35100	482	250	325		
	186			613			522	140	197		
	102	29 47	10 13	710 690	8500 1600	16300 2980	845 1030	5090 S 13200 S	20400 37400		
	94	22	6	579	540	844	936	6400	16200		
- 1		1 1	1		1 1			1			
••	96	48	12	458	320	396	903	1400	3410		
••	134 122	38	14	434	265	310	870	1110	2610		
	96	10	3	354 303	198 130	189 106	881 947	1150 1370	2740 3500		
	80	30	6	291	85	67	892	1020	2460		
			·		"						
••	63	16	3	303	190	155	804	830	1800		
	58	35	5	291	150	118	710	710	1360		
••	60	25	4	243	70	46	642	600	1040		
	63	90	15	186	28	14	579	540	844		
	181 86	5620 S	3160 93	191 191	15 14	8 7	570	500	770		
		700	,,	171	14	′					
tal	9693		4467	12161		75732	18665	1	120747		

S Computed by subdividing day.

9-3645. ANIMAS RIVER AT FARMINGTON, N. MEX. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

	Method	jo	analysis	SPWC	Ø	Ø	Ø	SPWC	VPWC	VPWC	A	>	PWC	PWC	SPWC
			2,000												
			0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	!	!	!	100	1	1	100	100	1	;	1	ì
		meters	0,500	!	ł	100	86	1	100	86	73	100	1	!	1
		Percent finer than size indicated, in millimeters	0,250	100	100	86	92	ļ	95	84	21	78	1	ŀ	100
	Suspended sediment	cated,	0,125	66	66	96	94	100	75	69	35	53	!	!	66
	ded se	ze indi	0,062	66	66	92	92	66	63	22	56	36	1	100	86
_	Suspen	than si	0,031												
l water)		at finer	0.016	96	ļ	1	į	94	37	33	l	ļ	100	94	88
listilled		Percei	0.008												
W, in o			0.004	67	1	1	1	84	20	18	1		81	20	28
n tube;			0.002	55	1	!	1	55	16	12	1		20	26	45
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sediment	discharge	(tons per day)												
S, sieve; V, vi	Sediment	concen- tration	(mdd)	9690	154	35	49	346	606	1290	579	239	1660	6920	2000
P, pipet		Discharge (cfs)	Ì	750	291	279	222	222	992	1840	3060	2350	148	069	804
	Sam-														
	Water tem-	per-	ature (°F)	48	20	34	45	5.0	20	52	54	57	79	72	70
		Time (24 hour)	<u> </u>	1845	1755	1630	1500	1520	0625	0060	1000	1230	0800	1615	1530
		Date of collection		Oct. 18, 1960	Nov. 8	Jan. 20, 1961.	Feb. 10	War 10	Apr. 20	May 2	May 26	June 8	July 30	Aug. 18	Sept. 10.,,,,,,,,

SAN JUAN RIVER BASIN--Continued

9-3680. SAN JUAN RIVER AT SHIPROCK, N. MEX.

LOCATION, --At gaging station on left bank 3 miles west of Shiprock, San Juan County, and 6 miles downstream from Chaco River. DRAINGEMENT --12, 300 square miles, approximately. RECORDS ANALLARIE.--Chemical analyses: February 1841 to September 1945, July 1957 to September 1961.

Water temperatures:

December 1950 to September 1961,

Rational resolutions: December 1907 to September 1901.

EXTREMES, 1960-61.—Dissolved solids: Maximum, 1,300 ppm Sept. 18; minimum, 142 ppm May 23 to June 4.

EXTREMES, 1960-61.—Dissolved solids: Maximum, 1,300 ppm Sept. 18; minimum, 142 ppm May 23 to June 4.

Rationes: Maximum, 580 ppm Sept. 18: minimum, 87 ppm May 23 to June 4.

Specific conductance: Maximum, 88° July 25; minimum, 87 ppm May 29.

Rate temperatures: Maximum, 88° July 25; minimum, freezing point on several days in December and January.

Sediment Lone Maximum, 88° July 25; minimum, 88° July 25; minimum, 411,50 ppm July 24.

Sediment Lone Maximum, 88° July 25; minimum, 2980 ppm July 30-31, 1959; minimum, 115 ppm June 21-28, 30, 1944.

Rationes (1957-61): Maximum, 1,100 ppm July 30-31, 1959; minimum, 188 micromobes June 6, 1958-8

Specific conductance (1957-61): Maximum, 3,360 micromobes July 25, 1961; minimum, freezing point on many days during winter months each vear.

Sediment concentrations (1950-61): Maximum daily, 86,000 ppm Aug. 14, 1955; minimum daily, 6 ppm July 17, 18, 1959.
Sediment loads (1950-61): Maximum daily, 17,00,000 tons July 87, 1957; minimum daily, 1 ton on several days in July and September 1959.
REMARKS.—Peccates of 1950-611: Maximum daily, 1870-700,000 tons July Samples available in district office at Albuquerque, N. Mex. Flow affected by ice Jan. 3-15.

		Нq	7.8	8.0	8.1	7.8	7.8	7.8		0	× 1	7.3
	Specific	duct- ance micro- nhos at 25°C)	1320	1090	906	1020	1080	1120	1180	2	080	973
ľ		ad- ad- borp- tion ratio	2.8	е 0	co co	۲. د	۵. س	8	o o	N	٦. «	1.8
		Non- car- bon- ate	276	141	144	186	212	222	254	200	717	202
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	432	318	288	348	372	386	382	432	380	320
	Dissolved solids (residue at 180°C)	Tons per day		-			1270	1260				_
1961	Dissolved solids	Tons per acrs- foot	1,27	1,01	83	.95	1.01	1.05	1.12	1.29	1.02	e. -
eptembel	Dis (resi	Parts per million				969		775	821	946	747	664
to S		ron (B)	0,11	8	6	9	=		8		_	_
1960		rate (NO ₂)	22	9	=	12	=	12	5	12	2	7.8
tober		Fluo- ride (F)										_
r year October 1960 to September 196		Chloride ri (Cl) (Cl)	43	32	28	32	38	38	7	20	38	9
on, wate		Sulfate (SO ₄)	477	342	277	321	326	371	422	490	355	321
m1111		# # (CO)	0	0	0	0	0	0	9	0	0	0
s per		car- bon- ate (HCO ₂)	190	217	176	198	196	200	144	176	188	181
part		Stat & (X)										
Chemical analyses, in parts per million, water		Sodium (Na)	136	122	88	92	901	105	114	133	92	13
al anal		Mag- ne- stum (Mg)	30	11	14	17	21	23	26	90	21	21
Chemic		Cal (Ca)	124	66	85	111	115	117	91	124	118	105
		Fron (Fe)										
		Silica (SiO ₂)	9.3	12	15	14	=	Ħ	13	17	12	=
		Mean discharge (cfs)	275	1322	1495	742	632	604	426	412	210	646
		Date of collection	Oct. 1-12, 1980	0ct, 13-18	Oct. 19-22	Oct. 23-31	Nov. 1-30	Dec. 1-31	Jan. 1-2, 1961	Jan. 3-7	Jan. 8-24	Jan. 25-26

6.7.8 7.4.8 7.6.8 7.6.8	7.7 7.7 7.6 8.0	77.87.77 6.6.4.6.4.4	4.0.0.0.0.1	7.7
1230 1160 1030 1020 1080	885 762 624 734 615 529	393 339 313 415 882	353 271 231 285 359 429	548 627 845 668 801 1190
6 4 4 4 6 6	0 0 0 0 0 0 0	7.7.0.1 0.0 0.0 0.0	8. 6. 7. 1.1	200000
1224 196 170 196 198	134 104 106 83	0.400000	4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	108 108 127 228
318 3328 3328 3528 3528	2242 242 242 244 234 234 234 234 234 234	153 130 150 121 150	130 104 87 102 125 153	184 212 262 226 268 368
1430 1140 1090 1320 1110	2030 1850 1710 2510 2680 2340	2580 2070 1870 2640 2010	2180 2480 2710 2140 2000	1360 1370 1620 1380 924 542
	1865.584	2,000,000		
1.09			8 2 4 5 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	74. 95. 97. 47. 1.12.
827 800 713 689 734 741	592 404 404 403 339	244 211 262 193 262 177	222 166 142 174 223	348 410 576 443 546 822
444444	8001100	881869	0.000.00	000 100 181
4 1 8 8 8 7	8 6 5 5 5 6 4 5 5 5 5 5	24 2 8 8 8 9 9 9	2 1 1 1 0 0 2 8 8 7 8 7	44.1 1.9 5.8 7.7 18.7
	•			:
38 33 33 37	26 20 115 113	7.001 0.4.04	7.48.0 0 SI 4.48.40	200 200 200 300 4
382 343 343 348 354	256 219 167 203 169 133	82 74 100 62 97	80 52 46 63 85	147 173 261 186 244 409
00000	00000	00000	00000	00000
209 196 166 186 198	202 176 154 180 158	125 102 111 102 114 88	102 89 74 80 80 92	124 142 188 158 172
148 111 102 100 101	43 65 33 33	21 18 27 16 27	24 112 12 14 30 30	41 52 83 56 71
15 21 18 16 22 21	112 123 124 124 124 124 124	7.00000 4.7.0000	0.4.0 0.4.0 0.0 0.0 0.0	10 12 8 8 5 11 16 28
102 120 104 103 108	448 440 70 70 63	84 14 88 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	39 32 27 31 39	57 66 91 73 81
444888	844448	1122213	11221123	253622
642 529 712 557	1273 1356 1570 1926 2460 2554	3913 3628 2642 5073 2836 4357	3632 5537 7063 4551 3314 2107	1448 1234 1040 1150 627 244
<u> </u>		::::::	:::::	::::::
Jan. 27-31, 1961. Feb. 1-9, 11-12. Feb. 10. Feb. 21-28.	Mar. 13-17. Mar. 18-25. Mar. 26-30. Apr. 31-Apr. 4 Apr. 6-19.	Apr. 20-22 Apr. 23-26 Apr. 27-30 May 1-7 May 8-12 May 13-15.	May 16-19. May 20-22. May 23-June 4. June 5-15. June 16-23.	June 27-30 July 1-7 July 8 July 8-11 July 12-17 July 18-25
Teb.	Mar. 1 Mar. 1 Mar. 2 Mpr. 6	hpr. 2 hpr. 2 fay 1-1 fay 8-13	fay 16 fay 20 fay 23 fune 5 fune 1	Tune 2 Tuly 1 Tuly 8 Tuly 9 Tuly 1
				.1.0.0.0.0

SAN JUAN RIVER BASIN--Continued

9-3680, SAN JUAN RIVER AT SHIPROCK, N. MEX. -- Continued

		Hq	8.2	7.7	× .	8.	8.0	۰ د د	2.8	7.7	7.8	80 c	2.7	7.2	7.7	7.7	7.4	2	:	1
	Specific con-	duct- ance micro- nhos at 25°C)	1620	1440	728	876	1010	775	677	889	765	800	748	1750	1170	545	573	850	1	:
	ģ;	dium ad- sorp- tion ratio	3.6	ري دن ا	7	2	8.	о т Н ч	• ⊢	4.	1.9	H,		3.6	3.8	 	H. 3	-		1
		Non- car- bon-	357	254	000	144	78	स र	06	110	118	128	0 6	331	28	82	85	147		1
	Hardness as CaCO ₃	Cal- clum, Mag- ne- stum	498	470	202	292	260	270	228	276	252	268	264	580	302	185	196	285		1
inued	solids : 180°C)	Tons per day	363 749	1670	3300	941	3550	6510	1460	2070	1130	1350	1720	5170	11450	1890	!	ŀ		1
Cont	Dissolved (residue at	Tons per acre- foot	1.60	1.43	4. 4	8.	.92	7.	19	.82	.70	.72	0.89	1.81	1.07	.47	0.51	1		1
September 1961 Continued	Dis (resi	Parts per million	1180				629	275	446	604	212	528	368	1330	789	348	378	578	1	1670
eptem		Bo-	0.14	60	<u> </u>	.07	11.	9;	190	60	٠٥.	80.	1.1	.16	.15	80.	0.07	5	:	.32
ಭ		Ni- trate (NO ₂)	27 20	1.9	7.	10.	3,1	1,1	Ť. T.	8	8.0	4.0	4 0	9	2	3.6	4.	α	3	19.0
. 1960		Fluo- ride (F)																		
r October 1960		Chloride (C1)	61 54	53	9 5	56	35	80 5	70 70	24	22	50	1.6	20	15	15	15.0	26	2	67
million, water year	1	Sulfate (SO ₄)	647	533	200	264	290	191	179	263	222	240	700	720	347	145	160,0	286	3	707
м , пс		Pon- CO)	00	0	00	. 0	0	0 9	0	0	0	0	20	0	0	0	0	-	,	0
	Bi-	car- bon- ate (HCO ₂)	172 218	264	176	180	222	240	168	202	164	170	124	304	298	130	135	168	3	594
parts per	É	Fo- tas- sium (K)		·						-										
in part		Sodium (Na)	183	162	110	11			22			92	S 4	200	150	40	48.0	78.0	2	210
analyses,		Mag- ne- stum (Mg)	44	17	1.6	13	7.4	0,0	10.3	10	13	17	y 4	12	10	8.6	10.0	16.0		46.0
		Cal- cium (Ca)	127 121	160	021	92	92	100	22	94	62	62	8 8	208	104	9	61.0	88		271
Chemical		Iron (Fe)																		
		Silica (SiO ₂)	9.2 18	18	5 E	12	18	17	16	16	16	12	1.4	21	16	12	13.0	13.0		56.0
		Mean discharge (SiO ₂) (cfs)	114				1937	4620	1214	1270	819	944	1285	1440	5375	2014	1	1634 2 13		1
		Date of collection	July 26-28, 1961	Aug. 1-2	Aug. 3-4	Aug. 9-15	Aug. 16-18	Aug. 19	Aug. 21-24	Aug. 25-26	Aug. 27-31	Sept. 1-11,13	Sept. 12, 14-15	Sept. 18	Sept. 19-20	Sept. 21-30	Weighted average	Time weighted	0	Tons per day

SAN JUAN RIVER BASIN---Continued

9-3680. SAN JUAN RIVER AT SHIPROCK, N. MEX.--Continued Temperature (*F) of water, water year October 1960 to September 1961

'er-	age				
Ý	ď	144 35	4 4 4 0 0 0 0 0 0	57 64 74	77 77 69
	ĩ	47 37	213	67	73
ļ	30	43 32	1133	63 82 82	79 76 62
	29	41	33	65 61 81	83 73 60
	28	51 39 34	36	8 8 1 8	8 8 8 8 9 9
	27	55 45 32	33	60 64 79	86 72 66
ĺ	26	58 46 33	34 50 50	5.4 4.0 8.0	84 19 65
	25	42	37 45 51	70 78	88 71 61
	24	59 45 35	w 4 w w w 0	57 69 78	70 80 67
	23	58 43 34	33 43 59	58 66 79	77 83 73
	22	57 44 36	521	8 6 8	82 82 72
	21	48 39 33	33 48 51	6.5 78 78	76 79 63
	20	35	35	62 65 77	73 72 64
	16	39	34 44 51	61 70 74	82 73 65
	18	48 39	36	322	82 72 71
	17	34	524	63 75	83 73
Day	16	43 34	34	58 66 72	84 75 73
ļ	15	41	35	51 67 73	70 77 78
	7	53 46 43	34 52 54	54 67	78 82 72
	13	59 48 38	33 49 53	56 54 72	71 81 69
	12	60 41 41	34 48 51	56 70	77 79 68
	=	60 43 35	3.5 4.5 8.8 8.8	51 69 72	72
	2	59 37	4 50 3	51 67 71	82 71
	٥	 	33 47 53	52 66 72	81 87 70
	80	62 36	32	49 60 72	79 81 70
	7	67 51 34	464	54 40 60 60	78 82 72
	9	53	466	54 56 72	74 81 72
	5	63 50 36	33	48 57 69	79 83 70
	4	61 48 43	425	69 54 70	79 80 65
	က	59 47 44	32 33 47	62 61 67	73 76 59
	7	71 42	32 35 51	47 64 67	77 74 75
	-		4 9 5	57 69 66	68 73
1	Month	October November December	January February March	April May June	July August September

SAN JUAN RIVER BASIN--Continued

9-3680. SAN JUAN RIVER AT SHIPROCK, N. Mex.--Continued

Suspended sediment, water year October 1960 to September 1961

1		OCTOBE	₹	Į.	NOVEMBE	₹	Į.	DECEMBER	
		Suspen	ded sediment			ded sediment			led sedimen
Day	Mean dis-	Mean concen-	Tons	Mean dis-	Mean	Tons	Mean dis-	Mean concen-	Tons
	charge (cfs)	tration (ppm)	per day	charge (cfs)	concen- tration (ppm)	per day	charge (cfs)	tration (ppm)	per day
1	270	40	B 30	645	630	B 1100	560	340	514
2	260	41	29	613	480	B 790	540	440	642
3	245	47	31	629	350	594	588	650	1030
4	225	188	114	589	250	398	691	610	1140
5	209	56	32	573	100	155	733	880	1740
6	217	136	80	581	51	80	677		B 1700
7	205	29	16	597	110	177	588	495	786
8	221	120	72	663	480	B 860	540	480	700
9	250	100	68	735	315	625	658		B 2800
0	307	340	282	857	460	B 1100	719	1710	3320
1	361	518	505	745	540	1090	712	760	1460
2	525	460	652	690	440	820	684	710	1310
3	565	190	290	654	165	291	664	570	1020
4	549	158	234	645	70	122	726	2900	5680
5	1150		E 60000	637	49	84	719	1300	2520
6	1650		E 90000	621	80	130	684	210	388
7	1880		E 120000	645	45	B 80	622	145	244
8	2140	55000	127000	637	32	55	582	650	1020
9	2120	22000	B 130000	604	29	47	555	320	480
20	1660	9300	B 42000	604	80	B 130	505	190	259
11	1180	4200 2000	13400	599	195	315	515	130	181
23	1020 904	1000	5510	622	395	663	520	90	126
24	820	850	2440 1880	604	430	701	490 465	84	111 100
5	778		B 1400	616	440 300	732 489	540	87	127
6	735	550	1090	594	400	642	560	123	186
7	717	320	619	588	400	635	560	106	160
8	699	530	1000	582	400	629	588	97	154
9	690	480	B 890	604	645	1050	604	118	192
30	672	460	835	582	810	1270	599	144	233
31	663	930	1660				540	186	271
otal	23887		602159	18959		15854	18728		30594
		JANUARY	,		FEBRUARY	,		MARCH	
1	475	89	114	582	3700	5810	525	139	197
2	378	53	54	599	3000	4850	500	74	100
3	342	64	59	550	2000	2970	495	44	59
4	370	66	66	510	2320	3190	510	81	112
5	400	595	643	495	1450	1940	610	220	362
6	450	200	243	490	750	992	610	1300	2140
7	500	77	104	460	500	621	588	1270	2020
8	520	94	132	446	550	B 660	550	420	624
9	520 520	76 90	107 126	490 566	880 2180	1160 3330	540 515	220 1010	321 1400
- 1				i		1			
1	530	47	67	566	1490	2280	545	1250	1840
2	510	53	73	628	1900	3220	691	950	1770
3	480	40	52	646	1780	3100	946	1500	3830
5	500 510	51 250	69 344	658 705	2700 3320	4800 3320	1080 1240	2220 2550	6470 8540
6	490	175	232	733	3000	5940	1500	4450	18000
7	495	380	508	804	2200	4780	1600	5580	24100
8	495	555	742	800	2000	4320	1360	4500	16500
9	495	190	254	700	1300	2460	1360	2900	10600
0	500	300	405	652	1250	2200	1280	2000	6910
1	485	90	118	572	6280	9700	1160	1700	5320
2	520	80	112	572	2750	4250	1300	1700	5970
3	520	113	159	577	344	536	1250	1600	5400
5	588 652	63 480	100 845	588 588	289 298	459 473	1440 1700	1750 2780	6800 12800
6	640	230	397	530	309	442			
7	652	6700	11800	530 515	229	442 318	1840 1590	3000 2100	14900 9020
8	764	11000	22700	515	187	260	1290	1400	B 4900
9	670	8400	15200	1			1290		B 4500
0	577	12000	18700				1840		B 14000
	545	7500	11000				2440	7050	46400
1	242	1300							

E Estimated.
B Computed from estimated-concentration graph.

COLORADO RIVER BASIN

SAN JUAN RIVER BASIN -- Continued

9-3680. SAN JUAN RIVER AT SHIPROCK, N. MEX. -- Continued Suspended sediment, water year October 1960 to September 1961--Continued

S Computed by subdividing day.

B Computed from estimated-concentration graph.

SAN JUAN RIVER BASIN--Continued

9-3795. SAN JUAN RIVER NEAR BLUFF, UTAH

OCATION .--At bridge on State Highway 47, 1,800 feet downstream from gaging station, 20 miles southwest of Bluff, San Juan County, and 114 miles upstream

DRAINAGE AREA .--23,000 square miles, approximately, upstream from gaging station. RECORDS AVAILABLE.--Chemical analyses: February to June 1927, October 1929 to September 1961

Water temperatures: May 1944 to September 1961 (discontinued).
Sediment records: August to September 1983, July 1929 to September 1961.
EXTREMES, 1960-61.--Discolved solids: Maximum, 1,400 ppm Oct 4; minimum, 188 ppm May 22-31.
Hardness: Maximum, 655 ppm Oct 4; minimum, 119 ppm May 22-31.

Specific conductance: Maximum daily, 1,830 micromios Jan. 9; minimum daily, 258 micrombos June 4.

Water temperatures: Maximum daily, 1,830 micromios Jan. 9; minimum daily, 258 micrombos June 4.

Water temperatures: Maximum daily, 58,000 ppm Aug. 21; minimum daily, 20 ppm July 28, 385 definent concentrations: Maximum daily, 58,000 tons Sept. 20; minimum daily, 104 ppm July 28.

Sediment loads: Maximum daily, 755,000 tons Sept. 20; minimum daily, 104 ppm July 21.

Bardness: Maximum, 874 ppm July 21-31, 1934; minimum, 102 ppm July 1-34, 1934; minimum daily, 208 micrombos June 17, 1962.

Bardness: Maximum, 874 ppm July 21-31, 1934; minimum, 102 ppm July 1-6, 6-10, 1957.

Water temperatures (1944-61): Maximum, 22°F July 31, 1959; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 309, 000 ppm Sept. 21, 1939; minimum daily, no flow on several days during July 1934 and August 1939.

Sediment loads: Maximum daily, 12, 200, 000 tons Cot. 14, 1941; minimum daily, 0 tons on several days during July 1934 and August 1939.

Sediment loads: Maximum daily, 12, 200, 000 tons Cot. 14, 1941; minimum daily, 0 tons on several days during July 1934 and August 1939.

REMARRS.--Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Flow affected by ice Jan. 1-28.

			1 60	N 0	0 03	-	7	o ۵	0	0	80	- 0	,	7
	9.	1 n 1 # C	2,0	2 6	8.2	8.	7.7				7.	906 8.1	1 8	7.
	Specifi con-	duct- ance (micro- mhos at 25°C)			1250		1370	. , .					_	
	& :	ad- Borp- tion ratio	6.0	, ,	2.4	2.5		2.0			1.8	6.0		
	ness ICO3	Non- car- bon-	291	174	279	285	310	388	318	290	173	161	77	62
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	432	979	432	444	494	284	475	450	310	304	169	157
	solids 180°C)	Tons per day	830	3180	1610	1620	1230	1710	1910	1940	2520	3560	2510	2930
r 1961	Dissolved solids (residue at 180°	Tons per acre- foot	1,35	90	1.22	1.27	1.36	1.69	1,31	1.28	.84	98.	40	.36
to September 196	Dis (resi	Parts per million	995	1400	899	934	1000	1240	961	942	618	636	296	262
		ron (B)	0.09	9 6	16	.15	80.	71.	.07	.07	90.	.07	.05	.04
r 1960		NI- trate (NO ₃)	27	, a	13	13	12	9 9	11	8.7	6.1	9.0	3.1	2.1
October		Fluo- ride (F)		_										
water year C		Chloride (Cl)	48	9 6	40	42	48	9 4	38	40	23	21	10	0.6
million, wat		Sulfate (SO ₄)	515	929	457	472	500	636	499	456	289	304	111	94
		(C) the total	00	0	•	0	0	-	0	0	۰	0 0	0	•
ts per	Bi-	car- bon- ate (HCO ₂)	172	200	187	194	225	200	191	195	167	174	119	116
in parts	ě	K itas	4.9		. 8	3.8	3.7	0 0	. 4	4.0	3.7	9.0	2.0	1.6
analyses, 1		Sodium (Na)	158	192	114	120	125	128	114	115	72	78	56	22
	707	nag- ne- stum (Mg)	33	2 6	35	36	37	9 5	34	35	22	21	10	8.0
Chemical		Cal- ctum (Ca)	119	971	115	118	136	121	134	122	87	87	51	20
		Iron (Fe)	•	1 8	•	1	00.	3,6		1	1	8.5	.01	1
		Silica (SiO ₂)	7.8	0	17	11	010	2 5	11	8.2	10	13	11	12
		Mean discharge (SiO ₂) (cfs)	309	1467	665	644	456			191		2073		
		Date of collection	Oct. 1-3, 5-14, 1960	Oct 15-31	Nov. 1-30.	Dec. 1-31	Jan. 1-5, 1961	Jan. 13-31	Feb. 1-28.	Mar. 1-18	Mar. 19-31	Apr. 1-6	Apr. 21-30.	May 1-9, 14-21

08789	4.8	20 20	- 8	~ ·c · ·	ł so	1 6	
7.5	7.7	7.8		7.7	7.8	995 7.9	i i
536 300 323 456 648	900	919	1210	1050 692 682	719	366	
1.0	1.9	3.1	2.9	202	1.5	2.0	1
97 42 51 81	167	118	179 96	192 15 118	132	200	-
207 119 124 165 227	306	294	370	350 228 233	252	342	
2400 3210 2660 1900 1280	1420 588	2240 4400	4090 1800	3560 2890 2340	2210	1	1
26 27 27 28 58	1.23	1.58	1.17	1.00	0.68	1	
352 188 202 292 428	626 907	642 1160	858	738 a 464 453	498	708	-
82281	.05	.17	12	90.	0.07	60.0	0.30
2.5 2.5 4.7	8.7	8.1	5.0	6.3	5.2	8.7	23.0
		-					
12 6.5 8.0 12 21	26 42	26	30	24 16 16	19	29	85.0
143 60 73 123 190	278 475	279 600	418	365 144 208	227	343	1000
00000	00	00	00	000	۰	0	0
134 94 89 102 131	169	215 275	233	193 260 140	146	173	649
46.000	e.4	6.2	4.5	3.7	2.9	3.7	13.0
32 14 17 30 50	76 126	99 163		95 69 51	59	06	261
13 5.1 6.6 10	31	12	20	17 9.5 7.8	16	23	69.0
61 39 49 68	89 108	98 168	115	113 76 81	75	86	334
11118	.05	11	11	111	1	1	
8.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	11 8.8	15 16	16	13 1.5	11	11	50.0
2522 6332 4885 2415 1110	843 240	1291 1406	1766	1786 2310 1916	:	1641	
May 10-13, 1961 May 22-31 June 1-17 June 18-30	July 5-22	Aug. 1, 7-12, 16-18, 22	Aug. 13-15, 19-21, 28-29	Sept. 1-9, 11-22 Sept. 10 Sept. 23-30	Weighted average	Time-weighted average	Tons per day

a Calculated from determined constituents.

SAN JUAN RIVER BASIN--Continued

9-3795, SAN JUAN RIVER NEAR BLUFF, UTAH.-Continued

						Tem	Temperature (°F) of water, water year October 1960 to September	ture	ို	£	J.	ateı		ate	r ye	ar (Set	ber	196	Ö.	S.	pte	mper.	1961	::						,	
Manch															1	Day																Aver-
Month	_	2	က	4	5	9	7	8	٥	10	=	12	13	14	15	9	17	18	6	20	21	22	23	24	25	26	27	28	29	30	31	age
October November December	35	59 46 35	61 48 35	65 52 39	3.00	52	35.0	59 32	846	3 4 5 6 8 8 8 9 9 9 9	200 4	36.50	145	56 35	3430	4 t 0 4 t 0	51 37 32	50 42 11	47	440 32	41.	196	38	39	323	38	404	38	136	38 32	8	46 43 34 34
January February March	34	32 33 41	32	32 42	34 32 45 43	432	432	134	32 38 41 41	1 1 4 3	4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	32 44 45	4 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	7 4 4 4 8 4 8	32	32 49 51	32 45 51	34 41 48	£ 4 4 6 0 8	1 1 8 1 1	35 38 51	33 40 57	38	34 41 54	2004	4 4 5 4 5 8 4 8 8 8 8 8 8 8 8 8 8 8 8 8	E 6 8	4 36 4	32 14	35	51 2	33 44 47
April May. June	52 61 63	52 61 61	57 61 63	56 59 64	4 5 5	51	6033	48 51 69	634	50 44 69	61 49	50 70	222	50 54 70	27.0	49 70 70	562	57 66 73	58	55 73	55	57 62 77	53 75	50 65 77	4 6 7 2 2 2 2	50 64 75	13 79	55 68 73	753	64 75	1 62	53 60 70
JulyAugust		74 75 77 75 68 69	72 73 74 75 61 58	73	72 77 74 74 62 64	74 45	77 74 63	75 75 66	78 75 74 74 67 67	75 74 67	74 82 77 70 67 68	82 70 68	82 76 72 68	27 27 1	70 74 72 70 68 68	74 70 68	76 76 68 68 71 67	76 68 67	75 67 61	81 68 62	73 60 60	72 72 60	219	75 75 60	2 4 8	76 75 59	75 73 73 61 6	78 71 60	613	52 25	121	76 72 63

COLORADO RIVER BASIN

SAN JUAN RIVER BASIN--Continued

9-3795. SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Suspended sediment, water year October 1960 to September 1961 / Where no concentrations are reported, loads are estimated/

		осто	BER		NOVEMBER	ł		DECEMBER	
			ended sediment	1		ded sediment			ded sediment
	Mean			Mean		100 100.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Mean		1
Day	dis-	Mean		dis-	Mean	Tons	dis-	Mean	Tons
i	charge	tratio	1-	charge	concen-	per	charge	concen-	per
	(cfs)	(ppm		(cfs)	tration (ppm)	day	(cfs)	(ppm)	day
,	300	7	3 60	753	864	1760	613	552	914
1	281			731	821	1620	583	485	763
3	356	510		718	366	710	566	337	515
4	270	420	3060	711	521	1000	816	19000	5 60700
5	25		1110	697	768	1450	731	22300	44000
6	229			684	796	1470	724	2000	3910
7	237			819	4500	9950	731	324	639
8	23!			731	5400	10700	684	742	1370
9	254 439			745 738	1400 3950	2820 7870	620 690	426 1100	713 2050
		- 1		1				1990	
11	30			804	2870	6230	827	1260	4440 2630
12	302			834	1330	2990	774 745	1040	2090
13	357 478			745 711	2150 846	4320 1620	724	562	1100
5	878		16600	670	1400	2530	738	740	1470
16	2310	1570	o s 101000	651	676	1190	760	1160	2380
17	234	2480	0 S 158000	620	484	810	738	710	1410
18	3180		308000	613	976	1620	670		1550
19	314	3140	0 266000	620	305	511	601	1040	1690
20	263	2780	0 197000	595	330	530	548	228	337
21	1690			583	440	693	548	154	228
22	1260	1100	0 A 37000	607	354	580	510	83	114
23	99			566	396	605	542	194	284
24	92 88			572 572	271 1110	419 1710	560 510	203	307 138
	1	-			1				Į.
6	811		0 4710	560 560	505 232	764 351	488 548		100 250
27	81 774	129	0 3830 0 2700	578	286	446	560		290
29	78		- 2500	572	172	266	595	i	470
30	76		0 2260	589	143	227	620	387	648
31	75	92					613		620
otal	2922	-	- 1248401	19949		67762	19977		138120
		JANU	ARY		FEBRUAR	,		MARCH	
1	57	,	- 450	657	8870	15700	572	877	1350
2	51) 19	5 269	670	4140	7490	578	870	1360
3	44			998		13000	560	823	1240
4	38			881	4650	11100	583	619	974
5	38	, -	- 80	753	3480	7080	632	612	1040
6	41	9 4		804	4790	10400	651	1340	2360
7	46	29		745	3990	8030	767	568	1180
8	52) -	- 230	657	2810	4980	697	2610	4910
9	C 54	6		638 684	2720	4690 6000	632 554	1130	1930 2180
				ı			1	1	
11	C 54			782	3500	7390	554	483	722
12	56			711	4280	8220	560	436 994	659
13	54 51	90	6 446	718	2900	5620	613 774	2230	1650 4660
14	51		4 281 5 414	745 760	2080 2270	4180 4660	998	2630	7090
16	54	ŀ	1	738	2260	4500	1120	3390	10300
17	54			819	3250	7190	1280	4390	15200
18	C 52	26		834	4290	9660	1570	6660	28200
19	C 52	18	3 257	906	3560	8710	1430	6800	26300
20	C 52	-	- 400	858	2940	6810	1330	5890	21200
21	C 52			774	2310	4830	1300	4200	14700
22	C 52	15	7 220	684	1720	3180	1230	2030	6740
23	C 52	14	2 199	626	942 787	1590 1320	1240 1270	1640 2510	5490 8610
24 25	56 261			620 620	670	1120	1400	3100	11700
26	c 70	- 1		651	429	754	1750	4500	21300
27	C 70	41	0 775	645	976	1700	1830	450	22000
28	C 70	544	0 10300	601	760	1230	1640	3700	16400
29	73		0 3300	1	755		1550	3800	15900
	97	2 430	0 11300				1610	5750	25000
30									
o I Total	1741		0 5500 - 42247	20579		171134	2030 33305	13200	72300 354645

S Computed by subdividing day.
A Computed from partly estimated concentration graph.
C Composite period.

SAN JUAN RIVER BASIN--Continued

9-3795. SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Suspended sediment, water year October 1960 to September 1961--Continued
/Where no concentrations are reported, loads are estimated/

- 1		APRIL			MAY			JUNE	
H			ded sediment			ded sediment			ded sedimen
_	Mean		dea sealment	Mean		ueu seument	Mean	<u> </u>	ueu seumen
Day	dis-	Mean concen-	Tons	dis-	Mean	Tons	dis-	Mean concen-	Tons
- 1	charge	tration	per	charge	tration	per	charge	tration	per
	(cfs)	(ppm)	day	(cfs)	(ppm)	day	(cfs)	(ppm)	day
1	2370	10300	65900	2980	2300	18500	6790	1950	35700
2	2220	7450	44700	4200	3120	35400	6920	4310	80500
3	1820	8500	41800	4850	4230	55400	6870	2080	38600
400	1620	7700	33700	5390	3970	57800	6200	1650	27600
5	1740	6050	28400	5510	3190	47500	5160	1430	19900
6	2670	6300	45400	5120	1940	26800	4310	2760	32100
7	3570	9300	89600	4170	2270	25600	4230	2130	24300
8	2890	6250	48800	3420	1820	16800	4100	1300	14400
9	3050	4900	40400	2910	625	4910	4200	1380	15600
0	3750	5500	55700	2430	10100	66300	4370	1170	13800
1	2980	3350	27000	2090	6600	37200	4580	1520	18800
2	2520	3250	22100	2250	1650	10000	4720	1210	15400
3	2120	3450	19700	3320	1940	17400	4520	1280	15600
5	1890 2190	2080 2300	10600 13600	4620 4550	2940 2310	36700 28400	4320 4170	855 968	9970 10900
		1							
6 7	2180 1810	2200 1650	12900 8060	3600 3110	608 1330	5910 11200	3850 3740	1300 1000	13500 10100
á	1650	800	3560	2830	1230	9400	3690	1710	17000
9	1980	1900	10200	3230	1340	11700	3460	1220	11400
ó	2680	3600	26000	4340	2010	23600	3240	825	7220
1	3260	3650	32100	5640	2790	42500	2910	896	7040
2	3550	3800	36400	6120	3720	61500	2910	1060	8330
3	3690	2900	28900	5750	2130	33100	2680	1030	7450
4	3580	2150	20800 -	6300	2350	40000	2370	907	5800
5	3830	2200	22800	6280	2720	46100	2100	776	4400
6	3750	1100	11100	6010	1910	31000	1880	2020	10300
7	2980	1800	A 14000	6120	1890	31200	1760	878	4170
8	2440	1900	12500	6490	2030	35600	1600	1630	7040
9	2130	1450	8340	6700	2210	40000	1470	475	1890
10	2180	2200	12900	6840 6710	2340 2690	43200 48700	1320	766	2730
otal	79090		847960	143880		999420	114440		491540
-		JULY	041700	143600	AUGUST	777420		SEPTEMBE	
-+		T						т-	
2	1090 1010	121 70	356 191	309 702	24700 31200	20600 S 62000	842 724	13800 9500	31400 18600
3	1050	750	2130	920	39500	5 104000	711	7300	14000
4	1290	3750	5 16200	1460	44000	S 197000	677	4400	8040
5	1310	6100	5 22300	2180	43500	\$ 258000	677	2300	4200
6	1320	3160	11300	1770	45000	223000	697	2000	3760
7	1190	2400	7710	1700	17000	78000	850	4200	9640
8	1330	9920	5 50500	1310	11400	40300	858	3300	7640
9	1390	12800	5 53300	1060	8100	23200	3690	24000	5 301000
0	1040	11600	32600	811	4800	10500	2310	27700	173000
1	1010	6500	17700	711	3400	6530	1280	27600	95400
2	1090	2400	7060	601	2800	4540	2000	27200	S 161000
3	1020	770	2120	520	4300	A 6000	2190	23000	136000
4	842	814	1850	510	9500	13100	1740	20000	A 94000
5	704	860	1630	578	6600	10300	1310	16600	58700
6	638	754	1300	1580	16800	5 166000	1150	9500	29500
7	548	375	555	1640	21200	S 117000	1570	22000	93300
8	483	242	316	3030	26100	S 216000	1260	10000	34000 5 271000
9	418 332	196 104	221 93	2890 4680	40200 53200	325000 697000	3120 5580	29000 48300	5 271000 755000
		i							
2	284 232	88 75	67 47	2380 1450	58000 30800	387000 121000	3920 2650	49000 24800	538000 177000
3	223	118	71	1180	10100	32200	2300	10800	67100
4	241	94	61	1080	7700	22500	2070	7520 4900	42000 27400
5	267	117	84	939	3900	9890	2070	1	
6	332	63	56	1480	12800	S 59500	2040	3540	19500
7 • •	267	62	45	1550	19500	81600	1840 1780	3570 2860	17700 13700
8	198	20	11	990	21000	56100			12200
9	182 164	2190 1700	S 1680 753	1580 1330	23400 12800	5 116000 46000	1670 1560	2700 2520	10600
1	288	20600	5 16800	1190	13100	42100			
				 	-	 		+	
otal	21783		249107	44111		3551960	55136		3224380

Total discharge for year (cfs-days). 598892
Total load for year (tons). 11386676
S Computed by subdividing day.
A Computed from partly estimated concentration graph.

SAN JUAN RIVER BASIN--Contined

9-3795. SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

	Mathod	Jo .	analysis	VPWC	2	VPWC	VPWC	VPWC	VPWC	VPWC	A PW	NGA	VBWC	SO .	VPWC	VPWC	VPWC	VPN	VPWC	VPWC	6 23	VPWC	VPWC	VPWC	VPWC
			2.000																						
			1.000											001											
		neters	0.250 0.500	100	18	1	1	100	100	25	007	3	100	86	!	1	1	-	!	ł	1	!	1	1	11
		ı millin		66	86	100	8	66	66	66	S :	92	89	82	8	8	9	100	100	9	8	100	100	100	88
	liment	ated, in	0.125	87	87	90	98	87	81	66	2 1	20	45	40	86	66	66	66	86	98	97	86	95	93	98
	Suspended sediment	Percent finer than size indicated, in millimeters	0.062	22	82	84	79	78	79	88	50	52	19	13	97	86	96	96	87	86	98	96	87	81	95 87
	Suspen	than stz	0.031										11												
water)		t finer	0.016	99	2	79	73	89	65	81	7	22	6	ŀ	92	96	69	20	9/	78	!	92	74	74	81 73
istilled		Percen	0.008										7												
W, in d			0.004	53	3	63	62	20	47	67	77	£	9	1	67	89	23	4	19	မှ	ŀ	73	09	29	57
tube;			0.002										4												
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sodimont	discharge	(tons per day)																						
; S, sieve; V, v	Sediment	concen- tration	(mdd)	2010	3520	3070	2640	4200	4070	8230	3830	3830	1200	1200	8210	15100	42000	42000	32100	14400	14400	33900	5520	7460	29700 9160
P, pipet		Discharge (cfs)	<u>}</u>	834	819	834	873	1280	1790	1680	3640	3640	4160	4160	1080	1180	906	906	2360	1600	1600	1520	1080	704	1360 1290
	Water tem-		(F)	59	35	40	41	51	48	22	20	22	69	6	8	75	75	75	74	74	74	72	75	61	67
	Gamb	ling	point																						
		Time (24 hour)	Ì	1415	0902	0060	0060	0060	0845	0830	6650	0825						0810	0720	0745	0745	0735			0815 0750
		Date of collection		Oct. 26, 1960		Feb. 11	Feb. 20	Mar. 17	Mar. 27	Apr. 3	Apr. 22	Apr. 22	June 8	June 8	July 9	July 10	Aug. 4	Aug. 4	Aug. 5	Aug. 7	Aug. 7	Aug. 22	Aug. 24	Sept. 3	Sept. 11

COLORADO RIVER MAIN STEE

9-3800, COLORADO RIVER AT LEES FERRY, ARIZ,

LOCATION. --At gaging station on left bank at head of Marble Gorge at Lees Ferry, Coconino County, just upstream from Paria River, 16 miles downstream from San Juan of Glen Canyon Dam, 28 miles downstream from San Juan of Glen Canyon Dam, 28 miles downstream from San Juan

DRAINAGE AREA. --107,900 square miles, approximately.
RECORDS AVAILABLE. --Chemical analyses: January to July 1926, October 1926 to June 1927, October 1928 to September 1930, November 1942 to October 1945, October

Mater temperatures: July 1949 to September 1961.

Mater temperatures: July 1949 to September 1961.

September 1961.

Mater temperatures: July 1949 to September 1963, November 1942 to September 1961.

September 1961.

Mater temperatures: July 1949 to December 1963, November 1942 to September 1961.

September 1962.

Marinum, 960 opps Oct. 15; minimum, 453 minimum, 453 minimum, 326 ppm July 27.

September 1962.

Mater temperatures: Maximum, 627 July 10, 11, Aug. 3, 5; minimum dally, 1360 ppm July 27.

September 1962.

September 1963.

Mater temperatures: Maximum dally, 1,960,000 tons Sept. 12; minimum dally, 1360 ppm July 27.

September 1962.

Marinum dally, 1,960,000 tons Sept. 12; minimum dally, 1360 ppm July 27.

September 1963.

Mater temperatures: Maximum 967 ppm Cot. 15, 1960; minimum, 1320 ppm June 11-20, 1964.

Mater temperatures (1928-30, 1942-46, 1947-61): Maximum 967 ppm July 27.

Mater temperatures (1946-1961): Maximum 967 ppm Oct. 15, 1960; minimum, 11-20, 1964.

Mater temperatures (1946-1961): Maximum dally, 26, 2500 ppm Maximum dally, 21, 2200 ppm Maximum dally, 13, 220 tons 3 minimum dally, 21, 220 tons 3 minimum da

Date Mean Mean Glicolarge Silica Tron Cal. Mean Cal. Cal. Mean Cal.	l		뛶	١٠	9.	80	80.	9.	6.	9.	7.	7	9			9.	0.	80.
Date Mean Silica Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron Cal. Iron		ecific	uct- ince os at		_	_	_	_		_	_			_	_	_	_	_
Date Mean Silica Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Cal Iron Iron Cal Iron Cal Iron Iro		- 62		1,1														
Date Mean class Silica Incompany Cal- I		Ø.		4									_		_	_	_	
Date Mean Silica Iron clum sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium (Na) sium sium sium (Na) sium sium (Na) sium sium sium (Na) sium sium sium (Na) sium sium (Na) sium sium sium (Na) sium sium sium (Na) sium sium sium (Na) sium sium sium (Na) sium sium sium (Na) sium sium sium (Na) sium sium sium sium sium (Na) sium sium sium sium sium sium sium sium		inco.				_		_	_			_	_	_			_	
Date of discharge (SiO ₂) Mean (cfs) Silica (cfs) (Fe) (Cs) (Fe) (Cs) Po- car- bon- sium sium (Na) Po- car- bon- sium sium sium (Na) Po- car- bon- sium sium (Na) Po- car- bon- sium sium sium (Na) Po- car- bon- sium sium sium (Na) Po- car- bon- sium sium sium (Na) Po- car- bon- sium sium sium (Na) Po- car- bon- sium sium sium (Na) Po- car- bon- sium sium sium sium sium sium sium sium		Har	Cal- ctum Mag- ne- stum	580	280	485	292	96	448	565	510	470	495	430	428	382	328	372
Date Mean Silica Iron clum sium sium (Na) sium bon sate (SO ₄) (CO ₅		solids 180°C)	Tons per day	12400	13000	12400	17500	36300	18000	22000	16900	12300	12600	15700	15200	18900	20200	23000
Date Mean Silica Iron clum sium sium (Na) sium bon sate (SO ₄) (CO ₅		solved due at	Tons per acre- foot	1,78	1.73	1,32	1,69	2.61	1.29	1.63	1.47	1.39	1.30	1.34	1,37	1,17	86.	1.09
Date Mean of discharge collection (cfs) (c	11	Dis. (rest	Parts per million			972	1240	1920	948	1200	1080	1020	1100	886	1010	828	723	803
Date Mean of discharge collection (cfs) (c	er 196		. B. B.	0.18	1				_			1	.13	1	j		1	1
Date Mean of discharge collection (cfs) (c	ptembe		rrate (NO ₂)		!		_				1		14				_	
Date Mean of discharge collection (cfs) (c	Se Se		Fluo- ride (F)	9.0	!	ł	1	ŀ	i	!	ł	!	4	!	!	!	!	1
Date Mean of discharge collection (cfs) (c	er 1960		Chloride (Cl)	136	ł	I	ł	!	ł	1	1	;	150	1	!	ł	1	1
Date Mean of discharge collection (cfs) (c	er Octob			573	ł	1	1	ŀ	1	1	ı	1	451	1	ł	1	1	!
Date Mean of discharge collection (cfs) (c	ter ye	į	2 4 8 <u>0</u>															
Date Mean of discharge collection (cfs) (c	n, wa	늄	car- bon- ate (HCO ₂)	161	205	218	224	236	204	220	211	207	222	204	202	206	182	200
Date Mean of discharge collection (cfs) (c	#111c	į	E tar	8.9	1	1	1	1	1	1	ł	1	6.3	1	1	ł	1	l
Date Mean of discharge collection (cfs) (c	rts per		Sodium (Na)	174	170	126	164	236	140	163	148	144	172	145	156	126	102	111
Date Mean of discharge collection (cfs) (c	in pa	3	stum (Mg)	49	46	37	48	2	댦	\$	4	38	4	35	98	8	25	29
Date Mean of discharge collection (cfs) (c	yses,		Ctum (Ca)	151	156	134	160	296	128	160	136	124	130	115	113	104	8	102
Date Mean of discharge collection (cfs) (c	l anal		Iron (Fe)	0.00	!	i	ŀ	ŀ	1	i	ł	l	10.	1	1	l	ŀ	i
Date Mean of discharge collection (cfs) (c	enica		Stilca (SiO ₂)	11	1	!	:	:	-	1		-	20	1	1	!	1	-
Date of collection collection collection ct. 1-6, 1960 ct. 13-14 ct. 13-14 ct. 18-31 ct. 18-31 ct. 18-31 ct. 18-31 ct. 18-31 ct. 18-31 ct. 18-31 ct. 18-31 ct. 18-31 ct. 18-31 ct. 18-4.pr. 7. 29-29-20. 28-4.pr. 7. 21-21 pr. 6-11 ct. 18-4.pr. 7. 21-21 ct. 21	£		Mean discharge (cfs)	3513	3796	4720	5235	7010	7330	6774	5805						_	10630
			Date of collection	ct. 1-6, 1960	et. 7-11	ct. 12	et. 13-14	et. 15	et. 16-17		ov. 1-30	ec. 1-31	an. 1-28, 1961	an. 29-Feb. 28	ar. 1-27	ar. 28-Apr. 7	pr. 6-11	pr. 12-15

7.76	6.7.7.7. 6.0.0.7.7.	24.7 6.00 7.	9.5.7.7.	7.6	7.6
1010 850 731 621 517 516	606 743 970 1230 1560 1850	1520 1710 1500 1790 1790	2110 1430 1830 1390 1350	1070	1310
21111 280410	444444	8004F	44.0044	2.0	2.5
172 140 120 97 74 69	98 122 186 280 389 516	343 472 384 538 292	690 346 646 340 341	219	278
324 280 248 216 1184 200	214 254 332 426 548 690	515 635 592 695 550	915 585 820 540 660 500	372	440
18100 15700 20600 24000 29600 26000	15300 12800 12400 8770 12300 21700	15500 22100 19000 19400 55200	113000 54500 44700 37300 35000	1	1 1
86. 86. 87. 86. 84. 84.	88. 1.5.1 1.5.1 1.8.	1.48 1.73 1.55 1.90	2.34 1.47 1.40 1.71 1.36	1,02	1 1
698 571 492 415 346 326	394 484 654 833 1110 1350	1090 1270 1140 1400 978	1720 1080 1510 1030 1260 1000	752	925
\$11118	111111	11111	111111	ŀ	1 1
8.1111.	}	ППП	111111	1	1 1
4:11114	111111	11111	111111	1	1 1
811118	111111	11111	111111	1	1 1
1011118	111111	11111	111111	1	1 1
186 171 156 145 134 160	142 161 178 179 194 212	210 199 254 192 314	274 292 212 244 194	186	198
7,11117	111111	11111	11111	-	1 1
94 57 34 34 29	42 57 76 109 142 157	144 144 113 148 94	150 96 124 104 122 112	93	123 2310
25 18 16 13 13	16 25 39 45 45	35 35 31 31	42 29 34 31	27	33
88 76 70 61 52 61	60 73 92 107 146	69 180 180 180 180	298 184 260 209 150	106	122
<u>ध्।।।।४</u>	111111	152 1186 1180 1180 1180	298 184 260 169 209	1	1 1
113	111111	11111	111111	-	11
9619 10160 15480 21430 31700 29510	14400 9822 6996 3898 4112 5962	5255 6450 6162 5120 20900	24300 18700 10960 13400 13700	ł	9177
Apr. 16-30, 1961 May 1-4 May 5-19 May 20-26 May 27-31 June 1-24	June 25-July 2 July 3-6. July 7-15 July 16-29. July 30-Aug. 6	Aug. 17-27 Aug. 28-31 Sept. 1-4. Sept. 5-8 Sept. 9-11	Sept. 12. Sept. 13. Sept. 14-18. Sept. 19-23. Sept. 27-30.	Weighted	Time-weighted average

COLORADO RIVER MAIN STEM--Continued

9-3800. CGLORADO RIVER AT LEES FERRY, ARIZ.--Continued Temperature ('F) of water, water year October 1960 to September 1961 [Once-daily measurement, generally between 8:00 a.m. to 5:00 p.m.]

Aver-	aga				
¥	ed.	48	111	55 75	79
	31	53	39 54	67	80 75
	30	141	1 2	62 68 79	12
	29	51 42 	36	64 69 80	17 63
	28	37.58	143	60 17 80	81
	27	58	444	59 70 80	80 1 63
	26	8 4 5 E	 44 51	58 71 81	81 80 62
	25	58	1 4 1	57 71 81	800
	24	57 35	33	58 70 80	80 77 64
	23	57 444	33	58 70 11	79
	22	45	45	819	1 1 5
	2	57 45	5 4 5 5 5 5 6 5 6 5 6 5 6 5 6 6 6 6 6 6	59 67 78	78
	20	56 37	111	58 66	80 79 66
	61	55	33 54 54	60 67 76	83 78 68
	8_	54 47 37	111	60 67 76	81 78
	12	50	6 4 8 8 9 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	60 66 74	81 78 70
Day	2	47	111	59 74	192
	15	6.4	33 55 55	58 62 74	77
	7	37	111	112	881
	13	911	33 42 53	56 73	81 78 69
	12	37	111	57 63 73	81 77 70
	=	50	33	56 64 72	82 78 68
	2	61 50 38	39	56	82 80 67
	٥	63 52 38	33 47	59 62 71	181
	80	53 39	1 1 4	58 62 70	1 1 2
	7	55	6 4 4 6 0 9	59 62 69	79 80 71
	9	67 55 39	111	60 62 68	800
	5	114	98	511	82
	4	41	33	66	1 8 9 6 9
	က	52	1 8 1	66 67 67	78 82 68
	2	66 52 41	1 1 5	58	78 79 72
	_	67 53 42	4 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	56 64 68	78 80 74
Month	MOHIII	October November December	January February March	April May. June	JulyAugust

COLORADO RIVER MAIN STEM--Continued

9-3800. COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1960 to September 1961

		OCTOBER	?		NOVEMBER	<u> </u>		DECEMBER	
		Suspen	ded sediment		Suspen	ded sediment		Suspen	ded sedime:
Day	Mean dis- charge	Mean concen-	Tons per	Mean dis- charge	Mean concen-	Tons per	Mean dis- charge	Mean concen-	Tons per
	(cfs)	tration (ppm)	day	(cfs)	tration (ppm)	day	(cfs)	tration (ppm)	day
1	3760	920	9340	5500	2550	37900	1560	490	2060
2 • •	3650	1000	9860	5360	2600	37600	1420	505	1940
3	3550	950	9110	5390	2500	36400	1800	340	1650
٠	3440	840	7810	5470	2400	B 35000	3030	710	5810
5	3360	780	B 7100	5550	2400	В 36000	3970	920	9860
5	3320	760	6810	5530	2350	35100	4550	1020	12500
7	3340	820	7400	5550	2350	35200	4930	1100	B 15000
8	3280	1180	10500	6030	3250	52900	5220	1220	17200
9	3630	4150	40700	6570	4750	84300	5440	1260	18500
۰.۰	3880	9700	102000	6030	3850	62700	5640	1290	19600
1	4850	5300	69400	6000	3120	50500	5820		B 19000
2 • •	4720	5150	65600	5940	2550	40900	5730	1180	18300
3	5250 52 2 0	5550 5750	78700	5910	2400	B 38000	5470	1100	B 16000
5	7010	6150	81000 116000	6030	2550 2720	41500 44100	5220 5030	960 870	13500 B 12000
		I		****	1			1	
5	7720	8300	B 170000	5850	2400	37900	4900	710	9390
7	6940 7410	7850 10100	147000 202000	5820 5820	2450	38500 36100	4800 4780	620 610	B 8000 7870
9	7410 8390	13900	315000	5820 5910	1900	36100	4780 4720	610	
0	8140	14900	327000	5910 5940	1900		4680	580	7330
1	8250	17100	381000	5850	1900	30000	4600	560	в 7000
2	7940	15700	337000	5850	2020	31900	4500		B 6700
3	6870	12000	223000	5880	1920	30500	4350	540	6340
4	6480	8800	154000	5820	1900	B 30000	4230	450	5140
5	6350	6150	105000	5880	1900	B 30000	4280	440	B 5100
6	6130	4500	74500	6100	2000	32900	4380	470	5560
7	6030	3980	64800	6100	2250	37100	4500	470	
8	5850	3550	56100	5970	2000	32200	4600	480	5960
9	5790	3250	50800	5880	1800	28600	4680		B 6200
0	5670 5530	3000 2650	B 46000 39600	4620	1600	20000	4800 4850	550 610	7130 B 8000
		2000			 		 	- 610	
otal	171750		3314130	174150		1144100	138480		292040
		JANUARY	<u> </u>		FEBRUARY	<u> </u>		MARCH	
1	4850	660	8640	5170	1000	B 14000	5410	1440	21000
2	4830	600		5170	1000		5330	1250	18000
3	4700 4500	520 480	B 6600 5830	5090 5030	1030	14200 B 14000	5140 5200	1110	15400 16000
	4250		B 5100	5060	990	13500	5530	1200	
5	4250	440	9100						
5		440			,,,,,			1200	
6	3970	440	B 4300	5220	1000	B 14000	5440 5300	1200	
5 6 7	3970 3740	440 400 360	B 4300 3640	5220 5300	920	13200	5300	1060	15200
6 7 8	3970 3740 3610	440 400 360 350	B 4300 3640 3400	5220 5300 5300	920 900	13200 B 13000			15200 15400
5 6 7 8	3970 3740	440 400 360	B 4300 3640	5220 5300	920	13200	5300 5280	1060 1080	15200
6 7 8 9	3970 3740 3610 3550	440 400 360 350 340	B 4300 3640 3400 3260	5220 5300 5300 5250 5140	920 900 880 980	13200 B 13000 12500 B 14000	5300 5280 5280	1060 1080 1160	15200 15400 16500
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3610 3550 3420 3380 3420	440 400 360 350 340 320 290 320	B 4300 3640 3400 3260 B 3000	5220 5300 5300 5250	920 900 880	13200 B 13000 12500	5300 5280 5280 5360	1060 1080 1160 1120	15200 15400 16500 16200
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3610 3550 3420 3420 3420 3460	440 360 350 340 320 290 320 350	B 4300 3640 3400 3260 B 3000 2650 B 3000 3270	5220 5300 5300 5250 5140 5110 5110	920 900 880 980 1070 810 700	13200 B 13000 12500 B 14000 14800 11200 B 9700	5300 5280 5280 5360 5440 5390 5200	1060 1080 1160 1120 1080 1000	15200 15400 16500 16200 15900 B 15000 14000
5 6 7 8 9 0	3970 3740 3610 3550 3420 3420 3420 3460 3630	440 360 350 340 320 290 320 350 390	B 4300 3640 3400 3260 B 3000 2650 B 3000 3270 B 3800	5220 5300 5300 5250 5140 5110 5110 5170	920 900 880 980 1070 810 700 700	13200 B 13000 12500 B 14000 14800 11200 B 9700 B 9800	5300 5280 5280 5360 5340 5390 5200 4960	1060 1080 1160 1120 1080 1000 1000	15200 15400 16500 16200 15900 B 15000 14000 B 13000
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3610 3550 3420 3380 3420 3460 3630 3810	440 400 360 350 340 320 290 320 350 390 470	B 4300 3640 3400 3260 B 3000 2650 B 3000 3270 B 3800 4830	5220 5300 5300 5250 5140 5110 5140 5110 5170 5170	920 900 880 980 1070 810 700 700 720	13200 B 13000 12500 B 14000 14000 11200 B 9700 B 9800 10100	5300 5280 5280 5360 5440 5390 5200 4960 4800	1060 1080 1160 1120 1080 1000 1000 1000	15200 15400 16500 16200 15900 B 15000 14000 B 13000
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3610 3550 3420 3380 3420 3460 3630 3810	440 400 360 350 340 320 290 320 350 390 470	B 4300 3640 3400 3260 B 3000 2650 B 3000 3270 B 3800 4830 B 5300	5220 5300 5300 5250 5140 5110 5110 5170 5170	920 900 880 980 1070 810 700 700 720	13200 B 13000 12500 B 14000 14800 11200 B 9700 B 9800 10100 B 10000	5300 5280 5280 5360 5360 5440 5390 5200 4960 4800	1060 1080 1160 1120 1080 1000 1000 1080	15200 15400 16500 16200 15900 B 15000 14000 B 13000
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3610 3550 3420 3480 3460 3630 3810	440 400 360 350 340 320 290 350 390 470 490 520	B 4300 3640 3400 3260 B 3000 2650 B 3000 3270 B 3800 4830 B 5300 5900	5220 5300 5300 5250 5140 5110 5110 5170 5170 5170 5170	920 900 880 980 1070 810 700 700 720	13200 B 13000 12500 B 14000 11200 B 9700 B 9800 10100 B 10000	5300 5280 5280 5360 5360 5440 5390 5200 4960 4800	1060 1080 1160 1120 1080 1000 1000 1000 1080	15200 15400 16500 16200 15900 B 15000 B 13000 14000 B 13000
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3610 3550 3420 3380 3420 3460 3630 3810 3990 4200 4350	440 400 360 350 340 320 290 350 390 470 490 520 540	B 4300 3640 3400 3260 B 3000 E 5500 B 3000 4830 B 5300 B 5900 B 6300	5220 5300 5300 5250 5140 5110 5110 5170 5170 5170 5140 5090	920 900 880 980 1070 810 700 720 720 720	13200 B 13000 12500 B 14000 11200 B 9700 B 9800 10100 B 10000 10000 B 9600	5300 5280 5280 5360 5440 5390 5200 4960 4800 4720 4800 5280	1060 1080 1160 1120 1080 1000 1000 1000 1080	15200 15400 16500 16200 15900 8 15000 14000 8 13000 12400 8 16000
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3610 3550 3420 3480 3460 3630 3810	440 400 360 350 340 320 290 350 390 470 490 520	B 4300 3640 3400 3260 B 3000 2650 B 3000 3270 B 3800 4830 B 5300 5900	5220 5300 5300 5250 5140 5110 5110 5170 5170 5170 5170	920 900 880 980 1070 810 700 700 720	13200 B 13000 12500 B 14000 11200 B 9700 B 9800 10100 B 10000	5300 5280 5280 5360 5360 5440 5390 5200 4960 4800	1060 1080 1160 1120 1080 1000 1000 1000 1080	15200 15400 16500 16200 15900 B 15000 B 13000 14000 B 13000
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3610 3550 3420 3480 3460 3630 3810 3990 4200 4350 4560 4560	440 400 360 350 340 320 290 350 350 350 350 350 350 60 610 620	B 4300 3640 3260 B 3000 B 3000 B 3000 B 3000 B 3000 4830 B 5900 B 6300 7410 B 7700	5220 5300 5300 5250 5140 5110 5110 5170 5170 5170 5190 5090 5060 5110	920 900 880 980 1070 810 700 720 720 720 720 620 600	13200 B 13000 12500 B 14000 14800 11200 B 9700 B 9800 10100 B 10000 10000 B 9600 8470 B 8300	5300 5280 5280 5360 5440 5390 5200 4960 4800 4720 4800 5280 5610 5790	1060 1080 1160 1120 1080 1000 1000 1080 1000 960- 1100 1410	15200 15400 16500 16200 15900 B 15000 14000 B 13000 12400 B 16000 21400 B 27000
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3550 3420 3420 3460 3630 3610 3990 4200 4350 4500 4560 4680	440 400 360 350 340 320 290 320 350 390 470 490 520 540 610 620	B 4300 3640 3400 3260 B 3000 B 3000 3270 B 3600 4830 B 5300 5900 B 6300 7410 B 7700	5220 5300 5300 5250 5140 5110 5170 5170 5170 5170 5170 5140 5090 5060 5110	920 900 880 980 1070 810 700 720 720 720 720 600 650	13200 12500 14000 14800 11200 8 9700 8 9800 10100 8 10000 10000 8 9600 10000 9 9600 9 9600 9 9600 9 9600 9 9600	5300 5280 5280 5360 5360 5440 5390 4960 4800 4800 5610 5790	1060 1080 1160 1100 1000 1000 1000 1000	15200 15400 16500 16200 15900 B 15000 14000 B 13000 12400 B 16000 21400 B 27000
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3610 3550 3420 3480 3460 3630 3810 3990 4200 4350 4560 4560	440 400 360 350 340 320 290 350 350 350 350 350 350 60 610 620	B 4300 3640 3260 B 3000 B 3000 B 3000 B 3000 B 3000 4830 B 5900 B 6300 7410 B 7700	5220 5300 5300 5250 5140 5110 5110 5170 5170 5170 5190 5090 5060 5110	920 900 880 980 1070 810 700 720 720 720 720 700 620 600 650 1880	13200 B 13000 12500 B 14000 14800 11200 B 9700 B 9800 10100 B 10000 B 9600 B 9600 B 9600 S 38700 78500	5300 5280 5280 5360 5440 5390 5200 4960 4800 4720 4800 5280 5610 5790	1060 1080 1160 1120 1080 1000 1000 1080 1000 960- 1100 1410	15200 15400 16500 16200 15900 8 15000 14000 8 13000 12400 B 16000 21400 B 27000
5 6 6 7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	3970 3740 3610 3550 3420 3420 3420 3430 3630 3810 3990 4200 4350 4500 4580 4680 4680	440 400 350 340 320 290 470 490 520 540 610 620 640 620 640 720 820 710	B 4300 3640 3400 3260 B 3000 C 2650 B 3000 B 3000 B 3270 B 3800 4830 B 5300 F 5900 B 6300 T 710 B 7700 B 9200 10700 9200	5220 5300 5300 5250 5140 5110 5170 5170 5170 5170 5170 5090 5060 5110 5390 7110 9230 10700	920 900 880 980 1070 810 700 720 720 720 720 620 650 1880 3150 4450	13200 12500 12500 14600 14600 11200 8 9700 8 9800 10100 8 10000 8 9600 8 8470 8 8300 9 9460 5 38700 78500 129000	5300 5280 5280 5360 5340 5390 5200 4960 4800 4720 4800 5280 5610 6100 6540 6740	1060 1160 1120 1080 1000 1000 1000 1000 1000 100	15200 15400 16500 16200 8 15900 14000 8 13000 12400 8 12400 8 27000 21400 8 27000 34300 43300 43300
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3550 3420 3420 3460 3630 3810 3990 4200 4500 4580 4680 4750 4680 4750 4680	440 400 360 350 340 320 290 350 390 470 520 540 610 620 640 720 820	B 4300 3640 3400 3260 B 3000 3270 B 3600 4830 B 5900 B 6300 T 7100 B 6300 B 6300 B 6300 B 6300 B 7700 B 9200	5220 5300 5300 5250 5140 5110 5170 5170 5170 5170 5170 5140 5090 5060 5110	920 900 880 980 1070 810 700 720 720 720 720 600 650 1880 3150	13200 B 13000 12500 B 14000 14800 11200 B 9700 B 9800 10100 B 10000 B 9600 B 9600 B 9600 S 38700 78500	5300 5280 5280 5360 5440 5390 5200 4800 4800 5280 5610 5790 6100 6540	1060 1080 1160 1120 1080 1000 1000 1000 1080 1100 960 1100 2000 2080 2340	15200 15400 16500 16200 8 15900 14000 8 13000 12400 8 12400 8 27000 21400 8 27000 34300 43300 43300
6 7 8	3970 3740 3610 3550 3420 3420 3420 3430 3630 3810 3990 4200 4350 4500 4580 4680 4680	440 400 350 340 320 290 470 490 520 540 610 620 640 620 640 720 820 710	B 4300 3640 3400 3260 B 3000 2650 B 3000 2650 B 3000 4830 B 5300 5900 B 6300 7410 B 7700 B 9200 B 9200 B 8200	5220 5300 5300 5250 5140 5110 5170 5170 5170 5170 5170 5090 5060 5110 5390 7110 9230 10700	920 900 880 980 1070 810 700 720 720 720 720 620 650 1880 3150 4450	13200 12500 12500 14600 14600 11200 8 9700 8 9800 10100 8 10000 8 9600 8 8470 8 8300 9 9460 5 38700 78500 129000	5300 5280 5280 5360 5340 5390 5200 4960 4800 4720 4800 5280 5610 6100 6540 6740	1060 1160 1120 1080 1000 1000 1000 1000 1000 100	15200 15400 16500 16200 8 15900 14000 8 13000 12400 8 12400 8 27000 21400 8 27000 34300 43300 43300
5 7 8 90 1 22 34 5 6 7 8 90 1 1 1 1 1 1	3970 3740 3610 3550 3420 3420 3420 3430 3810 3910 4200 4350 4500 4580 4750 4830 4830 4750 4830 4750	440 400 3600 3500 3200 3200 3200 3500 4700 4900 5400 6400 6400 6400 6400	B 4300 3640 3400 3260 B 3000 C 650 B 3000 B 3000 B 3000 B 3000 B 3000 B 5900 B 6300 T 410 B 7700 B 9200 10700 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200	5220 5300 5300 5250 5140 5110 5170 5170 5170 5170 5170 5170 5190 5060 5110 9230 10700 10300 7800	920 900 880 980 1070 810 700 720 720 720 720 620 650 1880 3150 4450 3900	13200 13200 12500 14800 11200 14800 11200 8 9800 10100 8 10000 10000 8 8470 8 8300 9460 S 38700 78500 129000 108000	5300 5280 5280 5360 5360 5390 5200 4960 4800 5280 5610 5790 6100 6540 6770 6670	1060 1160 1160 1170 1080 1000 1000 1000 1000 1000 960- 1100 2000 2000 2360 2360 2000	15200 15400 16500 16500 15900 8 15900 14000 8 13000 14000 8 12400 8 12400 8 27000 34300 43000 8 36000 8 31700
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3550 3420 3420 3460 3630 3810 4900 4750 4580 4680 4750 4800 4750 4680 4750 4680 47750	440 400 3500 3500 320 290 320 350 350 350 490 520 540 620 640 640 640 640 640	B 4300 3640 3400 3260 B 3000 B 3000 B 3000 B 3000 B 3600 B 3600 B 5900 B 6300 7410 B 7700 B 9200 10700 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200 B 8200	5220 5300 5300 5250 5140 5110 5170 5170 5170 5170 5170 5170 5190 5060 5110 5390 7110 7230 10700 10300	920 900 880 980 1070 810 700 720 720 720 720 600 650 1880 3150 4450 3900 6300	13200 B 13000 12500 B 14000 14800 11200 B 9800 10100 B 10000 B 9600 8470 B 8300 9460 5 38700 78500 129000 133000	5300 5280 5280 5360 5440 5390 5200 4800 4800 5610 5610 5790 6100 6540 6670 6670 6640 7010	1060 1080 1160 1120 1080 1000 1000 1000 1000 1000 2000 2	15200 15400 16500 16200 15900 15900 14000 8 13000 12400 8 13000 22400 8 27000 32900 34300 8 36000 31700 30500 31800
5 · · · · · · · · · · · · · · · · · · ·	3970 3740 3610 3550 3420 3420 3420 3430 3630 3810 3990 4200 4350 4500 4580 4750 4830 4750 4830 4750 4830 4750 4830 4770 4780 4780	440 400 350 3400 320 320 350 390 470 610 620 640 640 640 740 910	B 4300 3640 3400 3260 B 3000 C 650 B 3000 B 3000 B 3270 B 3800 B 5900 B 6300 T 410 B 7700 B 9200 10700 B 8200 B 8100 B 8100 B 8100 B 8100 B 8100 B 8100	5220 5300 5300 5250 5140 5110 5170 5170 5170 5170 5170 5060 5110 9230 10700 10300 7800 7800 7800 7840 5940	920 900 880 980 1070 610 700 720 720 720 600 650 1880 3150 4450 3900 6300 3900 2300	13200 12500 14800 11200 14800 11200 8 9700 8 9800 10100 8 10000 10000 8 470 8 8470 8 8300 9460 5 38700 78500 108000 133000 76200 36900	5300 5280 5280 5360 5360 5390 5200 4960 4800 5280 5610 5790 6100 6540 6740 6670 6640 7010	1060 1080 1160 1120 1080 1000 1000 1000 1000 1000 100	15200 15400 16500 16500 15900 8 15900 14000 8 13000 14000 8 13000 12400 8 27000 34300 43000 8 36000 8 36000 317000 39500 31800 54700
5 6	3970 3740 3610 3550 3420 3420 3460 3630 3810 4930 4750 4580 4750 4680 4750 4680 4750 4750 4750 4750 4750 4750 4750 475	440 400 350 350 320 290 320 350 350 370 470 490 520 610 620 720 710 640 740 970	B 4300 3640 3400 3260 B 3000 B 3000 B 3000 B 3000 B 3000 B 3000 B 5900 B 6300 T 410 B 7700 B 9200 10700 B 8200	5220 5300 5300 5250 5140 5110 5170 5170 5170 5170 5170 5170 5190 5060 5110 9230 10700 10300 7800	920 900 980 980 980 1070 700 720 720 720 720 620 620 620 1880 3150 4450 3900 2300 2300	13200 B 13000 12500 B 14000 14000 11200 B 9700 B 9800 10100 B 10000 B 9600 8470 B 8300 9460 5 38700 78500 129000 133000 76200 36900	5300 5280 5280 5360 5360 5390 5200 4800 4800 5610 5610 6540 6740 6670 6640 7010 7940 8430	1060 1080 1180 1120 1000 1000 1000 1000 100	15200 15400 16500 16200 15900 15900 14900 14900 12400
7	3970 3740 3610 3550 3420 3420 3420 3430 3630 3810 3990 4200 4350 4500 4580 4750 4830 4750 4830 4750 4830 4750 4830 4770 4780 4780	440 400 350 3400 320 320 350 390 470 610 620 640 640 640 740 910	B 4300 3640 3400 3260 B 3000 C 650 B 3000 B 3000 B 3270 B 3800 B 5900 B 6300 T 410 B 7700 B 9200 10700 B 8200 B 8100 B 8100 B 8100 B 8100 B 8100 B 8100	5220 5300 5300 5250 5140 5110 5170 5170 5170 5170 5170 5060 5110 9230 10700 10300 7800 7800 7800 7840 5940	920 900 880 980 1070 610 700 720 720 720 600 650 1880 3150 4450 3900 6300 3900 2300	13200 12500 14800 11200 14800 11200 8 9700 8 9800 10100 8 10000 10000 8 470 8 8470 8 8300 9460 5 38700 78500 108000 133000 76200 36900	5300 5280 5280 5360 5360 5390 5200 4960 4800 5280 5610 5790 6100 6540 6740 6670 6640 7010	1060 1080 1160 1120 1080 1000 1000 1000 1000 1000 100	15200 15400 16500 16500 15900 8 15900 14000 8 13000 14000 8 13000 12400 8 27000 34300 43000 8 36000 8 36000 317000 39500 31800 54700

COLORADO RIVER MAIN STEM--Continued

9-3800. COLORADO RIVER AT LEES FERRY, ARIZ. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued

		APRIL			MAY			JUNE	
		Suspen	ded sediment		Suspen	ded sediment		Suspen	ded sedimen
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	8000	2400	51800	10300	1630	45300	35600	1780	171000
2	8210	2740	60700	9640	1510	39300	34800	1800	169000
3	8570 8500	3500	81000	10000	1530	41300	35600	1690	162000
5	8500 8390		B 80000	10700	1770	51100	38400	1800	187000
"	8390	3020	68400	12200	2300		39700	1600	B 170000
7	8180 7940	3110 3500	68700 75000	14400 16600	2890 3450	112000 155000	37400 33500	1500 1450	152000 131000
8	9230	4250	106000	18100	3230	158000	31500	1470	125000
9	11100	5180	155000	17500	2900	137000	29900	1340	108000
10	10300	4870	135000	15800	2450	105000	28000		B 91000
1	10700	4780	138000	14400	2380	92500	28000	1180	89200
2	11600	4040	127000	13400	1970	71300	28400	1080	82800
3	10700	3590	104000	12900	1780	62000	29600	1220	97500
4	10300	3000	B 83000 66900	12700	1700	B 58000	30300	1100	90000
5	9910	2500	66900	13200	1820	64900	29900	1300	105000
7	9570	2180	56300	16100	2200	95600	28800	1020	79300
8	9450	2100 1960	53600 48300	19300	2580	134000 115000	28000	870	65800
9	9120 8250	1740	38800	18700 16900	2280 1790	81700	26500 25400	840 920	60100 63100
ó	7800	1670	35200	16600	1610	72200	24300	720	47300
1	7690	1610	33400	17800	1730	83100	22900	770	47600
2	8220 8540	1620	36000	18700		B 100000	21900	720	42600
3	8540	1830	42200	20600	2400	134000	20600	610	8 34000
4	8830	1910	45500	23600	2530	161000	19300	570	29700
5	9720	2400	63000	25400	2530	174000	18400	530	26300
6	10900	2570	75600	27300	2320	171000	17200	530	24600
7	12000	2540	82300	29200	2220	175000	15800	600	25600
8	12000	2390	77400	30700	2220	184000	14700	660	26200
9	11300 1 0 90 0	2100 2820	64100 83000	31100 32700	2120 2180	178000 193000	13700 12700	640 530	23700 18200
1	10900	2020	83000	34800	2050	193000	12/00	330	10200
otal	285920		2235200	581340		3513300	800800		2544600
		JULY			AUGUST			SEPTEMBER	₹
1	11800	500	15900	3030	530	4340	8250	12700	283000
2	10900	480	14100	3420	4500	5 43400	6000	13700	222000
3	9990	620	16700	3070	10000	82900	5470	10100	149000
4	10100	580	B 16000	4520	13500	165000	4930	7900	105000
5	10300	1200	B 33000	4500	20400	248000	4550	7200	B 88000
6	8900	2320	55800	7940	27800	596000	5170	8100	B 110000
7	8570	4100	94900	8830	32500	804000	4880	9000	119000
8	7970	2200	47000	9080	26000		5880	5800	92100
9	7550 7380	1200 1050	B 24000 21000	7940 6800	20700 18400	444000 338000	16100 21900	11000	B 480000 1160000
1	7350	1400	27000						
2	6380	1640	27800 28300	6030 5220	12200	199000 152000	24700 24300	28200 29800	1880000 1960000
3	6030	780	12700	4830	9000	117000	18700	20300	1020000
4	5910	980	15600	3900	8650	91100	13200	17000	B 610000
5 • •	5820	1200	B 19000	3550	6500	62300	11300	28500	870000
6	5500	1100	B 16000	3440	5050	46900	10500	29000	B 820000
7	5030	1010	13700	4440	4450	41300	9870	21800	581000
B • •	4680	770	9730	4250	3250	37300	9910	15000	B 400000
9	4380 4080	650 580	7690 6390	5610 6220	14400 9800	218000 165000	11300 12500	12900 16300	394000 550000
1	3830	450	4650	6480	16000		14200	17300	663000
2	3760		B 5100	7550	14000	B 290000	16300	19700	867000
3	3630	2000	B 20000	6030	18800	306000	12700	21700	744000
4	3500	3730	35200	5200	19200	270000	10100	21100	575000
5 • •	3340	1450	13100	4550	13200	162000	9910	18600	498000
6	3260	410	3610	4250	8100	93000	10900	15200	447000
7••	3240	155	1360	4230	6000		13400	11800	427000
8	3180	190	1630	4550 5970	5550	68200	15000	9200	373000
9	3160 3200		B 1900 B 2100		7600	123000 278000	13900 12500	11100	417000 B 370000
1	3220	297	2590	7240 8040	14200	306000	12500	11000	570000
	185940		586550	169710		6740740	358320		17274100
otal	103340								
otal	discharge	for year	r (cfs-daye). ns)						3349530 39490310

COLORADO RIVER MAIN STEM--Continued

9-3800. COLORADO RIVER AT LEE'S FERRY, ARIZ. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withbrawal tube; C, chemically dispersed, D, decantation; N, in native water; P. vinet: S, sieve: V, visual accumulation tube: W, in distilled water)

	Method	jo.	analysis	SPWC	VPWC	VPWC	VPWC	VPWC	VPWC	VPWC	VPWC	VPN	VPWC	VPWC	SPWC	VPWC
			2,000													
			0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000							100						
		meters	0.500	1	1	!		100	9	86	81	100	100	100	!	!
		in milli	0.250	1	9	901	9	97	8	63	8	88	8	82	1	1
	diment	cated,	0.125	100	8	66	8	2	8	21	63	63	16	8	!	100
	Suspended sediment	Percent finer than size indicated, in millimeters	0.062	66	54	28	75	16	7	44	29	8	2	28	100	\$
	Suspen	than si	0.031	1	ł	1	;	 -	!	ł	48	20	!	1	1	i
1 Water		nt finer	0.016	8	12	7	46	46	4	24		39	21	38	87	11
distried		Perce	0.002 0.004 0.008	!	1	1	1	1	1	1	31	58	}		1	ł
, w			0.00	55	œ	4	8	28	24	16	27	2	31	24	63	48
n tube;			0.002	44	-	6	24	23	8	13	70	4	23	20	21	35
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water,	Sediment	discharge	(tons per day)	3230	3280	4060	4120	3370	3860	2990	2990	3040	3330	2230	3970	2640
s, sleve; v, vi	Sediment	concen- tration	(mdd)	4590	443	3250	3690	2310	2380	3640	1830	1830	1330	822	25500	19900
r, piper		Discharge (cfs)	Ì	4580	3850	8610	11800	16100	19000	28800	34400	34400	33500	29200	7310	22200
	Sam-															
	Water tem-	per-	(.F)													
		(24 hour)		1040	1210	1050	1400	1130	1040	1010	1140	1140	1150	1010	0830	1000
		Date of collection		Oct. 12, 1960	Jan. 15, 1961	Feb. 23	Apr. 12	May 10	May 18	May 27	June 2	June 2	June 7	June 16	Aug. 6	Sept. 10

PARIA RIVER BASIN

9-3820, PARIA RIVER AT LEES FERRY, ARIZ.

LOCATION.--At gaging station, 0.5 mile upstream from mouth and 1 mile northwest of Lees Ferry, Coconino County. DMAINAGE AREA.-1,570 square miles, approximately. RECORDS AVAILABLE.--Chemical analyses: October 1947 to February 1950. Water temperatures: October 1956 to September 1961.

EXTREMES, 1660-61.—Water temperatures: Not determined.

EXTREMES, 1660-61.—Water temperatures: Not determined.

EXTREMES, 1660-61.—Water temperatures: Not determined.

Sediment concentrations: Maximum daily, 433 000 pm Aug. 4; minimum daily, 1888 than 0.05 ton June 1-30.

EXTREMES, 1967-61.—Mater temperatures (1956-60): Maximum, 96°F Aug. 11, 1958, July 29, 1960; minimum, freezing point Jan. 18, 1960 and several days during January 1961.

Sediment concentrations: Maximum daily, 433,000 ppm Aug. 4, 1961; minimum daily, 1 ppm June 1-10, 1950.

Sediment concentrations: Maximum daily, 433,000 ppm Aug. 4, 1961; minimum daily, 1 ppm June 1-10, 1950.

REMARKS.—Flowaffected by ice Jan. 5-16.

Temperature (°F) of water, water year October 1960 to September 1961

Mench															Day															Aver-
Month	-	7	6	4	5	9	7 8	6	2	=	12	13	14	15	9	17	18	61	20	21	22	23	24 2	25 2	26 2	27 28	8 29	30	31	age
October November	71	57	57.7	8 1 1	117	1 1 1	1 4 8	- 60 8 55 	5 50	56	63 42	67 35	56 48 38	48 53 33	51	53	52	33	67 53 35	59	821	63 5	9 95	67 66			33	1 45	34	111
January February	37	33	1 8 4	4 2 1 2	1 8 6 7		32 448 55 44	4 45	5 37 4 6	4 1 4	111	32 54 49	1 4 4	32 25 50	11	3 4 6 5 0 5 0	115	32 43	1 1 89	32	1 6	32 34 3	51	55		48 40 58 47	7 9	5 1 1	37	511
April May June	78	911	67	111	9 5 8	5 8 4 1 1	55 60	821	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	65	91 2	52	111	r 18	73	77	1911	973	111	112	111	52 -	116	1120		54 777 88	611	92	84	111
July August September	83 80 67	78	84 79 65	58	71 17		82 69 66 66 66	85	5 72 - 66	79 78 76	8 2 7 5 7	80 77 68	86	69 75	72	88 72 67	89 77 66	47 60	77 81 56	68	112	77 81		84 88 72 70 72 73		85 93 69 85 74 78	74 75	4 69 5 73	969	76

PARIA RIVER BASIN -- Continued

9-3820. PARIA RIVER AT LEES FERRY, ARIZ .-- Continued

Suspended sediment, water year October 1960 to September 1961 [Where no daily concentrations are reported, loads are estimated]

		OCTOBER	e no daily co		NOVEMBER				ECEMBER		
+			ded sediment				sediment			ded	sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	u-u	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
1	4.7	C 23	0.3	10		-	2	18	128		6.2
2	5.2	C 23	.3	11			3	16			10
3 • •	5.2	C 23	•3	11		}	3	16			20
4	5.2	C 23	• 3	11			3	20			25
5	5 • 2	C 23	•3	12		ĺ	4	16	560		24
6	5.0	C 23	.3	13			30	9.7			10
7	5.0	C 23	•3	156	36500	S	27800	11			10
8	7.0		5 671 5 771000	71	52000	1	10300	8 • 2			5
9	696 8 87		S 771000 S 651000	28 20	57000 2 9 200	ļ	4470 1580	9•6 17	354	s	8 22
										-	
11	212 63	68000 40000	5 49800 7060	18	15200 2100	Ì	739 102	22 22	560 655	B S	40 44
13	35	29000	2740	18 17		8	30	20	547	5	35
14	21	9500	539	17	300	٦	14	17	547 779	Š	35 38
15	18	3120	152	17	285		13	17	795		36
16	14	3100	B 120	17	228]	10	14	630		24
17	16	3450	149	16		В	ığ l	14			20
18	18		B 150	16	205	[9	14			25
19	25	2280	154	16		8	13	12			20
20	21	3200	181	16	340	ì	15	12	460		15
21	17	7200	330	16	250		11	12			14
22	16	14600	631	15	210	ļ	8 • 5	11			12
23.4	15	4200	170	15			8	12	460		15
25	14 14	781 333	30 13	15 1 5			8 8	14 13			16 14
26 • •	13 12	156	5.5	15			7	13 16	375		13 20
28	12		3	16 16		l	7	19			25
29	12		3	16			7	20	550		30
30	11		3	14	145		5.5	8.9			10
31 • •	10	77	2•1					6•2	410		6.9
Total	2214•5		1484911.7	664			45226	45046			613•1
		JANUARY	,		FEBRUARY	′			MARCH		
1	6.2	C 163	2.7	23	C 355		22	11	380		11
2	5.4	C 163	2.4	23	C 355	ì	22	14	440	В	16
3	5•2 4•7	C 163 C 163 C 163	2 • 3	20	C 355		19 19	17 20	470 630		22 34
5	4.7	C 163	2•1 2•1	15	C 485		20	22	820		49
		1 1		1		l	- 1				
6	3.8	C 163	1.7	12	C 485		16	18	10000 23800	В	790
7••	3.8 3.8	C 163 C 163	1 • 7 1 • 7	16 19	C 485 C 579		21 30	2 5 18	23800		1610 117
9	4.7	C 163	2.1	18	C 579		28	16	3100		134
10	5.2	C 163	2+3	18	C 579	l	28	20	3800		205
11	5.4	C 163	2.4	17	C 579	1	27	26	1300		91
12	5.9	C 163	2.6	18	C 579	İ	28	26	1800	В	130
13	7.1	230	4 • 4	18	C 579	-	28	21	4800	i	272
14	8.6		B 4	16	C 579	(25 20	19 20	7000 4280		359
15	8.9	150	3.6	13	C 579			20	4280		231
16	9•6	150	B 4	13	C 579	1	20	19	4000		205
17	12	C 157	5-1	16	C 579		25	21	4400		249
18	16	C 157	6.8	16	C 579	1	25 22	20 19	5950 2600		321 133
20	16 13	C 157	6 • 8 5 • 5	14 12	C 579	l	19	17	850		39
21	13	C 157	5.5	15	C 579		23	15	750	В	30
22	12	C 157	5.1	14	C 579	1	22	15	780	٦	32
23	13	C 157	5.5	13	C 579	1	20	14	700	Ì	26
24	13 16	C 157	5.5 16	11 9.6	C 443		13 11	13 20	1400 2800	B	49 180
										٦	=
26	16		16	13	C 443	1	16	35	3700		350
	16		16	12	C 443		14	24	25 0 0 19 5 0		162
27			16			1	12	22		İ	116
27	16 16		16			1					62
27	16 16 16		16 16	=		l		22 20	1050 9900	ļ	62 535
27 28 29	16			=	=			20 20 20	9900 2200		535 119

S Computed by subdividing day. B Computed from estimated-concentration graph. C Composite period.

PARIA RIVER BASIN--Continued

9-3820. PARIA RIVER AT LEES FERRY, ARIZ. -- Continued

Suspended sediment, water year October 1960 to September 1961---Continued

-		APRIL			MAY			JUNE	
	Mean	Suspen	ded sediment	M	Suspen	ded sediment	Mean	Suspend	ded sedimen
Day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	23	1200	75	3.6	C 22	0.2	3.4	C 4	T
2	21	1700	96	4.0	C 22	1 •2	3.6	C 4	Ţ
3	18 18	15800 16000	768 B 780	3.6	C 22	•2	5.2	c 4	Ī
5	15	11000	8 780	4.7 6.2	C 22	•3	4.6 4.7	C 4	Ţ
· ·	1,	11000	1 ***	0.2	- 41	· '			•
6	14	5000	189	5.0	C 41	•6	5.0	C 4	T
7	13	11500	404	5.9	C 41	•7	4.5	C 4	Т
8	46	22800 20200	2830 1800	5.9	C 41	•7	4.0	C 4	Ţ
0	33 16	18600	804	8.2	C 41	•9	3+2 2+8	C 4	
ı						1			
200	14 12	18800 6600	711	3.6 3.0	C 26	•3	4•2 3•6	C 4	7 T
3	10	5800	157	3.0	c 26	•2		c 4	Ť
4	8	2300	B 50	4.0	C 26	.3	3.4	C 4	T
5	7.5	455	9.2	4.7	C 26	•3	3.6	C 4	Т
1600	8.2	217	4.8	4.5	C 26	.3	3.8	c 4	т
17	8.9	155	3.7	4.0	C 26	•3	2.6	C 4	T
18	8.2	214	4.7	4.5	C 26	•3	4.2	C 4	Ţ
19	7.8 7.1	230 200	8 4 B	3 · 8	C 8	:1	4 • 2 3 • 8	C 4	Ţ
,,	• •	175	1	_	1				,
	5.2		2.5	3.8		•1	3.6	C 4	
22 • •	4.7 5.2	128 84	1.6	4.0 3.8	C 8	•1	3.0 3.0	C 4	T T
4	4.7	50	B .6	3.8	c 8	: : :	1.6	c	į †
5	5.0	51	.7	3.8	c š	i	3.2	č š	Ť
6	5.0	100	В 1	3.8	с в	•1	3.0	c 4	т
7	4.7	134	1.7	2.8	c 8	i	3.8	č 4	Ť
28	4.7	100	lB 1	3 • 2	C 8	•1	3.0	C 4	T
9 • •	4.7	58	.7	4.1	C 8	•1	3.2	C 4	Т
30	4.0	40	B •4	4+2	C 8	•1	2.4	C 4	т
31				3.6	c 8	•1			
Total	356.6		9365.6	131.6		8+5	107•4		1.
		JULY			AUGUST		:	SEPTEMBER	
1	1.8	53	0.3	37	175000	19400	177	156000	S 113000
2	4.2	40	B •5	15	64000	2690	28	49000	3840
3	5.9	20	•3	62	183000	S 61500	13	25200	885
4	107	84000	B 75000	2110	433000	5 4100000	10	14200	383
500	72	160000	8 35000	1100	124000	5 946000	943	6300	B 160
6	24	90500	6300	899	348000	S 1520000	8.2		B 40
7	12 8•6	48500 26000	1630 B 600	68	109000	21500	8 • 2	550	12
9	6.2	7500	B 130	24 17	52000 47000	B 3500 2240	13 1000	10400 247000	S 392 S 1140000
10	13	20500	5 805	17	27500	1260	95	132000	36400
11		25000	479						
2	7•1 5•7	12500	192	33 41	27500 156000	S 2870 S 25200	26 14	92000 59500	6940 2330
3	4.7	20500	260	18	60000	3020	12	31000	1000
14	4.2	9500	108	13	22500	790	12	17000	551
5	3.2	1400	B 12	9.6	15500	402	14	17400	S 1110
6	3.4	620	B 6	13	45000	5 1940	18	47000	2370
17	3.8	480	4.9	74	125000	S 30900	12	32000	1080
18	3.6	370	3 • 6	30	90000	7830	2460	283000	2470000
9	3.6 4.5	265 300	2.6	17 16	50000 29000	2380 1250	208 36	125000 84000	S 87800 8470
1	-		1						
2	14 13		S 1210 B 740	11 39	13000 95000	B 390 B 15000	28 19	60500 29000	4740 1490
3	6.2	9800	B 160	62	178000	5 40400	16	11000	1490 475
400	4.5	4600	56	40	151000	18100	14	4000	B 150
5	4.0	1900	21	403	182000	S 340000	13	630	22
6	3.8	860	8.8	184	158000	5 104000	11	316	9.
27	3.6	400	3.9	34	84000	8000	iö	289	7
28	3.6	203	2.0	14	45500	1780	10	217	5.
29	3.4	200	B 2	12	36000	1210	8.9	214	5.
10	13 86	47000 196000	B 6000 52300	65 114	114000 155000	S 47900 S 56900	8.2	101	2
+	453.6	.,3000			199000				•
otal			181041.5	5591.6	I	7388352	4311.8		3883670

⁶ Computed by subdividing day.
T Less than 0.05 ton.
B Computed from estimated-concentration graph.
C Composite period.

PARIA RIVER BASIN---Continued

9-3820. PARIA RIVER AT LEES FERRY, ARIZ .-- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 · (Methods of analysis: B, bottom withdrawal tube; C, chemically dampersed, D, decandation; M, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

1	of	analysis	VPWC	VPWC	VPWC	VPWC	VPWC	VPWC	VPWC
		2,000							
		1,000	1	!	ł	100	1	201	1
	neters	0.500		1	i	86	ı	8	2
	n millin	0,250	100	100	201	8	100	16	6
Suspended sediment	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	96	66	86	48	86	67	8
ded se	se indic	0.062	90	16	83	8	88	42	22
Suspen	than siz	0.031							
	t finer	0.016	7.5	67	72	12	99	8	33
	Percen	0.008							
		400.0	48	47	49	12	4	18	23
		0.002	44	39	42	2	34	14	18
Sediment	discharge	(wns per day)							
Sediment	concen- tration	(mdd)	142000	127000	20000	296000	258000	451000	270000
	Discharge (cfs)		129	221	8	2540	235	6270	2470
	pling								
Water	per-	(°F)	9	22	78	72	11	11	99
	Time (24 hour)		0830	1220	1800	0620	1810	1940	1730
	Date of collection		Oct. 9, 1960	Oct. 10	July 31, 1961	Aug. 4	Aug. 4	Aug. 4	Sept. 18

LITTLE COLORADO RIVER BASIN

9-4012. LITTLE COLORADO RIVER AT CAMERON, ARIZ,

LOCATION.--At bridge on U. S. Highway 89 at Cameron, Coconino County, 12 miles upstream from gaging station, which is 3 miles downstream from Coconino damsite, 9.5 miles downstream from Moenkopi Wash, 9.5 miles northwest of Cameron, and 45.5 miles upstream from mouth.

DRAINGE AREA. --26,500 square miles, approximately, upstream from gaging station.

RECORDS AVAILELE. --Charical analyses: October 1950 to September 1958.

Water temperatures: October 1951 to September 1961.

Sediment records: October 1947 to September 1956 (monthly), October 1956 to September 1961.

Sediment records: October 1947 to September 1956 (monthly), October 1956 to September 1961.

Sediment concentrations: Maximum dally, 160,000 ppm Sept. 10; minimum dally, 00 ppm Sept. 10; minimum dally, 00 ppm Sept. 10; minimum dally, 00 ppm Sept. 10; minimum dally, 01 ppm

Sediment loads: Maximum daily, 2,580,000 tons Sept. 21, 1952; minimum daily, 0 tons on many days each year. REMARKS.--Sediment loads are computed at station with allowance made for inflow below sampling point and gaging station. Appreciable inflow between sampling site and gaging station during periods of storm runoff. Most of this inflow is from Moenkopi Wash, but other arroyes may at times become sizeable contributors.

1961	
ember	
Sept	
4	
1960	
water year October 1960 to September 13	
vear	
water	
water	
of water	
(F) of water	
("F) of water	
Temperature (°F) of water	

7															Day	Α.															Aver-
4ontn	-	7	б	4	2	9	7	80	6	10 11	1 12	2 13	3 14	1 15	91 9	17	18	19	20	21	22	23	24	25	92	27	28	29	30	31	age
October November December	48 50 40	60 49 41	60 52 41	62 51 42	63 64 48 4	62 48 40	59 49 35 4	000	58 65 50 51 42		65 50 53 49 52	54	4 45	46	6 55	52	53	54 45	4 5 4 5	144	411	47	46	41	100	1 8 8	34	34 4	35	34	47
anuary	503	33	33	34	503	35	45 4 60 6	35	35 42 56 56 5	36 3 55 55 5	37 38 42 38 56 55		33 34 36 42 54 48	36	6 3 4 6 6 4 6 6 4 6 9 4 6 9 6 9 6 9 9 9 9 9	32	233	34	40 40	41 41 64	64 64 64	34 36 55	6 3 3 6 3 3	35 55 55	34 45 57	34 4 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3	33 3 4 6 6 6 6 6 6 6	34	39	35 39 56
April May	52 78	57	311	11 65	511	5	9	211	62	65 11	55 53		56 62	62	1100	09	4	65	1 1 2	611	1162	54	6	311	311	1 58	52	75	113	111	62
July August September	1.1	1 1 5	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111		111	111	111	111

COLORADO RIVER BASIN

LITTLE COLORADO RIVER BASIN -- Continued

9-4012. LITTLE COLORADO RIVER AT CAMERON, ARIZ. -- Continued

Suspended sediment, water year October 1960 to September 1961 [Where no daily concentrations are reported, loads are estimated]

OCTOBER NOVEMBER DECEMBER Suspended sediment Suspended sediment Suspended sediment Mean Mean Mean Dav Mean Mean Mean disdisdis-Tons Tons Tons charge concencharge concen charge concen per day per day per day tration tration tration (cfs) (cfs) (cfs) (ppm) (ppm) (ppm) 1.. 0 0 1.2 0.8 --2.. 0 0.1 0 • 8 1.8 5.. __ 0 0 0 6.. 7.. 0 1.1 0 4.6 7.2 0 ŏ 00 .6 8.. 6.1 0 9.. 66 52000 41500 11000 3720 1.8 11.. 16 25000 1080 2.2 22 12.. 5.8 1.6 20000 18000 310 80 2.2 8 • 2 7 • 0 14.. 862 17000 51300 30 1.1 5.7 144000 16.. 214 28400 s 19200 1.8 17.. 18.. 19.. 34600 35600 40800 351 422 47800 48700 1.2 S 1.0 531 1110 .8 1.0 **B2000** ō 56000 174000 • 4 o•1 21.. 524 56000 82200 55000 55000 55000 22 • • 23 • • 198 108 30500 n 16600 000 24. 70 0 25.. 40 54000 6050 26.. 27.. 28.. 20 10 10 10 53000 2970 0 0 52000 51000 1460 1430 1370 • 4 0 29.. 49000 . 4 0 •4 30 . . 45000 В 760 31.. 40000 B ŏ 340 Total 40.4 4611.0 686400 600 62.7 350 JANUARY FEBRUARY MARCH 1.. 0 1.8 ٥ ٥ 0 1.8 2 . . 0 0 3.. --000 5.. ō 0 .3 ŏ ō 0 • 3 ٥ ۵ ō • 2 0000 --8 · · 0 ٥ ŏ 0 0 10. 0 11.. 0 0 0 0 12.. 13.. 14.. 15.. --000 0 ń 000 0 ŏ 0 0 0 16.. 0 ٥ 17.. 18.. 19.. 0 ō 0 Ö ō 0 000 0 0 0 20. 21.. 0 0 0 0 22.. 23.. 24.. 0 0 0 0 0 0 0 0 0 10 12 7•1 4•f 0 26 . . 0 ٥ ٥ 27.. 28.. 0 280 8740 0 6930 14200 11000 9510 22000 5550 2770 29.. 572 187 4.6 31.. 108 Total 37.0 40 1147 39060 6.5

S Computed by subdividing day.
B Computed from estimated-concentration graph.

LITTLE COLORADO RIVER BASIN -- Continued

9-4012. LITTLE COLORADO RIVER AT CAMERON, ARIZ. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued

1	Mean dis- charge (cfs)	Mean	ded sediment	Mean	Suspen	ded sediment	Mean	Suspend	led sedimen
1	dis- charge			Mean					
3	(618)	concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
3	101	9050	2470						
	119	9220	2960						
	138	9190	3420						
5	114 183	10700 17500	S 6180 8650						
6	510	18700	25700				1	1	
7	854	16200	37400						
8	836	12800	28900						
9	686 520	11100 9300	20600 13100						
1	385	7780	8090						
2	310	6420	5370						
3	266	6000	4310	ŀ				1	
4	195	6040	3180		1		l		
5	160	4600	1990						
6	133	3150	1130						
7	104 88	2400 2320	674 551		1				
9	70	1860	352						
0	40	1240	134						
1	25	1500	101						
3	15 5	1470 1400	60 B 18	Ì	1		1	1 1	
4	٠.2	1000			1		1		
5	0	1000	6						
6	0		0						
7	0		0						
9	ŏ		1 6		1		1		
0	0		Ō				1		
1		_=							
otal	5857.2		175341	0		0	0		0
		JULY			AUGUST			SEPTEMBER	
1	0			158		45000	93	72200	18800
3	0 29			171 233		60000 111000	75 60	70400 69200	14800 11600
4	13	i	1	80		20000	50	65400	9160
5	Ö	\		129		40000	45	60000	B 7600
6	0		1	211	99400	s 63000	40		B 6200
7	0	1	i	155	92000	41400	35		B 4900
8	Ö]	40	94500	11000	30	50000	B 4200
9	ŏ			13 10	81500 64500	2970 1810	664 982	123000 160000	5 392000 5 494000
1	0			10	52000	1460	180	108000	56400
2	0	1	1	10		1000	50	96600	14000
3	0	1	I	5		450	25	89200	6470
5	0			5		400 350	17 16	76500 75600	3640 3390
6	0		ļ	15		3000	15	72500	3040
7	ŏ		1	59	92700	5 21000	13	72100	2620
8	0			43	98000	12200	11	71400	2200
9	0			269	126000	5 101000	10	69200	1940
0				881	111000	284000	10	67600	1890
2	0	1	1	1020 409	92000 79000	272000 90500	60 60	67900 118000	11400 20500
3	0	l	1	227	73500	46700	40	110000	12800
5	0		1	131 84	75800 75800	27800 17800	25 18	91900 83500	6660 4210
- 1	0		1	1	1			1 1	
7	0			45 30	79400 98000	10000 8530	12 8	83100 83400	2790 1870
8	0		1	20	90000	5220	3	68400	958
9	0	1	1	67	84300	5 18200	4	69800	782
0	0 314			114 120	91500	30200 26900	.3		B 570
otal	356	_	100000	4768		1374890	2656		1121390

S Computed by subdividing day. B Computed from estimated-concentration graph.

COLORADO RIVER BASIN--Continued

9-4012, LITTLE COLORADO RIVER AT CAMERON, ARIZ, -- Continued

Particle-size analysis of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, rebmically dispersed; D, decandon; N, in native water; October 1961 of the control of the c

Sediment Sediment Concentration Concen					P, pipet;	S, sieve; V, vi	P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	tube; V	, in dig	stilled w	ater)						
Concent discharge Percent than size indicated, in millimeters a tration (tons per day) 0.002 0.004 0.006 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000 2.000 2.000 3.000 5.000	Water tem- Sam-	Water tem- Sam-	Sam-			Sediment	Sediment				Su	pended	sed1me	nt			Mathod
(Wills per taxy) 0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000 4.000 5.00 1.000 1.	Time per- pling Discharge (24 hour)	н	н	Discha (cfs)	rge	concen- tration	discharge		*	ercent	iner th	n size iı	dicated	, in mil	imeters		jo
42 51 70 86 98 100 58 72 79 80 84 95 100	(°F)	(°F)	To Take			(mdd)		0.002	0.004	0 800.	016 0.	031 0.0	62 0.13	5 0.25	0,500 1,00	0 2,000	4
58 72 79 80 84 95 100	1800 65 13400		13400	13400		4880			42		21		9	96	100		VPWC
	1800 73 50			20		102000		28	7.2		79	_	8	98	100		VPWC

COLORADO RIVER MAIN STEM

9-4025. COLORADO RIVER NEAR GRAND CANYON, ARIZ.

OCATION.-At gaging station on left bank at Kaibab Bridge, 0.2 mile upstream from Bright Angel Creek, 11 miles by trail northeast of Grand Canyon, Cocconion County, 26 miles downstream from Little Colorado River, and 267 miles upstream from Hoover Dam.

DRAINAGE AREA.--137,800 equate miles, approximately.

RECORDS AVAILABLE -- Chemical analyses: August 1925 to November 1942, September 1943 to September 1961

Sediment concentrations: Maximum daily, 138,000 ppm Sept. 13, 1927; minimum daily, 16 ppm Dec. 25-31, 1960.
Sediment loads: Maximum daily, 27,600,000 tons Sept. 13, 1927; minimum daily, 196 tons Oct. 11, 1956.
REMARKS.--Values reported for sodium (Na) are determined by analysis and do not include potassium (K). Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex.

1.0.2.2 핂 mhos at specific ductmicro-25°C) ance 1710 1630 1570 1640 1570 1710 1780 1700 V46000F0 ratio dium forp-늏 န္ပ 2328 3328 3328 3328 3328 3328 291 287 282 306 306 260 276 ate Non-Caras CaCO, Hardnsss Mag-ne-sium clum, 570 750 750 525 535 505 178 190 190 195 195 132 156 (residue at 180°C) rons psr day 5660 7760 15500 15900 15000 17000 16300 20100 37500 25300 20800 19700 15400 Dissolved solids acrs-foot 1.54 1.59 1.59 1.63 1.39 1.86 2.31 2.31 1.67 1.67 1.54 Chemical analyses, in parts per million, water year October 1960 to September 1961 Tons per per million Parts 4370 1270 1700 1230 1230 1130 1130 1130 1220 1070 1170 11200 1020 11118 11 1 11 1 1 1 8 5 E trate (NO.) 11 1 1 Fluo- Nirlde 111 E Chloride ਹੁ 2111111 11118 11 Sulfate 8 1111211 Se a So HCO' Bi--uoq 197 206 184 228 220 224 214 223 223 223 223 220 220 220 a 1111211 2111111 Po-tas-stum (K) Sodium (Ra) 210 193 236 191 186 177 187 217 176 198 198 174 192 Mag-ne-sium (Mg) 64424644 04444484 Cal Ca 149 134 120 126 126 1100 11 111 1111811 Fe) Silica (SiO₂) 8111111 111111 discharge (cfs) 4411 5855 8163 7625 6269 3448 1855 2355 5372 5020 4616 3157 3075 1-30..... 19-31 2-3..... 6-25.... 26-31..... 26-Feb. 28... 1960 14-15..... 6-18..... 1-11 12-30..... T..... 4-5 : 1961 Date of collection -25 Deo. Nov. lov. Dec. Dec. Jan. Set.

ত ৰ্ ত্ৰত্ৰ	8478778	2000	9
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
1330 1180 1310 1110 881 811	540 646 763 1100 1450 1810 2030		1180
1 2 2 3 1 1 1 2 3 5 5 1 1 1 1 2 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	444666	w a a a a w a a a a	3.0
212 181 212 184 132 120	74 94 112 186 260 426 480	345 490 357 801 532	227
392 358 394 348 288 268 231	194 212 248 350 426 610	550 680 560 965 724	387
19900 22600 33700 19000 22000 22100	27800 17200 15800 14400 10800 23800 18000	21400 32400 33900 108000 50000	
1.16 1.00 1.15 1.15 .96 .77	.46 .54 .08 1.00 1.35 1.82	1.66 1.89 1.54 2.43	1 1 1
856 738 846 708 569 512 439	337 400 501 734 996 1340 1520	1220 1390 1130 1790 1390	863 1100 22700
ПППП	۶ ۱۱۱غ	11111	1 1 1
111111	6.111.9	11111	1 1 1
1111111	£ 4.	11111	1 1 1
1111111	116811133	11111	
1111111	104	11111	1 1 1
220 222 222 200 190 180	146 144 166 200 202 224 232	250 232 248 200 235	195 211 5130
1111111	8.1118.11	11111	1 1 1
140 115 135 110 76 69	37 66 104 155 181 212	176 167 135 154 134	115 150 3030
33 29 30 20 20 17	12 16 16 24 24 42 42 43	37 37 38 38	36
103 96 105 90 78 74 74	58 60 73 100 116 175	112 212 172 310 228	108 29 121 36 2829 761
1111111	<u>8</u> <u>9</u>	11111	1 1 1
1111111	4	11111	1 1 1
6601 11370 10360 9951 14330 15980 25110	30610 15920 11670 7277 4033 6577	6498 8640 11100 22400 13320	9739.2
Mar. 31-Apr. 8, 1961. Apr. 9-14. Apr. 15-17. Apr. 15-17. May 3-11. May 12-21.	May 30-June 26 June 27-30 July 1-6 July 19-Aug. 2 Aug. 3-15 Aug. 16-19	Aug. 20-31 Sept. 1-2 Sept. 3-12 Sept. 13	Weighted average Time weighted average Tons per day

COLORADO RIVER BASIN--Continued 9-4025. COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

	Arenage	Average.	6 3	50	39	37	4 4 4 4	51 50	57 57	6.5	75	980	78	69
		31	57	11	37	39	11	52 51	11	68	11	79	77	
		30	58	44	37	39		52	61 59	69	000	79	77	64 64
		29	58	4 4	37	39	11	53	59	2 83	8 8	79	77	64 63
		28	5.9	44	37	39	44	55	57	22	81	81	7.7	64 63
		27	58	4 5 5	37	38	4 5 4 5	56	56	70	81	80	78	64 63
		26	5.00	4 4 7 5	37	38	4 5 4 5	56	55	69	80	79	78	65 64
-		25	5.58 8.88	4 4 6 4	37	37	4 5 4	57	57 56	69	80	79	78	65
1961		24	59	41	37	37	47	57	58	6.5	80	79	78	65 65
September		23	59	47	37	37	47	57 57	58 57	66	80	80 79	78	66
ptem		22	5.9	47	37	37	47	55	58	99	78	8 8	78	66
8		21	58 57	47	37	37	47	55	58	66	77	8 8	78	68 67
0 to		20	58 57	48	37	37	47 47	55 54	58 58	99	77	9 0	78	69
1960		19	58	4 4 8 8	37	38	47	53	58 57	6.5	92	88	77	70 69
ber		18	5 88 8 88	6 4 4 8	38	38	47	\$ \$	57	6.5	22	၁ ၈	72	2¢
water year October		17	0, 80 0, 80	50	38	38	4 4 5	53	57	62	76	80	76	69
ä	Day	16	500	30	38	37	4 4 7 2	53	56	62	76	80	76 76	69
r ye		15	29	22	388	37	45	53	56	61	75	808	78	69
ate		14	63	50	38	36	4 4 4 5	52	56	61	72	80	78	69
		13	63	52	39	36	4 4	51	50.00	62	75	81	78	68
water,		12	6.5	53	404	37 36	11	4 8 4	56	63	72	81	71	68
of		Ξ	65	53	41	35	4 4	48	57	63.	73	80	79	69
(*F)		2	8.9	44	4 0 4	35	4 3	40	58	62	73	80	29	69
		6	689	54	44	35	43	47	58	61	73	19	79	70
tur		8	69	54	9 9	35	42	3 3	58	200	22	79	79	69
Temperature		7	0,69	54	104	35	42	4 6	59	63	20	79	79	69
Tem		9	269	4 4	4 4	36	4 5 7	44	53	63	669	79	79	70
		5	22	44	44	36	42	45	59	44	69	78	79	71
		4	22	7, 7,	5 6	3 %	4 5 7	2 4	52	33	69	78	79	72 1
		3	70	5.5	4 4	36	42	4 4 5	52	64	69	80	7.9	74
		2	22	10 TC	4 4	36	14 4	5 5	E E	63	8 8	8 8	2 6	77
		•	71	55	44	36	39	2 4	53	62	64	80	79	77
			: :	::	: :	::	::	::	::	::		::	::	::
	Manah	Мошп	October Maximum Minimum	8 8	m m m	January Maximum Minimum	February Maximum Minimum	March Maximum Minimum	Maximum Minimum	Maximum Maximum Minimum	Maximum Minimum	Maximum Minimum	90	September Maximum Minimum

COLORADO RIVER MAIN STEM--Continued

9-4025. COLORADO RIVER NEAR GRAND CANYON, ARIZ, -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported, loads are estimated)

		ОСТОВЕ	R		NOVEMBEI	₹		DECEMBER	
		1	ded sediment			ded sediment			ed sediment
Day	Mean			Mean			Mean	1	
Day	dis-	Mean concen-	Tons	dis-	Mean concen-	Tons	dis-	Mean concen-	Tons
	charge	tration	per	charge	tration	per	charge	tration	per
	(cfs)	(ppm)	day	(cfs)	(ppm)	day	(cfs)	(ppm)	day
								 	
2	4400 4300	595	7070 6400	6080 6070	1400 1210	23000 19800	5300 2100	450 455	6440 2580
3	4220		5700	5940	925	14800	1610	455	1980
4	4100		5100	5950	790	12700	1730	320	1490
5	4020		4600	6060	700	11500	2980	310	2490
			1000	""	1		2,00	1 7.0	-4,-
6	3920	390	4130	6140	650	10800	4260	360	4140
7	3890	360	3780	6150	640	10600	4970		4600
8	3940	335	3560	6290	655	11100	5470		4400
9	3980	330	3550	6700	950	17200	5700		3800
10	4500	330	4010	7020	1870	35400	5870		3300
11	5120	520	7190	6560	1480	26200	6000		3100
12	5570	4400	66200	6500	2060	36200	6170		2700
13	5380	15200	221000	6460	1770	30900	6100	143	2360
14	5830	8400	132000	6430	1090	18900	5900	150	2390
15	5880	15000	B 240000	6550	890	15700	5680	111	1700
16	8280	24000	B 540000	6500	940	16500	5480	85	1260
17	8340	22500	507000	6420	820	14200	56380	82	1190
18	7870	10000	212000	6360	895	15400	5280	72	1030
19	8550	9500	219000	6380	760	13100	5260	C 59	838
20	9470	10600	271000	6430	720	12500	5220	Č 59	832
21	9660	16400	428000	6450	560	9750	5130	c 59	817
22	9180	22000	B 550000	6390	395	6810	5080	C 59	809
23	8470	14000	B 320000	6410	380	6580	4970	C 59	792
24	7460	12600	254000	6420	380	6590	4820	C 59	768
25	7060	10200	194000	6380	400	6890	4710	C 16	203
6	6920	8100	151000	6490	420	B 7400	4750	C 16	205
27	6740	5900	B 110000	6660	410	7370	4870	C 16	210
28	6630	3550	63500	6570	400	7100	4990	C 16	216
29	6460	2500	43600	6410	440	7620	5060	C 16	219
30	6320	1900	32400	6310	455	7750	5180	C 16	224
31	6200	1600	26800				5270	C 16	228
Fotal	192660		4636590	191480		440360	151290		57311
		JANUAR	Y		FEBRUAR	1		MARCH	
1	5380	C 34	494	5650	C 55	839	6170	4200	70000
2	5350	C 34	491	5650	C 55	839	5820	2720	42700
3	5310	C 34	487	5680	C 55	843	5740	1280	19800
4	5180	C 34	476	5600	C 55	832	5650	720	11000
5	4970	C 34	456	5490	C 55	815	5700	568	8740
6	4700	C 34	431	5540	C 55	823	5950		9200
7	4450	C 20	240	5660	C 55	841	5830		8200
8	4240	C 20	229	5690	C 55	845	5740		7700
9	4100	C 20	221	5700	C 55	846	5690	470	7220
10	4040	C 20	218	5680	C 55	843	5680	500	7670
11	3920	C 20	212	5580	C 55	829	5780	480	7490
12	3860	C 20	208	5570	C 55	827	5820	440	6910
13	3880	C 20	210	5570	C 55	827	5710	400	6170
14	3950	C 20	213	5580	C 55	828	5540	420	6280
15	4070	C 20	220	5640	C 55	838	5280	430	6130
16	4220	C 20	228	5680	C 55	843	5170	390	5440
17	4380	C 20	237	5680	C 55	843	5050	350	4770
18	4530	C 20	245	5620	C 55	835	5140	355	4930
19	4730	C 29	370	5520	C 55	820	5620	385	5840
20••	4830	C 29	378	5510	C 55	818	5880	400	6350
21	4910	C 29	384	5540	C 55	823	6130	550	9100
22	5000	C 29	392	5940	53	850	6290	630	10700
23	5120	C 29	401	7570	250	5110	6360	790	13600
24	5140 5130	C 29	402 402	9580 11400	780 1400	20200 43100	6830 6950	1090 1240	20100 23300
- 1		ł			1			1	
26	5120	C 29	401	10100	1400	38200	6880	1320	24500
27	5120	C 29	401	7900	450	9600	6870	1110	20600
28 • •	5120	C 29	401	7570	1510	30900	6970	1010	19000
30	5170 5350		405 607				7440 8580	950	19100 42400
	5560	42 52	781	=		==	8660	1830 1830	42400
31							0000	1 2000	72000
Total	146830		11241	177890		165457	190920	1	497740

B Computed from estimated-concentration graph. C Composite period.

COLORADO RIVER MAIN STEM -- Continued

9-4025. COLORADO RIVER NEAR GRAND CANYON, ARIZ. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued

Day		Suspen	ded sediment				1		
Day			aca scannon	li .	Suspen	ded sediment	1	Suspen	ded sedimen
	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	8520	1460	33600	10900	1570	46200	36500	4610	454000
2	8180	1300	28700	10300	1460	40600	36500	4410	435000
3	8480	1290	29500	9880	1310	34900	37800	3780	386000
4	8640	1390	32400	10400	1300	B 37000	38700	3350	350000
5	8630	1600	37300	11500	1300	B 40000	39200	3500	370000
6	8660	1500	B 35000	13200	1900	B 68900	39200	3400	360000
7	8820	1 22.00	B 36000	15300	3300	136000	37400	3000	B 300000
8	8820		B 36000	17300	4380	205000	34400		B 240000
9	10600		5 101000	18300	4400	217000	31700	2390	205000
0.0	12000	4260	138000	17300	3500	163000	30200	2040	166000
11	10900	3750	110000	15800	3100	132000	29300	1850	146000
2	11800	4160	133000	14600	2850	112000	28900	1860	145000
13	11800	3570	114000	13900	2490	93400	29800	2000	161000
14	11100	2710	81200	13400	1860	67300	31300	2000	169000
5	10700	2510	72500	13200	1690	60200	32100	1800	156000
16	10400	2220	62300	14300	2420	93400	31300	1510	128000
17	9970	1920	51700	17800	4820	232000	30600	1380	114000
18	9900	1620	43300	19900	4400	236000	28800	1280	99500
19	9350	1460	36900	18700	2990	151000	27400	1200	88800
20	8520	1460	33600	16900	2460	112000	26400	1160	82700
21	8080	1360	29700	17100	2920	135000	25200	1300	88500
22	8070	1200	26100	18500	3570	178000	24000	1280	82900
23	8470	1160	26500	19500	3290	173000	22400	1090	65900
24	8690	1100	25800	22000	3390	201000	21100	930	B 53000
25	9080	1170	28700	24800	4290	287000	20100	830	45000
6	10300	1480	41200	26200	4490	318000	19100	740	38200
27	11700	2100	66300	28400	4880	374000	17800	690	33200
28	12400	2380	79700	30200	4570	373000	16400	660	29200
29	12000	1990	64500	31300	4790	405000	15200	700	28700
30	11500	1890	58700	32800	4370	387000	14300	610	23600
31				34800	4780	449000			
Fotal	296080		1693200	578480		5557000	853100		5044200
		JULY			AUGUST	_		SEPTEMBER	₹
1	13500	510	18600	3920	140	1480	8880	13600	326000
2	12600	510	17400	3720	850	8540	8400	13900	315000
3	11700	570	18000	4010	6990	75700	6310	12500	213000
4	10600	770	22000	3880	3000	31400	5990	15000	B 240000
5	11200	550	16600	6060	9250	151000	5510	9800	146000
6	10400	1100	B 30900	6030	14600	238000	5210	8700	122000
7	9420	2000	B 51000	9340	18900	477000	5860	6600	104000
8	9000		B 78000	9170	28000	693000	5640	7600	B 120000
9	8370	4100	92700	9470	17700	453000	8580	14300	S 448000
10	7930	1650	35300	8130	25500	560000	19700	41600	2290000
11	7760	840	17600	7120	27000		22800	27000	1660000
12	7660	840	17400	6420	21000	B 360000	25400	34400	2450000
3	6810	660	12100	5820	15500	244000	22400	29100	1760000
4	6490	660	B 12000	5470	10500	155000	17300	20100	939000
5	6290	850	14400	4580	10400	129000	13100	21800	771000
16	6210	600	10100	4190	7300	82600	12000	22800	739000
17	5900	1000	15900	4130	7500	83600	11000	20300	603000
18	5480	1350	20000	4180	7250	81800	11200	16500	499000
19	5140	1160	16100	5090	5750	79000	12000	27000	875000
20	4790	830	10700	6550	6600	117000	12800	22400	774000
21	4490	700	8490	7480	19000	384000	13400	9950	360000
22 • •	4280	550		8050	21300	463000	16400	11800	523000
3	4180	380		8020	21800	472000	16000	17000	
5	4160 3950	270 280	3030 2990	6690 5870	15200 20500	275000 325000	12600 10900	16000	544000 489000
- 1									
26 **	3790	360	3680	5540	17300	259000	10900	17600	518000
27	3670	240	2380	5060	18500	253000	12400	16000	536000
28	3650 3590	600 650	5910 6300	4840 5140	15400 10500	201000 146000	14800 15500	13300	531000 439000
30	3560	300	2880	6900	6900	129000	14100	10000	381000
31	3600	160	1560	7840	12300	260000	14100	10000	381000
otal	210170		574720	188710		7708120	377080		20445000
lote 1		for year							3554690 46830939

S Computed by subdividing day.
B Computed from estimated-concentration graph.

Method of analysis

PWC SPWC SPWC VPWC VPWC VPWC PWC

COLORADO RIVER BASIN--Continued

9-4025. COLORADO RIVER NEAR GRAND CANYON, ARIZ. -- Continued

	_		.d	1_						
			2,000							
			1.000 2.000							
		neters	0.500	-	1	ŀ	100	100	100	1
		millin	0.250	1	100	1	66	95	96	!
ter;	diment	ated, ir	125	1	66	100	88	79	78	1
ative w	Suspended sediment	Percent finer than size indicated, in millimeters	0.062	100	97	86	65	54	28	100
optembe N, in m	Juspen	han siz	031						_	1
to Se tation; water)		finer	0.016	92	20	8	28	27	38	93
decan decan stilled		ercent	800							1
Octobe sed; D, 7, in di		_	400	89	26	28	16	16	28	77
year disper tube; W			1.002.0.004.0.008.0.016.0.031.0.062.0.125.0.250.0.500.1	54	72	48	12	13	18	29
Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sediment	discharge	(vons per day)							
of suspended m withdrawal tu S, sieve; V, vis	Sediment	tration	(mdd)	989	b 2100	b 4200	4140	3520	1130	9180
size analyses nalysis: B, botto P, pipet;	Discharge	(cfs)		6170	12800	11900	30400	36500	29100	3640
ticle- ods of a	Sam-	pling	i Se	T						1
Par (Metho	Water tem- Sam-	per-	(°F)	28	46	22	73	67	92	8
	J. mo	(24 hour)		1630	1800	1100	1415	1230	0800	0830
		Date of collection		Nov. 6, 1960	Feb. 25, 1961	Apr. 12	May 28	June 2	June 18	Aug. 5

b Computed from estimated-concentration graph.

VIRGIN RIVER BASIN

9-4150, VIRGIN RIVER AT LITTLEFIELD, ARIZ,

LOCATION.—At gaging station 0.4 mile downstream from Beaver Dam Wash, 0.4 mile upstream from Littlefield, Mohave County, and 36 miles upstream from Beaver Dam Wash, 0.4 mile upstream from Littlefield, Mohave County, and 36 miles upstream from Littlefield, Mohave County, and 36 miles upstream from Littlefield at elevation 1,221 feet above mean sea level.

RECORDS AVAILELE.—Charactal analyses: Unly 1949 to September 1961.

RECORDS AVAILELE.—Charactal analyses: Unly 1949 to September 1961.

Sectiment concerns cotober 1947 to September 1961.

Sectiment concerns cotober 1947 to September 1961.

Sectiment concerns cotober 1947 to September 1961.

Sectiment concerns and the section of the secti

		찚	~	,		œ.		œ	œ	œ,		7.	۲.
	Specific	duct- ance (micro- mhos at 25°C)				2800 8					3080 7.	3080	
	-os	sd- Forp- ratto	i	2.5							8.2	2.9	2.4
		Non- car- bon-	959	880	804	738	765	809	825	896	1060	1050	1200
	Hardness as CaCO,	Cal- clum, Mag- ne- stum	1210	1110	1070	1020	1050	1090	1080	1240	1280	1280	1420
	Bolids ted)	Tons per day				869		723	722	461	388	404	864
1961	Dissolved solids (calculated)	Tons per acre- foot	3,16	2.67	2.80	2.71	2.76	2.80	2.84	3.11	3.14	3.14	3.22
September	Dia (c:	Parts per million	2320	1960	2060	1990	2030	2060	2090	2290	2310	2310	2370
0 to		- 70 TO TO TO TO TO TO TO TO TO TO TO TO TO	0.89	. 62	. 72	.73			-		.94	-	•
r 196		trate (NO ₃)	1.6	6	1.7	2.7	1.6	٤.	٤.	ε.	е.	ĸ.	2.3
ctobe		350											
water year October 1960 to September 1961		Chloride ri (C1) (1)	380	260	330	355	350	355	355	355	345	350	320
ion, wat		Sulfate (SO ₄)	1030	940	890	808	838	849	668	1040	1100	1100	1160
m111	į	2 a 2 C	•	0	0	0	0	0	0	0	•	•	•
ts per	Bi-	car- bon- ate (HCO ₂)	306	280	324	344	347	343	317	332	273	270	280
n par	Ğ	Stum (X)	25	16	21	19	23	23	24	56	22	22	22
Chemical analyses, in parts per million,		Sodium (Na)	278	189	256	256	253	262	254	254	234	239	208
al ans	Mag	Stum Stum (Mg)	101	71	80	82	89	86	84	100	107	112	108
Chemic		Ctum (Ca)		329			309	295			339	327	393
		Iron (Fs)	0.01	8	-	!	00.	ł	1	10.	1	1	
		SH1ca (SHO ₂)		11			17	16	19	22	21	21	
		Mean discharge (cfs)	86.7	237	211	130	125	130	128	74.5	62.2	64.7	135
		Date of collection	Oct. 1-10, 14-31, 1960.	oct. 11-13	Nov. 1-30	Dec. 1-31	Jan. 1-31, 1961	Feb. 1-28	Mar. 1-31	Apr. 1-30	May 1-31	June 1-30.	July 1-31

3140 7.9 2610 7.8 2860 7.9 2800 8.0

2880 8.0 2890 8.0 3080 8.0 3080 8.0

3080 7.9

288 316 2.1 .77	3 6	0 1360 0 1220	313 0 1360 306 0 1220	00	313 0	22 313 0 23 306 0	89 233 23 306 0	211 22 313 0 233 23 306 0	80 211 22 313 0 89 233 23 306 0
330 1.4 0.79	8	0 1070	314 0 1070		314	23 314	88 239 23 314	239 23 314	88 239 23 314
341 1.2 0.81	3	0 1020	313 0 1020	0	313 0	24 313 0	91 244 24 313 0	244 24 313 0	91 244 24 313 0
134 0.6 0.32	1	0 431	127 0 431	9.3 127 0 431	97.0 9.3	36.0 97.0 9.3	36.0 97.0 9.3	147 36.0 97.0 9.3	36.0 97.0 9.3

VIRGIN RIVER BASIN--Continued

9-4150. VIRGIN RIVER AT LITTLEFIELD, ARIZ. -- Continued

Suspended sediment, water year October 1960 to September 1961

[OCTOBER			NOVEMBER			DECEMBER	
		Suspen	ded sediment		Suspend	ded sediment		Suspende	ed sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	58	556	87	98	1200	318	152	3210	1320
2	58	4680	733	93	1350	339	156	1970	830
3	58	4380	686	93	1270	319	149	1820	732
4	62	800	134	93	1170	294	147	1870	742
5	62	360	60	98	1640	434	141	1920	731
6	62	304	51	168	8420	S 5090	141	1620	617
7	60	252	41	1610	70600	S 341000	155	3250	1360
8	60	260	42	378	18000	18400	160	2920	1260
9	69	3000	559	209	7800	4400	165	4190	1870
.0	87	4000	A 940	185	4200	2100	160	3500	1510
1	417	28400	S 35600	181	3400	1660	128	2850	985
2	169	7500	3420	183	3370	1670	128	2630	909
3	124	4200	1410	181	3560	1740	130	2430	853
4	110	3100	921	183	2700	1330	125	1840	621
5	114	2200	677	174	2970	1400	125	2320	783
6	112	2070	626	190	4380	2250	120	1750	567
7	110	2370	704	158	2670	1140	115	1810	562
8	110	2630	781	158	2300	981	120	1820	590
9	108	2270	662	163	1840	810	125	2030	685
20	100	1800	486	156	1940	817	120	2070	671
1	94	2300	584	160	1980	855	120	1970	638
2	98	2600	688	156	2190	922	115	2100	652
3	89	1440	346	156	1940	817	115	2070	643
4	94	1600	406	152	1760	722	115	1950	605
5	98	2040	540	156	2050	863	120	1620	525
6	94	1300	330	156	1820	767	120	1940	629
7	93	1170	294	160	2400	1040	115	2120	658
28 • •	87	1300	305	174	4200	1970	115	1720	534
29	91	1150	283	160	2600	1120	110	1880	558
30	94	1100	279	152	1680	689	105	1390	394
31	96	850	220				110	1600	475
Γotal	3138		52895	6334		396257	4022		24509
		JANUARY			FEBRUARY			MARCH	
1	110	1340	398	145	2420	947	152	2220	911
2	112	1760	532	137	2250	832	160	2800	1210
3	112	1090	330	141	1320	503	176	3870	1840
4	116	1310	410	137	2320	858	176	2580	1230
5	118	1110	354	137	1990	736	174	2460	1160
6	120	1590	515	134	1890	684	174	2620	1230
7	112	1260	381	137	2020	747	178	3250	1560
8	116	644	202	139	2000	751	169	2760	1260
9	122	768	253	137	2150	795	163 154	2360	1040 848
.0	124	1880	629	134	3960	1430			
1	122	1890	623	156	2100	885	141	1970	750
2	122	1560	514	141	2120	807	114	1460	449
3	122	1820	600	141	2000	761	100	966	261
4	116	2710	849	130	1780	625	96 94	939	243 312
5	118	1390	443	126	1340	456		1230	
6	128	1980	684	128	2110	729	93	1370	344
7	128	1770	612	130	1480	519	96	1400	363
8	122	2260	744	120	1420	460	93 141	1230 2520	309 959
9	118 120	1860 1730	593 561	112 122	1010 1960	305 646	122	1690	557
1	122	1840	606	110	979	291	108	1760	513
22	116	1500	470	104	2670	750	80	853	184
3	122	1460	481	96	1640	425	78	858	181
4	124	7490	2510	100	962	260	81	1080	236
25	114	6220	1910	98	1210	320	91	1260	310
26	116	1780	557	133	3420	1230	134	5140	1860
27	163	1720	757	158	1790	764	145	3280	1280
28	202	1980	1080	158	2170	926	154	3070	1280
29	147	3510	1390				149	3130	1260
0	141 130	2830	1080			- -	114 80	1950 858	600 185
11		2940		<u></u>			L	020	24725
otal	3875		22098	3641		19442	3980		

S Computed by subdividing day.
A Computed from partly estimated concentration graph.

VIRGIN RIVER BASIN -- Continued

9-4150, VIRGIN RIVER AT LITTLEFIELD, ARIZ, -- Continued

S Computed by subdividing day.

Total

--

--

A Computed from partly estimated concentration graph.

VIRGIN RIVER BASIN--Continued

9-4150. VIRGIN RIVER AT LITTLEFIELD, ARIZ. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B. bottom withdrawal tube: C. chemically dispersed: D. decanation: N. in native water:

Method	jo	analysis	VPWC	Ø	VPWC	AP WC	VPWC	VPWC	VPWC	S CA	NGA		VPWC	AP W	ADMC	VRWC		VPWC	SPN	VPWC	NACA	2	VP WC	SPWC	VP NC	APMC Span	DE AG	VPWC	VPWC	VP#C	APMC VPWC
		2,000																													
		1,000																										_			
	eters	0.500	100	100	100	100	100	100	100	001	30		100	3 5	3 6	3 1		100	100	100	100	Ī	1	1	1 ;	200	3	1	1	1 5	91
	millin	0.250	66	86	86	86	86	86	86	97	0 00		86	8 6	0 0	200	3	66	86	66	66	3	100	100	3	66	S.	100	100	100	100
ment	Percent finer than size indicated, in millimeters	0,125	88	98	92	85		83	25	8	2	;	6,5	9 5	9 8	9 00	8	90	87	93	3 6	'n	66	97	86	8 3	I A	66	66	86	8 6
Suspended sediment	e indica	062	7.1	71	49	75	22	47	49	6 1	7 5	;	39	1 ;	7 7	i	7	49	64	29	79	0	97	91	96	28	8	97	97	95	92
spende	han siz	0.016 0.031 0.									_					5	3								_			_			
Š	finer t	910.0	47	:	41	30	20	19	19	18	9 6	1	818	3 ;	7.6	3 6	3	43	32	26	649	8	96	4	8	29	<u>*</u>	91	93	67	9 6
	Percent	800.0							_							5	17														
	,	0.004 0.008	28	1	24	16	01	11	=	;	7 F	1	#	77	7 4	9 4	2	33	-	30	0;	Ţ	99	8	28	47	ñ	63	7	37	8 2
	·	0.002														۰	•		_												
Sediment	discharge	(cons per day)						-			-																				
Sediment	concen- tration	(mdd)	66300	96300	2820	1910	2340	1500	1600	1600	3080	3	1930	2510	2510	705	CS.	2320	2320	101000	101000	00/06	12300	141000	20200	2400	126000	65000	16300	65900	32900
	Discharge (cfs)		1920	1920	172	156	d 125	d 110	116	116	145		130	163	163	1 0	•	91	91	1880	1880	010	142	1520	136	29	1610	168	73	497	3380 254
Sam-	pling	Politi																													
Water tem-	per-	(°F)	55	22	54	26	53	28	20	8	0 0	3	63	27	2 0	8 6	?	72	72	29	6;	4	82	28	84	8	11	92	85	23	73
	Time (24 hour)	•	0630	0630	0730	1200	1200	1700	0815	0815	1200	3	1400	1200							1330	0000		1200		_		_			0430
	Date of collection		Nov. 7, 1960	•	Nov. 15.	Nov. 30	Dec. 15	Dec. 31			Jan 31		Feb. 14			Mar 21		Apr. 6		July 4	July 4	ATT	July 6				Aug. 4			Aug. 11	Aug. 13

VPWC	γ.Ε.Ε.	Ø	VPWC	SPWC	SPWC	VPWC	SPWC	AP WC	VPWC	SPWC	VP/IIC
		_	_							100	
ŀ	1	!	1	100	100	;	100	100	1	66	1
001	100	9	100	86	66	100	66	66	100	93	100
86	200	86	86	87	96	86	93	97	66	83	97
96	9	94	97	74	16	96	8	93	- 6	75	93
6.6	6	!	8	47	09	87	21	75	06	59	75
9	5 7	:	23	23	38	9	30	22	65	36	49
11000	00616	91900	106000	145000	63900	12500	143000	84900	30300	73700	62200
26	010	710	277	2400	1570	191	1980	418	159	10600	099
26	20	82	- 22	7.5	75	72	62	62	62	28	22
1600	1600	1600	1800	0090	0090	0090	0090	0020	0090	0090	0630
g. 14, 1961				Aug. 24	g. 25	g. 26	pt. 9	pt. 10	Sept. 11	pt. 18	Sept. 19

COLORADO RIVER MAIN STEM

9-4210. LAKE MEAD AT HOOVER DAM, ARIZ .- NEV.

LOCATION.--Midway between the intake towers, 225 feet upstream from the gaging station on State line between Mohave County, Ariz., and Clark County, Nev. DRAINAGE AREA.--167,800 square miles, approximately, upstream from gaging station. RECORDS ANALIABLE.-Chemical analyses: October 1940 to September 1961. REMARKS.--Samples are collected by the U.S. Bureau of Reclamation and analyzed by the Wetropolitan Mater District of Southern California, La Verne, Calif.

hern California, La Verne, Calif.

		South
		o.
		District
		Water
		U.S. Bureau of Reclamation and analyzed by the Metropolitan Water District of South
		the
3		рà
בים		yzed
7118		anal
848	1961	and
10 II II II II II I	October 1940 to September 1961.	lamation
9	to S	Rec
•	40	ç
TIME	ber 19	Bureau
5	cto	'n
3	Ó	ë.

	Нq	2.7.7. 7.7.8 8.7.8 0.8	7.8 8.2 7.7 8.1 7.7	7.9 8.1 8.5 7.8 8.5 8.5	4.00.88	7.7 7.6 7.8 8.1 8.3
	Specific conduct- ance (micro- mhos at 25°C)	888 886 891 889 986	995 990 1,020 1,020 1,020	1,040 1,040 1,060 1,060 1,060 1,060	940 940 940 940 940	970 995 1,000 945 1,020
	Noncar- bonate hardness as CaCO ₃	172	197	203	191	206
	Hard- ness as CaCO ₃	274 275 315 313	319 320 323 326 332	331 332 334 335 335	302	312 326 326 304 334
1961	Dis- solved solids (calcu- lated)	555	631	676	409	640
ptember	Ni- trate (NO ₃)	1.9	2.3	2.8	4.11111	1.5
Chemical analyses, in parts per million, water year October 1960 to September 1961	Chloride (C1)	67 66 67 73 73	44 74 75 77 90	88 88 88 88 88 88 88 88 88 88 88 88 88	70 71 71 69 69	71 73 74 71 76
October	Sulfate (SO ₄)	240	269	2431	765	279 265 265 282
er year	Car- bonate (CO ₃)	40 4 0	101014	1014140	001010	101010
ion, wat	Bicar- bonate (HCO ₃)	122 122 122 122 124	150	157 157 157 159	135 135 135 134	135
er mill	Po- tas- sium (K)	4 4	4 4	4 4	4	4 4 4
n parts 1	Sodium (Na)	8311111	14, 1 1 18	1811181	8	84
lyses, i	Mag- ne- sium (Mg)	25 25	781112	1211121	811111	26 27 27 27 27 27 27 27 27 27 27 27 27 27
al ana	Cal- cium (Ca)	17 1 18	18	1811161	211111	18 6 8
Chemic	Silica (SiO ₂)	0.11118	101110	101	8. 4.	8 8 6
	Tem- per- ature (°F)	78.6 78.1 77.0 70.9 64.7	58.5 56.4 54.5 53.1 63.1	53.55 53.55 53.24 5.65 5.65 6.65	63.0 63.0 63.5 63.5	62.2 58.0 56.5 55.0 54.2
	Eleva- tion (feet)	1,165 1,145 1,120 1,095 1,070 1,045	1,020 995 970 945 920 895	845 845 820 795 770 745	1,163 1,143 1,118 1,093 1,068 1,043	1,018 993 968 943 918 893
	Depth (feet)	25 50 75 100 125	150 175 200 225 250 275	3320 3320 3325 444 335 345 355 355 355 355 355 355 35	5 25 50 75 100 125	150 175 200 225 250 275
	Date of collection	Oct. 3, 1960 Oct. 3 Oct. 3 Oct. 3	Oct. 3. Oct. 3. Oct. 3. Oct. 3.	Oct. 3. Oct. 3. Oct. 3. Oct. 3.	Nov. 29 Nov. 29 Nov. 29 Nov. 29 Nov. 29	Nov. 29 Nov. 29 Nov. 29 Nov. 29 Nov. 29

8.0 7.9 8.0 8.0	7.6 7.7 7.7 8.0 8.3	7.8 7.6 7.6 7.9 9.2	7.5 7.6 8.0 7.6 7.8	88.0 88.1 88.1 7.8 8.2	8.1 7.9 8.5 8.5
945 960 1,050 1,060 1,060 1,060	960 965 970 960 970	970 965 1,000 1,010 1,040	1,060 1,040 1,060 1,060 1,060 1,060	970 965 970 965 965	975 990 1,030 1,020 1,040 1,050
193 208 	192	191 204 201	199 198 198	194	209
301 307 336 340 338	307	305 305 318 329 330	333 33 33 33 33 33 33 33 33 33 33 33 33	309 310 309 310	316 333 335 335 336
612	605	6315	673	611	0 0 0 1
2.4	1:8	2.5	1112.12	6:11	1 1 2 2 1
71 72 72 88 83 83 83	22222	71 71 74 76	79 77 79 78 81 80	222222	72 77 78 80 80 81
267	563	263 270 270	281	265	280
1014100	00 0 8	0 0	1010100	010101	-10191
139 154 159 165	140 140 142 133	134	161 163 163 143	140 140 134	135 151 146
4 4	4	4 4 4	4 4	4	4 4
18 18 111	811111	18 18 18	1 1 1 8 1 9 1	811111	1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 8 1 8 1 1 1	811111	25 26 26 26	1	8	1 28 1 24 1
1818111	2	18 188 188		\$	1 1 8 1 8 1
9.2	8 1 1 1 1 1	9.8	111 1 1	£:!!!!!	9.7
53.5 53.5 53.5 53.7	55.8 57.8 56.3 56.3	56.8 57.0 56.3 55.8 54.1	53.3 53.3 53.3 53.3 53.8	55.2 55.4 55.5 55.6 55.9	55.8 54.6 54.9 54.9 54.2
868 843 818 768 743	1,160 1,140 1,115 1,090 1,065	1,015 990 965 940 915	865 840 815 790 740 725	1,158 1,113 1,088 1,063 1,038	9000 9000 9010 9010 9000 9000
300 325 350 375 400 443	5 25 50 75 100 125	150 175 200 225 250 275	300 325 350 375 400 440	5 50 75 100 125	175 200 225 250 275 300
29, 1960. 29. 29. 29. 29.	4, 1961 4 4	कं कं कं कं कं कं	यां का का का का का का		31 31 31 31 31
Nov. Nov. Nov. Nov.	Jan. Jan. Jan. Jan.	Jan. Jan. Jan. Jan.	Jan. Jan. Jan. Jan. Jan.	Jan. Jan. Jan. Jan.	Jan. Jan. Jan. Jan. Jan.

COLORADO RIVER MAIN STEM .- Continued

9-4210, LAKE MEAD AT HOOVER DAM, ARIZ.-NEV. -- Continued

	Hď	8.7.7.9 7.9 7.9 8.3	8.22.28.89.21.00.11	27.7.9 8.7.7.8 8.0 0.0	7 8 7 8 7 8 8 0 8 4 8 5 2 .	0000000 401014	0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	Specific conduct- ance (micro- mhos at 25°C)	1,060 1,060 1,060 1,060 1,060	966 965 972 972 975	975 974 999 1,040 1,050	1,140 1,150 1,120 1,140 1,140 1,140	985 985 980 980 990 990	995 1,030 1,040 1,080 1,120
	Noncar- bonate hardness as CaCO ₃	205	£611111	196 196 205 212	111211	200	203
	Hard- ness as CaCO ₃	340 340 342 342	3333333	310 320 331 331 333 344	352 351 352 352 352 352	317 316 314 317	316 326 326 338 344 346
ontinued	Dis- solved solids (calcu- lated)	669	607	613 657 702	727	624	657
1961C	N1- trate (NO ₃)	2.5	1. 8.	1.8	111811	1.6	3.0.8
Chemical analyses, in parts per million, water year October 1960 to September 1961 Continued	Chloride (Cl)	888888	222222	880 830 830 830 830	999999999999999999999999999999999999999	75 76 73 74	7.4 88.5 89.6 89.6 89.6 89.6 89.6
r 1960 tc	Sulfate (SO ₄)	279	261	280	1110811	269	281
Octobe	Car- bonate (CO ₃)	0 0 40	00 0 0	101010	101010	00 10 10	1014
ater yean	Bicar- bonate (HCO ₃)	165 167 159 170	142	142	166	143	150
10n, w	Po- tas- sium (K)	4 4	4	141414		4 4	141414
per m11]	Sodium (Na)	92	8	81 88 1	101	26 18	91 97 105
n parts	Mag- ne- sium (Mg)	8 1 1 1 8 1	811111	181818	111811	8 8	23 23 24
yses, 1	Cal- clum (Ca)	811181	211111	181818	111811	211112	18 16 16
al anal	Silica (810 ₂)	01 11	e	0 0 0	1 6	6 8	0 0 0
Chemic	Tem- per- ature (°F)	53.00	111111	111111	111111	20000000000000000000000000000000000000	53.7 53.7 53.2 53.2 52.8
	Eleva- tion (feet)	838 813 788 763 738	1,158 1,136 1,111 1,086 1,061	1,011 986 986 936 936 911 888	861 836 811 786 761	1,150 1,130 1,105 1,080 1,055	1,005 980 955 930 905
	Depth (feet)	325 350 375 400 425 438	25 50 75 100 125	150 175 200 225 250 250	300 325 375 4400 438	25 25 50 75 100 125	150 175 200 225 250 275
	Date of collection	Jan. 31, 1961. Jan. 31. Jan. 31. Jan. 31.	Feb. 28. Feb. 29. Feb	Feb. 28. Feb. 29. Feb	Feb. 28 Feb. 28 Feb. 28 Feb. 28 Feb. 28	Apr. 13. Apr. 13. Apr. 13. Apr. 13. Apr. 13.	Apr. 13 Apr. 13 Apr. 13 Apr. 13 Apr. 13

0.8.8.7.8.8	8 8 8 8 7 8 8 4 6 6 9 4	7.88.89.89 6.68.1.00	8.5 7.7 7.7 7.7	8.4.8.8.8	98.22.7.
1,120 1,110 1,170 1,150 1,150 1,140	990 985 990 985 990 1,000	1,020 1,010 1,040 1,080 1,090	1,120 1,130 1,120 1,140 1,150	985 1,000 990 1,000	995 1,000 1,020 1,020 1,080
1118111	8	200 52	319	6	201
346 355 357 350	316	322 323 337 338 348	347 346 346 354	308	318 324 332 315 318
1118111	93	639 671	181111	624	639
1118,111	°!!!!!	01	16:1111	<u> </u>	2.7.2
96 102 102 102 102	000000	77 77 88 88 89 93	4000000	22222	27. 28. 24. 48. 48.
1118111	272	278 280 280 290	18811111	72	271 275 275 275
14 10 144	44 4 0	1-1010	101010	40 10 4	101410
157 162 162 160 165	134 134 134 138	142 156 156	163 155 155	126 137 132 132	144
4	*!!!!!	14 4 4	141111	*:::::	141414
6	2	18 18 100	181111	811111	181818
1118111	811111	1811818	181111	811111	218121
1118111	811111	14 17 18	18:1111	811111	12:12:18
1118111	<u>4</u>	9.7 10 1.0 1.4	1 %	27	12 12 19
52.0 52.0 53.0 53.0 53.0	64.4 83.8 62.6 62.0 61.1	59.0 59.0 58.6 57.1	88.88.88 8.88.88 4.48.88	89.5 67.6 66.6 53.6 58.7	0.00 4.00 0.00 0.00 0.00 0.00 0.00
855 830 805 780 755 730	1,149 1,129 1,04 1,079 1,054 1,029	1,004 979 954 929 904 879	854 829 804 779 754	1,152 1,132 1,107 1,082 1,057 1,032	1,007 982 957 932 907 882
300 325 350 375 400 425	25 50 75 100 125	150 200 225 250 250	300 325 350 375 400	25 50 75 100 125	150 175 200 225 250 275
Apr. 13, 1961 Apr. 13 Apr. 13 Apr. 13 Apr. 13 Apr. 13	Apr. 28	Apr. 28	Apr. 28	June 8	June 8. June 8. June 8. June 8. June 8.

COLORADO RIVER MAIN STEM -- Continued

9-4210, LAKE MEAD AT HOOVER DAM, ARIZ, -NEV, --Continued

	Hd	8.9 8.6 8.6 8.7 7.7	8.1 7.9 7.6 8.0	7.8 7.9 7.7 8.2	8.8 8.2 8.0 7.6	8.0 7.8 7.9 7.9	7.9 7.9 7.9 8.0
	Specific conduct- ance (micro- mhos at 25°C)	1,100 1,100 1,100 1,100 1,100 1,090	990 986 991 993 988	1,000 988 988 1,100	1,120 1,120 1,130 1,130 1,140	984 979 983 989 993	1,000 1,000 1,020 1,050 1,080
	Noncar- bonate hardness as CaCO ₃	210	202	200	215	503	203
	Hard- ness as CaCO ₃	341 340 341 339	303	316 319 312 334 343	347 349 350 349	303	319 321 324 332 335 339
Continued	Dis- solved solids (calcu- lated)	697	615	630 672 672 698	1117	950	636
1961	N1- trate (NO ₃)	3.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	4.11111	3 8 8	3.6	1.3	3 2 2 3
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued	Chloride (Cl)	90 90 93 89 94 94	76 76 75 75	75 76 86 92 94	95 96 96 97	77 77 76 75 74 74	76 78 83 87 88
r 1960 to	Sulfate (SO ₄)	1 1 1 8 8 1 1 1	273	270 282 282 286	7 1 1 5 1 1 1	27.7	274
: Octobe	Car- bonate (CO ₃)	14 10 140	00 0 0	101010	101010	041010	101010
ter yea	Bicar- bonate (HCO ₃)	151 151 149 135	123 123 137 143	145 155 165	165 165 165 167	122	153
ion, wa	Po- tas- sium (K)	4	4	4 4 4	4	4	4 4 4
per mill	Sodium (Na)	1110111	811111	120 120 180	1110111	8::::::	. 86
in parts	Mag- ne- sium (Mg)	1118111	2	3018818	111811	27	12 28 24
yses,	Cal- cium (Ca)	11188111	111111	18 18 19	111811	111113	14 18 18
cal anal	Silica (SiO ₂)	111 = 111	ព្ឋ ។	10 10 10	11011	ទ្ឋ	1 01 11 01
Chemi	Tem- per- ature (°F)	53.8 53.8 53.6 53.6 53.6	78.0 77.7 68.2 65.2 62.2 58.6	58.0 55.9 54.7 53.5	53.4 53.6 53.6 54.0 53.6	81.5 81.3 79.7 65.7 61.5	55.5 55.1 54.7 54.3 53.9
	Eleva- tion (feet)	857 832 807 782 757 732	1,156 1,136 1,111 1,086 1,061	1,011 986 961 936 911 886	861 836 811 786 761 723	1,153 1,108 1,108 1,083 1,058 1,058	1,008 983 958 933 908 883
	Depth (feet)	300 325 350 375 400 425 435	25 25 50 75 100	150 175 200 225 250 275	300 325 350 375 400 438	5 25 50 75 100	150 175 200 225 250 275
	Date of collection	June 8, 1961 June 8 June 8 June 8 June 8 June 8	June 30 June 30 June 30 June 30 June 30	June 30 June 30 June 30 June 30 June 30 June 30	June 30	Aug. 1 Aug. 1 Aug. 1 Aug. 1	Aug. 1

7.7.8 7.8 8.7.8 5.8	8.88.6.7. 4.4.0.0.7.	8.0 8.0 8.0 8.0	8.7.7.9
1,100 1,120 1,120 1,120 1,130	965 965 975 1,000 1,000	1,000 1,000 1,020 1,020 1,060	1,080 1,110 1,100 1,120 1,140
214	202	202	2111
342 348 348 350	293 291 315 316	318 320 321 334 331	339 342 345 118
707	628	633	111211
1115	1.9	2.3	6
9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8 1 1 8 8 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1	76 77 77 79 88	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
1118111	272	274 276 276 286	291
101014	441010	101010	101010
159	109	144 149 149 157	160 163 163
4	4 4	4 4 4	4
!!!66!!	86 186 1	188 88 98 98	111811
111811	811811	31818	111811
	80 1 1 2	8 8 8	1118811
11211	8 1 18 1 1	9.8	111 01
53.7 53.7 53.6 53.6 53.8	82.0 82.5 79.0 64.5 61.0	57.0 56.5 54.9 53.6	53.6 53.4 53.4 53.4 53.4
858 833 808 783 758	1,149 1,129 1,104 1,054 1,054	1,004 979 954 929 904 879	854 829 804 779 754 723
300 325 350 375 400 435	25 25 50 75 100	150 175 200 225 250 275	300 325 350 375 400 431
Aug. 1, 1961 Aug. 1 Aug. 1 Aug. 1 Aug. 1	Aug. 31 Aug. 31 Aug. 31 Aug. 31	Aug. 31 Aug. 31 Aug. 31 Aug. 31	Aug. 31 Aug. 31 Aug. 31 Aug. 31

COLORADO RIVER MAIN STEM--Continued

9-4215. COLORADO RIVER BELOW HOOVER DAM, ARIZ.-NEV.

LOCATION. --At Hoover Dam, on State line between Mohave County, Ariz., and Clark County, Nev., just downstream from gaging station. DALINAGE ARRA.-167,800 equare miles, approximately. RECORDS ARIALISE. --Chemical analyses: October 1939 to September 1961.

Water temperatures: October 1941 to September 1961.

Street and and de Chemical analyses, in parts per million, water year October 1960 to September 1961

	찚	7:7	8.1	8.1	8,3	8.2	٥	6	8.7	7.8	8.1	4	7.3	1	1
Specific	duct- ance (micro- mhos at 25°C)	1,010	1,010	1,010	1,020	1,040	000	1,080	1,030	1,040	1,060	1000	1,050 7.3	T	1,040
ø.	ration of the contract of the					2.2					2.3		2	\dagger	2.2
		194						202					198	†	210
Hardness as CaCO,	Cal- Clum, Mag-	326	328	328	330	338	976	338	346	364	344	356	329	\dagger	340
Dissolved solids (residue at 180°C)	Tons per day	17,	16,	16,	ຂີ	16,700		34,900	32,200	31,600	24,600	25,600	21,700		22,400
noived lue at	Tons per acre- foot	0.92	.92	.92	.93	.94	4	26	95	.94	.94	90	96	T	0.94
resid	Parts per million	929	678	675	189	694	000	711	697	693	694	705	705	Ī	694
	- 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.12	ī	1	.12	.10		10	: 1	1	.14		1		0.4 3.5 0.12
	Ni- frate (NO.)	2.6	I	1	2.7	2.9		3.2	. !	1	4.9	60	4.0	T	3.5
	Fluo- ride (F)	4.0	ļ	ł	4.	1		7	: ;	ł	4.	7	;	T	4.0
	Chloride (Cl)	8	;	!	8	82		88	: ;	1	98	2	8		87
	Sulfate (SO ₄)	280	1	;	282	284		286	1	1	287	281	284		288
	1 2 2 <u>0</u>	٥	0	0	9	0	•	0	0	0	0	•	0		۰
Ė	Car- bon- ate (HCO ₂)	191	158	158	156	163	101	162	157	155	162	160	160	T	160
Š	a tage	3.6	;	;	4.6	7.0		4.3	1	;	4.4	1	1		4.6
	Sodium (Na)	91	93	91	92	93	5	96	91	91	96	47	6		95
Š	stum (Mg)	24	24	24	25	28	9.7	25	88	32	27	22	27		27
	2 # (S) (S)	91	16	91	91	68	8	2	93	63	93		8		92
	Iron (Fe)	3									8.	;	;		0.01
	Silica (SiO ₆)	10	ł	1	9.2	9.6		12	1	!	11	7	=		97
,	Mean discharge (cfs)	9,700	9,030	9,060	10,850	8,910	13 700	18,200	17,100	16,900	13,150	13.450	11,420		11,960
	Date of collection	Oct. 1, 14, 1960	Nov. 1, 15	Dec. 2, 15	Jan. 4, 16, 1961	Feb. 1, 14	Ker	Apr. 3, 14.	May 1, 15.	June 5, 15	July 3, 14 13,150	Aug. 1. 16.	Sept. 8, 16 11,420		Weighted aver- age a 11,960

a Includes estimated data for missing periods. Represents 100 percent of runoff for water year.

Temperature ('F) of water, water year October 1960 to September 1961

	ď,	. 555
	Date	Aug. 16, 1961 Sept. 8 Sept. 16
	ď.	55 55 55
	Date	June 15, 1961 July 3 July 14
	A C	54 54 54 54
measurement/	Date	Apr. 14, 1961 May 1 June 5
Siweekly m	ě.	55 54 54
/Biwe	Date	Feb. 1, 1961. Feb. 14 Mar. 1
	AL O	55 55 55
	Date	Dec. 2, 1960. Dec. 15 Jan. 4, 1961. Jan. 16
	ă.	54 55 55
	Date	Oct. 1, 1960. Oct. 14 Nov. 1.

COLORADO RIVER MAIN STEM--Continued

9-4240. COLORADO RIVER NEAR TOPOCK, ARIZ.

LOCATION...-Temperature recorder at gaging station, Gila and Salt River meridian, on left bank in Mohave Canyon, 2.7 miles downstream from Topock, Mohave County, 39.5 miles upstream from Dark and 49 miles downstream from Davis Dam. BRANKER SAL-172,300 square miles, approximately.
RECORDS AVAILABLE..-Mater temperatures: July 1952 to September 1961.
RECORDS AVAILABLE..-Mater temperatures: Maximum, 76°F Aug. 13-14; minimum, 46°F on several days in January.
RETYREMES, 1960.--Mater temperatures: Maximum, 76°F July 25, 1966; minimum, 46°F Peb. 3, 4, 1956, Jan. 5, 1960.

Townsone (90) of meton

					16	lemperature	777		(1)	o	Water	er,	, water		year	Š	Uctober	ī	1300	201	Sep	September		1201								
1															_	Day																A
Month	-	2	က	4	2	٥	^	8	٥	2	=	12	13	7.	15	2	1	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October Maximum Minimum	66	99	99	65	63	999	949	66	64	62	63	69	449	79	64	64	65	99	99	99	25	65	6.5	6.5	65	65	64 63	64	64 63	63	63 61	69
November Maximum	63	63	63	63	63	63	63	62	62	62	62	62	5 5	60	3 8	58	58.5	58	5.8	58	59	59	58	58	588	8 8	58	57	57	57	11	09
Maximum	57	52	7.0	57	5 4	50	50	52	52	53	53.4	53	52	52	52	53	53	53	53	53	52	51	53	53	53	53	52	52 51	50	20	000	53
Maximum	50	5 5	0.04	6 4	6 4 4	64	6 6	200	0.64	6 6 6	20	50 64	64	0.00	0.00	50	22	202	5 5	50	50	50	51	51	51	51 51	52 51	52	51	22	22	20
February Maximum	51	51	52	52	52	52	52	52	52	53	5 6	54	5.5	53	23	53	5.24	53	53	53	53	53	53	53	53	54 53	54 53	53	11	11	11	53
Maximum	53	2.5	4 4	53	53	3.4	53	54	5 5	5.5	55	55	55	56	200	55	55	55	5.5	57	54	57	58	58	57 56	56 56	57 56	57 56	56	56	58 57	35
April Maximum	59	58	6.0	61	62	63	63	60	60	61	600	109	200	709	602	62	49	62	63	63	29	62	61	59	62	63 61	63	64	64	4.6	11	62
Maximum	64	64	4 6	63	63	62	63	9 6 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	63	6.5	2 4	4 5	63	63	6.4	4 6 6	49	4 7 9	63	63	9 6	99	99	66	66	66 65	66 64	65	63	64	63	63
Maximum	65	63	6.6	66	86	69	64	64	68	63	64	71	10	70	6.3	73	25	72	72	68	12	70	70	71	72 67	72 67	68 67	89	6 6	69	11	69
Maximum	69	71	67	58	10	69	69	71	44	74	71	72	69	67	17	73	6.3	72	71	71	70	69	0.99	20	70 67	71 69	72 69	72	52	70	70	17
August Maximum Minimum	69	71 68	68	71	72	72	69	72	71	10	72	69	22	76	68	17 69	75	72	25	72	63	73	72	72	72	71	71	70 6.8	6.9 8.9	68	71	72
September Maximum Minimum	71	70 67	66	72	12	72	71	0.70	8 9	63	02	99	0.69	0 8 9	69	69	0.68	2 9	8 9	69	69	6.8 6.5	65	67	99	0 4 8 8	70 68	70 68	69 89	69	11	69

COLORADO RIVER MAIN STEM -- Continued

9-4280. COLORADO RIVER BELOW PARKER DAM, ARIZ .- CALIF.

LOCATON.—At gaging station, San Bernardino Meridian, on right bank 3.9 miles downstream from Parker Dam, 10.4 miles upstream from Readgate Rock Dam, and II miles northeast of Parker, Yuma County, Ariz.

RECORDS AREA.—178,800 square miles, approximately.

RECORDS AVILIABLE.—"Mater temperatures: Pebruary 1954 to September 1961.

EXTREMES, 1964-61.—"Water temperatures: Maximum, 80°P Mug. 21, 22, 24, 26; minimum, 48°F Jan. 7-12.

EXTREMES, 1965-61.—"Water temperatures: Maximum, 83°F Aug. 12, 13, 18, 1955; minimum, 48°F on many days in January and REMARKS.—Recorder Inoperative Nov. 14-18.

water year October 1960 to Sontember 1961 Temperature (PF) of water

						i									1	Day					3											<u>.</u>
Month	-	2	က	4	5	9	7	œ	٥	2	=	12	13	7	15	16	17	8	-6	20	21	22	23	24	25	26	27	78	29	30	3	Average
October Maximum	72 72	73 72	72	72	73 71	73 72	72 71	71 70	70	68 63	69	70	76	70	17.	70 75	71	17 37	17 75	70	70	70	70	69	69	69	68	69 68	69	69	68	70
November Maximum	68 68	68 67	67 67	67	99	99	99	99	99	66	65	66	99	11	11	- 1 1		11	63	62	62	62	52	61	61	61	61	909	59	58	- 1 1	63
December Maximum	58 58	58 58	58	57	57 56	55	55	54	53	54	53	53	53	53	53	23	53	52	52	52	52	52	52	52	52	52	52	52	52	51	521	53
January Maximum Minimum	51	51	50	50	50	4 9	4 4 8	4 8 4 8	4 8 4 8	4 8 4 8	4 8	4 8 4	6 4 4	49	200	51	51	52	52	52	52	52	52	52	52	52	52	52	52	523	20.00	503
February Maximum Minimum	53	53	53	53	53	53	53	53	53	54	54	54	54	55	20.00	52	55	55	55 54	54	5.5	50.0	55	20 C	5.5	55	0, 70 70, 70	55		11	11	54
March Maximum Minimum	55	56	5 6	56	56	56	56	56 56	57	57 57	57	57	58	58	58	59	59	59	59	59	59	59	909	9 3	9 9	61	60	999	909	6.1	61	η, ιλ 60 80
April Maximum Minimum	61	62 61	63	63	63	62	62	64	64 49	64	64	49 49	64	65	65	65	99	99	66	65	99	99	99	66	66	67	67	64	68	89	11	6.5
May Maximum Minimum	68	69	69	68	68	68	69	69	71	7.0	70	70	70	17	71	22	71	122	7.1	71	17	17 1	7.1	71	72	72	72	72	72	72	72	7.1
June Maximum Minimum	72	72	73	73	73	73	73	73	73	72	73	72	72	76	76	76	75	7,47	7.4	75	75	75	76	76	76 76	76	76	76	77	77	11	74
July Maximum	77	77	77	77	77	76 76	76 76	76 76	76 75	75	75	75	75	75	76	76	76	76 76	77	77	77	77 7	77	77	77	7.4	78	78	77	77	78	77 76
August Maximum	78	78	78	78	78	79	79	79	78 77	7.8	78	79 78	79	7.8	78	77	79	77	77	79	80	780	79	79	79	80	79	78	78	78	7.8	79
September Maximum Minimum	77	78 77	77	79	79	79 78	78 78	78 77	77	78	77	77	7.7	77	77	76 76	76 75	76 75	76	76	74	74	74 74	75	76	75	75	75	11	11	1 1	77 76

COLORADO RIVER MAIN STEM -- Continued

ARIZ.-CALIF 9-4291. COLORADO RIVER BELOW PALO VERDE DAM, on right bank 1.4 miles downstream from Palo Verde upstream from Ehrenberg, Yuma County, Ariz. Salt River Meridian, and gaging station, Gila LOCATION .-- Temperature recorder at

on several days during August and September; minimum, 48°F Jan. Aug. 7, 11, 1958; minimum, 47°F Jan. 31, Feb. 1, 4, 1960. Canal intake structure, 9.5 miles northeast of Blythe, Calif., and 11.0 miles

COLORADO RIVER MAIN STEM -- Continued

9-4293. COLORADO RIVER BELOW CIBOLA VALLEY, ARIZ.

LOCATION. --Temperature recorder at gaging station, Gila and Salt River meridian, on left bank, 6.7 miles south of Cibola, Yuma County, Ariz., 38 miles nperteam from Imperial Dam, 39.7 miles downstream from Enchoire, Ariz. 52.1 miles downstream from Palo Verde diversion dam near Blythe, Calif., and at mile 620 on Colorado River Profile Survey map.

PRAINGE REA.-163,500 equare miles, approximately.

RECORDE AVILLEES. ---Water temperatures: March 1956 to September 1961.

EXTREMES, 1960-61.---Water temperatures: Marimum, 87°F Aug. 21.

EXTREMES, 1963-61.--Water temperatures: Marimum, 87°F Aug. 1, 10, 11, 1959; minimum, 49°F on several days in January 1960.

REMERES, 1963-61.--Water temperatures: Marimum, 88°F Aug. 1, 10, 11, 1959; minimum, 49°F on several days in January 1960.

Temperature (°F) of water, water year October 1960 to September 1961

					Te	emperature	ratu		3	ō	Water	er,	water		year		October		1961	to	Sept	September		1961								
Memory																Day																
Month	-	2	3	4	5	9	7	8	٥	ō	Ξ	12	13	14	15	19	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October Maximum Minimum	76	76 75	77	77	78	79	278	67	72	73	71	22	122	269	67	65	900	8,9	69	0,69	71	22	73	73	74	74	75	45	42,	73	42	73
November Maximum	73	72	72	72	73	73	73	11	11	11	11	11	11	11	62	11	11	11	11	11	11	11	11	91	61	61	59	58	58	52	11	11
December Maximum	57	57	57	57	54	51	50	50	11	11	52	53	11	11	11	11		11	11	11	11	11	11	11	11	11	11	11		11	11	11
January Maximum Minimum	11	11	11		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	58	58	5.6	80 80 80 70	55	53	53	11
February Maximum Minimum	56	2	11	11	11	11	11	52	55	11	56	5.00	57	5.9	58	5.9	5 2	58	52	5 4	57	57	57	56	36 54	57	5.50	υ υ υ 4	11	11	11	11
March Maximum	55	56	56	56	56	57	58	58	58	58	200	59	99	61	61	61	19	61	61	61	62 61	63	63	63	61	9 6 6	09	99	960	9 %	60	9 66
April Maximum Minimum	62	6.5	65	66	67	67	67	6.5	63	63	3 4	99	6.5	66	65	6.8	6 8 9	69	69	99	57	65	6.5	6.5	49	99	67	69	6.0	69	11	99
May Maximum	11	170	71	69	66	6.6	999	6.8	70	22	71	70	67	89	68	170	72	72	72	72	72 71	72	73	73	73 72	73 72	73	72	12	2 %	22	11 69
June Maximum Minimum	69	71	73	74 73	75	77	7.9	78	77	78	7.8	78	90	80	80	80	8 3 3	4 8 8	8 2 8	83	82	83	84	84	83	84	8 8 3 3	83	82	883	11	90 47
Maximum	83	833	81	80	82	82	82	83	4 8	8.4	8 80 3 %	8.4	83	83	4 60 4 60	4 6 8 3	8 4 8 2	48	4 6	48	83	8 3	83	83	83	84	98.4 8.3	8 4 8 3	8 4 8 3	8 8	4 6	83
August Maximum Minimum	88.55	2 2	4 4	428	83.5	986	86	8 4	8 8 4 4	4 60	80 80 73 EC	8 6 7 4	80 80 70 4	6 6 5	4.6	8 2 2	80 80 80 80	80 80 40 44	83.2	986	87 86	9 4 8	83	85	86 48	986 48	8 4	8 8 3	4 6	9 8 2 2	982	80 80 70 44
September Maximum	4.8	83	77	78	79	780	90	80	77	78	77	82	80	82	81	82	8 8	79	77	72	78 77	77	77	77	78 77	78	77	79	78	77	11	80 84

GILA RIVER BASIN

9-4305. GILA RIVER NEAR GILA, N. MEX.

LOCATION. --At gaging station on left bank at Hooker damsite, 1 mile upstream from Mogollon Creek, and 7 miles northeast of Gila, Grant County.

RECORDS AVAILABLE .-- Water temperatures: July 1959 to September 1961. Sediment records: July 1959 to September 1961.

DRAINAGE AREA .-- 1.854 square miles.

EXTREMES, 1960-61.--Water temperatures: Maximum, 87°F July 24; minimum, 40°F Nov. 29, Dec. 4, 9, 20.
Sediment concentrations: Maximum daily, 17,500 ppm June 16; minimum maily, 2 ppm Dec. 11.14.
Sediment loads: Maximum daily, 7,70 tons June 17; minimum daily, less than 0.50 ton on many days during December and January.
Sediment loads: Maximum daily, 7,70 tons June 17; minimum daily, less than 0.50 ton on many days during December and January.
Sediment concentrations: Maximum daily, 17,500 ppm June 16, 1961; minimum daily, 1 ppm Sept. 3, 1959.
Sediment concentrations: Maximum daily, 14,800 tons Mar. 9, 1960; minimum daily, 1 pss than 0.50 ton on many days in September 1959,

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. December 1960 and January 1961.

	ė	e e				
	Ave	age	111	111	61 68 75	522
		31	811	3 2	121	82 78
		30	52.2	911	120	75
		29	331	8 1 7	61 8	68 68
		28	1 4 4	7 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	211	112
		27	4 6 4 4 6 9 4 9	121	63	78 77 76
		56	65 55 48	58 58	52 70 76	81 78 67
		25	*9 	51 53	351	282
961		23 24	63 52 48	47	65 70 82	80
er 1		23	43	118	43	81 79 72
emp		22	53	5.4	67 74 83	80 78 74
Sept		21 22	52	52	100	27 23 63
ţ		20	62 	121	76	77 77 18 00 1 1 80
960		19	58	1 6 1	122	221
r 1		17 18	1.7	1 50 4	331	22 24 74
tope		17	5.8	6 1 6 1 6	5.5 6.2 7.0	112
8	Day	16	115	3 C	69	122
Temperature (°F) of water, water year October 1960 to September 1961		15	54	52	75	22.25
ter		14	4 1 4	2,40	53 60 81	72 22 88
Wa		13	63 58 45	47 55 62	35.55	220
ter,		12	61 6	\$11	9 1 9	72 23 80
Wa		11	64 57 41	111	60 71 72	2011
ò		10	445	\$11	60 68 75	74 68 75
C.F		6	49	52	126	77 81 68
ure		œ	63 59 43	521	58	78 75 72
erat		6 7	69	57	57 75	783
emp			5.5 1.1	441	4.07	73
٢		5	70 57 50	45 49 52	8 5	100
		4	813	201	65	218
		3	59	4 50 5 20 2 20	6.8 71	72
		2	51	122	73.62	27 9
		-	68 58 50	1 1 2	123	72
1	Month	1110000	October November December	January February March	April May. June	JulyAugust

9-4305. GILA RIVER NEAR GILA, N. MEX.--Continued

Suspended sediment, water year October 1960 to September 1961

L		ОСТОВЕ	₹		NOVEMBE	₹		DECEMBER	
		Suspen	ded sediment		Suspen	ded sediment		Suspen	ded sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	31	12	1	65	9	2 2	54	C 7	1
2	32	10	1	63	12	2	54	C 7	1
3	32	10	B 1	61	C 11	2	57	C 7	1
5	32 31	13 12	1 1	59 59	C 11	2 2	71 69	C 7	1
7	31	1 12] "	ļ	•	0,7	,	
6	31	12	1	59	C 11	2	63	c 7	1
7	31	14	1	61	C 11	2	61	3	Т
8	29	12	1	59	C 11	2	61	C 5	1
9	40 42	30	3 2	57 57	C 11	2 2	69 67	C 5	1 1
10	42	21] "	C 11	· ·	6,	,	•
11	40	17	2	57	c 9	1	63	C 2	т
12	39	10	1	57	C 9	1	59	C 2	T
13	39	24	3	57	C 9	1	61	C 2	т
14	40	12	1	55	C 9	1	61	C 2	Ţ
15	49	20	8 3	55	C 9	1	61	C 4	1
16	62	110	8 18	55	C 9	1	59	C 4	1
17	120	287	5 129	55	JC 9	l i	59	C 3	Ŧ
18	254	800	549	55	C 6	1	57	C 3 C 3	T
19	220	437	260	55	C 6	1	57	C 3	<u> </u>
20	154	208	86	55	C 6	1	57	C 3	т
21	120	120	B 40	55	c 6	1	59	c 3	7
22	102	75	B 20	55	C 6	l i	57	Č 3	T
23	91	50	8 12	55	C 6	i	59	C 3	T
24	86	36	8	55	C 6	1	59	C 3 C 3	T
25	80	24	5	55	C 6	1	59	C 3	т
26	76	19	4	55	c 6	1	59	C 4	1
27	71	21	1	54	c 6	i	59		î
28	69	20	B 4	54	C 6) ī	59	C 4 C 6	ī
29	67	14	3	55	C 6	1	61	C 6	1
30	65 65	12	2	54	C 6	1	67	c 6	1
31		 	1		 		67	C 6	11_
Total	2240		1168	1703		40	1885		23
		JANUAR	Y		FEBRUAR			MARCH	
1	65	C 3	1	71	C 6	1	65	C 6	1
2	61	C 3	Ţ	71	C 6	1	63	C 6	1
3	59 59	C 3 C 3	Ţ	67 61	C 6	1 1	63 63	C 6	1
5	59	c 3	l 'i	61	C 6 C 6	i	69	C 6 C 6	i
						-	1		
6	59	C 3	T	63	C 6	1	74	C 6	1
7	59 57	C 3	<u> </u>	63	C 6	1	74	C 6	_ 1
9	57 55	C 3	T T	63 63	C 6	i 1	71 74		E 1
10	55	c 3	Ť	63	C 6	i	74		E 1 E 2
- 1		i		H		ļ		1	
11	55	C 3	т	63	C 6	1	78		E 2
12	57	C 3	J Ţ	63	C 6	1	80		E 2
13	55 55	C 3 C 3	Ţ	63 63	C 6	1	82 86	20 28	4 7
15	55	c 3	į į	63	c 6	1 1	93	49	12
1		1	i .	Ĭ			1		
16	55	C 3	Т	63	C 6	1	107	80	B 25
17	57 57	C 3]	65	C 6	1	114	95	29
18	57	C 3	T	65 67	C 6	1	117 114	66	21 B 18
20	57	C 3		67	C 6 C 6	l i	114		B 16
		1			1	_		1	
21	57	C 3	T	67	C 6	1	110	40	12
22	57	C 3	Ţ	67	C 6	1	105	39	11
23	57	C 3	Ţ	67	C 6	1	110	42	12
24	59 65	C 3	, , , , , , , , , , , , , , , , , , ,	67 65	C 6	1	114 124	63 106	19 35
25 • •		с з	1	65	c 6	1	130	112	39
		د با	2	65	¢ 6	i	130 132 127	110	B 40
26	65 71	IC 8					g 132	1 110	- +0
26	71 82	C 8			C 6	1	1 127	66	23
26 27 28 29	71 82 80	C 8	2 2	65	C 6		124	51	23 17
25 · · · · · · · · · · · · · · · · · · ·	71 82 80 78	C 8	2 2 2	65	=		124 124	51 50	B 16
26 27 28 29	71 82 80	C 8	2 2	65			124	51	B 16 20

E Estimated.
S Computed by subdividing day.
T Less than 0.50 ton.
B Computed from estimated-concentration graph.
C Composite period.

9-4305. GILA RIVER NEAR GILA, N. MEX. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued

Day	Mean dis-	ТТ	led sediment	Mean	Suspen	G6G 86	diment		Suspen	aea i	eedimen
Day	dis-	1 50 1						Mean			
	charge (cfs)	Mean concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)		Fons per day	dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
1	122	45	15	76	21		4	34	30	В	3
2 • •	117	43	14	74	27	-	5	32	20		2
•••	114	50	15	71	27	1	5	30	16		1
5	110 117	108	20 34	71 76	25 20	В	5 4	30 29	14		1 2
.				· ·	1	-					
7	127 143	126 220	43 85	78 76	23 27	ļ	5	29 29	13 25	l	1 2
B	152	240	98	69	20	1	4	27	19		ī
9	152	170	B 70	69	18	ł	3	27	20	l	1
0	146	100	39	65	21		4	27	22		2
1	135	76	28	61	18	1	3	27	26		2
2 • •	127	54	19	59	20	8	3	27	22		2
3	120 112	55 48	18 15	57 59	15 18		2	27 27	25 22		2
5	107	39	ii	59	15		2	29	20	В	2
s	102	40	11	55	١.,			84	17500	s	4500
7	100	38	10	54	15 16		2 2	122	16100	s	7170
B • •]	98	40	11	54	17	1	2	70	9200	В	1700
9	96	40	B 10	52	13		2	57	1450		223
ا •••	98	40	в 10	50	17		2	52	554		78
1	105		B 18	48	17		2	48	348		45
2	112	60	18	44	21	1	2	44	270		32
4	110 102	44 32	13 9	42	16 21	1	2	41 39	294		33 24
5	100	30	8	42 41	19		2 2	41	229 240	В	25
6	98	33	9	41	20		2	41	250		28
7	93	27	ŕ	41	20	В	2	85	2840	s	903
8	86	30	7	39	20	B	2	57	1600	В	250
9	82 80	23	5 4	37	30 30	В	3	46	800	В	100
1				37 36	72		3 7	42	425		48
otal	3363		674	1733			97	1300			15185
		JULY			AUGUST				SEPTEMBE	₹	
1	42	300	34	32	130		11	30	500		40
2	42	335	38	39	1000	в	110	27	190		14
3	44	460	55	37	2800		280	26	250	В	18
5	5 2 48	1190 1420	167 184	32 29	500 179	В	45 14	25 30	220 130	ļ	15 11
		1 1									
7	41 48	380	66 49	27	120	İ	9	32	98	_	10
6	46	370	46	27 27	115 94		8 7	37 39	100 126	В	10
9	42	290	33	26	101	ļ	7	44	290		34
0	42	250	28	24	108		7	48	210	ĺ	27
۱	51	628	S 204	32	180	В	16	54	600		84
2	44	6000	713	63	11600	5	2120	55	600	l	89
3	41 41	1470 268	163 30	37	2300		230	61	580		96 173
5	39	360	38	32 63	740 7800		64 1330	61 55	1050 440		65
6	36	1 1	В 30		4930	١.	985	55	160		
7	32		B 16	64 50	1200	S B	160	52	103	1	24 14
8	29	140	11	67	3150	ľ	570	48	84	1	11
9	29 29	120	9 10	63	800	1	136	44	70	В	8
1		125	-	54	324		47	42	60		
•••	27	97	7	46	278		35	41	52		6
2	30 30	97	8	52 74	1160 4500	S	246 899	39 37	36 36		4
	27	67	5	63	880	1	150	36	29	1	3
5	26	57	4	57	512		79	34	33		3
6	26	53	4	48	423	1	55	34	28		3
7	24	52	3	42	238		27	32	37		3
B	24		B 3	55	2200	В	760	32 32	42		4
9	27 34	34 120	2 11	48	7700 850	1	998	32 32	49		4
1	36	300	29	41 34	220		94 20	32	30		
otal	1129		2006	1385	1		9519	1214			798

S Computed by subdividing day. B Computed from estimated-concentration graph.

GILA RIVER BASIN

9-4305. GILA RIVER NEAR GILA, N. MEX. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, rebmically dispersed; D, decantation; N, in native water; P, pipel; S, sieve; V, visual accumulation tube; W, in distilled water)

analysis Method Ħ S S S PWC 2,000 100 111 111 8 8 | | | 111 0.500 Percent finer than size indicated, in millimeters $|\cdot|$ 1 1 1 1 0.250 100 111 Suspended sediment 0.062 0.125 66611 1111 87 100 100 0000 0.002 0.004 0.008 0.016 0.031 1118 848 1 1 1 28 96 86 76 85 1116 Sediment discharge (tons per day) concen-tration (ppm) Sediment 382 26 392 4760 2580 7260 2290 1250 Discharge (cfs) 202 91 84 84 22 Sam-pling point per-ature (°F) Water tem-58 74 74 73 73 80 80 (24 hour) Time 1230 1900 1500 1600 1600 1600 1130 1730 Oct. 19, 1960....
Mar. 15, 1961....
July 8.... Aug. 12...... Aug. 13..... Sept. 11..... Date of collection

9-4740, GILA RIVER AT KELVIN, ARIZ.

LOCATION .--Just above mouth of Mineral Creek, 1,200 feet upstream from gaging station at Kelvin, Pinal County, 17 miles downstream from San Pedro River, and DRAINAGE AREA. --18,011 square miles at gaging station, of which 5,125 square miles is below Coolidge Dam. 19.5 miles upstream from Ashurst-Hayden Dam.

RECORDS AVAILABLE .-- Chemical analyses: December 1950 to September 1961.

Water temperatures: December 1950 to September 1961. Sediment records: January 1958 to September 1961.

EXTREMES, 1960-61.—10 sectors and any 13-25; minimum, 407 ppm Sept. 14.

Ratchess: Maximum, 1,970 ppm May 13-25; minimum, 3,760 ppm May 13-25; minimum, 3,760 ppm May 13-25; minimum, 3,760 ppm May 13-25; minimum, 3,760 ppm May 13-25; minimum, 3,760 ppm May 13-25; minimum, 46°F Dec. 7-10.

Specific conductance: Maximum dally, 510 micromhos May 22; minimum, 46°F Dec. 7-10.

Sediment concentrations: Maximum dally, 360 ppm May 13-25; 1961; minimum, 294 ppm Rept. 24, 1954.

Sediment loads: Maximum dally, 54,760 ppm May 13-25; 1961; minimum, 129 ppm Rept. 24, 1954.

EXTREMES: 1960-61.—15:80-196 and 13-25; 1961; minimum, 129 ppm Rept. 24, 1954.

Specific conductance: Maximum dally, 5,120 micromhos May 22, 1961; minimum, 41°F pec. 15, 25, 1950, Jan. 25, Feb. 23, 1955.

Specific conductance: Maximum dally, 5,120 micromhos May 22, 1961; minimum, 41°F pec. 15, 25, 1950, Jan. 25, Feb. 23, 1955.

Specific conductance: Maximum dally, 5,120 micromhos May 22, 1961; minimum, 41°F pec. 15, 25, 1950, Jan. 25, Feb. 23, 1955.

Specific conductance: Maximum dally, 55,000 tons May 22, 1961; minimum dally, 1 ppm May 8, 1963.

Sediment loads (1958-61): Maximum dally, 55,000 tons May 6, 6, 1958, minimum dally, 1 ppm May 8, 1963.

Sediment loads (1958-61): Maximum dally, 55,000 tons May 6, 6, 1958, minimum dally, 1 ppm May 8, 1963.

SEMBNES.—Value of corrective of dally samplysis and do not include potessium (N). Recorded of gaging station, except during available in district office at Albuquerque, N. Mex. No appreciable inflow from Mineral Creek between sampling point and gaging station, except during

periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1960 to September 1961

		Col-		_	_	_			_	_		_	_	_
	-	E . #						6.7	3.3	7.5	7.3	7.9	7.6	7.7
	Specifi con-	duct- ance (micro- mhos at 25°C)	2730	1350	3070	2870	3390	3420	3890	3020	1570	1520	2050	2530
	S	ad- ad- sorp- tion ratio	3.0	4.1	9.	9.	5.6	2.7	4.	3.0	4.1	4.2	3.2	2.8
	ness ICO,	Non- car- bon-	1070	460	1370	1180	1630	1590	1860	1180	221	200	547	910
	Hardness as CaCOs	Cal- clum, mag- ne- sium	1160	588	1420	1280	1660	1640	1860	1340	390	370	710	1040
	Dissolved solids (residue at 180°C)	Tons per day	146	152	190	162	146			0	437			
	Dissolved solids	Tons per acre- foot	2.94	1.26	3.59	3.20	4.11	4.11	4.43	3.36	1.24	1.32	2.04	2.79
TOT TOWNS AND SO SO	Dis (resi	Parts per mil- llon	2160	924	2640	2350	3020	3020	3260	2470	914	974	1200	2020
		. Bo-	1	ì	ŀ	1	0.25	1	1	1	!	1	1	1
		Ni- trate (NO ₂)	1	1	ŀ	1	1.0	1	1	1	1	1	1	1
		Fluo- ride (F)	1	;	1	1	1.1	ŀ	ŀ	1	ł	1	1	ł
Company and Jacob Park of Park There are a company of the company		Chloride (C1)	;	!	!	1	240	1	1	1	ŀ	i	1	1
		Sulfate (SO ₄)	1	1	1	1	1750	ŀ	ł	1	1	1	!	1
	Bi-	car- bon- ate (HCO ₂)	113	156	62	126	38	57	0	196	506	208	199	159
	,	Sium (K)	i	;	1	1	31	}	1	1	1	1	i	!
		Sodium (Na)	232	77	228	216	242	249	242	255	186	184	193	210
4444	Total	acid- fty as H+1	0.0	o.	۰.	•	۰.	۰.	9.	0.	۰.	٥.	•	٥.
-	:	Mag- ne- sium (Mg)	65	13	11	99	82	8	9	8	24	24	36	28
		Cal- cium (Ca)	358	202	442	405	525							
		Sul- ica (SiO ₂) (Fe)	1	1	1	1	0.03	l	i	ŀ	1	1	l	1
		SH- ica (SiO ₂)	;	ł	;	1	29	ŀ	!	ŀ	1	i	1	1
		Mean discharge	25.1	61.0	26.6	25.6	17.9	15.4	17.0	14,4	177	189	0.09	
		Date of collection	Oct. 1-7, 1960.	Oct. 8	Oct. 9-15	Oct. 16-20	0ct. 21-31	Nov. 1-17	Nov. 18	Nov. 19-29	Nov. 30	Dec. 1-9	Dec. 10-11	Dec. 12-31

GILA RIVER BASIN---Continued

GILA KIVEK BASIN--CONTINUED 9-4740. GILA RIVER AT KELVIN, ARIZ.--Continued

		Col-				
		PH	8464455	7.7.87.87.7. 7.8.8.4.8.7.7.	8.2.6.2	8:17 8:17 7:17 7:17
	Specific		2600 2890 3410 2650 3140 3040	2500 2900 3220 3580 3340 4270 3440 2920	2880 1870 1180 939 1380 739	3730 2060 1290 1540 791
	8,	anum sd- sorp- tion ratio	0.01010101010 0.01010101010	04446881 0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	1.38.1	& ಬ.ಬ.ಬ ∡.ಬ.ಬ.ට ආ &
	Hardness as CaCO,	Non- car- bon-	958 1220 1660 1030 1430 323	390 794 909 1130 1180 1970 1460	1520 604 230 240	506 200 112 58
	Hard as C	Cal- clum, mag- ne- stum	1080 1310 1660 1120 1450 1460	550 895 1000 1180 1300 1970 1610	1760 930 556 444 630 304	720 445 340 485 342 450
ntinued	solids 180°C)	Tons per day	123 139 174 118 201 167 980	791 273 231 206 59.8 49.0 16.1	2.9 186 477 46.8 63.9	1640 2210 617 215 241 523
61Co	Dissolved solids (residue at 180°	Tons per acre- foot	2.96 3.45 4.18 3.75 3.75	2.19 2.88 3.18 3.66 3.67 5.14 4.07	3.67 2.04 .95 .94 1.33	3.18 1.66 1.10 1.43 .70
mber 19	Dtu (res1	Parts per mil- lion	2180 2540 3070 2250 2760 2640 1440	1610 2120 2340 2690 2700 3780 2990	2700 1500 696 694 980 458	2340 1220 807 1050 514
Septe		- 10 PG - 10 PG - 10 PG	11111188	1112/1111	111111	11141 1
30 to		trate (NO ₂)	1	1112	111111	1111:
er 19		Fluo- ride (F)	1111112	11151111	111111	11151 1
Chemical analyses, in parts per million, water year October 1980 to September 1961Continued		Chloride (C1)	11 148	111881111	80	11151 1
water y		Sulfate (SO ₄)	328	1118	111111	1 188
11on,	Bi-	car- bon- nte (HCO ₂)	149 107 0 110 36 204	196 123 111 62 62 0 0 178 296	290 398 660 262 476	262 422 340 348 402 478
er mil		A star (X)	1111112	1118111	111111	111#1 1
parts p		Sodium (Na)	215 216 216 210 218 198 215 298	324 327 337 3386 2286 112	106 89 42 41 74 49	520 258 137 151 39
es, in	Total	acid- ity as H+1	0.04.00	000000000	000000	66666 6
analys	:	Mag- ne- stum (Mg)	59 65 60 70 71 38	40 53 62 70 73 97	116 45 30 21 34 16	48 29 18 16 22
mical		ctura (Ca)	335 418 532 350 465 470	155 272 298 358 358 400 630 630 528	515 298 173 143 196 96	210 130 106 152 110
Che		Iron (Fe)	1111112	11181111	111111	11151 1
		Sil- ica (SiO ₂)		%	111111	1 188 1
		Mean discharge	20.9 20.3 21.0 19.4 27.0 23.4	182 47.7 36.6 26.4 8.2 2.0 5.0	.4 46.0 254 25.0 31.7	260 672 283 76.0 174
		Date of collection	Jan. 1-7, 1961. Jan. 8-16. Jan. 17. Jan. 18-25. Jan. 28-27. Jan. 28-7eb. 18 Feb. 19-28.	Mar. 1-8. Mar. 9-31. Apr. 1-10. Apr. 11-30. May 1-12. May 26-31. June 1-30.	July 1-20 July 21, 25 July 22-24 July 26 July 27-29 July 30-31	Aug. 1

6.8	7.4	7.9	7.7	7.1	7.7	7.8	7.8	8.1	7.6	5.5	5.5	1
1370 809	2400	861	1170	1460	867	675	1300	1030	1180	1650	2650	
9.1	1.8	1.3	2.7	6.2	7.7	1.2	2.7	3.6	2.9	2.8	2.9	
331	1040	0	176	368	172	4	252	74	195	334	997	-
580 360	1160	336	352	448	352	260	404 404	232	328	585	1150	
206 2110	482	735	391	376	1090	605	264	197	306	1	1	-
1.37	2.84	.74	1.07	1.41	18.	. 55	1.23	8	1.09	1.58		-
1010 500	2090	543	788	1040	595	407	902	663	799	1160	2170	243
11	1	1	1	1	i	1	ľ	Ì	1	ŀ	ł	:
11	1	I	ı	ı	!	١	1	ł	1	ł		
11	1	1	1	1	1	1	1	1	1	1	-	-
11	1	;	!	;	1	1	i	1	ł	!		
11	1	1	ı	;	ł	1	1	1	ł	;	**	
304	144	458	215	86	219	312	186	192	162	279	173	69
11	I	ŀ	1	1	1	1	1	ŀ	;	ŀ	1	1
37	129	53	115	142	ន	45	123	125	122	156	212	33
o o o	0.	•	°.	•	•	•	0.	٥.	۰.	o.	0.	
20	39	19	15	20	14	11	18	12	15	31	63	6.5
188	8	104	116	146	118	88	132	73	106	173	352	36
11	1	1	1	ī	1	1	Ī	1	١		ł	!
11	ł	ľ	1	1	l	1	ł	ł	1		1	-
75.7	85.4	201	184	134	629	551	108	110	142	ŀ	78.0	-
Aug. 17, 20-21, 1961. Aug. 23-24	Aug. 25-29	Aug. 30-31	Sept. 1-5, 7, 9-11	Sept. 6	Sept. 8, 12,13	Sept. 14	Sept. 15-20	Sept. 21-22	Sept. 23-30	Weighted average	Time-weight- ed average	Tons per day

Temperature (°F) of water, water year October 1960 to September 1961

	Aver-	28c	73	33	56	09	65	7.1	10	98	82	96	78
		31	02	55	1	1	89	1	1	I	86	82	1
		30	68	36	58	1	62	1	86	8	88	82	16
-		29	0.2	36	9	1	28	72	89	80	85	8	78
		28	72	23	55	28	72	20	82	80	88	98	80
		22	<u>67</u>	3,4	62	57	72	68	68	80	82	86	မ္
		26	22	5 5	61	58	65	89	72	8	8	88	8
1		25	62	50	65	28	4	1	2	8	80	88	78
		24	7.5	50	56	58	8 9	65	2	98	85	86	78
		23	70	55	56	58	70	1	99	86	78	79	78
		22	74	9.6	09	9	72	65	99	90	75	1	70
		23	74		51	9		80	65			8	
		20	74	57	53	58	65	1	99	8	78	46	72
		61	70		53	58		82	89		78	8	
		18	65	5.4	55	9	58	82	68	88	78	88	8.1
		17	6.5		55	49			4			84	81
	Day	91	02	25	55	9	65	2	2	88	80	8	82
	_	15	6.5		55	62		20	68		80	78	80
		14	67	30	54	52	72	72	89	06	82	8	78
1		13	_	25	5	64		72	9		82	8	78
•		12	72	52	ļ	63	62	68	62	96	82	82	85
		1.1	72	25	56		62	62	76	88	84	82	85
		10	0,0	4.6	55	ł	68	67	25	88	84	87	85
		6	75	9	57	9	67	67	75	88	84	8	80
		8	75	9 4	54	9	62	65	75	98	84	8	73
		7	79	4	55	57	65	62	ŀ	86	84	90	80
		9	80	. 4	55	63	62	20	65	98	82	06	80
-		5		10	57	63	4	77	l	84	82	85	80
		4	80	50	4	9	57	75	65	98	ŀ	84	
		3	85	20	55	65	26	75	99	82	75	84	7.5
		2	81		55	63		2	2			87	
		-	80	5.6	55	65	9	7.1	72	98		85	
	Meash	IIIOW	October	November		Fohmony	March	Andi	Mar	June	Infe	Amenica	September

9-4740. GILA RIVER AT KELVIN, ARIZ. -- Continued

Suspended sediment, water year October 1960 to September 1961

		OCTOBER	₹		NOVEMBER	.		DECEMBER	
		Suspen	ded sediment		Suspend	ded sediment		Suspen	ded sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	33	142	13	16	87	4	203	2020	1110
2	28 27	51 39	4	16	85	4	197	1160	617
3	26	19	3	17	75 74	3	217	1330	779
5	20	16	1	17 17	86	3 4	225 219	1210 1070	735 633
6	23	9	1	16	45	2	217	1570	920
7	19	22	1	16	79	3	197	1850	984
8	61	4410	S 2800	14	31	1	138	770	287
9	26 17	3600 260	253 12	14 14	68 110	3 4	86 65	515 700	120 B 120
1	37	53700	S 5890	14	166	6	55	931	138
2	24	27600	1790	15	240	B 10	37	520	52
3	21	5700	323	14	232	9	29	267	21
5	24 37	2160 12600	140 S 1740	16 15	143 167	6 7	27 26	287 224	21 16
6	30	5250	S 474	14	187	7	24	286	19
7	22	335	20	16	116	5	33	187	17
8	28	340	26	17	184	8	32	218	19
9	28	332	25	17	128	6 7	27	182	13
20••	20	222	12	16	161		25	196	13
21 • •	19	166	9	12	158	5	24	285	18
22 • •	20	168	9	11	117	3	22	257	15
3	19 19	108 115	6	11	136 121	4	24 24	199 308	13 20
5	19	167	6 9	11 11	99	4	19	255	13
6	19	158	8	10	99	3	18	215	10
?7••	19	150	B 8	11	100	3	17	191	9
28	16 17	185 149	8 7	12	115	4	18		B 10
30	14	149	4	36 177	3520	5 320 1680	22	268 317	16 18
11	16	155	7	1		1080	24	589	38
otal	748		13610	613		2131	2312		6814
		JANUARY	1		FEBRUARY			MARCH	
1	24	198	13	23	368	23	307	560	464
2	20	263	14	22	330	20	298	515	414
3	2 2 19	237	14 12	22	562 355	33 21	246 179	430 688	286 333
5	20	227	12	22	312	19	140	240	91
6	20	250	14	19	234	12	109	109	32
7	21	308	17	20	304	16	95	156	40
8	24	205	13	21	299	17	B3	137	31
9	20	510	28	21	266	15	75	241	49
10	20	576	31	22	330	в 20	68	336	62
1	19	518	27	22	400	24	62	139	23
2	19 20	767 377	39 20	21	461	26	61 59	225 147	37 23
13	20	365	20	22	316 220	19 12	59 57	202	23 31
5	18	328	16	20	540	29	55	128	19
16	23	1400	87	20	711	38	54	129	19
17	21	20200	5 1300	20	972	52	54	171	25
8	16	6300	272	54	2400	B 690	53	568	81
900	16 18	10600 2100	458 102	194 211	4640 2470	2430 1410	45 42	272 95	33 11
11	20	2000	108	225	2060	1250	44	164	19
22	19	2240	115	231	1680	1050	44	198	22
23	21	2070	117	231	960	599	36	416	40
24	20 25	1330 746	72 50	231 240	638 626	398 406	35 35	303 318	29 30
		480	31	300		s 1510	34	382	35
25	2/-		88	327	1340	1180	34	268	25
	24 30	1090							
25••	24 30 28	1090	88	327	920	812	33	327	29
26 27 28	30 28 26	1170 510	88 36	327			33	262	23
26	30 28	1170	88		920	812 			

S Computed by subdividing day.
B Computed from estimated-concentration graph.

GILA RIVER BASIN---Continued

9-4740. GILA RIVER AT KELVIN. ARIZ. -- Continued Suspended sediment, water year October 1960 to September 1961--Continued

APRIL MAY JUNE Suspended sediment Suspended sediment Suspended sediment Mean dis-Mean Mean Day Mean Mean Mean disdis-Tons Tons Tons charge charge charge per day per day per day tration tration (cfs) (cfs) tration (cfs) (ppm) (ppm) (ppm) 1.. 16 0.6 131 41 58 2... 36 33 418 188 41 17 13 188 172 •6 92 164 T 5.. 36 38 242 318 24 33 9•2 9•2 82 40 2 •6 130 167 6.. 7.. 8.. 9.. 10.. 38 38 35 35 36 212 177 22 18 7.3 31 20 1 T 148 T 6.4 6.0 5.2 4.2 113 •6 •7 •7 13 15 15 135 157 225 176 1 15 6 157 11.. 38 30 4.8 6.4 6.0 34 32 410 350 22 39 • 7 146 T 12.. 13.. 14.. 15.. 190 239 • 8 • 8 • 7 31 31 31 29 34 45 102 346 1 1 † 412 538 4.8 144 173 82 16.. 26 378 168 2 27 4.8 .4 .3 .3 151 T T T T 21 32 33 30 17.. 28 33 35 33 280 358 123 6.4 6.0 5.2 196 3 2 3 2 146 19.. 169 320 197 21.. 33 71 157 T T T T 321 29 3.2 1 • 3 22... 23... 24... 25... 32 30 227 5.5 3.5 3.5 4.2 166 103 79 136 190 134 153 20 17 1 1 1 •3 •3 •3 28 229 17 15 106 300 26 . . 24 19 3.8 25 t • 2 123 27... 28... 29... 30... 23 21 19 18 518 515 32 29 18 6 2.9 55 41 53 99 160 126 11 • 3 • 2 • 2

lotal	933			796	172.3			45	14.4			6
		JULY				AUGUST			s	EPTEMBER		
1	•3	8	1	т	260	50100		36500	200	20500		11100
2	•2	12	1	Ť	672	55800	٥.	218000	205	9200		5090
3	•2	12	1	Ť	445	48200		66100	149	3800		1530
4	.3	49	1	Ť	240	10600		7290	164	1350		598
5	• 4	10		Ť	165	3500	ľ	1560	192	850		441
6	•2	177		Ť	120	3870		1250	134	640		232
7	•2	66		T	100	2800		756	132	686		244
8	• 2	111		T	70	2290		433	1320	28300	s	173000
9	• 2	22		Ť	50	1420		192	300	34600	s	38700
0	•2	16		T	40	30000	A	3200	170	1180		542
1	•2	16		T	192	36800		38000	145	15000	A	5900
2	• 2	17		Ť	146	12600		7120	492	21000		27900
3	• 2	18	ŀ	Ť	185	47600		30800	226	45000		29500
4	•2	22		T	573	64300	S	182000	551	61000	s	148000
5	•2	20		т	354	90000		92400	125	17000		5740
6	•2	17		T	188	61800		44100	120	4500		1460
7	•2	14		Ţ	127	42900		33900	110	1120		333
8	•2	26		T	205	73600		44800	100	793		214
9	•2	28		T	329	55600		73800	100	576		156
0.0	4.5	6390	s	1530	75	3320	5	674	95	350		90
1	57		s	104000	25	713		48	90	2300		559
2	306		\$	177000	206	6440		52800	129	7420		2580
3	391	120000	s	162000	2920	55100		345000	138	1720		641
4	65	93500		17600	210	59500		39300	136	551		202
5	35	26500		2500	114	22200	5	7370	136	567		208
6	25	23700		1600	95	11900		3050	132	652		232
700	25	24700		1670	69	2280		425	134	850		308
28	30	25500		2070	52	680		95	154	3400		1410
29	40	63500	١.	7110	97	4270	S	5280	154	1420		590
10	318		S	142000	406	53000		60200	154	540		225
31	509	111000	5	174000	596	62400	S	120000			_	
otal	1809.7			793080	9326			1516643	6387			457725
				cfs-days).								28459 2808735

1.3 1.1 .8

110

130

31.. Total

S Computed by subdividing day.
T Less than 0.50 ton.
A Computed from partly estimated-concentration graph.

B Computed from estibated-concentration graph.

GILA RIVER BASIN--Continued

9-4740. GILA RIVER AT KELVIN, ARIZ. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

	thod.	of	ııysıs	ပ္			PWC	VPWC	ົວ	ō
	Me			1	03	03	₹	<u> </u>	Ā	2
			0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000							
		rs	000	_						
		llimete	50 0.5	-	-	-	-	100	-	:
	ent	l, in mi	25 0.2		100	· :	-	99	-	<u> </u>
	sedim	dicated	62 0.1	<u>'</u>			100	66		
	Suspended sediment	Percent finer than size indicated, in millimeters	31 0.0	Ľ	٠,	=	7		=	=
(T)	Sus	er than	16 0.0		_	_				
מאמות		ent fin	0.0 80	8	-	!	86	8	æ	8
men i		Perc	0.0							
, w,			05 0.0	88	-		76	22		
				67	-	-	26	38	28	63
r, pipet, s, sieve, v, visual accumulation time, w, in distinct water,	limont	discharge	per day							
IBMEI AC	ğ	etb (SIIO)							
, , ,	ment	concen- tration	m (iii	0011	224	278	20000	60700	2000	200
o, or	Sedi	con	ğ	ğ			Š	9	õ	4
, puber,		Discharge (cfs)	,	4	ō.	6	36	20	00	ž.
		Disch (cf.	•	"	•••	_	.,	•	ä	ï
	Sam-	pling	1							
	Water tem-	per-	(°F)	72	54	54	8	75	88	88
		Time (24 hour)		200	430	8	1200	1700	200	.00
		. 2		ļ.	_	_				_
		ction		0			:		:	
		Date of collection		11, 196	15	13, 196	21	July 22	30	18
		Date		oct.	Dec.	Jan.	July 21	July :	July	Aug.

9-4985. SALT RIVER NEAR ROOSEVELT. ARIZ.

LOCATION...-Temperature recorder at gaging station on left bank, 100 feet downstream from bridge on Globe-Young Highway, 0.2 mile downstream from Phala Creek, 1 mile upstream from diversion dam for power canal, 14 miles east of village of Roceevelt, Gila County, and 17 miles upstream from Rocevelt Dam.

COUNTY, and 17 miles upstream from Rocevelt Dam.

DRAINGE AREA..-4,306 square miles.

RECORDS AVAILABEE.-"Refer temperatures: Maximum, 90°P July 8-10, Aug. 2, 1958, July 10, 1959; minimum, 35°F Jan. 19, 1960.

REMANKS.-"Temperature recorder inoperative Dec. 14 to Jan. 20, Mar. 6 to Apr. 24, June 22 to Sept. 30.

Temperature (°F) of water, water year October 1960 to September 1961

	1	Average	66 62	55	11	11	52	11	11	72 67	1.1	11	11	1
		31	560	11	11	51	11	11	11	75	11	11	11	1
		30	62	51	11	51	11		63	44	11	11	11	1
		29	62 6	50.2	11	51	11	Ħ	8 6	22	ii	11	11	-
		28	63	52	11	51	52	11	67	77	11	11	11	-
		27	663	523	11	51	25	Ħ	999	4 6 9	++	 	Ħ	i
		26	63	53	11	51	52	11	59	74	11	11	11	-
		25	63	523	11	51	500	11	500	4 69	11	11	11	1
		24	63	53	11	8 4	53	11	11	42	11	11	11	-
		23	582	53	11	4 4 60 60	53	11	11	42	11	11	11	1
		22	62	523	11	8 4	45	11	11	74	11	11		-
3		21	595	523	11	4 4 6 4	53	11	11	4 6 8	82	11	11	-
2		20	58	53	11	11	533	11	11	73	84	11	11	1
		19	22	52	11	11	53	11	11	73	82	11	11	-
		18	50.00	53	11	11	53	11	11	44.	81	11	11	1
		17	5.5	53	11	11	53	11	11	73	80	11	11	1
	Day	91	260	5.5	11	11	53	11	11	72	83	11	11	1
	_	15	602	55	11	11	4 6	11	11	55	82	11	+1	1
		14	66 61	55	11	11	53	11	11	69	980		11	1
		13	67	52	4 4 6 4		53	11	1.1	63	78	11	11	1
		12	63	52	47	11	52	11	11	71 67	980	11	11	1
		11	63	57	47		52	11	11	72	90 4	11	11	1
		10	66	59	47	11	50	1.1	11	72	79	11	11	-
•		6	65	59	47	11	5 5	11	1.1	72	79	11		,
		8	71	61	48	11	51	11	1.1	63	79	11	11	1
		7	72	61 59	0 4 0 8	11	51		11	68	78	11		;
Ì		9	73	59	50	11	51		11	69	78			1
•		5	74	50.00	50	11	52	53	11	68	78	1.1	11	t
		4	74 67	5 8	51	11	52	52	11	69	77	11	11	1
		3	75	58	51	1 1	52	52	11	71	76	11	11	1
		2	74	58	51	11	52	52	11	72	75	11	11	ŀ
		1	72	0.00	51	1 1	51	51	11	71	75		11	1
			::	::	::	::	::	::	::	::	::	::	::	:
	7	Month	October Maximum . Minimum .	88	88	January Maximum Minimum	mum mum	imum	Maximum	May Maximum Minimum	June Maximum . Minimum .	Maximum	99	September Maximum.

9-5020. SALT RIVER BELOW STEWART MOUNTAIN DAM, ARIZ.

LOCATIONJust downstream from dam, 3.5 miles upstream from gaging station below Stewart Mountain Dam, which is 6 miles upstream from Verde River, Maricopa County

DRAINAGE AREA . -- 6,211 square miles.

RECORD AVAILABLE.—Chemical analyses: December 1950 to September 1961.

**RECORD AVAILABLE.—Chemical analyses: December 1950 to September 1961.

**Record Condition and Con

maten meen October 1080 to Sentember 1061 to the most state of Chemical analyses

	_	B	7.7	7.7	7.5	7.8	7.7	7.7	1
	Specific	duct- ance (micro- mhos at 25°C)	902 947	932 924		1070 1070 1080	1010	878	1
	8;	and and and and and and and and and and	4.4	44	4.5	4.9 4.9 5.0	4.6	4.4	1
	ness ICO ₃	Non- car- bon-	34 38	36	37 38	44 42 42	39	38	!
	Hardness as CaCO,	Cal- cfum, Mag- ne- stum	154	160	164 164 170	172 173 176	168	164	ı
	Dissolved solids (residue at 180°C)	Tons per day	164	211 1870	1240 1830 2290	2650 1910 1590	1	1	1
1961	Dissolved solids residue at 180	Tons per acre- foot	0.69	.70	.72	22.2	0.77	1	:
eptember	Dis (res	Parts per million	511 516	514 517	531 552 574	594 597	564	544	1190
2			0.12	.15	.13	1.1	1	1	1
1960		Ni- trate (NO ₂)	1.5 0.12	° !	1.3	e	ŀ	T	1
toper		Fluo- Ni- ride trate (F) (NO ₃)	6.9	o. !	4:1:	4.	1	1	1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	186	190	502	230	1	1	1
on, wate:		Sulfate (SO.)	04	42	43	4-1-1	1	1	1
M1111	į	(0) (0)							
s per	Bi-	car- bon- ate (HCO ₃)	146 151	151 150	155 154	160 158 164	157	154	331
part	Ė	(K)	4.7	4.7	5.7	4.8			1
yses, in		Sodium (Na)	121 126	123	135 132 142	148 147 153	139	133	293
I ana I	7	mag- ne- stum (Mg)	9.5	10	11 9.5	===	11	51	22
em1ca		Cal- cfum (Ca)	46	47	50 50 50	51	20	49	105
3		Iron (Fs)	0.02	<u>ق ا</u>	811	គ្. ! !	1	1	;
	· · · · ·	Silica (SiO ₂)	8!	61	8	811	!	ı	:
		Mean Silica discharge (SiO ₂) (cis)	119 65	152 1340	867 1231 1480	1650 1186 987	1	781.6	1
		Date of collection	0ct, 1-Nov. 30, 1960.	Jan. 1-Feb. 28, 1961	April 1-30	July 1-31 Aug. 1-28 Aug. 29-Sept. 30	Weighted average	Time-weighted average	Tons per day

GILA RIVER BASIN--Continued

9-5020. SALT RIVER BELOW STEWART MOUNTAIN DAM, ARIZ .-- Continued

	Aver-	3 8e	99	1	i	1	55	56	56	63	19	69	69
		31	11	ŀ	1	1	22	1	61	1	68	69	1
		30	11	5	ł	ł	26	55	61	65	69	69	68
		29	11:	55	!	;	52	55	61	65	68	69	69
		28	11:	5	!	54	55	57	61	65	67	69	89
		27		!	!	5	56	57	61	65	67	69	68
		26	<u></u>	<u> </u>	1	54	99	25	61	65	29	69	68
н		25	65	ţ	!		56	57		65	67	69	68
Temperature (°F) of water, water year October 1960 to September 1961 [Once-daily measurement at 7:00 a.m.]		24	6.5	ļ	1	53	55	57	61	65	67	69	69
ber		23	65	ì	1	!	55		9	65	67		69
tem		22	65	!	1	54	55	57	09	65		69	1
Sep		21		!	1		54			65	68		70
÷.		20	79	1	;	53	54	58	09	65	68	89	7.0
1960 a.m		19		1	1		54		9	49			20
er]		18	79	;	;	53	54	1	59	49	68	69	20
tob it 7		17		ŀ	ł		52		61	49	68	69	70
r Oc	Day	16	4 !	-	1	54	55	57	59	63	89	69	70
уеа • еше	_	15	79	i	1	54	55		29	63	68	69	70
of water, water year October 1960 (Once-daily measurement at 7:00 a.m.		14	5 1	;	1	54	54	57	28	63	29	69	69
Wa		13	65	;	1		54	57	29	62	67		2
ter,		12	9 1	1	1	54	75	57	59	63	67	59	20
wa e-d		=	67	;	i	54	54		5	79	67	89	70
Onc.		10	67	!	1	-	54		29	62			10
(°F		6	19	<u>. </u>	Ť	Ť	4.		28	62	67		69
ıre		8	_	l	;	1	54	55	28	79		89	69
rat		7	11	!	i	İ	54			62			69
empe		9	91	-	1	;	54	55	58	61	67	89	69
Ĕ		2	9	<u>:</u>	i	i	54			-			69
		4	67	!	-	-	54	55	96	61	99	68	69
		3		<u>: </u>	+	+	54	55		61			69
		7	-	ŀ	-	1	54		-	61			69
		_		<u> </u>	÷	+	54			61			69 6
	Month	THOUSE THE PARTY OF THE PARTY O	October	December	Tomous	February	March	Anril			Inla	Angust	September

9-5045. OAK CREEK NEAR CORNVILLE, ARIZ.

LOCATION: --Temperature recorder at gaging station near left bank on downstream side of pier of county highway, 0.2 miles upstream from mouth. The Page Springs, 4 miles northeast of Cornville, Tavapai County, and 15 miles upstream from mouth. BRIANGE AREA, --337 square miles. RECORDS AREA, --337 square miles. RECORDS AREA, --34 three temperatures: June 1954 to September 1961, 7; minimum, 39°F Jan. 3-5, 7. EXTREMES, 1960-61.--Water temperatures: Maximum, 86°F July 25, Aug. 7; minimum, 31°F Feb. 21, 1955, Jan. 4-6, 1960.

Temperature ('F) of water, water year October 1960 to September 1961

					ì		;		:		8	-1	8		1	100000 Tan			3	3	Tomas dans		3	١							
Month															Day																
THOM:	1	2	3	4	5 (9	7 8	6 8	- 10	=	12	13	14	15	9	17	8-	6	20	21	22	23	24	25	78	27	28	29	30	5	Average
October Maximum	70	69	71	70	70 67 67	9 69	69 69		67 61 61 59	60	61	62	62	60	57	56	57	58	59	60 58	5.0	59	709	62	61	60	096	58	58	56	62
November Maximum	20 20		2 4	55.55	57 5	57 5	57 57 57 54		55 54	523	3 52	52	50	0.8	49	48	48	48	6 4 6	49 48	49	44	48						44	11	5 2 5
December Maximum	47	4 4 4 7	6 4 6 7 7 8 4 9	8 7 4	47 4	45 4	42 41 40 41		42 42	4 5 7	4 4 3	43	43	42	42	45	42	44	4 4	43	42	45	43	43	43	43	43	44	44	4 t 4 3	44 43
January Maximum	43	41	39	39	39 4	400	39 40		04 04	4 4 1 0 4 1	410	41	0,0	42	43	43	43	43	43	43	4 4	7 7 7	9 4 4	8 4 9	6 4 4	44	47	47	47	47	43
February Maximum	4 4 7	48	4 9 7	49	4 8 4 4 6 4	4 2 4	48 48		49 51	52	53	53	52	53	53	53 52	54	53 51	53	53	54	53.	45	52	24	51	53	H	11	11	50
March Maximum	55	56	5,4	50	53 5	52 5	54 54		56 57 54 55	5.8	5.8	60	58	61 59	60 57	58 56	55	53	55	560	62 58	6 62	59	61	52	5.5	58	53	53	57	58 55
April Maximum	54	49	528	55	58 6	63 6	62 62 57 53		64 62 54 55	53	3 55	56	565	65 55	68 58	6.0	7.5	67	58	57	57	57	56	55	54	67	5.8	22	73	11	65 56
Maximum	73	62	71 6	69	59 5	58 5	56 70 58 57		74 71 63	71 62	70	64	71	73	73	73	75	73	73	75	76	949	77	77	74	77	75	70	74	74	72 62
June Maximum	74	74	63	77	78 7	77 8	80 80		80 79 67 65	80	99	79	6.9	82	80 69	78	78 69	81	98 70	84	83	83	73	81	79	70	83	382	83	11	9 9 8 8
July Maximum	73	73	78	70	82 7	7 17	84 84 71 72		84 85 72 73	73	3 73	83	54	54	79 67	83	83	85	84	83	81	73.83	83	86	82	44	82	94	82	92	82 71
August Maximum	79	83	78	75	85 8	77 77	86 85 75 76		84 76 56 64	73	3 72	13	74	76	7.1	83	81 73	75	81	83	83	74	77	81	79	81	79	22	78	79	81 72
September Maximum	77	76 70	73	44 64	75 7 66 6	76 7	76 75 69 70		72 74 68 68	69	2 4 6 9	73	73	74	75	73	73	69	69	69	70	63	71	72	7.1	63	71	0,49	63	11	73

9-5100. VERDE RIVER BELOW BARTLETT DAM, ARIZ.

---At gaging station on right bank 2.2 miles downstream from Bartlett Dam, Maricopa County, and 3.5 miles upstream from Camp Creek.

RAINAGE ARE.—6,188 square miles.

RAINAGE ARE.—6,188 square miles.

Water temperatures: December 1950 to September 1961.

Water temperatures: December 1950 to September 1951.

Water temperatures: December 1950 to September 1951.

Bardness: Maximum, 275 ppm Mar. 1-31; maintamm, 202 ppm Sept. 14-20.

Specific conductance: Maximum daily, 865 micromhos Bee. 12; minimum daily, 527 micromhos Sept. 14-20.

Specific conductance: Maximum daily, 865 micromhos Bee. 12; minimum daily, 527 micromhos Sept. 14.

SEXTREMES, 1950-61.—Dissolved solids: Maximum, 550 ppm Dec. 18-21, 1956; minimum, 497 ppm Jan. 11-20, 1952.

Hardness: Maximum, 413 ppm Dec. 18-21, 1956; minimum, 108 ppm Jan. 11-20, 1952.

Specific conductance: Maximum daily, 956 micrombos Nov. 10, 1956; minimum daily, 234 micrombos Jan. 13, 15, 1952.
Water temperatures: Maximum, 90°F July 18, Aug. 14, 1951; minimum, 41°F Jan. 30, 1952.
REMANKS. --Values reported for sodium (Na) are determined by analysis and do not include potassium (X). Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex.

					_						_	_	_	a. 1	1		
		Hd	8.2	0 00	80	<u>.</u>	80	œ «	8	8.1	8.0	8	3.7	8.2	8,1		1
	Specific con-	duct- ance (micro- mhos at 25°C)	643					640			658				632	829	1
	å.	ad- ad- gorp- tion ratio	1.2	7.7	1.1	1.1	1.0		0.1	1,3	1.3	1.4	1.2	1,3	1,1	1.1	ı
		Non- car- bon-	38	3 8	8	77	88	- a	18	28	30	8	22	28	23	24	-
	Hardness as CaCO,	Cal- clum, Mag- ns- stum	257	268	268	272	276	286	248	256	254	238	202	238	256	280	
	Dissolved solids (residue at 180°C)	Tons per day	4.77	221	115	81.9	202	55.3	592	268	143	216	187	285			
r 1961	Dissolved solids esidue at 180°	Tons per acre- foot	15.0	4.4	.54	.54	.52	55.5	15	.55	.58	.53	.45	.52	0,53		1
Septembe	Dis (resi	Parts per million	397				386	386	373		412				389	393	193
0 to		Bo-	1.1 0.17		.18	ŀ	į	.18		ŀ	23	ł	ŀ	!	ŀ	ł	1
196		Mi- trate (NO ₂)	1.1		'n	ļ	ļ.	۲.	1	I	1.7	١	1	1		-	
tobe		ride (F)	0.5		4	-	I	4.	I	ļ	4.	1	١	1		i.	1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	28	1 %	56	;	1	8		1	31	ì	1	!			1
ton, wat		Sulfate (SO ₄)	83	1 1	73	I	I	89	1	I	88	1	1	1	-	ı	:
m111	,	CO CO	0	۰ ۳	4	0	0	0	•	0	0	0	0	•	1		ł
ts per	B1-	car- bon- ate (HCO ₂)	282	200	292	303		304		27.8	274	280	220	258		-	1
n Dar	,	Stun (X)	4.1		3.4	ŀ	ļ.	3.4	1	1	4.3	1	1	1	1	1	1
lyses. 1		Sodium (Na)	45	\$ 3	£	\$	39	4:	38	4	48	22	9	48	42	4 3	21
cal ana	:	Mag- ns- sium (Mg)	83	4 4	34	35	36	34	52	33	33	32	24	31	31	33	15
chemit.		Cal- clum (Ca)	84	3 2	215	21	52	2 2	80	64	47	41	42	44	51	50	88
		Iron (Fe)	0.02	1 1	8	1	Ļ	10.	1	1	8	1	ī	1	1	l	ł
		Silica (SiO ₂)	28	1 1	28	1	-	22		!	24	ı		!_	1		1
		Mean Silia discharge (SiC (cfs)	72.2 28	238	107	77.0	194	53.1 25	588		129				1	183.8	;
	ı	Date of collection	Oct. 1-31, 1960	Nov. 1-30	Jan. 1-31,1961	Feb. 1-28	Mar. 1-31	Apr. 1-30	June 1-30	In 1 - 31	Aug. 1-31	Sept. 1-13	Sept. 14-20	Sept. 21-30	Weighted average	Time-weighted average	Tons per day

GILA RIVER BASIN--Continued 9-5100. VERDE RIVER BELOW BARTLETT DAM, ARIZ.--Continued

	Aver-	age	70 60 54	51	5 5 6 5 5 6	82
	_	31	65	52	1 2 1	882
		30	60	52	35	882
		29	65	52	35	81 85 80
		28	66 61	52	56 70	81 85 80
		27	66 61 52	52 50	56 56 70	80 85 80
		26	66 61 52	1 20 1	108	800
961		25	95 52 52	50	58 71	80.00
r 18		24	95 52 52	122	58 71	8020
mpe		23	65 52 52	52	58 56 70	80
Temperature (°F) of water, water year October 1960 to September 1961 [Once-daily measurement at 8:30 a.m.]		22	66 52 52	52	58 56 17	80 80 80
to S		21	65 62 52 52	52	58 56 71	80 80 80
. B		20	66 62 52	501	58	8810
water year October 1960 measurement at 8:30 a.m.		61	65 52 52	52	56	808
obe:		18	522	300	56	80 80 80 0 0 0
t at		1	67 62 52	52 51 53	0 0 0 4	8 8 8
rear men	Day	92	68 62 53	52	56 56 64	808
er 3 sure		15	68 52 54	52	56 56 64	8 8 8
wat mea		14	252	52 51 54 54	2009	888
er,		13	74 62 54 54	49 51 54	6 UE UE	888
of water, Once-daily		12	5 2 4 2 4 4 5 4 4 5 4 4 5 4 4 5 4 5 4 5	521	0.00	888
of		11	74 58 55	49 51 52	0.00 0.00 0.00 0.00	8 8 8
(°F)		10	485	20 20 20 20 20 20 20 20 20 20 20 20 20 2	5 2 2 4 9 4 9 4 9 4	881
re		6	74 58 50	50	56 49	188
ratı		8	74 74 58 58 58 58	1 51	56 57 56 56 64 64	880
эшре		1		510		881
ž.		9	74 74 74 58 58 58 58	51 50 51 51	56 56 56 58 60 62	80 80 82 82
		5				
		4	82 76 58 58 58 58	50 49 51 51 51 51	4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	82 82 83 83
		3	ļ			
		2	58 82 58 58 58 58	49 49 51 51 51 51	54 54 56 58 57 57	71 71 82 82 83 83
			_			
	April 1	Month	October November December	January February March	April. May June	July

9-5195. GILA RIVER BELOW GILLESPIE DAM, ARIZ,

LOCATION. --About 1 mile downstream from gaging station on Gila Bend Canal which is 200 feet downstream from Gillespie Dam, Maricopa County, and 8 miles downstream from Hassayampa River. Gila Bend Canal diverts from left bank and Enterprise Canal diverts from right bank at Gillespie Dam.

DRAINGER AREA (revised).—49,650 square miles.

RECORD AVAILABLE.—Chemical analyses December 1950 to September 1950.

RATERERS.—Chemical analyses December 1950 to September 1950.

RATERERS. 1960-61.—Dissolved Solids: Maximum, 16,960 ppm Dec. 1-22; minimum, 358 ppm July 23.

Specific conductance: Maximum daily, 10,400 micrombos on several days during November and December; minimum daily, 556 micrombos July 27.

Rater temperatures: Maximum, 1927 ppm Dec. 1-1,40, 1959; minimum, 227 ppm May. 2, 1955.

RATERERS. 1950-61.—Dissolved Solids: Maximum, 350 ppm Avg. 2, 1955.

RATERERS. 1950-61.—Dissolved Solids: Maximum, 950 ppm Avg. 2, 1955.

RATGHERS: Maximum, 1940 ppm Oct. 11-20, 1959; minimum daily, 10,400 micrombos on several days during December 1959, November and December 1960; minimum daily, 370 micrombos Specific conductance: Maximum daily, 10,400 micrombos on several days during December 1959, November and December 1960; minimum daily, 370 micrombos

Water temperatures: Maximum, 98°F July 8, 1958, July 22, 1959; minimum, 35°F Jan. 1, 1951.

REMARKS.—"Alues reported for sodium (Na) are determined by analysis and do not include potassium (K). Records of specific conductance of daily samples REMARKS. The district of office at Albuquerque, N. Mex. Samples from canal are believed to be representative of total flow passing Gillespie Dam, including spill and amounts diverted into Gila Bend and Enterprise Canals. Aug. 2, 1955.

		B	7.7	::	2.2	7.6	7.7		7.8	7.7	7.8	7.7	7.4	7.5	7.5	7.6	7.6	7.5
	Specific con-	duct- ance (micro- mhos at 25°C)	0968	22.10	10200	8110	9730		9700	8710	9620	9380	6730	9340	8920	9210	8440	9720
	& ,	ad- ad- sorp- tion ratio	16	9	17	12	16		17	16	17	16	13	16	16	17	16	18
	ness ICO ₃	Non- car- bon-	1360	1450	1650	1280	1560		1550	1410	1540	1540	1100	1500	1400	1420	1290 16	1490
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	1600	1/10	1920	1560	1850		1830	1640	1800	1620	1300	1760	1640	1660	1490	1700
	Dissolved solids (residue at 180°C)	Tons per day	157	198	220	163	242		569	239	222	266	170	230	198	141	134	120
1961	Dissolved solids esidue at 180°	Tons per acre- foot	8.42	9/.8	9.47	7.47	9.15		8.91	8.04	90.6	8.88	6.12	8.77	8.46	8.85	7.96	9.41
eptember	Dis (resi	Parts per million	6190	6440	0969	5490	6730		6550	5910	9680	6530	4500	6450	6220	6510	5850	6920
to S		(B) 10 PA	3.6	!	1	1	ľ		3.3	ŧ	:	1	ł	i	3.3	1	1	1
1960		Ni- trate (NO ₃)	Ī	ł	;	1	ŀ		2.8 55.	1	1	1	j	1	3.5 45 3.3	1	ł	ł
tober		Fluo- Ni- ride trate (F) (NO ₃)	3.4 47	ł	1	1	1		2.8	ļ	1	ł	1	l	3.5	ŀ	1	Ī
analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	2160	l	i i	ļ	1		2380	l	1	1	1	!	2170	1	1	!
on, water		Sulfate (SO.)	1520	i	1	ı	!		1710	1	1	1	1	1	1560	1	ł	
m1111		CO CO																_
s per	Bi-	car- bon- ate (HCO ₃)	288	322	334	348	329		340	282	318	338	250	319	293	289	245	256
part	-	K K	11		1	1	1		12	;	I	ŀ	ļ	ŀ	12	1	1	!
yses, in		Sodtum (Na)	1510	1550	1730	1330	1610		1650	1460	1650	1540	1070	1530	1520	1600	1440	1720
l anal		Mag- ne- sium (Mg)	156	168	185	144	178		178	162	174	180	123	173	165	166	155	176
Chemical	-	Cal- Cium (Ca)	385	1 08	164	388	448		440	390	435	432	318	420	385	392	342	392
5	_	fron (Fs)	0.01	1	1	1	l		8		i	ł	l	ŀ			I	1
		Suica (SiO ₂)	8		·	1	1		30	!	1	!	ļ		32	!!		-!
		Mean discharge (cfs)	9.4 28	11.4	117	0.11	13,3		15.2	15.0	12.3	15,1	14.0	6	11.8	8.0	8.5	6.4
		Date of collection	Oct. 1-31, 1960	Nov. 1-30	Dec. 1-22	Dec. 23-24	Dec. 25-31	Jan. 1-Feb. 9.	1961	Feb. 10-11.	Feb. 12-28	Mar. 1-12	Mar. 13-14	No. 15-31	Apr. 1-30	May 1-20	May 21-June 6	June 7-10

9-5195. GILA RIVER BELOW GILLESPIE DAM, ARIZ. --Continued

mhos at 25°C) Buce 9390 8480 8820 6140 2210 4870 7710 5540 8480 6990 8770 Specific micro-2920 4860 3220 4960 3790 9190 15,7 15.2 So-fitum fron-fron-fron-16 118 118 118 118 212 618 1120 1260 1070 1340 Non-car-bon-909 320 759 87 742 568 920 488 834 834 1470 1350 Hardness ss CaCO, 1570 1320 1430 1430 1520 1520 372 785 1300 850 1450 1320 725 640 640 720 720 Cal-1590 ł 88.5 81.5 43.5 12.3 133 1050 43.4 42.0 98.6 54.8 126 134 99.1 69.2 60.8 49.0 83.6 ł ŀ Per day (residue at 180°C) Dissolved solids Chemical analyses, in parts per million, water year October 1960 to September 1961 -- Continued Tons per acre-foot 2 4 2 4 8 8 8 2 2 8 4 4 8 8 7,96 I I 7.45 8.94 8.06 8.81 5.77 8.51 Parts per million 5480 6570 5930 6480 6320 1970 3320 2070 3300 2520 6380 5930 298 1360 3170 5210 3610 5840 4700 6020 4200 5290 3500 1140 358 3520 392 111111 13 l ١ 8 5 A Fluo- N1-ride trate (F) (NO₃) ļ I ŧ ł Chloride (CI) 1 111111 1111116 1111111 111111 1 l Sulfate (SO₄) 111111 11111 ŀ ŀ 111111 Bi-car-bon-ate (HCO₂) 231 180 151 151 172 226 160 176 172 172 272 208 260 190 196 216 218 222 234 301 265 192 220 186 276 276 304 8 286 12 S in the R 1111111 111111 1111112 111111 ł ı Sodium (Na) 73 1450 1340 1660 1460 1570 1020 1620 1010 1550 828 292 72 72 866 76 362 676 450 695 566 1560 1440 337 818 818 1350 968 968 1470 1140 7.8 Mag-ne-Stum (Mg) 155 28 137 137 88 1158 1118 154 132 164 154 106 106 C (S (S) 374 8 312 355 320 342 238 345 103 189 295 295 320 335 335 364 11118 ŢĦ 1111 ł (Fe) Silica (SiO₂) 4.8 4.6 4.0 138 110 41.0 102 6.7 6.7 1.6.9 1.6.9 7.9 11.0 17.5 17.5 7.8 11111 ŀ ŀ 18.8 Mean discharge (cfs) 6 8 8 8 8 9 4 6 8 8 8 9 9 1 June 11-17....
June 18-26...
June 27-30...
July 1-2...
July 3... Aug. 1-2.
Aug. 3.
Aug. 7-6.
Aug. 7-6.
Aug. 10-17.
Aug. 18-Sept. 5. 3.4-6. 24. Sept. 12. Sept. 13-16. Sept. 17-18. Tons per day 9-19.... 20-21 22 23..... Sept. 6-10..... Sept. 11..... Sept. 19..... Weighted average average.... Time-weighted

GILA RIVER BASIN--Continued

9-5195. GILA RIVER BELOW GILLESPIE DAM, ARIZ.--Continued Temperature (°P) of water, water year October 1960 to September 1961 [Once-dally measurement at 10:00 a.m.]

١.	1				1
Aver-	age	89 09 64	53 55	61 69 80	4 1 6
	31	64 52	1 25	1 8 1	8 1 1
	30	525	513	8 6 8	83
	53	52	52 54	66 68 87	84 78
	28	52	55	68	84 78
	27	500	58	66 70 85	84 78
	26	52	55	44 88 85	1 2
	25	124	448	404	84
	24	4 3 2 5	55 55 57	68 68 86	82 76
	23	200	447	8 8 8 8	812
	22	52	55	62 70 84	818
	21	200	50.00	62 70 84	4 9
	20	67 52 46	55	62 70 84	1 8
	61	522	52 22	8 4 8	4 8
	18	8 4 8	52 53 57	62 68 84	4 1 8
	17	14.0	53.5	924	4 8
Day	91	200	52 57	60 70 82	84 84 78
1	15	0 to 0	54 52	888	4 4 8 4
	14	68 5.5 5.5	50	68	84 78
	13	8 8 8	52.20	98 8	84 78 78
	12	68 65 52	52 57	302	84 83 78
	=	45 45	52 56 57	59 70 78	84 83 78
	10	70 65 46	57	59 70 78	84 84 80
	6	659	51 50	70 72	8 4 4 4 0 8 0
	8	1 8 2 7	50	58 76	86 85 80
	7	75 68 50	30 00 00 00 00 00 00 00 00 00 00 00 00 0	56 69 72	86 82
	9	76 68 50	56	56 68 72	86 84 82
	5	76 68 52	55 55	8602	85 83 82
	4	75 70 50	55	58 68 72	86 84 82
	3	75	52 56 57	58 72	87 84 80
	2	75	51 2	57 68 70	86 83 80
	-	75 72 52	55.2	57 68 70	86 84 80
Month	MOUTH	October November December	January February March	April May. June	JulyAugust

COLORADO RIVER MAIN STEM

9-5210, COLORADO RIVER AT YUMA, ARIZ,

LOCATION.—At gaging station, San Bernardino meridian, on left bank, 500 feet upstream from lower highway bridge, 1,800 feet downstream from highway bridge at Yhna, Yhna Connty, 0.5 mile upstream from Yina Main Canni wastewy, 5 miles downstream from boundary between california and Mexico, and 19 miles downstream from imperial Dan.

DANIMAGE AREA.—242,900 square miles, approximately, including all closed basins entirely within the drainage boundary.

SECREDS WAILBAIE.—Chemical analyses: September 1926 to September 1928, October 1942 to February 1943, June 1947 to July 1952, November 1952 to September 1961.

Water temperatures: February 1954 to January 1956. REMARKS.--Sodium (Na) and potassium (K) values are calculated and reported as sodium.

water year October 1960 to September 1961 in parts per million. Chemical analyses.

i		Нď	7.6	9.1	7.8	7.9	6,1	4.9	7.7	9.2	7.8	9.2	7.5	7.4
	pecific con-	duct- ance (micro- mhos at 25°C)	1470	1500	2930	3040	2980	1930	2510	4180	2780	3280	3230	4270
		ad- ad- sorp- tion ratio	3.7	3.6	6.1	5.9	6.3	£.3	5.3	9.7	5,6	6.3	6.7	6.2
		Non-s car-s bon-r	238	262	524	554	546	356	452	780	216	634	280	174
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	400	410	210	735	680	512	616	950	929	200	120	920
	Dissolved solids (residue at 180°C)	Tons per day	1140	2840	2950	3420	2940	4240	6350	4510	8170	2670	6550	6400
TOGT .	solved at	Tons per acre- foot	15,1	1,34	2,56	2.64	2.48	1,62	2.18	3.62	2.43	2.77	2.77	3.71
eptember	Dis (resi	Parts per million	996	982	1880	1940	1820	1190	1600	2660	1780	2040	2040	2730
201		Bo- ron (B)												
OGT .		Ni- trate (NO ₃)	1.7	2.2	8	2.4	8.8	4.3	20	1.5	2.4	3.4	4.7	5.8
toper		9 2 6												
Chemical analyses, in parts per million, water year october 1900 to September 190		Chloride Fi	167	191	802	640	635	318	484	980	564	725	200	1000
on, ware		Sulfate (SO ₄)	354	344	472	436	450	378	409	551	425	480	484	568
m1111	-0,	ste (CO ₂)												
s ber	Bi-	car- bon- ate (HCO ₃)	197	181	227	221	163	191	80	202	195	191	202	239
part	Ğ	tas- sium (K)												
yses, ın		Sodium (Na)	169	169	377	370	377	225	303	541	333	410	421	567
l anal	Year	nag- ne- sium (Mg)	38	34	65	29	11	46	52	8	29	8	89	93
em1ca		Cal- cium (Ca)	108	108	178	184	156	130	161	235	174	182	189	236
C		Iron (Fe)												-
		Silica (SiO ₂)												
		Mean discharge (cfs)	436						1470	628	1700	1030	1190	868
		Date of collection	0ct. 4, 1960	Nov. 10	Dec. 29	Jan. 16, 1961	Feb. 6	Mar. 9	Apr. 20	May 4	June 7	July 6	Aug. 18	Sept. 14

DIVERSIONS AND RETURN FLOWS AT AND BELOW IMPERIAL DAM

9-5225. GILA GRAVITY MAIN CANAL AT IMPERIAL DAM, ARIZ,-Calif.

LOCATION.--Temperature recorder at gaging station, Gila and Salt River meridian, on right bank, 3,200 feet downstream from intake at east end of Imperial Dam, Yuma County, Ariz. RECORNS AVALLABLE.-Water temperatures: January 1956 to September 1961.
EXTREMES, 1960-61.-Water temperatures: Maximum, 89°F Aug. 21, 22, 27, 28; minimum, 45°F Jan. 6, 7, 200 and August 1961; minimum, 45°F Jan. 6, 7, 1961.
EXTREMES, 1965-61.-Water temperatures: Maximum, 89°F on several days during July 1956, July and August 1957, and August 1961; minimum, 45°F Jan. 6, 7, 1961.

Temperature (°F) of water, water year October 1960 to September 1961

					•	din.	emperature	1	3	5		Water,	į	40.0	į D	3	year october		Tage	3	,	requestion		100	_							
*	L														-	Day																
Month	-	2	3	4	5	9	7	80	6	0.	=	12	13	14	15	16	17	18	<u>6</u>	20	21	22	23	24	25	26	27	28	29	30	31	Avelage
October Maximum Minimum	78 76	77 76	87 76	7.8 7.7	80	80	80	77	77	74	170	120	1702	7.1	70	67 66	99	66	69	70	71	71	7.1	1.7	72	72	72 71	17	71	0 <i>1</i>	69	73 71
November Maximum	67	66	99	65	65	65	99	99	66	65	65	64	64	63	61	60	59	58	58	58	58	58	58	58	58	58	58	57	56	56	11	62
December Maximum	5.5	56	5.5	55	52	55	4 6	53	200	50	6 4 4	50	51	51	51	52	52	52	52	53	53	53	53	53	53	53	53	53	53	52	52	53
January Maximum	50	51	50	49	47	4 4 7 0	4 5	47	44	0 4 0 00	50	50	50 4 9	51	51	52	53	54	54	5.5	55	55	5.5	57	58	58	58	58	57	55	56	53
February Maximum Minimum	5.5	56	56	55	55	55	55	5.5	5.6	56	52	57	58	57	57	57	57	57	55	5.5	55	5.5	55	5.5	55	57	56	57	11	11	11	56 55
March Maximum	57	57 56	58	58 57	56	58	58	58	58	60 58	200	62	63	63	63	61	61	60	60	62	63	63	65	63	63	62	62	61	59	61	62	61 59
April Maximum Minimum	65	67 64	69	69	68	70	69	68	66	66	66	67	67	68	69	70	71	17	71	71	69	69	69	67	65	67	70	70	74	75	11	69
May Maximum Minimum	76	76 74	75	74	72	72	71	72	74	75	75	74	71	73	73	75	76	77	76	77	78	77	77	77	78	77	78 76	78 76	76	76	76	75
June Maximum	73	75	76	78	77	77	77	77	7.5	80	81	81	78	84	84	84	85	83	833	85	83	83	83	85	835	83	84	82	84	83	11	82 80
July Maximum Minimum	84	84 82	83	82 79	82	82	83	84	83	86	85	85	8 4	84	86	85	85	84	85	8 4 8 4	85	83	83	85	8 4 4	84	8 4 8	986	83	83	83	8 8 8 8
August Maximum Minimum	86	85	87	85	86	85	86	85	87	86	86	85	87	87	883	83	98	85	87	88	88	89	86	88	88	88	988	89	88	86	86	87 85
September Maximum Minimum	83	83 25	83	77	79	77	98 C 7.8	81	75	77	80	81	82	82	82	82	81	38.5	77	7.8	77	76	76	77	77	77	78	78 76	78 76	78 76	11	80 78

DIVERSIONS AND RETURN FLOWS AT AND BELOW IMPERIAL DAN

9-5255. YUMA MAIN CANAL BELOW COLORADO RIVER SIPHON, AT YUMA, ARIZ.

LOCATION .--At grating station on Yuma Main Canal below Colorado River siphon on Arizona side of river, 3.5 miles downstream from siphon-drop powerplant,

M. Mex.	
;	
}	
!	
ı.	
ğ	
z.	
due	
dne	
11bu	
t.	
office a	
of £	
rct	
str	
Ę,	
mples available in district office	
1 8 b1	
Val	
6	
ig Ta	

		Hď	7.9 8.0 8.1	8.7.8 8.0.8	8.7 8.2 8.1	7.9	7.9	:
	Specific	duct- since (micro- mhos at 25°C)	1230 1270 1270 1280	1210 1180 1190 1230	1220 1200 1210 1230	1220	1230	1
		adum ad- borp- tion ratio	8388	87.80	8889	5.9	2.9	
		Non- car- bon-	215 222 221 221	218 220 220	223 220 217 217	219	219	1
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	352 362 385 382	33.55 33.55 35.58 35.88 35.88	358 352 348 350	358	357	}
	Dissolved solids (residue at 180°C)	Tons per day	1050 841 615 775	1090 1070 1210 1410	1290 1300 1140 1430	-		
r 1961	solved a	Tons per acre- foot	1.10 1.14 1.15 1.15	1.15 1.10 1.08 1.14	1.08	1.12	ł	-
to September 1961	Distriction (rest	Parts per million	812 837 847 870	843 808 797 839	794 799 827 838	823	826	1100
0 to		ron (B)	1.4 0.17	1181	14.		-	
r 196		Ni- frate (NO ₃)	1.4	1121	1.7		!	-
ctobe		Fluo- ride (F)	6.4	1141	1411		1	
water year October 1960		Chloride (Cl)	130 130 130	1111	118	1	1	-
ion, wat		Sulfate (904)	326	307	319		ı	-
m111	į	(CO)						
ts per		car- bon- ate (HCO ₂)	167 171 176 176	170 171 172 168	165 181 180 162	181	168	224
n par	į	tas- sium (K)	5.0	4	16:11		-	ł
Chemical analyses, in parts per million.		Sodium (Na)	122 136 135 135	123 118 129	127 125 126 127	126	127	169
cal an		ne- sium (Mg)	28 27 27	8888	29 26 27	22	27	88
Chemi		Cal- cium (Ca)	99 101 105 100	100 100 100 98	84.68	86	66	132
		fron (Fe)	0.01	2	1811	!	ł	ł
		Suica (SiO ₂)	15 17	1121	1211	1	1	1
		Mean discharge (cfs)	478 372 269 330	478 493 560 621	602 601 509 631		495.8	l
		Date of of collection	Oct. 1-31, 1960 Nov. 1-30 Dec. 1-31	Jan. 30-Feb. 28 Mar. 1-31 Apr. 1-30	June 1-30 July 1-31 Aug. 1-31	Weighted average	Time-weighted average	Tons per day

DIVERSIONS AND RETURN FLOWS AT AND BELOW IMPERIAL DAM--Continued 9-8255. VUMA MAIN CANAL BELOW COLORADO RIVER SIPHOW AT VUMA, ARIZ .--Continued

į	Aver-	-	\	;	1	١	
	Day	31	75	1	85	4	1
		30	_	83	1	4	1
		29	52	83	1	85	1 82
		28		83	85	98	2
_		27	1	4	83	!	4
		26	25	83 84 83	35 84 84 85 85 83 85	1	62
		25	17	83 82 84 85 84 84 84 83	85	96	=
Temperature (°F) of water, water year October 1960 to September 1961		24	25	1	84 85 85 84 84	98	!
)er		23	75	8	1	86	ŀ
tem		22	26	*	1	87	2
Sep		21	1	94	94	8	82
유		20	1	84 85	85	;	2
1960		19	7,	84	85	Ī	28
er		18	2	1	85	96	2
top		17	2	1	84	8	1
ŏ		16	22	82	1	84	!
yea		15	17	83	ł	85	78
ter		14	:	81	86	88	8
Wa		13	1	8	86	ł	83
ter		12	7.2	78 78 81 78 80 81	85	86 85 87 88	2
WB		11	73	1	85	87	<u>=</u>
<u>ن</u>		10	73	1	83	85	1
ũ		6	73	8	1	86	1
ure		8	69	8		86	18
erat		7	:	78	81	86	83
emp		9	!	8	81	1	2
F		5	2	26	83	1	2
		3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	22	1	1	85	1
		3	73	1	83	85	1
		2	25	7.	1	98	1
		_	23	73	1	85	78
	Mosek	Mav	June 73 74 76 78	July	August	September 84 78 78 83 81 -	

MISCELLANEOUS ANALYSES OF STREAMS IN COLORADO RIVER BASIN

Periodic determinations of suspended-sediment discharge and particle size, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

	Mothod	jo	analysis	
			0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	
		Percent finer than size indicated, in millimeters	005.0	
		in mill	5 0.25	
•	diment	icated,	2 0.12	
	es per	ize ind	90.0	
	Suspended sediment	than s	6 0,03	
d water	٠.	nt finer	3 0.01	
distille		Perce	00.00	
W, in			2 0.00	
on tube;			00.00	
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sediment	discharge	(tons per day)	
S, sieve; V, v	Sediment	concen- tration	(mdd)	
P, pipet		Discharge (cfs)		
	Water Sam-	pling	1	
	Water tem-	per- pling	(*F)	
		Time (24 hour)		
		Date of collection		

EAGLE RIVER BASIN

9-700. EAGLE RIVER BELOW GYPSUM, COLO.

	, ,	
10 2 2 56 20	217 151 86 28 12	13 21 67
15 18 4 125 46	78 37 22 13 12	20 28 83
172 209 172 167 d 161	1030 1510 1450 804 381	246 274 301
1000 1730 1000 1700 0830	0830 1840 1430 0630 1100	1200 1115 1015
Oct. 14, 1960 Nov. 1 Jan. 14, 1961 Feb. 15	May 21. June 3. June 16. June 17. July 11.	July 25.

LITTLE COLORADO RIVER BASIN

9-4015. MOENKOPI WASH NEAR CAMERON, ARIZ.

Маг. 30. 1961	21.7	10600	621	
Aug. 4	47.0	90100	12300	
Aug. 5	192	192000	114000	
Aug. 7	6.6	68100	1770	
Aug. 17	34.3	101000	10000	
d Daily mean discharge.				

PART 10. THE GREAT BASIN GREAT SALT LAKE BASIN

10-100. GREAT SALT LAKE, UTAH

LOCATION .--At gaging station at Salt Lake County Boat Harbor on southeast shore of lake, 17 miles west of Salt Lake City, Salt Lake County. RECORDS AVAILABLE.--Chemical analyses: Pebruary 1960 to September 1961 (discontinued).

		-lo	ö																			
			H		7.6	7.7	9.	7	!	T	ŀ	!	T	T	Ţ	1	Ţ	1	T	1	1	Ţ
	Specific conduct-	ance	(micro-	mhos at 25°C)	173,000	175,000	77,000	78,000	81,000	179,000	180,000	79,000	180,000	179,000	79.000	80,000	179,000	78,000	180,000	80.000	78,000	178,000
	Sodium	ģ	Borp-		-				_		_	_	_			_	_	_	_			
		-uoN		pon-																		
	Hardness as CaCO,	-je Cal-	cium,	mag- nestum							_							_				
1961	Dissolved	solids		at 180°C)	278,000	244,000	276,000	269,000	273,000	256,000	268,000	266,000	272,000	273,000	277.000	281,000	284,000	285,000	282,000	281.000	284,000	275,000
tember		Boron	<u>e</u>	a			_														_	
Sep Sep		ż	trate	<u>2</u>	69 32	98	2 5	3	!	1	1	!	ï	ļ	1	T	1	;	;	T	1	1
1960		Fluo-	ride	9												_						
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chlorids	ਉ		151,000	133,000	148,000	146,000	!	;	;	!	!	1	ŀ	!	1	!	!	;	!	1
ter year		Sulfate	(°08)		20,200	0 17,700	18,000	15,300	!	ł	;	;	!	ł	ŀ	;	ł	}	1	!		1
'n,	Car-	-uoq	ate	ල් ර	0	0	0	0	I	1	i	1	ł	!	ł	1	;	ŀ	!	ł	1	1
1111	Ä	Car-	bonate	HCO"		331			}	1	;	!	;	1	1	1	1	;	1	ł	;	
Per	Ş.	ta.8-	Bium		5,040	4,230	0.9	,540	!	1	T	ï	1	T	1	Ţ	1	-	1	ï	7	
in parts		Sodium	(gg		89,400	77,800	86,900	83,500	!	ŀ	1	1	;	:	ļ	;	1	1	1	ŀ	1	-
Lyses,	Mag-	-e-	Bjum	(Special Control Contr	8,400	7,380	8,410	8,220	1	1	;	!	1	ļ	;	1	1	1	1	ł	¦	1
ana I		녆		<u>.</u>	324	303	887	315	:	1	ļ	;	!	1	1	ŀ	1	1	1		!	1
nem1c	Kan-	43	nese	g g	L																_	
٥			(Fe)		0.05	.02	.02	8	!	1	ł	1	1	1	1	-	ţ	;	1	- 1	1	1
	Alu-	-in	mmu	<u> </u>	1	2.6	9.6	5.6	1	1	1	1	1	1	1	!	;	;	1	ŀ	!	-
		Silica	(SiO ₂) num		Ц	5.0	_	_	;	1	1	!	!	!	;	1	1	1	ł	1	!	1
			(feet)			4,193.20			4,193.50	4,193.60	4,193.70	4, 193, 80	4,193.70	4,193.65			4,193.05	4, 192.55	4,192.45	4,192,25	4,191,75	4,191.70
		Date of	collection		Oct. 11, 1960.	Nov. 30	Dec. 15.	reb. 1, 1961	rep. 15	Mar. 1	Mar. 15	Apr. 4	Apr. 17	May 1	May 16	May 31	June 30	July 25	Aug. 1	Aug. 15	Sept. 5	Sept. 18

		Density			Density			Density
Date of	Iodide	(grams	Date of	Iod1de	(grams	Date of	Iod1de	(grams
collection	Ξ	per m1	collection	Ξ	per m1	collection	Ξ	per ml
		at 20°C)			at 20°C)			at 20°C)
Oct. 11, 1960.	0.43	1,217	Mar. 15, 1961.		1,202	June 30, 1961.		1,216
30	.42	1,189	4	ŀ	1,200	្ល	1	1,215
Dec. 15	.45	1,212	Apr. 17	1	1,206	Aug. 1	1	1,215
Feb. 1, 1961.	.45	1,203	May 1	ŀ	1,208	Aug. 15	;	1,218
Feb. 15		1,205	May 16	1	1.211	Sept. 5	;	1,217
Mar. 1	1	1,192	May 31	ŀ	1,214	Sept. 18	1	1,210

BEAR RIVER BASIN

10-1261. BEAR RIVER AT BEAR RIVER BIRD REFUGE, NEAR BRIGHAM CITY, UTAH

LOCATION.—At headquarters building, about 35 miles downstream from gaging station and 12 miles west of Brigham City, Box Elder County. DRAINAGE AREA.—6,000 square mailes, approximately, upstream from gaging station.

RECORDS AVAILABLE.—Chemical analyses: October 1959 to September 1961 (discontinued).

EXTREMES, 1960-61.—Dissolved solids: Maximum, 3,780 ppm Oct. 1-9; minimum, 571 ppm Apr. 30 to May 5.

Barchaes: Maximum, 308 ppm Oct. 1-9; minimum, 776 ppm Oct. 1-9; minimum, 771 ppm Apr. 19.

Specific conductance: Maximum daily, 6,300 micromhos Oct. 5; minimum daily, 1010 micromhos Apr. 19.

REMARKS.—Mater discharge estimated on the basis of discharge of gaging station near Collinston, Utah.

		Hq	4.0	_			7.9						9.0			8.2						. 9	
	Specific	duct- ance (micro- mhos at 25°C)	6300				1250	2100	1370	1520	1450	1310	1750	1580	1440	1350	1240	1490	1400	1040	1080	1320	1240
Ì		ration of the	21	6.7	0.0		e	9	3.6	4.1	80	6.0	0.4	4	9.0	80	6.	4	4	2.6	0 0	9 6	٠. ٥
Ì		Non- car- bon-	97	215	61	7	4 8	80	34	21	41	39	3 2	48	37	40	86	47	8	19	520	328	31
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	598	396	396	770	336	380	344	364	368	356	380	374	352	334	328	354	322	306	323	298	335
	Dissolved solids (residue at 180°C)	Tons per day	1020	2320	2380	O CT	1750	3890	2090	1890	2020	2040	1230	2560	1760	2270	756	2050	1930	2450	2500	2400	2060
ır 1961	Dissolved solids esidue at 180	Tons per acre- foot	5.14	1.67	1.71		86.5					• • •	1.36		1,11	1.0	.95	1.15	1.08	.82			
Septembe	Dis (resi	Parts per million	3780	1230	1260	967	719	1200	775	875	832	756	1000	861	813	765	200	844	50			740	
ţ Q		- Pag B 2011 (B)	1		1	1	1 3		1	I	ŀ	!	11	I	1	ļ	1	ī	1	1;	0.14	12	.15
r 196		No.	3.1	3 6	6.0	-	1.5	. 1	3,3	3.0	3.0	e .	4.	1.2	1.9	1.9	80	1.7	1:1			, w	
ctobe		Fluo- Ni- ride trate (F) (NO.)																					_
water year October 1960 to September 1961		Chloride (Cl)	1760	450	989	000	582	455	230	280	250	215	345	276	255	245	210	280	765	145	145	232	188
ion, wat		Sulfate (SO4)	258	35	88	8	0 8	88	64	75	11	69	62.2	98	8	61	55	20	ŝ	22	200	88	19
m111	į	(C) # (E)	17	190	υ;	\$	00	•	0	91	14	0	00	0	0	0	12	0;	=	12	0 (14.	•
rts per		car- bon- ate (HCO ₃)	577	389	399	3	368	388	378	362	371	386	400	400	384	358	330	375	323	326	359	296	371
in pa	ģ	A THE	71	24	22	3	13	22	14	16	17	133	9 6	11	18	13	12	12	14	11	77	15	14
Chemical analyses, in parts per million,		Sodium (Na)	1170	308	313		138	297	153	182	170	144	190	179	166	159	137	173	172	105	3 2	156	127
cal an	Ş	from (Mg)	113	82	29	6	43	46	40	43	47	45	40	4	39	40	36	80 6	8	36	40	88	39
Chemi		Call (Call	53	88	19	ř	4 6	12	72	15	11	69	22	11	77	67	72	62	2	63	2 2	57	2
		Iron (Fe)	1	П	1		1 1		1	1	1	1		T	1	1	1	!	1	1		1	!
		Silica (SiO ₂)	13	15	12	7	1.4	16	16	16	п	12	138	13	15	14	9.5	12		7	7.6	17	11
		Mean discharge (cfs)	100	200	25	3	965	1200	1000	800	900	1000	200	1100	800	1100	400	88	906			1200	
		Date of collection	Oct. 1-9, 1960	oct. 16-22	Oct. 23-27		Nov. 5-10	Nov. 22-27	Nov. 28-Dec. 3	Dec. 4-8	Dec. 9-17	Dec. 18-25	Jan. 1-9, 1961	Jan. 10-12	Jan. 13-16	Jan. 17-21	Jan. 22-23	Jan. 24-Feb. 5	Len. 0-11.	Feb. 12-15	Feb. 10-ZI	Mar. 4-8	Mar. 9-20

88888	8.27.1.28	6888 6.0210	° ! !	
1200 1080 1300 1320 1050	1040 7.9 1030 8.2 1780 7.7 3850 8.1 4020 8.2	4220 8.7 4120 8.0 5720 8.2 5380 8.1 3900 8.0	5050 5110 4140	1660
23.28	2.7 2.7 5.7 13	15 12 14	17	5.1
8 8 8 8 8 4 7 7 8 2	24 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	124 16 89 15 141 21 135 19 81 14	124 17	42
314 302 354 320 276	292 285 340 422 370	404 424 452 444 390	462	342
2750 2450 2370 1600 2040	156 617 266 578 602	637 621 872 815 580	770	1560
.92 .82 1.00 1.01	.78 1.34 2.91 3.03	3.21 3.13 4.39 4.11 2.92	3,88	1.27
678 604 732 739 581	577 571 984 2140 2230	2360 2300 3230 3020 2150	2850	933
13	.13 20 31 32 32	36 4.49 8.89	.43	1
44281 71848	8 8 8 4 H	4.2.2.4. 1.0.9.4.	8:11	3.1
185 160 200 165	150 155 370 1040	1140 1090 1620 1490 988	1380 1440 1100	327
60 63 44	46 70 83 83	99 111 128 129 120	124	29
0 3 0 12 2	00000	4 0000	۰۱۱	
318 296 386 338 298	327 321 346 338 308	294 408 379 377	412	366
13221	38 30 30	35 37 37	1146	17
126 112 139 151 112	104 105 242 627 690	719 695 1010 927 627	826	217
338	31 29 55 50	63 72 60	11	42
80 80 20 20	66 68 79 66	58 67 69 60	8	89
11288	ន់!!!!	11222	911	-
18 15 16 14	13 13 12 10	8.00 8.4.0.4.	6.9	15
	0041100 00011000		100	619
Mar. 21-25, 1961 Mar. 26-Apr. 2 Apr. 3-7 Apr. 8-11	Apr. 22-29 Apr. 30-May 5 May 6-15 May 16-21	May 30-June 16 June 17-July 2 July 3-10 July 11-16 July 17-23	July 24-Aug. 3 Aug. 4-31 Sept. 1-26	Weighted aver- age a

a Includes estimated data for missing periods. Represents 100 percent of runoff for water year.

WEBER RIVER BASIN

10-1285. WEBER RIVER NEAR OAKLEY, UTAH

LOCATION. --At gaging station, 1.4 miles downstream from South Fork, 2.6 miles upstream from Weber-Drovo diversion canal, and 3.2 miles northeast of Oakley, Summit Courty.

Summit Courty.

BRIGATIAGE AREA. --163 square miles.

RECORDS AVAILABLE. --Chemical analyses: October 1959 to September 1961 (discontinued).

	L	Hq	325 8.4 302 7.9	327 8.1	0:1	320 236 161	111	
	Specific con-	duct- ance (micro- mhos at 25°C)	325 302	327	328	320 236 161	276 279 199	240
	·8;	anum ad- aorp- tion ratio	0,1	1.	7:1	111	111	0.1
	евв СО ₃	Non- car- bon-	15	16	13	111	111	10
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	176 162	177	178	111	111	125
	Dissolved solids (regidue at 180°C)	Tons per day	21.6 20.0	20.3	20.4	32.6 63.1	23.4	33.5
r 1961	Dissolved solids ecidue at 180°	Tons per acre- foot	0.22	.27	30	14	.22	0,18
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dis (reei	Parts per million	163	197	186	183 140 102	163 154 	134
60 to		B 20 B						
er 19		Fluo- Ni- ride trate (F) (NO ₂)	0.2	ī.	۰:۱	111	111	0.2
Octob		Fluo ride (F)						
er year		Chloride (C1)	4.0 3.0	3.0	3.0	111	111	2.2
ion, wat		Sulfate (SO ₄)	17 18	19	61	111		11
m111	į	(CO)	40	0	۰ ۱	111	111	1
ts per		car- bon- ate (HCO ₃)	188	196	201	111	111,	140
in par	Ė	S tar in (X)	1.2	1.1	۰:۱	111		1
lyses,		Sodium (Na)	2.4	2.7	2.4	111	111	2.4
al ans	2	stum (Mg)	12	13	1 12	111	111	7.9
Chemi		Cal- (Ca)	51	20	22	111	111	37
		Iron (Fe)	9.0	.01	<u>a</u> !	111	111	
		Silica (SiQ,)	5.0	6.0	5.1	111		4.3
		Mean discharge (cfs)	49.1	36.1	40.6	54.6 86.2 229	53.1 49.5 102	93.5
		Date of collection	Oct. 16-Nov. 14, 1960. Nov. 15-Dec. 15	1961	Jan. 14-Feb. 21 Feb. 22-Mar. 10	Mar. 11-Apr. 11 Apr. 12-30 June 10-14	July 15-Aug. 16 Aug. 17-Sept. 16 Sept. 24-30	Weighted aver- age a

a Includes estimated data for missing periods. Represents 100 percent of runoff for water year.

WEBER RIVER BASIN--Continued

10-1305. WEBER RIVER NEAR COALVILLE, UTAH

LOCATION. --At gaging station, 1.5 miles upstream from high waterline of Echo Reservoir, 1.5 miles south of Coalville, Summit County, 3 miles upstream from Chalk Creek, and 6 miles downstream from Silver Creek.

THEAINAGE AREA. --436 square miles.

RECONDS AVAILABLE. --Chemical analyses: September 1959 to September 1961 (discontinued).

		Hq	453 7.7	8 6	486 7.9	8.2	1	ł	1	!		
	Specific	duct- ance (micro- mhos at 25°C)	453	538	486	482	459	451	422	443	452	445
	ģ;	adum ad- gorp- tion ratio	0.3		e.			ï	1	1	-	0.3
	co _s	Non- car- bon-	20	4	38	34	-	;	-	1	1	25
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	236	276	251	250	1	1	T	1	1	226
1961	Dissolved solids (residue at 180°C)	Tons per day	33.9	46.9	47.1	40.1	42.5	12.0	10.4	27.7	40.9	51.8
mber 1	solved	Tons per acre- foot	0.35		4.		.35	35	.34	35	.35	0.37
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dis (res	Parts per million	260	325	303	311	258	254	249	260	259	270
1960		8 5 G										
tober		Fluo- Ni- ride trate (P) (NO ₂)	0,1	<u>•</u> .	1.0	1:0	!	1	-	T	1	
ar Oc												
water ye		Chloride (C1)	11	12	11	7	ł	1	ł	!	!	9.4
nillion,		Sulfate (SO.)	27	7.1	45	43	1	1	1	!	!	34
per 1	į	(CO)	٥	4	•	0	1	1	1	ŀ	1	1
parts	P.	Pare Pare (HCO ₂)	264	250	260	264	!	!	!	!	1	245
a, in	į	S and M	2,1	64 60	2.6	4.2	1	1	1	ī	1	2.3
analyse		Sodium (Na.)	11	12	10	97	1	1	;	!	-	10
emical	7,00	ne- stum (Mg)	16	17	15	17	-	!	1	;	ŀ	15
ឡ		Cal Cal (Ca)	89	83	75	73	1	ŀ	ļ	ŀ	:	99
		Iron (Fs)	0.01	<u>e</u> .	.01	.14	:	I	T	1	!	
		Silica (SiO ₂)	8.5	13	=	12	1	T	1	1	1	9.8
		Mean discharge (SiO ₂) (cfs)	48.3 8.		57.6 11		61.0					71.1
		Date of collection	Oct. 17-Nov. 16,	Nov. 17-Dec. 17 Dec. 18-Jan. 13,	1961	Jan. 14-Feb. 17	Feb. 18-Mar. 13	Apr. 28-May 12	May 30-July 27	Aug. 1-20	Aug. 21-Sept. 30	Weighted average a

a Includes estimated data for missing periods. Represents 100 percent of runoff for water year.

WEBER RIVER BASIN -- Continued

10-1310, CHAIK CREEK AT COALVILLE, UTAH

LOCATOR.-At gaging etation, 100 feet downstream from bridge on U.S. Highway 189 in Coalville, Summit County, and O.3 mile upstream from mouth. DRAIMACE AREA.-253 square miles. September 1959 to September 1961 (discontinued).

8.7.8 8.3.8 8.1.0 8.0 111111 ŀ ance 738 ad- ance Borp-(micro-tion mhos at mhos at 25°C) 949 723 737 725 809 802 618 536 558 915 960 Specific ductratio 6.0 Hum 1.1 ģ 15 car-bon-30 118 23 18 23 11111 Nonas CaCO, Harduess ctum, Mag-ne-stum 383 320 322 311 328 11111 320 14.6 28.2 22.2 21.9 6.56 18.9 10.7 14.9 17.9 13.8 Per day Dissolved solids (residue at 180°C) Chemical analyses, in parts per million, water year October 1960 to September 1961 0.75 .55 .57 .65 244464 acre-0.57 Tons per 420 per million 550 401 423 477 293 293 306 517 Parts 0.11 8 5 E Fluo- Ni-ride trate (F) (NO₂) 4.7 1.4 2.0 2.5 6.6 1.9 111111 Chloride <u>ਹ</u> 91 59 58 75 111111 22 Sulfate (80 111111 23 Bi-car-bon-ate (HCO₂) ł 00000 111111 Bi-car-430 368 349 357 372 11111 2.4 Stun (X) 11111 Sodium (Na) 61 38 38 49 111111 37 Mag-ne-stum (Mg) 25 8 2 2 2 2 3 111111 10 to 00 88 88 88 88 111111 87 18686 11111 ļ Fe) Silica (SiQ,) 9.5 4.8 7.8 7.4 11111 7.8 Mean discharge (c) (cfs) 18.7 7.2 13.8 15.9 12.1 8.9 28.11 28.11 26.1 4.7 Feb. 1-28 Mar. 1-23, 25-31. Apr. 1-30. Aug. 1-31. Sept. 1-30. Oct. 1-9, 1960... Oct. 10-Nov. 10... Nov. 11-Dec. 8... Dec. 9-31..... age a..... 1-9, 1960.... Weighted aver-

a Includes setimated data for missing periods. Represente 100 percent of runoff for water year.

WEBER RIVER BASIN--Continued

10-1320, WEBER RIVER AT ECHO, UTAH

LOCATION.--At Echo Dam outlet, 0.8 mile upstream from Echo Creek and 1 mile southeast of Echo, Summit County. DEALNAGE AREA.--732 square miles.
RECORDS AVAILELE.--Chemical analyses: September 1959 to September 1961 (discontinued).
RELARKS.--Records of discharge supplied by Echo Reservoir watermaster.

Chemical analyses, in parts per million, water year October 1960 to September 1961

	Ħ	8.4	7.8	7.8	8.0	ł	;	ł			!
Specific	duct- ance (micro- mhos at 25°C)	521	546	248	548	557	529	544	455	483	552
8:	tion (0.5	ů.	ç.	ď.	I	-	ŀ	ī	1	ľ
1	Non- car- bon-	24	31	31	53	1	;	1	1	1	1
Kardness as CaCO,	Cal- ctum, Mag- ne- stum	250	262	260	264	1	ì	Ī	1	1	1
Dissolved solids (residue at 180°C)	Tons per day					.45	.42				
solved	Tons per acre- foot	1				.46					
Des (res	Parts per million	299	306	334	334	335	311	321	264	284	328
		L									
	rate (NO ₂)	1.0	1,1	1.5	1.0	1	†	!	1	1	!
	Fluo- ride (F)										
	Chloride (C1)	24	25	56	25	!	1	!	;	;	;
	Sulfate (SO4)	34	35	38	37	i	ł	1	!	1	ŀ
	00 at 50 00 00 00 00 00 00 00 00 00 00 00 00	6	0	0	0	ŀ	1	ł	į	!	ŀ
#a	car- bon- ate (HCO ₃)			279		1	-	!	;	!	1
é	stun Stun (R)	2.1	2,1	2.3	1.8	!	ŀ	ī	1	ļ	1
	Sodium (Na)	18	18	19	18	1	ł	!	1	!	ŀ
,	stum (Mg)	17	81	18	16	1	1	;	ŀ	!	!
	(Ca)	1		75		1	ł	ł	1	ŀ	ł
	Iron (Fe)	0.00	8	.01	.01	1	1	1	1	1	!
	Silica (SiO _a)	6.6		.5 12	11	1	1	ł	1	1	1
	Mean discharge (cfs)	0				ů.		114			
	Date of collection	Nov. 2, 1960	Dec. 1	Dec. 28	Jan. 31, 1961	Feb. 28	Mar. 30	Apr. 30	June 13	Aug. 3	Sept. 5

WEBER RIVER BASIN--Continued

10-1365. WEBER RIVER AT GATEWAY. UTAH

800 feet downstream from Union Pacific Railroad bridge, 2,500 feet downstream from Strawberry Creek, and 2,500 feet east of section LOCATION. -- At gaging station, 800 fe house at Gateway, Morgan County.

DRAINGE AREA.—11,610 square miles, approximately.

BROONEN ARIALIABLE.—Chemical analyses: May 1958 to September 1961.

Rater temperatures: August 1958 to September 1968.

Rater temperatures: August 1958 to September 1969.

Rater temperatures: August 1958 to September 1969.

Rater September 1960-61.—Dissolved solids: Maximum, 182 ppm Apr. 1-6.

Ratchess: Maximum, 270 ppm Jan. 1-31; minimum, 182 ppm Apr. 1-6.

EXTREMES, 1958-61.—Dissolved solids: Maximum, 352 ppm Sept. 21. 29; minimum Mally, 376 micromhos May 26.

EXTREMES, 1958-61.—Dissolved solids: Maximum, 352 ppm Sept. 21. 29; minimum, 154 ppm Apr. 26 to May 4, 1959.

Ratchess: Maximum, 270 ppm Nov. 1-30, 1959, Jan. 1-31, 1961; minimum, 110 ppm Apr. 26 to May 4, 1959.

Specific conductance: Maximum daily, 621 micromhos Sept. 21, 29; 1961; minimum daily, 242 micromhos May 13, 1960.

REMARKS.—Records of specific conductance of daily samples available in district office at Salt Lake City, Utah.

		Hq	8.8	8.8	8.0	8.4	. 6 . 6	8.0	7.9	7.9	1
	Specific	duct- ance (micro- mhos at 25°C)	535 554	524	574	525	400	468 522		535 564	518
	8.	ad- ad- gorp- tion ratio	9.0	6 6	9.	9	0.0	<u>π</u> . π	'n		0.6
		Non- car- bon-	32	22 22	39	28	33 88	25	35	32	30
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	244	230	266	236	182	214	251	248 256	238
	Dissolved solids (residue at 180°C)	Tons per day	95.0	48.2	66.1	77.2	85.6	211	228	140 104	119
r 1961	Dissolved solids esidue at 180°	Tons per acre- foot	0.43	4.	.47	.43	38.22	.41	.42	.48	0.42
1960 to September 1961	Dds (resi	Parts per million	317 326			318	233 280	278	307	316	308
0 to		ron (B)	0.07	8.8	\$.05	141	961		.06	1.8 0.09
r 196		ni- trate (NO.)	8.6			2.3	1.1	6.5	1.3	2.6	1.8
October		Fluo- ride (F)									
water year (Chloride (Cl)	26	53 54	39	27	2 2 4 2	54 54 54	25	24 30	25
		Sulfate (SO ₄)	43	4 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	42	38	34 36	36	37	41	68
million,	į	e ge go	0 0	00	0			00		0	
ts per	Bi-	car- bon- ate (HCO ₂)	255 272	302	277	236	176 218	22 8 259	264	264	255
n par	ŝ	tas- Etus- (X)	2.2	8 8	2.7	2.5	2 2	2 2	2.2	2.7	2,4
Chemical analyses, in parts per		Sodium (Na)	22	7 7 7 7 7 7	21	21	19	19	19	18 28	20
al ana	ļ	nag- ne- stum (Mg)	18	8 2	18	16	12	19	19	22 17	18
Chemic		Cal- clum (Ca)	67			89	53 26	60	70	63 75	99
		Iron (Fe)	88.	18	1	11	8.5	11	ю.	11	1
		Suica (SiO ₂)	11 21	4 4	14	15	x 6.	13	13	14 15	13
		Mean discharge (cfs)	111 11 61.6 15			89.9	136	261 13 325 14	275	164	143
		Date of collection	Oct. 1-31, 1960	Jan. 1-31, 1961	Feb. 1-28	Mar. 1-31				Aug. 1-31 Sept. 1-30	Weighted aver-

ļ

ŀ

ł

WEBER RIVER BASIN -- Continued

10-1410. WEBER RIVER NEAR PLAIN CITY, UTAH

LOCATION. -- At gaging station at bridge on State Highway 40, 1 mile downstream from Fourmile Creek, 1.5 miles south of Plain City, Weber County, and 6 miles upstream from mouth.

BRAINAGE AREA. --2,060 square miles, approximately,

RECORDS AVAILABLE. --Chemical analyses: October con non Sent 1-16: minimum. 316 ppm O.

EXTREMES, 1960-61.--Dissolved solids: Maximum, 682 ppm Sept. 1-18; minimum, 316 ppm Oct. 24 to Nov. 9.
Specific conductance: Maximum daily, 1,200 micromhos Sept. 7; minimum daily, 562 micromhos Nov. 4.
EXTREMES, 1959-61.--Dissolved solids: Maximum, 682 ppm Sept. 1-18 196; minimum, 208 ppm Apr. 5-13, 1960.
Extremes, (1959-60): Maximum, 294 ppm July 19-31, 1960; minimum, 18 ppm Apr. 5-13, 1960.
Specific conductance: Maximum daily, 1,200 micromhos Sept. 7, 1961; minimum daily, 357 micromhos Apr. 13, 1960.

757 7.4 562 7.5 811 8.3 823 7.9 821 7.6 ł 111 111 띥 ŀ mhos at 25°C) Specific 839 582 1100 1050 ancs 837 1090 1200 microduct-991 con ratio 1.6 71 1 1 $\Pi\Pi$ 1.4 er de HoH 24 21 35 33 11111 111 22 Car-Nonë Hardness as CaCO, 身 chum, ne-280 232 290 288 892 11 11 111 153 221 170 23.9 8.22 5.09 7.37 66. 228 176 Per g 153 101 Dissolved solids (residue at 180°C) .43 Chemical analyses, in parts per million, water year October 1960 to September 1961 0,61 67 8 6 4 8 8 88.8 Tons per acre-foot 446 316 493 487 339 633 619 447 183 328 362 per million Parts 8 5 E Nate (NO₂) 8.8 T 1 1 1 1 Fluo ride (F) Chloride <u>ਹ</u> 858 88 11111 111 73 Sulfate (SO₄) 32 28 45 47 38 11111 111 2 5 8 8 O 000 00 11111 111 HCO. 318 300 94-312 257 299 111 ė g ă 8. 4. 8 6. 4. 4. 7.4 6.9 Po-1111 111 Sodium (Na) 989 52 62 11111 111 Mag-ne-stum (Mg) 33 23 22 11111 111 21 유 발 함 (8 1) 18 73 75 67 78 11111 111 0.02 88 ī ī 1 Fon (Fe) Silica (SiO,) 4112 11 11111 111 Mean discharge | (cfs) 116 189 186 14.0 83.7 8.0.4 122 Oct. 1-9, 1960... Oct. 24-Nov. 9... 1-15..... 1-9. 20-May 31.... 1-30. 1-9, 1960.... 16-31..... July 1-31..... Aug. 1-31..... аgе в..... Weighted aver-Dec. 1-Jan. 15, Date of collection Mar. Apr. June

runoff for water year, Represents 100 percent of Includes estimated data for missing periods.

;

JORDAN RIVER BASIN

10-1710. JORDAN RIVER AT SALT LAKE CITY, UTAH

Chemical analyses, in parts per million, water year October 1960 to September 1961

		뛵				7.4				7.6							7.2					8.1			7.5
Specific	-uoo	duct- ance (micro- mhos at 25°C)	2070	2380	2170	2050	2090	1980	2140	2050	2100	2010	2060	2090	2010	2030	2070	2090	1990	1970	1920	2090	0901	200	1990
_	_	tfon distribution	3.4	60	8	60	3.2	3,1	3.3	3.1	3.4	3.1	6	6	2	9.0	3.1	8	3	3.0	2	6	c	9 0	9.00
		Non- car- bon-	261	445	525	417	578	415	472	416	479	400	545	540	418	445	444	591	423	465	421	565	770	000	450
Hardness	as Ca	Cal- cium, Mag- ne- stum	692	760	720	676	704	670	720	680	069	099	705	715	680	9	675	712	664	862	656	716	000	0 0	668
solids	ted)	Tons per day	841	1140	896	870	869	825	895	794	876	780	808	608	748	707	763	736	658	637	643	826		1 6	720
Dissolved solids	(calculated)	Tons per acre-	1.89	2,07	1.96	1.80	1.90	1.75	1,92	1.81	1.88	1.75	85	88	1.77	1.78	1.80	1,89	1.75	1.75	1.71	1.92	1		1.77
Dissolved Dissolved	၁	Parts per million	1390	1520	1440	1320	1400	1290	1410	1330	1380	1290	1360	1380	1300	1310	1320	1390	1290	1290	1260	1410	000	200	1300
3		Bo- ron (B)	:	1	1	1	ŀ	ŀ	1	1	1	1	-	-	1	1	1	ŀ	1	ŀ	ł				11
		Ni- frate (NO ₂)	6,1	1.5	8.3	2.8	3.3	5,5	1.8	4.9	5.7	2.8	6		9.9	3.9	3.6	=	1		9.4	122	ç	2 0	127
3		Fluo- ride (F)																			_	_			
		Chloride (C1)	295	360	315	295	285	290	310	295	310	285	280	295	290	295	300	290	290	280	285	305	900	200	282
CICETACA SERIJOGO I II PALCO POL INTITUCE, TOCOL JOSE		Sulfate (SO4)	559	451	518	414	578	398	465	416	470	403	523	514	396	423	433	565	396	457	391	533	700	3 0	422
	į	1 1 1 1 1 1 1 1 1 1	٥	0	٥	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	» c	, 0
82	Bi-	car- bon- ate (HCO ₂)	160	384	238	316	154	311	302	322	257	317	195	214	319	287	282	148	294	240	286	184	606	200	266
5	á	(X) III (X)	;	;	;	ŀ	;	14	18	15	16	15	5	2	14	16	14	13	13	173	13	14	ç	3 7	1 4
, gags,		Sodium (Na)	203	245	214	199	197	185	202	185	205	181	178	184	175	182	186	180	177	176	167	181	175	100	174
	Mod	ne- ne- sium (Mg)	74	83	71	99	7.1	89	73	99	71	89	72	74	8	89	72	7.1	65	67	9	69	7.0		65
		Cal- (Ca)	156	168	172	162	165	156	168	164	160	152	164	164	168	160	152	168	160	156	164	174	ď	9 6	160
		fron (Fe)		0.26	.03	.02	1.7	1	1	1	ł	!	ŀ	1	!	1	!	i	1	!	6	.02	-	: 2	
		Silica (SiO,)	18	18	22	22	23	17	20	23	17	23	22	17	22	19	20	17	23	77	21	19	5	3 8	18
		Mean discharge (cfs)	224	278	249	244	230			221							214					217	202		202
		Date of collection	Oct. 1-8, 1960	Oct. 9-13	oct. 14-20	Oct. 21-27	Oct. 28-Nov. 3	Nov. 4-10	Nov. 11-16	Nov. 17-26	Nov. 27-29	Nov. 30-Dec. 8	Dec. 9-15	Dec. 16-23	Dec. 24-31	Jan. 1-8, 1961	Jan. 9-12	Jan. 13-19	Jan. 20-27	Jan. 28-Feb. 2	Feb. 3-11	Feb. 12-14	Feb. 15-23	Feb. 24Kar 3	Mar. 4-10.

6.6 7.3 7.0 6.9	6.9 7.4 4.6 6.7	7.0 7.0 4.7 8.8	7.00.7. 8.8.8.9.	7.5	1
2040 1940 2030 2060	1860 1770 1960 1960	1930 1620 1910 1950 2090	2010 2200 2190 2050 2190	2030 1960 2110 2050	2030
90004	32222	9.00 O 4 W	000000 00000	3.3	3.1
584 430 408 467 567	444 350 366 561 501	503 306 526 365 574	383 621 425 532 429	382	470
700 668 644 658 658	610 652 590 636 632	620 522 612 600 660	612 678 662 630 660	630	671
749 681 662 672 674	578 544 446 597 717	564 446 5469 188	394 595 590 459	411	403
1.88 1.74 1.70 1.81 1.68	1.67 1.71 1.55 1.77 1.75	1.70 1.40 1.69 1.67	1.73 1.99 1.90 1.84	1.75	1.80
1380 1280 1250 1330 1360	1230 1260 1140 1300 1290	1250 1030 1240 1230 1370	1270 1460 1400 1350	1290	1320
11111	11111	1 1 2 1 2 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	4. E.	1
12 4.4.0 4.0.4.1	13. 13. 5.0 9.2	6.3 7.7 8.1 1.3	3.7 7.7 111 2.4	3.7	6.6
285 285 275 300 298	262 252 245 268 283	255 220 250 285 290	268 332 276 332	295 280 302 290	290
549 396 452 540	441 525 356 565 498	509 320 525 369 575	391 643 436 552 447	392 391 	459
00000	00000	00000	00000	0011	0
142 290 288 288 233 140	202 125 273 91 160	143 263 105 286 105	279 69 289 120 282	302 286	245
113 113 14	112 112 115 116	15 112 116 116	17 18 19 16 20	1 1 16	15
179 178 174 192 184	166 152 152 169 179	165 149 173 194 197	197 209 223 202 229	204	185
69 68 67 61 70	44 65 51 70	65 49 63 65 71	67 75 71 69 75	64	99
167 156 147 164 159	172 154 153 149 138	142 128 142 133	135 148 139 141	143	157
60.04	11111	11111	11111	1111	
22 19 23 18	17 19 18 14 15	16 15 15 17	16 18 19 17	119	19
201 197 202 187 181	174 160 145 170 206	167 159 140 163	115 151 156 126	118 140 124 147	113
Mar. 11-16, 1961 Mar. 17-23 Mar. 24-31 Apr. 1-6	Apr. 13-21 Apr. 22-27 Apr. 28-May 2 May 3-12.	May 20-25. May 26-31 June 1-9 June 10-16 June 17-22.	June 23-29 June 30-July 7 July 6-15 July 16-20	July 28-Aug. 1 Aug. 2-11 Aug. 12-31 Sept. 1-30	Weighted aver- age a

a Includes estimated data for missing periods. Represents 100 percent of runoff for water year.

JORDAN RIVER BASIN--Continued

10-1726.05. JORDAN RIVER AT MOUTH, AT WOODS CROSS, UTAH

LOCATION. --At diversion canal from Burnham dam on road to New State Gun Club, 2.5 miles west of Woods Cross, Davis County. RECORDS AVAILABLE. --Chemical analyses: July 1959 to July 1961 (discontinued). REMARKS. --No discharge records available.

		HQ.	7.77	7.77	7.5	4.8 4.8 7.5 8.0	7.5	7.3
1	Specific con-	duct- ance (micro- mhos at 25°C)	1,780 1,930 1,970 2,060 2,120	2,210 2,210 2,050 1,980	2,010 1,980 2,030 2,030	2,050 1,020 1,080 1,980	1,980 2,170 2,330 1,950	1,990 2,180 1,390 1,370
ŀ			82474	88448	40000	000000 000000	84544 89784	80447
-	ģ.	Pa don traction of the contracti	L					
	Hardness as CaCO,	Non- car- bon-	329 391 444 467 496	496 492 467 441 451	424 424 447 447	244 407 512 485 407	463 0 196 364	385 393 261 318 337
	Hard as Ci	Cal- cium, Mag- ne- stum	536 594 622 666 688	688 684 664 826 646	650 626 624 652 658	690 596 690 658 604	642 604 584 524 530	554 554 488 472 540
	solids .ted)	Tons per day						
	Dissolved solids (calculated)	Tons per acre- foot	1.58 1.67 1.86 1.88	1.96 1.93 1.81 1.73	1.78 1.69 1.74 1.74	1.80 1.89 1.89 1.70	1.71 1.82 1.63	1.85 1.20 1.20 1.39
1961	Dia (Ci	Parts per million	1,160 1,230 1,230 1,380 1,380	1,440 1,420 1,330 1,270 1,260	1,310 1,240 1,280 1,280 1,300	1,320 1,270 1,390 1,340 1,250	1,260 1,270 1,340 1,200 1,200	1,200 1,360 1,360 1,020
117 15		- 8 (B)	0.25					
to F		rrate (NO ₂)	8.8 7.7 1.5	7.22.7 7.20.7 7.10	2	7.1 11 9.2 13 8.3	40.00.7	7
1959		Fluo- ride (F)	0.8					
chemical analyses, in parts per million, July 1959 to July 1961		Chloride (C1)	265 280 250 315 295	330 325 290 262 265	272 270 270 280 272	278 305 305 295 290	285 330 355 305	300 375 175 180 210
per miii		Sulfate (SO ₄)	371 404 458 482 507	509 505 477 472 456	491 443 464 468 453	447 410 509 482 423	459 18 9.5 264 385	395 426 267 314 338
arts		(C)	00000	00000	00 00	00700	00000	00000
, tn	H.	Car- bon- ate (HCO ₂)	252 248 217 243 243	234 234 240 226 238	224 232 244 210 294	302 221 203 211 240	218 873 922 400 202	208 196 277 188 248
aryses	ě	S tage (X)	12111	11111	11111	11111	11111	11111
TCST ST		Sodium (Na)	200 181 179 221 208	231 227 203 196 184	198 202 188 188	193 211 204 204	193 275 315 236 217	207 268 122 122 143
	Ş	nie- nie- sium (Mg)	55 63 63	68 66 66 72	70 66 72 75	71 62 73 74	77 62 65 54 57	68 44 47 74
Ì		Civen (Cp)	1117 131 146 164	164 165 157 143	146 142 140 143	180 136 150	130 139 127 120 119	120 1123 1153 115
		Fe)	18111	11188	1138	28282	88222	22222
		Silica (SiQ,)	12 18 18 18 18	212812	118 118 118 119	11 17 19 19	27280	13 8.7 14 14
		Mean discharge (cfs)						
		Date of collection	July 1, 1959 Sept. 29. Oct. 12. Oct. 19.	Nov. 2. Nov. 9. Nov. 16. Nov. 24.	Dec. 8	Jan. 14. Jan. 18. Jan. 25. Feb. 1.	Feb. 8. Feb. 22. Feb. 29. Mar. 7.	Mar. 21. Mar. 28. Apr. 11. Apr. 18.

24400	7.7.0	26.214	20000	6.1.4.4.1
1,560 1,750 1,360 1,610	1,420 1,930 1,950 2,280 2,240	2,030 2,030 2,080 2,080	2,010 1,660 2,010 2,180 2,180	2,500 2,560 2,000 1,960
33333	0 0 0 4 4 4 6 6 6	7.0000 00400		33.3
3333 344 386 344	2444 2523 2523 813	1,070 425 410	334 334 506 520	720 776 394 411
544 566 500 500 500	424 616 644 700 546	544 632 1,350 646 628	620 544 600 692 676	928 996 640 644
0.00	200			
4.0.4.4.0	1.22 1.73 1.74 2.07	98.29.9	1.99.1	2.38 2.48 1.77 1.73
1,030 1,130 1,040 1,040	1,270 1,260 1,520 1,520	1,530 1,340 3,090 1,370 1,330	1,300 1,160 1,300 1,440 1,360	1,760 1,820 1,300 1,270
133.96	4.9 4.5 12	400000 10404	80 - 0.4 40 - 14 - 0.	10 7.8 8.7 7.8
210 245 170 210 225	200 265 340 345	355 735 310 305	295 285 315 295	345 350 300 290
342 386 305 423 375	289 468 474 567 257	59 488 1,170 461 431	455 391 428 528 526	703 742 391 393
00000	00000	00000	00000	0000
257 238 202 136 258	202 208 236 236 402	1,040 214 338 270 266	220 256 266 227 190	254 268 300 284
11111	11111	11111	11111	11841
147 172 122 161	149 196 253 251	402 217 544 228 219	210 202 222 226 207	233 228 189 183
4 5 4 5 8 5 5 5 5 5 5 5 5	86 86 86 86 87	64 69 131 63 66	68 17 84 89	61 61 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	95 139 149 166 123	112 140 325 156 143	136 117 135 156	236 248 156 151
88888	• • •	11111	18998	98:111
16 15 9.8	41 16 16 16 16 16 16 16 16 16 16 16 16 16	18 17 17 16	17 17 18 19	17 15 21 21 21
Apr. 25, 1960 May 2 May 9 May 23	June 6. June 13. June 20. July 4.	July 18. Aug. 8. Aug. 16. Aug. 23.	Sept. 6. Sept. 12. Sept. 19. Sept. 26.	Oct. 10 Oct. 17 Jan. 10, 1961 Apr. 5.
23335	ร์ร์ร์ร์ร์	4444	ထွဲ့ ထွဲ့ ထွဲ့ ထွဲ	४४५५।

a Residue at 180°C.

SEVIER LAKE BASIN

10-1915. SEVIER RIVER BELOW PIUTE DAM, NEAR MARYSVALE, UTAH

LOCATION.--At outlet below Plute Dam, 0.8 mile upstream from gaging station and about 9 miles south of Marysvale, Plute County. DRAINAGE AREA.--2,440 square miles, approximately, upstream from gaging station. RECORDS AVAILABLE.--Chemical analyses: March 1958 to September 1959, February to September 1961.

1		Hd.	8.0	6.6	7.4	7.7	8.5	. 0		7.8	7.7		7.8	9.0	7.6	6. r	.8	7.8		9 00	; ;			1
	Specific	duct- ance (micro- mhos at 25°C)	453	445	455	472	477	472	477	489	484	604	455	448	449	459	487	492	506	514	535	504		470
	& :	ad- ad- borp- tion ratio	8.8	œ «	8	œ. α.	6	<u>.</u>	9 0	1.0	1.0	•	۲.				. 80	.7	•	0.0	: 1	1 1		8.0
		Non- car- bon-	00		0	00	•	00	5 0	0	00	•	ŏ	0	0	Ö	0	10	7 (٠-	'	1 1		0
	Hardness as CaCO,	Cal- cium, Mag- ne-	194	186	190	192	202	192	192	193	189	188	194	190	196	198	208	220	222	225	1	11		200
	Dissolved solids (residue at 180°C)	Tons per day	98.3 106	104	83.8	77.4	47.5	246	362	143	172	156	153	161 221	221	158	28.1	110	125	2 00	1	1 1		82.8
	solved at	Tons per acre- foot	0.38	80.00	.37	.38	.40	66.	5.0	4.	4 .	3.	.38	9.6	38	.39	.42	.42	.44	45	: 1	11		0.40
1961	Dis (resi	Parts per million	280 279	282	270	273	293	284	282	294	293	273	282	277	280	288	308	312	322	330	} !	} }		295
mber		(B) 20 B	0.02							61			.17	.07	.07	.00	.07	80.	66	60	1	1 1		1.3 0.12
Sept		rate (NO.)	1.9		: -:	æ æ	1.6	æ. c	••		4.		.5	1.6	1.2	2.1	6.	1.	1.2	1.0	:	1 1		1.3
ry to		Fluo- ride (F)										_												
1, February to September		Chloride (C1)	7 21	2 5	1	##	12	2 :	77	: 2	16	q	4.	16	16	16	12	18	8 9	9 2	8	16		14
in parts per million,		Sulfate (SO ₄)	27	3 28	88	30.88	33	34	3.5	40	9;	31	53	30	562	30	34	32	80 5	² 4	: :	11		36
ts per	į	100 100 100 100 100 100 100 100 100 100	00	00	•	00	15	0	-	•	•	>	0	-	•	00	•		0			1 1	4	1
n par	Ä	car- bon- ate (HCO ₂)	248	242	248	248 256	229	245	243	247	241	231	237	238	239	244	257	262	268	257	1	1 1		260
	É	sium (X)	2.7	80.0	3.2	8. 8. 8. 8.	3.2	3.3	2.4	3.6	3.6	5.5	3.4	, w	3.8	4.4	4	4.0	6.0	4	: 1	11		3.8
al analyses,		Sodium (Na)	25	% %	28	26	28	8 8	8 8	32	33	23	23	22 23	52	5 53	22	25	23	9 6	: 1	11		3 8
Chemical	ş	sium (Mg)	19 19	19	28	88	20	22	7 5	31	70	7	18	16	12	11	18	20	12	9 0	1			19
		Cal- Cal	46 44	£ 4	5	4 4	47	42	4.4	43	£ ;	è	47	5.5	51	22	22	22				1 1		49
		Iron (Fe)	11		0.01	 70:	10.	!	1 1	1	1	!	1	16	.02	20.	3 1	ŀ	!		1			0.02
		Silica (SiQ,)	28 29	28	24	29 29	28	28	22	36	24	0.7	92	25	36	39	34	30	22	27	1	11		88
		Mean discharge (cfs)	130 141	137	115	105 97	99	321	404	180	217	212	201	295	292	203	. 2	130	144	9	22	3.1		104
		Date of collection		Mar. 21	Apr. 3	Apr. 10	Apr. 25	May 9.	May 13	Kay 29.	June 4	June 13	June 19.	July 6	July 12	July 17	Aug. 2	Aug. 8	Aug. 14	And 29	Sept. 11	Sept. 18	Motohted aver-	8 9 98

a Includes estimated data for missing periods. Represents 100 percent of runoff for water year.

SEVIER LAKE BASIN--Continued

10-2240, SEVIER RIVER NEAR LYNNDYL, UTAH

LOCATION.—At bridge on county road, 1.5 miles upstream from gaging station and about 2 miles south of Lynndyl, Millard County.

RECORDS AVAILABLE.—Cleanical analyses: March 1951 to September 1961.

RECORDS AVAILABLE.—Cleanical analyses: March 1951 to September 1961.

Water temperatures: March 1951 to September 1961.

Water temperatures: Marimum, 1960 ppm July 1-20, 26-31; minimum, 812 ppm Sept. 1-7.

RATCHERS: 1960-61.—Dissolved Solids: Marimum, 343 ppm Aug. 1-6.

RATCHERS: Marimum, 622 ppm July 1-20, 26-31; minimum, 343 ppm Aug. 1-6.

RATCHERS: 1951-61.—Dissolved Solids: Marimum, 4,500 ppm July 10; minimum, 512 ppm Mar. 9-12, 1955.

EXTREMES: 1951-61.—Dissolved Solids: Marimum, 4,600 ppm July, 680 ppm July, 685 minimum, 512 ppm Mar. 9-12, 1955.

EXTREMES: 1951-61.—Dissolved Solids: Marimum, 4,600 ppm July, 840 ppm Mar. 9-12, 1955.

Specific conductance: Marimum daily, 7,040 micromhos July, 840 ppm Mar. 9-12, 1955.

Specific conductance: Marimum, 62° July 21-23, 1956; minimum, 33° ppm Mar. 9-12, 1955.

Specific conductance: Marimum, 62° July 192-23, 1956; minimum, 33° ppm Mar. 9-12, 1955.

RATCHERS: Marimum, 51° Diget minimum, 51° ppm Mar. 9-12, 1955.

Specific conductance of daily samples available in district office at Salt Lake City, Utah. Discharges are adjusted to compensate for inflow from a deep well discharging to the river between the sampling point and the gaging station.

ł		찚	7.9	8.1	8	.	•	8.0	8	8.1	90	<u>:</u>	7.7	8	. r	7.7	7.8
	Specific	duct- ance micro- nhos at 25°C)	1720	1700	1700	1690	100	2230	2340	1930	2240	7400	2830	1900	2820	1640	1370
		T to be	3.7	en e	0	e 0	,	5.5	4.	4.	,	9	6.7	4 0	. a	4	8
		Non- car- bon-	263	263	242	240	*	359	360	282	722	9	374	280	364	197	169
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	484	498	486	488	OTO	604	809	526	2010	000	625	490	2 6	408	382
	olids ted)	Tons per day	94.8	99.3	8.66	0.40	20.0	1.66	90.6	104	1690	000	954	0.0	355	6	35.3
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1.40	1.37	1.37	1.36	7.00	1.84	1.92	1.56	20.0	20.7	2.38	1.50	1.13		1.10
to September 1961	ald o)	Parts per million	'			1000			•	•			1750	1100	1810	981	812
0 to		9 5 E						.24	. 29	.24	90,	1	.47	.58	200	28	4.
sr 196		rate (NO)	2.1	1.6	- 7		•	ε.	ů.	2.1	0.0	*	2.1	1.2	0.0		₹
Octob		Fluo- ride (F)													_		
water year October 1960		Chloride (CI)	290	280	280	272	orc	400	415	325	380	*	520	350	194	268	219
million, wat		Sulfate (SO ₄)	256	244	239	237	*	348	373	286	333	707	469	261	436	233	183
r m111		(00) (00)	0	0	0	00	>	0	0	0	00	, _			-		
ts pe	Bi-	car- bon- ate (HCO ₂)	270	286	297	305	9	299	303	297	320	3	306	280	286	257	260
in parts per	Ġ	S is is is	4.4	4.1	ю ж	4.	;	8.4	9	2.5	9.0	6.	7.5	2.5	11	10	4.0
Chemical analyses,		Sodium (Na)	186	181	176	174	3	254	274	210	278	243	387	219	354	200	145
al ans		stum (Mg)	77	75	2	9 6	•	88	65	13		0	68	5	7 2	9	25
Chemic		Can (Ca)	1			20 4		96	8	8	56	D O	104	80	35	8	29
		Fe)	о. В	T	I	8	-	1	5	<u>.</u>	i	Ī	9	5		1	T
		Silica (SiO ₂)	=	#	2	4:	:	9.7	13	16	* :	F	27	25	3 6	12	13
		Mean discharge (Sid				34.8 14		27.2					202 21				
		Date of collection	Oct. 1-31, 1960	Nov. 1-30	Dec. 1-31	Jan. 1-31, 1961		Mar. 1-31	Apr. 1-15	Apr. 16-30	June 1-30		July 1-20, 26-31	4 1.e	Aug. 7-17.	Aug. 16-31	Sept. 1-7

SEVIER LAKE BASIN -- Continued

10-2240. SEVIER RIVER NEAR LYNNDYL, UTAH -- Continued

I		В	7.7	7.9	7.9	
	Specific con-	duct- ance (micro- mhos at 25°C)	2350 7.7 1950 7.8	2250 7.9	2030 7.9	I
	ģ;	ad- sorp- tion ratio	₹. 4. €. 4.	5.3	5.4	
	688 CO ₃	Non- car- bon- ate	346	281	282	1
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	580 506	533	522	1
tinued	solids ted)	Tons per day	94.2	366	1	1
1Con	Dissolved solids (calculated)	Tons per acre- foot	1.94	1360 1.85	1	1
mber 196	1	Parts per million	1430		1220	1
Septe		9 2 G	0.2 0.07	3.3 0.36	1.7 0.27	0.9 0.10
0 to		rate (NO.)	6.0	3,3	1.7	6.0
er 196		Fluo- ride (F)				
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride ride trate ron (Ci) (F) (NO ₂) (B)	412	390	348	105
water ye		car- bon- ate ate (SO ₄) (HCO ₂)	391 305	347	308	93.0
ton,	0	25 e e e e e e e e e e e e e e e e e e e	0	0	0	0
r m111	Bi-	car- bon- ate (HCO ₃)	285	308	293	82
ts pe	í		υ. υ.	6.2	5.2	75.0 1.7
, in par		Sodfum (Na)	290 228	281	238	
alyses		nag- ne- stum (Mg)	83 70	75	7.5	20.0
al an		Ca)	96 87	91	88	24.0
Chemic		Fe)	11	1	ì	1
		Silica (SiO ₂)	13 12	20	15	5.4
		Mean discharge (SiO ₂) (cfs)	24.4 13 19.6 12	20	99.3 15	1
		Date of collection	Sept. 8-17, 1961 Sept. 18-30	Weighted average	Time-weighted average	Tons per day

Temperature ('F) of water, water year October 1960 to September 1961

	÷	ا				
	Aver-	80	04 E	4 6 6 6	60 61 75	7 62
Ī		31	34 12	¥ 1 3	1 4 1	7.41
l		30	38	34	63 76	2.43
		29	52 40 34	4 1 5	92	77 86 60
		28	53 40 34	4 4 5 0 5 0	60 63 76	77 82 64
		27	53 40 34	94 98 90 00	63 78	77 82 66
١		26	50 40 34	34 1 20	60 63 78	77 84 68
		25	56 40 34	34 48 50	55 61 78	61 82 68
-1		24	34 5	34 47 55	55 62 78	61 82 68
		23	56 42 34	34 47 55	55 62 78	80 80 80 80
		22	56 43 34	34 47 55	55 62 78	80 80 68
8		21	56 43 34	34 55 55	55 62 78	80 80 68
		20	60 43 34	46.4	55 61 78	81 80 68
		19	60 43 34	34 45 55	55 61 78	81 80 68
1		18	60 44 34	34 54 54	58 65 78	80 81 70
3		17	62 45 34	4 4 4 4 4	63 63	80 70
	Day	16	64 45 34	34 54 54	60 62 80	80 70
		15	66 45 34	34 45 52	62 60 80	80 76
3		14	68 45 34	34 45 52	62 60 80	81 80 76
,		13	68 45 36	34 45 52	62	80 77 78
emperature (r) or water, water year		12	68 45 36	34 43 52	62 60 78	76 76 78 78 68 78
5		=	4 8 3 8	523	63 60 88	76 78 68
		2	544	34 52	982	2 8 P
ש		٥	0 8 9	4 4 0	62 61 76	28 28 78 78
10.10		80	564	4 4 0 0 0 0 0 0	62 60 73	28 78 70
Tag		7	0 4 4 0 8 9	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	62 60 77	76 78 74
Ď		٥	75 48 46	4 0 0 5 0 0	62 61 70	26 24 24
		5	72 48 36	38	600	76 76 74
		4	38	4 8 0 S	60	25 47
		က	38 38	3 4 6 4	61 60 66	76 76 74
		2	38 38	34 48	60 60 66	26 26 47
	L	-	72 52 38	37 4 8 4	63	2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
	;	Month	October November December	January February	April May June	JulyAugust

WALKER LAKE BASIN

10-2930. EAST WALKER RIVER NEAR BRIDGEPORT, CALIF.

LOCATION: --At gaging station 1,500 feet downstream from Bridgeport Reservoir, 5 miles north of Bridgeport, Mono County, and 10 miles upstream from Sweetwater Creek.

DRAINGE AREA.--362 square miles:

REXCORDS AVAILABLE --Chemical analyses: October 1958 to September 1961.

REMARKE.--Flow regulated by Bridgeport Reservoir.

		Нď	7.8	8.0	7.9	8.1	8,2	8.2	8.2	8.0	8.2	8.1	7.8	7.8
	Specific	duct- ance micro- nhos at 25°C)	193	177	354	321	225	240	256	279	276	245	243	238
		ad- ad- sorp- tion ratio	8.0			1.3			1.1	1.2	1.0	æ	8.	80
	ess CO ₃	Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- clum, Mag- ne- stum	63	19	66	92	76	75	82	84	94	87	87	84
11	solids ated)	Tons per day										_		
er 196	Dissolved solids (calculated)	Tons per acre- foot		1	ŀ	1	!	1	ł	0.24	!	1	1	.22
Septemb	a ~	Parts per million		ľ	1	1	!	!	!	179	!	1	;	129
960 to		ron (B)	0,1	•	4.	~	~	٦.		~	_	٦.		_
er 16		N1- trate (NO ₃)	1	1	!	!	!	1		0.4	!	!		1.5
Octob		Fluo- ride (F)	1	1	!	;	1			0.4	1	!	!	۳.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	4.0	6.2	10	7.0	3.0	3.5	3,4	4.8	1,3	1.0	1	2.5
lion, wa		Sulfate (SO ₄)	ŀ	1	ŀ	;	!	1	;	25	!	1	1	14
r mil	į	Pare (CO)												
rts pe	Bi-	car- bon- ate (HCO ₃)	94	8	154	136	100	112	153	130	138	122	128	128
in pa	é	F st III	1	!	ŀ	i	1	ł	ı	4.0	ŀ	I	ī	4.9
alyses,		Sodium (Na)	14	13	38	88	12	77	22	22	23	18	17	17
cal an	ļ	nie- nie- sium (Mg)	:	ł	;	ļ	ļ	1	1	2.5	ŀ	ł	ł	3.4
Chemi		Cal- ctum (Ca)		1	ł	!	1	l	1	22	ł	ł	1	28
		Iron (Fe)								0.0				
		Silica (SiQ.)		1	J	1	1	<u> </u>	1	22	ı	L	1	2
		Discharge Sili (cfs) (SiC	37	26	5.0		6.2		29	38	8	99	4	25
		Date of collection	Oct. 6, 1960	Nov. 2	Dec. 7	Jan. 3, 1961	Feb. 7	маг. 2	Apr. 4	Kay 2	June 1	July 6	Aug. 9	Sept. 7

WALKER LAKE BASIN -- Continued

10-2960. WEST WALKER RIVER BELOW LITTLE WALKER RIVER, NEAR COLEVILLE, CALIF.

LOCATION. --At bridge on U.S. Highway 395, 200 feet downstream from gaging station, 275 feet downstream from East Fork, and 13 miles southeast of Coleville, Mono County.

DEALTHAGE AREA. --182 square miles.

RECORDS AVAILARLE. --Chemical analyses: October 1958 to September 1961.

		Hq	7.7	8.0	8.	8.0	8.0	8.0	7.6	7.6	7.5	7.7	7.9	8.
	Specific	duct- ance (micro- mhos at 25°C)	195	194	187	136	111	120	47	44 7.6	46	55	101	129
		ad- ad- Borp- tion ratio	1.3	1.4	1:1	9	Ľ.	۲.	Ŋ	ď	N.	C.	4.	<u>ښ</u>
		Non- car- bon- ate	0	0	0	0	0	4	0	0	0	0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	20	20	64	47	43	38	19	18	18	21	39	22
_	solids ited)	Tons c per day												_
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	!	1	1	1	1	0.04	1	1	1	Η.
Septembe	ald o)	Parts per million		1	!	1	1	İ	1	31	1	1	1	79
<u>۾</u>		Bo- ron (B)	0.2	~	~	•	٦.	۰. ا	•					
r 19		Ni- trate (NO ₃)				1	1	}						
ctope		Fluo- Ni- ride trate (F) (NO ₃)		1	1	1	1	Ī		0.1		1		
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	5.0	1	5.8	3.8	.5	2.0	0.	•	9.	1.0		2.5
ion, wat		Sulfate (SO ₄)	1	1	1	1	1	1	ł	0.0	1	1	ı	4.0
	į	Bon- ete (CO ₃)												
ts per	Bi-	car- bon- ate (HCO ₃)	92	94	122	2	28	£	29	24	27	30	8	72
n par	Ė	tas- stum (K)		1	1	;	1	!		0.7			1	
lyses, 1		Sodium (Na)	21	23	21	9.4	7.4	8.6	2.3	2.0	2.4	2.4	5.4	5.5
al ana	į	mag- ne- stum (Mg)	ł	1	i	1	1	;	1	2.4	;			
Chemic		Ca)		1	ŀ	1	ł	1	1	3.2	1	!	!	12
		Iron (Fe)								8				
		Silica (SiQ _e)		1	i	1	-	L	!	9	1	1	!	12
		Discharge Sili (cfs) (Sid	25	23					569	257				
		Date of collection	Oct. 6, 1960	Nov. 2	Dec. 7	Jan. 3, 1961	Feb. 7	Mar. 2	Apr. 4	May 2	June 1	July 6	Aug. 9	Sept. 7

217

CARSON RIVER BASIN

10-3055. BAST FORK CARSON RIVER NEAR MARKLEEVILLE, CALIF.

LOCATION .--Approximately 100 yards upstream from Hangmans Bridge, 1.2 miles southeast of Markleeville, Alpine County, and 7 miles southeast of Woodfords. RECORDS ANIARIE.--Chemistyses: September 1956 to September 1951.

		Нq	8.0	8.0	8°	8.1	8.1	8.0	7.6	73 7.7	7.8	8.0	7.8	2.8
	Specific	duct- ance micro- mhos at 25°C)	156	152	213	176	148	150	7.1	73	70	101	103	110
		dium ad- Borp- tion ratio	9.0	œ.	9.	20	۲.	۲.	'n.	e.	₹.	4.	ů.	4.
		Non- car- bon-	٥	0	0	0	0	0	0	0	0	0	0	٩
	Hardness as CaCOs	Cal- ctum, Mag- ne- stum	55	22	8	99	25	2	25	28	24	37	38	#
	solids ted)	Tons c												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	i	-	1	!	;		0.08		1	1	.10
Septembe	etC (c	Parts per million	-	ţ	!	1	1	1	1	26	1	1	1	76
80 to		Bo- ron (B)	0.2	۲,	4	۲,	۲,			٦.				
er 19		Fluo- Ni- ride trate (F) (NO ₂)		!	1	!	;	1		_	1	i		.3
Octob		Fluo- ride (F)	1	!	1	!	;	1		0,1	!	!	1	-
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	2.3	-	7.5	4.0	3.2	4.0	2.0	1.8	!	2.0	2.0	4.0
ion, wat		Sulfate (SO4)	1	;	1	1	ŀ	I	1	3.0	1	1	1	4.0
m111	- 5	ate (CO)												
ts per		car- bom- ate (HCO ₃)	79	75	116	8	69	72	39			24	26	26
In pa	Ě	tas- sium (X)	1	1	1	}	1	1		6.0		1		1:4
lyses,		Sodium (Na)	10		13				5.5			6.3	6.4	6.5
al ans	į	mage- nie- stum (Mg)	1	1	1	;	ŀ	1		3.2		1	1	3.3
Chemit		Cal- cium (Ca)	-	!	ŀ	!	!	1		6.0	!	!	ł	11
		(Fe)								0.01				
		Silica (SiQ,)	1	1	1	ŀ	!	ı		18	ŀ	1	1	17
		Mean discharge (SiO ₂) (cfs)												
		Date of collection	Oct. 6, 1960	Nov. 2	Dec. 7	Jan. 3, 1961	Feb. 7	Mar. 2	Apr. 4	May 2	June 2	July 6	Aug. 9	Sept. 7

CARSON RIVER BASIN--Continued

10-3090. EAST FORE CARSON RIVER NEAR GARDNERVILLE, NEV.

LOCATION: --Temperature recorder at gaging station, 2 miles east of Mud Lake Reservoir, 4.5 miles downstream from Bryant Creek, and 7 miles actions at of gradientile, Douglas County.

PATAINGE AREA, --344 square miles.

RECORDS AVAILABLE.--Rater temperatures: July 1955 to September 1961.

EXTREMES, 1960-61.--Pater temperatures: Maximus, 82°F Aug. 7; 1960; minimum, 74°F Dec. 11, 31.

EXTREMES, 1965-61.--Pater temperatures: Maximus, 85°F Aug. 7; 1960; minimum, freesing point Dec. 30, 1955, Dec. 24, 28, 31, 1957, several days during January 1958, Dec. 16, 18, 1959.

000

											1				Dav															L	
Month		-	\vdash	Ι,	\vdash	+	-	⊢	-	\vdash	\vdash	-	<u> </u>	Ŀ	1			5	3	7	\vdash	-	_		\vdash		-	-	-	Ž	Average
	-	7	2	4	<u>.</u>	٥	\dashv	, 0	2	=	2	2	4	2	<u></u>	\leq	<u>»</u>	2	3	7	77	53	47	C7	707	7/7	<u>.</u>	ر ا	2	_	
November	-	-	-	_	1	. ;	-	_			- 1	1	_!	_	4	7	7	43	44	4	77	43	46	- 7	-1-	38 37	_	38 40	- 1		;
Minimum	¦	1	+	1	$\frac{\cdot}{1}$	-	<u> </u>	_	$\frac{1}{1}$	<u> </u>	+	!	1	1		39	42	39	39		39		4 2						<u> </u>		;
December		_;		_					_				_			•	,		;	_			-		_		_				,
Maximum							37 37	_	36 36		96 36			_	36	0 1	2 .	39	36	_	33		6.5	_			-		36		9 1
Minimum	35	35	35	35	35	35	35		35	34		35	32	35		35	36	36	35	36	35	35	32	32	36	37 36		35 35			2
January	3.6	3.7	37	_	3.6	_	36		36	30	30	4	7	7	7	0	9	3,0	,	27	ď	7 0 7	6.4	7 6 7	7 64	41 40		1 45	4.7		
Maximum		. "							35 35			-		_		7	, "	, "	. ") K								_		
February	_	`		_			_		_	_		_	_			3	`	`	;	_	`				_	_	-	_	_		,
Maximum	4	7 7	45	45	45 4	46 4	48 45	-	49 51	_	8 42	41	45	45	45	7,7	45	45	94		47	45		454		43 47	_	1	!		46
m um	40	39	40	38	38 4	41 4	42 42	_	43 46	9		38	38	4.1		36	39	37	38	9	42	37 4	0 4	414	42 3	39 38		1	!		0
March								_							_		-			_					_						
Maximum		_		_		_	47 48	_	20 46	_	_				_	64	20	64	54	_	26				_	_			24	_	o +
Minimum	4 1	43	404	41	6 04	38	38 3		45 4(41	1 42	43	9 4 6	43	41	38	39	745	75	7,	9+	7 9 4	77	404	07	41 40		38 43			~
April								_				_					_						_	_	_		_		_	_	
Maximum	28	20	58 5	23	51 5	52	52 5	52 5	51 52	2	4 52	51	1 53	26	26	26	2	20	20		94	77	94	_	-	56 57	_	57 57	_	_	
Minimum				Ė		÷		_						_	_	8 4	45	45	-	7			~	<u>4</u> -	7 7 7 7	454		48 47	!	_	4
May		_	_	_		_	_	_		_				-	_	_							_		-		_		_		
Maximum	55	_		_					_		53 50			_		57	57	53	28		57		29				-		53		20
Minimum	49	45	7 9 7	94	43	45	45	7 97	48 48	_	45 45	43	20	4	48	48	64	4.7	9	8	64	484	6 4	20	64	47 50	-	49 48	_	_	_
June									_				_	-	_	-		i			-						_		_	_	
Maximum	53			- 29	_	_	_	_			_	_	69	_	_	9	9	7.	6	_	2		2	_			_	_	_	_	٥
Minimum	4.5	20	20-2	25	53	53	25	54 -	52 54		55 51	. 55		2.4	58	28	56	5	29	79	70	5	79	3	7	61 60	-	96 96	<u> </u>		٥
July .	;			:				_		_				_	,	9		6	,		-	-		<u>'</u>	-	1		7,5	,		,
Maximum	<u>.</u>	2	_	:		_			_			•		-	_	3	7	3			•	_	-				-	-	_		
Minimum	58	61	9 79	29	57	26	29 6	9 6	62 64	-	65 64	9 .	69	62	4	9	49	65	63	63	7.0	65	65	7	- 49	94 62	-	61 60	9		2
August	٥	9		<u>,</u>	- 72			78 7	70 72	_	1,4	7	7.4	7,	7,6	75	70	7.0	č	6	0	- 74	7.4	75	73	44 45	_	70 73	- 2		
Maximum	3	-		2 :			2 !	_		_		_		_	_	: :			3 :		3 :						_	_	_	_	
Minimum	29	49	63	20	<u>•</u>			- - 9	63 64		94 62	66	6	9	<u>, , , , , , , , , , , , , , , , , , , </u>	7	2	\$	ŝ	9	<u> </u>	4	6	70	, ,	26	_	44	3		v
Maximum	69	99	99	88	70	88	65 6	65 6	68 68	_	72 71	89	9 9	99	62	9	63	67	62	99	63	63	- 19	63	65	62	-	63 62	-		65
Minimum	57	_		52	_			_				_		_	-	51	64	54	52		20		48	64		52 56		51 49	-		53
		1	1	+	_	-	-	_	-		-	_	_	_			_	_	_		-	-	-	-	-	-	-	_			

CARSON RIVER BASIN--Continued

10-3100. WEST FORK CARSON RIVER AT WOODFORDS, CALIF.

LOCATION .--At bridge on State Highway 89, 0.3 mile upstream from gaging station, 0.8 mile southwest of Woodfords, Alpine County, and 3.5 miles downstream from Willow greek.

DRAINAGE AREA --66 square miles, approximately.

RECORDS AVALLARL.--Chemical analyses: October 1958 to September 1961.

		Нq	7.5	7.9	7.7	7.8	78 7.9	•	7.6	4.4	7.7	7.7	7.9	7.9
	Specific	duct- ance micro- nhos at 25°C)	85	78	79	82	7 28		84	51	23	88	82	82
		ad- Borp- tion ratio	0.3	4.	e.	e.	4.0	:	ů	2			e.	
		Non- car- bon-	٥	0	0	0	00	5	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	32	28	90	31	31	9	16	21	21	23	33	37
	solids ted)	Tons per day				-								-
er 196	Dissolved solids (calculated)	Tons per acre- foot	-	1	!	1	11			90.0		!	!	60.
Chemical analyses, in parts per million, water year October 1960 to September 1961	and or	Parts per million	1	1	1	!	1 1	!	1:	4	1	!	-	89
60 to		- P 0 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0.0	۰.	٦.	•	0	:	•		_	_	_	_
er 19		Fluo- Ni- ride trate (F) (NO ₂)				_				0.1			!	٠.
Octob		Fluo- ride (F)		!	<u> </u>	!		 _		0.1		!	!	٠.
er year		Chloride (Cl)	1,0	1	ď.	1.5		7.7	0.	e.	e.	æ	1	1.5
ion, wat		Sulfate (SO.)		1	1	!	1 1	i -	1	0.0	1	1	l	3.0
m111	į	(0) (0)												
ts per	Bi-	car- bon- ate (HCO ₃)	47	46	48	48	41	2	29	29	28	8	20	48
in pa	Š	E ST IN	1	;	1	!	1 1			6.0		;		1.8
lyses,		Sodium (Na)	4.4	5.0	4.1	4.2	5.1	,	4.1	1.9	2.5	2.0	3.6	3.4
al ans	7,0	mag- ne- stum (Mg)		ł		!	-			2.7		!	!	20.00
Chemit		Cal- Ctum (Ca)	1	!	1	1	1 1	 		4.0	!	1	!	=
		Fe)								8				
		Silica (SiQ,)	1	1	1	1	1.1	L	13	17	1	1	1	77
		Discharge SH. (cfs) (Sh	9.5				16	101	142	131	101	54	13	8.5
		Date of collection	Oct. 6, 1960	Nov. 2	Dec. 7	Jan. 3, 1961	Feb. 7		Apr. 4	May 2	June 2	July 6	Aug. 9	Sept. 7

HUMBOLDT RIVER BASIN

10-3350, HUMBOLDT RIVER NEAR RYE PATCH, NEV.

OCATION .--At gaging station 1,000 feet downstream from Rye Patch Dam and 1.5 miles northwest of Rye Patch, Pershing County.

SCORDS AVAILARLE. --Chemical analyses: December 1951 to September 1958, October 1959 to September 1961. Water temperatures: December 1951 to September 1958, October 1959 to September 1961. RECORDS AVAILABLE. -- Chemical analyses:

TATREMES, 1800-61.—Dissolved solids: Maximum, 1,510 ppm Apr. 22-00; minimum, 606 ppm July 1-19.

Hardress: Maximum, 444 ppm May 1-June 3; minimum, 205 ppm July 1-19.

Specific conductance: Maximum daily, 2,790 micromhos July 1-19.

Specific conductance: Maximum daily, 2,790 micromhos July 4.

Water temperatures: Maximum, 70°F July 15-26; minimum, 50°F Apr. 22-30.

EXTREMES, 1961-68, 1969-61.—Dissolved solids: Maximum, 2,90 ppm 89pt. 1-5, 1954; minimum, (sum) 253 ppm June 24, 1956.

Hardness: Maximum, 462 ppm 89pt. 1-5, 1964; minimum, 86 ppm Jun. 25, 1958.

Specific conductance: Maximum daily, 4 010 micrombos Sept. 2, 1954; minimum daily, 384 micrombos June 24, 1956.
Where temperatures (1951-54, 1969-58, 1959-61): Maximum, 787 Sept. 2, 1959; minimum, 377 on many days during winter months.

**Records of specific conductance of daily samplem available in district office at Sacramento, Calif. Flow completely regulated by Rye Patch Reservoir.

		Ħ	7.8	9.6	7.7	7.8	7.9	1
	Specific	duct- ance (micro- mhog at 25°C)	2,550	1,830	1,240	1,010	1,320	71 7.0 2,150
	ģ,	ad- sorp- tion ratio	9.3	6.1	4.4	8	4.8	7.0
	Hardness as CaCO ₃	Non- car- bon-	79	101	m	Ö	0	71
	Hardr as Ca	Cal- clum, Mag- ne- stum	338	318	246	202	244	353
	Dissolved solids (residue at 180°C)	Tons per day	1,180	6,340 136	135	129	103	442
1961	Dissolved solids esidue at 180°	Tons per acre- foot	2.05	1.48	1.02	.82	1.06	1,280 1.74
September	Dis (resi	Parts per million	1,510	1,440	749	909	782	
to		B) 130	1.5	2,7 1.2	œ.	9.	œ.	1,4 1.3
1960		Ni- trate (NO ₂)	1.4	2.7	1.8	₹.	4.	1.4
tober		3 g C			_			
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride ri (Cl) (Cl)	575	335	208	145	210	447
on, wate		Sulfate (SO ₄)	160	158	79	29	88	139
m1111	,	4 4 8 0°						
ts per	Bi-	car- bon- ate (BCO ₃)	316	382	296	280	306	345
n par	,	S # IN	စ္က	23 28	17	16	71	3 8
yses, 11		Sodium (Na)	393	333 520	157	126	173	303
al anal	;	stum (Mg)	32	34 27	13	13	21	30
hemic		Cal- ctum (Ca)		110 83				85
Ī		Iron (Fe)	0.01		;	10.	.02	+
		Silica (SiQ ₂)	30	24 88 88 88	37	36	37	38
		Mean discharge (SiO _e) (cfs)		163 43				128
		Date of collection	Apr. 22-30, 1961	May 1-June 3	June 10-13	July 1-19	July 20-31	Weighted

a Represents 99 percent of runoif for water year.

	Aver-	age	1 % 1	69
		31	53	1
		30	50	1
		29	53	1
		88	50 53	1
		27	55 65	1
1	1	26	881	2
196		24 25 26 27	881	20
ber		24		20
tem		23	50 50	2
Ser		22	2 2 !	20
Temperature ('F) of water, water year October 1960 to September 1961		20 21 22 23	121	66 66 68 68 68 67 68 68 68 68 68 68 68 68 70 70 70 70 70 70 70 70 70 70 70 70 70
1960		20	35	2
er		19	55	2
ctot		18	55	2
Ŏ		17	55	2
yea	Day	18	121	2
ter	_	5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	109	2
ě		14	131	89
ter		13	50	89
r wa		12	96 96	89
ö		=	99	89
		2	95 96 96	89
ure		٥	92	89
erat		8	56	89
enp		7	58	67
F		9	56	89
		5	55	89
		4	54	89
		3 4	53	99
		7	52 57	99
		-	52 57	89
	16de	Month	April May une	July 68

PYRAMID AND WINNEMUCCA LAKES BASIN 10-3368. LAKE TAHOR AT BIJOU, CALIF.

LOCATION. --At boat landing at Connoley's Resort, Bijou, El Dorado County.
RECORDS AYALIAREL: --Chemical analyses: October 1988 to September 1961.
REMARKS. --No discharge records available.

		Hq	7.6	7.7	7.7	7.9	93 8.0	•	7.7		6.	8.0	0.8
	Specific con-	duct- ance (micro- mhos at 25°C)	95	96	95	94	93	90	87	8 3	8	93	96
		dium ad- fion ratto	0.4	2	ī,	ī,	4.1		ı,	4.4	. 4	4	*
	688 CO.	Non- car- bon-	0	0	0	0	00	-	0	0 0	0	0	٥
	Hardness as CaCO,	Cal- ctum, Mag- ne-	35	34	35	33	36	3	34	2 6	32	33	33
	solids ted)	Tons per day											
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	:	1	!	1 1		18	80.0	1	1	80.
Septembe	a s	Parts per million	-	1	!	!	1 1	! 	11	<u>.</u>		!	62
60 to		(B)		٦.	•		•				: :	٥.	
er 19		Fluo- Ni- ride trate (F) (NO ₂)	1	1	!	!		!	13		_	-	٠.
Octob		Fluo- ride (F)	-	!	 -	!				•		1	٩
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	1.5	1.8	e. 5	e.	2.5	-	0.5		0.0	1.8	4.2
ion, wat		Sulfate (SO ₄)		1	ŀ	1	1 1		1;	7.0	1	ł	°.
m111	į	G # 60											
ts per		car- bon- ate (HCO ₃)	20	22	54	22	202	3	26	8 4	20	7	51
n par	Ğ	E ta S	1	l	1	1			1 9	2 !	1	1	0.2
lyses, 1		Sodium (Na)	5,2	6.9	6.2	6.1	7.0	•	6.9	. r		5.9	2.0
al ans	Ş	Mag nie- frum (Mg)	-	!	!	!				;;		!	2.6
Chemic		Cal (Ca)	1	!	!	1			_	9	; ;	1	9.3
		Fe)								20.0			
		Silica (SiQ,)	1	ŀ	1	1	Ш	ļ	Ŀ	L	ı	!	7
		Mean discharge (SiO _a) (cfs)											
		Date of collection	Oct. 5, 1960	Nov. 1	Dec. 6	Jan. 2, 1961	Feb. 6.	•••••••••••••••••••••••••••••••••••••••	Apr. 3	hine 2	July 5	Aug. 8	Sept. 6

PYRAMID AND WINNEMUCCA LAKES BASIN -- Continued

10-3369. LAKE TAHOE NEAR TAHOE VISTA, CALIF.

LOCATION: --At boat landing at Edgewater Cottage (private residence), and 8 miles northeast of Tahoe Vista, Placer County. RECORDS AVAILABLE. --Chemical malyses: October 1958 to September 1961.
REMANES. --Fo discharge records available.

		Hq	7.7	7.5	7.8	7.9	8.0	95 7.1	8.0	94 7.9	7.8	7.9	8.0	8.0
	Specific	duct- ance (micro- mhos at 25°C)	95	8	96	94	92	95	92	94	96	93	16	93
		dum ad-pad- tion tion ratto	4.0	ī.	'n	4.	ı.	ī.	4.	4.	ī,	4.	ı,	4.
	co ₃	Non- car- bon-	٥	0	0	0	0	-	0	0	0	0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	36	34	36	33	35	34	32	34	34	40	33	33
	solids ted)	Tons per day						_						
r 1961	Dissolved solids (calculated)	Tons per acre- foot	!	;	!	!	!	!		0.08	!	!	ł	80.
Chemical analyses, in parts per million, water year October 1960 to September 1961	gi (3)	Parts per million	1	-	1	1	1	!	!	61	1	1	1	19
60 to		. B. B.	0.1	٦:		_	۰.			٦:	_			°.
er 19		Fluo- Ni- ride trate (F) (NO.)	L	1	1	1	;	1		0.0	 -	1	!	٩
Octob			1	1	!	1	!	1		0.0	- -	!		.2
er year		Chloride (Cl)	1.8	2.2	1.8	Φ.	2.0		2,5	1.6	1.6	2.0	1.7	4.1
ion, wat		Sulfate (SO4)	1	1	1	1	1	1	1	1.0	1	1	1	°.
m111	į	1 6 8 0 0 0												
ts per	Bi-	car- bon- ate (HCO ₃)	49	49	25	54	22	\$	54	22	5	20	53	20
in par	É	F star (x)	1	1	1	ŀ	1	1	ł	1.4	!	1		1.6
lyses,		Sodium (Na)		6.4	6.2	5.8	6.2	6.4		5.8		6.0		
cal an	Ž	sium (Mg)	1	ŀ	!	ŧ	1	!	-	1.6		!		2.8
Chemi		Can (Ca)	!	!	!	1	1	1		=	8.9	!	;	9.0
		Iron (Fe)								0.01				
		Silica (SiQ,)	1	1	ŀ	ŀ	1	1	1	12	L	:	1	13
		Mean Silica Ir discharge (SiQ ₆) (F (cfs)												
		Date of collection	Oct. 5, 1980	Nov. 1	Dec. 6	Jan. 2, 1961	Feb. 6	Mar. 1	Apr. 3	May 1	June 1	July 5	Aug. 8	Sept. 6

PYRAMID AND WINNEMUCCA LAKES BASIN -- Continued

10-3370. LAKE TAHOE AT TAHOE, CALIF.

LOCATION: --At State Highway 89 bridge and upstream from headgate for Truckee River at Tahoe, Placer County. DRAINAGE AREA.--506 square miles, at lake outlet. RECORDS AVAILABLE. --Chemical analyses: October 1958 to September 1961.

														1
		Hd	7.7	7,7	7.7	7.8	8.0	7.3	8.0	7.9	7.7	7.9	8.6	8.0
	Specific	duct- ance micro- nhos at 25°C)	93	92	95	93	93	93	92	93	95	93	16	95
	\$.	dada ad- tion ratto	4.0	'n	6	4	4.	÷	9	4.	4.	4.	60	•4
		Non- Car- Bon-	0	0	0	0	0	•	0	•	0	0	0	٥
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	35	36	34	33	33	33	34	34	35	39	32	34
		05% 6	_			_				_	_		_	_
	solids tted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	!	1	;	1	;	I	1	0.08	;	1	ł	.09
Septembe	e PC	Parts per million	1	1	1	1	1	1	1	9	!	1	1	64
0 to		. B	0,1	Ħ.	۲.	•	•	•	٦.	٦.	•	٦.	•	•
r 196		rrate (NO ₂)	;	I	1	!	I	1	I	0.0	;	1	1	o.
ctobe		Fluo- ride (F)	1	1	ì	ì	1	I	ł	0.0	!	ŀ	I	۰.
million, water year October 1960 to September 1961		Chloride (C1)	1.5	1.8	4.	ď.	φ,	6.	2.0	1.6	1.4	1.2	1.5	4.1
ion, wat		Sulfate (SO4)	1	1	ì	1	1	1	ı	1.0	1	1	1	1.0
111	į	(C) # 2	٥	0	0	0	0	0	0	0	0	0	က	0
ts per	Bi-	car- bon- ate (HCO ₂)	20	20	54	54	53	20	54	23	21	S	47	52
n par	Ę	K ta ta (X)	1	1	i	1	1	1	1	1.3	1	1	i	1.7
Chemical analyses, in parts per		Sodium (Na)	5.1	6.9	6.2	5.7	5.7	6.4	7.5	5.7	5,9	5.9	5.9	5.4
al ana	200	nie- stum (Mg)	1	١	1	}	ł	1	1	2.4	2.9	1	1	2.6
Chemic		ctum (Ca)	1	!	1	Ī	1	!	1	9.6	9.2	l	ŀ	9.4
		fron (Fe)								0.0				
		Silica (SiQ,)	1	ŀ	1	1	1	L	1	12	¦	1	1	4
		Mean discharge (StQ _s) (cfs)				_	_							
		Date of collection	Oct. 5, 1960	Nov. 1	Dec. 6	Jan. 2, 1961	Feb. 6	Mar. 1	Apr. 3	May 1	June 1	July 5	Aug. 8	Sept. 6

PYRAMID AND WINNEMUCCA LAKES BASIN--Continued

10-3380. TRUCKEE RIVER NEAR TRUCKEE, CALIF.

LOCATION.—At gaging station 1.4 miles upstream from Donner Creek, and 2.5 miles southwest of Truckee, Nevada County. DRAINGE AREA.—552 square miles. RECORDS AVAILABLE.—Chemical analyses: October 1958 to September 1961. REMARKS.—To discharge records available.

J		Hq	97 7.5	7.5	7.7	7.9	7.8	7.8	7.8	85 7.9	6.9	7.8	7.8	8.0
	Specific	duct- ance (micro- mhos at 25°C)	26	66	101	104	108	109	87	85	65	96	66	110
		ad- ad- Borp- tion ratio	0.4	S.	4.	4.	4.	4.	4	₹.	e.	4.	4.	4.
	co,	Non- car- bon-	0	0	0	0	0	10	0	0	0	က	0	0
	Harduess as CaCO,	Cal- clum, Mag- ne- stum	36	34	37	37	40	41	31	31	56	43	37	40
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	1	į	ł	1	0.08	ł	1	!	.10
Septembe	ag S	Parts per million	1	1	1	1	!	1	1	62	!	1	1	75
30 to		ron (B)	0.1	۲.	~	۰.	۰.	٦.		٦.	•		_	
ı 19		Ni- trate (NO,)	1	1	!	1	!	ŀ	1	8.0	į į	l	l	۰.
ctobe		Fluo- Ni- ride trate (F) (NO ₂)	1	;	;	;	Ï	}	1	0.1	1	1	1	0.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	1.8	1.8	1.5	8.	3,5	1.0	2.2	2.6	1.3	1.4	2.0	4.4
ion, wat		Sulfate (SO.)	ł	1	1	i	l	ł	1	4.0	1	1	!	4.0
m111	Č	(CO)												
ts per	Bi-	car- bon- ate (HCO ₃)	20	21	22	57	22	44	43	42	33	49	8	27
n par	í	tas- sium (K)		1	!	1	1		1	1.0	1	ł	!	2.0
lyses,		Sodium (Na)	5,3	9.9	6.0	6.0	6.0	6.4	5.2	4.8	2.9	5.7	5.9	6.3
al ans	,	mag- ne- stum (Mg)	1	;	ł	1	į	}	1	2,4	1,9	;	!	3,5
Chemic		Cal- ctum (Ca)	1	1	1	ŀ	!	1	1	8.4	7.2	!	1	10
		Iron (Fe)								0.01				
		Silica (SiQ _k)	1	1	1	1	1	-	-	17	1	_	1	17
		Discharge SE (cfs)	355						224	268	125	241	138	44
		Date of collection	Oct. 5, 1960	Nov. 1	Dec. 6	Jan. 2, 1961	Feb. 6	Mar. 1	Apr. 3	May 1	June 1	July 5	Aug. 8	Sept. 6

PYRAMID AND WINNEMUCCA LAKES BASIN--Continued

10-3460. TRUCKER RIVER AT FARAD, CALIF.

LOCATION. --At gaging station 0.7 mile downstream from Farad powerplant, 2.5 miles north of Floriston, Nevada County, 3.4 miles downstream from Bronco Creek, and 3.5 miles upstream from California-Nevada State line.
DRAINAGE AREA. --332 square miles.
RECORDS AVAILABLE. --Chemical analyses: October 1958 to September 1961 (discontinued).

7.8 7.9 7.8 7.8 7.8 8.7 7.6 6.6 7.7 7.8 7.8 띥 mhos at 25°C) 011003 84 80 67 84 86 Specific microance Sorp-tion ratio Noncar-bon-000000 as CaCO, Hardness Carl-Mag-ne-stum 38 42 33 44 44 43 31 26 32 32 31 l'ons per day Dissolved solids (calculated) Chemical analyses, in parts per million, water year October 1960 to September 1961 Tons
per
acrefoot 18,1118 111111 per million 111111 181118 Parts 8 5 E 8.4.6.4.4 400004 Fluo- Ni-ride trate (F) (NO₃) 16. 1111 11 ļ 119 17,1119 111111 400004 0484 | 8 Chloride ਹੁ Sulfate (SO₄) 1001119 111111 Control ate (HCO₂) car-bon-55 53 56 66 446844 Po-11111 121112 Sodium (Na) 80.080.08 44.6.04.4 14.6.09.4 44 | 18 Mag-ne-stum (Mg) 111111 111111 10.9112 C tem (S) fron (Fe) 0,02 Silica (SiQ_e) 181119 Discharge (cfs) 517 578 488 451 432 237 414 225 a272 a198 a185 a185 Apr. 3.

May 1.

June 1.

Aug. 8. Dec. 6. 1961.... Jan. 2, 1961.... Feb. 6. 5, 1960.... Yov. 1..... Date of collection

a Daily mean discharge.

HONEY LAKE BASIN

10-3565. SUSAN RIVER AT SUSANVILLE, CALIF.

LOCATION: --At gaging station 0.5 mile west of Susanville, Lassen County, and 1.1 miles upstream from Piute Creek. DRLINMEN AREA.--1995 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1961.

		Ħ	8.0	7,9	7,9	8,0	8.1	8,1	8.0	7.8	7.6	8,1	8.2	205 8,4
	Specific	duct- ance (micro- mhos at 25°C)	188	180	158	157	114	126	8	83	9	171	214	202
		add- gorp- tion ratio	0.3	~	m	۳.	۳.	e.	7	Τ.	2	۳,	۳.	.
		Non- carr- bon- ate	٥	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO,	Cal- clum, Mag- ne- stum	89	83	72	11	47	55	42	42	92	83	101	96
	solids ited)	Tons c day					_					_		
er 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	1		1	1		0,10		1	!	.21
Chemical analyses, in parts per million, water year October 1960 to September 1961	S C	Parts per million	1	1	1	1	1	1	ł	74	ł	1	1	151
60 to		\$ E E	0.0	۰.	۰.	٠.	•	۰. ۱	•	•				_
er 19		rrate (NO ₂)	乚		_	_				0.3		1	ī	<u>د.</u>
Octob		Fluo- ride (F)		1	<u> </u>	1	1	1		0.1		!	1	7.
er year		Chloride (C1)	0	₩.	2.0	~	2.	1.7	8.	.5	•	8.	0.1	8.
ion, wat		Sulfate (SO4)	1	1	1	!	1	I	i	1.0	1	1	!	1.0
. m111		(CO)	0	0	0	0	0	•	0	0	0	0	0	ო
rts per	Bi-	car- bon- ate (HCO ₃)	120	111	86	107	89	73		57	36	107	141	129
in par	é	Stum (X)	1	1	1	1	1	1		0.7	1	í		2.5
alyses,		Sodfum (Na)	L	_		5.9		4.8		1.8		5.9	7.7	6.9
cal an	2	stum stum (Mg)	!	1	!	1	!	!		4.4		1	!	#.
Chemi		10 (g. 10 (g.	1	!	1	1	1	!	-	9.6	!	!	1	2
		Fe)								0.03		_		
		Silica (SiQ ₂)	8	9.9	1	!	ŀ	1	!	88	ł	1	L	1.5 41
		Discharge Silica (cfs) (SiQ ₆)	4		13	13	41	37	88	78	159	1.7		1.5
		Date of collection	Oct. 13, 1960	Nov. 10	Dec. 15	Jan. 13, 1961	Feb. 16	Mar. 9	Apr. 13	May 11	June 15	July 13	Aug. 3	Sept. 13

PART 11. PACIFIC SLOPE BASINS IN CALIFORNIA

CARREL RIVER BASIN

11-1432.5. CARMEL RIVER NEAR CARMEL, CALIF.

LOCATION .--Approximately 30 feet downstream from Rancho San Carlos bridge, 2 miles east of Carmel, Monterey County, and 4.5 miles from mouth. DALINAGE AREA.--195 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961.
REMANGS.--RO discharge records available. Stream dry during summer months.

		Hq	480 8.2 686 8.0 542 8.1 828 8.0 844 8.0 7.9
	Specific	duct- ance (micro- mhos at 25°C)	480 686 542 828 844 789
	å,	dum ad- gorp- tion ratio	000040
	888 503	Non- car- bon-	50 92 47 95 121 114
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	184 254 183 279 308 290
-	solids ited)	Tons per day	
er 196	Dissolved solids (calculated)	Tons per acre- foot	29*0
Chemical analyses, in parts per million, water year October 1960 to September 1961		Parts per million	495
60 to		ron (B)	0.0
er 16		rate (NO ₂)	0.0
Octob		Fluo- ride (F)	0.4
ter year		Chloride Fluo- Ni- Bo- (C1) (F) (NO ₂) (B)	28 46 36 66 67
lion, wa		Sulfate (SO.)	139
r mil.		bon- ate (CO ₂)	
rts pe		car- bon- ate (HCO ₃)	163 198 166 225 228 228 215
n pa	ě	tas- sium (K)	5.0
alyses,		Sodium (Na)	31 43 31 62 58 60
cal an		ntag- ne- stum (Mg)	23
Chemi		Clum (Ca)	78
		Iron (Fe)	00.00
		Suica (SiQ.)	21
		Mean Silica discharge (SiQ ₂) (cfs)	
		Date of collection	Dec. 13, 1960 Jan. 11, 1961 Reb. 15, 1841 Apr. 28

SALINAS RIVER BASIN

11-1488. NACIMIENTO RIVER NEAR BRYSON, CALIF.

LOCATION. --At gaging station, 0.6 mile upstream from Turtle Creek, 1.6 miles west of Bryson, Monterey County, and 10 miles southwest of Lockwood

DRAINARE AREA. --140 square miles.

RECORDS AVAILAREA. -- Water temperatures: March 1958 to September 1960, October 1960 to September 1961.

RECORDS AVAILAREA. -- Water temperatures: March 1969, October 1960 to September 1961.

EXTREMES, 1960-61. --Sediment concentrations: Maximum daily, 6 860 ppm Nov. 13; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 8,440 toon 50 Dec. 1; minimum daily, 0 toon on many days.

Sediment 1968-99, 1960-61. --Sediment concentrations: Maximum daily, 6,660 ppm Nov. 13, 1960; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 30,200 tons Apr. 3, 1958; minimum daily, 0 ton on many days.

Temperature ('F) of water, water year October 1960 to September 1961

	_														10	Day	1					1	Day								-	1
Month	_	7		4	5	9	7	3 4 5 6 7 8 9 10	6	2	11 12	12	13	4	5	13 14 15 16 17 18	7	8	19	20 21	=	22 2	23 2	24 25 26 27	5 2	5 2	7 28	8 29	9 30	0 31	· T_	age
October November December 48	1 1 8	111	111	19	1 1 2	111	1 2 1	111	1 1 4	111	52	115	111	111	51 51		1 8 6	118	111	111	111	121	53		111		1 24		37	58		1 1 1
January 55 February 55 March	55	55 54	103	53	54	33	50	2	37 53 51	53	53 52		50 39	52	1 2 3 3		47 46		50		1 1 0 2	121	42		52		50		51 51	111		111
April 50 May	811	57	9	111	56	111	56	1 2 5	64	54	111	54 63	54	4 1	511	111	6 4 9 1 1		631	111	51	141	06 10		51		53		63			111
JulyAugust	111			511		181	69		69 11		111		69		74		111		68		111	111	161		83		111		1 67	111		111

SALINAS RIVER BASIN--Continued

11-1488. NACIMIENTO RIVER NEAR BRYSON, CALIF .-- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

- 1		OCTOBE	₹		NOVEMBE	R		DECEMBER	
		Suspen	ded sediment		Suspen	ded sediment		Suspen	ded sedime
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1				0		0	2810	692	5 8440
2			1	0		0	722	30	5 66
3				0		0	237 138	12	5 8
5						ŏ	92		
6			١	0		0	67	1	
7		1	1	0		0	51		-
9				0	==	0	42 33	==	
10				ŏ		ŏ	32	1	ı
11				0		o	49	2	
12				.0		5 230	38 32		
13			l	15 12	6860 144	5 230 S 5.7	29	1	l
15				5.5	69	K 1.2	49	4	K
16				1.0	40	•1	65		İ
17		l	1	•7		T 1	51 45	1	l
19		1		.2		ļ ;	38		
20				•2		т	34		
21			į	•2		Ţ	32	2	
22				•1		T	29 27		
24				:1		Ť	24		
25				•1		Ť	22		
26				358	66	5 113 K 8.7	21 20	1	
27				95 28	29	K 8.7	19		-
29				17	2	i	18		
30				12		•1	18 17	2	
Total	0		0	545.6		359.6	4901		8519
		JANUAR'	Y		FEBRUAR	Y		MARCH	
1	16		0.1	286	27	5 22	18		Т
2	16		•1	216		4.1	18		Ţ
3	15 15		•1	182 141	2	1.0	17		T
5	14	1	т**	115		.3	18	1	į i
6	13		т	98	1	.3	18		Т т
7	13		T	81		•2	18		1
8	12 12		Ť	69 60	1	•2	17 16	==	Ţ
9	12	1	Ť	53		•2	15		ļ i
11	12		т	67	4	K 1.0	14		т
12	12) <u>I</u>	84	2	5 •6	13	1	Ţ
13	11 11		T	60 53		•2	12 13		T C
15	10	1	į į	51	1	:1	202	33	5 21
16	10		т	47	1	•1	135		4
17	9.5		T T	44 40		•1	136 118	15	δ 6
18	9•5 9•5		i i	36		•1	87	2	-
20	9.5		Ť	33	1	i	71		
21	9.5		Ī	30		•1	62	1	
22	9•5 8•8	1	Ţ	28 26		•1	53 47	2	1
24	8.8 12	2	ή K •2	23		•1	44 45		
1			1			i	li .		
26	1150 369	122 24	S 427 K 28	21 20	1	•1	40 36	1	
28	199	3	1.6	19	1	•1	34		
29	141		-8				33		
30	106 265	34	s 38		==	==	30 29	3	
31									

S Computed by subdividing day. T Lese than 0.05 ton.

K Computed from estimated-concentration graph and subdividing day.

SALINAS RIVER BASIN--Continued

11-1458. NACIMIENTO RIVER NEAR BRYSON, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported loads are estimated)

ŀ		APRIL	1.1.2		MAY	1-1-1		JUNE	1 2*
	Mean	Suspend	ded sediment	Mean	Suspen	ded sediment	Mean	Suspend	ed sedimen
Day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	27		0.1	8.1			4.5		
3	26 26	2	•1 •1	8 • 1 7 • 4	1		4.5 4.0		
4	24		•1	7.4			3.5	1 1	
5	22		•1	7.4			3.0		
6	21	2	•1	6.7			2.5		
7	20		•1	6.7	1		2.0	3	
9	19 18		•1 •1	6.0 6.0			2 • 0 2 • 0		
10	18		•1	6.0			1.5		
11	16	2	•1	5.5	1		1.5		
12	15	i i	•1	5.5			1.0	-6	
13	15 15		•1 •1	5.0 5.0	1		.9		
15	14	2	•1	5.0			• 7		
16	13		•1	4.5			.4		
17	12 12		•1	4.5 4.5	2		•2		
19	11	2	•1	6.0	1		•1		
20	11		•1	6.0			•1		
21	11		•1	5.5	1		0		
22	18 22	2	•1 •1	5.0 4.5			0		
24	17	i i	•1	4.5	2		0		
25	14	1	Т	4.0			0		
26	12	1	т	4.0			0		
27	11 9.5		T T	3.5 4.5	2		0		
29	8.8		T	4.5			ō		
30	8.1	1	T	4.5 4.5	₁		°		
Total	486.4		2.6	170•3		0.5	35.5		0.
		JULY			AUGUST			SEPTEMBER	
1									
2									
3									
5									
6									
7			'						
9									
10									
11									
12			j				ļ]	
13									
15									
16									
17									
18									
20			İ						
21									
22			ŀ						
23							i		
25							1	1	
26									
4000			!						
27			1						
27					1	ı	B .	1 1	
27 28 29 30			İ				}] [
27	0		0	0		0	0		0

T Less than 0.05 ton.

SALINAS RIVER BASIN--Continued

11-1488, NACIMIENTO RIVER NEAR BRYSON, CALIF. -- Continued

Particle size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withtrawal tube; C, chemically dispersed; D, decambiding M, in native wader; D rince: S sizes: V visual scrimulation tube: W in distilled water)

				r, paper,	TA 'A GARAGE A' AT	r, paret, s, areve, v, tabuer accumination table, w, in distingt water	,	; ;										
		Samn	Water tem-		Sediment	Sodiment					napend	Suspended sediment	nent					Method
Date of collection	Time (24 hour)	Hing	per-	Discharge (cfs)	concen- tration	discharge		-	ercent	Percent finer than size indicated, in millimeters	n Size	indicat	ed, in	pillime	ters			ъ.
		point	E.		(mdd)	(tons per any)	0.003	0.004	0.008	. 002 0. 004 0. 008 0. 016 0. 031 0. 062 0. 125 0. 250 0. 500 1. 000 2. 000	.031	0.062	.125 0	. 250 0	. 500	900	98	analysis
Nov. 13, 1960		L	47	6 0.2	29,200		22	22		37 54	74	88	94	86	66	8		VPWC
Nov. 14	0060		46	14	156				_		_	84	97	86	901	1		>
Nov. 26			48	1,220	139		_		_			92	82	82	92	100		>
Dec. 1			22	1,110	957		_					92	11	88	66	8		^
Dec. 1			54	8,070	949						_	38	46	61	80	98	100	>
											1				1			

e Estimated.

SALINAS RIVER BASIN--Continued

11-1497. SAN ANTONIO RIVER AT SAM JONES BRIDGE, NEAR LOCKWOOD, CALIF.

LOCATION. --At gaging station 300 feet downstream from China Gulch, amd 3.5 miles southwest of Lockwood, Monterey, County.

DRAIMAGE AREA. --211 square miles.

RECORDS AVAILABLE. --Water temperatures: January to July 1959, May to September 1961.

Sediment records: January to July 1959, May to September 1961.

Suspended sediment, January to July 1959 (Where no concentrations are reported loads are estimated)

Day	January			February			March		
	Suspended sed		led sediment		Suspended sediment			Suspended sediment	
	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	3.2		(t)	16		0.2	133		22
2	3.2		(t)	16	7	.3	111	54	16
3	3.2		(t)	15		.2	100	==	11
4	3.2		(t)	14	4 4	.2	38	25	5.9
5	6,0		(t)	13		.2	81		5.7
6	80	31	k11	13	7	.2	79	28	6.0
7	79	25	s6.1	12		,2	77		5.6
8	30	9	.7	12		.2	72		4.9
9	456	1,100	s2,310	12	6	.2	70		4.5
10	619	764	s1,510	75	82	k61	67		4.3
11	342		74	563	508	s805	65		4.4
12	207	28	16	355	310	297	63		4,6
13	155	1 1	10	246		150	60	29	4.7
14	123		6.6	143		42	60		4.4
15	95		4.4	107		12	58		3.6
16	81		3.1	344	1.400	s4.340	58	19	3.0
17	67		2.0	607	490	903	56		2.3
18	56		1.4	986	664	1,770	56		2.1
19	48	5	.6	615	210	349	53		1.9
20	42	2	.2	513	165	229	53	12	1.7
21	38		.2	830	541	s1,860	52		1.5
22	35		.4	604	190	310	50		1.2
23	32	7	.6 .5	504		160	48	9	1.2
24	28	1 1	.5	381	110	113	50	1 1	1.2
25	27		.5	307		83	50		1.2
26	27	6	.4	259		63	48	ا و	1.2
27	25		.3	210		45	49		1.3
28	22		.3	162		31	47		1.4
29	20		:2				45		1.7
30	18	3	:ī				45	17	2,1
31	17		.2				45	==	1.9
Total	2,787.8	T	3,959.8	8,434		11,524.9	1,988	 	134,5

s Computed by subdividing day.
t Less than 0.05 ton.
k Computed from estimated-concentration graph and subdividing day.

PACIFIC SLOPE BASINS IN CALIFORNIA

SALINAS RIVER BASIN--Continued

11-1497. SAN ANTONIO RIVER AT SAM JONES BRIDGE, NEAR LOCKWOOD, CALIF. -- Continued

Suspended sediment, January to July 1959 -- Continued April May June Suspended sediment Suspended sediment Suspended sediment Mean Mean Mean Day Mean dis-charge Mean Mean dis-charge dis-Tons concen-tration concen-tration concen-tration charge per day per day per day (cfs) (cfs) (cfs) (ppm) (ppm) (ppm) 8.1 7.4 6.7 6.0 8.0 1.7 1.5 1.2 .9 19 19 19 19 1 2 3 4 5 45 45 43 43 6 7 8 9 5.3 5.3 4.6 3.9 3.2 43 43 43 42 42 18 17 16 16 15 .9 .8 .8 12 2.5 2.5 2.5 2.5 2.5 11 12 13 14 15 42 38 37 37 33 .7 .8 .6 .6 15 14 13 14 14 --6 --13 12 11 9.5 9.5 2.1 2.1 2.1 2.1 2.1 16 17 18 19 20 32 30 28 28 27 .5 .5 .4 .4 .3 .3 .3 .3 9.5 9.5 9.5 9.5 9.5 2.1 2.1 2.1 2.5 2.5 21 22 23 24 25 27 23 20 19 20 .3 1.0 .8 .6 .6 3.2 2.5 3.2 3.2 3.2 26 27 28 29 30 31 23 37 30 23 20 --------11 9.5 9.5 9.5 8.8 8.8 Total 1,008 20.6 406.6 11 106.1 2 July 2.5 2.5 2.5 2.1 1.7 1 2 3 4 5 6 7 8 9 1.7 1.3 1.3 1.0 1.0 1.0 1.3 1.3 11 12 13 14 15 1.3 1.3 1.3 1.3 16 17 18 19 20 1.3 1.7 1.7 1.7 21 22 23 24 25 1.3 1.7 1.7 1.7 1.7 26 27 28 29 30 31 3 Total 45.9 0.4 14,776.4 15,653.2

SALINAS RIVER BASIN--Continued

11-1497. SAN ANTONIO RIVER AT SAM JONES BRIDGE, NEAR LOCKWOOD, CALIF. -- Continued

Suspended sediment and temperature (°F) of water, May to September 1961

Date 19 4, 1961	Time (24 hr)	Water tem- per- ature (°F)	Discharge (cfs)	Mean concen- tration (ppm)	Discharge (tons per day)
y 4, 1961					i
y 19		63 68 68 68	5.0 4.1 3.1 2.1	3 3 2 3	(t) (t) (t) (t)
May total			a105.3		b0.7
ine 1		65 79 73 75 83 80	2.4 1.8 1.8 1.6 .7	2 3 3 2 3 4	(t) (t) (t) (t) (t) (t)
June total			a40.6		b0.3
July total			4.1		(t)
August total			0		0
September total			0		0

^{150.0} 1.0

t Less than 0.05 ton.

b Days not shown are estimated and included in total.

SALINAS RIVER BASIN--Continued

11-1497. SAN ANTONIO RIVER AT SAN JONES BRIDGE, NEAR LOCKWOOD, CALIF. -- Continued

Particle-size analyses of suspended sediment, January to July 1959 (Methods of analysis B bottom withdrawal tube; C, tembically dispersed, D, decandation; M, in mative water; P, unher: S, stews: V visual becommunisted the W in detilled water)

				r, puper,	o, sieve, v, v	r, paret, 3, sieve, v, visual accumulation tube; w, in distilled water)	ame.	5 5									
		Samo.	Water tem-		Sediment	Sodiment					Suspend	Suspended sediment	nent				;
Date of collection	Time (24 hour)	il.		Discharge (cfs)	concen- tration	discharge		-	ercent	finer t	an size	Percent finer than size indicated, in millimeters	d, in	nillime	ters		o jo
		mod			(ppm)	(tons per day)	0.002	0.004	0.008	0.016	0.031	0.062	125 0	.250 0	500	002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	a .
lan. 9, 1959	1320		25	808	2,000		16	22	30	36	52	8	75	8	26	100	VPWC
Feb. 16	0940		23	820	1,150			36		S		62	74	87	66	100	VPWC
leb. 16	1130		26	1,240	3,580			33		48		64	22	68	66	001	VPWC
'eb. 16	1430		22	1,370	3,090			17		56	-	39	22	11	96	100	VPWC
eb. 18	0855		5	1,120	803			1		ŀ		27	\$	88	66	8	>
	1												-	_			

SALINAS RIVER BASIN--Continued

11-1500. SAN ANTONIO RIVER AT PLEYTO, CALIF.

LOCATION.--At gaging station at old townsite of Pleyto, Monterey County, 1.1 miles down-stream from Cooperhead Creek, and 15 miles west of Bradley. DRAINAGE AREA.--284 square miles. RECORDS AVAILABLE.--Water temperatures: February to September 1961. Sediment records: February to September 1961.

Suspended sediment and temperature (°F) of water, February to September 1961

		Water			ed ssdiment
Date	Time (24 hr)	tem- per- ature (°F)	Discharge (cfs)	Mean concen- tration (ppm)	Discharge (tons per day)
Feb. 2, 1961		60 62 55	61 29 29	13 4 3	2.1 .3 .2
February total			a826		b13,6
Mar. 20		65 60 58 55 58 77	33 27 25 20 18 16	6 5 4 4 4 2	0.5 .4 .3 .2 .2
March total			a565		b5,9
Apr. 4		72 74 78 75	14 12 10 4.7	3 2 2 1	0.1 .1 .1 (t)
April total			£242. 8		b1.5
May total			28.8		0.1
June total			0		0
July total			0		0
August total			0		0
September total			0		0

1,662.6

t Less than 0.05 ton.
a Monthly totals include days not shown.

b Days not shown are estimated and included in total.

SALINAS RIVER BASIN--Continued

11-1525. SALINAS RIVER NEAR SPRECKLES, CALIF.

LOCATION .--At gaging station in El Toro Grant 80 feet upstream from bridge on Salinas-Monterey highway, 0.5 mile upstream from Toro Creek, 2 miles west of Spreiches, Monterey County, and 4 miles south of Salinas.
DANING ARM.--4,156 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1961.

1		뜊	7.5		7.9	7.8	7.5	6.9	7.4	7,2	7.4	7.4	2.5
	Specific	duct- ance (micro- mhos at 25°C)	1,090	1,610	1,660	1,280	1,090	1.030	1,120	1,110	1,190	1,300	1,280
		dum ad- borp- tion tion ratio	3.3	, 0	2,2	2.6	3,3	9.0	3.5	3.5	e. 6	3,3	3.4
		Non- car- bon-	0	0	0	0	•	0	46	30	4	88	16
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	205	296	00	375	251	206	244	248	280	325	292
		Tons c			_								
r 196	Dissolved solids (calculated)	Tons per acre- foot								90			
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dias.	Parts per million								665			
60 to		Po io B io	4.0			٠.	۳.	s.	9.	'n.	ĸ.		9.
er 19		rrate (NO ₂)	L	_						58			
Octob		Fluo- ride (F)	L		_							_	
er year		Chloride ric (Cl) (F)	140	160	132	123	130	130	138	128	143	162	152
ion, wa		Sulfate (SO ₄)								105			
r m111		(C)	0					•	•	•	•	•	٥
rts pe	Bi-	car- bon- ate (HCO ₂)	272	726	830	496	342	305	242	266	242	313	336
in pa	É	S to the state of	L							14	_	_	
alyses,		Sodtum (Na)	109	138	126	114	120	118	126	127	149	138	135
cal an	76.00	stum (Mg)								29			
Chemi		Cal-								21			
		Iron (Fe)								0.0			
		Suica (SiO _a)		_				_		22			
		Mean discharge (cfs)	-				1.1	1.0	æ.	1.3	1.2	0.1	8
		Date of collection	Oct. 5, 1960	NOV. S	Dec. 13	Jan. 11, 1961	Feb. 16	Mar. 8	Apr. 12	Kay 3	June 7	July 12	Aug. 1

a Estimated.

PAJARO RIVER BASIN

11-1540. UVAS CREEK NEAR MORGAN HILL, CALIF.

LOCATION:At site of former gaging station, 500 feet upstream from Uvas Dam, 0.6 mile downstream from Eastman Canyon, and 4.8 miles southwest of Morgan Hill, Santa Clara. County.

BRAINAGE AREA.—So.-4 square miles.

RECORDS GWAILABLE.—Chemical analyses: October 1953 to September 1961.

REMARKS.—No discharge records available. Stream dry during August and September.

		뜅	7.9	8.4	8.0	372 8.2	8.2	397 8.2	8.	8.4	8.4	8.4
	Specific con-	duct- ance (micro- mhos at 25°C)				372	380	397	402	408	433	466
	ģ;	Borp- Borp- tion ratio	0.4	4	4	4.	4.	4.	4	4	₹.	ec.
		Non- car- bon-	7	11	8	24	53	25	78	40	59	21
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	155	167	168	174	182	184	194	198	215	227
1	solids ted)	Tons per day										
r 1963	Dissolved solids (calculated)	Tons per acre- foot								0.33		
Septembe	Dis (cr	Parts per million								245		
00 to		ron (B)	0,1	٦.	٥.	٦.	٦.	8	٦.	7.	٦.	7
r 196		Ni- trate (NO ₃)							1	0.1		
ctobe		Fluo- Ni- ride trate (F) (NO ₂)										
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	5.5	5.2	8.5	7.0	10	8.5	9.7	10	8.6	2
ion, wat		Sulfate (SO ₄)							;	9		
mill		3 to 10 to 1	0	9	0	0	0	0	0	20	2	9
ts per		car- bon- ate (HCO ₂)	180	170	178	183	188	194	200	184	204	239
n par	Ė	Etas Rimm (X)							,	7.7		
lyses, 1		Sodium (Na)	10	11	11	12	15	12	£1;	14	14	16
al ana	Ş	nie- stum (Mg)								21		
Chemic		Cal- (Ca)							;	6		
		Iron (Fe)		_					-	0.00 5	_	
		SHICE SHQ.)								4	_	
		Mean Silica discharge (SiQ ₂) (cfs)										
		Date of collection	Oct. 5, 1960	Nov. 9	Dec. 14	Jan. 11, 1961	Feb. 15	Mar. 8	Apr. 12	#8. J	June 7	July 12

PAJARO RIVER BASIN--Continued

11-1565. SAN BENITO RIVER NEAR WILLOW CREEK SCHOOL, CALIF.

LOCATION .--At gaging station, 1.7 miles downstream from Willow Creek, San Benito County, 1.8 miles northwest of Willow Creek School, and 10.4 miles northwest of DAALINGS ARRA.--25 square miles.

DRANINGS ARRA.--25 square miles.

REMANNS.--Chemical analyses: October 1958 to September 1961.

REMANNS.--Stream dry during July to September.

		Ħď	8,3	œ د،	8.5	8.5	8.5	8,5	8.5	8.8 6.6
	Specific con-	duct- ance (micro- mhos at 25°C)	2,010	2,100	1,840	1,860	1.850	1,900	2,080	2,080
		duum ad- sorp- tion ratio	8.8	4.	2.9	9°ε.	3.6	3.5	4.5	4.4
		Non- car- bon- ate	166				153	171	151	218
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	610	614	610	287	280	619	009	658
1	solids ited)	Tons per day								
er 196	Dissolved solids (calculated)	Tons per acre- foot								1,370 1.86
Septemb	sign Sign	Parts per million								•
60 to		Bo- ron (B)	2,1	1.6	1.7	1.6	1.6	1.8	2.1	0.0
er 19		Fluo- Ni- ride trate (F) (NO ₂)			_		_	_	_	0.4 2.0
Octob		Fluo- ride (F)								0.5
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (CI)	170	212	128	135	135	142	186	176 185
ion, wat		Sulfate (SO4)								475
. m111	-00	ate (CO)	13				26	35	22	22 22
rts per		car- bon- ate (HCO ₃)	516	468	498	522	469	476	202	486
in pa	č	sium (K)								3.6
alyses,		Sodium (Na)	218	273	166	200	200	200	254	248 256
cal an	7,00	me- ne- sium (Mg)								130
Chemi		Cal- ctum (Ca)								20
		Iron (Fe)								0.00
		Silica (SiQ _e)								15
		Mean discharge (SiQ ₂) (cfs)	0.1		9.	1.5	1.8	1,8	4.	2.2
		Date of collection	Oct. 5, 1960	Nov. 9	Dec. 14	Jan. 11, 1961	Feb. 15	Mar. 8	Apr. 12	May 3June 7

PAJARO RIVER BASIN---Continued

11-1590. PAJARO RIVER AT CHITTENDEN, CALIF.

LOCATION: --At gaging station, on State highway bridge in Salsipuedes Grant, 0.6 mile downstream from Pescadero Creek, 0.6 mile southeast of Chittenden, Santa Cruz County, and 2.3 miles downstream from San Benito River.
DRAINAGE AREA (revised).--1,186 square miles.
RECORDS AVAILABLE. --Chemical analyses; October 1953 to September 1961.

		pH	8.4	8,3	8,4	8.0	8.1	8.2	8	8.4	8.4	8.3	8.5	8.5
	Specific	duct- ance (micro- mhos at 25°C)	1,630	1,690	1,430	1,350	1,340	1,330	1,400	1,500	1,460	1,670	1,560	1,600
		Borp- Hon ratto	3,5			2.0			2,1	2.8	3,3	4.1	3.8	4.0
	co,	Non- car- bon-	14	29	74	81	170	182	90	137	48	3	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	444	495	458	466	495	208	518	516	448	455	452	456
1	solids ated)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot	1	1	¦ _	!	1	!	_	1.28	1	!	1	1.32
Septembe	ega ×	Parts per million	1	!	1	!	i	1	!	940	1	1	1	973
80 to		Bo- ron (B)	8.0	9.	٠.	9.	۲.	٠.	۲.	3.7 1.0	80.	1.1	1.0	1.3 1.1
r 19		N1- trate (NO ₃)	!	i	l	!	l	ŀ	1	3,7	;	1	ł	1.3
Octobe		Fluo- Ni- ride trate (F) (NO ₃)	1	1	-	1	1	1	1	0.3	ł	1	1	.3
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	156	185	145	120	118	110	108	142	143	211	159	170
ion, wat		Sulfate (SO4)		1	1	1	1	1	1	237	1	1	!	169
. mill	,	bon- ate (CO ₃)	13	16	9	0	0	•	9	11	11	10	31	22
ts per	Bi-	car- bon- ate (HCO ₃)	499	536	448	470	396	398	510	440	466	531	494	514
in par	ė	shum (X)	1	1	1	1	1	1	-	3.6	ŀ	!	ł	4.4
lyses,		Sodium (Na)	169	198	191	100	100	100	108	146	159	200	184	196
cal ans	7,	nie- nie- stum (Mg)	1	ì	ł	ł	!	1	1	69	ł	!	!	70
Chemi		Cal- Ctum (Ca)	;	1	1	;	ļ	;	1	93	;	;	1	67
		Iron (Fe)								0.01				
		Silica (SiO ₂)	-	ŀ	-	ł	:	1	ŀ	16	1	ŀ	:	19
		Mean discharge (cfs)	1.5	1.9	3,9	7.3	8.2	8.8	01	5,1	3.1	.2	4.	• 5
		Date of collection	Oct. 5, 1960	Nov. 9	Dec. 14	Jan. 11, 1961	Feb. 15	Mar. 8	Apr. 12	May 3	June 7	July 12	Aug. 7	Sept. 7

SOQUEL CREEK BASIN

11-1600. SOQUEL CREEK AT SOQUEL, CALIF.

LOCATION: --At gaging station 0.2 mile upstream from highway bridge in town of Soquel, Santa Cruz County, and 0.4 mile downstream from Bates Creek. BALMANGA RASA.--40.5 Square miles of Sociober 1953 to September 1961.

		Hď	8.4	8.2	8.4	8.4	8.4	8.4	6.0	8.7	8.5	8.5	7.9	8.0	
	Specific con-	duct- ance (micro- mhos at 25°C)	719	744	864	894	797	820	785	781	768	713	106	707 8.0	
	ģ;	and and and and and and and and and and	6.0	1.3	1.6	4	1.5	1.4	1.4	1.5	1.4	1:1	1:1	1,1	
	ness ICO ₃	Non- car- bon-	78	88	118	102	6	66	16	88	87	98	85	78	
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	275	291	324	318	290	297	291	294	279	286	280	276	
	solids ted)	Tons per day													
1961	Dissolved solids (calculated)	Tons per acre- foot		1	ì	1	;	1	!	0.68	;	}	1	.59	
eptember) शंद	Parts per million		!	;	;	!	1	ľ	498	1	1	Î	435	
to S		Bo- ron (B)	0,3	7	2	7	٦,	.2	r.	7	٦.	e,	٦.	°.	
1960		Ni- trate (NO ₂)	1	1	1	ļ	1	1	1	9.0	1	ļ	1	.2	
ober		Fluo- ride t (F) (ļ	1	1	;	1	1	0.3	1	1	;	0.3	
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	28	74	86	82	62	2	63	89	73	53	53	51	
n, water		Sulfate (SO.)	;	;	1	1	1	1		111	1	1	;	85	
11110		Bon- Ste (CO)	12	0	9	6	00	6	6	13	13	11	0	0	
per m		car- bon- ate (HCO ₃)	216	248	239	246	222	223	226	225	208	222	238	244	
parts	Ę	stum Stum (K)	1	;	1	1	ì	;	ì	3.9	1	1	ŀ	4.7	
yses, in		Sodium (Na.)	36	51	65	28	28	22	55	28	54	42	42	43	
1 anal	70	nie- nie- stum (Mg)	1	1	1	!	!	!	_:	24	l	1	ŀ	24	
hemica		Ctum (Ca)	:	ł	!	1	:	!	-1	19	1	1	1	77	
٥		Iron (Fe)								0.01					
		Silica (SiQ,)	1	1	1	1]	1	1	59		1	!	36	
		Mean discharge (cfs)	2.0	3,1	4.6	4.6	10	7.3	5,1	4.6 29	3.6	a1.5	1.4	1.0	;
		Date of collection	Oct. 4, 1960	Nov. 8	Dec. 13	Jan. 10, 1961	Feb. 14	Mar. 7	Apr. 11	May 2	June 6	July 11	Aug. 4	Sept. 8	a Estimated.

SAN LORENZO RIVER BASIN

11-1605. SAN LORENZO RIVER AT BIG TREES, CALIF.

LOCATION.--In Canada del Rincon Grant at Sequoia Picnic and Camp Grounds at Big Trees, Santa Cruz County, approximately 0.5 mile upstream from gaging station, and 4 miles north of Santa Cruz.

BASIA--111 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961.

ts per million, water year October 1960 to September 1961 B1- Car- Don- Sulfate Chloride ride trade ride trade ride trade ride trade ride trade ride trade ride trade ride trade ride trade ride ride trade ride trade ride trade ride ride trade ride ride ride ride ride ride ride ri					_	_	_						_	_	_
Calculate Sodium Calculate Sodium Calculate Sodium Calculate Sodium Calculate Sodium Calculate Calcula		- 5	E	3 7.8	8.2	8.2	8.2	8.1	8.	8.1	8.3	8.3	3 - 2	8.1	7.9
Mean Silica Iron Cal- Mag- Sodum tas- Don- Cal- Don-		Specific	duct- ance (micro- mhos at 25°C)												
Calculated Single		8;	ad- ad- sorp- tion ratio	0.9	6	1.0	1.2	1:1	6	6	6	6	6	6.	8
Mean Silica Iron ctum sium (Ra) sium (Ra) (K) (HCO ₂) (CO ₂) (CO ₃) (RC) (CI ₃) (RO) (Ra) (Ra) (Ra) (Ra) (Ra) (Ra) (Ra) (Ra				13	23	22	24	53	27	31	56	20	23	17	12
Mean Gilta Iron clum sium (Na) sium sium (Na) sium sium sium (RC) (CG) (CG) (CG) (CG) (CG) (CG) (CG) (C		Hardr as Ca	Cal- cium, Mag- ne- sium	118	144	145	141	134	135	148	142	139	138	128	123
Mean Silica Iron Cal- Mag- Sodtum tas- Don- Car- Sodtum tas- Don- Sulfate Chioride Fluo- Ni- Bordischarge (SiQ ₄) (Fe) (Ca) (Mg) (Kg) (Kg) (Kg) (Ca) (Kg) (Ca) (Kg) (Ca) (Kg) (Ca) (Kg) (Ca) (Kg) (Ca) (Kg) (Ca		solids ted)								•					
Mean Silica Iron Cal- Mag- Sodtum tas- Don- Car- Sodtum tas- Don- Sulfate Chioride Fluo- Ni- Bordischarge (SiQ ₄) (Fe) (Ca) (Mg) (Kg) (Kg) (Kg) (Ca) (Kg) (Ca) (Kg) (Ca) (Kg) (Ca) (Kg) (Ca) (Kg) (Ca) (Kg) (Ca	r 1961	solved salcula	Tons per acre- foot	1	1	1	l	ł	1	1	0,33	1	l	1	.30
Mean (cfs) (SiQ _b) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	Septembe	Dis.	Parts per million	-	1	1	1	1	1	-	239	1	1	1	219
Mean (cfs) (SiQ _b) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	0 to		Bo-	1.0	٦.	۲.	۲.	۲.	۲.	e	7	٦.	۲.	•	•
Mean (cfs) (SiQ _b) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	r 196		Ni- trate (NO ₂)	;	1	1	1	1	1	1	1.0		1	1	ū
Mean (cfs) (SiQ _b) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	tobe		ride (F)	1	1	I	1	1	1	ł	0.2	1	ł	ŀ	2
Mean (cfs) (SiQ _b) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	er year O		Chloride (Cl)	26	34	27	26	23	24	25	56	27	25	27	24
Mean (cfs) (SiQ _b) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	ion, wat		Sulfate (SO.)	ł	1	ł	1	}	ł	ł	41	1	1	!	30
Mean (cfs) (SiQ _b) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	111	ė	CCO)	0	0	0	0	0	0	0	က	4	0	•	0
Mean (cfs) (SiQ _b) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	ts per			128	148	110	143	128	132	143	136	137	140	135	132
Mean (cfs) (SiQ _b) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	n par	å	tas- skum (K)	1	1	1	1	1	1	1	1.5	1	1	1	1.5
Mean (cfs) (SiQ ₄) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	lyses, 1			23	25	27	33	28	22	24	56	25	25	23	21
Mean (cfs) (SiQ ₄) (Fe) (75) (75) (75) (75) (76) (75) (76) (76) (76) (76) (76) (76) (76) (76	al ana		mag- ne- stum (Mg)	1	1	1	1	1	1	1	7.8	1	1	1	8,9
Mean (Silica (Cfs) (Cfs) (SiQ _a) (Cfs) (SiQ _a) (14 27 20 447 27 27 27 27 27 27 27 27 27 27 27 27 27	Chemic		Cal- ctum (Ca)	1	1	!	1	;	1	1	44	1	1	!	38
Mean (Silica (Cfs) (Cfs) (SiQ _a) (Cfs) (SiQ _a) (14 27 20 447 27 27 27 27 27 27 27 27 27 27 27 27 27											0.01				
Date Mean of discharge collection (cfs) (c			Silica (SiQ,)		-	-	-	:	<u> </u>		_		1	_	32
Date of collection Cot. 4, 1960 Nov. 8, 1960 Nov. 8, 1961 Nov. 10, 1961 Reb. 14, 1961 Mar. 7, 11 May 2, 11 May 2, 11 May 11 May 11 May 12 May 12 May 12 May 12 May 12 May 12 May 12 May 13 May 14 May 14 May 14 May 14 May 14 May 14 May 14 May 15 May			Mean discharge (cfs)								23	20	9,3	9.1	8,5
				oct. 4, 1960	Nov. 8	Dec. 13	Jan. 10, 1961	Feb. 14	Mar. 7	Apr. 11	May 2.	June 6	July 11	Aug. 4	Sept. 12

GUADALUPE RIVER BASIN

11-1680. LOS GATOS CREEK AT LOS GATOS, CALIF.

LOCATION .-- at gaging station, 0.3 mile downstream from Trout Creek, 0.5 mile downstream from Lexington Reservoir, and 1 mile south of Los Gatos, Santa Clara County. DRAINAGE AREA (revised). --38.6 square miles. RECORDS AVAILARE. --Chemical analyses: October 1953 to September 1961.

		Hd	8.0	8,2	8,3	8,2	8.2	8.2	8.4	8.4	8,1	8,2	8.0	8,1
	Specific	duct- ance nicro- nos at 25°C)	785	370	720	726	685	746 8.2	777	780 8.4	839	849	835	775
			Ļ	10	_	75	~	"						
	å;	ad- ad- gorp- tion ratio	0.7	.5		9				.7				
	Hardness as CaCO,	Non- car- bon-	75	16	47	87	115	125	4	149	135	127	115	78
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	344	173	286	342	315	350	370	384	409	424	404	377
1	solids ited)	Tons per day												
ır 196	Dissolved solids (calculated)	Tons per acre- foot	1	1	;	ļ	1	}	\	0.69	1	1	ł	.65
Septembe	aid s)	Parts per million	1	!	1	ţ	1	1	!	208	1	1	1	481
0 to		. B. B.	0.2	.2	۲.	۲.	۲.	7	6	۲.	2	۳.	4.	.3
r 196		Ni- trate (NO ₂)	1	1	1	ł	l	ŀ	ł	8.0	ŀ	1	ŀ	.3
ctobe		Fluo- ride t (F) (1	!	I	ł	1	1	ł	0.3	ŀ	I	1	.1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	21	0.6	20	12	16	19	30	19	22	23	36	16
ion, wat		Sulfate (SO ₄)	1	!	1	1	1	1	1	167	!	1	!	112
m11.	į	CO)	0	0	9	0	0	0	9	0	0	0	0	0
ts per	-BI-	car- bon- ate (HCO ₃)	328	191	279	311	244	275	268	282	334	362	353	365
n par	É	tas- stum (K)	1	1	1	1	!	;	ł	2.7	1	ŀ	;	2.2
lyses, i		Sodium (Na)	28	14	28	56	33	27	33	30	32	32	11	28
al ana	1	nie- ne- stum (Mg)	1	:	ł	;	!	1	1	33	ı	;	!	40
Chemic		Cal- cium (Ca)	:	1	;	ŀ	;	!	1	100	1	;	1	82
		Iron (Fe)								0.00				
		Suica (SiQ ₆)		1	;	1	;	1	1	14	-	!	!	17
		Mean discharge (cfs)		••		2.3			1,4	2.9 14		₹.	.3	۲.
		Date of collection	Oct. 4, 1960	Nov. 8	Dec. 13	Jan. 10, 1961	Feb. 14	Mar. 7	Apr. 11	Мау 2	June 6	July 11	Aug. 4	Sept. 12

COYOTE CREEK BASIN

11-1700. COYOTE CREEK NEAR MADRONE, CALIF.

LOCATION:--At gaging station, near southeast corner of La Laguna 8eca Grant, 1.2 miles downstream from Anderson Dam, and 1.8 miles northeast of Madrone, Santa Clara County.

DALINGA REAR (revised).--195 square miles.

RECORDS ANIARIEM.E.--Chemical analyses: October 1953 to September 1961.

REMARKS.--Stream dry during summer months.

	1	ЪН	4.4.6.0	8 8 8 8 8 2 1 4
	Specific con-	duct- ance micro- nhos at 25°C)	442 8.4 591 8.1 449 8.3 419 8.2	390 8.3 393 8.2 412 8.1 494 8.4
		ad- ad- sorp- tion ratto	9.0	សលល់ស
		Non- car- bon-	2222	0442 429
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	200 260 197 162	168 192 182 232
	solids ted)	Tons per day		
1961	Dissolved solids (calculated)	Tons per acre- foot		0.41
ptember	१२) इस्त	Parts per million		305
to Se		Bo- ron (B)	0.1	4844
1960		N1- trate (NO ₃)		1.1
ober		Fluo- Ni- E ride trate r (F) (NO ₃) (0.3
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride Flu (Cl) (F	16 25 14	12 10 13
n, water		Sulfate (SO ₄)		49
11110		bon- ate (CO ₃)	7040	m 0 0 to
per m	Bi-	car- bon- ate (HCO ₃)	201 287 202 197	174 181 195 236
parts	Do	tas- stum (K)		7.3
ses, in		Sodium (Na)	19 25 20 17	16 17 17 20
analy	Meg	nie- stum (Mg)		22
emical		Cai- clum (Ca)		57
CP		Iron (Fe)		00.00
		Silica (SiQ,)		13
		Mean discharge (Sid (cfs)	98 69 7.4	2.4 2.8 57
		Date of collection	Oct. 5, 1960 Nov. 9 Dec. 14	Feb. 15 Mar. 8 Apr. 12

ALAMEDA CREEK BASIN

11-1765, ARROYO VALLE NEAR LIVERMORE, CALIF,

900 feet downstream from highway bridge, 1,1 miles upstream from Dry Creek, 4.1 miles south of ATION.---At gaging station in Valle de San Jose Grant, 900 feet do Livermore, Alameda County, and 6.9 miles southeast of Pleasanton.

DRAINAGE AREA.—148 square miles.

RECORDS AVAILABLE.—Chemical analyses: December 1961 (discontinued)

Rather temporatures: Cotober 1969 to September 1961 (discontinued)

Rathers: Cotober 1969 to September 1961 (discontinued)

Rathers: Cotober 1969 to September 1961 (discontinued)

Rathers: Legeratures: Cotober 1592 to September 1961 pan Jan. 13-24; minimum, 303 ppm Mar. 23-31.

Rathers: Maximum, 307 RAG. 77; minimum, 497 Dec. 15, Jan. 15-77, 19.

EXTREMES, 1959-60.—19 scolled: Maximum 497 Dec. 15, Jan. 15-77, 19.

EXTREMES, 1959-60.—19 scolled: Maximum, 10,90 Jan. 18, 1961; minimum, 189 ppm Feb. 9, 10, 1960.

Specific conductance: Maximum, 30°F July 21, 1960; minimum, 44f F Jan. 14, 15, 1960.

Rather temperatures: Maximum, 30°F July 21, 1960; minimum, 44f F Jan. 14, 15, 1960.

Rect temperatures: Maximum, 30°F July 21, 1960; minimum, 44f F Jan. 14, 15, 1960.

Rect temperatures: Maximum, 30°F July 21, 1960; minimum, 44f F Jan. 14, 15, 1960.

١		Hd	1.0		8.5	0.	4.	7.5 2.6	3.4	7.8	80 60		
	Specific	duct- ance (micro- mhos at 25°C)	1,590	1,720	1,570	841	841	856	869	770	822	894	805
	8;		3.5	3.0	2.0	1.2	1.2	e	1:1	1.1	e	.5	1.6
	688	Non- car- bon-	143	178	151	83	79	72	62	51	49	25	42
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	520	570	332	352	356	323	303	320	328	352	346
1	Dissolved solids (residue at 180°C)	Tons per day	0.28	50.	12.0	7.16	4,01	3.21 9.18	8.55	2.59	96.	30	.31
er 196	Dissolved solids esidue at 180°	Tons per acre- foot	1.40	1.48	1,30	74	.75	4. 49	.61	.65	.69	75	.77
Septembe	Dis (resi	Parts per million	1,030	1,090	956	541	550	541 472	446	480	506	555	267
60 to		ron (B)	4.0	9 69	6.7	6	6.	ت. ش	œ.	ω, α ₀	0		1.3
er 19		Ni- trate (NO ₂)	1.6		e. e.		. ~	-i -i	1.4	1.2	ಬ್ 4	. 63	2.5
Octob		Fluo- ride (F)	0.2		9.0		! ??	4.4	٦:	2.0	۳,	: -:	-:
in parts per million, water year October 1960 to September 1961		Chloride (CI)	192	225	205	44	46	36	42	38	43	22	64
lion, wa		Sulfate (SO ₄)	202	218	196	118	118	119	85	98	89	108	66
r mil	į	1	٥٥	-	00	•	6	• •	^	••	0 6	0	18
rts pe	Bi-	car- bon- ate (HCO ₂)	460	478	315	328	320	333	280	322	340	366	334
in pa	į	fast (X)	4.2	9 60	4.0	2.3	2.1	2.2	2.2	2.2	2.2	4.	2.5
Chemical analyses,		Sodium (Na)	167	165	150	52	25	56 46	43	46 52	55	65	69
cal an	,	Mag- ne- stum (Mg)	99	63	28 40	44	4	37	32	38	39	42	4
Chemi		Cal- Ctum (Ca)			101		12	4 88	64	64	8 8	72	67
		fron (Fe)	88	38	88	00	.02	88	8	88	88	8	8
		Silica (SiQ ₆)	36	325	30	22	24	68	15	220	22	26	62
		Mean discharge (SiO ₂) (cfs)			8.8 30		2.7	7.2 18	7.1	2.0 20			
		Date of collection	Nov. 12- Dec. 15, 1960	Jan. 13-24	Jan. 25-31	Feb. 7-17	Feb. 18-28	Mar. 1-12	Mar. 23-31	Apr. 1-30	May 13-21	June 1-11	June 12-20

ALAMEDA CREKK BASIN--Continued

11-1765. ARROYO VALLE NEAR LIVERMORE, CALIF. -- Continued

		Hď	3.5	8.1	3.2	3.1	3.5	4.	1
	Specific	duct- ance micro- nhos at 25°C)	874	116	982	1,000	896	1,040	805
	8;		1.6	1.7	1.9	1.9	2.2	2.4	1.2
		Non- car- bon-	44	40	37	41	30	26	70
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	342	356	352	358	322	344	334
tinued	Dissolved solids (residue at 180°C)	Tons per day		•33					1,53
1Con	Dissolved solids residue at 180	Tons per acre- foot	0,74	.84	.85	98.	.85	.93	0.70
mber 196	Dis	Parts per million	541	615	622	631	627	682	512
Septe			1.2	1,5	1.6	1.5	1.7	.2 2.3	1.0 0.9
0 to		Ni- trate (NO.)	3.5	.5	4.	2	٦,	.2	
r 196		9 8 €	0.2		2	7	2	.2	0.2
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride ri (Cl) (1	58	29	71	74	82	90	46
water ye		Sulfate (SO ₄)	66	112	66	114	113	115	107
lon,	j	(CO)	17	•	0	0	18	12	1
r mill	-ia	car- bon- ate (HCO ₂)	328	385	384	386	320	364	8322
ts pe	· c	tas- sium (X)	2.5	2.8	3.0	2.9	2,7	3.2	2.3
i, in par		Sodium (Na)	99	74	80	82	91	102	19
nalyses		Mag ne- sium (Mg)	45	44	46	48	25	49	40
ical a		20 12 (20) -1 m (20)	_	2					89
Chem		Iron (Fe)	0.00	8	8	8.	8	.0	0.00
		Silica (SiQ.)	59	2 32	35	35	37	40	20
		Mean discharge (cfs)				-	-		1.1 20
		Date of collection	June 21-30, 1961	July 1-10.	July 11-20	July 21-31	Aug. 1-5	Aug. 6-14	Weighted average

a Includes carbonate (CO3).

Temperature ('F) of water, water year October 1960 to September 1961

	ver-	age				
	Ý	eg.	11	1 8 6	4 6 9	74 72
		31		813	121	21
		30	11	4 5	890	2 !
į		56	11	2 2	0 8 8	8
		28	11	600	5.0	72
		27	50	0 0 0 0 0 0	0 8 9	54
		26	11	2 8 Q	59 72	2 %
		25		6.65	38.6	5 4
		24		52 62 57	56 76	12
		23		52 61 58	994	22
		22		53 60 57	28	74 72 74 70
		21		50 61 60	60 61 72	7.4
		20	11	50 60 60 60 60	61 58 72	78 78 70 72
		19		9 8 8 8	63 60 70	70
		18		221	62 59 70	78
		17	11	4.9 5.0 6.0	54 59	420
	Day	16	- 1	49 55 56	5.0	2 2
		15	64	4 6 5 4 8 5 4 8	66 63 62	76
		14	-	59	68 62 70	76
		13		50 58 58	68 61 70	68
		12	- 1 1	1 9 3	229	76 72 72 74
		=		1 3 3	510	72
		10	11	1 262	223	8.4
		6		60 57	600	76
		8		1 20 80	65	2.2
		^	11	1 7 3	400	74 80
		9	11	1 50 50	676	72
		2	- 11	1 82	500	74 72
		4		1 8 9	58 50 60	70 76 70 70
İ		3	5.6	57	67 60 59	50
		2	55	57	9 0 0	72 74 70 70
		-	*5	59	60 58	
	Month		October November December	January February March	April May June	JulyAugust

ALAMEDA CREEK BASIN--Continued

11-1769, ARROYO DE LA LAGUNA AT VERONA, CALIF,

OCATION. -- At bridge on State Highway 21, 2.1 miles south of Pleasanton, Alameda County, and 8 miles northeast of Niles. RECORDS AVAILABLE. -- Chemical analyses: October 1959 to September 1961.

Water temperatures: October 1959 to September 1961.

RETREMES, 1960-61.—Dissolved solids: Maximum, 1,100 ppm June 1-6; minimum, 446 ppm Mar. 15-18.

Hardness: Maximum, 670 ppm June 1-6; minimum, 59 ppm Aug. 14-31.

Brackness: Maximum (70 ppm June 1-6; minimum, 61 ppm Aug. 14-31.

Fract conductance: Maximum (31,70 ppm Aug. 9, 29, 30; minimum, 38°F Jan. 6.

EXTREMES, 1969-61.—Dissolved solids: Maximum, 1,130 ppm Aug. 18-23, 1960; minimum, 193 ppm Peb. 8-11, 1960.

Brackness: Maximum, 700 ppm Apr. 8-23, 1960; minimum, 58°F Jan. 6.

Specific conductance: Maximum daily, 2,060 minimum, 38°F Jan. 6, 1961.

Mater temperatures: Maximum daily, 2,060 minimum, 38°F Jan. 6, 1961.

EXEMPLES PREMARKS.—Records of Specific conductance of daily samples available in district office at Sacramento, Calif.

Records of discharge furnished by Alameda County Flood Control and Water Conservation District. Unmeasured intermittent flow May to September.

		Нď	7.8	7.3	4.0	9 60		7.7	7.1	7.9	8.1	8.6	7.0	٠ د د د د	8.1.
	Specific con-	duct- ance micro- nhos at 25°C)	1,220	1,100	1,320	1.360 8.3	000	892	1,050	1,360	1,630	1,580	764	1,270	1,550
		Sorp- tion ratio	1.2	1.5	9.0	2.0		1.7	1.7	1.9	2.1	2.2	4.0	0 0	9 60
		Non- car- bon-	141	142	186	138	9	16	106	140	187	179	77	173	199
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	485	404	516	497	7	288	348	472	216	596	248	400	535
	solids ted)	Tons per day	5.4	3.8	.67	189		5.6	1.7	1.1	1.0	. 53	 	12.	. 25
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1,08	. 92	1.12	1.15	7	72	.85	1.09	1.30	1,32	19.	90.1	1.26
Septembe	2) 1 डाय	Parts per million	962	675	826	836	777	533	622	801	957	973	446	193	926
30 to		Bo- ron (B)	7.0	1.0	9.1	4.5	,	T.3	8.	1.3	2.0	1.5	9.		2.6
r 196		Ni- trate (NO ₃)	47	20	27.2	24	1	19	24	25	17	27	29	2 :	.2 7.1
ctobe		F)	ł	0.3	ů.	2 2 2 2 2 4 2 4 2 4	C	7 67	6	٠.	ņ	.2	1 '	20	00
water year October 1960 to September 1961		Chloride r (Cl) (162	111	149	165	9	109	123	164	208	200	80,	0/1	218
		Sulfate (SO ₄)	100	145	169	971	8	62	85	118	154	132	20	146	166
. mil		(S) # (S)	۰	0	17	, , ,	•	0	0	0	•	30	0 9	97	•
in parts per million,	Bi-	car- bon- ate (HCO ₃)	420	320	378	424	101	259	295	405	474	448	208	787	410
in pa	ř	K in the state of	34	19	18	8 2	•	112	25	13	18	20	24	91.	14
Chemical analyses,		Sodium (Na)	09	77	9 6	102	4	88	11	93	117	123	5.5	35	124
sal ans	Year	stum (Mg)	58	20	61	57	9	8 2	41	22	69	29	္က:	4 5	22
Chemic		Cal- ctum (Ca)				106		64	72	96	117	129	<u>0</u>	2 -	92
		(Fe)	0.09	8	8.8	38	8	88	10.	0.	.0	00	8.8	3.5	0.
		Suica (SiQ _e)	29	19	222	2 2	-	17	28	27	22	22	12	7 9	22
		Mean discharge (cfs)				3 24		3.9 17							11 25
		Date of collection	Nov. 15, 26-30, 1960	Dec. 1-7	Dec. 8-19	Jan. 1-12, 1961	Ton 10 08	Jan. 26-31	Feb. 1-4	Feb. 5-17	Feb, 18-28	Mar. 1-14	Mar. 15-18	Apr. 1-10	Apr. 11-20.

ALAMEDA CREEK BASIN--Continued

11-1769. ARROYO DE LA LAGUNA AT VERONA, CALIF. -- Continued

		Hď	8.1	۲.	Ξ.	۰.	7.8	4.		4.	<u>.</u> ائ
	Specific		1,600	1,730	1,720 8	1,800	1,890 7	962	924 8	948	1,660
		ad- ad- Borp-(r tion ratio	2.5					1.3	1.2	1.3	2.1
İ		Non-s car- bon-	206	_			215				
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	540	610	286	622	670	390	384	394	644
tinued	solids ted)	Tons coper day	0.25	.28	;	ľ	1	1	- 	1	1
11Con	Dissolved solids (calculated)	Tons per acre- foot				1.40			.76		
mber 196	5	Parts per million	940	1,030	1,010	1,030	1,100	578	557	582	1,010
Septe		. B. B.	5 2.8	3.3	3,3	2.9	3.4	.,	9.	® .	1.7
0 to		rrate (NO ₃)	7.	ņ	8	က်	2.9	2.7	4.9	5.5	2.7
r 196		Fluo- ride (F)	0,2	٤.	2	e.	~	٥.	۲.	е.	3.
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride (C1)	245	255	264	276	282	64	99	72	192
water ye		Sulfate (SO ₄)	148	156	151	125	133	86	79	79	224
ton,		# # 60°	٥	0	0	0	0	22	0	10	•
r m111	Bi-	car- bon- ate (HCO ₃)	407	481	451	487	555	350	396	388	460
rts pe	,	ro- tas- sium (K)	11	13	13	13	14	9.4	8.0	8.2	12
i, in pai		Sodium (Na)		135			147	61	54	9	120
nalyses	:	Mag- ne- stum (Mg)	75	92	9/	78	80	48	48	49	80
cal a		Cal- Ctum (Ca)	93	120	109	121	136	28	75	18	126
Chemi		Iron (Fe)	0.01	8.	00.	.00 121	.01	5	.04	.01	.03
		Silica (SiQ _e)	25	22	24	24	27	17	26	88	27
		Mean discharge (SiO ₂) (cfs)	0.1	۲.	1	24					
		Date of collection	Apr. 21-30, 1961	May 1-10	May 11-20	May 21-31	June 1-6	Aug. 5-13	Aug. 14-22	Aug. 23-31	Sept. 1-5

Temperature ('F) of water, water year October 1960 to September 1961

Aver-	age	164	4 82 87 F 80 82	991	121
	31	12	613	181	121
	30	80.4 80.00	8 8	59	121
	59	4 4 0 8	213	181	121
	28	0.4	50.00	1 80 1	151
١.	27	52	0.4.0	131	121
	78	64	4 5 4 7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	52	181
	25	81	5.45	58.1	181
	24	1.4	9 2 2 5	59	1 8 1
	23	4.5	4 7 E	56	1 8 1
	21 22	18	4 to 0	1 % 1	181
Day	2	14	4 4 4 4 4 4	50.	2
	20	18	45 51 56	55	141
	16	50	5 2 2 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	28 1	1 89 1
	17 18	12	54 51 51	59	189
	17	5.5	522	59	6.8
Day	9_	50	4 4 6 6	991	121
	15	53	5.5	60	1.51
	4	15	53	8601	121
	13	164	22 1	58	1691
	12	46 1	47 47 58 59	9 9 1	71 73
	Ξ		518	59	121
	0	1 4	53	59	121
	٥	13	8 4 7 8 4 6 8	52	121
	8	14	404	57	121
	^	14	4 7 5 5 5 7 5	621	121
	٥	10	38 52 51	63 62 64	151
	3		39 52 52	63	1 8 4
	4	52	240	2 4 6	111
	က	1 \$	40 57 54	63 88 8	 68
	2	55 54	50 55 52 54	7 6 9	115
	-	1 52	1201	1.6.2	112
Mosch	MOIIIII	October November	January February March	April May June	July August September

ALAKEDA CREEK BASIN--Continued

11-1790. ALAMEDA CREEK NEAR NILES, CALIF.

LOCATION .-- At gaging station, 0.3 mile downstream from railroad bridge, and 1.2 miles northeast of Niles, Alameda County. DRAINAGE AREA. -- 633 square miles.

RECORDS AVAILABLE .-- Chemical analyses: February 1952 to September 1961. Water temperatures: July 1956 to September 1961.

Sediment records: January 1967 to September 1961.
EXTREMES, 1960-61.--Dissolved solids: Maximum, 697 ppm Feb. 1-8; minimum, 381 ppm Oct. 1-9.
Hardness: Maximum, 408 ppm Feb. 1-8; minimum, 246 ppm Oct. 1-9.

Actor conductance: Maximum daily, 1,160 micrombos Mar. 15; minimum daily, 614 micrombos Oct. 1.

Mater temperatures: Maximum daily, 1,160 micrombos Mar. 12; minimum daily, no flow on many days.

Sediment concentrations: Maximum daily, (estimated) 38 ppm Jan. 27; minimum daily, no flow on many days.

Sediment loads: Maximum daily, (estimated) 0.9 ton Jan. 27; minimum daily, no flow on many days.

Sediment loads: Maximum daily, (estimated) 0.9 ton Jan. 27; minimum daily, no flow on many days.

Sediment loads: Maximum daily, (estimated) 0.9 ton Jan. 16, 1957; minimum, 136 ppm Reb. 6-10, 1960; minimum, 215 ppm Reb. 6-10, 1960; Specific conductance (1956-67, 1959-61): Maximum daily, 137 ppm Reb. 6-10, 1960; minimum daily, 131 micrombos Feb. 9, 1960; Sediment concentrations (1957-61): Maximum daily, 131 spin minimum daily, 131 minimum daily, 131 minimum daily, 131 minimum daily, 131 minimum daily, 131 minimum daily, 131 minimum daily, 131 minimum daily, 131 minimum daily, 131 minimum daily, 131 minimum daily, 132 minimum daily, 131 minimum daily, 132 minimum daily, 131 minimum daily, 132 minimum daily, 131 minimum daily 131 minimum daily 131

Chemical analyses in nexts nor million water year Ortoher 1980 to Sentember 1981

Date Mean Silica Iron cium inc. Cal. Mag. Sodium tate Done Sulica (state (state)) (state (state)) (state (state)) (state) (sta	1		РИ	8.5	8.6	8.2	8.0	8.0	8.1	8.2	8.2	8.1	8.0
Mean Cal- Mag- Sodium Cal- Mag- Sodium Cal- Mag- Cal- Mag- Cal- Mag- Cal- Mag- Cal- Mag- Cal- Mag- Cal- Mag- Cal- Mag- Cal- Mag- Cal- Mag- Cal- Cal- Mag- Cal		con-	duct- ance (micro- mhos at 25°C)	616	777	809	771	815	828	833	915	176	914
Mean Sulface Iron Cal Mag- Sodium tag- Don- Solida Iron Cal Mag- Sodium tag- Don- Solida Iron Cal Mag- Sodium tag- Don- Solida Iron Cal Mag- Cal Cal Cal Mag- Cal		8		1,1	1.8	1.3	1.4	1.4	1.5	1.6	1.6	1.5	1.4
Mean Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Silica Iron citum Iron citum Silica Iron citum Silica Iron citum Iron cit		T	Non- car- bon-	47	47	92	99	86	28	6	118	112	94
Mean Silica Iron citum Fee Sodium Ease Dine Cale Mage Silica Iron citum Cale Mage Silica Iron citum Cale Mage Silica Iron citum Cale Mage Sodium Ease Don		as Ca	Cal- cium, Mag- ne- stum	246	268	308	294	310	314	306	334	379	349
Mean (cfs) Sulfca (Fe) (Ca) Cal- (Mg) Formula (Fe) (Ca) Port (Mg) Bi- (Mg) Car- (Sold, Mg) Port (Mg) Bi- (Mg) Car- (Sold, Mg) Formula (Mg)		180°C)	Tons per day							1.18	1.50	3,33	1.26
Mean (cfs) Sulfca (Fe) (Ca) Cal- (Mg) Formula (Fe) (Ca) Port (Mg) Bi- (Mg) Car- (Sold, Mg) Port (Mg) Bi- (Mg) Car- (Sold, Mg) Formula (Mg)		due at	Tons per acre- foot	0,52	99.	. 67	. 65	. 70	.72	.71	.82	.83	.78
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68	2	(resi	Parts per million	381	484	494	475	513	527	525	603	611	571
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68			Bo- ron (B)	0.5	8.	.7	.7	8.	6.	1.0	6.	œ,	6.
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68			Ni- trate (NO ₃)	2.3	2,1	6.		9.	1.0	۳.		6	۲.
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68			Fluo- ride (F)	0.1	۳.	ŀ	2	4.		.2		Ī	.2
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68	122		Chloride (C1)	36	47	44	44	49	42	62	20	82	89
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68			Sulfate (SO4)	92	122	115	110	120	112	134	159	144	136
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68	1	Car-	bon- ate (CO ₃)	11	15	0	0	0	0	0	0	0	0
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68	1	Bi-	car- bon- ate (HCO ₃)	221	239	283	278	273	312	264	264	326	311
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68		Po-	tas- Stum (K)	1.7	2.6	2.5	2.3	2.3	2.7	2.6	2.6	3.4	2.4
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68	-			39	89	54	54	26	09	63	69	29	62
Mean Silica Iron cium (cfs) (Fe) (Ca) (Ca) (1.5 16 0.01 52 11.1 7 7.9 0.01 61 1.0 8.5 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68 7.8 2.2 113 0.0 68		Mag-	nie- sium (Mg)	28	36	40	35	38	35	40	45	42	38
Mean Gilica (cfs) (SiQ _a) (cfs) (SiQ _a) (cfs) (1.5 16 1.1 10 1.1 10 1.7 7 7.9 1.7 7.9 1.2 2.2 13 8.5 2.2 13	Ϊ	į	cium (Ca)						89	26	9	83	22
Mean Bill (cfs) (c			Iron (Fe)	0.01	.0				00.	8	8	8	8
Mea discha (cfs)			⋥ 55	16	13	10	7.9	8.5	13	12	8.7	12	11
Date of collection 1-9, 1960 1-10 11-20 11-20 11-20 11-20 11-20 11-20 1-8		,	Mean discharge (cfs)										
Oct Oct Nov Nov Nov Dec				Oct. 1-9, 1960	Oct. 15, 16, 27-31	Nov. 1-10	Nov. 11-20	Nov. 21-30	Dec. 1-8	Dec. 9-17	Dec. 18-31	Jan. 1-5, 1961	Jan. 6-14

959 933 933 937

ł

941

1.6

113

1,45

0.81

6.0

8.0

60,3

79

142

ļ

a300

4.4

89

43

73

0.00

9

6.0

Weighted average

84.25.28

ALAMEDA CREEK BASIN--Continued

11-1790, ALAMEDA CREEK NEAR NILES, CALIF, -- Continued

917 994 1,080 1,020 mhos at 25°C) 1,030 1,000 985 934 976 ance Specific microtion 1.5 g d 100 105 95 98 96 126 133 142 154 140 137 114 Hardness as CaCO, Mag-Cal-ctum, 346 388 408 388 396 376 398 356 356 349 348 348 348 359 nemillion, water year October 1960 to September 1961 -- Continued 1.12 7.10 5.55 3.12 1.98 2.25 1.66 1.23 .76 8.20 8.20 4.01 2.04 1.87 Tons per day (residue at 180°C) Dissolved solids 95 95 90 Tons
per
acrefoot 85 85 79 84 88588 969 Parts per million 569 622 697 665 678 551 524 535 582 517 586 585 585 585 588 B 2 8 1.0 1.1 8.7 9. Ni-trate (NO.) 0.00 Fluo-88888 **ಬ**ಬಬಬ4 20040 Chloride <u>ਹ</u> 78 69 65 58 20 91 91 88 94 112 85 68 68 75 Sulfate (SO₄) 147 137 142 160 168 173 143 162 160 161 148 144 150 153 Co. 00000 00000 parts per Bi-car-bon-ate (HCO₃) 305 335 335 305 310 301 280 318 295 308 304 304 309 309 67779 Po-tas-Sium (K) 24.04.0 20.04 0.4.6.6 # Sodium (Na) Chemical analyses, 64 71 78 70 71 77 71 71 66 32228 Mag-ne-stum (Mg) 44 45 45 45 4 4 4 4 4 4 Call (Cal 72 69 68 70 67 77 85 77 78 83 73 74 74 00000 8888 88888 Fe) Silica (SiQ_e) 8.9 111 8.6 7.2 9.2 8.0 9.1 12 10 10 4.08.27. Mean discharge (cfs) 7.0 0.8.0.1 40865 Mar. 15-23. Mar. 24-31. Apr. 1-10. Apr. 21-30..... May 1-10...... May 11-20...... 1-8.... 15-24, 1961.. 25-31...... 1-14..... 1-10.... 21-31..... 18-28.... June 1-13.....

e b.

88888

a Includes carbonate (CO₃). b Includes estimates for missing data.

Pemperature (°F) of water, water year October 1960 to September 1961

Aver-	age	1821	35 89 89	69
	31	3 1	2 3	131
	30	30°4	52 	8 8 1
	29	294	51	8961
	28	004	50	661
	27	0 4 4	53	7.1
	26	164	53 57	71
	25	100	9 50 50	121
	24	50	4 CC CC	121
	23	121	56 56 50	52
	22	1.6	46 57 60	58
	21	55	45 56 60	131
	20	55 52	4 60 0	1 63 1
	16	1 2 2 2 2	52	151
		54 52	55	421
	17 18	54	5 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 70 72 1
Day	16	53 51	4 5 5 5 8	221
	15	55	4 5 5 5 5 5 5 5 5 6 8 6 8	221
	14	55	4. 6. 7. 8. 8.	5 1
	13	54 54 46	45 11 55 61 58	65
	12	55	57	67 75
	11	55	46 45 55 57 59 59	68 67 74
	10	 56 42	57	68 73
	6	55	45 46 54 57 59 59	68 70 73
	8	66 55 42	50.00	68 70 71
	7	65 56 44	32 54 59	69
	9	67 55 45	32 55 56	69 67 73
	4 5	67 54 48	97. 97.	0.88
		56 54 51	38 57 56	73 74 69 69 69 68
	3	64 56 49	39 58 56	73 69 69
į	2	67 59 52	45 57	1280
	-	69 59 57	55	70 67 66
Month		October November December	January February	April May

ALAMEDA CREEK BASIN--Continued

11-1790. ALAMEDA CREEK NEAR NILES, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

		OCTOBER	.		NOVEMBER	۱	ε	ECEMBER	
		Suspend	led sediment		Suspen	ded sediment		Suspen	ded sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	2.6		Ţ	6.0	9	5 0.2	0.9		Ţ.
3	2•2 3•0	10	0.1	2.2		T T	1.9 6.6		0.1
4	2.7	10	•1	.3		i i	3.1		.1
5	1.5		τ	•3		Ť	1.9	12	•1
6	•7		Ŧ	.4		т	1.3		Т
7	• 6	1	<u>T</u>	•4		ī	1.1		T
9	•1		T T	.4	3 4	T T	1.0 1.0		ļ ;
10	0		ò	.3		†	• 9		Ť
11	0		0	.4		ī	.9		1
12	0		0	1.0		T T	•9 •7	12	Ţ
14	0		ů l	.9	12		.7		l †
15	• 2		ř	.,		Ť	. 8	9	Ť
16	• 1		т	.5		1	•7		т
17	0		0	•5		I I	• 9		Ţ
18	0	1	0	.7		t T	• 8	5	T
20	ŏ		ŏ	.6		į į	.6		Ť
21	0		0	.5	5	т	.7		Ţ
22	0		0	•4		Ţ	•9 •8		Ť T
24	0		0	•4		T T	.8		Ť
25	ŏ		ŏ	.5		Ť	.8		Ť
26	0		0	4.4		•2	1.0		ī
27	•1		Ţ	1.5		,•1	•9 •8	5	T
29	•1		†	1.7	13	i i	.8		l i
30	• 1		T	.7		Ť	• 7		т (
31	•1		Т				2•6	8	K •2
Total	14.3		0.3	28 • 4		0.8	38•2		1.4
		JANUARY	,		FEBRUAR'	<i>(</i>		MARCH	,
1	5.4		0.4	4.8		0.3	0.7		Ţ
3	1.9	22	*1 T	4.2 3.1		•3	.7		T T
4	1.0		i l	3.2		•2	.7		Ť
5	• 9		Ť	2.7		•1	•8		Т
6	• 7		т	2.0		•1	1.0		T
7	.8		Ţ	1.9	17	•1	1.0	10	ļ Ţ
8	•8 •8	11	T T	1.7 1.7		•1	1.2		
10	.9		į į	1.4		i	1.2		į į
11	•9	12	т	1.5		•1	1.0		т
12	• 9		I	1.8		•1	1.1		Ī
13	•8 •8		T T	1.8 2.1	10	•1	1.3 1.3	10	Ţ
15	• 7		i i	2.1	6	τ*1	3.1		0.1
16	• 7		т	1.8		T	8.7	28	•7
17	• 7		т	1.5		T	8 • 4		•5
18	•7	- <u>-</u>	Ţ	1.3		Ţ	8.0		•4
20	•8 •7		T T	1.3 1.2		T T	5•4 3•5		.1
21	.7		т	1.2		т	2.7	11	•1
!	• 7		Ţ	1.1	11	Ţ	2.1	15	•1
22	•8		T T	1.1		T T	1•9 2•0		•1
23	. 8					i i	3.0		:i
23	• 8 • 9	6	Ť	1.0					
23 24 25	.8 .9 2.3	22	T •1	9		т	2 • 4		•1
23 24 25 26 27	.8 .9 2.3 8.5	22	1 •1 •9			т	2.7	12	•1
23 · · · 24 · · · 25 · · · · · · · · · · · · · · ·	.8 .9 2.3 8.5 4.8	22	1 •1 •9 •4	9			2•7 2•7		.1
23 24 25 26 27 28 29 30	.8 .9 2.3 8.5 4.8 3.5 3.3	22 28 	T • 1 • 9 • 4 • 2 • 2	.9 .9 .9 	 7	т	2.7 2.7 2.1 1.9	12 	.1 .1 .1
23 · · · 24 · · · 25 · · · · · · · · · · · · · · ·	.8 .9 2.3 8.5 4.8 3.5	22 28	T •1 •9 •4 •2	.9	 1	Ţ Ţ	2•7 2•7 2•1	12	•1 •1 •1

S Computed by subdividing day. T Less than 0.05 ton.

K Computed from estimated-concentration graph and subdividing day.

ALAMEDA CREEK BASIN--Continued

11-1790. ALAMEDA CREEK NEAR NILES, CALIF .-- Continued

Suspended sediment, water year October 1960 to September 1961---Continued (Where no concentrations are reported loads are estimated)

		APRIL		ļ	MAY			JUNE	
		Suspen	ded sediment		Suspen	ded sediment		Suspend	led sedimen
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	1.7		0.1	1.1	7		0 • 3		
2	1.7		•1	1.0			•3		
3	1.7		T • 1	1.0 1.0			•3	==	
5	1.3 1.2	==	¦ ;	1.0			• 2	18	
- 1			i .						
6	1.1		Т	1.2			•2		
7••	1.1		Ţ	1.2			• 1		
9	1.2 1.0		T	1.0 1.0	16		•1	21	
10	1.0	8	i i	1.0			.2		
			1		!				
11	• 7		T	1.0			•1		
12	. 8		Ţ	1.0			•1		
13	1.0 1.0		T T	.9 .8			0.1		
15	1.5		.1	.,	27		ő		
				l.					
16	2 • 2		•1	.5			0		
17	1.0	8	Ţ	•6			0	=	
18	1.0 1.0		T T	.6			0		
20	1.0		'i	.8			ļ ŏ		
				l			F	i l	
21	1.1		т	.7			0		
22	1.9		Ţ	• 7	13		0		
23	2 • 1 1 • 8	8	T T	•7			0		
25	1.4		T T	•6 •5			0		
			[
26	1.3		Т	•5			0		
27	1.2	8	Ţ	•5			0		
28	1•2 1•1		T T	•3 •3	10		0		
30	1.1		i i	.3			ŏ		
31				• 2					
l'otal	38.4		1.2	23.5		0.9	2.4		0.
		JULY	1.2	23.53	AUGUST			SEPTEMBER	
		3011	T		1.00001			J	
1									
3			{		į.				
4					l		1	1	
5			İ		1				
6								l i	
7									
8				-					
9								1	
10				li .					
11								1	
12							l		
13		1					ŀ		
14							Į.		
15		1					l		
16									
17					l .		}		
18					1				
19				1					
20							Į.		
21									
22		1					I .		
23				1			B		
24		1	1				H		
25		1							
26		1	1						
27		1							
28		1							
29			1						
30		1							
31		ļ						 	
	0	1	0	٥		0	0	ll	0
otal		<u>. </u>							
otal	discharge	for year	r (cfs-days). ns)						327. 13.

BUENA VISTA LAKE BASIN

11-1860. KERN RIVER NEAR KERNVILLE, CALIF.

LOCATION: --At gaging station, 3 miles upstream from Salmon Creek, and 15 miles north of Kernville, Kern County.
DALINARA REAL—866 square miles.
RECORDS AVAILABLE. --Chemical analyses: October 1955 to September 1961.
Water temperatures: June to September 1961.
RETREMER, June to September 1961.--Water temperatures: Maximum, 84°F June 25, July 11.

		L	 	0	e	e C	∞	_	8	6	8	0	ぜ	2
	<u> </u>	Hd	9 7.	7	4 7	1.	2.7	181 7.1	. 2	109 7,3	2.	8 7.	6 7	
	Specific con-	duct- ance (micro- mbos at 25°C)	15	17	17	18	18	18	11	9	œ	11	12	12
	& ;	dium ad- sorp- tion ratio	1,1		1,1	1.0		1:1	۰.	æ	. 7	6.	1,1	1,0
		Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	42	48	49	22	25	48	32	30	23	35	42	35
	solids ited)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	;	1	ł	!	ł	0,10	!	ì	ł	11.
Septembe	Diss.	Parts per million	1	1	1	i	ŀ	1	1	72	1	Ī	1	833
0 to		. B. B.	0.2	8	~	۲.	۲.	٦.	n	•	۲.	٦.	۲.	۲.
r 196		rrate (NO ₂)	1	-	;	!	;	ł	1	0.0	1	1	ŀ	•
ctobe		Fluo ride (F)	1	I	ļ	ł	;	1	1	0.0	1	!	1	e,
Chemical analyses, in parte per million, water year October 1960 to September 1961		Chloride (Cl)	7.5	9.2	6.8	0.9	7,8	6.9	3.5	5.0	2.9	5.8	7.6	5.9
ion, wat		Sulfate (SO4)	1	1	1	1	1	1	ł	7.0	1	1	!	9.8
mi11		CO)												
te per	Bi-	car- bon- ate (HCO ₃)	99	75	77	82	82	86	54	49	34	52	99	22
n par		Figure 7	1	1	l	1	ŀ	I	1	1,1	1	l	1	1,5
lyses, 1		Sodtum (N2)	16	18	17	17	12	18	11	6.6	8.0	12	16	13
al ana	;	Mag- ne- stum (Mg)	1	ł		1	;	;	1	1,3	ŀ	!	!	1.8
Chemic		Cal- (Ca)	1	1	1	;	ŀ	;	ŀ	9.6	1	1	ļ	11
		Iron (Fe)								0.01				
		Silica (SiQ,)	1	1	ł	;	!	:	ł	14	:	!	ŀ	13
		Mean discharge ((cfs)		1.7						2.0				3,0
		Date of collection	Oct. 14, 1960	Nov. 3	Dec. 5	Jan. 3, 1961	Feb. 6	Mar. 1	Apr. 5	Мау 1	June 6	July 3	Aug. 1	Sept. 1

Townsoreture (°E) of

	Awarana	merage	;	;	80	68	76	4	69	59
		31	1	1	7.8	99	75	4	1	1
		30	7.5	63	80	67	75	79	67	24
		29	7.7	63	81	69		63	68	58
		20 21 22 23 24 25 26 27 28	79	99	82	2		61	9	28
		27	82	7.1	8 1	2	74 73	61	9	58
		26	83	7.1	82	2	75	63	68	58
		25	8	7.2	82	2	68 75	49	67	58
		24	83	7.1	81	=	77 67	71 62	4	28
		23	83 83	7.1	80	88	11	7.1	67	58
l		22	82	7.1	8 1	67	81	7.1	67	57
Ì		21	82	69	80	99	79	7.1	64 67	59
1		20	82	89	82	2	80	69	69	28
		6	81	99	82 82	2	16	10 69	69	58
		18 19	81	29				65	68	
		17	81	89	82 83	69	77	64 65	68	61
١,	Cay	16	81	89	83	_	77	65		61
	7	15	08	67		69	7.8	65	20	58
		12 13 14 15 16	62	99	82	69	7.8	29	69	28
		13	79	65	83	69	79 78	67	69	58
		12	12	63	81	- 12	81	65	7.1	59
		=	7.5	63	7,8	2	7.5	89	10	59 59
		2		61	82	89				
	Ì	٥	73 75	62	81		81 79	70 72	69 70	58 58
	1	80	74	63			82	69		
		^	1	1	78 79	63	79 82	70	70 68	59 57
		9	!	ŀ	48	49	79	89		
	-	2	1	1	78 78	94 94	76 79	69	72 72	09 09
		2 3 4 5 6 7 8 9 10	-	1				69	72	9
	Ì	က	1	Ť	72 78	19	72	69 89	4	63 60
		7	1	1		_	73	99	77	65
	ł	_	1	1	78 72	63	7.7	9	1,6	65
	Moorh		June	Minimum	July Maximum	Minimum	August Maximum	Minimum	September	Minimum

BUENA VISTA LAKE BASIN--Continued

11-1875. BORKL CANAL BELOW ISABELLA DAM, CALIF.

LOCATION: --Temperature recorder at gaging station, 500 feet downstream from Isabella Dam, Kern County, and 3 miles upstream randont where canal crosses Erskhen Creek.

RECORDS AVAILABLE—Fatter temperatures: October 1968 to September 1961.

SETHERED, 1960-61.—Fatter temperatures: Maximum, 79° Puly 25; minimum, 79° Puly 25; minimum, 79° Puly 31, 40° Puly

1961	
September	
ţ	
1960	
October	
year	
water	
water,	
of	
(°F)	
Temperature	

		ı											
	Average	53	44	41	4.2 3.8	4 8 4 5	1 1	57 52	92	6 4 9	74	77	66
	33	50	11	36	46	11	56	11	58	11	73	70	11
1	30	54	42	36	46	11	55	55	61	63	74	2c 64	63
	29	504	42 38	41	4.5	1.1	53	60 54	62 58	71	75	69	64
	28	54	3.9	37	4 1 1 1	50	52	52	62 59	72	76	68	65
	27	54 51	4 9 0 4	38	4 1 1 1 1	8 4 9	51	56	62 59	73	76	68	63
	56	55	4.1	38	44	8 t 7 3	50	5.5	58	75	77	70 67	64
	25	55	45	39	4 0	94	51	52	62 59	75	79	71	64
	24	54	4.5 4.0	44	44	4 5	5.0	51	62 59	75 69	78	72	62
	23	55 51	44	4 4 5 C	43	4 4 4 4	55 50	50 4 8	62 59	68	77	73	63
	22	55 51	45	39	39	6 4 4	55	5.2 4.8	58	44	75	74	62
3	2	55	45	38	41	4 4	54 48	5.2 4.8	62 56	75	73	76 69	64 62
	20	5.5	4 1 4 9	42	41	47	53	5.2	53	73	75	75	63
	2	54 50	46	41	42	47	51	55	59 57	72	76	71	64
	8	54 49	45	4.0	43	47	11	55	62 58	71	75	71	64
	17	53	45	41	39	4 t	11	59	58	72	75	7.1	67
Day	16	5.3 8.4	46	41	43	48	11	59 54	63	72 66	7.2	70 64	69
	15	5.9 4.8	46	41	38	47	11	58	56	71	74	70 49	66 49
	4	6.8 6.8	4 4 4 4	41	3.8	47		56	52	71	75	71	63
	13	53 48	4 t 4 t	41	3.8	49	-	55	57	69	75	7.1	64
	12	π 4 ε 8	4 4 6 2	41	38	50	11	53	53	67	76	70	63
	=	56	6 4 4	4136	42	50	11	53	54	66	74	73	67
	2	56 52	50	35	36	6 4 6	11	57	61 55	65	74	75	66
	٥	58 54	6.0	34	36	43	11	57	54	64	73	76	65
	8	62 56	51	34	36	47	11	56	58	65	7.1	76	61
	^	409	50	38	36	4 5 4 5	11	57	56	65	69	75	62
`	9	63	51 50	35	3.8	41	11	59	52	65	68	75	68
	5	63	53	41	36	47	50	58	56	66	69	74	68
	4	62	53	42	36	47	50	62 57	54	99	70	73	69
	က	63	52	43	35	46	5.0	61	55	56	6.8	707	63
	7	63	54 51	4 4 4 4 4 4 4 4 4 4 4 1	36	4 5	50	53	55	61	70	74	69
	_	64	54	38	35	46	50	58	59	99	71	73	70
	Month	October Maximum Minimum	November Maximum	December Maximum	January Maximum	February Maximum	Maximum	April Maximum	May Maximum Minimum	Maximum	Maximum	August Maximum Minimum	September Maximum

BUENA VISTA LAKE BASIN-~Continued

11-1910. KERN RIVER BELOW ISABELLA DAM, CALIF.

LOCATION: --At Isabella Dam, Kern County, approximately 0.6 mile upstream from gaging station, and 1 mile southwest of Isabella. DRLIMMER MEM. --2,046 square miles upstream from gaging station. Testion. RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1961.

		Hď	7.4	7.1	7.4	7.0	7.8	7.1	7.4	9.2	7.5	7.5	7.4	281 7.5
	Specific con-	duct- ance (micro- mhos at 25°C)	254	261	293	308	321	335	335	314	278	254	273	281
	ģ,	ad- ad- gorp- tion ratio	1,2	1,2	1,3	1.2	1,5	1.3	1.4	1.3	1.2	1,3	1.2	1.3
		Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	62	77	16	85	96	102	101	06	83	73	81	85
_	solids ted)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot	-	1	ŀ	1	1	!		0.24	!	!		.24
Chemical analyses, in parts per million, water year October 1960 to September 1961	and o	Parts per million	ŀ	!	}	!	!	1	ļ	174	!	!	!	175
60 to		Bo-	0.2	۳.	۳.	~	۳,	۳. ا	ı.	0.2	4.	۳.	۲.	.2
er 19		Fluo- Ni- ride trate (F) (NO ₃)										_		۴.
Octob		Fluo- ride (F)	-	!	-	!	-	!	!	0.0	1	!	1	ŗ.
er year		Chloride (C1)	7.5	12	10	9.5	13	11	12	14	70	10	10	12
ion, wat		Sulfate (SO ₄)	1	1	1	1	1	ı	1	22	1	!	1	15
m1]]	į	Don- ate (CO)												
rts pe		car- bon- ate (HCO ₂)	116	121	145	145	120	184	155	143	125	119	126	141
in par	É	Situal (K)		ļ	!	!	!	1	!	2.7	!	!	!	3.1
alyses,		Sodium (Na)	24	24	28	26	34				92	22	22	28
cal an	Š	nag- ne- sium (Mg)	;	!	!	;	;	1	!	4.9	5.5	!		5.0
Chem1		Cal (Ca)	1	;	1	ł	ļ	1	1	28	24	!	!	56
		Iron (Fe)								0.00				
		Silica (SiO ₂)	1	ŀ	1	1	1	1		2,9	į	1	i	16
		Discharge Sili (cfs) (Sic				16			7.3	6,3	7,3	256	284	115
		Date of collection	Oct. 14, 1960	Nov. 3	Dec. 5	Jan. 3, 1961	Feb. 6	Mar. 1	Apr. 5	May 1	June 6	July 3	Aug. 1	Sept. 1

BURNA VISTA LAKE BASIN--Continued

11-1940. KERN RIVER NEAR BAKERSFIELD, CALIF.

LOCATION.--At gaging station, at Kern County Land Co. diversion weir, approximately 2 miles east of Oil City, and 5 miles northeast of Bakersfield, Kern County. DARINAGE AREA.--2,420 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961.
RECORDS AVAILABLE.--Chemical analyses of California Bulletin No. 23-61.

8.0 7.7 8.1 8.1 7.5 8.7.9 7.8 7.9 8.0 8.0 띥 mhos at 25°C) 237 231 233 233 233 233 194 138 137 220 252 221 Specific ance ductmicroconratto 1.000.42 -bad 000000 000000 Nonbon-Hardness as CaCO, Cal-Mag-23 38 40 40 40 61 61 -gu 66 61 61 63 62 62 Tons day Dissolved solids (calculated) Chemical analyses, in parts per million, water year October 1960 to September 1961 0.12 Tons per acre-foot 1112 11111 11111 81 | 81 million Parts per 9 g (a) 4.00000 trate (NO₂) Π 10 ż Fluo ride (F) 181114 22.00.00 112 10 9.8 10.8 Chloride <u>ញ</u> Sulfate (80%) 11111 121114 B1-Car-bon-ate (HCO₂) Bi-car-bon-98 94 94 95 25 82 54 50 60 12 98 Frank (K) 151114 11111 Sodium (Na) 4888888 282423 10.4 Mag-ne-stum (Mg) 111111 다 다 (R (B) (B) 11111 122 | 121 0.01 Fe) Discharge Silica (cfs) (SiQ_s) 11111 121117 246 260 387 366 288 a175 a157 a209 178 a206 167 5, 1960.... 15. 5, 1961.... 2..... Aug. 2. Sept. 5..... ······ ,.... Date of collection Oct. Nov. Dec. Jan. Feb.

a Daily mean discharge.

TULARE LAKE BASIN

11-2035. TULE RIVER NEAR PORTERVILLE, CALIF.

LOCATION: --At gaging station, at highway bridge, 1 mile upstream from South Fork, and 6 miles east of Porterville, Tulare County. DALINAGE AREA.-261 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961 (discontinued).

		Нq	402 8.2 403 8.4 403 8.4 397 8.4 269 8.4 310 8.4
	Specific	duct- ance (micro- mhos at 25°C)	
	\$	dfum ad- sorp- tion ratio	0 8 0 0 0 7 7
		Non- car- bon-	000000
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	164 180 159 163 113 128
1	solids ated)	Tons per day	
er 196	Dissolved solids (calculated)	Tons per acre- foot	0.27
Chemical analyses, in parts per million, water year October 1960 to September 1961	a d	Parts per million	198
60 to		Fluo- Ni- Bo- ride trate ron (F) (NO ₃) (B)	0 4 4 4 4 4
er 19		rrate (NO ₂)	0.3
Octob		Fluo- ride (F)	0.2
er year		Chloride (CI)	16 14 112 12 9,0
lon, wat		Sulfate (SO ₄)	0°2
m111	0	bon- ate (CO ₃)	000/440
ts per	Bi-	car- bon- ate (HCO ₃)	232 229 218 213 149 170
n par	-	tas- slum (K)	2.5
lyses,		Sodtum (Na)	25 25 25 25 25 15 18
al ana		nag- ne- sium (Mg)	8.0
Chemic		Cal- ctum (Ca)	38
		Iron (Fe)	00.00
		Silica (SiQ,)	26
		Mean Sil discharge (Sil (cfs)	24 22 30 14 121 33 6.5
		Date of collection	Dec. 15, 1960 Jan. 4, 1961 Peb. 7 Mar. 2 Mar. 2 Apr. 4 June 6

TULARE LAKE BASIN--Continued

11-2065. MIDDLE FORK KAWEAH RIVER NEAR POTWISHA CAMP, CALIF

gaging station, 0.7 mile southeast of Potwisha Camp, Tulare County, and 0.9 mile upstream from confluence with Marble Fork Kaweah River OCATION. -- Temperature recorder at

DRAINAGE AREA. -- 100 square miles.

RECORDS AVAILARLE..-Water temperatures: October 1958 to Septes STREERS, 1966-61.-"Mater temperatures: Maximum, 75% July 11 EXTREERS, 1966-61.-"Water temperatures: Maximum, 79% July 27 EXTREERS, 1968-61.-"Water temperatures: Maximum, 79% July 27

ires: October 1958 to September 1961.

Eximum 76 P.11, 14** minimum, 35** Dec. 29-31, Jan. rres: Maximum, 76** P.11y 27, 1999; minimum, 33** Fan. 5, 1960.

1-6.

TULARE LAKE BASIN--Continued

11-2105. KAWEAH RIVER NEAR THREE RIVERS, CALIF.

LOCATION: --At gaging station 2.5 miles downstream from South Fork and 3 miles southwest of Three Rivers Post Office, Tulare County. DALINARB ARRA.--SOS square miles. RECORDS AVALABLE.--Chemical analyses: October 1963 to September 1961 (discontinued).

١		Нq	7.9	7.9	7.9	8.0	7.8	123 7.9	7.6	7.5	7.4	102 7.9	8.1	8.4
	Specific con-	duct- ance (micro- mhos at 25°C)	163	156	125	136	166	123	57	48	46	102	130	119
	ģ.	ad- ad- Borp- tion ratio	0.5	50	4.	υ.	۳.	4.	۳.	6	.2	ε.	4.	4.
		Non- car- bon-	0	0	0	0	0	0	•	0	0	0	0	0
	Hardness as CaCO,	Cal- clum, Mag- ne- sium	57	26	20	53	69	47	21	18	18	40	20	46
	solids ted)	Tons per day							-					
r 196	Dissolved solids (calculated)	Tons per acre- foot	1	!	ļ	ł	!	ł	ł	0.04	1	!	!	97.
Septembe	Dis (c.	Parts per million	-	ľ	!	1	i	;	1	32	;	!	1	73
50 to	-	Bo- ron (B)	0.1	٦.	۲.	•	۲.	•	۲.	0	٦.	۰.	•	•
r 196	-	Ni- trate (NO ₃)	1	1	-	!	ŀ	ī	1	0.2	1	ľ	I	2,5
ctobe		Fluo- Ni- ride trate (F) (NO ₃)	1	;	1	l	1	I	1	0.0	ł	1	1	N.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	11	0.6	2.0	5.0	4.2	5.0	1,5	1,9	1.3	4.6	8.0	6.0
ion, wat		Sulfate (SO ₄)	1	1	-	1	1	1	ł	1.0	1	ì	1	2.8
mi11	į	(CO)	٥	0	0	0	0	•	0	0	0	0	0	61
ts per		car- bon- ate (HCO ₃)	72	72	64	7	98	64	31	23	25	20	61	55
n par	ģ	sta (X)	1	;	;	!	!	1	1	9.0	į	!	ł	1.6
lyses, 1		Sodium (Na)	8.6	8.9	9.9	8.0	9.9	6.2	3.1	2.9	2.1	5.0	7.2	5.8
al ana	Ž	sium (Mg)	1	1	ŀ	!	1	1	1	0.7	1.0	!	!	1.5
Chemic		Cal- (Ca)	1	;	1	;	ŀ	1	1	6.2	5.8	1	1	16
	_	Fron (Fe)								0.01				
		Silica (SiQ ₂)	ï	ŀ	!	}	1	1	ŀ	7.9	1	1	I	8.0
		Discharge Sil (cfs) (Si	17	88	80	65	85	85	602	518	512	22	28	34
		Date of collection	Oct. 5, 1960	Nov. 3	Dec. 14	Jan. 4, 1961	Feb. 7	Mar. 2	Apr. 4	Кау 9	June 6	July 11	Aug. 2	Sept. 5

TULARE LAKE BASIN--Continued

11-2185. KINGS RIVER BELOW NORTH FORK, CALIF.

LOCATION.—At gaging station, 0.6 mile downstream from North Fork, Fresno County, 2.4 miles southwest of Balch Camp, and 8.5 miles southeast of Trimmer. PRAINAGE ARRA.—1.350 square miles, approximately. September 1961. RECORDS ANAILABLE,—Chemical manayess: October 1955 to September 1961.

		Нq	7:1	6,9	6,9	0.7	7.1	7.4	7.2	8.8	9.9	7,1	8.9	7.6
	Specific	duct- ance (micro- mhos at 25°C)	62	99	23	9	29	26	20	30	23	38	33	48
	ø,	ad- ad- Borp- tion ratio	0.3	4.	m	4.	4.	4.	۳.	е.	2	۳.	۳,	.3
		Non- car- bon-	4	N	_	0	0	0	H	0	0	0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	24	22	19	19	20	20	20	80	00	13	=======================================	12
	solids ted)	Tons per day		_		_								
er 196	Dissolved solids (calculated)	Tons per acre- foot		1	;	ł	ŀ	1		0.03	-	!	ŀ	.
Septemb	8)(C	Parts per million	1	!	1	!	1	1	1	21	1	1	1	31
60 to		ron (B)	0.0	٦.	۰.	٠.	٦.			۰.	_	•	•	٠.
er 19		Ni- trate (NO ₃)	ł	!	1	;	ł	-	1	0.2	!	!	<u> </u>	-
Oc tob		Fluo- Ni- ride trate (F) (NO ₂)		!	!	1				0.0	1	!	!	.2
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	2.6	3.8	2.0	8.	2.0	1.4	2.5	1.5	9.	2.0	8	1.7
ion, wat		Sulfate (SO ₄)	1	ĺ	1	1	1	1	1	2.0	1	1	!	1.0
. m111	100	(C) # 20 (C)												
rts per		car- bon- ate (HCO ₃)	25	52	22	31	24	56	23	01	12	18	19	22
in pa	č	stur (X)		1	1	1	1	l		0	ł	1		6.
lyses,		Sodium (Na.)	3,4	4.2	3.5	4.1	4.7	3.7	2.8	1.9	1.5	2.2	2.2	2.9
al ans	7	mag- ne- stum (Mg)	1	1	ł	1	1	;	ł	0.4	.7	¦	1	• 5
Chemic		Cal- Ctum (Ca)	1	1	1	ł	1	1	1	6.3	2.1	;	1	5,3
		Iron (Fe)							_	0.01				
		(SiO ₂)	-	1	1	1	1	1	1	8.8	1	!	1	7.6
		Discharge SIII (cfs) (SI	133							1,850			1,110	226
		Date of collection	Oct. 3, 1960	Nov. 1	Dec. 5	Jan. 3, 1961	Feb. 1	Feb. 28	Apr. 3	May 1	June 5	July 10	Aug. 7	Sept. 5

TULARE LAKE BASIN--Continued

11-2200. BIG CREEK ABOVE PINE FLAT RESERVOIR, CALIF.

LOCATION .--At gaging station, 2.4 miles upstream from mouth and 2.7 miles northeast of Trimmer. DRAINAGE ARRA.--66.2 square miles.
RECORDS AVAILABLE.--October 1960 to September 1961.
REMARKS.--No flow during summer nonths.

		рН	7.3	, c	105 7.6	7.7	91 7.5
	Specific con-	duct- ance (micro- mhos at 25°C)	196	100	105	107	103
		ad- ad- Borp- tion ratio	6.0	9.1	9	6.6	∞ ₁ ~
	1	Non- car- bon-	21	n c	0	00	000
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	55	9 9	31	35	31.0
	solids ted)	Tons per day					
r 1961	Dissolved solids (calculated)	Tons per acre- foot					0,10
Septembe		Parts per million					73
60 to		Fluo- Ni- Bo- ride trate ron (F) (NO ₂) (B)	0.2	ijĊ	:=:	-:-	9.7
er 19		Ni- trate (NO ₂)					0.0
Octob		Fluo- ride (F)					••
er year		Chloride (Cl)	22	χ. C.	7.8	4.6	7.6
Chemical analyses, in parts per million, water year October 1960 to September 1961		Sulfate (SO ₄)					3.0
. mill		ate (CO)					
ts per	Bi-	car- bon- ate (HCO ₃)	42	2 6	38	43	38
n par	ģ	tas- sium (K)					1.4
lyses,		Sodium (Na)	16	~ «	8	8 4	8.6
al ana	ļ	mag- ne- stum (Mg)	1	11	1	11	2.2
Chemic		Cal-	1		1	11	8.8
		Fron (Fe)					0.01
		Silica (SiQ ₂)					24
		Discharge Silic (cfs) (SiQ	8.0	15	4.6	7.6	4.0
		Date of collection	Nov. 1, 1960	Jan 3 1961	Feb. 1	Feb. 28	May 1.

TULARE LAKE BASIN--Continued

10-Z215. KINGS RIVER BELOW PINE FLAT DAM, CALIF.

LOCATION: --At gaging station, 3,200 feet downstream from Pine Flat Dam, Fresno County, and 2.9 miles northeast of Piedra. DALINAEA AREA.-1,545 guare miles. Seconds AALLAREE.--Chemical analyses: October 1955 to September 1961.

1		Н	7.0	8.9	7.0	6.9	6.9	7.3	6.9	7.3	8.9	0.	۰.	7.2
	Specific con-	duct- ance micro- nhos at 25°C)	34	35	38	43	15	4	39	20	42	28	21	34
		add- ad- sorp-(r tion m	0,2	ন	ন	<u>ښ</u>	4	Ņ	4.	es.	N.	N.	e.	.2
		Non- 6 car- 6 bon- 1	N	-	0	ਰ	O)	5	0	-	0	0	0	0
	Hardness as CaCO,	Cal- clum, Mag- ne- stum	14	13	14	17	81	19	11	17	16	10	8	12
	solids (ted)	Tons c per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot		ļ	;	1	1	;	1		;	;	1	•03
Septemb)) 9)Q	Parts per million	1	1	1	1	1	1	1	35	1	1	1	25
60 to		Bo- ron (B)	0.0	°.	۲.	۰.	•	•	۰.	•	٦.	•	۰.	•
er 19		Fluo- Ni- ride trate (F) (NO ₂)		ł	1	ŀ	1	1		_	!	1	!	•
Octob		Fluo- ride (F)		ł	1	1	1	}		0.0	1	I	;	.4
water year October 1960 to September 1961		Chloride (Cl)	1,0	1.8	1.0	c.	1.5	N.	1.5	2.8	1.0	۲.	1.0	
ion, wat		Sulfate (SO ₄)	1	1	i	ł	ī	1	1	3.0	1	!	!	9.
. mill	į	(0) the part of th												
rts per	Bi-	car- bon- ate (HCO ₂)	15	15	18	22	20	24	17	20	22	15	56	18
in pa:	Ė	stus (X)	1	1	;	1	1	!		6.0	!	٠.	_	9.
Chemical analyses, in parts per million,		Sodium (Na)	1,3	1.5	1.9	2.6	3,9	2.2	2.7	3.0	2.2	1.6	2.7	1.7
cal an	į	nag- ne- stum (Mg)		l	-	1	1	1		9.0		!	1	9.
Chemi		ctum (Ca)	-	ł	I	ŀ	1	Ī	1	5.8	4.0	;	!	3.8
		Iron (Fe)								0.00				
		Silica (SiQ _g)		i	1	1	1	!	I	8.2	1	ŀ	1	7.2
		Discharge Silica (cfs) (SiO ₄)					102		131	1,120	1,700	2,700	2,300	806
		Date of collection	Oct. 5, 1960	Nov. 1	Dec. 5	Jan. 3, 1961	Feb. 1	Feb. 28	Apr. 3	May 1	June 5	July 10	Aug. 7	Sept. 5

TULARE LAKE BASIN--Continued

11-2227. KINGS RIVER AT PROPLES WEIR, NEAR KINGSBURG, CALIF.

LOCATION: --Approximately 0.2 mile downstream from gaging station located on diversion weir, 2 miles south of Kingsburg, and approximately 12 miles northeast of Hanford, Kings County.

RECORDS AVAILABLE. --Chemical analyses: October 1953 to September 1961.

REMARKS. --Records of discharge furnished by Kings River Water Association.

		Hq	7.6	8.0	8.0	8.1	8,1	75 7.5	7.8	139 8.0	7.8	7.1	7.5	7.4
	Specific	duct- ance (micro- mhos at 25°C)	68	179	173	214	202	75	119	139	144	36	49	64
	& ;	dium ad- Borp- tion ratio	0,3	9.	9.	9	۲.	e,	63	9	9.	.2	۳.	.3
		Non- car- bon- ate	0	0	0	0	0	0	•	0	0	0	1	0
	Hardness as CaCO,	Cal- cium, Mag- ns- stum	33	64	99	4	74	53	46	49	21	13	18	24
1	solids ted)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot		!	1	!	!	1	ł	0.12	!	ł	1	90.
Septemb	170	Parts per million	-	1	!	!	!	1	ł	87	!	1	!	43
60 to		ron (B)	0.0	ا	۲.	•	۰.	•		٠.		٠.		
er 19		Ni- trate (NO ₃)		!	1	!	!	1		0.9		ł	!	۴,
Octob		Fluo- Ni- ride trate (F) (NO ₂)	;	1	1	1	1	1	ł	0:0	1	1	ł	.2
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	2.2	4.0	4.4	4.5	5.8	1.4	5.2	5.8	4.5	9.	2.8	1.6
ion, wa		Sulfate (SO ₄)	1	1	I	1	!	1	ł	7.0	1	1	1	9.
r mill	;	CO)		_										
rts per		car- bon- ate (HCO ₃)	42	85	85	114	103	36	57	67	72	18	21	36
in pa	J.	fas- film (X)								1.3				
lyses,		Sodium (Na)	3.7	12	::	13	13	8.	4.6	9,3	6.6	2.0	2.6	3.2
cal ans	707	mag- ne- stum (Mg)	-	1	ŀ	ł	!	1	1	4.0	4.4	1	!	2.1
Chemi		Cal- ctum (Ca)	1	1	;	;	;	1	}	13	13	1	1	6.2
		Iron (Fe)								0.03				
		Silica (SiQ _e)	-	1	ŀ	1	1	I	1	13	1	!	1	9.7
		Mean S discharge ((9	9					102	36	36	1,386	200	6
		Date of collection	Oct. 5, 1960	Nov. 3	Dec. 14	Jan. 4, 1961	Feb. 8	Mar. 2	Apr. 4	жау 9	June 6	July 10	Aug. 2	Sept. 5

SAN JOAQUIN RIVER BASIN

JOAQUIN RIVER NEAR FLORENCE LAKE, CALIF. SAN FORK 11-2300, SOUTH

gaging station, just downstream from spillway of Florence Lake Dam, Fresno County, and 6 miles LOCATION .-- Temperature recorder at upstream from Bear Creek

SAN JOAQUIN RIVER BASIN---Continued

11-2350. SAN JOAQUIN RIVER ABOVE BIG CREEK, CALIF.

LOCATION .-- Temperature recorder at gaging station, 0.8 mile upstream from Ross Creek, and 2.3 miles upstream from Big Creek,

Fresno County.

DRAINGE MEAS.-1,050 square miles

RECORDS AVAILEME.-Water temperatures: January to September 1961.

EXTREMES, January to September 1961.-Water temperatures: Maximum, 82°F Jume 21, 23, July 10, 14, 17, 19, Aug. 7, 8.

ł				١					Te	Temperature	tur		(°F)	of	water,		January		\$	ept	September		1961		-		١				
															Day	Α.															A
	_	2	က	4	2	9	7	8	-	10	12	13	- 4	15	- 19	17	18	6	20	2	22	23	24	25	5	27	28	29	30	31	901741
Ļ	;	1	1	1	1	43 6	4 4 4	43 4	43 44	4 4	77	44	4 4	7,7	7 7	77	4	4	4	4		4	4 5	4	20	8 4	52	52	52	53	94
•	Ť	1	-	1	+	7 7 7	45 4	45 4	42 43	3 43	3 43	43	3 44	4	+ 43	4	43	43	4	43	43	4	4 4	4.5	4	4 6	48	52	46	94	44
	53	53	53	53	47 4	47	44	640	50 5	51 54	50	5.2	53	50.00	5 5		53	4 4	7 4	4 6 6 7 5	50	4 4	49	4 4	4 4	4 4 8 9	64	11	11	11	5.0 8.4
																	52	53	52	55	52	55	53	5 4	0.04	9 4 9	52	53	53	53	52 49
	5.5	55	58	96	56 5	56	57 5	54	54 5	60 61 54 55	5 5 5 5	52	2 53	61	1 63	61	58	5.5	52	56	54	54	55	58	58	58	62 53	63 54	54	11	59
	562	55	57	55	53 5	5.5	54 5	54 2	54 5	62 62 57 56	5 58	54	2 62	56	5 57	58	59 8	59	63	58	9 6 6	68 59	58	70	40 62	70 59	63 58	64 59	55	57	64 56
	56	62	57	20	707	72 61	73 7	4,49	72 7 62 6	74 71 63 63	1 75	76	5 67	79	9 80	69	79	89	980	82	71	82	81 69	80	81 71	980	78 67	76 64	76 64	11	76 65
	77	75	770	77	76 7	949	76 7	82	78 8	82 81 69 70	1 76	190	1 82 0 69	8 9	8 69	70 20	20 70	82	70	78	669	102	90 4	90 2	96	81 70	80	79 68	78	77	79 68
::	77	76 66	9 9 9	7.5	77 8	81	82 8	72	81 7 70 7	77 78	78 78 71 69	79	9 78	77	7 76 6 66	76	2 4 6 5	76 69	702	80	80	80	79	78	76 67	70	73	75	75	75	77
::	16	4 9 9	72	72	72 7	72	59 5	58	59 5	68 68 59 59	59 60		68 68 58 58	58	49 64	9 9	5 66	58	90	60	59	99	58	67	59	9 9	66 62	68	59	11	6 6

SAN JOAQUIN RIVER BASIN --- Continued

11-2370. BIG CREEK BELOW HUNTINGTON LAKE, CALIF.

LOCATION: --Temperature recorder at gaging station, 1,200 feet upstream from Grouse Creek, and 1 mile downstream from Huntington Lake, Fresho County.

BALIANGE AREA, --80.0 cquare miles.

RECORDS AVAILABLE.--Water temperatures: July to September 1961.

Temperature ('F) of water, July to September 1961

	u verage	58 53	60 56	58 55
_	31	59	61	11
	30	5.5	99	53
	29	5.4	99	5.6
		58 54	55	55
	27 28	59	58	56 54
	19 20 21 22 23 24 25 26	59	57	
	25	59	62 58	57 57 54 54
	24	59 55	62 58	
	23	59	62 58	56 57
	22	59 59	62 62 58 58	56
	21	59	62 58	57 56 55 53
	20	58 53	62 58	5.4
	61	58 58 54 53	60 62 57 58	57 58
	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	58 53	58 59 54 55	53
	٤١	59		55
Day	16	58 59 59 58 53 54 54 53	59 59	59 59 59 58 57 57 55 55 55 57 55 53
	15	53		υ. τ. Ο τ.
	14	59 58 54 53	60 59 56 55	R R
	13	5,0		η. 9 η.
	12	59 57 54 54	58 60	60 60 56 56
	11		58	26
	10	59	60 58 56 57	59 60
	6	5.08	99	5.5
	8	57 58 52 52	61 61 57 56	60 59 56 56
	4	52	61	5.6
	9	56 56 52 51	59 61 57 56	57
	2	52	5.7	7 57 57
	4	56 57 54 53	57	30
	က		5.6	2,00
	2	52	55	61 61 57
	_	58	54	61
Moosh	Month	July Maximum	August Maximum	September Maximum

SAN JOAQUIN RIVER BASIN -- Continued

11-2465. WILLOW CREEK AT MOUTH, NEAR AUBERRY, CALIF.

LOCATION: --Temperature recorder at gaging station, 40 feet upstream from bridge, 0.4 mile upstream from mouth, 1.3 mil:
downstream from Miskey Creek, and 4.3 miles northeast of Auberry, Fresno County.
MAINAGE AREA, --130 square miles.
RECORDS AVAILABLE. -- Mater temperatures: October 1960 to September 1961.
RETREES, 1960-61. -- Mater temperatures: Maximum, 88°F June 23, 24, 26, 27; minimum, 36°F Jan. 3, 4.
REMARKES. -- Stream dry during snamer months.

1 2 3 4 5 6 7 8 9 10 11 12 	3 4 5 6 7 8 9 10 11 13 2 3 5 3 6 40 40 40 40 40 40 40 40 40 40 40 40 40	4 2 5 6 7 8 9 9 10 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5	2	7	0 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 1 1 1 2 4 1 4 2 4 1 4 1 4 1 4 1 4 1 4 1	0 1 1 1 2 4 1 4 2 4 1 4 1 4 1 4 1 4 1 4 1	42 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	= 11 44 3	1 101	2 13 1,	4 1 1 1 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	115	Day 15 16 17 16 42 43 43 16 42 42 43	17 17 17 17 17 17 17 17	18 1 18 1 18	6	18 19 20 2	5 !! 57	22 23 24 42 42 41 41 44 44 45	23 44 44 23 44 24 44 24 44 24 44 24 44 24 24 24 24	24 42 45 45 45	51		1		1 1-1		Average 43 41
4 0 4														52 6		53	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 6 4 6 4 6 4	56		56 47	5 2 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6	 53 54	2.2	4 2 6 4	
52 22		54 54	4 9 6 6	56 59	63 62 58 57 61 60 54 56		56 51 56 51 53 53	2 52 58	2 52 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	53	60 20	55	50 50	52 565	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	57 57 67	28 28 2	5 4 6 7 6	55 20	40 40 60 60 60 60 60 60 60 60 60 60 60 60 60	51 51	66 49 4	22 4 6 2 4 6 2 4 6 2 4 6 2 4 6 2 4 6 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7	4 8 8 6 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6	50 51 50 51 68 66	 53 54 66 66 66 66	11 50	2 E 4 E	
59		62										76		80	81 72		81 72	83	85		77						 			

SAN JOAQUIN RIVER BASIN--Continued

11-2470. SAN JOAQUIN RIVER BELOW KERCKHOFF POWERHOUSE, CALIF.

LOCATION --Temperature recorder at gaging station, 1.1 miles downstream from Kerckhoff powerhouse, Fresno County, and 1.4 miles downstream from Eig Sandy Creek.

DRAINAGE AREA.--1,460 square miles.

RECORDS AVAILABLE.--Rett temperatures: November 1960 to september 1961.

RECORDS AVAILABLE.--Rett temperatures: Maximum, 73°F ANG. 22; minimum, 38°F on several days during January.

								T.	Temperature	ratı		(°F)	of	water,		Novmeber 1960	mebe	4	960	to September	Sept	que e		1961	ļ						-	
Month	Ī	t	t	f	t	t	1	t	t	t	t	t	t	-	1	÷	+	+	+	+	1	ŀ	Ì	1	t	ŀ	-	ŀ	ŀ	1	Ť	Average
	-	7	ო	4	2	9	7	80	٥	2	=	2	23	4	15	16	17	18	6	20	21	22	23	24	25	26	27	28	29	8	31	5
November	1	;	1		1	-:	- ;	!	1	- 1		5.7	56	26		_						25	50	20	52 5	50	50 5	51		52	-1	:
Minimum	1	-	_	1	i	1	÷	-	1	1	52	99		55	53	53	53 5	53	52 5	52	51		÷	-	_				51 5		-	;
December	50	50	64		64	50	-	47			94	9	45	- 54	45	- 54	454	7 9 7	45-4	7 7 7 7	4 4 4	7 7 7	4 4		45-4	7 7 7 7	_ 	7 7 7	43	_	~	94
Minimum	200	64		64		80	47	46	46			4.5												43				_		7 7	45	45
January Maximim	45	45	1,4	45				04	0	39	39	39	39	39	39	39	38	38		38	38	38		39		43		41			-04	04
En	45	45	41	41	7	41	04	39	_	39		39		39	_			_	38	_	_		38	60	39		40		9	39	6	38
February	40	04		0 4	-1	41	45	42		4	£3	43	4	45	45-			45	44	7 7 7	- 7		4 4	4	7 7 7	45	45 4	4.5	+	<u>.</u>	-	43
Minimum	49	04	39	39		0		41	42	43		4,1		7,		45	7 7 7 7	7 77	43			7 7	_	4	7 7 7 7	_	42		<u> </u>	<u>:</u>	1	43
March	4	45	4.5	4.5	45	٦.	45	4.5		47	2 4	84	7 8 7	8,	48	89	47 4	7 24	47 4	87	48	89	48	47	48	- 84	- 84	- 84	47 4	84	ω,	47
Minimum	4 4	4		45		4	_	44	4	9 4		46		47				94		_				47			47 4		46	7 74	47	45
April	64	84	8 4	6	-64	6,	64	64	64	-64		20	64	- 64									50	20	20	21	51	51	51	51	1	50
Minimum	47	4.7		47		8		84		64	64	64	64	64	50	20	20 2	20	50 5	50	50 5	20	_	_	64			_		_	-	64
May	51	52		25		52		52	52	52		52		25				54	53			54	54	54		5.5	55	55	55	55	55	53
Minimum	50	51	51	51	21	51	5	51	51	21	51	51	21	51	52	25	52 5			53	53 5		_	5	53						4.0	25
June	54	5	54	55		55	54	55	54	55		55		57					59			09		61				62	61		1	5.8
Minimum	54	53	_	53	53	54		53		54	54	54	55	26		25	58	28	58	28	59	66	909	09	909	09	909		909	09	1	96
July	63	63	63	65	49	79	63	49	65	65	99	67	67	69		89		69	_	89		2		69			_				69	67
Minimum	61	61	62	63	63	63	63	63	49	49	65	65	99	99	67	_	68		68		67	2.5	67	۲,	89	29	89	89	89	89	89	99
August	68	70	89	68	89	7.1		89	68	68	89	89	_	69	$\overline{}$		$\overline{}$	_	_	69		73	2	- 69	69		$\overline{}$		_	_	20	69
Minimum	99	99		89		89	89	89	89	89	68	89	89	89	89	89	9 89	89	9 89	89	89	69	2	69	69	69	89	89	89	89	68	99
September	7.0	2	20	69	2	0,2	69	68	69	69	89	69			67	67	67 6	- 29	67					- 9				99	67		-	89
Minimum	89	89		89	_	69		67	67	29	67	89	67	29	67	29	99	_	99	99		99	_	99	65		99	99	99	99	1	29

SAN JOAQUIN RIVER BASIN--Continued

11-2510. SAN JOAQUIN RIVER BELOW FRIANT, CALIF.

LOCATION: --At gaging station, 0.5 mile west of Friant, Fresno County, 1.5 miles downstream from Cottonwood Creek, and 2 miles downstream from Friant Dam. DRAINARA RRAL --1, 675 equerge miles.
RECORDS AVAILABLE. --Chemical analyses: October 1952 to September 1961.

		Ħ	1%	7.3	7.4	7.4	7.4	7.5	7,3	7.2	7.5	7.5	7.2	59 7.3
Chemical analyses, in parts per million, water year October 1960 to September 1961	Specific con- duct- ance (micro- mhos at 25°C)		56,	53	56	9	56	26	52	26	29	9	64	29
	So- So- Sor ad- Sorp-(thou ratio		0.5	'n	ī,	ī,	4.		'n	9	9	9	'n	9.
		Non- car- bon-	1	0	0	0	ıC	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	17	15	19	19	20	15	17	16	14	17	19	16
	Dissolved solids (calculated)	Tons per day												
		Tons per acre- foot	ŀ	ŀ	1	ł	!	1		0.06	!	!	1	• 05
		Parts per million	-	1	1	1	!	!	!	43	1	-	!	\$
	Bo- ron (B)		0.1	7	۰.	۰.	۲.	°.				۰.	۰.	۲.
	Fluo- Ni- ride trate (F) (NO ₂)									0.3		1	1	4.
	Fluo- ride (F)		1	;	1	l	!	1		0.1		1	1	٠,
	Chloride (C1)		5,0	4.8	4.0	4.2	3.5	6.0	6.4	5.2	6.0	3.7	0.9	6.0
	Sulfate (SO4)		;	1	1	}	1	1	}	1.0	1	1	1	0.
	Car- bon- ate (CO ₃)													
	Bi- car- bon- ate (HCO ₅)		20	18	24	59	18	20	21	22	19	59	24	24
	Po- tas- stum (K)		1	1		!		1	ł	8.0	ł	ŀ	!	.7
	Sodium (Na)		4.6	4.2	5.0	5.0	4.0	4.6	3.0	5.0	5.3	5.5	5.4	5.4
	Mag- ne- sium (Mg)		1	i	1	1	ł	!	{	1.7	1	1	1	1.6
	Cal- cium (Ca)			1	1	ł	1	!		3.6		!		3.6
	ron (Fe)		1	!	;	ł	1	!	ł	0.00	ł	1	!	• 00
	Suica (SiQ,)		1	1	ŀ	1	ł	1	_1	14	1	ł	ı	10
	Discharge Silica (cfs)		144	125	94	62	20	104	132	174	178	178	171	146
	Date of collection		Oct. 4, 1960	Nov. 2	Dec. 14	Jan. 4, 1961	Feb. 7	Mar. 3	Apr. 4	Мау 9	June 5	July 11	Aug. 4	Sept. 6

11-2535, SAN JOAQUIN RIVER NEAR BIOLA, CALIF.

OCATION. --At Skaggs Bridge, 1.9 miles upstream from gaging station, and approximately 2.5 miles northwest of Biola, Fresno County. DRAINAGE AREA. --1,805 square miles upstream from gaging station.

ARATARS MAILABLE. --OS square mires upstream iron gratum, states upstream iron gratum, states upstream iron gratum, states upstream iron gratum, states upstream is an analysis. November 1952 to September 1961 (discontinued).

Water temperatures: November 1952 to September 1962 to September 1961 (discontinued).

WATERISS 1969-61.--Dissolved solids: Maximum, 80 ppm Dec. 4-18.

Hardness: Maximum, 34 ppm Nov. 24-30; minimum daily, 198 micrombos Dec. 13.

WATERISS 1865-61.--Dissolved solids: Maximum, 1967 Jan. 3.

WATERISS 1865-61.--Dissolved solids: Maximum, 197 Jan. 3.

WATERISS 1865-61.--Dissolved solids: Maximum, 197 Jan. 3.

WATERISS 1865-61.--Dissolved solids: Maximum, 197 Jan. 3.

WATERISS 1865-61.--Dissolved solids: Maximum, 197 Jan. 3.

WATERISS 1865-61.--Dissolved solids: Maximum, 197 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum, 197 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum, 198 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum, 198 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum, 198 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum, 198 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 178 midromose Maximum, 198 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum, 198 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum, 198 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum, 198 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 178 midromose Maximum, 198 Jan. 4.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 186.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 186.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 186.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 186.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 186.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 186.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 186.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 186.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 186.

WATERISS 1865-61.--Dissolved solids: Maximum daily, 186.

WATERISS

and gaging station except during periods of heavy runoff.

ļ		Hď	8.8	- 4.		6.6	6.95	9,6	7.5	4.6	0.2.
	Specific con-	duct- ance (micro- mhos at 25°C)	75	2 2 2	8 8	105	85 85	73	73	8 8	79
		of the standard of the standar	0.7		. 9		9.7.	7	9,		- 8
		Non- car- bon-	00	000	- m	00	000	0	00	00	•
	Hardness as CaCO,	Cal- clum, Mag- ne- stum	888	8 4 8	2 6	8 8	222	22	2 6	28	222
	Dissolved solids (residue at 180°C)	Tons per day	14.3	14.9	7.41	5.73	38.0 10.2	23.7	14.8	10.8	12.7
1961	Dissolved solids residue at 180	Tons per acre- foot	80.0	3,5,8	6.6	9.1.	66.8	.07	.00	98	68
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dise (res:	Parts per million	80	222	99	76 80	2 4 6 2 4 8	51	a 50 a 67	9 9	8.55 58
10 to		- 10 B									
er 196		Trate (NO ₂)									
Octobe		Fluo- ride (F)									
er year		Chloride (CI)									
ion, wat		Sulfate (SO.)									
mi11	- 8	(CO)									
ts per	B1-	car- bon- ate (HCO ₂)	58 52	5 6 6	32	46	3 2 8	88	82 84	£ \$	30
n par	Ė	E Signary (X)									
lyses, 1		Sodium (Na)	7.3	. 4.6	7.3		7.7		8.8	20.00	8 8 5 6
al ana	7,7	sium sium (Mg)	1.9	. 4.	4.4.	6. 6. 4. 4.		.5	2.7	2.3	2.5
Chemic		- (g. (g. (g. (g. (g. (g. (g. (g. (g. (g.	8.4.6			8 8	6 8 7 4 0 6	8.0	7.5	6.5	4.8
		Fron (Fe)									
		Silica (SiQ,)									
		Mean discharge (cfs)	89.7	96.4	42.2		287 70.3		110		
, and the second		Date of collection	Oct. 1-10, 1960	Nov. 1-7	Nov. 16-23	Nov. 24-30	Dec. 4-18 Dec. 19-31 Jan. 1-10. 1961	Jan. 11-20	Jan. 21-31	Feb. 11-20.	Mar. 1-10.

75 7.2 76 6.7 73 7.2 69 7.1 71 6.5 69 6.6	8.5. 2.7. 1.7. 1.4.	
75 76 73 69 71 69	70 73 44 47 87	75
<u> </u>	9,7,2,9	0.7
000000	00000	٥
882288	252222 252222	22
11.3	12.0 10.4 10.1 8.81 8.33 6.99	12.7
80.00.00.00.00.00.00.00.00.00.00.00.00.0	000000000000000000000000000000000000000	0.07
500	50 50 50 50 50 50 50 50 50 50 50 50 50 5	55
25 2 2 2 2 4 2 2 3 4 2 3 4 2 3 4 3 4 3 4 3	22 22 22 31	28
6,7,7,6	6.7.1 9.0 9.0 9.0	7.1
922326	4.1.2.1.2 0.7.4.04	1.6
0 0 0 4 0 0 0 0 0 0 0 0	4 លួល 4 លួល ឈ្នាល់ 6 ស្	6.0
		H
74.5 73.1 63.9 95.9 98.3	88. 86.70 80.46 80.80 80.80 80.80	85.2
Mar. 21-31, 1961 Apr. 1-10 Apr. 11-20 May 1-10 May 1-10 May 11-19	May 20-31 June 1-30 July 1-31 Aug. 1-31 Sept. 1-15 Sept. 16-30	Weighted average

a Calculated from determined constituents.

Aver-4 8 6 4 1 8 5 1 5 52.4 1 28 85 85 81 80 72 48 82 82 7 15 80 80 6.04 4 2 2 3 78 82 44 5 Temperature (°F) of water, water year October 1960 to September 1961 4 6 8 9 5 2 5 60 67 70 \$15 12 23 4.9 6.8 6.8 80 87 87 75 4 | 6 1 | 8 59 67 1 8 8 76 76 91 91 61 64 8 0 4 1 82 60 4 71 89 60 50 75 25 90 82 8 8 8 1 6 8 99 64 1 46 53 63 48 84 44 44 69 4 62 64 œ 8 1 8 _ 21 28 75 75 ø 52 22 8 1 8 86 85 56 52 56 22 85 85 44 84 87 က 27.8 April May. July August September January..... October November December March Month

SAN JOAQUIN RIVER BASIN--Continued

11-2540. SAN JOAQUIN RIVER NEAR MENDOTA, CALIF.

LOCATION. --Approximately 2.5 miles downstream from Mendota Dam, and 4 miles north of Mendota, Fregno County. PRINKMGE AREA. --4,310 square miles.
PRINKMGE AREA. --4,310 square miles.
RECORDS AVALLABLE. --Chemical analyses: October 1953 to September 1961.
REMARKE. --NO discharge records available.

		Нq	8.1	8.1	7.2	7.8	8.0	7.9	8.0	7.5	8.0	7.8	7.8	7.4	7.8
	Specific con-	duct- ance (micro- mhos at 25°C)	750	910	102	331	878	1,080	489	260 7.5	261	351	723	789	699
		ad- ad- Borp- tion ratio	2.7	2,7			3.5		1.8	1:1	1,1	1.5	3.6	4.0	3.4
		Non- car- bon-	55	84	0	10	81	151	47	=	Ħ	11	53	99	43
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	159	200	58	82	188	254	139	80	77	88	122	128	116
.961	solids ited)	Tons per day													
r 1961	Dissolved solids (calculated)	Tons per acre- foot		1	!	1	1	1	ł	0.22	1	1	1	.58	.49
Septembe	SHICK STATE	Parts per million		1	!	1		!	1	162	1	!	!	424	361
60 to		Fon (B)	0.3	ı.	٦.	٦.	9.	ı.	г.	۲,	٦.	٦.			_
er 19	L	Fluo- Ni- ride trate (F) (NO.)	_		!	!	1	1		6.	!	1		3.3	1.0
Octob		Fluo- rlde (F)	-	!	;	;	1		;	0.2	!	1	1		°.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (CI)	140	156	97	42	124	171	2	56	24	45	155	175	136
ion, wat		Sulfate (SO ₄)	ł	1	1	1	1	1	1	27	!	!	!	41	4
1111		Pon- ate (CO ₃)								_					
ts per		car- bon- ate (HCO ₃)	127	141	34	6	130	126	112	84	81	92	84	26	88
n par	É	sium (K)	1	1	!	!	!	!	-	6.0	ŀ	!	1	4.8	3.2
lyses,		Sodium (Na)	7.2	88	9.3	34	109	104	48	23	22	32	16	103	82
cal ans	ş	mag- ne- sium (Mg)	1	1	!	i	}	1	!	0.6	!	!	1	18	16
Chemi		Cium (Ca)	1	ŀ	1	ł	ł	1			!	!	!	22	20
		(Fe)								0.10					
		Silica (SiQ _g)		1	;	1	į	1	-	17	-	1	ı	8	1.5
		Mean discharge (SiQ _p) (cfs)													
		Date of collection	Oct. 6, 1960	Nov. 10	Dec. 14	Jan. 12, 1961	Feb. 16	Mar. 9	Apr. 13	May 4	June 7	July 13	Aug. 3	Aug. 17	Sept. 6

SAN JOAQUIN RIVER BASIN--Continued

11-2580, FRESNO RIVER NEAR DAULTON, CALIF.

LOCATION --At gaging station, 0.5 mile downstream from Willow Creek, and 5.3 miles southeast of Daulton, Madera County. DALINAR AREA. -289 square miles and services are services and services and services are services and services and services are services and services and services are services and services and services are services and services and services are services and services and services are services and services and services are services and services and services are services and services are services and services are services and services are services and services are services and services are services and services are services and services are services and services are services and services are services and services are services and services are services and services are servi

		뛾	373 7.9 186 7.7 205 7.6 168 7.8	162 7.9 100 7.8 92 7.5 106 7.7
	Specific	duct- ance (micro- mhos at 25°C)	373 186 205 168	162 100 92 106
	.	ad- ad- Borp- tion ratio	21.11	U. 00. 00. 00
		Non- car- bon-	2000	000 m
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	76 57 49	3,88,89
	solids ited)	Tons per day		
r 1981	Dissolved solids (calculated)	Tons per acre- foot		60.0
Chemical analyses, in parts per million, water year October 1960 to September 1981	aka S	Parts per million		88
90 \$2		Bo- ron (B)	0.2 .0 .0	0040
er 19		Ni- trate (NO ₂)		0.1
Octob		Fluo- Ni- ride trate (F) (NO.)		0.1
er year		Chloride (Cl)	89 30 32 23	8.7 111
ion, wat		Sulfate (SO ₄)		0.0
1111	į	te pon (CO)		
rts per	B.	car- bon- ate (HCO ₃)	62 52 53	848 848 75
n pa	Ė	tas- shum (K)		6.0
lyses, i		Sodium (Na)	45 19 20 15	17 10 9.1
al ans	,	nie- ne- stum (Mg)		2.2
Chemic		Cal- ctum (Ca)		8.
		Iron (Fe)		00.00
		Silica (SiQ,)		8
		Discharge Sili (cfs) (Sid	2.7 20 14 30	31 38 30 30
		Date of collection	Nov. 2, 1960 Dec. 14 Jan. 4, 1961 Feb. 8	Mar. 3. Apr. 5. May 10. June 5.

띥

SAN JOAQUIN RIVER BASIN--Continued

11-2590. CHOWCHILLA RIVER AT BUCHANAN DAMSITE, CALIF.

LOCATION .--At gaging station, 1.9 miles upstream from Raynor Creek, and 4.3 miles west of Raymond, Madera County. DRAINAGE AREA.--238 square miles. RECORDS AVAILABLE.-Chemical analyses: January 1958 to September 1961. REMARKS.--RO flow during summer months.

-		Ω.	1-1-88	00 00 00
	Specific	duct- ance (micro- mhos at 25°C)	420 7 483 7 345 8	
	-0S	ad- ad- Borp- tion ratio	1.5	
	Hardness as CaCO ₃	Non- car- bon-	22 44 18 10	040
	Hard as Ca	Cal- cium, Mag- ne- stum	130 128 98 93	73 81 110
	Diggolved solids (calculated)	Tons per day		
er 1961	Diggolved golic (calculated)	Tons per acre- foot		0.25
Septembe	(2) 時日	Parts per million		184
60 to		- 180 - 191 - 191	0.0	
er 19		rrate (NO ₂)		0.0
Octob		Fluo- ride (F)		0.1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride Fluo- Ni- B (Ci) (F) (NO ₂)	84 91 55	36 48 83
1on, wat		Sulfate (SO ₄)		3.0
m111	į	CO)		
ts per	-Ha	car- bon- ate (HCO ₃)	132 102 98 101	90 94
in par	į	1 4 1 3 3		2.4
lyses,		Sodium (Na)	39 40 31 27	40 40 40
cal ana	Ş	mag- ne- stum (Mg)		4.5
Chemi		Ca)		25
		fron (Fe)		0.00 25
		Silica (SiO _c)		24
		Discharge (cfs)	8.1 1.2 1.1	16 8,1 2,2
		Date of collection	Dec. 14, 1960 Jan. 4, 1961 Feb. 8	Apr. 5 May 10 June 5.

8AN JOAQUIN RIVER BASIN--Continued

11-2603. BEAR CREEK AT MERCED, CALIF.

LOCATION. --At U.S. Highway 99 bridge in Merced Merced County.
RECORDS AVAILABLE. --Chemical analyses: January 1959 to September 1961 (discontinued).
REMARKS.--No discharge records available.

		Hq	8.4	8.4	8.4	8	8.2	336 8.3	8.2	85 7.4	7.3	7.3	8.0
	Specific	duct- ance micro- nhos at 25°C)	300	320	282	306	384	336	289	85	85	233	208
		Borp- Hon tion	9.0	6	9	9	٠.	6.	9		۳.	9.	
		Non- car- bon-	0	0	0	П	6	4	8	8	0	0	٥
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	128	129	139	147	180	147	123	36	37	8	92
_	solids ted)	Tons per day				_							
er 196	Dissolved solids (calculated)	Tons per acre- foot	**	1	1	!	i	ł		0.08	ł	!	.20
Chemical analyses, in parts per million, water year October 1960 to September 1961	9) 8HQ	Parts per million	1	!	1	i	1	ţ	}	26	1	1	144
60 to		Pon Bon	0.0	•	۰.	٠.	۰.	٦.		7			
er 19		Fluo- Ni- ride trate (F) (NO ₂)	L	-	!	!	ļ	1		0.2			1.3
Octob		Fluo- ride (F)	!	!	!	!	i	;		0.1		1	
er year		Chloride (C1)	3,7	5.2	8.8	6.0	6.5	8.5	7.5	2.8	1.2	4.4	8.5
ion, wat		Sulfate (SO ₄)	}	1	1	1	;	1	}	4.0	1	1	8.0
m111	- 0,	See - CO	3	4	4	9	0	8	0	0	0	0	۰
ts per	Bi-	car- bon- ate (HCO ₂)	169	180	170	166	506	170	147	41	8	124	109
in pa	É	stum (K)	-	1	!	I	1	1	1	6.0	!	ŀ	1.4
alyses,		Sodfum (Na)	16	24	12	14	15	22	14	3.3	4.0	13	14
al an	7,00	stum (Mg)		i	}	}	ł	1	1	4.9	1	1	7.5
Chemi		Ca)	-	1	ł	1	ł	!	-	6.4	!	!	18
		Fron (Fe)								0.00			
		Silica (SiQ.)	1	1	1	1	ı	l		13	1	1	31
		Mean Silica dischargs (SiQ _b) (cfs)											
		Date of collection	Oct. 6, 1960	Nov. 2	Dec. 14	Jan. 3, 1961	Feb. 6	Ear. 3	Apr. 3	May 10	June 5	Aug. 4	Sept. 8

SAN JOAQUIN RIVER BASIN--Continued

11-2610. SALT SLOUGH NEAR LOS BANOS, CALIF.

LOCATION: --At gaging station in Sanjon de Santa Rita Grant, at San Luis Ranch, 600 yards downstream from confluence with Mud Slough, and 7.0 miles north of Los Banos, Merced County.

RECORDS AVAILABLE. -- Chemical analyses: November 1958 to September 1961.

		Ħ	8.1	8.0	7.8	7.4	9.2	7.8	7.5	7.8	8,0	7.7	7.9	4:4
	Specific	duct- ance (micro- mhos at 25°C)	896	1,990	2,020	2,130	2,550	2,440	1,750 7.5	1,210	1,020	1,140	1,240	1,300
		dum ad- sorp- tion ratio	3.0	5.9	6,3	5.9	6.9	9.9	5,1	3,9	3,5	4.0	4.2	4.2
		Non- car- bon-	81	175	191	529	288	291	200	129	97	110	106	117
	Hardness as CaCO,	Cal- clum, Mag- ne- stum	210	361	385	435	200	478	370	260	238	248	250	260
	solids	Tons per day												
er 196	Dissolved solids	Tons per acre- foot	ł	!	!	1	!	!		0.95	;	:	!	.
Septembe	ਬੋ	Parts per million	ŀ	!	-	!	!	1	!	869	!	!	!	721
50 to		. ron (B)	0.3	6.	٠.	1.7	2.2	2.0	æ			1.0	9.	_
er 19		N1- trate (NO ₃)	1	I	!	ł	1	l	ł	2.8	!	!	!	2,4
Octobe		Fluo- Ni- ride trate (F) (NO ₃)	1	1	-	!	1	l	1	0.5	!	1	ł	٤,
analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	174	334	365	358	440	385	318	220	148	172	222	232
ion, wat		Sulfate (SO ₄)	;	1	286	344	446	445	222	135	132	160	124	129
r mil]	į	2 m a a a a a a a a a a a a a a a a a a												
rts per	Bi-	car- bon- ate (HCO ₃)	157	227	237	251	258	228	207	160	172	168	176	174
in pai	É	Stun Stun (K)		ŀ	!	1	1	1	1	4.8	1	!	1	5.0
llyses,		Sodium (Na)	66	258	282	285	356	334	224	146	115	147	154	157
cal ans	Ş	nage ne- stum (Mg)	1	;	1	ł	ŀ	ł	1	59	1	!	ŀ	32
Chemical		Ctum (Ca)	1	ł	1	1	1	1	1	26	l	!	ł	52
		Iron (Fe)								0.0				
		Silica (SiO ₂)	1	-	-	!	-	ŀ	1	25	ı	1	1	25
		Discharge Sil (cfs) (Sk	86		26	a78	67	a 58	47		93	61		
	,	Date of collection	Oct. 5, 1960	Nov. 9.	Dec. 15	Jan. 12, 1961	Feb. 16	Mar. 9	Apr. 13	Мау 4	June 8	July 13	Aug. 3	Sept. 7

a Daily mean discharge.

11-2615. SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE, CALIF.

LOCATION: --At gaging station in Orestimba Grant, 150 feet downstream from Fremont Ford Bridge, Merced County, 2.1 miles downstream from Salt Slough, 4.5 miles west of Stewinson, and 6.7 miles upstream from Merced River.

BRAINAGE ARRA.--8, 909 equare miles, approximately.

RECORDS AVAILABLE. --Chemical analyses: July 1955 to September 1961.

Water temperatures: July 1955 to September 1959.

		pH	7.8	7.5	8.4	8.2	7.7	7.6	8.1	8.2	7.5	8.2	8.0	8.2	۰.0	7.5	7.6
	Specific	duct- ance (micro- mhos at 25°C)	1,440	2,440	2,310	1,660	2,250	2,590	2,318	1.900	1,390 7.5	1,340	1,430	1,610	1,510	1,580	1,440
	_	ad- ad- Borp- tion ratio	4.5	6.3	6.5	2.5	6.9	7.3	5.9	4.7	4.1	4.4	4.1	4.8	4.9	4.9	4.6
		Non- car- bon-	121	274	274	121	263	291	270	250	142	139	159	159	157	120	145
61	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	268	461	470	360	455	480	475	408	302	290	314	320	292	306	294
	solids ited)	Tons per day															
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	1	i	1	ł	1	1,58	1,09	!	1	;	1.14	1.21	1,11
Septembe)) श्राप	Parts per million	1	1	1	1	!	1	<u></u>	1,070	802	1	1	1	836	889	818
80 to		. B. B.	0.4	8.	1:1	1:1	1.6	1.8	.7	9	9.	9.	8.	.7	.4	٠,	٠2
er 19		Ni- trate (NO ₂)	1	1	1	;	l	1	ŀ	5.2	4.1	1		!	4.5	2.4	1,6
Octob		Fluo- ride (F)	ľ	1	1	!	!	1		0.3	•	1	1	!	٠.	٦.	<u>د.</u>
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	270	520	440	265	395	474	444	388	260	250	261	316	300	312	284
		Sulfate (SO ₄)	1	1	1	220	364	412	256	202	155	164	167	169	131	155	410
r mil.		4 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5	٥	•	9	0	0	•	۰	•	•	0	•	0	0	0	٥
ts pe	늄	car- bon- ate (HCO ₂)	179	228	227	291	234	231	250	193	195	184	189	196	165	180	182
n par	É	E tas (X)	1	!	ł	ì	l	1	i	3.2	4.4	1	ŀ	1	5.2	4.8	2,8
lyses, i		Sodium (Na)	171	310	326	225	338	368	298	218	164	174	166	198	190	198	182
al ans		Mag- ne- stum (Mg)	-	1	!	1	;	ŀ	;	46	33	;	ł	ł	32	34	35
Chemi		Cal- cium (Ca)	;	ţ	į	1	ł	i	ł	88	99	i	ł	ł	64	99	90
		Iron (Fe)									0.02						
		Silica (SiO _e)	ŀ	1	!	1	;	1	1	24	19	1	1	1	27	22	23
		Discharge Siller (cfs) (SiQ _s	55	28	820	148	127	66	85	06	128	123	92	62	77	93	93
		Date of collection	Oct. 6, 1960	Nov. 10	Dec. 15	Jan. 12, 1961	Feb. 16	Мат. 9	Apr. 13	Apr. 21	May 4.	June 8	July 13.	Aug. 3.	Aug. 17.	Aug. 28	Sept. 7

a Daily mean discharge.

SAN JOAQUIN RIVER BASIN--Continued

11-2700. MERCED RIVER AT EXCHEQUER, CALIF.

LOCATION ---At gaging station at Exchequer, Mariposa County, 0.65 mile downstream from Lake McClure, and 5 miles northeast of Merced Falls. ARAI-1.029 equare miles. RECORDS ARAI-1.029 equare miles. RECORDS AVAILABLE. L-Chemical analyses: October 1953 to September 1961.

١		Hď	1.	8.0	7.7	7.7	6.0	8.0	6.2	7.3	7.2	7.7	7.3	9.7
	Specific con-	duct- ance (micro- mhos at 25°C)	185	198	114	113	119	118 8.0	118	39 7.3	36	24	74	92
		ratton cr	0.2	۴.	2	۳,	.2	e.	1.	2	.2			.2
		Non- Car- bon-	20	7	Ŋ	0	9	7	7	0	0	_	*	-
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	8	88	48	84	49	20	49	15	10	24	31	40
		Tons cl												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	;	1	1	I	ŀ	0.04	!	ł	1	80.
Chemical analyses, in parts per million, wêter year October 1960 to September 1961	ald S	Parts per million	1	1	1	1	1	l	1	28	!	!	1	29
8		. B. B.	0,1	۰.	•	•	0	<u>٠</u>	٠	•	۲,	٠.	۲.	۰.
er 19		Fluo- Ni- ride trate (F) (NO ₂)	1	1	1	1	1	1		0.1	!	1	!	æ.
Octob			1	1	ŀ	!	ł	1		0.0	1	1	ŀ	٠:
er year		Chloride (C1)	5.6	7.8	3.2	3.5	3.5	8.3	5.6	2.8	1.0	1	3.8	3,2
ion, wet	-	Sulfate (SO4)	1	1	1	1	1	ſ	1	2.0	1	1	!	3.0
III		(00)												
ts per	BI-	car- bon- ate (HCO ₂)	92	100	22	64	22	22	51	16	13	28	33	84
n pa	Ė	A state (N	Ĺ	1	l	1	1		l	0.7	1	1	!	۲.
llyses,		Sodium (Na)	4.1	5.7	4.0	4.2	3.4	4.4	2.4	2.0	1.7	2.0	2.5	3.2
al ans	1	mag- ne- sturn (Mg)	1	;	1	ł	;	1	!	1.0	ı.	1	!	2.4
Chemic		Cap (Cap)	;	1	!	!	!	!		4.4	3.0	1	ŀ	12
		Fe)								0.01				
		Silica (SiO ₂)	;	ŀ	ŀ	ł	1	}	1	7.1	ŀ	1		9.3
		Discharge Sili (cfs) (SiC		37						1,430	1,520	147	176	143
		Date of collection	Oct. 4, 1960	Nov. 2	Dec. 13	Jan. 3, 1961	Feb. 6	Mar. 1	Apr. 3	May 8	June 7	July 12	Aug. 4	Sept. 8

SAN JOAQUIN RIVER BASIN--Continued

11-2725. MERCED RIVER NEAR STEVINSON, CALIF.

LOCATION: --At gaging station, 5 miles upstream from mouth, and 6 miles northwest of Stevinson, Merced County. DALNARE AREA: -1,74 equare miles. RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1961.

		Hď	8.1	8.0	8.0	0.8	8.0	8.0	4.8	8.2	6.2	6.2	7.7
,	Specific con-	duct- ance (micro- mhos at 25°C)	367	325	309	304	295	314	394	294 7.8	286	394	333
	& :	dium ad- Borp- tion ratio	1,6	1.7	1,3	1,3	1.4	1.3	1.8	1.4	1.4	6.1	4.
		Non- car- bon-	٥	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	95	16	92	85	98	94	121	84	81	97	94
1961	solids ted)	Tons per day											
1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	1	1	1	ł	0.26	1	1	.28
September	Dis (c	Parts per million	ł	!	;	1	1	1	!	191	1	i	202
to S		Bo- ron (B)	0.0	٦: :	۰.	۰.	۰.	۰.	•	٦.	٦.	•	o.
1960		Fluo- Ni- ride trate (F) (NO ₂)		ł	1	ł	1	1	1	3.4	ł	1	6
ctober 1		Fluo- ride (F)	1	1	1	I	1	1	ŀ	0.1	1	1	τ.
r year Oc		Chloride (C1)	72	22	16	15	16	18	34	20	16	35	24
Chemical analyses, in parts per million, water year October 1960 to September 1961		Sulfate (SO ₄)	;	!	ŀ	1	!	1	ŀ	12	!	!	12
	į	ate (CO ₃)	0	0	0	0	0	•	4	•	•	•	•
	Bi-	car- bon- ate (HCO ₃)	155	145	146	157	132	130	166	132	129	160	149
part	Ę	State (X)	1	1	!	ŀ	!	1	ŀ	2.0	!	1	1.7
yses, ir		Sodium (Na)	36	37	30	28	30	30	45	30	28	44	35
11 anal	Ş	nage ne- sium (Mg)	!	1	1	;	1	1	!	7.1	6.9	1	e. 6.
hemical		Cal- cium (Ca)	:	;	1	1	;	1	ł	22	21	1	23
		Iron (Fe)								0.02			
		Silica (SiQ _e)	:	!	-	-	-	1	1	56	ŀ	:	 02
		Discharge Silica (cfs) (SiQ ₆)				115	131	103		71			
		Date of collection	Oct. 6, 1960	Nov. 10	Dec. 15	Jan. 12, 1961	Feb. 16	Mar. 9	Apr. 13	May 4	June 8	July 13	Sept. 7

SAN JOAQUIN RIVER BASIN---Continued

11-2740. SAN JOAQUIN RIVER NEAR NEWMAN, CALIF.

LOCATION.--At gaging station, at bridge on Hills Ferry Road, 300 feet downstream from Werced River, and 3.5 miles northeast of Newman, Stanislaus County. DEMINAGE AREA.--9,990 square miles. RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1961.

		Нď	8.0	7.6	7.7	7.7	8.0	7.6	6.2	7.5	8.2	2.6	7.7	7.6	7.7
	Specific con-	duct- ance (micro- mhos at 25°C)	1,530	1,860	2,310	1,610	2,360	2,680	2,450	1,350 7.5	1,480	1,710	1,780	1,550	1,200
	8;	ad- ad- Borp- tion ratio				5.5			6.2	4.0	4.7	4.7	5.4	5.0	3.6
	ness ICO ₃	Non- car- bon- ate	165	169	254	94	285	322	267	20	161	230	179	153	103
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	303	364	460	323	495	516	493	228	318	400	366	304	220
	solids (ed)	Tons per day													
r 1961	Dissolved solids (calculated)	Tons per acre- foot		1	1	1	1	1	1	1,05	1	ŀ	1	1.18	98.
Septembe	8 73	Parts per million	:	!	1	ł	!	¦ 	1	771	1	!	-	864	634
30 to		Bo- (B)	0.5	۰	1:1	1.2	1.6	1.9	6.	4	6.	6.	٠.	ı.	4.
r 19		Ni- trate (NO ₂)		ł	!	ŧ	!	!	1	3.2	1	!	1	6.4	1.8
ctobe		Fluo- Ni- ride trate (F) (NO ₃)	-	1	l	ł	-	I	1	0,3	l	ł	1	۳,	e.
er year (Chloride (C1)	262	325	420	238	390	449	436	234	235	302	334	302	212
ion, wat		Sulfate (SO ₄)	1	1	1	231	438	470	340	164	211	225	221	135	82
m111	9	(CO)													
ts per	Bi-	car- bon- ate (HCO ₃)	168	238	251	279	256	236	276	193	191	202	226	184	179
n par	ż	tas- sium (K)	1	1	ł	1	1	1	ŀ	4.4	!	1	!	5.2	3.4
Chemical analyses, in parts per million, water year October 1960 to September 1961		Sodium (Na)	183	228	338	228	338	368	318	158	192	214	236	200	138
al ans		Mag- ne- sium (Mg)	1	1	1	1	١	1	1	33	1	1	1	35	53
Chemic		cium (Ca)	1	ļ	1	1	1	;	ŀ	19	!	1	;	64	22
		Iron (Fe)								0.04					
		Silica (SiO ₂)	;	1	;	;	1	1	1	18	1	;	;	25	24
	- '	Discharge SU (cfs) (S						235	157	200	217	a100	885	100	
		Date of collection	Oct. 6, 1960	Nov. 10	Dec. 15	Jan, 12, 1961	Feb. 16.	Mar. 9	Apr. 13	Мау 4	June 8	July 13	Aug. 3	Aug. 17	Sept. 7

a Daily mean discharge.

11-2747. SAN JOAQUIN RIVER NEAR GRAYSON, CALIF.

LOCATION: --At gaging station, at Laird Slough Bridge, 1.8 miles east of Grayson, Stanislaus County, 5 miles upstream from confluence with Twolumne River, and familes continent of Modesto.

RECORDS AVAILABLE.-Chemical analyses: October 1953 to September 1961.

REMANES.-Records of discharge given in State of California Bulletin No. 23-61 as San Joaquin River at Grayson. Flow is San Joaquin River diversion into Laird Slough which returns to San Joaquin River main channel 2.1 miles downstream.

		斑	8.0	8.0	7.8	7.8	7.7	8.0	8.0	8	8.2	7.9	8.5	7.8
	Specific con-	duct- ance (micro- mhos at 25°C)	1,640	1,340	1,410	1,500	1,490	1,910 8.0	1.690	1,080	1,100	1,570	1,550	1,500 7.8
		adum Borp- tion ratto			4.6					3.5				
			1		84					96		_		_
	Hardness as CaCO,	Non- car- bon-	L								_	_	_	
	Har as (Cal- clum, Mag- ne- stum	32	272	300	33	58	392	365	249	274	402	378	336
	solids ited)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	ł	1	1	ł	0.83	1	1	1.26	1,18
Septembe	BHQ S	Parts per million	-	1	-	1	1	1	ı	613	1	!	926	868
10 to		B. 3 B. 3	9.0	ī,	9.	٠.	1.0	1,1	æ	4.	ī.	۳.	'n.	θ.
r 196		Ni- trate (NO ₂)	!	ł	l	I	ł	1	ŀ	3.0	l	!	4.8	4.2
ctope		Fluo- ride t (F) (ī	ŀ	1	1	i	Ī	ł	0.1	!	1	•	.3
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	270	239	225	235	232	318	288	180	175	256	261	257
lion, war		Sulfate (SO4)	:	1	1	1	1	1	1	100	1	1	198	180
T I	į	(CO)	0	0	0	0	0	0	0	က	0	0	24	0
ts per	Bi-	car- bon- ate (HCO ₃)	235	222	266	240	218	228	236	181	204	266	216	238
n par	ģ	tas- (K)	1	1	1	ł	ŀ	1	i	3.4	1	ŀ	5.0	4.0
lyses,		Sodium (Na)	185	182	185	190	188	233	220	128	138	168	179	177
cal an	ž	nag- ne- stum (Mg)	1	1	ŀ	I	1	1	ŀ	30	!	!	49	41
Chemi		Cap (Ca)	1	ŀ	ŀ	1	ļ	ŀ	1	20	1	ł	2	67
		Iron (Fe)								0.00				
		Silica (SiQ,)	-:	ł	1	1	i	ŀ	ł	98	ŀ	ŀ	88	20
		Mean discharge (SiQ,) (cfs)						300	230	315	245	80	100	175
		Date of collection	Oct. 10, 1960	Nov. 11	Dec. 14	Jan. 7, 1961	Feb. 10	Mar. 9	Apr. 10	Кау 9	June 6	Aug. 9	Aug. 17	Sept. 12

SAN JOAQUIN RIVER BASIN--Continued

11-2880. TUOLUMNE RIVER ABOVE LA GRANGE DAM, NEAR LA GRANGE, CALIF.

LOCATION .--Approximately 0.5 mile upstream from gaging station at Don Pedro Dam, 4 miles upstream from La Grange Dam, and 5.5 miles upstream from La Grange, Stanislass County
DAMINGER AREA.--1,581
BRACHOS AVAILABLE.--Chemical analyses: October 1953 to September 1954, October 1956 to September 1961.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954 at 100.

		뛾	0.7	8.8	7.2	6,9	6.9	7.4	2.5	7.1	6.9	6.7
	Specific con-	duct- ance (micro- mhos at 25°C)	25	22	31	88	88	36	41	27	20	22
		ad- ad- sorp-(r tion ratio	0,2	2	2	6.	w 64	8	7	2	?	7
	-	Non- car- bon-	٥	F	67	0		-	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ns- stum	6	10	13	9	12	14	16	10	_	00
	solids ted)	Tons c day										
r 1961	Dissolved solids (calculated)	Tons per acre- foot		ŀ	1	1	11	1	0.04	1	!	.02
Chemical analyses, in parts per million, water year October 1960 to September 1961	sta o)	Parts per million	1	1	1	1	11	ŀ	28	1	1	16
60 to		ron (B)	0,1	۲.	۰.	۰.	 	۰.	_	_	_	_
er 19		Fluo- Ni- ride trate (F) (NO ₃)		1	_	1	11			1		
Octob		Fluo- ride (F)	-	-	1	1	11		0:0		!	
er year		Chloride (CI)	1.5	1.8	1.5	ς.	1.0	φ.	2.0	1.0	!	1
ion, wat		Sulfate (SO4)	1	;	1	1	11	1	1.0	1	1	2.
m111		(CO)										
ts per		car- bon- ate (HCO ₃)	11	11	14	18	13	20	13	13	12	12
n par	Ė	Situm (K)	1	1	1	;		I	0.7	1	1	₹.
lyses, 1		Sodium (Na)	1.7	1,5	1.6	2.3	1.3	1.8	2.0	1.5	1.3	1,2
al ana		Mag- ne- sium (Mg)	1	i	1	!	11	1	1.5	1	ł	ı,
Chemic		Clum (Ca)	1	1	1	1		1	8.8	1	1	2,5
		fron (Fe)							0.0			
		Silica (SiQ _e)	1	1	1	1	11	1	7.2	1	1	4.8
		Mean discharge (cfs)	610				126 409	1,340	904	1,450	1,830	2,120
		Date of collection	Oct. 10, 1960	Nov. 11	Dec. 14	Jan. 7, 1961	Feb. 11	Apr. 10	May 9	June 6	Aug. 9	Sept. 12

SAN JOAQUIN RIVER BASIN--Continued

11-2898. TUOLUMNE RIVER AT HICKMAN, CALIF.

LOCATION: --At gaging station, approximately 0.6 mile south of Miterford, and 1 mile north of Hickman, Stanislaus County. RECORNS AVAILABLE. --Chemical analyses: October 1953 to September 1961.
REMANKS. --Records of discharge given in State of California Balletin No. 23-61 as Tuolumne River at Hickman Bridge.

I		Hd	7.9	7.4	7.2	7.4	6.7	8.2	8.2	7.8	8.0	8.2	8.2	
	pecific con-	duct- ance (micro- mhos at	543	143	102	66	205 7.9	507-8.2	553	266	543	593	283	
	ø,	Borp- Borp- tion n	2.2	1.2	9	9	1.2	2.2	2.1	2.1	2.3	2.3	23	
		Non- car- bon-	30	6	S)	9	13	31	31	40	34	44	9	
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	120	31	30	27	21	111	138	126	124	146	133	
		Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	ł	1	ŀ	1	ł	ì	1	0.45	ŀ	¦	.46	
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dis. (cs	Parts per million	1	Ī	Ī	1	1	ł	1	329	}	!	339	
0 to		ron (B)	0.1	•	•	۰.	۲.	1.		•		•	r.	
r 196		Ni- trate (NO ₃)	1	1	1	ī	1	1	ŀ	9.0	1	1	e.	
ctobe		Fluo- Ni- ride trate (F) (NO ₃)	ł	1	I	1	ī	ł	I	0.1	ł	1	~	
er year (Chloride (C1)	108	53	14	13	35	103	113	120	112	124	121	
ion, wat		Sulfate (SO ₄)	1	1	;	I	1	ŀ	1	4.0	1	!	1.6	
m111	į	(CO)												
ts per		car- bon- ate (HCO ₃)	110	27	30	56	46	97	131	105	110	124	114	
n par	ć	Stars- (K)	1	1	;	1	1	i	ŀ	6.1	ŀ	!	5.6	
lyses, 1		Sodium (Na)	56	15	8.0	7.7	19	54	57	54	28	64	9	
al ana	ž	nage ne- stum (Mg)	1	i	ł	1	1	-	l	13	!	1	12	
Chemic		Cal- clum (Ca)	:	i	;	1	ŀ	;	1	59	;	ł	33	
		Iron (Fe)			-					0.0				
		Silica (SiQ ₆)		1	1	1	1	1	1	20	1	1	49	
		Mean discharge (SiQ _s) (cfs)	123	497	695	624	285			87			;	
		Date of collection	Oct. 10, 1960	Nov. 11	Dec. 14	Jan. 7, 1961	Feb. 10	Mar. 9	Apr. 10	Мау 9	June 6	Aug. 9	Sept. 12	

SAN JOAQUIN RIVER BASIN--Continued

11-2902. TUOLUMNE RIVER AT TUOLUMNE CITY, CALIF.

LOCATION.—At gaging station, at bridge in Tuolume City, Stanislaus County, and 3.4 miles from mouth. RECORDS AVAILELE.—Chemical analyses: October 1963 to September 1961. RECORDS GASILE.—Chemical analyses: October 1963 to September 1961.

		Н	8.0	6.9	7.2	7.1	7.6	7.4	7.8	8,2	7.7	8,3	7.8
	Specific	duct- ance (micro- mhos at 25°C)	1.040	420	356	328	640	886	933	1,060	1,200	1,150 8.3	883
	-8:	ad- ad- sorp- tion ratio	3.4	2,1	1.8	1.7	2,3	3,3	3.2	3,3	3.6	3.7	3.0
	ess CO ₃	Non- car- bon-	79	38	33	28	28	78	77	102	86	94	46
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	216	92	77	89	137	206	198	232	246	242	199
	solids .ed)	Tons per day											
r 1961	Dissolved solids (calculated)	Tons per acre- foot	-	1	1	1	!	1	0.70	1	!	.85	89.
Septembe	8) 8)(1	Parts per million	1	1	1	1	!	1	512	!	!	625	200
30 to		ron (B)	0.2	٦.	٥.	٦.	٦:	~	۰.	7	~	٦.	٦.
er 19		rrate (NO ₂)	1	١	1	1	ł	1	3,1		1	3,8	4.2
Octob		Fluo- ride (F)	1	1	!	1	!	ŀ	0.0	1	!	۳.	~.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	232	94	20	65	136	218	207	255	283	250	179
ion, wat		Sulfate (SO4)	1	ł	ł	1	1	1	91	1	1	17	7.2
m111	į	Don- afe (CO)	0	0	0	0	0	•	0	•	0	n	•
ts per		car- bon- ate (HCO ₃)	167	99	54	49	96	156	147	159	180	174	186
n par	É	Sium (K)	1	1	1	ł	I	Ì	8.0	1	1	9.4	6.2
llyses, i		Sodium (Na)	114	47	37	32	61	108	102	116	128	130	96
cal ans	707	nie- nie- stum (Mg)	1	ļ	ł	1	!	1	16	!	1	19	13
Chemi		Cal- ctum (Ca)	 	1	i	ŀ	!	ŀ	53	;	;	99	29
		Iron (Fe)							0.04				
		Silica (SiQ,)	:	1	1	i	1	<u> </u>	41	L	1	46	£.
		Mean discharge (SiQ,) (cfs)			765				235	175	140	185	225
		Date of collection	Oct. 10, 1960	Nov. 11	Dec. 14	Jan. 7, 1961	Feb. 10	Mar. 9	Мау 9	June 6	Aug. 9	Aug. 17	Sept. 12

SAN JOAQUIN RIVER BASIN -- Continued

11-2905. SAN JOAQUIN RIVER AT MAZE ROAD BRIDGE, NEAR MODESTO, CALIF.

LOCATION.--at Maze Road Bridge, 0.2 mile downstream from gaging station at Hetch Hetchy Crossing, 2.7 miles upstream from Stanislaus River, and 12 miles west of Modesto, Stanislaus County.

RECORDS AVAILABLE.--Chemical maniyes; October 1963 to September 1961.

REMARKS.--Records of discharge given in State of California Bulletin No. 23-61 as San Joaquin River at Hetch Hetchy Aqueduct Crossing.

۱		Ħď	8.1	6.2	7.6	7.6	7.5	7.8	500 8.0	8,1	7.5	8.1	8.5	8.2
	Specific	duct- ance (micro- mhos at 25°C)	1,360	808	220	129	1,160	1,460	1,500	1,100	1,240	1,800	1,440	1,310
		ad- ad- sorp-(r tion ratio						4.1	5.5	3.5	3.8	4.5	4.2	3.9
		Non- car- bon- ate	115	74	19	63	100	159			137	_	_	
	Harduess as CaCO ₃	Cal- cium, Mag- ne- stum	288	179	174	152	237	304	316	247	294	392	310	862
	solids ed)	Tons per day		_										
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	1	1	1		0.86	1	1	1.08	1.04
Septembe	Dis (cs	Parts per million	1	1	1	1	1	i	1	629	1	1	161	165
00 to		ron (B)	0.5		ຕຸ	۳.	9.	9.	4.	4.	4.	٥.	4.	4.
r 196		NI- trate (NO ₂)	П	!	!	;	ł	1		3,1		1	4.8	4.3
ctobe		Fluo- ride t (F)	;	1	1	1	ŀ	1	-1	0.1	1	I	•	.2
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	260	144	132	122	198	287	325	206	258	404	308	254
ion, wat		Sulfate (SO.)	1	!		!	!	1	1	88	1	1	63	112
m111	į	G at a C C C C C C C C C C C C C C C C C	0	0	0	0	0	0	0	0	0	0	6	•
ts per		car- bon- ate (HCO ₂)	211	128	189	108	167	177	193	175	192	202	180	222
n par	É	Sium (K)	-	;	1	1	1	ŀ	-	8.2	ŀ	ŀ	8,0	5.2
lyses, i		Sodium (Na)	155	06	93	88	143	165	176	126	152	206	168	156
al ana	3	nie- nie- stum (Mg)	1	ì	;	ŀ	:	1	1	88	i	!	32	34
Chemic		Ctum (Ca)	!	!	i	ł	1	!	1	23	1	!	7	63
		Iron (Fe)								0.01				
		Silica (SiQ,)		!	1		-		1	30	-		37	27
		Msan discharge (SiQ,) (cfs)	510		685	1,190	1,050		250		310	115	180	-
		Date of collection	Oct. 10, 1960	Nov. 11	Dec. 14	Jan. 7, 1961	Feb. 10	Mar. 9	Apr. 10	May 9	June 6	Aug. 9	Aug. 17	Sept. 12

SAN JOAQUIN RIVER BASIN--Continued

11-2999.98 STANISLAUS RIVER AT TULLOCH DAMSITE, NEAR KNIGHTS FERRY, CALIF.

LOCATION.--Approximately 1 mile downstream from Tulloch Dam, 2.4 milee downstream from Goodwin Dam, and 4.6 miles upstream from Knights Ferry, Stanislaus County.
County. NALLABLE.--Chemical analyses: October 1956 to September 1961.
REMORDS AVAILABLE.--Chemical analyses: October 1956 to September 1961.

		Нq	80 7.5		4.	9.	7.7	7.4	9.7	4.	4.4	:	63 7.3
	Specific con-	duct- ance micro- nhos at 25°C)	80	99	89	99	79	73	75	26	2	2 0	63
		tion catto	7.	e.	~	2	es.	8	٦.	8,0	N C	9.0	2 2
		Non- car- bon-	-	=	-	0	ı,	•	က	0	0	5	00
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	35	28	31	78	35	31	33	24	8 8	2 6	26
	solids ted)	Tons per day											
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	ŀ	I	1	1	90.0	1	1	.05
Septembe	Dis (c	Parts per million	1	1	Ì	;	;	1	;	46		!	39
0 to		- 10 B	0.0	•	•	۰.	0.	•	۲.	•		•	90
ır 196		e trate r (NO ₂)	1	1	1	1	1	Ī	1	0.1	1	!	٠.
ctobe		Fluo- ride t (F)	1	Ī	1	1	I	ŀ	1	0.1	1	1	17
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	1,4	1.5	ď.	۰.	1.0	8.	2,5	1.0	Ņ		1.2
lon, wate		Sulfate (SO ₄)	1	ī	1	1	ŀ	ł	1	2.0	!	;	۱۰.
m111		(C) # (S)		_									
ts per	Bi-	car- bon- ate (HCO ₂)	42	33	36	36	37	45	37	9	8 8	0 0	35
n par	ė	Shim (K)	1	ŀ	1	1	1	!		_		1	۱۳.
lyses, i		Sodium (Na.)	1.9	8.8	2.4	2.4	3.4	2.7	1.3	1.9	0.0	9 (2.0
al ana	7,00	mag- ne- sium (Mg)	1	1	1	1	1	ł	1	2.7	2.1	1	2.8
Chemic		- (S. (S. (S. (S. (S. (S. (S. (S. (S. (S.	1	1	1	1	!	1	1	5.2	8.8	!	5.6
		Iron (Fe)				_	_			0.00			
		Silica (SiO _g)	1	1	1	1	1	1	1	17	1	!	8.9
		Mean discharge (cfs)					_						
		Date of collection	oct. 4, 1960	Nov. 2	Dec. 13	Jan. 3, 1961	Feb. 6	Mar. 1	Apr. 3	May 8	June 5.	Tar is	Aug. 4.

SAN JOAQUIN RIVER BASIN--Continued

11-3034. STANISLAUS RIVER NEAR MOUTH, NEAR VERNALIS, CALIF.

LOCATION: --At gaging station, 2.9 miles upstream from mouth, and approximately 6 miles northeast of Vernalis, San Joaquin County. RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961. REMANES.--Records of discharge given in State of California Bulletin No. 23-61 as Stanislaus River near Mouth.

		Hď	8.2	8.1	8.0	7.8	8.0	7.7	7.7	7.7	8.0	7.8
	Specific	duct- ance (micro- mhos at 25°C)	316	251	228 8.0	155	255	308	335 7.7	315	321	279
	_	dum ad-ad- tion ratio	8	9	ıO	4.	9.	.7	9	٠.	æ	φ.
		Non- car- bon-	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	117	97	94	65	66	117	148	126	134	112
	solids ited)	Tons per day										
r 1961	Dissolved solids (calculated)	Tons per acre- foot								0.28		
Septembe	Dis o)	Parts per million								207		
30 to		Fon (B)	0,1	٦.	•	•	•	٥.	•	٦.	7	۰.
er 196		Fluo- Ni- ride trate (F) (NO ₃)								9.0	_	
Sctob		Fluo- ride (F)		_						0.1		
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	8.8	6.5	5.2	00 1		7.4	Ξ'	0°6	7.7	e. e.
ion, wat		Sulfate (SO.)							,	91		
1111	ء ق	bon- ate (CO ₃)										
ts per		car- bon- ate (HCO ₃)	172	131	124	8 6	129	164	204	182	0 1	ZCT
n par	ğ	tas- stum (K)							,	7.7		
lyses,		Sodium (Na)	20	14	12	1.,,	•	18	17	B 6	9;	12
al ans	X 20	nie- stum (Mg)	ł	1	1	!	!	ŀ	1;	77	*	!
Chemic	;	ctum (Ca)	1	ŀ	ŀ	!	1	ŀ	18	3 5	7	
		Iron (Fe)							2	70.0		
		Silica (SiQ _e)								<u>*</u>	_	
		Mean discharge (cfs)	104					48	1.5	12	, L	?
	ā	Date of collection	Oct. 6, 1960	NOV. TU.	Dec. 15	Feb 17		Mar. 9.	Apr. 13	Trans R	Inlu 13	

11-3035. SAN JOAQUIN RIVER NEAR VERNALIS, CALIF.

OCATION .--At gaging station at Durham Ferry highway bridge, 3 miles downstream from Stanislaus River, and 3.4 miles northeast of Vernalis, San Joaquin

WECORDS AVAILABLE. --Chemical analysés: March 1951 to September 1961. Water temperatures: March 1951 to September 1961. approximately. DRAINAGE AREA. -- 14,010 square miles,

Sediment records: November 1956 to September 1961.

EXTREMES, 1960-61.—-Dissolved solids: Maximum, 1,200 ppm Aug. 10, 11; minimum, 370 ppm Doc. 21-31.

Hardness: Maximum, 410 ppm Apr. 9-21; minimum, 1,20 ppm Aug. 11; minimum, 410 ppm Doc. 21-31.

Partness: Maximum daily, 2,350 micromhos Aug. 11; minimum daily, 629 micromhos Doc. 16.

Water temperatures: Maximum daily, 2,350 micromhos Aug. 11; minimum daily, 10 ppm 1, 20.

Sediment loads: Maximum daily, 113 ppm July 2; minimum daily, 15 ppm Jul 4.

Sediment loads: Maximum daily, 404 tons Feb. 1; minimum daily, 15 ppm Jul 4.

Sediment loads: Maximum daily, 404 tons Feb. 1; minimum daily, 15 ppm Jule 1.

Sediment loads: Maximum 410 ppm Apr. 19-21, July 13, 1961; minimum, 23 ppm June 1.10, 1962.

Specific conductance: Maximum 411, 2, 250 micromhos Aug. 11, 1961; minimum daily, 60 micromhos June 21, 1953.

Specific conductance: Maximum 411, 2, 250 micromhos Aug. 11, 1961; minimum daily, 60 micromhos June 21, 1953.

Sediment loads (1966-61): Maximum daily, 28, 500 tons Apr. 5, 1958; minimum daily, 2 tons Aug. 10, 1961.

REMARES.—Records of specific conductance of daily samples svalable in district office at Secremento, Calif.

	۱
1961	
September	
ţ	l
1960	l
October	
year Oct	
water	
million,	
per	
n parts per	-
tn	١
alyses,	
al an	١
Chemic	ŀ
	ſ

		Hď	2.	۲.	.5	3.4	3.5	4.4	7.5	3.2	4.	۰.	٥.	6.
	Specific	duct- ance micro- ahos at 25°C)	1,200	858	855	762	741	837	711	699	667	712	831	838
		adum sorp- tion tion ratio	3.8	3.0	3.0	8.8	2.7	3.0	2.4	2.5	2.5	2.6	3.4	3.4
		Non- car- bon- ate						70		22	22	22	54	61
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	266	193	189	170	170	187	158	148	146	148	170	166
	olids ted)	Tons per day	1,010	1,070	1,090	1,170	1,230	1,260	1,350	1,310	1,260	1,280	1,750	1,890
TOCT T	Masolved solids (calculated)	Tons per acre- foot	0.94	.67	99.	. 59	.58	99.	. 52	.51	3.	.53	99.	99.
Too Termonder	end (c	Parts per million	069	489	485	436	423	484	386	373	370	387	484	485
OCCOPED TERRO CO		ron (B)	0.4	~	2	~	e.	e,	6.	8	'n.	~	4.	₹.
121		rrate (NO ₂)	3.7	3.2	8.8	2.7	3,1	3,3		3.2	3.4	2.1	3.2	3.6
200		Fluo- ride (F)	0.1	•	•	۲.	۲.	٦.	8	8	o.	٦.		e,
Teak Tar		Chloride (C1)	225	120	120	136	130	154	110	110	110	112	135	142
11 OH , WG		Sulfate (SO ₄)	06	67	73	63	22	67	29	28	26	89	8	- -
1111	į	를 다 되었 다 되었	٥	0	0	e	e	က	۰	0	0	0	•	•
ed en	Bi-	car- bon- ate (HCO ₂)	201	147	140	121	128	137	124	113	=======================================	11	142	128
T Da	Ė	Situm (X)	5.2	4.3	3.7	3.2	2.8	2.8	3.4	2.7	2.7	2.7	89.	3.4
demical analyses, in parts per militon, water year		Sodium (Na)	141	96	96	85	82	63	69	69	69	73	101	102
car am	į	mage- ne- stum (Mg)	27	8	8	18	16	19	17	12	12	7	18	17
THOR		Ctum (Ca)	62	44	42	39	38	44	36	34	33	36	36	38
		(Fe)	0.0	8	8	8	5	8	8	8	8	8	8	8
		Silica (SiQ ₂)	37	32	28	5 8	56	30	27	22	22	24	24	21
		Mean discharge (SiO ₂) (cfs)	542						1,300	1,299	1,265	1,223	1,342	1,440
		Date of collection	Oct. 1-12, 1960	Oct. 13-20	Oct. 21-31	Nov. 1-10	Nov. 11-20	Nov. 21-30	Dec. 1-10	Dec. 11-20	Dec. 21-31	Jan. 1-10, 1961	Jan. 11-20	Jan. 21-31

7.7 7.5 7.9 7.9 1.8	446698	7.6	7.5 7.7 7.7 6.2 6.2
811 7 1,070 7 1,140 8 1,220 7 1,310 8	1,480 7 1,780 7 1,340 7 1,390 7 1,250 8	360 7 550 7 550 7 500 7 790 7 770 7	1,800 1,560 1,560 1,560 1,370 1,370 1,430 966
999999	0.0 0.4 4 6 0.0	V-10807-6	4044464 6
63 107 125 141 125	182 214 264 193 1153 116	146 172 185 170 246 291 239	236 347 179 1156 121 121 136 88
172 221 240 261 294 297	330 356 410 337 311 272 286	306 332 344 336 440 395	400 334 334 320 320 320
1,810 1,770 1,660 1,120 672 795	507 2334 206 469 7526 783	33346 3383 3383 1994 1090	195 132 339 541 819 628 720
. 82 . 87 . 92 1. 00	1.10	1.01 1.13 1.17 1.08 1.26 1.46	1.33 1.66 1.15 1.16 1.06 1.11
452 606 642 676 732 8727	809 872 974 739 770 667	746 834 860 792 929 1,070	975 1,220 849 852 831 783 816
400040	ৰ তে ক ৰ ৰ ক ত	4040000	
4.00.00.4 0.00.00.4	6.6.6. 1 6.4.6.4.6.6.0	32.22.23	7.000.00 0.00 0.00 0.00 0.00
444444	<u> जंजंजंचंजंजं</u>		1 1 2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2
128 180 198 224 250	328 370 215 288 222 250 250	272 328 345 316 410 495	407 543 342 312 295 276 285 176
85 1111 120 109 74	82 100 78 84 84 92	88 88 88 88 89 89 89 89 89 89 89 89 89 8	90 124 69 107 109 88 112
000020	000000	000000	000000
133 164 162 168 163 210	180 176 178 176 193 193	195 195 194 202 188 188 190	197 190 204 217 228 222 208 151
0000404	00000000000000000000000000000000000000	8 8 0 9 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9	
88 123 132 143 143	163 173 200 144 165 138	149 170 172 160 192 230	204 256 177 175 174 161 165
1 388239	32 33 33 31 31 31	32 33 33 34 44 35 44 36 36	42 35 35 35 37 37
88 4 4 8 8 1 1 68 6 4 8 8 1	79 87 71 72 62 64	70 76 77 77 91 87	91 111 81 76 66 60 67 67
2200020	8222388	8888888	00.00.00.00
18 26 26 333 27	23 23 24 30	353 353 110 110 110 110	334 331 331 331 331
1,462 1,079 960 612 340 405	232 142 78.3 235 435 406	271 165 166 77.2 47.5	74.0 40.0 148 235 365 327 327 604
Feb. 1-6, 1961 Feb. 7-17 Feb. 18-28 Mar. 1-9 Mar. 10-19	Apr. 1-12. Apr. 13-18. Apr. 22-30. Apr. 22-30. May 1-7. May 8-16.	June 1-9. June 10-20. June 10-20. July 1-10. July 1-10. July 120. July 22-31.	Aug. 1-9. Aug. 10. 11. Aug. 21-20. Aug. 21-31. Sept. 1-5. Sept. 6-17. Sept. 18-30.

a Estimated. b Includes estimates for missing data.

SAN JOAQUIN RIVER BASIN--Continued

11-3035. SAN JOAQUIN RIVER NEAR VERNALIS, CALIF. -- Continued

	'ver-	age	2.25	.0.00.10	0.00 ==	
	<		84 96 09	4 12 22 6 12 12	63	11.8
		31	59	52	181	82 l
		30	80 4 80 4	2 2	63	63
		29	58 51 43	51 51	66 68 68	72 71 65
		28	5 7 4 5 7 5	51 52 52	63 64 68	71 70 88
		27	51	50.00	61 64 78	122
31		5 26	0 10 4 0 17 80	41 52 56	65 75 75	71 64 66
196		5	51	4 6 5 7 4	55 76	72 70 67
per		23 24	60 129 189	52 6	56 75	45 63 65
pter		23	61 52 48	526	56 78	12 25 65
Temperature (°F) of water, water year October 1960 to September 1961		1 22 2	522	50 22	52 75 75	72 71 65
t t		21	52	5 2 2 5	58 77	73
196		20 21	59 52 51	51. 52.	55 73 85	72 71 65
ber		19	522	5000	567	22 25 55
)cto		18	55	3 1.4	62 65 72	72 75 69 70 63 63
ar		17	50 50 E	5 11 4 6 5 11 4	4 6 6 6 6 6	72 69 63
r ye	Day	16	53	533	65 77	71 68 68
ate		15	53	3 %	62 77	71 68 65
г,		13 14 15 16 17 18	53	58 57	59 61 75	6.69
ate		13	5.5 5.5 8	3 2 2	5.0 6.0 6.0	73 70 65
J.		12	8 5 4 8 8 8 8	8 1 4	62 61 67	76 73 69
F)		=	56 56 41	50 57 55	6 4 6	128
ه		10	55	3,72	62 65 65	121
tur		٥	57 55	4 22 22 72 40 42	61	131
per		ω	633 455 55	4 10 10	63	129
Теш		7	65 56 45	41 53 50	61 58 67	25 8 8
		9	68 58 47	51	61 61 67	929
		2	65 56 49	4 10 10 4 10 10	61 58 67	66 69
		4	65 57 51	4 6 4	62 67	69 74 67
		က	59	4 4 2	62 61 67	74 711 65
		2	53	4 50 0	61	75 68 69
		_	59	4 5 5 5	63	72 67 71
	7	Monu	October November December	January February March	April May June	July August

11-3035. SAN JOAQUIN RIVER NEAR VERNALIS, CALIF .-- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

		OCTOBER	1	1	NOVEMBER			DECEMBER	
		Suspend	ded sediment		Suspend	led sediment		Suspende	ed sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	478		50	830	20	45	1080	34	99
2	546	38	56	810		46	1130	}	100
3	542		56	905	23	56	1200	33	107
5	486 494	38	50 52	950 1010	21	56 57	1360 1360	30	120 110
7.0	4,4		,,,,	1010		٠.	1300	"	110
6	506	39	53	1080	{	64	1310	\ \	81
7	546		56	1080	26	76	1260	19	65
8	584	33	52	1080	1	73	1420		84
9	584 592	25	44 40	1120 1100	25	76 74	1450 1430	26	102 110
••••	,,,	-		1100			1430		
11	562		35	1100	26	77	1410	30	114
12	579	24	38	1110		81	1370		110
13	682		52	1130	28	85	1310 1220	31	110
14	750 840	32	65 64	1130 1050	25	79 71	1310	28	99
1,000	840		04	1050	"	**			
16	895	24	58	1060		72	1350	26	95
17	890		58	1040	26	73	1330	26	93
18	795	24	52	1040	1	73	1290	28	98 87
19	765	7-	50	1070	24	69	1190	27	
20	860	26	60	1050		62	1210	32	105
21	865		56	975	21	55	1260	31	105
22	880	21	50	925		50	1270	30	103
23	895		51	955	22	57	1280	23	79
24	805	22	48	1040		70	1270	21	72
25	660		39	1050	25	71	1250	22	74
26	710	21	40	985		53	1250	21	71
27	790		45	885	20	48	1240	21	70
28	835	21	47	900		49	1220	17	56
29	880	1	45	925	21	52	1260	17	58
30	905	18	44	990		67	1300	17	60
31	890		43				1310	20	71
Total	22091		1549	30375		1937	39900		2807
		JANUARY	·		FEBRUARY			MARCH	
1	1300	19	67	1590	94	404	860	29	67
2	1260	23	78	1570	83	352	795	23	49
3	1150	19	59	1470	75	298	660	25	45
4	1080	15	44	1440	74	288	534	27 23	39
5	1230	20	66	1490	74	298	522	23	32
6	1270	17	58	1330	70	251	579	22	34
7	1280	17	59	1230	63	209	562	19	29
8	1260	16	54	1200	62	201	546	27	40
9	1250	20	68	1200	62	201	446	22	26
10	1150	27	84	1150	56	174	350	18	17
11	1230	36	120	1120	56	169	350	20	19
12	1290	40	139	1070	50	144	340	19	17
13	1340	38	137	1010	42	115	375	24	24
14	1450	33	129	960	40	104	316	22	19
15	1460	29	114	945	42	107	281	18	14
16	1340	25	90	980	41	108	299	17	14
17	1280	24	83	1000	35	94	319	16	14
18	1300	22	77	1000	30	81	358	16	15
19	1360	20	73	1000	27	73	410	21	23
20	1370	24	89	985	29	77	446	24	29
21	1370	24	89	955	31	80	406	20	22
22	1460 1450	30	118 149	955 970	32 27	83 71	375 354	23 26	23 25
23	1310	42	149	970	24	62	358	25	24
25	1230	46	153	970	29	76	392	22	23
26	1370	49	181	990	30	80	400	30	32
							478		
27	1420 1530	63	242 277	935 845	26 25	66 57	486	31 31	40 41
29	1580	68	290	"==			462	29	36
30	1560	73	307				372	31	31
31	1560	87	366				330	33	29

11-3035. SAN JOAQUIN RIVER NEAR VERNALIS, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported loads are estimated)

		APRIL			MAY			JUNE	
			ded sediment			ded sediment			ed sediment
Day	Mean dis-	Mean	Tons	Mean dis-	Mean	Tons	Mean dis-	Mean	Tons
	charge (cfs)	tration (ppm)	per day	charge (cfs)	tration (ppm)	per day	charge (cfs)	tration (ppm)	per day
1	299	33	27	254	87	60	335	63	57
2	333	37	33	263	83	59	294	57	45
3	336 257	46	42 33	225	82 75	50 42	239 239	56 62	36 40
5	195	40	21	209 225	71	43	291	73	57
6	176	36	17	251	87	59	300	66	53
7	197	44	23	347	102	96	256	57	39
8	203	49	27	466	105	132	248	57	38
9	186 206	54 53	27 29	490 458	99 96	131 119	237 211	58 58	37 33
				JJ	1		i		
11	225 173	59 51	36 24	406 434	86 83	94 97	214 248	69	40 49
13	147	49	19	403	70	76	239	65	42
14	163	50	22	426	80	92	190	49	25
15	147	45	18	438	98	116	178	56	27
16	142	43	16	392	92	97	154	76	32
17	145	50	20	375	86	87	163	67	29
18	106	55	16	372	84	84	175	60	28
19	80 68	53 48	11 9	375 386	82 79	83 82	175 180	55 71	26 35
21	87	46	11	414	85	95	173	83	39
22	132	40	14	462	92	115	146	78	31
23	179	43	21	450	80	97	137	67	25
24	266	59	42	438	87	103	163	57	25
25	296	76	61	450	87	106	173	65	30
26	260	75	53	450	81	98	214	81	47
27	242	67	44	406	75	82	180	74	36
28	245	70	46	375	68	69	146	73	29
29 30	254 245	70 84	48 56	392 378	62 63	66 64	144 170	67 78	26 36
31				361	63	61	170		
Total	5990		866	11771		2655	6212		1092
		JULY			AUGUST			SEPTEMBER	
	105			l			225	05	
1 · · · 2 · · ·	185 199	94 113	47	115 89	64 59	20 14	335 360	85 72	77 70
3	194	111	61 58	63	58	10	363	63	62
4	209	103	58	54	62	9	394	76	81
5	197	83	44	54	63	9	374	76	77
6	151	77	31	65	62	11	360	73	71
7	125	70	24	101	60	16	310	80	67
8	110	64	19	89	60	14	304	72	59
9	137 151	68 96	25 39	36 30	34 29	3 2	314 324	81 81	69 71
11	115	102	32	1	34	5	346	85	79
12	72	77	32 15	50 63	40	7	346	77	68
13	59	65	10	132	59	21	276	71	53
14	57	62	10	173	71	33	237	63	40
15	70	70	13	190	85	44	239	59	38
16	101	58	16	178	84	40	262	57	40
17	101 84	63 58	17	149	78	31	262	48	34
18	84 36	50	13 5	149 137	79 75	32 28	291 324	58 64	46 56
20	36	43	4	163	90	40	335	59	53
2000	59	57	9	224	103	62	335	58	52
		52	9	224	110	67	328	75.	66
21	63	57	9	214	95	55	321	78	68
21	57	21	13	204	93 86	51 49	346 363	66 55	62 54
21 22 23 24	57 96	51				***			
21 22 23 24 25	57 96 65	51 50	9	209					
21 22 23 24 25	57 96 65	51 50 54	9 10	194	80	42	332	47 52	42
21 22 23 24 25	57 96 65 68 63	51 50 54 48	9 10 8	194 194	80 88	46	310	52	44
21 22 23 24 25 26 27	57 96 65 68 63 72	51 50 54 48 53	9 10 8 10	194 194 248	80 88 85	46 57	310 321		
21 22 23 24 25 26 27 28 29	57 96 65 68 63 72 61 91	51 50 54 48 53 58 58	9 10 8 10 10	194 194	80 88 85 82 83	46 57 62 66	310	52 51	44 44
21 22 23 24 25 26 27 28 29 31	57 96 65 68 63 72 61	51 50 54 48 53 58	9 10 8 10 10	194 194 248 279	80 88 85 82	46 57 62	310 321 318	52 51 47	44 44 40
21 22 23 24 25 26 27 28 29	57 96 65 68 63 72 61 91	51 50 54 48 53 58 58	9 10 8 10 10	194 194 248 279 296	80 88 85 82 83	46 57 62 66	310 321 318	52 51 47	44 44 40

SAN JOAQUIN RIVER BASIN--Continued

11-3035, SAN JOAQUIN RIVER NEAR VERNALIS, CALIF. -- Continued

	Maked	o o	analysis	Δ	>>
			2.000		
			1.000		
		eters	0.500		
		millim	0.250		
ater;	fment	ted, in	0, 125	100	g !
ative w	Suspended sediment	e indica	0.062	66	100
optembe N, in n	Suspen	han siz	0.031		
o to Sentation;		finer t	0.016		
er 1960, decar		Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000		
octob rsed; L W, in d			0.004		
ir year ly dispe n tube;			0.002		
Particle size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis B, bottom withdrawat tube; C, rehenically dispersed, D, decanation; N, in mattre water; P, pipet; S, steve; V, visual accumulation tube; W, in distilled water)	1000	discharge	(tons per day)		
of suspended on withdrawal to S, sieve; V, vi	Sediment	concen- tration	(mdd)	99	93
size analyses nalysis: B, botto P, pipet;		Discharge (cfs)		242	450 248
rticle ods of a	Water	ling per-	(°F)	89	70
Ps (Meth		ling	point		
		Time (24 hour)		1300	1010
		Date of collection		Apr. 27, 1961	May 23June 9

SAN JOAQUIN RIVER BASIN--Continued

11-3042. SAN JOAQUIN RIVER AT MOSSDALE, CALIF.

LOCATION.--Boat landing at Mossdale Bridge at Mossdale, San Joaquin County, opposite tidal gaging station, and 7.6 miles northeast of Tracy. RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961.

		Нq	8.1	8,1	7.7	7.7	7.7	8.0	7.6	7.9	7.9	7.7	7,8	8,0	8.2
	Specific	duct- ance (micro- mhos at 25°C)	1,190 8.1	739	736	788	1,130	1,320	1,430	1,200 7.9	1,260	815	280	801	1,410
		ad- sorp- tion ratio	3.4	2.8	2,9	2	3,6	9,0	4.0	3.7	3.7	2.7	2,2	2,6	4.0
		Non- car- bon- ate	100	69	62	99	102	136	170	118	137	9	56	63	127
	Hardness as CaCO _s	Cal- cium, Mag- ne- stum	261	173	164	168	240	290	309	265	294	183	141	190	304
	solids ted)	Tons per day													
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	;	1	1	1	1	ł	0.88	1	ŀ	1	.56	1.04
Septembe) (၁)	Parts per million	1	1	[1	1	1	ł	645	1	ł	1	415	768
0 to		ron (B)	0.0	~	•	ຕຸ	5.	•	4.	٤.	4.	۴,	7	۳,	•3
r 196		Ni- frate (NO ₃)	1	1	1	ŀ	1	1	1	0.5	ŀ	ł	1	3.0	8.
ctobe		Fluo- ride 1 (F)	1	1	!	1	1	ī	I	0.1	ł	1	i	г.	2.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	221	137	132	134	208	244	262	242	248	153	26	142	280
lon, wat		Sulfate (SO ₄)	;	1	1	1	1	ł	1	20	1	1	1	35	91
m111	į	(CO)													
rts per		car- bon- ate (HCO ₃)	196	127	124	124	168	188	170	173	191	120	140	155	216
n pa	Ď,	Stun Stun (X)	1	;	!	!	1	1	!	6.0	1	!	!	5.2	5.6
alyses,		Sodium (Na)	127	86	98	74	129	151	162	139	148	85	19	83	161
cal an	Yez	nag- ne- sium (Mg)	!	ŀ	ŀ	ŀ	ł	ŀ	1	59	1	1	ł	21	33
Chemi		Cal- cium (Ca)	1	ł	ŀ	ŀ	ł	1	ł	29	ł	1	ŀ	42	67
_		Iron (Fe)								0.02					
		Silica (SiQ _e)	1	1	;	ļ	1	1	1	14	ı	1	ł	7.5	23
		Mean Sili discharge (SiC (cfs)													
		Date of collection	oct. 7, 1960	Nov. 10	Dec. 15	Jan. 12, 1961	Feb. 17	Mar. 9	Apr. 14	May 4	June 8	July 14	Aug. 9	Aug. 17	Sept. 7

SAN JOAQUIN RIVER BASIN---Continued

11-3048. SAN JOAQUIN RIVER AT GARMOOD BRIDGE, NEAR STOCKTON, CALIF.

LOCATION: --Boat landing at Garwood Bridge on State Highway 4, opposite tidal gaging station, and 1.8 miles west of Stockton, San Joaquin County. RECORDS AVAILABLE. --Chemical analyses: October 1953 to September 1961.

		Н	7.7	8,1	7.9	7.8	7.8	,130 8.0	7.7	7.7	7.8	7.8	7.7	7.6	
	Specific con-	duct- ance micro- nhos at 25°C)	703	196	670	719	1,030	1,130	1,060	873 7	804	573	582	734	
		ad- ad- Borp- tion ratio	2.7	3.5	2.7	3.0	3,3	3.7	3.8	3,1	3.0	2.0	2,5	3.2	
		Non- car- bon-	٥	8	53	8	82	84	06	6	65	38	22	24	
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	153	220	150	157	219	238	223	199	173	126	125	154	
_	solids ted)	Tons per day													
r 196	Dissolved solids (calculated)	Tons per acre- foot	1	1	!	!	!	!		0.64	:	!	;	• 53	
Septembe	Dia (cs	Parts per million	-	1	-	1	1	!	1	472	1	!	1	389	
30 to		ron (B)	0.3	۳.	•	۳.	4.	ı.	4.	۳.	۳,	~	۲.	۰.	
r 196		Fluo- Ni- ride trate (F) (NO.)		1	i	ŀ	ŀ	ŀ	1	1,4	1	1	1	1.2	
ctobe		Fluo- ride (F)	1	1	;	1	1	1	ł	0.2	1	1	1	.2	
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	105	180	112	123	188	202	186	169	144	102	102	134	
ion, wat		Sulfate (SO ₄)	1	;	1	1	!	1	1	19	1	1	1	58	
1111	-0,	5 2 2 0													
ts per	Bi-	car- bon- ate (HCO ₃)	186	169	118	115	167	188	182	133	132	107	66	159	
n par	Ė	shum (K)	!	1	1	1	1	1	1	6.2	1	1	1	9.0	
lyses, 1		Sodium (Na)	78	118	77	98	114	133	132	102	8	26	84	6	
al ans	20/4	mag- ne- sium (Mg)	!	;	1	!	i	1	;	23	!	1	ŀ	18	
Chemic		Ctum (Ca)	1	;	;	ł	ł	1		4	1	1	!	32	
		Fron (Fe)								0.01					
		Suica (SiO ₂)	1	ł	¦	;	1	1	1	1,4	1	1	1	e.	
		Mean discharge (SiO ₂) (cfs)													
		Date of collection	Oct. 3, 1960	Nov. 1	Dec. 16	Jan. 13, 1961	Feb. 17	Mar. 10	Apr. 14	May 5	June 9	July 14	Aug. 9	Sept. 6	

SAN JOAQUIN RIVER BASIN--Continued

11-3095. CALAVERAS RIVER AT JENNY LIND, CALIF.

LOCATION --At bridge on Milton Road, 70 feet upstream from gaging station, 0.2 mile south of Jenny Lind, Calaveras County, and 6.5 miles downstream from Cosgrove Creek.
DRAINAGE AREA.--358 Square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1961.
REMARKS.--No flow during summer months.

		Ħ	8.0	8.1	8.2	8,3	8.0	319 7.8	8.4
	Specific	duct- ance (micro- mhos at 25°C)		_					308
	8;	ad- ad- Borp- tion ratio	0.4	-	-	£.	·	Ī	.4
	Hardness as CaCO,	Non- car- bon-	30	32	27	32	53	77	10
	Hard as Ca	Cal- clum, Mag- ne- sium	125	130	120	136	148	141	134
	solids ed)	Tons per day							
ır 1961	Dissolved solids (calculated)	Tons per acre- foot						0.26	
Septembe	Dis (ca	Parts per million						192	
30 to		ron (B)	0.0	•	•	٦.	٦.	2,	-
er 196		Fluo- Ni- ride trate (F) (NO ₃)				_		0.1 0.8	
Octobe		Fluo- ride (F)							
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride ric (Cl) (F	13	음	9.0	#	17	£ ;	7
.ion, wat		Sulfate (SO ₄)						56	
m111		CO)	0	0	0	-	0	0.	2
ts per		car- bon- ate (HCO ₃)	116	119	114	125	145	155	140
n par	č	S st st S						2.2	
lyses,		Sodium (Na)	9.8	6.3	10	8.4	9.4	13];
al ans	7.	nage ne- stum (Mg)						13	
Chemic		Ctum (Ca)		_				32	
		Iron (Fs)						0.00 35	
		Silica (SiQ,)						13	
		Discharge Si (cfs) (S	16	14	45	e.	6.	e	3.4
		Date of collection	Dec. 13, 1960	Jan. 3, 1961	Feb. 6	Mar. 1	Apr. 3	May 8.	June 1

11-3112. STOCKTON SHIP CHANNEL NEAR RINDGE PUMP, ON RINDGE TRACT, CALIF.

LOCATION. --Boat landing at ship channel, downstream from confluence with Fourteen Mile Slough, downstream from tidal gaging station, and approximately 9.6 miles northwest of Stockton, San Joaquin County.
RECORDS AVAILABLE. --Chemical analyses: October 1953 to September 1961.

ı		띥	6	0	٦.	9.		2	80	80	۲.	6	r.	۰.
	Specific con-	duct- ance (micro- mhos at 25°C)	477 7	644	749	788	856 7	681 7.5	529 7	317 7.8	279 8	297 7	450 7	415 8
	·8;	Sorp- formation in ratio	6.1	8.8	0.0	8.8	4.	.3	6	1,3	1,1		7.4	0:
		Non- au Car- 80 Car- th bon- ra		56						24		12		
	Hardness as CaCO,		===	144	98	32	86	4.	- 88	6	22	96	22	96
	Ha	Cal- ctum, Mag- ne- stum	7	-	-	<u>~</u>	<u> </u>	-	- -	<u> </u>	_		-	<u></u>
	solids ted)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot		!	!	1	!	1		0.24	!	!	i	.32
Septemb	∄°	Parts per million		!	1	!	!	!	-	180	1	1	!	232
60 to		- RO (B)	0.1	.2		۳.	۳.	e.	6	۲.	•	٦.	٦.	•
er 19		Fluo- N1- ride trate (F) (NO ₃)	L	-	1	!	!	1		6.	!	1	!	2.7
Octob		Fluo- ride (F)	1	1	!	!	!	1		0.2	ŀ	!	!	۲.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	78	29	134	130	153	112	80	42	33	33	82	69
lion, wa		Sulfate (SO ₄)	ł	!	ł	;	1	1	1	77	!	1	!	19
r m11	į	CO (CO)						_						
ts pe	B!-	car- bon- ate (HCO ₂)	109	144	132	116	117	117	107	83	85	8	8	89
n par	ś	K)	1	¦	I	1	ı	1	ì	1.8	!	ļ	1	2.4
llyses,		Sodium (Na)	46	92	89	88	4	69	52	28	24	22	22	46
cal ans	Ş	stum (Mg)	1	1	ļ	;	ì	;	ŀ	==	ŀ	1	!	13
Chemi		Ca)	1	!	1	1	!	!	ŀ	19	ŀ	1	!	17
		Iron (Fe)								0.01				
		Silica (SiQ _e)	;	1			-	1	ļ	15	1	!	1	19
		Mean Silica I discharge (SiQ ₆) (cfs)												
		Date of collection	Oct. 3, 1960	Nov. 1	Dec. 16	Jan. 5, 1961	Feb. 9	Mar. 10	Apr. 5	May 11	June 1	July 12	Aug. 9	Sept. 7

SAN JOAQUIN RIVER BASIN--Continued

11-3127. OLD RIVER AT SOUTH TIP OF FABIAN TRACT, NEAR TRACY, CALIF.

LOCATION: --At southern tip of Fabian Tract, at trash rack of pump intake at end of Lammers Road, approximately 3 miles east of Bethany, and 6.1 miles north of Tracy, San Joaquin County,
RECORDS AVAILABLE. --Chemical analyses: October 1953 to September 1961.
REMANES.--No discharge records available.

		EG.	8.0	8.1	7.3	7.8	7.4	8.0	7.9	8.0	8.2	7.6	7.4	8.2
	Specific	duct- ance (micro- mhos at 25°C)	1,290 8.0	870	893	833	1,180	1,230	1,470	1,230 8.0	1,330	925	714	1,070
		Borp- tion ratio	3,7	3.1	3.1	2.2	3,5	3,8	4.0	3.8	3,7	2.8	2,2	3,3
		Non- car- bon-	117	86	82	82	105	125	179	127	154	66	48	117
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	274	202	210	188	258	274	339	280	313	219	160	248
1	solids ted)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot	ŀ	ł	!	!	!	!		0.92	1	!	!	.78
Septemb	Die (ce	Parts per million	-	!	!	!	!	!	;	929	!	!	!	220
30		. Bo. B. B.	4.0		•	۳.	٠.	9.		4.	'n	4.	۳,	e.
ır 19		Ni- trate (NO ₃)	-	ŀ	-		ł	1	1	9.0	i	1	į	
Ctobe		Fluo- Ni- ride trate (F) (NO ₃)		1	1	ļ	Ī	1	;	0.2	1	I	1	7
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	252	152	155	137	212	218	278	230	249	191	124	215
ton, wa		Sulfate (SO.4)	1	!	1	1	1	;	1	107	1	ŀ	1	99
Till I	į	(C)												
rts per		car- bon- ate (HCO ₃)	192	147	153	129	187	182		187	194	146	137	160
n pa	é	stum Stum (K)	1	ł	ŀ	1	1	!	-	6.2	!	1	ì	2.0
lyses,		Sodium (Na)	141	102	102	69	129	146	170	145	152	94	74	121
cal and	Ş	sium (Mg)		ŀ	ł	!	1	!	1	31	ŀ	!	1	28
Chemi		Cap Ctam (Cap	1	ł	ŀ	1	1	ł	ŀ	61	ļ	ļ	ł	53
		Fe)					_			0.01				
		Silica (SiQ _e)	;	i	1	1	1	1	ì	2.4	!	1		2.1
		Mean discharge (cfs)												
		Date of collection	Oct. 6, 1960	Nov. 11	Dec. 16	Jan. 13, 1961	Feb. 17	Mar. 7	Apr. 11	May 1	June 6	July 11	Aug. 9	Sept. 7

11-3129.9. DELTA-MENDOTA CANAL ABOVE TRACY PUMPING PLANT, NEAR TRACY, CALIF.

LOCATION .--At Byron Road bridge, 1.1 miles upstream from Tracy Pumping Plant, Alameda-Contra Costa County line, and 9.2 miles northwest of Tracy, San Joaquin RECORDS AVAILABLE. --Chemical analyses: October 1953 to September 1961. REMANNES. --Records of discharge given for Delta-Mendota Canal at Tracy pumping plant, near Tracy. No appreciable inflow between sampling point and gaging station. County.

i		Hd	8.1	8.0	7.9	7.8	7.8	263 7.6	6.2	7.7	7.5	7.7
	Specific	duct- ance (micro- mhos at 25°C)	509	908	1.050	955	316 7.8	263	242	334	745	610
		dum ad- Borp- tion ratio	2.1	3.4	9	9	1,3	1.0	1.0	1.3	3.7	3.1
		Non- car- bon-	30	74	61	145	29	17	9	16	19	36
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	114	195	194	234	92	79	18	16	129	===
	solids ted)	Tons per day										
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	;	;	ł	Ι	0.22	1	ı	!	.44
Septembe	Dis (c	Parts per million	ł	1	1	;	!	160	!	1	1	322
0 to		Bo- ron (B)	0.1	9	ď		٦.		٦.	۲.	٦.	•3
r 196		Ni- Frate (NO ₂)	-	1	1	ł	1	0.1 0.8	ł	ļ	!	3.0
ctobe		Fluo- Ni- ride trate (F) (NO ₃)	-	1	1	ł	ŀ	0,1	1	1	į	- :
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	06	155	177	156	36	31	23	44	168	124
lon, wat		Sulfate (SO ₄)	1	ł	1	;	1	24	!	!	1	23
mi11:		bon- este (CO)										
ts per	-ia	car- bon- ate (HCO ₂)	102	147	162	108	81	75	8	69	83	89
n par	Ė	tas- Sium (K)	-	1	ł	¦	ł	1.4	1	ł	!	3,4
lyses, 1		Sodium (Na)	51	109	124	16	88	21	13	53	96	74
al ana	29,	mag- ne- stum (Mg)		1	!	!	1	8.3	ł	!	Ī	16
Chemic		Cal- ctum (Ca)		1	1	!	1	18	ŀ	ł	1	16
		Iron (Fe)			_			0.00				
		Suica (SiQ ₆)	1	1	1	1	1	18	ì	1	1	16
		Mean discharge (SiQ ₆)	2,319		454	2,277	2,807	3,071	3,367	4,143		
		Date of collection	Oct. 4, 1960	7	14, 1961		Apr. 10	May 1	ie 5	July 10	Aug. 3	Sept. 11
ı			s S	NON	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep

11-3130.1. DELTA-MENDOTA CANAL BELOW TRACY PUMPING PLANT, NEAR TRACY, CALIF.

0.5 mile downstream from Mountain House Road siphon, 2.9 miles downstream from Tracy Pumping Plant, and 8.5 miles northwest OCATION . -- At canal bridge 4.98. Tracy, San Joaquin County.

RECORDS AVAILABLE, -- Chemical analyses: July 1959 to September 1961. Water temperatures: July 1959 to September 1961.

Water temperatures: July 1959 to June 1960.

Sediment records: July 1959 to June 1960.

Sediment records: July 1959 to June 1960.

EXTREMES, 1960-61.—Dissolved solids: Maximum, 717 ppm Reh. 11-20; minimum, 146 ppm May 11-20.

Rardness: Maximum, 736 ppm Reb. 21-28; minimum, 74 ppm May 1-10.

Specific condictance: Maximum, 797 July 11, 22, Aug., 7 minimum, 147 Pan. 21.

Water temperatures: Maximum, 797 July 11, 12, Aug., 7 minimum, 74 ppm May 1-10, 1961.

Maximum, 255 ppm Reh. 21-28, 1964.

Hardness (1960-61): Maximum, 785 ppm Reh. 21-20, 1961; minimum, 146 ppm May 11-20, 1961.

Specific conductance (1960-61): Maximum (1960-61), 41° p Jan. 21, 1961.

Naturum, 81° p July 25, 1969; minimum (1960-61), 41° p Jan. 21, 1961.

REMARES.—Records of specific conductance of dally samples available in district office at Sacramento, Calif. Records of disching the formulation of January.

**New Maximum of Sacrament of Gally samples available and Sacramento, Calif. Records of disching the formulation of January.

**New Maximum of Sacrament of Gally samples available and Sacramento, Calif. Records of disching the formulation of January.

Records of discharge given for Delta-Mendota

		Ħ	8.4	7.5	8.3	8,3	7.6	8.1	7.7	9.	7.5	7.5	8.0	0.8	7.9	456 7.1	8.1	7.1	7.5
	Specific	duct- ance (micro- mhos at 25°C)	899	994	761	907	828	872	902	1,010	1,170	1,160	982	657	596	456	279	249	245
		Sorp- tion tion	2.7	3.4	6.	6	9.0	2.9	3,1	3.6	3.7	9,0	6	2.1	2.1	1.5	1:1	0.1	
		Non- car- bon-	41	81	26	77	74	72	74	6	112	125	161	101	83	47	13	14	7
	Hardness as CaCO ₃	Cal- chum, Mag- ne- stum	142	216	170	203	192	195	192	214	253	255	254	180	162	124	8	16	4/
	Dissolved solids residue at 180°C)	Tons per day	2,130	1,940	1,070	701	267	812	1,010	279	1,650	2,660	3,730	2,680	1,550	1,630	1,470	1,320	1,060
r 1961	Dissolved solids esidue at 180	Tons per acre- foot	0.52	. 79	8	.73	.67	. 68	.74	.82	86	76.	98.	,	.49	.38	.24	.21	.20
September	Dis (resi	Parts per million	381	263	440	539	491	203	543	601	717	716	633	422	363	278	177	153	149
to		ron (B)		~		;	1	1	4.	9.	œ.	9.	4.	?	ω.	63	-:	٦.	7.
r 1960		Ni- trate (NO ₂)	1.2	1.5	1.6	1	1	ł	3.4	6.2	9	8	9.4	9	4.5	2.8	1.3	0.1	×.
October		E G	0.1	۲.	₹.	T	!	T	е.	е.	N.	w.	ů.	n.	е.	e.		2	<u>.</u>
water year (Chloride r (Cl) (Cl)	119	183	130	;	;	}	144	168	200	199	162	104	106	64	31	36	47
-		Sulfate (SO4)	37	72	88	1	!	i	96	116	136	139	410	2	65	42	22	20	
million	-10	2 te (CO)	3	0	67	4	0	0	•	•	0	0	0	•	0	•	•	0	•
in parts per	Bi-	car- bon- ate (HCO ₃)	117	165	135	146	144	120		149					96	6	77	12	9/
in par	Ę	F tas (F)	2.8	4.2	8.8	1	1	1	2.6	4.2	4.6	4.0	9.6	3.1	2.9	2.6	1.6	1.2	1.3
analyses,		Sodium (Na)	74	115	98	94	3 5	4 6	66	120	136	132	107	4		38			
	Mag	ne- ne- stum (Mg)	18	24	19	22	21	21	21	24	28	28	20 0	61	18	13	8.4	φ. ι	;;
Chemical		Cal- cium (Ca)	l	47			42	43	42	46	55	9 1	2	40	35	82	13	9 !	7
		Fron (Fe)	0.02	.02	.02	-	1	1	90.	.01	6	.01	3.6	3	00	.03	.02	8.	3
		Silica (SiO ₂)	12	24	21	1	ŀ	!	22	20	22	7	47	*	22	56	20	21	2
		Mean discharge (SiO ₂) (cfs)	2,069	1,232					169				2,163	2,352	1,581	2,177	3,078	3,200	2,680
		Date of collection	Oct. 1-12, 1960	let. 13-21	ct. 22-31	ov. 1-10	Nov. 11-20	lov. 21-30	Jan. 21-31, 1961	Feb. 1-10	eb. 11-20	eb. 21–28	Mar. 1-9.	Mar. 10-19	Mar. 20-31	Apr. 1-10	pr. 11-20	pr. 21-30	May 1-10
- 1			ŏ	ŏ	ŏ:	ž	ž	ĭ	J	ř.	Ĕ, I	Ξ,	ä:	i	¥	¥.	7	₹:	ä

8.0 7.4 7.9	317 7.9 424 8.0 618 7.7 795 7.4 768 7.5	700 7.8 628 7.5 615 8.0 571 8.0	1
221 254 248 249 263	317 424 618 795 768	700 628 615 571	220
1.00	41.004.6	0 0 0 0 0 0 0 0	2.2
113 17 8 8	111 21 41 57 56	4 4 4 6 4 6 4 6 4 6 4 6 6 6 6 6 6 6 6 6	38
75 77 76 80	86 112 126 126	129 115 120 121	115
1,020 1,210 1,400 1,540 1,850	2,140 3,160 4,480 5,070 4,490	3,440 2,150 1,970 1,920	1,720
22 22 22 22 22	27 34 61 61 55	. 53 . 47 . 43	0.42
146 157 152 149	199 248 355 446 429	393 369 388 349	310
		40,50	0.2
rr000		00 co c	11.6
<u>vaidid</u>	4440 0	0 4 4 4	a0,1 a1,6 a0.
2222	38 70 126 175 169	146 131 120 105	98 a
222 21 16 19	30 23 33 34 34 34 34 34 34 34 34 34 34 34 34	38 38	a 39
			ď
00000	00000	0000	
76 81 88 89	88 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	86 90 98 108	94
40044	7.2.6.4. 7.4.0.0	2 2 2 2 2 3 4 8 0 9	a 2.5
16 20 20 21	30 46 103 99	90 82 74 65	22
დ ლ ფ ფ ფ ლ ფ 4 ფ დ	11 12 16 18 17	17 18 17	14
16 17 16 16	17 18 18 21 21	22 22 22	23
889.88	40.00.00	400.00	0.03 g data.
19 18 19 18	25 23 21 18 17	21 23 24 19	a21 missing
2,587 2,855 3,415 3,830 4,256	3,983 4,716 4,678 4,214 3,876	3,246 2,154 1,881 2,039	2,056 tes for 1
May 11-20, 1961 May 21-31 June 1-10 June 11-20 June 21-30	July 1-10. July 11-20. July 21-31. Aug. 1-10.	Aug. 21-31 Sept. 1-10 Sept. 11-20 Sept. 21-30	Weighted average 2,056 a21 a Includes estimates for missing

Temperature (°F) of water, water year October 1960 to September 1961

																Day																Aver-
Month	-	2	6	4	5	9	7	æ	6	10	=	12	13	14	15	9	17	18	19	20	2	22	23	24	25	26	27	28	29	30	31	age
October November	67	61	1 5 6	58	288	52	900	56	57	565	40	4501	54	42.	96	52	54	88	481		1 25	1 263	201	1 202	123		64 1	50	63	48	12	44
January February	1 4 4	145	1 4 0	47	45	174	49	100	10.4	52	53	53	5.53	53	55	1 88	121	182	527	55	52.5	525	4 8 8	450	525	4 60 60	181	1 20	45 57	515	5 5	54
April	56	58 62 67	58 62 67	57 61 68	58 62 67	59 61 68	59 61 67	63	65 66 69	52.0	5 6 8 8	57 62 69		60 62 71	1985	246	61 65 76	61 66 76	62	60 77	5.0 18 18	38 76 76	28 27	57 67 78	59 66 76	5.0 7.5 7.5	59 74	094	261	61 67	63	59 72
July	75	212	73 75 73	73 76 74	75	75	76 79 72	76 78 73	25 73 87	78 77	79 75 72	78 76 72		75	25 70 70	722	1 2 2	222	7 5 6 6 9	242	8 4 5	242	7 5 5	7 4 7 1	7 4 6	2 E E E	82.5	2 4 5 9 6 9	2 4 2	555	241	5 2 1 1

SAN JOAQUIN RIVER BASIN--Continued

11-3130.5. DELTA-MENDOTA CANAL NEAR MENDOTA, CALIF.

LOCATION: --Approximately 1 mile upstream from control gates into Mendota Pool, and 2 miles north of Mendota, Fresno County. RECORDS ANIALMEL.-Chemical manages: October 1993 to September 1991.

		Нď	3.0	8.0	6.2	8.2	8.4	7.7	7.7	9.2	3,1	7.9	6.7	7.7	6.
	Specific con-		539	816	842	954	982	1,060	346	268 7,6	255	364	702	782	695
		ad- ad- Borp- tion ratio	2.2	33	3.2	3.4	3.4	3.0	1.4	1:1	1,0	1.5	3.4	3,9	3.5
		Non- Car- bon-	35	99	77	30	89	154	33	21	11	16	22	29	44
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	118	174	189	214	204	252	102	82	78	8	121	126	120
	solids ted)	Tons c day				_									
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	ł	1	ł	!	1	0.22	1	ł	1	.57	. 50
Septembe	Dias (c:	Parts per million	-	;	1	1	Ī	1	1	162	1	1	1	418	365
30 to		ron (B)	0.1		•	9	9.	4.	8	٦.		٦.	٦.	٦.	٠.
r 196		Ni- trate (NO ₃)	l	1	1	;	1	1	1	9.8	1	1		1.1	
ctobe		Fluo- Ni- ride trate (F) (NO ₂)	-	1	1	ł	Ī	1	1	°,	1	1	ł	٦.	.2
water year October 1960 to September 1961		Chloride (C1)	94	135	140	146	146	178	42	28	23	49	148	172	137
		Sulfate (SO ₄)	1	1	;	ļ	1	1	1	27	1	1	1	42	36
1111	į	(S) # 20 (S)	0	0	0	0	4	•	۰	•	0	•	•	•	۰
ts per	Bi-	car- bon- ate (HCO ₃)	101	132	137	224	132	120	84	74	82	8	86	82	93
n par	é	F ta ta (X)		1	!	1	I	1	1	1.1	1	1	1	4.4	4.2
Chemical analyses, in parts per million,		Sodium (Na)	22	66	101	115	112	109	32	22	21	33	87	100	87
al ana	Ş	mag- ne- stum (Mg)	1	1	1	1	1	1	1	8.4	ŀ	1	1	17	16
Chemic		Ctum (Ca)	:	ł	!	ł	1	1	_1	19	1	!	1	22	21
		Iron (Fe)								8.					
		Silica (SiQ _e)	;	;	;	;	:	!	;	19	;	;	;	61	4
		Mean discharge (cfs)			_										_
		Date of collection	Oct. 6, 1980	Nov. 10	Dec. 14	Jan. 12, 1981	Feb. 16	Mar. 9	Apr. 13	May 4	June 7	July 13	Aug. 3	Aug. 17	Sept. 6

SAN JOAQUIN RIVER BASIN--Continued

11-3132. GRANT LINE CANAL AT TRACY ROAD BRIDGE, CALIF.

LOCATION:--At bridge on Tracy Read, approximately 5 miles north of Tracy, San Joaquin County. RECORDS AVAILABLE.--Chemical maniayses: October 1958 to September 1961. RELAKES.--RO discharge records available.

ı		H	7.8	8.1	7.7	7.8	7.9	8.1	7.9	8.0	7.8	7.7	7.7	7.8
	Specific con-	duct- ance (micro- mhos at 25°C)	1,160	750	675	836	1,110	1,060	1,250	1,000	1.160	380	645	1,140
	å;	ad- ad- sorp-(; tion ratto	3.3	8.8	2.7	2.5	3.7	3.2	3.7	3.5	3.4	1.5	2.8	3,6
		Non- car- bon- ate	102	69	26	80	97	103	137	86	ᄗ	20	47	114
	Hardness as CaCO	Cal- cium, Mag- ne- sium	250	175	153	187	236	233	278	220	272	9	130	248
	solids ted)	Tons c per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	ł	ŀ	ł	1	ł	0.73	1	1	1	.81
Septembe	Dis (c	Parts per million	•	1	!	ł	ł	!	1	534	1	1	1	594
30 to		Bo- ron (B)	١٩.	8	•	٤.	.5	₹.	4.	۳.	4.	٦.	٦.	• 5
r 196		Ni- trate (NO ₃)	ł	ł	ŀ	ŀ	1	I	ŀ	0.7	1	1	1	٦.
ctobe		Fluo- Ni- ride trate (F) (NO ₂)	1	}	1	1	1	1		0.2	ī	1	1	۲.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	224	138	118	145	208	196	252	185	218	25	127	232
tion, wat		Sulfate (SO ₄)	1	1	1	1	1	1	1	69	ŀ	1	1	89
r m11	ė	CO (CO)				_	_							
ts pe	Bi-	car- bon- ate (#CO ₂)	180	129	118	130	169	158	172	163	208	86	101	163
in par	ě	shim (K)	1	1	ŀ	ł	ŀ	I	1	5.4	1	1	!	5.0
lyses,		Sodium (Na)	120	98	78	78	129	111	143	119	128	35	74	132
al an	į	mage- nie- sium (Mg)	;	;	ļ	1	ŀ	1	ŀ	23	1	;	¦	28
Chemic		chun (Co.)	ŀ	1	!	ŀ	1		!	20	1	1	ł	54
		Iron (Fe)								0.04				
		Silica (SiQ ₂)	1	I	ŀ	ł	ł	1	1	1.2	;	1	1	1.0
		Mean discharge (SiO ₂) (cfs)												
		Date of collection	Oct. 6, 1960	Nov. 11	Dec. 16	Jan. 13, 1961	Feb. 17	Mar. 7	Apr. 11	May 1	June 6	July 11	Aug. 9	Sept. 7

SAN JOAQUIN RIVER BASIN--Continued

11-3132.5. OLD RIVER AT CLIFTON COURT FERRY, CALIF.

LOCATION: --At Clifton Court Ferry Crossing, 0.3 mile downstream from tidal gaging station, 2.1 miles east of Herdlyn, and 3.6 miles north of Bethany, San Joaquin County. RECORDS AVAILABLE. --Chemical analyses: October 1953 to September 1961.

		рН	488 8.0	7.7	8.0	7.8	7.5	7.9	7.8	7.9	7.8	7.9	7.8	7.8
or 1960 to September 1961	Specific con- duct- ance micro- nhos at 25°C)		488	855	811	821	1,020	886	315	214 7.9	241	327	260	285
	So- dlum ad- sorp-(tion ratio							2.6	1.2	8	1.0	1.4	3.8	2,9
		Non- car- bon-	20	85	67	80	115	139	30	15	10	17	22	37
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	100	198	183	183	230	228	96	72	92	88	122	110
	Dissolved solids (calculated)	Tons per day												
		Tons per acre- foot	1	1	1	1	1	1	_	0,18		1	1	.42
		Parts per million	-	!	1	!	!	!	+	130	!	1	!	312
	Bo- ron (B)		0.1		۰.	۳.	2	7.	7	٦.	٦.	٦.	•	٠,
r 19	Ni- trate (NO ₃)			!	!	1	1	!	1	0.1	1	ł	!	6.
Chemical analyses, in parts per million, water year October 1960 to September 1961	Fluo- Ni- I ride trate 1 (F) (NO ₂)			!	ŀ	ł	!	1	-1	0.2	ł	1	1	
	Chloride (C1)		84	153	140	142	178	136	39	21	21	4	169	120
	Sulfate (SO.1)		-	1	1	1	i	1	ł	17	1	1	1	25
	Car- bon- ate (CO ₃)													
	Bi- car- bon- ate (HCO ₃)			138	141	126	140	109	81	20	81	87	82	89
	Po- tas- sium (K)			!	i	1	1	1	1	1,6	!	ł	!	3,3
	Sodium (Na)			101	97	75	106	6	27	16	19	31	97	69
cal ans	Mag- ne- sium (Mg)			i	!	i	;	1	-	8.4	1	!	ŀ	16
Chemia	Cal- clum (Ca)			ŀ	!	!	!	!	-	15	1	ŀ	!	18
	Fron (Fe)									0.04				
	Silica (SiO _g)			1	!	1	1	1	1	17	1	1	L	16
	Mean Siltea Ird discharge (SiO ₂) (F													
		Date of collection	ct. 3, 1960	ov. 7	ec. 12	an. 9, 1961	ab, 13,	Mar. 7	Apr. 11	May 2	June 5	July 10	Aug. 3	Sept. 11
			ıŏ	ź	Á	ñ	ŭ	Ħ	¥	Ä	ร	ร	Ä	Ď

SAN JOAQUIN RIVER BASIN--Continued

11-3133. ITALIAN SLOUGH AT MOUTH, NEAR BYRON, CALIF.

LOCATION .--At confluence of Italian Slough and Old River, 3.6 miles east of Byron, Contra Costa County, and 12 miles northwest of Tracy. RECORDS AVAILABLE.--Chemical malyses: October 1953 to September 1961.

Chemical analyses in narts ner million water vear October 1960 to September 1961

1	ьщ			7,9	7.9	7.5	7.4	8.0	8.0	7.8	7.9	7.9	7.7	7.8
September 1901	Specific con- duct- ance (micro- mhos at 25°C)		535	529	818	863	1,040	1,130 8.0	463	226 7.8	233	330	802	638
	So- dium ad- sorp-(tion ratio		2.5	2,3	3.5	2.4	3.6	4.0	1.6	1.0	0.1	1.5	4.0	3.2
	Hardness as CaCO ₃	Non- car- bon-	26	37	67	105	66	112	53	97	97	12	22	42
		Cal- ctum, Mag- ne- stum	105	120	188	200	206	233	124	73	16	82	130	113
	Dissolved solids (calculated)	Tons per day												
		Tons per acre- foot	!	1	ł	ł	ł	1		0,19	ŀ	1	ł	.45
		Parts per million		!	1	ŀ	!	!	ì	141	1	1	!	332
Chemical analyses, in parts per million, water year October 1960 to September 1961	Bo- ron (B)		1.0	8	۳.	'n	1.0	1:1		•				
	Ni- trate (NO ₃)		1	1	1	!	1	1	;	0:0	!	i	1	9.
	호용·C		ī	1	1	1	ŀ	1	ł	0,1	ŀ	ļ	1	8
	Chloride Flu		86	82	155	156	198	204	65	22	20	44	186	132
	Sulfate (SO4)		;	1	1	ł	1	1	ı	19	1	!	!	24
	Car- bon- ate (CO ₃)													
ts per	Bi- car- bon- ate (HCO ₃)		96	101	147	116	130	147	87	77	8	89	92	87
n par	Po- tas- sium (K)			1	ł	1	!	1	1	1.5	1	l	1	3.4
Chemical analyses, in	Sodium (Na)			28	101	77	118	141	42	20	19	35	104	78
	Mag- ne- stum (Mg)		1	1	1	1	1	1	1	7.4	ŀ	ł	ŀ	17
	Cal- ctum (Ca)		1	ŀ	;	1	1	1	1	17	;	1	1	18
	Iron (Fe)									0.05				
	Silica (SiO _s)			1	1	1	-	1	1	16	1	1	1	16
	Mean discharge (cfs)													
		Date of collection	Oct. 3, 1960	Nov 7	Dec. 12	Jan. 9, 1961	Feb. 13	Mar. 7	Apr. 11	Мау 2	June 5	July 10	Aug. 3	Sept. 11

SAN JOAQUIN RIVER BASIN--Continued

SAN SORGUIN MITTER BASIN--COLLINGED
11-3133.5. INDIAN SLOUGH NEAR BRENTWOOD, CALIF.

LOCATION .--At East Contra Costa Irrigation District Dumping station on Bixler Road, 3.6 miles north of Byron, and 4.1 miles southeast of Brentwood, Contra Costa Courty.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961.

REMANNS.--RO discharge records available.

		Hq	7.8	8,4	8,3	8,1	7.9	8.4	7.9	269 8.1	8.0	8.2	7.5	8.0
	Specific con-	duct- ance (micro- mhos at 25°C)	726	1,310	1,300	1,360	1,420	1,570	346	269	285	512	968	852
		dium ad- ad- fion tion ratto	2.9	3.6	3.5	4.0	3.5	4.2	1.5	1,1	1,2	2.1	4.3	3.7
	ess 203	Non- car- bon-	\$	64	8	22	104	109	28	=======================================	23	22	48	28
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	143	331	358	350	367	329	103	83	88	126	164	152
	solids ted)	Tons c												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	f	ļ	1	-	ŀ	1	0.22	ļ	ļ	1	.61
Septembe	වර්	Parts per million	-	1	1	-	1	1	-	191	!	!	!	452
50 to		ron (B)	0.5	2.2	2,6	2.2	2.2	2.5	. .	7		4.	'n.	4.
er 19		Ni- trate (NO ₃)	1	l	ł	1	I	!	1	9.0	1	!	!	1.9
Ctobe		Fluo- ride (F)	1	ŀ	!	1	1	1	ŀ	0.3	1	1	1	2
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	134	126	200	195	225	230	40	26	26	92	218	173
ion, wat		Sulfate (SO ₄)		1	1	1	1	1	1	22	!	ł	!	84
mill		- d # 00 - d # 00	۰	œ	œ	0	0	ທ	0	•	•	0	•	•
ts per	Bi-	car- bon- ate (HCO ₃)	126	304	341	358	321	292	92	88	85	121	105	115
in par	, E	Stun (K)	1	1	1	I	ľ	1	1	1.4	l	l	ŀ	4.2
llyses,		Sodium (Na)	81	120	153	174	155	182	34	23	28	53	127	104
cal an	707	mag- ne- stum (Mg)	1	1	!	1	1	1	1	9.8	!	1	ł	24
Chemic		Cal- ctum (Ca)	ŀ	1	1	1	1	<u> </u>		17	!	1	!	22
		Fon (Fe)								0.12				
		Silica (SiQ,)		1	1	ı	!	1	1	18	!	1	ŀ	17
		Mean discharge (siO _a)												
		Date of collection	Oct. 4, 1960	Nov. 8	Dec. 12	Jan. 10, 1961	Feb. 14	Mar. 6	Apr. 10	May 1	June 5	July 10	Aug. 3	Sept. 11

SAN JOAQUIN RIVER BASIN -- Continued

11-3134. OLD RIVER AT ORWOOD BRIDGE, NEAR MIDDLE RIVER, CALIF.

LOCATION: --At Atchison, Topeka and Santa Fe Railroad bridge, 1.6 miles west of Middle River, San Joaquin County, and 7.9 miles east of Brentwood. RENORDS AVAILABLE.-Chemical analyses: October 1953 to September 1961.

		Нq	7.9	8,0	7.9	7,3	7,3	7.8	8.0	7.8	7.9	7.8	7.5	8.0
	Specific con-	duct- ance (micro- mhos at 25°C)	476	433	840	876	1.070	828 7.8	228	196 7,8	217	377	938	630
		ad- front ratto	2.2	2.0	3,1	2,3	6.2	2.5	ω,	1.0	6	1.8	4.6	3.0
		Non- car- bon-	16	25	74	111	163	120	15	က	9	16	74	4
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	100	109	196	8	260	208	77	19	72	87	140	117
1	solids ted)	Tons per day												
er 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	ł	1	1	1	0.17	1	1	1	.46
Septemb	ā°	Parts per million	;	1	1	!	!	!	!	123	1	1	!	340
60 to		. B. B.	0.2	~	۳.	4.	ı.	9.	۲.		۳.	٦.	۲.	•
er 19		Ni- trate (NO ₂)	1	1	!	!	1	!		0.0	1	!	;	1,3
Octobe		Fluo- N1- ride trate (F) (NO ₂)	1	1	-	1	1	ı	1	0.1	1	1	1	.2
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	8	63	155	148	180	122	8	17	16	28	220	132
ion, wat		Sulfate (SO ₄)	i	1	!	1	ļ	1	l	12	1	ļ	;	31
m111	;	G # 60												
ts per		car- bon- ate (HCO ₃)	102	103	149	108	118	107	75	71	8	87	81	88
in par	Š	State (X)	-	1	ł	!	;	;	ŀ	1.2	1	1	1	4.0
alyses,		Sodium (Na)	51	48	101	74	106	83	17	18	17	38	126	74
cal ans	ş	nie- nie- sium (Mg)	1	ŀ	;	;	1	1	1	6.4	!	1	1	18
Chemi		Ca)	1	1	;	ŀ	1	1	1	14	f	ŀ	1	18
		Iron (Fe)								0.07				
		Silica (SiQ,)	-:-	!	ı	l	1	1	1	16	1	1	1	18
		Mean Silica I discharge (SiO ₂) ((cfs)												
		Date of collection	Oct. 4, 1960	Nov. 8	Dec. 12	Jan. 10, 1961	Feb. 14	Ear. 6	Apr. 10	May 1	June 5	July 10	Aug. 3	Sept. 11

SAN JOAQUIN RIVER BASIN--Continued

11-3134.2. ROCK SLOUGH NEAR KNIGHTSEN, CALIF.

LOCATION: --At Contra Costa Canal intake at the end of Tule Lane, 2 miles northeast of Knightsen, Contra Costa County, and 4.2 miles southeast of Oakley. RECORDS AVAILIALE. --Chemical analyses: October 1963 to September 1961.

Chemical analyses, in parts per million, water year October 1960 to September 1961

	Нq	7.9	8.1	7.7	9.	7.4	7.9	7.8	7.8	7.8	7.7	7.2	7.9
Specific	duct- ance micro- nhos at 25°C)	206	400	689	864	1,100	754	251	190	227	413	1,100	693
	ad- ad- Borp- tion ratio	2.3	1.8	2.5	0	8.	2,3	6	æ.	6.	1,9	5	3.5
	Non- car- bon-	31	21	26	105	161	104	18	S	9	21	86	20
Hardness as CaCO,	Cal- cium, Mag- ne- sium	112	104	168	206	269	188	81	65	73	94	155	124
solids ated)	Tons per day												
Dissolved solids (calculated)	Tons per acre- foot	1	1	!	!	l	1		0.16		!	1	9.
Dis	Parts per million	1	1	-	1	1	}	١	118	1	!	1	371
	- Pon (B)	0.1	۰.	۳.	ď.	9.	e.		•			?	°.
	Ni- trate (NO ₃)	ŀ	;	l	1	ł	ŀ	1	0.0	i	1	ì	.2
	Fluo- ride (F)	1	1	ŀ	ł	ŀ	1	ļ	0.2	1	1	ŀ	۲.
	Chloride (C1)	89	24	116	136	188	110	26	15	17	89	269	146
	Sulfate (SO ₄)	1	1	!	1	ł	1	ŀ	14	!	1	1	33
	(CO)												
Bi-	car- bon- ate (HCO ₃)	66	101	137	123	132	103		73		88	84	8
č	tas- stum (X)	1	ŀ	1	i	1	1	I	1.2	1	l	ŀ	3,8
	Sodium (Na)	57	43	73	99	106	74	19	14	18	42	121	89
~~ ,	nie- nie- stum (Mg)	1	1	;	ł	ŀ	!	1	8.0	1	ŀ	!	19
	Cal- ctum (Ca)	!	ł	ł	ł	ł	ł	ŀ	13	;	!	ŀ	18
	Iron (Fe)								0.09				
	Silica (SiQ,)		1	!	1	1	1	-	17	1	1	ı	81
	Mean discharge (SiO ₄) (cfs)												
	Date of collection	Oct. 3, 1960	Nov. 7	Dec. 12	Jan, 9, 1961,,,,	Feb. 13	Mar. 6	Apr. 10.	Мау 1.	June 5	July 10	Aug. 3	Sept. 11

SAN JOAQUIN RIVER BASIN -- Continued

11-3134, 5. OLD RIVER AT MANDEVILLE ISLAND, CALIF.

LOCATION. --On northwest side of Mandeville Island, San Joaquin County, approximately 0.5 mile upstream from confluence with San Joaquin River, and approximately 5.5 miles southwest of Terminous. RECORDS AVILAGE. --Chemical analyses: December 1954 to September 1961. REMARKS.--No discharge records available.

		Hď	7.8	8.0	8,0	7.8	7.6	329 7.9	8.0	7.5	7.9	8.0	7.8	8.0
	Specific	duct- ance (micro- mhos at 25°C)	427	302	405	403	678	329	201	177	201	412	266	589
		Borp- Borp- tion catto	1,9	1,6	1,4	1,1	1.8	1.1	7		1.7	2.0	5.0	3.4
		Non- car- bon-	14	က	22	36	110	29	6	က	က	21	7	31
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	26	85	138	107	184	96	70	62	69	91	137	103
1		Tons c per day				-								
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	ł	;	1	!	I		0,15		!	ł	.44
Septembe	Dis (ca	Parts per million	1	1	1	1	1	1	;	111	1	1	;	327
60 to		B 2 B	- 0.1	۰.	٦.	۲.	~	•		٦.	۰.	٦.		
er 19		Ni- trate (NO ₂)		{	1	1	}	1		0.4	1	1	!	1.2
Octob		Fluo- Ni- ride trate (F) (NO ₂)	l	1	i	ł	1	1	1	0.1	1	1	1	۲.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (CI)	99	38	19	54	100	40	16	12	12	20	237	121
ion, wa		Sulfate (SO ₄)	;	1	1	1	!	1	ł	11	1	ŀ	ł	59
m111		Co ste												
ts per		car- bon- ate (HCO ₃)	101	96	141	87	8	82	74	72	8	82	81	88
ın par	Ę	K)	1	1	1	1	1	1	1	1.4	1	1	ŀ	4.3
lyses,		Sodium (Na)	43	33	38	56	57	22	14	12	16	44	135	80
al ans		ne- ne- stum (Mg)	1	¦	1	!	!	!	1	7.2	!	1	!	13
Chemi		Can (Can (Can	!	1	1	ŀ	1	1	1	13	1	ł	1	19
		Fe)								0.0				
		Silica (SiQ,)	1	1	i	1	1	1	1	13	1	1	ı	16
		Msan discharge (SiO ₂) (cfs)												
		Date of collection	Oct. 3, 1960	Nov. 1	Dec. 16	Jan. 6, 1961	Feb. 9	Mar. 10.	Apr. 5	May 11	June 1	July 12	Aug. 9	Sept. 6

SAN JOAQUIN RIVER BASIN--Continued

11-3195. MOKELUMNE RIVER NEAR MOKELUMNE HILL, CALIF.

LOCATION.--Temperature recorder at gaging station at bridge, 1.2 miles northeast of Mokelumme Hill, Calaveras County, and 8 miles downstream from confluence of North and South Forks.
DAMNIANGE MEMBLE.--Bas equare miles.
RECORDS AVAILABLE.--Water temperatures: February to September 1961.

		30 31 Average	-	1 1	52	51 50 50	55 57	53 54	61 57 56		09 69	56 57	60 52 56	48 49 53	1	1	1	1
		53	i	÷		000	20	52		5.7	58	99	54	84	i	i	ì	i
		28	-					25		99	26	28	20	64	i	1		1
		27 2	4 8 4	47 47		52 51	54-5	51 5		54 5	62 5	60 5	51 5	4 6 4	- 89	26	<u> </u>	
		26		7		25		2		2,		9	51	20	99	99	28	
		25	484	7 8 7		2	53	51	56	54	89	20	52	55	9	58	6	
19		24	8 4	8		52	- 23	20	26	54		29	. 25	51	-09	29	- 19	2.5
1961		23		47		52	54	52	56	54	9	28	52	51	61	28	æ	57
September		22	8 4	84	52	51	- 75	24	09	54	61	26	52	51	59	58	58	57
epte		21	84	74	_	2	26	4	62	24	09	28	54	2	5.8	57	80	
to S		20	8 7	47	52	2	57	54	57	55	90	57	55	52	80	56	5.7	26
		19	84	47		20	58	55	55	52	9	57	55	53	58	5,6	56	52
bra		18	84	47	53	6	59	25	65	53	61	23	54	53	57	26		29
£,		17	8 7	48	52	20	58	5.7	55	53	5	57	57	53	57	56	5.7	96
water, February	Day	16		1		20	9	26	58	25	59	57	5	54	57	53	5,	
of wa		15		1	52	20	n,	5	54	5.5	57	26	56	54	56	5.3	5	5.5
		14	-	1		4	5.8	55	5	51		5.5	56		56	54	- 1	1
(°F)		13		1	50	64	50	54	57	50	57	55	58	56	5.5	4,3	- !	!
Temperature		12	1	!		4	56	26	52	5	£.	56	58	56	7.	ις.	;	!
era		=	+	!		48	59	5.5	52	52	57	96	59	55	5.5	53	<u> </u>	!
Te		10	;	1		48	59	55	56	52		57	ς. Φ		- 2	5.	- 1	
-		٥	-	!		4	- 61	5.5	53	5.1	58	5.7	61	_	5,7	R.		
		8	- [1		48	9	55	52	20	5	51	61	34	5.5	53		
		7	- 1	1		4	5.7	26	55	5.1	58		59	53	57	۲,	_ !	
		9	- :	1		3 48	57	+ 26	53	1 52	69		55	_	55	15.2	_	
		5		!	64	48	26	54	54	51	9	5.7	5.5		60	£	-	
		4		1		8	- 58	52 53	55 57	53 53	_	57 57	57 56	55 55	52 52	טא	- 1	
		3	- !	!	6 7	8 7	7.				- 61				_	_		
- 1		2	- 1	 	48 49	48 48	54 54	50 50	56 58	53 54	58 58		58 58		54 52	40 50	- !	
		_																
	Month	Month	February	Minimum	March Maximum	Minimum	April	Minimum	May Maximum	Minimum	June	Minimum	July	Minimum	August	Minimum	September	Minimum

SAN JOAQUIN RIVER BASIN--Continued

11-3210. MOKELUMNE RIVER AT LANCHA PLANA, CALIF.

LOCATION.—Approximately 500 feet downstream from gaging station, 1 mile east of Lancha Plana, Amador County, 3 miles downstream from Pardee Dam, and 5 miles upstream from Camanche Creek.

Upstream from Camanche Creek.

DRAINAGE AREA.—584 square miles.

RECORDS AVAILABLE.—Chemical analyses: October 1953 to September 1961.

		Нq	6.9	7.2	7,3	7.1	7.4	7.4	7.3	46 7.2	7.6	7,5	7.4	7.4
	Specific con-	duct- ancs (micro- mhos at 25°C)					20		49	46	46	ည	56	54
		ade Borp- Fratton ratto	0.2	~	.2	77	4.	.2	Ŧ.	۳.	e,	<u>ښ</u>	<u>ښ</u>	.3
		Non- car- bon-	က	П	4	0	9	က	9	0	က	0	-	3
	Hardness as CaCO,	Cal- clum, Mag- ne- sium	17	13	13	12	19	16	20	16	17	17	18	18
	solids ted)	Tons c												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	i	1	1	i	1	ł	ŀ	0.05	1	ļ	1	• 05
Septembe	aid o)	Parts per million	ì	1	1	1	!	1	1	36	!	ŀ	!	38
30 to		ron (B)	0.0	۰.	۰.	۰.	٦.	•		•	•	٠.	٦.	°.
er 19		Fluo- Ni- ride trate (F) (NO ₂)	1	1	i	1	!	1		0.1	1	ł	I	۰.
Octob			1	!	1	1	!	!		0.0		1	1	•2
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Ci)	2.5	2.5	1.8	1.8	2.2	4.5	4.6	3,8	4.0	3.6	6.2	4.6
ion, wat		Sulfate (SO ₄)	ŀ	1	1	1	I	1	i	1.0	l	1	1	5.0
mi11	į	Don- Bate (CO)												
rts per		car- bon- ate (HCO ₂)		15		27	16	16		19		22	21	18
in pa	É	stum Stum (K)	1	!	;	!	!	!		6.0	!	ŀ	!	.7
lyses,		Sodium (Na)	1.7	2.0	2.0	2.0	3.9	2,3	1.3	2.7	2.6	2,9	2.9	2.5
al ana	Ver	nag- ne- stum (Mg)	1	1	-	ŀ	1	ł	1	1.9	!	ľ	1	1,6
Chemic		Cium (Ca)	}	ł	1	1	1	1	l	3.2	ŀ	I	ł	4.6
		Iron (Fe)								0.0				
		Silica (SiO ₂)	ŀ	1	!	!	1	1		13	1	!	1	10
		Mean discharge (cfs)						138		185	273	320	295	288
		Date of collection	Oct. 3, 1960	Nov. 1	Dec. 13	Jan. 3, 1961	Feb. 6	Mar. 1	Apr. 3	мау 8	June 1	July 10	Aug. 10	Sept. 6

SAN JOAQUIN RIVER BASIN -- Continued

11-3255. MOKELUMNE RIVER AT WOODBRIDGE, CALIF.

LOCATION: --At dam of Woodbridge Irrigation District, 0.4 mile upstream from gaging station at Woodbridge, San Joaquin County.

BEALIAGE AREA.--GH square miles upstream from gaging station at Woodbridge, San Joaquin County.

BECORDS AVAILABLE.--Chemical analyses: March 1951 to September 1961.

Water temperatures: March 1951 to September 1968 November 1960 to September 1961.

Water temperatures: March 1951 to September 1968 November 1960 to September 1961.

EXTREMES, 1960-61.--Mater temperatures: Marximum (1951-61, 1956-58, 1960-61), 83°F July 9, 1951; minimum (1951-55, 1956-58), 35°F Jan. 20, 30, 1954.

		Hď	7.0	7.1	7.4	7.1	7.6	53 7.3	7.3	58 7.0	7.5	7.5	7.4	7.5
	Specific	duct- ance micro- nhos at 25°C)	52	46	43	41	22	53	99	28	55	22	92	26
		ad- ad- sorp- tion m	0.2	N.	ب	8	e,	e,	<u>ښ</u>	₹.	۳.	۳.	4.	8
		Non- S car- S bon- t	8	н	4	0	ıO	က	ო	0	က	0	0	0
	Hardness as CaCO,		12	17	17	16	21	19	24	19	20	19	20	20
	# a	Cal- ctum, Mag- ne- stum	ļ											
11	solids ted)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	Į	1	1	ł	0.05	1	1	1	90.
o Septemk	∄ë	Parts per million		;	1	ł	!	1	!	39	1	;	!	41
60 to		Bo-	2.0	۰.	•	•	•	°.	0	٦.	•	•	٦.	۰.
er 19		Fluo- Ni- ride trate (F) (NO ₂)	1	1	1	ł	1	1	ŀ	6.0	1	ŀ	;	۲.
Octob		Fluo- ride (F)	ł	1	I	ł	ŀ	1	1	0.0	1	ŀ	l	2
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	2.8	2.8	1.8	2.2	2.8	4.6	4.8	3.6	4.2	3,1	7.0	5,1
lion, wa		Sulfate (SO4)	1	!	1	1	1	1	1	1.0	1	;	!	2.0
r mil	į	00 te 10 (00)												
rts pe	Bi-	car- bon- ate (HCO ₃)	23	19	16	24	8	19	26	23	21	23	22	24
in pa	É	State (X)	1	!	1	ł	1	1	ł	1.5	1	i	ł	
alyses,		Sodium (Na)	2.0	2.2	2.7	2.0	3.6	3.0	3.5	3,9	3.1	2.9	4.3	2.3
cal an	Ž	nag- ne- stum (Mg)	1	1	!	!	i	1	1	0.7	!	1	1	1.6
Chemi		Cium (Ca)	1	1	;	ł	ł	1	:	6.4	1	1	1	5.4
		fron (Fe)								0.12				
		Silica (SiQ ₂)		1	1	1	1	1	;	97		1	1	12
		Mean Silica I discharge (SiO ₂) (30	09						14				
		Date of collection	Oct. 6, 1960	Nov. 4	Dec. 15	Jan. 13, 1961	Feb. 17	Mar. 10	Apr. 14	May 5	June 1	July 14	Aug. 10	Sept. 7

SAN JOAQUIN RIVER BASIN--Continued

11-3255. MOKELUMNE RIVER AT WOODBRIDGE, CALIF .-- Continued

		30 31 Average	52	51		77 17	20	20 50	:		59	56 57	69	63	8 9	62 62	73	69	42	74 74	7.2	02 02	- 89	89 89
		29	52	52	4.5	7,	20	20	- 1	!	59	26	99	4	68	6	7.1	6	78	73	73	2	6.8	99
		78	53	25	_	4 2		20		52		26	99			<u>*</u>	_	0 /		72		7		99
		27	53	53	4	46	51	20	53	52	5.8	58	63	28	67	3	75		16	0	73	7.1	6.8	8 9
		56	5,		4	46		4 9		52		58	63			63		7		7.		70		68
27		25	53	52	47	46	49	4 8	52	52	59	58	63	- 28	99	79	74	7.3	76	72	74	7.	6.8	68
13		24	52	52	4	47	4 8	9 7		52		20	49		99			2		72	7			9
lber		23	53	52	4.8	48	46	42	!	!	9	28	62	9	99	79	74	2	7.7	73	72	69	68	68
water, November 1960 to September 1961		22			1	1	45	45	1	;		21	61		_	79		7.	<u> </u>	7.4		69		9 9
Se		2	5,	54	-	1	4.5	45	!	1	58	57	64	63	67	79	7.5	2	78	73	74	0,	6.8	99
0 tc		20	54	53	1	ł	45	42	!	ŀ	57	57	67			63		68	78	72	74	7.1	_	68
196		6.	54	54	- 1	1	46	45	- l	1	5.7	57	68	94	65	6	72	9	7.8	73	72	71	68	99
ber		18	4,7	54	ł	1	47	4 6	1	1	57	57		79		29		99	77	73		7.	99	88
Mem.		17	54	53	-	;	47	47	5	51	5.8	57	67	64	67	62	73	69	7.8	74	74	69	68	99
N.	Day	16	53	53	1	1	47	47	52	51	58	24	6.8	63	67	29		67		73	75	20		68
ter		15	54	53	ŀ	1	47	47	52	52	ę,	57	67	62	67	29	70	65	7.8	73	74	70	69	68
		14	5.5	54	1	1	47	4.1	52	22	5.8	26	6.5	19		29	69	65	7.8	4,		10	69	68
) of		13	55	55	47	47	47	47	52	52	57	5	65	61	99	61	69	99	79	74	75	72	6.8	68
(°F)		12	55	55	47	47	47	47	52	52	26	52	49	62	6.5	9	68	65	77	75	77	73	69	68
ure		11	55	55	47	46	47	47	52	52	5,	54	67	62	49	58	67	6.5	79	74	77	74	68	67
Temperature		10	56	55	94	94	47	94	52	25	55	54	99	62	09	29	99	6.5	7.8	72	76	73	68	67
emb		6	- 1	1	47	94	46	77	52	52	5.5	7	67	63	63	υ. Θ	68	99	7.5	10	7.8	73	69	89
F		8	1	1	84	47	44	43	52	25	55	54	19	63	63	57	89	79	75	69	78	73	69	68
		7	- 1	1	64	4 8	43	43	52	51	5.5	24	67	49	63	57	69	65	74	68	77	72	70	68
		9	1	1	5.1	64	43	64	5.1	-	5.5	54	67	63	59	58	10	99	74	20	16	72	7.0	68
		5	- ;	1	52	51	ŀ	ŀ	51	51	55	5.5	99	62	63	80	7.0	99	74	7.3	76	7.1	20	69
		4	1	-	5.2	52	- 1	1	51	51	56	55	65	63	63	28	7.1	99	7.3	20	73	7.0	10	29
		3	1	1	r 2	52	;	1	ŗ.	ر د	56	54	65	62	99	62	72	6,	7.3	70	7.5	ç	72	89
		2	-:	1	52	25	77	55	51	51	56	55	63	09	99	62	10	99	74	69	75	7.0		70
		1	- 1	!	52	51	4 4	7 7	51	50	57	53		58	65		67	99	73	89	77	73	75	7.1
	Mosek	MOUTH	November	8	December Maximum	Minimum	January Maximum	Minimum	February Maximum	Minimum	March Maximum	Minimum	April Maximum	Minimum	May Maximum	Minimum	June Maximum	Minimum	July Maximum	Minimum	August Maximum	Minimum	September Maximum	Minimum

SAN JOAQUIN RIVER BASIN -- Continued

11-3350, COSUMNES RIVER AT MICHIGAN BAR, CALIF.

LOCATION .-- At gaging station at Michigan Bar, Sacramento County, 5.5 miles southwest of Latrobe, and 12 miles downstream from confluence of North and Middle FORKS.

DRAINAGE AREA. --537 square miles.

RECORDS AVAILABLE. --Chemical analyses: October 1953 to September 1961.

		рН	8.7	7.7	7.5	7.7	6.6	٥.	7.9	7.7	7.6	7.7	
	Specific	duct- ance (micro- mhos at 25°C)	105	9	91	6	120	3	79	80.00	67	7.0	_
		ad- ad- Sorp-(tion ratio	0.3	7	e,	e,	ů.	Ŋ	4.0	3 65	<u>د.</u>	NN	_
		Non- car- bon- ate	0	0	0	0	9 (N	H	0	0	00	
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	40	40	34	36	20	7.5	33	22 22	56	34	_
	solids ted)	Tons per day											_
er 1961	Dissolved solids (calculated)	Tons per acre- foot		1	ł	ŀ	!	1	15	31	ł	18	
Chemical analyses, in parts per million, water year October 1960 to September 1961	sia o)	Parts per million	!	ŀ	1	I	1	1	15	ĝ	1	1 92	
60 to		ron (B)	0.0	۳.	۰.	٠.	•	٠. —		? =:	_	•••	
er 19	. <u>.</u>	Ni- trate (NO ₃)	-	ł	1	!	1	ļ		:	1	19	;
Octob		Fluo- ride (F)	-	!	1	ł		!		31	1	=	
er year		Chloride (CI)	1.5	!	3.2	2.2	4.0	2.1	8.0	2 2	1,5	1.5	
ion, wat		Sulfate (SO4)	1	ł	I	ł	1	;	13	3:1	1	100	•
r mi11	0	- page (CO)											
ts per	Bi-	car- bon- ate (HCO ₃)	54	20	41	44	54	49	39	3 2	33	43	!
In par	ė	tas- stum (K)	1	;	1	ì	1	i		3 1	1	1.1	
lyses,		Sodhum (Na)	4.1	4.6	4.4	4.0	4.8	, ,	5.6	9.0	3.2	3.1	i
al ans	,	mag- ne- stum (Mg)	1	1	ļ	}	1	1	19	. !	i	1.5	
Chemic		Cal (Ca)	ł	1	1	1	!	!	15	4. 0 i	1	7.6	
		Iron (Fe)							3	To • 0			
		ge Silica Iro (SiO ₂) (Fe	-	1	1	!	l	!	15	<u> </u>	1	15	Ĺ
		Discharge Silin (cfs) (SiC					92		242	105	34	16	
		Date of collection	Oct. 3, 1960	Nov. 1	Dec. 13	Jan. 3, 1961	Feb. 6	Mar. 1	Apr. 3	June 1	July 10	Aug. 10.	

Periodic determinations of suspended-sediment discharge, water year October 1960 to September 1961 (Methods of analysis B. bottom withdrawal tube; C. chemically dispersed, D. decanabon; N. in native water; D. nines B. nines S. stees. V. stees D. nines S. stees. V. stees D. nines S. stees.

	Mothed	of of	analysis		
			2,000		
			1.000		
		eters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000		
		millim	0.250		
	iment	ated, in	0, 125		
	ded sed	e indica	0.062		
	Suspended sediment	han siz	0.031		
water)		finer t	0.016		
Bulled		Percent finer than size indicated, in millimeters	0.008		
, Ha			0.004		
cape;			0.003		
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sodimont	discharge	(tons per day)	27	70
; S, Sleve; V, Vl	Sediment	concen- tration	(mdd)	99	37
P, piper		Discharge (cfs)		156	204
	Water tem-	ling per-	(*F)	53	49
	S S	Img	point		
		Time (24 hour)		1310	1235
		Date of collection		Jan. 31, 1961	Mar. 15

SAN JOAQUIN RIVER BASIN--Continued

11-3360. COSUMNES RIVER AT MCCONNELL, CALIF.

LOCATION -- At gaging station on U.S. Highway 99 bridge, 0.2 mile south of McConnell, Sacramento County, 1 mile downstream from Deer Creek, and 7 miles north DRAINAGE AREA.--730 square miles. RECORDS MAILABLE.-Chemical amalyses: October 1958 to September 1961. REMARKS.--No ilow during summer months. of Galt.

		Нq	7.9	7.6	7.7	7.8	8.7 66	7.6	7.6	8.8
	Specific	duct- ance (micro- mhos at 25°C)	86	66	8	124	66	73	67	89
		ad- ad- Borp-(tion ratio	0.3	e.	<u>د.</u>	e.	8	۳.	<u>.</u>	۴.
		Non- car- bon-	1	4	0	ς.	~1	0	0	•
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	38	33	41	49	42	30	27	27
1	solids ed)	Tons per day				-,-				
er 196	Dissolved solids (calculated)	Tons per acre- foot							0.07	
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dis (ca	Parts per million							53	
960 to		Po- (B)		0.0	٦.	٦.	٦.		٦.	•
er 16		Fluo- Ni- ride trate (F) (NO ₃)							0.2	
Octob		Fluo- ride (F)		_					0.1	
er year		Chloride (Cl)	4.1	3.5	2.2	3.0	2,5	2.8	1.5	2.6
ton, wa		Sulfate (SO4)	6.0	1	1	1	1	1	2.0	1
r mill	į	Don-								
rts pe	늄	car- bon- ate (HCO ₃)	45		52	54	49	37	36	36
in pa	ć	tas- Shum (K)	6.0		ļ	}	1			:
alyses,		Sodium (Na)		4.6	4.5	5.0	3.3	3.6	2.9	3.5
cal an	2	mag- ne- sium (Mg)	4.4	ŀ	1	!	1	ł	2.9	
Chemi		Cal- cium (Ca)	8.0	!	-	l	1	ł	0.9	
		Iron (Fe)							0.01	
		Silica (SiQ,)							18	
		Mean discharge (cfs)	30	26	12	80	67	232	140	40
		Date of collection	Dec. 14, 1960	Dec. 16	Jan. 6, 1961	Feb. 9	Mar. 10	Apr. 6	May 11	June 1

Sediment discharge measurements and particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal hube; C, chemically dispersed; D, decardation; M, in mative water; P. to bioet; S, sieve; V, visual accumination thin. W, in distilled water!

	Mothod	of o	analysis						^		
			2,000								
			1.000								
		eters	0, 500						8		
		millim	0,250						66		
	liment	ated, in	0, 125						91		
	Suspended sediment	e indica	0.062						88		
	Suspen	han siz	0.031								
Water)		t finer t	0.016								
Brilled		Percent finer than size indicated, in millimeters	0.008								
W, H			0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000								
n cabe;			0.00	<u>.</u>							
F, pipet; S, Bieve; V, Visual accumulation tube; W, in distilled water/	Sodiment	discharge	(tons per day)	0.5	Τ.	15	13	11	32	6.7	œ.
S, Bleve; V, VI	Sediment	concen- tration	(mdd)	9	87	28	30	39	98	22	80
r, piper		Discharge (cfs)		30	14	93	165	104	242	113	37
	Water tem-	-		42	22	57	21	54	65	7	1
	Somu	Jing	point								
		Time (24 hour)			_		1400				
		Date of collection		Dec. 14, 1960	Jan. 25, 1961	Jan. 31	Feb. 16	Mar. 15	Mar. 22	Apr. 27	June 2

SAN JOAQUIN RIVER BASIN--Continued

11-3366. DELTA CROSS-CHANNEL NEAR WALNUT GROVE, CALIF.

LOCATION: --Approximately 0.2 mile downstream from control gates, 0.5 mile north of Walnut Grove, Sacramento County, and 7.5 miles south of Courtland. REMAIRALE. --Chemical analyses: October 1953 to September 1961.

		Щď	7.8	9.2	7.5	7.7	7.4	0.	7.8	7.8	8.0	7.8	7.8	<u>.</u> ا
	Specific con-	duct- ance (micro- mhos at 25°C)	187	167	188	181	106	148	135 7.8	159	187	171	172	235
	.d.	adum ad- Borp-(r tion ratto	9.0	9.	9	9.	۳.	4.	4.	9.	۲.	۲.	«	8.
		Non- a carr- bon- t	0	0	_	0	2	0	-	0	0	0	0	•
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	99	62	67	65	46	29	22	26	99	29	22	8
	# es	25 % " #s						_						_
1	solids ted)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot	1	1	l	ŀ	1	1		0.14		1		.20
Septemb	P	Parts per million	1		!	!	1	1	!	101	!	!	i	145
160 tc		Bo- (B)	0.1	٠.	•	٦.	٦.	٦ <u>.</u>		۰.		٦.		_4
er 16		trate (NO ₃)		1	ł	ł	ł	1		0.0	1	;	1	9.
Octob		ride (F)	1	1	1	1	!			0.1	1	!	ŀ	٠.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	8.0	3.0	10	7.5	5.0	3,6	5,5	7.3	7.6	9.5	8.8	12
lion, wa		Sulfate (SO ₄)	1	1	ì	1	l	i	ł	8.8	ŀ	1	1	13
r mil.		CO)												
rts pe		car- bon- ate (HCO ₃)				82	48	92	99	72	84	75	78	108
in pa	é	sium (K)		1				1	1	1.5	1	1	1	1.7
alyses,		Sodium (Na.)	12	11	12	11	5.0	7.4	7.1	11	13	12	13	17
cal an	7,00	mag- ne- stum (Mg)	l	1	1	l	ł	1	1	6,2	1	!	!	9.7
Chemi		Cal- cium (Ca)	;	ŀ	ł	ļ	ł	;	:	12	ł	ŀ	ŀ	16
		Iron (Fe)								0.03				
		Silica (SiO ₂)	-	1	;	!	1	1	1	19	1	j	1	22
		Mean discharge (SiO ₂) (cfs)			_					_	_			
		Date of collection	Oct. 3, 1960	Nov. 7	Dec. 12	Jan. 9, 1961	Feb. 13	Mar. 6	Apr. 10	May 1	June 5	July 10	Aug. 8	Sept. 7

SAN JOAQUIN RIVER BASIN--Continued

11-3368. LITTLE POTATO SLOUGH NEAR TERMINOUS, CALIF.

LOCATION .--At tidal gaging station at bridge on State Highway 12, approximately 0.2 mile from confluence with South Fork Mokelumne River, and approximately 0.5 mile north of ferminous, San Joqquin Count.

Maile north of Terminous, San Joqquin Count.

October 1963 to September 1961.

	<u></u>	Нd	8.0	8.1	7.2	7.5	7.4	210 7.8	7.9	181 7.8	8.0	7.7	8.0	8.0
	Specific con-	duct- ance micro- nhos at 25°C)	229	218	210	161	257	210	150	181	218	219	198	251
ĺ		duum ad- sorp- tion ratio	8.0	1.0	۲.	9	۲.	۲.	10	9.	6	8.	8.	6.
		Non- car- bon-	Т	8	15	က	28	9	10	3	0	9	60	٥
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	77	72	69	99	89	75	59	64	71	73	65	82
51	solids ted)	Tons per day								_				
er 196	Dissolved solids (calculated)	Tons per acre- foot		1	!	i	!	1	ł	0.16	1	ŀ	;	.30
Septemb	81 Q	Parts per million	1	1	1	1	l	1	1	114	1	!	!	147
360 tc		. 10 n (B)	0.0	•	•	٦.	7			۰.	٦.	٦.	۰.	•
er 19		Ni- trate (NO ₂)	1	1	1	!	1	1	1	0.0	!		1	•
Octo		Fluo- Ni- ride trate (F) (NO ₃)	1	1	1	1	1	\ _		0.1	1	1	•	.2
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	19	31	56	10	32	18	0.6	12	12	20	14	20
lion, wa		Sulfate (SO ₄)	:	1	1	!	!	1	١	13	ł	1	!	#
r mil	-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1												
rts pe	Bi-	car- bon- ate (HCO ₃)	93	85	99	77	74	84	99	74	94	82	16	102
in pa	ć	K)	1	I	ŀ	!	1	1	ŀ	1.3	!	1	ŀ	1.6
alyses,		Sodium (Na)	16	19	14	12	16	13	8.4	12	18	16	14	19
cal an	7,0	sium (Mg)	1	ŀ	!	!	ł	1	;	7.7	ļ	!	;	2
Chemi		Cal- clum (Ca)	1	ŀ	;	!	;	;	}	13	ļ	;	!	16
		Iron (Fe)								0.05				
		Silica (SiQ _e)	1	-		1		!	1	19	;	1	:	19
		Mean discharge (SiO ₂) (cfs)												
		Date of collection	Oct. 3, 1960	Nov. 7	Dec. 12	Jan. 9, 1961	Feb. 13	Mar. 6	Apr. 10	May 1	June 5	July 10	Aug. 8	Sept. 7

SAN JOAQUIN RIVER BASIN--Continued

11-3372. SAN JOAQUIN RIVER AT ANTIOCH, CALIF.

from mouth.	
r, and 4.5 miles from mout	
у, яп	1961
a County	ptember
Cost	to Se
Contra	1952
Antioch,	October
ı at	:ses!
station	anal
gaging	-Chemical
tidal	VBLE
At	VAIL
LOCATION At tidal gaging station at Antioch, Contra Costa County, and 4.	RECORDS A

		Hq	7.9	7.8	7.6	7.5	7.5	7.8	8.0	7.4	7.7	7.9	7.6	7.6
	Specific con-	duct- ance (micro- mhos at 25°C)		1,620 7,8					198	359 7.4	1,150	3,400	6,280	4.330
	<i>.</i>	ad- ad- sorp- tion ratio						1.1	7.	2.0	6,1	11	17	14
		Non- car- bon- ate	168	126	0	32	22	34	00	14 2.0	87	341	620	392
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	252	204	79	94	84	66	20	482	154	416	694	469
	olids ed)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	;	;	ŀ	1	;	ŀ	i	0,28	i	ł	1	3.17
Septembe	Dis. (ca	Parts per million		!	ŀ	1	1	1	i	204	1	!	1	2.330
0 to		Bo- ron (B)	0.2		٦.		۲.	۲.	0	٦.	ď	4.	9.	4
r 196		Ni- rate NO ₃)	1	ŀ	ł	!	l	1	1	0.2	!	1	1	2.5
tobe		Fluo- Ni- ride trate (F) (NO ₃)	ī	1	¦	1	1	ŀ	ŀ	0.1	1	1	1	0
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	575	425	59	74	31	33	16	09	278	977	1,860	1,260
ion, wat		Sulfate (SO ₄)		;	ł	1	1	1	ŀ	22	1	ł	1	143
m111	Į	bon- ate (CO ₃)												
ts per	Bi-	car- bon- ate (HCO ₃)	102	95	114	92	92	43	75	78	82	92	6	94
in par	É	tas- sium (K)	1	1	1	i	1	1	1	2.0	1	ŀ	1	25
lyses,		Sodium (Na)	313	216	25	48	28	25	14	40	174	530	ᄅ	715
sal ans	Med	mag- ne- sium (Mg)		;	;	1	ŀ	1		8,6	1	!	!	88
Chemi		Cal- clum (Ca)		ł	ł	1	1	1	1	17		1	!	43
		Iron (Fe)								0.04				
		Silica (SiQ _g)	1	1	ł	i	ŀ	1	1	16	ŀ	ł	1	6.6
		Mean discharge (SiQ _s) (cfs)												
		Date of collection	Oct. 3, 1960	Nov. 7	Dec. 12.	Jan. 9, 1961	Feb. 13	Mar. 6	Apr. 10	May 1	June 5	July 10	Aug. 3	Sept. 11

SACRAMENTO RIVER BASIN

11-3420. SACRAMENTO RIVER AT DELTA, CALIF.

LOCATION. --At gaging station, 0.2 mile downstream from Dog Creek, 0.6 mile southeast of Delta, Shasta County, and 2.8 miles south of La Moine. DRAINAGE ARRA. -427 square miles.
BRAINAGE ARRA. -427 square miles.
WASTONDS ARRALEME. --Chemical analyses: December 1953 to September 1961.
Water temperatures: June to September 1951, October 1953 to September 1957.

		Hď	7.9	7.9	7.7	7.6	7.8	7.9	8.0	7.6	7.9	8,1	8.0	8.3
	Specific	duct- ance (micro- mhos at 25°C)	153	135	116	111	75	97	86	81	93	134	144	152
		dium ad- Borp- tion ratio	9.0		4.	4	C)	m	2	Ŋ	2	50	9	
		Non- car- bon-	٥	0	0	0	0	Ħ	0	0	S	0	0	0
	Hardness as CaCO ₃	Cal- clum, Mag- ne- sium	55	22	45	61	32	42	40	38	46	49	26	24
1	solids ted)	Tons per day									_			
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	1	1	i	}	0.08	ľ	ł	1	.15
Chemical analyses, in parts per million, water year October 1960 to September 1961	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Parts per million	;	1	1	1	1	1	ł	28	1	!	1	112
60 to		ron (B)	0.1	۶.	•		•	۰.		۰.	۰.	٦.		
er 19		Fluo- Ni- ride trate (F) (NO ₃)	1	1	1	1	ł	1	!	0.0	!	!	!	
Octob				<u> </u>	!	1	!	1	!	0.0	1	;	1	۲.
er year		Chloride (CI)	7.5	6.7	4.0	4.0		1.8	1.8	2.8	1.9	4.3	7.0	10
ion, wat		Sulfate (SO ₄)	1	;	1	1	1	1	1	0.0	1	1	!	3.0
. mill		(CO)	0	0	0	0	0	•	0	0	0	0	0	-
ts per	Bi-	car- bon- ate (HCO ₃)	79	79	62	86	4	20	21	49	20	74	77	92
in par	É	fas- stum (K)	1	!	1	ŀ	!	1		0.3		ł	_	1.0
lyses,		Sodium (Na)	11	12	5.9	6.9	2.6	4.5	2.5	2.7	3.6	8.4	9.6	==
al ans	ş	mag- ne- sium (Mg)	8.5	1	!	1	;	l	1	5.8	1	1	ł	6.4
Chemic		Cal- (Ca)	8.0	1	ŀ	ŀ	ł	1	ł	5.8	;	1	į į	11
		Iron (Fe)								0.00				
		Silica (SiO ₂)	:	ł	ļ	1	ŀ	1	1	17	L	1	ı	31
		Discharge Sil (cfs) (Sil	232						1,660	1,510	891	306	226	200
		Date of collection	Oct. 11, 1960	Nov. 8	Dec. 13	Jan. 11, 1961	Feb. 14	Mar. 7	Apr. 11	May 9	June 14	July 12	Aug. 2	Sept. 11

SACRAMENTO RIVER BASIN--Continued

11-3455. SOUTH FORK PIT RIVER NEAR LIKELY, CALIF.

LOCATION: --At gaging station 1.3 miles downstream from West Valley Creek and 3.5 miles east of Likely, Modoc County. DRAIMAGE AREA.--248 square miles. RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1961.

1		Ηď	8.0	7.6	7.7	7.8	8.0	8.0	7.9	7.5	7.9	8.1	8.1	8.5
	Specific con-	duct- ance (micro- mhos at 25°C)	145	104	102	103	134	121	8	110	88	151	174	183
		ad- Borp- tion (r	9.0	4.	4.	4.	'n	۲.	63	e.	۳.	9		٠.
		Non- car- bon-	٥	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	53	41	44	43	20	46	36	41	37	26	63	99
	solids ed)	Tons c								_				
er 1961	Dissolved solids (calculated)	Tons per acre- foot	ŀ	:	1	I	!	I	1	0.12	1	1	i	.19
Chemical analyses, in parts per million, water year October 1960 to September 1961	SICI	Parts per million		1	1	!	!	!	!	68	1	ł	1	140
60 to		Bo- (B)	0.1	•	۰.	•	7	۲.		۰.	۰.	=:	2	_
er 19		Fluo- Ni- ride trate (F) (NO ₃)	1	!	!	!	1	!		8.0	! _	!	!	9.
Octob		Fluo-	1	!	!	!	1	-		0.1	1	!	<u> </u>	
er year		Chloride (C1)		æ.	2.7	1	-	1.0	1.0		!	1.5	3.5	4.5
lion, wat		Sulfate (SO4)	1	1	ï	1	1	1	l	1.6	1	1	1	9.0
- m111	-10	GO ge m	0	0	0	0	0	•	•	•	0	•	0	4
rts per	-19	car- bon- ate (HCO ₃)	79	63	64	2	74	73	49	63	54	8	95	88
in pa	É	K ta ta se (X)	1	!	1	!	!	1		2.4		1	1	4.4
lyses,		Sodium (Na)	10	5.4	6.2	5.7	8.1	#	4.7	5.1	3.6	9	12	13
al an	7.0	mag- nie- stum (Mg)	1	;	1	;	1	1	ł	4,4	;	!	!	6.3
Chemi		Ca) (Ca)	1	;	;	ŀ	1	1		9,2	1	;	1	16
		Iron (Fe)								90.0				
		(SiQ ₂)	1	l	!	1	1	1	1	33	1	!	1	38
		Discharge Silica (cfs) (SiQ _g)		22	a20		8.0		47	122	p20	92		
		Date of collection	Oct. 13, 1960	Nov. 10	Dec. 15	Jan. 12, 1961	Feb. 16	Mar. 9	Apr. 13	May 11	June 15	July 13	Aug. 2	Sept. 13

a Daily mean discharge. b Estimated daily mean discharge.

11-3485. PIT RIVER NEAR CANBY, CALIF.

LOCATION.—At gaging station, at lower end of Warm Spring Walley, 4 miles southwest of Canby, Modoc County. DRAINAGE AREA.—1, 450 square miles, approximately, excluding Goose Lake basin. RECORDS AVAILABLE.—Chemical analyses: October 1968 to September 1963.

		Нq	8.0	7.6	8.2	7.9	7.8	8.0	8.3	7.6	8.2	8.5	8.5	8.4
	Specific	duct- ance micro- nhos at 25°C)	337	272	326	229	204	283	226	296	355	293	233	326
		ad- ad- Sorp- tion ratio	1.5	1.8	1.6	1.1	1.0	1.8	1.0	1,3	1.5	1.1	1.0	1.2
		Non- car- bon-	0	ō	0	0	0	0	0	0	0	0	0	٥
	Hardness as CaCO ₃	Cal- clum, Mag- ne- sium	26	73	92	2	64	82	75	82	106	102	81	106
	,,,,,	Tons c day			_									
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	;	ł	ł	1	1	0.28	1	;	1	. 29
Septembe	BHG S)	Parts per million	+	1	1	1	1	1	1	208	1	1	1	212
60 to		. Bo-	0.3	۲.	٠.	-	٦.			~	_	۰.	•	٠.
er 19		Fluo- Ni- ride trate (F) (NO ₃)	L	ł	1	!	¦	!		1,3	;	1	!	٥.
Octob		Fluo- ride (F)	;	!	!	!	!	!	!	0.2	;	1		-
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	9.0	7.5	12	5.0	2.1	==	6.5	8.2	5.4	4.0	3.5	8.2
ion, wa		Sulfate (SO ₄)	1	ŀ	!	1	;	;	ı	ន	}	!	1	12
. m11	=0,5	ate (CO ₃)	0	0	0	0	•	0	8	0	0	ເດ	9	e
ts per	B1-	car- bon- ate (HCO ₃)	169	134	166	129	106	145	110	158	186	162	121	180
in par	, a	fas- sium (K)		1	1	1	1	!	1	4.7	;	1	1	5.4
lyses,		Sodhum (Na)	34	36	36	22	18	ļ	18	58	36	52	20	28
al ans	Mag	nie- nie- stum (Mg)		ł	1	1	ł	!	1	9.6	1	ł	!	9.4
Chemic		Civil (Ca)	;	1	!	1	ł	ł	1	23	;	ŀ	!	27
		Iron (Fe)								0,03				
		Silica (SiO ₂)	1	!	1	1	1	!		31	ı	L	L	32
		Discharge Silic (cfs) (SiQ	43				225	49	38	142	42	34	3.6	27
	,	Date of collection	Oct. 13, 1960	Nov. 10	Dec. 15	Jan. 12, 1961	Feb. 16	Mar. 9	Apr. 12	May 11	June 15	July 12	Aug. 2	Sept. 13

a Daily mean discharge.

Sediment discharge measurements and particle-size analyses of suspended sediment, wherefore to October 1960 to September 1961 in Machade of annicate: R before setted-round that A hominally discounsed in decarbation. N is suffice water.

	Mothod	of o	analysis				٨		•		
			2,000								
i			1.000								
		eters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000								
		millim	0.250				100				
arer;	iment	ated, in	0.125	1	!	ł	66	ŀ	100	1	1
arive w	Suspended sediment	e indica	0.062	1	!	ŀ	96	I	66	ŀ	ŀ
z,	Suspen	han siz	0.031								
water)		finer t	0.016								
, decan		Percent finer than size indicated, in millimeters	900.0								
raed; b V, th di			0.004								
y dispe			0.002								
(Methods of analysis: b. bottom withdrawal tube; C, chemically dispersed; D, decadration; N, in harive water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sodiment	discharge	(tons per day)	4.2	88	=	16	7.5	2.2	1.9	4.9
om withdrawal tu S, sieve; V, vi	Sediment	concen- tration	(mdd)	58	191	20	92	47	38	65	39
nalysis: B, botto P, pipet;		Discharge (cfs)	Ì	54	181	82	63	59	24	=	47
ods of	Water tem-	per-	(FF)	37	43	43	47	25	45	99	99
(Meth	8	ling	point								
		Time (24 hour)		1700	1700	1200	0840		0820		
		Date of collection		Jan. 24, 1961	Feb. 13	Feb. 21	Mar. 22	Apr. 13	Apr. 19	May 16	June 10

SACRAMENTO RIVER BASIN---Continued

11-3520. PIT RIVER NEAR BIEBER, CALIF.

LOCATON: -Approximately 200 feet upstream from gaging station, 2.2 miles upstream from Spring Gulch, and 7.4 miles south of Bieber, Lassen County. DRAINAGE AREA.--2, 970 square miles, approximately, excluding Goose Lake basin.

RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1961.

1		Hd	352 8.2	4.9	7.9	7.7	7.8	245 7.9	8.0	8.0		8.3
	Specific con-	duct- ance (micro- mhos at 25°C)	352	301	231	254	145	245	194	258	341	389
	·8:	ad- ad- Borp- tion ratio	1,1	1.6	1:1	1.1	6.	1.1	7.	œ	1.4	1,4
	e 88 CO ₃	Non- car- bon-	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	119	91	72	92	45	4	74	88	108	123
1	solids ted)	Tons per day										
er 196	Dissolved solids (calculated)	Tons per acre- foot								0.22		
Chemical analyses, in parts per million, water year October 1960 to September 1961	STCI	Parts per million								191		
960 to		ron (B)	0.3	?	٦.	٦.	٦.	2	•		•	-
er 19		Fluo- Ni- ride trate (F) (NO ₃)								6.0		
Octo		Fluo- ride (F)							_	0.2		
er year		Chloride (C1)	8.0	7.8	5.5	5.8	ł	6.5	2.8	4.0	1	6.0
.ton, wat		Sulfate (SO.)								3.0		
r m111	1,0	afe (CO ₃)	0	0	0	0	•	0	0	0	4	4
rts pe	Bi-	car- bon- ate (HCO ₂)	196	158	128	135	16	130	114	153	197	214
in pa	å	Sium (K)								4.1		
alyses,		Sodium (Na)	28	36	22	22	13	22	14	17	33	36
cal an	7,00	nage- ne- stum (Mg)								9.2		
Chemi		Call- Can (Ca)								20		
		Iron (Fe)			_					0.05		
		Silica (SiQ ₂)				_				27		
		Discharge SII: (cfs) (Si	31	26	a 105	a120	1,250	178	29	10	47	.2
		Date of collection	Oct. 13, 1960	Nov. 10	Dec. 15	Jan. 12, 1961	Feb. 16	Mar. 9,	Apr. 12	May 11	June 15	July 12

a Daily mean discharge.

11-3650. PIT RIVER NEAR MONTGOMERY CREEK, CALIF.

LOCATION .--At gaging station, 1 mile upstream from Cow Canyon Creek, and 3.5 miles west of Montgomery Creek, Shasta County. DRAINAGE AREA.--5,170 square miles, approximately, excluding Goose Lake basin.
RECORDS ANALLMELE.--Chemical analyses: October 1958 to September 1967, October 1958 to August 1959.

		Ħ	8.1	7.9	7.9	7.9	129 8.0	8,1	8.1	8.1	8,1	8.5	7.9	8.2
	Specific con-	duct- ance micro- nhos at 25°C)	148	156	156	152	129	143	134	127	143	161	154	153
		Sorp- tion thou	0.6	ŝ.	9.	9.	ŝ.	4.	ŗ.	ı.	٠.	۰	9.	9.
		Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	26	57	57	61	48	22	53	20	22	26	22	26
	solids ted)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot	!	!	!	!	!	!		0.13	1	!	!	•16
Septemb	1 1	Parts per million	1	1	!	1	;	!	!	66	1	1	!	116
60 to		. B. B.	0.1	۰.	۲.	•	۲.	,	٠.	٦.	•	۰.	7	۲.
er 19		trate (NO.)	!		_	!	1	1			ŀ	1	!	٠.
Octob		Fluo- ride (F)	!	ļ	1	!		!		0,1	ļ	1	_	∾.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	2.5	2.8	5,5	3.2	13	9	3,8	3.2	1.3	4.0	4.8	5.8
ion, wat		Sulfate (SO4)	-	!	1	I	1	!	1	2.0	ļ	1	1	2.0
mi11	į	bon- ate (CO ₃)	0	0	0	0	0 (0	•	0	0	n	0	0
ts per		car- bon- ate (HCO ₃)	87	6	6	5	75	87	78	9/	83	86	84	87
n par	۽	Sium (K)	1	1	1	1		!		1.7			1	
lyses, 1		Sodium (Na)	10	9.3	11	11	7.7	9.9	8.9	7.9	8.5	14	Ħ	10
al ans	707	mage- ne- stum (Mg)		1	ł	1	1	!	1	4.9	ł	1	!	5.7
Chemic		Clum (Ca)	1	1	1	!	1	1		12	ı	¦	l	13
		Fe)								0.0				
		Silica (SiQ,)	-	ŀ	ţ	1	1	!		8	!	1	1	ee Ee
		Discharge Silica (cfs) (SiQ _s)	4,030	3,260	862	3,310	6,620	4,730	4,910	4,770	3,340	3,150	3,020	2,480
		Date of collection	Oct. 12, 1960	Nov. 9	Dec. 14	Jan. 12, 1961	Feb. 15	Mar. 8	Apr. 12	May 10	June 15	July 12	Aug. 2	Sept. 13

11-3680, MCCLOUD RIVER ABOVE SHASTA LAKE, CALIF.

LOCATION: --At gaging station upstream from Shasta Lake, Shasta County, 0.2 mile downstream from Big Bollibokka Creek, and 11.3 miles east of La Moine. DALINAR AREA. -606 square miles.
RECORDS ANALMALE. --616 square miles.
RECORDS ANALMALE. --616 square miles: October 1958 to September 1961.
Water temperatures: June to September 1951, October 1953 to September 1959.

		Нq	7.8	7.7	7.8	7.9	82 8.0	7.9	8.0	94 7.8	7.8	8.0	8.1	8.1
	Specific con-	duct- ance (micro- mhos at 25°C)	95	86	101	100	82	96	95	94	100	97	92	93
		Borp- tton ratto	4.0	8	ω.	6	8	ĸ.	۳.	2	4.	۳,	۳.	e.
		Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	38	37	42	44	35	40	43	40	39	41	37	38
		Tons ci		_										
1961	Dissolved solids (calculated)	Tons per acre- foot	1	;	ł	ŀ	1	ŀ	ł	0.11	1	;	!	.12
Chemical analyses, in parts per million, water year October 1960 to September 1961	ald o	Parts per million		1	1	1	1		1	79	1	1	-	87
0 to		. B. B.	0.0	•	٦.	۰.	۰.			•	•	•	7	٠.
r 196		rrate (NO ₃)	!	1	1	l	ł	1		0.3	1	1	1	٠.
ctobe		Fluo- ride (F)	1	1	!	1	1	1		0.1	1	!	1	۲.
r year O		Chloride (C1)	1.0	٠.	2.0		2.	2.2	1.8	.2	1	1.8	2.8	2.8
on, wate		Sulfate (SO.)	1	1	1	1	!	i	I	1.4	1	1	1	1.0
mi111		(CO)												
s per		car- bon- ate (HCO ₃)	58	28	9	99	8	53	54	26	28	55	22	55
par	É		Ľ	l	!	1	!	!	-	1.3	!			1.2
yses, 1		Sodium (N2)	5.0	4.9	4.8	5.0	3,3	7.6	4.2	2.8	5.1	4.9	4.9	4.3
ıl anal	Ş	mag- ne- sium (Mg)	1	ī	1	!	ł	1	1	3,6	I	1	1	3.2
hemic		Cal- Can (Ca)		!	!	1	ł	1	ł	10	ļ	;	ł	10
٥		Fron (Fe)								0.00				
		ge Silica (SiQ.)		!	;	1	1	-	ŀ	31	1	ı	!	37
		Discharge Sili (cfs) (SiQ				1,200	3,450	1,480	1,710	1,540		1,080	1,020	984
		Date of collection	Oct. 11, 1960	Nov. 8	Dec. 13	Jan. 11, 1961	Feb. 14	Mar. 7	Apr. 11	May 9	June 14	July 11	Aug. 2	Sept. 11

11-3705. SACRAMENTO RIVER AT KESWICK, CALIF.

LOCATION .--At gaging station, 0.4 mile upstream from Middle Creek, 0.8 mile downstream from Keswick Dam, 1.6 miles downstream from Keswick, Shasta County, and 10 miles downstream from Shasta Dam.
DANIRAGE ARRA.--6,710 squere miles, approximately, excluding Goose Lake basin.
RECORDS AVAILARE.--Chemical analyses: December 1953 to September 1961.

	Specific con-	duct- ance (micro- mhos at 25°C)	15	4	_				_	_			
ļ		もゅ 日母説	1	12	133	129	1.26 7.7	116	112 7.3	119	117	112	114
- 1	8:	ad- sorp-(tion ratio	0.4	ıc.	4	4	ıı,	'n	4.	4.	4.	4.	4.
	COs	Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	45	47	69	54	49	44	46	20	46	47	45
	solids ited)	Tons per day								_			
r 1961	Dissolved solids (calculated)	Tons per acre- foot		1	ł	1	1	1	0,11	1	ì	1	.12
Septembe	eid S	Parts per million		1	1	}	1	ı	84	1	1	1	82
30 to		Bo- ron (B)	0.0	0,	0	0	•		•	0	•	٦.	•
er 19		Ni- trate (NO ₂)		1	ł	!	1		0.0	!	!	1	.2
2c tobe		Fluo- ride (F)		1	1	1	1		0.1	I	!	ł	۲.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chlor ide (C1)	2.5	1.9	3.0	2.2	1.8	2.5	2.8	2.2	2.2	2.4	2.5
ion, wat		Sulfate (SO4)		1	!	1	;	ł	8.0	I	ł	!	5.0
1111	į	bon- ate (CO ₃)											
ts per	Bi-	car- bon- ate (HCO ₃)	19	65	106	88	29	58	57	19	63	62	62
n par	ć	Stum (K)	1	1	1	1	!		0.3		!		1.2
lyses, i		Sodfum (Na)	6.1	7.5	7.5	7.7	7.6	7.5	6.4	6.5	9.9	0.9	9.0
al ans	No.	mag- ne- stum (Mg)	5,1	1	ł	!	1	ł	4.5	1	1	ļ	3.6
Chemic		Cal- ctum (Ca)	9.6	-	1	ł	!	1	#	1	1	1	12
		Iron (Fe)							0.21				
		Silica (SiO _a)		1	1	1	ı	1	23	1	ı	ł	23
		Mean discharge (SiO ₄) (cfs)	6,340	5,830	3,700	4.240	12,600	6.200	7,700	8,280	11,300	11,900	8,040
		Date of collection	Oct. 10, 1960	Nov. 7	ec. 12	Jan. 10, 1961	Mar. 6	Apr. 10	May 8	June 12	July 10	Aug. 8	Sept. 7

SACRAMENTO RIVER BASIN -- Continued

11-3720. CLEAR CREEK NEAR IGO, CALIF.

LOCATION: --At gaging station, at highway bridge on Redding-Igo road, 1.0 mile northeast of Igo, Shasta County, 8 miles southwest of Redding, and 11.1 miles upstream from mouth from mouth and from mout

	1	Hq	8.0	6.2	7.5	7.2	7.8	7.8	7.8	7.6	7.7	8,0	8,0	0.
	Specific	duct- ance (micro- mhos at 25°C)	193	180	119	111	63	83	81	83	110	3	191	202
		drum ad- sorp- tion ratio	8.0		4.	*	۳.	4.		4.	4.	9.	œ	.8
		Non- car- bon- ate	8	'n	-	9	10	က	•	4	10	7	7	2
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	63	29	51	4	56	30	30	34	44	48	19	62
	H 42				_		_				_			_
11	solids ted)	Tons per day									_			
er 196	Dissolved solids (calculated)	Tons per acre- foot		;	}	1	;	1	}	0.09	;	;	!	0.16
Septemb	Dis (c:	Parts per million		1	1	1	1	1	1	64	1	1	1	119
60 to		Bo- ron (B)	0.0	•	•	•	•	•	0.	•	۰.	•	•	•
er 19		Fluo- Ni- Fride trate r (F) (NO ₂)	-	1	i	Ī	1	!	1	0.2	1	ł	1	•
Octob		Fluo- ride (F)		Ī	I	i	ŀ	ī	1	0.0	1	Ī	1	.1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	18	17	7.2	6.0		2.8	3.2	4.0	6.4	9.4	19	22
lion, war		Sulfate (SO4)	1	Ī	1	1	ł	ī	1	7.0	1	1	1	0.6
r mil	į	te date (CO)												
rts pe		car- bon- ate (HCO ₂)	29	99	63	46	26	33	36	37	48	26	99	69
in pa	Ė	tas- sium (K)		ŀ	ŧ	1	1	Ī	1	0.7	1	ł	1	1.6
alyses,		Sodium (Na)	14	13	6.5	6.5	3.0	5.5	4.3	4.8	6.7	9,9	14	12
cal an	2	mag- ne- stum (Mg)	5.6	ŀ	ł	1	ī	1	1	2,1	1	!	1	3,5
Chemi		Cal- clum (Ca)	16	1	1	1	1	1	1	10	1	ŀ	i	119
		fron (Fe)								0.01				
		Silica (SiO ₂)		ļ	;	;	;	1	1	17	1	1	1	14
		Discharge Sill (cfs) (SiC	40				1,440		398	240	132	55	38	28
		Date of collection	Oct. 10, 1960	Nov. 7	Dec. 12.	Jan. 10, 1961	Feb. 13	Mar. 6	Apr. 10.	May 8	June 12	July 10	Aug. 7	Sept. 7

a Daily mean discharge.

SACRAMENTO RIVER BASIN--Continued

SACKAMENTO MI VEN BASIN--CONTINUES 11-3740. COW CREEK NEAR WILLVILLE, CALIF.

LOCATION: --At gaging station, 4.2 miles southwest of Millville, Shasta County, and 4.3 miles downstream from Little Cow Creek. DRAINGE AREA.-427 Square miles. RECORNS AVAILABLE.--Chemical analyses: October 1958 to September 1961.

		Нď	8.0	7.9	8.0	7.6	89 7.8	7.8	6.7	7.9	6.	8.1	8.0	8.3
	Specific con-	duct- ance micro- mhos at 25°C)	1						104 7.9	105	110	152	178	182
		Borp- Borp- tion tion	4.0	'n	50	5	<u>ښ</u>	4.	е.	e.	e.	4.	4.	• 4
	ess CO ₃	Non- car- bon-	0	0	2	12	4	=	-	0	•	0	0	0
	Hardness as CaCO ₃	Cal- clum, Mag- ne- stum	92	89	65	69	41	49	42	42	46	61	74	7.5
	solids ted)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot		ł	1	;	ł	ł		ਂ	ŀ	ł	i	.18
Chemical analyses, in parts per million, water year October 1960 to September 1961	9HG	Parts per million	i	!	1	1	1	1	1	8	1	1	1	129
60 to		- 10 P	0.1	~	٦.	•		ë.		•	_	٦.	~	•
er 19		Fluo- Ni- ride trate (F) (NO.)	L	1	1	!	1	!		_	1			1:1
Octob				1	1	1	1	1		_	1	۱ _	Ĺ	.2
er year		Chloride (C1)	9.5	5.0	8.5	6.8	2.2	4.5	2.0	4.6	4.0	4.5	6.5	5.4
ion, wat		Sulfate (SO4)	1	1	1	!	1	;	1	4.4	ŀ	!	;	1.0
. mill	1	(CO)	0	0	0	•	•	•	•	0	0	0	0	2
ts per	Bi-	car- bon- ate (HCO ₃)	86	8	71	2	45	86	20	23	62	82	66	100
in par	Ė	i i i i i i i i i i i i i i i i i i i	1	1	1	1	ł	1	_	_	1	١		1.8
lyses,		Sodium (Na)	8.9	9,3	9.2	9.6	4.2	5.7	5.1	4.8	5.1	7.9	8.4	7.9
al ans	Men	mag ne- stum (Mg)		}	ŀ	1	ŀ	1		4.1	!	!	!	6.8
Chemic		Ctum (Ca)		!	i	;	ŀ	ŀ			1	1	!	19
		Iron (Fe)								0.02				
		Silica (SiQ _e)	:	1	1	1	1	1		98	L	1	ŀ	35
		Discharge Sili (cfs) (SiC	39				1,700		242	428	224	41	17	19
		Date of collection	Oct. 10, 1960	Nov. 7	Dec. 12	Jan. 10, 1961	Feb. 13	Mar. 6	Apr. 10	May 8	June 12	July 10	Aug. 8	Sept. 7

11-3758, COTTONWOOD CREEK NEAR ONO, CALIF.

LOCATION.--Approximately 1 mile downstream from North Fork, and approximately 8 miles southeast of Ono, Tebama County.
RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1961.
RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1961.
RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1961.
The september of discharge for gaging stations at Middle Fork Cottonwood Creek near Ono and North Fork Cottonwood Creek near Igo are combined to give the flow at this station.

1		Hď	8.2	8,3	8.0	7.6	8.1	8.1	8,3	0.0	6.	8,3	8.4	4.
	Specific	duct- ance (micro- mhos at 25°C)	296	347	239	179	147 8.1	210	217 8.3	182	199	268	279	283
	ģ;		0.5	ı.	4.	4.	ĸ,	ů.	ε,	ĸ.	4.	<u>ښ</u>	4.	4.
	COs	Non- car- bon-	9	13	4	•	14	7	6	0	က	0	7	4
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	124	152	106	88	62	92	107	88	84	119	128	126
31	solids ted)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot	1	;	1	!	ł	}	1	0.16	ŀ	1	!	.23
Septem	970	Parts per million	1	!	;	!	!	ŀ	1	121	1	!	!	172
960 to		ron (B)	0.0	•	٦.	٠.	۰.	٠.	۰.	•	•	۰.	•	٠.
er 16		Fluo- Ni- ride trate (F) (NO ₅)	1	1	1	ł	1	!	ŀ	0.1	1	ł	l	.2
Octob		Fluo- ride (F)		1	1	1	1	1		0.1	1	1	1	٠.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	20	77	12	8.5	2.2	4.2	3.5	4.2	7.6	8.2	12	15
lion, wa		Sulfate (SO ₄)	1	ł	1	1	ł	ł	ŀ	8.0	1	1	l	7.0
r mil	ć	4 4 6 0 C	0	4	0	0	0	•	п	0	0	4	4	က
rts pe		car- bon- ate (HCO ₃)	144	162	124	109	28	104	117	108	66	139	146	143
tn pa	Ė	State (X)	1	1	ì	1	1	1		•	l	ŀ		1.4
alyses,		Sodfum (Na.)	12	13	9.0	8,1	5.6	7.2	6,1	6.3	8.0	8.7	01	=
cal an	Ş	Mag. ne- stum (Mg)	14	ŀ	ł	ł	1	1	1	9.5	!	1	l	13
Chem		Can (Ca)	26	1	;	;	1	!	ł	20	1	ŀ	ł	59
		Iron (Fe)								8.0				
		Silica (SiO ₂)	1	l	1	ŧ	1		1	61	ı	L	1	22
		Mean discharge (cfs)	28				1,308		297	190	78	30		
		Date of collection	Oct. 10, 1960	Nov. 7	Dec. 12	Jan. 10, 1961	Feb. 13	Mar. 6	Apr. 10	May 8	June 12	July 10	Aug. 7	Sept. 7

11-3759. SOUTH FORK COTTONWOOD CREEK NEAR COTTONWOOD, CALIF.

LOCATION.—At bridge on Evergreen Road, approximately 1 mile upstream from confluence with Cottonwood Creek, and 3.5 miles southwest of Cottonwood, DRAINING ARM.—218 square miles.

EXCROM ANALALE.—Chemical analyses: November 1958 to September 1961.

REMARKS.—We discharge records available.

		Hď	8.2	370 8.1 252 8.2 319 8.3	4 4 6 4	
	Specific	duct- ance (micro- mhos at 25°C)	311	252	255 255 255 255 255 255 255 255 255 255	280
	- · · ·	ad- Borp- tion ratio	0 8	æ 4 æ		•
	1	Non- car- bon-	0 62	899		7
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	131	106	108	CTT
	solids ted)	Tons per day				
er 1961	Dissolved solids (calculated)	Tons per acre- foot			0.19	
Septemb	Die (e	Parts per million			141	
80 to		ron (B)	0.0	100		7.
er 19		Fluo- Ni- ride trate (F) (NO ₂)			0.1	
Octob		Fluo- ride (F)				
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	12	33	10 9.9 13.5 13.5	8 1
lon, wat		Sulfate (SO ₄)			13	
r m1]]		CO Set	00	000	NOO 60	
rts per	Bi-	car- bon- ate (HCO ₂)	161 191	174	122	827
in pa	É	S S S S S S S S S S S S S S S S S S S			8.0	
lyses,		Sodium (Na)	7 20 20 20	10 12		#T
cal an	707	nie- etum (Mg)			8.0	
Chemi		Clum (Ca)			88	
		(Fe)			0.02	
		Silica (SiQ,)			70	
		Mean discharge (SiO ₆) (cfs)				
		Date of collection	Oct. 10, 1960 Dec. 12	Jan. 3, 1961 Feb. 15.	Apr. 11 May 2. June 6.	Aug

SACRAMENTO RIVER BASIN--Continued

11-3760. COTTONWOOD CREEK NEAR COTTONWOOD, CALIF.

LOCATION --At gaging station, 2 miles east of Cottonwood, Shasta County, and 2.4 miles upstream from mouth. MARIANGEA REMA.--945 Square miles. RECORDS AVAILARES.--Chemical analyses: October 1983 to September 1961.

		H	7.9	7.8	8.0	7.9	8.1	7.8	. 8	7.8	7.9	8.2	8.0	8
	02	duct- ance (micro- mhos at 25°C)	172	180	269	246	199	228	222 8.3	_			_	
	-òs	ration p	0.4	'n	50	4	۳.	4	4	4	4.	4.	4.	7
	co,	Non- car- bon-	0	0	12	n	9	4	4	0	m	0	0	0
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	69	75	110	122	86	97	102	86	8	87	78	7.5
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	!	ł	!	l		0.17		1	!	116
Septembe	भूत	Parts per million	1	1	1	!	1	!	!	128	!	!	1	121
30 to		. B. B.	0.0	•	۰.	٠.	•	۰ <u>.</u>	۰.	0.5	•	•	٦.	٩
r 190		Ni- trate (NO ₂)	1	ļ	ł	ł	1	1						
ctobe		Fluo- Ni- ride trate (F) (NO ₂)	;	1	1	1	1	1		0.1		1	I	
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	4.5	8,9	17	13	3.	6.2	5.5	5,5	5.8	3.8	4.4	4.0
ion, wat		Sulfate (SO4)	1	1	I	1	1	1	ļ	8.0	1	1	1	5.0
m111	į	ate (CO ₃)	٥	0	0	0	0	0	П	0	0	0	0	0
ts per	Bi-	car- bon- ate (HCO ₂)	94	95	120	145	86	113	117	107	106	116	102	66
n par	ć	at tage (X)	1	ł	ŀ	1	1	I	l	1,3	ł	1	1	1.4
lyses, 1		Sodium (Na)	8,6	6.6	11	=	6.6	97	8,3	8.5	8.3	9.1	8.5	8.5
al ana	Š	nie- stum (Mg)	8,3	ł	!	!	;	1	1	8	1	1	1	8.5
Chemic		Cal- ctum (Ca)	14	1	1	ļ	1	į	1	8	1	1	ł	16
		fron (Fe)								0.00				
		(SiO ₂)	-	1	ı	1	1	L		22	L	1		8
		Discharge Si (cfs) (S	138					620	612	440				
		Date of collection	Oct. 10, 1960	Nov. 1	Dec. 12	Jan. 10, 1961	Feb. 13	Mar. 6	Apr. 10	May 8	June 12	July 10	Aug. 8	Sept. 7

SACRAMENTO RIVER BASIN--Continued

SACKAMENTO KIVER BABIN--CONTINUES
11-3760. COTTONWOOD CREEK NEAR COTTONWOOD, CALIF.--Continued

Periodic determinations of suspended-sediment discharge, water year October 1960 to September 1961 (Methods of analysis: B. bottom withdrawal tube; C. Chemically dispersed; D. Geanaldon; M. in mattre water; P. p. nines: S. sieve. V. visual accumulation tube: W. in distilled water)

	Mathod	jo.	analysis														
			2,000		_		_	_	_			_				_	
			1.000														
		eters	0.500														
		millin	0.250														
	liment	ated, tr	0.125														
	Suspended sediment	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000														
	Suspen	than siz	0.031														
-		t finer (0.016														
2011101		Percen	0.008										_				
, m			0.004														
1			0.002														
r, paper, S, sieve, V, visual accumulation tube, W, in unstand weren	Sediment	discharge	(tons per day)	9.0	ē.	297	168	8.8	4.	92	151	8		4.3	1.3	.7	φ.
D, BIEVE, V, VI	Sediment	concen- tration	(mdd)	8	63	134	63	2	-	33	44	. 00	•	90	4	4	e
r, puper,		Discharge (cfs)		10	97	1,650	686	264	160	1,030	1.270	455	440	266	123	99	20
	Water tem-	per	(°F)	09	20	1	20	48	21	53	52	4	99	72	72	92	69
	Som D	ling	point								_						
		Time (24 hour)	Ì							1200					0230		
		Date of collection		Oct. 18, 1960	Nov. 15	Dec. 2	Dec. 3	Dec. 29	Jan. 25, 1961	Feb. 20	War 22	Anr. 19	May 3	June 9	June 23	July 20	Aug. 25

SACRAMENTO RIVER BASIN--Continued

11-3765. BATTLE CREEK NEAR COTTONWOOD, CALIF.

LOCATION: --At gaging station, 6.3 miles upstream from mouth, and 7.6 miles east of Cottonwood, Sbasta County. MAINAGE MASA.--362 square miles. RECORDS AVAILABLE: --Chemical manies. October 1958 to September 1961 (discontinued).

ı		Hq	8.0	6.2	8.0	7.9	7.9	8,1	118 7.9	8.0	8.1	8.1	8,1	8,3
	Specific	duct- ance micro- nhos at 25°C)	149	154	140	144	92	127	118	113	109	135	145	153
		drum ad- sorp- tion ratio	0.5	'n	'n	'n	e.	'n	4.	'n	₹.	'n	ı.	• 2
		Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	59	28	22	28	38	21	47	43	43	22	26	56
	solids ed)	Tons per day		_			_							
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	1	1	1		o _	1	1	!	.17
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dia (c:	Parts per million	-	1	1	1	}	!	1	101	1	<u>{</u>	!	123
90 to		ron (B)	0.0	7	۰.	٦.	•			•	•	_		7.
er 19		Fluo- Ni- ride trate (F) (NO ₂)		1	1	1	1	1			1	!	1	-
Octob		Fluo- ride (F)	1	!	!	!	 -	!		0.2	!	<u> </u>	!	-:
er year		Chloride (C1)	4.0	1	3.0	2.0	1.2	1.5	1.0	2.5	2.5	2.0	3.5	2.5
ion, wat		Sulfate (SO ₄)	1	1	1	1	1	1	1	1.0	I	1	I	1.0
m111	į	Parte (CO)	0	0	0	0	0	•	0	0	0	•	•	
ts per		car- bon- ate (HCO ₂)	87	89	98	98	51	7.2	65	67	62	78	98	88
n par	ė	Sirin (K)	1	ł	1	1	l	I		1.8	1	1		2.2
lyses, 1		Sodium (N2)	8.5	9.3	8.5	8.5	4.2	7.5	9.9	7.9	0.9	7.9	8.5	8.4
al ana	,	Mag- ne- stum (Mg)	;	1	1	Ī	1	I	1	4.9	I	1	ŀ	7:5
Chemic		Cal- ctum (Ca)	1	i	1	ł	ł	i	1	9.2	!	ł	ł	2
		fron (Fe)								9.0				
		ge Silica Iro (SiO ₂) (Fe	1	1	1	1		!	1	40	1	1	1	47
		Discharge Sili (cfs) (Sid	193				1,440		414	379	427	227	182	a145
		Date of collection	oct, 10, 1960,	Nov. 7	Dec. 12	Jan. 3, 1961,	Feb. 15	Mar. 14	Apr. 11	Мау 2	June 6	July 6	Aug. 8	Sept. 7

a Daily mean discharge.

SACRAMENTO RIVER BASIN--Continued

11-3765. BATTLE CREEK NEAR COTTONWOOD, CALIF. -- Continued

Periodic determinations of suspended-sediment discharge, water year October 1960 to September 1961 (Methods of analysis: B. bottom withdrawal the; C. chemically dispersed, D. decandation, N. in native water;

11-3772, SACRAMENTO RIVER AT BEND, CALIF,

LOCATION. --At highway bridge at Bend, Tehama County, approximately 7.9 miles upstream from gaging station near Red Bluff, 0.3 mile upstream from Spring Creek, and approximately 9 miles north of Red Bluff.

DAAIMAGE ARRA...-9,300 square miles, approximately upstream from gaging station. RECORDS ANILARLE..-Chemical malyses: "May 1955 to September 1961. Water temperatures: May 1955 to September 1961.

EXTREMES, 1960-61.--Dissolved solids: Maximum, 114 ppm Nov. 21-30; minimum, 87 ppm July 21-31.

Discharge records given for Sacramento River Hardness; Maximum, 56 ppm Nov. 11-20; minimum, 38 ppm Dec. 1.
Specific conductance: Maximum daily, 163 micromhos Jan. 27; minimum daily, 61 micromhos Dec. 1.
Specific conductance: Maximum daily, 163 micromhos Jan. 27; minimum daily, 61 micromhos Dec. 1.
KKTREMES, 1955-61.—Dissolved solids: Maximum, 138 ppm Dec. 28, 1958; minimum, 70 ppm Feb. 16, 1959.
Rardness: Maximum, 66 ppm Dec. 28, 1958; minimum, 28 ppm Jan. 14, 15, 1956, Dec. 1, 1960.
Specific conductance: Maximum daily, 215 micromhos June 4, 1960; minimum daily, 61 micromhos Dec. 1, 1960.
Nater temperatures: Maximum, 64° Sept. 6, 12, 1959 June 2, 4, 1960; minimum daily, 61 micromhos Dec. 1, 1960.
Nater temperatures: Maximum, 64° Sept. 6, 12, 1959 June 2, 4, 1960; minimum, 41°F Jan. 27, 1957.
REMARKS.—Records of specific conductance of daily samples available in district office at Sacramento, Calif.
near Red Bluff. No appreciable inflow between sampling point and gaging station.

į		Ħď	7.3	7.1	7.3	7.4	9.	7.3	6.1	7.4	6.9	7.7	7.8	142 7.8	8.0	7.1	137 7.6 119 7.8
	Specific con-	duct- ance (micro- mhos at 25°C)	122	122	123	129	136	135	67	143	127	139	139	142	148	110	137
		ad- ad- tion tion ratio	4.0	4.	4.	4.	4.	4.	2	4	4	4.	ı.	5.	ı.	4	44
		Non- car- bon-	0	0	0	0	0	0	0	-	=	0	0	0	0	=	00
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	49	48	48	22	26	25	28	53	49	52	22	23	54	40	45
r 1961	solids 180°C)	Tons per day	[``	•••	1,550	•		••		2,130	2,840	1,540	1,420	1,500	1,540	6,720	3,040
to September 196	Dissolved solids (residue at 180°	Tons per acre- foot	0.14	13	13	.14	12	.16	¦	15	.13	.14	.14	.15	.14	. 14	41.
1960 to Se	Diss (resi	Parts per million	103	66	26	101	109	114	ŀ	111	86	106	103	110	105	100	94
		. B. B.						۲.		0				۰.	•		-:0
Octo		Ni- trate (NO ₂)													4.		1:3
year		Fluo- ride (F)	0.0	٦.	۲.	•	٠.	٠.		7				۲.			-:-
n, water year October		Chloride (Cl)	5.0	4.2	2.2	3.8	4.8	2.0	1.5	3.7	3.0	4.0	3.2	3.1	4.5	2.5	. e.
r million		Sulfate (804)	5.0	4.0	5.0	2.0	5.0	7.0	4.0	97	91	8.0	9.6	4.6	5.4	8.0	7.0
ts pe	į	1 1 2 S															
in parts per		car- bon- ate (HCO ₃)	99	89	99	69	7	29	34	64	29	65	72	75	78	48	58,
	Ė	F in the S			1,2		_	_		2.0				1.6			1:0
al analyses,		Sodium (Na)	6.7	6.7	7.2	6.7	7.1	7.4	2.4	7.4	6.7	7.2	8.3	8.3	8.9	5.2	9.0
Chemical	į	nie- ne- stum (Mg)	5.2	5.0	5.0	5.4	6.3	5.8	1	5.0	5.2	4.7	6.1	5.6	8.8	3.9	4.0
		Cal- ctum (Ca)			=				1	13	11	13	11	12	12	9.6	22
		Iron (Fe)	0.00	8	8	8	.0	.02	!	14	.12	80.	.02	8.	.05	.21	<u> </u>
		Silica (SiQ _e)	26	21	27	88	56	56	14	59	24	88	26	27	22	21	2 2
		Mean discharge (SiO _a) (cfs)			5,906		6,224	7,008	50,500		10,740	5,395	5,116	5,059		24,880	11,270 24,200
		Date of collection	Oct. 1-10, 1960	Oct. 11-20	Oct. 21-31	Nov. 1-10	Nov. 11-20	Nov. 21-30	Dec. 1	Dec. 2-15	Dec. 16-21	Dec. 22-31	Jan. 1-9, 1961	Jan. 10-19	Jan. 20-29.	Feb. 1, 2	Feb. 3-8

~ ee ee ee	87878	04400 K	1000000
7.5	7.7	64.7.8	
131 132 122 122 130	128 125 125 124 123	123 124 123 121 119	121 123 123 123 122 123
40444	च च च च च	यं यं यं यं यं यं	. 4. w. w. 4. 4.
00000	00+00	00000	000000
51 48 48 50	52 52 52 52	84 44 74 74 84 84	74 74 64 84 84 84 84
4,910 3,820 4,910 4,250 2,330	,280 ,410 ,200 ,100	,410 ,450 ,650 ,640 ,830	980,980,980,980,980,980,980,980,980,980,
4,0,4,4,0	ดดดดด	กลุ่มกลุ่ม	8 HHH 8
4.5.4.4.5.	455555	555555	13 13 12 14 12 12 12
100 100 104 93	100 92 94 93	8 9 9 9 9 8 9 9 8 9 9 9 9 9 9 9 9 9 9 9	95 96 96 89 100 89
00440	00000	000000	0000000
80878	00000	00000H4	444466
0	66664	<u> </u>	11.12.22.1
00000000000000000000000000000000000000	2.6 7.1 2.0 0.0	24.00.00.00 4.40.00.00	9 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
6.0	7.0 6.0 7.6 7.6	0.4.8.4.8 0.0.0 0.0	446.644.00 0008864.00
68 70 63 64 62	66 63 44 44	4 4 4 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	67 69 67 73 67
4 1 0		141222	1.08 1.0
200.004	တစ္တစ္တစ္ တစ္ဆက္အရ	8.00.00.00 840 - 20.00	សុសុសុស្គ សស្4ស្4ស្
7.00.0	0.4000 0.0040	0.4.4.4.0.0	47.80.44.6.
11211	11221	122111	110 110 112 112 113
88552	48888	888888	888888
25 25 25 25	44000	22222 26455 26455	
			İ
17,480 14,900 18,190 15,130 9,270	8,189 9,161 9,208 8,659 8,355	9,291 9,764 10,920 10,970 11,270 11,680	11,610 11,190 10,100 8,242 7,373 6,831
17-28, 1964 1-10 11-20 21-31	Apr. 11-20	June 1-13	Aug. 1-10. Aug. 11-20. Aug. 21-31 Sept. 1-10. Sept. 11-20. Sept. 11-20. Weighted average
80.00	88.	# # # P # P #	200 E
117. 11. 11. 10. 11. 10.	11.20 1-20 1-31	22-15 22-3 11-10 21-10 21-3	21-10-11-11-11-11-11-11-11-11-11-11-11-11
Feb. Mar. Mar. Mar. Apr.	Apr. Apr. May 1 May 2	June June July July July	Aug. 1 Aug. 2 Aug. 2 Sept. Sept. Sept.

a Includes estimates for missing data.

						1										Day	Day															Aver-
Month	_	2	9	4	5	9	7	80	٥	0	Ξ	12	13	14	15	9	17	18	16	20	2.1	22	23	24	25	26	27	28	29	30	31	age
October November	60 58 53	60 58 52	53.60	50.28	50.00	0, 0, 4, 80, 80, 80	574	57	8 7 8 7 8	57 58 49	520	52	24.2	53 53	5.4.6	56 52	960	60 57 52	344	51	59 51	52	240	950	7.4.0 7.40	57 52 50	52 52 52 53	20 C S	482.9	9.69	80 80	555 50
January February March	53 49	53	74 £ 8 6 8	8 6 6	522	53 53	515	51	5 C C C C C C C C C C C C C C C C C C C	52	522	50	5 2 2 2	50	52 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	51	500	206	500	52	52	52 50	525	202	52 4	52 51 49	522	52	2 5	2 2	53	49 31 31
April	2 4 2 2	58 57 55	12.8	578	552	57 53	233	57	522	56 55 61	525	56	\$2.0	52	500	5008	500	60	55	50.00	600	533	52 56 61	55	56	55	58	8 8 0	57	58	121	5.6 5.7 6.0
July	60 58 61	60 59 61	220	1 25 25	993	60	5.00	55	1 25 05	58 57 58	226	57 60	62 09	619	0.82.0	58.80	529	2 2 2	61 97 62	58	500	63 57 61	53	62 57 61	282	59	366	526	928	53	211	0 80 0 0 0 0

SACRAMENTO RIVER BASIN--Continued

11-3775. PAYNES CREEK NEAR RED BLUFF, CALIF.

LOCATION --At gaging station, 0.4 mile upstream from mouth, and 6.5 miles northeast of Red Bluff, Tehama County. DALINAGE AREA. --22.5 square miles. RECORDS AVAILABLE. --Chemical analyses; October 1958 to September 1961. RECORDS AVAILABLE. --Chemical analyses; October 1958 to September 1961.

1		Hd	8,1	8,1	8.0	8.0	7.7	7.8	0,0	8.1	
	Specific con-	duct- ance (micro- mhos at 25°C)	252	252	162	212 8.0	110	152 7.8 162 7.7	178	219	
		ad- ad- Borp- tion ratio	1.0	1.0		∞.	4.	7.7	80	, o	
	ess CO ₃	Non- car- bon-	0	0	0	0	0	00	0	00	
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	84	82	9	73	41	80	62	73	
1	solids ted)	Tons per day									
er 196	Dissolved solids (calculated)	Tons per acre- foot							140 0.19		
Chemical analyses, in parts per million, water year October 1960 to September 1961	5 00	Parts per million							140		
960 to		Bo- (B)	0.4	œ.	•	4.	•	44		4	
er 1		Fluo- Ni- ride trate (F) (NO ₃)							0.3		
Octo		Fluo- ride (F)							0.3		
ter year		Chloride (C1)	20	16	7.8	12	2.8	8.0	0.6	14	
lion, wa		Sulfate (SO4)				-			2.0		
r mil	į	CO stem									
rts pe	Bi-	car- bon- ate (HCO ₂)	122	124	86	110	22	883	85	112	
in pa	Ę	sium (K)							1.4		
alyses,		Sodium (Na)	21	21	12	16	5.9	11	14	18	
cal an	Ş	mag- ne- sium (Mg)							7.8		
Chem		Cal- cium (Ca)							12		
		Iron (Fe)							0.00		
		Silica (SiQ _e)							48		
		Discharge SU (cfs) (S	0,2	.3	78	19	307		24	4.1	
		Date of collection	Oct. 11, 1960	Nov. 2	Dec. 6	Jan. 3, 1961	Feb. 16	Mar. 14	May 2	July 7	

11-3780. SACRAMENTO RIVER NEAR RED BLUFF, CALIF.

LOCATION: --Temperature recorder at gaging station at lower end of Iron Canyon, 0.5 mile downstream from Sevenmile Creek, and 4.6 miles northeast of Red Bluff, Tehanm County.

DRAINAGE AREA.--9,300 square miles, approximately, excluding Goose Lake basin.

EXCORDS ANALLAELE.--Mater temperatures: November 1960 to September 1961.

EXTREMES, November 1960 to September 1961.--Mater temperatures: Minimum, 45°P Dec. 30, 31, and on several days during January. Temperature ('F) of water, November 1960 to September 1961

															-	Day															-	
Month	-	2	က	4	5	9	7	8	٥	10	=	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October Maximum			-			-																										
Minimum						_				ç					5			-				-				9			-			1
Minimum	1 1		1 1	-	11	::	1 1	1 1	52	52	52	2 2 2	48	+ 4 0 &		0 4	200	20	50	2 2	200	200	2 02	200	0 40	0 4	4 6 4	0 4 0 4		- C 4		1 1
	47	47	44	47	47	47	47	47	47	47	47	47	4 4 8	8 8	8 4 4	80 80	8 8	8 4	8 4 4	80 80	8 4	8 4 8	8 8	4 t	8 4 4	47	47	4 4 6 4	46	4.5	2 4 5	47
H H	4 4 55	4 4	4 4 7 7	4 t 5 t	4 2 2	4 4 R R	2 4 25	4 4 n n	46	9 4	47	L T T	44	4 4 8	8 4	80 80	8 4 4	8 4	4 4 7	47	47	47	47	47	4 4	4 4 4 7	649	6 4	64	64	50	47
February Maximum Minimum	5.0 C.0	5. P.	5.7.	50	5.5	5.0	50	50	50	50	50	50	6 4 9	64	64	64	644	8 4 8	8 4 9	8 80	8 4 9	8 4 8	8 8	6 4 8 8	4 4 80 80	80 80	4 8 4	8 8	11	11	11	64
Maximum	4 4 8	64	0 0	64	64	6 4	64	50	500	50	50	51	512	51	51	51	50	50	51	51	50	51	51	51	51	51	51	51	52	53	54	50
April Maximum Minimum	55	55	57	57	54	56	5.50	55	55	55	5 5 5 5 5 5	5.5	55	55	5.55	55	5.6	55	55	54	533	53	52	52	53	53	3.6	54	54	54	11	55 54
May Maximum Minimum	54	54	5.5 4	54	5,4	54	53	54	55	53	53	54	54	56	57	57	57	57	57	57	55	56	56	56	56	56	56	56	56	55	55	55
June Maximum	56	55	55	56	30.00	58	57	56	57	57	57	57	57	57	57	57	57	57	52	55	5.5	55	20 Z	5.5	55	55	5.5	55	5.5	54	11	56 56
Maximum	54	53	η. η. 4.	55	20 A	2.2	20 E	5.5	7, 7, 7, 7,	5.5	56	56	57	57	55	5.5	55	56	55	55	55	56	55	56	55	55	55	56	5 50	56	56	56 55
August Maximum Minimum	55	56	57	57	55	5.50	56	57	57	57	57	56	57	57	57	57	50	57	57	56	5 0	58	57	57	57	57	57	58	57	57	58	57 56
September Maximum	55 80 80 80	55 58 58 58	58 58	7, 75 08 08	58	58	58	5.88	8 80	5.08	58	5.88	58 58	5.08	8 7 2	58	57	57	57	57	57	57	56	56	57	57.	57	57	57	58	11	58 57

11-3785. SACRAMENTO RIVER AT RED BLUFF, CALIF.

LOCATION. --At U.S. Highway 99E bridge, at Red Bluff, Tehama County, approximately 5 miles downstream from gaging station near

DRLINGE AREA. --9,300 square miles, approximately, excluding Goose Lake basin, upstream from gaging station.

School Arithans. --farter temperatures: October 1967 to September 1961.

School S

Temperature ('F) of water, water year October 1960 to September 1961

Month											-					Day																Aver-
TATOLICII	_	2	3	4	2	9	7	8	6	10	=	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	age
October November December	60 59	100	60 55 51	118	9.00	113	52	118	0 0 4 0 0 0	115	200	112	222	12.0	2 4 8	55	040	50.00	55	55 52	60 55 49	54	59 52 50	53	52	4.8	57 50 	50	59 50 48	51 48	113	 84 80
January February March	48 40 40	47 52 50	7 2 4 6 8 4	\$7 50 50	4 5 5 3 8 4	53	520	504	8 0 0	52.00	0000	0.40	5 4 4 5 0 0	\$ 4°0 50 0	500	F 8 8	4 4 4 0 0 0	9 4 4	7 4 4 7 6 4	801	8 0 °C	800	8 4 5 5	200	4 ° 0 4	S 4 4	500	500	\$15	618	51 56	\$ 00 00
April May. June	50.00	5.6 5.5 5.5	60 57 56	55	57 55 60	53	8 4 0	58	5 5 8 5 6 8	5 4 1	120	122	56 57 62	58	860	609	600	1 33 5	54 60 61	53	52 59 60	58	51	4 90 1	200	58	57	9.0	55 57 59	381	181	56 1.56
July	60 58 62	111	59 59 61	111	57 58 60	111	8000	111	\$ 00	111	60 57 62	111	58	111	58	111	600	111	58	58	0900	111	602	111	59	111	50 60 60 60	111	50 60 60 60 60 60	111	111	111

PACIFIC SLOPE BASINS IN CALIFORNIA

SACRAMENTO RIVER BASIN--Continued

11-3785. SACRAMENTO RIVER AT RED BLUFF, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

İ		OCTOBE	R	1	NOVEMBE	R		l	DECEMBER		
		Suspen	ded sediment		Suspen	ded	sediment		Suspen	ded	sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
1	6220	6	101	5980	6		97	50500	755	s	136000
2	6220		100	6030		1	98	23400	296	S	23400
3	6240	6	101	6000	6	i	97	11800	80		2550
5	6240	_ -	100	6000			97 97	7590 6400	23 13	1	471 225
5	6240	6	101	6000	•		97	6400	13		223
6	6470		140	6050			98	5770	9		140
7	6540	8	141	6150	6	Ì	100	5410	8		117
8	6540		120	6170		Į.	100	5230	8		113
9	6520 6470	6	106 87	6170 6170	5	1	83 83	5080 4980	6		82 81
10			٠,	8170	1		05	4,00	"		01
11	6440	5	87	6270	6	ľ	102	4910	6		80
12	6270		85	6370		١.	100	4810	6		78
13	6120	6	99	8540	40 58	S	1040	4760	6		77 76
14	6100 6030	5	81	7970 5750	16	13	1380 248	4720 4850	7	l	92
1		1		1	i						
16	5980		81	5300	7		100	7030	20	L	380
17	5930 5890	6	96 95	5320	6 9	1	86 139	16400 15400	207 165	S	10000 7510
18	5890 5860	6	95	5700 5700	13		200	10500	50	3	1420
20	5820		94	5320	1 7		101	8130	23		505
l		1			1	l				l	
21	5820	6	94	5190	6	1	84	7010	16	1	303
22	5840		95 95	5020 4870	6	ľ	81 53	6370 5980	12		206 194
23	5860 5910	6	96	4930	4	ļ.	53	5730	9		139
25	5930	7	112	9020	64	5	3210	5520			130
	5930				180	_					130
26	5930 5960		110	16400 7730	25	S	9320 522	5340 5190			110
28	5930		80	5890	12	1	191	5060		1	110
29	5930	5	80	5510	8	1	119	4980	8		108
30	5930		80	5730	18		278	4930	7		93
31	5930		96					4850	6	L	79
Total	189110		3044	193250			18357	268630			184999
		JANUAR	Y		FEBRUAR	Y			MARCH		
1	4980	6	81	22700	406	s	30500	15200	20	Π	821
2	5190	7	98	25000	593	s	50100	14600	21		828
3	5150	6	83	18900	315	s	18000	14500	19		744
4	5150	6	83	12500	100		3380	14500	21		822
5	5120	7	97	10200	50		1380	14500	25		979
6	5100	6	83	9150	35		865	14800	22	1	879
7	5100	8	110	8700	30		705	14500	17		6 66
8	5100	6	83	8180	15		331	14500	20		783
9	5150	6	83	25000	486	S	51000	16500	38		1690
10	5190	6	84	23600	345	5	27300	15400	25		1040
11	5150	8	111	30200	454	s	44600	15200	22		903
12	5100	8	110	25200	190		12900	15000	18		729
13	5060	7	96	20900	65		3670	14900	16		644
15	5080 5040	8	110 122	21900 23700	80 80		4730 5120	15200 21500	174	s	944 10400
1200	5040	,	122	23700	•0	1	5120	21500	1/4	"	10400
16	5040	7	95	23100	80		4990	19600	75		3970
17	5000	7	94	20400	45		2480	23400	184	\$	12400
18	4980	7	94	19300	38		1980	19500	60	1	3160
19	4950 4950	6	80 80	18400 17900	36 32		1790 1550	17800 19800	30 77		1440 4120
i		1			1						
21	4950	6	80	17500	28		1320	17800	32		1540
	4930 5020	6	80 81	17300 16900	28 26		1310 1190	17100 17100	25 20		1150 923
22		8	109	16700	24		1080	18200	50		2460
22 23 24	5040	l ă	108	16600	21		941	18900	90	s	5100
22 23 24 25		1 0		II .	22		968	15800	28		1190
22 23 24 25	5040 5000	1	112	1/200		1				1	1170
22 23 24 25	5040 5000 5170	8	112	16300	19	1	831	16200	50		
22 23 24 25 26 27	5040 5000 5170 5910	8 21	335	16200	19		831 875	16200 12500	50 24		2190 810
22 23 24 25 26 27 28	5040 5000 5170 5910 5820 7660	8 21 17 78	335 267 S 3160	16200 16200	19 20		875	12500 11400	24 18		2190 810 554
22 23 24 25 26 27 28 29	5040 5000 5170 5910 5820 7660 19200	8 21 17 78 635	335 267 S 3160	16200 16200 	19 20 			12500 11400 11000	24 18 18		2190 810 554 535
22 23 24 25 26 27 28	5040 5000 5170 5910 5820 7660	8 21 17 78	335 267 S 3160	16200 16200	19 20		875	12500 11400	24 18		2190 810 554

S Computed by subdividing day.

11-3785. SACRAMENTO RIVER AT RED BLUFF, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued

		APRIL			MAY			JUNE	
ŀ			ed sediment		Suspende	ed sediment		Suspend	ed sedimen
Day	Mean dis-	Mean		Mean dis-	Mean		Mean dis-	Mean	
	charge (cfs)	tration (ppm)	Tons per day	charge (cfs)	concen- tration (ppm)	Tons per day	charge (cfs)	concen- tration (ppm)	Tons per day
1	10100	15	409	9370	12	304	9070	12	294
2	10000	13	351	9370	11	278	9600	14	363
3	9920	13	348	9150	10	247	9580	12	310
5	9720 9430	16 17	420 433	9010 8980	9 10	219 242	9550 9520	11	284 257
6	9210	11	274	9150	9	222	9460	12	307
7	9010	12	292	9490	12	307	9320	10	252
8	8590	10	232	9210	12	298	9230	8	199
9	8400	14	318	9120	12	295	9180	8	198
٥	8320	11	247	9230	10	249	9090		220
1	8270	10	223	9430	13	331	9070	10	245
2	8160	13	286	9460	15	383	9040		220
3	8270	10	223	8870	12	287	8930	8	193
5	8050 7970	8 8	174 172	8590 8480	8 8	186 183	9150 9320		200 201
- 1		1 1			1		1	1 -	
7	7920 7860	11	235 212	8370 8350	9 8	203 180	9780 9750	8	210 211
в	8100	10	212	8320	9	202	9690		210
9	8670	12	281	8350	6	180	9720	8	210
0	8620	12	279	8370	11	249	10200		300
1	8730	11	259	8430	10	228	10500	12	340
2	9150	10	247	8370	10	226	10600		340
3	10100	20	545	8350	13	293	11000	12	356
4	10100	24 12	654	8290	9	201 133	11000	10	300 297
5••	9150		296	8180	6		11000	10	
6	9070	8	196	8210	6	133	11000	10	300 294
7••	8400	9	181	8320	7	157 133		10	
9	8670 8870	11	211 263	8210 8670	6	140	10900 11000	8	260 238
ó	9370	14	354	8290	8	179	10900		240
1				8590	9	209			
otal	266200		8834	270580		7077	297050		7849
		JULY			AUGUST			SEPTEMBER	
1	10900	8	235	11700	6	190	9150	6	148
2	10900		240	11600		190	8650	!	140
3	10800	8	233	11600	5	157	8240	5	111
4	10800	i	230	11600		160	8210		110
5	10900	8	235	11600	5	157	8240	5	111
6	10800		230	11600		160	8270		89
7	10800	8	233	11600	5	157	8290	4	90
8	11200		300	11600		160	7780		84 126
9	11300 11300	11	336 340	11600 11600	5	157 160	7780 7810	6	130
1	11200	11	333	11600	5	157	7780	5	105
2	11200		330	11600		190	7620		100
3	11200	12	363	11600	6	188	7240	5	98
4	11200		270	11600		190	7270		98
5	11200	6	181	11600	5	157	7270	4	79
6	11200		210	11300		150	7320		99
7	11200	8	242	10700	4	116	7060	8	152
8	11200		240	10600		110	7080		130
9	11500 11600	8 8	248 251	10600 10700	5	143 140	7060 7030	7 7	133 133
		1			_				
2	11600 11700	7	219 220	10700 10700	5	144 120	6900 6880	4	75 74
3	11700	7	221	10700	4	116	6820	4	74
4	11700		190	10600		110	6850		74
5	11700	6	190	10400	5	140	6820	4	74
6	11700		190	10200		140	6820		74
7	11600	6	188	10000	5	135	6800	4	73
8	11700		190	9690		130	6820		74
9	11700	7	221	9690	5	131	6800	5	92
	11700		220	9210		120 150	6800		73
0									
	11700 350900		190 7519	9180 339070		4625	223460		3023

SACRAMENTO RIVER BASIN--Continued

11-3785. SACRAMENTO RIVER AT RED BLUFF, CALIF. -- Continued

Particle size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

	Method		Δ	>	^	>	>	>	
		0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	100						
	ters	. 500	66	100	100	100	100	100	
	millime	0.250	06	66	92	66	66	86	
liment	ated, in	0, 125	19	95	80	95	92	87	
Suspended sediment	se indica	0.062	44	16	20	06	86	8	
Susper	Percent finer than size indicated, in millimeters	0.031							
	nt finer	9 0.01	_					_	
	Perce	90.00						_	
		2 0.00	_	_	_				
_		<u> </u>	_						
Softwent	Sediment discharge	(tons per day)							
Sodiment	concen- tration	(mdd)	918	823	1,050	431	1,270	782	
	Dischargs (cfs)]	65,900	21,900	47,700	23,200	35,000	38,000	
Water	per-	(F)	51	48	20	20	22	2	
	Samp- ling			_	_	_			
	Time (24 hour)						1700		
	Date of collection		Dec. 1, 1960	Jan. 30, 1961	Jan. 31	Feb. 1	Feb. 2	Feb. 11	

SACRAMENTO RIVER BASIN--Continued

11-3788. RED BANK CREEK NEAR RED BLUFF, CALIF.

LOCATION .--At gaging station on road bridge, 0.1 mile downstream from unnamed tributary, 1.8 miles southeast of Red Bank, and approximately 13 miles west of Red Bluff, Tehama County.

BARMANGE RASA.--89.5 Square miles.

RECORDS AVAILABLE. --Chemical analyses: October 1859 to September 1861.

REMARKS.--No flow during summer months.

1		띥	8.2	8.5	8.5	8.4	8.4	8.2
	Specific	duct- ance micro- mhos at 25°C)	ĺ			475	522 8.4	496
		duum ad- borp- tion tion ratio	ŧ	'n		Ī	'n	
	ess CO ₃	Non- car- bon-	77	89	8	38	37	41
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	228	271	210	226	254	235
	solids ted)	Tons per day						
r 1961	Dissolved solids (calculated)	Tons per acre- foot	0.40			_	ł	.41
Septembe	and o	Parts per million	297	346	264	1	1	298
60 to		B 20 B	4.90.0	٦.	٦.	٦.	7	•
er 19		Fluo- Ni- ride trate (F) (NO ₃)	4.9	1.6	1.9	ı	1	•
Ctob		Fluo- ride (F)	0.0	•	۲.	1	1	•
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (CI)	30	30	6.0	10	20	12
ton, wat		Sulfate (SO.)	8	72	47	1	!	S
111		(CO)	۰	~	œ	-	9	•
ts per	Bi-	car- bon- ate (HCO ₃)			204	215	253	236
In pa	<u>.</u>	K T T T T T T T T T T T T T T T T T T T	8.0	٠.	~	1	1	6.
llyses,		Sodium (Na)	17	19	14	17	19	28
cal ans	<u> </u>	sium (Mg)	25	58	22	!	1	58
Chemi		C C C C C C C C C C C C C C C C C C C	ន	19	48	ł	1	0.00
	_	Iron (Fe)						°.
		Siller (SiQ ₆)	15	11	17	1	1	20
		Discharge Sili (cfs) (Sig	7.6	2.7	49	11.7	6.9	3.0
		Date of collection	Dec. 5, 1960	Jan. 3, 1961	Feb. 15	Mar. 2	Apr. 10	Eay 1

SACRAMENTO RIVER BASIN--Continued

11-3790. ANTELOPE CHEEK NEAR RED BLUFF, CALIF.

LOCATION.--At gaging station, in Rio De Los Berrendos Grant, 1.8 miles upstream from diversion dam of Los Molinos Mutual Water Co., 6.5 miles east of Red Buiff, Tehama County, and 9.7 miles upstream from mouth.

BLASHANGE REA.--124 Square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1988 to September 1981.

		H	8.0	7.9	7.9	7.9	84 7.9	7.6	8,1	7.9	8,1	8,1	8,4	169 8,3
	Specific	duct- ance (micro- mhos at 25°C)	167	169	126	156	84	75	101	107	121	156	163	169
		dum ad- gorp-(i tion ratio	0.5	9.	3.	9.	£.	.2	4.	r.	9.	9.	90	9.
		Non- car- bon-	٥	5	0	0	0	0	0	0	0	0	0	٥
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	65	64	21	29	36	33	42	40	43	22	22	9
	solids ited)	Tons per day		_				_						
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	ł	1	!		l	1	0,12	1	1	!	.17
Septembe	Dis (c	Parts per million	1	1	l	1	1	!	ì	98	1	1	1	128
60 to		- 10 E	0.1	2	•	~	7:	۳.			٠:	7	~	7.
er 19		Ni- trate (NO ₂)	-	I	!	1	ł	1	1	0.0	1	1	1	.2
Octob	Fluo- ride (F)		1	1	١	1	1	1		0.1	1	1	1	٠.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	97	8.0	6.2	7.5	1,5	æ	4.9	5.5	9,2	8,5	01	=
ion, wat		Sulfate (SO4)		1	I	1	I	I	ł	0:0	1	l	Ī	o.
1111	į	(CO)	٥	0	0	0	0	0	0	0	0	0	0	-
ts per	_	car- bon- ate (HCO ₃)	89	81	89	82	47	45	26	28	62	81	83	98
ln par	ě	tas- stum (K)	1	1	;	1	1	1		0.1	!	1		1.4
lyses,		Sodium (Na)	01	11	7.6	97	3.8	3,1	6.4	7.6	8,3	7	13	7
al ans	ļ	mag- ne- stum (Mg)	1	i	;	ţ	ŀ	1	1	4.1	1	i	ì	6.7
Chemic		Citum (Ca)	1	1	1	1	1	Ī	1	9.2	1	1	1	13
		Iron (Fe)								8,0				
		Silica (SiQ,)	;	1	1	!	1	1	ı	59	L	1	ı	41
		Discharge Silica (cfs) (SiO ₄)	34	34	6		300		100	16	64	33	58	29
		Date of collection	Oct. 11, 1960	Nov. 2	Dec. 6	Jan. 3, 1961	_	Mar. 15	Apr. 11	Kay 2	June 6	July 7	Aug. 8	Sept. 14

SACRAMENTO RIVER BASIN--Continued

11-3791. ANTELOPE CREEK NEAR MOUTH, NEAR LOS MOLINOS, CALIF.

LCCATION: --At U.S. Highway 99E bridge, O.2 mile northwest of Lassen View Union School, and approximately 6 miles north of Los Molinos, Tehama County. RCMCORS ANALABLE. --Chemical analyses: October 1985 to September 1981.

j		Hď	6.2	7.5	8.2	7.7	7.7	7.7	0.	8.		8.	0.
	Specific con-	duct- ance (micro- mhos at 25°C)	246 7.9	234	174	232	75	174	152 8.0	176	194	289	240
		ad- ad- Borp- tion ratio	1,1		ů.		8	10	1.3	9			6.
		Non- car- bon- ate	12	40	н	7	0	e	0	4	7	-	0
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	69	72	73	86	33	65	42	63	63	110	7.2
	solids ited)	Tons per day											
r 196	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	1	!	-	0.15	!	!	ł	.24
Septembe	Dis	Parts per million		1	1	1	1	1	110	1	1	1	173
50 to		. B.	8.0	۲.	٦.	۳.	•	63	۳.	_	٠.		9.
r 196		Ni- trate (NO ₃)	1	1	i	1	l	1	0.0	1	ł	1	æ.
ctobe		Fluo- Ni- ride trate (F) (NO ₃)	1	1	!	1	1	ŀ	0.2	1	ł	1	r.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	27	20	8,5	14	.5	8.0	11	9.7	11	18	19
ion, wat		Sulfate (SO ₄)	1	;	;	ļ	;	ł	13	}	;	;	14
m111	į	Part (CO)											
ts per		car- bon- ate (HCO ₃)	69	82	88	104	44	75	52	72	89	133	96
n par	Ė	sten (X)	1	1	1	1	1	i	2.7	1	1	1	4.0
lyses, 1		Sodium (Na)	21	20	6.3	14	3.1	10	11	70	13	16	19
al ans		Mag ne- stum (Mg)	1	1	1	ł	ŀ		3.5	ł	ł	ł	9.0
Chemic		Ctum (Ca)	;	ŀ	1	1		!	11	1	1	1	16
		fron (Fe)							0.00				
j		Silica (SiQ,)	1	;	1		1	_	31	1	L		43
		Mean discharge (cfs)				_				_			
		Date of collection	Oct. 11, 1960	Nov. 2	Dec. 6	Jan. 3, 1961	Mar. 15	Apr. 11	Мау 2	June 6	July 6	Aug. 8	Sept. 14

11-3795. ELDER CREEK NEAR PASKENTA, CALIF.

LOCATION. --At gaging station, 2.5 miles downstream from South Fork, 8 miles northeast of Flournoy, and 11 miles north of Paskenta, Tehama County. DRAINAGE AREA. --95.8 square miles. RECORDS AVAILABLE. --Chemical analyses: October 1958 to September 1961.

)	Нd	8.3	8.2	8.4	8,3	3.4	9.6	9.6	3.4		3,5	3.2	8.3
	Specific	duct- ance (micro- mhos at 25°C)	1,250 8.3	1,070	462	467	274	349	266	312 8.4	387	586	803	1,250
		Sorp-(controller)	3.2	3.1	۲.	۲.	۳.	4.	4.	.5	9.	1.4	2,3	3.3
		Non- car- bon-	152	111	33	30	-	16	6	13	24	25	64	28
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	308	274	188	192	134	164	127	142	164	183	216	283
1	solids ted)	Tons per day								_				
r 196	Dissolved solids (calculated)	Tons per acre- foot	!	!	ŀ	¦	!	1	;	0.24	ŀ	!	1	.85
Chemical analyses, in parts per million, water year October 1960 to September 1961	sp <mark>O</mark>	Parts per million	1	Ī	1	1	1	1	1	178	1	1	Ī	622
60 to		. Bo-	0.2	7			۰.			•	_	٦.	۲,	• 3
er 19		trate (NO ₃)	:	i	;	;	1	1		0.0	ì	ł	1	4.
Octob		Fluo- ride (F)	1	1	1	1	1	1	ł	0.2	!	1	1	۰.
ter year		Chloride (Cl)	293	229	45	40	6.5	19	12	18	33	102	169	308
ion, wat		Sulfate (SO4)	1	!	1	1	!	1	1	8.6	1	ł	1	8.0
11111	į	G at a Co	9	0	9	87	87	∞	œ	9	-	9	0	3
ts per	Bi-	car- bon- ate (HCO ₃)	178	199	177	194	158	165	128	145	169	148	185	147
in par	É	tas- stum (K)	1	1	1	ì	ì	1	1	8.0	1	ì	1	1.8
lyses,		Sodium (Na)	130	117	23	23	8.5	13	9.7	13	18	45	92	127
cal ans	Yez	nag- ne- stum (Mg)	ŀ	!	ŀ	ŧ	1	{	1	19	ţ	!	1	39
Chemi		Cal- ctum (Ca)	1	ļ	;	;	1	+	ł	56	ļ	1	ł	49
		Fon (Fe)								0.0				
		Silica (SiQ ₂)		1	1	1	ŀ	_ 	1	14	1	1		14
		Discharge Silit (cfs) (SiQ	2.1				188		64	44	20	5,0	3.7	6.
	ı	Date of collection	Oct. 11, 1960	Nov. 1	Dec. 5	Jan, 2, 1961	Feb. 15	Mar. 2	Apr. 10	May 1	June 7	July 5	Aug. 9	Sept. 6

SACRAMENTO RIVER BASIN--Continued

11-3805. ELDER CREEK AT GERBER, CALIF.

LOCATION. ---In Sautos Grant, at U.8. Highway 99W bridge, 1,200 feet upstream from gaging station, 1.2 miles west of Gerber, Tehama County, and 3.7 miles DRAIMAGE AREA. ---Item from mouth and in the square miles. RECOMOS AVALLAE. ---Chemical analyses: January 1959 to September 1961.
RECOMOS AVALLAE :---Chemical analyses: January 1959 to September 1961.
REMARKS. ---SO I-VA GAILIS cumer months.

284 8.4 339 8.4 394 8.5 513 8.3 472 8.4 462 8.0 281 8.3 380 8.5 뜅 mhos at 25°C) Specific ance micro-8.6 ratio 4 6 4 9 12 17 -uoN car--uoq Hardness as CaCO, Cal-cium, Mag-ne-stum 189 196 117 170 133 154 190 242 Tons per day Dissolved solids (calculated) Chemical analyses, in parts per million, water year October 1960 to September 1961 0.36 1811 acre-1 Tons per 1 | 1 | 264 161 million Parts per 8 5 E ٥ ٠ ٠ 4004 Fluo- Ni-ride trate (F) (NO₃) 2.2 l 1911 0.0 $\Pi\Pi$ 1. 39 39 22 52 Chloride 330 ਹੁ Sulfate ĝ 8111 1211 Car-bonate (HCO₂) (CO₂) 90 142 Bi-car-bon-141 163 195 264 171 197 Po-Stun (K) 6:1 1 8 1 1 24 20 9.2 Sodfum (Na) 1478 Mag-ne-stum (Mg) 1112 191 C (a) 92 | | | 1811 0.00 Fe) Suica (SiQ_e) a27 17 9.2 ---a183 ---1411 Mean S discharge ((cfs) a183 38 Apr. 11.... June 7.....July 7..... Dec. 6, 1960..... Peb. 16..... far. 14..... Date of collection

a Instantaneous discharge.

11-3816.2. MILL CREEK AT MOUTH, NEAR LOS MOLINOS, CALIF.

LOCATION ---At bridge on U.S. Highway 99, 0.8 mile upstream from confluence with Sacramento River, and 4.7 miles downstream from gaging station near Los Molinos, Tehama County.

MOLINOS, Tehama County.

DRAINAGE AREA.--134 square miles upstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: October 1963 to September 1961.

REWARKS.--Records of discharge are given for Mill Creek near Los Molinos. Considerable diversion between gaging station and sampling point.

1		览	7.8	7.8	6.7	8.0	7.9	7.7	7.8	7.8	7.7	7.7	8.0	8.0
	Specific con-	duct- ance micro- nhos at 25°C)	229 7.8	215	174	191	112	117	122	125 7.8	118	153	199	261
		ad- ad- Borp- tion ratio	1.1	1.0	<u></u>	1.0		9.	80		9	۲.	œ.	® .
		Non- car- bon-	10	2	8	80	0	0	0	9	6	=	12	10
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	62	9	22	29	33	38	35	38	32	46	64	6
_	solids ted)	Tons per day												
r 1961	Diss olved solids (calculated)	Tons per acre- foot		l	1	1	1	1	1	0.13	ł	ļ	ł	.24
Septembe	Dis (cs	Parts per million	1	1	1	1	1	1	!	96	Ī	1	1	175
60 to		. B. B.	9.0	9.	2	5	~		۳.	۳.	.2	۳.	٠.	9.
er 19		NI- trate (NO ₂)		1	1	-	!	1	-	0:0	!	!	1	
Octob		Fluo- ride (F)	-	!	1	 -	1	1	1	0.2		 	1	፣
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (CI)	97	22	16	17	7.2	7.5	8.5	9.2	8.2	91	18	8
ion, wa		Sulfate (SO ₄)	1	1	1	ŀ	l	ł	ł	13	1	1	l	18
r mil]		Se age												
ts per	Bi-	car- bon- ate (HCO ₃)	63	67	9	62	47	51	43	39	32	43	64	86
n par	å	tas- shum (K)	-	1	1	1	!	l		1.6	1	i	l	3.2
llyses,		Sodium (Na)	20	18	14	18	7,1	8.1	#	91	8.6	11	14	17
al an	5	nie- sium (Mg)	1	;	1	!	1	!	1	3,4	ŀ		1	8.5
Chem1		Ctum (Ca)	-	ŀ	-	;	1	!	1	9.6	;	1	1	22
		Iron (Fe)								0.00				
		Silica (SiQ _e)		ŀ	1	1	i	1	1	59	<u>.</u>	ł	ŀ	37
		Discharge Silica (cfs) (SiO ₄)	86					196	322	291	272	181	133	16
		Date of collection	oct. 11, 1960	Nov. 2.	Dec. 6	Jan. 3, 1961	Feb. 16,	Mar. 15	Apr. 11	May 2	June 6	July 6	Aug. 8	Sept. 14

SACRAMENTO RIVER BASIN--Continued

11-3820. THOMES CREEK AT PASKENTA, CALIF.

LOCATION: --At graing station, 0.25 mile upstream from Digger Creek, and 0.3 mile upstream from highway bridge at Paskenta, Tehama County. DMAINGE AREA.--188 square miles. RECORDS ANLIAEMS ANAMALE.--Chemical analyses: October 1958 to September 1961.

88.2.2.2.8 8.1 8.1 8.0 7.7 8.5 8.2 펁 129 125 140 253 328 403 mhos at 25°C) 453 443 196 196 135 185 Specific ance (microad-Borp-tion ratio 0000040 882548 Nongte por Hardness as CaCO, Cal-cium, Mag-ne-stum 188 180 92 85 64 85 64 55 68 68 115 72 151119 111111 Tons per day Dissolved solids (calculated) Chemical analyses, in parts per million, water year October 1960 to September 1961 Tons
per
acrefoot 16.111 111111 per 121118 11111 Parts 9 5 E 000440 Fluo- Ni-ride trate (F) (NO₃) 11111 131119 121119 2.6 9.5 19 2.6 Chloride ਹੁ Sulfate (SO₄) 12:11 111111 Bi-car-bon-ate (HCO₂) Bi-car-bon-122 136 88 91 76 66 66 70 70 114 133 159 Po-tas-Stum (K) 111111 121112 23.00.00 3.3 3.6 7.9 Sodium (Na) 10,111 Mag-ne-stum (Mg) 111111 . 17 111111 111 Can (a) 0.03 Fe) Discharge Silica (cfs) (SiO₂) 12:111 111111 330 368 158 20 10 4.1 105 72 798 200 Apr. 10
May 1.
June 7.
Aug. 9.
Sept. 6. Now 1. Dec. 5. Jan. 2, 1961.... Feb. 15. far. 2..... Oct. 10, 1960.... Date of collection

SACRAMENTO RIVER BASIN--Continued

11-3821. THOMES CREEK NEAR MOUTH, NEAR CORNING, CALIF.

LOCATION .--At U.S. Highway 99W bridge, 2.6 miles upstream from mouth, and 3.5 miles north of Corning, Tehama County. RECORDS VALIABLE.--Chemical malayses: January 1989 to September 19651. REMARKS. No discharge records available. No flow during summer months.

*		Hq	8.3 8.3 8.3	8 8 8 8 8 8 0 8 8 8
	-uoo Specific	duct- ance (micro- mhos at 25°C)	246 239 165 222	166 161 188 261 282
	-08	ad- ad- Borp- tion ratio	0.3	20000
	Hardness as CaCO,	Non- car- bon-	24 15 9	01 02 02 14 2 14 14
	Hard as Ca	Cal- cium, Mag- ne- stum	116 111 78 103	81 79 95 125 135
_	solids ted)	Tons per day		
r 196	Dissolved solids (calculated)	Tons per acre- foot		0.13
Septembe	stict o)	Parts per million		66
60 to		B 3	0440	
er 19		Ni- trate (NO ₃)		0.0
ctobe		Fluo- Ni- ride trate (F) (NO ₂)		0.2
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	7.2 3.5 8.0	ა ა ა
ion, wat		Sulfate (SO ₄)		#
111m	-5	(C) # (S)	0000	0000m
ts per	Bi-	car- bon- ate (HCO ₃)	112 117 84 108	86 84 113 139 141
n par		tas- sium (K)		0.6
lyses, i		Sodlum (Na)	7.0 2.3.7 8.8	5.00
cal ana	3	Mag- ne- stum (Mg)		5.2
Chemi		Cal Can (Ca)		23
		(Fe)		00.00
		Silica (SiO ₄)		#
		Mean discharge (SiO _s) (cis)		
		Date of collection	Dec. 6, 1960 Jan. 3, 1961 Feb. 16	Apr. 11

SACRAMENTO RIVER BASIN--Continued

11-3838. SACRAMENTO RIVER NEAR HAMILTON CITY, CALIF.

LOCATION. --At gaging station, on State Highway 32 bridge, 1.3 miles northeast of Hamilton City, Glenn County, and 2.4 miles upstream from Pine Creek. REMEMBER. --Chemical analyses: October 1983 to September 1961 REMEMBER. --Chemical analyses: October 1983 to September 1961 REMEMBER. --Records of discharge given in State of California Bulletin No. 23-61 for Sacramento River at Hamilton City.

ı		Нq	7.9	8.1	7.3	7.7	8,6		8.0	7.7	7.9	8.0	7.7	7.9
	Specific	duct- ance (micro- mhos at 25°C)	128	130	140	149	127	è	135 8.0	131	128	123	119	123
		drum de de de de de de de de de de de de de d	0.5	٠.	4.	٠,	4.4	•	4.	4.	4.	4.	4.	4.
		Non- car- bon-	٥	0	0	0	00	-	0	0	8	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	47	49	9	61	2 22	3	23	51	24	47	46	49
	solids ted)	Tons c per day								_	_			_
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	;	ŀ	ļ	1			0.12	1	1	i	.12
Chemical analyses, in parts per million, water year October 1960 to September 1961	end S	Parts per million	-	!	1	!	i		1	06	1	!	1	06
9 2		Bo- ron (B)	0.0		٦.	۰.	٦.	?	۰.					_
er 19		Ni- trate (NO ₃)	1	!	!	!	1 1	l 		0:0		ł	;	٠.
Stop		Fluo- ride (F)	ł	!	!	!				0.2		!	!	
er year		Chloride (Cl)	3.5	4.8	5.5	5.0	8,0	7	3.5	2°8	3,1	1,9	2.5	3.0
lon, wat		Sulfate (SO4)	1	1	ŀ	1		1	1	8.8	!	ł	I	5.0
H		6 a 60												
ts per		car- bon- ate (HCO ₂)	67	69	87	8	98	*	71	64	64	20	64	65
n pa	ģ	Etas K (K)	1	ł	ŀ	1	1 1	l		8.				1:1
lyses,		Sodium (Na)	7.3	7.6	7.1	8,3	9.0	•	6.6	7.2	7.4	8.8	6.4	6.3
cal ana	2	mage- ne- stum (Mg)	4.7	ı	ŀ	!	11	}	1	5.7	!	1	;	5.2
Chemic		Cium (Ca)	11	ŀ	1	!				=	1	!	1	7
		Iron (Fe)								0.0				
		(SiQg)		!	1	1	1 1		1	22	1	!	1	56
		Discharge Sili (cfs) (SiC	5,406	4,928	_		24,770	211621	7,986	7,252	7,224	8,102	8,631	6,131
	ı	Date of collection	Det. 10, 1960	Nov. 1		Jan. 2, 1961	Feb. 15		Apr. 10	May 1	June 8	July 5	Aug. 9	Sept. 7
			S S	Nov	Dec	Jan	Feb		Apr	May	Z	3	Aug	C o

SACRAMENTO RIVER BASIN--Continued

11-3840, BIG CHICO CREEK NEAR CHICO, CALIF.

LOCATION.--At gaging station, in Arroyo Chico Grant, 1.8 miles upstream from golf clubhouse in Bidwell Park, 2.6 miles upstream from Lindo Channel, and 7 miles northeast of Chico, Butte County.
DARINGE AREA.--6.9 square miles conty.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961.

		Hď	8.1	8.0	7.8	7.9	7.9	8.2	8,1	8.1	8,2	8.0	8.5	8.2
	Specific con-	duct- ance (micro- mhos at 25°C)	203	217	109	181	16	149	135 8,1	139	182	209	210	223
		ad- Borp- Gorp- tion ratto	0.7	æ	₹.	9	2	4.	٠,	٠.	9.	æ.	۲.	æ.
		Non- car- bon-	0	0	0	31	0	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- clum, Mag- ne- stum	74	28	43	74	38	28	53	52	89	74	78	78
1	solids ted)	Tons c						-						
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	ł	1	!	!	1	0,14	ł	i	į	.22
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dis (c.	Parts per million	1	1	1	1	1	1	1	106	1	1	1	160
30 to		ron (B)	0.1	۳.	•	~	٦.	۲.	٦.	۰.	٦.	٦.	۳.	۲.
er 19		Fluo- Ni- ride trate (F) (NO ₂)		!	!	!	!	!	1	0.4	1	ļ	;	3,9
Octob		Fluo- ride (F)	1	1		!	1	1		0.1	ì	1	1	٠.
er year		Chloride (C1)	14	8.5	4.8	7.5	2.0	4.0	3.0	5.8	10	12	14	14
ion, wat		Sulfate (SO4)	1	1	l	1	1	1	ŀ	3.0	1	ŀ	1	3.2
m111	į	Pon Series	0	0	0	0	0	0	0	0	0	0	7	0
ts per	Bi-	car- bon- ate (HCO ₃)	102	113	22	52	49	11	72	75	92	106	105	113
n par	Ę	tas- stum (K)	1	1	1	ī	1	I		2.2		!		1.1
lyses, 1		Sodfum (Na)	13	16	6.2	1	3,3	7.4	7.9	8,3	12	16	14	17
al ana	7,00	Mag- ne- stum (Mg)	1	1	1	ł	1	1	ł	8.6	1	1	ì	8.6
Chemic		Cal- ctum (Ca)	1	1	1	1	1	1	:	9	1	1	1	17
		(Fe)								000				
		Silica (SiQ _e)	:	;	1	1	ŀ	1	1	33	ı	ŀ	ļ	39
		Discharge Silica (cfs) (SiQ_)						63	82	73	39	27	22	20
		Date of collection	Oct. 10, 1960	Nov. 1	Dec. 5	Jan. 2, 1961	Feb. 14	Mar. 3	Apr. 10	May 1	June 8	July 6	Aug. 9	Sept. 7

SACRAMENTO RIVER BASIN--Continued

11-3842. BIG CHICO CREEK AT CHICO, CALIF.

LOCATION --At gaging station, at intersection of Bidwell Way and Rose Avenue, and approximately 1 mile west of Chico, Butte County. RECORDS AVAILABLE. --Chemical analysess: January 1989 to September 1961. RESIAMES. --Red discharge given in State of California Bulletin No. 23-61.

		Hq	8,1	8,0	7.9	182 7.9	o.	152 7.9	6.2	8.1	8.2
	Specific con-	duct- ance (micro- mhos at 25°C)	203	223	110	182	66	152	137	174	208
		dium ad- Borp- tion ratio	0.7	œ	4.	0,0	·.	4.		9	• 1
		Non- car- bon-	0	0	0	0	5	00	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	74	80	44	29	5	19	22.5	72	77
	solids (ed)	Tons per day									
r 1961	Dissolved solids (calculated)	Tons per acre- foot							0.14	,	
Septembe	SHC (sa	Parts per million							106		
50 to		Po-	0,1	7	Ι,	٦,	τ.	۲,	; -;	0,	.2
r 196		Ni- trate (NO ₃)							0.4	,	
ctobe		Fluo- Ni- ride trate (F) (NO ₃)							0.1		
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	12	9.5	4.2	8	2	4.0	. 4	9,5	12
ion, wate		Sulfate (SO ₄)							3.0		
m111		Post (CO)									
ts per		car- bon- ate (HCO ₃)	102	111	28	100	64	11	73	95	106
n par	ŕ	Figure (X)							0.5		
lyses, 1		Sodium (Na)	13	16	6.2	#	4.1	8.1	. 0	11	15
al ana		Mag- ne- sium (Mg)							0.9		
Chemic		Cfurra (Cg.)							11		
		Iron (Fe)							0.00		
		Silica (SiQ ₂)							34		
		Discharge Silles (cfs) (SiQ ₂)	8.2	4,5	116	23	9/	54		14	3,3
		Date of collection	Oct. 10, 1960	Nov. 1	Dec. 5	Jan. 2, 1961	Feb. 14	Mar. 3.	May 1	June 7	July 5

SACRAMENTO RIVER BASIN--Continued

11-3880, STONY CREEK AT BLACK BUTTE DAMSITE, NEAR ORLAND, CALIF.

LOCATION: --At graing station, 120 feet downstream from diversion dam, and 8.7 miles northwest of Orland, Glenn County. DRAINGE ARMS.--741 square miles. RECORDS AVAILABLE --Chemical analyses: October 1957 to September 1961.

		Hď	334 8.2	8.4	8.4	8.4	8.1	8.3	8.2	8,2	8,0	8.3	8.2	8.3
	Specific	duct- ance (micro- mhos at 25°C)			453	423	232	348	258 8.2	261	286	278	293	310
	·\$;	ad- ad- sorp- tion ratio	0.5	œ	۲.	۲.	ů.	9.		9.	9.	۲.	9.	9.
		Non- car- bon-	8	1	48	36	13	23	17	7	12	-	0	-
	Hardness as CaCO ₃	Cal- clum, Mag- ne- sium	147	178	178	179	6	147	110	107	123	113	123	130
1	solids ted)	Tons per day												
ır 196	Dissolved solids (calculated)	Tons per acre- foot	!	1	0.34	.33	.18	!		200	1	ł	ł	.24
Septembe	Dis (c)	Parts per million	ŀ	1	251	242	134	1	1	146	;	1	1	176
30 to		Bo- ron (B)	0.3	.5	٥.	.2	٠,	۰.	۲.	۲.	ď	2	e.	.2
ır 196		Ni- trate (NO ₃)	1	I	1.2	'n.	4.	1	ŀ	۰.	ł	1	!	4.
ctobe		Fluo- ride (F)		1	0.0	۰.	۲.	l	ł	.2	ł	1	ŀ	=
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	91	28	42	35	14	20	. 14	13	16	16	12	16
ion, wat		Sulfate (SO ₄)	-;-	1	32	27	14	!	ł	13	!	1	1	20
m111		(CO)	0	ß	4	4	0	-	0	0	•	-	•	7
ts per	Bi-	car- bon- ate (HCO ₃)	169	194	121	166	86	149	118	122	135	134	152	157
n par	Ė	Stun (K)	1	1	6.0	ı,	۳.	1	1	9.	ŀ	ł	1	6.
lyses, 1		Sodium (Na)	1.5	25	23	20	12	17	13	13	14	16	15	15
al ana	ļ	naeg- ne- stum (Mg)	-	ł	12	12	8.9	1	l	0.6	!	ŀ	1	13
Chemic		Cal- ctum (Ca)		;	46	47	56	1	1	88	ì	1	1	30
		Iron (Fe)								0.02				
		Silica (SiO ₂)	1	ŀ	13	=======================================	12	1	1	8.9	!	ŀ	1	Ħ
		Mean S discharge (cfs)	828		164	44	808	188	233	155	72	161	102	
		Date of collection	Oct. 10, 1960	Nov. 1	Dec. 5	Jan. 2, 1961	Feb. 15	Mar. 2	Apr. 10	May 1,	June 7	July 5	Aug. 9	Sept. 6

a Instantaneous discharge.

SACRAMENTO RIVER BASIN--Continued

11-3880. STONY CREEK AT BLACK BUTTE DAMSITE, NEAR ORLAND, CALIF. ~- Continued

Sediment discharge measurements and particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B. bottom withdrawal hubs, C, chemically dispersed. D, decatation; N, in native water; P. p. pinet: S. aleve: V. visual accumulation the: W. in distilled water;

	Mothod	jo.	analysis		VPWC				>				٨					
			2.000					_										
			1.000															
		eters	0.500										100					
		millin	0.250	1	100	1	!	1	100	!		!	86	l	ł	ì	!	1
	liment	Percent finer than size indicated, in millimeters	0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000		96	;	ł	;	97	ł		!	7 6	1	l	!	!	1
	Suspended sediment	e indica	0.062	1	91	1	1	-	93	1		!	90	!	ł	!	ł	1
	Suspen	than siz	0.031															
Water		t finer	0.016		26													
Bulled		Percen	0.008									_						
w, in			0.004	L	49							_						
n cabe;			0.003															
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water,	Sediment	discharge	(tons per day)	9.0	16,400	452	28	.2	249	17,900		0.0	276	4.5	8.8	17	22	15
S, sleve; V, Vi	Sediment	concen- tration	(mdd)	10	1,970	276	9	က	169	2,280	;	-	137	13	34	47	64	4
P, pipet;		Discharge (cfs))	24	3,090	909	260	28	545	2,900	000	320	745	127	96	137	143	124
	Water	per-	(°F)	54	49	49	53	25	20	ŀ	,	ç	54	99	63	81	17	80
	G m	ling per-	point					_				_						
		Time (24 hour)		L						1800			1505					
		Date of collection		Nov. 15, 1960	Dec. 1	Dec. 2	Dec. 3	Jan. 23, 1961	Jan. 27	Jan. 31,	4.5	ren. 43	Mar. 20	Apr. 17	June 11	July 20	Aug. 22	Aug. 25

11-3885. STONY CREEK NEAR HAMILTON CITY, CALIF.

LOCATION: --At gaging station, in Capay Grant, 2.3 miles southwest of Hamilton City, 8 miles upstream from mouth, and 8 miles east of Orland, Glenn County. PARINAGE AREA.--Chemical analyses: October 1953 to September 1981.
REMORES AVAILABLE.--Chemical analyses: October 1953 to September 1981.
REMARES.--No flow during summer months.

		Hq	402 8.2 283 8.2	8 8 4 6	∞ ∞ 4 €	
	Specific con-	duct- ance (micro- mhos at 25°C)				ı
	& ;	dium ad- sorp- tion ratio	9.0			
	Hardness as CaCO ₃	Non- car- bon-	26 16	120	##	
	Hard as Ca	Cal- cium, Mag- ne- stum	165	149	131	
	solids ted)	Tons per day				
1 1961	Dissolved solids (calculated)	Tons per acre- foot			0.23	
Septembe	Dis (c	Parts per million			168	
o to		Bo- ron (B)	0.1	٦.	۲.	
r 196		Fluo- Ni- ride trate (F) (NO ₃)			0.0 0.0	
ctobe		Fluo- ride (F)			0.3	1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride riv (C1) (F	29 16	70 10	18	_
ion, wat		Sulfate (SO ₄)			14	
	į	bon- (CO)	00		ro 4	
ts per	Bi-	car- bon- ate (HCO ₃)	170 126	154	136	-
n par	Ė	tas- sium (K)			8.0	
llyses, 1		Sodium (Na)	18 13	13 8	14	
cal and	ž	mag- ne- sium (Mg)			173	
Chemi		ctum (Ca)			33	
		Fron (Fe)			0.01	
		Silica (SiQ,)			6.2	
		Discharge Silica (cfs) (SiO ₄)	18 887	178	53	
		Date of collection	Jan. 2, 1981	Mar. 2.	May 1. June 8	

11-3890, SACRAMENTO RIVER AT BUTTE CITY, CALIF.

LOCATION. -- At highway bridge downstream from gaging station and 0.5 mile south of Butte City, Glenn County, RECORDS AVAILABLE. -- Chemical analyses: May 1955 to September 1961.

Mater temperatures: May 1955 to September 1968, October 1969, to September 1961.

EXTREMES, 1960-61.—Dissolved soilds: Maximum, 123 ppm Dec. 9-16; minimum, 86 ppm Dec. 17-20.

Matchess: Maximum, 66 ppm Jan. 1-9; minimum, 44 ppm Nov. 26-28.

Specific conductance: Maximum ataly, 181 minimum, 44 ppm Nov. 26-29; minimum ataly, 69 micromhos Dec. 2.

Specific conductance: Maximum, 13° F unce 15, 16; minimum, 13° F ppm Pac. 1-4, 1966; minimum, 72 ppm Pac. 16-18, 1959.

March temperatures: Maximum ataly, 26 micromhos Mar. 1-4, 1960; minimum, 35 ppm Dec. 19-21, 1955.

Specific conductance: Maximum ataly, 26 micromhos Mar. 3, 1960; minimum (1955-57, 1959-61), freezing point Jan. 2-5, 7, 1960.

REMARKS.—Rescords of gally samples available in district office at Sacramento, Callif.

		рĦ	7.4	7.6	7.4	7.4	7.4	7.5	7.3	9.9	149 6.6	7.0	٥ ر د د	7
	Specific con-	duct- ance micro- nhos at 25°C)	135	139	138	144	144	155	115	151	149	7/7	/21	101
•		ad- ad- Borp-(tion ratio	0.5	٠.	ı.	.5			4.	.5	i.	ů.	ů.	œ.
		Non- car- bon- ate	0	0	0	0	0	•	0	0	-	> 0	۰ د	7
	Hardness as CaCO	Cal- cium, Mag- ne- sium	20	21	53	54	25	28	44	54	4, 5	0 1	47	70
	Dissolved solids (residue at 180°C)	Tons per day	1,520	1,590	1,510	1,400	1,890	1,820	3,440	2,010	6,190	2,060	3,390	2,270
r 1961	Dissolved solids esidue at 180°	Tons per acre- foot	0,13	.15	.15	.13	15	•16	.12	. 15	.16	1	77.	CT.
million, water year October 1960 to September 1961	Dus. (res1	Parts per million	в 98	110	108	86	108	118	а 90	107	116	123	200	8112
60 to		ron (B)	0.1	•	۰.	•	۲.	۲.	.1	•	٠.	٠,	•	?
er 19		Ni- trate (NO ₃)		1.2			1.0		2.5	1,1	4.	7:,	4.	2.
Octob		Fluo- ride (F)	L_				. 23		.3	_	E, 0	_	_	_
er year		Chloride (Cl)	3.0	6.8	3.0	5.2	4.5	4.5	2.5	6.0	ຜູ້ເ	0.4	4.1	0.0
ion, wat		Sulfate (SO ₄)	5.0	7.0	2.0	5.0	2.0	7.0	5.0	8.0	2;	3,	0.0	- - - - - - - - - - - - - - - - - - -
n111		bon- ate (CO ₃)												_
ts per	-ia	car- bon- ate (HCO ₂)	72	65	74	92	74	80	64	71	65	200	ñ	*
in par	Ė	tas- sium (K)					1.9				7.			
Chemical analyses, in parts per		Sodium (Na)	8.0	8.1	8.1	8.0	6.4	0.0	6.7	0.6	6.0			÷.0
al ana	ş	mag- ne- sium (Mg)	4.9	5.1	5.6	5.8	4.7	8.8	4.9	5.8	8.0	* •	* 0	0.0
Chemic		Call-	12	12	12	12	13	12	9.6	12	27	7 .	77	F1
İ		Iron (Fe)	0.0	8	8	8	8	.01	.08	.03	6.0	5.	9.5	3
		Silica (SiO _g)	27	56	88	ဓ္	53	E	52	28	27	77	25	9
		Mean discharge (cfs)					6,489		14,160	6,970	19,760	4, 600	7,000	240,
		Date of collection	oct. 1-10, 1960	. 11-20	. 21-31	r. 1-7	Nov. 8-15	16-25	Nov. 26-28	. 59, 30	1-8	17 00	27.20	1
			oct	S S	S S	Nov	Nov	Nov	Nov	Nov	Dec	Dag	oper d	אפר

				_	
7.7	7.1 7.3 7.6	7.77.9	8.1 7.8 7.8 8.0	7.9 7.7 7.7	7.8
159 161 164	127 154 126	142 144 132 130 146	141 141 141 137	139 134 130 128	129 129 129 136 137
ທຸທຸ	444	4000000	रु व व व व	44444	44444
000	440	00000	00000	00000	00000
68 61 81	51	56 52 50 50 57	55 59 56 54	53 50 48 47	49 51 53 53 53
1,883 1,930 2,000	9,850 5,020 7,630	5,400 4,870 5,070 3,420 2,240	1,830 2,020 1,940 1,830 2,170	2,040 2,170 2,080 2,040 2,130	2,350 2,350 2,010 1,800 1,650
.16	.13	441111111111111111111111111111111111111		13	41. 13. 41. 41. 61.
116 121 116	95 104 91	100 a106 88 87 108	94 104 103 102	102 98 96 91	101 101 103 99 99 99 99
.3 6 .0 .0	-:×-		00001	<u> </u>	0.000.00
6.4.0	1.1	r. 0.00 0.00	დ 60 00 60 4	R4221	
N	H.O.O.	044460	00400	04040	
8.4	3.0	0.4 6 6 6 6 0 0 0 0 0 0	0.0.4.0 1.0.0.0.0	0.4000 00044	8 8 8 8 8 8 8
3.6	10 12 8.0	0.00 0.00 0.00 4.7	10.0 10.0 9.0 6.0		3.0 5.0 4.0 7.0
102 84 87	57 70 62	72 78 69 67 70	70 70 71 71	71 69 69 67	69 71 74 74 70
1.6	E 00.		3223	44000	2228.6.
9.8	6.0 7.3 6.1	7.8.7.8.8 7.000.44	7.7.0	7.0.0.0	0.00000
8.5 7.1 6.3	5.7 6.3 5.1	0000000 004000	6.6 6.6 7.7 8.6	6.6.4.6.4.0.1.1.	5.05.00
13 13	11	122 112 113 113 113 113 113 113 113 113	13322	12 11 12 12 12 12 12 12 12 12 12 12 12 1	1211011
90.0.	100.10	.06 .07 .12 .13 .02	20000	88888	86666
28 8 24	19 24 24	26 27 23 25 25	2 7 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	22202	26 27 26 29 26 29
6,013 5,899 6,378	38,400 17,870 31,040	20,010 17,000 21,350 19,800 11,740 7,482	7,224 7,181 6,993 6,629 7,639	7,401 8,190 8,022 8,309 8,669	8,603 8,622 7,746 6,474 6,180
Jan. 1-9, 1961 Jan. 10-19	Jan. 30, 31, Feb. 1-3 Feb. 4-9	Feb. 20-28 Mar. 1-9. Mar. 10-20 Mar. 21-31 Apr. 11-20.	Apr. 21-30 May 1-10 May 11-20 May 21-31 June 1-10	June 11-20 June 21-30 July 1-10 July 11-20 July 21-31	Aug. 11-20. 8,622 Aug. 21-31. 7.46 Sept. 1-16. 6,474 Sept. 17-30. 6,180

a Calculated from determined constituents.

SACRAMENTO RIVER BASIN--Continued 11-3890. SACRAMENTO RIVER AT BUTTE CITY, CALIF.--Continued

	Aver-	age	61 53 48	\$ 50 E0	1 6 6 3 1	69
			9	4 10 10	100	
		31	62	55	181	8%
		30	61 50 47	52	62 60 68	68 69 65
		29	62 48 48	51 50	61 60 69	6.8
		28	0 4 4	1 62 4	61 61 69	64 64 64
		27	58 49 48	52	2 4 5	68 67 65
12		26	59 50 49	222	61 65	\$13
19		24 25	61 52 49	533 333	60 67 69	70 66 67
per		24	60 53 49	51	51	\$11
pter		23	62 51	50 52 53	52 10 70	69 68 66
Se		20 21 22	533	4 00 00 1- 10 10	450	6 6 6 5 9 6
٥		21	1 2 2	244	212	0 8 8 8 8
year October 1960 to September 1961		20	63 55	4 50 5 2 5	54 71	188
ber		16	62 54 52	51 52	59 72	70 68 67
Scto		61 81 21	5.5	522	981	69 64 64
ar		17	 54 	4 00 00 0 0 00	63	64
r ye	Day	16	62 55 46	48 53	63	131
ate		15	60 52 45	\$! !	63 73	12 86 1
		14	59 52 45	22.4	63	6 8 1
ate		13	59	52	62	2 %
, To		11 12 13	60 53 44	51 52 53	61	231
F)		=	57 56 44	4 60 50	62	6
ಀ		101	57 57 43	522	62	69
Femperature (°F) of water, water		6	58 59 43	4 00 00 2 2 2 2	61	67
pera		80	60 57 47	53	134	681
Tem		7	6.4 5.8 5.0	4 60 60	6.0	67 68
		9	8.00 8.00 8.90	4 N N 2 4 U	188	69
		5	500	4 % C	51 60 67	68 67
		4	50	3 4 1	0.00	69
		က	67 54 	1 22	51	69 67
		7	65 59 52	524	62 49	659
		_	65	1 22 25	55	67
	Mooch	MODE	October November December	January February March	April May	JulyAugust

SACRAMENTO RIVER AT COLUSA, CALIF.

LOCATION .-At gaging station, at north end of Jimeno Grant, downstream from highway bridge at Colusa, Colusa County, at mile 89.4 upstream from Sacramento. RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1961.

		Hd	8.0	8.0	7.7	7.4	7.9	7.9	8.0	7.9	8.0	6.7	7.9	8.0	
	Specific con-	duct- ance (micro- mhos at 25°C)	134	141	146	162	140	150	146	139	138	131	123	131	
		dum ad- forp- ratto ratto	4.0	'n	4.	ď.	4	9	4.	4.	S.	4.	4.	4.	
	co,	Non- car- bon-	0	0	11	0	-	•	0	0	-	0	0	0	
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	54	26	63	62	26	55	28	26	24	21	ဇ္	53	
	solids ted)	Tons per day													,
ır 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	1	!	!	!		0.13		1	!	.13	
Septembe	ੱ ਸ਼ੁਰੂ	Parts per million	1	1	1	1	1	!	·	97	!	!	!	86	
30 to		B 2 8		7	٦.	•	•	•		7	•	•	٦.	٠.	
er 19		Fluo- Ni- ride trate (F) (NO ₃)	ł	!	;	!	1	\ _		:	!	1	1	4.	
Ctobe			!	!	!	1	1	-		_	;	!	!	۳.	
er year (Chloride (C1)	3.0	4.9	7.0	4.5	3.0	3.2	3.5	3.0	3,9	i	2.6	3.5	
Chemical analyses, in parts per million, water year October 1960 to September 1961		Sulfate (SO ₄)	1	1	}	1	1	1	1	6.2	1	1	1	5.0	
m111		0 t 0 0 t 0													
ts per	Bi-	car- bon- ate (HCO ₃)	11	74	64	8	29	79		7.1	73	72	99	2	
n par	Va.	K Signal	1	1	ŀ	!	1			1,3	1	1		1:3	
lyses, 1		Sodium (Na)	6.9	8.2	7.7	0.6	9.9	8.6	6.9	7.5	7.9	7.2	6.3	7.1	
al ana	76.0	Mag ne- stum (Mg)	1	1	1	1	1	1	1	6.3	1	!	!	5.6	
Chemic		Cal- ctum (Ca)	:	1	ł	ł	ł	ŀ	ł	12	ţ	ŧ	ł	12	
		Fron (Fe)								0.10					
		Silica (SiQ,)	1	ŧ	1	ŧ	ŀ	!	ł	22	!	!	ţ	56	
		Discharge Silica (cfs) (SiQ,)	5,560	5,060	10,500	6,060	27,900	17,600	8,970	6,920	7,330	7,100	a8,200	6,190	charge.
		Date of collection	Oct. 12, 1960	Nov. 2	Dec. 6	Jan. 3, 1961	Feb. 16	Ear. 2	Apr. 11	May 2	June 8	July 7	Aug. 10	Sept. 8	a Daily mean discharge.

SACRAMENTO RIVER BASIN--Continued

11-3900. BUTTE CREEK NEAR CHICO, CALIF.

LOCATION:—At gaging station, 0.7 mile downstream from Little Butte Creek, and 7.5 miles east of Chico, Butte County. DRAIMAGE AREA.—148 Square miles. RECORDS AVAILABLE.—Chemical analyses: October 1953 to September 1961.

		Hď	۱°:	7.7	7.8	7.8	6.7	8.0	6.7	7.8	8.	8.7	8	6.
	Specific con-	duct- ance (micro- mhos at 25°C)	117	112	06	101	13	98	92	73 7.8	78	92	102	114
		daum ad- Sorp-(n tion m	0.2	۳.	~	۲.	ď	o.	8	۳.	ď	2	ď	٠,
		Non- s car- t bon- t	0	0	0	0	0	0	0	0	0	=	0	0
	Hardness as CaCO3	Cal- Cium, Mag- ne- sium	52	20	40	46	34	36	32	53	36	45	46	20
	P1 66	0 5 M 1 18	_	_	_	_						_		
-	solids ited)	Tons per day												
ar 1961	Dissolved solids (calculated)	Tons per acre- foot		!	!	!	!	!		0.08	!	!	ŀ	.11
Septemb	ā ^s	Parts per million	1	 -	¦	1	!	!	!	57	!	!	1	79
60 to		Po no no no no no no no no no no no no no	0.0	•	۲.	۰.	۰.	•		۰.	•	۰.	•	
er 19		Ni- trate (NO ₃)	L	1		1	!		-	0:0	ļ	!	1	۰.
Octob		Fluo- ride (F)		1	1	1	!	-	-	0.1	ł	!	!	
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	2.0	.	ů.	۰.	æ	٠.	8.	e.	e.	Φ.	2.2	-
ion, wat		Sulfate (SO.)	1	1	ı	1	í	!	1	0.0	1	1	1	0.
1111		- tu at 00						_						
rts per		car- bon- ate (HCO ₃)	89	64	54	9	43	53	41	45	48	54	63	70
In par	Ė	Site Site (X)	1	;	;	}	;	1	1	9.0	!	!	!	1.
lyses, 1		Sodium (Na)	3,4	4.5	2.9	2.2	2.3	2.9	2.8	3,3	2.4	3.4	3.6	4.1
al ana		mag- ne- sium (Mg)	1	1	!	;	1	!	1	3.2	:	!	;	4.9
Chemi		clum (Ca)	1	1	!	i	!	1	1	6.4	!	!	!	12
		Iron (Fe)								80.0				
		Suica (SiQ _a)	;	1	1	1	1	1	ŀ	21	1	1	_	22
		Discharge Silic (cfs) (SiQ	66					a308	446	446	276	179	118	118
		Date of collection	Oct. 10, 1960	Nov. 1	Dec. 5	Jan. 2, 1961	Feb. 14	Mar. 3	Apr. 10	May 1	June 8	July 6	Aug. 9	Sept. 7

a Daily mean discharge.

11-3906, SACRAMENTO RIVER AT BOYER'S BEND, NEAR DUNNIGAN, CALIF,

OCATION. --On pump pier 1,200 feet downstream from Miller's Landing, 4.1 miles northwest of Kirkville, and 8.6 miles northeast of Dunnigan, Yolo County, RECORDS AVAILABLE. --Chemical analyses: June 1960 to September 1961.

Water temperatures: June 1960 to September 1961. KXTREMES, 1960-61.—Dissolved solids: Maximum, 125 ppm Oct. 1-10, Jan. 11-20; minimum, 73 ppm Dec. 2-5. Hardness: Maximum, 68 ppm Jan. 1-10; minimum, 36 ppm Dec. 2-5.

Specific conductance: Maximum daily, 190 micromhos Dec. 13; minimum daily, 74 micromhos Dec. 3.
Mater temperatures: Maximum, 77 % June 16; minimum, 45% Jan. 3-8, 15.
KXTREMES, 1960-61.—Dissolved solids: Maximum 125 ppm Oct. 1-10, 1960, Jan. 11-20, 1961; minimum, 73 ppm Dec. 2-5, 1960.
Rardness: Maximum, 68 ppm Jan. 1-10, 1961; minimum, 36 ppm Dec. 2-5, 1960.

Specific conductance: Maximum daily, 160 micromhos Dec. 13, 1660; minimum daily, 74 micromhos Dec. 3, 1960.

Mater temperatures: Maximum, 77°F June 16, 1961; minimum, 45°F Jan. 3-8, 15, 1961.

MAKKS.-Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge given for Sacramento River below Wilkins Slough.

152 7.4 149 7.4 147 7.4 147 7.7 145 7.5 7.57 뛶 153 95 171 129 169 172 178 179 179 126 127 nhos at 9 Specific ance microduct-25°C) dina dio. ratio tion ģ 000000 <u>-ioN</u> -uoq caras CaCO, Hardness Cal-Mag-2000044 ne-58 57 57 63 68 67 60 50 47 2,140 2,210 2,280 2,280 4,900 6,230 1,850 1,770 1,580 1,580 2,050 2,980 2,370 2,040 2,620 2,720 2,530 lons per day (residue at 180°C) Dissolved solids 0.17 September 1961 acre-foot 113 10 119 119 119 Tons 73 73 116 99 93225 125 124 114 112 113 nillion Parts per Chemical analyses, in parts per million, water year October 1960 to 5----8 5 E ---000 0000 Fluo- Ni-ride trate (F) (NO₂) 800000 4.1.07 000000 04.004.0 0000100 0 8 6 6 8 0 8.5000 Chloride ਹੁੰ 7.20 0.0000 0.000.00 Sulfate (SO₄) -uoq 20 (C) ate (HCO,) 880 880 880 880 880 880 880 880 682 288328 G F e e e e e Po-tasglum 12 12 5.9 7.6 6.1 6.6 Sodium (Na) 0000000 46.67.7 8.7.8 8.7.8 6.9 Mag-ne-stum (Mg) 8 를 해 (8 (8) 555454 444 00 03 09 09 09 22333 888829 Fe) Silica (SiQ_e) 329934 222222 discharge (cfs) 5,475 5,280 5,139 5,236 6,594 6,196 13,630 7,990 20,500 8,379 13,900 8,012 6,501 6,537 6,913 23,770 16,800 25,340 6-17..... 21-31..... 9-17..... 1-10, 1961... 11-20..... 11-18..... 1-10, 1960... 11-20..... 1-8----18-26..... 27-29..... 30-Dec. 1.... 2-5-----22-31.... 21-30.... 31, Feb. 1-6. of collection Oct. Nov. Nov. Nov. Nov. Nov. Dec. Dec. Dec. Jan. Jan. Feb.

constituents, determined Calculated from

SACRAMENTO RIVER BASIN--Continued

11-3906. SACRAMENTO RIVER AT BOYER'S BEND, NEAR DUNNIGAN, CALIF .-- Continued

		Ħ	2.7.9	8.1	8.1	9.0	8.1	8.0	8.0	7.9	7.9	7.7	8.1	
	Specific con-	duct- ance (micro- mhos at 25°C)	142 146 131	156	150	154 158	146	137	134	133	135	151	150	143
	å;	1	4.00.00	4.0	€.4	4.00		4.0	44	4.	44		ů.	0.5
	ess CO ₃	Non- car- bon-	0000	00	01	000	0	00	• •	0	00	0	00	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	88888	9 2	88.88	& 4 &	22	88	52	<u>%</u>	229	28	22	55
tinned	Dissolved solids (residue at 180°C)	Tons per day	5,640 5,900 5,890	2,150	1,700	1,880 1,830 2,020	1,640	1,720	1,630	1,960	2,020	1,610	1,910	2,620
1Con	Dissolved solids residue at 180	Tons per acre- foot	44.64	115	15	112	.15	41.	.13	14	115	14	1.16	0.14
in parts per million, water year October 1960 to September 1961 Continued	Diss (resi	Parts per million	100 8,108 92 105	107	108	112	107	104	993	104	106	104	113	105
Sept		ron (B)				00-			•••		۰.۰			0.1
60 to		Ni- trate (NO ₂)	4.0	. 4		4.00					œ. r.			0.7
er 19		Fluo- ride (F)	0	? ?	0.1.	0.10	-		•••		7.7			0.1
sar Octok		Chloride (C1)	6446	9.0	6.0	1.0.4	4.2	4.4	e. e.	o.e	0.0	4	4.4.	4.3
water ye		Sulfate (SO ₄)	8 6 8 8	7.6	7.4 8.0	0.00	6.0	5.6	6.0	5.0	4.4 0.0	5.0	4. E.	6.9
11 on,	į	2 a 20 2 a 20												
er mil	Bi-	car- bon- ate (HCO ₂)	02 08 17	7.6	74	78 82 79	75	72			74 79			73
rts p	É	stus. (X)	H000,			12.5		1.1			1.2			1.1
		Sodium (Na)	- 8 1 4 0 0 0 0			0 0 0 0 0 0		7.2			6.8 8.8			7.9
Chemical analyses,	7	stum (Mg)	8.00 8.00 8.00 8.00	6.4	6.8	6.8 7.1 6.6	9.0	4.9	5.4	6.4	9.0	8.0	6.1	6.0
ical s		Can (Can	521123			<u> </u>		13			121			12
Chem		Iron (Fe)	0.10	20	40.	888	8	88	88	e. 	88	88	 	0.06
		Silica (SiO ₂)	58 58 58 58 58	272	26 27	30 28 30	88	28	9 7 8 8	88	28	98	37	27
		Mean discharge (cfs)	20,880 16,810 20,290 20,770		5,829	6,208 6,090 6,981	5,694	6,133	6,357 6,678	6,972	7,045 6,443	5,721	6,230	9,227
		Date of collection	Feb. 19-28, 1961. Mar. 1-10. Mar. 21-31.	Apr. 11-20	Apr. 21-30	May 11-20	June 11-20	June 21-30		Aug. 1-10	Aug. 11-20	Sept. 1-10	Sept. 21-20	Weighted average

a Calculated from determined constituents.

SACRAMENTO RIVER BASIN--Continued

11-3906. SACRAMENTO RIVER AT BOYERS BEND, NEAR DUNNIGAN, CALIF. -- Continued

	Aver-	age	8 8 8 8 8 8 8 8	4 77 80 80 84	63 72	72 71 70
		31	19	51 53	121	121
		30	61 50 47	212	65 66 72	223
		29	61 50 47	2 3	65 66 72	120
		28	60 52 49	54 4	65 67 72	122
		27	61 53 50	52 54 55	62 68 72	12 05
1		26	61 53 48	51 52 53	60 67	212
196		25	63 52 48	50 52 54	69 76	422
ber		24	62 54 49	49 53	57 67 74	73 71 69
tem		23	62 53 50	55 55 48	57 68 75	73
Temperature (°F) of water, water year October 1960 to September 1961		22	64 55 50	4 60 e	5.5 6.8 7.5	43 69
to		21	64 55 53	47 55 55	58 70 75	74 70 69
1960		20	65 55 52	47 53 53	63 68 75	73 70 69
er		19	 55 59	49 51 53	65 69 75	46 5
ctol		18	62 55 53	84 0.0 0.0 0.0	65 75 75	40.00
r o		17	62 56 52	4 60 C	65	25 65 69
yes	Day	16	61 53 51	48 52 52	64 63	73 70 69
ıter		15	61 54 51	45 54 54	64 66 75	‡ 2
¥.		14	61 55 48	5 H S	63 65 75	* 20%
ter		13	60 55 49	527	63 73	222
f W		12	60 55 49	50 53	59 62 70	27.
<u>ڻ</u> ه		11	60 57 48	4 10 C	63	22
ະ		10	59 57 48	53	63 70	222
ure		6	61 56 48	47 53 52	62 62 69	72 72 70
erat		80	64 58 48	5 4 5 2 2	6 4 6	222
Gen D		7	66 57 48	3 2 2 2	62 70 70	73
-		9	6.8 5.6 4.8	5 4 5 2	63 69	57 27 27
		5	25.00	5 4 5	62 68 68	525
		4	69 59 50	5.5	65 63 68	525
		က	69 59 54	4 6 5	6.48	72 71 71
		2	61 52	3 4 4	6.5 6.5 6.8	¥2.
		-	69 61 52	4 4 6	6.5	252
	Month		October November	January February March	April May June	July August

SACRAMENTO RIVER BASIN--Continued

11-3906.5. SACRAMENTO RIVER ABOVE COLUSA TROUGH, AT KNIGHTS LANDING, CALIF.

LOCATION. --Approximately 200 yards upstream from State Bighway 24 bridge at Knights Landing, Yolo County, and approximately 0.3 mile upstream from

gaging station.
RECORDS AVALLABLE. --Chemical analyses: July 1960 to September 1961.
REMARKS.--Records of discharge given for Sacramento River at Knights Landing. Considerable inflow between sampling point and gaging station.

		Нq	7.8	7.6	7.8	8	7.8	7.6	8	7.5	5 1		7.9	8.2		7.9	7.9
	Specific con-	duct- ance (micro- mhos at 25°C)			164			164	170	122	134	141	166				
		duum ad- sorp- tion ratio	0.5	9	9.	9.	ů.	9.	ı.	9	ņ	Ŋ	9.	9.	9	9.	. 7
	-	Non- car- bon-	0	0	0	-	0	0	01	_ (0 1	-	0	0	0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	59	09	65	62	22	62	67	26	22	9	62	67	22	29	69
	solids ted)	Tons per day				_											
	Dissolved solids (calculated)	Tons per acre- foot	-	1	0.16	1	1	1	ŀ	1	!	ł	.15	1	!	;	.18
er 1961	Dis (c:	Parts per million	;	;	116	1	1	ł	1	1	1	{	113	1	1	1	130
eptem		Bo-	0.0	•	0	•	٠:	۲.	۲.	7.	٦.	•	٥.	•	•	٦.	.1
to S		rrate (NO ₂)		1	0.2	!	!		1	!	ł	1	۳.	!	!	1	۴,
1960		Fluo- ride (F)			0.1		1	-	!	 -		<u> </u>	٠.	1	1	_	7
Chemical analyses, in parts per million, July 1960 to September 1961		Chloride (C1)	5.8	0.9	3.5	4.0	3,8	8.0	5.2	7.7	N I	0.2	7.6	5.4	5,5	5,2	8,0
er milli		Sulfate (SO4)	ł	1	10	1	!	1	ł	1	1	1	9.4	1	1	1	12
rts r	į	(CO)															
in pa	- Bi	car- bon- ate (HCO ₃)	82	8	89	8	75	16	85	9	2 6	7.7	79	86	75	78	97
yses,	É	Stum (X)	1	ł	1,3	ŀ	1	1	ŀ	l		1	2.3	1	ŀ	!	1.1
cal anal		Sodium (Na)	9.6	1	12	=	0.6	9.1	6	6,		4.	11	11	6.6	#	14
Chemi	Ž.	nage ne- stum (Mg)	ï	1	7.8	1	1	1	1	!	1	ł	9.9	1	i	1	æ.
		Cal- ctum (Ca)	1	i	13	1	1	1	!	;	1	1	14	;	:	1	14
		Iron (Fe)	1	1	0.04	}	1	-	1	!	1	! _	90.0	;	ł	i	İ
		Silica (SiQ ₂)	1	1	22	1	1		ı	1	L	L	23	1	L	ı	24
		Mean discharge (SiQ ₂) (cfs)	7,140	6,590	6,640	5,860	5,850	10,400	6,860	15,600	19,800	13,400	6,140	6,430	6,430	8,130	7,500
		Date of collection	July 8, 1960	Aug. 12	Sept. 15	Oct. 3	Nov. 4	Dec. 9.	Jan. 4, 1961	Feb. 8	Mar. 13	Apr. 6	Мау 4	June 13	July 6	Aug. 10	Sept. 8

SACRAMENTO RIVER BASIN--Continued

11-3907. COLUSA TROUGH NEAR COLUSA, CALIF.

LOCATION.--At gaging station, 3 miles west of Colusa, Colusa County, on State Highway 20, and 6 miles northeast of Williams.
RECORDS AVILMBLE.--Chemical analyses: October 1953 to September 1961.
RECORDS AVILMBLE.--Chemical analyses: October 1953 to September 1961.
BRANKS.--Becords of discharge given in State of California Bulletin No. 23-61 for Colusa Basin Drain at Highway 20. This water is the drainage from Colusa Basin passing down the Back Barrow pit and entering the Sacramento River Just above Knights Landing gaging station.

		Hď	7.9	8.2	8.2	8,1	8.0	8.4	7.9	7.9	7.9	7.9	8.2	8.0
	Specific con-	duct- ance (micro- mhos at 25°C)	440	436	106	1,190	809	1,300 8.4	416	437	454	471	430 8.2	442
		ad- ad- Sorp- tion ratio	1.4	1.8	5.0	3.4	3.1	9,0	1,5	1.9	2,1	1.5	1.6	1.6
		Non- car- bon-	0	0	S	45	0	65	ıo	0	0	0	0	0
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	133	128	180	298	176	329	125	119	121	143	136	134
31	solids ted)	Tons per day					_							
er 196	Dissolved solids (calculated)	Tons per acre- foot	1	ł	1	1	;	1	ŀ	0.37	ŀ	1	1	.35
Septem	() FIG	Parts per million	!	!	1	i	1	1	1	269	!	1	!	255
960 to		ron B)	0.1	۲.			_	4.				~	٤.	٦.
er 19		Ni- trate (NO ₃)		1	1	1	1	l	1	1.6	1	1	1	•
Octo		Fluo- Ni- ride trate (F) (NO ₃)	-	!	!	1	!	1	!	0.3	1	1	1	4.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	84	16	46	88	9	110	23	24	26	24	22	21
lion, wa		Sulfate (SO ₄)	:	;	1	l	ł	l	1	64	1	!	!	33
r mil	:	Co See	0	0	0	0	0	9	0	0	0	0	0	0
rts pe		car- bon- ate (HCO ₃)	176	185	214	308	231	302	146	148	170	192	192	195
in pa	ć	Stun (K)	1	ł	1	1	ł	1	1	2.6	!	ŀ	1	1.8
alyses,		Sodium (Na)	37	48	68	136	94	163	39	48	25	42	43	42
cal an	Mag	nie- nie- stum (Mg)	1	1	1	ŀ	ŀ	1	1	16	1	!	1	17
Chemi		Cal- ctum (Ca)		ì	1	1	1	1	1	21	1	;	1	56
		Iron (Fe)								0.04				
		Silica (SiQ _e)	:	1	1	!	-	!	ı	18	1	ŀ	i	81
		Discharge SIII (cfs) (SIC	299	482	571	169	1,028	209	391	723	824	533	886	1,197
		Date of collection	Oct. 12, 1960	Nov. 2	Dec. 6	Jan. 4, 1961	Feb. 16	Mar. 2	Apr. 12	Мау 2	June 8	July 7	Aug. 10	Sept. 7

SACRAMENTO RIVER BASIN---Continued

11-3911. SACRAMENTO SLOUGH NEAR KNIGHTS LANDING, CALIF.

LOCATION --At gaging station, on levee near Reclamation District 1,500 pumping plant, 1 mile upstream from mouth, and 5.4 miles southeast of Knights Landing, RECORDS AVAILABLE.—Chemical analyses: October 1953 to September 1961.
REMAKES.—REMAKES.—ROCATION STORMS REMAKES.—ROCATION OF SECTEMBENT OF

		рн	8.2	8,1	7.6	8,2	7.9	8,0	7.5	7.9	8.4	8.1
	Specific con-	duct- ance (micro- mhos at 25°C)	399 8.2	378	154	518	318	361 8.0	427	627	444	387
		ad- ad- Borp- tion ratio	8.0	6	ı.	1.2		œ.	1.1	1.7	1.0	6.
	ess COs	Non- car- bon-	0	0	0	9	•	0	0	80	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	157	149	62	195	126	142	153	194	176	157
	solids ted)	Tons per day										
r 1961	Dissolved solids (calculated)	Tons per acre- foot		1	1	ł	ī	0.30	1	1	1	.33
Septembe	sita sita	Parts per million		1]	;	1	217	!	1	1	239
80 to		. B. B.	0.2	.2	.1	•	۲.		•		_	•
er 19		rrate (NO ₂)	L			1	1	0.4		1	ł	'n.
Octob		Fluo- ride (F)		!	1	-	1	0.0	1		1	۲.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	24	13	5.0	48	13	25	36	77	25	14
ion, wat		Sulfate (SO4)	1	1	1	1	1	97	1	1	1	5.0
m111		2 to 20 to 2	۰	0	0	0	0	۰	0	0	ß	٥
ts per	Bi-	car- bon- ate (HCO ₃)	203	200	77	230	172	178	198	227	238	227
n par	Ė	fast (X)	1	i	1	i	1	2.6	1	1	1	2.0
llyses, i		Sodium (Na)	23	25	8.6	37	19	22	32	54	32	22
al ans	,	mag- ne- stum (Mg)	1	1	1	1	1	18	i	!	1	19
Chemic		Cal- Ctum (Ca)	1	1	1	1	!	27	1	1	1	31
		Iron (Fe)			_			0.04				
		Suica (SiQ ₆)	1	1		1	i.	24	l	1	1	30
		Discharge Silid (cfs) (SiQ	357	a96	2.697	331	890	875	924	a674	789	1,166
		Date of collection	Oct. 3, 1960,	Nov. 4.	Dec. 9	Jan. 4. 1961	Mar. 13	May 4.	June 13	July 6	Aug. 15	Sept. 11

a Estimated daily mean discharge.

SACRAMENTO RIVER BASIN -- Continued

11-4015. INDIAN CREEK NEAR CRESCENT MILLS, CALIF.

LOCATION .--At gaging station, 0.8 mile upstream from Dixie Creek, and 1.5 miles south of town of Crescent Mills, Calif. DALINAGE ARRA (revised).--739 aquate miles. RECORDS ARRAILAGE.--Chemical analyses: October 1958 to September 1961.

		Hq	8,1	7.5	7.8	6.2	123 7.9	7.7	99 7.6	7.4	7,3	7.8	6.	8.2
	Specific	duct- ance micro- nhos at 25°C)	223	182	187	160	123	137	66	001	148	253	375	280
	ø,	drum ad- sorp- tion ratio	0.5	₹.	₹.	4.	4	4.	5.	~	4.	9.	80	.7
		Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	94	75	20	71	49	22	44	42	19	104	147	114
	- "	D 13 24 1 26		_									_	_
	solids ited)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	!	1	!	l	-	0.10	1	1	ŀ	.25
Septembe	era Ta	Parts per million	i	i	!	!	!	!	!	77	ł	i	!	187
30 to		Fon (B)	0.2	٦.	٦.	۰.	•	٠	•	۰.	٠.	٥.	۳.	٦.
r 19		Ni- trate (NO ₂)	1	!	!	ŀ	ł	ŀ	ł	0.2	;	1	1	۴.
)ctobe		Fluo- ride (F)	1	1	ł	1	1	-	1	0.1	1	!	1	ī.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	6.0	2.8	7.0	2.8	4.	4.2	1.9	2.2	6.	5.0	14	8.5
ion, wat		Sulfate (SO4)		1	1	}	}	1	ŀ	3.0	1	!	1	01
m111	į	bon- (CO ₂)												
ts per	描	car- bon- ate (HCO ₃)	124	97	85	96	67	73	55	26	86	144	202	160
n par	ŕ	tas- stum (K)		ł	i	1	1	1	1	0.7	1	ŀ	1	1.4
lyses, i		Sodium (Na)	11	8.2	8.6	8.4	5.9	7.0	7.8	3.7	6.9	14	21	17
al ana		mag- ne- stum (Mg)		ł	ŀ	ŀ	1	!	1	4.4	1	1	1	9.5
Chemic		Cal- ctum (Ca)		1	1	1	1	i	1	9.6	;	ł	!	30
		Iron (Fe)								0.04				
		Silica (SiQ ₂)	-	ł	1	1	1	1	1	25	1	1	i.	ឌ
		Discharge Silica (cfs) (SiO ₂)	17				402		402	437	92	11	3,9	6.8
		Date of collection	Oct, 14, 1960	Nov. 11	Dec. 16	Jan. 13, 1961	Feb. 17	Mar. 10	Apr. 13	May 12	June 15	July 13	Aug. 3	Sept. 6

SACRAMENTO RIVER BASIN--Continued

11-4015. INDIAN CREEK NEAR CRESCENT MILLS, CALIF. -- Continued

Periodic determinations of suspended-sediment discharge, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; M, in native water;

	Mathod	jo .	analysis													
			2, 000		_							_				
			1.000													
		eters	0.500													
		millim	0.250													
	liment	ated, in	0,125													
	Suspended sediment	e indic	0.062													
	Suspen	han siz	0.031													
water)		Percent finer than size indicated, in millimeters	0.016													
istilled		Percen	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000													
W, in d			0.004													
n tube;			0.00													
P, pipet; S, sleve; V, visual accumulation tube; W, in distilled water)	Sodimont	discharge	(tons per day)	2.9		18	0.6	37	48	46	20	6.5	1.9	.2	₹.	
S, steve; V, vi	Sediment	concen- tration	(mdd)	11	က	24	15	31	35	42	22	17	01	8	13	17
P, pipet		Discharge (cfs))	66	88	279	223	446	209	405	368	142	17	4.4	91	16
	Water	per-	(FF)	1	44	43	l	45	1	52	١	2	1	1	ŀ	1
	Comm	ling	point											_		
		Time (24 hour)				1330					_	1725			1640	1440
		Date of collection		Jan. 9, 1961	Jan. 23	Feb. 22	Mar. 3	Mar. 21	Apr. 7	Apr. 18	May 4	June 10	June 14	July 31	Sept. 7	Sept. 21

CALIF. 11-4070. FEATHER RIVER NEAR OROVILLE.

---At gaging station, 75 feet upstream from bridge on Feather River Highway, 1.9 miles downstream from North Fork, and 4 miles northeast of Oroville, Butte County.

DRAINAGE AREA (revised). --3,615 square miles.

ECORDS AVAILABLE .-- Chemical analyses: October 1953 to September 1961.

Water temperatures: October 1953 to September 1954, November 1956 to September 1961. Sediment records: November 1956 to September 1961.

EXTREMES, 1960-61.—Water temperatures: Maximum, 76°F Aug. 9; minimum, 37°F on several days during January.
Sediment concentrations: Maximum daily, 26° ppm dan. 31; minimum daily, 1 ppm on several days during January.
Sediment loads: Maximum daily, 10,300 tons Jan. 31; minimum daily, 4 tons Jan. 14.
Sediment loads: Maximum daily, 11,000 tons Jan. 31; minimum daily, 4 tons Jan. 14.
Sediment concentrations (1966-61): Maximum daily, 1,680 ppm Feb. 24, 1957; minimum daily, 1 ppm on several days in 1961.
Sediment loads (1966-61): Maximum daily, 1,680 ppm Feb. 24, 1967; minimum daily, 1 ppm on several days in 1961.
REMARKS:—Weasurement of suspended sediment made at bridge on (revised) porvolle-chico Highway, 5.2 miles downstream from gaging station. No appreciable minious sampling point and gaging station except during periods of heavy rainfall.

		Hď	7.9	124 7.5	7.7	7.7	8.0	7.9	73 7.9	7.7	7.6	8.0	7.8	8.0
	Specific	duct- ance (micro- mhos at 25°C)	125	124	116	104	88	97	73	69	66	102	111	128
		dium ad- Borp- for tion ratio	0.3	۳.	<u>ښ</u>	۳.	ď	e.	۳.		ď	e.	e.	.3
		Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO,	Cal- ctum, Mag- ne- sium	55	53	52	46	38	42	33	53	42	46	48	53
	solids ted)	Tons psr day			-									
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	-	ł	1	1		0.07	1	1	!	.11
Chemical analyses, in parts per million, water year October 1960 to September 1961	၁) SPCI	Parts per million	1	1	ł	1	1	1		53	1	1	1	79
60 to		ron (B)	0.1	•	•	•	٦.	•		٠.				•
er 19		Fluo- Ni- ride trate (F) (NO ₂)	1	ł	!	!	1	1		0.1		!	1	.2
Octob		ride (F)	1	1	-	1	-	1		0.1	!		!	
er year		Chloride (Cl)	3.0	1.2	4.0	Φ.	م	2.4	2.0	45	••	1.5	2.0	3.5
ton, wat		Sulfate (SO ₄)	1	!	1	1	!	1	1	2.0	1	1	;	3.0
. mill		te ate (CO)												
ts per	Bi-	car- bon- ate (HCO ₃)	73	20	89	64	20	51	41	39	28	61	64	74
in par	-	fas- Sium (X)	1	1	1	1	I	1		9.0		!	!	1.4
ılyses,		Sodium (Na)	5.6	4.9	5.2	4.4	3.4	4.4	3.7	2.7	3.7	4.5	4.5	5,3
al ans		mag- ne- stum (Mg)	1	;	1	1	!	!	1	3.4	;	!	!	5.6
Chemic		Cal- cium (Ca)	ł	!	;	1	1	1		6.0	1	1	;	12
		Iron (Fe)								0.02				
		Silica (SiQ,)	;	ì	1	ŀ	!	ı	. !	19	!	1	!	12
		Discharge Sill (SiC (SiC)	1,360					2,640	4,980	5,480	2,620	2,520	2,540	1,290
		Date of collection	0ct, 14, 1960	Nov. 11	Dec. 16	Jan. 13, 1961	Feb. 17	Mar. 10	Apr. 13	May 12	June 16	July 13	Aug. 14	Sept. 12

SACRAMENTO RIVER BASIN--Continued

11-4070. FEATHER RIVER NEAR OROVILLE, CALIF. -- Continued

						ř	эшре	Temperature		(°F)	of		water,		ter	water year October 1960	8	tobe	er 1	960	\$	Sep	September	er 1	1961							
M																Day																
Month	1	2	3	4	5	9	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30 3	31	Average.
October Maximum	1	1		1	1	1		1	1	;			1	1	1	1	1	1		1	;	1	1	1		45	4 0	4, 0	53	53	6.0	1
Minimum November Maximum	1 K	5.2	2 2	52		25	52	51		20		1 0		6 7		4.6		7.4		9 4		2.		4:							7 1	1 60
Minimum December Maximum		2 4 2				3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		3 8 8			0 8 8	C & &	6 6 6	7 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3 0 0	9 4 6	6 4 4	4 4 4 7	0 7 7	0 77	4 4 2	4 4 4 7 1 7	4 1 4	4 0 0	1 00		4 4 6 7		4 66		1 68	, 44 , 00
January Maximum Minimum		86				37		38				C 0		0.0		0.0		0.0		38		39		4 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7					_		47	0 0
ary cimum iimum	9 4	4 4 6 4	4 4	9 4 9	9 4 9	9 4 9	9 4 9	9 4 9	4 4 7 7	47	4 4	7 t t c c c	44	3 4	4 4 5	4 4 R R)	2 4	44	44	43	4.5	44	4.6	4 4	44	4 4	4 6 4	4 6	11	11	11	4 5 5 2
March Maximum Minimum	4 4 4 4	4 4 4	4.5	4 4	7 7 7	4 4	43	4.2	4 4 4	4 4	4 4	3 4 4 4	4 4 2	2 4	45	6 4 4	4 4 4 4	44	4 4	44	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 6	9 4 6	9 4 9	9 4 4	4 4	4 4	44	9 4 4	47 44	4 4 4 7	4 4 2
April Maximum Minimum	4 4 0 8	51	52	52	15.	0.0	0,0	644	0 4 4	0.00	0 6 4	5 6	0.04	0.0	51	53	52	53	52	51	4 4	47	4 5	4 4 6	8 9 4	6 4	51	50	511	53		49
May Maximum Minimum	53	52	52	52	53	53	50	54	4 6	53	53	52	52	5.4	56	57	58	59	50	59	58	59	58	58	268	58	5.0	57	57 5	57 5	52	54
June Maximum Minimum	56 55	56	e r	58	62	62	4 6 6	62	44	63	6.4	56 64	6.4	8 9 9	70	71	72	72	71	72	72	72	72	72	72	272	72 70 7	71	70 7	68	11	67 65
July Maximum Minimum	70	7.1	7.0	02	70	70	69	70 6.8	70	71	72	73	73	74 711	74	73	73	7.2	74	74	74 72	74	75	75	72	74 73	74 73	74 72	74 77	72 7	27	73
August Maximum Minimum	73	73	73	73	722	44	74	75	76	75	7 4	75	74	74 72	73	72	72	72	72	72	72	73	73	73	72	72	72 7	02	71 7	71.	272	73
September Maximum Minimum	7.0	110	٤,4	7 o	0 ¢	4 0	A 4	α t	0 4	11	11	11	11	1 1	11		11	11	11	11	11		11	11	11	11	11		11	11	11	11

11-4070. FEATHER RIVER NEAR OROVILLE, CALIF .-- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

		остове	R		NOVEMBE	R			DECEMBER		
1		Suspen	ded sediment		Suspen	ded s	ediment		Suspen	ded	sediment
Day	Mean dis-	Mean	Tons	Mean dis-	Mean		Tons	Mean dis-	Mean		Tons
	charge (cfs)	tration (ppm)	per day	charge (cfs)	tration (ppm)		per day	charge (cfs)	tration (ppm)		per day
1	1680		18	1630			13	4510	127	s	2200
2	1670	3	14	1630		ļ	13	8560	84	s	2070
3	1590		13	1630	4	1	18	4950	21	1	281
4	1370		15	1530			17	3580	18	l	174
5	1390	4	15	1410			15	3180	10		86
6	1430		15	1410			15	2960	6	İ	48
7	1480		16	1430	4		15	2880	5		39
8	1430		15	1470			16	2810			38
9	1440 1390	3	12 11	1440 1430			12 12	2760 2880			30 31
- 1	1060		,,	1480	3		12	2890	4	ĺ	31
11	1360 1380	4	11	1990	7		38	2840			31
13	1380		15	2600	34	s	280	2830		ł	31
14	1370		15	3000	33	١٦	267	2820	4		30
15	1360		ií	2950	11		88	2830			31
16	1350	3	11	2770	6	ì	45	3110	5	ì	42
17	1350	4	15	2740			44	4820	26	S	358
18	1350		15	3590	12	S	126	4860	17	S	236
19	1350		15	3510			100	4020	6		65
20	1350	3	11	3000	6		49	3660			49
21	1350		11	2790			38	3450	4		37
22	1340		11	2300			31	3350			36
23	1350		11	2250	5		30	3280			27
24	1430 1650	3	12 13	2360 3310	100	ĸ	38 1300	3190 3150	3		26 26
26	1670		14	5710	129	s	2300	3090			25
27	1690	4	18	3740	12	٦	121	2810	3	1	23
28	1640		18	3250	==	ļ	35	2300		l	19
29	1630		13	2900	3		23	2150		Į.	23
30	1630		13	2820	l	Į	23	1990	5	ļ	27
31	1630	3	13					1730			19
l'otal	45480		425	74070			5134	104240		L	6189
		JANUAR	Y		FEBRUAR	Y			MARCH		
1	1700		14	11300	62	s	2080	2600	4		28
2	1680	2	9	8490	62	s	1480	2400	4		26
3	1780		10	7800	40	1	842	2420		1	26
4	1720		9	5860	15	1	237	2520	3		20
5	1720	2	9	4390	14	1	166	2460			20
6	1680		9	4170	11	ļ	124	2900	4		31
7	1630		13	3790	8		82	2700			29
8	1640	4	18	3540	8		76	2540			34
9	1740 1910		23 21	10000 11500	154 57	S	5360 1890	3180 3090	11		94 75
			1		1					Ì	
11	1810	2	10	11000	54	5	1700	2940 2720			48 37
12	1770 1740		5	9470 6870	22 19	1	563 352	2720 2740			37
14.0	1660	1	4	5960	13	1	209	2980			32
15	1670		5	6040	ii		179	6560	91	s	1770
16	1690		5	6120	9	l	149	6020	18		293
17	1690	1	5	5290			100	6130	90	s	1590
	1820		5	4450	6		72	5110	16	1	221
18		l	10	3970			64	4480	16		194
19	1770	1			6	1	64	5580	23		347
19	1770 1640	2	9	3920	•					1	157
20	1770 1640 1500	2	9	3840			52	5270	11	l	0.0
20	1770 1640 1500 1350	=	9 8 7	3840 3190	1		34	5190			98 837
20 21 22 23	1770 1640 1500 1350 1610	 2	9 8 7 9	3840 3190 3330	4		34 27	5190 7900	37	S	837
19 20 21 22 23	1770 1640 1500 1350	=	9 8 7	3840 3190			34	5190		S	
19 20 21 22 23 24 25	1770 1640 1500 1350 1610 1320 1820	2	9 8 7 9 11 15	3840 3190 3330 3110 2870	4 3 		34 27 25 23	5190 7900 8850 8120	37 47 25		837 1200 548
19 20 21 22 23 24 25	1770 1640 1500 1350 1610 1320 1820	2	9 8 7 9 11 15	3840 3190 3330 3110 2870	 4 - - 3		34 27 25 23	5190 7900 8850 8120 7080	37 47 25		837 1200
19 20 21 22 23 24 25	1770 1640 1500 1350 1610 1320 1820	2	9 8 7 9 11 15	3840 3190 3330 3110 2870	3		34 27 25 23	5190 7900 8850 8120	37 47 25		837 1200 548 306
19 20 21 22 23 24 25 26 27 28 29	1770 1640 1500 1350 1610 1320 1820 1540 1930 1530	2	9 8 7 9 11 15	3840 3190 3330 3110 2870 2690 2870 2560	3 6		34 27 25 23 22 39 41	5190 7900 8850 8120 7080 7060 6300 5620	37 47 25 16 20 12		837 1200 548 306 381 204 150
19 20 21 22 23 24 25 26 27 28 29 30	1770 1640 1500 1350 1610 1320 1820 1540 1930 1530 1720 3000	4	9 8 7 9 11 15 17 16 12 23 122	3840 3190 3330 3110 2870 2690 2870	3		34 27 25 23 22 39 41	5190 7900 8850 8120 7080 7060 6300 5620 5430	37 47 25 16 20 12 7		837 1200 548 306 381 204 150 103
19 20 21 22 23 24 25 26 27 28 29	1770 1640 1500 1350 1610 1320 1820 1540 1930 1530	2	9 8 7 9 11 15 17 16 12 23	3840 3190 3330 3110 2870 2690 2870 2560	3 6		34 27 25 23 22 39 41	5190 7900 8850 8120 7080 7060 6300 5620	37 47 25 16 20 12		837 1200 548 306 381 204 150

S Computed by subdividing day.

K Computed from estimated-concentration graph and subdividing day.

11-4070. FEATHER RIVER NEAR OROVILLE, CALIF .-- Continued

Suspended sediment, water year October 1960 to September 1961--Continued

-		APRIL			MAY			JUNE	
	Mean	Suspend	ed sediment	Mean	Suspen	ded sediment	Mean	Suspend	ed sediment
Day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	5270		85	5060		160	4530		110
2	5550	8	120	5310		160	4530	1	130
3	6740		290	4740	7	90	4330	10	117
5	8010 7610	21	454 370	4790 4330		65 58	3880 3580		84 68
								1	
7	6830 6440	12	221 160	4680 4620	6	76 87	3340 2890	6	54 47
8	5580		110	4300	1	81	3020		49
9	5260	6	85	4170	8	90	2930	6	47
10	5100		83	5780		230	2520		34
11	4580		74	5780		170	2320	5	31
12	4870	8	105	5490	10	148	2660	4	29
13	5020		110	5350		140	2970		32
14	4350 4260		82 69	5090 4790		110 78	2840 2720	4	31 29
		1			, ,			i 1	
16	4250 4850		69 92	5160 5140		84 97	2720 2450		22 20
18	5120	7	92 97	5170	- A	112	2230	3	18
19	4500		61	5460		130	2490		20
20	4030		54	5340		130	2420		20
21	3850	5	52	5020	8	108	2360	3	19
22	4890	14	185	4850		79	2420		20
23	4390		140	4510		61	2420		20
24	3850 3780	8	83 61	4260 4300	4	46 46	2400 2380	4	26 32
2300			61		_ 				
26	3850		62	4180		45	2560		35
27	3950 4150	6	64	3560	4	38 37	2720 2740	5	37 37
28	4460		67 84	3450 3420		46	2720		37
30	4860	9	118	3690		70	2680	5	36
31				3960	8	86			
Γotal	150250		3707	145750		2958	86770		1291
		JULY			AUGUST			SEPTEMBER	
1	2680	T I	29	2640		29	1920		21
2	2660	1 == 1	29	2640		29	1680		18
3	2660	4	29	2610	4	. 28	1680	5	23
4	2660		29	2590		28	1680		23
5	2660		36	2580		28	1670	1	23
6	2650	6	43	2580	4	28	1650	5	22
7	2660 2640		43	2580		28 28	1650 1560		22 17
9	2600	4	36 28	2580 2560	5	35	1400		15
10	2560		28	2560		35	1390	4	15
	2560	5	35		i i	35	1340	1 1	14
11	2560		35	2560 2540	5	34	1260		14
13	2560	4	28	2540		34	1170		13
14	2550		28	2560		35	1170	4	13
15	2540		27	2550		34	1160		13
16	2560	4	28	2520	6	41	1180		13
17	2530		27	2530		41	1200		13
18	2540 2520		27 27	2500 2520		34 27	1220 1220	4	13 13
20	2540		34	2500		27	1210	4	13
	2000	5		2450		26	1200		10
21	2530 2540	5	34 34	2450		26 27	1200	3	10
23	2560		35	2500		27	1150		9
24	2560		28	2490	4	27	1140		9
25	2570	4	28	2480	6	40	1070		9
26	2580		28	2500		40	978	3	8
27	2580		35	2500		27	970		8
28	2560	5	35	2240	3	18	984	=	8
29 30	2600 2600		35 28	2120 2180		17 24	1010 967		8 10
2000	2620	-4	28 28	2080	4	22	707		
31								+	
otal	80190		974	77240		933	39069		420

SACKAMENTO ATTEN DASIN-COLLINGA 11-4070. FEATHER RIVER NEAR OROVILLE, CALIF.--Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis B, bottom withfrawal tube; C, chemically dispersed; D, decandidin, N, in mative water; P, pinet; S, sieve; V, visual accumulation tube; W, in distilled water)

Mothod	jo.	analysis	۸	^	>	>
		2.000				
		1.000				
	neters	0.500	100			1
	ı millim	0.250	93			ŀ
diment	ated, 1	0, 125		84		1
Suspended sediment	se indic	0.062	74	75	84	100
	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000				
	t finer	0.016				
	Percen	0.008				
		0.004				
		0.00				
Codimon	discharge	(tons per day)				
Sediment	concen- tration	(mdd)	405	282	302	171
	Discharge (cfs)	Ì	18,900	22,100	17,400	6,790
	Per-	GF.	49	47	49	46
	ling	point				
	Time (24 hour)		1430	1830	1730	0060
	Date of collection		Jan, 31, 1961	Jan. 31	Feb. 9	Mar. 17

SACRAMENTO RIVER BASIN--Continued

11-4196. YUBA RIVER NEAR SMARTVILLE, CALIF.

LOCATION: --Approximately 0.5 mile downstream from State Highway 20 bridge, 2.3 miles northwest of Smartville, 4 miles downstream from Deer Creek, and 5 miles downstream from Deer Creek, and 5 miles downstream from Englebright Dam, Yuba County.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961.

REMARKS:--Records of discinarge for geging stations at Englebright Dam and Deer Creek near Smartville are combined to give the flow at this station.

		ЪН	7.9	6.7	7.9	7.8	7,9	7.8	7.8	74 7.9	7.7	7.7	7.9	8.1
	pecific	duct- ance micro- mhos at 25°C)	130	131	109	104	101	85	76	74	69	74	104	119
	-08:	ad-ad- Borp-Ction tion ratio	0.2	63	7	63		2	۲.	23	Š	۲,	~	.2
		Non- car- bon-	2	4	6	က	7	ıo	es	0	0	63	0	1
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	62	28	21	47	44	40	35	32	30	34	46	25
	solids ted)	Tons c												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	i	ł	1	1	ŀ	}	0.07	1	1	!	.11
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dis (c	Parts per million	-	1	1	}	1	1	1	52	1	1	}	80
60 to		- B E G	0.0	۰.	۰.	٥.	•	٦.		۰.	•	۰.	۰.	۰.
er 19		rrate (NO ₃)	1	1	!	!		1		0:	1	1	!	•1
Octob		Fluo- ride (F)	1	!	!	!	1	!		0.0	!	1	1	•1
er year		Chloride (C1)	4.0	2.0	1,2	1.8	!	1.8	2.5	1,6	c,	œ.	2.8	3,2
ion, wat		Sulfate (SO4)	ŀ	1	1	1	1	1	ı	4.0	1	-	1	6.0
mi11	,	CO Ste												
ts per	Bi-	car- bon- ate (HCO ₂)	64	99	28	54	25	43	39	39	40	39	26	62
n par	č	stum (X)	1	1	1	1	!	;		0,5	1	!	1	1.4
lyses,		Sodium (Na)	3.6	3.7	3,1	2.7	3.0	2.2	1.3	2.4	2.4	2.1	2.7	2.9
al ana	7,00	mag- ne- stum (Mg)	1	1	ł	1	1	1	ł	2,3	1	;	i	2.9
Chemic		Cal Ctum (Ca)	-	1	!	ł	!		!	9.2	1	1	!	16
		Iron (Fe)								0.01				
		Silica (SiO _g)	1	1	;	1	1	1	1	13	1	L	!	91
		Mean discharge (SiO ₂) (cfs)	414			638	2,535	1,350		2,180				- 1
		Date of collection	Oct. 3, 1960	Nov. 3	Dec. 8	Jan. 3, 1961	Feb. 9	Mar. 14	Apr. 5	May 4	June 12	July 7	Aug. 14	Sept. 12

11-4215. YUBA RIVER AT MARYSVILLE, CALIF.

LOCATION .- On Simpson Lane Bridge in Marysville, Yuba County, 800 feet upstream from site of former gaging station, and approximately 2 miles upstream from mouth.

PANTAGE REAL.-1,340 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961.

REMARKS. No discharge records available.

		рН	7.9	7.9	7.8	7.6	7.9	7.8	7.9	7.8	7.5	7.9	8.0	8.0
	Specific con-	ance (micro- mhos at 25°C)	134	169	113	109	104	68	78	78	16	118	146	166
		dum ad- sorp- tion tion ratio	0.2	8	ಣ	8	2	α.	٦.	.2	Ö	2	~	ς.
	COs	Non- car- bon-	8	12	0	21	-	က	က	63	0	9	12	15
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	64	77	21	48	46	39	36	34	33	25	69	77
-	solids ited)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot	1	!	I	!	1	!	-	0,07	ł	!	1	.15
Chemical analyses, in parts per million, water year October 1960 to September 1961) \$10	Parts per million	1	-	1	Ī	!	1	1	51	1		1	107
60 to		ron (B)	١-		•		٦.			•	۰.	•	•	٠.
er 19		Ni- trate (No ₂)	1	1	!	!	!	!		0:0	!	-	!	፣
Octob		Fluo- ride tr (F) (i	1	1	!	1	1	!		••	1	!	_	-:
er year		Chloride (Cl)	3.0	1.5	2.0	1,2	!	1.5	2.0	2.0	;	1,5	2,5	2.5
ion, wat		Sulfate (SO4)	1	1	I	1	1	1	-	3.6	1	1	1	17
. m111	į	(CO)												
ts per	Bi-	car- bon- ate (HCO ₃)	89	79	64	26	22	4	4	33	42	26	2	16
n par	Ė	F tas (X)	1	ŀ	;	ļ	1	1	1	4.0	1	1	ł	ē.
lyses, 1		Sodium (Na)	3.5	3.9	4.5	2.7	3.0	2.2	1.1	2.0	2.1	3.0	3.7	3,3
al ana	,	nie- sium (Mg)	1	1	1	ł	1	1	1	2,9	1	ļ	1	6.6
Chemic		Cal- (Ca)	1	1	1	I	ł	1	l	9,1	1	1	ŀ	20
		Iron (Fe)								0.0				
		Silica (SiQ _e)	1	1	1	1	1	1	_!	12	1	1	1	20
		Mean Silica discharge (SiO ₆) (cfs)												
		Date of collection	Oct. 3, 1960	Nov. 3	Dec. 19	Jan. 4, 1961	Feb. 9	Mar. 14	Apr. 5	May 4	June 12	July 7	Aug. 14	Sept. 12

SACRAMENTO RIVER BASIN--Continued

11-4217. FEATHER RIVER BELOW SHANGHAI BEND, NEAR YUBA CITY, CALIF.

LOCATION: --At gaging station, north of Barry Road, approximately 3 miles west of Olivehurst, and 5 miles south of Yuba City, Sutter County. REMAINALE. --Chemical analyses: October 1988 to September 1961.
REMAINS: --Records of discinate given in State of California Bulletin No. 23-61.

Chemical analyses, in parts per million, water year October 1960 to September 1961

	Hď	7.9	7.9	7.7	7.7	7.9	7.8	7.7	7.8	7.8	7.8	7.9	154 7.8
Specific con-	duct- ance (micro- mhos at 25°C)	136	140	119	116	97	66	192	82	95	120	126	154
	dum ad- Borp- tion ratio	0,3	65	6	e	2	6.	-	. 67	2	e.	e,	e.
ress CO,	Non- car- bon-	0	0	0	0	0	0	-	0	0	0	0	0
Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	09	28	53	20	41	41	34	35	41	22	53	65
solids ted)	Tons per day												
Dissolved solids (calculated)	Tons per acre- foot	1	ľ	!	1	!	!		0.07	!	1	i	.13
Sta (c	Parts per million	;	!	ł	1	1	!		55	1	1	1	86
	- 10 B	0,1	0,	٦.	•	•	7.	ď	•				
	Ni- trate (NO ₃)	ł	ļ	1	1	!	1	ł	0.0	1	ł	ŀ	•3
	F) Ge	1	1	I	1	1	1	;	0.0	ŀ	1	ľ	•
	Chloride Fi (Cl)	3,0	2.0		1.0	1,2	1.5	2.0	2.1	1,3	2.0	3.2	4.8
	Sulfate (SO4)	i	!	ı	ļ	ł	I	ł	3.2	1	1	1	0.0
į	(CO)												
Bi-	car- bon- ate (HCO ₃)	92	79	99	64	52	54	40	43	22	65	69	82
Po- tas- stum (K)			;	1	1	!	1	1	0.4	!	ł	1	1.2
	Sodium (Na)	5.6	5.7	4.6	4.5	3.4	3.7	4.1	2.6	3,1	4.8	4.9	5.4
7,0	mag- ne- stum (Mg)	1	;	1	1	1	1	!	2.9	1	1	1	4.9
	Cal- ctum (Ca)	1	ì	1	1	}	1	1	9,2		1	1	18
	Iron (Fe)								0.02				
	Silica (SiQ ₂)	i	!	1	ŀ	!	L	_	14	i	1	ı	17
	Mean discharge (cfs)	1,390	1,120	2,460	3,420	a6,000	4,280	10.900	4,800	1,730	606	881	564
	Date of collection	Oct. 3, 1960	Nov. 4	Dec. 9	Jan. 4. 1961	Feb. 9	Mar. 13	Anr 6	May 3	June 12	July 7	Aug. 15	Sept. 12

a Instantaneous discharge.

11-4240. BEAR RIVER NEAR WHEATLAND, CALIF.

LOCATION: --Wear gaging station, at bridge on U.S. Highway 99E, I mile southeast of Wheatland, Yuba County, and 6.5 miles downstream from Rock Creek. BARMANGE MASA.--259 square miles. Records AMALALANGE STATE ARCORDS AND ANTALANGES. --Chemical analyses: October 1963 to September 1961.

		hЧ	8.2	8,0	7.8	7.9	7.8	8,1	7.9	8.0	8,2	8.4
	Specific	duct- ance micro- nhos at 25°C)	324	328	109	128	176	278	123	206	265	280 8.4
		ad- ad- Borp- tion ratio					e.	۳.	Ε.	۳.	e.	.2
		Non- car- bon-	38	37	Ξ	17	20	33	10	12	29	28
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	155	157	46	28	92	128	22	88	134	130
	Bolids ted)	Tons per day										
er 1961	Dissolved solids (calculated)	Tons per acre- foot	ŀ	1	I	ŀ	!	1		0,17	1	. 23
Septembe	Big (c)	Parts per million	1	1	1	1	}	1	1	125	1	166
60 to		Bo- ron (B)	0.0	٠,	•	۰.	• 	٠		۰.		
er 190		Fluo- Ni- ride trate (F) (NO ₃)			l	1	Ī			0,3		
ctob		Fluo- ride (F)	1	Ī	Ī	I	Ī	ŀ		0.1		- 1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	14	12	1,5	3.0	5.0	0.6	4.0	5.5	8.8	13
ion, wat		Sulfate (SO4)	ı	!	1	ŀ	!	i		21	!	24
. mill		bon- ate (CO)	0	0	0	0	•	0	0	0	•	က
rts per	-ia	car- bon- ate (HCO ₃)	143		43	2	89			8	128	119
ın pa	ć	tas- stum (K)	ŀ	1	1	1	ŀ	1	!	1.8		
lyses,		Sodium (Na)	6.5	8,4	4,1	3.5	6.2	7.2	1.7	8.9	9.9	5.8
cal ana	-	mag- ne- stum (Mg)	-	1	1	;	1	!	1	6.8	1	15
Chemi		Cal- clum (Ca)	;	1	1	!	1	!	;	21	;	27
		Iron (Fe)							-	0.0		-
		Silica (SiQ ₂)		-	1	ŀ	1	1	;	16	;	19
		Discharge Suice (cfs) (SiQ _a				128		7.6	105	14	0.9	7.0
		Date of collection	Oct. 3, 1960	Nov. 3	Dec. 8	Jan. 3, 1961	Feb. 9	Mar. 10	Apr. 5	May 4	June 13	Sept. 11

SACRAMENTO RIVER BASIN--Continued

11-4249. BEAR RIVER NEAR MOUTH, NEAR RIO OSO, CALIF.

LOCATION: --At bridge on Feather River Boulevard, 0.3 mile northwest of Rio Oso, Sutter County, and approximately 3 miles upstream from mouth. RECORDS AVALIABLE. --Chemical manages: November 1985 to September 1981. RECORDS AVALIABLE. --Chemical analyses: November 1985 to September 1981.

		Н	7.7. 8.0.0.0 0.00.0
	Specific con-	duct- ance (micro- mhos at 25°C)	199 136 185 252 147 401
			0 EEE 4 11
	co,	Non- car- bon- ate	20 7 14 16 12 20
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	84 59 75 104 66
	solids ted)	Tons per day	
1961	Dissolved solids (calculated)	Tons per acre- foot	0.34
Chemical analyses, in part per million, water year October 1960 to September 1961		Parts per million	251
0 to		Bo- ron (B)	0.0
r 196		rate (NO.)	0.4 0.3
ctobe		Fluo- ride (F)	
er year o		Chloride ride trate ron (C1) (F) (NO ₂) (B)	11 3.5 3.0 10 4.8
ion, wate		Sulfate (SO ₄)	24
m111:		Pon- ate (CO ₃)	
t per		car- bon- ate (HCO ₃)	78 63 74 107 66 139
in par	į	tas- stum (K)	6.5
lyses,		Sodium (Na)	6.5 7.0 9.6 30.8
al ans	,	mag- ne- stum (Mg)	16
Chemic		clum (Ca)	28
		Iron (Fe)	0,13 28
		Silica (SiQ _e)	35
		Mean discharge (cfs)	
		Date of collection	Dec. 19, 1960 Jan. 4, 1961 Peb. 9 Mar. 10 May 4

11-4250, FEATHER RIVER AT NICOLAUS, CALIF,

DALIGN.—At gaging station at highway bridge at Nicolaus, Sutter County, and 2.9 miles downstream from Bear River.

DALIAGE AREA.—5, 520 square males, approximately.

RECORDS AVAILABLE.—C-Constoal analyses: March 1951 to September 1961.

Water temperatures: March 1951 to September 1958 to September 1961.

Water temperatures: March 1951 to September 1959 to September 1961.

Bardness: Maximum, 79 ppm Nov. 23, 24; minimum, 159 ppm Apr. 5, minimum, 59 ppm May 22-31.

Bardness: Maximum, 94 ppm Nov. 23, 24; minimum, 159 ppm Apr. 5, minimum, 169 ppm May 22.

Specific conductance: Maximum, 94 ppm May 19-31, minimum, 165 ppm Oct. 8-14, 1957; minimum, 43 ppm May 19-31, 1958.

Bardness: Maximum, 94 ppm Nov. 25, 1956-65, 1956-

Collection Cal. Magnetic per million water year (ctober 1965) Cal. Magnetic per million water year (ctober 1966) Cal. Magnetic per million																			
Chemical analyses, in parts per million, water year October 1960 to September 1961 Cal. Mag- Car. Cal.				7.4	7.5	2.5	7.7	7.7						7.2	7.0	7.2	6.7	6.7	6.7
Cal Magnetic Cal Magnetic Cal Magnetic Cal Magnetic Cal Magnetic Cal Magnetic Cal Magnetic Cal Magnetic Cal Magnetic Cal Magnetic Cal Magnetic Cal Magnetic Cal Cal Car		Specific con-	duct- ance (micro- mhos at 25°C)	145	148	150	137	189	127	121	117	122	129	105	100	107	112	109	110
California Cal		ģ,	ad- gorp- tion ratio	0.3	m.	4.4	4	e.	ε.	ů.	, e		е.	ε.	е.	е.	ຕຸ	ε.	<u>د</u> .
Chemical analyses, in parts per million, water year October 1960 to September 1961 Dissolved solids			Non- car- bon-	0	0	0 0	0	15	•	r .	70	· H	4	-	8	0	0	2	က
Mean Silica Iron chum chum chum chum chum chum chum chum		Hardi as Ca	Cal- cium, Mag- ne- stum	28	09	09 8	22	79	21	20	2 4	52	54	42	42	46	46	44	46
Mean Gillon Cal Mag- Sodium tas Don- Car C		solids 180°C)	Tons per day	1	215	216	750	1	1,160	1,240	808	652	621	ł	3,110	1,350	820	1,620	2,550
Mean Gillon Cal Mag- Sodium tas Don- Car C	r 1961	solved a	Tons per acre- foot	1	0.13	E :	12	1	.12	.12	1.1	12	11.	1	97	97	.11	Ξ.	Ξ.
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	8eptembe	Dis (resi	Parts per million	1	94	66 6	68	}	88	98	8 8 8	82	83	ł	73	74	78	78	80
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	to		ron (B)																
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	r 196		Ni- Frate (NO ₂)															_	_
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	ctobe		Fluo- ride (F)																
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	er year 0		-																
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	ion, wat																		
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	. m11	į	CO)																
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	ts per		_	74	62	83	2	78	63	57	86	62	19	20	49	26	26	51	52
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	n pa	Š	sium (X)																
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	lyses, i		Sodium (Na)	6.0	6.1	4.6	9	7.1	5.8	4.0	0 10	8.0	5.7	4.4	3,9	4.0	4.3	4.0	4.0
Mean Silica Iron (cfs) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (SiQ ₂) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe) (Fe	al ana	Š	sium (Mg)	5.6	6.1	6.1	5.0	8.3	5.8	6,1	0.00	6.0	လ ထ	4.4	4.1	5.5	e 6	4.6	4.5
Mean Silica (cfs) (cfs) (cfs) (slO ₄) (cfs) (3lO ₄) (cfs) (3lO ₄) (cfs) (3lO ₄) (cfs)	Chemic		Cal- ctum (Ca)	14	7	4.6	121	18	11	25	33	12	12	9.6	97	9.5	12	ខ	11
Date Mean Silica of discharge (StO ₄) (Cfs) (StO ₄) (Cfs)			Iron (Fe)																
Date Mean of discharge collection (cfs) (c			Silica (SiQ.)																_
Date of collection collection collection collection collection cort. 11-10, 1960 collection cort. 11-20 collection col			Mean discharge (cfs)	l										11,760	15,760	6,771	4,037	7,705	11,800
				0ct. 1-10, 1960	Oct. 11-20	Nov 1-12	Nov. 13-22	Nov. 23, 24	Nov. 25-30	Dec. 1-11	Dec. 21-31	Jan. 1-15, 1961	Jan. 19-31	Feb. 1-9	Feb. 10-18	Feb. 19-28	Mar. 1-10	Mar. 11-20	Mar. 21-31

SACRAMENTO RIVER BASIN--Continued

11-4250, FEATHER RIVER AT NICOLAUS, CALIF. -- Continued

1			ЬН	6.7	8.9	٠.	8.9	8.9	6.9	7.5	7.6	٠ د د	0.	7.1	7.5	7.8	7.3	7.8	
	Specific	-uoo	duct- ance (micro- mhos at 25°C)		98				83	98	101	3	132	134	133	153	162	155	108
		ģ.	ad- ad- Sorp- tion ratio	0.3	<u>د</u>	r.	-:	- :	۲.	?	w.	?	?	۳.	۳.	4.	4.	4.	0.3
	ess	1	Non- car- bon- ate	3	0	7	4	9	7	4	н (200	>	0	0	0	0	0	-
	Hardness	as CaCO	Cal- ctum, Mag- ne- sium	39	36	8	38	38	38	38	42	200	ຣີ	28	26	63	99	62	45
tinued	solids	(residue at 180°C)	Tons per day	1,770		;	1	!	648	!	377	170	171	ľ	154	108	165	1	a763
1Con	Dissolved solids	due at	Tons per acre- foot	60.0	60.	i	1	l	80.	!	.10	3	.12	ł	.12	.13	.14	1	a76 a0.10
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued	Dis	(resi	Parts per million	89	64	!	1	ŀ	29	ļ	77	85	O.S.	ł	85	26	104	1	a76
Septe			ron (B)																
60 to			Fluo- Ni- ride trate (F) (NO ₃)																
er 19			Fluo Tide (F)																
ar Octob			Chloride (Cl)																
water ye			Sulfate (SO4)																
ton,		į	(C)																
r mill		Bi-	car- bon- ate (HCO ₃)	44	44	46	41	39	38	41	20	92	8	71	70	82	83	83	53
rts pe		ŕ	tas- stum (K)																
, in par			Sodium (Na)	4.0	3.9	4.0	2.1	0.0	1.9	3.4	4.2	, o	0.2	5.8	5.3	6.5	7.0	7.2	4.3
alyses		700	mag- ne- sium (Mg)	4.1	3,4	6,6	6	6.6			4.1			8.9	5.7	6.8	7.5	9.9	4.8
cal an			Cal- ctum (Ca)	8.8	œ œ	9.6	80	80	8.8	8.4	2	7.	27	12	13	14	14	14	10
Chemi			Iron (Fe)																
			Silica (SiQ _e)																
			Mean discharge (cfs)	9,659					4,066	3,854	1,965	9 9 9	707			414			3,716
			Date of collection	Apr. 1-10, 1961	Apr. 11-20	Apr. 21-30	Kay 1-10	Kay 11-21	May 22-31	June 1-5	June 6-18	June 19-30	outh 1-12	July 13-31	Aug. 1-31	Sept. 1-10	Sept. 11-20	Sept. 21-30	Weighted average

a Includes estimates for missing data.

SACRAMENTO RIVER BASIN--Continued

11-4250. FEATHER RIVER AT NICOLAUS, CALIF. -- Continued

	ي ا	.	!			
	Aver-	age	61 47 38	37 54 54	60 65 81	86 83 75
		31	55 37	51 5	121	080
		30	54 42 37	4 1 2	4.68	80 82 66
		29	52 4 4 0 4	39	64 66 81	84 82 67
		28	51 40 39	40 45 54	63 68 79	86 82 69
		27	54 40 38	40 54 53	6.8 8.2	84 79 69
1		26	55 42 37	40 50 52	62 67 85	83 76 73
196		25	58 45 39	38 51 55	68 83	84 78 68
Temperature (°F) of water, water year October 1960 to September 1961		24	47	35 41 55	55 69 87	84 81 69
tem		23	61 46 38	38 50 50	4.0 6.6 8.5	83 82 67
Ser		22	0.4.60	4 6 5 4 5 5 4 5	56 83	92 81 73
to,		21	59 45	33 54 54	8 6 6 8 8 8 8	94 82 76
1960		20	63 44 39	37 43 55	59 66 87	91 85 77
er		19	63 44 39	35 41 53	5.6 8.6 8.6 8.6	92 77 75
ctol		18	64 44 39	41	60 67 87	93 81 76
ır o		17	61 43 34	1 0 5 5	63 66 83	89 82 74
ye	Day	16	63 45 36	53	65 83	87 79 74
ter		15	62 44 37	41	66 87	89 80 75
		14	66 45 37	1 1 4 5	4 0 0 4 10 10	87 82 73
ter		13	61 46 36	1 2 4	57 65 81	88 82 75
f w		12	61 46 36	53.9	6.4	86 86 80
<u>ج</u> ه		=	58 46 40	35 543 543	59 60 76	93 80 80
٤		10	58 51 41	44 42 53	60 62 76	86 80 77
ture		٥	55 49 36	4 4 6 6 9 9 9 9	981	91
era		ω	55 50 34	37 42 54	62 65 74	89
remp		^	59	6 4 6 4 8	5.4	80 80 80 4 0 4
•		9	67 52 37	32 4.4 53	58 73	81 87 74
		5	69 54 39	5.6 5.0 5.0	60 65 72	88 88 83
		4	71 54 41	32 40 53	62 64 71	83 86 81
		ო	70 54 46	92 63 53	62 65 70	86
		7	68 54 39	4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0 4 6	88 6 7 4 4
		-	68 54 40	3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	7.2	85 82 82 82
	Month	MORE	October November December	January February March	April May. June	JulyAugust

11-4270. NORTH FORK AMERICAN RIVER AT NORTH FORK DAM, CALIF.

LOCATION. --Temperature recorder at gaging station, 50 feet upstream from spillway of North Fork Dam, Placer County, 2 miles upstream from Middle Fork, and 4 miles northeast of Auburn.
DRAINAGE AREA. --343 square miles.

RECORDS AVAILABLE. --Water temperatures: November 1969 to September 1961.

EXTREMES 1960-61.--Water temperatures: Maximum, 80°F Aug. 10-14, minimum, 43°F Jan. 6-9.

EXTREMES, 1969-61.--Water temperatures: Maximum, 80°F Aug. 10-14, indimum, 43°F Jan. 6-9, 1961.

1961
September
\$
1960
October
year
water
water,
of
(°F)
Cemperature

							١	١																: :							
March															Δ	Day															Average
Month	-	2	၉	4	5	9	7	ω	٥	2	=	12 1		4	15 1	1 9	17 1	18	9 20	-	21 2	22 2	23 2	24 25		26 27	7 28	3 29	30	31	Miniage
October Maximum	68	89	68 5.8	5.8	67	19	67 (59	57	6.6 5.5	65 6		65 6	49	63 6	62 6	62 62		62 62 62 61		61 61	61	1 61		60 59	59	59	59	59	59	63
November Maximum Minimum	0.00	50	ς τ. Ο Ο	5.0	55	ης τ. Ω ας	9 8	€ 60 60 60 60 60 60 60 60 60 60 60 60 60 6		5.0			575	7.9	56 5							53				52	2 52	51		11	
December Maximum	51	5.1	51	r 4	4 4	5 4 4	64	00	64	0, 80	8 7 7	α w	4 8 4	47	4 7 4 4 4 4	4 9 4	46 47		46 46		46 46 46 46	4 6	5 4 5	4 4 5	5 4 5 5 4 5	4 5 5	5 4 4 5	4 4	4 4	4 4	47
January Maximum	7 7 7	777	4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	7 7 7	7 7 7	6 4 4 6 9 9	43	43 6	4 4	7 7 7 7 7 7	4 4 4 4 4	4 4 4 4	7 7 7 7 7 7 7	4 4 4 4	4 4 4 4 4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		45 45		45 45	4 5	5 4 6	4 4	5 46	4 4	4 6	4 6	44
February Maximum	47	48	0 4 4 0 8	64	50	51	50	50	50.0	020	64	644	7 67	64	7 6 7	4 6 7	48 48		47 47		47 48		48 48 48 48	8 4 8	8 4 4 8 4 8	8 4 4	8 4 8	11	11	11	4 4 8
March Maximum Minimum	0 4 8	5 C	ה ה	(C	0 4 0 4	64	0 0	40	64	r 64	50 5	200	51 5	52	51 5	51	51 51		52 52		51 53		54 54 54 53		53 51	51	1 51	51	50	51	50
April Maximum Minimum	52	54	3.5 4.0	ر 4 م	5.5	ን ጉ ጉ	4 50	54	2 4	4 4 5	54	54	53.5	8 80	54 5	5.5	56 57 55 55		55 55		55 53		52 52		52 52	53	3 55	55	55	11	53
May Maximum Minimum	58	5.7	R 7.	ac ao	η, η 60 60	58	57	5.8	5.00	5.8	5.58	555	5.4	5.8	58 5	58	61 62 59 60		60 60		60 62 57 57		60 61		62 62 60 60	62	2 63	62	62	62	58
June Maximum	11	11	11	11	1.1	11	11	11	11	11	11		$\frac{\cdot \cdot \cdot}{\cdot \cdot \cdot \cdot}$	11	+	11	11		11		11		11		11	11	11	11	11	11	11
July Maximum Minimum	75	77	77 76	76	75	7.3	74	74	75	75	75	75	78 7	78	78 7	78 77	78 77	7 8 7	78 78		78 79		79 79		79 79	7 9 7 8	9 79 8 78	79	7 7 8	7.8	77
August Maximum Minimum	77	77	7.7	78	7.8	77	78	79	6 L	80	08	80	9 0 8	6 2	7 67	79 7	7 67	7 77	97 97 97 97		97 97 97 97		79 79 79 79		97 97 97 97	<u> </u>	79 78 78 78	78	3 78	78	79
September Maximum	78	7.8 7.8	4 4 8	35	75	76	75	75	73	73	4 41	73	73 7	73	72 7	72 7	71 7	7 07	07 07		07 07		70 70		70 69	9 9	8 6 8 8 8 8	68	89 68	1.	72

11-4335, MIDDLE FORK AMERICAN RIVER NEAR AUBURN, CALIF.

LOCATION: --At gaging station, 0.5 mile upstream from Mountain Quarry Co. plant, 1.9 miles upstream from mouth, and 3.5 miles northeast of Auburn, Placer County. DARINGE AREA. -619 square miles. Cotober 1958 to September 1961.

		Hď	7.4	7.6	7.6	7.6	7.3	7.7	7.1	7.4	7.3	7.6	7.8	7.7
	Specific	duct- ance (micro- mhos at 25°C)	93	92	72	75	52	24	28	31	32	57	83	94
	ģ.	ad- ad- sorp- tion ratio	0.2		.2	7	2	e.	.1			.2	.2	.2
	co,	Non- car- bon-	7	9	61	-	6	61	п	0	0	-	0	5
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	38	36	30	59	21	22	12	12	13	24	34	37
	solids ted)	Tons per day												
т 1961	Dissolved solids (calculated)	Tons per acre- foot	ŀ	ł	1	1	1	1	ł	0.03	1	1	1	80.
Septembe	ejd S	Parts per million	1	1	1	1	1	1	1	24	1	1	1	19
5		(B) Bo	0,1	•	•	٥.	٥.	•	0.	٥.	•	٥.	•	۰.
196		Ni- trate (NO ₃)	1	1	!	ŀ	1	l	1	0:0	1	1	;	٦
tobe		Fluo- Ni- ride trate (F) (NO ₃)	1	ì	ŀ	I	1	ŀ	1	0.0	1	I	1	٦.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (CI)	5.5	5.0	2.2	2.2	1.5	3.4	1.8	1.6	9.	2.4	3.7	7.0
ion, wat		Sulfate (SO ₄)		1	1	1	ŀ	;	1	0:0	1	1	1	4.0
딉	į	ate (CO ₃)												
ts per	Bi-	car- bon- ate (HCO ₂)	38	36	34	34	22	24	13	15	17	28	45	39
n par	ć	tas- sium (K)	1	ł	ŀ	ł	ł	¦	ł	0.5	ļ	1	ł	6
lyses, 1		Sodfum (Na)	3.0	2.9	2.6	2.5	2.4	3.4	9.	1.7	1.3	2.0	2,2	3,3
al ana	,	mag- ne- stum (Mg)	-	ļ	1	I	ŀ		1	6.0	ŀ	;	i	2.3
Chemic		Cal- ctum (Ca)		¦	ļ	1	1	ŀ	ŀ	3.4	ł	1	1	11
		Iron (Fe)								0.02				
		SiO ₂)	1	ŀ	1	ł	ŀ	!	ŀ	8.9	!	ł	1	13
		Discharge Silica (cfs) (SiO ₂)	99		233		4,120		3,010	1,960	688	204	53	38
		Date of collection	Oct. 7, 1960	Nov. 3	Dec. 8	Jan. 3, 1961	Feb. 10	Mar. 3	Apr. 5	May 1	June 12	July 5	Aug. 14	Sept. 12

Sediment discharge measurements and particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B. bottom withdrawal thus; c, chemically dispersed; D, decandation; N, in native water;
P, pipet; S, steve; V, visual accumulation tobe; W, in distilled water)

	N. Call	of o	analysis		>
			2,000		
			1.000		
		eters	0.500		100
		millim	0.250		66
	Iment	ated, in	0.125		6
	Suspended sediment	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000		92
	Suspen	han siz	0,031		
		finer t	0.016		
		Percent	0.008		
			0.004		
			0.00		
() () () () () () () () () ()	Sodimont	discharge	(tons per day)	45	467
	Sediment	concen- tration	(mdd)	42	22.00
		Discharge (cfs)		399	2,980
	Water		(°F)	48	:
	60.00	ling.	point		
		Time (24 hour)		1025	1615
		Date of collection		Jan. 31, 1961	Apr. 4

11-4455. SOUTH FORK AMERICAN RIVER NEAR LOTUS, CALIF.

LOCATION: --At gaging station, 0.4 mile downstream from Greenwood Creek, 2.4 miles northwest of Lotus, El Dorado County, and 3.3 miles northwest of Coloma. DRAINAGA ARRA.--GS square miles.

RECORDS AVAILAGE.--Chemical analyses: October 1958 to September 1961.

Water temperatures: December 1959 to September 1961.

Water temperatures: Maximum, 82°F June 26, Aug. 7; minimum, 35°F several days during January.

EXTREMES, 1960-61.--Water temperatures: Maximum, 86°F July 20, 1960; minimum, 34°F Jan. 2-6, 1960.

		Нq	56 7.0	7.3	7.4	7.5	9.	7.6	34 7.2	7.2	7.8	7.5	7.3	7.6
	Specific	duct- ance (micro- mhos at 25°C)	56	22	68	80	93	64	34	34	35	20	41	49
		Borp- Formation	0.3	<u>.</u>	e.	۳.	es.	e.	۲.	N.	~	e.	۴.	.2
	co ₃	Non- car- bon-	4	٦	~	0	00	0	-	0	0	0	0	-
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	20	21	28	34	38	22	14	=	13	19	14	17
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	ŀ	;	!	!		0.04	1	!	!	.04
Chemical analyses, in parts per million, water year October 1960 to September 1961	and o	Parts per million	-	!	1	1	!	!	;	27	1	1	!	32
60 to		. B. B.	0.1	٦.	۰.	•	۰.	•	_	٦.	_	۰.	۰.	o.
er 19		Fluo- Ni- I ride trate 1 (F) (NO ₂)	!	!	!	!	!	<u> </u>		_	!	!	1	•
Octob		Fluo-		1	!	1	1			0.0	1	!	1	•
er year		Chloride (C1)	4.8	4.0	3.0	2.8	3.2	4.5	2.1	1.6	«·	2.6	1.6	5.0
ion, wat		Sulfate (SO ₄)	-	Ī	1	!	!	1	1	0.0	!	ł	1	۰.
. mill		Co ate										_		
ts per	Bi-	car- bon- ate (HCO ₃)	20	24	35	22	38	28		17	19	24	52	20
in par	20	tas- stum (K)		1	1	;	1	!		0.3	1	;	1	9.
lyses,		Sodium (Na)	2.7	2.8	3,3	3.4	3.6	3,4	6.	1.6	1.8	2.5	3.1	2.1
al ans		mag- ne- stum (Mg)	;	1	1	1	;	!	1	0.0	!	!	!	1.0
Chemic		ctum (Ca)	1	!	!	!	ŀ	!		4.4	!	!	!	5.2
		Iron (Fe)								0.04				
		Silica (SiQ _e)	-	-	!	;	1	!	1	9.5	1	1	ł	8.1
		Discharge Silica (cfs) (SiQ _s)					577		1,560	385				
		Date of collection	oct. 7, 1960	Nov. 3	Dec. 8	Jan. 3, 1961	Feb. 10	Mar. 3	Apr. 5	May 3	June 12	July 5	Aug. 14	Sept. 12

SACRAMENTO RIVER BASIN--Continued

11-4455. SOUTH FORK AMERICAN RIVER NEAR LOTUS, CALIF. -- Continued

Temperature (°F) of water, water year October 1960 to Sentember 1961

	America	Average	096	64	4 t 4 0	38	4 4 2	48	53	56	57 67	76	75	67
		31	54	11	37	44		51	TI	57	11	76	72	11
		30	54	43	38	2 4	_11	50	54	58	75	75	72	63
		29	54 54	43	38	43	11	4 4 5 4 5 4	53	57	7,0	74	73	64
		28	56	45	4 4	6.0	4 t 5 t	4 6	53	57	77	7.0	75	65
		27	57 56	46	41	43	46	47	52	57 55	80 76	76	71	66
۱.		26	57	4 6	41	41	t t	4 4	52	57	82 76	77	71	69
1001		25	58 56	4 4 7 2	42	4 4	4 5 5 5	49	50	58	78 76	78	72	63
ner		24	57	4 2	42	39	4 4 5 5 5	50	47	57 55	78	80	73	63
Jacuman dae		23	57 56	46	42	39	45	50	47	56	76	79	75	64
		22	58	4 4 4 6	42	38	44	4 9	51	57	77	75	76	64
3		7	58 57	4 5	45	38	4.5 4.3	4 4	51	57	78	75	73	4 4
1200		20	58	4 4 7 7	45	39	4 7	44	53	58	77	76	73	63
Jaconso		19	58 56	45	42	38	43	47	55	58	76	78	70	69
3		18	58	4 4 4 6	42	39	4 t	4 8 4 7	55	58	74	79	70	65
		17	57	47	45	38	4 4	48	56	55	73	80	73	63
2	Day	2	57	4 4	38	38	4 4	50	53	5.6 5.5	73	79	74	99
water year		15	57	50 48	38	37	4 4	50	51	5.5	99	76	76	66
		7	7.5	51	38	37	4 4	6 4 8 6 4 8	52 50	55	64	75	73	5. 5.7.
warer,		13	59	52	38	37	44	4 4 4 7	52	5.2	65	76	77	70
5		12	59	52	38	37	4 4	47	54	52	67 54	78	75	7.1
		=	66	52	38	37	4 4	47	54	54	66 65	78	75	71
		0_	62	52	38	36	4 6	47	5.4	55	99	80	79	69
amberarare		٥	65	53	38	36	4 6 4 5	47	5,3	55	65	76	80	66
2		8	65	53	38	35	4 4 7 4	4 4 5 5	54	53	63	71	90	66
5		7	68	54	39	35	4 4 5	4 6 6 7	55	54	63	70	82 77	69
		٥	68 67	54	39	35	4 4	45	54	52	63	71	90	71
		5	89	54	43	35	4 4 5	4 6 6 7 2	55	54	63	74	75	71
		4	68	54	4 3	3.5	4 5	4 4 6 4	55	53	59	76	75	71
		က	89	4 4	45	35	4 4 6 7	46	53	54	59	78	74	57
		2	69	54	4 9 9 9	35	4 4 7 4	4 4 6 7	54	53	56	78	74	71
		-	69	54	49	37	445	4 4 5 5 6	52	53	5.5	77	75	71
	Manage	Month	October Maximum Minimum	November Maximum Minimum	December Maximum Minimum	January Maximum Minimum	February Maximum Minimum	March Maximum Minimum	April Maximum Minimum	May Maximum Minimum	June Maximum Minimum	Maximum	August Maximum Minimum	September Maximum Minimum

SACRAMENTO RIVER BASIN--Continued

11-4455. SOUTH FORK AMERICAN RIVER NEAR LOTUS, CALIF. -- Continued

Periodic determinations of suspended-sediment discharge, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

	Mother	Jo .	analysis		_				
			2,000						
			1.000						
		neters	0.500						
		millim c	0.250						
	liment	ated, ir	0.125						
	Suspended sediment	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000						
	Suspen	than siz	0.031						
		t finer	0.016						
		Percen	0.008						
			0.004						
			0.005						
t, piper, 5, store, 1, them accommon mac, 11, in more near	trough 60	discharge	(tons per day)	28	21	15	42	41	14
, 2, 040,00, 1, 1	Sediment	concen- tration	(mdd)	46	16	14	22	13	10
r , paper		Discharge (cfs)	Ì	228	496	403	619	1,170	208
	Water	per-	(F)	38	44	44	49	26	72
		11ng	point		_				
		Time (24 hour)		1330	1105	1000	1045	1200	1000
		Date of collection		Dec. 7, 1960	Jan. 31, 1961	Feb. 15	Mar. 15	May 29	July 21

11-4464. AMERICAN RIVER AT NIMBUS DAM, CALIF.

LOCATION .--At dam, approximately 1.5 miles east of Fair Oaks, Sacramento County. RECROBO AVAILABLE.-Chemical manalyses: November 1984 to Spriember 1961. REMARKS.--Records of discharge intrished by U.S. Bureau of Reclamation.

ı		Hď	0.	7.7	7.6	7.5	7.8	7.6	7.7	3.5	7.7	7.7	2.2	7.5
	Specific con-	duct- ance (micro- mhos at 25°C)	28	61	99	64	8	26	16	76	7.3	29	25	77
		dum ad- sorp- tion ratio	0.2	N	~	8	2.	N.	۲.	N.	N			
	ess CO ₃	Non- car- bon-	4	က	П	=	9	4	ıs	01	n	0	-	3
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	24	22	53	22	40	31	32	33	8	24	20	28
	solids ted)	Tons per day				-	•							
er 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	;	Ī	1	1		0.07	!	1	1	.07
Septemb	sha o)	Parts per million	1	}	}	1	1	1	1	51	1	1	1	48
60 to		Bo- ron (B)	0.0	۲.	0.	0.	٥	٦.		•	•	٠.	٦.	•
er 19		Ni- trate (NO ₃)	1	1	ī	1	1	!		0.1	1	I	1	٠.
Octob		Fluo- Ni- ride trate (F) (NO ₂)	1	1	1	1	1	1		0:0	1	1	1	٠.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	5.8	2.8	1,5	1.8	5.5	1	3.8	4.2	3.5	1.6		6.0
ion, wat		Sulfate (SO.)	1	;	ī	l	1	1	1	4.0	I	ı	Ī	2.0
IIIII	į	Don- Bon- COO)												
rts per	Bi-	car- bon- ate (HCO ₃)	25	27	34	32	42	33	33	34	31	29	23	90
in pa	É	fas- stum (K)												
lyses,		Sodium (Na)	2.1	2.4	2,3	2,3	3.1	2.2	1.3	2.7	2.7	2.0	1.8	2.7
cal ana	Year	mag- ne- eium (Mg)	1	1	1	1	1	!		_	1	I	_	1.9
Chem1,		Cal- cium (Ca)	-	-	1	1	1	!		8.1	1	1	1	8.0
		Iron (Fe)								0.01				
		Silica (SiQ _e)	١	1	1	1	1	1	1	9.1		1	Ī	12
		Mean disc harge (cfs)	ĺ			2,500			666	1,060	1,530	3,060	3,820	1,030
		Date of collection	Oct. 7, 1960	Nov. 4	Dec. 19	Jan. 6, 1961	Feb. 9	Mar. 13	Apr. 7	Мау 3	June 2	July 5	Aug. 7	Sept. 11

SACRAMENTO RIVER BASIN--Continued

11-4465. AMERICAN RIVER AT FAIR OAKS. CALIF.

LOCATION, --At old highway bridge 2,2 miles downstream from gaging station, 1,500 feet upstream from new highway bridge at Fair Oaks, Sacramento County, 2.6 miles downstream from Mibmus Dam, and 10 miles downstream from South Fork.
DBAINAGE AREA, --1,889 square miles, upstream from gazing station.

RECORDS AVEL.—1.889 square miles, upstream from gaging station.

RECORDS AVELLACH STARTAL—1.889 square miles, upstream from gaging station.

RECORDS AVELLACH STARTAL—1.889 square miles, upstream from gaging station.

RECORDS AVELLACH STARTAL—1.889 square miles, upstream from gaging station.

RECORDS AVELLACH STARTAL

Chemical analyses in narts nor million water year October 1060 to Sentember 1061

ĺ		Нq	7.8	9.4	7.7.	7.3	6,4	6.5	. 9.	6.7	6.7	7.4	4.		7.1	6.9
	Specific	duct- ance (micro- mhos at 25°C)	71	63	64	65		89					7.5			
		dium ad- Borp- tion ratio	0.3	w, c	9 69	N.	8	α, c	, N	6	e.	.2	4.	. c	N	25
		Non- car- bon-	00	۰.	10	0	'n	es c	9 69	8	n	=	00	ים כ	စ	9
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	28	52	58	27	26	8 8	26	26	56	30	8 8	3 6	35	32
	solids ted) a	Tons per day	73.7	62.3	134	143	204	279	343	334	194	149	132	918	95.9	123
r 1961	Dissolved solids (calculated)	Tons per acre- foot	0.07	90.	90.	90°	90°	.07	.0.	90°	.07	.07	.03	0.0	.0	.07
, in parts per million, water year October 1960 to September 1961	න්	Parts per million	88	44	4 4	46	47	848	48	47	48	51	22	2.5	54	22
2		B 20 B			-											
er 19		rrate (NO ₂)													_	
Octo		Fluo- ride (F)														
er year		Chloride (C1)														
ion, war		Sulfate (SO.)														
1	į	CO)														
ts per	Bi-	car- bon- ate (HCO ₃)	37	31	32	33	26	28	28	28	28	35		3 8	32	32
n pa		tas- firm (X)														
analyses,		Sodium (Na)	3.9	2.9	3.1	2.7	2.6	2,0	. 6	2,9	2.9	2.8	4.6	9 67		3.2
al ana	,	Mag- ne- stum (Mg)	2.8	2.3	2.4	2.6		2.4				2.9	200	4	2.4	2.4
Chemical		Cal- ctum (Ca)	6.3	6.2	9.9	6.7	6.4	200	8	8.0	8.0	7.4	7.8	α	8.8	8.8
		fron (Fe)														
		Silica (SiO _e)														
		Msan discharge (cfs)	546 531				1,610	2,150	2,650	2,630	1,500	1,080	939			
		Date of collection	Oct. 1-10, 1960	Oct. 21-31	Nov. 11-21	Nov. 22-30	Dec. 1-10	Dec. 11-20	Jan. 1-9, 1961	Jan. 10-20	Jan. 21-31	Feb. 1-10	Feb. 11-20	Mar. 1-10	Mar. 11-20	Mar. 21-31

6.9 7.1 6.9 6.9	6.8 4.7.7 3.2 5.7	:
78 77 76 76	73 68 59 62 62	65
0000H	अंधंधंधं धं	0.2
6 6 8 111	က်အယယ္တ	က
31 32 34 34	32 28 47 48 26	27
141 146 149 149	140 270 416 337 124	202
70.00	.07 .06 .06 .06	0.06
55 55 55 55 55 55 55 55 55 55 55 55 55	51 48 39 43 63	46

3323	8 8 8 8 8	29
	0.5 44 .0	
33.46	0.0.0.0.0	2.6
000000 04040	04044	2.2
88800	0.27.9	7.0
950 1,020 1,040 1,030	1,020 2,080 3,760 3,200 1,070	1,654
Apr. 1-10, 1961 Apr. 11-20 Apr. 21-30 May 1-10	May 21-31. June 1-30. July 1-31. Aug. 1-31. Sept. 1-30.	Weighted average

a Calculated from specific conductance.

Temperature (°F) of water, water year October 1960 to September 1961

Aver-	age	62 58 51	8 2 2	59 63	65 77
	31	313	2 2	121	551
	္က	61 55 49	5 5	58 60 63	8 4 7 8
	29	58	5 1 %	56 61 63	24.2
	28	50 50	500	804	65 79 79
	27	35.0	50	55 62 64	65 74 78
	26	56	50	54 61 63	65 74 78
	25	61 56 51	50 51 51	400	65 74 78
	24	61 58 51	48 51 54	58 59	65 74 78
	23	62 55 51	50 50 52	5.5 6.0 6.5	65 74 78
	22	59	521	55	65 72 76
	21	61 52 51	52.46	56 64 63	65 73
	20	61 57 51	50	56 61 61	65 75
	19	61 58 52	48 51 55	55	65 71 76
	18	61 58 52	48 51 54	6.0	65 76
	17	61 56 54	5 11 6	56 65 65	65
Day	91	55	53	59 63	69 72 78
	15	55	5212	609	922
	4	58	52.0	58 64 64	70
	13	60	5 11 4	200	717
	12	60 50	9 2 4	56 62	71
	Ξ	51	52.0	5 3 8 8	702
	0	61 59 51	531	5.6	65 71 78
	٥	59	522	57 19	65 77
	80	50	511	57	65 11
	_	59 6	4000	509	717
	9	61 65	533	56	42.5
	5	65 60 60 52 5	52.25	5 8 6 6 1 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6	63 6
	4	4124	550	6.58	68
	т С	61 6 5	4 5 5 5	58 57 59 62 6	63 69 747
	2		9 4 6		592
	_	62 65 61 61 55 55	9 11 12 15 15 15 15 15 15 15 15 15 15 15 15 15	58 58 56 55 61 60	45.0
45.5%	- Wolldin	October November	January February	April	July

SACRAMENTO RIVER BASIN--Continued

11-4470. AMERICAN RIVER AT SACRAMENTO, CALIF.

LOCATION.--At site of former gaging station, at H Street Bridge, east of Sacramento, Sacramento County, and 6.5 miles upstream from mouth. RECININGE AREA.--1,889 square miles, upstream from gaging station. RECORDS AVAILABLE.--Chemical analyses: October 1983 to September 1961. REMARKS.--Records of discharge given for American River at Fair Oaks. No appreciable inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1960 to September 1961

	Hď	7.2	7.3	7.5	7.5	7.7	:	7.7 87	9.7	7.4	7.5	7.5	7.4
Specific con-	duct- ance (micro- mhos at 25°C)	58	62	99	64	۲.	10	78	92	10	61	54	29
	ad- ad- sorp- tion ratio	0.2	ď	Ŋ	ď	oi.	?	۲.	e,		ď	ď	
	Non- car- bon-	23	0	=	0	0 4	,	c	4	4	က	0	က
Hardness as CaCO,	Cal- cium, Mag- ne- sium	24	52	58	56	538	3	34	33	28	52	20	24
solids ted)	Tons per day												
Dissolved solids (calculated)	Tons per acre- foot	-	!	!	;	!	¦		ં	ł	1	;	90.
Dia S	Parts per million	1	!	1	1	!	!	1	48	1	!	!	43
	Bo- ron (B)	0.0	۰.	۰.	•	۰.۰ ا	?		•	_			
	Ni- trate (NO ₂)	1	1	I	!	ł	l	1	0.2	ŀ	I	1	4.
	Fluo- Ni- ride trate (F) (NO ₃)	1	-	!	ļ	ŀ	l	!	0.0	ŀ	1	1	۲.
	Chloride (C1)	3.2	1.2	2.2	1.2	4. 0	7.0	3.8	8.8	3.0	2.5	4.0	4.0
	Sulfate (SO ₄)	;	1	1	1	1	; -	1	4.0	;	1	1	2.0
	2 de 100 100 de 100												
	car- bon- ate (HCO ₂)	27	30	34	32	35	4,	35	33	53	27	77	56
	K)	1	i	1	;	1		1	1.0	ŀ	!	ļ	.7
	Sodium (Na)	2.1	2.0	2.3	2.0	e e	***	1.6	3,3	2.1	2.1	1.9	1.9
	mag- ne- stum (Mg)	1	!	ł	;	!	1	1	2.3	ł	1	ŀ	1.7
	Ctun (Ca)	1	ŀ	I	ł	1			8.4			ī	6.8
	Iron (Fe)								0.0				
	Silica (SiO ₂)	1	ł	1	1	!	1	1	8.5 0.00	1	1	1	12
	Mean discharge (cfs)	552				1,080	990	955	1,030	1,470	3,010	3,770	
	Date of collection	Oct. 7, 1960	Nov. 4	Dec. 19	Jan. 6, 1961	Feb. 9	Mar, J	Apr. 6	May 5	June 2	July 5	Aug. 7	Sept. 11

11-4475. SACRAMENTO RIVER AT SACRAMENTO, CALIF.

LOCATION .--At Tower Bridge, 0.6 mile downstream from gaging station at Sacramento, Sacramento County, and approximately 1.3 miles downstream from confluence with American River. RECORDS AVAILABLE. -- Chemical analyses: April 1951 to May 1960.

Sediment records: May 1965 to September 1961.

Sediment records: October 1966 to September 1961.

Sediment records: October 1966 to September 1961.

Sediment concentrations: Maximum daily, (estimated) 680 ppm Feb. 2; minimum daily, 16 ppm Oct. 22, 23.

Sediment concentrations: Maximum daily, (estimated) 75,000 tons Feb. 2; minimum daily, 16 ppm Oct. 23, 23.

Sediment loads: Maximum daily, (estimated) 75,000 tons Feb. 2; minimum daily, 1867 ppm Feb. 23, 1960; minimum daily, (estimated) 11 ppm Nov. 30, 1959.

Sediment concentrations (1956-61): Maximum daily, 865 ppm Feb. 9, 1960; minimum daily, (estimated) 11 ppm Nov. 30, 1959.

Sediment loads (1956-61): Maximum daily, 147,000 tons Feb. 9, 1960; minimum daily, (estimated) 200 tons pec. 14, 1959.

REMARES.—Ro appreciable inflow between gaging station and sampling point except during periods of heavy local runoff.

Temperature (°F) of water, water year October 1960 to September 1961

					1
Aver-	age	1 1 4	555 7 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	62 73 55	£11
	31	84	5 5	1 5 1	17 25
	30	62 52 47	51 53	63	71 69
	29	49	52	64 67 72	27 27
	28	61 50 50	53	66 70	2 12
	27		522	62 67 72	73
	26	115	0 4 4 0 8 4	61 69 76	4 7
	25	56	5 0 4 0 4	60 67 77	72 67
	24	63	53	18	72 68
	23	1 4 8 4	53	199	22
	22	49	\$ 6.0 6.4	 62 74	71 67
	21	54 49	5 5 5 4 5	62 68 76	75
	20	64 51	47 52 53	60 67 76	75 67
	19	53	46 51 52	60 67 76	551
	18	62 51	46 51 53	62 70 76	72
	17	53 52	52	64 67	73
Day	16		42 51 50	4.89	0 9
	15	55	42 51 54	4.80	12
	14	61	42 51 55	69	75
	13	55	4 6 6	61 65 72	27
	12	60	500	63	75
	1.1	58	7 2 5 5	63	77
	10	99	50 22	62 63 74	77 73
	6	58	54 52	61 65 72	73
	8	1 94	244	61 65 71	5 15
	7	58 47	54 52 52	63 70	5
	9	67 48	52	61 61 70	71 73
	5	57 50	53	61 70	70 71
	4	68 51	4 .c. c. 8 .c. c.	63	69
	3 4	57 51	4 m 6 m 6 m	332	71 75
	2	65 52	52 54 54	62 65 69	75 72
	-	 64 53	48 52 54	60 63 67	73
Month	THOUSE THE	October November December	January February March	April May June	July August September

11-4475. SACRAMENTO RIVER AT SACRAMENTO, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

		OCTOBER			NOVEMBE	R		DECEMBER	
		Suspend	led sediment		Suspen	ded sediment		Suspen	ded sediment
Day	Mean dis-	Mean concen-	Tons	Mean dis-	Mean concen-	Tons	Mean dis-	Mean concen-	Tons
	charge (cfs)	tration (ppm)	per day	charge (cfs)	tration (ppm)	per day	charge (cfs)	tration (ppm)	per day
1	7970		690	7930	25	535	15400	77	3200
2	8170	42	926	8200		620	17300	86	4020
3	7890		1100	8300	31	695	28100	568	5 45200
5	8170 7970	57 	1260 1100	8400 8400	34	730 771	32600 317 0 0	667 459	58700 39300
6	8010	41	887	8500		760	27700	308	23000
7	7970		880	8500	30	689	23500	212	13500
8	8090		960	8600		670	20800	142	7970
9	8380		1100	8700	29	681	18300	112	5530
10	8050	50	1090	8800		710	17100	88	4060
11	8170		950	9000	33	802	17000	75	3440
12	8050	32	696	9100		980	15100	60	2450
13	7930		580	9600	57	1480	14500	55 45	2150 1700
14	7720 7440	26	542 600	11000 13000	105	2400 3690	13400	39	1410
16	7520	36	731	15000		4900	12900	32	1110
17	7400		540	14500	137	5360	12800	31	1070
18	7440	19	382	12500		3700	14600	34	1340
20	7110 7110	22	360 422	12000 12000	75	2430 2000	20500 23400	112 277	6200 17500
- 1	7070		400	12500	60	2030	22200	142	8510
21	7070	16	320	12000	=-	1700	20700	110	6150
23	6780	16	290	11500	40	1240	18800	74	3760
24	7400	17	340	10900	40	1100	17700	62	2960
25	7110		500	10700	45	1300	16800	42	1910
26	7680	38	788	11400		1900	15900	38	1630
27	7440		680	17800	1	4800	15300	33	1360
28	7640 7800	28	578 530	23900 21000	383	24700 12200	14800 14200	30 27	1200 104 0
30	7760	22	461	17300	109	5090	13400	24	868
31	7760		460	17500			12900	27	940
otal	238400		21143	351030		90663	573400		273178
		JANUARY	,		FEBRUAR	Y		MARCH	
1	12600	23	782	31700	572	5 51200	24300	128	8400
2	12300	17	565	40600	680	B 75000	23900	130	8390
3	12300	22	731	43100	500	58200	23300	160	B 10000
5	12500 12700	24	810 823	44900 46600	439 470	53200 59100	22300 21900	167 149	10100 8810
6	12900	27	940	46300	320	40000	21600	136	7930
	12700	30	1030	41600	225	25300	21900	133	7860
7•• 8••	12700	27	926	35500	188	18000	21900	146	8630
9	12700	24	823	30500	185	15200	21900	172	10200
10	13300	20	718	30500	222	18300	22400	160	B 9700
11	13700	24	888	39800	258	27700	23700	132	8450
12	13700	29	1070	45100	317	38600	23700	138	8830
13	13700	25	925	48500	212	27800	23200	124	7770
14	13400	26	941	49500	205	27400	23500	96	6090
15	13200	28	998	49100	184	24400	23000	145	9000
16	13100	30	1060	48000	144	18700	28000	241	18200
17	12800	24	829	46900	145	18400	32000	286	24700
18	12900	23	801	45400	162	19900	34500	280	26100
20	12700 12 6 00	24 20	823 68 0	42900 39600	148 120	17100 12800	35400 34800	243 218	23200 20500
21	11600	18	564	36400	110	10800	34500	184	17100
22	11200	19	575	34000	127	11700	34300	188	17400
23	11100	23	689	31800	140	12000	33500	155	14000
25	11000 110 0 0	20	594 594	303 0 0 28400	157 160	12800 B 12000	33600 34700	140 133	B 13000 12500
26	11200	24	726	26600	160	B 11000	36400	135	13300
27	11800	28	892	25700	148	10300	36700	145	14400
28	12400	56	1870	25100	139	9420	35700	169	16300
29.0	14000	66	2490				34700	188	17600
30	14100	116	4420				32100	156	13500
31	23100	202	12600	<u> </u>		736320	29000 882400	150	11700
[otal	401000			1084400					403660

⁸ Computed by subdividing day. B Computed from estimated-concentration graph.

PACIFIC SLOPE BASINS IN CALIFORNIA

SACRAMENTO RIVER BASIN--Continued

11-4475. SACRAMENTO RIVER AT SACRAMENTO, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported loads are estimated)

2. 25200 127 8800 1000 49 11000 13700 128 473 3. 24600 120 8 8000 11400 56 1790 15000 126 493 4. 24800 114 7630 11600 59 1850 15500 126 493 5. 25200 146 8 9930 11600 59 1850 15500 77 328 6. 25500 146 8 9600 11300 51 1560 1400 48 183 8. 25700 120 7680 11700 61 8 1900 13000 53 168 9. 22000 117 6990 11700 61 8 1900 13000 53 168 9. 22000 117 6990 11700 55 1740 12100 51 1580 111. 19900 112 6020 1200 67 2170 10800 46 133 115. 16100 97 4220 14800 94 3760 870 52 133 13. 16100 97 4220 14800 94 3760 870 52 133 14. 17400 112 5210 14800 96 384 3130 8750 27 63 14. 17400 125 5400 14700 93 3840 3880 37 102 14. 18300 94 3500 14100 83 31400 86 370 52 16. 18300 99 3960 13800 84 3130 8750 27 63 18. 13400 80 2890 1400 83 3140 8660 30 77 220. 12300 74 2400 1400 83 31400 88 2800 37 102 221. 10100 40 18 2500 14100 83 3140 8660 30 77 221. 11300 57 1740 15600 101 4250 8720 28 860 30 77 222. 12000 74 2400 14500 90 3770 8500 25 5 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	}		APRIL		-	MAY		ļ	JUNE	
Company Contempore Contem		Meen	Suspen	ded sediment	Man-	Suspen	ded sediment	Manu	Suspen	ded sedimer
2 25200 127 8640 1000 49 1100 13700 128 473 3 24600 120 8 8000 11400 58 1790 14500 126 493 4 24800 114 7630 11600 59 1850 15500 82 355 5 25200 146 8 9500 11500 59 1850 15500 77 328 6 25500 140 8 9600 11500 57 1850 15500 77 328 6 25500 120 7640 1150 7700 11000 57 1890 14100 48 183 8 23700 120 7640 11700 61 8 1900 13000 53 166 9 22000 117 6950 11700 55 1740 12100 51 180 10 20900 93 5300 11600 77 1200 67 2170 10800 46 134 11 19900 112 6020 1200 67 2170 10800 46 134 13 16100 97 4220 14800 94 37860 8870 55 135 14 16100 97 4220 14800 94 37860 8870 55 135 14 1700 125 5400 14100 83 3400 8260 37 92 14 1800 99 3900 13800 84 3130 8750 27 65 16 14800 99 3500 14100 83 3400 8260 37 79 16 14800 99 3500 14100 83 3400 8660 30 77 17 13800 94 3500 14100 83 3400 8660 30 77 17 13800 96 3500 14100 83 3400 8660 30 77 17 13800 96 3500 14100 87 31400 97 3990 26 9890 27 17 13800 96 3500 14100 87 31400 87 3990 26 9890 27 17 13800 96 3500 14100 87 31400 87 3990 26 9890 27 17 13800 97 13800 14100 97 2290 8390 26 9890 27 17 13800 98 13800 14100 87 31400 88 3150 8660 30 77 17 13800 98 13800 84 3130 8750 27 65 18 12000 74 2460 13900 90 3770 8500 25 59 18 12000 45 1400 1370 99 39 3900 26 9890 26 9890 27 17 13800 98 13800 14100 87 3290 8890 3990 26 9890 27 17 13800 98 13800 14100 87 3290 8890 3990 26 9890 3990 26 9890 3990 3900 3900 3900 3900 3900 3900	Day	dis- charge	concen- tration	per	dis- charge	concen- tration	per	dis- charge	tration	per
3.* 24600 114 7630 11400 58 1790 14500 126 493 5.* 22200 1146 9930 11600 59 1850 15300 82 355 6.* 25500 140 8 9600 11000 57 1850 15800 82 355 6.* 25500 140 8 9600 11000 57 18600 15800 57 328 6.* 25700 120 7680 11700 61 8 1990 13000 53 186 6.* 25700 120 7680 11700 61 8 1990 13000 53 186 6.* 25700 120 7680 11700 61 8 1990 13000 53 186 6.* 25700 120 7680 11700 62 18 1990 13000 53 186 6.* 25000 95 5360 11700 67 11700 95 1740 11200 51 189 6.* 2500 100 4940 13900 85 3190 10600 46 133 6.* 2700 112 6020 1200 67 2270 10800 46 133 6.* 11700 112 6020 1200 67 2270 10800 46 133 6.* 11700 111 4920 1490 99 3940 1400 99 31400 9680 39 100 6.* 14800 99 3940 13800 84 3130 8600 42 110 6.* 14800 99 3940 13800 84 3130 8750 27 64 88 1300 94 88 1300 94 88 1300 94 88 1300 94 98 98 98 98 98 98 98 98 98 98 98 98 98										
4 2.8500 116 7630 11600 99 1850 15300 82 355. 2.2500 146 8 9930 11500 59 1850 15800 77 322 6 25500 146 8 9600 11300 51 1560 14900 65 261 7 24800 115 7700 11000 57 1690 14000 48 188 8 23700 120 7680 11700 61 8 1900 13000 53 168 9 22000 117 6950 11700 55 1740 12100 51 167 0 20900 99 5360 11600 54 1690 11300 51 153 0 20900 112 6020 1200 67 2170 10800 46 133 3 16100 97 4270 14800 94 3760 9870 52 133 3 16100 97 4270 14800 98 35809 9200 37 132 4 17400 111 5210 14800 98 35809 9200 37 92 6 18800 99 3960 13800 84 3130 8750 27 65 6 18800 99 3590 14000 78 22550 9000 15 86 6 11300 80 22590 14000 78 22550 9000 15 86 6 11300 80 22590 14000 78 22550 9000 15 86 6 11300 97 7 1740 15000 79 3770 8500 25 55 6 11300 98 3500 14100 83 3160 8660 30 77 6 11300 57 1740 15000 101 4250 8720 22 8 86 6 12300 10 45 1100 15000 101 4250 8720 22 8 86 6 12300 57 1500 14500 90 3770 8500 25 55 6 11000 45 1100 15000 101 4250 8720 28 86 6 11000 45 1100 15000 101 4250 8720 28 86 6 11000 45 1100 15000 101 4250 8720 28 86 6 11000 45 1100 15000 101 4250 8720 28 86 6 11000 45 1100 15000 101 4250 8720 28 86 6 11000 45 1100 15000 101 4250 8720 28 86 6 11000 45 1100 15000 101 4250 8720 28 86 6 11000 45 1100 15000 59 1990 10000 48 130 6 11000 45 1400 1400 66 2510 9830 45 116 6 11000 45 1400 1400 66 2510 9830 45 116 6 11000 45 1400 1400 66 2510 9830 45 116 6 11000 45 1400 1000 33 971 1000 33 990 6 1000 45 1400 1000 33 991 1990 10000 48 130 6 11000 45 1400 1000 33 991 1990 10000 48 130 6 11000 46 1500 1200 940 9790 110 6 11000 55 1430 1300 1300 51 1800 1000 36 89 6 11000 30 8 760 11500 940 9790 110 6 11000 30 8 989 11100 1300 9950 53 146 6 11000 30 8 980 11100 31 1000 9900 9900 9900 9900 9900		25200				49				4730
5 25200 146 9930 11800 59 1850 15800 77 326 6 25500 140 8 9600 11300 51 1560 14900 65 261 7 24800 115 7700 1100 51 1560 14900 65 261 9 22000 117 6990 11700 55 8 1740 12100 43 168 9 22000 197 6990 11700 55 8 1740 12100 51 1600 1. 19900 112 6070 11600 54 1690 11500 51 150 1. 19900 112 6070 1200 67 2170 10800 46 133 3. 16100 97 4220 14800 94 3760 9870 52 134 4. 17400 111 5210 14800 96 5840 9680 39 102 5. 16000 125 5400 14700 93 3690 9260 37 92 6. 18800 99 3960 14100 83 3160 8660 39 102 6. 18800 99 3960 14000 78 2950 9040 19 460 9. 12800 66 2350 14000 77 2990 8390 26 58 1. 11800 99 3500 14000 77 2990 8390 26 58 1. 11800 80 2890 14000 77 2990 8390 26 58 1. 11800 80 2890 14000 77 2990 8390 26 58 1. 11800 80 1280 14000 77 2990 8390 26 58 1. 11800 80 1280 14000 77 2990 8390 26 58 1. 11800 80 1280 14000 77 2990 8390 26 58 1. 11800 80 1280 14000 77 2990 8390 26 58 1. 11800 80 1280 14000 77 2990 8390 26 58 1. 11800 80 1280 14000 77 2990 8390 26 58 1. 11800 80 1280 14000 77 2990 8390 26 58 1. 11800 80 1280 14000 77 2990 8390 26 58 1. 11800 80 1280 1500 90 3770 8500 25 55 35. 11800 85 1300 15700 69 2920 8980 39 99 35. 11800 45 1390 15000 74 3000 9440 46 117 4. 12100 50 1630 14500 84 3290 9620 33 99 36. 11800 45 1390 15000 74 3000 9440 46 117 36. 11800 55 1630 13700 61 8 2300 10100 33 90 36. 1190 48 1540 1300 51 1800 10100 36 99 37. 11000 55 1630 13700 61 8 2300 10100 33 90 36. 11000 33 881 11000 940 9790 110 36. 11000 38 1040 11200 940 9790 110 37. 9800 30 8 780 11300 77 8380 9320 5 110 38. 9800 33 881 11200 940 9790 110 38. 9800 33 881 11200 940 9790 110 38. 9800 33 881 11000 940 9790 110 38. 9800 33 881 11000 940 9790 110 38. 9800 33 881 11000 940 9790 110 39. 9900 30 8 780 11000 38 12000 11000 9950 54 38. 10000 33 990 11000 33 1000 65 177 39. 10000 33 1000 65 177 39. 10000 33 1000 65 1200 11000 9950 54 38. 11000 33 980 11100 11000 9950 54 38. 11000 33 980 11100 11000 9950 54 38. 11000 39 990 11100 11000 9950 38 99 30. 11000 33 980 111		24600								4930
5 25500 140 8 9600 11300 51 1560 14900 65 261 7 24800 115 7700 11000 51 8 1690 14900 65 261 7 24800 115 7700 11000 51 8 1690 14900 63 261 7 24800 115 7700 11000 51 8 1690 14900 53 169 7 22900 195 5560 11600 54 1690 11500 51 169 7. 22900 110 6930 11700 67 2170 10000 64 7. 18900 110 6490 12000 67 2170 10000 64 133 7. 18900 120 6490 12000 67 2170 10000 64 133 7. 18900 120 6490 14800 96 3840 9680 39 100 7. 18900 125 5400 14700 93 3840 9680 39 100 7. 18900 92 3940 13800 84 3130 8750 27 7. 18900 93 3590 14000 88 2950 9040 19 7. 18900 94 3590 14000 88 2950 9040 19 7. 18900 95 2390 14000 88 2950 9040 19 7. 18900 96 2380 14000 97 2790 8390 26 56 7. 18900 96 2380 14000 77 2990 8390 26 56 7. 18900 68 2250 14000 77 2990 8390 26 56 7. 11800 68 2250 14000 77 2990 8390 26 56 7. 11800 65 1300 15700 69 2920 8960 379 7. 11800 65 1300 15700 69 2920 8960 379 7. 11800 65 1300 15700 66 2510 8300 46 117 7. 11900 68 1580 13700 61 8 22500 10100 33 96 7. 11900 68 1580 13700 61 8 22500 10100 36 99 7. 1100 50 1630 14900 74 3000 940 46 117 7. 1100 50 1630 14900 67 2510 10100 39 100 7. 1100 60 1640 13100 51 1800 10100 36 99 7. 1100 50 1630 14900 67 2510 10100 39 100 7. 1100 50 1630 14900 72 2310 10100 36 99 7. 1100 50 1630 14900 77 2900 9400 3790 117 7. 1100 50 1630 13700 61 8 2200 10100 36 99 7. 1100 58 990 11000 1300 9900 9400 36 7. 1900 46 1200 11500 11000 9900 54 7. 1400 36 990 1		24800		7630						
7. 2.4800 115 7700 11000 57 1690 14100 48 188 8. 23700 120 7680 11700 55 1740 12100 53 166 9. 22000 117 6990 11700 55 1740 12100 51 1690 9. 22000 195 5560 11700 55 1740 12100 51 1690 1. 19900 1300 53 1660 11600 54 1690 11500 51 1690 1. 19900 1300 60 54 1690 11500 51 1690 1. 19900 1300 60 54 1690 11500 51 1690 1. 19900 1300 60 67 2170 10800 46 132 2. 18300 100 4940 13900 85 3190 10600 46 132 3. 16100 97 4220 14800 94 3760 9870 52 133 4. 17400 111 5210 14800 96 3840 9680 39 100 5. 16000 125 5400 14700 93 3690 9260 37 92 6. 14800 99 3960 14100 83 3160 8660 30 77 7. 13800 99 3960 14000 78 2950 9040 19 460 9. 12800 66 2350 14000 77 2990 8390 26 58 9. 12800 66 2350 14000 77 2990 8390 26 58 9. 12800 66 1300 15700 69 2920 8980 39 99 9. 12300 74 2460 15700 69 2920 8980 39 99 9. 11400 45 1390 15700 74 3000 9440 46 117 4. 12100 50 1630 14500 84 3290 9620 33 140 11400 45 1390 15700 74 3000 9440 46 174 4. 12100 50 1630 14500 84 3290 9620 33 99 9. 1000 45 1640 14100 66 2510 9830 45 115 6. 11000 55 1630 13700 61 8 2300 10100 33 99 9. 9980 55 1680 13700 61 8 2300 10100 33 99 9. 9980 55 1680 13700 61 8 2300 10100 33 99 9. 9980 55 1680 13700 61 8 2300 10100 33 99 9. 9980 55 1680 13700 61 8 2300 10100 33 99 9. 9980 55 1680 13900 72 2310 10100 33 99 9. 9980 55 1680 13900 72 2310 10100 33 99 9. 9980 55 1680 13900 72 2310 10100 36 99 9. 9980 55 1680 13900 77 2310 10100 36 99 9. 9980 55 1680 13900 77 2310 10100 36 99 9. 9980 55 1680 13900 77 2310 10100 36 99 9. 9980 55 1680 13900 77 2310 10100 36 99 9. 9980 55 1680 13900 77 2310 10100 36 99 9. 9980 55 1680 13900 77 2310 10100 36 99 9. 9980 55 1680 13900 77 2310 10100 35 99 9. 9980 55 1680 13900 77 2310 10100 35 99 9. 9980 55 1680 13900 77 2310 10100 35 99 9. 9980 55 1680 13900 77 2310 10100 35 99 9. 9980 55 1680 13900 77 2310 10100 35 99 9. 9980 55 1680 13900 77 29 9. 10000 30 8000 77 20	5••	25200	146	9930	11600	59	1850	15800	77	3280
7. 2.4800	6	25500	140	B 9600	11300	51	1560	14900	65	2610
9. 22000 117 6550 11700 55 1740 12100 51 1650 1. 19900 112 6020 12000 67 2170 10800 46 1. 19900 112 6020 12000 67 2170 10800 46 3. 16100 97 4220 14800 94 3760 9870 52 133 4. 17400 111 5210 14800 96 3840 9660 39 100 5. 16100 97 3600 14700 93 3690 9260 37 9260 5. 16100 99 3600 13400 86 3130 8750 27 55 5. 16100 99 3600 13400 86 3130 8750 27 55 5. 16100 99 3600 13400 87 82590 900 19 46 5. 18300 80 2890 14000 77 2990 8390 26 58 5. 12800 68 2350 14400 77 2990 8390 26 58 5. 12800 68 2350 14400 77 2990 8390 26 58 5. 11800 57 1740 15500 90 3770 8500 25 57 1. 1300 45 1390 15700 69 2220 8860 39 99 99 3. 11400 45 1390 15900 84 3000 9440 46 117 4. 12100 50 1630 15700 89 2200 8890 39 99 95 5. 12000 45 1640 14100 66 2510 9830 45 117 5. 12000 45 1340 13500 84 3000 9440 46 117 5. 12000 45 1460 14100 66 2510 9830 45 116 5. 11000 55 1430 13500 67 2250 9830 45 110 5. 11000 45 1340 13500 67 2250 9830 45 110 5. 11000 45 1340 13500 67 2250 9830 45 110 5. 11000 45 1340 13500 67 2250 9830 45 110 5. 11000 45 1340 13500 67 2250 9800 39 99 99. 9980 46 1540 13100 66 2510 9830 45 116 5. 11000 46 1540 13900 67 2250 9830 45 116 5. 11000 46 1540 13900 72 2310 10100 33 99 99. 9980 46 1260 11900 72 2310 10100 33 99 99. 9980 46 1260 11900 72 2310 10100 33 99 99. 9980 46 1260 11900 72 2310 10100 45 126 1. 1000 38 881 11200 910 9810 116 1. 1000 38 890 33 881 11200 910 9810 116 1. 1000 38 890 31 823 11600 850 920 55 114 1. 1000 38 890 31 823 11600 850 9220 55 114 1. 1000 38 890 31 823 11600 850 9220 55 114 1. 1000 38 890 31 823 11600 1100 9950 54 1. 11000 37 990 11900 1100 9950 54 1. 11000 38 8100 11900 1100 9950 54 1. 11000 38 8100 11900 1100 9950 54 1. 11000 38 8100 11900 1100 9950 54 1. 11000 38 8100 11900 1100 9950 54 1. 11000 38 8100 11900 1100 9950 54 1. 11000 38 8100 11900 1100 9950 54 1. 11000 38 8100 11100 1100 9950 54 1. 11000 38 8100 11100 1100 9950 54 1. 11000 38 8100 11100 1100 9950 54 1. 11000 38 8100 11100 1100 9950 54 1. 11000 38 8100 11100 1100 9950 54 1			115	7700	11000	57	1690		48	1830
0 20900 95 3560 11600 54 1590 11500 51 158 1. 1900 112 6020 1200 67 2170 10800 46 133 3. 18100 100 490 13900 87 3190 10600 46 133 3. 18100 111 9210 14800 96 3760 9870 12 13 3. 18100 112 5210 14800 97 3840 9870 32 13 3. 18100 125 5400 14700 93 3890 9260 37 92 5 16100 125 5400 14700 93 3890 9260 37 92 5 16100 125 1400 1400 77 290 14800 96 1400					11700					1860
1 19900 112 6020 12000 67 2170 10800 46 134 2 18300 100 4940 13900 85 3190 10600 46 134 3 16100 97 4220 14800 94 3760 9270 52 135 3 16100 115 5210 14800 94 3760 9270 52 135 3 16100 125 5400 14700 93 3840 9860 37 125 3. 16100 125 5400 14700 93 3840 9860 37 125 3. 16100 125 5400 14700 93 3840 9860 37 125 3. 18100 94 3500 14700 83 3160 860 30 77 3. 18800 94 3500 14100 83 3160 860 30 77 3. 18800 68 2890 14000 78 2950 9400 19 46 3. 18100 68 2890 14000 77 2990 8390 25 56 3. 18100 68 2890 14000 77 2990 8390 25 56 3. 18100 45 13900 15700 69 2920 8980 25 56 3. 18100 45 13900 15700 69 2920 8980 39 1350 1400 101 4250 8720 28 8 3. 18100 45 13900 15700 69 2920 8980 39 1350 1400 1400 160 25 1100 1500 1400 160 25 1100 1500 17 1100 150 1630 14500 84 3290 9620 38 99 1500 17 1700 69 2920 8980 39 1500 17 1700 66 2510 9830 25 115 115 1100 150 1630 14500 84 3290 9620 38 99 1500 17 1700 66 2510 9830 46 117 1100 150 1630 14500 84 3290 9620 38 99 15 115 1100 150 1630 14500 86 3290 9620 38 99 15 115 1100 150 1630 14500 84 3290 9620 38 99 17 1100 150 1630 14500 86 3290 9620 38 99 19 115 1100 150 1630 14500 86 3290 9620 38 99 19 115 115 1100 150 1630 14500 86 3290 9620 38 99 19 115 115 115 115 115 115 115 115 1	9 • •									1670
2. 18300 100 4940 13900 85 3190 10600 46 132 3. 16100 97 4220 18800 94 3760 970 52 133 3. 16100 97 4220 18800 94 3840 9880 39 106 3. 16100 125 5400 14700 93 3840 9880 39 1070 3. 16100 125 5400 14700 93 3840 9880 39 1070 3. 16100 125 5400 14700 93 3840 9880 39 1070 3. 18100 94 3590 14100 83 3140 8660 30 77 3. 18100 94 3590 14100 83 3140 8660 30 77 3. 18100 68 2890 14100 78 2950 9040 19 40 40 40 40 40 40 40 40 40 40 40 40 40	۰•۰	20900	95	5360	11600	54	1690	11500	51	1580
1-100	1	19900	112	6020	12000	67	2170	10800	46	1340
17-000										1320
5.* 16000 125 5400 14700 93 3690 9260 37 92 6.* 14800 99 3960 13800 84 3130 8750 27 62 6.* 13800 94 3500 14100 83 3130 8750 27 63 6.* 12800 68 2320 14400 78 2990 9040 13 46 6.* 12800 68 2320 14400 78 2990 9040 13 46 6.* 12800 68 2320 14400 79 2990 8380 25 5 5 5 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1										1390
8 14800 99 3960 13800 84 3130 8750 27 65 7 13800 94 3500 14100 83 3160 866 30 76 8 13400 80 2890 14000 77 2990 8390 26 36 8 13400 80 2890 14000 77 2990 8390 26 36 8 13200 74 2400 15500 90 3770 8500 25 36 8 13200 75 1740 15600 101 4250 8720 28 8 66 8 13400 45 1330 15700 69 2920 8980 39 94 8 11800 45 1330 15000 74 3000 9440 46 117 8 1200 50 1650 1650 14500 84 3290 9620 38 98 8 11000 45 1390 15000 74 3000 9440 46 117 8 1200 45 1460 14100 66 2510 9830 45 118 6 11900 48 1540 13900 67 2510 10100 33 99 9 9800 45 1640 13100 51 1800 10100 33 99 9 9800 55 1480 12500 59 1990 10000 48 130 0 9460 50 1280 11900 72 2310 10100 45 123 1 1 1 1 1 1 1 1 1 1	4 • •	17400		5210	14800			9680		1020
7. 13800	5	16000	125	5400	14700	93	3690	9260	31	923
7. 13800	6	14800	99	3960	13800	84	3130	8750	27	638
8. 13400			94			83			30	701
9 12800	8	13400					2950	9040		464
1.	9	12800	68	2350	14400	77	2990	8390		589
22. 10700 45 1390 15700 69 2920 8980 39 99 40 46 117 30. 11400 45 1399 15000 74 3000 9440 46 117 4 3000 950 1630 14500 66 2510 9830 45 115 5. 12000 45 1460 14100 66 2510 9830 45 115 5. 11900 48 1540 13900 67 2510 10100 39 106 7. 11000 55 1630 13700 61 8 2300 10100 33 9 96 9. 950 55 1480 12500 55 1800 10100 36 98 99. 950 55 1480 12500 57 1990 10000 48 130 12. 11800 78 2490 1000 45 123 120 120 120 120 120 120 120 120 120 120	0	12300	74	2460	15500	90	3770	8500	25	574
2. 10700 45 1390 15700 69 2920 8980 39 99 40 46 117 30. 11400 45 1399 15000 74 3000 9440 46 117 44. 12100 50 1630 14500 84 3290 9620 38 99	1	11300	57	1740	15600	101	4250	8720	28	B 660
3. 11400										946
4 12100 50 1630 14500 84 3290 9620 38 98 98 98 11000 45 1460 14100 66 2510 9830 45 118 11900 11900 11900 10100 39 106 10100 39 106 10100 55 1630 13700 61 8 2300 10100 33 98 99 9980 55 1480 12500 59 1990 10000 48 130 1300 51 1800 10100 45 1230 12500 12500 12500 1280 11900 72 2310 10100 45 1230 1200 78 2490 11800 78 2490 11800 78 2490 11800 78 2490 11800 1200 910 9810 1100 1200 910 9810 1100 11200 910 9810 1100 11200 910 9810 1100 11200 980 9430 38 999 11300 33 1010 9170 920 1300 33 1010 9170 920 1300 1300 1300 9170 920 1300 1300 9170 920 1300 1300 9170 920 1300 1300 1300 9170 1000 9400 36 810 1300 1000 9950 54 1400 11800 1000 9950 54 1400 11800 1000 9950 54 1400 11800 1000 9950 54 1400 11800 1000 9950 54 1400 11800 1000 9950 54 1400 11800 1500 10100 63 172 172 11500			45			74	3000	9440	46	1170
6. 11900 48 1540 13900 67 2510 10100 39 106 7. 11000 55 1630 13700 61 8 2300 10100 33 90 8. 10100 60 1640 13100 51 1800 10100 36 98 9. 9980 55 1480 12500 59 1990 10000 48 130 0. 9460 50 1280 11900 72 2310 10100 45 123 1 11800 78 2490 123 1 11800 78 2490 137830 406400 78800 328040 4826 JULY AUGUST SEPTEMBER 1. 9980 46 1240 10900 33 971 10600 130 2. 9870 41 1090 11200 910 9810 116 3. 9890 33 881 11200 940 9750 116 3. 9640 36 989 11300 980 9430 38 990 11300 1000 9000 30 8 780 11500 27 838 9320 1100 9900 58 1440 11000 38 1040 11800 1800 9900 58 1440 11000 38 1040 11800 1300 9900 58 1440 11000 38 1040 11800 1300 10100 65 177 1800 1010	4	12100	50	1630			3290	9620		987
7. 11000 55 1630 13700 61 B 2300 10100 33 99.6 6. 10100 60 1640 13100 51 1800 10100 36 99.9 99.0 9980 55 1680 12500 59 1990 10000 48 130 7. 1980 55 1680 12500 59 1990 10000 48 130 7. 1800 1280 11900 78 2490 7. 1800 10100 45 122 7. 1800 1280 11900 78 2490 7. 1800 10100 45 122 7. 1800 1280 11900 78 2490 7. 1800 10100 45 122 7. 1800 1280 11900 78 2490 7. 1800 1280 11900 78 2490 7. 1800 1280 11900 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1	5	12000	45	1460	14100	66	2510	9830	45	1190
7. 11000 55 1630 13700 61 B 2300 10100 33 99.6 6. 10100 60 1640 13100 51 1800 10100 36 99.9 99.0 9980 55 1680 12500 59 1990 10000 48 130 7. 1980 55 1680 12500 59 1990 10000 48 130 7. 1800 1280 11900 78 2490 7. 1800 10100 45 122 7. 1800 1280 11900 78 2490 7. 1800 10100 45 122 7. 1800 1280 11900 78 2490 7. 1800 10100 45 122 7. 1800 1280 11900 78 2490 7. 1800 1280 11900 78 2490 7. 1800 1280 11900 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1280 1 7. 1800 1	٤	11000	4.8	1540	13000	4.7	2510	10100	30	1060
8. 10100 60 1640 13100 51 1800 10100 36 99. 9. 9980 55 1480 12500 59 1990 10000 48 130 0. 9460 50 1280 11900 72 2310 10100 45 123 1 11800 78 2490										900
99.0 9980 55 1480 12500 59 1990 10000 48 130 10.0 9460 50 1280 11990 72 2310 10100 45 132 1 11800 78 2490 127 2310 10100 45 132 1 11800 78 2490 23 2310 10100 45 132 1 11800 78 2490 23 2310 10100 45 132 1 11800 78 2490 1300 78 2490	8									982
1946	9	9980	55	1480		59		10000		1300
Description Page 2015 Pa	0	9460	50	1280				10100		1230
JULY AUGUST SEPTEMBER	1				11800	78	2490			
1 9980	otal	507940		137830	406400		78800	328040		48266
2 9870			JULY			AUGUST			SEPTEMBE	R
2 9870	1	9980	46	1240	10900	33	971	10600		1300
3. 9890 33 881 11200 940 9790 116 4. 9640 38 989 11300 980 9430 38 985 5. 9560 36 929 11300 33 1010 9170 92 6. 9660 36 929 11300 33 1010 9170 92 6. 9660 30 8 780 11500 1000 9040 36 81 6. 9830 31 823 11600 850 9220 58 144 9. 9890 34 908 11600 35 1100 9950 166 0. 10100 36 8 980 11900 36 11600 1000 9950 54 145 1. 10100 36 8 980 11900 38 1220 9870 156 2. 10100 33 8 900 11900 1300 10100 63 177 3. 10400 27 758 12000 46 1490 10300 186 4. 10300 33 918 12300 1500 10100 65 177 5. 10500 33 936 12300 1400 10100 186 6. 10600 32 916 11600 1300 9980 53 142 7. 10700 40 1160 11500 41 1270 10300 156 8. 10600 47 1350 11400 1400 10100 150 9. 10700 37 1070 11200 51 1540 10100 140 0. 11000 38 8 1200 11400 1400 10100 140 1. 11000 34 1010 11100 44 1320 9920 140 1. 11000 38 8 1200 11400 1400 9570 42 100 3. 11500 49 1520 11300 1400 9570 42 100 3. 11500 49 1520 11300 1600 9550 38 99 4. 11500 45 1400 11200 1600 9550 38 99 4. 11500 45 1400 11200 1600 9550 38 99 5. 11200 37 1120 11300 1600 9550 38 99 5. 11200 37 1120 11300 1600 9550 100 6. 11200 37 1120 11300 1600 950 39 99 9. 11200 38 1150 1100 1500 9120 99 9. 11200 38 1150 1100 1500 9120 99 9. 11200 38 1150 1100 1500 9120 39 9. 11200 38 1150 1100 1500 9120 39 9. 11200 38 1150 11100 1500 9120 39 9. 11200 38 1150 11100 1500 9120 39 9. 11200 38 1150 11100 1500 9120 39 9. 11200 38 1150 11100 1500 9120 39 9. 11200 38 1150 11100 1500 9120 39 9. 11200 38 1150 11100 1400 9020 44 11100 38 1140 11100 46 1380										1100
4 9640 38 989 11300 980 9430 38 969 11300 980 9430 38 969 11300 33 1010 9170 92 91 9100 9170 92 91 9100 9170 92 91 9100 9170 92 91 9100 9170 9170 92 91 9100 9170 9170 9170 9170 9170 9170 9	3	9890			11200		940	9790		1100
6 9640 31 807 11700 1000 9040 36 87. 9600 30 8 780 11500 27 838 9320 116 8 9830 31 823 11600 850 9220 58 144 9 9890 34 908 11600 35 1100 9550 166 9 10100 38 1040 11800 1100 9550 54 145 1 10100 36 8 980 11900 38 1220 9870 150 2 10100 33 8 900 11900 1300 10100 63 177 3 10400 27 758 12000 46 1490 10300 186 4 10300 33 918 12300 1500 10100 65 177 5 10500 33 936 12300 1400 10100 166 6 10600 32 916 11600 1300 9980 53 142 7 10700 40 1160 11500 41 1270 10300 156 8 10600 47 1350 11400 1400 10400 56 157 9 10700 37 1070 11200 51 1540 10100 1400 0 11000 38 8 1200 11400 1500 10200 40 116 1 11000 34 1010 11100 44 1320 9920 116 2 11500 45 1400 11200 1500 10200 40 116 2 11500 49 1520 11300 53 1620 9410 100 3 11500 49 1520 11300 53 1620 9410 100 3 11500 49 1520 11300 1600 9570 42 107 3 11500 49 1520 11300 1600 9570 42 107 3 11500 49 1520 11300 1600 9570 42 107 3 11500 49 1520 11300 1600 9570 42 107 3 11500 49 1520 11300 1600 9570 38 99 3 11400 46 1420 11300 1600 9570 38 99 3 11400 46 1420 11300 1600 9570 38 99 3 11200 37 1120 11300 1600 9570 38 99 3 11200 37 1120 11300 1600 9570 38 99 3 11200 38 1150 11100 1500 9120 39 99 3 11200 38 1150 11100 1500 9120 39 99 3 11200 38 1150 11100 1600 9020 44 100 3 11100 35 1050 11100 1400 9020 44 100 3 11100 35 1050 11100 1400 9020 44 100 3 11100 36 1140 11100 46 1380 9000 44 100 3 11100 36 1140 11100 46 1380 9000 44 1000 1000 1000 1000 1000 1000 1								9430		968
7. 9600 30 8 780 11500 27 838 9320 116 8. 9830 31 823 11600 850 9220 58 146 9. 9890 34 908 11600 35 1100 9500 166 9. 10100 38 1040 11800 1100 9950 54 145 1. 10100 36 8 980 11900 38 1220 9870 156 1. 10100 33 8 900 11900 1300 10100 63 172 1. 10100 33 918 12300 1500 10100 65 177 1. 10500 33 936 12300 1400 10100 166 1. 10600 32 916 11600 1300 9980 53 142 7. 10700 40 1160 11500 41 1270 10300 156 8. 10600 47 1350 11400 1400 10400 56 151 9. 10700 37 1070 11200 51 1540 10100 156 1. 11000 34 1010 11100 44 1320 9920 116 2. 11400 36 8 1200 11400 1500 10200 40 116 1. 11000 34 1010 11100 44 1320 9920 116 2. 11400 48 8 1200 11400 1600 9950 38 996 1. 11500 49 1520 11300 53 1620 9410 100 1. 11500 45 1400 11200 1600 9950 38 995 1. 11500 45 1400 11200 1600 9950 38 995 1. 11500 46 1420 11300 46 1400 9290 100 1. 11200 37 1120 11300 1600 920 100 1. 11200 37 1120 11300 1600 920 100 1. 11200 37 1120 11300 1600 920 100 1. 11200 37 1120 11300 1600 9200 100 1. 11200 37 1120 11300 1600 920 100 1. 11200 37 1120 11300 1600 920 100 1. 11200 37 1120 11300 1600 9200 100 1. 11200 37 1120 11300 1600 920 100 1. 11100 38 1150 11100 46 1400 9200 990 1. 11100 38 1150 11100 47 1410 8920 990 1. 11100 38 1150 11100 1400 9000 1400 9000 1600 9000 1600 9000 1600 9000 1600 9000 1600 9000 1000 1600 9000 1000 1600 9000 1000 1600 9000 1000 1600 9000 1000	5	9560	36	929	11300	33	1010	9170		920
7 9600 30 8 780 11500 27 838 9320 116 8 9830 31 823 11600 850 9220 58 149 9 9890 34 908 11600 35 1100 9500 166 0 10100 38 900 11900 1100 9950 54 145 2 10100 33 8 900 11900 1300 10100 63 172 3 10400 27 758 12000 46 1490 10300 186 4 10300 33 918 12300 1500 10100 65 177 5 10500 33 936 12300 1400 10100 166 6 10600 32 916 11600 1300 9980 53 143 7 10700 40 1160 11500 41 1270 10300 156 8 10600 47 1350 11400 1400 10400 56 151 9 10700 33 980 11100 1500 10400 56 151 9 10700 37 1070 11200 51 1540 10100 1400 0 11000 34 1010 11100 44 1320 9920 116 2 11400 38 8 1200 11400 1400 9950 38 91 2 11400 49 1520 11300 53 1620 9410 100 3 11500 49 1520 11300 53 1620 9410 100 3 11500 49 1520 11300 53 1620 9410 100 3 11500 49 1520 11300 66 1400 9290 100 4 11500 47 1280 11300 46 1400 9290 100 4 11200 37 1120 11300 1600 920 100 4 11200 37 1120 11300 1600 920 100 4 11200 37 1120 11300 1600 920 100 4 11200 37 1120 11300 1600 920 100 4 11200 37 1120 11300 1600 920 43 107 7 11300 42 1280 11300 48 1460 9450 100 4 11200 38 1150 11100 47 1410 8920 990 9 11200 38 1150 11100 1400 900 44 100 11 11100 38 1150 11100 1400 900 44 100 900 44 11100 11100 46 11100 46 1380	6	0449	31	807	11700		1000	9040	36	879
8. 9830 31 823 11600 850 9220 58 144 9. 9890 34 908 11600 35 1100 9950 160 0. 10100 36 8 980 11900 38 1220 9870 152 1. 10100 33 8 980 11900 38 1220 9870 152 1. 10400 27 758 12000 46 1490 10300 186 1. 10500 33 918 12300 1500 10100 65 177 5. 10500 33 936 12300 1400 10100 160 6. 10600 32 916 11600 1300 9980 53 142 7. 10700 40 1160 11500 41 1270 10300 155 8. 10600 47 1350 11400 1400 10400 56 157 9. 10700 37 1070 11200 51 1540 10100 140 0. 11000 33 980 11100 1500 10200 40 116 1. 11000 34 1010 11100 44 1320 9920 140 2. 11400 38 8 1200 11400 1400 9770 42 105 3. 11500 49 1520 11300 1600 9570 42 105 3. 11500 49 1520 11300 53 1620 9910 160 6. 11200 37 1120 11300 1600 9550 38 99 4. 11500 45 1400 11200 1600 9550 38 99 5. 11400 46 1420 11300 46 1400 9290 106 6. 11200 37 1120 11300 1600 9550 38 99 9. 11200 38 1150 11300 46 1400 9290 110 6. 11200 37 1120 11300 1500 920 43 107 7. 11300 42 1280 11300 46 1400 9290 106 6. 11200 38 1150 11100 47 1410 8920 99 9. 11200 38 1150 11100 47 1410 8920 99 9. 11200 38 1150 11100 1400 900 44 1900 900 44 11100 1400 900 44 11100 1400 900 44 11100 1400 9000 44 11100 1400 9000 44 11100 1400 9000 44 11100 1400 9000 44 11100 1400 9000 44 11100 1400 9000 44 11100 1400 9000 44 11100 1400 9000 44 11100 46 1400 9000 44 1100 9000 44 1100 9000 44						27				1100
9 9890 34 908 11600 35 1100 9500 166 0. 10100 36 8 980 11900 1100 9950 54 145 1 10100 36 8 980 11900 1300 10100 54 3 10400 27 758 12000 46 1490 10300 186 3 10400 27 758 12000 46 1490 10300 186 4 10300 33 918 12300 1500 10100 65 177 5 10500 33 936 12300 1400 10100 166 6 10600 32 916 11600 1300 9980 53 143 7 10700 40 1160 11500 41 1270 10300 156 8 10600 47 1350 11400 1400 10400 56 157 9 10700 37 1070 11200 51 1540 10100 140 0 11000 33 980 11100 1500 10100 140 1 11000 34 1010 11100 44 1320 9920 140 2 11400 38 8 1200 11400 1400 9970 42 100 3 11500 49 1520 11300 1400 9950 38 99 4 11500 45 1400 11200 1600 9950 38 99 4 11500 45 1400 11200 1600 9950 38 99 5 11400 46 1420 11300 46 1400 9220 43 107 7 11300 42 1280 11300 46 1400 9220 43 107 7 11300 42 1280 11300 46 1400 9220 43 107 7 11300 42 1280 11300 46 1400 9220 43 107 8 11200 38 1150 11100 47 1410 8920 99 9 11200 38 1150 11100 47 1410 8920 99 9 11200 38 1150 11100 47 1410 8920 99 9 11200 38 1150 11100 1400 900 44 11100 11100 45 11100 46 1380		9830						9220	58	1440
1 10100 36 B 980 11900 38 1220 9870 155 2 10100 33 B 900 11900 1300 10100 63 17; 3 10400 27 75B 12000 46 1490 10300 188 3 10500 33 918 12300 1500 10100 65 17; 5 10500 33 936 12300 1400 10100 166 5 10600 32 916 11600 1300 9980 53 142 57. 10700 40 1160 11500 41 1270 10300 156 8 10600 47 1350 11400 1400 10400 56 15; 9 10700 37 1070 11200 51 1540 10100 166 0 11000 33 980 11100 1500 10200 40 116 1 11000 34 1010 11100 44 1320 9920 116 2 11400 38 B 1200 11400 1400 9570 42 106 3 11500 49 1520 11300 53 1620 9410 100 3 11500 49 1520 11300 53 1620 9410 100 3 11500 45 1400 11200 1600 9350 38 99 5 11400 46 1420 11300 46 1400 9290 106 6 11200 37 1120 11300 1600 9350 38 99 6 11400 46 1380 1500 9120 39 9 11200 38 1150 11300 1500 9120 39 9 11200 38 1150 11100 47 1410 8920 96 9 11200 38 1150 11100 47 1410 8920 96 9 11200 38 1150 11100 1400 9020 44 101 1 11100 38 1140 11100 46 1380	9					35				1600
2. 10100 33 B 900 11900 1300 10100 63 173 3. 10400 27 758 12000 46 1490 10300 180 4. 10300 33 918 12300 1500 10100 65 177 5. 10500 33 936 12300 1400 10100 166 6. 10600 32 916 11600 1300 9980 53 143 6. 10600 47 1350 11400 1400 10400 56 157 9. 10700 37 1070 11200 51 1540 10100 150 0. 11000 33 980 11100 1500 10200 40 110 1. 11000 34 1010 11100 44 1320 9920 110 2. 11400 38 B 1200 11400 1400 9570 42 100 3. 11500 49 1520 11300 53 1620 9410 100 4. 11500 45 1400 11200 1600 9950 38 99 5. 11400 46 1420 11300 46 1400 9290 100 6. 11200 37 1120 11300 1400 920 43 107 7. 11300 42 1280 11300 46 1400 9290 100 6. 11200 37 1120 11300 46 1400 9290 100 6. 11200 37 1120 11300 46 1400 9290 100 6. 11200 37 1120 11300 46 1400 9290 100 6. 11200 37 1120 11300 46 1400 9290 100 6. 11200 37 1120 11300 1500 9120 39 99 9. 11200 38 1150 11100 47 1410 8920 99 9. 11200 38 1150 11100 47 1410 8920 99 9. 11100 35 1050 11100 1400 9020 44 10 11. 11100 38 1140 11100 46 1380	U • •	10100	38	1040	11800		1100	9950	54	1450
2.* 10100 33 8 900 11900 1300 10100 63 177 3. 10400 27 758 12000 46 1490 10300 180 4. 10300 33 918 12300 1500 10100 65 187 5. 10500 33 936 12300 1400 10100 160 6. 10600 32 916 11600 1300 9980 53 142 7. 10700 40 1160 11500 41 1270 10300 150 8. 10600 47 1350 11400 1400 10400 56 151 9. 10700 37 1070 11200 51 1540 10100 150 1. 11000 34 1010 11100 44 1320 9920 110 2. 11400 38 1200 11400	1	10100	34	B 980	11900	3.8	1220	9870		1500
3 10400									63	1720
4 10300 33 918 12300 1500 10100 65 177 5 10500 33 936 12300 1400 10100 166 6 10600 32 916 11600 1- 1300 9980 53 142 7 10700 40 1160 11500 41 1270 10300 156 8 10600 47 1350 11400 1400 10400 160 10100 140 0 11000 37 1070 11200 51 1540 10100 140 1 11000 34 1010 11100 1400 9920 114 2 11400 38 8 1200 11400 1400 9570 42 100 3 11500 49 1520 11300 1600 9350 38 99 5			27	758		46	1490		1	1800
8 10600 32 916 11600 1300 9980 53 142 7 10700 40 1160 11500 41 1270 10300 156 8 10600 47 1350 11400 1400 10400 56 157 9 10700 37 1070 11200 51 1540 10100 140 0 11000 33 980 11100 1500 10200 40 111 1 11000 34 1010 11100 44 1320 9920 110 2 11400 38 8 1200 11400 1400 9570 42 100 3 11500 49 1520 11300 53 1620 9410 100 4 11500 45 1400 11200 1600 9350 38 99 5 11400 46 1420 11300 46 14400 9220 43 107 7 11300 42 1280 11300 48 1460 9450 100 8 11200 37 1120 11300 1400 9220 43 107 7 11300 42 1280 11300 48 1460 9450 110 8 11200 38 1150 1100 47 1410 8920 99 9 11200 38 1150 11100 47 1410 8920 99 9 11200 38 1150 11100 47 1410 8920 99 9 11100 38 1140 11100 46 1380 9020 44 101 1 11100 38 1140 11100 46 1380 9020 44	4									1770
7. 10700	5 • • }	10500	33	936	12300		1400	10100		1600
7 10700 40 1160 11500 41 1270 10300 156 8 10600 47 1350 11400 1400 10400 56 15 9 10700 37 1070 11200 51 1540 10100 140 0 11000 33 980 11100 1500 10200 40 110 1 11000 34 1010 11100 44 1320 9920 110 2 11400 38 B 1200 11400 1400 9570 42 100 3 11500 49 1520 11300 53 1620 9410 100 4 11500 45 1400 11200 1600 9350 38 95 5 11400 46 1420 11300 46 1400 9290 100 6 11200 37 1120 11300 1400 9220 43 107 7 11300 42 1280 11300 48 1460 9450 110 8 11200 44 1330 11300 1500 9120 39 99 9 11200 38 1150 11100 47 1410 8920 99 0 11100 38 1140 11100 46 1380	6	10600	32	916	11600		1300	9980	53	1430
8. 10600						41				1500
9 10700 37 1070 11200 51 1540 10100 140 0 11000 33 980 11100 1500 10200 40 111 1 11000 34 1010 11100 44 1320 9920 110 2 11400 38 8 1200 11400 1400 9570 42 100 3 11500 49 1520 11300 53 1620 9410 100 4 11500 45 1400 11200 1600 9350 38 99 5 11400 46 1420 11300 46 1400 9220 43 107 7 11300 42 1280 11300 48 1460 9450 110 8 11200 38 1150 11300 48 1460 9450 110 8 11200 38 1150 11100 47 1410 8920 99 0 11100 38 1150 11100 47 1410 8920 99 0 11100 38 1140 11100 46 1380	8	10600	47							1570
1 11000 34 1010 11100 44 1320 9920 110 2 11400 38 8 1200 11400 1400 9570 42 100 3 11500 49 1520 11300 53 1620 9410 100 4 11500 45 1400 11200 1600 9350 38 99 5 11400 46 1420 11300 46 1400 9290 100 6 11200 37 1120 11300 1400 9220 43 107 7 11300 42 1280 11300 48 1460 9450 110 8 11200 44 1330 11300 1500 9120 39 96 9 11200 38 1150 11100 47 1410 8920 99 0 11100 38 1140 11100 46 1380	9	10700	37			51				1400
2 11400	0	11000	33	980	11100		1500	10200	40	1100
2 11400	1	11000	34	1010	11100	44	1320	9920		1100
3 11500 49 1520 11300 53 1620 9410 100 4 11500 45 1400 11200 1600 9350 38 95 5 11400 46 1420 11300 46 1400 9290 100 6 11200 37 1120 11300 1400 9220 43 107 7 11300 42 1280 11300 48 1460 9450 110 8 11200 44 1330 11300 1500 9120 39 99 9 11200 38 1150 11100 47 1410 8920 99 0 11100 35 1050 11100 1400 9020 44 101 1 11100 38 1140 11100 46 1380		11400					1400	9570	42	1090
4 11500 45 1400 11200 1600 9350 38 95. 11400 46 1420 11300 46 1400 9290 100 6 11200 37 1120 11300 1400 9220 43 107 7 11300 42 1280 11300 48 1460 9450 110 8 11200 44 1330 11300 1500 9120 39 94 9 11200 38 1150 11100 47 1410 8920 96 0 11100 38 1140 11100 46 1380	3	11500								1000
6 11200 37 1120 11300 1400 9220 43 107 7 11300 42 1280 11300 48 1460 9450 116 8 11200 44 1330 11300 1500 9120 39 96 9 11200 38 1150 11100 47 1410 8920 99 0 11100 35 1050 11100 1400 9020 44 101 1 11100 38 1140 11100 46 1380	4									959
7 11300 42 1280 11300 48 1460 9450 116 8 11200 44 1330 11300 1500 9120 39 96 9 11200 38 1150 11100 47 1410 8920 96 0 11100 35 1050 11100 1400 9020 44 101 1 11100 38 1140 11100 46 1380	>••	11400	46	1420	11300	46	1400	9290		1000
7 11300 42 1280 11300 48 1460 9450 116 8 11200 44 1330 11300 1500 9120 39 96 9 11200 38 1150 11100 47 1410 8920 96 0 11100 35 1050 11100 1400 9020 44 101 1 11100 38 1140 11100 46 1380	6	11200	37	1120	11300		1400	9220	43	1070
8 11200 44 1330 11300 1500 9120 39 99 9 11200 38 1150 11100 47 1410 8920 99 0 11100 35 1050 11100 1400 9020 44 101 1 11100 38 1140 11100 46 1380	7	11300				48		9450		1100
9 11200 38 1150 11100 47 1410 8920 99 0 11100 35 1050 11100 1400 9020 44 101 1 11100 38 1140 11100 46 1380	8	11200	44	1330	11300		1500	9120		960
1 11100 38 1140 11100 46 1380		11200	38		11100	47	1410			960
		11100	35				1400	9020	44	1070
	0		1 20	1 11-0	11100	70	1500		 	

B Computed from estimated-concentration graph.

SACRAMENTO RIVER BASIN--Continued

11-4475. SACRAMENTO RIVER AT SACRAMENTO, CALIF. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

	Mothod	Jo .	analysis	m	>	^	VPWC	^	^	VPWC	^	^	^	^	٨
			2,000												_
			1.000												
		eters	0.500	-	1	ł	700	9	100	100	100	100	ŀ	100	700
		millim	0.250	1	1	100	66	77	86	86	86	97	100	66	96
	liment	ated, in	0,125	100	901	92	16	6S	92	90	77	90	06	84	61
	Suspended sediment	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	96	95	77	62	55	16	77	65	80	32	72	45
	Suspen	han siz	0, 031				73								
water)		finer t	0.016	1	ł	1	64	1	!	9	ł	1	1	1	ł
stilled		Percent	0.008				23								
W, in d			9.004		ŀ	!	ස	1	!	37	l	!	l	1	I
tube;			0.002				31								
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sodimont	discharge	(tons per day)												
; S, sieve; V, v	Sediment	concen- tration	(mdd)	23	39	153	260	454	09	460	466	499	473	201	162
P, pipet		Discharge (cfs)		7,340	9,010	d21,000	32,700	32,600	14,300	31,600	41,300	42,900	46,400	41,400	34,900
	Water tem-	per-	(F)	99	67	48	2	2	47	21	22	23	53	53	22
	Som of	iii	pount												
		Time (24 hour)							1035	1105	1600	1020	0060	1405	1035
		Date of collection		Oct. 6, 1960	Oct. 6	Nov. 29	Dec. 4	Dec. 5	Dec. 13	Feb. 1, 1961	Feb. 2	Feb. 3	Feb. 5	Feb. 7	Mar. 29

d Daily mean discharge.

Particle-size analyses of bed material, October 1859 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S; sieve; V, visual accumulation tube; W, in distilled water)

			t, Paper, 5, steve, 7, visual accumination tube, w, in distinted water/	ner A	41 400	TOTAL PROPERTY.	E (S	11010	TOTA WELL	•						
		Number							Bed m	Bed material						
Date of collection	Time (24 hour)	of	Discharge				Percent	finer th	an size i	Percent finer than size indicated, in millimeters	in milli	meters				of
		points		0.016	0.031	0.062	0, 125	0.250	0.500	1.000	2,000	4.000	8.000	0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000 4.000 8.000 16.000 32.000	2.000	analysis
Feb. 16, 1960. Cotf. 6. Oct 6. Dec. 5. Dec. 3, 1961.	1115 0840 1500 1345 1035	សស ស ស ស 🚓	47,000 7,340 9,010 32,600 14,300 42,900				ппппппп	22227	95 95 93 95 95 95	100 99 100 100 100	188181					ಬ ಬ ಬ ಬ ಬ ಬ ಬ

11-4476.5. SACRAMENTO RIVER AT FREEPORT, CALIF.

OCATION .-- At drawbridge at Freeport, Sacramento County, approximately 11 miles south of Sacramento. RECORDS AVAILABLE. -- Chemical analyses: June 1960 to September 1961.

Water temperatures: June 1960 to September 1961. EXTREMES, 1960-61. --Dissolved solids: Maximum, 169 ppm Sept. 11-20; minimum, 72 ppm Dec. 4-7.

Hardness: Maximum, 91 ppm Sept. 11-20; minimum, 40 ppm Dec. 4-7.

Hardness: Maximum, 92 ppm Sept. 11-20; minimum, 40 ppm Dec. 4-7.

Specific conductance: Maximum, 76°F vince 16, 17; minimum, 44°F vinc. 5.

EXPERIENCE, 1960-61, --Dissolved solids: Maximum, 169 ppm Sept. 11-20, 1961; minimum, 72 ppm Dec. 4-7, 1960.

Hardness: Maximum, 91 ppm Sept. 11-20, 1961; minimum, 40 ppm Dec. 4-7, 1960.

Specific conductance: Maximum daily, 26° micromics Jan. 29, 1961; minimum daily, 84 micromics Dec. 4, 1960.

Records of discharge given for Sacramento River IRMARKS .-- Records of specific conductance of daily samples available in district office at Sacramento, Calif. Water temperatures: Maximum, 76°F June 16, 17, 1961; minimum, 44°F Jan. 5, 1961, at Sacramento. No appreciable inflow between sampling point and gaging station.

Photolmod solids Chemical analyses, in parts per million, water year October 1960 to September 1961

	Hq	4.7	4.0	9.	1.0	6.7	8.1	α α	7.7	4.
Specific con-		185 7	179 7	168 7	124 7	111	158 8	177 7	1517	126 7
	ad- ad- Borp-(r tion m ratio m	9.0	ø. ø.	ø. ø.	w, w	4.9	က်ဆ	œ. α.	œ. r.	4.
	Non- car- bon- tr	00	00	00	п 0	10 0	00	00	0 0	•
Hardness as CaCO ₃	Cal. N cium, c Mag. b ne. s	66 64	2 8	88	43	62	56	61	54	48
	Si Ki									
solids : 180°C)	Tons per day	2,920	2,470	3,400	4,390	5,610	3,980	4,280	7,660	10,840
Dissolved solids esidue at 180°	Tons per acre- foot	0.18	.15	.15	.12	10	.14	.16	14	.12
Dissolve (residue	Parts per million	134	123	110	a85 112	72	101	119	137	87
	'89 (B)	0.0			٠,٠	00	٠.٠	٠.٥		r:
	Ni- trate (NO ₂)	1.6				2.1			4.4	
	Fluo- ride (F)	0.1							-1.2	
	Chloride (C1)	9.5 8.0	8.0	6.5	0.0	8.0	7.0	7.3	12	0.8
	Sulfate (SO.)	0.8	9.0	0.8	7.0	2.21	9.6	99	12	8.4
į	2 a a 8									
Ħ-	car- bon- ate (HCO ₂)	83 83				43		83	8 8	
Ė	tas- shum (K)	1.3	4.1.	1.3		1.5			4.1.	
	Sodium (Na)	11			7.5	5.7	9.3	14	15	6.2
7,0	nag- ne- stum (Mg)	7.5	6.7	6.9	4.6	4.4	7.2	6.9	5.8	2.0
	Can (Ca)	14			9.6	8.8	12		12	i
	Iron (Fe)	88	88	8.8	.03	80.0	.01	88	.18	.14
	Silica (SiQ _e)	24	25.	33	88	16 21	22	22	18	02 T
	Mean discharge (SiO ₂) (cfs)	8,076	7,440 8,392	11,450	19,150	28,880 15,920	17,180	13,310	39,960	46,130
	Date of collection	Oct. 1-11, 1960	ot. 21-31	ov. 10-19	v. 29, 30.	9c. 4-7.	Dec. 20-31	Jan. 10-18	Jan. 29-31, Feb. 1 Feb. 2-10	3b. 11-19 46,130 20
		88	ဝိနိ	N O	S S	22	2 2	Fe S	2 E	E.

a Calculated from determined constituents.

SACRAMENTO RIVER BASIN -- Continued

11-4476,5. SACRAMENTO RIVER AT FREEPORT, CALIF. -- Continued

İ			Hď	7.7	9.7	7.7	8.2	6.6	9.6	8.0	7.9	8.1	7.8	7.7	7.7	. 6.	7.8	1
	1610	-uo	duct- ance (micro- mhos at 25°C)	146 156 138				193					166	188	204 7.7	252	214	165
	_		ad- ad- Sorp- tion ratio	.55	4.	ŭ 4	9.		œ.	٠.	.,		۲.	۰.	œ. c		o.	9.0
				000			н,	* 0 *	00	0	00	0	00					0
	dnesa	as CaCO,	Non- car- bon-	10.0						_			(D. O)			_		
	Har	88	Cal- cium, Mag- ne- stum	55 60 54	20.	ŭ ŭ	32.0	67	Z 86	99	99 1	Š	56	9	89 8	6 6	22	09
			50 •. ~	000					20	_	0.0		00		0.0			0
nued	ids	180°C	Tone per day	8,840 6,630 7.460	8,29	4,35	3,44	4,870	4,92 5,16	3,38	3,25	3,15	3,530 3,850	3,80	4,210	63	3,48	4,760
Conti	ed so		8 H g f	15	12	4	19	11.	861	81	17	12	17	17	19	18	19	0,15
1 961	Dissolved solids	(residue at	Tons per acre- foot	_											_	_		
September 1961Continued	a	(res	Parts per million	a106 109 a 98	8	104	116	127	136	13,	124	17	116	a120	139	191	138	112
			Bo-	2.0	٠.·	-: -:	٠.	•		۲.	٠.	::	. ·	۰.	٠.	: 0	۰.	0.1
o to			Ni- frate (NO ₃)	1.0	1.0	6.	1.1	1.0	1.4	1.2	1.2		1,2	1.0	1:1	1.0	6.	1.2
r 1960			Fluo- ride (F)	1.0	٦.	٠.	0.0	00	• •	•	۰,	:0		Τ.	٠.	: "	.2	b0.1
October				25.5	3.5	. s.	8.8	122	2 2	2	= 0	0.6	7.5	9.5	10	3 4		7.4
year oc			Chloride (Cl)				,			_	-				-			
water ye			Sulfate (SO ₄)	7.0	0.9	0.8	0.6	121	12	11	11	0.6	0.6	7.0	2:	12	8.6	9.5
			(CO)			_												
r million			bon- HCO,	71 79 69	65	99	70	88	2 8	88	77	76	76 84	98	96	118	100	92
parts per			K in the second	6.6	0.0	ວ ວ	6.0	11	1.1	1.3	1.3	1:2	1:1	1.2	4.0	1.2	1.3	1.2
7			Sodium (Na)	0.00	6.5	7.7	11:	41	12	14	13	12	13	14	16	212	17	11
analyses,		-	stum (Mg)	5.78	5.7	e. 0	9,5	280	8,0	7.7	7.2	7.7	7.2	7.7	8.0	12	8.0	9.9
			Ca) (Ca)	13 13	12:	12	13	17.	15	15	13	3 =	ដដ	13	14	17	16	13
Chemical			(Fe)	0.03	01.	0.02	9.	38	88	00.	8.8	88	88	8	8.8	88	00.	0.04
			Silica (SiO ₂)	24 24 24	23	27	22	343	2 7 7 7	24	23	23	23	24	222	22	22	22
			88.0															
			Mean discharge (cfs)	30,880 22,540 28,180		24,320 15,480							11,260		11,230			15,740
			Date of collection	Feb. 20-28, 1961 Mar. 1-10	Mar. 21-31	Apr. 1-10	Apr. 21-30	May 11-20	May 21-31	June 11-20	June 21-30	July 11-20	July 21-31	Aug. 11-20	Aug. 21-31	Sept. 11-20	Sept. 21-30	Weighted average

a Calculated from determined constituents.
b Includes estimates for missing periode.

SACRAMENTO RIVER BASIN--Continued

11-4476.5. SACRAMENTO RIVER AT FREEPORT, CALIF. -- Continued

SACRAMENTO RIVER BASIN--Continued

11-4500. CLEAR LAKE AT LAKEPORT, CALIF.

LOCATION --At foot of Third Street, near municipal wharf in Lakeport, Lake County.
DRAINGARAM AND THE STREAM OCTORED TO SEPTEMBER 1991.
RECORDS ANTILABLE --Chemical maniyess: October 1953 to September 1961.

		Hd	7.5	7.9	8.1	7.9	8.2	7.9	7.7	8.0	8.1	8.2	7.9	8.1
	Specific con-	duct- ance (micro- mhos at 25°C)	273	272	257	264	252	252	250	253	262	270	283	286
	ģ;	adum ad- Borp- tion ratio	4.0	.5	4.	4.	4.	4.	4.	4.	4.	4.	4.	ď.
	co,	Non- car- bon-	٥	0	0	0	0	0	0	ō	0	7	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	117	122	118	119	110	111	112	140	117	127	123	129
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	!	ł	¦	;	!	1		0.24	!	;	;	.22
Septembe	Dis (c	Parts per million	;	!	ł	ł	!	!	!	174	ł	l	!	163
30 to		70m (B)	8.0	9.	æ	ω.	6.	æ.	6	80.	۰.	6.	6.	۰.
r 196		Fluo- Ni- ride trate (F) (NO ₃)	1	I	1	l	1	1	1	1.7	!	!		3.2
ctobe		Fluo- ride (F)	1	1	l	1	1	ŀ	1	0.1	1	1	1	°.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	6.5	7.5	5,5	4.5	6.0	4.7	5.5	6.2	4.8	5.5	6,6	8.8
ion, wat		Sulfate (SO4)	1	1	1	ł	1	1	!	9.6	1	1	Ī	7.0
mi11	į	CO)												
ts per	Bi-	car- bon- ate (HCO ₃)	147	152	144	120	135	142	138	176	149	154	164	159
n par	Ė	Stuff (K)	1	ï	ŀ	ŀ	1	1	-	1.8	1	ł	I	2.4
lyses, i		Sodfum (Na)	9.7	12	10	9.7	9.2	9.3	9.7	10	10	11	1	12
al ana	į	nie- ne- stum (Mg)	1	1	1	1	1	1	1	77	12	1	1	17
Chemic		Cal- ctum (Ca)	1	!	1	í	1	1	1	22	22	1	1	24
		Iron (Fe)								0,01				
		Silica (SiQ,)	1	1	1	1	1	1		14	1	1	1	01
		Mean discharge (SiO ₂) (cfs)												
		Date of collection	Oct. 12, 1960	Nov. 3	Dec. 7	Jan. 4, 1961	Feb. 16	Mar. 13	Apr. 12	May 3	June 2	July 8	Aug. 14	Sept. 6

SACRAMENTO RIVER BASIN -- Continued

11-4510, CACHE CREEK NEAR LOWER LAKE, CALIF.

LOCATION.--At gaging station, 500 feet downstream from Clear Lake Dam, 1.9 miles downstream from Copsey Creek, and 2.5 miles northeast of Lower Lake, Lake, County, Aska, -628 square miles.

RECORDS ANALABLE.--Chemical analyses: October 1953 to September 1961.

				_		_			_			_	_	
		<u>g</u>	294 8.0	8	7.	7.	?	٤.	7.7		•	0	~	8
	Specific	duct- ance (micro- mhos at 25°C)	294	298	210	229	216	231	253	283	187	281	293	302
	& :	ad- ad- Sorp- tion ratio	0.4	ž.	4.	4.	'n	4.	ທ	ı,	ů	ņ	'n	4.
	CO ₃	Non- car- bon-	٥	0	0	F	7	63	17	0	5 (<u> </u>	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	129	135	8	101	87	84	105	140	126	128	128	136
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	ì	1	;	}	1	0.24	ì	1	l	. 22
Septembe	Dis (c	Parts per million	ł	1	1	1	1	ł	13	174	1	1	1	161
S S		. Bo. Bo.	0.1	1.0	9.	9	e,	۳,	•	<u>.</u>		3	6.	œ.
r 196		Ni- trate (NO ₃)	1	1	ļ	1	1	ŀ	1	1.9	ī	Ī	ī	6
tobe	-	Fluo- ride (F)	1	1	i	1	ŀ	ï	!	0.1	I	1	ŀ	•
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (CI)	6.0	8,5	4.0	3.8	5.0	8.8	6.0	7.1	9.9	0.9	6.9	9.3
ion, wat		Sulfate (SO.)	1	1	ŀ	1	Ī	1	1	0.6	!	1	1	8.0
1111	į	(C) at 50	٥	0	0	0	0	0	0	0	0	0	0	0
ts per	Bi-	car- bon- ate (HCO ₃)	165	171	114	122	86	104	107	181	128	160	165	167
n par	ć	K M M	1	i	1	1	1	ł	-	2.3	1	!	1	2.1
lyses, 1		Sodfum (Na)	11	13	9.3	9.3	9.7	8.8	12	133	12	12	12	12
al ans	7	nie- nie- stum (Mg)		1	;	ł	1	ł	ł	18	91	1	ł	17
Chemic		Cal- ctum (Ca)	-	1	1	;	1	1	!	22	97	1	i	56
		fron (Fe)								0.01				
		Suica (SiQ,)	ī	1	1	;	I	ı	1	0.2	Į	l	1	9.
		Discharge Sulca (cfs) (SiQ ₄)	40	2.4				3,4	7.9					
		Date of collection	Oct. 12, 1960	Nov. 3	Dec. 7	Jan. 4. 1961	Feb. 16	Mar. 13	Apr. 12,	May 3	June 2	July 8	Aug. 14	Sept. 6

11-4515. NORTH FORK CACHE CREEK NEAR LOWER LAKE, CALIF.

LOCATION.—At bridge on State Highway 20, 3 miles downstream from gaging station, 2 miles upstream from confluence with Cache Creek, and 6 5 miles northeast of Lower Lake, Lake County.

Of Lower Lake, Lake County.

DRAINAGE AREA.—198 square miles upstream from gaging station.

RECORDS AREA.—Chemical manipases: October 1953 to September 1961.

RECORDS AVAILABLE.—Chemical manipases: October 1953 to September 1961.

REMARKS.—Miscellaneous suspended-sediment samples collected at gaging station. Some inflow between gaging station and sampling point during rainy season.

	Нq	8.4	8.1	8.4	8.3	8.2	279 8.3	345 8.4	8.3	8.5	8.5	8.3	8.5
Specific	duct- ance (micro- mhos at 25°C)							345					
	ad- ad- Borp- tion ratio	1.2	1.5	2.7	0.1	4	9.	9.	7	۰,	1,0	1.2	
	Non- car- bon-	21	21	26	6	0	0	0	0	0	6	90	17
Hardness as CaCO,	Cal- ctum, Mag- ne- stum	196	198	198	184	96	115	153	144	167	180	186	199
solids ed)	Tons per day												
Dissolved solids (calculated)	Tons per acre- foot	;	1	ļ	;	1	;		0.28	1	ļ	I	7.7
Sig (S)	Parts per million		1	1	1	1	1	1	203	}	1	1	305
	Bo-	4.4	5.7	4.4	3,7	•	6	1.5	1.5	2,3	3,3	3.7	
	Ni- trate (NO ₃)	1	1	I	1	1	1	l	9.0	!	3.3	!	٥
	Fluo- ride ti (F) (i	1	1	1	1	1	1	1	0.1	1	1	1	
	Chloride (C1)	98	72	09	43	5.5	14	14	16	29	42	52	Q.
	Sulfate (SO.)	;	;	;	}	;	1	1	11	1	;	1	2,5
	(C) # (E)	6	0	00	12	0	87	G	n	6	13	G	r
	car- bon- ate HCO ₃)	195	216	194	190	117	142	186	174	187	182	202	000
	tas- stum (K)	1	;	;	1	1	ļ	1	0.7	j	j	l	,
	Sodium (Na)	40	49	87	30	8.6	12	18	19	25	30	37	
,	mag- ne- stum (Mg)	;	1		1		1		20	1	1	1	6
	Cal- Ctum (Ca)	1	ļ	1	ł	1	1	1	22	;	;	{	ç
	fron (Fe)								000				
	Silica (SiQ ₂)		-	1	-	-	_	-	20	1	آ_	۔ ا	
	Discharge Silica (cfs) (SiO ₂)	2.0	2,3	19	36	414	144		80				
	Date of collection	Oct. 12, 1960	Nov. 3	7	4. 1961.	Feb. 16.	Mar. 13	Apr. 12	May 3	2.5	July 8	Aug. 14	41.0
		8	Nov	Dec	Jan	Feb	Mar	Apr.	Ma.v	June	July	Aug	

SACRAMENTO RIVER BASIN--Continued

11-4515. NORTH FORK CACHE CREEK NEAR LOWER LAKE, CALIF. -- Continued

Sediment discharge measurements and particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal bube, C, chemically dispersed. D, decamatidon, N, in native water; Sieves. V, visual accumulation tube. W, in distlied water)

	Method	llimeters	1.000 2.000					84 98 100 VPWC								
	Suspended sediment	e indicated, in m	0.062 0.125 0.250 0.500					63 72								_
Tien water,	Suspen	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031					46								
P, piper; S, sieve; V, visual accumulation tube; W, in distinct water)		Per	0.002 0.004 0.					24								_
isual accumulation	Sedimont	discharge	(tons per day)	4 4 4	0.1	8.83	1.1	10,900	ه . ه	42	2.9	, m	, _t	4 ب	++	,
S, Bleve, v, v	Sediment	concen- tration	(mdd)	1 2 2			4	1,490	en en	55.	4 00 4	, es	n m	4 €	87	ř
P, piper		Discharge (cfs)	(ana)	1.8	17.88	72 59	86	2,700	113	283	132 69	32	4.5	1.6	1.5	;
	Water tem-			8 1 5	51	8 2	49	20	44 4	24	88.99	78	1 &	8 8	22	<u>*</u>
	S	ling														
		Time (24 hour)		0910 1340 0925							1510		1450			
		Date of collection		Oct. 21, 1960 Nov. 14.	Nov. 28	Dec. 27	Jan. 29, 1961	Jan. 31	Mar. 3.	Mar. 26.	Apr. 23.	June 5	July 17	July 19.	Aug. 29.	Ochr. 2*

t Less than 0.05 ton.

11-4517.6. CACHE CREEK ABOVE RUMSEY, CALIF.

LOCATION: --At gage, 0.4 mile downstream from highway bridge, and 2.5 miles northwest of Rumsey, Yolo County.

DRAINAGE AREA.--954 square miles.

RECORNS ANAL.-954 square miles.

Sediment records: November 1960 to September 1961.

Sediment records: November 1960 to September 1961.

Statement loads: Maximum daily, 79,600 tons Dec. 1; minimum daily, 1 minimum dai

Temperature (°F) of water, water year October 1960 to September 1961

}															Day												Ī				Aver-
2 3				4 5	5 6	6 7	7 8	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	age
52 49	1.10	114	48 45		45 42		111	57	113	115	121	121	154	131	112	111	2201	112	112	54 45	115	111	113	121	151	147	121	151	1 4 8	111	111
52 52 44 49	at Ni I	144	1 4 4		48 51 49 49		181	12.2	128	52	151	47 47 51	121	128	135	1 4 4	1:5	148	150	1 4 4	22	440	51 1	444	215	574	212	\$12	8 6	211	1 8 6
1 2 1	1 ~ 1	011	911		7 28		1112	111	111	111	211	111	111	811	111	111	211	111	111	211	211	211	211	211	111	112	111	111	211	111	111
111	1 4 1	1 1 1	111		111		111	111	111	111	111	111	111	111	111	811	111	111	111	111	121	111	119	111	111	111	111	111	111	111	111

11-4517.6. CACHE CREEK ABOVE RUMSEY, CALIF. -- Continued

Suspended sediment, November 1960 to April 1961 (Where no concentrations are reported, loads are estimated)

-		Novembe	r		December	'		January	
ı		Suspen	ded sediment		Suspend	ded sediment		Suspen	ded sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1 2 3 4 5	4.6 4.4 4.1 5.5 5.9	=======================================	(t) (t) (t) (t) (t)	3,400 1,210 482 244 161	5,160 558 117 35 16	s79,600 s2,070 s166 23 7.0	68 68 67 66 64	5	0.
6 7 8 9	5.8 6.1 6.3 5.8 5.4	 1	(t) (t) (t) (t)	122 98 83 78 72	10 8 4	3.3 2.1 1.6 1.3	62 60 57 55 55	2 2 	:
11 12 13 14	5.3 7.0 19 42 25	9 12 20 9	(t) 0.2 s.7 s2.4	73 72 59 50 51	3 4 	.6 .8 .6 .5	56 54 55 53 54	4	:
16 17 18 19 20	17 14 12 9.8 9.6	 8 	.4 .3 .3 .2 .2	70 600 1,200 560 350	5 120 144 36 16	.9 k320 s522 s58 15	52 53 51 50 50		. ! . ! . !
21 22 23 24 25	9.0 7.7 7.7 7.5 9.8	6 10	.1 .1 .1 .1 .3	240 180 150 130 115	10 7 6 	6.5 3.4 2.4 2.1 1.6	50 49 50 51 53	 4 7	1.0
26 27 28 29 30	148 124 72 48 42	190 149 31 16 15	s100 s54 6.0 2.1 1.7	100 92 86 78 75 72	3 2	1.1 .7 .5 .4 .4	657 465 227 480 1,460 3,420	1,430 262 60 627 725 2,400	s3,360 s404 37 s2,230 s3,750 s27,700
otal	690.3		170.0	10,353		82,813.6	8,112		37,494.
_		Februar	у		March			April	
1	1,650	510	s2,560	201	6	3.3	277	16	12
2 3 4 5	1,520 1,500 960 620	628 300 100 52	83,250 1,220 259 87	193 192 191 176	4	3.1 2.1 2.1 1.9	262 245 233 210	12 11	9.1 7.5 7.5 6.2
6 7 8 9	500 430 370 430 1,050	31 23 20 234 207	42 27 20 s549 s650	182 189 181 305 284	4 4 18 13	2.0 2.0 2.0 18 10	197 192 176 166 160	10 	5.3 5.2 4.8 4.3
11 12 13 14	950 1,700 1,000 820 770	379 342 135 115 70	\$1,350 \$1,690 364 255 146	256 247 237 244 907	9 8 1,200	6.2 5.3 5.1 5.3 83,040	151 140 140 272 290	10 66	4.1 3.8 3.8 19 52
16 17 18 19	780 610 530 460 399	70 60 45 30 23	147 99 64 37 25	648 1,000 940 720 626	110 1,190 206 110 97	192 83,280 8540 214 164	290 290 279 281 284	45 	45 39 34 32 31
11 12 13 14	363 325 301 274 253	20 17 12 8	20 15 9.8 6.7 5.5	532 472 444 406 413	68 54 40 36 36	98 69 48 39 40	369 456 492 465 449	108 106 98 72 91	108 131 130 90 110
16 17 18 19 10	240 232 207	 6 	3.9 3.8 3.4	390 424 398 354 335 306	26 38 25 22 21	27 44 27 21 19 16	437 416 397 386 364	54 44	81 61 54 48 46
otal	19,244		12,909.1	12,393.		7,946.4	8,786		1,189.6
	discharge	for peri	lod November to		fs-days).		• • • • • • • •		59,578.3 142,522.9

SACRAMENTO RIVER BASIN--Continued

11-4517.6. CACHE CREEK ABOVE RUMSEY, CALIF. -- Continued

Periodic determinations of suspended-sediment discharge, October 1960, May to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

		of	analysis						
			2.000				_		
			1.000	Γ					
		eters	0.500				_	-	
		millim	0.250				_		
	iment	ted, in	0.125						
	Suspended sediment	e indica	0.062						
	Suspen	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	L					
water)		t finer (0.016						
listilled		Percen	0.008						
W, in d			0.004	L					
n tube;		•	0.00						
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sodimont	discharge	(tons per day)	0.4	38	23	92	18	7.3
S, steve; V, vi	Sediment	concen- tration	(mdd)	9	42	31	65	25	20
P, pipet		Discharge (cfs)		24	336	270	540	260	136
	Water tem-	ling per-	(*F)						
		Time (24 hour)		1005	0902	1425	1345	0860	1035
		Date of collection		Oct. 21, 1960	May 2, 1961	June 5	July 17	Aug. 22	Sept. 24

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B) bothom withdrawal tube; C, chemically dispersed; D, decandation; N, in native water; no convenient of the convenien

Mothod	jo	analysis	VPWC	VP#C	^	VPWC	VPWC	VPWC	VPWC	VPWC
		2,000		_				_		
		1.000			_	-				
	eters	0. 500	100	100	{	1	1	100	!	¦
	millim	0.250	66	86	100	100		86	1	!
Iment	ated, in	0, 125	26	96	86	66	100	96	i	100
Suspended sediment	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	88	86	94	96	66	91	100	66
Suspen	than stz	0.031	83	78	1	}	1	88	97	1
	finer	0.016	1.2	65	i	83	88	75	91	82
	Percen	0.008	57	53	1	į	ŀ	61	8	1
		0.004	43	40	-	61	19	46	61	26
		0.002	36	35	1	1	1	44	21	!
*****************	discharge	(tons per day)								
Sediment	concen- tration	(mdd)	20,100	5,500	647	333	2,000	4,640	2,270	1,810
	Discharge	(ara)	e12,000	7,770	1,260	1,060	918	5,350	909	e1,000
Water	per-	Prure (FF)	52	51	49	21	49	22	48	46
	Jing J	point			_					
	Time	(morr : •)	1200					1220		080
	Date of collection		Dec. 1, 1960	lec. 1	lec. 2	Dec. 2	an. 26, 1961	Jan. 31	Mar. 15	lar. 17

e Estimated.

SACRAMENTO RIVER BASIN--Continued

11-4520. CACHE CREEK NEAR CAPAY, CALIF.

LOCATION.--4t gaging station, 1.8 miles upstream from Clear Lake Water Company's diversion dam, 3.2 miles northwest of Capay, Yolo County, and 5.4 miles northwest of Esparto.
DRINGA ARRA.-1,052 square miles.
RECORDS AVAILABLE.-Chemical analyses: October 1952 to September 1961.

		Hq	8.4	8.2	8.4	8,3	8.3	8.5	8.5	8,3	8.4	8,3	8.2	8,3
	Specific con-	duct- ance micro- nhos at 25°C)	479	678	631	722	386	572 8.5	574 8.5	414	383	324	337	362
		ad- gorp- ratto ratto	1,0	1.7	1.6	1.7	6.	1.2	1,3	1.0	8.	9	۲.	.7
		Non- car- bon- ate	٥	7	36	26	20	11	Ħ	0	0	0	0	٥
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	177	228	211	239	159	206	204	163	151	142	140	154
_	olids ted)	Tons per day											_	
er 196	Dissolved solids (calculated)	Tons per acre- foot	-	1	ļ	ł	1	ļ	ļ	0,33	;	ļ	ī	.28
Septemb	Diasi O	Parts per million	1	1	!	ļ	1	ì	1	241	1	1	1	203
60 to		Bo- ron (B)	1.5	1.6	5.9	3,4	1.1	1.9	2.0	1.4	1,3	1,1	6	1.1
r 19		Ni- rate NO.)	1	1	Ī	l	ī	1	1	0.2 1.4	1	1	1	е.
Octobe		Fluo- Ni- ride trate (F) (NO ₃)	1	I	1	;	1	1	1	0.2	ł	ŀ	1	۳.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	40	75	16	88	59	55	20	56	22	12	13	17
lion, wa		Sulfate (SO ₄)	1	1	1	ł	1	1	1	17	1	1		1
r mil		ate (CO ₃)	8	0	80	9	က	11	6	ო	4	4	0	2
rts pe	Bi-	car- bon- ate (HCO ₃)	204	270	210	248	163	216	230	197	184	169	183	190
in pa	ď	tas- stum (K)	1	1	ł	ł	1	ŀ	1	3,3	1	1	1	2.8
alyses,		Sodium (Na)	30	9	24	19	56	41	44	59	23	17	18	20
cal an	Mag	nie- sium (Mg)		1	ł	ŀ	1	1	1	23	ł	ŀ	!	22
Chemi		Cal- cium (Ca)	**	1	;	ł	١	1	1	28	١	1	1	56
		Iron (Fe)								0.00				
		Silica (SiQ ₂)	1	ì	l	ļ	1	ŀ	ŀ	13	1	;	1	6.5
		Discharge Silici (cfs) (SiO _s					456		128	337	320	406	340	176
		Date of collection	Oct. 13, 1960	Nov. 4	Dec. 7	Jan. 5, 1961	Feb. 19	Mar. 1	Apr. 13	May 4	June 2	July 8	Aug. 14	Sept. 6

SACRAMENTO RIVER BASIN--Continued

Sediment discharge measurements and particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B. bottom withoutwait they C. Chemically dispersed in the formal matrix water;

11-4520. CACHE CREEK NEAR CAPAY, CALIF. -- Continued

	Mathod	jo	analysis	VPWC	VPWC			^					
			2,000										
			1.000										
		eters	0. 500										
		millin	0.250		100	1	1	001	!	1	1	!	1
	liment	ated, ir	0, 125	100	66	!		66	ł	ŀ	!	!	! _
	Suspended sediment	e indic	0.062	86	97	!	!	86	1	l	1	!	!
ĺ	Suspen	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	88									
water)		t finer	0.016	1.2	84	i	1	1	!	1	!	ŀ	1
istilled		Percen	0.008	22									
W, in d			0.004	44	29	l	1	١	I	1	1	!	1
n tube;			0.002	36									
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	1	discharge	(tons per day)	29,400	2,380	5.6	22	211	63	26	85	22	4.0
S, steve; V, vi	Sediment	concen- tration	(mdd)	1,810	609	12	46	105	63	34	63	32	#
P, pipet		Discharge (cfs)	(20)	6,010	1,450	174	198	745	373	278	485	285	134
	Water		(F)	,	22	1	22	53	67	74	82	84	72
		ling -	point				_						
		Time (24 hour)							0830			1200	
		Date of collection		Dec. 1, 1960	Dec. 2	Dec. 6	Jan. 29, 1961	Feb. 16	May 18	June 5	June 23	Aug. 7	Sept. 14

11-4525. CACHE CREEK AT YOLO, CALIF.

LOCATION --At gaging station, 800 feet upstream from highway bridge, and 0.5 mile south of Yolo, Yolo County. DRAINGGR AREA.--1,137 square miles. RECORDS AVAILABLE.--Water temperatures: October 1988 to September 1981.

Sediment records: October 1956 to September 1961.

EXTREMES, 1960-61.--Sediment concentrations: Maximum daily, 3,690 ppm Dec. 2; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 31,500 tons Dec. 2; minimum daily, 0 ton on many days.

EXTREMES, 1968-61.--Sediment concentrations: Maximum daily, 6,130 ppm Feb. 17, 1959; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 184,000 tons Feb. 17, 1959; minimum daily, 0 ton on many days.

Temperature (°F) of water, water year October 1960 to September 1961

Aver-	age	1	111	
	31	1	113	1
	30	1	112	1
	29	1	211	1
	28		\$;
	27	9 🛊	53 54	1
	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	ł	61 61 63	1
	25	ŀ	113	1
	24	1	111	1
	23	1	141	1
	22	65	57 59	1
	21	1	1 1 6	1
	20	53	112	1
	19	54	111	ł
	18	. 54 54	111	;
	17		1 1 60	!
Day	19	1	1.81	1
	15	1	1 25	+
	7	ŀ	111	1
	13	1	154 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1
	12	ŀ	1 \$1	1
	Ξ	1	111	68
	0.	1	121	
	٥	!	111	1
	ھ	53	111	1
	7	54	111	!
	9	49	141	1
	2	20	1 8 1	!
	4	50	131	1
	က	25	1 68	1
	2	53	1 53	1
	-	1	181	1
1,1	Month	December 53 52 50 50 49 54 53	January 53 53 February 53 53	April

11-4525. CACHE CREEK AT YOLO, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

11 2 3 4 5 6 7 10 11 12 13 14 15 16 17 18 19 20 21	Mean dis- charge (cfs)	Suspen Mean concen- tration (ppm)	ded sediment Tons per day	Mean dis- charge (cfs)	Suspen Mean concentration (ppm)		sediment Tons per day	Mean dis- charge (cfs) 547 2360 659 260 98 74 49 33 14 6.1	Suspen Mean concentration (ppm) 500 3690 690 90 50 52 28 22 3	K S S	Tons per day 7400 31500 1450 63 13 10 3.77 2.0 0 0 0 0 0 0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19.	dis- charge	Mean concen- tration	Tons per	dis- charge	Mean concen- tration		Tons per	dis- charge (cfs) 547 2360 659 260 98 74 49 33 14 6.1 0 0 0	Mean concentration (ppm) 500 3690 690 90 50 52 28 22 12 3	K S S	Tons per day 7400 31500 1450 63 13 10 3.7 2.0 0 0
2 3 4 5 6 7 10 11 12 13 14 17 18 19 20								2360 659 260 98 74 49 33 14 6.1	3690 690 90 50 52 28 22 12 3	S	31500 1450 63 13 10 3.7 2.0 .7 .1
7 8 9 10 12 13 14 15 16 17 18 19 20								49 33 14 6.1 0 0 0	28 22 12 3	K	3.7 2.0 .7 .1 0 0
12 13 14 15 16 17 18 19 20								0 0 0			0
17 18 19 20							1				ŏ
21								0 0 530 383 151	304 116 65	5 5	0 0 474 138 27
22 · · · 23 · · · 24 · · · 25 · · ·								1.8 0 0 0			0 0 0 0
26 27 28 29 30								0 6.5 15 3.2 0	4	ĸ	0 •1 •3 •1 0
Total	0		0	0			0	5190•6			41082•1
		JANUAR'	Y		FEBRUAR	Y			MARCH		
1	0		0	2270	1790	s	12900	120		Γ	75
2	٥		0	1050	353	s	1050	108			70
3	0		0	1380 770	334 150	S	1390 312	99 90	275		74 68
5	0		o	536	140	i	203	84			61
6	0		0	408	130		143	78			55
7	0		0	336			110	84			57
9	0		0	276 246			82 66	84 87			54 54
10	ŏ		ŏ	675	272	S	539	168			110
11 12 13	0		0	616 1260 860	768 158	S S	330 2780 392	162 144 141	==		100 89 84
14	0		0	672 608	133		240 218	135 267			77 270
					[
17	0		0	636 524	130		223 200	592 604	370	s	580 722
18	0		ŏ	443			180	860			930
19	0		0	380 330	==		160 150	612 506	115		300 157
i					1		1				
21	0		0	294 261		l	140 130	460 394	106	1	132 100
23	0		0	231	180		112	348			87
24	0		0	207 186			100 90	327 303	90		78 74
					i						
26	3.6	4	K 1.7	171			83 81	297 297	100		80 88
27	555 400	821 40 0	S 1280 432	150 135	==		77	303			98
29	200	140	76					282			76
30	891 1710	772 1330	5 2940 5 10900					261 240			68 58
Total	3759.6	1550	15629.7	15911		-	22481	8537			4926

S Computed by subdividing day, K Computed from estimated-concentration graph and subdividing day.

11-4525. CACHE CREEK AT YOLO, CALIF .-- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported loads are estimated)

		APRIL			MAY			JUNE	
			ded sediment			ded sediment			ded sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	189			8.6					
2	156 120	1		9.2			i	1	
3	59	()		12 13					
5	48			3.9			-		
6	41	1		0					
7	31	(0				ł !	
8	25			0			ĺ		
9	20 16	1		0					
- 1				1					
11	2 • 8 0			0				1 1	
13	0			0					
14	0	i i		0					
15	0]		0					
16	0	[0					
17	0	ĺ .		0					
18	0			0				1	
20	ō	ļ		ō				1 1	
21	0	.		0					
22	ő	1		0				1	
23	0	()		0				1	
24	22 22			0					
i		1		i '			,		
26	22	1		0					
27	22 22			0				1 1	
20 - 1	17			0					
30	12			0					
Total	846.8		140	46.7		4	0		0
-		JULY	140		AUGUST			SEPTEMBER	
		5021			A00001		ļ		
2									
3		į į							
4								1	
5		(
6		1		1					
7									
9								l	
10									
11									
12									
13				1					
14							ļ		
15									
16				!				1	
17							ļ		
19									
20									
21									
22						ļ į			
23								1	
24									
25		1							
25		1						1 1	
26							i	1	
26									
26 27 28 29									
26 27 28 29 30									
26 27 28 29 30 31									
26 27 28 29 30 31 Total	0		0 (cfs-days).	0		0	0		0 34,291.7

Method of analysis

1.000 2.000 100

VPWC VPWC VPWC VPWC VPWC VPWC V

SACRAMENTO RIVER BASIN--Continued

11-4525. CACHE CREEK AT YOLO, CALIF. --Continued

								_	_		
		eters	0.500	66	100	1	1	100	1	1	100
		millim	0.250	86	96	1	1	93	;	100	66
ater;	iment	tted, in	0, 125	73	92	100	9	84	100	66	96
ative w	Suspended sediment	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500	64	92	66	66	77	86	86	94
eptemb N, in n	Suspen	han siz	0.031								
tation;		finer t	0.016	56	84	1	68	62	88	ł	1
tober 1960 to i; D, decantation in distilled water)		Percent	0,008								
rsed; D			0.004	40	65	1	64	37	62	l	1
er year y dispe			0.003								
Particle-size analyses of suspended sediment water year October 1960 to Soptember 1960 (Methods of analysis: B. bottom withdrawal tube; C. chemically dispersed; D. decantation; M. in native we p. pipet; S. sieve; V. yearal accumulation tube; W. in distilled water)	Sodiment	discharge	(tons per day)								
s of suspended on withdrawal to S, sieve; V, vi	Sediment	concen- tration	(mdd)	3,980	2,070	1,080	1,120	2,840	1,140	178	109
e-size analyse malysis: B, botto P, pipet;		Discharge (cfs)		1,950	1,610	1,440	1,710	2,470	1,860	231	488
articlo	Water	per-	(F)	52	53	53	22	54	53	49	57
Meth	Some	ing.	pount								
		Time (24 hour)		1000	1250	1600	1550	1730	1440	1125	1250
		Date of collection		Dec. 2, 1960	Dec. 2	Jan. 30, 1961	Jan. 31	Jan. 31	Feb. 1	Feb. 23	Mar. 20

11-4535. PUTAH CREEK NEAR GUENOC, CALIF.

LOCATION.—Temperature recorder at gaging station, in Guenco land grant, just upstream from Coyote Valley damsite, 2.8 miles upstream from Softeam from Softeam from Softeam from Softeam from Softeam and Softeam and Softeam from

th 1 2 72 72 72 75 66 66 66 67 64 62 67 68 69 69 69 69 69 69 69 69 69 69 69 69 69												6													l		-	1
n 72 72 n 66 66 n 64 62 n 58 59												Day															4	8
n 65 66 m 64 62 n 58 59	3 4	5	9	7	8	٥	2	=	2 13	3 14	15	2	17	-8	6	20	12	22	23 2	24 2	25 2	26 2	27 2	28 2	29 30	31	Wei age	, l
n 66 66 m 64 62 n 58 59	71 69	68	8 6 8	_	67	64	62	64 6	9	64 64	61	65	99	99	67	67	99	67	9 49	99	9 29	63 6	62 64		64 64	69	99	
m 64 62 n 58 59	65 64			63	61								28	58		09												
m 58 59	62 60	- 29	9 58	9	61		09	60 5		56 56	57	26	59	9	59	57	58	57	55	_	56 5	53 5	51 51	_	51 52	1	58	
Jacob Park						5,5			55 5			_	55			54							4 6 4			1		
52 52	52 52	5.1	1 50	5	51	5.1	20	52 52		52 51	5	2	53	52	52	52	52	25	52 5	5	51.5	52	52 48		67 67	48	5.1	
52 51		_		_		_	-						51			50												
48 47	46 46	4	6 47	47	84	r J	5.1	50	649	0 20	5.3		5.1	51		20	50	- 12				52 5	50 50		50 50			
um 45 44			_	4.5		8 4	_			48 48	_	20	49		87	48			50 5	50	52 4					20	48	
53 54	53 53			54	5.1	52	51	51.5	50	50 52	-	5.1	5.1	50	51	54	55		54						 	i		
52 53		5.0	0 52	20	20					64 64	5.1		4.8			20		23		25	52 5	51.	51 52		1	1	50	
57 57	54 56	- 24	7 2	r.	53			-	- 45	57 55			5.2	54	45		5.5	ur ur	5.6	r.	4	4	55 56		58 60			
53 54		_		_		47							47		_	48		_		_			_	_		5.5	51	
62 65	67 66	64		63	_	99				4 65	67	69	99	63	63	52	58	54	54 5	82		64	65	61		!		
56 58			6 57		96		56	56 5	57 5	54 56			59			54		_			53 5		55 58		58 55	!	26	
66 67	67 66	62		99		79		63	67 6	68 71	7.2	70	7.2	73	7.1	89	72	69	71 17	72	711	72 7	71 7		67 68			
58 58			6 57		57	-	57		_				6.1			63		_			61 6		60 62			9	59	
June 67 70	72 74	72	7.3	74	73	74	7.5	73 7	7 2	78 79	90	90	78	77	78	- 62	462	78	78 7	- 62	7 6 1		77 75		74 76			
62 63					_	63	_						89	65		69		1,1		-		73 7				1	67	
July Maximum 79 78	77 75	75	5 76	77	7.8	79	9.0	8 1 7	79	82 79	79	4	80	81	80	82	83	9,4	83 8	83	82 8	82 8	82 82		81 81			
mum 71 71	72 70				70	7.1				72 71	70		72			7.1					_	_	74 73	_	73 73	73	72	
82 82	82 82	2 84	4 8 2	83	84	84	81	82 8	83 8	82 80	80	38	79	80	76	81	82	80	80 7	79	79 7	77 77	78 79		80 81	81	81	
80 74						7,				_			7	7.5		1 4		, ,										
2.2					7.0								67.			67												

SACRAMENTO RIVER BASIN--Continued

11-4540. PUTAH CREEK NEAR WINTERS, CALIF.

LOCATOR:—At gaging station, 1 mile downstream from Monticello Dam, 6 miles west of Winters, Yolo County, and 8 miles downstream from Capell Creek. DRAINAGE AREA.—57 square miles.
RECORDS AVAILABLE.—Chemical analyses: October 1952 to September 1961.

		нd	8.3	8,2	8,4	8.1	8.5	8.5	8.6	8,5	8.5	8,3	7.9	8.5
	spectfic con-	duct- ance (micro- mhos at 25°C)	311	313	333	336	326	324	318	320	318	321	334	316
		ad- sorp-(1 tion ratto	0.3	۳.	4.	۳.	۳,	e.	e.	4	۳.	е.	4.	.3
		Non- car- bon-	7	15	3	7	6	2	4	S	9	77	4	4
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	150	160	157	162	161	158	158	158	159	162	157	156
		Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	1	l	1	1		0,25		ł	1	. 24
Septembe	Dis (c	Parts per million	-	ļ	1	1	1	1	ŀ	186	1	1	1	175
60 to		Bo- ron (B)	0.1	.2	.2	•2	.2				2		_	
er 19		Fluo- Ni- ride trate (F) (NO ₂)	1	1	1	ł	!	1		0.4		1	1	.3
Octobe		Fluo- ride (F)	1	ł	ł	1	1	1		0.2	_	1	1	.2
Chemical analyses, in parts per million, water year October 1960 to September 1961	Chloride (C1)			5,2	7.0	6. 0	5,5	4.8	5.5	5.5	7.8	5,2	7.6	4.2
ton, wat		Sulfate (SO ₄)	1	1	;	ŀ	1	ļ	ł	15	!	1	1	#
. mill	į	(CO)	ß	0	4	0	4	12	∞	ß	9	4	0	20
ts per	Bi-	car- bon- ate (HCO ₃)	164	177	180	195	177	162	172	176	174	176	186	144
n par	é	Situm (K)	1	1	1	1	I	1	ł	1.8	ŀ	1	1	1.8
lyses, 1	Sodium (Na)			9.2	11	6.6	0.6	9.3	9,1	10	8.6	8,8	91	7.7
al ans	K	nie- sium (Mg)	!	1	!	ŀ	1			92	ł	1	1	56
Chemi	Cal- cium (Ca)			ł	ł	1	ł	!	ł	20	ŀ	ł	1	20
		Iron (Fe)								0.00				
		Silica (SiQ,)		!	1	1	;	1		15	١	1		13
		Discharge SII (cfs) (Sk	99			12			171	273	360	386	322	260
		Date of collection	Oct, 13, 1960,	Nov. 4	Dec. 8	Jan, 5, 1961	Feb. 17	Mar. 1	Apr. 13	Мау 4	June 1	July 7	Aug. 14	Sept. 12

SACRAMENTO RIVER BASIN--Continued

11-4553. LINDSAY SLOUGH NEAR RIO VISTA, CALIF.

LOCATION .--Near tidal gaging station, 6 miles north of Rio Vista, Solano County, and 1.1 miles upstream from confluence with Cache Slough. RECORDS AVAILARLE. --Chemical analyses: October 1953 to September 1961.

		뛾	7.9	8.0	7.6	7.6	7.6	8.2	8.0	7.9	8.0	7.7	7.7	7.9
	Specific con-	duct- ance (micro- mhos at 25°C)	221	196	201	197	302	279	202	199	234	221	188	228
		dum ad- Borp- tion ratio	8.0	6.	89.		1.2	8.	80	-	6.	8	9	8.
	ess CO ₃	Non- car- bon-	0	0	0	4	7	8	П	0	0	4	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	78	89	89	73	91	8	69	89	79	80	89	77
	solids ited)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	;	1	1	1	1	0,17	!	!	;	.19
Septembe	ejiQ	Parts per million	-	ļ	1	1	ł	ł	1	122	!	!	1	139
30 to	Bo-			۲.	٠,	.1	.2	.2		٦.		٦.		৽
er 196	Ni- trate (NO ₃)			¦	1	!	1	1		1.2	1	1	1	.4
Ctobe		Fluo- ride (F)	1	!	İ	1	1	ł	1	0.2	!	I	1	٦,
Chemical analyses, in parts per million, water year October 1960 to September 1961	Chloride (C1)			8.5	14	10	22	17	10	9.4	12	14	9.4	11
ion, wat		Sulfate (SO ₄)	1	1	;	1	1	1	1	15	!		1	13
. mill		pon- ate (CO ₃)												
ts per	Bi-	car- bon- ate (HCO ₃)	104	92	86	84	103	107	83	84	100	93	85	102
in par	- 4	tas- stum (K)	1	1	}	1	1	1	1	1.2	!	i	l	1.6
llyses,		Sodjum (Na)	16	17	15	13	26	17	15	14	19	17	12	17
cal ans		Mag ne- sium (Mg)	1	ì	}	1	1	}	1	8.5	!	!	!	9.6
Chemi		Cal- (Ca)		1		1	!	1	1	13	ŀ	1	!	12
		Iron (Fe)								0.07				
		Silica (SiQ ₂)	1	;	1	ŀ	!	1		18	1	1	ŀ	21
		Mean Silica Ir discharge (SiQ _a) (i		_										
		Date of collection	Oct. 3, 1960	Nov. 7	Dec. 12	Jan. 9, 1961	Feb. 13	Mar. 6	Apr. 10	May 1	June 5	July 10	Aug. 8	Sept. 12

SACRAMENTO RIVER BASIN--Continued

11-4554. SACRAMENTO RIVER NEAR RIO VISTA, CALIF.

LOCATION .--At pler, 1,500 feet upstream from tidal gaging station, 1 mile south of Rio Vista, Solano County, and approximately 3.1 miles downstream from Steamboat 810-00. RECORDS AVAILABLES.--Centoal analyses: October 1953 to September 1961.

		рн	8,1	7.9	7.5	7.8	169 7.5	8.1	7.9	7.8		7.8	7.9	8.1
	Specific con-	duct- ance (micro- mhos at 25°C)							163	169	216	183	178	235
		ad- ad- Borp- tion ratio	0.7	ī.	7	9	9.	ı.	9.	9.	6	œ.		6.
		Non- car- bon-	0	0	0	п	4	•	က	60	0	0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	74	69	22	67	61	7.7	62	9	72	63	9	19
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	!	i	1		0.15		1	!	.20
Septembe	Dis (c	Parts per million		1	!	1	ł	!	!	108	1	!	1	146
30 to		ron (B)	0.1	۲.	٦,	•	٦.	7.	۰.			_		_
r 19		Ni- trate (NO ₃)		ł	1	!	1	!		0.7			!	8.
Octob		Fluo- Ni- ride trate (F) (NO ₃)		1	1	ŀ	1	1		0:0		Ī	!	•
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride r (Cl)	9,5	7.5	12	8.5	7.7	6	7.5	8.8	12	10	10	13
ion, wat		Sulfate (SO4)	1	ł	!	1	1	1	1	14	;	!	1	12
mil1	į	bon- ate (CO ₃)												
ts per		car- bon- ate (HCO ₃)	94	86	74	83	69	88	72	69	94	78	78	109
n par	Ė	Sium (K)	1	1	1	1	1	1	1	1.8	1	ŀ	!	1.4
lyses,		Sodium (Na)	14	6.6	12	11	7	07	10			74	12	18
al ana	7.0%	mag- ne- sium (Mg)		1	1	1	ì	!	1	6.7	!	l	1	9.5
Chemic		Cal- cium (Ca)	1	1	ŀ	ŀ	!	1	_	13	1	1	ļ	16
		Iron (Fe)								0.01				
		Suica (SiQ ₂)	:	!	1	!	L	1	1	18	1	1	1	21
		Mean discharge (SiO ₂) (cfs)			_			-						
		Date of collection	Oct. 3, 1960	Nov. 7	Dec. 12	Jan. 9, 1961	Feb. 13	Mar. 6	Apr. 10	May 1	June 5	July 10	Aug. 8	Sept. 12

NAPA RIVER BASIN

11-4560, NAPA RIVER NEAR ST. HELENA, CALIF.

DALTON. --At gaging station, 0.2 mile upstream from highway bridge, 1.3 miles northeast of Zinfandel, and 2.5 miles east of St. Helena, Napa County. DALTAGE AREA.-81.3 grare miles.

RAKEORDS AVAILABLE.-Chemical analyses: October 1953 to September 1961.

Water temperatures: October 1957 to September 1961.

Sediment records: December 1957 to September 1961.

EXTREMES, 1966-61.--Sediment concentrations: Maximum daily, 409 ppm Jan. 31; minimum daily, no flow on several days.

Sediment locats: Maximum daily, 1,520 tons 3 minimum daily, 10 non on several days.

EXTREMES, 1966-61.--Sediment concentrations: Maximum daily, 0, 100 no neveral days.

Sediment locats: Maximum daily, 3,500 tons Feb. 8, 1960; minimum daily, 0 ton on many days in 1957, 1959-61.

		ь	499 8.0	7.8	7.9	7.4	7.8	7.9	7.8	272 7.7	8,1	8,2	7.6	7.6
	Specific	duct- ance micro- nhos at 25°C)	499	439	320	295	162	218	244	272	320	365	360	375
	å:	dum ad- Borp- tion ratio				1.2		œ	80	1.0	1.1	۲.	9.	
		Non- car- bon-	55	22	0	0	2	_	0	_	ō	~	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	182	173	84	86	26	7	8	91	107	151	152	126
1	solids ated)	Tons per day											_	
r 196	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	;	!	ŀ	1	0.26	;	ļ		.31
Septembe	Dis	Parts per million	I	l	1	!	1	!	ŀ	189	ł	1	1	229
30 to		Bo- ron (B)	1.9	6.	1.1	6.	٦.	4.	9.	ı.		9.	ı.	4.
r 19		Ni- trate (NO ₃)	1	į	l	ľ	!	l	Į	3,4	;		1	٦.
ctobe		Fluo- Ni- ride trate (F) (NO ₂)	1	I	ī	l	1	I	1	0.4	I	ŀ	!	•
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	29	44	36	30	0.6	13	16	18	24	13	14	13
ton, wat		Sulfate (SO ₄)		!	1	1	ı	ı	ł	16	!	1		18
. mill	į	Don- ate (CO ₃)												
ts per	Bi-	car- bon- ate (RCO ₃)	155	180	104	108	62	82	101	110	130	182	185	196
in par	Ę	Siturn Siturn (K)	1	1	!	I	1	1	1	2.4	1	1	Ī	2.7
lyses,		Sodium (Na)	25	22	30	56	#	16	17	21	22	8	19	19
cal an	ş	nie- sium (Mg)	1	ì	ł	ł	!	1	1	11	1	!	1	18
Chemi		ctum (Ca)	}	ł	1	1	1	1	1	19	i	}	1	32
		Iron (Fe)								000				
ĺ		Silica (SiQ,)	1	!	1	1	1		!	43	1	1	_	59
		Mean discharge (SiO ₂)				8.5			38	18	7.7	9.	2	4.
		Date of collection	Oct. 13, 1960	Nov. 4	Dec. 8	Jan. 5, 1961	Feb. 17	Mar. 1	Apr. 13	May 4	June 1	July 7	Aug. 2	Sept. 6

NAPA RIVER BASIN--Continued 11-4560. NAPA RIVER NEAR ST. HELENA, CALIF.--Continued

	Aver-	age	119	47 54 56	1911	
		31	413	53	1 % 1	111
		30	182	212	212	231
		29 ;	100	6 5	221	111
		28	1 4 6	50 4		
		27 3	1 4 0	553	67 61 72	59
		56	52			
1961		25 26	14.4	50 52 50 56 58 56	46 65 67 74	<u> </u>
er		24		5 8 3 5 8 3		!!#
cemp		23 ;	58 46 52 45 50	0.00	58 60 67 60 73	449
Sep		22		545		
Temperature (°F) of water, water year October 1960 to September 1961		20 21 22 23	73 52 49 50 45	4 10 00	54 51 66 74	12
96		50				
r 1		19	60 51 52 51 53	50 40 48 57 53 53	59 59	1 76
top			3 8 4			
8		7 1	144	53 53 54 48	65 59	29
yea	Day	14 15 16 17 18	47			
ter	Ω.	1	5.0 4.0 4.0	50 45 55 55 55 55	67 65 72 80	1108
WB.		14			70 80 72 4	2
ter,		. 81	155	48 43 52 54 59 52	69 1	1 7 69
Wa		12 13				
o To		11	1226	51 52 59 58	68 62 64 73	1 1 1
°.		10				
ure		6	54 41 45	55 1 1 55 5 1 1	52 68 61 72	74 74 62
rat		8			213	
embe		7	43 42	43 50 54 52 56 53	231	8 1
F		9	4 4 4 4 4	4 0 6	916	
		5	\$ 1 \$	52 50 50 50 50 50 50 50 50 50 50 50 50 50	251	111
		4				
		3	52	50 43 56 11 55 49	73 70 65 67	70 11 61
	Ì	2				
		-	55 50	39 41 54 54 62 58	53 54 56 69	111
	Moork	MORE	October 57 60 November 57 55 50	January 39 41 February 54 54 March 62 58	April May. June	July August September

NAPA RIVER BASIN--Continued

11-4560. NAPA RIVER NEAR ST. HELENA, CALIF .-- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

1		OCTOBE	R		NOVEMBE	₹	-	ECEMBER		
		Suspen	ded sediment		Suspen	ded sediment		Susper	ded	sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
1	0			.7	1	T	262	286	S	399
2	0		Į.	• 7		Į t	122	40		13
3	0			• 9	3	T	53	15		2.1
4	0		1	1.0		Ţ	26	8	ì	•6
5	Ü		1	•8		Τ	15	,		• 2
6	• 2	5		.8	7	Т Т	11	4		• 1
7	.8			1.5		ī	9.1	4	Ì	• 1
8	1.8			1.6		T	8 • 5	4	1	• 1
9	1.6	4	1	1.6	10	Ţ	7.9 8.8	3	1	• 1
10	1.0			1.5		Т	•••			• 1
11	•6			1.5		т .	11		l	• 2
12	• 5	5		3.4	11	0.1	7.9			• 1
13	• 4			6.7	17	. 3	7.6			• 1
14	• 2			8 • 2	13	- 3	7.0	4		• 1
15	• 1	6		3.6	4	T	7.6	4		• 1
16	.1		1	2.4	4	т .	15	11	5	•6
17	•1		1	2.2	4	Ť	62	20	S	3.5
8	• 2	7	1	2.3	5	T	42	10		1.1
19	• 1			2.3	4	T	43	9	İ	1.0
20	•1		1	2.0	5	T	23	9	1	• 6
21	,	3		, ,		т .	17	8		
22	•2 •1			1.8	3	1	16	5		•4
23	•1		1	1.9		, i	14	á	į	•1
24	•1	3	1	2.2	4	Ť	13	4		• 1
25	• 2		1	2.9	8	•1	13	3	ĺ	• 1
		ĺ								_
26	• 2			14	21	•8	11	2	1	• 1
27	• 2			8 • 5	27	•6	11	3	i	•1
29	•3			4.3 3.3	20 12	•2	9.4	3		•1
30	.3	l		3.6		•1	9.1	7	İ	• 2
31	• 4	2					8 • 8	5		• 1
Total	1 0 3		0.1	89.9		3.1	882•7			424.4
		JANUAR			FEBRUAR'		00207	MARCH	L	
		JANUAR	1		FEBRUAR	·		MARCH		
1	8.8	3	0.1	372	80	80	42	5		0.6
2	8.5	3	• 1	321	53	S 49	. 39	4		• 4
3	8.5	3	•1	232	22	B 6.5	37	4	1	• 4
5	8.5 8.5	6 5	•1	160 120	15 12	B 6.5	34 40	4		•3
		1	•••	120		, ,,	1 70		Į.	•
6	8.5	3	•1	102	10	2 • 8	39	4		•4
7	8 • 2	6	•1	86	7	1.6	32	3		• 3
8	8.5	4	.1	77	7	1.5	62	13	S	4 • 5
9	8.2	5	•1	261	61 40	S 51 B 25	98	19	5	5.9 1.0
10	8.2	4	B •1	228	40	27	63	°	ì	1.0
11	7.9	4	B .1	634	258	S 554	57	6		.9
12	7.9	3	B •1	366	65	64	49	6	1	• 8
13	7.9	2	T	292	72	S 74	44	5	1.	• 6
14	7.9	2	٠,	303	82	S 76	77	15	S	9.4
15	7.9	3	•1	268	24	17	309	87	S	77
6	7.9	1	τ .	225	16	9.7	204	23		13
7	7.9	3	•1	180	13	6.3	357	77	s	84
8	7.9	3	•1	148	10	4.0	218	20	1	12
9	7.9	3	•1	122	7	2.3	166	12	ì	5 • 4
20	7.9	3	•1	105	8	2•3	154	13		5 • 4
1	7.6	2	1	92	8	2.0	128	11	1	3.8
2	7.3	4	•1	79	6	1.3	114	10	1	3.1
3	8 • 5	6	: : : : : : : : : : : : : : : : : : : :	72	5	1.0	110	9	1	2.7
24	8.2	4	•1	65	4	• 7	122	12	В	4.0
,	24	19	5 3.3	60	6	1.0	117	10		3 • 2
5		119	5 61	55	5	• 7	176	36	s	22
?5	174			50	5	.7	212	33	Ĺ	19
26	174 84	34	15 8.4							
26	174 84 56	34 21	5 8.4 3.2	47	6	. 8	164	15	İ	
26	84 56 336	21 369	3 • 2 5 530	47	6		132	10	В	3.6
26 27 28 29	84 56 336 339	21 369 121	3.2 S 530 S 144	47 	 		132 112	10 9	в В	6.6 3.6 2.7
26 27 28	84 56 336	21 369	3 • 2 5 530	47	6		132	10		3.6

S Computed by subdividing day. T Less than 0.05 ton.

B Computed from estimated-concentration graph.

NAPA RIVER BASIN -- Continued

11-4560. NAPA RIVER NEAR ST. HELENA, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported loads are estimated)

- 1		APRIL	Į.		MAY	Į		JUNE	
Г		Suspend	ed sediment		Suspen	ded sediment		Suspend	ed sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	86	9	2.1	22	7	0.4	7.7		0.
2	78	8 7	1.7	21	10	•5 •5	7•3 6•8	7	•
3	7 2 67	8	1.4	20 18	10 1	•6	6.6	9	
5	57	9	1.4	18	13	.6	7.0		•
6	52	7	1.0	18	}	•6	7.0	11	
7	48	8	1.0	17	11	• 5	7.5		•
8	44	9	1.1	16		•5	6.2	8	•
10	43 42	8 8	•9	15 15	11	.4	5•2 5•0	4	:
11	40	7	.8	15	10	.4	5.0		
12	40	e	.9	13	(.4	4.4	5	•
13	38	7	.7	12	12	.4	4.2		• :
14	34	8 7	•7	12		• 5	3 • 5 3 • 2	4	Ţ
15	33	1 1	•6	13	16	•6			
16	30 30	7 6	•6 •5	11 11	14	•5 •4	2•5 2•9	4	T T
17	27	111	.8	11		.4	2 • 8	4	Ť
19	26	9	•6	11	13	.4	3 • 2	(•
20	26	6	•4	10		• 3	2.9	7	•:
21	30	15 8		11	9	• 3	2 • 4		· · ·
22	52	29	4+1	10	8	•2	2•5 1•8	7	÷
23	65 40	21 12	3.7 1.3	9•5 8•6	7	•2	1.8	3	Ţ
25	30	9		8.2	7	•2	1.5		Ť
26	27	12	.9	7.9		•1	1.7	3	T
27	25	10	•7	7.5	6	•1	1.5		Ţ
28	23	9	•6	7.7		•1	1.5 1.4	4	Ţ
29	23 23	11 7	•7	7.3 6.8	7	•1 •1	1.3	4	÷
31			22	7.0	6	.î			
Total	1251	- - T	34.1	390.5		11.0	118•3		2 • 3
		JULY		<u> </u>	AUGUST			EPTEMBER	
1	1.3			0.2			0.1		
2	1.3	10	1	• 2	4		• 2		
3	1.4			•6			•2	6	
5	1.2	7	Í	.5 .6			•2 •2	==	
1	• 7	9	1	•6	7		.4	9	
7	.6			.4			• 5		
8	.8	5	ű.	• 3	[• 5		
9	•8 •9		ļ	•2	4	l	•5 •5	3	
- 1		· - I							
11	•7			•2	[ſ.	• 4		
12	.8 .6	4	l l	• 4 • 4	5	1	•4	1	
14	.7	3	į	.4			• 2		
15	. 5			•2		ı	•2		
16	• 5	5		•2	3	Į	• 4		
17	• 2			• 5		ļ	• 5	4	
18	• 1	3	ŀ	•5		ľ	• 5		
20	0			•5 •5	5		•5 •5	2	
21	•1	1	1	.4			•6		
22	•2		li l	•6		Í	•5		
23	• 2	4))	•7	4]	• 5		
25	•2	==		•4 •2			• 5 • 4	2	
(1			Í			
26	• 2 • 2	4	1	•1	4	ŀ	•2	4	
28	• 5			•2			• 3		
	• 3	3	ľ	•3	3	ĺ(• 4		
29					3	1	• 4		
30	• 4 • 5		Į.	•2		l l			

 Total discharge for year (cfs-days).
 13,740.9

 Total load for year (tons).
 4,096.5

T Less than 0.05 ton.

NAPA RIVER BASIN--Continued

11-4560, NAPA RIVER NEAR ST. HELENA, CALIF. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

	Mothod	jo .	analysis	Λ	>	^
			2,000			
			1.000		100	
		eters	0. 500	100	92	66
		millim	0.250		88	
	iment	ated, in	0, 125		82	
	Suspended sediment	Percent finer than size indicated, in millimeters	0.062	80	73	98
	Suspen	han siz	0.031			
		finer t	0.016			
		Percent	0.008			
		1	0.004			
			0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000			
-) before a large of the second seco	Sodiment	discharge	(tons per day)			
	Sediment	concen- tration	(ppm)	882	339	210
		Discharge (cfs)		693	915	1,000
	Water tem-	ling per-	(•F)	49	53	51
	Gamn	ling	point			
		Time (24 hour)		1650	1720	9060
		Date of collection		Jan. 29, 1961	Jan. 31	Feb. 11

RUSSIAN RIVER BASIN

11-4625. RUSSIAN RIVER NEAR HOPLAND, CALIF.

7.9 8.1 7.7 7.8 7.8 7.8 8.0 8.0 7.9 H mhos at 25°C) 175 157 163 190 175 197 169 172 183 183 217 Specific ance microductcon-LOCATION.--At gaging station, in Rancho de Sanel Grant, 0.2 mile downstream from McNab Creek, 4 miles north of Hopland, Mendocino County, and 17 miles Unstream from Sulfur Creek.
DARINGE AREA: --362 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1961. sorp-(0 4.00000 dium ratio 446666 န္ပ ģ 04000 Noncarbon-NO800H Hardness as CaCO, Mag-ne-sium Cal-83 81 74 69 82 77 86 75 76 78 Tons per day Dissolved solids (calculated) Chemical analyses, in parts per million, water year October 1960 to September 1961 Tons per acre-foot 15. 111 111 151112 nillion 111111 Parts per B 6 8 0 44466 Fluo- Ni-ride trate (F) (NO₃) 1.5 ; 1 11 | | 1111 0.004.00 0.000.00 0.000.00 3.52.0 Chloride <u>ច</u> Sulfate (SO4) 19:1110 111111 Car-bon-ate (CO₂) -uoq Bi-97 92 92 94 84 8 2 2 2 2 2 Po-tas-sium (K) 111111 14:1116 Sodium (Na) 6.4 8.0 6.6 8.9 27.4.6.6.4 9:11111 18:1118:9 Mag-ne-sium (Mg) Cal (Ca) 61 | | | | 12118 0.08 Fe) Silica (SiQ₂) 111111 1116 Mean discharge (cfs) 248 315 300 300 459 1,570 595 570 231 333 365 495 Nov 3. Dec. 7. Jan 4. 1961 Feb. 17. Apr. 12 May 3. June 1. Aug, 7. Sept. 6 12, 1960.... Date of collection

RUSSIAN RIVER BASIN--Continued

RUSSIAN RIVER BASIN--Continued 11-4640. RUSSIAN RIVER NEAR HEALDSBURG, CALIF.

LOCATION:—At gaging station, in Sotoyome Grant, 2 miles east of Healdsburg, Sonoma County, and 3.5 miles upstream from Dry Creek. DRAINAGE AREA. 791 square miles.

OCTOBER OF STATIONALE.—Chemical analyses: October 1953 to September 1961.

		PH	8.0	8.2	7.0	8.1	8.1	8,1	8.2	8.3	8,3	7.9	8.0	8.0
	Specific con-	duct- ance (micro- mhos at 25°C)	234	227	258	247	193	280 8.1	246	237	247	229	220	215 8.0
		ad- ad- Sorp- tion ratio	6.0		4.	6		ů.	е,	4.	<u>ښ</u>	۳.	۳.	۴.
		Non- car- bon-	٥	0	13	2	4	11	80	0	8	0	7	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	106	101	108	116	88	132	119	108	114	105	104	86
_	solids ted)	Tons per day												
er 1961	Dissolved solids (calculated)	Tons per acre- foot		1	!	!	1	1		0,19	1	1	;	.17
Septemb	etic (,	Parts per million		1	;	!	1	1	1	140	1	ļ	ŀ	123
90 to		ron (B)	0.4	4.	4.	4.		۳,		۳.	۴,	2	4.	4.
er 19		ride trate (F) (NO,)	!	1	1	ļ	!	}	1	0.8	1	1	ļ	80
Sctob		Fluo- ride t (F)	l	1	!	ł	ŀ	1	ŀ	0.2	ł	1	1	۲.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	5,5	1	5,2	5.0	3.0	4.2	4.5	3.8	5.5	3,3	4.6	2.3
ion, wat		Sulfate (SO ₄)	1	1	1	1	1	ļ	1	11	ł	1	1	7.0
111	į	Pon- ate (CO ₃)	0	0	0	0	0	0	•	H	-	0	0	0
ts per	Bi-	car- bon- ate (HCO ₃)	130	124	116	135	102	148	135	130	134	128	125	120
n par	ģ	Sium (K)	1	1	1	1	1	i	1	1.4	1	}	1	1.0
lyses, i		Sodium (Na)	7.7	7.7	0.6	8.0	5.6	8.5	8.3	9.5	8.5	7.5	6.9	7.0
al ana	Š	mag- ne- sium (Mg)	12	1	I	1	1	1	ł	12	1	!	ł	9,2
Chemic		ctum (Ca)	23	!	!	;	ļ	ŀ	;	23	;	1	1	24
		Iron (Fe)								0.02				
		Silica (SiO ₂)	1	1	1	!	1	!	!	13	1	!	Ľ	12
		Mean discharge (cfs)	227	295	877	605	3,270	842	890	752	415	325	300	390
		Date of collection	Oct. 13, 1960	Nov. 3	Dec. 7	Jan. 4, 1961	Feb. 17	Mar. 1	Apr. 13	May 3	June 1	July 7	Aug. 2	Sept. 6

RUSSIAN RIVER BASIN--Continued

11-4670. RUSSIAN RIVER AT GUERNEVILLE, CALIF.

LOCATION: --On State Highway 12 bridge in Guerneville, Sonoma County, 5.3 miles downstream from gaging station, and 6.5 miles upstream from Austin Creek. DALINARB ARRA-1,343 square miles upstream from gaging station grammer from gaging station of the RECORDS AVAILARIE. --Chemical malyses: October 1953 to September 1961.

		Нq	8,1	8.3	6.3	8.1	7.8	8.1	8.2	8.1	8.2	8,2	7.7	8,2
	Specific	duct- ance (micro- mhos at 25°C)	257	244	264	266	193	280	258	253	264	242	236	226
		ad- ad- Borp- tion ratio	0.4	7.	₹.	7	e,	ıç.	4.		4.	e.	<u>.</u>	£.
		Non- car- bon-	0	Ä	61	9	63	7	9	0	H	0	9	0
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	114	108	114	123	81	127	120	112	119	112	115	104
	solids	Tons c day						-						
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	ľ	ł	;	;	1		0.21	1	1	1	, 18
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dis (ca	Parts per million	1	!	1	!	1	ł	ŀ	155	!	1	!	132
60 to		Bo- ron (B)	0.4	4.	4.	۳.	۲.	e.		۳,	۳.	_	۳.	4.
er 19		Ni- trate (NO ₃)		1	!	!	۱ _	!		1:1	1	!	!	.7
0ctob		Fluo- Ni- ride trate (F) (NO ₂)	1	1	!	!	1	1		0.1	!	!	!	۲.
er year		Chloride (C1)	8.0	5,5	7.2	6.0	4.0	5,5		5.8	6,5	3.1	4.0	2.5
ion, wat		Sulfate (SO ₄)	1	I	1	!	1	1	ł	14	1	1	1	8.0
mi11		CO See	0	63	0	0	0	0	0	0	0	0	0	0
ts per		car- bon- ate (HCO ₃)	140	127	65	143	96	146	139	139	144	136	133	128
n par	ć	tas- stum (K)		1	ŀ	;	1	1	1	2,5	1	1	1	1.1
lyses, 1		Sodium (Na)	9.7	8.9	9.3	9.3	6.5	13	9,3	13	6.3	7.7	7.5	7.9
al ana	Yes	mag- ne- sium (Mg)	13	1	ŀ	!	1	ł	1	13	1	1	1	11
Chemic		Cal- ctum (Ca)	24	{	ł	ł	1	1		24	1	1	1	23
		Iron (Fe)								0.02				
		Silica (SiO ₆)		1	1	1	1	1	1	13	1	1	ŀ	14
		Mean discharge (cfs)	228				6,400		995					377
		Date of collection	Oct. 13, 1960	Nov. 4	Dec. 8	Jan. 4, 1961	Feb. 17	Mar. 1	Apr. 13	May 4	June 1	July 7	Aug. 1	Sept. 5

88.23

Нď

GUALALA RIVER BASIN

11-4675. SOUTH FORK GUALALA RIVER NEAR ANNAPOLIS, CALIF.

LOCATION. --Approximately 400 feet downstream from gaging station, 1,400 feet downstream from Wheatfield Fork Gualala River, and 4.8 miles west of Annapolas, Sonoma County.

DRAINAGE AREA. --1601 square miles.

RECORDS AVAILABLE. --Chemical analyses: January 1959 to September 1961.

		፟፝ፙ	80	œ	9	٢	œ	۴	2	œ	œ	œ	7	œ
	Specific	duct- ance (micro- mhos at 25°C)	300	302	184	224	176	181	195	222	252	272	276	274
	8.	dium ad- Borp- tion ratio	9.0	'n.	'n.	₹.	4.	4.	۳.	'n	۳.	ď.	υ.	9.
	co,	Non- car- bon-	0	0	12	-	•	3	3	0	1	0	7	0
	Hardness as CaCO,	Cal- cium, Mag- ns- stum	128	130	99	92	72	92	83	102	107	110	123	116
_	solids ted)	Tons per day												
r 196	Dissolved solids (calculated)	Tons per acre- foot	1	!	i	1	;	!	ł	0.20	!	;	}	.24
Chemical analyses, in parts per million, water year October 1960 to September 1961	Dis (ce	Parts per million	1	1	;	1	!	1	ł	148	1	1	!	173
60 to		Bo- ron (B)	0.0	۲.			۰.			٦.	٠.	۰.	Τ.	.2
er 19		trate (NO ₂)		1	!	1	!	1	1	1.0	!	1	l	.2
Octob		Fluo- ride (F)	-	!	!	!	!	1	1	0.1	1	1	!	۰.
er year		Chloride (CI)	11	13	7.2	6.8	4.8	5.8	8.0	7.5	7.5	7.2	10	13
ion, wat		Sulfate (SO4)		1	!	1	1	}	1	13	!	ł	!	12
llim:	ا ا	bon- ate (CO ₃)	0	0	0	0	•	•	•	0	0	0	0	2
rts per		car- bon- ate (HCO ₃)	163	164	99	115	88	87	86	127	129	120	149	147
in pa		tas- sium (K)	1	ł	1	;	1	!		1,3		!	!	1.4
alyses,		Sodium (Na)	15	14	0.6	9.6	7.2	8.5	5.8	11	12	13	13	15
cal an	<u>غ</u>	mag- ne- stum (Mg)	15	1	1	1	1	!		9	1	1	1	11
Chemi		Cal- ctum (Ca)	22	1	1	1	;	1	_ 	24	;	1	!	28
		Iron (Fs)								0.0				
		Silica (SiQ ₆)	-	1	1	-	1	1		17	1	;		18
		Msan discharge (cfs)	8.9	8.9	370	120	836	336	299	48	44	13	6.0	3.7
		Date of collection	Oct. 10, 1960	Nov. 7		Jan. 9, 1961	Feb. 6	Mar. 7	Apr. 3	May 11	June 5	July 3	Aug. 1	Sept. 5

NAVARRO RIVER BASIN

11-4680. NAVARRO RIVER NEAR NAVARRO, CALIF.

LOCATION .-- At gaging station, 2.7 miles downstream from North Fork, 5.4 miles upstream from mouth, and 6.6 miles west of Navarro, Mendocino County.

DRAINAGE ARRA304 square miles. RECORDS AVAILABLEChemical analyse	square mi	iles. analy	ses:	Januar	y 1959	January 1959 to September 1961.	mber	1961.		i		•											
				Chemi	cal ana	lyses, i	n par	ts per	milli	on, wate	Chemical analyses, in parts per million, water year October 1960 to September 1961	ctobe	r 196	0 to	Septembe	1961							
							Ė		į						Diss (cg	Dissolved solids (calculated)	lids bd)	Hardness as CaCO,			Specific con-		
Date of collection	Mean Silica II discharge (SiO _a) ((cfs)	Silica (SiQ,)	(Fe)	Ctum (Ca)	mag- rie- sium (Mg)	Sodium (Na)	F tas-	car- bon- ate (HCO ₃)		Sulfate (SO4)	Chloride (Cl)	Fluo- Ni- ride trate (F) (NO ₂)	Ni- Frate (NO.)	- og (B)	Parts per million	Tons per acre- foot	Tons per day	Cal- cium, Mag- ne- stum	Non- car- bon-	ad- ad- Borp-(r tion m	duct- ance (micro- mhos at 25°C)	Нq	
Oct. 10, 1960	21	1		27	11	13	1	147		!	10	1	0.1	0.1	1	1		114	0	0.5	280	7.8	
Nov. 7		1		!	1	14	ŀ	120		1	14	1	ł	7	1	}		118	0	9.	277	8.2	
Dec. 5		1		1	1	9.7	1	92		1	8.0	1	ŀ	۲.	1	1		79	-	ŗ.	199	7.8	
Jan. 9, 1961		1		1	1	11	!	120		1	7.5	1	1	۲.	1	!		100	7	'n	235	7.5	
Feb. 6	702	1		1	1	7.7	1	98		ł	6.2	1	1	۲.	}	1		71	0	4.	178	8.0	
Mar. 7		<u>. </u>		1	1	6.3	1	96		ł	0.9	-	1	۲.	I	ī		82	က	4.	198	6.2	
Apr. 3	427	1		<u> </u>	1	8.9	-	96		ı	8.5	1	I	•	ŀ	ł		78	0	۳.	194	7.8	
May 11	222 17	17	0.0	24	7.3	11	1,2	114		11	7.8	0.1	0.5	۲.	136	0.18		8	0	ı,	201	8.1	
June 5	80	1		1	l	2.0	ŀ	134		1	0.6	I	¦	2	ł			105	0	٦.	255	8.2	
July 3	26	1		}	1	13	ŀ	145		1	7.4	ł	1	۲.	}	}		105	0	9.	261	8.1	
Aug. 1	11	1		1	1	13		140		1	8.7	¦			1	!		116	Н	ı.	258	0.8	
Sept. 5	-	18	_	26	11	14	1.4	143	_	8.0	10	•	'n	.2	129	. 22		109	0	9.	263	8.1	

NAVARRO RIVER BASIN

11-4680. NAVARRO RIVER NEAR NAVARRO, CALIF.

LOCATION .-- At gaging station, 2.7 miles downstream from North Fork, 5.4 miles upstream from mouth, and 6.6 miles west of Navarro, Mendocino County.

DRAINAGE AREA304 square miles. RECORDS AVAILABLEChemical anal	Square mi-Chemical	iles. analy	yses:	Januar	у 1959	January 1959 to September 1961	mber	1961.		•		•					•					
				Chemi	cal ana	lyses, i	n par	ts per	milli	on, wat	Chemical analyses, in parts per million, water year October 1960 to September 1961	ctobe	r 196	0 to	Septembe	r 1961						
					, T				į						Diss (cs	Dissolved solids (calculated)	olids ed)	Hardness as CaCO,	co,	& :	Specific con-	
Date of collection	Mean discharge (cfs)	Silica (SiO ₆)	fron (Fe)	Cal- cium (Ca)	mag- ne- sium (Mg)	Sodium (Na)	tas- stum (K)	car-bon-report	(CO)	Sulfate (SO ₄)	Chloride (Cl)	Fluo- Ni- Fride trate r (F) (NO ₃)	ni- trate (NO ₂)	- 10 B	Parts per million	Tons per acre- foot	Tons per day	Cal- ctum, Mag- ne- stum	Non- carr- bon-	dlum ad- Borp- tion ratio	duct- ance (micro- mhos at 25°C)	Нď
Oct. 10, 1960	21	ŀ		27	==	13	1	147		ł	10	1	ł	0.1	1	ī		114	°	0.5	280	280 7.8
Nov. 7		1		!	1	14	I	120		1	14	1	ł	7	1	ł		118	0	9.	277	8.2
Dec. 5		1		ŀ	1	9.7	1	92			8.0	!	ŀ	۲.	1	ł		79	-	.5	199	7.8
Jan. 9, 1961		;		1	1	11	l	120		1	7.5	1	1	٠.	1	1		9	7		235	7.5
Feb. 6	702	ł		1	!	7.7	1	98		ł	6.2	ł	ł	۲.	1	1		77	•	4.	178	8.0
Mar. 7		1		!	;	6.0	Ī	96		ł	6.0	ŀ	1	۲.	1	I		82	n	4.	198	7.9
Apr. 3	427	1		ŀ	1	8.9	-	96		ŀ	8.5	-	1	•	ŀ	ł		78	•	.3	194	7.8
May 11	222 17	11	9.0	24	7.3	11	1,2	114		11	7.8	0.1	0.5	Ε,	136	0.18		8	0	.5	201	201 8.1
June 5	80	1		!	1	2.0	ŀ	134		1	0.6	Ī	ŀ	2	ł	}		105	•	.1	255	8.2
July 3	26	1		}	1	13	ŀ	145		1	7.4	ł	ŀ	۲.	}	}		105	0	9.	261	
Aug. 1	11	1		1	1	13		140		ľ	8.7	ľ	•	ņ	1	1		116	Η,		258	0.0
Sept. 5	7.1	18		26	11	14	1.4	143		8.0	10	o.	• 2	.2	129	. 22		109	٥	9.	263	8.1

BIG RIVER BASIN

11-4681. BIG RIVER NEAR MOUTH, NEAR MENDOCINO, CALIF.

LOCATION. --Approximately 200 feet upstream from Little North Fork Big River, and approximately 5.5 miles east of Mendocino, Mendocino County. RECORDS AVAILABLE. --Chemical analyses: January 1959 to September 1961.

232 7.8 235 7.9 156 7.6 185 7.8 146 8.0 7.8 8.2 8.2 8.0 7.9 Hď 146 157 196 210 211 mhos at 25°C) Specific ductance (micro-Borp-tion ratio åd-000000 000000 car--uoq Non-Hardness as CaCO, ate Cal-ctum, Magne-94 94 95 95 95 95 95 Tons per day Dissolved solids (calculated) Chemical analyses, in parts per million, water year October 1960 to September 1961 acre-0.15 111111 1 1 8 Tons per 109 11111 million Parts per 4.8.4.6.44 ₽ <u>8</u> 8 4.4 Fluo- Ni-ride trate (F) (NO₂) 1.0 119 1211 7.9 Chloride <u>ਹ</u> Sulfate (SO₄) 121112 THILL Bi-car-bon-ate (HCO₃) 123 123 76 96 68 68 car. 73 87 111 112 113 Po-tas-Stum (K) 111111 1.4 5.8 112 122 133 113 14 9.0 10 7.7 Sodium (Na) % | | | | | | 5.1 Mag-ne-stum (Mg) Cal-Can (Ca) 811111 181118 0.00 Fe) Silica (SiQ_e) 181116 111111 Mean discharge (cfs) Apr. 3.
May 11.
June 5.
Aug. 1.
Sept. 5. 9 Oct. 10, 1960.... Mar, 7..... Date of collection

mhos at 25°C)

띥

ance Specific ductmicro172 7.9 174 8.1 132 7.5 145 7.4 116 7.8

7.7 7.9 7.9 7.5 8.05

114 120 148 157 163

NOYO RIVER BASIN

11-4665. NOYO RIVER NEAR FORT BRAGG, CALIF.

LOCATION. --At gaging station, 0.7 mile downstream from South Fork, and 3.5 miles east of Fort Bragg, Mendocino County. DRAINAGE AREA.--105 square miles. RECORDS AVAILABLE. --Chemical analyses: January 1959 to September 1961.

sd-Borp-tion 44,44,46 000000 000000 Nonate Hardness as CaCO, Cal-Mag-42 46 55 59 64 60 ne-65 65 65 65 65 65 rons per day Dissolved solids (calculated) Chemical analyses, in parts per million, water year October 1960 to September 1961 121.0 Tons per acre-foot 111111 181118 per million 111111 Parts 8 5 E 040000 Fluo- Ni-ride trate (F) (NO₂) 180 $\Pi\Pi\Pi\Pi$ 117 7.8 6.5 6.5 7.3 10 7.5 7.5 6.8 Chloride ਹੁ Sulfate 111111 80 Bi-car-car-bon-ate (HCO₃) (CO₃) 63 62 62 50 54 53 77 77 80 Po-tas-K) 161112 11111 4.7. 6.6. 11. 11. Sodfum (Na) 8.0 9.0 1.8 311111 121113 Mag-ne-stum (Mg) Ca) 211111 121119 0.04 Fe) Silter (SiQ.) 181118 Mean Sdischarge (cfs) Apr. 3.
May 11.
June 5.
Aug. 2.
Sept. 5. 9, 1961 10, 1960.... 9..... 7..... , , Date of collection

Nov. Dec. Jan. Feb.

MATTOLE RIVER BASIN

11-4690. MATTOLE RIVER NEAR PETROLIA, CALIF.

LOCATION: --At gaging station, 0.2 mile downstream from Clear Creek, 1.2 miles southeast of Petrolia, Humboldt County, and 1.3 miles upstream from North Fork. DAMINGE AREA.--242 square miles.
RECORDS AVAILABLE.--Chemical analyses: January 1959 to September 1961.

		Hd					7.9			7.7				
	Specific	duct- ance (micro- mhos at 25°C)	260	271	137	154	125	131	136	118	168	206	234	252
		drum ad- Borp- tion ratio	0.3	4.	4.	6,	e.	ĸ.	8	4.	8	e.	4.	
		Non- car- bon-	23	12	9	01	6	^	4	4	'n	ŝ	3	8
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	116	112	28	67	53	22	26	48	2	89	103	112
	solids rted)	Tons coper 1 day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	-	-	1	1	1	ŀ	0,11	1	ŀ	1	.21
Septembe) 명[대	Parts per million	-	Î	1	}	1	f	ł	81	Ī	Ī	1	152
30 to		- 100 B) II	0.0	٦.	•	۲.	•	o,	۲.	۰.	٦.	•	٦.	_
r 196		rate (NO ₂)	ļ	l	l	1	1	1	1	0,1	!	!	;	.2
Octobe		Fluo- ride (F)	1	1	1	!	1	 -		0.1	1	ł	ł	
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	5.0	1	4.2	3.5	3.0	2.8	4.8	5.5	4.2	4.5	4.0	5.0
ion, wat		Sulfate (SO ₄)	1	1	1	1	1	l	i	9.0	1	-	}	21
m111		(C) (S)	0	0	_	_	•		0	0	0	•	0	2
ts per	Bi-	car- bon- ate (HCO ₂)	114	122	28	2	54	28	63	54	79	103	119	123
n par	ů.	tas (K)	1	!	ŀ	!	!	1	!	1,2	!	!	!	1.3
lyses, i		Sodium (Na.)			6.4	6.5	5.3	5.6	3.4	6.0	3.4	7.2		
al ans	Mea	mag ne- stum (Mg)	6.3	1	1	!	1	!	ł	3.8	1	1	1	5.4
Chemic		ctum (Ca)	36	1	i	1	ŀ	!		13	1	ŀ	1	36
		fron (Fs)								8.0				
		Silica (SiQ _e)	1	1	1	1	1	1	1	15	1	1	1	13
		Mean discharge (SiO ₂) (cfs)	69				1,720	1,330	968	2,430	355		99	
		Date of collection	Oct. 12, 1960	Nov. 9	Dec. 7	Jan. 11, 1961	Feb. 8	Mar. 8	Apr. 5	May 10	June 6	July 5	Aug. 2	Sept. 5

EEL RIVER BASIN

11-4710. POTTER VALLEY POWERHOUSE TAILRACE NEAR POTTER VALLEY, CALIF.

LOCATION. --At gaging station, 100 feet downstream from powerhouse of Pacific Gas and Electric Company, and 3 miles northwest of Potter Valley,
Mendocino County.

RECORDS AVAILABLE. --Chemical analyses: October 1953 to September 1961.

		рН	8.0	7.9	7.4	7.5	7.9	7.8	7.9	7,9	8.0	8.1	7.8	7.9
	Specific con-	duct- ance (micro- mhos at 25°C)	164	174	144	146	108	130	137	134	148	152	150	150
		ad- ad- Sorp- tion ratio	0.3		6	۳.	2	2	2	۳.	۳.	~	2	7
		Non- car- bon-	0	0	8	0	ı	6	0	0	0	0	9	87
	Hardness as CaCO,	Cal- clum, Mag- ne- sium	72	78	19	7.1	46	22	62	9	99	69	72	89
	solids ted)	Tons per day		-										
er 1961	Dissolved solids (calculated)	Tons per acre- foot		!	1	1	1	1		0.11	1	ŀ	i	.12
Chemical analyses, in parts per million, water year October 1960 to September 1961	and o	Parts per million	1	;	1	!	!	1	-	82	!	1	1	89
60 to		ron (B)	0.2		4.	4.		٠ <u>.</u>		~		_		
er 19		Fluo- Ni- ride trate (F) (NO ₃)		!	!	!	1	!		0.0		ł	1	.5
octob		Fluo- ride (F)	;	!	1		;	1	- 1	0.2		1	_	٠.
er year		Chloride (Cl)	3.5	5.5	3,8	3.2	۰.	1,5	2.0	2.0	2,5	.7	2.8	2.0
ion, wat		Sulfate (SO ₄)	-	1	ï	1	I	1	ŀ	5.8	1	1	1	7.0
II 11	į	bon- ate (CO ₃)												
ts per		car- bon- ate (HCO ₃)	90	92	72	88	54	99	75	75	78	8	8	81
n par	ć	tas- sium (K)		1	1	1	!	ł		6.0		1	_	٠.
Lyses,		Sodium (Na)	5.4	5.6	5,3	5.8	4.0	4.2	4.1	4.8	4.9	4.7	4.6	4.5
al ana	Š	nie- sium (Mg)	6.0	1	!	ł	!	1	ł	4.9	!	1	1	5.0
Chemic		Cal- cium (Ca)	19	ļ	!	1	1	ŀ	ŀ	16	ŀ	;	ŀ	19
		Iron (Fe)								0.04				
		Silica (SiQ,)		1	1		1	1		2	;	ŀ	!	2
		Mean discharge (Sig (cfs)	245	306	303	211	300	302	305	309	213	110	94	267
		Date of collection	Oct. 12, 1960	Nov. 3	Dec. 7	Jan. 4, 1961	Feb. 17	Mar. 13	Apr. 12	May 3	June 2	July 8	Aug. 2	Sept. 6

EEL RIVER BASIN--Continued

EEL RIVER BASIN--CONTINUED
11-4721.5. EEL RIVER NEAR DOS RIOS, CALIF.

No correction made for LOCATION. --At bridge upstream from Outlet Creek, and approximately 6.2 miles south of Dos Rios, Mendocino County.
RECORDS AVAILARLE. --Chemical analyses: October 1958 to September 1961.
REMANES. --Discharge used is difference between gaging stations at Eel River above Dos Rios and Outlet Creek near Longvale.
inflow between stations.

		Hď	8.0	8.1	7.9	7.9	7.9	137 8.1	8.1	163 8.0	8.2	8.2	8.4	8.6
	Specific	duct- ance (micro- mhos at 25°C)	340	271	154	191	134	137	135	163	207	249	227	226
		ad- ad- Borp- tion ratio	1.1	4.	ຕຸ	4.	2	22	۲.	ε.	e.	<u>ښ</u>	5.	
	co,	Non- car- bon-	9	10	4	4	2	Ħ	4	3	c.	00	-	iO.
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	100	117	99	84	29	9	63	73	85	114	94	95
	solids ted)	Tons per day												
ır 1961	Dissolved solids (calculated)	Tons per acre- foot	1	ì	}	ł	1	1	1	0.14	1	1	ì	.18
Septembe	Dids (C2	Parts per million	1	1	1	1	1	1	1	100	}	1	1	132
60 to		B 2 8	0.4	4.	٦.					~	_	~	۳,	۳.
er 19		trate (NO ₃)	1	ł	!	1	!	!		0.0	!	1	!	
Octob		Fluo- Ni- ride trate (F) (NO ₃)	!	1	!	1	1	1		0.1	!	!	!	٦.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (CI)	6.8	9.0	3.5	4.0	2,5	!	3,5	2.8	4.3	5.0	5,1	7.0
lion, wa		Sulfate (SO ₄)	;	1	١	14	1	1	١	97	1	ł	1	81
. mil.		Pon- ate (CO)	0	0	•	0	•	•	۰	•	•	0	03	4
ts per	Bi-	car- bon- ate (HCO ₃)	115	130	75	86	69	72	72	82	109	132	109	102
n par	å	fas- sium (K)	1	ł	ŀ	1	1	1		8.0	1	;		1.2
lyses,		Sodium (Na)	25	9.2	5.6	8.5	4.0	4.2	2.4	5.4	9.9	8.5	70	97
al ans	Max	mag- ne- stum (Mg)		1	!	i	;	!	ł	6.8	!	ł	l	7.9
Chemic		Cal- ctum (Ca)	1	ł	1	1	ł		;	18	1	ļ	1	22
		Iron (Fe)								0.00				
		Silica (SiO ₂)	1	ł	!	;	l	1	1	14	ŀ	l		8.1
		Mean discharge (cfs)	13							1,360				
		Date of collection	oct. 11, 1960	Nov. 8	Dec. 6	Jan. 10, 1961	Feb. 7	Mar. 7	Apr. 4	May 10	June 6	July 4	Aug. 1	8ept. 4

EKL RIVER BASIN---Continued

EKL KIVEK BASIN--CONTINUGA 11-4722. OUTLET CREEK NEAR LONGVALE, CALIF.

LOCATION.—At railroad bridge, approximately 0.9 mile downstream from gaging station, approximately 600 feet upstream from Eel River, and 6.5 miles northeast of Longvale, Mendocino County againg station.

DRAINGS REAL—159 square miles upstream from gaging station.

RECORD ANALARIA.—Chanical analyses: October 1968 to September 1961.

REMARKS.—160 appreciable inflow between sampling point and gaging station.

		Hd	316 8.2	8.1	7.8	7.8	7.8	7.7	8.0	108 7.5	8.1	8.1	8.4	4.8
	Specific con-	duct- ance (micro- mhos at 25°C)	316	360	129	158	115	88	127	108	181	239	318	396
	_	and and and and and and and and and and	0,5	9.	4.	4	۳.	£.	.2	.3	4.	4.	9.	«
	ness ICO3	Non- car- bon-	4	=	3	4	7	8	1	0	-	0	0	9
į	Hardness as CaCO ₃	Cal- cium, Mag- ne- shum	127	149	22	99	49	36	56	45	16	103	131	152
1	solids ated)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	-	!	!	!	1	!		0.10	!	!	!	.31
Septembe	erici	Parts per million	1	!	1	1	!	!	-	20	!	!	ţ	228
60 to		. 10 n	1.9	2.1			۳.	_		2	_	۲.	2,3	.0 4.2
r 19		rrate (NO ₂)	ł	1	1	;	1	!	+	0.4	!	ł	!	٠.
ctobe		Fluo- Ni- ride trate (F) (NO ₂)	ł	!	1	1	ŀ			0.1	1	1	1	۲.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	22	56	5.0	7.2	4.0	2.4	5.2	3,5	6.5	8.8	22	38
ion, wat		Sulfate (SO.)	1	1	1	7.0	-	1	ł	6.0	1	1	1	7.0
m111		(CO)	٥	0	0	0	0	•	0	0	0	0	n	4
ts per	Bi-	car- bon- ate (HCO ₃)	150	168	9	9/	28	42	67	22	92	127		
n par	F	tas- sium (X)		ł	1	ł	1	1		0.5	!	1		1.8
lyses, i		Sodium (Na)	13	17	0.9	7.1	4.7	3.7	3,1	4.4	7.5	10	17	24
al ans	,	mag- ne- sium (Mg)	1	;	1	1	1	ŀ	ŀ	5,1	1	1	1	16
Chemic		Call- clum (Ca)	-	1	1	1	1	1	ł	9.6	!	ł	1	35
		Iron (Fe)								°.				
		Silica (SiQ ₂)	1	1	1	1	1	1	1	13	;	ı	1	14
		Mean discharge (cfs)	2.4	2,9	215	86	398	962	245	521	53	4.6	1.7	1.7
		Date of collection	Oct. 11, 1960,	Nov. 8	Dec. 6	Jan. 10, 1961	Feb. 7	Mar. 7	Apr. 4.	May 10	June 6	July 4	Aug. 1	Sept. 4

Minimum

111161111126127

EEL RIVER BASIN--Continued

11-4725. KEL RIVER ABOVE DOS RIOS. CALIF.

and 2.1 miles south of Dos Rios, Mendocino County. LOCATION.--At gaging station, 1.8 miles upstream from Middle fork, and 2.1 miles south of Dos Rios, Mend MAINMAGA ARRA (revised).--705 square miles. RECORDS AVAILABLE.--Water temperatures: October 1957 to September 1959, October 1960 to September 1961.

Sediment loads: Maximum daily, 70,000 tons Feb. 11; minimum daily, less than 0.50 ton on many days.

"TREMES, 1957-61.--Sediment concentrations: Maximum daily, 4,410 ppp Feb. 8, 1960; minimum daily, 1 ppm on many days in 1957-61.

Sediment loads: Maximum daily, 796,000 tons Feb. 8, 1960; minimum daily, less than 0.50 ton on many days in 1957-61. Sediment records; October 1997 to September 1961.
EXTREMES, 1960-61.--Sediment concentrations: Maximum daily, 1,320 ppm Feb. 11; minimum daily, 1 ppm on many days. EXTREMES, 1957-61, -- Sediment concentrations:

Average 3 30 10111121121 ł 29 28 27 1111844111211 1 668 668 668 668 668 668 26 of water, water year October 1960 to September 1961 25 24 23 1111 ŀ 1 22 11 | 1444 | 14 | 14 | 15 | 14 | 1 | 166 | 187 | 177 | 176 | 186 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 1 111111114110111424 5 20 111 646 ٥ 8 1 2 2 2 2 1 1 1 111411411611166167177 Dαλ 11 1111264 184 67 14116 ł 1411 662 662 75 75 75 70 67 67 3 11 ł 4 2 1111111114 2 \equiv (3 E) 9 Temperature 0 _ 9 1 1823 1111 2 4 1111 1.47 11 38 i 1 111 11 111 557 69 67 67 64 64 188 179 178 160 174 19 ı ł က 47 2 11 l 1 1 ŀ 1141181 11 ŀ 1118699149116 1 ī 1 48 1 28 ī ī 63 --73 67 1 1 1 ł 1 1 ŀ ŀ ŀ 1 ł ł 67 78 68 17 69 Maximum Maximum Maximum Maximum Minimum Maximum Minimum ... Maximum Maximum Minimum Minimum Minimum Minimum Minimum ... : Maximum Minimum Maximum : Minimum Maximum Month Maximum Maximum eptember November

February annary

March

KEL RIVER BASIN--Continued

11-4725, EEL RIVER ABOVE DOS RIOS, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

		остовы	₹		NOVEMBE	R			DECEMBER		
 -			ded sediment	 		ded sed	iment			ded	sediment
Day	Mean dis-	Mean	Tons	Mean dis-	Mean		ons	Mean dis-	Mean		Tons
	charge (cfs)	concen- tration (ppm)	per day	charge (cfs)	concen- tration (ppm)	P	ons er ay	charge (cfs)	tration (ppm)		per day
\dashv				 							
1	4.4 4.7			8.7 8.5			T T	16500 7500	1300		57900 5870
3	5.1			8.1			Ť	2700	40		292
4	5.0		ľ	7.1		i	Ť	1170	34	1	107
5	5.3			7.1			Ť	784	17		36
6	8.1			7.9			7	553	10	ŀ	15
7	13			8.3			Ţ	452			9
8	15	2		29	2		Ţ	392 345	6		6
9	13 13	==		20 18			T T	340	8		6 7
11	11			23			1	350		ĺ	9
12	11			52	45	s	7	308	7		6
13	10			365	109	s	124	290		1	5
14	9.9			360	88	S	88	280			
15	9.9	1		205	43	s	25	625	64	S	195
16	9.9			113		_	7	5390	285 691	S	5800
17	9.7 9.1		Į.	79 395	18 92	S	110	13700 6960	268	5	26300 5480
19	11			256	88	s	65	3440	99	s	982
20	9.5	2		132	33	ĸ	12	1820	43	-	211
21	8.7	1		118	13		4	1620			150
22	8.3			102	9		- 5	1320	28		100
23	8.1			141	112	S	77	1040			65
24	8+1 8-5	==		640 4850	539 636		890 3330	815 652	15		40 26
26	9.5			2010	135	s	968	525			20
27	9.3			815	40		88	431	12	1	14
28	8.9		1	525	15	1	21	358		ŀ	9
29	8 • 7			395	10		11	308		ŀ	5
30	8.9 8.9	 1		640			55	278 282	3		2
Total	283.5		1	12338.7		12	2889	71528			103671
-		JANUAR'		1433001	FEBRUAR				MARCH		
		JANOAK	T		r	T			J	_	
2	258 241		3	10000 9040	482 506		200	254 229			6
3	229		ا ءَ	6840	300	K 6	000	211			ž
4	221	4	2	3980		1	400	192			1
5	209		2	2490			610	280	21	s	15
6	211		2	1810	55		269	1360	112	s	470
7	215		2	1410			110	1170	53	S	186
8	235	4	3	1290	28		98	1470	62	S	274
9	229 219	3	2	9730 7030	766 390		400 3200	2530 2710	142 218	S	1120 1680
11	203		2	18700	1320	s 70	0000	2810	128	s	998
12	195		i	11000	430	12	800	1790	38	5	197
13	190		1	7860	300		5370	1320	20	1	71
14	184		1	6890	190		3530	2720	240	5	3690
15	179	2	1	6600	190		3390	8810	576	1	13700
16	177		1	5260	175	2	2490	7180	318	1	6160
17	175		Ţ	3760	85	Ī	863	10300	552	١.	15400
18	171 168	1	Ţ	2680 1950	58	1	420	6830 4940	235 221	S	4540 3340
20	166		Ť	1550	32		134	5270	173	\$ \$	2700
21	166		т	1270			82	3620	70		684
22	163		7	1100	19	1	56	3290	75		666
23	203		1	970		1	47	3280	53		469
24	225 213		5 5	915 543	18 15		22	3740 4240	104 78	S	1150 923
26	529	26	S 52	494			19	4220	95	5	1130
27	622	38	5 67	462			16	3850	55		572
28	353	14	13	343	11	1	10	3080	33		274
29	3010	252	S 2540			1		2240	25		151
30	3520	136	S 1350 S 60300			l		1490	24		97 96
	15500	1280	5 60300		ı 			1690	1 21	1	70
Total				1			3620	97116		$\overline{}$	60766

S Computed by subdividing day. T Less than 0.50 ton.

K Computed from estimated-concentration graph and subdividing day.

BEL RIVER BASIN -- Continued

11-4725. EEL RIVER ABOVE DOS RIOS, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported loads are estimated)

$ \top$			(Where no con	centrations		port	ed Tongs a	re estimate		
ŀ		APRIL	ded sediment		MAY	امط	sediment		JUNE	lad andimont
_	Mean		ded sediment	Mean		qed	sealment	Mean		led sediment
Day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day	dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	1660	18	81	824	14		31	180		3
2	1540		58	757			25	166	-6	3 2
3	1450 1370	11	43 44	616 480	5		8	158 151	2	i
5	1290	13	45	353	1		i	142		Ť
6	930		30	398	2		2	141	1	T
7	995	11	30	525	3		4	141		Ţ
8	856 802	10	23 22	449 395		ļ	4 5	134 127	2	1
10	766	==	21	837	32	5	77	119		ī
11	498		12	2240	125	s	801	113	3	1
12	386	7	7 8	1660	40	s	192 39	110 103	 5	1
13	441 398	7	8	1210 990	12		21	96		1
15	395		7	860	4	l	- 9	85	2	Ť
16	389		6	616			5	81		Ţ
17	365 325	5	5 4	532 443	2	1	3 2	72 64	3	1
19	300	5	4	410	2	1	2	59		Ŧ
20	273		4	407			2	55	3	T
21	337	24	5 26	386	3		3	53		Ţ
22**	1030 2080	51	S 147	360			3	50 48	3	Ţ
23	1050	78 18	S 477 51	315 252			2	44		÷
25	925	==	27	221			2	42		T
26	824	9	20	219			2	38 35		T T
27	652 584	- 8	14 13	211 197	4		2 2	33		÷
29.0	716	14	27	186	1		1	32		T
30	766	8	17	186 195			1 2	32	5	
Total	24393		1281	17730		-	1260	2704		25
		JULY		177.50	AUGUST				EPTEMBER	
1	31			12		Г		7.0		
2	29		İ	12				6.6		
3	28			12				6 • 6		
5	26 26			12 11				6•4 6•2		
6	27			11				6.1		
7.0	26			11				5.7		
8	25		l	11		1		5.7		
10	24 22	2		11 10				5 • 7 5 • 7	2	
11	20			9.7				5.9		
12	19			9.5				6.1		
13	18			9.5				5.9		
15	18 17	2		9.3 9.3				5.9 6.1		
16	17			9.1				6.4		
17	16			8.9				6.6		
18	16	4		8 • 7		1		6.8		
20	16 15	1		8.5 11	10			6 • 8 6 • 8	1	
21	16			9.9				6.8		
22	16			8.7	7			6.8		
23	16 15			8 • 1 8 • 5				6.8	2	
25	16	2		8.7				6.4		
26	15			7.9				6.4		
27	15 14			8.7				6 • 2 6 • 1		
28	14			8.3 8.3				5.9		
30	13	1		8.1				5.9		
31	12			7.5	4	-				
Total	597		4	299•2		<u> </u>	2	188+9		1
Total	discharge	for ves	r (cfs-days).							381.724.3

Total discharge for year (cfs-days). 381,724.3
Total load for year (tons). 412,880

S Computed by subdividing day. T Less than 0.50 ton.

EEL RIVER BASIN--Continued

11-4725. EEL RIVER ABOVE DOS RIOS, CALIF. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis B, bottom withfrawal tube, C, chemically dispersed; D, decanation, M, in native water; P, pinet: S, sieve: V, visual accumulation tube: W, in distilled water)

	Mathod	of of	analysis	Δ	^	VPWC	Α	VPWC	^	Δ	. >	>	^	۸
			2.000		_	_						_		
			1.000	1	1	100	9	100	100	100	1	1	ŀ	ŀ
		eters	0.500	100	100	66	86	66	86	86	1	1	100	100
		millim 1	0.250	l						16				
	liment	Percent finer than size indicated, in millimeters	002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000							42				
	Suspended sediment	e indica	0.062	87	83	9/	26	99	29	89	94	95	72	73
	Suspen	than siz	0.031			67								
water,		t finer t	0.016	!	1	26	!	44	ŀ	1	1	1	!	1
Brilled		Percen	900 '0			45								
w, in a			0.004	-	!	33	1	56	1	1	ŀ	1	ł	1
a moe;			0.002			56								
F, pipet; S, sieve; V, Visual accumulation mue; W, in distilled water/	Sodimont	discharge	(tons per day)											
S, Bleve, V, VI	Sediment	concen- tration	(mdd)	720	730	2,080	820	2,070	1,110	1.330	276	546	684	46
r, piper		Discharge (cfs)		2,290	5,650	068'9	15,600	19,900	11,300	20.700	2,940	1,250	9,400	4,460
	Water tem-		(FF)	1	!	48	22	22	51	46	47	21	ł	46
	Go mu	ling.	point				_							
		Time (24 hour)		1650	0060	0932	0935	0902	0902		0935		0855	0840
		Date of collection		Nov. 24, 1960	Nov. 25	Dec. 1	2	Jan. 31, 1961	Feb. 9	Feb. 11	Mar. 10	Mar. 14	Mar. 15	Mar. 26

EEL RIVER BASIN -- Continued

11-4739. MIDDLE FORK EEL RIVER AT DOS RIOS, CALIF.

No correction made for

-		рН	8.0	8.2	7.9	8.0	8.0	8.1	8.1	8.0	8,1	8.2	8.5	8.4
	Specific con-	duct- ance (micro- mhos at 25°C)	368	371	154	184	138	162	103	128	140	235	278	282
		Borp- Borp- tion ratto	0.5	9.	e.	N.	N.	es.	٦.	8	٦.	2	4.	4.
		Non- car- bon- ate	20	44	80	9	4	2	4	20	7	15	19	27
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	149	152	20	83	64	74	20	9	65	110	125	118
=	solids ated)	Tons per day												
er 196	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	!	ł	!		0.11		1	!	
Septem	sra sra	Parts per million	ł	!	!	۱ 	!	!	!	81	!	1	ŧ	163
960 tc		Bo- ron (B)	6,0	۳.	۰.	4	٦.	-:		۰.				
)er 16		trate (NO ₂)						1		0.0		1	l	٠.
Octo		(F)		!	!	ł	1	1		0.1		1		٠.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	26	20	2.0	3.8	1.5	1		2.0				
lion, wa		Sulfate (SO4)	1	1	1	14	1	1	1	7.0	1	ł	!	8
r mil		(CO)	0	0	0	0	0	0	0	0	0	0	10	4
rts pe		car- bon- ate (HCO ₃)	121	132	26	94	73	84	28	67	7	116	119	103
in pa	Ė	tas K)	1	1	ł	1		1	;	0.9	I	ŀ	1	1:1
alyses,		Sodfum (Na)	14	16	5.3	4.9	3.6	3.7	1,3	3.2	1,3	5.9	10	11
cal an	-	ne- ne- stum (Mg)	;	{	1	;	1	;	1	5.5	1	1	;	9.4
Chemi		Cal- cium (Ca)	1	!	i	1	!		}	15	!	;	ļ	32
		Iron (Fe)	1	;	ì	1	1	}	1	0.00	1	;	1	8
		Silica (SiQ _e)	ł	1	ŀ	1	1	ŀ	ł	14	;	1	1	7.9
		Mean discharge (cfs)						4,510	7,470	3,860				
		Date of collection	oct. 11, 1960	Nov. 8	Dec. 6	Jan. 10, 1961	Feb. 7	Mar. 7	Apr. 4	May 10	June 6	July 4	Aug. 1	Sept. 4

EEL RIVER BASIN--Continued II-4739, MIDDLE FORE EEL RIVER AT DOS RIGS, CALIF.--Continued

	Aver-	ge				
	¥	es.	111	115	111	111
		31	96 	53	121	121
		30	118	212	212	818
		29	1\$1	218	53	111
		28	151	0 4 4 7 6 7	25	111
		27	45	5 5	1 62	111
1		26	151	47	212	111
196		25	1 6 4 6 5 6 5	124	111	811
ber		24	191	133	811	111
tem		23	151	119	\$11	112
Ser		22	134	111	6 6	121
ţ		21 22	691	113	4 K 8 8	111
961		20	414	184	112	80
er		19	174	113	63	111
ctob		18	1 2 2 4 8 4 8	0 4 4 4 0 20 0	112	211
0 1		17	52	1 5 5	51 1 2 1 1 2 1	211
Temperature (°F) of water, water year October 1960 to September 1961	Day	15 16 17	115	1 4 4	111	111
ter		15	5.0 4.9 5.5	47 47 45	188	841 111
WB.		14	94	1 4 4	112	111
ter		13	191	1 2 4	57	111
f wa		12	49	45	52	111
٥ (٢		11	111	1 2 4	49	111
٠,		10	119	213	121	31.5
ure		6	111	100	5 2 4 6 3	111
erat		8	57 54 41	4 4 4 4 7	111	111
ешъ		7		114	1 2 2	111
-		9	110	133	50	111
		5		115	281	123
		4	<u></u>	8	113	111
		က	1184	111	54	111
		2	124	37 52 48	118	111
		1		151	53	111
	Month	Month	October November December	January February March	April May. June	JulyAugust

EEL RIVER BASIN -- Continued

11-4739. MIDDLE FORK EEL RIVER AT DOS RICS, CALIF .-- Continued Monthly and annual summary of suspended-sediment discharge,

Month	Discharge (cfs)	Suspended-sedimen' (tons)
October 1960	526.5	-
November	19.464.3	43.100
December	84,851	283,000
January 1961	34,121	110.000
February	143,233	287,000
March	130,894	101,000
Apr11	71,797	16,700
May	55,472	6,640
June	14,536	380
July	3,086	20
August	928.8	6
September	518.1	•
Total for year	559,426.7	847,896

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawlathey C, chemically dispersed.) D, decanding N, in native water;

Date of collection Time of the collection Time of the collection Time of the collection Time of the collection Discharge of the collection Consistence of the collection Percent finer than size indicated, in millimeters Nov. 24, 1960 1630 45 3,100 2,930 (tons per day) 0,000 0,00 <t< th=""><th></th><th></th><th>1</th><th>Water</th><th></th><th>Sediment</th><th>Sodiment</th><th></th><th></th><th></th><th>Ø</th><th>uspend</th><th>Suspended sediment</th><th>nent</th><th></th><th></th><th></th><th></th><th>Vertex</th></t<>			1	Water		Sediment	Sodiment				Ø	uspend	Suspended sediment	nent					Vertex
4, 1960 1630 47 (upm) (upms) (upus) per day) 0.002 0.004 0.006 0.016 0.013 0.015 0.126	Date of collection		ling.	ber-	Discharge (cfs) E	concen- tration	discharge			Percent	finer tha	ın size	indicat	ed, in	nillime	ters			jo Jo
44, 1960			point	(F)]	(mdd)	(tons per day)	0.00	0.004	0.008	0.016	. 031	062 0	. 125 0	. 250 0.	500	80	2.000	analysis
15.5 15.0 4.5 7,000 3,760 2.7 2.9 9.0 9	Nov. 24, 1960	1630		47	3,100	2,930		L	23		38		57	20	88	100	!		VPWC
1, 1961. 0950 42 30,000 3,950 19 24 34 50 69 81 93 99 11, 1961. 0950 48 18,000 2,540 19 24 34 45 55 69	Nov. 25	1620		45	7,000	1,760	_	_	1	_	;	_	73	8	8	66	8		•
7/7 9950 48 18,000 2,230 19 24 45 55 62 73 87 99 11, 1961 9020 50,000 2,540 2,110 67 77 99 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2	Dec. 1	0830		42	30,000	3,950			59		20	_	69	81	93	66	91		VPWC
11, 1961 6920 50,000 2,540 30 54 85 89 95 99 1, 1961 0925 52 13,000 2,110 66 75 87 99 1, 1, 1960 1, 13,000 1, 870 67 77 89 98 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	Dec. 17	0920		48	18,000	2,230	_	19	24	34	45	22	- 62	23	87	66	901		VPWC
2 0925 52 13,000 2,110 66 75 87 99 2 1645 51 13,000 2,020 67 77 89 98 14 1655 49 6,000 1,870 67 77 89 98 14 10,000 45 9,000 15,870 64 76 99 100 15 10,000 86 64 76 89 100 15 9000 545 64 76 89 100 17 90 100 321 64 76 89 100 23 1040 84 2,000 84 91 91 96 97 100	Jan. 31, 1961	0260	_	20	20,000	2,540		_	30		24		82	68	92	66	100		VPWC
2 3 3 3 3 3 9	Feb. 2.	0925		22	13.000	2.110			1		;		- 99	75	87	66	001		A
94 9,000 1,870 67 77 89 99 1144 1655 49 6,000 1,080 67 77 89 99 15 90 45 10,080 88 64 76 89 100 15 90 45 90 321 64 76 89 100 25 46 6,100 34 64 76 89 100 23 48 6,100 34 68 77 90 100 23 48 6,100 84 2,500 84 77 90 95 23 48 2,500 84 2,500 84 97 100	Feb. 2.	1645		51	13,000	2,020			ı		1	_	67	11	68	86	901		^
144 1655 49 6,000 1,080 86 94 99 100 10,000 45 10,000 880 64 76 89 99 45 9,000 645 64 76 89 99 223 48 6,100 321 65 72 80 95 44 2,500 84 2,500 84 72 80 91 96 97 100	Feb. 9	0820		49	000,6	1,870			l		1		67	22	68	66	8		A
0900 45 10,000 880 64 76 89 99 090 0925 48 6,100 321 66 77 80 100 95 95 100 95 64 76 89 99 99 100 95 95 99 99 99 99 99 99 99 99 99 99 99	Mar. 14	1655		6	9,000	1,080			1		1		98	\$	6	100	!		٨
0925 45 9,000 545 66 77 90 100 225 48 6,100 321 66 72 80 95 1040 84 2,500 84 77 100	Mar. 15	0060		45	10,000	880			ı		l	_	9.9	16	68	66	100		>
0925 48 6,100 321 65 72 80 95 100 1040 44 2,500 84 91 96 97 100	Mar. 17	0925		45	000,6	545			1		1		88	22	8	81	1		>
1040 44 2,500 84	Mar. 23	0925		48	6,100	321			1		1		8	72	8	92	8		>
	Apr. 23	1040		\$	2,500	84		_	1		1		16	96		801	1		٨

KEL RIVER BASIN--Continued

11-4750. EEL RIVER AT ALDERPOINT. CALIF.

LOCATION .- Temperature recorder at gaging station at Alderpoint, Humboldt County, 600 feet downstream from Carter Creek, and 11.4 miles northeast of Garberville. DRAINAGE AREA. -- 2,079 square miles.

RECORDS AVAILARIE: --Water temperatures: November 1960 to September 1961.
EXTREMES November 1960 to September 1961.--Water temperatures: Maximum, 81°F June 16, July 10, 14, 15, Aug. 8-10; minimum, 3an. 5-6.

37°F

EEL RIVER BASIN--Continued

11-4752.5. EEL RIVER AT MCCANN, CALIF.

LOCATION: --Downstream from Summer Bridge, approximately 0.5 mile northwest of McCann, Humboldt County, and 6.5 miles upstream from confluence with the South Fork. RECORDS AVAILABLE. --Chemical analyses: October 1953 to September 1961. REMARES. --No discharge records available,

		Hd	8.0	8.1	7.8	7.9	8.0	7.9	8,1	7.9	8.1	8	8.3	8.3
	Specific	duct- ance (micro- mhos at 25°C)	284	301	153	200	147	152	131	144	163	235	255	266
		ad- ad- Borp-(tion ratio	0,3	۳.	2	8	7	4	٦.	8	۲.	۳.	e.	e.
	co _s	Non- car- bon-	14	41	7	90	4	7	ın	4	9	6	n	12
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	130	138	89	6	99	69	19	99	75	110	114	120
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	i	ŀ	ł	1	i	0.12	;	!	1	.21
Septembe	87Q	Parts per million		1	1	1	ł	1	ŀ	06	1	1	!	158
30 to		Bo- ron (B)	0.2	8	.1	5	۲.	•	•	٦.	•	~	•	.3
r 196		Ni- trate (NO ₃)	1	ł	I	ł	i	ŀ	ł	0.2	ī	1	1	٠.
ctobe		Fluo- ride (F)		ŀ	1	1	1	I	1	0.1	!	1	1	•
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	5.9	4.5	2.8	3.8	2.0	1	2.4	2.2	3,4	4.5	5,4	7.0
ion, wat		Sulfate (SO4)		1	1	15	ł	1	ł	0.6		!	!	22
m111	0	bon- ate (CO ₃)	0	0	0	0	0	0	0	0	0	0	4	7
ts per		car- bon- ate (HCO ₃)	141	118	74	100	92	92	89	16	84	123	125	128
n par	É	stun Stum (K)	1	i	ï	1	ł	1	ł	1.0	1	1	1	1,3
lyses, 1		Sodium (Na)	6,9	8.0	4,5	5.4	3.4	3.7	1.6	4.0	3.7	6.4	7.2	7.9
al ana	2,5	mag- ne- sium (Mg)	}	1	!	}	i	1	1	5.7	ł	l	ŀ	8.6
Chemic		Cal- ctum (Ca)	;	}	1	!	!	!		17	ŀ	1		34
		Iron (Fe)	;	;	1	;	i	ŀ	ł	0.00	1	ł	1	8
		Silica (SiQ ₂)	i	1	;	1	į	!	;	14	l	į	!	12
		Mean discharge (SiO ₂) (cis)												
		Date of collection	Oct. 11, 1960	Nov. 8	Dec. 6	Jan. 10, 1961	Feb. 7	Mar. 7	Apr. 4	May 10	June 6	July 4	Aug. 1	Sept. 4

KEL RIVER BASIN -- Continued

11-4755. SOUTH FORK REL RIVER NEAR BRANSCOMB, CALIF.

LOCATION: --Temperature recorder at gaging station, 0.4 mile upstream from Jack of Hearts Creek, and 4.7 miles north of Branscomb, Mendocino County.

DALANAGE AREA. --43.9 square miles.

EXTREMES, 1960-61.--Water temperatures: October 1960 to September 1961.

EXTREMES, 1960-61.--Water temperatures: Maximum, 82.º P Aug. 7.

Temperature (°F) of water, water year October 1960 to September 1961

	L														۵	Day															L	
Month	<u>_</u>	~	6	4	2	9	7	- w	٥	2	=	12	13	4	15	191	17	8	19	20 2	\vdash	22 2	23 2	24 2	25 2	26 2	27 28	8 29	30	3	Average	age
October			T	1		1	T	T	T	1	T	+	\dagger	†-	\vdash	+-	f	+	+-	+	+	+-	+	+		+-		+		+	_	
Maximum	;	ŀ	Ì	;	i	!	i	ŀ	1	!	1	1	<u>-</u>	<u>.</u>	1	<u>.</u>	1	_	1	-	1	_	<u> </u>	57	7 56	÷	5 51	52	25	21	1	
Minimum	1	1	Ì	-	i	!	1	1	:	-	i	!	÷	<u>.</u>	+	<u>'</u>	-	<u>'</u>	<u> </u>		<u> </u>	_	<u> </u>	_		<u></u>	_			_	-	
Maximum				20	67	84	64	64	6,7	6,7		2		_	4 6 7	649	_		50		48 48		48 49	-	_	64		48		!	-	
Minimum	2.1	2	50	8 4		4.7		64			6	200	50.	20 2			49	20	49 47	_	_	_		8	- 4	_	6	_	4.8			
December									_					-										_	-							
Maximum	Ī	1		64		94	_	7.7		7,7	_	7 7	-	_	<u> </u>	<u>-</u>	-	_	+	_	1	<u> </u>	<u> </u>	1	+	<u> </u>	-	<u> </u>	1	!	1	
une	1	1	64	48	7	4. n.	44	44	43	43	7 7 7 7	7 7	44	7 7 7	44	<u>.</u> !	+	-	1	_	1		1	!	1	<u> </u>	+	1	<u>!</u>	1	1	
January							_		_						_										_		_	_	_			
Maximum	!	!	!	ŀ		:	<u>.</u>	<u> </u>	<u>.</u>	:	-	:	<u>-</u>	:	<u>-</u>	-	<u> </u>	<u>-</u>	<u> </u>	_	<u> </u>	_	<u>!</u>	_	_	_	*	-	2	2	_	
Minimum	1	1	Ī	1	;	!	i	-	i	!	i	!	 	<u>.</u> ¦	1	<u>-</u>	1	_	1	_	<u> </u>	-	1	. 48	8 48	48		÷	_		;	
February					_					-	_		_		_	-	_												_	_		
Maximum	51	51	51	2	2		3	20	_	20		20	20	20	50	20	20	20		-		-			_		48 48	_		<u> </u>	2	
Minimum	_		_	21		~		20	20	20	20	20	_			_	_		49 49	_	64 64	_	47 48	4.8	8 46	47		_	<u> </u>	!	_	
March	9	,		5	45	45	-4	, t	- 4		47	;	8 9		4 8 7	7	48	_	_	-	07 07		48 40		40 50	50		2			_	
Minimum	_		1	. 6	_	. 4	_		_	. 4		. 4	_	8 4	_	-		9	48 48	-		_	_		67 67	_	6	_	20	2	4.7	
A - millimination		?		?	_	-		}	_	-		-	_		_		_	-	_			-	_	_				_		_		
Maximim				69		54	2	21		51		-25		_	53			_		_		_	6 4 9		51 50	51			_	-		
Minimum	52	54	56	22	55	64	_	47	8	47	64	20	45	46		51	52 4	48	44 46	-	45 44	_	43 45		48 48	_	48 50	21	2	1	- 4	
Mav	_	_	_	_	_		_	_	_	_	_	_		-	_	_	-	_	_	_	_	_	_		_	_	_	_		_		
Maximum	53	52	_	51		64		25	25	51	20	51		54	55	55	57 5	57 5	58 55	-	54 54		54 56		56 57			5	8	57	54	
Minimum			6	84	64	9,	47	64	_	20		94	64		_			_			_			_			53 56	_	_			
June		_								-				_	_	_			_		_	_	_					_	_		_	
Maximum	9	29	63	63	69	6	29	79	69	63		9		7:		_	7	2:	27		7/ 5/		5		9 9		* :	2 5	7.5	;	ò:	
Minimum	_		_	79		28		9		9	7	29	29		<u> </u>	89				_		_	9		6	_	6		_	_	_	
Marimum	7.3	7,4	_	9	_	89		12	73	7		7.8		_		76	77 7	78 7	78 77	_		_	9		79 79	_	80 79	79	9 76			
Minimum			49	63	9	9	61	63		65	89	69	2	- 99	65	_			-		66 67	-	69 99				_	_	_	49	9	
	_		-			-				-		-	_	-		_			_		_	_							_	_		
Maximum	7.5		_	9.	9 9	6:1	85	6 :	8	8 5	7.	7:		7.3	_	23	727	11	70 73	_	71 70	_	2 :		68 66		69 71	7.5	7/2	2 \$	* :	
Minimum	_	*	8	7		-		7		<u>.</u>	_	8	8	-	<u>.</u>				_	_	_	_	_			_				_	_	
Maximum		69		20	_	67		65		65	65	63		- 25	_		_	-					1 61		19	_		29		1	63	
	9		29	29	28	57	26	55	55	55		54	54	55	59	59	57 5	58	56 55	_	55 54	_	54 52	_	52 53		55 54	_	2 20			
	_	_	1		-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	_	-	-	_	-	-	_	-	-	_	

EEL RIVER BASIN--Continued

11-4755. SOUTH FORK EKL RIVER NEAR BRANSCOMB, CALIF. -- Continued

Periodic determinations of suspended-sediment discharge, water year October 1960 to September 1961 (Methods of analysis B. bottom withdrawal tube; C, chemically dispersed; D, decardation; N, in native water; P nicer: S steve: V visual secumulation tube: W in distilled water)

Suspended Beament	Percent finer than size indicated, in millimeters of	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000 analysis																
		1.000 2.0								-				_	_	_		
	neters	0.500																
	n millir	0.250													_	_		_
diment	cated, i	0.125													_			
nded se	ize indi	0.062	L	_														_
Suspe	than si	3 0.031													_			_
	nt finer	0.016				_										_		
	Perce	90.00																
		2 0.00																
		0.00	_				-				_	_						
Sodiment	discharge	(tons per day)	4	0.1	1.2	ε.	ī.	37	1.8	44	2.9	14	2.1		~	۲.	4	•
Sediment	concen- tration	(mdd)	τ	4	9	8	4	24	7	27	6	33	5	83	₹	6	6	•
	Discharge (cfs)	(crs)	3.2	12	74	37	48	268	94	603	121	159	156	4	19	#	5.3	
Water	per-	ature (°F)	52	2	44	48	48	20	49	49	55	45	52	28	69	74	77	60
	ii.	point													_			
	Time (24 hour)	(mon sø)	ĺ							1635			0855					0661
	Date of collection		Oct. 20, 1960	lov. 17	ec. 12	an. 25, 1961	an. 28	eb. 17	lar. 1	Mar. 25	pr. 5	pr. 22	May 17	'une 6	'une 26	'uly 18	Aug. 10	n + 100

t Less than 0.05 ton.

EEL RIVER BASIN--Continued

11-4765. SOUTH FORK EEL RIVER NEAR MIRANDA, CALIF.

LOCATION: --At gaging station, at Sylvandale Campgrounds on U.S. Highway 101, 0.5 mile upstream from Rocky Glen Creek, 4.3 miles southeast of Miranda, PHMDoidt County, and 20 miles upstream from mouth.

HENDINGE AREA.-537 square miles upstream from mouth.

RECORDS AVAILAGE. --Chemical analyses: October 1983 to September 1981.

Water temperatures: November 1980 to September 1981.

EXTREMES, 1960-61.--Mater temperatures: Maximum, 92°F July 10; minimum, 40°F Jan. 5.

		Нq	8.2	8.3	7,5	7,5	0.8	7.8	6.7	7.9	8.2	8.2	8.4	8.6
	Specific con-	duct- ance (micro- mhos at 25°C)	258	284	130	153	125	120	133	129	165	197	218	231
		ad- ad- Borp-(tion ratio	0.4	₹.	4	4.	e.	<u>.</u>	2	۳,		m.	4.	4.
		Non- 8 car- 8 bon- 1	3	3	ß	e	0	m	П	0	П	0	0	•
	Hardness as CaCO,	Cal- Cium, Mag- ne- sium	118	118	28	67	25	21	57	23	72	84	66	20
	EE 68	Cin Mi Sin	_	_								_	_	_
	solids ted)	Tons per day												
er 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	1	1	1	1		0.11	!	1		.18
Septemb	sid	Parts per million		!	ļ	; _	;	!	;	84	!	;	!	136
30 to		B 2 8	_	7	•	٥.	2	•	۲.	٦.	۲.	•	۲.	٦.
r 196		Ni- trate (NO ₃)	1	ī	ŀ	I	I	l	;	0,1	1	1	!	.2
ctobe		Fluo- Ni- ride trate (F) (NO ₃)	1	i	1	1	1	1	ł	0.1	1	1	1	7
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (CI)	8.5	!	4.2	4.8	4.5	2.8	4.6	3.8	5,3	3.8	5.8	8.0
lon, wat		Sulfate (SO4)		Ī	1	i	1	1	ł	7.0	1	1	ŀ	8.0
mi11	į	CO Ste	0	7	0	0	0	0	0	٥	0	0	9	4
rts per		car- bon- ate (HCO ₃)	138	136	82	78	64	80	89	92	98	110	111	120
n pa	Ė	tas- sium (K)		;	1	1	1	1	ł	0.7	ļ	;	1	1.4
lyses, 1		Sodfum (Na)	8.8	9.7	6.3	6.7	5.0	5.2	3.0	5.7	1.9	7.2	8,4	9,5
cal ana		mag- ne- stum (Mg)	10	1	1	1	ł	!	1	5.6	1	1	1	8.4
Chemi		Cal- cium (Ca)	30	;	!	ł	ł	1	ł	12	ŀ	ŀ	ļ	27
		Iron (Fe)							_	0.00				
		Silica (SiQ _g)	1	;	1	1	ŀ	I	ł	17	l	ŀ	1	6.6
		Msan Sili discharge (Sic (cfs)	75				2,440	1,910	1,670	2,080	484	182	94	63
		Date of collection	Oct. 11, 1960	Nov. 8	Dec. 6	Jan. 10, 1961	Feb. 7	Mar. 7	Apr. 4	May 10	June 8	July 4	Aug. 1	Sept. 4

EEL RIVER BASIN--Continued

11-4765. SOUTH FORK EEL RIVER NEAR MIRANDA, CALIF .-- Continued

						i		Tem	era	Temperature	(°F)	<u>ج</u> ٥	of wa	water,	- 1	November	er	1960	\$	Sep	September		1961								
Mean															Day	y															Average
Montn	-	2	က	4	2	9	7	8	9	101	-	12 1:	3 1,	4 15	91 2	17	-18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avelage
November	ŀ	ŀ	- !	r.	5.2	. 74			4	74	54		67 49	4	- r	5,	57		4	5.2	4	8	5.2		5.0	52	6 7	5.0	5.2		1
Minimum	1	1	_			_				_				-				46		46	_	46	1 8	20	6 7		46		6 7	1	;
December	5,2	45	ر د		20 9	- 64	7 8 7	7 7 7	7 8 7		4	4	47 48	4				r.		r.		5.0	0	0 1	5.5	r.	0	8 7	- 4		0
Maximum	52	25								47 4			46 47	_	_	51	52	52	51	50	4 8	4 8	8 4		4 0 1		45		7 7	45	47
January Maximum		4 4	42	41		7 7 7 7		7 77					104	- 1	- !	- 1	- !	1	ł	ŀ	1	- 1		50	20	51	53	51	51	55	;
Minimum	0 4	39	38		37 3		39 4		43	4 9 4	45 47	_	27	1	1	!	1	ŀ	ţ	!	1	1	1		6 7	64	20		20	20	1
February Maximum	52	55	20.	26	53	533	50	20	52 5	52 5	52 49		50 52	22			50	51	54	53	52	51	0,0		51		53		<u> </u>		52
Minimum	0	76	_						_		7	_	_		4					2		÷	0	0	‡ †	0	.	1	<u> </u>	:	4
Maximum		52						7 8 7									53	20	52	53		53	52		6 4		52		26	56	51
Minimum	4	6	7,	7	7 8 7	7 2	7 9 7		7 9 7	4 9 7	47 48		49 50	4 7	7 47	4		4 8		*	4	3	4 20	7 4	φ φ	20	20	0	8 4	 2 2	/ 4
April Maximum	58	60	62	49	62 6	900	62 6	62 6	60 6	60 6	64 60		57 62	49 6	63	50	56	58	20.00	52	9 4	50	53	56	58	61	62	59	61		59
Minimum	3	75					_						_				_	?	_	•		:		2	1		`	_	₹		•
Maximum	61	55	59	60	57 5	54	61 6	53	59 5	56 5	53 5	56 5	59 60	563	3 62	57	2 2 2 9	563	50	62 56	200	55	54	63 56	58	55	58	60	58	70	62 55
June	69	69	72		99						68 7	72 7	73 83	89	9 89		79	80	7.5	8.1		84	87	87	83	78	75	75	77	1	16
Minimum	62	63		64		61	56 5	29	909	9 09			60 62			2		99		9	67	69	8 9		69		29	49	61	-	94
July Maximum	77	7.8		20									84 84					8 .				77	82		81		77		77	- 62	81
Minimum	79	4	70	99	<u>و</u>		<u></u>	79	62	80	2		77	- 6 -	<u>ب</u>	5	9	9	9	0	8	9	70	o	20	0	7	7	69	6	6
August Maximum	4	79		7.7			_											7.8		78		75	75		65		18		4/	92	44
Minimum	63	63	79	65	9 99		707	72 6	9 29	99	72 6	9 99	68 67	2 65	5 63	63	62	9	62	89	65	64	09	62	62	49	49	61	62	61	65
September Maximum	73	72	57	77	74 7	59	58 5	54	72 7	70 6	569	57 5	59 57	67	7 67	6.0	57	72	59	4 9	55	67	69	71	70	73	57	63	65	11	69
····	;	`		-						_	_	-		-		_	_	:		_					:			_	:		

KEL RIVER BASIN--Continued

11-4765. SOUTH FORK EEL RIVER NEAR MIRANDA, CALIF. -- Continued

Sediment discharge measurements and particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B. bottom withdrawal thus C., chemically dispersed; D. decantistion; N. in native water; assec. V. visual accumulation thus. W. in distilled water)

	Mothod	jo .	analyana							>	۸				
			2.000	-		_							_		
			1.000								100				
		eters	0.500	ī	1	ŀ	I	ŀ	!	100	66	1	!	ŀ	ī
		millim	0,250	!	1	!	I	!	1	82	66	!	1	1	1
	iment	uted, in	0, 125		ł	!	ı	l	l	7.1	97	1	ŀ	I	ł
	Suspended sediment	Percent finer than eize indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	1	ŀ	l	1	1	1	64	94	1	1	;	1
	Suspen	han etz	0.031												
water)		t finer t	0.016												
Bulled		Percen	900'0												
w, ma			0.004												
i onpe			0.002												
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sodimon	discharge	(tons per day)	0,2	2.9	11	48	9.5	3,200	3.710	1,120	9.1	1.5	ĸ.	9.
S, Sleve; V, Vl	Sediment	concen- tration	(mdd)	1	9	23	14	7	237	239	176	2	7	6	4
P, pipet		Discharge (cfs)	Ì	99	179	1,150	1,260	200	2,000	5.750	2,350	484	136	65	99
	Water tem-	per-	GE E	59	22	48	42	20	45	20	46	9	7	2	67
	Water	ling	point												
		Time (24 hour)							0820		1115				
		Date of collection		Oct. 19, 1960	Nov. 17	Nov. 29	Dec. 28	Jan. 28, 1961	Feb. 18	Mar. 25	Apr. 22.	June 7	July 19	Aug. 23	Sept. 22

KEL RIVER BASIN--Continued

11-4770. EEL RIVER AT SCOTIA, CALIF.

DRAINOR ARRA.—3,13 square malles.

BROORD ARRA.—3,13 square malles.

BROORD ARRA.—3,13 square malles.

BROORD ARRA.—3,13 square malles.

BROORD ARRA.—3,13 square malles.

BROORD ARRA.—3,13 square malles.

BROORD ARRA.—3,13 square malles.

RROORD ARRA.—3,13 square malles.

RROORD ARRA.—3,13 square malles.

RROORD ARRA.—3,13 square malles.

RATERIES.—1961.

Sediment records: October 1957 to September 1961.

Sediment concentrations: Maximum 4111, 3,730 ppm Feb. 11; mninum 4111, 1 ppm on many days.

Sediment loads: Maximum 4111, 9,750 ppm Feb. 11; mninum 4111, 1 ppm on many days.

Sediment loads: Maximum 4111, 955,000 tons Feb. 11; mninum 4111, 1 ppm on many days in 1986-61.

EXTREMES, 1967-61.—Water temporatures: Maximum (1960-61), 75°F June 16-18, 1961; mninum, 41°F Jan. 2, 1860.

Sediment loads: Maximum dally, 95,000 tons Feb. 11; mninum dally, 1 ppm on many days in 1988-61.

Sediment loads: Maximum dally, 3,380,000 tons Feb. 8, 1960; mninum dally, 1 ppm on many days in 1988-61.

Sediment loads: Maximum dally, 3,380,000 tons Feb. 8, 1960; mninum dally, 1 on on many days in 1988-61.

		Hq	8.2	8.2	7.8	8.0	8.0		8.0	8.1	8,1	8,5	8.5
	Specific con-	duct- ance (micro- mhos at 25°C)	294	307	242	190	147	100	151	185	244	274	272
		dum ad- gorp- tion rattio	6				N.		H. 69	m	6	4.	4.
		Non- car- bon-	٥	4	21	9	e .	#	r0 4	7	4	0	က
	Harduess as CaCO,	Cal- cium, Mag- ne- stum	132	147	110	88	65	₹	67	84	111	125	123
_	solids ted)	Tons per day											
er 196.	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	1			0.13		-		. 22
Septemb	đ	Parts per million	1	!	1	!	! 	!	- 6	1	1	1	129
60 to		(B) n	0.0				٦̈́		•-		٦.	_	
er 19		Ni- trate (NO ₂)	_	1	!	!	!	!	1.2		!	ł	
Octob		Fluo- Ni- Fride trate r (F) (NO ₂)	1	!	1	1		<u> </u>	15		1	1	•1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	7.0	ļ	5.5	5.2	3.5	*	4.4	5.0	5,8	8.9	8.0
10n, wat		Sulfate (SO ₄)	1	1	1	1	ī		10.6	1	1	Ī	16
111	į	Don- ate (CO)	0	0	0	0	0	>	00	0	0	က	4
ts per		car- bon- ate (HCO ₃)	191	174	108	100	76	8	76	6	131	147	138
in par	É	Stun (K)	1	1	!	1	1	1	16.0	1	ì	1	1.4
Tyses,		Sodium (Na)	8.9	9.4	7.1	9.9	4.0		2.2	5.7	7.8	9.6	9.6
at ans	3	mag- ne- stum (Mg)	9.6	1	ł	1	I		1 %	1	ł	1	9.8
Chemic		Cal- ctum (Ca)	37	1	1	1	1	!	1 97	1	1	1	33
•		Iron (Fe)							00.0				
		Silica (SiQ _e)		ł	1	1	1		12	}	1		8.5
		Mean discharge (cfs)	175	135	6,400	2,110	10,900	30,01	10,400	2,600	206	252	152
Chemical analyses, in parts per million, water year October 1960 to S		Date of collection	Oct. 11, 1960	Nov. 8	Dec. 6	Jan. 10, 1961	Feb. 7		Apr. 4	June 6	July 4	Aug. 1	Sept. 4

EEL RIVER BASIN--Continued

11-4770. EEL RIVER AT SCOTIA, CALIF. -- Continued

Temperature (°F) of water, water year October 1960 to September 1961

	1 1													Day										1	1					9000
2		က	4	2	9	~	œ	6	0	=	2 13	4	15	9	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TACIA BC
!	_	1	1	65	;	65	1	_	9	09	-	-	62		62	1	59	!	1	61	1	63	1	62		09	1	59	-	1
1		ļ	1	ł	1	1	-	+	<u>-</u>	1	-	-	!	1	1	1	I		ł	;	1	1	1	1	1	1	I	-	1	ł
1		!	1	1	i	i	ŀ	1	<u> </u>	 	 	1	;	1	1	!	ŀ	ī	l	;	1	ī	Ī	ī	l	ļ	ī	1	1	ł
1		!	1	1	1	i	-	!	_	_		_	;		1		1	¦	1	;		i	1	1	ŀ	!	_	-	1	į
1		!	1	Ī	1	1	1	1	_	54 54	53	3 52	52	52	22	52	52	22	21	21	20	20	20	20	20	49	_	48	1	į
+		!	1	1	1	i	1	- 5	52 5	_	_	_	52	_	52		21	21	2	20		20	20	20	49	48	48	47	1	;
1		!	1	1	ì	1	1	1	1	1	1	1	!	!	1	1	1	;	ł	;	1	!	ļ	1	1	;	1	1	;	ŀ
47 47		47	47	47	47	46	44	44 4	44 4	44 43	_	_	43	_	45	47	47	47	47	47	47	47	46	46	46	46	46	44	44	46
47 47		47		47	46	<u> </u>	44		_		3 43	3 43	43	43	44	45	47	47	47	47	47	46	46	46	46	46		44	44	45
1		1	1	ļ	;	i	1	1	<u> </u>	1	<u> </u>		÷	_	1	1	1	1	1	1	1	!	ŀ	1	!	;		1	;	1
		43	_	44	44	44	44	474	_	47 47	_	8 49	20	20	20	20	20	20	49	49	20	51	21	25	21	51	21	51	22	48
44 43		42	44	44	44	44	44	44	44 4	47 46	3 48	_	_	_	20	20	20	49	48	48	49	20	51	21	51	21		21	21	48
1		1	1	1	1	i	-	1	1	1	-		 -		1	1	Ì	1	1	!	1	1	1	!	1	;	1	1	1	;
52 52		22	52	52	52	_	21	_	51 5	1 50	50		20	20	20	20	49	49	20	20	20	20	20	20	20	20	ľ	1	1	21
1 52		_		52		_	21	51 5	-	50 50	_	0 20	20	_	20	49	49	49	49	20	20	20	20	20	20	20	1	-	1	20
1		-	_	1	_	_	1		-	-	_	_	1	_	ŀ		i	1		1		1	ì	1	ļ	1	i	1	Ĭ	ŀ
50 50		20	20	20	20	20	20	50	50 5	50 50	20	0 20	20	20	20	20	20	20	20	20	20	20	20	20	20	49	20	20	22	20
_				20			20		_	_	_		20		20		20	20	20	20		20	20	20	49	49	49	20	20	20
_		_	_	Ī	1	<u> </u>	-	_	-		_		_	_	ŀ	_	Ï	1	ŀ	1	_	ł	ĺ	1	ï	;		1	i	1
53 54		25	26	26	26	26	26	56	56 5	56 56	3 56	92 9	26	92	26	26	26	26	26	52	20	49	20	23	26	57	28	28	1	55
		-	_	26	26	_	99			_			_		26	_	26	26	22	20		49		20	53	26		28	1	54
_		_		1	_	_	<u> </u>	_	_		_		!		ì	_	1	ļ	ľ	1		1		1	;	1	_	1	1	ŀ
58 58		28	99	55	22	55	22	55 5		55 53	3 52	2 53	55	22	57	9	9	09	9	29	29	29	9	09	9	29	29	80	09	57
	oo.			55			54		55 5	35			53		55		9	9	59	29		28		09	59	29		28	28	28
		_		1	_		-	_		_	_		_		i	_	1	1	1	!	_	1	_	ï	1	1	1	1	1	ŀ
_	62	62	62	65	65	65	62	61 6	61 6	64 67	2 68	8 72	2	12	75	22	73	2	69	2	69	2	77	2	69	69	89	29	1	89
9 09	N			62				_		_		_	_		74	_	2	89	67	69	_	69		69	69	99		99	Î	99
	1		i	Ī	1	_	ŀ	_	_	1			<u> </u>		I	_	ī	l	i	!		1	1	!	I	1	ī	1	1	!
9 29	~	_		99			7	72 7	_	74 74	74	4 72	72	_	72	_	72	7	69	89	99	2	Š	2	2	2	_	20	2	2
9 6		67	_	99			89	_	70/7	_			2	_	69	2	2	69	67	67		67	67	89	89	89	_	69	89	89
_		_		ŀ		_	1	_	_		1		_		1		1	;	l	l		;	1	!	1	1	ŀ	!	1	;
69 69		69	89	89	20	72	77	707	9 02	89 69	99 8	69 9	69	69	20	20	20	7	20	2	69	89	69	89	89	69	89	2	7.1	69
				67	_	_	88	_	_				_		99		99	29	89	89		65	99	99	65	99	99	89	89	67
_		_		1		<u> </u>	-	-	_	_	!		¦ _		;	_	1	!	1	!	;	;	1	1	1	1	1	-	1	ŀ
_		_		69	_	_	99	_	-	_	_	_	63	_	99		67	67	65	65	64	99	65	67	99	65	64	62	1	99
69 66		65	99	99	99	99	63	63	65 6	65 65	5 65	5	63	63	65	65	65	99	64	63	62	62	63	64	64	64	62	57	1	64
				1																1	1	Ī								

EEL RIVER BASIN--Continued

11-4770. EEL RIVER AT SCOTIA, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

		остове	R		NOVEMBE	R		DECEMBER	
		Suspen	ded sediment		Suspen	ded sediment		Suspen	ded sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	100		0.5	147	1	0.4	37700	2180	S 317000
2	100		.5	147		•4	58500	2180	S 373000
3	95 95		•5	140	1	•4	23600	870	55400 14500
5	100	2	•5	140 140	1	.4	13100 8550	410 290	6690
700	100	_	1	170	1 1	**			
6	147		-8	135		• 4	6400	200	8 3500
7	196	2	1.1	135	1	• 4	5170	140	8 2000
8	203 196	2	1.1	135 135	1	•4	4320 3790	50	1050 512
10	182		1.0	140		-8	3550	40	383
11	175	2	.9	154	2	•8	3770	50	509
12	168		•9	196	2	1.1	3410	40	368
13	175	2	•9	354	7	6.7	2850	20	154
14	175 168	1	•5	640 1700	14 62	24 S 291	2450 2510	10	66 8 68
.									-
17	161 154	1	.4	1320 1010	28 19	100 52	7450 67800	480 2910	K 13000 S 582000
18	147		.4	1620	253	S 1260	71200	2230	S 440000
19	140	2	-8	3310	374	3340	45000	1310	159000
20	140		.8	2350	155	983	25800	860	59900
21	140		•4	1440	68	264	15700	500	21200
22	140	1	•4	1130	44	134	11700	440	13900
23	140 140	1	•4	1290 9930	108 1520	S 434 S 49900	9260 7650	490 410	12300 8470
25	140		.4	31300	2960	250000	6550	200	3540
26	147	1	.4	26500	1400	S 109000	5720	200	3090
27	154		.4	11500	460	14300	5130	120	B 1700
28	161	1	.4	6850	160	2960	4600	64	795
29	154		•4	4600	75	932	4150	42	471
30	154 147	1	.4	4450	175	2100	3750 3390	36 34	365 311
Total	4634		18.5	113038		436087•0	474520		2095242
-		JANUAR			FEBRUAR			MARCH	
		1			T	r			
2	3190 2890	24 16	207 125	62700 39100	1890 1790	S 344000 S 196000	5370 5000	120 100	1740 1350
3	2490	16	108	41000	1410	S 165000	4710	90	1140
4	2330	13	82	24400	720	47400	4260	80	920
5	2210	11	66	16800	550	24900	4540	120	1470
6	2090	10	56	13100	360	12700	6900	362	S 7170
7	1990	12	64	10900	270	7950	10000	530	14300
8	2050	10	55	9280	450	11300	8770	317	S 7810
9	2070 2110	9	50 63	25400 54500	2130 2150	S 205000 S 323000	15400 19300	877 810	S 37600 42200
11	2050 19 70	10	55 48	94800 73000	3730 2120	955000 418000	19300 19000	700 470	36500 24100
13	1770	8	39	46800	1680	212000	14700	260	10300
14	1640	7	31	46200	1510	188000	14200	357	S 15400
15	1550	6	25	42200	1150	131000	44200	2190	S 278000
16	1470	5	20	38600	970	101000	45300	1170	S 148000
17	1410	5	19	27700	660	49400	50300	1420	S 197000
18	1360 1300	6	22 14	20800 16300	500 430	28100 18900	43800 31300	820 590	97000 49900
20	1250	3	10	13500	490	17900	33000	750	66800
21	1200	3	в 9•7	11400	700	21500	24300	400	26200
22	1160	3	9.4	9900	800	21400	20500	410	22700
23	1290 1490	6	21 36	8780 7850	520 370	12300 7840	23700 21400	480 300	30700 17300
25	1710	13	60	7210	280	5450	25400	520	35700
26	1680	8	36	6260	220	3720	23300	370	23300
27	2850	46	S 478	5750	220	3420	23800	370	23800
28	3910	70	739	5320	190	2730	19600	250	13200
29	5330	258	S 6240				15400	210	8730
30	23800 68700	1980 3540	S 131000 S 668000				13400 11800	170 143	6150 4560
Total	152330		807788.1	779550		3534910	621950		1251040
	171330	L		,,,,,	<u> </u>			<u> </u>	

S Computed by subdividing day.
B Computed from estimated-concentration graph.

K Computed from estimated-concentration graph and subdividing day.

EEL RIVER BASIN--Continued

11-4770. EEL RIVER AT SCOTIA, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported loads are estimated)

		APRIL			MAY				JUNE	
		Suspen	ded sediment		Suspen	ded	sediment		Suspende	ed sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	11100	155	4650	6820	65		1200	2760	5	37
2	9550	260	6700	6900	64		1190	2620		35
3	10300	260	7230	6350	50		857	2590	5	35
4	10400	241	6770	5570	35		526	2570		49
5	9740	240	B 6300	5110	40		552	2710	10	73
6	8750	230	5430	5220	53		747	2600		98
7	7510	196	3970	5750	52	1	807	2460	14	93
8	6710	150	2720	5500	32		475	2380	1 11	64
9	6000	110	1780	5280	32		456	2220	8	48
10	5550	73	1090	6900	126	s	2510	2090		34
11	5150	73	1020	13300	420	s	15800	1980	4	21
12	4880	56	738	15700	490		20800	1910		21
13	4750	45	577	11400	170		5230	1800	5	24
14	4600	40	497	9340	84		2120	1750		28
15	4500	30	365	7880	60		1280	1660	6	27
16	4300	25	B 290	6920	43		803	1580		21
17	4100	22	244	6110	30		495	1450	4	16
18	4000	20	B 220	5520	22		328	1350		15
19	3950 3900	19 17	203 179	5120 4780	21 21		290 271	1290 1230	4	14 13
1		1]]		1			
21	4600	80	994	4540	19		233	1170	4	13
22	7570	529	S 11200	4250	17		195	1130	3	12
23	11400	505	15500	4010	13		141 131	1070 1000	3	8.7
24	11800 8280	275 112	8760 2500	3720 3500	13 12		113	972	3	7.9
26	7360	75	1490	3330	10		90	916		7.4
27	6650	58	1040	3230	8		70	860	4	9.3
28	6050	44	719	3080	6		50	834		6.8
29	5950	42	675	2850	7		54	782	3	6.3
30	6570	65	1150	2790	9		68	756		6.1
31				2780	7	<u> </u>	53			
Fotal	205970		95001	183550			57935	50490		851.6
		JULY			AUGUST				SEPTEMBER	
1	769	3	6.2	252			2.0	163		0.4
2	743		6.0	245			2.0	152	1	• 4
3	718	2	3.9	239			1.3	158		• 4
4	706		3.8	233	2		1.3	152	2	• 6
5	670	3	5.4	233		1	1.3	146	2	• 8
6	634		5.1	227			1.2	141		• 6
7										• • • • • • • • • • • • • • • • • • • •
	610	2	3.3	227			1.2	130		• 4
8	599		3.3 3.2	221			•6	130		•4
9	599 588	3	3.3 3.2 4.8	221 227			•6	130 130		• • • • • • • • • • • • • • • • • • • •
9	599 588 577	3	3.3 3.2 4.8 4.7	221 227 227	1		•6 •6	130 130 130	=	• 6
8 9 10	599 588 577 555	3 3	3.3 3.2 4.8 4.7	221 227 227 221	1 		.6 .6 .6	130 130 130	1	• 4 • 4 • 4
8 9 10	599 588 577 555 511	3	3.3 3.2 4.8 4.7 4.5 4.1	221 227 227 221 221	1 2		.6 .6 .6 1.2	130 130 130 130	1	• 4 • 4 • 4
9 10 11 12 13	599 588 577 555 511 480	3 3	3.3 3.2 4.8 4.7 4.5 4.1 2.6	221 227 227 221 221 239	1 		.6 .6 .6 1.2 1.2 1.3	130 130 130 130 125 125	1 	.4 .4 .4
9 10 11 12 13	599 588 577 555 511	3	3.3 3.2 4.8 4.7 4.5 4.1	221 227 227 221 221	1 2		.6 .6 .6 1.2	130 130 130 130	1	.4 .4 .4 .3
8 9 10 11 12 13 14	599 588 577 555 511 480 450 420	3 2 2	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4	221 227 227 221 221 239 227 209	1 2 		.6 .6 .6 1.2 1.2 1.3 1.2	130 130 130 130 125 125 120	1 1 1	• 6 • 6 • 6 • 6 • 6 • 6 • 6 • 6 • 6 • 6
8 9 10 11 12 13 14 15	599 588 577 555 511 480 450 420	3 2 2	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3	221 227 227 221 221 239 227 209	1 2 1		.6 .6 .6 1.2 1.2 1.3 1.2	130 130 130 130 125 125 120 120	1 1 1	• 6 • 6 • 6 • 6 • 7 • 8 • 8 • 8 • 8 • 8 • 8 • 8 • 8 • 8 • 8
8 9 10 11 12 13 14 15	599 588 577 555 511 480 450 420 400 392	3 2 2	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 2.2	221 227 227 221 221 239 227 209 203 197	1 2 		.6 .6 .6 1.2 1.2 1.3 1.2 .6	130 130 130 130 125 125 120	1 1	• • • • • • • • • • • • • • • • • • •
8 9 10 11 12 13 14 15 16 17 18	599 588 577 555 511 480 450 420	3 2 2	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3	221 227 227 221 221 239 227 209	1 2 1		.6 .6 .6 1.2 1.3 1.3 1.2 .6	130 130 130 125 125 120 120 130 152 158 252	1	
8 9 10 11 12 13 14 15 16 17 18	599 588 577 555 511 480 450 420 400 392 383	3 2 2 2	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 2.2 2.1	221 227 227 221 221 239 227 209 203 197 191	1 2 1		.6 .6 1.2 1.2 1.3 1.2 .6	130 130 130 130 125 125 120 120 130 152 158	1 1 1 1	
8 9 10 11 12 13 14 15 16	599 588 577 555 511 480 450 420 400 392 383 386	3 2 2 3	3-3 3-2 4-8 4-7 4-5 4-1 2-6 2-4 2-3 2-2 2-1 3-1 3-1	221 227 227 221 221 239 227 209 203 197 191	1 2 1		.6 .6 .6 1.2 1.3 1.3 1.2 .6	130 130 130 130 125 125 120 120 130 152 158 252 252	1 1 1 1 1	
8 9 10 11 12 13 14 15 16 17 18 20	599 588 577 555 511 480 420 400 392 383 366 349 340 324	3 2 2 2 2 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 2.2 2.1 3.1 3.1 3.1 3.1	221 227 227 221 221 239 227 209 203 197 191 191 185	1 2 1 1 1		.66 .66 .61.2 1.2 1.3 1.2 .66 .55 .55	130 130 130 125 125 120 120 120 150 152 252 252	1 1 1 1 1 1	44 44 44 45 45 45 46 46 46 47
8 9 10 11 12 13 14 15 16 17 18 20 21 22 23	599 588 577 555 511 480 450 420 400 392 383 366 349 340 324 287	2 2 3	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 2.2 2.1 3.0 2.8 1.8 1.7	221 227 227 221 239 227 209 203 197 191 191 185	1 		.66 .66 .60 1.2 1.3 1.2 .60 .55 .55 .55 .55	130 130 130 125 125 120 120 130 152 158 252 252 272	1 1 1 1 2 2	
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	599 588 577 555 511 480 450 420 400 392 383 346 349 349 324 287 294	3 2 2 2 2 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 2.2 2.1 3.0 2.8 1.8 1.7 1.5	221 227 227 227 221 239 227 209 203 197 191 191 185 180 168 158	1 2 1 1 1		.66 .6 .6 .6 .6 .1.2 .1.3 .1.2 .6 .5 .5 .5 .5 .5	130 130 130 125 125 120 120 130 152 158 252 252 272 174 142 130	1 	
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	599 588 577 555 511 480 450 420 400 392 383 366 349 340 324 287	2 2 3	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 2.2 2.1 3.0 2.8 1.8 1.7	221 227 227 221 239 227 209 203 197 191 191 185	1 		.66 .66 .60 1.2 1.3 1.2 .60 .55 .55 .55 .55	130 130 130 125 125 120 120 130 152 158 252 252 272	1 1 1 1 2 2	
8 9 10 11 12 13 14 15 16 17 18 20 21 22 23 24 25	599 588 577 555 511 480 450 420 400 392 383 364 324 287 294 266	3 3 2 2 2 2 3 3	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 2.2 2.1 3.0 2.8 1.7 1.5 1.6	221 227 227 221 221 239 203 197 191 191 185 180 168 158 158 152	1		.66 .6 .6 .1.2 1.3 1.2 1.3 .5 .5 .5 .5 .5	130 130 130 125 125 120 120 130 152 158 252 252 174 142 130 130 130	1 1 1 1 1 2 2	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 90 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	599 588 587 577 555 511 480 450 400 392 383 366 349 340 224 287 294 266 259	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 3.0 2.8 1.8 1.7 1.5	221 227 227 227 221 221 239 227 209 203 197 191 185 180 168 158 158 158 158 158	1		.66 .66 .1.2 1.2 1.3 1.2 .66 .5 .5 .5 .5 .5 .5 .5 .5	130 130 130 125 125 120 130 152 158 252 252 252 275 174 142 130 130 130	1 1	
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 27	599 588 577 555 511 480 450 420 400 392 383 366 324 287 294 294 266 259 245	3 -3 -2 -2 -2 -3 	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 2.2 2.1 3.0 2.8 1.7 1.5 1.6 1.6	221 227 227 221 221 239 203 197 191 191 185 160 168 158 152 146	1		.6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .	130 130 130 125 125 125 120 130 152 158 252 252 174 142 130 130 130	1 1 1 1 1 2 1 2 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1	
8 9 10 11 12 13 15 16 17 18 20 21 22 23 24 25 26 27 28	599 588 587 551 511 480 450 420 400 392 383 366 349 340 324 287 294 264 27 265 265 27 27 27 27 28 28 28 28 28 28 28 28 28 28 28 28 28	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.6 2.6 2.3 2.2 2.1 3.1 3.0 2.8 1.8 1.7 1.5 1.6 1.6	221 227 227 227 221 221 239 227 209 203 197 191 185 180 168 152 146 152 174 180	1		.6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .	130 130 130 125 125 120 130 152 158 252 252 252 275 174 142 130 130 130	1 1 1 1 1 2 2	
8 9 10 11 12 13 14 15 16 17 18 19 20	599 588 577 555 511 480 450 420 400 392 383 366 324 287 294 294 266 259 245	3 	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 2.2 2.1 3.0 2.8 1.7 1.5 1.6 1.6	221 227 227 221 221 239 203 197 191 191 185 160 168 158 152 146	1		.6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .	130 130 130 125 125 120 130 152 252 252 252 252 274 142 130 130 130 130 130 130 130 130	1 1 1 1 1 2 1 2 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1	
8 9 10 11 12 12 14 15 16 17 18 19 20 22 22 22 22 22 22 23 22 23 -	599 588 577 555 511 480 450 420 400 392 383 366 349 340 3247 294 266 259 245 256	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3.3 3.2 4.8 4.7 4.5 4.1 2.6 2.4 2.3 2.2 2.1 3.0 2.8 1.7 1.5 1.6 1.6	221 227 227 227 221 239 209 203 197 191 185 180 158 158 158 158 158 158 158 158 168 158 168 168 168 174	1		.6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .	130 130 130 125 125 120 130 152 252 252 252 252 274 142 130 130 130 130 130 130 130 130	1 1 1 1 1 2 1 2 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1	

S Computed by subdividing day.
B Computed from estimated-concentration graph.

KKL RIVER BASIN--Continued

11-4770, EEL RIVER AT SCOTIA, CALIF .-- Continued

Particle size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Mother	Jo.	ınalysıs	VPWC	VPWC	VPWC	VPWC	VPWC	•	VPWC	VPWC	>	VPWC	•	VPWC	>	>
		_		_	_						_		_		_	_
		0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	100	1	1	1	1	1	1	!	ł	8	1	100	1	1
	eters	0.500	96	!	100	100	9	100	100	901	;	66	9	86	ł	100
	millim	0.250	80	100	66	66	66	68	66	90	91	66	16	86	200	92
iment	uted, in	0, 125	89	96	94	93	94	72	93	72	93	93	74	88	8	9/
Suspended sediment	e indica	0.062	28	86	80	78	28	53	75	55	77	22	80	7	2	62
Suspen	Percent finer than size indicated, in millimeters	0.031		1	!	69	1	ł	1	45	1	1	1	I	!	l
	t finer t	0.016	41	62	53	52	51	}	21	34	ł	21	1	48	ł	1
	Percen	0.008	1	!	I	41	!	ł	1	26	!	ŀ	1	ł	ı	1
		0.004	27	39	32	23	8	1	88	19	1	22	1	28	1	!
		0.002		1	1	23	ì	1	1	12	1	1	1	1	1	1
Sediment Sodiment	discharge	(tons per day)														
Sediment	concen- tration	(mdd)	2,410	1,200	2,330	3,720	2,450	2,540	4,030	3,530	1.820	3,650	605	2,010	1,420	220
	Dischargs (cfs)		12,700	23,300	e 62,000	e 80,000	e 75,000	26,200	78,000	38,800		108,000				
Water tem-	ber-	(°F)	20	20	47	45	47	51	22	51	51	51	49	8	8	2
S and	ling.	pount		_							_					
	Time (24 hour)								1200			1600				
	Date of collection		Nov. 24, 1960	Nov. 26	Dec. 2	Dec. 17	Dec. 18	Jan. 30, 1961	Jan. 31	Feb. 9	Feb. 10	Feb. 11	Feb. 18	Mar. 15	Mar. 17	Mar. 25

e Estimated.

KEL RIVER BASIN--Continued

11-4777. SOUTH FORK VAN DUZEN RIVER NEAR BRIDGEVILLE, CALIF.

LOCATION: --Temperature recorder at gaging station, 0.2 mile upstream from Butte Creek, 3 miles upstream from mouth, and 7.8 miles east of Bridgeville, Humbuldt County.

DAMINAGE ARRA.-56.2 gaquere miles

RECORDS ANALIAGLE.--Water temperatures: November 1960 to September 1961.

EXTREMES, November 1960 to September 1961.--Water temperatures: Maximum, 61°F July 13; minimum, 39°F Jan. 2-6.

Temperature (°F) of water, November 1960 to September 1961

															Day	\ x														-	
Month	_	2	3	4	5	9	7	8	6	0	=	2 1;	3 7	-	5 16	17	18	2	20	2	22	23	24	25	26	27	28	29	8	3	Average
November Maximum		1.1	11	11	11				11		11		1 1	47	7 48	4 4	4 4 4 7	47	4 4 4 4	4 4	4 t 4 5	46	8 4	64 4	4 6 4 6	4 4 7 L	4.5	45	2 4 5		1 1
December Maximum Minimum	4 4 5	2 4 5	45	2 4 5 5	44	77	45	45 4	42 43		43 43		44 44 43				£ £ 4			4 4 5		2 4 4	. 4.4 . v.v.	2 4 4	5 5 5		5 5 3			4 4 7 7	‡ ‡
January Maximum	41	39	39	39	39 4	39	00	4 4 0 4 4 4 4	43 43		42 42		42 42	45	2 42	42	410	0 0 0	41	40	41	45	4 4 5 6 5	44	† † † †	4 4 4	4 4	44	44	4 4 5 5	41
Maximum	4 5 5	46	4 6 6	45	4 4 4 4 4 4	46	1 1 1 1 1 1	44	4 2 4	4 4 9 4	77 77 77 97		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	4 4	4 4	4 4 4 4 3 4 4 3	4 4 8	43	43	44	4 4 3 6	44	4 4	45	4.3	43	6 4 3	Ħ	11	11	4 t
Maximum	4 4 5 6 5	4.6	453	47	43	4 7 7 7 7	4 0 4	45 4	45 4	7 7 7	44 44		45 45	44	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4	9 1 4	4 4 4 5	9 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1	47	4 6 4 6	46	9 4 4	44	4 4 3	44	45	44	8 4 4	45	4 4 2 3
Maximum	49	51	51	51	50 94	51	50 5	4.2	51 5	51 54	53 51		51 52 45 45	544	7 49	52	51	51	4 5 5	48	41	48	20 4	52	52	52	53 48	49	52		51
Maximum	51	50	52	53	7 67	64	48 4	464	51 4	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	47 48		49 53	4 6 4	5 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	50	58	53	53	58	53	58	58	59	53	57	53	5.8	53	5 ¢	54 50
Minimum	63 56	58	59	58	59 5	59 6	56 5	58 5	58 5	9 69	64 67		68 70 61 59	72 62	2 72 2 63	72	72 62	72	72	74	74	73	76	76	75	72	63	200	71	11	69
Maximum	73	73	73	6,4	62 5	69	72 7	74 7	76 7	78 8	80 80		81 78 71 67	77 66	6 65	77	78	77	75	76	77	77	78	79	78	77	76	76	75	15	76 65
August Maximum Minimum	75	77	99	78	77 77	68	78 7	79 07	9 69	78 7	76 77		76 74 67 66	4 4 6 5	5 65	74	7,49	7.5	74	76 67	73	71	0.49	70	68 62	72	72	73	73	72	75 66
Minimum	70	99	69	69	68 6	66	59 5	58 5	57 5	58 5	65 63 59 57		62 63 57 57	59	4 62 9 60	57	62 57	63 58	62 57	61 56	53	58	58 54	59	60 55	55	6 C 5 5	52	56	11	53

EEL RIVER BASIN--Continued

11-4785. VAN DUZEN RIVER NEAR BRIDGEVILLE, CALIF.

LOCATION: --At gaging station, at bridge on State Highway 36, 0.3 mile downstream from Pip Creek, 0.5 mile upstream from Rogers Creek, and 4 miles west Del Bridgeville, Humbolit County.

BALINAGE AREA (revised). --216 square miles.

RECORDS AVAILEE. --Chemical analyses: October 1958 to September 1961.

Water temperatures: December 1960 to September 1951.

EXTREMES, 1960-61.--mater temperatures: Maximum, 80°F July 11, 12; minimum, 44°F several days during March.

		Hq	8.1	8,2	7.8	7.9	7.9	7.9	7.9	4.		4.0	8.2	8.2
	Specific con-	duct- ance micro- nhos at 25°C)	255	246	136	145	122	115	105	104	101	189	225	246
		Sorp-(0.3	<u>ښ</u>	ন	N.	ď		H.	Ņ		N	ij	e.
		Non- car- bon-	17	60	9	က	e	=	4	m ·	# (0	9
	Hardness as CaCO ₃	Cal- clum, Mag- ne- stum	115	111	62	9	26	င္တ	20	47	7 0	S S	101	113
	solids ted)	Tons per day			-									
r 1961	Dissolved solids (calculated)	Tons per acre- foot		!	;	!	1	1	1				ŀ	.20
Septembe	Dis (c	Parts per million	-	1	!		1	1	11	69	!	!	-	146
60 to		Bo- (B)	0,1	۲.	•	۲.	۲.	٠.	•	ų.	•	:	٦.	۲.
er 19		Fluo- Ni- ride trate (F) (NO ₂)		!	;	1	ľ	1	1;	4.	!	!	!	۲.
Octobe		Fluo- ride (F)	1	1	1	-	1	1		0.1	_	!		۲.
Chemical analyses, in parts per million, Water year October 1960 to September 1961		Chloride (Cl)	4.8	4.2	1,5	2.5	2.0	1	2.0	1.5	7.0	χ.	3.4	2.0
ion, wat		Sulfate (SO4)	1	;	1	11	1	1	ij	0.9	1	!	1	17
r m111		bon- ate (CO ₃)	0	0	0	•	•	•	0	0	، د	· c	•	•
ts per	Bi-	car- bon- ate (HCO ₂)	120	124	89	92	65	9	26	25.0	700	25	126	131
ın paı	ř	tas- sium (K)	1	1	!	1	!	1		1.0	! _	!		1:0
lyses,		Sodium (Na)	6.9	7.0	3,6	3.8	3.4	3.7	1.0	2.7	, ,	0	7.0	7.5
al ana	Yes	nie- nie- sium (Mg)	ł	1	1	ŀ	ł	1	1	4.1	!	1	ł	8.0
Chemic		Cal- ctum (Ca)	1	1	ł	1	ţ	1		12	;	1	ì	32
		Iron (Fe)								0.0				
		Silica (SiQ ₆)	1	l	1	1	1	1	1	14	<u>.</u>	!	1	10
		Mean discharge (SiQ ₆) (cfs)	16					1,150	1,070					
		Date of collection	Oct. 11, 1960	Nov. 8	Dec. 6.	Jan. 10, 1961	Feb. 7	Mar. 7	Apr. 4	May 10	June b	July 4	Aug. 2	Sept. 5

KEL RIVER BASIN--Continued

11-4785, VAN DUZEN RIVER NEAR BRIDGEVILLE, CALIF. --Continued

								Ter	per	Temperature		(°F)	of W	Lter	٠ <u>.</u>	water, December 1960	M	1960	\$		September	þer	1961								
Ment															Day	y.															Average
Month	-	2	က	4	5	9	7	8	6	0	-	12 1	13 1,	1:	15 16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
December Maximum		-		50	50	20	50	50	4 6 4	7 64	4 6 4	64	64 64	\vdash	64 64	49	84	8,4		84		84		48		4 8	47	1,4	4.7	47	64
E E	;	1	20	20	_	20	20	-64	40	64	4 6 4	4 6 4	64 64		64 64	4	8 4 8	48	48	4	8 4	4 8	8 4	48	4 8	47	47	47	47	47	84
January Maximum		47		4																4.5				45		4.5	45	45	4.5	45	4.5
Minimum	4	94	46	45	45	45	454	5	45	4.5	454	4 2 4	45 45		45 45	4.5	4 2	4.5	4.5	4.5	5	45	4 5	42	4	45	45	45	4.5	45	4.5
Hebruary Maximum		9		46		9 +		9 7												4				4		46	46	1	1	1	46
Minimum	2,	4.5	94	9	94	94	46	6	46	4 - -	4 6 4	4 9 4	9 4 9 4		94	4	4 6	4	4	4	4	4	46	46	46	9	94	1	<u> </u>	-	46
Maximum		94		46	_	94												4		4		÷		46		46	46	46	46	46	45
Minimum	46	94	9,4	94	94	9 4	454		4.5	45	45 4	4 2 4	45 45	_	45 44	‡	44	44	4	4	4	44	4	4	46	46	94	9	46	94	45
April Maximum		47	84	8 4		8 4				84			48 49		64 64	49	64	49	4	4	47	_		4	47	48	49	49	64	-	84
Minimum	46	94	_	48	784			8,	484	_		4 8 4	_		64 64							4	4	4	46	47	8 4	49	84	1	8 7
May	67	64	6,4	64		2.1						_	_				_	- 25						57	57	57	57	58	59	-09	53
Minimum		84		8 4	64	20	5.	52	52	21.	50 5	20	50 51		52 52	52	53	5	5.	54	55	55	55	26	57	56	57	57	28	28	53
June	63	63	49	79	**			79	79	- *	65		67 73	<u> </u>	76 76	75	- 17	2	67	2	2	70	7	7	89	99	65	69	- 6	-1	89
Minimum	59	63		49	_	64	63	63			_	9			71 72			_	_	63	-	_		65	65	63	62	61	63	1	65
July Maximum	6.7	89	69	67	99	69	- 69	73	-52	78			77 78	_	76 76	77	7 77	75		89	9 67	7	73	74		73	73	73	74	74	73
Minimum	49	94		65		62	_	94			71/	72 7	71 70	_	73 73	_			9	65		_	_	\$	69	99	65	65	99	99	67
August Maximum	74	74	75	7.1	69	78	- 82		-92		76/7	72 / 7	75 74		72 74	73	78	75	76	77	75	75	75	75		70	7.	72	73	7	47
Minimum	99	67	67	29	67	99	69	2		89	68		99 99	_	89 89	_	99	99	99	69	69	_	67	69	67	69	89	99	99	67	89
September	7.1	7	7	73	7	- 02	- 69	89	89		67-6		64		99	65	5 65	68						65		99	65	63	99	1	4
Minimum	69			45	_	6.5		_	_	63	_	63	63 62	_			_	_	62	62	19	29	28	59	29	59	9	59	9	1	62

٠

KKL RIVER BASIN -- Continued

11-4785, VAN DUZEN RIVER NEAR BRIDGEVILLE, CALIF. --Continued

Sediment discharge measurements and particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

				r, piper,	o, aleve, v, v	F, piper, S, sieve, V, Visual accumulation moe, W, in distinct water,	empe,	, H.C.	naTT e	Merce 1								
		Samo	Water		Sediment	Sodimont					uspend	Suspended sediment	nent				_	Mathod
Date of collection	Time (24 hour)	ling	Per-	Discharge (cfs)	concen- tration	discharge		1	Percent	finer th	an size	Percent finer than size indicated, in millimeters	ed, in	nillime	ters			jo.
	-	bounc	3		(mdd)	(tons per day)	0.002	0.004	0,008	0.016	0.031	0.062	. 125	. 250 0	500	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000		inalysis
Oct. 19, 1960	L		26	13	2			:				;	1	-	-	L	-	
Nov. 16	_		21	175	22			;		1		1	i	;	1			
Jan. 27, 1961			45	339	14			1		ı		ł	¦	;	1		_	
Feb. 18	_		46	1,700	131			1				1	1	!	1	_	_	
Mar. 24			46	2,850	809			39		63		8	91	94	86	100		VPWC
Apr. 21	1300		48	503	22			1		1	_	ŀ	1	i	1			
Apr. 21	1820		47	1,540	1,350	5,610	40	21	63	11	68	6	97	66	100	_	_	VPWC
June 7	1115		63	213	4			1		!		1	1	1	1	_		

MAD RIVER BASIN

11-4805. MAD RIVER NEAR FOREST GLEN, CALIF.

LOCATION: --Temperature recorder at gaging station, 0.7 mile downstream from Lamb Creek, and 7.0 miles northwest of Forest Glen, Trinity County.

DRAINAGE REAL-144 square miles.

RECORDS AFRAIL-144 square miles.

RECORDS AFRAIL-187 ("September 1960 to September 1961" MAXIMUM, 79°F June 25; minimum, 38°F Jan. 5.

Temperature (°F) of water, November 1960 to September 1961

								•	The state of		,	ì				1					Tomor doc			;								
4-74															ı	Day															Awa	4000
Month	-	2	က	4	5	9	7	8	6	0	=	12 1	13	4	15	191	77	- 8	6	20	21 2	22 2	23 2	24 2	25 2	26 27	27 2	28 29	9 30	3	-	Avelage
November Maximum	- 1	1	1	l	- 1	1	-	;	i	-	i	-			1	7 94	47 4	- 64		47	4 9 4	45	46 49		49 47		47 47		949	- !	-	
Minimum	1	1	1	ļ	1	1	Ī	i	i	1	÷	1	÷	1	1	7 94	4 9 4	47 4	47 4	46 4	45 45		46 47		47 47	7 47	7 47	4 6	9 4 9		1	
Maximum	46		46	46	46	43	0,4	40		4.1	43	45	45 4	- 44	45	7 94	47 4	47 4	47 4	7 94	4 9 4	45 4	45 44	_	7 7 7 7 7		45 42	41	1 41	41	7 + 7	.4
Minimum	46	94	94	94	43	0.4	9	40	404	0 4	41	643	7 7 7	7 7	43 4	7 7 7 7	45 4	46 4	47		46 4		45 44		43 47	4 42		0,4	0 41	41		
January Maximum	4.1	0,4		39		0 7		42		4 4	- 7	£3		4,						7 0,7	40 43		46 45		45 46	46	9 + 9		9 4 9	46	43	•
Minimum	0 4	39		6		36	• •	0		4			43		4	7 7	7 0 7	04	39		39				4.5	_		4 6				CJ.
Maximum	46	47	47	8 1 7	8 4	8 4 8	8 4 9	7,	48	8 4 8	484	4.6	46	94	46	94	4 9 4	45 4	45 4	7 94	47 47	_	47 46		46 46		46 47	1	1	1 1	47	۲,
March	,	,				? ;														_												
Minimum	4 4	<u>+</u> +		0 4	0 4	† † †	64	0 4	; ;	0 4	0 7 4	4 5		5 4		2 4 4		44	4 4	0 7 7	45 46		46 46		44 45		43 42	45		4 4	44	0.4
April	50	25	53	53	51	51		51					51	2	54-5	55	55 5		50		48 44		47 50		50 51	52	2 53		3 53			-
Minimum	47	48		20	_	9 7	_	47	48	47	64	64		80				48		7 8 7		-			-			200	_	1	- 47	
May Maximum	52	53	53	51	51	4 9	52	55	55	20		52				28														61	1 56	vo
Minimum	51	84	48	47	64	64	84	84	20	48	94	94	64	20	50 5		54 5	54	56 5	85	57 5	57	56 55		57 57	_	54 57	55	5 57			2
June Maximum	69			67		99		99		67		-02		73	75 7	92			~								_				71	-
Minimum	5	61	63	63	63	63	09	63	63	62	99	- 64	67	89			70	71	69	0,	71/	72	71 71	-	72 73		99 69		64 64	1	_	_
Maximum	7.1			70		89		7.1	_	73	_	73		74		75	76 7	76 7		92			_						73 72	72	2 73	
Minimum	65	99	99	99	4	6ء	69	99	99	- 89	20/	69	7.	2	68		_		70/		69	<u></u>	70 71	_	17 17	_	70 70	_		_		•
Maximum	72	72		75	75	7.4	7.4	74		75		73		72									71 70							2 -	0 72	7
Minimum	70	20	c L	72	_	73	73	72	-23	72	73	0,	6	65	69	 69	69	69	9 69	89	70/	0,	9 69		89 68	-	69 29	-	02	_	_	0
Maximum	70	89	99	80 1	68	89	89	67				2 5	17	7.1	707	12						_			69 69	_	70 71		9 68	_	69	0.0
Minimum	00	ŝ		۵	\neg			, 0	44	ŝ	90	-		5		-	2	ò	<u>`</u>	۰,	0 0		0 / 0		90		00 00	8				

MAD RIVER BASIN--Continued

11-4805. MAD RIVER NEAR FOREST GLEN, CALIF. -- Continued

Sediment discharge measurements and particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in mative water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Mathod	Jo .	analysis							Α		>							
		2,000		_			_								_			
		1.000		_					200									
	eters	0.500	1	I	I	;	!	!	86	ŀ	100	1	1	!	ł	1	1	}
	millim	0.250	1	1	ı	1	I	ŀ	82	1	66	1	1	1	!	1	1	1
liment	ated, in	0.125	ŀ	1	ł	ł	ł	1	67	l	91	l	!	l	1	!	!	1
Suspended sediment	e indica	0.062	;	l	1	1	i	ŀ	54	1	83	1	!	ŀ	!	İ	ł	1
Suspen	han siz	0.031																
	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000							_									
	Percent	0.008																
		0.004																
		0.002					_											
tuo mi fo D	discharge	(tons per day)	t	0.3	1,200	6.3	3.2	29	5,300	73	105	109	8.9	14	1.3	۲.	œ.	t.
Sediment	concen- tration	(mdd)	1	9	141	32	11	21	644	28	31	33	6	36	S	4	~	н
	Discharge (cfs)	(****)	3.7	11	3,160	67	109	518	3,050	896	1,260	1,220	365	206	96	67	30	3.0
Water		(°F)	59	46	46	1	46	48	48	44	46	43	1	46	64	1	!	1
	ling	point																
	Time (24 hour)	Ì							1600			1240						
	Date of collection		Oct. 19, 1960	Nov. 16	Dec. 2	Jan. 6, 1961	Jan. 27	Feb. 6	Feb. 9	Feb. 18	Mar. 24	Mar. 27	Apr. 8	Apr. 21	June 7	June 13	June 27	Aug. 28

t Less than 0.05 ton.

MAD RIVER BASIN -- Continued

11-4810. MAD RIVER NEAR ARCATA, CALIF.

LOCATION. --At gaging station, 100 feet upstream from bridge on U.S. Highway 299, 1.0 mile downstream from Warren Creek, and 2.8 miles northeast of Arcata, Humboldt County.

DAAINAGE AREA .--485 square miles. RECORDS ANTALRE.--Chemical analyses: November 1958 to September 1961. Water temperatures: December 1957 to September 1961.

Sediment records: December 1987 to September 1961.

SECTIMENS 196-61.—Water temperatures: Maximum, 40*P Jan. 3, 4, Mar. 29.

SECTIMENS 196-61.—Water temperatures: Maximum, 40*P Jan. 3, 4, Mar. 29.

Sediment concentrations: Maximum daily, 3,170 ppm Nov. 25, manimum daily, 0.1 ton on many days during October and November. Sediment loads: Maximum daily, 160,000 tons Feb. 11; minimum daily, 0.1 ton on many days during October and November.

SECTIMENS 1957-61.—Water temperatures: Maximum, 40*P and Peb. 8, 1960; maximum daily, 1 ppm on many days in 1958-60.

Sediment loads: Maximum daily, 4,860 ppm Feb. 8, 1960; minimum daily, 0.1 ton on many days in 1958-60.

Chemical analyses, in parts per million, water year October 1960 to September 1961

	H	8.0	8	٠.	7.4	7.2	7.8	7.7	7.7	7.6	7.8	7.2	8	80 80 87 87 88
pecific con-	duct- ance (micro- mhos at 25°C)	262	260	88	138	159	114	98 7.7	97	97	137	142	203	235
	Sorp- fron tion	ı							-	۳.	٦.	2	2	N N
	Non- car- bon-	12	6	87	=	16	8	^	ĸ	8	9	87	=	၈ မ
Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	126	121	36	63	78	20	43	44	42	8	62	85	116
solids ted)	Tons per day													
Dissolved solids (calculated)	Tons per acre- foot			!	!	!	ł	_			_		!	16.
Sig(Parts per million	1	1	1	!	!	ŀ	!	!	99	1	1	!	143
	(B)	0.0	٦.	ł	۲.	۰.	۳.	۰.	٩	•	۰.	ł	7	14
	Ni- trate (NO ₂)		ł	;	1	1	1	-		_			1	14
	Fluo- ride (F)	1	ł	1	1	1	;	;	1	0.1	1	ł	1	15
	Chloride (Cl)							2.2						6.50
	Sulfate (SO ₄)	i	1	5.0	ł	ł	1	1	1	4.0	1	6.0	1	=
į	(CO)	0	0	•	0	•	•	•	-	0	0	•	0	NO
	car- bon- ate (HCO ₃)							44						124
-	A E E E E E E E E E E	I	1	1.0	-	1	1	1	ŀ	80	1	٠.	1	1:2
	Sodium (Na)	5.8	6.9	3.4	4.7	4.6	3.5	3.6	-	4.6	1.7	3,9	4.6	5.0
,	rie- stum (Mg)	7.5	1	1,5	1	1	!	1	}	3.5	1	4.1	!	1.8
	Cal- ctum (Ca)	38	ţ	12	1	1	1	1	ŀ	#	1	18	ł	36
	Iron (Fe)									0.00				
	Silica (SiQ _e)	1	ŀ	1	1	1	1	1		13	l	1	L	12
	Mean discharge (cfs)	35		8,670			3,810		1.720	2,230				29 29
	Date of collection	Oct. 12, 1960	Nov. 9	Dec. 2	Dec. 7.	Jan. 11, 1961	Feb. 9	Mar. 8	Anr. 5	May 9.	June 7	June 8	July 6	Aug. 2sept. 5

MAD RIVER BASIN--Continued

11-4810. MAD RIVER NEAR ARCATA, CALIF. -- Continued

		ای																																		İ
	Average		1	!	:	ŧ	1	1	ł	46	40	1 4	4	: :	47	47	1	1	í	1	23	25	ł	5 5 5	3 1	65	62	í	65	64	ł	1	ł	1	1 1	
		31	1	1	ł	ł	ł	1	ł	43	5	1 0	2 4	: :	1	1	1	47	44	1	1	1	;	61	3 1	ŀ	1	;	64	63	I	I	ī	!	11	1
		30	1	ļ	;	1	48	47	!	44	5	19	2 4	: ;	1	1	1	44	42	;	22	24	1	828	8 1	65	19	1	4	49	!	ŀ	1	09		٦
		29	28	1	;	1		41	!			1 9			1	!	1	42	40		54			57			9	_	49		1	ŀ	1	1	11	
		28	-	1	;	!	48	47	1	46	5	1 0	47	: ;	47	46	!	-	1	1	54	22	!	28	5 1	64	62	1	49	64	1	:	ł	-	: :	1
		27	29	I	1	1	49	48	i	47	6	1 9	47	: :	47	46	;	ŀ	1			2		29		_	64		49	_	ł	1	1	1	11	1
1		56	1		1	1	20	49	1	47	94	! 9	47	: ;	47	46	1	ŀ	!	1	53	49	!	8 9	9 1	67	65	!	64	64	-	1	!	65		1
water, water year October 1960 to September 1961		25	61	l	l		20		1				47			46	;	ŀ	1					90			65		65		ł	ţ	I	1	11	1
ber		24	1	1	ł	!	20	20	1	47	46	1 5	46	: 1	47	46	1	1	1	!	49	47	1	62	3 !	69	64	1	65	64	!	1	ŀ	9	11	٦
tem		23	09	ļ	I	_	ည					1 :					1	1	1		64			28			64		49		1	1	1	1	11	_
861		22	1	-	1	1	20	49	;	47	94	1 4	5 4	1	48	46	1	1	ì	!	49	46	1	26	8 1	89	63	ļ	25	4	1	!	i	8	11	٦
to		21	ļ	ŀ	1	1	2	20	ì	41	9	1 9	2 6	1	47	46	1	1	1			49		26			64	_	65	_	1	1	ł	1	11	-1
1960		2	09	!	!	1	21	20	!	48		13	1 2	1	46	44	1	1	1	1	22	22	1	57	8 1	35	64	!	99	92	1	1	1	67	11	1
ě		6	_	ļ	1	_	22	_				1 4		_			1	1	Ì		_	2		28			65		99			64		Ī	11	٦
cto		8	09	-	1	!	24	22	1	649	Ď	1 9	5 4	: 1	46	45	1	-	:	1	54	72	ŀ	80 0	8 1	88	99	1	67	35	1	64	33	!		1
r o		1	ŀ	l	1	_	2			_		1 9				46	1	ì	1		22			8 4			99	1	67		1	64	_	1	H	-
ye	Day	2	09	-	1	1	54	24	-	47	94	1 5	4 4	: :	46	46	1	-	:	1	55	2	!	55	5 1	72	65	!	67	54	1	64	63	1		1
ıter		15		1	ŀ	_	22	_	_		_	1 5			_		1	1	1		_	2		55		_	64		65		1		62	_	11	-
, W.		4	9	1	ł	1	26	22	;	47	46	1 5	46	: 1	17	47	1	;	1	!	22	22	ī	75 2	5 1	69	63	1	99	54	1	63	62	1	11	1
ıter		13		ī	Ī	_	28	-				1 4					1	1	1		54		_	22			62		67		1	63		i	11	-
of WE		12	09	1	1	!	29	28	1	46	45	1 9	5.4	: ;	47	46	ŀ	-	-	1	22	7	1	200	-	92	29	1	89	99	!	64	စ္တ	1	::	1
		=	Ī	Ī	Ī	_	29	_	-			1 9	_	_	·		1	1	i		55			20		_	28		_	65	i	64	-	i	H	4
ر. ا		2	9	1	1	-	9	28	1	45	4	1 9	9 4	-	64	49	-	44	44	!	26	54	1	222	3 1	82	9	1	67	92	-	64	34	-	1 :	1
Temperature (°F)		٥	1	ŀ	ŀ	_	8	_	_	<u> </u>	5		4 4			47	Ī	44	44		9		_	53	_	_	24	_	_	64	1		49	9	11	1
era		00	7	i	1	;	19	8	1	43	5	! ?	1 2	: ;	47	47	;	45	4	;	55	23	;	233		90	57	;	99	63	;	65	64	8	1.	1
Ç emp		^	62	I	1	1	9	9	1	4	5	! 5	_			41	1	46	_		22			20			09		65	-	_	_	64	1	11	1
		٥	1	1	:	1	1	ì	ŀ	46	44	15	5 6	: ;	49	48	1	46	46	1	22	23	;	21	2 1	19	09	;	49	9	1	64	63	!	1 1	1
		2	63	i	i	ł	1	ł	1	47	46	1 5			48	48	1	46	46		26			52		9	9	1	63	62	l	63	63	!	11	٦
		4	1	!	ı	ŀ	i	1	!	48	7.4	1 5	1 9	: ;	48	48	1	47	46	1	22	22	-	52	3 1	9	9	1	64	63	1	63	63	-	11	٦
		က	29	ŀ	1	;	i	ł	ł	8	8	1 5	1 9	1	_	_	1	47	46	1	22	22	_	53	_	9	09	ŀ	65	64	1	63	63	9	1 1	1
		7	1	1	1	1	1	1	-	48	8	! \$	41	: ;	49	48	1	47	46	;	22	49	1	25	3 1	09	09	1	65	64	1	64	63	-	11	1
		-	ŀ	ŀ	1	ļ	ŀ	ł			8	1 5	5 4	1		48	1		46			47		55		_	9			63		64		1	; ;	1
				:	:		:	:		:	:			_	-	:	_	:	:		:	:		:	:	:	:		:	:	_	:	:	_	: :	1
	4				c								9						Ē					E E			Ę.		E	Ę		Ë	c		 § §	
	Month		October	Maximum	Minimum	November	Maximum	Minimum	Secember	Maximum	Minimum	Movimum	Minimum	February	Maximum	Minimum	ą.	Maximum	Minimum	_	Maximum	Minimum		Maximum		Maximum.	i j	July	exim.	Minimum	181	Maximum	Minimum	September	Maximum Minimum	
			Octo	Σ	Σ	Š	Σ	Z	ă	Z:	Ξ.	Most	Σ	Febr	Σ	Σ	March	Σ	Σ	April	Σ	₹,	May	ΣŽ	In	Σ	Z	July	Σ	Σ	August	Σ	Σ,	ğ	ΣZ	

MAD RIVER BASIN -- Continued

11-4810. MAD RIVER NEAR ARCATA, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

		остове	R		NOVEMBE	R		DECEMBER	
		Suspen	ded sediment		Suspen	ded sediment		Suspen	ded sedimen
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	23		0.1	29	1	0.1	5730	1010	5 24300
2	24		•1	29		•1	8670	1510	\$ 39300
3	25	2	•1	38 28	23 .	2 • 4	4050 2400	340 124	3720 804
5	31 27	2	•2	26	4	•3	1600	70	302
							1		
6	26		•1	26		•1	1160	44	B 140
7	29 37	3	•2	26	1	•1	904 754	34	83 65
9	50		•4	26 26	2	.1	650	32	56
10	44	2	•2	28		• 2	580	31	49
11	39		.2	48	4	•5	670	31	56
12	35	1	•1	51		-8	580	34	53
13	33 31		•1	115	23	7•1 22	510 470	34	47
15	29	1	•1	231 285	37	28	438	17	20
16	27	1	.1	285	34	26	670	240	K 570
17	26		•1	327	35	31	11600	2340	5 79900
18	26	2	-1	1310	651	S 2480	9820	1350	S 37100
19	26 26	1 4	.1	712 433	445 50	S 912 58	6100 3580	600 310	9880 3000
21	26		.3	370	10	10	2430	200	В 1300
22	25		•3	321	10	8.7	1780	100	481
23	26	4	•3	737	50	99	1360	77	283
24	26 26	2	•2	3660 10900	818 3170	S 8540 S 109000	1110 917	49 26	B 150
26	29		•2	5070	695	5 11300	802	19	41
27	28	2	•2	2490	160	1080	695	16	30
28	31		.3	1530	85	351	620	19	32
29	32	4	•3	1120	45	136	540 490	30	44
30	32 30	==	•3	1000	35	95 	450	36 12	15
Total	925		6.0	31277		134189.5	72130		201975
		JANUAR	Y		FEBRUAR	Y		MARCH	
1	414	7	B 7.8	6290	1010	5 18700	1160	38	119
2	378	7	7.1	5530	851	12700	1680	110	499
3	353	7	B 6.7	5040	430	5850 1830	1360 1160	42 30	154 94
5	328 311	34 62	30 52	3230 2280	210 160	985	1260	50	170
6	293	24	B 19	1870	100	505	3090	360	5 3230
7	290	5	3.9	1640	75	332	2850	180	1390
8	300	12	B 9•7	1350	50	182	2540	131	898
9	311 363	27 27	23 26	3810 7300	1050	S 16400 S 23100	3370 3850	310 500	2820 5200
					2990			1040	12900
11	346 422	31 33	29 38	18900 10400	1370	5 160000 5 40200	4600 4000	410	4430
13	390	13	14	8490	1110	5 26000	3500	550	5200
14	360	8	7.8	9270	1210	30300	3600	310	3010
15	335	7	6.3	9550	988	5 24300	5000	1510	20400
16	311	26	22	7040	710	13500	4100	620	6860
17	286	18	14	4950	420	5610	6000	910	14700
18	269 253	16 15	12 10	3700 2860	310 200	3100 1540	5000 4200	390 460	5270 5220
20	238	5	3.2	2350	150	952	3900	660	6950
21	226	3	B 1+8	2010	110	597	3500	260	2460
22	214	3	B 1.7	1820	90	442	3200	580	5010
23	250	10	6.8	1570	100	424	5000	470	6350
25	300 286	11	B 8.9 7.7	1430 1640	115	309 509	5200 8000	880	6180 19000
26	279	10	7.5	1330	48	172	6000	380	6160
27	304	7	5.7	1190	38	122	5000	360	4860
28	328	8	7.1	1200	39	126	4000	240	2590 B 1900
30	406 2090	10 386	11 S 2370	==			3610 3050	200 165	B 1900 1360
31	10900	2340	5 78300				2660	116	833
	22134		81069.7	128040		388787	115440		156217
otal									

S Computed by subdividing day.

B Computed from estimated-concentration graph.

K Computed from estimated-concentration graph and subdividing day.

MAD RIVER BASIN -- Continued

11-4810. MAD RIVER NEAR ARCATA, CALIF .-- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported loads are estimated)

- 1		APRIL			MAY			JUNE	
- 1		Suspen	ded sediment		Suspen	ded sediment	J	Suspend	ed sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	2340	89	562	1620	53	232	570	8	12
2	2190	80	473	1590	48	206	490	6	7+
3	2160	90	525	1310	30	106	502	7	9•
4	2020	74 60	404 279	1160	24 24	75 72	482 458	6 5	7 • 1 6 • 2
5	1720	00	219	1110	24	12	470	1 1	•••
6	1470	49	194	3370	264	S 2860	498	7	9.4
7	1260	43	146	3480	211	S 2130	545	13	19
8	1120	35	106	2280	63	388	478	7	9 • 1
.9••	1010	31	85	2230	208	427 1800	442 410	5	6.1
10	931	29	73	3210	208	1000	410		4.
11	856	37	86	5010	421	5690	386	4	4.
12	931	52	131	4200	230	2610	367		4.
13	892	42	101	3120	123	1040	346	3	2.
14	778	31	65	2480	70	469	325		2 • •
15	720	22	43	2020	61	333	300	"	٠.
16	685	23	B 43	1660	43	193	276		3.
17	660	29	52	1470	35	139	253		2.
18	660	32	57	1280	27	93	235	3	1.
19	645	43	75	1160	23	72	226		1.
20	610	43	71	1040	23	65	211		1.
21	1290	120	S 613	938	24	61	211	3	1.
22	2310	218	1360	856	18	42	197		1.
23	2220	126	755	808	16	35	186		1.
24	1940	95	498	742	13	26	173	1 1	1.
25	1900	104	534	680	12	22	161	3	1.
26	1880	96	487	685	10	18	153		1.
27	1690	64	292	675	14	26	148		î.
28	1550	48	201	610	a	13	146	3	1.
29	1580	52	222	575	10	16	142		1.
30	1580	45	192	640	11	19	132		•
31				635	11	19			
[otal	41598		8725	52644		19297	9449		131.4
								1 1.	
		JULY			AUGUST			SEPTEMBER	
_		Υ			AUGUST			SEPTEMBER	
1	126	2	0.7	49		0.3	33	SEPTEMBER	
2	124	2	0.7	48	AUGUST	.3	32		•
3		2	0.7			•3 •3	32 32 30	T	:
2	124 122	2	0•7 •7 •7	48 48		.3	32 32		:
2 3 4 5	124 122 118 114	2 2	0.7 .7 .7 .6	48 48 48 48		• 3 • 4 • 5	32 32 30 29	5	0.
2 3 4 5	124 122 118 114	2 2	0.7 .7 .7 .6 .6	48 48 48 48		.3 .3 .4 .5	32 32 30 29 28		•
2 3 4 5 6	124 122 118 114	2 2	0.7 .7 .7 .6 .6	48 48 48 48		• 3 • 4 • 5	32 32 30 29	5	•
2 3 5 6 7 8	124 122 118 114 108 105 103 99	2 2	0.7 .7 .7 .6 .6	48 48 48 48 48 48 45	4	.3 .4 .5 .5 .5	32 32 30 29 28 28 28 27	5	•
2 3 4 5 6 7 8	124 122 118 114 108 105 103	2 2	0.7 .7 .7 .6 .6	48 48 48 48 48 45	4	.3 .3 .4 .5 .5	32 32 30 29 28 28 28	5	•
3 4 5 7 8 9	124 122 118 114 108 105 103 99	2 2 2 2	0.7 .7 .7 .6 .6 .6	48 48 48 48 48 45 44	4	.3 .3 .4 .5 .5 .5 .5	32 32 30 29 28 28 28 27 28	5	•
2 3 4 5 6 7 8 9	124 122 118 114 108 105 103 99 96	2 2 2	0.7 .7 .7 .6 .6 .6 .6	48 48 48 48 48 45 44 42	4	.3 .3 .4 .5 .5 .5 .5 .5	32 32 30 29 28 28 28 27 28	5	•
2 3 4 5 6 7 8 9 10	124 122 118 114 108 105 103 99 96 89	2 2 2 2	0.7 .7 .7 .6 .6 .6 .6 .5 .5	48 48 48 48 48 45 44 42 41	4	.3 .3 .4 .5 .5 .5 .5 .5	32 32 30 29 28 28 28 27 28 27 28	5	•
2 3 4 5 6 7 8 9 10	124 122 118 114 108 105 103 99 96 89	2	0.7 .7 .7 .6 .6 .6 .6 .6 .5 .5	48 48 48 48 48 45 44 42	4	.3 .3 .4 .5 .5 .5 .5 .5	32 32 30 29 28 28 27 28 28 27 28 28 27 28 26 27 26 27	5	•
2 3 4 5 6 7 8 9 10	124 122 118 114 108 105 103 99 96 89	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5	48 48 48 48 48 45 44 42 41 38	4	.3 .3 .5 .5 .5 .5 .5 .5	32 32 30 29 28 28 28 27 28 28 27 28 28	5	•
2 3 4 5 6 7 8 9 10 12 13	124 122 118 114 108 105 103 99 96 89 86 84 82 81	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5	48 48 48 48 45 44 42 41 40 38 37 36	4	.3 .3 .4 .5 .5 .5 .5 .5 .5 .4 .4	32 30 29 28 28 28 27 28 28 26 27 28	5	
2 3 4 5 7 8 10 11 12 13 14	124 122 118 114 108 103 99 96 89 86 84 82 81	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5	48 48 48 48 45 44 42 41 40 38 37 36		.3 .3 .4 .5 .5 .5 .5 .5 .5 .5	92 32 30 29 28 28 28 27 28 28 26 27 26 27 26	5	
2 3 4 5 8 9 10 13 14 15	124 122 118 114 108 105 103 99 86 89 86 84 82 81	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5	48 48 48 48 48 45 447 40 37 36 35	4	.3 .3 .4 .5 .5 .5 .5 .5 .5 .4 .4 .4	32 30 29 28 28 28 27 28 28 26 27 26 27 26 29	5	
2 3 4 5 6 7 8 9 13 14 15	124 122 118 114 108 103 99 96 89 86 84 82 81	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5	48 48 48 48 45 44 42 41 40 38 37 36		.3 .3 .4 .5 .5 .5 .5 .5 .5 .5	32 32 32 32 32 28 28 27 28 26 27 26 27 26 28 32 40 35		
2 3 4 5 8 9 10 12 13 14 15 16 18	124 122 118 114 105 103 109 99 96 89 86 84 82 81	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5	48 48 48 48 48 45 44 42 41 38 37 36 35 35		33 33 44 55 55 55 56 44 44 44 44 44	32 32 30 29 28 28 27 28 28 27 28 27 26 27 26 32 32	5	
2 3 4 5 6 7 8 9 10 13 14 15 17 18 19 19	124 122 118 114 108 105 103 99 96 89 86 84 82 81 76 68 68	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .4	48 48 48 48 48 45 44 42 41 40 38 37 36 35 35 34 33		.3 .3 .4 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4	32 32 32 32 29 28 28 27 28 26 27 26 27 26 28 32 40 35 31		
2 3 4 5 6 7 10 11 12 13 14 15 16 17 18 19 19 19 19 19 19	124 122 118 110 108 105 103 99 96 89 86 84 82 81	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5	48 48 48 48 48 45 44 42 41 40 38 37 35 35 35 35 32		33 34 45 55 55 55 44 44 44 44 44 44 44 44 44	32 32 30 29 28 28 27 28 28 26 27 26 27 26 32 38 40 35 31		
2 3 4 5 6 7 8 9 0 4 5 6 1 5 6 6 7 8 9 9 9 9 9 9	124 122 118 114 108 105 103 99 96 86 84 82 81 76 68 68 66 66	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5 .4	48 48 48 48 48 44 42 41 40 38 37 36 35 35 34 32 31		.3 .3 .4 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4	32 32 32 32 32 32 38 28 27 28 26 27 26 27 28 32 40 35 31 33		
2 3 4 5 7 8 9 10 13 14 15 16 17 18 19 19 22 22 23	124 122 118 114 108 105 103 99 96 86 84 82 81 76 68 68 68 66 66	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5 .5	48 48 48 48 48 45 44 42 41 40 38 37 35 35 35 35 32	4	33 33 44 55 55 55 55 44 44 44 44 44 42 42 42 42 42	32 32 32 32 29 28 28 27 28 26 27 26 27 26 27 28 32 33 40 35 31		
2 3 4 5 6 7 8 9 6 13 4 5 6 17 8 9 9 9 9 9 9	124 122 118 114 108 105 103 99 96 86 84 82 81 76 68 68 66 66	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5 .4	48 48 48 48 48 45 44 42 41 40 38 37 36 35 35 32 31 31 30	4	.3 .3 .4 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4	32 30 29 28 28 28 27 28 26 27 26 27 26 27 28 32 38 40 35 31		
2 4 5 6 7 8 9 10 13 14 15 17 18 19 22 23 24 24 24 24 24 24 24 26	124 122 118 114 108 105 103 99 96 86 84 82 81 76 68 68 66 65 63 63 63 63 63 63	2	0.7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .3 .3	48 48 48 48 48 44 42 41 40 38 37 36 35 34 32 31 30 30		.3 .3 .4 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .2 .2 .2	32 30 29 28 28 28 27 28 26 27 26 27 26 27 28 32 33 40 35 31 30 30 30 31		
2 3 5 6 7 8 10 11 12 13 14 15 19 20 21 22 22 23 24 25 26	124 122 118 114 108 105 103 99 96 86 84 82 81 76 68 68 68 66 65 63 61 58	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5 .5 .6 .4 .4 .4 .4 .5 .5 .5 .5 .5	48 48 48 48 48 45 44 42 41 40 38 37 36 35 35 32 31 31 30 30 30	4	.3 .3 .4 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .2 .2 .2 .2 .2	32 32 32 32 32 28 28 27 28 26 27 26 27 28 32 40 35 31 33 30 30 30 31 31		
2 3 5 6 7 8 9 10 13 14 15 16 17 18 19 20 21 22 2	124 122 118 114 105 103 99 96 86 84 82 81 76 68 66 65 63 63 63 63 63 63 65 65	2	0.7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .4 .4 .4 .1 .5 .4 .3 .3 .3	48 48 48 48 48 44 42 41 40 38 37 36 35 34 32 31 30 30	4	.3 .3 .4 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .2 .2 .2 .2 .2	32 32 32 32 32 28 28 27 28 26 27 26 27 28 32 40 35 31 33 30 30 30 31 31		
2 3 5 6 7 8 9 11 12 13 14 15 17 18 19 22 23 24 25 29 20 2	124 118 114 108 105 103 99 96 86 84 82 81 76 68 66 65 63 63 63 63 63 65 55 55 55	2	0.7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .4 .4 .4 .1 .5 .4 .3 .3 .3 .3 .3	48 48 48 48 48 44 42 41 40 38 37 36 35 32 31 30 30 30 30 31 36 41 35		.3 .3 .3 .4 .5 .5 .5 .5 .5 .5 .6 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4	32 30 29 28 28 28 28 27 28 26 27 26 27 26 27 32 32 33 30 30 31 31 30 28 28 27 27 28 28 26 27 28 28 28 28 28 28 28 28 28 28 28 28 28		
2 3 5 6 7 8 10 11 12 13 14 15 16 17 18 19	124 122 118 114 108 105 103 99 96 86 84 82 81 76 68 68 68 68 63 61 55 55 55 55 55	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .4 .4 .4 .4 .3 .3	48 48 48 48 48 45 44 42 41 40 38 37 36 35 34 32 31 31 30 30 30 30 31 35 33		.3 .3 .4 .5 .5 .5 .5 .5 .5 .6 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4	32 32 32 32 28 28 28 27 28 26 27 26 28 32 40 35 31 33 30 31 31 30 28		
2 3 45 6 7 88 90 12 3 44 5 6 78 89 12 89 12 14 15 16 1	124 122 118 108 105 103 99 86 84 82 81 76 70 68 68 66 65 63 63 63 63 63 65 55 55 55 55 55 55	2	0.7 .7 .7 .6 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .4 .4 .4 .1.5 .1.5 .1	48 48 48 48 48 45 44 42 41 40 38 37 36 35 34 32 31 30 30 30 31 36 41 35 33 33		.3 .3 .4 .5 .5 .5 .5 .5 .5 .6 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4	32 32 30 29 28 28 28 28 27 28 28 27 26 27 26 39 30 31 31 31 30 28 28 27 27 26 28 27 26 28 27 26 27 26 27 26 27 26 27 27 28 28 27 27 28 28 27 27 28 28 27 28 28 27 28 28 28 28 28 28 28 28 28 28 28 28 28		
2 3 45 6 78 90 12 123 66 78 90 123 1	124 122 118 114 108 105 103 99 96 86 84 82 81 76 68 68 68 68 63 61 55 55 55 55 55	2	0.7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .4 .4 .4 .4 .3 .3	48 48 48 48 48 45 44 42 41 40 38 37 36 35 35 32 31 31 30 30 30 30 31 31 31 31 31 31 31 31 31 31 31 31 31		33 34 45 55 55 55 55 55 55 55 55 55 55 55 55	32 32 30 29 28 28 28 27 28 28 26 27 26 28 32 33 30 31 31 31 31 31 30 28 28 27 27 26 27 26 27 26 27 26 27 27 28 28 27 27 28 28 27 27 28 28 27 28 28 27 28 28 27 28 28 28 28 28 28 28 28 28 28 28 28 28		

S Computed by subdividing day.

B Computed from estimated-concentration graph.

MAD RIVER BASIN--Continued

11-4810. MAD RIVER NEAR ABCATA, CALIF. -- Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bothom withdrawal tube; C, remittally dispersed to deconation; N, in native water; D by D into the control of a control of the contro

	Mathod	jo .	analysis		VPWC	^	VPWC	VPWC	٨	APWC	>	^	VPWC	▶	VPWC	٨	>	>	^	۸
			2.000	1	!	1	901	1	i	-	1	ı	:	1	1	1	1	901	1	1
			1.000 2.000	1	100	100	66	901	1	100	1	1	100	1	001	100	1	86	100	1
		eters	0.500	1	66	66	66	66	100	66	100	100	66	!	66	66	100	94	66	100
		millim	0.250	1	92	92	91	93	91	5.0	86	66	95	100	94	88	97	90	92	86
	iment	tted, in	0, 125	100	84	83	92	84	72	84	88	91	84	88	86	69	8	76	83	16
	Suspended sedimen	e indica	0.062	66	65	69	9	20	28	8	74	85	65	82	20	26	99	2	71	83
	Suspen	han size	0.031		54															
WALCE!		finer t	0.016	1	42	!	37	84	ŀ	42	!!	;	45	1	43	1	!	1	!	!
Bulled		Percent finer than size indicated, in millimeters	0.008		32															_
, ma		Α,	0.004		24	ļ	81	88	ı	2	1	1	24	1	54	ŀ	1	1	!	1
cape; w			0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500		22			_								_				
F. pipet; S. sieve; V. visual accumulation mbe; W. in distilled water.	Sodiment	discharge	(tons per day)																	
; S, Sleve; V, V	Sediment	Sediment concen- tration (ppm)		511	5,230	1,210	1,600	1,100	926	3.170	479	386	2,920	407	1,870	1.150	617	310	936	413
P, piper	:	Discharge (cfs)	Ì	742	16,600	6,420	7,540	9,210	7,360	14.700	5,380	2,190	13,100	5,060	6,480	9.360	8,000	e 5,000	e 6,800	5,280
	Water tem-		(F)	52	20	48	48	48	48	48	48	48	48	49	49	47	1	1	1	20
	S	Img	point																	
		Time (24 hour))						1600	1130						1600				1200
		Date of collection		Nov. 19, 1960	Nov. 25	Dec. 1	Dec. 1	Dec. 2	Dec. 2	Dec. 17.	Dec. 19	Jan. 30, 1961	Jan. 31	Feb. 3	Feb. 9	Feb. 13.	Mar. 17.	Mar. 23	Mar. 25	May 11

e Estimated.

Particle-size analyses of bed material, October 1959 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S; sieve; V, visual accumulation tube; W, in distilled water)

		•	I provided to the state of the	•												
		Number							Bed material	tertal						Mathod
Date of collection	Time (24 hour)	of	Discharge				Percent finer than size indicated, in millimeters	finer tha	n size tr	dicated,	in milli	neters				of
		points		0.016	0.031	0.062	0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000 4.000 8.000 16.000 32.000	0.250	0.500	1,000	2.000	1,000	8.000	6.000	2.000	analysis
Jan. 14, 1960.	l	4	748			1	2	9	28	52	65	74	82	92	100	80
Sept. 16		m	24				-	12	47	89	80	68	96	8	1	ø
Dec. 2	1330	ıo	8,150				ı	-	6	2	36	22	9/	8	001	5 0
June 8, 1961		4	482				1	-	CV	ıc.	6	17	32	2	001	8 0

REDWOOD CREEK BASIN

11-4825. REDWOOD CREEK AT ORICK, CALIF.

LOCATION: --At gaging station, on U.S. Highway 101 bridge at Orick, Humboldt County, and 0.9 mile downstream from Prairie Creek. DRAININGE REA.-278 Square miles. RECORDS AVAILABLE.--Chemical analyses: November 1958 to September 1961.

		Нq	8.0	7.7	7.6	7.4	7.7	7.6	7.6	7.5	7:7	7:7	7.9	8.
	Specific con-	duct- ance (micro- mhos at 25°C)	156	151	90	101	84	75	72	72	96	121	135	142
l		Borp- tion ratio	6.3	N.	9	e.	2	e.	ਜ਼	4	٦.	e.	e.	e.
		Non- car- bon-	80	6	9	9	60	Ħ	ıo	က	9	IC)	7	_
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	63	64	37	43	35	58	30	30	40	21	20	19
	solids :ed)	Tons c		_	-									
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	!	i	ľ	1	!	1	90.0	1	!	!	11.
Septembe	E)	Parts per million	1	1	1	;	1	i	1	45	1	;	i	8
60 to		ron (B)	0.0	•	۰.	۲:	•	•		r.	0.	•	•	2.
r 19		Ni- trate (NO ₂)	1	ŀ	1	1	l	1	1	0.0	1	1	1	٦.
ctobe		Fluo- Ni- ride trate (F) (NO ₃)	1	Ī	i	1	I	l	1	0.2	1	ŀ	ī	•
Chemical analysee, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	8.8	7.0	4.0	4.5	4.8	3.0	4.6	2.8	5.2	5.0	4.6	8.9
ion, wat		Sulfate (SO4)	;	1	1	7.0	1	1	1	4.4	1	i	1	0.9
1	į	(0) te bo												
ts per		car- bon- ate (HCO ₃)	29	67	38	45	38	34	31	33	41	26		
in pa	Ė	i i i i i i i i i i i i i i i i i i i	1	1	1	1	1	}	1	0.6	;	ļ	ŀ	6
lysee,		Sodium (Na)	5,1	4.6	3,4	3.9	3.1	4.1	1.1	2.5	1.4	4.2	5.1	4.9
al ans	Ş	stum (Mg)	;	1	1	1	1	1	1	1,6	1	1	1	2.6
Chemit		ctum (Cg)	1	Ī	1	1	1	!			1	!	1	8
		Iron (Fe)								0.01				
		Siltea (SiQ ₂)	1	l	1	1	1	1	Ī	7.3	I	1		
		Mean discharge (cfs)						2,230		1,970			2	39
		Date of collection	ct. 12, 1960	ov. 9	ec. 7	an. 11, 1961	eb. 8	Mar. 8	pr. 5	Мау 9	une 7	July 5	ug. 2	Sept. 5
i			Ιŏ	ž	ă	7	ž	꽃	Ϋ́	3	ร	ち	¥	š

LOWER KLAMATH LAKE BASIN

11-4895. ANTELOPE CREEK NEAR TENNANT, CALIF.

LOCATION: --At gaging station, 2.5 miles south of Tennant, Siskiyou County, 4 miles downstream from Frog Lake, and 17 miles southeast of Mount Hebron. DALINAGE AREA. --18.8 square miles.

DRAINAGE AREA 18.8 square miles RECORDS AVAILABLE Chemical anal	.8 square n	miles. analy	yses: ()c to be	r 1959	October 1959 to September 1961	ember	1961.					1									
				Chemi	cal ans	lyses,	in par	ts per	m1113	ion, wat	Chemical analyses, in parts per million, water year October 1960 to September 1961	Octobe	er 19	30 to	Septembe	r 1961						1
					,				<u> </u>						Diss (cs	Dissolved solids (calculated)	olids ed)	Hardness as CaCO	Hardness as CaCO ₃	8.	Specific con-	
Date of collection	Mean discharge (cfs)	Silica (SiQ _e)	Iron (Fs)	Cal- clum (Ca)	mag- ne- stum (Mg)	Sodium (Na)	K K K	car- bon- ate (HCO ₂)	ate (CO)	Sulfate (SO4)	Chloride (Cl)	Fluo- Ni- ride trate (F) (NO ₃)	Ni- trate (NO ₃)	Fon (B)	Parts per million	Tons per acrs- foot	Tons per day	Cal- ctum, Mag- ne- stum	Non- car- bon-	ad- ad- gorp- tion ratio	duct- ance (micro- mhos at 25°C)	Hď
Oct. 12, 1960	13	1			1	2.9	1	36	-	-	0.4	1	0.0	0.0	1	1		25	0	0.3		7.5
Nov. 9.		ı		1	1	2.8	1	39		1	5.	1	1	•	1	1		28	_			7.8
Dec. 14		1		ŀ	1	3.5	1	33		1	Ī	Î	ŀ	0	1	1		23	_	F?		9.7
Jan. 11, 1961		L		1	1	200	1	37		0:0	2	_	I	4.0	1	1		42.	_	. ·		7.7
Mar. 8	24	<u> </u>			11	1.4	11	272	-	H	2 !	П	11	. 0	11	П		26		? =		57 7.8
Apr. 12				ł	1	3,3	ī	30		l	8.		ī	۰.	;	i		8	_			7.7
May 10	82	19	0.02	3.8	1.6	1.7	8.0	88	_	œ.	4,0	<u> </u>	0.0	•	39	0.05		16	-	8,0		38 7.3
Jule 13		1 1		1 1	1 1	2 6		7 6	_]]	ν α	Π	П	•	1 1	1 1		2 12	_			7.7
Aug. 1		1		!	1	4.1		36		}	: 1		1	0	1	1		21	_	. 4		4.6
Sept. 12	13	30		7.2	1.3	2.8	1.4	36	_	۰.	1.0	Ε.	2	•	62	80.		24	•			7.8
		ļ						1	-					1		-		-				

LOWER KLAMATH LAKE BASIN--Continued

11-4905. BUTTE CREEK NEAR MACDOEL, CALIF.

LOCATION .--At gaging station, 7 miles south of Macdoel, Siskiyou County, and 7.5 miles downstream from Little Antelope Creek. DRAINAGE AREA.--178 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1959 to September 1961.
REMARKS.--No discharge records available.

		Щ	7.5	7.4	7.7	7.5	9.7	7.7	74 7.4	9.1	۰ ا م	7.7	7.9
	Specific con-	duct- ance micro- nhos at 25°C)	74	73	20	65	49	89	74	40	200	22	80
		duum ad- Borp- tion ratio	0.3	e.	e.	e.	4.	ਜ਼.	<u>ښ</u>	ņ	· ·	4.	ĸ.
	ess CO ₃	Non- car- bon-	0	0	0	0	0	0	0	5	5 (0	•
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	27	32	22	36	22	33	62	27	22	200	33
1	solids ted	Tons per day											
er 196	Dissolved solids (calculated)	Tons per acre- foot		!	1	!	!	!	ċ	1	;	!	60:
Chemical analyses, in parts per million, water year October 1960 to September 1961	shu o)	Parts per million	-	1	!	i	!		99	1	!	1	63
60 to		B) B9-	0.0						٠.		_	•	•
er 19		Fluo- N1- Fride trate (F) (NO ₅)	l	;	1	1	!	1	0.2		!	1	۳.
Octob		Fluo- ride (F)	-	1	1	1	1	!	0.2		! _	1	
ter year		Chloride (CI)	0.4	۰.	1	c,	0.1	!	1	1	1.2		1,5
lion, wat		Sulfate (SO ₄)		1	1	0.0	ì	;	۰.	1	1	!	1.0
r mil]		bon- ate (CO)											
rts pe	B1-	car- bon- ate (HCO ₃)	42	46	42	42	41	42	46	38	23	20	47
tn pa	É	State (X)	1	!	1	!	!	!	_	ŀ	-		1.7
alyses,		Sodium (Na)		3.6	4.2	3.5	4.6	1.4	3.6	3.7	4.	5.5	3.6
al an	7,00	mage- nie- sium (Mg)	1	!	:	1	1	1	2.9	!	1	!	3.2
Chemic		Cal- clum (Ca)	1	;	;	1	1	1	7.1	1	;	1	8.0
		Iron (Fe)							0.03				
		Silica (SiQ _g)	1	!	!	ı	!	!	8	!	!	1	27
		Mean discharge (SiO _s) (cfs)											
		Date of collection	Oct. 12, 1960	Nov. 9	Dec. 14	Jan. 11, 1961	Feb. 15	Mar. 8	May 10	June 13	July 12	Aug. 1	Sept. 12

KLAMATH RIVER BASIN

11-5125. KLAMATH RIVER BELOW FALL CREEK, NEAR COPCO, CALIF.

LOCATION. --At gaging station, 500 feet downstream from Fall Creek, 0.5 mile downstream from Copco No. 2 plant of The California Oregon Power Co, and 1 mile south of Copco, 31stiyou County.

DAMINGE AREA.--4,370 square miles, approximately.

RECORDS AVALLARE. --Chemical analyses: October 1963 to September 1961 (discontinued).

		Hd	7.0	7.3	7.5	7.6	7.5	7.2	2.5	6.9	7.1	7.5	7.4	7.5
	pecific con-	duct- ance (micro- mhos at 25°C)	178	209	242	185	244	308	265	266	180	169	158	178
		ad- sorp-(1 tion ratto	6.0	1.2	1,4	1,2	1.2	1.0	6	1.1	6.	1,0	9.	6.
		Non- car- bon-	0	0	0	0	0	10	11	6	0	0	0	•
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	26	57	65	54	72	100	6	80	19	22	23	26
1		Tons cl			-									
er 196	Dissolved solids (calculated)	Tons per acre- foot		ŀ	1	1	l	1	1	0.24	i	I	ī	.18
o Septemb	Dis (c)	Parts per million	-	1	1	1	1		1	173	!	-	Ī	135
360 t		Bo- ron (B)		٦.	٦.		_	7		٦.	_	٦.	•	7
er 1		Ni- trate (NO ₂)		1	!	1	1	1		1,1		1	!	2,3
Octol		Fluo- ride t (F) (1	1	1	;	1		0.2		!	1	۲.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	4.1	5.0	5.2	5.0	5.5	3.0	1.2	10	4.8	3.5	2.2	4.6
lion, wa		Sulfate (SO ₄)	1	1	ŀ	173	34	88	1	46	!	!	1	12
r mil	-6,	Pon- late (CO ₃)										_	_	
rts pe		car- bon- ate (HCO ₃)	98	62	102	92	89	110	86			81	75	63
tn ps	ŭ	fas- Stum (K)		!	1	1	1	1	;	3.0	!	1	!	2.9
alyses,		Sodium (Na)	1.5	21				_		22		17	13	15
ical ar	Max	mag- ne- sium (Mg)	1	!	1	!	!	1	-	9.8	1	!	!	5,1
Chem		Cal- Ctum (Ca)		1	1	l	1	<u> </u>	!	16	_	:	!	14
		fron (Fe)								0.03				
		Silica (SiQ ₂)		1	-	1	1	1	ŀ	23	1	1	1	38
		Mean discharge (cfs)		1,820	2,510	2,040	280	2,330	1.920	1,400			1,110	
		Date of collection	Oct. 6, 1960	Nov. 7	Dec. 12	Jan. 4, 1961	Feb. 5	Mar. 2	Apr. 10	May 8	June 5	July 13	Aug. 7	Sept. 11

88888

847 871 871 734

000000

2220 2220 2240 2295 256

0.56 116

ŀ

121113

1 % ł

110

38 38 34 34 34 34 34

1128 33

238 345 295 347 353

18 | 18

844288

121118

141118 0.01

14 1 1 18

27 17 27 27 28 27 28

Apr. 11. Aug. 1.

Dct. 11, 1960.... 13..... 11, 1961.... Feb. 14.....

Date of collection

......

ě Jan. 1112

8 8 8 8 8 8 8 4 4 4 4 6 4 6 4

553 502 508 509 509 509

00000

200 204 204 200 216 191

띥

mhos at Puce (micro-25°C)

ne-

ton ton ratio ģ

Noncar-bon-

Cal-

Specific

Hardness as CaCO,

con-

KLAMATH RIVER BASIN--Continued

11-5175. SHASTA RIVER NEAR YREKA, CALIF.

LCCATION: --At gaging station, 0.5 mile upstream from mouth, and 7 miles north of Yreka, Siakiyou County. DRAINGER ARRA.--7-596 square miles.
RECORDS AVAILARE.--Chemical analyses: December 1968 to September 1961.

Chemical analyses, in parts per million, water year October 1960 to September 1981

Per day Dissolved solids (calculated) Tons per acre-foot 111 111111 Parts nillion 8 5 E 4.0.0.0.4 Fluo- Ni-ride trate (F) (NO₂) 1111 Chloride 828288 ਹੁ Sulfate (SO4) 111211 car-bon-ate (HCO₂) (CO₃) 134668 Car-288 222 274 273 288 258 Po-tas-(x) 111111 Sodium (Na) 882888 Mag-ne-stum (Mg) 111111 2 = (E) 111111 Fe) Silica (SiQ_e) 111111 Mean discharge (cfs) 126 150 182 174 354 354

Periodic determinations of suspended sediment discharge, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

			Water		Sediment	40000					Mapend	Suspended sediment	ment					No.
Date of collection	Time (24 hour)	ling a		Discharge	concen- tration	discharge		Ã	ercent	finer th	an size	i indica	Percent finer than size indicated, in millimsters	millim	sters			Jo
	Ì	point	(F)		(mdd)	(tons per day)	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	.84	800	0.016	031	0.062	0.125	0.250	0.500	1.000	2,000	analysis
Dec. 8, 1960	1240		38	193	10	5.3		_			-							
Jan. 25, 1961	0830	_	42	184	00	4.0	_	_			_	_						
Jan. 31	1745		48	233	53	33		_										
Feb. 21	1055		46	249	13	8.7	_	_							_	_		
Mar. 22	1230		22	241	14	9.1		_										
Apr. 3	1800		1	508	15	60		_	_							_		
Apr. 19	1220		51	38	m		_	_										
June 1	1620		22	123	∞	2.7												
June 9	1830		2	112	9	8.7			_			_		_				

KLAMATH RIVER BASIN--Continued

11-5178.2. KLAMATH RIVER AT KLAMATH RIVER SCHOOL, NEAR HAMBURG, CALIF.

LOCATION: --At State Highway 96 bridge, 0.9 mile downstream from Klamath River School, 1.8 miles upstream from Horse Creek, and approximately 5.5 miles northeast of Hamburg, Siskiyou County.
RECORDS AVAILABLE. --Chemical analyses: December 1958 to September 1961.
RECORDS AVAILABLE. --Chemical analyses: December 1958 to September 1961.

mor million Some Lond Londings

		н	188 7.6	7.8	6.2	6.2	6.2	8 .0	7.7	266 8.0	8.0	8.2	0.0	7.8
	Specific con-	duct- ance (micro- mhos at 25°C)	188	236	263	226	283	295	253	266	216	212	176	188
		dum ad- gorp- tion ratio	8.0	1.1	1.2	1.0	۲.	6		6.	63	6	6.	6.
	co,	Non- car- bon-	0	0	0	0	0	0	80	9	8	0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	7.1	2	81	23	100	103	93	16	88	72	55	28
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	-	í	;	1	1	ī		0.24	1	1	1	.18
Septembe	Bis.	Parts per million	1	Ī	1	1	1	l	Ī	174	Ī	1	1	134
60 to		. 10 Pa	0.3	٦:	۲.	~		۲.		٠.	_	_		
er 19		rrate (NO ₃)	Ĺ	!	!	!	!	1	1	1.5	l	1		1.5
Octob		Fluo- Ni- ride trate (F) (NO ₃)	-	1	!	!	1	 -	-1	0.1	1	1		
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	5.5	7.0	7.2	6.5	6.5	4.9	3,5	10	5.2	9.0	3.2	5.2
lion, wa		Sulfate (SO ₄)		ł	1	12	24	38	34	37	!	!	!	9
r mil		CO at a CO		_		_								
rts pe	-18	car- bon- ate (HCO ₃)		103	117	112	128	126	104	104	104	86	92	8
in pa	غ	tas- (K)	;	;	1	1	!	1	;	2.6	1	1	1	3,2
alyses,		Sodium (Na)	15	21	24	19	17	21	16	19	4.0	18	16	16
al an	700	nag- ne- sium (Mg)	ŀ	ł	ŀ	ŀ	1	ŀ	ŀ	11	ŀ	1		11
Chemic		Ca) (Ca)	1	I	ł	1	1	1	1	18	ł	I	1	5.2
	-	Iron (Fe)								0.03				
		Silica (SiO ₂)	1	1	!	-	:	1		24	1	i	1	38
		Mean discharge (SiO ₂) (cfs)												
		Date of collection	Oct. 11, 1960	Nov. 8	Dec. 13	Jan. 12, 1961	Feb. 14	Mar. 7	Apr. 11	Мау 9	June 13	July 11	Aug. 1	Sept. 12

11-5195. SCOTT RIVER NEAR FORT JONES, CALIF.

LOCATION: --At gaging station, 1.7 miles upstream from Snow Creek, and 10.8 miles downstream from Fort Jones, Siskiyou County. DRAINAGE AREA.--605 square miles. RECORDS AVAILABLE. --Chemical analyses: November 1958 to September 1961.

-		Ħ	8.2	8.2	8.2	8.0	7.8	8.0	8.0	8.0	8.0	8.6	8.0	8,3
	Specific con-	duct- ance (micro- mhos at 25°C)	304	271	202	183	151 7.8	172	141	149 8.0	118	238	282	288
		Sorp- fron tion catto	0.2	Ñ	.2	7	۲.		т.	τ.	٠.		?	.2
		Non- car- bon-	٥	0	,	0	0	0	8	0	4	4	7	5
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	139	132	102	88	73	8	71	75	62	122	137	149
_	solids ted)	Tons comparations day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	;	ŀ	1	ł	1	1	0.13	ł	1	1	.24
Septembe	Dis (c	Parts per million	1	!	1	1	1	l	ł	86	1	1	1	174
30 to		ron (B)	0.0	•	•	۲.	•	۰.		٠.		•	•	٦.
r 196		Fluo- Ni- ride trate (F) (NO ₃)	1	ŀ	1	1	ł	1		6.0		1	ŀ	2.1
ctobe		Fluo- ride (F)	1	1	1	1	ł	1	ł	0.0	ľ	ŀ	1	٠.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	4.2	3,5	2.0	2.2	1.0	1.0	1.0	4.7	9.	4.8	4.0	6.0
ion, wat		Sulfate (SO ₄)	1	!	l	5.0	1	1	1	1.0	1	1	ľ	5.0
mi 11	į	CO CO	٥	0	0	0	0	•	0	0	•	œ	0	-
ts per	Bi-	car- bon- ate (HCO ₃)	176	164	118	109	85	102	84	85	7	128	165	174
n par	Š	Etas (X)	1	I	;	ŀ	!	i	l	0.7	I	;	1	6.
lyses, i		Sodfum (Na)	5.4	4.2	3.9	3.5	2.7	6.	2.1	2.4	2.3	4.7	4.9	4.3
al ana	2	nie- nie- stum (Mg)	1	1	1	ł	1	!	1	9.6	ŀ	1	!	15
Chemic		Cal- ctum (Ca)		ŀ	ł	1	· 	1	1	14	;	!	ŀ	32
		Iron (Fe)	_							0.01				
		Silica (SiO ₄)	1	1	1	1	1	1	1	8	1	ı	L	19
		Mean Sil. discharge (Sil. (cfs)	7.7	65			2,060		932	654	870	145	89	26
		Date of collection	oct. 11, 1960	Nov. 8	Dec. 13	Jan. 11, 1961	Feb. 14	Mar. 7	Apr. 11	May 9	June 13	July 11	Aug. 1	Sept. 12

11-5205. KLAMATH RIVER NEAR SEIAD VALLEY, CALIF.

LOCATION.--At gaging station, 0.4 mile upstream from Bittenbender Creek, 1.4 miles downstream from Grider Creek, and 2.2 miles west of Seiad Valley, BALIAAGE YOUNTY.
DALIAAGE AREA.--6, S80 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: December 1958 to September 1961.

		Hď	7.8	7.7	7:7	7.8	6.0	.	7.9	ο c		7	8	7.9
	Specific con-	duct- ance (micro- mhos at 25°C)	189	233	251	218	200	202	211	223	10	213	194	195
	- d - d - d - d	drum ad- sorp- tion ratio	8.0	1.0	1.0	6	ů,	•	ů.		, c	0.1		œ.
		Non- car- bon-	0	0	0	0	63 6	7	00	20	5	5	0	•
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	64	72	81	73	84	707	85	27 6	7 0	0 :	68	7
	solids ited)	Tons per day												
r 1981	Dissolved solids (calculated)	Tons per acre- foot		1	!	1	!	!		0.20		!	!	•
Septembe	म त	Parts per million	1	!	!	1	ŀ	1	1	145	!	!	1	145
30 20		- B 12 B	0.1	۲.	۲.		ا.	:	۳.		_	7		
r 19		Ni- trate (NO ₂)	1	1	1	!	1	!		_		!	1	1.7
ctobe		Fluo- Ni- ride trate (F) (NO.)		!	1	1		<u> </u>		0.1		!		e.
Chemical analyses, in parts per million, water year October 1960 to September 1981		Chloride (C1)	5.4	7.0	6.0	6.2	4.5	n n	3.0	8.7	20,0	0	5,5	8,2
ion, wat		Sulfate (SO ₄)	-	ļ	1	14	£1	1	23	24	1	1	!	10
m111	į	1 a 20 2 a 20 3 a 20												
ts per	-18	car- bon- ate (HCO ₃)			105	110	104	611	96			102	102	100
n paz	å	K in the second of the second	-		!	ļ		l	-	1.7	!	!	!	2.4
lyses, 1		Sodium (Na.)	14	8	21	17	9.	15	#	12	9	91	13	15
cal ana	;	stum (Mg)	1	I	1	ł	ŀ		1	9.6		!	1	8.1
Chemi		ctum (Ca)	ŀ	1	1	ł	!	1	1		1	į	;	12
		(Fe)												_
		Silica (SiO _a)	ŀ	1	<u> </u>	1	<u>l</u>	1	1	2	l	i	1	37
		Mean discharge (cfs)	2.300				6,820		4,300	3,440	3,440	1,520	1,340	1,820
		Date of collection	Oct. 11. 1980	Nov. 8	Dec. 13	Jan. 12, 1981	Feb. 14	Mar. 7	Apr. 11	Мау 9.	June 13	July 11	Aug. 1	Sept. 12

11-5225. SALMON RIVER AT SOMESBAR, CALIF.

LOCKTOR: --At graging station, 0.5 mile east of Somesbar Post Office, Siskiyou County, and 1.5 miles upstream from mouth. DALINKER AREA.--746 square miles. November 1958 to Soptember 1961.

l		Нq	7.8	8,1	7.6	7.5	8.0	7.8	7.8	9.	7.8	8.2	8.6
	Specific	duct- ance micro- nhos at 25°C)	138	140	107	104	107	78	77	10	87	115	130
		Borp- Borp- tion tion	0.2	S.	۳.	- ,	۲.	٠.	٠.	٦.	Ņ	Ŋ	
		Non- car- bon-	8	က	က	0	0	m	0	-	N	0	0
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	62	65	20	47	8	37	36	42	9	21	9
1	solids ted)	Tons per day											
ar 196	Dissolved solids (calculated)	Tons per acre- foot	-	!	i	1	!	ŀ		:	1	!	.12
Septemb	၁) ရာ(Parts per million		1	1	1	1	1	22	!	1	Ī	87
60 to		ron (B)	0.	۲.	•	•	٠.		٦.	•	•	•	•
er 19		Fluo- Ni- ride trate (F) (NO ₃)		1	1	ł	1		0:0	!	!	1	۰.
Octob		Fluo- ride (F)		1	!	1	!		0.1	!	1	1	°.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	2.8	2.5	1.0	1.2	1	1.5	1	1.0	0.0	₹.	4.8
ion, wat		Sulfate (SO ₄)		ł	1	4.0	1	ł	1.8	ŀ	I	ī	4.4
m111		- mg (00)	0	0	0	0	0	0	0	0	0	0	က
ts per	-H	car- bon- ate (HCO ₃)	73	76	22	28	62	42	4	28	46	99	67
n par	ć	A Part (N	1	1	1	1	1	1	0.5	1	Ī		1.0
lyses,		Sodlum (Na)	3.2	2.9	2.3	2.0	2.4	.7	1.5	φ.	7.	3.6	3,3
al ans	ļ	nag- ne- stum (Mg)	1	1	1	1	1	-	1.9	1	1	1	3.6
Chemi		Cal- cfum (Ca)		1	1	!	1	ı	11	!	ļ	ļ	18
		Iron (Fe)	;	1	1	1	1	1	0.01	1	1	1	0.00
		Silica (SiQ _e)	:	1	1	1	l	1	13	1	ı	1	16
		Mean Silica discharge (StO ₂) (cfs)	179	170	801	636	2,260	4,150	2,220	3,060	636	264	166
		Date of collection	Oct. 13, 1960	Nov. 10	Dec. 8	Jan. 12, 1961	Mar. 9	Apr. 6	May 8	June 7	July 6	Aug. 3	Sept. 6

KLAMATH RIVER BASIN--Continued

11-5230. KLAMATH RIVER AT SOMESBAR, CALIF.

LOCATION.—At gaging station, 300 feet downstream from Salmon River, and 1 mile west of Somesbar Post Office, Siskiyou County. DRAINGE AREA.—At gaging station, 300 feet downstream from Salmon Rackers Area.—At Gallery and Salmon Recognized and Salmon Salmo

Chemical analyses, in parts per million, water year October 1960 to September 1961

	pR	8.0	8.0	7.8	7.8	8.1	120 7.9	7.9	8.0	8.1	7.9	8.3
Specific	duct- ance (micro- mhos at 25°C)					162	120	139	106	163	165	183
ģ,	ad- ad- Borp- tion ratio	i .				4.	.1	.3	.1	3.	9.	9.
	Non- car- bon- ate	0	0	0	0	0	67	6	•	0	0	•
Hardness as CaCO,	Cal- cium, Mag- ne- sium	99	75	7	20	65	54	28	46	99	63	74
solids ted)	Tons per day											
Dissolved solids (calculated)	Tons per acre- foot		1	ł	!	1	!	0.12	1	i	1	.17
3 0	Parts per million	;	!	1	!	!	¦	6	1	!	!	122
	(B)	0,1	٦.	۰.	٦.	٦.	٦.	٦.	•	۰.	۲.	٦.
	Ni- trate (NO ₃)		1	1	}	1	-:			Ī	Ĩ	
	Fluo- ride (F)		I	ŀ	1	1	;	0.1	1	ı	1	0.0
	Chloride (Cl)	5.2	7.2	4.8	4.8	1	2.6	7.0	3.0	3.5	3,1	6.4
	Sulfate (SO.)	ł	;	1	8.0	1	ı	9.6	l	1	1	8.0
	2 te	0	0	0	0	0	0	0	0	0	0	-
	car- bon- ate (HCO ₃)	96	104	92	97	81	64	8	26	81	91	86
	E ta ta ta ta ta ta ta ta ta ta ta ta ta	1	;	ļ	ŀ	!	1	1:1	l	1	1	1.6
	Sodium (Na)	13	17	14	=	7.4	2.0	5.3	1.6	8,6	21	11
	ne- ne- stum (Mg)	-	ł	1	ŀ	1	ı	6.8	1	ļ	1	8,3
	Cal- ctum (Ca)	!	;	;	ļ	1		12	;	;	ł	16
	Iron (Fe)		_					0.02				
	Silica (SiO ₂)	1	1	1	1	L	ı	18	1	1	1	21
	Mean discharge (cfs)				4,710		15,800	8,700	11,400	2,860	1,980	1,680
	Date of collection	oct. 13, 1960	Nov. 10.	Dec. 8	Jan. 12, 1961	Mar. 9	Apr. 6	May 8	June 7	July 6	Aug. 3	Sept. 6

11-5255. TRINITY RIVER AT LEWISTON, CALIF.

LOCATION.—At old highway bridge in Lewiston, Trinity County, 0.3 mile downstream from gaging station, and 0.8 mile downstream from Deadwood Creek.

RECHING SARA.—726 equate miles.

RECHING AVAILARLE.—Chemical analyses: December 1953 to September 1961.

Water temperatures: September 1951 to September 1955, October 1957 to September 1958, July 1959 to September 1961.

EVERRING. 1996-61.—Water temperatures: Marximum, 67°F Oct. 1, 2, June 13, 15-17; minimum, 39°F several days during January.

EXTREMES, 1951-55, 1957-58, 1959-61.—Water temperatures: Marximum, 79°F July 20, 21, 28, 29, 1960, minimum, 33°F on several days in January 1952.

		н	8,1	8,0	7.7	8.0	6.2	7.9	7.9	7.9	8,0	6.	7.9	8.0
	Specific	duct- ance micro- ahos at 25°C)	179	174	103	108	123	117	115	108	112	104	8	66
		dium ad- sorp- tion ratio	0.3	<u>.</u>	٥.	~	8	e.	т.	~	τ.	Τ.	2	٠,
		Non- car- bon-	4	7	8	0	က	0	н	Н	87	8	0	7
	Hardness as CaCO,	Cal- clum, Mag- ne- stum	26	80	46	21	28	48	55	52	22	20	45	48
1	solids rted)	Tons per day								_				
r 196	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	!	1	1		0.10	1	!	!	60.
Septembe	aid o)	Parts per million	1	!	1	!	1	1	ŀ	70	1	1	!	64
60 to		ron (B)	0.1	•	•	۲.	٠.	°.		•	٩.	۲.	0	٠.
er 19		Ni- trate (NO,)		1	1	!	!	!		0.3	1	!	!	τ.
ctob		Fluo- Ni- ride trate (F) (NO ₃)		-		!	1	1	1	0.1	1	1	1	•
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	6.4	7.0	2.0	2.5	3.0] .	3,1	1.8	4.2	2.9	i	2.5
ion, wat		Sulfate (SO4)		1	1	4.0	l	I	ı	4.0	ł	1	1	1.4
m11]		- age (00)												
rts per		car- bon- ate (HCO ₃)	88	88	54	62	67	65	99	62	61	28		
n pa	-6	tas- stum (K)	-	1	i	ł	!	ı		9.0	l	!		ů
lyses,		Sodium (Na)	5.9	5.8	3.6	2.9	3.2	5.2	1.4	2.5	1,2	2.4	2.8	2.3
al ans		mag- ne- stum (Mg)	1	;	;	ŀ	ļ	1	!	8.8	!	;	ł	7.7
Chemic		ctum (Ca)	-	1	ł	1	1	1		8.4	1	I	ł	6.4
į		Iron (Fe)								000				
		Silica (SiQ ₆)	:	1	!	i	1	1	1	12	ŀ	ŀ	1	12
		Mean discharge (SiO ₆) (cfs)						175						182
		Date of collection	Oct. 14, 1960	Nov. 11	Dec. 9	Jan. 12, 1961	Feb. 9	Mar. 9	Apr. 7	May 8	June 8	July 7	Aug. 4	Sept. 7

KLAMATH RIVER BASIN--Continued

11-5255. TRINITY RIVER AT LEWISTON, CALIF. -- Continued

				ı	-	Temperature	9rat	ure	Ē	ر و		ter	water, water year October 1960 to September 1961	ter	year	8	tobe	9r 1	96	ţ	Sep	temp	er	1961									
76.00																Day																	١,
Month	-	2	3	4	5	٥	7	80	٥	2	=	12	13	7	15	16	17	8	13	20	21	22	23	24	25	26	27	28	29	30	31	Average	עַ
October Maximum	67	7 67	99	59	65	99	ļ	9					58		58		59	L	9		9		9	_	90	-	5,8		2	_	5.7		l
Minimum	36 :						62	_	58	2 2	56	26	55	55	55	55	99	26	57	5.7	57	57	57	57	26	22	55	54	35	7.	5.	52	
Maximum	57	2 56	55	53	52	5 5 2	52	53	53	53		52	50	50	49		48	_	4 8		48		47	47	47	47	46		77	77	_		
Minimum									5	_	52		50		48	48	48	48	48	47	47	47	47	47	47	_	45	4	7		1	64	
December			- 3	- 7									,		-		:		:	:	:	:			:					_			
Minimum	* *	3				42		45	4 4	4 4	4 4	4 4	¢ 4	7 7	7 7	1 7	3 3	7 7	7 7	7 7	7 7	,	7 7	7 7	3 3	4 9	3 0	9 9	9 9	9 9	9 9	2 7	
January															: 3		: :	: ;			: :		:	: :	: :		-				-		
Minimum		36	39	39	3 6	39	36	36	3.0	39	. 6	9 6	4	7 9	1 5	7 7	7 7	1 0	3 5	2 0	9 %	† 4	1 0	7 5	4 4	3 0	3 4	4 4	£ .	4 4	† ;	1,5	
February		- 3	_										: :						-		`		}	_	,		}		•	_	-		
Minimum	. 4		1 1	1 4	4	* *	1 4	1	* 4	; ;	* 4	* :	† ;	‡ ;	, t	t ,	ţ;	† t	† ¢	3 (4 :	. t	44	6,	7 .	4 .			!		!	44	
March									; 				;		•		‡	÷	5		†		•		÷		4	4	<u> </u>	!	!		
Maximum	4.6	4,6	_	5 45	45		_			-	46	46	94		46		46	47	47	4 6	48	47	46	_	94	45	94	47	*	_	5		
Minimum	4		44	_		2 44	44	4	43	44	_		45	46	45	45	77	45	45	77	45	46	45	45	7,		7.7		45	9	4	45	
April Maximum													53		55		54		5		07		8 7		2,4		u u				. (
Minimum		50	50	51	64	6 4 6	64	4 8	4	46	20	5	64	20	5	51	52	20	4 4	6,4	47	45	4.5	50	6, 4	20	50	, 5	2 6	, 60	;	9	
May	ď												ú		9		,		•		:		: :				. :		, ;		_	_	
Minimum	51	20	50	202	50	20.0	6	200	5.2	4 6	4 4	3 2	5.1	5.5	3 6	54	5 6	2 20	9 4	7 17	0 10	0 10	7 4	0 10	5 2	2 4	2 4	, ע	, ,	2 0	U 10	, ,	
June	9												47		67		47		. 4		77		4		3				, ,				
Minimum	55	56	5 54	26	57	7 57	55	57	55	57	57	52	5.8	9	9	9	61	27	9 6	9 5	3 6	9 9	9 6	3 9	9 6	9 6	0 0	נו נו	0 4	0 4	! !	t a	
July													_ :						`		\ <u>'</u>		3		3		ì		<u> </u>				
Minimum	57	57	57	55	55	5 5	5.5	56	5.0	5.0	φ r.	200	501	58	57	59	5.0	2 2	50	50	2 2	4 2	9 u	4 g	4 9	49	64	54	64	63	63	62	
August													5				? ;		2 6		3		3		: :		5		. :				
Minimum	57	1 57	57	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	58	52	56	57	56	52	9	5.6	56	2.6	2.6	26	54	3,0	, ,	0 10	26	20	2.5	5 5	200	2 6	2 2	5 2	0 R	טינ סינ	0 4	9 4	
September	.9												8		ď		4	_	0		, g		4 4		7 4								
Minimin	56	54	5	54	24	7	י יר	. 2	'n	24	4	. 4	7 4	, "	ית ה	, ,	, 4	2 2	, 4	. 4	2 4	2 4	2 5	2 0	0 4	0 5		ני נ	0:	0 6	1	, i	
	-		_	_	_	_	_	_	_		_		,		;		š		,			_	2		5		7		-		_		

KLAMATH RIVER BASIN--Continued

11-5255. TRINITY RIVER AT LEWISTON, CALIF. -- Continued

periodic determinations of suspended sediment discharge, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;

	Mothod	o d	analysis													
			2,000													
			1.000													
		eters	0.500													
		millim	0.250													
	iment	tted, in	0, 125													
	Suspended sediment	e indica	0.062													
	Suspen	han sizo	0.031													
water)		finer t	0.016													
gtilled		Percent finer than size indicated, in millimeters	900.0													
, in di		д	3.004													
tube; W			0.002 0.004 0.006 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000								_	_				
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Sadimont	discharge	(tons per day)	0.8	22	130	32	3.1	2.7	;	CT	9.9	44	1.4	2.5	
S, sieve; V, vis	Sediment	concen- tration	(mdd)	2	12	25	=	•0	ç	7	* 77	7	88	87	*0	
P, pipet;		Discharge (cfs)]	156	308	889	1,180	231	203	000	238	175	186	261	182	
	Water	Jer.	(FF)	57	48	44	\$	£	44	;	Ç.	49	55	56	90	
	G .m.	ling	point													
		Time (24 hour)							1200				0840			
		Date of collection		Oct. 18, 1960	Nov. 15	Dec. 3	Dec. 29	Jan. 26, 1961	Feb. 20		Mar. 23	Apr. 20	June 9	July 20	Aug. 24	

KLAMATH RIVER BASIN--Continued

11-5270. TRINITY RIVER NEAR BURNT RANCH, CALIF.

LOCATION: --At gaging station, 500 feet upstream from Cedar Flat Creek, 700 feet upstream from highway bridge at Cedar Flat, and 2.3 miles southeast of DALINAGE AREA. -1,488 square miles.

RECORDS AMEALALE. -1,488 square miles.

		Hď	200 8.0	0.	7.9	6.	7.9	8.2	8.0	131 7.9	6.	8.0	8.0	8.3
	Specific con-	duct- ance micro- mbos at 25°C)	200	206	129	124	117	153	119	131	6	123	121	162
		dum ad- sorp- tion ratio	0.3	<u>د.</u>		~	۲.	.2	τ.	.2	٦.	ď	.2	.2
		Non- car- bon-	4	00	S	0	0	N	4	П	4	₹	0	5
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	88	92	28	26	22	72	90	19	43	22	67	74
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	ł	l	1	1	1	1	1	0.12	1	1	ł	.13
Septembe	BiG o)	Parts per million	1	1	ł	1	1	1	-	86	!	1	1	8
30 to		. B. B.	0.1	•	•	۲.	٦.	٦.	٠.	•	•	•	•	•
r 196		Ni- trate (NO ₃)	1	1	ŀ	ł	ŀ	1		0.3	!	!	!	•
ctobe		Fluo- ride (F)		ŀ	1	1	1	I	1	0.1	I	1	ŀ	•
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	8.6	80.80	4.2	3.2	1,5	;	2.6	3.2	2.7	5.0	;	7.0
ion, wate		Sulfate (SO.)	1	1	1	4.0	ł	ī	ı	5.0	ŀ	1	l	2.0
m111		CO)	0	0	0	0	0	0	0	0	0	0	0	1
ts per		car- bon- ate (HCO ₃)	102	102	65	20	69	82	89	73	47	69	82	82
n par	ŕ	tas- sium (K)	-	1	1	ł	1	-	1	9.0	!	1	ŀ	
lyses, i		Sodfum (Na.)	5.8	5.9	4.0	3,3	2.2	2.9	1.3	5.9	1:1	3.2	4.6	4.6
al ana		mage- ne- stum (Mg)	!	!	!	1	1	1	1	5.7	1	!	1	7.7
Chemi		Cal.	;	ļ	;	1	;	1	1		ŀ	!	ŀ	17
		Iron (Fe)								0.00				
		Silica (SiO ₂)	1	1	1	L	1	L		17	!	L	ı	1
		Mean discharge (cfs)	295						2,680	1,230	1,430	262	332	265
		Date of collection	Oct. 13, 1960	Now. 11	Dec. 8	Jan. 12, 1961	Feb. 9	Mar. 9	Apr. 6	May 8	June 8	July 6	Aug. 4	Sept. 6

11-5282. SOUTH FORK TRINITY RIVER NEAR HYAMPOM, CALIF.

LOCATION: --Temperature recorder at gaging station, 0.4 mile upstream from Deep Guich, 1.0 mile upstream from Hayfork Creek, and
1.2 miles south of Hyampom, Trinity County.
DAAINAGE AREA: -342 square miles
RECORDS AREA: -342 square miles
November 1960 to September 1961. --Water temperatures: November 1961.
EXTREMES, November 1960 to September 1961. --Water temperatures: Minimum, 37°F Jan. 3-5, Feb. 2-6.

(00)

Month 1 2 November Assimum Maximum December						•																								
														Day																A 110110
	3	4	5	9	7	8	6	10	=	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	3	Avelage
:::																														
:	!	!	!	!	1	!	1	1	!	ŀ	!	;	ŀ	1	!	8 4	48	48	47	_	46	7 4	47	4	46	44	44	44	l	;
December	!	1	!	!	1	<u>!</u>	1	1	!	1	!	1	1	1	1	84	48	44	44	46	94	94	94	4	44	74	4	44	1	ļ
			-				-		_	_		_					_									_			_	
4.5	_				-					_	7	_	4.7			46	46	9	42		44	44	44	4		£3	4		40	43
Minimum 44 45	4.5	5 45	4	4	9	40	4	9	04	9	4	4.	41	4 1	4	46	46	45	42	44	44	44	77	4	43	41	9	0	39	74
ć	_							_								_		8	-	_			•	-		_		:		
_	_		6		20				4	_	4		2			T +	7	3	3	_	7	4	43	5	4	4	4		4	4 1
Minimum 38 37	37	7 37	37	31		38	0	41	41	4	45	43	43	43	41	0 4	39	33	3	33	04	42	43	43	43	44	4	4	44	41
February	-						_	-	4		3		- ;				,	7.7				,		_;						,
	_				-				-		‡		‡				4		‡			40	‡	4	\$	*	!	ŀ	;	4
Minimum 46 46	9 4 6	2 46	46	4	4	*	4	4 5	45	4	4	4 4	4	44	7 7	43	45	45	4	44	43	64	43	43	43	43	ł	ļ	1	44
	_		_	_		_							_	_			_				_		_		_					
Maximum 44 44	4	43	43	1	!	!	1	1	;	ļ	1	1	1	1	ł	1	1	ŀ	1	1	ŀ	1	1	1	1	45	45	41	47	1
Minimum 44 44	43	3 43	43	!	1	!	1	1	1	Į	1	;	1	1	1	1	1	ł	!	!	l	1	1	;	1	43	4	45	46	ļ
	_		_				_		_								_					_			_					
***	_	_	_				_		_		64	-	21		25		48		47	46	45	47	48	8	64	20	5		;	64
Minimum 47 48	8 4 8	8 4 8	47	47	4.7	48	4 8	8 48	4 8	6 4	4 8	84	48	20	2	8 4	46	9 4	4		43	7 7	46	46	47	48	20	20	;	47
	_	_			_		_				-		:		-	_	-					1	-	_ ;	-			_	į	;
Maximum 52 52		2 .			2 (24	25	7 .	-	2 :	2 :	7	5	υ.	7 5	ž	200	2	20 1	57	7	2	2	2	20	8	28	27	28	4.
7	•		÷	5	-				4		}	_	7		2		8		2		*	č	*	ŝ	* -		ŝ		90	26
Maximim	44	44	7	5	5	- 42	43	79	77	7	4.7	7.4	ŀ	-	1	1	ŀ	1	1	;	ŀ	;	1	-	1	ŧ	;	4	8	1
	_		: :				_			_	;	_		_			_	_				_	_						, ;	
Inly	9	9 6	09	9	2	20	- 26	9	- 61	6	62	49	1	1	!	i	ŀ	!	!		1	ł	1	1	!	!	!	62	62	ł
Maximum 69 69	69	69	68	99	68	3 70	72		74	74	75	74	74	7.2	72	72	72	72	72	72	72	74	74	47	73	7.2	72	7.1	7	7.2
Minimum 63 64	1 64	69	63	9	62	64	69	5 67	68	69	7.1	70	68	67	67	67	67	99	67	89	68	69	70	69	89	89	68	67	88	67
			_				_				_												_					_		,
72	_		_		7.3	3 72	73			i	1	1	!	1	!	1	1	ţ	1	!	1	1	1	!	1	i	!	;	1	ļ
Minimum 68 68	69	9 72	73	3 72	-		-	0/10	7.1	1		1	Ш	1	1	-	:	1	1		ľ	ţ	;	1	ļ	-	1	1	1	;

11-5285, HAYPORE CREEK NEAR HYAMPOM, CALIF

LOCATION: .--Temperature recorder at gaging station, 1.2 miles upstream from mouth, and 1.3 miles northeast of Hyampom, Trinity County

Jan. DARINAGE AREA. --379 square miles. RECORDS AVALLAE. --"Mater temperatures: December 1960 to September 1961. ETIERRES, December 1960 to September 1961.--"mater temperatures: Maximum, 83°F July 13; minimum, 35°F

:

Minimum

:

11-5290, SOUTH FORK TRINITY RIVER NEAR SALYER, CALIF,

LOCATION: --At gaging station, 4 miles south of Salyer, Humboldt County, and 8 miles upstream from mouth. DRAINAGE AREA. --899 square miles.

RECORDS AVAILABLE.—Water temperatures: November 1956 to September 1961.
Sediment recordes: November 1956 to September 1961.
Sediment recordes: November 1956 to September 1961.
Sediment recordes: November 1956 to September 1961.
Sediment concentrations: Maximum daily, 36,500 tons Feb. 11; minimum daily, 0.2 ton on several days.
KTRERES: 1956-61.—Sediment concentrations: Maximum daily, 4,190 ppm Jan. 29, 1958; minimum daily, 1 ppm on many days in 1956-61. —1966-61. Sediment leads: Marimum daily, 255,000 tons Feb. 19, 1958; minimum daily, 0.2 ton on many days in 1957, 1980-61. REVISION.--Revised total of sediment lead for December 1958 is 858.1 tons and for 1959 water year is 349,600.2 tons.

961

															.						1					ĺ					
															Day																Aver-
L	-	2	3	4	2	9	7	8	01 6	11	1 12	13	14	1 15	91 9	17	18	19	20	21	22	23	24	25	26	27	28	56	30	3.	age
October November	114	111	61	110	38 3	3 1 38	19		111	37	7 36	118	118	116	38	0.7	8 1 4	112	116	38	37	112	36	111	11%	118	111	37	191	111	111
January	1 4 4	1 80 1	174	1 4 4	1 4 4	124	43 645		36 38 48 47 43 45		144	6 4 4 4 8 4	1 4 4	144	F 4 4 4 4 4	121	144	1 4 4	140	144	1 4 4	1 64	1 4 4	444	3 4 4	4 4 4 8 17 8	8 4 4	312	2 S	8 2	123
April	\$ E	\$11	80 E	211	503	121	53 52		52 50		121	241	111	1 % !	111	121	111	53	9	1 % !	\$12	1 2 1	\$ 11	131	212	346	211	122	111	131	111
JulyAugust	111	111	211	111	111	111	111		111		111	111	1 2	111	111		111	211	111	1 3	111	111	121	111	111	111	211	111	111	111	111

11-5290. SOUTH FORK TRINITY RIVER NEAR SALVER, CALIF .-- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

1		OCTOBE	R	1	NOVEMBE	R		DECEMBER	
ľ		Suspen	ded sediment		Suspen	ded sediment		Susper	ded sedime
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	73		0.4	97	1	0.3	4620	404	S 7010
2	76		•4	97		•3	4810	250	\$ 3660
3	77	1	•2	96 94	1	•3	2240 1590	73 34	S 466
5	74 74		•2	93		• 3	1220	17	56
6	89	2	.5	94		•3	1100	12	36
7	116		•6	97		.3	1020	14	39
8	143		.8	102	1	• 3	888	10	24
9	130		•7	104		•3	765	4	1 9
10	125	2	•7	106	1	•3	654	4	
11	109		•6	118		•3	654	10	16
12	106		•6	139		•8	609	5	
13	104	2	•6	180		1.0	588	3	
14	104 102		•6	251 261	4	2.7 2.8	579 576	3 3	4
1		1		i	_				
16	101 99		•5	241 241	3	2.0	901 8870	70 815	S 22300
18	96	1	.3	587	151	S 254	7880	367	5 8380
19	96		• 3	519	41	57	4740	180	2300
20	94		•3	347	13	12	3050	84	692
21	94	1	•3	308	4	3.3	2320	50	31:
22	94		• 3	273	ļ	2 • 2	1970		220
23	94		•3	440	34	K 67	1690		180
25	93 94	1	•3	1240 1940	435	800 2280	1470 1300	32	127
i				ì		494		1	50
26	96 101		•3	1500 1040	122 37	104	1160 1080	16	4
27	99	1 1	•3	758	20	41	1000	16	43
29	99		•3	615	16	27	920	13	32
30	99		•3	642	20	35	860		19
31	99		•3				804	5	1
Total	3050		13.1	12620		4191.7	61928		46507
		JANUAR	Υ		FEBRUAR	Υ		MARCH	
1	755	7	14	6880	276	S 5600	1710	11	51
2	702		9.5	6710	297	S 5790	1690	10	46
3	667		5.4	6130	180 90	2980 1040	1590 1510	13	56
5	639 609	2	3.5 3.3	4270 3180	55	472	1580	17	73
.	600	1	3.2	2440	31	221	1920	40	20
7	594	2	3.2	2640 2290	26	161	1850	22	110
8	624		5.1	2120	30	172	1840	18	89
9	612	4	6 • 6	4960	395	S 7090	2250	41	249
10	636	10	17	7450	308	5 6640	2450	52	344
11	591		6.4	13300	992	S 36500	2890	98	S 796
12	567		4.6	9540	402	S 10700	3150	50	425
13	534 519	2	2.9 2.8	7180 6590	200 152	3880 2700	3480 4050	62 62	583 S 713
15	501		2.8	6930	195	3650	6510	222	5 4000
	480	-	2.6	(270	127	2150	5580	108	1630
16	465	2	2.5	6270 5230	95	1340	6350	108	2400
18	453		2.4	4360	69	812	5750	94	1460
19	438		2 • 4	3690	52	518	5670	85	1300
20	423	2	2.3	3180	42	361	6380	77	1330
21	417		2.3	2820	33	251	5300	56	801
22	405 459	3	1.1 3.7	2630 2420	25 20	178 131	5250 5640	67 82	950 1250
24	519		14	2260	19	116	5270	62	882
25	474		5.1	2150	16	93	4850	46	602
26	495	2	2.7	2000	15	81	4520	50	610
27	624	7	12	1900	15	77	4270	43	496
	688	9	17	1800	13	63	3850	40	416
28		57	S 227	l			3490	33	311
29	952					(3250	24	225
	952 3750 10200	240 813	S 2510 S 25300	==	==		3250 3120	26 23	226 194

S Computed by subdividing day.

K Computed from estimated-concentration graph and subdividing day.

PACIFIC SLOPE BASINS IN CALIFORNIA

KLAMATH RIVER BASIN--Continued

11-5290. SOUTH FORK TRINITY RIVER NEAR SALVER, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued

(Where no concentrations are reported loads are estimated)

		APRIL			MAY			JUNE	
Ī		Suspend	ded sediment		Suspend	ded sediment		Suspende	ed sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	3010	17	138	1690	8	37	892		12
2	3080	20	166	1620		31	880		12
3	3210 3130	26 21	225 177	1500 1420	6	24 23	932 948		15 18
5	2790	22	166	1360	6	52	920		20
6	2500	26	176	1530		41	852		16
7	2300	16	99	1490	6	24	828		16
8	2150	12	70	1380		15	769	7	15
10	2030 1930	11 9	60 47	1370 1620	7	26 57	723 692		14 11
- 1									
11	1850 1860		35 65	1860 1840	6	30 25	671 651		9•: 8•:
12	1780	10	48	1740	5	23	624		8.4
14	1660	1 10	36	1620		22	600		8.
15	1580		34	1520	4	16	564	4	6.
16	1530		33	1450		16	534		5.1
17	1510		33	1370	4	15	510		5•
18	1470	7	28	1320		14	483		5.
19	1410 1360	,	23 26	1280 1260	4	14 14	462 444	5	6.
21	1430 1640	16 28	62 124	1200 1160	5	16 16	423 408	6	6.
23	1630		100	1120	5	15	390		6.
24	1570	10	42	1070		12	375		5.
25	1570		30	1030	4	11	360		3.
26	1630	8	35	1020		14	358	3	2.
27	1660		45	988	6	16	355		2.
28	1660	10	45	936		15	350		3.
29	1720 1770		56 57	920 948	6	15 13	345 340	5	4.0
31			- <u>-</u>	940	5	13			
Total	58420		2281	41572		645	17683		265 • 9
		JULY			AUGUST			SEPTEMBER	
1	335		4.5	156	2		104		
2	330	(5.3	152			103		
3	325 316	6	5•3 4•3	149 146	3		102	1 1	
5	310		2.5	144			96		
- 1				1					
7	304 296	2	1.6	141 139			95 93		
8	290		2.3	138			92	1	
9	284		3.1	150			91	1 1	
10	280	5	3.8	150			90]	
11	272		3.7	137			89		
12	264		2.9	132			87		
13	256	4	2.8	141] '		86	1	
14	247 240		2.7	145 143			85 86		
- 1									
16	234 228	=	2.5	132 126			93 102		
18	222		1.8	120			105		
19	215	3	1.7	118			104		
20	209		1.7	116	'		103]]	
21	204		2.2	114			99	1	
22	199		2.1	111 107			97 96		
23	195 190	5	2.6 2.6	107	1		94		
25	186		2.5	102			93		
26	181		2.0	102			92		
27	175		1.9	114			91]]	
	172	3	1.4	115			89		
28	168		1.4	112			88 88		
29	164		•9	112 110					
	159						u .		
29 30	159 7450		79.0	3978		24	2833		8

KLAMATH RIVER BASIN--Continued

Particle size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B. bottom withdrawal tube; C. chemically dispersed; D. decanticul, M. in native water; 11-5290. SOUTH FORK TRINITY RIVER NEAR SALYER, CALIF. -- Continued

	Mathod	Jo.	analysis	Α	>	^	Α	^	>	>
			2.000			_	_	_		
			1.000	1	1	100	100	100	100	100
		eters	0. 500	100	001	86	66	66	66	97
		millim	0.250	86	66	94	88	16	86	77
	liment	ated, ir	0, 125	L			71			
	Suspended sediment	Percent finer than size indicated, in millimeters	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	84	88	67	54	62	56	21
	Susper	than siz	0.031							
		t finer	0.016	L						
ALL CALLES		Percer	0.008	ļ.,				_		
W, 411			0.004	L	_			_		
on tube,				_				_		
F, pipet, S, sieve, V, vibuat accumulation tube, W, in distinct water)	Sodius on	discharge	(tons per day)							
D, BIEVE, V, VI	Sediment	concen- tration	(mdd)	482	288	271	1,090	334	1,250	1,230
a s Papers		Discharge (cfs)	Ì	2,180	2,360	5,340	10,800	7,640	13,000	14,900
	Water tem-		(°F)	1	47	1	40	42	48	47
	0	ling	point	L				_		
		(24 hour)		1530	0940	080	1100	1100	1130	1030
		Date of collection		Nov. 25, 1960	Dec. 1	Dec. 2	Dec. 17	Dec. 18	Jan. 31, 1961	Feb. 11

11-5300. TRINITY RIVER NEAR HOOPA, CALIF.

LOCATION.--At gaging station in Hoopa Indian Reservation, 0.7 mile downstream from Campbell Creek, and 1.8 miles southeast of Hoopa, Humboldt County. DEAINAGES AREA.--2,848 square miles. RECORDS AVAILABLE.--Chemical malyses: October 1953 to September 1961.

**Rater temperatures: November 1956 to September 1961.

Sediment records; November 1956 to September 1961.

No appreciable inflow between ENTREMES, 1960-61.--Sediment concentrations: Maximum daily, not determined; minimum daily, 1 ppm Nov. 10.
Sediment loads: Maximum daily, not determined; minimum daily, 1 ton Nov. 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment loads: Maximum daily, 10.
Sediment

					_									
		Hd	8.0	8.2	7.9	7.8	7.9	8.2	127 8.0	8.0	8.0	8.1	8.2	8.3
	02	duct- ance (micro- mhos at 25°C)							127	131	118	155	182	195
	8:	Borp- Borp- tion ratto	0.2	۲.	۳.	2	۲,	۳.	٥.	۲.	۲.	4	2	
		Non- car- bon-	7	10	7	-	e	m	7	7	_	7	0	-
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	66	104	7	29	65	73	64	မွ	29	74	84	6
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	1	1	1	1	}	1	1	0.11	1	1	ł	•16
Septembe	Dis	Parts per million	1	!	Ī	1	1	ŀ	1	84	ł	1	Ī	117
٥ د		Bo-	0.0	۲.	•	۲.	۲.	•	r.	•	•	•	•	8
196		S rate So	0.0	1	;	Ī	1	ī	I	0.5	l	ī	ī	
tope		Fluo- Ni- ride trate (F) (NO ₃)	I	I	1	ī	1	ī	1	0.1	ŀ	1	1	•
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride F	7.4	0.6	3.0	3.0	2.5	i		2.0			1	6.1
ion, wate		Sulfate (SO ₄)	1	;	ī	5.0	I	I	ŀ	5.0	1	1	Ī	7.6
딃	į	CO)	0	0	0	0	0	0	•	0	0	0	0	7
ts per	岩	car- bon- ate (HCO ₃)	112	115	78	81	92	82	20	74	64	82	107	100
n par		X in the	1	;	1	1	;	1	1	4.	1	1	1	œ.
lyses, 1	!	Sodium (Na)	5.3	5.3	3.6	3,3	3.0	1.6	1,0	2.3	6.	3.1	5.1	4.8
al ana	, and	ne- sium (Mg)	1	¦	ŀ	1	!	ŀ	1	5.6	;	!	ļ	8.3
Chemic		ctum (Ca)	١	;	1	1	!	1		16	1	;	!	23
		Iron (Fe)								80.0				
		SiQ.)	1		-	1	:	!	-	16	!	!	-	12
		Mean discharge (SiQ ₆) (cfs)	206	472	267	2,500	10,500	5,880		4,060				
		Date of collection	Oct. 13, 1960	Nov. 10	Dec. 8	Jan. 12, 1961	Feb. 9	Mar. 9	Apr. 6	May 8	June 7	July 6	Aug. 3	Sept. 6

KLAMATH RIVER BASIN--Continued 11-5300. TRINITY RIVER NEAR HOOPA, CALIF.--Continued

	Aver-	age	11\$	115	1 22	1 1 1
		31	119	112	1 % 1	111
		30	88.0	1 12	52 42	111
		29	113	110	53	1 1 5
		28	14	9	4 % 4	111
		27	8044	1 4 4	5 4 6	118
_		26	94	15 5	50 57 62	111
196		25	47	911	56	122
ber		24	1.0	999	450	121
tem		23	100	119	45	113
Sep		22	110	1 90	281	111
Temperature (°F) of water, water year October 1960 to September 1961		21	119	112	44!	111
1960		20	114	199	5 5 6	111
er 1		19	1064	177	4 2 8	8 4
ctob		18	59	119	52 56 66	111
9		17		2 4 4 4	5. 4.0 6.8	1 199
yea	Day	16	94	9 9	54 67	111
ter		15		213	211	62
, W8		14	64 50 45	1 19	58	\$11
ter		13	114	114	444	118
f wa		12	50	914	5 6 1	111
0		Ξ		517	241	113
ਹੈ		0	53	7 1 4 7 1 4	8.6	111
ure		٥	39	2 1 4	53	1 1 2
era		8	63 54 40	\$15	50	111
emp		7	113	614	52	1 1 29
-		9	67 52 42	1 1 9	445	\$11
		5		37 44 46	3 4 5	1 1 8
		4	400	80 1 45 80 1 80	1 2 2 2	111
		က	112	36 38	50.00	113
		2	113		52 54 56	\$! !
		-	68 62 47	40 46 14 14	50 52 56	61
	,	Monen	October 68 November 62 December 47	January February March	April May June	July August September

11-5300. TRINITY RIVER NEAR HOOPA, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported loads are estimated)

		остове	R	1	NOVEMBE	R	i	DECEMBER	
		Suspen	ded sediment		Suspen	ded sediment		Suspen	ded sedime
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	352	2	2	472	6	8	7980	244	5 8140
2	352		2	468		3	12000	315	S 11200
3	361		2	464		3	6880	88	1630
4	361		2	460	2	2	5000	42	567
5	358		2	456		2	4060	.32	351
6	374	4	4	448	2	2	3500	20	189
7	500		11	444	- <u>-</u>	2	3130	18	152
8	580	5	8	452	4	5	2870	19	147
9	659		7	456		2	2680	20	145
.0	614		5	472	1	1	2570	20	135
1	564		3	580		9	2520	17	116
2	528		3	618	4	ĺ	2360	13	83
3	508		3	725		14	2280	14	86
4	496	2	3	952	13	33	2250	14	85
5	488		3	1000	===	27	2240	13	79
.	480		3	915	1 .	15	2730	25	S 211
7	480		3	1010	17	S 51	15900	532	S 26200
8	464	2	3	2280	44	K 280	17300	312	S 15300
9	460		2	1880	22	S 115	12500	138	4660
ó	456		2	1330		40	8900	74	1780
.			_					50	
1	452 448	2	2	1200		23 13	6880 5820	40	929
22	444		2 2	1170 1810	100	s 804	5140	40	555
4	444		2	6320	282	5 4700	4660	30	377
5	448		2	10000	499	S 15400	4310	25	291
6	468 472		3	6750 3610	214 79	5 4490 770	4030 3790	22 19	239 194
7	472	2	3			290	3600	19	189
9	472		3	2670 2250		140	3390	18	165
0	476	2	3	2250	24	146	3250	18	158
31	472		3				3140	17	144
otal	14495		101	53912		27397	167660		75126
		JANUAR	Y		FEBRUAR	Y		MARCH	
1	3030	13	106	15300	T		4350	19	223
2	2890	10	78	13400			4460	15	181
3	2800	12	91	14200			4240	22	252
4	2720	13	95	10200			4030	26	B 280
5	2640	12	86	7630		_ 	4200	34	386
6	2620	13	92	6550			5240	49	693
7	2600	11	77	5740			5160	51	711
8	2610	9	63	5280			5060	46	B 630
9	2580	11	77	10500			5880	60	953
ó	2670	10	72	17800			6330	52	889
1	2540	9	62	31800			7500	67	1360
2	2500	8	54	24700			8300	75	1680
3	2500 2300	8 9	56	24700 18300			9500	49	1260
4	2260	7	B 43	16600			11300	56	s 1820
5	1720	6	28	16300			17300	129	6030
			i	i			il	,.	
6	1610	11	48	15000		==	15500	65 94	2720
8	1570 1440	16	68	12600 10600			16100 15200	58	2380
9	1370	2	15	8960	80	1940	13900	208	7810
0	1320	2	17	7730	63	1310	15200	156	6400
1	1300	2	8 7	7080		920	13300	105	3770
2	1270	2	в 7	6630		700	12900	106	3690
3	1340	3	B 11	6160	35	582	14500	104	4070
4	1440	4	16 15	5740	29	449 370	13700 13100	85 75	3140 2650
500	1380			5480				1	
6	1370	8	30	5060		340	12500	65	2190
27	1570		- -	4740		290	12100	58	1890
28	1720			4510		240	11000	51	1510
29	1950					_ 	9980 9380	41	1100
30	5510 18200			==		==	9380	38 41	962 1020
	20200		1		.1				
otal	82840		32000	314590		140000	310410		66740

S Computed by subdividing day.
B Computed from estimated-concentration graph.

K Computed from estimated-concentration graph and subdividing day.

11-5300. TRINITY RIVER NEAR HOOPA, CALIF. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported loads are estimated)

		APRIL			MAY	l		JUNE	
Davi	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean		eodiniont	Mean			Mean		
Day	dis-	Mean	Tons	dis-	Mean	Tons	dis-	Mean	Tons
i	charge	concen-	1 ons	charge	concen-	per	charge	concen-	per
	(cfs)	tration	day	(cfs)	tration	day	(cfs)	tration	day
		(ppm)		` ′	(ppm)	u.,		(ppm)	
1	9050	39	953	4780	20	258	3110	4	34
2	9650	48	1250	4740	23	294	3480	6	56
3	10700	59	1700	4350	20	235	3930	l a	B 85
4	10900	52	1530	4100	16	177	4000	7	76
5	9800	39	1030	3960	26	278	3790	4	41
.	8540	32	738		35	409	3530	4	38
7	7650	23	475	4330 4350	29	341	3310	6	54
8	6950	21	394	4060	1 13	143	3080	Š	42
9	6500	21	369	4110	19	211	2840	1 4	31
10	6140	18	298	4800	16	207	2670	4	29
		1			1!			1	
11	5880	22	349	5280	17	242	2640	4	29
12	6040	22	359	5160	17	237	2570	4	28
13	5680	20	307	4900	20	265	2460	4	27 27
14	5240 4920	19	269 226	4640 4470	15	188 181	2510 2690	4	29
• • • •	4720	1 - 1	220	4470	1		20,0	1	1
16	4980	22	296	4400	8	95	2660	4	29
17	5200	17	239	4380	16	189	2550	3	21
18	5040	21	286	4440	57	683	2360	3	19
19	4620	24	299	4560	93	1150	2200	3	18
20	4370	11	130	4550	135	1660	2090	3	17
21	4460	14	169	4280	125	1440	2010	2	11
22	4740	28	358	4030	138	1500	2010	2	11
23	4560	19	234	3930	70	743	1950	3	16
24	4350	18	211	3610	10	97	1850	3	15
25	4240	19	218	3440	8	74	1850	3	15
26	4290	21	243	3520	7	67	1770	3	14
27	4370	20	236	3360	5	45	1640	3	13
28	4400	23	273	3110	8	67	1500	3	12
29	4600	23	286	3070	7	58	1420	3	12
30	4840	20	261	3240	3 1	26	1380	3	111
31				3220	ž	17	1300		===
Total	182700		13986	129170		11577	75850		860
		JULY		AUGUST			SEPTEMBER		
_	·	2	7	646	6	10	512	4	6
	1220					10	501		5
1	1330		11						
2	1310	3	11 14	638	5	9	505	4	5
3	1310 1310		14	630	5	9	505 498	-4	5
2	1310	3 4				9 8 10	505 498 491	-4-6	5 5 8
2 3 4 5	1310 1310 1260 1230	3 4 3 5	14 10 17	630 618 618		8 10	498 491	6	5 5 8
2 3 4 5	1310 1310 1260 1230	3 4 3 5	14 10 17	630 618 618	6	8 10 7	498 491 477	6	5 5 8 8
2 3 4 5 6 7	1310 1310 1260 1230 1210 1170	3 4 3 5	14 10 17	630 618 618 622 662		8 10 7 7	498 491 477 473	6	5 5 8 8
2 3 4 5 6 7 8	1310 1310 1260 1230 1210 1170 1130	3 4 3 5 4 3	14 10 17 13 9	630 618 618 622 662 685	6 4	8 10 7	498 491 477 473 470	6	5 5 8 8 8
2 3 4 5 6 7 8 9	1310 1310 1260 1230 1210 1170	3 4 3 5 4 3 3	14 10 17 13	630 618 618 622 662	 6 4	8 10 7 7 7	498 491 477 473	6	5 5 8 8
2 3 4 5 6 7 8 9	1310 1310 1260 1230 1210 1170 1130 1120	3 4 3 5 4 3 3 4 8	14 10 17 13 9 9 12 24	630 618 618 622 662 685 685	6 4 5	8 10 7 7 7 9 9	498 491 477 473 470 470 459	6 6	5 5 8 8 8 8 7
2 3 4 5 6 7 8 9 10	1310 1310 1260 1230 1210 1170 1130 1120 1110	3 4 3 5 4 3 3 4 8 6	14 10 17 13 9 9 12 24	630 618 618 622 662 685 685 680	6 4 5	8 10 7 7 7 9 9	498 491 477 473 470 470 459	6 6	5 8 8 8 8 7 7
2 3 4 5 6 7 8 9 10	1310 1310 1260 1230 1210 1170 1130 1120 1110	3 4 3 5 4 3 4 8	14 10 17 13 9 9 12 24 18 23	630 618 618 622 662 685 685 680	6 4 5	8 10 7 7 7 7 9 9	498 491 477 473 470 470 459 459	6	5 8 8 8 8 7 7
2 3 4 5 6 7 8 9 10	1310 1310 1260 1230 1210 1170 1130 1120 1110 1090 1080 1070	3 4 3 5 4 3 3 4 8 6 8	14 10 17 13 9 9 12 24 18 23 32	630 618 618 622 662 685 685 680 630 614	6 4 5	8 10 7 7 7 9 9 9	498 491 477 473 470 470 459 459 456 452	6 6	5 5 8 8 8 8 7 7 6 6
2 3 4 5 6 7 8 9 10 11 12 13	1310 1310 1260 1230 1210 1170 1130 1120 1110 1090 1080 1070 1110	3 4 3 5 4 3 3 4 8 6 8	14 10 17 13 9 9 12 24 18 23 32 36	630 618 618 622 662 685 680 630 614 618	6 4 5	8 10 7 7 7 7 9 9 8 8	498 491 477 473 470 470 459 459 456 452 452	6 6 5	5 8 8 8 8 7 7 6 6
2 3 4 5 6 7 8 9 10	1310 1310 1260 1230 1210 1170 1130 1120 1110 1090 1080 1070	3 4 3 5 4 3 3 4 8 6 8	14 10 17 13 9 9 12 24 18 23 32	630 618 618 622 662 685 685 680 630 614	5	8 10 7 7 7 9 9 9	498 491 477 473 470 470 459 459 456 452	6	5 5 8 8 8 8 7 7 7 6 6 6
2 3 4 5 6 7 8 9 10 11 12 13 14 15	1310 1310 1260 1230 1210 1170 1130 1120 1110 1090 1070 1110 1100	3 4 3 5 4 3 3 4 8 6 8	14 10 17 13 9 9 12 24 18 23 32 36	630 618 618 622 662 685 680 630 614 618	5	8 10 7 7 7 7 9 9 8 8	498 491 477 473 470 470 459 459 456 452 452	6 6 5	5 5 5 8 8 8 8 8 8 7 7 6 6 6 6 7 7 8
2 3 4 5 6 7 8 9 10 11 12 13 14 15	1310 1310 1260 1230 1210 1170 1130 1120 1110 1090 1080 1070 1110 1030 994	3 4 3 5 4 8 11 12 13	14 10 17 13 9 9 12 24 18 23 36 39 31 16	630 618 622 662 685 685 680 614 618 626 606	5	8 10 7 7 7 7 9 9 9 8 8 7 7 7	498 491 477 473 470 459 459 456 452 452 456 508	6 6	5 5 8 8 8 8 7 7 6 6 6 7
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	1310 1310 1260 1230 1210 1170 1130 1120 1110 1090 1070 1110 1100 1030 994 950	3 3 5 4 3 3 4 8 6 8 11 12 13	14 10 17 13 9 9 12 24 18 23 32 36 39 31 16 8	630 618 622 662 685 685 680 614 618 626 606	5	8 10 7 7 7 9 9 9 8 8 8 7 7 7 6 6 6 6 6	498 491 477 473 470 459 459 456 452 456 508 543 594	6	5 5 8 8 8 8 7 7 7 6 6 6 7 8 9
2 3 4 5 7 8 9 10 11 12 13 14 15 16 17 18	1310 1310 1260 1230 1210 1170 1130 1120 1110 1090 1070 1110 1100 1030 994 950 920	3 3 5 4 3 3 4 8 6 8 11 12 13	14 10 17 13 9 9 12 24 18 23 32 36 39 31 16 8 7	630 618 622 685 685 680 614 618 626 606 586 570 5547	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 6 4	498 491 477 473 470 459 459 452 452 452 456 508 543 594	6 6	5 5 8 8 8 8 7 7 6 6 6 6 7 7
2 3 4 5 7 8 9 10 11 12 13 14 15 16 17 18 19 20	1310 1310 1260 1230 1210 1170 1130 1120 1110 1090 1070 1010 1030 994 950 920 905	3 3 5 4 3 3 4 8 6 8 11 12 13	14 10 17 13 9 9 12 24 18 23 92 36 39 31 16 8 7	630 618 622 685 685 680 614 618 626 606 586 570 5547 547	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 6 4 4	498 491 477 473 470 459 459 452 452 456 508 543 594 533	6	55 58 88 88 77 66 66 77 89 100 97
2 3 4 5 6 7 8 9 10 12 12 13 14 15 16 17 18 19 20	1310 1310 1260 1230 1210 1170 1130 1120 1110 1090 1070 1110 1030 994 995 905 905	3 4 4 8 6 6 8 11 12 13 3 4 4	14 10 17 13 9 9 12 24 18 23 32 36 39 31 16 8 7	630 618 618 622 685 685 680 614 618 626 606 570 554 547 547	5	8 10 7 7 7 9 9 9 8 8 8 7 7 7	498 491 477 473 470 459 456 452 456 508 543 594 554 533	6 6	55 8 8 8 8 8 7 7 6 6 6 7 7 7 8 9 9 10 9 7 7 4
2 3 4 5 7 8 9 10 12 12 13 14 15 16 17 18 20	1310 1310 1260 1270 1210 1170 1170 1180 1080 1070 1110 1090 1090 994 950 920 905	3 4 3 5 5 4 4 3 3 3 3 4 4 6 6 6 8 11 12 13 13 3 4 4 4	14 10 17 13 9 9 12 24 18 23 36 39 31 16 8 7 10	630 618 622 685 685 680 614 618 626 606 570 5547 547 536 529	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 4 4 4 3 3	498 491 477 473 470 470 459 456 452 456 508 543 594 554 533	6	55 88 88 88 77 76 66 67 78 10 99 77
2 3 4 5 6 7 8 10 11 12 13 14 15 16 17 18 19 20	1310 1310 1260 1230 1210 1170 1130 1120 1110 1090 1010 1010 1010 1020 990 920 905 885 885	3 4 4 8 6 8 11 12 13 4 4 4 4	14 10 17 13 9 9 12 24 18 23 36 39 31 16 8 7 10	630 618 618 622 685 685 680 614 618 626 606 570 554 547 547 549	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 4 4 3 3 3	498 491 477 473 470 459 456 452 456 508 594 533 515 505	6 6 6 6 6 6 6 6 6 6 6 6 6 7 2	55 8 8 8 8 8 7 7 6 6 6 6 7 7 7 8 9 9 7 7 8 3 3 3 3 3 3
2 3 4 5 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 24	1310 1310 1260 1270 1210 1170 1170 1180 1080 1070 1110 1090 994 950 995 895 880 835 795	3 4 3 5 5 4 4 3 3 3 3 4 4 6 6 6 8 11 12 13 13 3 4 4 4	14 10 17 13 9 9 12 24 18 23 32 36 39 31 16 8 7	630 618 618 622 685 685 680 630 614 618 626 606 570 554 547 547 540 529 512	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 4 4 4 3 3 3 3 3	498 491 477 473 470 470 459 456 452 456 543 594 554 533 515 501 494	6 6	55 8 8 8 8 8 7 7 7 7 6 6 6 6 7 7 8 9 10 9 7 7 4 3 3 4 4 4 3 4 4 4 5 6 6 6 6 7 7 7 8 8 9 9 7 7 8 9 9 7 7 8 9 9 7 7 8 9 9 7 7 8 9 9 7 7 8 9 9 7 7 8 9 9 7 7 8 9 9 7 7 8 9 9 7 7 8 9 9 7 7 8 9 9 9 7 7 8 9 9 9 7 7 8 9 9 9 7 7 8 9 9 9 7 7 8 9 9 9 7 7 8 9 9 9 7 7 8 9 9 9 7 7 8 9 9 9 7 7 8 9 9 9 7 7 8 9 9 9 9
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	1310 1310 1260 1270 1210 1170 1170 1180 1080 1070 1110 1090 994 950 920 905 885 880 885 770	3 4 4 3 3 3 3 4 4 6 6 6 8 11 12 13 13 3 4 4 4 4 4 1 4 1	14 10 17 13 9 9 12 24 18 23 32 36 39 31 16 8 7 10	630 618 618 622 685 685 680 630 614 618 626 606 586 570 554 547 547 540 536 529 512 505	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 4 4 4 3 3 3 3 3 3 3	498 491 477 473 470 470 459 456 452 456 543 594 554 533 515 501 494 491	6 6 6 6 6 6 6 6 6 6 6 6 6 7 2	55 8 8 8 8 8 7 7 7 6 6 6 7 7 8 9 10 9 7 7 4 3 3 3 4 4 5
2 3 5 6 7 9 10 11 12 13 14 15 15 16 17 18 19 21 22 23 25 26	1310 1310 1260 1230 1210 1170 1170 1110 1090 1070 1110 1000 100	3 4 4 3 5 5 6 8 11 12 13 4 4 4 4 7 7	14 10 17 13 9 9 12 24 18 23 36 36 37 31 16 8 7 10 10 10 10 10	630 618 622 685 685 680 630 614 618 626 606 570 554 547 547 547 536 529 512 505	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 4 4 4 3 3 3 3 3 3 3 3 3	498 491 477 473 470 459 456 452 456 508 543 594 554 533 515 501 494 491	6 6 6 6 6 6 6 6 6 6 6 6 7	55888888887776666677
2 3 5 6 7 10 11 11 12 12 13 15 15 15 15 20 21 223 24 25 25 27 27	1310 1310 1260 1270 1210 1170 1130 1120 1110 1090 1080 1070 1110 1100 1090 994 950 905 895 895 897 770	3 4 4 3 5 5 6 6 6 8 111 12 13 13 4 4 4 4 7 7	14 10 17 13 9 9 12 24 18 23 36 39 31 16 8 7 10 10 10 10 19 9 9	630 618 622 685 685 680 630 618 626 606 570 554 536 529 512 507 501	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 4 4 4 3 3 3 3 3 3 3 4 4	498 491 477 473 470 470 459 456 452 456 508 504 533 515 501 494 491 484	6 6	55588888887776666777889910997743333455
2 3 4 5 6 7 9 10 11 12 13 11 13 14 17 18 17 20 21 22 24 25 24 25 24 23 24 25 24 25 24 25 24 25 24 25 24 25 24 25 24 25 24 25 24 25 24 25 24 25 24 25 24 25 24 25 24 25 25 24 25 25 26 25 26 2	1310 1310 1260 1230 1210 1170 1170 1110 1090 1070 1110 1100 1090 990 990 990 995 895 885 775 770 740 720 685	3 4 4 3 5 5 6 6 8 11 12 13 13 4 4 4 4 7 7 6	14 10 17 13 9 9 12 24 18 23 32 36 39 31 16 8 7 10 10 10 19 9 9	630 618 618 622 685 685 680 630 614 618 626 606 586 574 554 527 547 547 547 547 547 547 547 547 547 54	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 4 4 4 3 3 3 3 4 5 5	498 491 477 473 470 459 456 452 456 508 594 554 533 515 501 494 491 484 480 473	6 6 6 6 6 7 7 7	55888888887776666677
2 3 4 5 6 7 10 11 12 13 14 15 16 17 20 21 22 23 24 24 25 26 27 28	1310 1310 1200 1210 1210 1170 1130 1120 1110 1090 1090 1070 1110 1100 1090 994 950 955 885 885 885 775 770 720 685	3 4 4 3 3 3 3 4 4 8 6 6 8 111 12 13 13 4 4 6 6 6 6	14 10 17 13 9 9 12 24 18 23 32 36 39 31 16 8 7 10 10 10 10 19 9 10	630 618 622 685 685 680 630 614 626 606 586 570 554 547 540 539 512 505 501 512 550 562 543	5	8 10 7 7 7 7 9 9 8 8 7 7 6 6 6 6 4 4 4 4 5 3 3 3 3 3 3 3 4 5 6 6 6 6 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7	498 491 477 473 470 459 456 452 456 508 5043 594 533 515 501 494 481 480 473 466	6 6 6 6 6 6 6 6 6 6 6 6 7	55 8888887776666777889909774433333333333333333333333333333333
2 3 4 5 6 7 9 10 11 12 13 14 17 18 20 21 22 23 24 23 24 23 24 25 26 27 28 29 20 2	1310 1310 1260 1230 1210 1170 1170 1110 1090 1070 1110 1100 1090 990 990 990 995 895 885 775 770 740 720 685	3 4 4 3 5 5 6 6 8 11 12 13 13 4 4 4 4 7 7 6	14 10 17 13 9 9 12 24 18 23 32 36 39 31 16 8 7 10 10 10 19 9 9	630 618 618 622 685 685 680 630 614 618 626 606 586 574 554 527 547 547 547 547 547 547 547 547 547 54	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 4 4 4 3 3 3 3 4 5 5	498 491 477 473 470 459 456 452 456 508 594 554 533 515 501 494 491 484 480 473	6	55888888887776666677
2 3 5 6 7 9 110 112 113 114 115 117 118 119 220 221 224 224 225 226 227 228 229 230 240 250 260 270	1310 1310 1260 1230 1210 1170 1180 1100 1080 1070 1110 1090 990 990 990 990 995 885 777 740 720 695 686	3 4 4 3 3 3 3 4 4 8 6 6 8 111 12 13 13 4 4 6 6 6 6	14 10 17 13 9 9 9 12 24 18 23 32 36 37 10 10 10 10 19 9 9	630 618 622 685 685 680 630 614 618 606 570 554 547 547 540 536 552 550 552 552 543 543	5	8 10 7 7 7 9 9 9 8 8 7 7 7 6 6 6 6 4 4 4 3 3 3 3 4 5 5 4 4 4 4 4 4 4 4 4 4	498 491 477 473 470 459 456 452 456 508 5043 594 533 515 501 494 481 480 473 466	6	55 8888887776666777889909774433333333333333333333333333333333

B Computed from estimated-concentration graph.

KLAMATH RIVER BASIN--Continued

11-5300. TRINITY RIVER NEAR HOOPA, CALIF.--Continued

		Method of	-		▶ :	۰ ۵	
			2 000				_
			1.000		99	3 1	9
		eters	0.500		66 6	100	
		millim	0.250		74	96	
ater;	liment	ated, in	0.125	,	82	81	86
er 196. ative w	ded sed	e indica	0.062	1	28	88	61
eptemb N, in n	Suspended sediment	Percent finer than size indicated, in millimeters	0.031				_
0 to S station; water)		finer t	0.016				
er 196), decar		Percent	0.008				
Octob rsed; D			0.004				
y dispe			0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000				
Particle size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis B, bothom withdrawal the; C, chemically dispersed; D, decandidon; M, in native water; P, pipet; S, steve; V, visual accumulation the: W. in distilled water)	Sediment	discharge	(noise per day)				
s of suspended om withdrawal to ; S, steve; V, vi	Sediment	concen- tration	(mdd)	794	188	725	2.0
size analyse malysis: B, bott P, pipet	i	Discharge (cfs)		13,300	7,050	14,000	22,52
Article ods of s	Water tem-	per-	(*F)	47	47	48	;
Meth	Water Samp- tem-	ling per-					
		(24 hour)			1440		
	:	Date of collection		Nov. 25, 1960	Dec. 1	Mar. 23, 1961.	

Hd

8.1 8.0 8.0 8.0 8.0 88.0.088

KLAMATH RIVER BASIN--Continued

11-5305. KLAMATH RIVER NEAR KLAMATH, CALIF.

LOCATION:--It gaging station, 2.8 miles upstream from Turwar Creek, and 3.3 miles east of Klamath, Del Norte County. MakhAndem ARMA.--12,100 square miles, approximately. RRCORDS AVAILARE.--Chemical analyses: October 1953 to September 1961.

		Q.	1	œ	∞		œ	∞	7		۲.	∞	œ	∞
	Specific con-	duct- ance (micro- mhos at 25°C)	ĺ					139 8	113 7	120	106	159	164	178
	8:	ad- ad- Borp- tion ratio	0.4	٠.	٠.	e.	۳.	ů.		۳.			_	
	co,	Non- car- bon-	0	0	-	0	0	0	က	7	-	က	0	0
	Hardness as CaCO,	Cal- clum, Mag- ne- stum	92	82	72	64	63	53	52	26	48	69	89	74
-	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot	;	;	!	}	;	}	;	0.11	ł	1	!	.16
Septembe	Dis (c)	Parts per million	1	1	1	1	!	!	1	81	1	1	1	114
60 to		Bo- ron (B)	0.1	7.	٦.	۲:	•	•	0.	٦.	۰.	٦.	•	۲.
er 19		Fluo- Ni- ride trate (F) (NO ₃)		_	_					_				
Octob		Fluo- ride (F)	-	-	!	!	!	<u> </u>		0.1	_	\ _	1	•
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	5.0	o.9	3,8	3.2	3.0	1	2.6	7.3	3.2	4.0	1	6.0
ion, wat		Sulfate (SO ₄)		1	l	5.0	1	1	ł	6.4	1	!	1	7.6
m111	ć	(CO)												
ts per		car- bon- ate (HCO ₃)		_		88	79	72	9	9	24	80	8	94
n par	č	fes- firm (X)		_	1		1	1		0.7	_	!	_	1:4
lyses, i		Sodium (Na)	5*8	10	8.9	5.9	5.2	!	1.4	3.7	1.7	9.9	7.4	8.4
sal ana	3	mag- ne- sium (Mg)		1	1	ł	1	1	1	6.3	!	!	!	7.5
Chemi		Cal Cal		!	1	!	1	!	1	12	1	!	l	17
		Iron (Fe)								0.02				
		Silica (SiQ _e)	;	1	ļ	;	;	1	ŀ	14	L	1	į	20
		Mean discharge (cfs)	3,260	3,110	12,100	8,170	19,100	21,700	33,500	19,200	16,300	4,880	3,350	2,650
		Date of collection	oct. 12, 1960	Nov. 9	Dec. 7	Jan. 11, 1961	Feb. 8	Mar. 8	Apr. 5	May 9	June 7	July 5	Aug. 3	Sept. 6

SMITH RIVER BASIN

11-5325. SMITH RIVER NEAR CRESCENT CITY, CALIF.

LOCATION: --At gaging station, 0.5 mile downstream from South Fork, and 8 miles east of Crescent City, Del Norte County. DALINAEM ARRA. -613 Square miles. Sections of Crescent City, Del Norte County. RECORDS ANIAMEM. --Chemical analyses: October 1953 to September 1961.

		Н	.5	۳.	٠ <u>.</u>	9.	6.	0.	80	8.	6.	۰.	.2	8
	Specific	duct- ance (micro- mhos at 25°C)	136 7.5	139	6	8	88	82	192	80 7.8	88	114	125	133
	8;		0,1	۲.	Ξ.	۲.	۲.	e.	0.	۲.	•	۲.	7	۲.
		Non- a car- 50 bon- tr	3	-	7	0	0	0	4	0	*	9	0	9
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	65	67	46	64	42	34	38	37	43	21	9	89
	EE el	S S N F S	_					_						
	solids ted)	Tons per day												
r 1961	Dissolved solids (calculated)	Tons per acre- foot		1	1	ŀ	!	!	!	0.07	1	1	1	11.
Chemical analyses, in parts per million, water year October 1960 to September 1961	ag S	Parts per million	1	1	1	-	1	1	ł	49	1	ŀ	!	8
30 to		ron (B)	0°0	٥.	٥.	٦.	•	•	•	•	•	•	۰.	•
er 196		Ni- trate (NO ₂)	1	1	1	!	1	1		0.2	1	1	!	٠.
Octob		Fluo- ride t (F)	1	1	1	1	1	1	1	0.0	!	!	ł	٠.
er year (Chloride (Cl)	2.5	2.8	4.2	1.8	3.2	1.4	2.9	1.7	3.6	9.0	1	8.4
ion, wat		Sulfate (SO ₄)	1	1	1	1.0	1	1	ł	•	1	1	1	•••
mill	0	(C) (C)			_									
rts per	-18	car- bon- ate (HCO ₂)	75	8	54	8	51	8	42	45	8	62	74	92
in pa	ž	tas (K)	Ľ	!	1	1	1	1	1	0.0	1	!	ł	~.
lyses,		Sodium (Na)	2.2	2.5	2.1	1.7	2.0	3,7	9.	1.4	8.	1.9	2.7	2.6
al ana	7,7	mag- ne- sium (Mg)	1	1	1	1	1	!	l	6.2	ł	l	;	12
Chemic		Cal- clum (Ca)		1	1	ŀ	i	1	;	4.9	1	1	;	7.2
_		Iron (Fe)	1	1	1	¦	!	1	;	0.02	;	l	;	8
		Silica (SiQ ₂)		1	1	1	ŀ	1	1	13	1	ı	1	13
		Mean discharge (SiO ₂) (cfs)	273						4,880	6,800				
		Date of collection	Oct. 12, 1960	Nov. 9	Dec. 7	Jan. 11, 1961	Feb. 8	Mar. 8	Apr. 5	May 9	June 7	July 5	Aug. 2	Sept. 5

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN CALIFORNIA

Periodic determinations of suspended-sediment discharge and particle-size, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; D wing: S, sleve: V with a scrimmination tube, W, in distilled water)

Date of collection Time Value Sample Sediment					P, pipet	S, sieve; V, vi	P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	n tube;	V, in di	stilled	vater)							
Time October Colorest Col			Water	E S		Sediment	Sodimont				S	spendec	Suspended sediment	ent				Mothod
(°F) (°F) (Figure Cons. per day) (Figu	Date of collection	Time (24 hour)			Discharge (cfs)	concen-	discharge			Percent	finer t	an size	indical	ed, in	millimet	ers		jo
SAN FRANCISQUITO CREEK BASIN 11-1645. SAN FRANCISQUITO CREEK AT STANFORD UNIVERSI 1525 46 1 35 T T STANFORD UNIVERSI 1540 50 68 113 T T GUADALUPE RIVER BASIN 1340 60 272 2,210 1,620 1,620 1.3 1245 70 42 5.3 91 T S.3 1245 70 42 5.3 91 T S.3 1345 47 7 1.3 1345 47 7 T T T T T T T T T T T T T T T T T)				(mdd)	(tons per day)	0.002	0.004	800.0	910.0	0.031	0.062 0	.125	.250 0.	500 1.00	0 2.000	analysis
11-1645. SAN FRANCISQUITO CREEK AT STANFORD UNIVERSIST 11225 46						240	FRANCISONIE	BEEV B	NIS									
1540 52 11 19 T T T T T T T T T					11-1	1645. SAN FRAN	CISQUITO CREEK	AT ST	NFORD	UNIVER	SITY							
11-1690. GUADALUPE RIVER AASIN 11-1690. GUADALUPE RIVER AT SAN JOSE 1300 68	bec. 15, 1960 lan. 24, 1961	0935 1525 1540	46 46 52			19 35 11	+++					 		-				
11-1690. GUADALUPE RIVER AT SAN JOSE 1300 68 113 1-1690. GUADALUPE RIVER AT SAN JOSE 1340 59 5.3 91 1.40 1.530 42 51 66 1245 71 5.3 10 1.40 71 1345 53 1.4 6 1.4 7 7 7 7 7 1.4 6 1.4 6 1.6							UADALUPE RIVER	BASIN		=								
1346 272 2,210 1,620 42 51 66 1440 53 51 66 1540 5.3 51 51 66 1545 70 4.9 10 10 1.8 1.3 1.4 6 1.4 6 1.4 6 1.4 6 1.4 6 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.4 6 1.5 1.5 1.4 6 1.5						11-168	O. GUADALUPE R	IVER AT	SANJ	OSE								
1245 71 5.3 91 T. 1.3 5 1 00 1245 10 1.020 4.2 5.1 00 1245 70 4.9 10 1.020 4.0 1.0 00 1245 70 4.9 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	lov. 13, 1960	0060	18	-	888	113	237		:	3	1	-	- 5	- 1	- - 			
1545 71 5.3 1 1245 70 4.9 1 1346 47 2.4 0915 46 3.8 0915 48 4.3 0900 51 64 4.3 1055 59 3.8 1230 64 1.0	eb. 15, 1961	1440	29		5.3	2,210	1,620		10	8	:	ò	76	 8	 B			VP#C
1345 1340 0915 0915 0916 0900 1055 1055 1065 110 1230 110 110 110 110 110 110 110 110 110 1	pr. 26	1545	12		€. 6.	. o1	T.											
1345 53 1.4 1340 47 2.4 0915 46 3.8 0916 59 4.3 1055 59 3.8 0810 59 3.8 1230 64 1.0				1					1			1	1	1	$\frac{1}{2}$	-		
1345 53 1.4 0913 46 47 3.4 0915 48 4.3 0900 51 6.7 1 1055 59 3.8 1230 64 1.6						11-1835.	WALNUT CREEK	BASIN AT WAL?	TUT CRE	EK								
1340 47 2.4 0915 46 2.4 0915 48 4.3 0900 51 6.7 1 1055 59 3.8 1.0 7	lov. 22, 1960	1345	23		1.4	9	F						-			_		
0915 46 4.3 4.0 0900 51 6.7 1 1 0000 51 6.7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ec. 14	1340	47		4.0		[→ [
10900 51 6.7 1 1.0 1.230 64 1.6	an. 25, 1961	0915	\$ 4		ມ 44 ໝໍພໍ	4.00	T.0											
1055 59 3.8 7.0 7.0 1.50 7.1 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1	lar. 22	0060	51		2.9	4.	ູ່ຕຸ											
1230 64 1.6	une 9	0180	29		10,0	- 02	10											
SAN JOAQUIN RIVER BASIN 11.2925 MAKELIHUNE BIVER NEBE (IRMENT)	Mept. 13	1230	49		1.6	က	F											
11-3235 MORRITHUR BIVER NEAR CHEMBUTS						7S	N JOAQUIN RIVE	R BASI	_									
11 THE WILL WE THE THE CONTROL 10000-TH						11-3235.	MOKELUMNE RIVE	R NEAR	CLEMEN	TS								
1515 50 168 2 1420 59 402 4	bec. 15, 1960	1515	22		168	2.4	6.0					 				_	-	
Peb. 16	eb 16	1310	12.2		12 96 12 4	· 01 =1												

SACRAMENTO RIVER BASIN

11-3914, LITTLE LAST CHANCE CREEK NEAR CHILCOOT					R PORTOLA																		R BELOW SLOAT						
E CREEK					REEK NE/	_						_											HER RIVI	_	_				_
E LAST CHANC	₽ 6		-	·-:	11-3915, BIG GRIZZLY CREEK NEAR PORTOLA	E	ę.	8.5	2.1	4.1	1.4	1.1	4.	•	-:	.j.	Ν.	7.7	۲	L	H	F	11-3935. MIDDLE FORK FEATHER RIVER BELOW	9.0	9.	21	2.7	6.7	0.9
11-3914. LITT	m 4	7	9	∞	11-3915.	8	4	8	65	63	21	14	6	•	* •	9	'n	16	က	m	, -1	69	11-3935, MID	81	~ ;	92	ĸ	∞ (9
	D 2.7	1.6	8.7	2.7		2.4	2.7	12	12	24	24	62	16	,	22	19	14	27	2.0	<u></u>	·.	₽.		108	103	386	198	310	372
	32	23	28	99		-	32	!	33	1	20	;	53		1	l	ŀ	i	69	73	1	;		1	32	;	1	49	-
	1145	1640	1410	1255		1320	1045	1100	1030	1605	1535	1245	1315	9,00	0940	1250	1730	1545	1345	1000	1720	0745		1010	0845	1335	1000	1350	0960
	Jan. 24, 1961	Mar. 21	Apr. 18	June 10		Jan. 11, 1961	Jan. 24	Feb. 1	Feb. 22	Mar. 2	Mar. 21	Apr. 6	Apr. 18	à	Apr. 21	Мау 3	May 15	June 2	June 10	July 13	Aug. 1	Sept. 7		Jan. 11, 1961	Jan. 24	Feb. 1	Mar. 2	Mar. 21	Apr. 6

D Daily mean discharge. T Less than 0.05 ton.

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN CALIFORNIA -- Continued

Periodic determinations of suspended-sediment discharge and particle-size,

water year October 1960 to September 1961.—Continued water, water; (Methods of analysis: B. bottom withdrawal tube; C. chemically dispersed; D. decamation; N, in native water; P. pipei; S, sleve; V, visual accumulation tube; W, in distilled water)

analysis Method VPWC ğ > > 0.002 0.004 0.008 0.016 1.031 0.062 0.125 0.250 0.500 1.000 2.000 Percent finer than size indicated, in millimeters 100 86 Suspended sediment 6 100 100 93 11-3935,-MIDDLE FORK FEATHER RIVER BELOW SLOAT--Continued 75 SACRAMENTO RIVER BASIN--Continued 11-4517.2. BEAR CREEK NEAR RUMSEY 11-4530, YOLO BYPASS NEAR WOODLAND 49 0.1 26 1.0 7,040 tons per day) Sediment discharge 36.4.8 36.7.5 3.7.5 ٠.٠٠٠ نان تان ا 2,100 418 Sediment concentration (ppm) 31.25 20 103 15 2,530 764 Discharge (cfs) 2.4 224 244 1,030 177 16 7.3 2.0 2.0 1.3 1,020 359 372 273 273 50 39 45 Sam-pling point ature (°F) Water temper-4 | 18 | 1 | 53 (24 hour) Time 11145 0910 0930 1520 1600 1040 0925 1230 1025 1015 1020 1000 1130 1535 1505 1600 1445 1405 1030 Jan. 31 Feb. 16 Mar. 26 Apr. 23 Apr. 23 Une 5 July 17 Aug. 22 Sept. 24 16.....26..... 2 10..... 12..... 2 Dec. 3, 1960..... 18, 1961.... May 3......June 2..... 30..... 29, 1961.... Date of collection 18, 1960 June July Aug. Dec.

SONOMA RIVER BASIN 11-4585, SONOMA CREEK AT BOYES HOT SPRINGS

		-						-		-		-	
Nov. 22, 1960	1145	20	1.9	8	F		-	_	-	1		-	
	1640	46	5.2	-	H		-	_	;	!		1	
Jan. 13. 1961	1150	46	2.1	-	F		-	_	<u> </u>	!	_	;	
Jan. 26	080	25	477	459	591		- 6	_	66	100		Α	
Jan. 27	0060	20	37	17	1.7		1	_	!	1		1	
Jan. 28	0060	49	17	ıs	α.		!		!	1		!	
Jan. 30	0800	49	240	46	30		!		!	!		-	
	,	•	,	-			_	-			,		
Jan. 31	1000	49	1,630	088	3,870		- 61		 	66	100	>	
	1200	49	746	459	925		!	-	!	!		!	
Feb. 1	0060	48	280	47	36		!		!	;		-	
Feb. 2	1000	48	388	104	109		-	-	1	!		!	
Feb. 3	0060	51	172	13	0.9	_	-		!	!		!	
Feb. 4	1100	22	114	90	8.1		1	-	1	!		!	
Feb. 5	1000	48	96	9	1.6		-		!	!	_	!	
		_									_		
Feb. 8	1100	22	25	50	۲.		-	!	!	1		!	
Feb. 18	1000	84	16	'n	1.2		-	1	ł	!	_	!	
	0060	48	69	r.c.	6.		-		ł	!		1	
Feb. 22	0060	:	40	4	4.		1		;	!		!	
Feb. 24	1000	49	31	-	٦.		!	ì	!	ł		1	
Mar. 10	1210	22	35	-	۲.		-		!	!	_	1	
Mar. 15	0800	55	307	84	20		1	_	ŀ	ł		!	
;	-	•	()		,								
Mar. Ib	1000	20	108	E .	0.6		-	!	!	!		1	
Mar. 18	1000	48	166	13	5.9		-	<u> </u>	!	l		ł	
Mar. 19	1700	46	135	13	4.7		-	!	!	!	_	!	
Mar. 20	1700	!	102	-	1.9		-	!	!	ł		1	
Mar. 22	0060	54	12	ß	1.0		-	!	!	!		!	
Mar. 23	1700	22	63	12	2.0		;	!	!	l		!	
Mar. 25	0060	57	83	=	2.5		!	!	1	!		!	
	0060	54	133	30	=		!	!	1	Į		!	
Mar. 29	0060	54	102	==	3.0		-	!	:	ŀ		1	
Mar. 30	1700	62	92	∞	1.6		-	!	1	!		!	
Mar. 31	0060	26	29	4	2.		!	1	!	1		!	
Apr. 17	1225	62	17	87	-:		<u> </u>	-	1	ŀ		-	
May 24	1045	65	4.0	က	F		!	!	!	ŧ	_	!	
T Less than 0.05 ton	ton												

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN CALIFORNIA -- Continued

Periodic determinations of suspended-sediment discharge and particle-sise water year October 1960 to September 1961--Continued

(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, steve; V, visual accumulation tube; W, in distilled water)

				r, pubor,	n' n' prote 'n'	Sual accumulation	r, paper, b, steve, v, visita accumulation tube, w, in the titled water,
		Water tem-	Sam-		Sediment	Sadiment	Suspended sediment Method
Date of collection	Time (24 bour)	er -		Discharge	concen-	discharge	Percent finer than size indicated, in millimeters of
	(1)	ature (°F)			(mdd)	(tons per day)	0.002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000
					11-4731.	EEL RIVER BASIN 11-4731, WILLIAMS CREEK NEAR COVELO	IN NEAR COVELO
May 4, 1961	0935 1055	43 70		71	10	1.9	
July 25, Aug. 29	0920	8 I		4.1.	4.01	e e	
					11-4736	11-4736. SHORT CREEK NEAR COVELO	NEAR COVELO
Feb. 17, 1961	1315 1055	4 46		65 107	310	1.8 9.0	
Apr. 23	1145	99		4:1	15	1.7	
					11-4744	11-4744. HULLS CREEK NEAR COVELO	NEAR COVELO
May 2, 1961	1245 2030	55 63		77	3.6	0.4	
T Less than 0.05 ton.	on.						

PART 12, PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

WILLAPA RIVER BASIN

12-115. WILLAPA RIVER AT LEBAM, WASH.

LOCATION .--At bridge, on State Highway 12, 0.1 mile upstream from gaging station, 0.4 mile west of Lebam, Pacific County, and 1.1 miles upstream from

Walker Creek.

BRACHARA ARLA-41, 4 square miles.

RECORDS AVAILAE.--Chemical analyses: July 1989 to July 1960.

RECORDS AVAILAE.--Chemical analyses: July 1989 to July 1960.

Water temperatures: March 1952 to September 1961.

KXTREES, 1960-61.--Water temperatures: Maximum, 70°F July 19, 20, 1956; minimum, freezing point Jan. 3, 27.

KXTREES, 1960-61.--Water temperatures: Maximum, 72°F July 19, 20, 1956; minimum, freezing point Jan. 28-30, 1957.

		рН	8.9	6.9	6.9	6.9
	pecific con-	duct- ance (micro- mhos at 25°C)	99	49	22	61
	8	ad- ad- Borp-(n tion m			_	
		Non- car- bon-	0	0	0	0
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	19	12	7.	18
	Dissolved solids residue at 180°C)	Tons per day				
	solved	Tons per acre- foot				
1961	_	Parts per million		48		
July		Fluo- Ni- phos- ride trate phate (F) (NO ₃ (PO ₄)	0.0 0.5 0.01	.05	.02	90.
960 t		Ni- trate (NO ₂)	0.5	1.3	1.0	۰.
ber 1		Fluo- ride (F)	0.0	0	۰.	τ.
Chemical analyses, in parts per million, October 1960 to July 1961		Chloride (C1)	4.5	3.5	3.8	3.8
er milli		Sulfate (SO4)	3.8	3.2	3.4	2.8
rts r	į	CO)				
in p		car- bon- ate (HCO ₃)	36			
lyses,	É	Stun (X)	9.0			
cal ana		Sodium (Na)	5.5			
Chemi	797	nie- stum (Mg)	1.5			
		Cal- clum (Ca)	5.0	3.5	4.5	2.0
		Iron (Fe)				
		Silica (SiQ,)	13	12	12	14
		Mean discharge (SiQ ₂) (cfs)		452 12		
		Date of collection	Oct. 14, 1960	Jan. 5, 1961	Apr. 7	July 14

WILLAPA RIVER BASIN--Continued

ASH Continued
LEBAM, W.
RIVER AT
WILLAPA
12-115.

							Lemp	era	Temperature		('F)	Of W	water,		ater	water year	ar C	ctor	er	October 1960) to	Sel	September	per	1961	إر						
Ment																Day																4
Month	-	2	3	4	5	9	7	8	6	10	=	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avelage
October Maximum	56	56	56	56	55	57		54		64		50	50	51		56		26		55		55		55		53		52	51	64	51	54
Minimum	56	56	26	55	54	55	54	25	64	4.8	4 8	4 8	20	20	51	54	52	54	54	55	54	54	55	52	25	51		51	48	47	64	55
November Maximim	51	6 4	49	8	47	47	7	4.7	47	84	8 4	84	47	47	64	64	6 4	6 4	64	64	47	47	47	47	74	47	46	24	46	94	1	84
	49	49	48	4	94	4		45		4		47	47	47		64		64		46		4.7		47		46		45	45	46	1	4.7
December	7.7	.,	7.7	4	,		,	,		Ç	,	ų.	u V	4	,	- 67	*		7	4	77	۲,	7	,	7	4,	_	,	7	. ,	7	,
Minimum	4		4 4	t 4	1 4	1 0		36	39	3 6		9 6		5 6		42		. 4		1 4		1 7		4 7		t 4 t 3	4,4	† †	39	40	7.7	7 7
January Maximum	42	42	04	42	44	4 4		5.		47	47	47	4	47	47	47	1.4	47	4	7.	45	4	7,	5	7,	43		6,4	5 4 5	46	46	45
Minimum	42	0,4	39	0.4	42	7 7	44	45	45	94	74	46	45	9 4	47	47	47	46		74	4	43		4.5		7	39	41	43	45	94	7 7
February Maximum	4	46	46	47	84	8 4	47	46	47	4.7	46	9	45	9,	47	9 4	9	9	47	8 4	8 4	47	47	47	9	46		46	1	- 1	1	4.7
Minimum	46	45	46	9 7	46	47	46	46	94	94	4	45	4 5	45	9	94	9	45	94	4.7	47	46	94	9 †	4	45	45	94	ł	1	1	46
March	74	4	4.5	4	4	44	4	7.4	4	44	4	4 7	4	47	84	- 14	47	84	84	- 4	8 4	0 4	04	8.4	64	80	8.4	0 4	5.0	0.4	20	4.7
Minimum	46	45	4 4	4	4	4.5	_	94		4		. 4	9	9		9		9		9 4	_	47		8 4		1 9		5	94	46	8 4	4
April Maximum	50		51	50	49	50		51		51		51	51	50		51	51	64	47	84	84	47	89 7	8 4	89	84	51	51	51	51	1	20
Minimum	64	49	64	45	45	45	45	84	64	48	20	64	49	47	4 8	64		47	45	54		45		47	94	47	46	20	51	20	1	47
May Maximum	8		50	64	64	64	51	50		51	51	6 4	8	52	53	26		09		61		4.		99		57	56	58	59	57	62	54
Minimum	50	64	48	47	47	47		64	49	64	_	47	47	84		20	52	53		55	53	53	25	51	25	54	53	25	96	56	26	51
June Maximum	65	65	49	4	49	63		59	58	58	59	62	63	65	65	67	69	69	99	49	62	62	63	49	65	49	62	58	57	59	-	63
Minimum	9	63	62	62	61	61	57	57	28	26		29	9	63	49	65	67	99	49	62		59	61	61	63	62	28	26	55	57	;	09
July Maximum	59	62	63	63	63	29		61		65	68	2	20	68	99	65	63	63	63	49	49	63	9	61	61	61	59	59	9	61	61	63
Minimum	29	59	9	62	29	57	57	57	59		9	99	89	99	49	79		61	61	62		9		58		59	58	58	58	59	9	61
August Maximum	49	65	65	62	62	63	63	63		65	67	99	49	49	62	61		49	99	65	49	49		62	62	6.1	6.1	6.1	63	63	63	63
Minimum	9		61	79	9	29	_	61		62	63	49	63	62		9	9	61	63	63		62	62	29		29		28	9		62	61
September Maximum	62	59	58	61	63	59	58	28		9	59	59	58	58		58		9	59	58		54	53	52	52	53	52	54	53	25	1	57
	59	58	58		29	57		26	57	28		57	26	57	57	57	57	28	58	26	54	53		20		25		52	51	25	1	26

CHEHALIS RIVER BASIN

CREALLIS MIVER DASIN 12-250. NEWAUKUM RIVER NEAR CHERALIS, WASH.

LOCATION: --At gaging station, at County bridge, 2.5 miles southeast of Chehalis, Lewis County, and 3.5 miles upstream from mouth. DRAINAGE AREA.-155 square miles upstream from mouth. RECRONOS AVAILABLE.--Chemical analyses: July 1960 to September 1961.

		Hď	7.3	4.7	7.2	7.2	6.9 7.0	7.0	83 7.4 91 7.2 97 7.2
	Specific	duct- ance (micro- mhos at 25°C)	88 89	88 88	89	40	39	49	83 91
	\$;	ad- ad- Borp- tion ratio							
	co,	Non- car- bon-	0	00	0	0	000	00	000
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	30	3 29	22	18	247	16	335
	Dissolved solids (residue at 180°C)	Tons per day							
	solved due a	Tons per acre- foot							
1961	end (resi	Parts per million	29 65	64 63	20	46 46	24.6.4	36	63 72
ember		Phos- phate (PO4)	0.04 .03	.08	.05	.03	21.05		8.4.8
Sept		Fluo- Ni- ride trate (F) (NO ₃)	0.1	4. E.	9	6,7	1.0	5.1.	4.44
960 tc		Fluo- ride (F)	0.0	0.1.	•		00-		1.1.0
, July 19		Chloride (Cl)	6.0	8.5	4.8	e e	999	2.4 2.0	10.2
m11110n		Sulfate (SO ₄)	1.6	2.0	2.6	1.8	1.8	, w; w;	1.2
s per	į	(CO)							
n part	Bi-	car- bon- ate (HCO ₂)	37	38	50	22	17 19	34	38 39 40
es, 1	Ś	Sium (K)	0.4	r. 4	г.	r. r.	٠. نـ بـ	9.00	.6
Chemical analyses, in parts per million, July 1960 to September		Sodfum (Na)	5.2	5.5	3.8	3.0	9 7 9	2.5	5.5 5.8 6.2
hemica	707	nie- sium (Mg)	2.1	1.9	1.0	1.0	9.8.	1.5	1.9 2.4 2.5
٥		Call (Ca)	7.5	8.0	7.0	5.5	0.00	0.7	8.00
		Iron (Fe)							
		Silica (SiO ₂)	17 16	16 17	12	44	132	14	17 16 16
		Mean Sil. discharge (Sil.	55 34	59 71	204	400	1,780	672	33 33
		Date of collection	July 18, 1960	8ept. 13	Nov. 8	Dec. 5	Feb. 7.	May 9. June 13.	July 11

CHEHALIS RIVER BASIN--Continued

12-275. CHEHALIS RIVER NEAR GRAND MOUND, WASH.

at Meadows, 1.5 miles southwest of Grand Mound, Thurston LOCATION. -- Temperature recorder at gaging station at highway bridge County, and 6 miles downstream from Skookumchuck River,

DRAINAGE AREA. --895 square miles.

EXTREMES, 1960-61. --Water temperatures: Maximum, 76°F July 13, 14; minimum, 42° EXTREMES, 1960-61. --Water temperatures: Maximum, 76°F July 13, 14; minimum, 42° EXTREMES, 1952-61. --Water temperatures: Maximum, 80°F July 22, 23, 1969; minimum, 42° EXTREMES, 1952-61. --Water temperatures: Maximum, 80°F July 22, 23, 1969; minimum, 42° EXTREMES, 1952-61. --Water temperatures: Maximum, 80°F July 22, 23, 1969; minimum, 42° EXTREMES, 1952-61. --Water temperatures: Maximum, 80°F July 22, 23, 1969; minimum, 42° EXTREMES, 1952-61. --Water temperatures: Maximum, 80°F July 22, 23, 1969; minimum, 42° EXTREMES, 1952-61. --Water temperatures: Maximum, 80°F July 22, 23, 1969.

March 1952 to September 1961.
Maximum, 76°F July 13, 14; minimum, 42°F on several days during December and January Maximum, 80°F July 22, 23, 1959; minimum, freezing point Jan. 29-31, Feb. 1-4, 1957.

CHEHALIS RIVER BASIN--Continued

12-310. CHEHALIS RIVER AT PORTER, WASH.

LOCATION --At gaging station, at County Highway bridge in Porter, Grays Harbor County, immediately upstream from mouth of Porter Creek.
DRAINAGE ARRA.--1,294 square miles.
RECORDS ALLEBLE.--Chemical analyses: July 1959 to September 1961.
Water temperatures: July 1959 to September 1960.

		Hq	7.3	7.0	6.9	8.9	7.0	6.9	7.2	6.9	2.5	7. 7	7.6	7.2
	Specific con-	duct- ance (micro- mhos at 25°C)	94						62	26	16	8	96	109
	å;	dium ad- Borp- tion ratio											_	
	ne ss ICO ₃	Non- car- bon-	0	0	-	0	0	0	0	0	0	0	0	٥
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	32	21	22	14	15	14	21	18	98	32	32	33
1	Dissolved solids (residue at 180°C)	Tons per day												
r 196	Dissolved solids esidue at 180°	Tons per acre- foot												
Septembe		Parts per million	72	9	54	44	46	37	54	52	83	89	20	80
30 to		Fluo- Ni- Phos- ride trate phate (F) (NO ₂) (PO ₄)					5	4	.05	.03	.0	-04	90.	14
er 196		Ni- trate (NO ₂)	0.5	1.0	6.	1.2	_	6.	6.		ı.	~	<u>ښ</u>	ī.
Octob		Fluo- ride (F)					7.			Ξ.				
er year		Chloride (Cl)	6.2	4.0	3.0	2.8	3.0	2.8	3.0	3.0	3.5	9.0	5.5	9.5
ion, wat		Sulfate (SO ₄)	4.0	3.8	4.0	2.2	3.6	1.6	3.6	2.0	.8	3.2	8.8	3.6
. mill	-0,	CO ₃												
ts per	Bi-	car- bon- ate (HCO ₂)	42	36	26	19	20	18	27	25	34	₹	45	46
in par	ď	sium (K)	8.0				4.		80	4.	.5	4.	6.	1.2
Chemical analyses, in parts per million, water year October 1960 to September 1961		Sodium (Na)					3.2			3.8				
al ans	Yez	mag- ne- stum (Mg)	2.6	1.9	1.8	1.1	1.2	1.1	1.4	1.3	2.4	3.0	3.0	3.1
Chemic		- (Ca)	8.5	5.5	6.0	4.0	4.0	4.0	6.0	5.0		8	8.0	9.0
		Iron (Fe)												
		Silica (SiQ _e)	18	16	16	13	15	14	16	14	17	20	61	61
		Mean discharge (cfs)	334	2,340	3,720	9,370	11,200	16,500						
	,	Date of collection	Oct. 6, 1960	Nov. 4	Dec. 6	Jan. 6, 1961	Feb. 2	Mar. 3	Apr. 4	May 2	June 1	July 18	Aug. 1	Sept. 5

뚼

1.06.07.

04.7.7

CHEHALIS RIVER BASIN--Continued

12-350. SATSOP RIVER NEAR SATSOP, WASH

LCCATION. --At gaging station at bridge on U.S. Highway 410, O.8 mile west of Satsop, Grays Harbor County, and 2 miles upstream from mouth. Malifiag Analia. --S9 square miles. July 1960 to September 1961 (discontinued).

69 7.3 68 7.4 73 7.5 72 7.4 61 7.2 mhos at 25°C) 554435 Specific ance 50 61 67 71 (microdium dium ad-tion tion ratio car-bon-ate 00000 00000 00000 Non-Hardness as CaCO₃ Cal-cium, Mag-ne-stum 288282 1134 72228 Dissolved solids (residue at 180°C) Fons day acre-Tons per million 553 48 48 48 42 33 38 44 44884 Parts July 1960 to September 1961 Fluo- Ni- phos-ride trate phate (F) (NO₂) (PO₄) 22222 88282 88888 2,004.0 04000 40464 7,007,7 Chloride (C1) 20000 22.22.23 # 0 0 0 0 0 0 Chemical analyses, in parts per million, Sulfate (SO₄) 0 8 9 6 6 00000 84088 નં લં લં લં લં C # 10 C HCO.) Bi-car-bon-22 22 22 22 23 Blum (K) 00040 80805 Sodfum (Na) 2.2.2.2.2 7.0.4.0.0 3.8 1.01.0 96070 Mag-ne-stum (Mg) 6.000 0.4.8.8.8 0.00.00 다 다 (P) 다 다 다 (P) fron (Fs) Silica (SiO_a) 8.0 11.5 15.0 15.0 Mean discharge (cfs) 376 340 394 332 1,400 1,780 6,310 9,860 5,140 1,880 2,320 703 360 279 360 Aug. 2. Sept. 7. Oct. 6. Msy 2.
June 1.
July 18.
Aug. 1.
Sept. 5. July 19, 1960.... Date of collection

HUMPTULIPS RIVER BASIN

12-390. HUMPTULIPS RIVER NEAR HUMPTULIPS, WASH.

LOCATION: --At bridge on U.S. Highway 101, 0.2 mile south of Humptulips, Grays Harbor County, 1.1 miles upstream from Stevens Creek and 1.4 milee downstream from gaging station.

REMINIAGE AREA.--130 square miles upstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: July 1989 to September 1981 (discontinued).

REMINES.--Minor inflow between sampling point and gaging station except during periods of heavy local runoff.

		뼕	7.3	7.7	7.2	7.1	0.1	8	7.2	2.3	7.3	7.3	.5	7.5
	Specific con-	duct- ance (micro- mhos at 25°C)	67	26	54	43	41	43	49	44	29	89	69	63
	ø,	dium ad- gorp- ratio												
	888 CO.	Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	٥
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	22	21	20	12	14	16	19	16	22	56	56	24
1	Dissolved solids (residue at 180°C)	Tons per day												
er 196	Dissolved solids esidue at 180°	Tons per acre- foot												
Septembe	bd (res	Parts per million	48						42	35	44	47	52	52
o to		Phos- phate (PO ₄)	0.0 0.00	.03	.0	6.	.02	8	9.	0.	5	8	5	8
r 196		Ni- rate NO ₃)							23	e.	•	•	~	63.
ctobe		Fluo- ride (F)					•		٠.		_		_	
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	2.2	3.0	1.8	2.2	2.2	2.0	2.0	1.8	2.0	2.8	2.0	2.5
ion, wat		Sulfate (SO ₄)	3.2	3.0	2.4	1.8	2.6	8.8	2.2	æ.	1.8	3.6	3.5	4.0
m111	į	(CO)												
ts per		car- bon- ate (HCO ₂)					17		24	22	28	33	35	31
n par	Š	stum (K)					Ξ.		z.	٦.	ų.	•	ų.	e.
lyses, 1		Sodium (Na)	3.2	2.7	2.6	2.0	2.1	8.3	2.6	2.1	2.9	3.5	3.5	3.0
al ana	7,	nie- nie- stum (Mg)	1.3	1.5	1.3	1.2	œ.	6.	1.5	∞.	1.7	1.7	1.8	1.5
Chemic		Cal- ctum (Ca)	8.0	6.0	6.0	4.0	4.5	5.0	5.0	5.0	6.0	7.5	7.5	7.5
		Iron (Fe)								_	_	-		
		Silica (SiO ₂)	11	2	2	8.4		10	9.7		=	12	12	11
		Mean discharge (cfs)					5,330	2,570	1,270					
		Date of collection	Oct. 6, 1960	Nov. 4	Dec. 6	Jan. 6, 1961	Feb. 2	Mar. 3	Apr. 4	May 2	June 1	July 18	Aug. 1	Sept. 5

QUEETS RIVER BASIN

12-406. QUEETS RIVER AT QUEETS, WASH.

LOCATION.--At bridge on U.S. Highway 101 at queets, Jefferson County 1.4 miles upstream from mouth, and 1.9 miles downstream from Moses Creek. RECORDS AVAILABLE.-Chemical manayeses: July 1960 to September 1961 (discontinued).

46 7.0 56 7.1 45 6.8 67 7.3 71 7.4 74 7.2 75 7.2 42577.09 4251299 펁 Specific mhos at 25°C) ance 73 81 84 64 43 43 ductmicro-Borp-tion ratio So-dium Noncar-12255 Hardness as CaCO_s ate Cal-cium, Mag-ne-stum 28 28 30 22 23 15 15 15 long per day (residue at 180°C) Dissolved solids Tons per acre-foot Parts nillion Chemical analysee, in parts per million, July 1960 to September 1961 per Fluo- Ni- Phos-ride trate phate (F) (NO₃) (PO₄) 2282822 0,000,000 0.44444 20825 2222222 Chloride <u>5</u> 8.0.4.7. 0.8.0.9.00 0.8.00 Sulfate (**%**08) Bi- Car-car-bon-ate (HCO₃) (CO₃) 16 17 17 28 29 30 28 28 0 0 0 1 0 1 0 1 0 1 0 1 0 1 Po-gium (X) 4044000 8804899 Sodium (Na) 222222 20.11.00.12 E Mag-ne-sium (Mg) 6.0 6.0 6.0 10 10 10 9.5 10.5 7.5 5.0 5.0 Fe) Silica (SiQ_e) 8048888 0.04.0.04.0 0.0.0.0.0.0 Mean discharge (cfs) Sept. 7.
Oct. 6.
Nov. 4.
Jan. 6, 1961.
Feb. 2. Mar. 3. Mapr. 5. Mapr. 5. June 1. June 1. Sept. 5. July 19, 1960.... Date of collection

HOH RIVER BASIN

12-410. HOH RIVER NEAR FORKS, WASH.

LOCATION: --At bridge, on U.S. Highway 101, 2.3 miles downstream from Winfield and Alder Creeks, 9.6 miles downstream from gaging station, and 11.4 miles southeast of Fork-20 STATION STATION STATION.

DRAINAGE ARRA.—Chemical analyses: July 1960 to September 1961 (discontinued).

REMORDS AVAILARIE.—Chemical analyses: July 1960 to September 1961 (discontinued).

		Нq	7.4	7.8	81-7.4 63 7.2 57 7.2 65 7.3	7.2	L. 4.	71 7.5
	Specific	duct- ance (micro- mhos at 25°C)	67 72 82	88	81 63 57	23	110	72
	ģ.	dlum ad- Borp- tion ratio						
	co,	Non- car- bon- ate	9	7	4400	4	2	စစစ
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	28 31	8 8 4 55	2222	30	33.24	300
	Dissolved solids (residue at 180°C)	Tons per day						
	solved due a	Tons per acre- foot						
r 1961	Dis (resi	Parts per million	42 47 50	19	4.4.8 9.99.88	49	5. 53	46 45 45
tempe		Phoe- phate (PO4)	0.00	20.0	8.5.5.8	10.		9,89
to Sej		Fluo- Ni- E ride trate E (F) (NO ₂)	0.0	. F. 9.	ei ei ii	س	4.0	i
1960		Fluo- ride (F)	1.0.0		60 ti-			400
million, July 1960 to September 1961		Chloride (Cl)	1.2	1.2	22.5.5.2	1.5	1.2	1.0
r millio		Sulfate (SO ₄)	6.8 7.0	10 8.2	0.0004	8.0	6.8 9.6	8.8 9.8 8.6
ts pe	į	bon- ate (CO ₃)						
analyses, in parts per	Bi-	car- bon- ate (HCO ₃)	31	4.8	8 8 8 8 8 8 8 8 8 8 8 8 8	3.5	2 4	300
ses,	é	Sium (K)	1.0	100	44.00	9.		0.62.62
al analy		Sodium (Na)	4.1.	1.9	9.1.1.	2.0	1.6	1.2
Chemical	ļ	mag- ne- sium (Mg)	1.2	2.6	6,6,6,0	9	5.	6
		Cal- Ctum (Ca)	9.5	122	12 9.0 8.0	1	9.0	1112
		Iron (Fe)						
		Suica (SiO ₂)	E.4.4	7.2	4.000	5.1	4.4	444
		Mean discharge (cfs)	1,680	1,060	1,400 3,570 6,180	1,810	3,480	1,440 1,140 1,220
		Date of collection	July 19, 1960	Oct. 6.	Dec. 6. 1961 Jan. 6, 1961	Apr. 5	May 2.	July 18 Aug. 1

QUILLAYUTE RIVER BASIN

12-415. SOLEDUCK RIVER NEAR FAIRHOLM, WASH.

CACTION - At bridge on U.S. Highway 101, 2.7 miles downstream from Camp Creek, 8.4 miles west of Fairholm, Clallam County, 8.5 miles downstream from gaging Station, and 9.2 miles upstream from Bear Creek.

DRAINGE AREA. - 63.5 square miles upstream from gaging station.

RECORD MAINTAIRE. - - Chemical mailyses: July 1960 to September 1961 (discontinued).

REMARGS. - Appreciable inflow between sampling point and gaging station.

		Hq	80 7.8 89 7.8 91 7.7	7.9	77 7.5 56 7.5 47 7.3 59 7.4	96 7.4 70 7.6 82 7.6 91 7.6 90 7.6
	Specific con-	duct- ance (micro- mhos at 25°C)	89 89 16	102	77 85 85 85 85 84 85	91 90 90
		dum ad- ad- fron tion ratto				
	co,	Non- car- bon-	044	4 €0	88018	01 01 00 00 4 1
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	39	£ 15	2 2 1 2 2 4 8 9 4 8	30 35 35 39
	Dissolved solids (residue at 180°C)	Tons per day				
	Dissolved solids esidue at 180°	Tons per acre- foot				
r 1961		Parts per million	51 55 52	58	51 37 39 39	40 51 58 54
ptembe		Phos- phate (Po4)		<u>48</u>	82888	82282
to Sej		11- 10 ₃)	0.0	о. т.	46644	66464
1960		Fluo-Pride tr (F) (F)	0.0			
Chemical analyses, in parts per million, July 1960 to September 1961		Chloride (C1)	1.2	1.5	11111	1:00
r millic		Sulfate (SO.)	6.4 8.0 7.6	8. G	n. ω. ω. 4. π. ∞ ∞ ∞ ⊙ ω	0.000.00 0.0044
ts pe	- 0	Pon- ate (CO)				
in pa	Bi-	car- bon- ate (HCO ₃)	39 42 42	34	32 23 24 33	8 8 8 4 4 8 8 8 8 8
ses,	å	stus. (X)	0.2 .6	.0.	00407	46644
al analy		Sodium (Na)	22.2	1.9	0.04.0	22.22
Chemic	Year	nag- ne- stum (Mg)	1.7	4.5	1.01	0.1111
		Cal- ctum (Ca)	11.	101	8.0 7.5 8.0	9.5 10.12 124 13
		Iron (Fe)				
		Silica (SiQ ₆)	5.1		8.0.4.0.0 0.7.0.0	
		Mean discharge (Sil (cfs)	286 171 154		2,170 2,700 1,250	802 652 222 140
		Date of collection	July 18, 1960 Aug. 2	Oct. 5.	Dec. 6	May 1. June 1. Juny 17. Aug. 1. Sept. 5.

DUCKABUSH RIVER BASIN

12-540. DUCKABUSH RIVER BELOW BRINNON, WASH.

LOCATION .--At bridge on U.S. Highway 101, 0.2 mile upstream from mouth, 4.2 miles southwest of Brinnon, Jefferson County, and 4.3 miles downstream from gaging

Chemical analyses, in parts per million, July 1960 to September 1961

station DRANKER AREA. --66.5 miles upstream from gaging station. RECORDS AVAILABLE. --Chemical analyses: July 1960 to September 1961 (discontinued). REMARKS. --Appreciable inflow between sampling point and gaging station.

	н	60 7 9 89 7.7 550 7.5 990 7.3 253 7.4	430 7.5 447 7.3 51 7.5 63 7.6 63 7.4	46.77.7
Specific	duct- ance (micro- mhos at 25°C)	60 89 5,550 1,990	1,430 447 51 63 63	45 62 73 78 78
å	dium ad- Borp- tion ratio			
	Non- car- bon-	l	127 34 0 0	00000
Hardness as CaCO,	Cal- chum, Mag- ne- shum	28 34 197 187	160 63 22 28 28	22 23 3 4 5 4 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5
Dissolved solids (regidue at 180°C)	Tons per day			
seolved 1 due a	Tons per acre- foot			
(res	Parts per million	541 133		
	Phosphate (PO.)	28.112	1 1 2 2 2	82882
	Ni- trate (NO ₃)	1		
	Fluo- ride (F)	0.0	-:0-:	44466
	Chloride (C1)	1,700 1,700 545 51	380 104 .5	H H &
	Sulfate (SO ₄)	5.0 5.0		0,044.0 00400
Έ,	Ste Port			
ä	car- bon- ate (HCO ₃)	32 38 36 37 37	33 33 33 33	
	fas- fum (X)	1	118.00	
	Sodium (Na)	3.6	1 044	
	Mag- ne- sium (Mg)	1.2 1.6 113 42 4.2	26 1.1 1.0	
	ctum (Ca)	9.5 11 25 12	7.0 9.5 9.5	8.0 8.0 11.9.5
	fron (Fe)			
	Silica (SiQ,)	6.3	6.9 7.1 6.2	4.6 6.2 7.0 7.0
	Mean discharge (cfs)	345 189 94 64 186	275 498 1,140 578 596	995 965 400 123
	Date of collection	July 18, 1960 Sept. 7 a. Oct. 5 a.	Dec. 6 a	May 1. June 1. July 17. Aug. 1. Sept. 5.

a Salt water intrusion.

SKOKOMISH RIVER BASIN

12-600, SOUTH FORK SKOKOMISH RIVER NEAR POTLATCH, WASH,

LOCATION.—Temperature recorder at gaging station, 1 mile upstream from Rock Creek, 3 miles downstream from Brown Creek, and 7.5 miles west of Pottatch, Mason County.

Malias west of Pottatch, Mason County.

RECORDS MARIABLE.—Mater temperatures: May 1955 to September 1961.

EXTREMES, 1960-61.—Mater temperatures: Maximum, 66°F July 13; minimum, 38°F on several days during winter months.

EXTREMES, 1960-61.—Water temperatures: Maximum, 66°F July 22, 1959, Aug. 8, 9, 1960, July 13, 1961; minimum, freezing point Mar. 7, 1956.

	Average	29	51 49	4 4 5 5	41	1 1	11	43°	46	45	57	62 55	57	57
	^													
		3	48	11	41	-	11	4 4 3 6	11	56	11	55	59	11
1		30	47	44	040	1.1	1,1	4 4 3	4 4 4 4	51	56 51	64 55	58	53
		29	4 4 4 4 7	7 7 7 7	41	11	1 1	46	4 6 6 7	54 48	56	62 54	62 57	52
		28	8 4	4 4 6 4 3	42	11	43	45	46	53	55	59	99	54
- [27	8 4 8	43	45	11	43	44	6 4	51	58	61	61 56	55
		26	4 9	4 4 3	45	1 }	43	42	44	5 C	53	56	52	55
1961		25	0,0	4 7 7 7 7 7 7	45	11	4 4	44	4 4 6	54	61	55	63	55
ber		24	5. 0. 4.	4 4	42	11	44	43	4 4	52	52	99	58	56
September		23	200	4 6 4	1 1 1	11	4 4	2 4	2 4	8 4	61	53	58	56 51
Ser		22	200	44	42	11	44	43	6 6	47	51	57	57	56
t		7.	50	4 4	45	11	64.9	477	2 4	6 4 9	95	52	56	52
1960 to		20	52	4.5	42	11	4 4 6 3	4 1 7	44	64	58	56	57	57
er		6	0.04	4 5 6	42 4	11	44	423	47	53	52	56	57	538
top		8	52	9 4 9	41 41	11	643	4 7 7	4 6 6 6 9	53	53	55	4 9	54
water year October		17	502	4 6 6 6	104	ii	47	6,4	43	53	61	55	58	53
yea	Day	9	51	4 2 2	0 0	11	44	4 1	8 60	52	51	96	57	53
ter	"	2	51	4 2 7	407	11	43 64	417	43 6	52	900	56	58	54
Wa		4	64	4 6 6 6	41	11	6 6	41	46	4 5 6 8	6 6 6	52	57	58
of water,		3	64	9 9 7	417	43	43	4 4	44	4 5	8 4 8	56	58	54
F Wa		2	51	9 4 9	40	4 4 3	44	39	8 4 4	8 4	56	55	58	60
		Ξ	448	46	0 7 0 7	6 4 3	11	39	4 4 5	4 9 6	52	55.5	57	500
(F)		0	51	4 4 6 4	0 0	42	11	1 4 1	43	4 t t	52	54	57	61
ure	l	٥	51	46	39	45	11	77	43	4 4 5	51	52	4 8 6	540
erat		00	6.00	9 4 9	39	45	11	42	8 4	4 5 5	52	51	57	59
Temperature		^	50	4 4 50	0 0	5 1 4	TT	4 4 7	47	6 4	53	57	56	5.9
		9	53	4 4 0 0	0 4	41	11	39	47	9 4	52	52	56	50
		2	400	5 5	104	104	11	39	4 5 4 5	43	50	53	57	55
ı		₩.	35	9 4 9 9 9	1,1	040	11	42	46	4 4 6 7 3	50	57	61	61
		9	513	8 4	1,17	0.0	11	47	2 4	2 6	57	52	52	5.9
		2	50	4 4 4 4 7	42	0 0 7	11	4 7 7	4.3	4 4 9 6	57	53	52	56
	Ì	_	400	4 4 8	45	0 4	11	6 2	4 4	4 4	57	60	56	5.6
			::	: :	::	::		::	::	::	::			::
	4			E E	. 56	:: EE	:: ge	:: E E	:: §§	:: §§	:: Eg	:: EE	:: []	
-	Month		ctober Maximum Minimum	November Maximum Minimum	December Maximu Minimu	anuary Maximum Minimum	ebruary Maximum Minimum	k nimu	ximu nimu	inimu mimu	June Maximum Minimum	July Maximum . Minimum .	ist vximu nimu	September Maximum Minimum
		ļ	October Maxir Minir	N N N N N	December Maximum . Minimum .	Janu Ma Mi	February Maxim Minim	March Maximum Minimum	ZZZ ZZZ	ŘŽÝ Z	June Kirik	ĎŽŽ.	August Maximum Minimum	Z Ž

SKOKOMISH RIVER BASIN--Continued

12-615. SKOKOMISH RIVER NEAR POTLATCH, WASH

LOCATION: --At U.S. Highway 101 bridge, 0.5 mile downstream from gaging station, 4.8 miles southwest of Potlatch, Mason, County, and 5 miles upstream from mouth. DRAINAGE AREA (revised).--227 square miles upstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: August 1960 to September 1961 (discontinued).

Rater temperatures: May 1955 to September 1961.

RETREES, 1960-61.--Water temperatures: Maximum, 69°F July 13, 1961; minimum, 40°F on several days during March to May 1959.

REMERES, 1965-61.--Water temperatures: Maximum, 69°F July 13, 1961; minimum, 40°F on several days during March to May 1959.

REMARKS.--No inflow between sampling point and gaging station except during periods of heavy local runoff.

1		be!	I 🕶	4	2	m	_	4	e e	<u>ب</u>	a	e .	4	4	m	က i
	. ii	pa c at (;	74 7.4							1	56 7.2	2	2	2	2	2 7
	O.	duct- ance (micro- mhos at 25°C)	7	_	_	9	9		4	iO	'n	יטי	9	_	_	7
	·8:	ad- ad- sorp- tion ratio														
	ne ss ICO ₃	Non- car- bon- ate	0	0	0	0	0	0	0	0	0	0	0	0	0	۰
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	32	31	32	28	56	23	18	21	24	23	88	8	33	31
	Dissolved solids (residue at 180°C)	Tons per day														
	Dissolved solids esidue at 180°	Tons per acre- foot														
er 1961	Dia (res:	Parts per million	20	20	49	49	45	41	31	40	44	36	45	25	51	39
eptemk		Phos- phate (PO4)	0.04	.03	90.	.02	02	ဗ	.03	8	.02	.02	.04	.04	.03	.04
to S		Ni- trate (NO ₂)	0.1	4.	°.	e.	~		Τ.	Τ.	۲.	٥.	٥.	Ξ.	Ξ.	۲.
1960		Fluo- ride (F)	0.0	Ε.	7	•	۲.	Τ.	Τ.	0.	Τ.	٥.	٥.	٥.	۲.	٠.
Chemical analyses, in parts per million, August 1960 to September 1961		Chloride (Cl)	2.5	2.0	1.5	1.8	1.2	1,5	1.5	1.0	1.2	1.2	1.0	1.5	1.5	1.8
million		Sulfate (SO ₄)	1.2	e.	4.	2.2	1.6	œ.	8	4	· •	4.	1.0	1.6	9.	1.6
s per	į	(CO)														
n part		car- bon- ate (HCO ₃)	42	41	43	36	34	33	24	28	3	33	37	9	40	41
es, i	É	Stun (X)	0.3	<u>ښ</u>	4	0.	٥.	۲.	۰.	0	'n	۲.		۲.	۲.	۳.
l analys		Sodium (Na)	2.3	2.4	2.3	2.0	1.9	1.9	1.4	1.7	1.9	1.7	2.0	2.2	2.1	2.7
hemica	, J	nie- sium (Mg)	2.4	1.8	2.1	1.6	1.4	1.4	6.	1.4	1.6	1.4	1.9	2.4	2.5	2.1
		ctum (Ca)	0.6	9.5	9.2	8.5	8.5	7.0	6.0	0.9	7.0	7.0	8.0	8.5	9.0	0.6
		Iron (Fe)														
		Silica (SiQ.)	14	13	14	12	11	6.6	9.4	-	11	8.6	12	14	13	14
		Mean Silica discharge (SiQ ₂) (cfs)							5,200		1,510					
		Date of collection	Aug. 11, 1960	Sept. 7	Oct. 5	Nov. 4	Dec. 6	Jan. 5, 1961	Feb. 2	War 2	Apr. 4.	May 1	June 1	July 17	Aug. 1	Sept. 5

SKOKOMISH RIVER BASIN---Continued

12-615. SKOKOMISH RIVER NEAR POTLATCH, WASH .-- Continued

	9	18c																							
	Avor	Avelage	1	ł	45	45	43	43	43	43	4 5	4	4	43	48	46	50	48	58	54	65	9	;	ł	54 51
		31	84	46	1	1	43	43	43	64		1	47	45	1	!	53	64	1	1	!	I	57	52	11
		30	47	46	4	44	6,	43	43	4	!	L	9 4	45	48	46	20	64	9	57	65	9	53	51	52
		29	8 4	47	4	44	43	43	43	43	1	1	47	45	48	47	54	64	61	9	94	58	5.5	51	51
		28	84	47	44	44	43	43	43	42	43	4	46	44	64	48	52	64	62	59	63	9	55	50	51
		27	47	47	4	44	43	43	43	42	44	4	4.5	44	50	4 8	51	64	63	66	99	9	54	20	52
<u> </u>		26	48	47	44	44	43	43	43	45	43	4 3	45	7 7	8	8 4	64	49	63	9	89	61	54	51	52
196		25	49	47	44	44	43	43	43	43	43	43	45	43	49	47	52	49	64	61	67	59	55	51	53
ber		24	50	64	45	44	43	43	43	64	4,	÷	44	44	47	94	5.1	49	64	90	64	9	55	2	53
pten		23	51	50	45	45	43	43	43	43	7,	4	45	44	46	5	50	64	63	9	99	61	55	51	53
Water year October 1960 to September 1961		22	51	51	5	45	43	43	43	4 3	4 5	د ک	45	7 7	45	45	64	49	63	58	99	62	56	51	53 50
5		21	1	¦	45	44	43	43		43		4	45	4 4	47	45	51	64	63	57	67	62	ł	1	54 51
196		20	- 1	1	5	4	43	42	43	45	4 :	4	44	44	47	47	52	50	62	57	67	62	;	1	54 51
ber		19	1	1	5.4		643	4 3		£3		4		44		47	55			57	65	61	1	ł	53
cto		18	- 1	1	6.5	45	7,	43	4 4	43	643	4 U	45	44	4.8	7,	54	64	49	57	65	9	-	1	53
i i		17	;	;	4.5		43	43		43		7 4		43	4 8		55	64	62	56	65	9	1	1	54
Á	Day	16	1	1	45	45	43	43	44	43	4 9	ئ ب	43	43	48	47	54	64	62	55	99	61	1	1	55
ater		15	- 1	1	5	45	43	43	4	43	77	4	43	74	47	47	53	48	61	54	6.8	61	1	1	53
.*		14	1	1	5.4	45	43	43	43	43	7.	4	42	45	64	47	51	48	09	53	68	62	1	1	54
water,		13	1	1	45	45	43	45	43	6 4	4 .	4	45	45	48	94	64	48	09	52	69	63		1	55
of w		12	- 1	1	5 4	45	43	4.2	43	£3	4 .	-	7 7	42	4 8	94	50	47	58	51	6.8	61	l	1	55
(°F)		Ξ	1	1	46		43	4.1	43	43	44	4	42	45	4 8	47	50	46	53	51	99	9	1	1	55
		2	1	1	94	94	42	41	43	63	4 4	4	43	42	64	94	94	45	53	20	65	59	ŀ	ŀ	55
Temperature		٥	- 1	1	47	46	43	7 7	43	43	4 .	4	43	43	48	46	47	46	52	51	64	58	;	1	56
era		8	1	1	47	45	43	43	43	4 3	4:	4	43	43	50	94	6 4	41	53	90	63	56	¦	1	54 50
Temj		2	!	1	4	7 7	43	43	43	43	4	4	43	43	4	45	64	46	52	64	9	56	;	ŀ	55 51
		9	;	1	4	7 7		43	43	43		4		45	64	45	48		53	64	59	57	;	;	55 51
		5	1	1	84	45	44	44	43	43	44	4	43	4,1	48	45	64	45	52	49	61	59	1	1	53
		4	1	;	94	46	44	44	43	42	77	44	43	43		45	46		51	64	62	59	¦	i	56 52
		3	- 1	1	94	9 4	4.5	4	42	45	4 (4	43	43	48	45	4.8	45	51	64	65	59	1	1	56
		2	1	1	14	94	45	4	43	45	643	43		43	8 4		8 4		51		64		;	1	56 51
		-	1	1	4	47	4 5	44	43	43	43	4	43	43	47	46	8 4	46	52	64	9	58	i	ł	53
·			:	:				:	:	:	:	:	:	:		:	:	:		:					::
	7	משנט	§	9	9	Į.	٤	Ę.	m.	Ħ	ä	ŒĐ.	Ĕ.	mm.	E I	um.	May Maximum.	mm.	Ę	Ħ	July Maximum	Ę			
	ž	Ĭ	October Maxim	Minimum	November	Minimum	Secember Maximu	Minimum	anuary Maximum	linim	ebruary Maximum	uil.	farch Maximum	linim	il faxim	linim	, faxim	finim	June Maximum	inim	íaxim	linim	ugust	Minimum	September Maximum Minimum
			ő	. 2	δŽ	; Æ	ă Z	Σ,	Jan K	Σ	₽. E.	Σ	March Max	Σ	Apr	. Z	X X	2	ğz	Σ,	ĘŽ	, Z.	Aug	. Æ	Š SA

NISQUALLY RIVER BASIN

12-825. NISQUALLY RIVER NEAR NATIONAL, WASH.

LOCATION: --Temperature recorder at gaging station, 100 feet downstream from railroad bridge, 1 mile west of National, Pierce County, 2.5 miles west of Ashcord, and 3 miles upstream from Mineral Creek.

RECORDS AREA.--133 square miles.

RECORDS AVAILABLE.--Taketr temperatures: October 1951 to September 1961.

RECORDS AVAILABLE.--Taketr temperatures: Maximum, 65°P July 13; minimum, 35°P Jun, 27.

EXTREMES, 1960-61.--Taketr temperatures: Maximum, 65°P July 13; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1960 to September 1961

						1		,	0	•	10 (1			-		1	3	3		1 200	3	Tadmandad		4	1001							
Mean															ı	Day																1
MOINT	-	2	က	4	5	9	7	œ	6	10	=	12 1	13	14	15 1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October Maximum		52	51			64		9	9,	4.7	4.5		4 6		52 5		52 5	_	64	20	64	6 4	7 6 4	8 7	7 6 7	84	45 4	9,	45	4	9	64
-	4	4	4 4	45	7 7 7	8 4	_	£ 1		0,4	43	7 7		7 7		4.5		14	44	- 4	94	47			45			_	7 7 7	43	7 7	4
November	4	4	4.5	44	46	4	44	5	7 7 7	4 4	7 7 7	4	43	42 /	4.1.4	6.4	43	43	43	43	7	4.1	45 4	42	77	42	704	7	-7	4.2	1	43
Minimum	4	7 7	£ 1	41	_	7 7	41	64			424		424		7 0 7	41		43	43	41	7	- 1		7 7			7 0 4	_	7,17	41	1	45
December		42	7		0 4	39				0	41	7 7	42 4	7 7 7	704		42	42	7	4.1	4.1	4.1	41	0,4	707	0,4	0 4	0 4	39	39	38	41
Minimum	42	745	0,4	04	38	38	38	39	39	38	404		7 7	04	38	38	41	4,1	0,7	9	2	40	4 0 4	•		0 4	40	38		38	37	39
January Maximum		38		39	39 4			4.1							41		-	0,4	0,4	4.1	0	39	36	0 4	39	38	37	38	39	39	0 4	04
Minimum	37	36	36		39	39	7 0 7	0,4	٠ <u>+</u>	_	404	9	0 1	0,7	417	2	604	39	39	39	38	37	38	39	37		35 3	36	38	39	39	39
February	39	39	36	1,1	41	4.3	39	6	7 0 7	0 4	-04	38	38	36	39	38	39	38	38	39	39	39	-04	39	37	0,4	39	39	1	1	- 1	39
Minimum	_	39	39	39	4.1	39		39	39	39	38	_			38			38		38				37		37		_	i	1	ŀ	38
March	30	0,	0,0	- 4	8	-	42			0	90	90		- 24	4.2		4 2 4	44	- 7	7	F 3	_	7	7	-7	7	7			4	44.	67
Minimum		37			_	37	_	39	36							_		_		36		0 4		4		_				36	42	39
April	7	7	7	4	7	- 4			7	-	4		-7		7 8 7	84	4		7 7 7		77	7		4	7 5 7	8 7	- 4			41	:	4
Minimum		7,7	_			_	707	7.5				2 4				_	_	10		0 4			37.4	7 7				7 4		2 7	1	4 1
May	5	4.5	4.5	43		ب	48	4.7	724	- 24	- 61		7	-01	5.5	24	-12	24	54	2.	8 7	47	8 4	5.3	24	47	0.50	-0	20	 4	45	0 1
Minimum		45				_		64								_		6,4		, ę										4 4	6,4	. t
June	54	54	5	53	7 8 7	77	20	8 4	45		9 7		5.5		- 29		545	-	54	53	54		23		67	- 64	7	45	7	4.5	1	
Minimum		£ 4				6,4						7 7		6,4		4		4 4		4		, e		4 4						4	1	. 4 6
July Maximum	8 4	51	51	52	20 7	64	50	53									63		69	26	26	96	56	55	i	1	+	<u> </u>	i	-	1	ļ
Minimum	45	4.7	-	64	64	48	7 8 7	64	51	25	54	24	52 5	2	51 5	52	52 5	52	55	55		96		54	÷	1	+	<u>.</u> ¦	i	1	1	;

PUYALLUP RIVER BASIN

12-1015. PUYALLUP RIVER AT PUYALLUP, WASH

LOCATION.--At bridge, 0.8 mile downstream from gaging station, 1.8 miles northwest of Puyallup, Pierce County, and 6.2 miles upstream from mouth. DRAINAGE ARRA.--948 square miles upstream from gaging station.
RECORDS ANGIABLE.-Chemical Banalyses: July 1959 to September 1961 (discontinued).
Water temperatures: July 1969 to September 1960.
REMANKS.--No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1960 to September 1961

	Нď	7.4	7.1	0.7	7.3	7.1	7.2	7.3	6.9	7.1	7.1	2.0	7.1
specific con-	duct- ance micro- mbos at 25°C)	92	67	63	82	26	2	89	28	46	26	24	02
	dium ad- sorp- tion ratio							_	_				
	Non- car- bon-	2	0	0	0	н	П	0	0	0	0	က	4
Hardness as CaCO,	Cal- ctum, Mag- ne- stum	33	24	22	31	20	27	24	21	16	20	20	56
Dissolved solids (residue at 180°C)	Tons per day											_	_
solved due at	Tons per acre- foot												
_	Parts per million							56					
	Phos- phate (Po.)	0.05	90.	40.	13	.05	90.	40.					
	Ni- trate (NO ₂)	0.2	1.0	∞.		. 7	۲.		_		_		_
	Fluo- ride (F)					_	۲.			۲.	_		
	Chloride (Cl)	2.0	1.5	1.8	2.0	1.0	1.5	1.5	1.0	1.0	1.0	1.5	1.0
	Sulfate (SO4)	10	6.0	0.9	4.6	4.6	5.4	4.4	4.6	4.0	5.6	7.8	9.4
	CO)												_
Bi-	Bi- car- bon- ate (HCO ₃)				39	24	32	32	26	20	25	20	27
Ė	tas- shum (K)						ĸ.			.5			_
	Sodtum (Na)	4.4	3,1	2.6	4.0	2.8	3.3	3.7	2.9	2.2	2.9	2.9	3.5
200	sium (Mg)	2.6	1.5	1.1	2.7	1.3	2.3	1.6	1.4	6	1.3	1.4	1,9
	Cal- cium (Ca)	9.0	7.0	7.0	8.0	6.0	7.0	7.0	0.9	5.0	0.9	5.5	7.0
	Iron (Fe)												
	Silica (SiQ _e)	16	14	12	18	14	17	15	14	12	13	11	13
	Mean discharge (SiO ₂)	1,090	3,100	4,390	2,170	5,100	4,320	3.460	5,640	6,490	3,170	2,520	2,160
	Date of collection	Oct. 4, 1960	Nov. 4	Nov. 30	Jan. 3, 1961	Feb. 2	Mar. 6	Apr. 19	Kay 3	June 5	July 5	Aug. 3	Sept. 6

DUWANISH RIVER BASIN

12-1130. GREEN RIVER NEAR AUBURN, WASH.

LOCATION. --At bridge on State Highway 5B, 0.1 mile upstream from Big Soos Creek, 1.8 miles east of Auburn, King County, and 2.1 miles upstream from

gaging station.

BRAINAGA ARRA (revised).--399 square miles, excluding 3.67 square miles in the vicinity of Youngs Lake, upstream from gaging station.

BRAINAGA. ARRA (revised).--399 square miles, excluding 3.67 square miles in the vicinity of Youngs Lake, upstream from gaging station.

Water temperatures: March 1952 to September 1961.

Water temperatures: Marximum, 73°F July 12-14; minimum, 39°F Dec. 9, 10, 15-17.

BRINKERS, 1962-61.--Mater temperatures: Marximum, 75°F July 28, 1968; minimum, 33°F Peb. 16, 17, 1956.

REWERES, 1962-61.--March temperatures: Marximum, 75°F July 28, 1968; minimum, 33°F Peb. 16, 17, 1956.

	Нď	7.3	7.1	7.7	7.3	7.3	56 7.4	52 7.3	7.5	7.5	7.3	7.5	2.0
Specific con-	duct- ance (micro- mhos at 25°C)	101	53	63	65	43	26	52	47	48	78	97	93
			_	_			_					_	
	Non- car- bon-	0	0	0	0	0	•	•	0	0	0	0	0
Hardness as CaCO,	Cal- cium, Mag- ne- sium	38	19	21	23	12	20	18	17	17	28	36	35
Dissolved solids (residue at 180°C)	Tons coper day												
Dissolved solids esidue at 180°	Tons per acre- foot												
Dis (resi	Parts per million	99	46	53	48	40	47	42	45	4	26	7.1	71
	Phos- phate (PO4)	0				.03	.04	.03	40.	.02	.03	6	90.
	Ni- irate (NO ₂)	0.5	80	1.0	-	4	œ.	4.	4.	۲.	9.	7.	'n
	Fluo- Ni- P ride trate D (P) (NO ₂)	0.1	0.	7	0	۲.	0.	7.	٥.	Ξ.	=	<u>.</u>	Ξ.
	Chloride (C1)	2.8	1.2	1.5	1.2	1.0	1.2	1.5	œ.	1.0	1.8	3.0	3.2
	Sulfate (SO ₄)	4.6	3.6	3.6	3.6	2.4	2.4	2.0	2.4	2.0	3.6	5.4	5.2
į	ate (CO ₃)												
Bi-	car- bon- ate (HCO ₂)	20	22	28	30	21	27	26	24	54	38	48	46
Ė	Situm (K)	0.2	n	7	0	4	٦.	.1	е.	4.	4.	. 7	9
	Sodium (Na)	5.1	3.0	2.9	3.5	2.2	2.9		2.6				5.2
-	mag- ne- stum (Mg)	2.7	1.0	1.3	1.7	. 7	1.6	1.1	1.0	1.0	1.8	2.7	1.9
	Cal- cium (Ca)	11	9	6.5	6.5	5.0	5.5	5.5	5.0	2.0	8.5	10	-
	Iron (Fe)		_									_	
	Silica (SiQ ₂)	13	13	14	14	14	13	13	12	12	14	14	14
	Mean discharge (SiO _s) (cfs)	172	1.330	1.920	1,050	3,280	2,500	1,850	2,800	1,660	470	230	230
	Date of collection	Oct. 4, 1960	Nov. 4	30 ao	Jan. 3, 1961	Feb. 2.	Mar. 6	Apr. 19	May 3	June 5	July 5	Aug. 3	Sept. 6

DUWAMISH RIVER BASIN--Continued

12-1130. GREEN RIVER NEAR AUBURN, #ASH.--Continued Temperature (°F) of water, water year October 1960 to September 1961

DUWAMISH RIVER BASIN--Continued

12-1134. DUWAMISH RIVER AT TUKWILA, WASH

OCATION.--At county bridge at Tukwila, King County, 1.7 miles west of Renton, and 10 miles upstream from mouth. RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1961. Water temperatures: July 1959 to September 1961

EXTREMEN, 1860-61.—15. Solids: Maximum, 433 ppm Aug. 10-Sept. 7; minimum, 41 ppm Feb. 20-22.

Ratchess: Maximum, 156 ppm Sept. 22-56; minimum, 16 ppm Feb. 20-22.

Specialize conductance: Maximum daily, 3,270 micromhos Aug. 25; minimum daily, 38 micromhos Feb. 22.

Ratchess: Maximum, 76°F July 11; minimum, 38°F Jan. 38 micromhos Feb. 22.

KITAMENS, 1899-61.—10:850-70 ed solids: Maximum, 46°F July 11; minimum, 18°F ppm Sept. 27-30, Nov. 22-26, 1989.

Ratchess: Maximum and Maily, 3,270 micromhos Aug. 25, 1961; minimum and 119, 3,370 micromhos Aug. 25, 1961; minimum and 119, 1980.

Where resperatures: Maximum and Maily, 3,1270 micromhos Aug. 25, 1961; minimum and 119, 1980.

Where resperatures is second to the second and 119 samples available in district office at Portland, Oreg. No discharge records available.

7.2 1.7 6.7.7.7 6.4.4.4.6 44.22 핂 208 71 53 78 833 208 96 61 72 44 64 78 Specific mhos at ance micro-So-dium ad-forp-tion 20010 00 000 00000 Noncar--uoq Hardness as CaCO, Cal-chum. Mag-ne-stum 248289 88 2022 821683 Tons per day Dissolved solids (residue at 180°C) Chemical analyses, in parts per million, water year October 1960 to September 1961 Tons
per
acrefoot 524 60 22 28 888 841 841 841 841 841 per million Parts rate phate (NO₃) (PO₄) 120 588 Fluo- Ni-ride trate (F) (NO₂) 1.4 1.4 1.3 0.1. 448 20000 3.2 252 32125 Chloride ថ្ង 8.24.7 6.4 4 8 9 8 4 4 6 6 6 6 Sulfate 8 Control Bi-car-bon-328 328 ထက္လက္က်က P = 1 Sodium (Na) 3.2.8 4.2 44055 6.7 1.9 1.3 8 8 11.08.11 7.1.1 Mag-ne-stum (Mg) 14 6.5 7.0 7.5 10 6.0 6.5 9.0 7.0 5.0 7.0 Ca) (ca) Fs) Silica (SiQ₂) 84484 88 884 984884 94484 88 884 984884 Mean discharge (cfs) 20-22. 23-26. 27-Mar. 6... 12-19..... 28-Nov. 10... 11-16..... 6-13..... 6-11.... 23-31..... 17-21. 22-Dec. 5.... 14-27..... 12-22..... 1-11..... Jan. 5, 1961.... Date of collection Dec. 28-Dec. E. Jan. Nov. Nov. Nov.

Jan.

DUWAMISH RIVER BASIN--Continued

12-1134. DUWAMISH RIVER AT TUKWILA, WASH. -- Continued

		Ħď	7.1 7.1 7.1 7.1	7.27.7.28.7.15.11.5	77.77	2.7.7.7.2	1
	Specific con-	duct- ance (micro- mhos at 25°C)	99 98 93 85 85 85	74 91 88 75 64	73 110 146 134 183 457	192 766 403 202 1,210	194
	·8;						
	ess CO,	Non- car- bon-	00000	00000	800008	20 20 97 97	80
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	30 22 27 30	22 23 25 25 21	23 442 40 50 80	54 110 78 59 156 60	42
tinued	Dissolved solids (residue at 180°C)	Tons per day					
1Con	solved due at	Tons per acre- foot					
mber 196	Dis (resi	Parts per million	64 52 59 69 69 56	58 68 64 55	50 70 91 83 110 262	121 433 132 136	110
Septe		Phos- phate (PO4)	0.03	.00 .00 .00 .00	06. 110. 71. 119	2. 1 14 1 8.	. 12
0 to		Ni- trate (NO ₂)	1,1	88,48,6	4. 8. 1. 6.	1.4	1.1
r 196		Fluo- ride (F)	1.0 1.1 1.1	न्नन्न	ननननन:		0.1
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride (Cl)	2.24 2.5.4 6.5.2 8.1	23.50.00 8.80.00	3.8 13.5 10 20 96	20 182 76 21 310 25	31
rater yes		Sulfate (SO4)	6.5.2 2.6.2 2.6.4	44446	20.00.00	8.2 1.8 9.0	6.0
lon,	ۇ	bon- ate (CO ₃)					
r m111		car- bon- ate (HCO ₃)	37 29 31 37 25	322 332	32 42 53 62 62 64	68 70 73 71 71	43
ts pe	Ę	tas- stum (K)	0.7 .9 .7	8.61.61	26.54.4	1.6 2.0 2.0	6.0
, in par		Sodfum (Na.)	6.4.0.8. 4.2.4.0.4.	4.004.4 L1485	5.2 8.4 10 10 17 58	18 108 48 18 180	21
alyses	Mag-	nie- sium (Mg)	2.0 1.9 2.1 2.3	1.9	7.1 9.2 4.3 1.3 1.3	4.8 4.7 5.4	2.7
cal an		ctum (Ca)	8.5 6.0 7.5 8.0 5.0	6.5 8.0 7.0	6.5 9.0 11 11 13	14 16 15	8.8
Chemi		Fe)					
		Sillea (SiO ₂)	15 14 14 15	15 15 14 13	13 17 17 19	61 161 6	15
	;	discharge (SiO ₂) (cfs)		_			
		collection	Mar. 7-14, 1961 Mar. 15-22 Mar. 23-27 Mar. 28-Apr. 2 Apr. 3-5	Apr. 6-20 Apr. 21-26 Apr. 27-29 Apr. 30-May 16	May 26-June 8 June 9-21 June 22-July 5 July 11-24 July 25-29	July 30-Aug. 9 Aug. 10-Sept. 7 Sept. 8-14. Sept. 15-20. Sept. 21-26.	Time-weighted average

DUWAMISH RIVER BASIN--Continued

12-1134, DUWAMISH RIVER AT TUKWILA, WASH .-- Continued

	Aver-	age	56 54 63 63	4 4 4 5 4 4 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	47 51 62	880
		31	212	2 1 4	132	62
		ဗ္ဗ	50 45 41	113	51 53 65	65 66 55
		29	50 43 41	2 1 8	5.5	50 20 20 20 20 20 20 20 20 20 20 20 20 20
		28	52 43 42	4 4 4 0 6 0	52 63	63 58
		27	53	0 4 9	9 4 9 4 9	58
		26	53 42 43	41 42 45	5.5	72 62 55
120		25	44 44 63	4 t 1 t 6 t 1 t 6 t 1 t 6 t 1 t 6 t 1 t 1	4 2 0 0	69 69 58
100		24	56	444	53	4 8 8
1		23	59 43 42	044	46 52 69	59
b		22	58 43	144	46 51 67	69 70 51
3		21	57 41	4 4 4 5 5 5 5 5	53	200
1		20	5.6 4.5 4.3	45 41 47	525	69 71 59
Ę		19	58 46 43	1 4 4 4 1 4 8 4 1	45 51 65	64 59
5		18	59 44 44	444	51	63
•		17	59 42 42	1 6 4	4 to 0	5 63
5	Day	16	59 43 41	444	4 50 40 0 70 00	69 64 62
100		15 1	60 47 40	4 4 4 1 4 6	53	71 68 63
		14	57 44 44	0 4 4 9 4 6 9 9 9 9 9 9	45 51 65	72 69 61
100		13	56 43	444	46 50 62	27 29
F) of w		12	4 4 8 0 4 0 8 0	4 4 4 4	52 58	74 72 64
		11	50 49 41	444	7 0 S	73
		10	55 4 8 4 2	4 4 4 0 4 4 0	51	65 72 63
Temperature (°F) of water, water year October 1960 to September 1961		6	50 47 42	4 4 4 4	50 50 51	65 67 60
		8	55 48 41	4 4 4 4 4 70	50	688
		7	4 4 8 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4	7 4 4	8 0 0	66 61 61
		9	59	4 1 4 2 1 2	7 4 4 5 5 5	6.9 4.4
		2	0.0 8 4 60 60	41 45 41	447	6.8
		4	8 4 4 8 8 6	4 4 5 4 5	44 59	624
		3	0 C 4	39 44 42	4 4 rv 8 8 8	69 69 62
		2	58 47 47	4 4 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	84 00 60	67 67 65
		-	0 0 4 0 0 0	2 4	4 0 0 0 0 0 0	68
	Month		October November December	January February	April May	July 66 August 68 September 65

LAKE WASHINGTON BASIN

12-1175, CEDAR RIVER NEAR LANDSBURG, WASH.

LOCATION. --At county bridge at Landsburg, King County, 2 miles downstream from gaging station, 2.3 miles downstream from Rock Creek, and 10 miles east of Kent.

DRAINAGE AREA (revised). --117 square miles, excluding Rock Creek drainage upstream from Walsh Lake diversion, upstream from gaging station.
RECORDS AFMILABLE. --Chemical analyses: July 1980 to July 1960.
Rater temperatures August 1983 to September 1961.
RETURBLES, 1960-61. --Mater temperatures: Maximum, 67°F July 13; minimum, 41°F on many days during winter months.
EXTRENES, 1963-61. --Mater temperatures: Maximum, 67°F July 27, 28, 1960, July 13, 1961; minimum, 36°F on several days during January and February

in 1956, 1957, and 1960.

1961	
July	
ţ	
1960 to	
October	
million,	
in parts	
12	
analyses,	-
l an	
Chemica	
	-

	рН	51 7.3 64 7.8 41 7.3 67 7.5						
Specific	duct- ance (micro- mhos at 25°C)	51 64 41 67						
ģ.	ad- ad- sorp- tion ratio							
	Non- car- bon- ate	0000						
Hardness as CaCO,	Cal- cium, Mag- ne- stum	20 16 18						
Dissolved solids residue at 180°C)	Tons per day							
solved	Tons per acre- foot							
	Parts per million	34 44 30 51						
	hos- hate PO4)							
	Ni- trate (NO ₂)	4.0						
	Fluo- Ni- Phos- ride trate phate (F) (NO ₂) (PO ₄)	0.0 0.4 0.02 .0 .5 .03 .0 .3 .01						
	Chloride (C1)	1.0 8. 1.0						
	Sulfate (SO ₄)	1.8						
0	CO)							
	car- bon- ate (HCO ₂)	28 34 32 37						
å	1.00.8							
	1.8							
Men	mag- nie- stum (Mg)	1.1						
	Cium (Ca)	6.5 8.0 5.0						
	Iron (Fe)							
	Silica (SiQ.)	9.7 12 9.4 11						
	Mean Silica discharge (SiQ ₆) (cfs)	335 555 1,170 558						
	Oct. 4, 1960 Jan. 3, 1961 Apr. 19.							

LAKE WASHINGTON BASIN--Continued

12-1175. CEDAR RIVER NEAR LANDSBURG, WASH. -- Continued

	95	Age I	50	9 9	1 1	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	45	e e	47	52	60	57	5.8 5.5	52
ļ														
		မ	48	11	43	41	11	2 4 5	11	5.8	11	56	54	11
		္က	4 4	4 4	£ 4 2 4	41	11	4 4 7 7	2, 4 3, 8	2 4	4 09	5 % 8 %	55	51
		29	49	4 4	45	41	11	4 4 5	4 4	55	58	5.5	54	51
		28	4 4 9	4 4	11	477	45 45	4 4 5	4 4 9	53	58	62 56	53	52 51
l		27	2 4	4 4 4 5	11	41,	4 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	4 4	4 4 8	5,4	59	55	56	52
E		26	6.00	4 4 50	11	4 7	45	t t	4 4 80 80	50.4	57	5 4 8 8	5.0	51
1961		25	0.4	44	11	4 1 4 1	45	4 4 4 5	448	53	63	6.5	5.5	52
September		24	50	4 4	11	45	45	4 4	47	52	6 2 57	63 59	58	52 51
pter		23	5 5	44		42	4 5 2	‡ ‡	47	54	59	62 55	5.5	52 51
		22	5.0	4 4 4 4	11	4 5	4 7 7 7	4 4	4 7	53	62 56	5.8	59	52 52
t t		2	51 50	4 4		45	45	4 4	47	53	61 56	59	5.5	52 52
1960		20	51	44	43	45	45	44	47	50	59	57	59	53
		19	51	4 6	4 4 6 6	45	45	44	44	53	57	99	56	53 52
October		18	51	9 4 6	643	43	45	4 4 4	47	57	60	59	55	53
ig	Ì	17	0.4	4 6	4 5 2	4 2 2	45	44	47	52	58	57	5.0	53
ye	Day	16	50	4 4	42	43	45	4 th	47	52	62	59	55	53
water year		15	64	4 6	43	44	45	4 43	4 4	53	61 56	57	52	53
		14	64	4 6	43	42	45	4 43	46	64	99	99	55	54
water,		13	50	4 6	4 th	45	45	4 4 9 6	44	64	55	58	58	55
of W		12	50	9 4 6	4 th	45	45	4 4 3	47	64	5.5	58	58	53
		Ξ	51	4 6	£ 4 £ 3	45	4 5 7	43	4 7	4 4 8 4	57	59	59	55
(°F)		2	51	9 9	643	43	45	6 4 9	47	64	58	57	5.0	55
Temperature		٥	4 9	4 4 6 6	4 4 3 6	4 4 9	45	4 6 8	47	49 49	57	63	57	55
era		8	51	46	44	43	43	£4 43	47	64	5.5	62	58	55
Gw		^	51	4 4	4 4	4 2 4 2	4 4	43	4 9 4 6	4 4 8	58	57	5.5	52
		9	51	44	4 4	45	43	4 7 7	44	8 4 8	56	61	55	55
		2	51	477	4 4	42	41	1,1,	4 4 6	4 4 8 4	58	61	56	52
į		4	52	L'4 47	4 4	42	11,	42	44	40	96	61	5.4	54
		3	52	4 4	4 4	41	1,14	42	44	64	96	57	58	5,4
		2	50	4 4 80 80	11	42	1,1	45	4 6	64	55	6 2 5 7	63	53.4
		-	50	4 4 8 80	4 4	43	2.2	42	4 5 7	4 9	55	57	58	2.2
			::	::	::	::	::		::	::	::	::	::	::
	March	MODE	unu unu	ovember Maximum Minimum	num num	# # # #	ry imum imum	ximum	April Maximum Minimum	ximum .	Jne Maximum Minimum	Maximum		September Maximum Minimum
			October Maxin Minin	Na Na	Win	January Maxii Minii	February Maxim Minim	Max Min	Mai Mii	May Ma Mii	Mir Mir	W.W.	Ma: Mis	Septe Ma Mis

LAKE WASHINGTON BASIN--Continued

12-1190. CEDAR RIVER AT RENTON, WASH.

LOCATION .--At bridge on State Highway 5, 1.8 miles south of Renton, King County, 2.8 miles upstream from gaging station, and 4.8 miles upstream from mouth. DRAINAGE ARRA (revised).--186 square miles upstream from gaging station, including 3.67 square miles in vicinity of Youngs Lake in Big Soos Creek basin. RECORDS AVILLABLE.--Chemical analyses: July 1959 to September 1961 (discontinued). REMARKS.--Minor inflow between sampling point and gaging station.

LAKE WASHINGTON BASIN -- Continued

12-1265. SAMMAMISH RIVER AT BOTHELL, WASH.

LOCATION --At bridge on State Highway 2, at Bothell, King County, 0.1 mile upstream from gaging station and 0.1 mile downstream from North Creek. DRAINGA ARRA (revised).--21 square miles. Sequere miles. Sequere miles and special analyses: July 1959 to September 1961.

		Нď	7.4	6.9	6.9	7.1	6.8	•	7.1	0.7	0.	7.7	.2	7.1
	Specific con-	duct- ance (micro- mhos at 25°C)	111	116	95	86	83	9	90 7.1	16	100	102	105	109
	8,	ad- ad- sorp- tion ratio												
	68.6 CO ₃	Non- car- bon- ate	0	4	9	N	10 C	4	63	7	-	7	•	0
	Hardness as CaCO ₃	Cal- clum, Mag- ne- stum	42	44	32	36	31	Ţ	32	34	33	40	41	43
	Dissolved solids (residue at 180°C)	Tons per day												
r 1961	Dissolved solids	Tons per acre- foot												
Septembe		Parts per million	73	84	89	64	62	ò	9	89	64	74	68	19
60 to		Fluo- Ni- Phos- ride trate phate (F) (NO ₃) (PO ₄)					60.		60.			_	_	
r 19		Ni- trate (NO ₃)	0.9	2.0	2.4	1.7	8 6		1.6	1.5	1.1	1.2	9.	1.0
ctobe		Fluo- ride (F)	0.1	Ξ.	2	0	н,	:	Τ.	Τ.	Ξ.	=	=	ď
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	3.0	3.2	2.5	8.7	010		2.0	0.7	2.5	3.0	3.0	3.0
ion, wat		Sulfate (SO ₄)	7.8	12	91	7.0	4.0	9.0	7.6	8.0	9.2	7.4	8.0	8.4
m111		So So So So S												
ts per		car- bon- ate (HCO ₃)	52	48	36	41	33	c c	88	39	44	46	22	22
n par	ŕ	(X)	0.9	1.2	1.0	۲.		•	6.	1.0	1,0	1.1	1,1	1.2
Chemical analyses, in parts		Sodium (Na)	5.4	5.0	4.3	4.6	9.0		4.6	4.5	5.2	5.3	5.6	5.8
al ana	į	film (Mg)	4.4	4.7	3.4	3.6	3.0		3.4	3.5	3.6	4.2	4.5	4.3
Chemic		Cal- ctum (Ca)	9.5	91	8.5	8.5	7.5		7.5	8.0	9.0	9.0	9.0	9
		Iron (Fe)												
		Silica (SiQ ₆)	14		9.3	2	2	o :	7.5	2	8.		8.4	4
		Mean discharge (cfs)	117	219	758	431	928	1,0/0	574					
		Date of collection	Oct. 4. 1960	Nov. 4	Nov. 30	Jan. 3, 1961	Feb. 2	Mar. 0	Apr. 19	May 3	June 5	July 6	Aug. 3	Sept. 6

SNOHOMISH RIVER BASIN

12-1350. WALLACE RIVER AT GOLD BAR, WASH.

LOCATION: --Temperature recorder at gaging station, 30 feet downstream from highway bridge, 0.2 mile north of Gold Bar, Snohomish County, and 1.2 miles upstream from Oliney Greek.

DRAINAGE ARRA (revised).--19.0 square miles.

RECORDS AVAILAGE.--78 cet respectatures: 1/13/1 1956 to September 1961.

EXTREMES, 1960-61.--78 tet respectatures: Maximum, 70°F July 13; winimum, 38°F Jan, 3, 4.

EXTREMES, 1965-61.--78 tet respectatures: Maximum, 70°F July 29, Aug. 8, 9, 1960, July 13, 1961; minimum, freezing point on several

days during winter months.

Temperature (°F) of water, water year October 1960 to September 1961

															Day	۰.															
Month	-	2	3	4	5	9	7	8	- 6	11 01	1 12	13	14	15	16	17	18	19	20	2	22	23	24	25	26	27	28	29	30	31	Average
October Maximum	51.5	52	52 5	51	4.0	524	53 4	4 6 4	41 41 46 46	7 47 6	7 47	47	47	51	50	50	52	50	50.02	50	51	51	51	4 4 8 4	6 4 6 4 8 4	48	48	47	94	8 4 4	50 64
November Maximum Minimum	47	4 to 4	46 4	44	9 4 4	4.5	4 4 4 4 4 4	9 4 4	44 44	4 4 5 5	4 4 4	11	4 4	4 4	4 4 4	11	4 4	11	47	42	41	45	45	43	42	41	104	42	43	11	4 4 4 9 4 9
December Maximum Minimum	444	4 4	44	1 4	39 3	39	39 4	39	41 41	4 4 1	1 42	43	2 42	4 0 4	39	42	4 4 1	41	42	4.1	42	42	4 7 0 4	41	7 7	41	39	39	39	39	41
anuary Maximum Minimum	39	39	38	38	104	1,0	4 5 4 4 4 4 4	7 7 7	42 43	43 43	3 42	45	2 45	42	4 2 4 1	42	4 4 5	42	44	43	42	42	4 1	4 0 4 0	9 4	39	39	39	41	42	41
February Maximum	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	45	45 4	45	43 4	6 4 4	43 4	£43 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	44 44		44 43 45	45	2 4 5	42	4 1 4 1	1,1	4.4	4 4 0	4 4	4 0 0	4 4 1	42	4 2 4 0	4 0	41	41	41	11	11	11	45 41
Maximum	4 6	0 4 0 4	417	41	404	40	43 4	43 4	4 4 4 4 4 4 4	43 4	43 42	43	4 4 4	43	6 4 4 2	4 4 4 2 4	4 4	4 4	43	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	44	44	4 7 7	4 4 7 7	43	6 4	46	47	46	44	43 45
April Maximum Minimum	444	43	43	41	454	4 4 9 6	46 4	9 4 4	44	4 4 4 3 4 3	44 43 42	43	3 43	4 4	4 4 8 4 4	42	4 1 4 1	40	443	2 4	44	4 6	4 4	33	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 8 4	4 8 4 6	47	4 4 4 4	11	4.5
May Maximum Minimum	4 4 4 4 4 5	44	44	44	44	44	7 7 4 4	4 5 4	45 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	45 47	47	47	52	5 53	53	54 47	54 48	4.8	5.0 4.8	51 48	50	53	54 48	51	4 4 6 4	52	51 49	6 4 8 4 8	54 48 48	6 4 9
Maximum	52	51	50	58	56	50.	53 64	52	51 5	52 5	52 54	57	60 52	54	4 55	58	5 6 4 8	57	5.8	52	54	57	63 56	62 57	5 50	53	57 55	57 53	59 52	11	53
Maximum	8 4	56	561	58	5.8	5.56	5.9	5 60	56 4	64 6	67 69 59 61	70	2 62	67	2 65	58	5.66	58	508	60	62	58	59	56	58	61 59	59	64 55	65 56	52	63
Maximum	57	58	59	59	63	58	58 5	58	59 5	58 5	68 65 59 59	660	69 0	69	9 60	58	58 58	64	60	59	59	59	59	58	59	52	65 56	57	62 58	56	58
September Maximum	54	55	54	61 55	58 5	53	58 5	59	59 6 52 5	60 6 53 5	60 61 53 54	61	1 58	54	4 54	53	5 56	53	22	5.3	4 9	54 48	404	57	52	53	52 48	47	49	1 1	56 52

SNOHOWISH RIVER BASIN--Continued

12-1382. SULTAN RIVER AT SULTAN, WASH.

27.7 4.8 6.8 7.2 7.2 1.7.7.1 1.1.1 1.9.1 1.9 照 LOCATION:--at bridge on U.S. Highway 2, at Sultan, Snohomish County, 0.2 mile upstream from mouth, and 10.6 miles downstream from gaging station near Startup. REMARKS:--No discharge records available. mhos at 25°C) 2639 263 263 263 263 263 33937 73462 Specific ance micro-So-Hum ad-sorp-tion ratio Non-car-bon-10001 00000 00000 Hardness as CaCO, Cal-clum, Mag-ne-stum 16 29 25 16 10 28222 3110 Tons day Dissolved solids (residue at 180°C) Tons per acre-foot per million 223322 26 23 30 23 23 28333 Parts Chemical analyses, in parts per million, July 1960 to September 1961 Fluo- Ni- phos-ride trate phate (F) (NO₂) (PO₄) 28288 28222 55855 <u>1,0,0,4,4</u> 20,000 34.400 8.4.00 70077 00040 52225 Chloride 500000 <u>ਹ</u> 04840 22.4.6 4 4 4 6 0 8 Sulfate ĝ Bi-car-bon-ate (HCO₃) Bi-car-bon-38 32 118 26444 388 338 Po Firm (X 0 - - 0 -4000-87.681 Sodium (Na) 3.3 3.59 Mag-ne-stum (Mg) 20044 - 9916 3.50 6.6.6.4 3.0.4.0.0 က် ရှိ ရှိ (၁) Fe) Silica 1 0.00.00.4 0.40.00.00 4.6.44 7.6.4.0.0 Mean discharge (ro (cfs) Aug. 18. Sept. 19. Oct. 18. 20. 16, 1961.... 16 May 9.
June 13.
July 12.
July 12.
Sept. 21. July 20, 1960.... Date of collection Dec. Jan. Feb. Mar.

SNOHOMISH RIVER BASIN--Continued

12-1485. TOLT RIVER AT CARNATION, WASH.

LOCATION. --At bridge on State Highway 158, 0.2 mile downstream from Langlois Creek, 0.2 mile upstream from mouth, 0.8 mile south of Carnation, King County, and 7.9 miles downstream from gaging station.
PARINGE ARRA.—31.4 square miles, upstream from gaging station.
RECORDS AVAILABLE.—Chemical analyses: July 1960 to September 1961 (discontinued).
RECORDS AVAILABLE.—Chemical analyses: July 1960 to September 1961 (discontinued).
REMARKS.—Inflow between gaging station and sampling point includes that of Stoessel Creek which is approximately 2.5 percent of the total flow at sampling point.

Date Mean Silica Front Claim Face Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Silica Cal. Mean Mea					- -				_	.
Mean Silica Iron Cal- Mag- Sodium Iaa- Car- Don- Suliate Sodium Iaa- Car- Car- Sodium Iaa- Car-										
Mean Cal Mag Po Cal Mag Mag Po Cal Mag Cal Mag Mag Po Cal Mag M		Specific con-	duct- ance (micro- mhos at 25°C)	51 59 50	60 K	4.85	4	36	20	41
Mean Silica Iron Cium sime Nodium Has bon- Suliate (SiQa) (Fe) (Cal. Mg) (R) (R) (R) (R) (R) (R) (R) (R) (R) (R										
Mean Silica Iron ctum Silica Iron ctum Silica Iron ctum Silica Iron ctum Silica Iron ctum Silica Iron ctum Silica Iron ctum Silica Iron ctum Silica Iron ctum Silica Iron ctum Silica Iron ctum Silica Iron ctum				0000	00 0		0	00	0	o 01
Mean Silica (sta) From ctum Ring From ctal From ctum From ctum Ring From ctum From ctum From ctum From ctum From ctum From ctum From ctum From ctum Ring From ctum From ctum From ctum Ring From ctum From ctum From ctum From ctum Ring From ctum Ring From ctum Ring From ctum From ctum Ring From ctum Ring From ctum From ctum Ring From ctum Ring From ctum From ctum Ring Ring From ctum From ctum Ring Ring From ctum From ctum Ring Ri		Hardn as Ca(21 18 22 19	12	64	17.	<u> </u>	20	10,26
Mean discharge (Sida) (Fe) (Ca) (Mag. Sodium time. Sodium		solids : 180°C)								-
Mean discharge (Sida) (Fe) (Ca) (Mag. Sodium time. Sodium		solved due at	Tons per acre- foot							
Mean (Silica fron Cal- (fs) (SiQ _b) (Fe) (Ca) 176 8.0 6.0 160 8.5 7.5 5.5 1,850 6.7 4.0 2,340 7.1 4.0 889 7.1 4.0 890 7.7 4.0 650 7.7 4.0 650 7.7 4.0 184 8.5 7.0 184 8.5 7.0 184 8.5 6.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 185 8.0 186 8.	r 1961	Dis (resi	Parts per million	36 42 41 34	26	388	88	30	35	4 4
Mean (Silica fron Cal- (fs) (SiQ _b) (Fe) (Ca) 176 8.0 6.0 160 8.5 7.5 5.5 1,850 6.7 4.0 2,340 7.1 4.0 889 7.1 4.0 890 7.7 4.0 650 7.7 4.0 650 7.7 4.0 184 8.5 7.0 184 8.5 7.0 184 8.5 6.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 185 8.0 186 8.	tembe		Phos- phate (PO4)	8888	8 8	8 8 8 8		5.5	8	8.5
Mean (Silica fron Cal- (fs) (SiQ _b) (Fe) (Ca) 176 8.0 6.0 160 8.5 7.5 5.5 1,850 6.7 4.0 2,340 7.1 4.0 889 7.1 4.0 890 7.7 4.0 650 7.7 4.0 650 7.7 4.0 184 8.5 7.0 184 8.5 7.0 184 8.5 6.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 185 8.0 186 8.	o Ser		rate No.)		4. 0	4.10.1	; 4 .	4.0	٦.	4 .
Mean (Silica fron Cal- (fs) (SiQ _b) (Fe) (Ca) 176 8.0 6.0 160 8.5 7.5 5.5 1,850 6.7 4.0 2,340 7.1 4.0 889 7.1 4.0 890 7.7 4.0 650 7.7 4.0 650 7.7 4.0 184 8.5 7.0 184 8.5 7.0 184 8.5 6.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 185 8.0 186 8.	960 t		Fluo- ride (F)	0.404	ਜ਼ ਹ	<u> </u>	? न	٠,0	0	<u></u>
Mean (Silica fron Cal- (fs) (SiQ _b) (Fe) (Ca) 176 8.0 6.0 160 8.5 7.5 5.5 1,850 6.7 4.0 2,340 7.1 4.0 889 7.1 4.0 890 7.7 4.0 650 7.7 4.0 650 7.7 4.0 184 8.5 7.0 184 8.5 7.0 184 8.5 6.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 185 8.0 186 8.	n, July 1			0.8 1.0	1.2	4	0.00	63 10	80.1	1.2
Mean (Silica fron Cal- (fs) (SiQ _b) (Fe) (Ca) 176 8.0 6.0 160 8.5 7.5 5.5 1,850 6.7 4.0 2,340 7.1 4.0 889 7.1 4.0 890 7.7 4.0 650 7.7 4.0 650 7.7 4.0 184 8.5 7.0 184 8.5 7.0 184 8.5 6.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 185 8.0 186 8.	r millio			0404	8 4			9.0	3.6	4.0
Mean (Silica fron Cal- (fs) (SiQ _b) (Fe) (Ca) 176 8.0 6.0 160 8.5 7.5 5.5 1,850 6.7 4.0 2,340 7.1 4.0 889 7.1 4.0 890 7.7 4.0 650 7.7 4.0 650 7.7 4.0 184 8.5 7.0 184 8.5 7.0 184 8.5 6.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 185 8.0 186 8.	ts pe	į	bon- ate (CO ₃)							
Mean (Silica fron Cal- (fs) (SiQ _b) (Fe) (Ca) 176 8.0 6.0 160 8.5 7.5 5.5 1,850 6.7 4.0 2,340 7.1 4.0 889 7.1 4.0 890 7.7 4.0 650 7.7 4.0 650 7.7 4.0 184 8.5 7.0 184 8.5 7.0 184 8.5 6.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 185 8.0 186 8.	in par			22 22 28 28	13	222	181	17	24	32
Mean (Silica fron Cal- (fs) (SiQ _b) (Fe) (Ca) 176 8.0 6.0 160 8.5 7.5 5.5 1,850 6.7 4.0 2,340 7.1 4.0 889 7.1 4.0 890 7.7 4.0 650 7.7 4.0 650 7.7 4.0 184 8.5 7.0 184 8.5 7.0 184 8.5 6.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 185 8.0 186 8.	ses,	É	tas- sium (K)	0.1	•	بببر		۲. ۵		r. 4.
Mean (Silica fron Cal- (fs) (SiQ _b) (Fe) (Ca) 176 8.0 6.0 160 8.5 7.5 5.5 1,850 6.7 4.0 2,340 7.1 4.0 889 7.1 4.0 890 7.7 4.0 650 7.7 4.0 650 7.7 4.0 184 8.5 7.0 184 8.5 7.0 184 8.5 6.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 184 8.5 7.0 185 8.0 186 8.	al analy			1.7	1.3	i i i i	# S	1.5	1.6	1.8.1
Mean (site) (Fe) (cfs) (ffs) (cfs) (ffs) (Chemic	Ş	nag- ne- sium (Mg)	1.5	9. 0			۲. 6	9	8.6
Mean Silica (510,4) (5			ctum (Ca)	5.5	4. 4	* m * *	5.0	4. 4 10. 10	7.0	5.0
Date Mean Silica of discharge (SiQ ₄) Luly 20, 1960. 176 8.0 Aug. 18 1960. 176 8.0 Aug. 18 1960. 176 8.0 Aug. 18 1960. 178 8.0 Soct. 18 1960. 1860. 178 Sov. 17 1960. 1960. 1860. 178 Rey 9. 2, 340 6.0 Third 12 990 7.3 Third 12 990 8.4 Third 12 1860. 1860			Iron (Fe)							
Date Mean of discharge (collection (cfs) (Silica (SiQ ₂)		6.7	.000	7.7			
Date Of collection of collection 10.1 20, 1960. Mag. 18. Sopt. 19. Sopt. 19. Sopt. 19. Sopt. 19. Sopt. 19. Sopt. 19. Sopt. 19. Sopt. 19. Sopt. 19. Sopt. 21. Sopt. 21.			Mean discharge (cfs)							
				July 20, 1960 Aug. 18 Sept. 19	Nov. 17.	Jan. 16, 1961	Apr. 19	May 9	July 12	Aug. 21

SNOHOWISH RIVER BASIN--Continued

12-1555. SNOHOMISH RIVER AT SNOHOMISH, WASH

LOCATION: --At gaging station, at bridge on State Highway IA at Snohomish, Snohomish County, and 0.8 mile downstream from Pilchuck River. DRAINAGE AREA (Tevised).-1,714 square miles.

BRACHORS ANALALLEL.-1. The Square miles.

Water temperatures: July 1959 to September 1961.

Water temperatures: July 1959 to September 1961.

Water temperatures: July 1959 to September 1961.

Water temperatures: July 1959 to September 1961.

Water temperatures: July 1959 to September 1961.

Water temperatures: Maximum, Water 1962.

Water temperatures: Maximum, Water 1964.

Water temperatures: Maximum, Water 1964.

Water temperatures: Maximum, Water 1965 minimum, Water 1969.

Water temperatures: Maximum, Water 1969 minimum, Water 1969.

Water temperatures: Maximum, Water 1969 minimum, Water 1969.

Water temperatures: Maximum, Water 1969.

Water temperatures: Maximum, Water 1969.

Water temperatures: Maximum, Water 1969.

Water temperatures: Maximum, Water 1969.

Water temperatures: Maximum, Water 1969.

Water temperatures: Maximum, Water 1969.

Water temperatures: Maximum water 1969.

Water temperatures: Maximum water 1969.

Water temperatures: Maximum water 1969.

Water temperatures: Maximum water 1969.

Water temperatures: Water 1969.

Water temperatures: Water 1969.

Water temperatures: Water 1969.

Water temperatures: Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 1969.

Water 19

	fie					7.1	7.1					7.9						
	Specific	duct- ance (micro- mhos at 25°C)	44	37	46	3	49	33	42	29	33	40	77	39	46	37	000	8 8
	ģ.	ad- ad- Borp- tion ratio																
	688 30s	Non- car- bon-	0	Η	H	-	•	0	0	0	0	00	•	0	0	5	5 6	5
	Hardness as CaCO _s	Cal- ctum, Mag- ne- stum	16	14	16	14	18	12	16	10	12	14	•	14	17	*:	1 9	3 7
	solids 180°C)	Tong per day	1	ì	1		1	1,880	ŀ	;	1,680	1,370	006 47	1,840	;	l	1 2	# ! 6
r 1961	Dissolved solids (residue at 180°	Tons per acre- foot	0.05	, 0 4	.05	. 04	.05	.04	.05	.03		4.6	3.					2.0
September 1961	Dis (rest	Parts per million	35	30	40	31	40	30	37	25	27	31	77	32	32	27	0 0	32
ţ		Phos- phate (PO4)	0.01				10.	10.	60	5	.02	8.8	3					18
October 1960		Ni- Trate No.	0.5				æ.					9.0		æ.				
ctobe		Fluo- ride (F)	0.1				°.					••						<u>; o</u>
er year (Chloride (C1)	1.2	œ.	1.5	1.0	1.5	ıö.	1.2	œ.	æ.	90 H	ċ.	œ.	1.5	1.0		1.2
million, water year		Sulfate (SO4)	2.8	3.5	3.8	3.2	3.8	2.2	3.0	2.0	2.4	e .	7	3.5	3.4	2.8	9.0	1 80
		(CO)																
parts per	Bi-	car- bon- ate (HCO ₂)			19		22	14				81.5		18	27	16	2,5	172
in pa	ģ	E sa ta ta ta ta ta ta ta ta ta ta ta ta ta	ı		.5			4.						c,	4.	*:		<u> </u>
analyses,		Sodium (Na)			1.7		1,9					1.6						1.6
	25,	stum (Mg)			6.		1.0					4.0		_				
Chemical		다. (2) 제 (2)	4.5	4.0	5.0	4.5	5.5	4.0	4.5	- -	4.0	0.0	 	4.5	5.0	4.	***	4.4
		Iron (Fe)																
		Silica (SiQ _e)	6.3	5.9	7.6	6.5	8.3	5.9	7.5	5.6	6.1	7.1	ر د. ع	7.2	6.9	60	÷ .	9.6
		Mean discharge (SiO ₂) (cfs)	1	;		ł	l	23,230	l	l	23,060	16,390	92,300	21,240	!	1	1 9	13,020
		Date of collection	ct. 1-31, 1960	fov. 1-20	Nov. 21-Dec. 9	Dec. 10-27	Jan. 4, 1961	Tan. 5-19	Jan. 20-27	Ian. 28-Feb. 3	Feb. 4-11	Feb. 12-20	reb. 21, 22	Feb. 23-Mar. 5	War. 6-13	War. 14-29	Mar. 30-Apr. 4	Apr. 17-May 15

SNOROWISH RIVER BASIN -- Continued

12-1555. SNOHOMISH RIVER AT SNOHOMISH, WASH. -- Continued

			Chemi	Cal ar	alyses	, in par	ts pe	r mill1	on, w	ater yea	Chemical analyses, in parts per million, water year October 1960 to September 1961 Continued	r 196	to	Septem	ber 1961	Cont.	tnued					
	,						å	-IBI	į						_	Dissolved solids (residue at 180°C)	olids 180°C)	Hardness as CaCO ₃		8.	specific con-	į
Date of collection	Mean discharge (cfs)	Stilca (StO ₂)	(Fe)	Can (Can (Can)	(Mg)	Sodium (Na.)	K in the state of	Car- bon- ate (HCO ₂)	00 mg (%)	Sulfate (SO4)	Chloride (Cl)	Fluo- ride (F)	Ni- trate (NO ₂)	Fluo- Ni- Phos- ride trate phate (F) (NO ₂) (PO ₄)	Parts per million	Tons per acre- foot	Tons per day	Cal- cium, Mag- ne- stum	Non- car- bon-	ad- ad- forp- tion ratio	duct- ance (micro- mhos at 25°C)	Hq
May 16- June 15, 1961	16,420	4		3.6	ĺ		L			1.4	}	ı		0.01	23	1	1,020	80	0		27	6.9
June 16-28		4.0		4.						80		•		5.5	80 6			97	00		26	7.0
July 19-24	11	. 8		4.0	. r.	1.0	9.00	24		0 4	. T			2.6.	3 8	30	; ;	17	50		47	7.0
July 25-Aug. 29	;	۲.		7.0						3.2			80.	.04	41		;	21	0		9	7.0
Aug. 30-Sept. 12	1	ωį		9.6						4.0		0.0	ıı, c	5.0	\$:		;	17	00		848	
Sept. 13-30				9	- [3.4		-	?	3	44	- 1	;	77	7	1	8	:
Time-weighted average	1	6.5		4.7	0.7		1.6 0.5	19		89	1.2	1.2 0.1	9.0	0.6 0.02	32	0.04	ł	15	0		41	41

Temperature (°F) of water, water year October 1960 to September 1961

	Aver-	age	52 43 41	35\$	\$ 50 E	2.05 2.05
Ī		31	313	213	\$21	\$21
l		30	243	213	304	8 2 2
l		29	48.4	213	722	8 9 %
l		28	3 W 3	223	744	2 9 9
		27	4 8 4 2 8 4	3 3 3	2 4 8 2 8 8	266
		26	42 38	979	388	2 9 2
l		25	38.4	3 3 3	\$ 10 m	25%
1		24	28 28 0	774	4 50 50	286
		23	32 40	233	248	2 2 2
		22	479	£ 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	\$5 52 57	86 86 86
		21	6.0 4.3	3 4 4	2 5 8 2 5 8	21%
		20	84.4	311	220	2 8 8
		19	53 44 41	333	52 2	8 8 0
1		18	52 44 41	333	\$25	989
1		١2	52 44 41	774	\$22	6.8 6.8 6.1
	Day	16	244	171	300	313
		15	0.44	171	3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	63 61
		14	52 45 41	121	3 4 6	888
		13	244	122	4 4 0 4 4 4	65 63
		12	8 4 1 1	\$ # # # # # # #	46 52	65 67 61
		11	50 44 40	£ 4 £	4 4 5 2	65 67 61
		10	51 45 42	6 4 6 4 8 8	46 49 52	62 67 61
		6	52 45 38	5 5 4	242	251
		8	50 46 39	4 5 2 2	4.5 4.8 5.2	62
1		7	52 45 39	\$ 5 7	44 47 52	62 67 61
		9	53 44 42	444	542	60 67 61
		2	53 45 41	3 2 3	222	61 67 61
1	i	4	58 46 43	8 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	4 4 2 2 2	61 67 60
		3	94	38 42 43	4 4 8 8	61 67 60
		7	58 47 43	38	4 4 7 8 6	55 67 60
		-	58 48 43	0 4 4 0 5 5	5.5 5.2	55 67 60
	Manch	iiiuowi	October November December	January February March	April May. June	JulyAugust

STILLAGUAMISH RIVER BASIN

12-1677. STILLAGUAMISH RIVER NEAR SILVANA, WASH.

LOCATION: --At bridge on U.S. Highway 99, 1.5 miles east of Silvana, Snohomish County, and 7 miles downstream from confluence of the North and South Forks. RECORDS ANLARIA: --Chemistream analyses: July 1969 to September 1961. REMARKS.--No discharge records available.

		E.	7.4	7.4	7.5	2.5	1.7		51 7.4	2.5	7.7	7.1	7.4	7.7
	Specific	duct- ance micro- mhos at 25°C)	82	64	28	99	2 5	3	27	8 8	÷ (29	2	2
		ad- sd- Borp- tion ratio												
	ess 503	Non- car- bon-	٥	-	cv .	0	5 6	•	0	0	0	0		•
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	34	20	77	2	14	3	8	12	12	22	37	22
ij	Dissolved solids (residue at 180°C)	Tons per day												
er 196	Dissolved solids esidue at 180°	Tons per acre- foot							_					_
Septem		Parts per million					8 8		39	28	56	40	28	41
60 to		Phos- phate (PO_4)	0.01	8	6	60.	4.0 S.S.	3	.03	.02	.02	8	8	0
er 19		Ni- trate (NO ₃)							6.	~		e.		o.
Octob		Fluo- ride (F)		_		7.			۲.	•	9	Ļ	-:	٥.
million, water year October 1960 to September 1961		Chloride (Cl)	2.2	1.0	1.2	1.5		-	1.0	1.0	æ.	1.0	20	1.2
ion, wat		Sulfate (SO ₄)	4.0	3.2	4.0	9.0	0.0		2.4	80	2.0	89.	3.6	3.2
r m11		CCO.												
rts pe		car- bon- ate (HCO ₂)	43	23	27	8	16	•	24	19	18	30	\$	8
in pa	ě	tas- sium (K)		_			٠.	:	۳.	'n	e.	₹.		.7
Chemical analyses, in parts per		Sodium (Na)	2.5	1.5	1.7	2.1	, ,	;	1.5	1.1	1.0	1.7	2.6	1.9
cal an	201	nie- stum (Mg)	2.6	1.8	1.5	1.8		۲.5	1.2	6.	6.	1.8		1.2
Chemi		Cal- ctum (Ca)	9.5	2.0	7.0	8.0	4.0		9.0	4.5	5.5	7.0	9.0	8.0
		Iron (Fe)							_					
		Stlice (StO _e)		•	•	•	4.0	•		5.1				
		Mean Sill discharge (Signature) (Cis)		_										
		Date of collection	t. 4, 1960	v. 4	.v. 30	л. 3, 1961	Feb. 2.		r. 19	y 3	ne 5	1y 5	8. 3	Sept. 6
Į	ļ		8	ž	Š	4	e ;		ΨĎ	를	ž	3	Ψď	Se

STILLAGUAMISH RIVER BASIN--Continued

12-1685. PILCHUCK CREEK NEAR BRYANT, WASH.

LOCATION .- Temperature recorder at gaging station, 500 feet upstream from highway bridge, and 2 miles north of Bryant, Snohomish

DRAINAGE AERA (revised) --52.0 square miles.
RECORDS AVAILABLE.-"mater temperatures: March 1952 to September 1961.
RECORDS 1960-61.--"mater temperatures: Maximum, 78°F July 13; minimum, 36°F Jan. 27-29.
RETREMES, 1960-61.--"mater temperatures: Maximum, 82°F July 28, 1958; minimum, 33°F Mar. 7, 1955, on several days during winter months in 1960.

September 1961	Average	23 24 25 26 27 28 29 30 31	52 52 51 50 49 49 49 48 48 49 50 51 51 50 49 49 49 48 48 48 49	43 43 43 42 41 42 43 44 43 43 43 42 41 41 41 42 44	40 40 40 40 40 40 40 40 40 40 40 40 40 38 37 37 39	38 40 40 38 37 35 38 41 41 40 38 38 38 37 35 35 35 38 41 39	42 42 41 41 40 40 40 42	42 42 42 42 42 42 43 43 44 41 42 42 42 42 42 42 41 42 43 43 40	43 44 44 44 47 47 47 47 44 43 43 44 44 47 47 47 45 43	55 54 58 58 54 54 54 54 56 51 53 51 54 54 51 50 54 53 53 49	68 70 66 64 61 62 60 62 64 61 62 69 57 57 59	68 65 72 74 68 66 70 72 71 70 63 62 60 64 66 64 62 62 63 63	70 67 68 66 67 68 68 66 64 71 63 64 62 61 61 59 61 63 61 64	55 53 56 55 54 54 52 49 57 51 50 52 52 53 52 49 49 54
		22	52	4.5	44	46	4 1 4 1	44	4 4	5.5	59	71	72	52
<u>د</u>		21	22	4 4	4 0 4 1	14	111	404	4 4 9	55	58	67	72	54
1960		2	51	4 4	417	41	1,0	4 7 4 7	4 4	58	69	67	72	26
		٥_	4 4	11	4 1	45	44	45	42	5.8	7.1	75	73	58
October		18	4 4 0 8	11	38	4 4	3 3	42	4,2	53	57	74	5 2	58
			0.04	4 4	38	1 1	4 10	42	4 4	52	71	74	68	56
year	Day	2	0.4	4 4	38	44	1.1	45	4 6	53	63	70	69	62 58
water		15	50	4 4	38	11	4.4	42	43	4 4	60	75	71	60
		-	4 4	4 t 5	4 0 4 0	4 7 7	41	4.1	45	4 4	58	75	75	58 55
water		73	4 4	2 4 50	4 4 2	45	41	41	42	47	5.5	78	73	61 56
of we		12	4 4	24	4 0 4 0	44	6,04	38	4 4	44	55	92	72	61 55
		=	4 4	4 4	46	4 4	4 4	38	4 4	46	57	72	75	60 55
(°F)		2	4 4	4 4 n n	38	475	4 4	3 4	4 6	4 5	53	61	74	59 55
Temperature		٥	8 4 4	2 4 5	38	41	4.4	39	4 4	4 4 50	57	59	71	5.4
erat		80	51	4 4 70 70	38	4 4	6 4 4	99	44	42	54	57	72	53
di		7	5,2	45	38	39	43	39	44	4 4 5	9,9	57	73	55
-		9	4.6	4 4 70 70	38	39	4 4 6 60	37	4 4	4 4	409	58	72	58 56
		2	52	4 5	39	38	43	36	43	4 4	64 61	588	69	58
		4	5.5	47	45	38	42	36	4 4 0 4	4 7 7	65	68	71	59
		က	5. 5.34	4 4 7 4	4 2 4 2	37	41	36	4 4	45	65	60	75	57 57
		7	53	64	43	37	4.4	39	4 43	4 4 4 6	65	67	4.6	57
		-	52	9 4	4 4	37	4 4	4 4	4 4	4 4 6 4	62 56	59	73	61 56
	Month	Month	October Maximum		December Maximum	January Maximum	February Maximum	Maximum	April Maximum	Maximum	Maximum	Maximum	August Maximum Minimum	September Maximum Minimum

~, .._..

SKAGIT RIVER BASIN

12-1790. SKAGIT RIVER AT MARBLEMOUNT, WASH.

LOCATION: --At Cascade Road bridge at Marblemount, Skagit County, 2.5 miles downstream from Diobsud Creek, and 7 miles downstream from gaging station. DRAINAGE AREA (revised) --1,274 square miles, upstream from gaging station, of which 400 square miles is in Canada.

RECORDS AVAILABLE. --Chemical analyses: July 1959 to July 1960.

Rater temperatures: January 1953 to September 1961.

EXTREMES, 1966-61.--Factor temperatures: Maximus, 66°F July 30°, minimum, 38°F Reb, 19-23, Mar. 4.

EXTREMES, 1963-61.--Water temperatures: Maximum, 56°F July 30, 1961; minimum, 38°F Mar. 1, 1956.

EXTREMES, 1963-61.--Water temperatures: Maximum, 66°P July 30, 1961; minimum, 38°F Mar. 1, 1956.

		Нq	7.2	61 7.4 46 7.3
i	Specific con-	duct- ance (micro- mhos at 25°C)	51	61 46
i	-òg	ad- ad- sorp- tion ratio		
		Non- car- bon- ate	12	0
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	22	20 20
	Dissolved solids (residue at 180°C)	Tons per day		
	solved due at	Tons per acre- foot		
1961	bid (resi	Parts per million		38
July		Phos- phate (PO.	0.01	.0 .1 .2 .00
60 to		Fluo- N1- P ride trate P (F) (NO ₃) (0.2	4.4
er 19		Fluo- ride (F)	0.0	1.0
Chemical analyses, in parts per million, October 1960 to July 1961		Chloride ride (Cl) (F)		
er millic		Sulfate (SO ₄)	4.6	3.6
rts pe		bon- ate (CO)		
in pa		car- bon- ate (HCO ₂)		31
yses,	É	E Signal	6.3	
cal anal	!	Sodium (Na)		
Chemic	20,4	nie- nie- sium (Mg)	ľ	. 7
		Cal- ctum (Ca)	7.5	9.5
		Iron (Fe)		
		Silica (SiO ₂)	9.6	5.8
		Mean discharge (cfs)	4,170	5,260 10,800
		Date of collection	Oct. 5, 1960	Apr. 20.

SKAGIT RIVER BASIN -- Continued

12-1970, SKAGIT RIVER AT MARBLEMOUNT, WASH .-- Continued

						Te.	pera	Temperature	£	of of		water,		water	year		October	19	1960	to 3	September	equi.	r 1961	19						
														_	Day															V
		2	3	5	9	_	80	٥	2	=	12	13	4	15	2	17	8	9	2	17	22 2	23 2	24 2	25 2	26 2	27 28	8 29	3	3	Average
	51 5	51 5	51 51		51 51	12	1 51	50	50	9.0	50	20	50	50	20	20	0.5	50 5	20	50 5	50	50 50		50 50	20	8 4	84	4.8	84	50
		_	_		_					20	20		20		20											_		·	4	05
	_		48 48	_	48 48	4		_	48	4 8	47		4.7		47													_	1	47
	484	48 4	48	_	48 48	48	8 48	48	48	47	9	47	47	47	47	47	45	404	45 4	45 46		94 94	_	45 45	£ 2	5 45	4	<u> </u>	!	47
	- 1	4 4 4	77 77	_	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4		4	74	4 4	4 4	43	43	43	43	43	- -	43	_	43 43		43 43		43 43	43		45	_	7,	43
				_			4	7.7		44	43		43		7				43				-			3 42	_	45	45	43
		42 4	42 42					4.		4.1	7		1,		0,4			4 04	7 0 4		-0 -0			39 39	39		39	33	39	9
	45		42 45	_	41 41	3	4	4	41	40	7	4	7	0,4	0.4	04	- 04			9	_	39 39	_		_	9 39	_	_	33	9
	39 3	39 3	39 39		39 39	33	39	39	39	3.9	39	39	39	9 9	39	3.9	3.39	39	388	38 38		39 39 38 39		39 39	33	9 9	11		11	39
	39	39	39 39		39 39	39		39		0 4	39		39	_	04		-0,	4 0 4		41 41		41 41	_			2 42		- 7	4.	9
	39	39 3	39 38	_	39 39	_	33	_	39	33	39	33	39	33	0,4	9		1 07	- 0 7	43 41	_	41 41	_	41 42	2 42	_	7		4 1	ç
4.4	41		41 41		417	33	1 42	7 7	42	45	245	2 7	1,1	7 7	643	27.	24.5	77	7 7 7	45	77	43 43		42 42	77	2 45	42	77	11	45
r	_	_				_	_	_		,	,	_	;		;						_	_		_		_				:
~ ~	454	45 4	42 42		42 42	2 4	6 4 3	2 4	43	4 4 3	6 4 3	6 4	7 7 7	4 4	44	11	44	44 44	44	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	44	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		4 t t t t t t t t t t t t t t t t t t t		45 45	2 4	2 4	4 4	4 t
		_		_		_				1						,											9	_		
, ,	t t	4 10 4	45 45		45 45	4 4	5 4	4 4	4 4	4 U 10	4 5 5	4 4	t t		4 4	_	7 7	_										4 4		9
~	404		50		51 49	- 64	- 6	50		51		53	52		25					-	53	53 52		53 53		53 53	53	3 56	53	52
~	48	_	49 50	_	49 49	64	_		20	30	51	5	25	2	25	5	51	52 5	25	52 5	52	52 52		52 5		53 53			-	51
	53	53.5	54 54		53 54	5.5	3 53	533	53	533	53	53	53	53	53	50.00	533	54	53.4	488	53 45	53 53		53 53		54 54	53	52		4 6
			52 52		52 51		1 21		52	51	51	5.	22	20	51	51	21	51 5	55	51	22.2	51 51		51 51	12.2	1 51	12.	25	11	12.
••	53	52	52 5		51 50	20	_	20		3		2	2		2	_		_	_	_	_	_	_	_	_	_	_	_	<u> </u>	7

SKAGIT RIVER BASIN -- Continued

12-1825. CASCADE RIVER AT MARBLEMOUNT, WASH.

LOCATION.--Temperature recorder at gaging station, 1.5 miles downstream from Boulder Creek, 2 miles east of Marblemount, Skagit County, and 2.5 miles upstream from mouth.

BALIMAGE AREA (revised).--168 square miles.

RECORDS AVAILABLE.--Water temperatures: May 1952 to September 1961.

EXTREMES, 1960-61.--Water temperatures: Maximum, 58°F on several days during August; minimum, 37°F on several days during Pebruary and March.

EXTREMENT 5.1952-61. --Water temperatures: Maximum, 58°F July 27-29, 1958, on several days during August 1961; minimum, freezing point Feb. 1, 2, 18, 1956, Nov. 16, 1959, Jan. 19, 1960.

	Arrest	26 27 28 29 30 31 Mariage	47 46 45 45 44 45 48	40 39 40 40	39 39 40	40 40 40 39 39 39 40	39 99 99 99 99 99 99 99 99 99 99 99 99 9	00 10 10 00 00 00 00 00 00 00 00 00 00 0	38	41 42 43 44 43 49	Ct 14 74 74 74 74 74 74 74 74 74 74 74 74 74	43 43		***	51 51 51 50 50 50	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	53 53 52 51 52 54 51	54 55 55 56 53 57	76 66 66 76 76	49 48 48 47 47 50 47 48 47 46 46 49
1961		25	48	1,	40	0 4	9 6	, 60	37	4,	4	43	- 1	1	53	, t	2.2	52	25	0 4 0 8
ber		24	0, 00	0	9	4 4			37	4.5			- !	1	52			26		4 4 6 4
September		23	4 4 0 8	3	9	3 3	4 4	9 6	38	3.	7	43	- 1	!	52	5,7	52	56	<u></u>	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
		22	4 4 8 8	0	9	9 9	4 4	9 6	38	7,	3	42	-	ŀ	52		53	57		4 4
ţ		21	8 4 8	0,4	40	0 4	14.	3.0	38	9 9	4	41	-	1	50	,	53	58	<u>, </u>	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
1960		20	4 4	45	9	3 4	41		37	41		39	1	<u> </u>	20		25	58		5 6 4 0
		19	47	42	45	9 4	4.	3 5	37	4.1	1 1	4	- 1	!	5,	÷ 4	25	80 0	2	52
October		18	48	7	45	3 4	4.	38 +	38	7,	45	41	1	1	52		51	57	n n	52
		17	4 4 8 8	42	45	2 % 0 %	4 4	, 6	38	4 4	3 4	42	1	1	53	, r,	20	56	5	52
year	Day	16	4 4 80 80	45	4	3.3		9 6	36	9 9		45	1	1	25		25	58		20
water		15	4 8 4 7 4	7	4,1	0 4 6	41	30	33	4 4	42	41	1	!	52	, v	22	58	8	49
		14	47	42	41	0 4	1,1	, e	36	04.	4 5	0 4	1	ţ	20		25	80		S 8
water,		13	47	4.2	45	90,00	4.	30	36	0,5	4.3	41	- !	!	6 5	* 4	52	57	5	8 4
		12	41	4 2	42	39				9 6	, 5	6,4	1	ł	4 4		25	57		50 8 8
) of		Ξ	47	45	45	39	41	4	4	3	t 4	43	- 1	ŀ	7.4	£ 4	22	5.2	ř.	4 2 2
(°F)		10	4 4 7 ~ c		45	39			0,	9 9	4 4	43	1	1	7		21	57	, 1	51
ure		6	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	42	45	39	4 4	4	40	4 4	4 4	43	- 1	1	47	, t	20	57	<u>,</u>	51
erat		8	0 4 4	42	45	38			0,4	0 0	3 4	43	1	ŀ	7			57		48
Temperature		7	50	42	45	38	3.6	60	3	3 5	3	41	1	1	47	; ;	464	57	2	51
F		9	50	4 2	45	39				38			!	1	47		_	56		52
		2	9 4	42	45	41	8 8	0 7	0,4	37	43	41	1	1	-		51	56	2	52
ĺ		4	0 4 0 0	43	45	4.2	38	9	4	37	. 24	0,4	!	1	1		50	85.		52
		3	64	24.5	43	41	39	9 0	4	38	43	41	- 1	i	1	1 "	46	80.7	0	51
1		2	0.0	4		3.2				80 8			1	ì	1		_	80 5		51
l		-	50	2	45	4 1	39	40	39	98	4, 4	43	4 4	4	í	1 (47	58	4	52
	Mench	Month	October Maximum		Minimum	December Maximum	January Maximum	February	Minimum	Maximum	April	Minimum	May Maximum	Minimum	Maximum	July	Minimum	August Maximum	September	Maximum

SKAGIT RIVER BASIN--Continued

12-2005. SKAGIT RIVER NEAR MOUNT VERNON, WASH.

LOCATION .-At gaging station, at bridge on U.S. Highway 99, 1 mile north of Mount Vernon, Skagit County, and 3 miles downstream from Nookachamps Creek. DRINIAKBA RREA (revised).-3,903 square miles, of which 400 squares miles is in Canada. RECONDS AVAILABLE.--Chemical analyses; July 1959 to Scotember 1961.

			Hď	7.2	7.3	7.4	7.1	7.3	7.1	64 7.2	7.5	7.0	7.2	2.0	7.0
		02	duct- ance (micro- mhos at 25°C)	52	53	63	62	22	64	64	51	40	3	44	42
		ģ,	dium ad- Borp- tion ratio												
			Non- car- bon-	2	0	2	(3	٦	7	0	0	0	•	73	•
		Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	22	22	28	98	23	27	28	21	16	16	18	18
	11	Dissolved solids (residue at 180°C)	Tons per day												
	er 196	Dissolved solids esidue at 180°	Tons per acre- foot												
	Septemb	Dis (resi	Parts per million	34	39	45	48	35	44	44	33	29	32	32	32
	80 to		Phos- phate (PO.)	0.02	6.	.04	.01	.03	.03	.02	.01	.01	.02	0.	0.
	er 19		Ni- rate No.)	0.2	4.	٠.	۳.	4.	.03	6	۳.	e,	?	٦.	۲.
	Ctob		Fluo- Ni- P ride trate p (F) (NO ₂)	0.1	•	0	0	۲.	٦.	۲.	۲.	0.	7	۲.	۲.
	Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	0.2	8	8.	8	٥.	1.0	5.	ıÖ.	23	٥.	ις.	٠.
	lion, wat		Sulfate (SO4)	4.8	4.4	5.4	5.3	3.0	4.8	4.4	4.0	3.6	8.8	4.4	4.2
	r mil		1 to 2 to 2 to 2 to 2 to 2 to 2 to 2 to												
61.	rts pe	Bi-	car- bon- ate (HCO ₃)	24	26	30	53	27	32	31	52	20	8	21	27
er 19	in pa	Ė	tas- sium (K)	0.2	₹.	4.	5.	e.	ĸ?	4.	9.			'n.	9.
July 1959 to September 1961.	alyses,		Sodium (Na)	1.2	1.1	1.3	1.3	1.0	1.5	1.6	1.1	8 0.	∞.	1.1	1.1
959 to	cal an		nag- ne- stum (Mg)	1.0	∞.	1.6	1.4	1.3	1.5	1.5	6.	1.0		1.2	6.
July 1	Chemi		Call (Ca)	7.0	7.5	8.0	8.0	7.0	8.5	8.0	7.0	2.0	5.5	5.5	5.5
			Fe)												
analy			Silica (SiQ.)	6.2	6.5	7.7	7.6	9.9	9.0	8.1	6.3	2.0	9.0	2.1	5.5
-Chemical			Mean discharge (cfs)	8,030	16,000	15,300	13,200				22,500				11,900
RECORDS AVAILABLE Chemical analyses:			Date of collection	Oct. 4, 1960	Nov. 4	Nov. 30	Jan. 4, 1961	Feb. 2	Mar. 6	Apr. 19	May 3	June 5	July 6	Aug. 3	Sept. 6

NOOKSACK RIVER BASIN

12-2105. NOOKSACK RIVER AT LAWRENCE, WASH.

OCATION. --At bridge on State Highway 1 at Lawrence, Whatcom County, 5.1 miles downstream from gaging station at Deming, and 5.3 miles downstream from

South Fork.

South Fork.

DRAINAGE AREA (revised). --584 square miles, including 5 square miles in Canada, upstream from gaging station.

RECORDS ANIABLE. --Chemical analyses: July 1955 to September 1961.

Rater temperatures: September 1959 to September 1960.

REMARKS. --Minor inflow between sampling point and gaging station. Only discharges above 3,500 cfs are published.

400400 띥 Specific 823888 mhos at 25°C) 81 66 66 79 microance duct-COD 헣 orp-tion 0 - 4 0 0 4 444688 Nonate Hardness as CaCO, clem, Magitem 3888888 Per day Dissolved solids (residue at 180°C) Chemical analyses, in parts per million, water year October 1960 to September 1961 Tons
per
acrefoot 55 44 46 46 59 million Parts Fluo- Ni- Phos-ride trate phate (F) (NO₃) (PO₄) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 8888888 0.1 4.1-6.10.10 30000-0 -0---ö 0.8.8.8.0.0 Chloride 0.00000 <u>ញ</u> 41 0.8.2.8.4.0 0.4.2.8 Sulfate (SO₄) 9000 9.9.9.51 Car-HCO. Car-33,683,338 Po-Stum (K) 4.44446 Sodium (Na) 2.00 21.32.13 924022 Mag-ne-stum (Mg) 12 10 12 12 6.5 10 7.5 7.0 8.0 Cal Ca) Fon (Fe) Siltes (SiQ_s) 0.00.00.00 0.00.00.00 42008 Mean | discharge | (e) (cfs) 9,39 6,340 Oct. 4, 1960....
Nov. 4.
Jac. 1.
Feb. 2.
Mar. 6. May 3.
June 5.
Aug. 3.
Sept. 6. Apr. 19..... Date of collection

PEND OREILLE RIVER BASIN

12-3482, BITTERROOT RIVER NEAR CORVALLIS, MONT,

LOCATION.--Temperature recorder at gaging station, 20 feet downstream from present highway bridge, 1.2 miles downstream from Blodgett Creek, and 1.5 miles west of Corvallis, Ravalli County.

DRAINGE AREA.-1,711 square miles.

EXTREMES, 1960-61.--Water temperatures: Maximum, 74°F on several days during July and August; minimum, freezing point on many days during

Maximum, 74°F on several days during July and August 1961; minimum, freezing point on many days December to March.

EXISTERS, 1959-61. - After temperatures: Maximum, 74°F on several days during Juiduving winter months each year.

REMARKS. - Recorder stopped Dec. 9 to Jan. 10; range in temperature 32°F to 35°F.

Temperature (°F) of water, water year October 1960 to September 1961

								E.	Water-stage recorder	-sta	ge 1	eco	rder	with		empe	rat	ure	att	temperature attachment/	ent	_										
Meash																Day																Average
Month	-	2	ဗ	4	5	9	7	8	6	0.	=	12 1	13	141	15 1	161	17 1	8	61	20 2	21 2	22 2	23 2	24 2	25 2	26 2	27 2	28 2	29	30	31	UACIONS.
October Maximum	58	8	57	57	8	26	55	*	22	60	53	20	64	20	6,6		51.4	6.7	84	0,	50	25	5.15	- 20	80 1	- 4	9 4		9	4:	9	27
Minimum	25	2	20	20				7		<u> </u>		m											_			_			_	-	<u></u>	•
Maximum	47	46		ž,	43	4 2	43	7 7	0,4	41		7 7								0,4		38	38 4			9	38	36	33 3	34	1	41
Minimum	45	43	£3	45		38		39	_	38	414	7	9	7	39 3	39	39	7,	38		38	_		38 4	40	_					-	39
December				-														_									_			_		
Maximum	3 6	333	35	35	333	333	33	۳ م م م	11	1 1	: i		11	1 1	! 	1 1	 	 	 	<u></u> 	! 	<u></u> 	<u> </u>	<u> </u>	11	<u> </u>	<u> </u>	<u></u>	<u> </u>			; ;
January Maximum	ŀ	1	1	- 1	1		i	-	1	-		35							36			_				_	_	33		<u></u>	35	1
Ħ	1	1	1	1	i	1	i	;	Ť	-	34	33	33	35	36	36	35 3	36		32	32	32	32	32	32	32 3	323		32 3	35	33	;
February	ď	27	7			9		9		0		- 4	- <u>"</u>		37		3.2								- 04		37	 9	- ;	1		80
Minimum	3 6	. 4	4			35.0	34	3 6	7	3 6	3 6	3 4				35		46		36		36	35.5	33		34		_	_	1	1	35
March		. ;				: :	_				_											_										
Maximum	38	37	37	36		37	9	33	39	7	33	9 1	45		43	_	45	5 6		*			_	*	* * * * * * * * * * * * * * * * * * *	*	77	-		, ·	£ .	7 5
A-cil	36		2	32	33	34	_		_	35	-	5	_	7	_	- -			\$ 8	_	ر د	20	1					, 8	<u>پ</u>		7	ò
Maximum	4	- 84	47	43		4		7		7 7	- 4	2				64			4 9 4		48		454	48	4 6 4	47 5	515	54		21	-	94
Minimum		7	42	38	37	37	38	39	38	33		41	39	37	39	39 4	45	45		39		45 4	<u>†</u>			* 0;	_	_	7 9 4	٠	!	41
May	4	9	0,7			4	7 7 7	0							4																-0	0.5
Minimum	, 4			7	9	7 7		42	5, 1	9 4		45	1 4 4			43	4 9	12,		1 9 9		**	4 9 4	45	4 9 4	46	4 9 4	5. 5.	44	. 9	4 10	4
June		2		5				2		uf.		:										_								4		85
Minimum		17	4 7	7	7	000	1 89	60	200	10,	50	200	. 69	20,		25	53 5	54.	55.5	55	55.0	24.	56 5	57	57 5	57.	58 5		57.5	55	1	52
July Maximum		- 29	67	ç									_				72/7	- 12	707				73 7		73 6	- 69	73 7	73		~~~	73	11
Minimum	26	57	5	19	20	56	59	19	19	62	9	19	61	62	62	62		_		63	63			62			_	-	62	19	79	61
August Maximum	73	*	4	*		73	_	2		- 7						23										11				6.	69	11
Minimum	62	62	63	63	\$	49	62	19	62	19	79	61	63	7			63	- 62	9 49	99	63	79	9 49	62	65		61 6	19	62	9	61	62
September Maximum	61	20	63	65	9 9	6.5	63	4 4	62	19	200	61	9 2	9:	63	192	65	62	60	57	55.5	5.5	53	53	55.5	25	53 5	53	21.0	0,9	1 1	9.5
				2	_		_	Н		;		,		4	_	4		\dashv		┥		⊣		\dashv		Н		ᅥ				,

PEND OREILLE RIVER BASIN--Continued

12-3530, CLARK FORK BELOW MISSOULA, MONT.

LOCATION .-- Temperature recorder at gaging station, I (revised) mile downstream from Bitterroot River and 5 miles west of Missoula,

Missoula County,

RECORDS AREA.-9, 03 square miles.

RECORDS AREA.-9, 03 square miles.

RECORDS AREA.-9, 03 square miles.

RECORDS AREA.-1 where temperatures: Arizemus, 19, 22, 24; minimum, freezing point on many days during December to February.

EXTREMES, 1960-611.-* Water temperatures: Maximum, 77° Mag, 19, 22, 24, 1961; minimum, freezing point on many days during winter month.

REMARKS.--Recorder stopped Mar. 19 to Apr. 3; range not determined.

Temperature (°F) of water, water year October 1960 to September 1961

Month 1 2 3 4 5 6 7 8 9 10 11 12 13 14 5 6 17 18 19 20 11 12 13 14 15 14 15 14 15 14									/wa	/Water-stage recorder	Stag	i.	Scor	ler	M T C.	2	adm	Bru.	with temperature attachment/	r ca	cume	3									
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 3 24 25 24 25 24 24 24 24	Menny															Da	λ													*	965
*** *** *** *** *** *** *** *** *** **	Month	-	2	3	4	5	9	7			-	-	_	_	_	-									_	 		-			בושאב
40 412 41 440 20 8 37 37 37 37 37 37 37 37 37 37 37 37 37	mum.		57				53																								مَ تر
4.2 4.2 4.3 4.2 4.0 39 38 38 38 37 37 37 38 38 38 38 38 37 37 37 37 37 37 37 37 37 37 37 37 37			;		_			***					_																		
\$40 \$41 \$41 \$40 \$48 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17	Maximum	45	45	_	45		66										_		_				-								.
34 33 46 32 34 35 36 34 35 36 36 36 36 36 36 37 37 37 37 37 37 37 37 37 37 37 37 37	E	9	41		0		~	_							_		_			~~~				_							_
34 33 32 32 32 32 32 32 32 32 33 33 32 32	E	35	34		35		35																_			_					4
32 35 36 36 36 36 34 33 34 33 32 32 32 32 32 32 32 33 34 34 35 36 36 36 37 38 34 35 35 34 34 35 35 34 34 35 36 36 36 36 36 36 36 36 36 36 36 36 36	E	34	33		32		35												_					-		_			_		Ņ
32 32 33 34 32 32 32 32 32 32 32 32 32 32 32 32 32	mum		35	36																	34										4
34 34 35 36 36 36 36 36 36 36 36 36 36 36 36 36	Ħ		32	33	_					_						_				_	3,4		_	_		-				_	9
37 37 37 37 38 38 38 38 38 38 38 37 38 40 41 43 43 44 4 47 45 45 46 44 45 47 45 47 45 47 46 40 40 47 45 45 46 48 48 45 47 45 47 45 47 47 51 51 51 67 48 47 51 77 36 36 36 36 36 36 36 36 36 36 36 36 36		77	7	ď	4												_														9
37 37 37 37 37 38 37 37 38 38 38 38 38 38 38 38 38 38 38 38 38	Minimum	. 6		4	1 5						_						_						_					-		_	ı,
3	March	3 1	; ;	; ;	; ;																	_									
36 36 36 36 37 36 37 36 37 36 37 37 40 44 45 44 45 44 45 47 45 47 45 47 47 47 47 47 47 47 47 47 47 47 47 47	Maximum		37	6	9 9				_				_				_		-				<u></u>		i						!
54 54 53 56 64 64 64 64 64 64 64 64 64 64 64 64 64	···· mmmmm		96	0	90	_			_		_		_				-		-		_	_	<u></u>	_	i -	_	_	_	-		į
54 54 53 56 64 64 65 65 65 65 65 66 67 68 67 68 68 67 69 68 68 68 77 77 76 77 76 77 76 77 76 77 76 77 76 77 76 77 76 77 77	Aprii Maximum	-	1		47																<u> </u>										κņ
54 54 53 56 46 45 46 46 46 46 49 51 50 50 50 50 50 50 50 50 50 50 50 50 50	Minimum	1	1				42				_									_	_		_								Ň
54 55 56 56 56 56 56 56 56 56 57 57 57 57 57 57 50 51 51 52 52 51 51 51 51 51 51 51 51 51 51 51 51 51	May		:	:	-	_						_			_			_		_	_							_	_		,
54 55 56 56 56 56 56 56 55 55 57 57 57 57 57 60 61 62 64 64 63 63 63 65 66 66 66 66 65 67 67 67 67 67 67 67 67 67 67 67 67 67	Minimum		* :	2	2 :		-			_	_		_		_			-		_	_		-	_		_		_	_		2
51 55 56 56 56 56 56 56 57 57 57 57 57 57 60 61 62 62 64 64 63 63 65 66 66 66 66 65 64 62 51 53 55 55 55 55 56 54 54 53 54 53 54 54 52 54 56 57 60 61 62 60 60 59 60 60 59 60 66 65 64 62 51 53 65 64 63 62 64 66 67 68 67 68 68 68 67 69 69 68 68 71 71 70 71 70 67 67 68 68 69 70 51 57 58 60 60 59 59 61 61 56 50 54 62 62 62 62 60 61 61 60 69 60 61 62 60 61 59 69 69 69 69 69 70 52 58 59 59 50 61 61 56 57 55 54 51 53 54 55 57 56 58 57 58 59 59 59 51 50 51 50 69 55 57 53 58 59 59 61 61 56 57 55 54 52 57 56 58 50 69 60 61 57 68 67 67 68 67 67 68 67 67 68 69 69 53 51 50 50 52 53 53 53 53 52 52 54 52 50 68 68 69 57 51 69 64 64 57 64 56 59 64 64 64 64 64 64 64 64 64 64 64 64 64	June		7	5	•							_	_					_		_		_		_		 _					2
51 53 55 55 55 56 64 66 67 68 67 68 68 68 67 69 69 68 68 67 67 68 68 68 71 71 70 71 70 71 70 67 68 68 69 70 70 70 70 70 70 70 70 70 70 70 70 70	Maximum		55	26	26		26						_		_						9	_	_					_			0
57 58 64 63 6.2 64 66 67 68 67 68 68 68 68 67 69 69 69 68 66 68 71 71 70 71 70 67 69 68 69 70 70 71 72 70 71 72 70 71 72 70 71 72 70 71 72 70 71 72 70 71 72 70 71 72 70 71 72 70 71 70 71 72 70 71 70 7	Minimum		53	52	55		24	-		_											3	_	_		_	_		_			~
57 58 60 60 59 59 50 61 62 62 62 62 62 62 60 61 61 60 60 60 61 62 60 60 62 62 60 60 61 62 60 60 60 61 62 60 60 60 60 60 60 60 60 60 60 60 60 60	Maximum		65	\$	63	_				_													_	7.						_	~
71 72 70 71 72 70 71 72 71 73 70 66 58 71 69 66 68 70 67 68 74 77 72 76 77 65 57 66 59 69 67 69 66 60 60 60 60 60 60 60 60 60 60 60 60	Minimum		28	ŝ	9			_	_	_									_					3		-	_				o
51 59 59 51 61 61 56 57 55 54 51 51 56 56 56 56 56 56 56 56 56 56 56 56 56	August	;	ç	,									_	_					_				- 4	_	77	_		_	_		۰
58 59 59 59 60 61 61 56 57 75 54 52 56 56 56 57 56 56 56 56 57 58 53 54 56 46 46 45 46 46 46 46 46 46 46 48 48	Waxillium	: :		2 9	: :	_	•	_		_	_		_	_	_	_	_		-	_			3		_	-	-	_	-		
n 57 55 57 59 60 61 59 59 59 59 56 55 57 56 55 56 58 60 57 88 53 53 55 50 50 81 50 64 48 48 60 67 50 59 54 64 46 45 46 46 45 46 46 45 48 67 67 68 67 67 68 67 67 68 67 67 67 67 67 67 67 67 67 67 67 67 67	September	98	6	6	<u></u>								_							_	_		, ,		_	 	_				٥
53 51 50 50 52 53 53 53 52 52 54 52 50 48 48 50 50 53 54 51 50 48 47 46 45 45 46 46 46 46 46 45 50 50	я	57	55	57	- 65		61																		_						Ñ
		53	2	20	50		53				-		_							_	_									_	0

PEND OREILLE RIVER BASIN--Continued

12-3955. PEND ORBILLE RIVER AT NEWPORT, WASH.

LOCATION .--At bridge on U.S. Highway 2 at Newport, Pend Oreille County, 0.2 mile downstream from gaging station, 1.3 mile downstream from Idaho-Washington State line, and 1.8 miles downstream from Albeni Falis Dam.
DRAINGE ARRA.--24,200 equate miles, approximately.
RECORDS AVAILARE.--Chemical analyses: July 1959 to September 1961.
RECORDS AVAILARE.--Chemical analyses: July 1959 to September 1961.
REMANKS.--No inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1960 to September 1961

]	Нq	8.1	8 0	81	8.1	8.0	8.0	7.9	7.7	8.0	8.0	8.1	8.8
Specific con-	duct- ance micro- nhos at 25°C)	191	166	169	1 68	191	180	169	156	131	143	120	157
	dum ad- gorp- tion ratto												
	Non- car- bon-	3	4	4	9	9	9	3	4	7	67	8	67
Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	80	82	82	82	8	79	8	75	64	7	74	7.2
Dissolved solids (residue at 180°C)	Tons per day												
Solved due at	Tons per acre- foot												
Dis (resi	Parts per million						92		95	74	82	85	88
	Phos- phate (Po.)	0			.02	.05	10.	.01	.02	8.	.03	.01	.02
	Ni- trate (NO ₂)	0.3	.1	1.	.2	-	τ.	2		Η.	۲.		
	Fluo- ride (F)	Ь	_			_	.2		۲.	۲.	Ξ.	Ε.	67
	Chloride r (Cl)	0.2	∞.	3.	3.	٥.	s.	2	63	63	c.		ĸ.
	Sulfate (SO.)	8.8	9.0	9.6	8.6	8.6	10	9.8	8.4	6.0	6.2	7.2	8.0
į	(CO)	0	0	0	0	0	0	۰	0	•	0	0	4
Bi-	car- bon- ate (HCO ₃)	94	92	92	8	8	88	93	86	75	84	88	84
	stun. (K)	9.0	7	9.	6	9.	9.	7.	.7	. 7	ī.	8.	۲.
	Sodium (Na)						2.5	2.5	2.4	1.6	1.8	2.1	2.1
3	mag- ne- stum (Mg)	5.5	5.9	8.8	6.7	6.0	5.8	5.8	4.9	4.5	4.6	5.3	5.3
	Cal- ctum (Ca)	23	23	22	22	22	22	23	22	18	2	77	22
	Fron (Fe)												
	Silica (SiQ _{\$})	6.6	8.8	6.4	9.9	7.4	8.1	7.4	7.2	5.8	9.0	5.9	0.9
	Mean discharge (Si (cfs)	ι		19,500	15,800	26.400	31,600	42,800	68,800	40,800	16,000	5,640	18,300
	Date of collection	Oct. 26. 1960	Nov. 29.	Dec. 21	Jan. 25, 1961	Mar. 1	Mar. 28	Apr. 25	May 23	June 27	July 26	Aug. 30	Sept. 26

PEND OREILLE RIVER BASIN -- Continued

12-3965. PEND ORBILLE RIVER AT METALINE FALLS, WASH.

LOCATION.--At bridge on State Highway 6 at Metaline Falls, Pend Oreille County, 0.2 mile upstream from Sullivan Creek and 7 miles downstream from gaging station.
DANIAGE MESS.--25,000 square miles, approximately, upstream from gaging station.
STATES.--Chemical analyses: December 1988 to September 1950, July 1959 to September 1961.
Water temperatures: December 1948 to September 1950, July 1959 to September 1961.
REMARKS.--Small amount of inflow between sampling point and gaging station.

		Нq	8.1	8.0	8.2	8.1	155 7.7	7.9	7.7	6.	8.1	8.1	8.5
	Specific con-	duct- ance (micro- mhos at 25°C)	156	157	165	167	155	159	143 7.7	127	142	148	155
		ad- ad- Borp- tion ratio											
		Non- car- bon- ate	63	4	4	4	04	9	ı,	=	01	CI	0
	Hardness as CaCO _s	Cal- clum, Mag- ne- stum	78	16	79	81	75	77	69	6	69	7.4	74
-	Dissolved solids (residue at 180°C)	Tons per day											
er 1962	Dissolved solids sidue at 180°C	Tons per acre- foot											
Septembe	Dis (rest	Parts per million	16	91	94	94	87	96	8	72	80	81	88
30 to		Phos-	0.01	.03	0.	.02	86	.13	5	8	8	.02	.01
er 190		rate (NO.)	0.2			٥,	ښښ	۲.	ď	7	٦.	٥,	23
Octob		Fluo- Ni- P ride trate pl (F) (NO ₂)	L	8			üü		۲.	_	_	_	_
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	0.2	ů.	ž.	ı.	ui rö	2	٥.	٥.	٥.	5.	8.
ion, wat		Sulfate (SO.)	7.2	8.4	9.3	8.6	10.4	89.	7.6	6.4	0.9	8.9	8.0
r m111	į	(S)	0	0	•	•	00	0	•	0	0	•	7
ts per	Bi-	car- bon- ate (HCO ₃)	96	8	92	5	88	87	78	73	85	87	86
ın paz	ě	K S S S S S S S S S S S S S S S S S S S	0.6	80.	9.	∞ .	9.	6.	80,		'n	۲.	8.
lyses,		Sodium (Na)	2.3	2.1	2.2	2.4	44	2.5	2.2	1.6	1.9	20.20	2.8
cal an	7,00	nag- ne- stum (Mg)	5.5	5.2	5.9	6.4	5.7	5.3	5.2	4.5	4.6	5.1	5.4
Chemi		Ctum (Ca)	22	22	55	22	222	22	19	11	8	21	21
		fron (Fe)											
		Silica (SiQ ₆)	6.9	6.1	7.0	6.9	7.3	8.6	7.8	9.0	5.3	6.1	5.4
		Mean discharge (cfs)					33,200	45.400	63,200	47,900	21,100	7,100	16,800
		Date of collection	Oct. 27, 1960	Nov. 29.	Dec. 21	Jan. 25, 1961	Mar. 1.	Apr. 25.	May 23	June 27	July 26	Aug. 30	Sept. 26

COLUMBIA RIVER MAIN STEM

12-3995. COLUMBIA RIVER AT NORTHPORT, WASH,

OCATION .-- At bridge on State Highway 22, at Northport, Stevens County, and 12 miles downstream from gaging station at international boundary DRAINAGE AREA. --59,700 square miles, approximately, upstream from gaging station. RECORDS AVAILABLE. --Chemical analyses: February 1910 to January 1911, November 1951 to September 1961

XXTREMES, 1960-61. --Dissolved solids: Maximum, 102 ppm Dec. 19-Jan. 10; minimum, 74 ppm July 1-31 Water temperatures: November 1951 to September 1961.

Hardness: Maximum, 82 ppm Jan. 11-31; mintmum, 62 ppm July 1-31.

Hardness: Maximum 48.7 ppm Jan. 11-31; mintmum, 62 ppm July 1-31.

Specific conductance: Maximum dally, 175 incrembes Jan. 6, 29, 7eb. 13, 155 inchimum, 92 ppm Jan. 36.7 on several days during January and February.

Kater temperatures: Maximum, 68.7 pm, Max. 3-31, 1960; mintmum, 74 ppm Ang. 1-Sept. 15, 1969, Aug. 15-Sept. 7, 1960, July 1-31, 1961.

KRATERS; 1965-61.—-Dissolved solids: Maximum, 105 ppm Max. 3-31, 1960, mintmum, 74 ppm Ang. 1-Sept. 15, 1969, Aug. 15-Sept. 7, 1960, July 1-31, 1961.

Specific conductance: Maximum, 188 micromhos Mar. 2, 1569; minimum dally, 123 micromhos Aug. 2, 1960.

Water temperatures: Maximum, 188 micromhos Mar. 2, 1659; minimum dally, 123 micromhos Aug. 2, 1960.

Ration of Specific conductance of daily samples available in district office at Portland, Oreg. No appreciable inflow between sampling point NaMARS.—Beoords of Specific conductance of daily samples available in district office at Portland, Oreg. No appreciable inflow between sampling point

No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

1		Hď		7.7	7.7	7.7	٠.٠	o t- 60	6	 	7.6	9.	١٠	ł
	Specific	. 1 # _	144 7.7	129	167	169	166	155 7.7	140	135 7.7	126	133	135	142
		ad- ad- Borp- tion ratio	0.1	;	न ।	11	;	۲. ا	}	! -	!	1	-	1
		Non- car- bon- ate	12	12	14	11	13	199	80	3 00	80	œ	12	6
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	70	92	81	81	38	78	67	65	62	64	67	69
		052 8		_							_			-
	clids 180°C)	Tons per day	13,140 13,260	11,540	9,040	11,960	15,500	20,980	73,550	87,050	30,610	20,950	13,110	24,900
r 1961	Dissolved sclids (residue at 180°C)	Tons per acre- foot	0.12	. 13	13	13	.13	3 2 2	7.	01.5	101	10	.11	0.11
Septembe		Parts per million	85 87	92	102	96	66	4 8	88	77	74	76	80	83
30 to		8 5 E	0.03	T	90:		1	1 %	;	18	!!	l	1	1
er 196		Fluo- N1- Bo- ride trate ron (F) (NO ₂) (B)	0.7 0.03	I	10.	11	ŀ	4. 1		1 "	? ;	1		-
Octob		Fluo- ride (F)	0.2	ī	2.1		I	27	- 1	•	:	I		-
er year		Chloride (Cl)	0.0	1	2.	! !	1	1.21	ł	10	?	1	-	1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Sulfate (SO4)	14	1	16	11	I	1 41	١	15	1 . 4	1	-	-
r mill	d	4 a (0)												
rts pe	Bi-	car- bon- ate (HCO ₃)	70	78	80	81	82	81	72	25	99	88	88	72
in pa	į	stum Stum (K)	8.0	1	œ. ¦	11		121			۱ :	1		1
lyses,		Sodium (Na)	1.4	1.8	1.9	1.7	2.2	, 2, 2, 2, 60 0	9	11.	1.1	1.2	1.6	1.5
cal an	3	nage ne- stum (Mg)	4.2	ī	5.1		1	3.9	1	1;	9	1	1	1
Chemi		Cal (Ca)	21	1	22		1	24		15	1 A	1	!	1
		Fe)												
		Silica (SiQ _e)	4.1	1	8.1	11	ł	6.3		1;	?	1		1
		Mean discharge (SiO _a) (cfs)	57,270	44,080	32,820 37,020	45,200	58,000	72,990 82,600	332.200	418,700	153,200	102,100	60,710	111,082
		Date of collection	Oct. 1-31, 1960	Nov. 24-Dec. 18	Dec. 19- Jan. 10, 1961 32,820 Jan. 11-31 37,020	Feb. 1-16	Mar. 1-25.	Mar. 26-Apr. 10 72,990 Apr. 11-30 82,600	May 21-June 6	June 7-30 418,700	July 1-12.	Aug. 1-30	Aug. 31-Sept. 30	Weighted average 111,082

COLUMBIA RIVER MAIN STEM--Continued

12-3995. COLUMBIA RIVER AT NORTHPORT, WASH. --Continued

Aver-	age	55 46 39	1 6 2 4 2 5 4 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	50 9	62 65 61
	31	50 	5 5	1 % 1	6.5
	3	51 44 38	45 36	5 2 2 2	331
	29	51 43 38	7 1 4	4 K K 8 K B	4 4 9
	28	51 43 37	36 0 4 5 5	50.00	64 64 57
	27	51 43 40	% 0 4 0 4	47 52 58	6.6 5.8 5.8
	26	53 44 39	36 44 44	46 52 59	65 58 58
	25	53 45 41	38 40 44	46 51 58	65
	24	54 43 39	8 4 4 0 4 3 8	51.0	6.0
	23	54 43 40	191	51 5	65
	22	54 43 37	38 41 42	48 52 57	65
	21	4 4 8 8 8	3.8 9.9 4.3	44 51 57	68
	20	20 4 60 60 4 80	96 4 6 9 8 9	45 52 57	65 67 61
Day	61	30 66	39 40 43	5 to 5 to 5 to 5 to 5 to 5 to 5 to 5 to	65 68 62
		38	39	43 51	65
	17 18	70.4.€ 70.70.80	3.9 4.2	1 5 %	6.5 6.3
Day	16	54 41 38	39	100	63
	15	55 47 38	40 42	56	63
	14	54 47 38	80 80 M	56	62 63
	13	54 47 39	86 4 4 0 4 0 0	49 55	62 66 62
	12	54 47 39	1 604	1 4 1	65
	Ξ	54 47 39	38	47	69
	10	56 48 39	1 8 11	47 54	61 65 62
	٥	56 47 39	1 80 4	14	65
	8	56 47 39	39	147	63
1	7	57 48 40	3.8	53	60 65 62
	9	50 40 40	38		59 65 62
	5	86 40 40	37 76 89	4.5 5.4 5.4	59 65 61
	4	58 49 42	36	44 74 53	63
	3	59 49 43	38 37 40	44 47 53	59 63
	2	59 50 43	04 60 04 00 04 00	4 4 6 5 4 8 4 4 8	58 65 62
	-	59 51 43	39 39	4 4 U	57 65 63
;	Month	October November December	January February March	April May June	JulyAugust

KETTLE RIVER BASIN

12-4049. KETTLE RIVER NEAR BARSTOW, WASH.

LOCATION: --At county bridge 0.2 mile downstream from Toulou Creek, 1.1 miles east of Barstow, Ferry County, 5.8 miles downstream from Boulder Creek, and 17 miles downstream from international gaging station at Laurier. RECORDS AVAILABLE. --Chemical analyses: July 1960 to September 1961. REMARKS.--FO discharge records available.

		Нq	7.9	217 8.0 186 8.0	8.2	0.0	8.0	130 6.9 109 7.5	7.1	7.8	8.7
	Specific con-	duct- ance (micro- mhos at 25°C)	153 209	217	197	211	180	130	52	181	233 8.7
		ad- ad- Borp- tion ratio									
	less CO ₃	Non- car- bon-	€ 4	4.0	*	4 0	4	0 0	00	~ ~1	O 4
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	72	868	06	86	7.	48	22	73	110
	Dissolved solids (residue at 180°C)	Tons per day									
	Dissolved solids esidue at 180°	Tons per acre- foot									
r 1961	Dis (resi	Parts per million	94	127	122	129	97	38 73	45	66	126
tempe		Phos- phate (Po4)	0.01	10.0	.01			8.5		88	유명
to Ser		Fluo- Ni- pi ride trate pi (F) (NO ₂) (0.1	0.0	۳.	4.0	<u>, 1</u>	1.2.			H 63
1980		Fluo- ride (F)						uj			
Chemical analyses, in parts per million, July 1980 to September 1961		Chloride (C1)	0.5	. 00 113	. 2.	1.0	. 0.	4 O.	ė.	90	1.0
r millio		Sulfate (SO4)	9.2	112	13	15	3 #	6.9	12	. 6	14 16
ts pe		(CO)	00	00		00	0	00	00	0	0 9
in par		car- bon- ate (HCO ₃)	84	116	105	115	98	69 57	26	8 2	114
'ses'	É	Stum (X)	1.0	17	6.	1.0	9.	9.	6.	1.2	1.7
al analy		Sodium (Na)	3.7	4 	4.3	4. n	4. 4.	2.8	1.8 8.5	4.0	5.3 6.0
Chemic	V	mag- ne- sium (Mg)	4.0	00 m	6.0	6.2	0.4	2.6 6.0	1.0	4.00	5.7
		Cal- Ctum (Ca)	20	200	36	53	5 6	17	7.0	22	33
		Iron (Fe)									
		Silica (SiQ,)	12	105	17	41,	117	13	2	6.6	8.1 12
		Mean discharge (SiQ ₆) (cfs)									
		Date of collection	July 27, 1960	Sept. 30	Nov. 30	Dec. 22	Mar. 1	Mar. 29	Мау 22	June 2/	Aug. 30.

COLVILLE RIVER BASIN

12-4090. COLVILLE RIVER AT KETTLE FALLS, WASH.

LOCATION.--At county bridge, 0.2 mile upstream from Washington Water Power Company's plant, 0.3 mile upstream from gaging station, and 0.5 mile south of Ketile Falls, Stevens County.

DRAINAGE ARRA.--107 square miles, upstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: July 1960 to September 1961.

REMARKS.--No inflow between gaging station and sampling point.

		Hď	8 8 4 1	86 a	90.0	8.8	0.6	7.7	7.8	20 0	8 0.7	8.7
	Specific con-	duct- ance (micro- mhos at 25°C)	318	399	341	323	303	229	229	315	335	354
	.	ad- ad- Sorp- tion ratio										
	co ₃	Non- car- bon-	L 20	4 0	14°	14	180	0 4	4	9 0	4	3
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	167	177	168	164	152	114	111	12/	176	176
	Dissolved solids (residue at 180°C)	Tons per day										
	Dissolved solids esidue at 180°	Tons per acre- foot										
r 1961	Dis (res	Parts per million	193	211	228	201	194	151	143	197	209	210
ptembe		Phos- phate (PO4)	0.19			.19	66.	88	.10	.13	1.8	. 14
to Se		Ni- trate (NO ₃)	1.0		. 25	1.8	4.	. .	9.	œ :	- 9	2
1960		Fluo- ride (F)	0.1							_	7.0	
Chemical analyses, in parts per million, July 1960 to September 1961		Chloride (Cl)	1.0	 		1.5		. r.	0.	1.2		1.2
r m1111c		Sulfate (SO ₄)	15	17	23	17	123	12	13	17	12	18
ts pe	į	bon- ate (CO ₃)	3	H 0	•	00	000	•	•	0	-	10
in par	-H	car- bon- ate (HCO ₃)	189	209	188	192	166	134	130	184	209	161
ses,	Ė	tas- sium (K)	2.0			1.9	2.0	1.5	1.6	0.0	9 6	2.9
al analy		Sodium (Na)	5.8				9		4.6	0	9.9	6.4
Chem1c	Moz	mag- ne- sium (Mg)	14	16	12	14	7:	8.2	8.2	23	12	15
		Cal- ctum (Ca)	44 43	42	43	428	38	32	31	42	4 4	46
		Iron (Fe)										
		Silica (SiQ _p)	15 16	16	212	200	12.5	10	20	200	27	17
		Mean Sill discharge (Signature) (Cfs)	137	120	322	220	782	1,040	1,420	362	127	141
		Date of collection	July 27, 1960	Sept. 29	Nov. 30.	Dec. 21	Mar. 1	Apr. 25	May 22	June 27	July 26	Sept. 26

SPOKANE RIVER BASIN

12-4195. SPOKANE RIVER NEAR OTIS ORCHARDS, WASH.

LOCATION .-- At bridge on U.S. Highway 10, 0.5 mile downstream from state line, 2.5 miles upstream from gaging station, and 3 miles east of Otis Orchards,

Spokane County.

Skaka.--5,880 square miles, approximately, upstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1961.

REMARKS.--No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

		Нq	7.1	7	7.2	7.4	0.1	N .	0.7	7.3	7.1	7.1	6.9	6.9
	Specific con-	duct- ance (micro- mhos at 25°C)	49	52	22	72	55	3	55	49	44	46	48	49
	&;	dium ad- Borp- tion ratio												
	ess CO ₃	Non- car- bon-	2	7	F	7	4,	4.	4	2	-	2	67	4
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	20	8	8	8	22	77	21	19	18	18	18	19
n	Dissolved solids (residue at 180°C)	Tons per day												
er 196	Dissolved solids esidue at 180°(Tons per acre- foot								_				
Septemb	Dis (resi	Parts per million	36	38	35	36	4.	2	42	40	31	30	33	37
60 to		Phos- phate (PO ₄)	0	S	8	.03	.05	S	90.	.05	2	90.	.05	.04
er 19		Fluo- Ni- Pr ride trate pi (F) (NO ₃) (F	9.4	Ξ.	Ξ.	۲.	-:	". —		٦.		-:	4.	
Octob		Fluo- ride (F)					- :			-:				
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	0.0	40.	۰.	٥.	0.0	? .	۰.	•. 	~	~	٥.	٥.
lion, wa		Sulfate (SO ₄)	5.4	9.9	5.4	5.8	9.6	20	7.8	5.8	2.0	4.4	6.0	8.9
r mil	,	bon- ate (CO ₂)							_					
rts pe	Bi-	car- bon- ate (HCO ₃)	22	22	23	24	22	25	20	20	8	8	8	19
in pa	Ğ	tas- shum (K)					4.		7	_	_	_	_	
alyses,		Sodium (Na)					4.		1.4	1.3	1.1	1.0	1.6	1.3
cal an	Year	mag- ne- stum (Mg)	1.5	1.2	1.5	1.7	8.1	F. 8	1.4	1.5	1.2	1.0	۰.	1.0
Chemi		Cal- chum (Ca)					6.0		6.0	5.0	2.0	5.5	6.0	6.0
		Iron (Fs)												
		Silica (SiQ ₂)		•	•	•	80		10	97	œ			
		Mean discharge (cfs)	1,830	3,120	2,750	3,490	24,100	12,900	12,800	21,700	554	838	121	1,300
		Date of collection	Oct. 26, 1960	Nov. 29	Dec. 21	Jan. 24, 1961	Feb. 28	Mar. 25	Apr. 25	May 23	June 27	July 25	Aug. 29	Sept. 26

SPOKANE RIVER BASIN--Continued

12-4310, LITTLE SPOKANE RIVER AT DARTFORD, WASH.

LOCATION .--At Mill Road bridge, 0.5 mile east of Dartford, Spokane County, and 0.6 mile upstream from gaging station. Statisting Square miles, upstream from gaging station. RECORDS AVAILABLE.--Chemical analyses: July 1960 to September 1961. REMARKS.--No inflow between sampling point and gaging station except during periods of heavy local runoff.

		Нq		7.80	7.9	7.7 8.0 8.7 8.4
	Specific	duct- ance (micro- mhos at 25°C)	225	228 156	196 192 118 125	137 197 222 227 227
		ad- ad- Borp- tion ratio				
	co _s	Non- car- bon-	0	000	00000	00000
	Hardness as CaCO,	Cal- clum, Mag- ne- sium	105	1112	90 54 64	60 104 112
	Dissolved solids (residue at 180°C)	Tons per day				
	Dissolved solids residue at 180°	Tons per acre- foot				
er 1961	Dig (res	Parts per million		143	127 124 92 92 98	92 122 137 146
ptemb		Phos- phate (PO4)		138	£1.00.00.00.00.00.00.00.00.00.00.00.00.00	21.00.00.00.00.00.00.00.00.00.00.00.00.00
to Se		Fluo- Ni- E ride trate E (F) (NO.)	1.4	16. H	85.14.	. <u> </u>
1960		Fluo- ride (F)		, www	üüüüüü	uidudu
Chemical analyses, in parts per million, July 1960 to September 1961		Chloride (Cl)	2.2	1.55	22.1	80.80.80
r millio		Sulfate (SO4)	5.8	5.0	0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	6.0 4.0 6.0 6.0
ts pe	į	gree (CO ₃)	0	-00	00000	00004
in pa	-H	car- bon- ate (HCO ₃)		136 88	1112 1110 64 69 82	76 114 129 135
rses,	É	tas- sium (K)		2.08	2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.	4.1.0 6.1.0 1.9
al analy		Sodium (Na)	4.8	4.4.w	4444	44044
Chemic	Ş	mag- ne- stum (Mg)		7.6	0.00 W. 4.	4.0. 6.0. 1.8.7. 8.7.
		Cal- cium (Ca)	30 5	883	26 115 195	17 30 33 33
		(Fe)				
		Suica (SiO ₂)	16 18	1202	21 22 23 21 21 21 21 21	22 118 118 118
		Mean discharge (Sil (cfs)	180	165 177 486	273 284 962 976 566	628 273 172 143 158
		Date of collection	July 28, 1960	Sept. 28.	Dec. 21. Jan. 24, 1961 Feb. 28. Mar. 28.	May 23 June 26 July 25. Aug. 29 Sept. 26

SPOKANE RIVER BASIN--Continued

12-4330. SPOKANE RIVER AT LONG LAKE, WASH,

0.2 mile downstream from gaging station, 1.2 miles upstream from Chamokane Creek, and 12 miles north of Reardon, Lincoln County. LOCATION: --At bridge, 0.2 mile downstream from gaging station, 1.2 m DMAINAGE AREA.--5,920 square nailes, approximately. RCOODS AVALLAEE.--Candalal analyses: July 1959 to September 1961.

Water temperatures: July 1959 to September 1961.

RATERERS, 1960-61.—Dissolved solids: Maximum, 133 ppm May 10-June 26.

RATERERS: Maximum, 106 ppm Sept. 1.-30; minimum, 28 ppm May 10-June 26.

RATERERS: Maximum, 106 ppm Sept. 1.-30; minimum, 28 ppm May 10-June 26.

Rateric conductance: Maximum, 74°F July 23; minimum, 37°F Dec. 31, Jan. 7.

RATERERS: 1959-61.—Dissolved solids: Maximum, 133 ppm Sept. 1.-30, 1961; minimum, 46 ppm May 15-June 7, 1960.

RATERERS: 1959-61.—Dissolved solids: Maximum, 133 ppm Sept. 1.-20, 1960, Max 10-June 26, 1961.

Rateric sept. Maximum, 106 ppm Sept. 20, 1960; minimum daily, 63 micromhos June 2, 1961.

Rater temperatures: Maximum, 76°F Aug. 18, 1959; minimum, freezing point Jan. 21, Feb. 26, 1960.

Water temperatures: Maximum daily as amples available in district office at Portland, Oreg. No appreciable inflow between gaging station and sampling point except during periods of heavy local runoff.

		Нd	7.6	7.5	4.	7.4	4.7	2.5	7.5	7.3	7.1	7.2
	Specific con-	duct- ance (micro- mhos at 25°C)	180	171		129	130	79	85	79		
		dum ad- ad- tion tion ratio								-		
	e88 30,	Non- car- bon-	5.9	9	ĸ	9	9 9	4	m ea	44	4.	20 00
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	83	76	ŝ	29	82	33	34	33	28	3 8
	Dissolved solids (residue at 180°C)	Tons per day	819 846	1,270	4,470	1,100	1,260	4,190	2,410 2,620	2,530	3,060	2,640
1961	Dissolved solids esidue at 180°	Tons per acre- foot	0.14	.15	. I.	.12	.12	8	.08	80.	0.	.06
Chemical analyses, in parts per million, water year October 1960 to September 1961	Diss (resid	Parts per million	106	107	ca Ca	88	688	61	23 62	88	26	52
0 to		Phos- phate (PO4)	0	. 18		.17		_	86			9.6
r 196		Ni- trate (NO ₂)	2.2	2.6	2.4	2.3	4.0	1.5	1.3	œ «		1.3
ctobe		Fluo- ride (F)	0.1	= :	7.	Τ.	т. -	:=:				<u> </u>
er year O		Chloride (Cl)	3.0	2.5	2.0	1.8	6,0	1.0	œirů.	1.0	. 2.	œ. œ.
ion, wate		Sulfate (SO ₄)	9.4	9.2	8.0	8.4	8.0	6.4	7.4	8.4	7.2	0.9
mi 11	į	Son- age (CO ₃)										
ts per	Bi-	car- bon- ate (HCO ₃)	95	86	2	65	49	36	39.4			40
n par	Ė	sium (K)	2.0	1.5	1. 4	1.4	1.4	1.1	1.1			o. o.
lyses, 1		Sodfum (Na)	3.5	8	9.0	2.8	3.0	2.4	2.2	2.2	2.0	2.2
al ana	1	stum (Mg)	7.4	6.5	6.1	5.2	5.7	2.5	2.2	9.0	1.9	2 E.
Chemic		Cal- (Ca)	21	20	16	12	14	9.0	0.01	0.0	8.0	9.0
		Iron (Fe)										
		Silica (SiQ ₆)	2.6	8.6	7	11	11:	12	9.4	#:	11	9.8
		Mean discharge (SiO _k) (cfs)	2,862			4,629	5,247	25,470	17,150	5,590	2,680	15,940 2,642
		Date of collection	Oct. 1-31, 1960	Nov. 20-Dec. 13	Dec. 14-19 Dec. 20-	Jan. 12, 1961	Jan. 13-Feb. 2	Feb. 12-Mar. 4	Mar. 5-16	Apr. 4-May 3	May 10-June 2	June 3-26 June 27-July 8

115 7.3	7.4	7.4	7.5	7.9	95
115	130	167	199	226	95
4	9	9	9	9	4
20	09	78	94	106	40
2,870	2,620	1,820	1,680	2,140	1,610
60	11.	. 14	. 16	.18	60.0
69	82	100	118	133	65
60.	10	.13	119	. 25	01.0
1.9	2.3	4.4	8.	3.0	1.3
Ŧ.	Ŧ.	Ŧ.	Ħ.	.1,	0.1 1.3 0.10
1.5	2.0	2.8	3.2	4.5	1.1
7.6	8.0	8.8	10	11	7.6
-		_	_		
26					44
				2.2	1.2
2.7					2.4
4.3	5.4	6.7	8.4	10	3.3
13	15	20	24	26	11
_					
10	10	10	11	10	10
	2,618		1,684	2	9,119
July 9-15, 1961	July 16-24	July 25-Aug. 18	Aug. 19-31	Sept. 1-30	Weighted average 9,119

	Aver-	age	57 48 41	39 40 42	46 56 67	71 69 65
		31	37	8 1 4	181	68
ı		30	34 38 38	61 64	52 70 70	72 69 64
		29	54 42 38	8 4	51 61 70	68 69 62
		28	47.8	33 43 43	50 72	71 68 64
		27	40.4 40.8 80.8	4 4 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4 3 4 3	50 60 71	71 70 64
		26	54 47 39	044	50	71 69 62
196		25	4 8 6	39 41 43	49 60 71	73 61 63
Jer		24	30.74	4 4 4 0 0 w	48 71	72 69 64
ten		23	244	0 4 4 1 6 4 1 6 4	49 58 72	74 70 63
Sep		22	0 4 4 0 4 0 0	4 4 4 3 4 3 4 5 4 5 4 5 4 5 4 5 4 5 4 5	47 25 70	73 61 64
ş		21	411	0 4 4 4	8 4 6	72 68 64
960		20	4004	4 t 1 t 2 t 3	4¢ 70 2¢	1,24
October 1960 to September 1961		16	C 4 4 C 8 0	0	9 6 9	71 69
top		18	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 4 4 4	4 4 6 6 8 4 8	72 70 67
Š		17	€ 4 4 7 2 3 4	0 4 4 6 0 4 6 0	25.00	70
yea	Day	16	7 4 4 7 5 6 1	39	4 6 4 7 6 7	70 71 64
er	1	15	57	4 4 5 7 7 7	44.0	71 70 49
wa,		14	57	38	9 4 9	71 71 66
ter,		13	57	4010	5 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	71 70 64
wa		12	80 f	33	4 4 9 4 4 9 4 9 4 9	17 07 69
٦		-	500	338	5 5 5 5	70 67 67
(°F)		10	58 51 43	8 4 4	4 to 0 to 4	71
Temperature (°F) of water, water year		6	8 11 6	40 41	46.6	70 69 67
ratı		8	500	969	4 10 40 10 10 10	170
mpe		7	52 4 4 4 4 4 4	40 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4	300	70 70 70 10 10 10 10 10 10 10 10 10 10 10 10 10
ř		9	3820	800	4 6 8	72 66 68
		5	60 52 50 3	41 4	53 4	70 7 69 68
		4	9.60	31.38	444	70 67 68
		8	0.44	8 4 4 6 4 6 4 6 6 6 6 6 6 6 6 6 6 6 6 6	4 6 4	70 7 68 6 65 6
		2		8640		029
		-	60 61 54	38	53 53 62 63	71 7 72 6 68 6
	Month	MOREIT	October Ovember	January February	April May. June	July August

OKANOGAN RIVER BASIN

12-4473. OKANOGAN RIVER NEAR BREWSTER, WASH.

LOCATION .--At bridge on State Highway 10, 1.5 miles upstream from mouth, 3.5 miles east of Brewster, Okanogan County, and 11.5 miles downstream from

No appreciable inflow between sampling point and gaging station except during periods gaging station.
DEALINGE AREA.-8, 210 square miles, approximately, upstream from gaging station.
RECORDS AAALIABLE.-Chemical analyses: July 1959 to September 1961.
REMENTAGE.-REMENTAGE. To discharge given for Okanogan River near Malott. No apprect of heavy local runoff.

		Нq	8.3	8.0	8.2	7.9	8.0	8. 3	6.2	7.8	7.5	6.7	8.4	8.4
,	Specific con-	duct- ance (micro- mhos at 25°C)	298	278	300	273	265	271	225	160	112	174	282	314
	· & .	ad- ad- Borp- tion ratio												
		Non- car- bon-	13	12	15	01	13	13	6	4	3	9	15	16
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	135	129	137	123	121	124	104	72	48	22	131	147
1	Dissolved solids (residue at 180°C)	Tons per day												
er 196	Dissolved solids esidue at 180°	Tons per acre- foot												
Septemb	Dis (resi	Parts per million		180					144	100	75	114	182	205
60 to		Phos- phate (PO.	0.04	.03	90.	.08	.07	.1.04	.11	.05	.04	.15	8	8
er 19		Fluo- Ni- P ride trate p (F) (NO ₃) (ε.		٦.	₹.	Τ.
Octob		Fluo- ride (F)		ε.							-:			_
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (CI)	1.5	·	1.5	1.5	1.2	1.5	1.0	~	٥.	۳.	1.2	1.5
lion, wa		Sulfate (SO ₄)	33	31	34	88	58	30	21	13	0.6	18	33	88
r mil.	į	ate (CO ₃)	7	0	0	0	0	1	0	0	0	0	~	6
rts pe	Bi-	car- bon- ate (HCO ₃)	144	139	149	137	132	134	116	83				
in pa	Ę	tas- sium (K)	2.1				2.0			1.0		1.3		
alyses,		Sodium (Na)		9.3							3.3			
cal an	Year	mag- ne- sium (Mg)	10	9.4	9	8.6	8.8	9.0	6.5	4.8	3.2	4.8	=	12
Chemi		Cal- clum (Ca)	37	36	38	35	34	35	31	21	14	23	32	39
		Iron (Fe)												
		Silica (SiQ,)	11	==	=	8.6	12	07	=	12	8.9	11	11	11
		Mean discharge (cfs)	1,200	1,240	1.070	1,280	1,280	1,150	1,880	4,130	15,500	2,860	1,160	845
		Date of collection	Oct. 18, 1960	Nov. 16	Dec. 19	Jan. 17, 1961	Feb. 16	Mar. 13	Apr. 21	мау 9	June 13	July 11	Aug. 21	Sept. 20

METHOW RIVER BASIN

12-4499, 5. METHOW RIVER AT PATEROS, WASH.

LOCATION: --At bridge, on U.S. Highway 97, in Pateros, Okanogan County, 0.5 mile upstream from mouth, and 4 miles downstream from gaging station. PRAINAGE ARRA.--1, 780 square miles, approximately, upstream from gaging station. RECORDS ANALIGHE.--Chemical analyses: July 1959 to September 1961. RECORDS ANALIGHE.--Chemical analyses: July 1959 to September 1961. REMARKS.--No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

4.1.2.0.1.8 4.1.2.0.1.8 8.7.7.8 4.7.9 8.2.9 8.2.9 떮 mhos at 25°C) 198 194 194 196 196 188 151 120 67 131 199 Specific microance conad-Borp-tion 084440 000044 Nonbon-Hardness as CaCO, Cal-Mag-70 28 28 60 97 ne-Fons per day Dissolved solids (residue at 180°C) water year October 1960 to September 1961 Tons per acre-foot 96 74 46 83 83 137 per 119 120 118 1120 1120 1118 Parts - Ni- Phoe-trate phate (NO₃) (PO₄) 888888 999988 9 0.6 1.0 1.0 7. 4.6.24.6.6 Fluo- Ni-ride trate (F) (NO₂) 333436 224222 0.000000 Chloride 000000 <u>ਹ</u> 111 10 9.8 9.8 9.8 7.0 4.8 2.8 5.6 Sulfate (SO₄) Chemical analyses, in parts per million, Car-bon-(CO,) m0000 H 00000 (HCO) Bi-car-bon-109 110 1110 1112 107 86 68 36 74 74 114 123 ate Star CX @ @ L @ @ @ Sodium (Na) 800484 6.61.63.3 8.4.5.4 8.4.0 8.7.9 55.31.6 Mag-ne-stum (Mg) 18 18 20 20 32 32 Cal Can Ca 8888888 Fron (Fe) Silica (SiO₂) 8 I I I 132221 Mean Sdischarge (cfs) 1,380 2,460 8,680 1,520 387 320 435 422 300 360 368 388 18, 1960.... 16.... 19.... Apr. 21 May 9. June 13 July 12 Aug. 21 Sept. 20 16.... 13..... Date of collection Nov. Dec. Jan. Feb.

WENATCHEE RIVER BASIN

12-4578. WENATCHEE RIVER NEAR LEAVENWORTH, WASH.

LOCATION: --At bridge on U.8. Highway 2, 0.3 mile upstream from Hatchery Creek, and 6 miles northwest of Leavenwroth, Chelan County. GROOMS AVAILABLE.--Chemical analyses: July 1959 to September 1961.
REMARKS.--Fe discharge records available.

ļ		ьн	7.4	7.0	7.4	6.7	7.2	7 3	7.4	7.2	6.9	6.7	7.3	7.4
	Specific	duct- ance (micro- mhos at 25°C)	42	34	37	27	36	38	40	37	25	25	32	39
		ad- ad- Borp- tion ratio				_								_
	CO	Non- car- bon- ate	0	o	o	Õ	o	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	16	12	14	10	13	14	14	13	6	6	12	12
1	Dissolved solids (residue at 180°C)	Tons per day												
er 1961	Dissolved solids esidue at 180°	Tons per acre- foot												
Septembe	Dis (resi	Parts per million	30	29	26	26	31	31	32	27	23	22	30	33
30 to		Phos- phate (PO4)	00.00	8	8	00.	.01	.01		.01				
3r 196		Fluo- Ni- phos- ride trate phate (F) (NO ₃) (PO ₄)	٠.		.2	<u>س</u>	е.		ε.	.2	2	۲.	~	=
Octobe		Fluo- ride (F)	0.0		=:	•	٥.	٥.		Ε.				
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	0.2	0.	٥.	٥.	٥.	ů,	0.	٥.	6.	٥.	٥.	63
ton, wat		Sulfate (SO ₄)	2.4	2.8	2.0	2.4	4.2	2.2	2.4	2.0	1.6	2.0	2.0	2.8
. m111	,	bon- ate (CO)												
ts per	Bi-	car- bon- ate (HCO ₃)						20		78	_			
in par	Š	tas- slum (K)	L				_	«		1.0				
lyses,		Sodium (Na)					1.1	1.2	1.3	1.2	80.	1.0	1.1	1.4
al ans	2	nag- ne- stum (Mg)			6			1.1	1.0	œ.	۲.	4.	9.	1.2
Chemic		Cal- ctum (Ca)	4.5	3.5	4.0	3.0	3.5	4.0	4.0	4.0	2.5	3.0	4.0	4.0
		Iron (Fe)			_						_			
		Silica (SiQ ₂)	8.2	7.3	8.0	6,1	9.5	9.3	9.3	9.1	9.9	6.3	6.7	8.9
		Mean discharge (cfs)		_		_								
		Date of collection	Oct. 18, 1960	Nov. 17.	Dec. 20.	Jan. 16, 1961	Feb. 16.	Mar. 13	Apr. 20	May 9.	June 13	July 12,	Aug. 21.	Sept. 20

WENATCHEE RIVER BASIN--Continued

12-4625.2. WENATCHEE RIVER AT WENATCHEE, WASH.

LOCATION: --At bridge on U.S. Highway 97, 0.8 mile northwest of Wenatchee, Chelan County, and 0.9 mile upstream from mouth. RECORDS AVAILABLE. --Chemotcal analyses: 'July 1960 to September 1961.
RECORDS AVAILABLE. --Chemotcal available.

		Нq	7.5 7.3 8.1 7.5	69-7.6 47-6.8 65-7.5 70-7.8	7.5
	Specific	duct- ance (micro- mhos at 25°C)	35 70 89 89 56	69 47 70 70 63	54 33 37 66 101
		Borp- fron tratto			
	ness ICO,	Non- car- bon-	00000	••••	00000
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	36 37 37 23	88088	22 13 14 27 43
	Dissolved solids (residue at 180°C)	Tons per day			
	solved due at	Tons per acre- foot			
er 1961	Dis (rest	Parts per million	25 46 58 59 59	44 37 50 48 43	36 24 24 84 86 86
ptemb		Phos- phate (PO4)	0.0		26228
to Se		Ni- No ₂)	9.00.00.00		4.414.00
1960		Fluo- ride (F)	0.1.0.1.1		<u> </u>
Chemical analyses, in parts per million, July 1960 to September 1961		Chloride (C1)	0.2 1.0 1.0 5.5	widino.	0.0.11
er milli		Sulfate (SO4)	0.6.4.7.1	6.01 6.00 6.01 6.00 6.01 6.00	2.0 1.6 1.0 3.6
rts pe	1.0	CO)			
in pa	Bi-	car- bon- ate (HCO ₃)	04 64 84 84 85	3 3 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	29 18 18 36 56
yses,	É	tas- fium (K)	1.1		.8 .7 1.2
cal anal		Sodfum (Na)	1.2.6.1.4.1.8.0.1	21.12.12.0	1.6 9.1 2.4 3.6
Chem1	ž	nag- ne- sium (Mg)	2.6.4.9 2.2.4.9 2.2.2.8	E 4 E 6 6	2.4 1.3 1.0 5.0
		Cal- Cium (Ca)	8.8.8.0 0.00 0.00 0.00		3.0 4.0 6.5
		Iron (Fe)			
		Stlica (SiQ ₂)	6.3 10 9.9	9.3 11.4 10.0	10 7.6 6.8 9.4
		Mean discharge (SiO ₂) (cfs)			
		Date of collection	July 20, 1960 Aug. 18. Sept. 20 Oct. 18.	Dec. 19	May 9. June 13. July 12. Aug. 21. Sept. 21.

CRAB CREEK BASIN

12-4726. CRAB CREEK NEAR SMYRNA, WASH

LOCATION --At county bridge, 2.5 miles east of Smyrna, Grant County, 12.5 miles upstream from gaging station, and 17 miles upstream from mouth.
DRAINAGE AREA.--4,550 square miles, approximately, of which about 500 square miles in the vicinity of Soap Lake is probably noncontributing, upstream from gaging station.

RECORDS AVAILABLE.—Chemical analyses: August 1959 to September 1961.

RECORDS AVAILABLE.—Chemical analyses: August 1959 to September 1961.

Water temperatures: August 1959 to September 1961.

EXTREMENS, 1960-61.—Dissolved collds: Maximum, 872 ppm Mar. 23-25; minimum, 172 ppm June 30-July 7.

Bardness: Maximum, 258 ppm Mar. 23-25; minimum, 172 ppm June 30-July 7.

Bardness: Maximum, 268 ppm Mar. 23-25; minimum, freezing point on several days during December and January.

Mater temperatures: Maximum, 867 July 8. Aug. 1; minimum, freezing point on several days during December and January.

Bardness: Maximum, 258-25; Maximum, 872 ppm June 30-July 7, 1961.

Bardness: Maximum, 258-25; Je61; minimum, 172 ppm June 30-July 7, 1961.

Bardness: Maximum, 887 July 7, 8, 1961; minimum, freezing point on several days during winter months.

Water temperatures: Maximum, 887 July 7, 8, 1960; minimum, freezing point on several days during winter months.

REMARES.—Records of specialc conductance of daily samples available in district office at Portland, Oreg. Records of discharge given for Crab Creek near REMARES.—Records of specially camples available in district office at peary local runoif.

		Hď	8.1		# er	. 22		8.2	4.4	m :		2.2	8.0	8.2			9.0	N
	Specific	duct- ance (micro- mhos at 25°C)	897	962	3,5	982	-	941	1,020	933	896	1,080		951				960
		Borp-(tion ratto																_
	sess CO	Non- car- bon-	0	00	9 0	•		0	0	0	0 (>	•	0	۰,	-	•	>
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	221	234	222	226		223	214	217	186	212	212	217	218	216	808	277
1	Dissolved solids (residue at 180°C)	Tons per day	8.66	2.86.7	119	123		88.1	141	101	145	180	164	123	110	115	162	D.88
er 196	Dissolved solids esidue at 180	Tons per acre- foot	0.78	. 85	96.	98.		.82	6	. 81	.82	96.	16	98.	.83	4.	1.19	48.
Septemb	Dus (resi	Parts per million	574	622	200	632		009	662	298	624	807	199	634	610	616	2/2	219
960 to		Phos- phate (PO4)	0		-	84		.40	. 62	.53	.78	97.	.58	.43	. 45	.49	5	.45
er 19		rluo- Ni- ride trate (F) (NO ₂)	_	9.0		* *		1.6	2.6	8.8	2.7	2.7	2.5	1.0	1.5	9 ;	1.6	×.
Octo		Fluo- ride (F)	1,1	1.2	4 -	1.1		1.3	1.2	1.3	1.2	1.2	·••		1:0	0 ;	7	1:1
million, water year October 1960 to September 1961		Chloride (C1)	43	46	200	49		45	52	46	49	9	52	48	52	25	74	22
lion, wa		Sulfate (SO ₄)	132	142	147	146		132	132	122	114	168	146	137	136	141	522	147
r mil		2 to 15 to 1	0	0	9 0	• •		•	_	•	0	• —	•	•	•	-	0	<u> </u>
rts pe		car- bon- ate (HCO ₂)	342	367	378	371		362	396	360	398	380	380	360	363	368	420	362
tn pa	ŗ	tas- sium (K)	14	4:	2:	12		13	16	14	91	8	16	16	12	12	6	12
Chemical analyses, in parts per		Sodium (Na)	114	123	136	132		124	145	116	146	164	142	125	131	139	202	130
cal a	7,0	stum (Mg)	27	28	727	27		27	21	22	22	22	22	92	78	27	34	29
Chemi		Cal- ctum (Ca)	44	46	84.	26 46		44	42	45	38	48	43	44	41	42	46	44
		Iron (Fe)																_
		Silica (SiQ,)	24	28	53	30		32	3	32	28	9	31	30	59	28	92	56
		Mean discharge (SiO ₂) (cfs)	64.4	58.8	66.5	72.2 30		54.4 32								69.0 28		
		Date of collection	Oct. 1-31, 1960	Nov. 1-15	Nov. 16-23	Nov. 24-26	Dac. 6-	Jan. 6, 1961	Jan. 7-10	Jan. 11-Feb. 1	Feb. 2	Feb. 3	Feb. 4-13	Feb. 14-Mar. 7	Mar. 6-13	Mar. 14-22	Mar. 23-25	Mar. 26-Apr. 14

8.88.9.8 4.21.21.01.11	8.0.1.0.1.0	1
876 8.4 866 8.2 815 8.2 776 7.9 705 8.1	660 779 773 773 765	884
00000	00000	0
214 209 204 194 180	172 187 194 200 210 210	212
101 91.6 84.1 85.5 82.0	69.3 51.8 55.6 67.6 91.7	96.0
. 73 . 69 . 66 . 66		0.77
554 540 504 488 449	408 462 510 505 544 501	569
800000	22.25 22.25 22.25 1.90	1.1 0.35
. i . i i	2.0.1 0.0 8.0 8.0	1:1
a a a a a	ஜன் வ வ வ வ	1.0
52 44 40 36 31	29 32 36 36 37	44
132 128 122 112 98	92 104 111 115 127 116	129
***	•00000	0
308 322 304 292 272	253 279 302 298 317 300	335
113 123 122 123	10 12 13 12 13	14
118 114 102 93 82	74 85 100 96 106 98	118
25 25 25 25 25 25 25	2 8 8 8 8 2 1 2 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	26
40 40 38 36	35 36 40 42 42 42	4
16 118 21 21	18 24 27 23	56
67.6 16 62.8 18 61.8 19 64.9 21 67.6 21		62.2
Apr. 15-21, 1961 Apr. 22-Nay 12 May 13-June 5 June 6-13 June 14-29	June 30-July 7 July 8-20 July 21-25 July 26-Aug. 25 Rug. 26-Sept. 3 Sept. 4-30.	Weighted average

	Aver-	age	56 34	7 4 4 4 8	55 73	76 74 61
		31	45	36 1 38	181	4 6 9 1
		ဗ္ဂ	48 38 32	4 2	4 8 6	52 53
		59	52 36 32	5 2	68 29	81 72 56
i		28	32 32	33 62 62	924	69 57
		27	300	4 4 9 0	61 62 64	78 78 54
_		26	30 30 35 30 30 35	36 74 74 74	57 68 74	78 57
water year October 1960 to September 1961		25	35	244	56 67 80	44 62 88
ber		24	61 42 36	44	57 62 78	50 50 50
tem		23	39	34 42 49	63 63 76	69 76 60
Sep		22	300	35	57 80 79	23
2		21	40.0	4 6 4	51 79 68	80 4 4 7
960		20	55 41 34	37	45	79 78 55
er 1		19	52 36	240	46 68 71	75 74 59
top		18	484	37	51 76 86	78 72 62
Š		17	10 4 W	000	57	71 69 64
yea	Day	91	57 46 32	4 4 4	54 67 80	82 74 65
ter		15	45.6	44 53	54 78 78	76 82 62
Wa		4	36 36	2 4 4 4	42 68 77	78 75 58
ter,		13	46	80 4 4 80 70 70	50 62 71	80 72 59
¥.		12	34.00	744	58	80 78 61
Ö		=	32	0 4 4 6 4 9	526	77 84 68
•		10	54 42 33	8 4 4 8 0 4	500	445
Temperature (°F) of water,		6	32	0 4 9	58	69
rat		æ	55 4.1 32	37 43 43	52	68 75 60
embe		7	57 40 32	35 43 43	402	78 72 61
Ē		9	33	344	52	67 73 61
		2	35.5	3 43 2	51	69
		4	61 43 36	43	52	83 81 63
		6	35.00	37 6	130	81 49
		2	65 47 40	33	57	88.2 6.3
		-	67	525	62 73	69 86 62
	Month	Month	October November December	January February March	April May June	July August September

YAKIMA RIVER BASIN

12-4987. NACHES RIVER AT YAKIMA, WASH.

LOCATION --At bridge on U.S. Highway 97, 300 feet upstream from mouth, and 0.6 mile north of Yakima, Yakima County. RECORDS AVALLARLS.--Chemical maniyaes: July 1960 to September 1961.

ĺ		Hď	75 7.4	8.	8.0	80 1	7.7	8.1	7.7	7.4	93 7.9	7.6	7.3	9.1	9.	4
	Specific con-	duct- ance (micro- mhos at 25°C)	75	79	104	109	84	6	81	74	93	16	26	22	.0	8/
	& :	anum ad- Borp- tion ratio														
	ess CO,	Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	0	5	2
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	30	59	Q	44	33	34	32	56	36	59	27	22	56	31
	Dissolved solids (residue at 180°C)	Tons per day														
	Dissolved solids esidue at 180°	Tons per acre- foot														-
er 1961	Dis (res:	Parts per million	59	9	72	81	62	62	26	53	11	69	20	43	21	63
ptemb		Phos- phate (Po4)	0.05	.05	90.	80.	.0	90.	90.	90	.05	90.	.0	.03	.05	6
to Se		Ni- trate (NO ₃)	0.1	.2	7	4.	4.	٦.	۳.		7.	7.	۲.	ű	7	7
1960		Fluo- ride (F)	0.1		.1	.1	۲.		.1	_	۲.					7
Chemical analyses, in parts per million, July 1960 to September 1961		Chloride (C1)	1.0	1.2	1.5	1.8	1.5	1.2	1.0	σ,	1.2	æ.	5.	s.	'n.	1.0
er millic		Sulfate (SO4)	2.2	3.0	5.2	4.6	3.6	4.6	3.5	3.5	4.2	2.8	2.4	2.6	3.5	3.6
rts pe	į	(CO)	٥	0	0	ıo	0	0	0	0	0	0	0	0	0	0
in par	Bi-	car- bon- ate (HCO ₃)	41						43		22		·			
yses,	Ė	Sium (K)	1.1	1.0	1.2	1.2	9.	.5	9.	, C	80	.7		9.	6.	1.0
al anal		Sodfum (Na)	3.2	3.4	4.8	5.1	3.6	4.4	3.5	8	4.5	3.6	2.7	2.5	3.0	3.6
Chemi		mag- ne- sium (Mg)	1.7	2.0	3.5	3.6	2.3	6.5	2.2	,	2.7	1.6	1.5	1.6	1.4	2.0
		Cal- clum (Ca)	9.0	8.5	91	12	9.5	9.0	9.0	ď	101	9.0	6.0	6.0	8.0	9.0
		Iron (Fe)														
		Silica (SiQ.)	17	17	19	22	16	15	15	9	22	19	15	14	15	17
		Mean discharge (SiO _s) (cfs)														
		Date of collection	July 29, 1960	Aug. 23	Sept. 26,	0ct. 25	Nov. 22	Dec. 19	Jan. 23, 1961	Teb 27	Mar. 27	Apr. 26	Мау 22	June 26	July 27	Aug. 31

YAKIMA RIVER BASIN--Continued

12-5050. YAKIMA RIVER NEAR PARKER, WASH,

--At Sunnyside diversion dam, 700 feet upstream from gaging station, 1.5 miles east of Parker, Yakima County, and 3 miles downstream from Ahtanum Creek.

square miles, approximately. RCORDS AVAILABLE .-- Chemical analyses: DRAIN AGE AREA. --3,650

Water temperatures: August 1959 to September 1961. EXTERIERS, 1960-61.—Dissolved solids; Maximum, 120 ppm Oct. 13-Nov. 12; minimum, 59 ppm June 11-27. Hardness: Maximum, 70 ppm Oct. 13-Nov. 12; minimum, 32 ppm June 11-27.

Specific conductance: Maximum daily, 199 micromanos Dec. 16; minimum daily, 69 micromhos June 4.

Water temperatures: Maximum 72°F July 13, 18, Aug. 3, 4, 22; minimum, 33°F Dec. 29, 31, Jan. 1, 2, 4, 27.

Water temperatures: Maximum, 72°F July 13, 18, Aug. 2, pm, Jan. 1, 1960.

Waterdness; Maximum, 70°F July 13, 199 midromono Dec. 15, 7 ppm, Jan. 1, 1-13, 1960.

Water temperatures: Maximum, 72°F July 19, 199 midromono Dec. 16, 1960; minimum daily, 69 micromono June 4, 1961.

Water temperatures: Maximum, 72°F July 18, 1990, July 13, 18, Aug. 3, 4, 22, 1961; minimum, 33°F on several days during winter months.

Maker temperatures: Adminimum and the samples available in district office at Portland, Oreg. Approximately 15 percent of yearly flow is diverted at Sumnyside Diversion Dam. No inflow between sampling point and gaging station.

				_	_									
		Hg.	7.6					1		1	7	7.7	7.4	7.3
	Specific	duct- ance (micro- mhos at 25°C)	153	185	157	143	163	9	138	105	105	114	108	108
	ģ;	ad- ad- sorp- tion ratio												
	co,	Non- car- bon-	0	•	0	0	0	•	5 6	9 6	0	0	0	0
	Hardness as CaCO,	Cal- clum, Mag- ne- stum	28	20	8	54	8	5	2 6	9 6	42	46	44	44
	Dissolved solids residue at 180°C)	Tons per day	62.0	371	487	567	400	;	416	1 920	988	1,300	1,140	579
r 1961	Dissolved solids esidue at 180°	Tons per acre- foot	0.13	16	. 14	.13	. 14	,	1.	2 5	10	12	11	.11
Septembe	Dis. (rest	Parts per million	66	120	102	94	105	;	110	200	202	85	81	82
0 to		Phos- phate (PO.)	0.23					9	9 9		:=	13	60	80
r 196		Ni- rate NO ₂)	8.0	6.	6.	1.0	œ	,		0 d	. «		ε.	ů.
ctobe		Fluo- ride t (F)	0.1		٦.	=	67		. -	1 -	: -		۲.	٦.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	2.8	4.2	3.0	2.8	3.5		9.0	9 -	7 -	2.0	2.0	2.0
ton, wat		Sulfate (SO4)	8.9	9.7	0.9	5.6	9.9	t	0.0		0.4	4.0	3.2	3.6
m111	,	Ed ate												
ts per	Pi-	car- bon- ate (HCO ₃)	84	8	82	16	88		200					
n par	į	A firm (K)		1.7				,	9 -		9 4	1.3	1.2	6.
lyses, i		Sodium (Na.)	8.7	10	8.6	7.7	0.6	,	9.0			. 00	5.0	5.3
al ana	7	nie- stum (Mg)	5.6	9.9	6.1	4.7	6.1		3 (1)		. t.	3.0	4.1	3.9
Chemic		Cal- cium (Ca)	14	17	14	14	12	,	91	35	7:	12	11	11
		Iron (Fe)												
		Silica (SiQ ₂)	18	21	19	13	8		2,50	\ C	16	61	19	19
		Mean discharge (SiO ₂) (cfs)	232	1,145	1,770	2,233	1,410	,	1,401	,000	2,100	5,659	5,210	2,615
		Date of collection	Oct. 1-12, 1960	Oct. 13-Nov. 12	Nov. 13-18	Nov. 19-30	Dec. 1-27	Dec. 28-	Jan. 15, 1961	Jan. 10-Feb. 10	Feb. 11-1/	Mar. 13-26.	Mar. 27-Apr. 11.	Apr. 12-17

YAKIMA RIVER BASIN -- Continued

12-5050. YAKIMA RIVER NEAR PARKER, WASH .-- Continued

1		Hď	•		7.5	7.2	7.4	7.6	7.6	6.	1
	Specific	duct- ance (micro- mhos at 25°C)	ē	10	77	84	86	102	115	124 7.9	107
	& ;	ad- ad- gorp-(1 tion ratio		_	_		_				
		Non- car- bon-	-	5	0	ō	0	0	0	٥	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	96	9	33	32	37	40	45	47	43
Inued	Dissolved solids (residue at 180°C)	Tons per day	i	166	1,330	629	59.4	62.2	52.5	91.3	579
Cont	Dissolved solids residue at 180°	Tons per acre- foot	,	0.10	80.	80	60	01.	11.	.12	
ber 1961	i .	Parts per million	i					72			77
eptem		Fluo- Ni- phos- ride trate phate (F) (NO) (PO.)	90	8	.04	11	13	.15	13	.1 .4 .19	0.11
to S		Ni- trate (NO ₂)	, ,	. 4	e.	4	4	4	4.	.4	1.7 0.1 0.5 0.11
. 1960		Fluo- ride (F)	• 0	5	Ξ.	7.	2	Ξ.	Ξ.	Τ.	0.1
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride Flu (C1) (F)	,	7.7	1.0	1.0	1.5	1.5	2.0	2.5	1.7
ater yea		Sulfate (SO4)	0 0	3.2	2.2	3.6	2.0	4.4	5.4	4.8	4.1
on, w	ŀ	Don- ete (CO ₃)							_		
. milli	B1-	car- bon- ate (HCO ₃)								69	28
e ber	Ė	fas- stum (X)								1.4	1.0
in par		Sodium (Na)		4.4	3.6	4.0	5.3	5.7	6.7	8.8	5.3
lyses,	,	mag- ne- stum (Mg)	ł							3.6	3.9
al ana		Cal- ctum (Ca)		9.0	8.0	8.5	9.5	91	91	13	1
Chemic		Iron (Fe)									
		Silica (SiQ ₂)	,	97	14	12	12	17	18	16	17
		Mean discharge (cfs)		5,243	8,200	4,014		320			2.790
		Date of collection	Apr. 18-	May 11, 1961	May 12-June 10	June 11-27	June 28-July 25	July 26-Aug. 24	Aug. 25-Sept. 23	Sept. 24-30	Weighted average 2.790 17

21		
19		
September		
to		
1960		
(°F) of water, water year October 1960 to Septe		
year		6
Water		
water.		
ō	١	
£		
Temperature		
	l	

	Aver-	age	54 36	4 4 1 1 1 1 1 1	8 4 8 6 0 6 0	64 68 61
		33	33	% 3	121	981
		30	51 41 34	213	3 6 7	68 57
ĺ		29	33	213	229	54
		28	52 38 34	4 7 8	51 52 65	68 58
		27	50 38 36	8 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0.00	52
		26	52 40 35	26.65	4 4 4	58
Water year October 1960 to September 1961		25	36	36	50 52 67	69 62 61
į		24	52 40 35	8 8 8 8 8 8	52 53 66	69 66 57
E		23	38	36	545	59
o e b		22	55 42 37	35 41 44	\$ 25 5 5 5 5 5 5	67 72 60
3		21	44	4 43	1 2 4	200
200		20	55 43 37	37 43 52	4 90 9	69
-		6	55 42 35	0 4 6	50 4	61 29
2		18	54 44 34	38 38 45	47 52 65	22 29
3		17	49 42 35	80 4 0 4 0 5	51 52 60	6.8
7	Day	91	48	4 6 4 6	50.00	8 1 3
3		15	58 42 35	4 4 2 4 5 4 5 5	4.7 51 58	8 8 4
		4	57 43 38	0 7 7 7	4 6 4 5 8 9	5 8 8 8 8
WELL'S		13	50 44 37	38	52	72 68 63
2		12	35	8 4 4 8 0 6	528	69
5		Ξ	55 45 34	38 41 43	4 4 7 8 0 8	71 63
1		2	53 41 35	8644	50 20	4 6 6
1		٥	5 4 5 3 4 5 5 4 5 5 4 5 5 5 5 5 5 5 5 5	411	0.4 %	70 65 65
1 8 1		8	35	43	4 10 10 0 10 10	604
remperarue		^	57 34 34	338	59 57	6.8 6.5 6.5
1		9	3.6 3.6	35 43 37	8 4 8 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	50
		5	35	36	47 60	4 8 6 5
1		4	57 47 39	33	2 4 4 7 7 8 4 7	64 72 68
į		က	57 46 38	38	4 4 8 8 9	66 72 63
		2	56 41 41	33	4 4 8 5 5 9 5 9 5 9 5 9 5 9 5 9 9 9 9 9 9 9	66 70 65
		-	80 4 4 0 70 4	33 42	0 4 6	40.6
	Month	MOREIL	October November December	January February March	April May June	July August September

YAKIMA RIVER BASIN -- Continued

12-5105. YAKIMA RIVER AT KICNA, WASH.

LOCATION. --At highway bridge, downstream from gaging station at Kiona, Benton County, 3.5 miles downstream from intake of Kiona Canal, and 25 miles upstream

DAAINAGE AREA. --5,600 square miles, approximately.
RECORDS AVAILAREE. --Chemical analyses: December 1952 to September 1961.
Water temperatures: December 1953 to September 1961.
RITERREE, 1960-61. --Dissolved solids: Maximum, 23 ppm Sept. 11-30; minimum, 81 ppm May 20-28.
Hardness: Maximum, 138 ppm July 13-27; minimum, 46 ppm May 20-28.

Specific conductance: Maximum daily, 390 micromhos Sept. 16; minimum daily, 109 micromhos June 6.

Where remeratures: Maximum 84°F July 21; minimum, 35°F Jan. 2.

EXTREMES, 355-61.—1-15ssolves Sept. 16; minimum, 35°F Jan. 2.

EXTREMES: Maximum, 148 ppm Oct. 1-11, 1958; minimum, 42 ppm May 1-23, 1957, Dec. 16-31, 1959.

EXTREMES: Maximum 148 ppm Oct. 1-11, 1958; minimum, 42 ppm May 1-23, 1957, Dec. 16-31, 1959.

Specific conductance: Maximum adally, 390 micromhos Oct. 10, 1958, Sept. 16, 1951; minimum daily, 99 micromhos Dec. 17, 1959.

Water temperatures: Maximum, 84°F July 18, 1960, July 21, 1961; minimum, freezing point on several days during winter months most years. REMARKS.—Records of specific conductance of daily samples available in district office at Portland, Oreg.

1		ЪН	8.0	8.0	7.9	8.1	.;	 				7.8	7.8	7.7	7.9	2	8	0.8	7.7
	Specific con-	duct- ance (micro- mhos at 25°C)	331	296	243	279		245 8.2	Š	100	233	182	180	152	173	50	140	166	140
		Sorp- front ratto	8.0	ŀ	ł	ŀ		1.		ŀ		1	ł	1	;	ł	4	: ;	ı
	co _s	Non- car- bon-	٥	0	0	0	•	00	•	•	5	0	0	0	0		0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- sium	129	112	92	110		95	9	0 0	00	7.1	99	28	49	9	22	65	45
11	Dissolved solids (residue at 180°C)	Tons per day	1,370	1,350	1,490	1,190	,	1,050		7,200	1,200	2,170	2,460	2,000	1.620	2,320	2,190	1 200	2,060
er 196	Dissolved solids esidue at 180°	Tons psr acre- foot	0.31	. 29	.24	.28		.25	9	01.	0.7	.18	.16	. 14	2	15	14	18	13
Septemb	Dis (rest	Parts per million	230	210	175	188	,	181	7	271	OCT	131	120	100	112	110	103	114	93
60 to		ron (B)	2.9 0.10	1	ŀ	i		18		!	1	1	ŀ	I	ļ	¦	6		1
er 19		Fluo- Ni- ride trate (F) (NO ₃)	Į.	1	1	;		2.6		1	!	1	ł	!	i	ł	1.0	. !	1
Octo	L	Fluo- ride (F)	0.0	1	!	i		1 %		!	!	1	1	1	1	ŀ		! !	1
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	7.0	!	}	!		1.9		!	1	ł	!	1	;	1	2.2	; ;	1
lion, wa		Sulfate (SO ₄)	21	i	!	1		13		!	ŀ	1	ł	;	ł	1	5.6	1	ī
r m11	į	Pon- ate (CO)	٥	0	0	0	,	00	•	> <	<u> </u>	0	0	0	0			c	• •
rts pe	Bi-	car- bon- ate (HCO ₂)	174	155	122	145		122	Ş	1	119	2	8	4	80	8	78	87	74
in pa	ć	K in the second	3.5	ļ	1	I		1.2		Ī	-	ŀ	1	ł	;	1		_	ī
alyses,		Sodium (Na.)	21	18	12	17	,	18	,	7	CI	12	11	8.7	10	8 4	7	œ.	7.8
cal an	Ş	nie- nie- stum (Mg)	12	1	1	;		8 .9		i	1	1	1	1	ł	1	4.9		!
Chemi		Cal- ctum (Ca)	32	!	1	1		1 22		!	1	!	ŀ	!	1	ł	14	: 1	!
		Iron (Fe)																	
		Silica (SiQ.)	59	1	!	l		12		!	L	1	!		1	-	21	Ц	ı
		Mean discharge (SiO ₆) (cfs)	2,209					2,145 2,937						7,407					8,191
		Date of collection	Oct. 1-31, 1960	Nov. 1-19	Nov. 20-Dec. 5	Dec. 6-13	Dec. 14-	Jan. 8, 1961	0 0	Jan. 10-2/	Jan. 28~Feb. 2	Feb. 3-11	Feb. 12-21	Feb. 22-Mar. 7	Mar. 8-14	Mar 15-Apr 4	Apr. 5-10	Apr 11-28	Apr. 29-May 19

YAKIMA RIVER BASIN--Continued

12-5105, YAKIMA RIVER AT KIONA, WASH. --Continued

		Нq	7.8	7.6	8.0	7.9	8.0	8.1	8.1	8.4	8.2	8.1	8.3	1
	Specific con-	duct- ance (micro- mhos at 25°C)	120 7.8	125	186	134	180	207	306 8.1	352	331	336	366	192
	ġ,	ad- Borp- tion- ratio	1	1	1	1	1	1	0.8	1	;	1	1	1
	ne 88 ICOs	Non- car- bon-	٥	0	6	0	0	0	0	0	0	0	0	0
	Hardness as CaCOs	Cal- clum, Mag- ne- sium	46	48	70	20	20	79	116	138	130	132	137	73
tinued	Dissolved solids (residue at 180°C)	Tons per day	ı				1,180	816	753	643	825	974	1,000	1,470
Con1	Dissolved solids esidue at 180°	Tons per acre- foot	0.11	11.	.16	.12	91.	18	0.27	30	30	30	.32	0.18
ber 1961	Dis. (rest	Parts per million	81	84	121	87	117	131	195	222	222	218	233	129
Septem		ron (B)	1	;	;	;	ł	ł	2.4 0.04	1	ł	ŀ	T	1
to		Fluo- N1- 1 ride trate (F) (NO ₃)	1	1	Ī	ł	ŀ	ŀ		1	1	1	;	1
1960		Fluo- ride (F)	1	ī	1	1	;	1	0.3	1	1	1	T	1
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued	-	Chloride (Cl)	-	!	Ī	1	Ī	1	7.5	1	1	1	!	1
ater yea		Sulfate (SO4)	:	1	1	ł	1	!	20	1	1	1	1	1
on, w	į	Bon- ate (CO ₃)	0	0	0	0	0	0	0	9	0	0	ო	۰
m1111		car- bon- ate (HCO ₃)	63	64	96	89	94	105	154	169	174	177	181	66
s per	å	tas- sium (K)	1	1	1	1	1	1	3.4	1	1	!	1	1
in part		Sodium (Na)	6.4	8.9	12	7.6	Ħ	12	19	22	22	23	22	п
lyses,	Mod	nie- stum (Mg)	1	1	1	ł	1	1	97	1	1	1	ŀ	1
cal ans		Cal- clum (Ca)	1	ł	!	1	1	1	30	ŀ	ł	;	!	1
Chemi		Iron (Fe)												
		Silica (SiO ₂)	-	1	!	1	!	;	24	ŀ	ŀ	ŀ	1	1
		Mean discharge (cfs)		2			3,750		1,430				1,593	4,220
		Date of collection	May 20-28, 1962	May 29-June 12	June 13-17	June 18-22	June 23-27	June 28-30	July 1-12	July 13-27	July 28-Aug. 22	Aug. 23-Sept. 10	Sept. 11-30	Weighted average

Temperature (°F) of water, water year October 1960 to September 1961

	Aver-	age	74 6 7 6 6 8 6	044	5 5 5 6 8 8 9 4 4 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9	78 64 64
		31	3 2	112	121	821
		ဗ္ဂ	831	213	242	85 E 88
		29	52 40 38	39	58 8 88 8	75 57
		28	408	3.0 9.0 9.0	58	78 71 58
		27	1112	80 4 80 80 60	6 0 8	79 69 60
		26	3528	1 60	202	0 8 4
		25	98	8 4 4	2002	77 72 61
:		24	3946	38	33	77 61
		23	80 4 60 60 60	38 43	50 58 71	80 79 62
		22	54 40 40	118	60 60	83 78 62
on the reason and the state of the state of		21	93	6 4 4 6 7 8	1 2 6 9	94
		20	57	1 9 9	200	82 77 67
:		16	F 40	148	220	9 4 2 9 9
		18	58 38	3823	135	80 75 67
5		17	127	444	120	73
	Day	91	57 47 37	3 6 0 0	520	£ 1 %
;	_	15	1 20	9 4 4 6	222	154
•		14	54 47 39	4 6 8	52 58 71	82 77 65
		13	347	551	51	673
		12	14.7	45 45 45 45	54	62 73
3		=	474	244	500	133
•		10	55 4.5 36	45 46 46	4 4 6	1.10
,		٥	36.50	144	6 4 6	27.00
		8	56 45 37	0 4 7	6.55	74 77 62
ŀ		7	946	4 4 4 0 10 10	53	73
•		9	61	0 10 0	6320	73 78 67
		5	62 48 41	149	0000	225
		4	62	175	6 5 6 5 5 5 5 5	2 59
		ъ	62 64 64 4	25.5	533	72 79 67
		2	62 49 43	3 2 3	53	75
		-	51 4	211	1 4 6	5.03
	Month	MOREI	October November December	January February March	April May. June	July August September

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

		Нq	ì	21 50	l	2012	ļ	r-86	ı	9997
	- ii -			74 7.2 53 7.1 57 7.3 76 7.0		71 7.2 41 7.2 52 7.1 68 7.5		39 6.8 39 6.7 39 6.8		101 7.6 93 7.6 92 7.6 69 7.7
	02	duct- ance (micro- mhos at 25°C)		(40.00)		F-4-10-0		4.000		10
	8 :	ad- ad- sorp- tion ratio								
	co,	Non- car- bon-		0000		0040		0040		2422
	Hardness as CaCO,	Cal- cium, Mag- ne- stum		24 116 24		28 16 25 28		6616		45 40 41 30
	Dissolved solids (residue at 180°C)	Tons per day								
	Dissolved solids esidue at 180°	Tons per acre- foot								
1961	Dis (resi	Parts per million		59 44 62 62		50 37 41 46		8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		67 57 62 44
tembe		hos- hate (PO4)		0.02 .04 .03		0.00		8885		0.00.00.00.00
Sep		-i zete No.		4.0.4.0.	ASH.	1.6.2.2.	<u></u>	0 444	ASH.	0 7 7 7 7
80 tc		Fluo- Ni- ride trate (F) (NO ₃)	WASH	<u> </u>	¥ , ₩	0.3 0.1	WAS	0.0	38, W.	0.1.1.1
ly 19		ep (N KYAD,	00000 0000	TESA	2.08	ETTE	20.00.00	NGELI	0.1.0
n, Ju		Chloride (Cl)	R BAS)	2,0,0,2,	AR MOR		RIVER BASIN RIVER AT OZETTE, WASH	0.000	BASIN PORT A	T
Chemical analyses, in parts per million, July 1960 to September 1961		Sulfate (SO ₄)	CHEHALIS RIVER BASIN 12-200. CHEHALIS RIVER AT DRYAD, WASH	8 24 4 2		3.6 3.8 3.8	OZETTE RIVER BASIN OZETTE RIVER AT OZ	0.4.8.6.	ELWHA RIVER BASIN 12-455. ELWHA RIVER NEAR PORT ANGELES, WASH	8.8 7.4 8.6 6.6
ts pe	į	ate (CO ₃)	HEHA		HEE		OZETTE		RIVE	
in par		car- bon- ate (HCO ₃)	200. CH	33 33	WYNOOC	36 36 36	12-431.5.	30 00 00	ELWHA	94 4 4 8 34 4 4 8
ses,	Ė	tas- fium (K)	12	6.11.0	12-374.	2.0	12-4	1.00	-455.	0.0
l analy		Sodtum (Na)		3.1 3.6 5.7	12-	2.7 1.9 1.8 2.7		3.6	12	1.9
Chemica		mag- ne- etum (Mg)		9.1. 8.1. 8.1.		1.8 1.8 1.9		8.0.0.4		1.2
		Cal- ctum (Ca)		6.5 7.0 7.0		8.5 7.0 8.0		3.000.0		16 115 111
		Iron (Fe)								
		Silica (SiO ₂)		115 14 14		11 7.4 9.5		23.02		6.9 7.0 8.4
		Mean discharge (cfs)		62 1,520 336 47		3,740 1,130 121				344 2,510 1,940 1,660
		Date of collection		Oct. 14, 1960 Jan. 5, 1961 Apr. 7		Oct. 6, 1960 Jan. 6, 1961 Apr. 5		Oct. 5, 1960 Jan. 5, 1961 Apr. 4		Oct. 5, 1960 Jan. 5, 1961 Apr. 4
				Oct. Jan. Apr. July		Oct. Jan. Apr. July		Oct. Jan. Apr. July		oct.

158 7.3 95 7.5 80 7.6 90 7.6

4000

38 38

94 57 59

띥 con-duct-ance (micro-mhos at 25°C)

Specific

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

Non-car-bon-Hardness as CaCO, Cal-ctum, Mag-ne-stum long per day Dissolved solids (residue at 180°C) Tons
per
acrefoot Chemical analyses, in parts per million, July 1960 to September 1961--Continued Parts per million Fluo- Ni- phos-ride trate phate (F) (NO₃) (PO₄) Chloride ਹੁੰ Sulfate (SO4) Bi-car-bon-bon-ate (HCO₃) F in E Sodium (Na) Mag-ne-stum (Mg) Cal-ctum (Ca) fron (Fe) Silica (SiQ_g) Mean discharge (cfs)

Date of collection

DUNGENESS RIVER BASIN

12-480. DUNGENESS RIVER NEAR SEQUIM, WASH.

						Maria Carrier									
	04	54	6.	~		1.2	4.0	848	۳.	1.7	1.2	14	5.0	969	July 17
	26	75	10.	۲.		∞.	7.8	98	۲.	2.8	2.8	18	7.0	460	Apr. 4
120 7.7	54	74	.2	~	٦.	1.2	7.4	62	0.	2.9	2.7	17	6.5	383	Jan. 5, 1961
	69	92	0.0	0.0		2.0	8.8	78	0.2	3.5	3.5	22	7.2	102	Oct. 5, 1960

0.05 12-523. BIG QUILCENE RIVER NEAR QUILCENE, WASH. 8.62 8.8.8 22.080 2444 0000 22.28

22.42

2222

10 10 10 7.8

Oct. 5, 1960.... Jan. 5, 1961.... Apr. 4.

DOSEWALLIPS RIVER BASIN

	52 6 114 7.6 42 4 93 7.5 39 2 88 7.6 34 2 74 7 7
	72 59 55 48
, WASH.	0.1 0.00 .2 .01 .1 .01 .2 .10
NON, 1	0.0
DOSEWALLIPS RIVER AT BRINNON,	2.1 0.1 8.
IPS RIVE	8.0.4.0.2 8.0.2
DOSEWALI	56 47 46 39
12-535.	0.004
H	11.8
	1.6
	118 441 12
	8.6 9.7 1.7 4.7
	Oct. 5, 1960 Jan. 5, 1961 Apr. 4 July 17

DESCHUTES RIVER BASIN

12-790. DESCHUTES RIVER NEAR RAINER, WASH.

121 7.4 74 7.2 79 7.4 120 7.2			61 7.3 53 7.0	53 7.2		74 7.4 55 7.1 50 7.0 43 7.3
1 0 0			00	00		0004
28 28 42 42			22 18	18		1880
87 60 65 91			53	48		65 47 48 37
0.04 .06 .05 .13			0.05	.05		0.14
4.0		SH.	0.4		SH.	4.6.61.1
0.440		NA, W	0.2	<u>.</u> .6	NG, W	0.0
11 4.0 4.5	ER BASIN	AT MCKEN	1.5	1.5	R BASIN WEAR ORTI	9.4.1.
21.1.2	NISQUALLY RIVER BASIN	12-895. NISQUALLY RIVER AT MCKENNA, WASH.	2.2	2.8	PUTALLUP RIVER BASIN 12-935. PUTALLUP RIVER NEAR ORTING, WASH	13 3.4 7.4
	NISQ	ISQUA			PUYA	
51 35 37 51		95. N	28		35. P	25 24 14
7.0 22. 7.		12-8	0.7	<u>4.</u>	12-9	0 6.4.6.6
6.44 6.64 7.34			3.6	6, 6, 6, 8,		8.2.2.2. 8.9.9.4
1.00			1.3	1.3		21.6.1
12 7.5 8.0			5.0	ຕິຕິ		0.7 0.0 5.3 4.0
21 17 18 23			14	14		4046 6.9
42 513 243 50			659	1,570		265 366 597 874
Oct. 14, 1960 Jan. 5, 1961 Apr. 7			Oct. 14, 1960	Apr. 7		Oct. 4, 1960 Jan. 3, 1961 Apr. 19.
0545	ı		105	Α'n	J	। ০চৰ

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

			,	44-4	ł	1	01 ap 44 -1		കേരുക ച	,	1 8 4 0 0
ļ	-6	医		62 7.4 45 7.4 37 7.1 50 7.4		-	6.24.6.2		6 6.9 2 7.2 1 6.8 1 7.1		60 7.3 50 7.4 39 7.0 30 7.0
	V2	duct- ance (micro- mhos at 25°C)	•	9489			2 2 2 2 2 3 4 2 3 4 2 4 4 4 4 4 4 4 4 4		36 32 31 31		2000
	& :	ad- sorp- tion ratio				İ					
		Non- car- bon-		0000			0000		0000		4400
	Hardness as CaCO ₃	Cal- clum, Mag- ne- stum		22 16 13 18			13 7 12 10		41222		26 11 13
	Dissolved solids (residue at 180°C)	Tons per day			The same of the sa						
inued	Dissolved solids residue at 180	Tons per acre- foot									
61Cont		Parts per million		4 C C C			30 21 24 17		30 25 27	WASH.	4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
er 19		Fluo- Ni- phos- ride trate phate (F) (NO ₂) (PO ₄)		0.01					0.0 01. 01. 00.		0.0 103 101 101
ptemb		Ni- trate (NO ₂)	j j	6,6,6		MASH	0 440	WASH	4.4.6.4	1 211	0
to Se		Fluo- ride (F)	, WAS	0,004	8	BAK,	0000	LEIB,	0.0	g g	0.0
Chemical analyses, in parts per million, July 1960 to September 1961 Continued		Chloride (C1)	DUWANISH RIVER BASIN 12-1065. GREEN RIVER AT PALMER, WASH	4.4 8.0 8 8	SR BASIN	UBAR GOLD	H . H H	AT SNOQUALMIE,	0 . H 8. 8. 8. 8.	STILLAGUANISH RIVER BASIN 12-1610. SOUTH FORK STILLAGUANISH RIVER WEAR GRANITE FALLS,	0.1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0
1111on, J		Sulfate (SO.)	DUWANISH RIVER BASIN GREEN RIVER AT PALM	4644	SNOHOMISH RIVER BASIN	H KIVER	2.1. 6.4.8.0	RIVER	8.04.0 8.04.0	TOANISH R	4.4.4.4.
ermi	į	- 100 (CO)	DUWAN		SNORC	SNCHOMISH RIVER BASIN 12-1345. SKYKOMISH RIVER NEAR GOLD BAR,		SNOQUALKIE		FLLAG	
arts p	Bi-		-1065.	80022			18 10 16	1	17 17 14 16	ST.	32 18 16
in i	í	stun (K)	12	2.00.1.	1 5	Z-134	0.0 8.3	12-1444.	0.4.1.0	F HILL	0.0
alyses,		Sodium (Na)		6.440	•	1	2.0	12	1.7	610. 30	1.01.07.
cal an		mag- ne- stum (Mg)		4.8.8.0			8 6 6 6		8.4.4.	12-1	9 E. 8 4.
Chem		Cium (Ca)		0 10 4 0 20 20			4.4.4.6. O 80 80 80		4.0.4.4		0000
		Fe)									
		Silica (SiQ _s)		113			80 4 8 4 80 9 8		80.00 80.00]	0.0.0. 0.0.0.0 0.0.0
		Mean discharge (cfs)		162 692 1,420 430			1,170 23,700 3,140 3,070				153 342 698 698
		Date of collection		Oct. 4, 1960 Jan. 3, 1961 Apr. 19.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Oct. 18, 1960 Jan. 16, 1961 Apr. 20.		Oct. 18, 1960 Jan. 16, 1961 Apr. 19.		Oct. 5, 1960 Jan. 3, 1961 Apr. 20.

SKAGIT RIVER BASIN

12-1875, SAUK RIVER AT DARRINGTON, WASH.

	7.5 7.3 7.1			7.1	<u>-</u> 1		8.7.8 7.30 8.8
	65 7 28 7 28 7			101 70 57	2		
	0.0,410			77.8			196 212 192 121 121 192
	0000			NON	•		11400
	24 23 18 11			27 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	32		90 97 88 51
	52 447 34 22			71 53	28		123 141 125 98 130
	0.02 .02 .01			0.05	.02		0.08 .111 .07 .112
	0.2		WASH.	1.20	1.3	SH.	0.10
	1.0		TON,	0.0	Τ.	R, WA	0 .4.0.0.0
	1.8 1.5 1.0	RIVER BASIN	SAMISH RIVER NEAR BURLINGTON,	3.0 1.8	2.2	SANPOIL RIVER BASIN 12-4350. SANPOIL RIVER AT KELLER, WASH	0.5 1.0 .5 .0
	7.0 3.2 2.8		RIVER NEA	60 4 10 4 4 50	5.2	SANPOIL RIVER BASIN ANPOIL RIVER AT KEL	14 115 13 8.4
		SAMISH	I SH 1			SANF	00000
;	28 23 14		5. SAM	26 24 24	43	£350.	108 117 103 63 93
	0 8 4 4 4		12-2015.	.4.	6.	12-	1.3 1.2 1.9
	2.8 1.9 1.5		H	2.2.7			6.6 6.9 5.0 6.5
	1.5			2.1	3.1		8.0.0.0.0 8.0.0.0
	0.7.84			10 7.5 6.0	0.6		25 29 15 25
	11 10 8.0 5.2			12 8.3 6.4	9.6		19 22 21 23 22
				36 157 315	78		
	Oct. 5, 1960 Jan. 3, 1961 Apr. 20			Oct. 5, 1960 Jan. 4, 1961 Apr. 20	July 5		July 27, 1960 Oct. 29. Jan. 26, 1961 Apr. 25.

MISCRILANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

Chemical analyses, in parts per million, July 1960 to September 1961 -- Continued

1	뛶	<u> </u>		88.88	1	8.1 8.0 8.0 8.0 7.8			44644
Specific	duct- ance (micro- mhos at 25°C)			270 273 272 238		142 208 199 164 135			28 4 4 4 4 8 9 9 9 9
	dium ad- gorp- tion ratto								
	Non- car- bon-			20000		40000			ноооо
Hardness as CaCO ₃	Cal- cium, Mag- ne- stum			122 122 126 109		67 98 92 77 63			88888
Dissolved solids (residue at 180°C)	Tons per day								
solved at	Tons per acre- foot								
Dis (resi	Parts per million			172 176 170 149		90 132 125 103 87			33 33 34
	Phos- phate (PO4)			0.04		0.02 .02 .09 .01			0.00.00.
	Fluo- Ni- iride trate ir (F) (NO ₅)	HSA		4.4.4.4	WASH	0.1 .0 .1 .2 .1		æ.	.4.0.0.1
	Fluo- ride (F)	N 1	ì	0 0 0 0	TLLE,	0.1 2.2 1.1		, WAS	0 1.00 H 0
	Chloride (Cl)	R BASIN		4444 4444	AT OROV	0	BASIN	T CHELAN	0.000.8
	Sulfate (SO4)	OKANOGAN RIVER BASIN 19-4906 OKANOGAN BYUPB AT OBOUTILE WASH		26 28 28 24	12-4425. SIMILKAMEEN RIVER AT OROVILLE,	11 19 17 12 12	CHELAN RIVER BASIN	CHELAN RIVER AT CHELAN, WASH	00044 04404
į	Pon- ate (CO ₃)	DKANO	7	0004	LKAND		CHEL/	HELAN	
-ia	To	2		139 141 142 114	SIN	76 109 102 87 70		12-4525. (48444
	tas- sium (K)	9-430		8 4 8 1	-4425	0.8 1.1 1.0 .8		12-4	O
	Sodium (Na)		•	9.8 10 10 8.6	11	E. 4. 4. E. E. 6. E. O. C. C. C. C. C. C. C. C. C. C. C. C. C.	1		:::::: \$04.81
29,	mag- ne- stum (Mg)			9.9.9.8 9.0.6.8		4.6. 1.6. 3.9 3.2			4.8.8.0.0
	Cal- clum (Ca)			33.44		20 31 30 26 20			0.0 8.0 7.0
ŧ	Iron (Fe)								
	Silica (SiQ ₆)			9.9 7.5 6.3 7.9		10 12 10 11			4.00.00
	Mean Sil discharge (Sil (cfs)			607 546 400 484		1,640 430 790 1,450 2,240			5,030 2,210 2,100 1,630 4,600
	Date of collection			Oct. 18, 1960 Jan. 17, 1961 Apr. 20 July 11		July 20, 1960 Oct 18 Jan. 17, 1961 Apr. 20.			July 20, 1960 Oct. 18 Jan. 17, 1961 Apr. 21 July 12

ENTIAT RIVER BASIN

12-4530. ENTIAT RIVER NEAR ENTIAT, WASH.

99 7.7 77 7.4 83 7.7 50 7.5		51 7.2 59 7.3 57 7.6 45 7.3
200.00		10 10 10 4
0000		0000
32 32 35 80		22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
0,000		
20 59 41		37 42 37 29
0.02		0.02
0.1 0.3 0.02 .1 .1 .07 .0 .1 .2 .01	ASH.	0 111
	UM, W2	0,001
0.000	BASIN I CLE ELI	0.8 1.0 5.5
4.6.4.6. 8.7.0.4	YAKIMA RIVER BASIN YAKIMA RIVER AT CLE ELUM, WASH.	6.2.1.
54 45 27 27	YAK 95. YAKIN	34 30 37 37 37 37 37 37 37 37 37 37 37 37 37
41.88	12-4795.	0.0.1
6.2.2.1. 6.6.4.		2.3 2.1 1.0
6.1.9 0.4.9		12.8
12 9.5 10 7.0		3.7.0
13 13 11		8.60.7.8
		487 1,050 1,790 2,410
Oct. 18, 1960 Jan. 16, 1961 Apr. 21.		Oct. 19, 1960 Jan. 17, 1961 Apr. 21.

PART 13. SNAKE RIVER BASIN

SNAKE RIVER MAIN STEN

13-375. SNAKE RIVER HEAR HEISE, IDAHO

LOCATION. --At Eagle Rock canal headgate, 1.2 miles upstream from Heise, Jefferson County, 1.6 miles downstream from Anderson canal headgate, 1.8 miles downstream from gaging station, approximately 4.8 miles east of Ririe, and approximately 21 miles upstream from Henrys Fork.

DARINAGE AREA. ---5.752 square miles upstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: January 1983 to September 1961.

Water temperatures: January 1953 to September 1961. EXTREMES, 1960-61. --Dissolved solids: Maximum, 344 ppm Dec. 4-10; minimum, 174 ppm July 9-Sept. 2.

Ratchess: Maximum, 256 ppm Dec. 4-10; maintain, 125 ppm Aug. 5-5ept. 2.

Barthess: Maximum dally, 679 informables Dec. 6; infiniamum dally, 273 increables Dec. 6; infiniamum dally, 273 increables Maximum dally, 579 increables Dec. 6; infiniamum dally, 273 increables Dec. 6; infiniamum dally, 270 increables Maximum, 275 ppm Aug. 16 ppm Dec. 6; infiniamum, 175 ppm Aug. 16 ppm Dec. 11-20, 1965; infiniamum, 175 ppm Aug. 11-20, 1965; infiniamum, 175 ppm Aug. 10, 1965; inf

		рн	8.1	01 00 01 00		w w	& & & & & & &	000	0.00
	Specific con-	duct- ance (micro- mhos at 25°C)	361	519	223	489	507 494 475	397	342 7 8 306 8 7
		adum ad- Borp- tion ratio	0.5	11	1	ا بن	1 "	11	Ш
		Non- car- bon-	28	92	62	58 62 82	655 52 52	53	233
	Harduess as CaCO,	Cal- cium, Mag- ne- stum	150	228	232	220	227 229 212	197	154 154
	Dissolved solids (residue at 180°C)	Tons per day	2,460	1,230	1,200		1,430 1,420 1,680	2,590	6,800 6,870 6,080
r 1961	Dissolved solids esidue at 180°	Tons per acre- foot	0 30	84.	. 43	24.	. 14. 14. 39	8.83	82.2
Septembe	Diss (rest	Parts per million	217	316	319	303	318 300 289	286	220 204 180
30 to		- 08 TO 19 T	0.7 0.05	11	ŀ	18.	112	11	111
r 196		rrate (NO ₂)		П	1	.7.	4.	11	111
ctobe		Fluo- ride (F)	0.6		1	12.	110	11	111
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	14	11	1	20	1181	11	TIT
ion, wat		Sulfate (SO4)	0*	11	}	1 19	2	11	111
mi11	į	CO)	0	00	0	00	000	00	•••
ts per		car- bon- ate (HCO ₃)	148	205	202	198	196 200 194	176	158 150 138
in parts	É	tag- film (X)	2.2	11	1	2.7	2.7		111
lyses,		Sodium (Na.)	14	220	19		17 18 17	44	12 9.7 8.3
al ana	Ž	mag- ne- stum (Mg)	9.7		ł	15	11 91	11	111
Chemic		Cal- cium (Ca)	44	11	1	1.49	1 62	11	
		Iron (Fs)							
		Silica (SiQ ₂)	9.8	11	ŀ	1.6	119.	11	111
		Mean discharge (cfs)	4 14	1,440	_		1,661 1,753 2,149		11,440 12,480 12,510
		Date of collection	Oct. 1-14, 1960	Nov. 5-Dec. 3 Dec. 4-10.	Dec. 11-30	Dec. 31- Jan. 9, 1961 Jan. 10-Feb. 8	Feb. 9-Mar. 8 Mar. 9-Apr. 2 Apr. 3-17	Apr. 18-24	May 16-June 8 June 9-20 June 21-July 8

100000

00060

278 8.1	0.0	20	. T	8.7	1
278	282	331	364	412	357
ű.	ļ	l	ļ	;	-
36	21	53	34	42	36
130	125	148	164	182	161
5,300	3,820	2,770	2,230		2,970
24	24	. 28	.31	.33	0.29
174	174	203	228	242	216
.00	1	1	;		-
e.	1	1	1	-	1
4.	1	1	;	ŀ	T
7.2	1	1	i		;
8	!	!	1	;	1
•	0	-	0	9	٥
126	127	143	158	158	152
	ł				1
8.8	12	13	14	12	12
9.6	i	1	ļ	i	1
36	;	;	;	;	;
- 1	1	1	1	I	
11,290	8,139	5,062	3,618	2,410	5,085
July 9-	Aug. 8-Sept. 2	Sept. 3-15	Sept. 16-21.	Sept. 22-30	Weighted average

Temperature (°F) of water, water year October 1960 to September 1961

	Aver-	age	4 6 6 8 9 6 8 9 6	6 8 9 1 1 9 1	4 4 6 1 4 6	61 58 58
		31	11 2 2	414	1 8 1	62
		30	8 4 E	4 4	\$2 50 56	61
		29	44 32 32	33	50 50 56	62 61 50
		28	333	338	45 49 57	62 53
		27	46 39 33	32 39	4 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	62 62 51
		56	45 41 32	32 38 41	41 47 56	61 62 53
		25	35 32 32	33 39 41	4 4 6 8 4 6 9 6	63 55
1		24	47 40 32	333	5 4 6 5 6 5 6	62 61 51
,		23	47 37 33	# 4 4 4 0 0	0 4 4 8 0 8 3	61 61 59
2		22	47 34 32	333	39 45 57	62 63 58
3		21	46 36 32	8. 0.4 0.4 0.6	1451	59 2
\$		20	44 37 32	404	9.4 6.4 5.5	62 61 59
į		61	48 38 34	34 41 40	0 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	62 62 59
2		18	47 40 33	33 40 42	43 43 57	61 62 59
ישיבי לפני מכנים דמת מים מפור דמת		16 17	46 39 33	36 39 39	44 44 54	60 63 61
,	Day	16	46 40 32	35 41 41	45 42 55	62 62
		15	43 39 32	36	4 4 0 4 4 0	63 61
		14	41 40 32	4 6 4	40 47 51	62 63 61
		13	4 4 8 9 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	33	41 43 52	963
100		11 12	941 341	404	5 1 1 1 1 1 1 1 1	6 52 6 9
:			49 41 33	4 4 0 4 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3	34.6	59 61 61
		10	49 38 32	30 00	240	6.39
(4) amaterial		6	50 36 32	1 1 6	42	6.3
		8	53 41 32	4 8 0	3 4 6 0 4 0	62 62 62
		7	54 43 32	998	332	62 62 62
		9	52 40 32	33	40 39 50	62 61
		5	52 41 33	36 40	04 04 04	9 6 6 9
		4	52 41 36	32 37 39	4 4 4 2 6 4 4 9 6 9	61 63 59
ļ		ဗ	53 44 37	32	34 00	63
		2	53 42 38	4 90	42 41 49 49 49	55 26 26 26 26 26 26 26 26 26 26 26 26 26
		-	54 42 34	93		55 63 62
	Month		October November December	January February March	April May June	JulyAugustSeptember

HENRYS FORK BASIN

13-565. HENRYS FORK NEAR REXBURG, IDAHO

LOCATION .-- Temperature recorder at gaging station, 200 feet downstream from highway bridge, and 6 miles west of Rexburg, Madison

County.

DALINAGE AREA. --2,920 square miles.

RECORDS AVAILABLE. --Rater temperatures:
EXTREMEN: 1960-61. --Paret temperatures:
EXTREMEN: 1930-61. --Paret temperatures:

October 1953 to September 1961. Maximum, 78°F Aug. 5; minimum, freezing point on many days during winter months. Maximum, 78°F Aug. 5, 1961; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1960 to September 1961

						٠	ľ	150 6 70	,		;									2	3	1										
,																Day																A.rezoge
Month	_	2	3	4	5	9	7	8	6	10	1	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AVCIAGO
October Maximum Minimum	53	58 53	58 52	58 52	58	58 53	95 65	58 52	52	84	47	47	4 4 5 7	4 4 5 7	4 4 7 4	47	8 4 8 4	49	8 4	0 4 9	48	49	49	48	44	94	44	44	43 41	14	044	50
November Maximum	1,4	t 0 4	1,14	4104	4 4 0 0	0 4	41	1 0	38	3.9	3 8	3.88	38	39	37	37	37	37	37	36	36	36	2 4	35	3 38	37	37	33	33	32	11	38
December Maximum Minimum	32	33	34	34	32	32	32	32	32	32	32	32	32	32	32	32	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January Maximum Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February Maximum Minimum	32	32 32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	333	333	33	3.5	35	33.5	3.5	35.7	37	33.5	335	11	11	11	333
March Maximum	35	36 34	35	35	34	36	35	38	37 36	38	37	35	35	37	39	4138	37	4 4	43	4 9 4 0	37	39	64	4 5 2	7 4	47	4 4	43	45	47	47	38
April Maximum Minimum	4 4 4 4	51	53	53 8	4 t 8 t 4	744	4 4 4 4	4.5	8 4 6 8	41	4 4 70	4 7 7	1 4 L 4	4 4 9 6	0 4	54	6.4	50	5 1	43	51	51	4 4 6 4	44	7 t 4 7 t 7	51	4 4	50	53	54	П	94 70
Maximum	58 53	58 54	54	54 52	52 48	8 4 6 4	52 46	55	57	58	56	55	59	5.5	56	55	54	57	52	59	59	58	265	59	609	65	59	61 59	61 58	58	58	54
June Maximum Minimum	58	59	59	60 56	62 59	64	63	64	69	69	64	9 09	9 9	63	63	72	72	72	72	73	72	73	67	72	73	70	0 4 9	73	71	70 64	11	63
Maximum Minimum	71	72	72	70	53	70	71	72 67	72	70	6.5	71	73	72	73	73	72	71	72	70	71	72	27	71	17	68	73	72	71	74 68	72 69	71 67
August Maximum Minimum	74	75 68	76 70	77	78	74	72	02	8 4	69	70	70	68	70	71	72.	72	71	72	72	70	72	25	11	71	71	70	70	67	8 4 4	6.8	71
September Maximum	64	61 58	59	60 58	62 59	62 60	5.6	63	6 8 8	99	58	58	5,0	57	5.5	59	60	96	53	56	52	9 4 9	0 0	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	47	51	51	50	4 4 6 4	4 4 5	11	56 4

SNAKE RIVER MAIN STEM

SNAKE RIVER AT KING HILL, IDAHO 13-1545.

LOCATION .-- At county highway bridge, approximately 400 yards downstream from gaging station at King Hill, Elmore County, and 20 miles downstream from Big

DAALIAGE AREA .-35,800 square miles, approximately, RECORDS AALIABLE.-Chemical manises; March 1961 to September 1961 Water temperatures; March 1961 to September 1961.

EXTREMES, 1960-61. --Dissolved solids: Maximum, 354 ppm Oct. 1-31; minimum, 291 ppm May 4-June 3. Hardness: Maximum, 206 ppm Sept. 25-30; minimum, 176 ppm May 4-June 3.

Specific conductance: Maximum daily, 563 micromhos Oct. 19-Nov. 15; minimum daily, 469 micromhos May 24, 29, 31.

**Refor feaporatures: Maximum daily, 563 micromhos Oct. 19-Nov. 15; minimum daily, 769 m several days during December and January.

**RYTREMES, 1951-61.—Dissolved soilds; Maximum, 359 ppm May 1-10, 1952.

**RYTREMES, 1951-61.—Dissolved soilds; Maximum, 359 ppm Nov. 1-10, 21-30, 1953, Oct. 16-31, 1958; minimum, 160 ppm May 1-10, 1952.

**RYTREMES, 1951-61.—Dissolved soilds; Maximum, 160 ppm Nov. 1-10, 21-30, 1953, Oct. 16-31, 1958; minimum, 160 ppm May 1-10, 1952.

**RYTREMES, 1951-61.—Dissolved Maximum, 73°F Aug. 2, 1955; minimum, 40°F Feb. 2, 1956; minimum, 40°F Feb. 2, 1956.

**RYTREMES, 1951-61.—Dissolved Maximum, 73°F Aug. 2, 1955; minimum, 40°F Feb. 2, 1956.

**RYTREMES, 1951-61.—Dissolved Maximum, 73°F Aug. 2, 1955; minimum, 40°F Feb. 2, 1956.

**RYTREMES, 1951-61.—Dissolved Maximum, 73°F Aug. 2, 1955; minimum, 40°F Feb. 2, 1956.

**RYTREMES, 1951-61.—Dissolved Maximum, 73°F Aug. 2, 1955; minimum, 40°F Feb. 2, 1956.

**RYTREMES, 1951-61.—Dissolved Maximum, 73°F Aug. 2, 1955; minimum, 40°F Feb. 2, 1956.

**RYTREMES, 1951-61.—Dissolved Maximum, 73°F Aug. 2, 1955; minimum, 40°F Feb. 2, 1956.

**RYTREMES, 1951-61.—Dissolved Maximum, 73°F Aug. 2, 1955; minimum, 40°F Feb. 2, 1956.

**RYTREMES, 1951-61.—Dissolved Maximum, 73°F Aug. 2, 1955; minimum, 73°F Aug. 2, 1955;

Date Mean Silica Iron clum sium (Na) sium (Na) (R) (R) (RO ₂) (CO ₃) (RO ₂) (CO ₃) (RO ₂) (CO ₃) (RO ₃)			μ	8.2	8.2	8.1	8.2	8.2	8.3	8.3	8	8.4	8.1	8.3
Mean Silica Iron ctum stum (Na) Stum stum (Na) State Sodium Assertation Sulica Iron ctum stum (Na) State Sodium Assertation Sulica Iron ctum stum (Na) Stum Assertation Sulica Iron ctum stum (Na) Stum Assertation Iron ctum stum (Na) Stum Assertation Iron ctum stum (Na) Iron Iron ctum Iron c		Specific	duct- ance micro- nhos at 25°C)	542	537	530	537	528	518	206	499	497	484	493
Mean Cal Mag Cal Mag Cal Mag Cal Car Cal Mag Cal	Ì		ad- ad- Borp- tion ratio	ı									•	
Mean Silica Iron ctum stum (Na) stum stum (Na) Stum		co _s		16	13	ū	19	16	24	8	21	18	16	19
Mean Cal	İ	Hardr as Ca	Cal- ctum, Mag- ne- stum	202	202	192	204	200	201	195	196	189	182	190
Mean Mage	1	solids 180°C)	Tons per day											
Mean Mage	er 196	solved at	Tons per acre- foot	0.50	.49	.48	. 47	.46						
Mean discharge (Side, Iron of ties) (Sige, Side, Iron of ties) (Sige, Side, Si	Septemb	Dis (resi	Parts per million							321	324			
Mean discharge (Side, Iron of ties) (Sige, Side, Iron of ties) (Sige, Side, Si	60 to		Bo- ron (B)	90.0	ļ	1	1	11.	ŀ		1		•	
Mean discharge (Side, Iron of ties) (Sige, Side, Iron of ties) (Sige, Side, Si	er 19		Ni- trate (NO ₃)			_								
Mean discharge (Side, Iron of ties) (Sige, Side, Iron of ties) (Sige, Side, Si	Octo		Fluo- ride (F)	0.8	1	!	!	۲.	-	1	1	1	9.	T -
Mean discharge (Side, Iron of ties) (Sige, Side, Iron of ties) (Sige, Side, Si	ter year		Chloride (C1)	56	1	1	;	22	1	!	;	!	56	!
Mean discharge (Side, Iron of ties) (Sige, Side, Iron of ties) (Sige, Side, Si	lion, wa		Sulfate (SO ₄)	55	1	1	ł	20	1	ł	1	1	20	!
Mean discharge (Sinca fron cite) (Cis) (Sinca fron cite) (Sinca fr	r mil.	į	ate (CO ₃)	٥	0	0	0	•	-	-	0	4	0	8
Mean discharge (Sinca fron cite) (Cis) (Sinca fron cite) (Sinca fr	rts pe			230	230	228	226	224	214	211	214	201	202	202
Mean discharge (Sinca fron cite) (Cis) (Sinca fron cite) (Sinca fr	in pa	۾	tas- stum (K)	4.5	;	1	!	4.8	-	!	1	1	5.6	Ī
Mean discharge (Sinca fron cite) (Cis) (Sinca fron cite) (Sinca fr	alyses,		Sodium (Na)	36	35	35	34	34	33	33	33	33	33	33
Mean discharge (Sinca fron cite) (Cis) (Sinca fron cite) (Sinca fr	cal an	٤	nie- stum (Mg)	20	1	1	ı	19	<u></u> ¦	ł	į	1	19	!
Mean Silica (516), (518) (518) (518) (518) (518) (518) (518) (518) (517) (517) (517) (518) (517) (518) (517) (518) (517) (518) (517) (518) (517) (518)	Chem		Call- cfum (Ca)	49	!	1	1	48	1	!	!	!	42	1
Mean discharge (cfs) (cfs) (cfs) 8,795 8,528 8,528 8,518 7,810 7,510 7,617 7,115 7,115						_								
Mean discharge (cfs) (cfs) (cfs) 8,795 8,528 8,528 8,518 7,810 7,510 7,617 7,115 7,115			Silica (SiQ ₄)	35	1	1	;	34	1	1	1	1	32	1
Date of collection of collecti			Mean discharge (cfs)	8,795	8,528	8,219	8,178	7,810						
Oct Nov Dec Jan Jan Mark			Date of collection	0ct. 1-31, 1960	Nov. 1-30	Dec. 1-11,	Dec. 12-31	Jan. 1-16, 1961	Jan. 17-Feb. 5	Feb. 6-21	Feb. 22-Mar. 10	Mar. 11-28	Mar. 29-Apr. 15	Apr. 16-May 3

SNAKE RIVER MAIN STEM--Continued

13-1545. SNAKE RIVER AT KING HILL, IDAHO -- Continued

1		甁	503 8.0 503 8.2 505 8.2 505 8.2 516 8.3 542 8.7	1
	Specific con-	duct- ance (micro- mhos at 25°C)	480 503 505 486 516 542	513
	ģ.	ad- ad- sorp- tion ratio	110111	1
		Non- car- bon-	20 28 20 19 20 21	19
	Hardness as CaCO ₃	Cal- clum, Mag- ne- stum	176 188 197 183 201 206	195
inued	Dissolved solids (residue at 180°C)	Tons per day	5,240 5,590 5,700 6,840 6,810	6,560
Cont	Dissolved solids	Tons per acre- foot	44.44.4 88.44.4 88.44.4	0.44
tber 1961	Dis (resi	Parts per million	291 312 318 311 314 337	326
Septer		. Bo-	2.7 0.09	1
to t		Ni- trate (NO,)	i i	l
. 1960		Fluo- Ni- ride trate (F) (NO.)	1100	1
Chemical analyses, in parts per million, water year October 1960 to September 1961 Continued		Chloride (CI)	1 8	1
ater yea		Sulfate (SO4)	25	1
on, w	,	15 de 15 de	000011	п
m1111	Bi-	car- bon- ate (HCO ₂)	190 204 206 199 200 203	212
s per		For task	1 4 1 1 1	
, in part		Sodium (Na)	32 34 32 37	34
lyses,		Mag- ne- stum (Mg)	118111	ŀ
al an		Cal- ctum (Ca)	1 24	1
Chemic		Fe)		
		Silica (SiQ,)	1 8	-
		Mean discharge (cfs)	6,664 6,630 6,634 6,960 7,412 7,485	7,457
		Date of collection	May 4- June 3, 1961. June 4-July 2. July 3-Aug. 2 Sept. 1-24. Sept. 25-30.	Weighted average

Temperature (°F) of water, water year October 1980 to September 1961

	ا ا	6.1				
	Ave	age	52 4	4 51 53	56 61 64	800
		3	53	5 52	121	8 6 1
		30	53	2 2	69	67 66 56
		29	404	5 5	59 65 68	68 67 56
		28	C 4 4	49 51 55	5.5 6.5 8.5 8.5	69
		27	50	4.9 5.0 5.5	7.9 4.0 8.0	69
		26	51	50.00	5.5 4.6 5.9	67 67 57
3		25	50	500	2 4 6	57
Š		24	501	000	5 4 6	68 67 57
		23	500	50	56 64 69	68 7.2
2		22	51	49 51 55	5.5 6.4 6.9	67 68 57
3		21	58	52.4	8 63	8 8 8
3		20	5028	50	57	5 6 6
		19	52 52	3000	5 5 5 6 6 2 6	6 6 F
		18	52 64	500	52	8 8 0
		17	5.6 5.3 4.9	51 52 54	50	89
	Day	16	€ € € €	51 52 54	5.5	69 66 61
Terminal of the control and the control of the cont		15	₹ 5 € 80 € 80 € 80 € 80 € 80 € 80 € 80 €	533	400	69 66 61
		4	55	533	5.0 5.0 6.0	68 66 61
		-3	8.8 7.4	52	56 59 65	68 67 61
		12	53	52	% 0° 4	68 69
•		=	5.5 5.2 4.8	53	55 65	68 68 60
-		10	52	49 53	59	 69 61
		6	56 52 47	49 52 51	55 66	69 61
		8	58	52 51	6.9	68 69 61
Ì		7	59 52 48	49 51 51	58 58 65	68
		6	61 53 49	49 51 51	56 59 66	68 69 61
		5	60 53 50	48 50 51	57 57 65	68 69 61
		4	60 53	500	57	67 66 61
		3	50 50 50	50 50 50	0 0 0 0 0 0	67
		2	50.00	50	57 58 66	67 63
		-	3 2 S	48 51 51	56 59 65	66 67 65
	Month		October November December	January February March	April May June	JulyAugust

Hd

562 8.0 498 7.9 661 7.6 667 7.6

689 7.6

694 7.6 690 7.6 699 7.7 680 7.6 672 7.8

BOISE RIVER BASIN

13-2125. BOISE RIVER AT NOTUS, IDAHO

LOCATION.—At highway bridge, 1,100 feet upstream from gaging station, 0.2 mile southeast of Notus, Canyon County, and 7 miles northwest of Caldwell.

RECORDS AVAILABLE.—Chemical analyses: January 1839 to January 18940, November 1950 to September 1961.

RECORDS AVAILABLE.—Chemical analyses: January 1839 to January 183

1		Ω,	ا∞ا			^	7	7	^	١,	-	~	7	۰ ۰	٥ ٢	7
	Specific con-	duct- ance (micro- mhos at 25°C)	562 8	498	661	299	689	694	069	669	680	672	788	537	418	604
	8.	ad- ad- Borp- tton ratio	2.2	1	1	1	I	2.3	T	I	!	1	3.2			T
		Non- car- bon-	0	0	0	0	0	0	0	0	0	0	0	0 0	o C	0
	Hardness as CaCO,	Cal- clum, Mag- ne- stum	158	126	192	192	194	196	199	130	184	188	198	134	109	150
1	Dissolved solids (residue at 180°C)	Tons per day	506				768	676	674	289	564	503	165	65.1	109.9	76 8
er 196	Dissolved solids esidue at 180°	Tons per acre- foot	0.51	.45	. 59	9.	. 62	.64	.63	. 61	. 29	. 59	69	84.	32	.54
Septemb	Dis (resi	Parts per million	375	330	436	444	458	468	465	449	431	435	208	351	975	395
960 to		ron (B)	4.8 0.10	!	ł	ŀ	I	.03	ŀ	1	1	l	•			
ber 1		rrate (NO ₃)	ı	ł	l	۱ _	!	9.0	ì	!	!	ł	5.4		1 1	
Octo		Fluo- Ni- ride trate (F) (NO ₃)	9.0	1	1	1	¦	8.	!	i	!	1	.7	<u> </u>		-
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	16	ł	!	1	ŀ	20	1	ł	!	!	30	1	11	
lion, wa		Sulfate (SO ₄)	89	!	1	;	1	86	;	1	ŀ	1	104	!	1 1	
r mil	į	ate (CO ₃)	۰	0	0	0	0	0	0	0	0	0	0	0	0	0
rts pe	-i8	car- bon- ate (HCO ₃)	244	220	286	284	289	287	286	288	288	281	343	207	204	223
, in par	ć	tas- stum (K)	4.7	1	!	ł	ł	5.2	1	1	1	1	7.8	ł		
alyses,	Sodium (Na)			22	77	28	82	74	73	82	79	80	104	64	26.7	72
ical ar	}	nag- ne- stum (Mg)	12	;	1	1	1	15	1	;	;	;	17	ŀ	1 :	<u> </u>
Chem		Cal- (Ca)	44	ŀ	1	1	1	54	1	i	1	}	52	}	1	1
		fron (Fe)														
		Silica (SiQ ₂)	32	!	1	1	1	36		!	1	ł	82	<u> </u>	1	LL
		Msan discharge (Si (cfs)				736	621					428				72.0
		Date of collection	Oct. 1-9, 1960	oct. 10-16	Oct. 17-Nov. 16	Nov. 17-Dec. 3	Dec. 4- Jan. 2, 1961	Jan. 3-28	Jan. 29-Feb. 16	Feb. 17-Mar. 13	Mar. 14-18	Mar. 19-Apr. 10	Apr. 11-16	Apr. 17-19	Apr. 20-22	Apr. 27-29

BOISE RIVER BASIN -- Continued

13-2125. BOISE RIVER AT NOTUS, IDAHO--Continued

		Hd	7.6	7.7	7.9	8.0	7.9	8.1	8.5	8.0	7.9	8.0	8,1	8.1	8.0	8.3	802 8.3	8.1	8.0	9.7	
	Specific con-	duct- ance (micro- mhos at 25°C)	438	765	428	536	715	571	761	191	598	206	636	783	672	607	802	831	781	573	99
		ad- ad- Borp-(1 tfon ratio	1	¦	T	1	1	ï	1	1	ŧ	1	1	1	1	2.4	ł	I	1	1	1
		Non- car- bon- ate	0	0	0	0	0	0	0	•	0	0	•	•	0	0	0	0	0	•	ŀ
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	115	190	116	139	176	149	190	192	156	136	164	190	172	160	196	200	188	148	185
fuued	Dissolved solids (residue at 180°C)	Tons per day	128	259	194	118	63.4	94.7	8.09	67.8	80.9	216	168	115	155	217	77.77	92.9	145	009	447
Cont	Diss olv ed s olids esidue at 180°	Tons per acre- foot	0.39	.70	.38	.48	.64	. 50	. 67	69	. 52	. 44	. 56	. 70	.61	0.56	.74	.76	. 70	. 51	0.59
Chemical analyses, in parts per million, water year October 1980 to September 1961Continued	Dis (resi	Parts per million	286	516	277	356	474	371	495	206	384	324	412	514			545	261	516	372	436
Septen		- 10n (B)	1	!	1	1	1	1	1	1	1	1	1	1	1	4.3 0.16	1	;	1	1	-
0 to	i	Fluo- Ni- ride trate (F) (NO ₃)	ŀ	1	!	!	1	1	!	!	1	!	;	1		_		1	ł	!	
r 196			1	+	1	!	;	-	-	1	-	!		!	!	9.0	-	!	!	!	Ľ
r Octobe		Chloride (CI)	ŀ	1	1	!	:	;	1	١	;	!	ł	1	ŀ	20	1	ł	1	1	1
ater yea		Sulfate (SO4)	ı	1	1	ŀ	ł	l	!	1	1	1	1	ł	ł	80	1	I	!	1	1
on, w		bon- ate (CO ₃)	٥	0	0	0	0	0	7	0	0	0	0	0	0	0	4	0	0	•	0
m111:	Bi-	car- bon- ate (HCO ₃)	174	282	174	214	261	225	262	285	232	206	249	288	264	247	300	318	306	246	277
ts per	ć	stun Stum (K)	1	ł	1	1	1	1	I	1	1	1	1	1	ŀ	5.0	1	į	;	1	1
in par		Sodium (Na)	47	66	45	64	88	70	97	104	20	57	11	66	78	71	114	119	108	20	. 77
lyses,	Mag	nie- nie- stum (Mg)	;	ł	;	1	;	1	1	;	i	;	ł	;	;	13	ŀ	1	ł	ł	:
al ans		Cal- ctum (Ca)	;	ł	1	ł	1	1	1	ŀ	1	1	1	;	!	42	1	1	!	1	:
Chemic		Iron (Fe)																			
		Silica (SiQ,)	ŀ	1	1	1	1	1	1	1	1	1	1	!	ı	33	: 1	1	!	l	i
		Mean discharge (SiQ (cfs)	166	186										82.8	128	198	52.8	61.3	104	297	379.3
		Date of collection	Apr. 30-	May 4	May 5-8	May 9.	May 10, 11	May 12-15	May 16-19	May 20-27	May 28. 29.	May 30-June 5	June 6-16	June 17-28	June 29-July 5	July 6-11.	July 12-31	Aug. 1-30	Aug. 31-Sept. 18	Sept. 19-30	Weighted average

BOISE RIVER BASIN--Continued

13-2125. BOISE RIVER AT NOTUS, IDANO--Continued Temperature ('P) of water, water year October 1960 to September 1961

١,					
Aver	age	5 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	25 4 4	59 66 77	80 78 64
	31	52 43	312	121	281
	30	20 4 4	518	722	6 4 80
	29	544	2 2	68 65 76	79 76 55
	28	53 45 45	53 53	68 67 78	80 76 60
	27	5.0 4.6 4.6	44 49 50	67 70 80	81 76 61
	26	52.25	7 0 4 0 8	328	82 76 60
	25	53	4 4 6 6	8 2 8	132
	24	520	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	44.08	81 77 60
	23	\$ 7.4	50	53 73 80	82 76
	22	0.44 0.60 0.00	200	803	889
	21	000	4 0 W	200	81 80 62
	20	80.4	4 0 E	3 5 4	880
	6	\$0.4	346	8308	92
	18	\$ 0.0 4 4	4 4 70	8208	81 79 65
	17	8000	4 4 4 0 8 4	326	9 4 5 5
Day	16	7 0 C	4 4 8	62 79	83
_	15	244	52.4	962	883
	14	400	50 50 50	58 77	8 8 6 5 0 7
	13	400	518	3 4 5	63
	12	20 4 4 20 80 40	7 4 4 7 8 8	55	80
	=	5024	7 E 8 4	73	888
	0	202	4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	56 67 75	800
	6	222	400	2002	626
	80	212	424	53	78
	7	0 1 1	4 0 0 4 4 0 0 4	7.00	75 7 67 67
	9	1024	600	4 6 5	252
	2	00.4 00.4	444	57 57	47 75 75
	4	80.9	108	25.52	83
	3	0 0 4 0 0 8 0 0 4	4 0 4	60 25 20 20 20	78 83 67 67
	2	4 8 2 6 6	244	255	0 2 9
	_	66 52 46 46	4 4 4	64 62 70 7	73 82 84 64 64
Month	Month	October November	January February	April May.	July August September

MALHEUR RIVER BASIN

13-2270. BULLY CREEK NEAR VALE, OREG.

LOCATION .-- At county highway bridge, 2 miles downstream from gaging station, 5 miles upstream from mouth, and 5 miles southwest of

FATINGE AREA.—570 quate miles, approximately, upstream from gaging station.

PALI Malheur County.

DANIAGE AREA.—570 quate miles, approximately, upstream from gaging station.

BECOUNDS ANIALMENS.—1804 quate miles, approximately, upstream from gaging station.

Sediment records: April 1958 to September 1961.

Sediment concentrations: Maximum 4817, 2,360 ppm Feb. 3.

Sediment concentrations: Maximum 4817, 1,340 clons Feb. 3; minimum 4817, less than 0.50 ton on many days during year.

Sediment concentrations: Maximum 4817, 1,340 ppm Sept. 14, 1959.

Sediment concentrations: Maximum 4817, 12,800 ppm Sept. 14, 1959.

Sediment loads: Maximum 48117, 7,330 tons Mar. 8, 1960; minimum 48111, less than 0.50 ton on many days each year.

						Ţ	Temperature (°F) of water, water year October 1960 to September 1961	atu	re ((F)	Jo	vate	ř.	vate	r ye	ar	Cto	ber	196	0 to	Sej	otem	ber	196	_						
Moneh															Day																Aver-
MORE	-	7	3	4	2	9	~	ω	6	10 1	1 12	2 13	14	47	16	14 15 16 17 18	18	19	20	21	20 21 22 23 24	23	24	25	25 26 27 28 29	27	28		30	31	age
October November	43 104 104 104		141	116	33 - 1	111	1 33		09		33	34	111	1 4 1	181 615 101	57	111	56	141	112	1104	39	52 50	111	51	311	0 4 6	111	121	31.00	111
anuary February March	34		1901	841	1 4 1 E 4 4	93 4 7 7 7	42 41		8 4 6 4		40 41 1		53 6	1 4 6	1 4 6	5.5	1 4 4	111	4 4 1 2 0 2 0 2 0 1 1 1 1 1 1 1 1 1 1 1 1 1	111	140	8 4	1 46 0	8 3	118	4 4	204	1 %	5 3	111	111
April	54 61 60		1 5 1 1 5 1	144	111	211	36 35		5 1 % 8 1 %		51 72		1 4		1 88 1	141	211	118	121	111	415	121	19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	181	111	121	92	192	113	121	111
July 75 August 72	1- 75 1- 80 12 1-		112		5 2 4		69 17 18		72 79 69		1 49		76		1 1 1		70 67 10 10 10 10 10	181	713		82		76 76 59	111	173	<u>* </u>	#	121	75 59	811	111

SNAKE RIVER BASIN

MALHEUR RIVER BASIN -- Continued

13-2270. BULLY CREEK NEAR VALE, OREG. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported, loads are estimated)

ł		OCTOBE	R		NOVEMBE	₹	1 (ECEMBER	
		Suspen	ded sediment		Suspen	ded sediment		Suspen	ded sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	15		2	10	C 12	T	8.6	C 38	1
2	14	50	2	10	C 12	T	8 • 2	C 38	1
3	14	C 21	1	10	C 12	Ţ	8 • 2	C 38	1
5	14 14	C 21	1 1	10 10	C 12	Ť	9•5 7•8	C 38	1 1
i	-							i	
6	14	C 21	1	10	C 12	Ţ	7.0	C 38	1
7	14	C 21 C 21	1	10 10	C 12	T	6•5 6•0	C 38 C 38	1
9	13 12	C 21	1	10	C 12	†	6.0	C 38	i
ió	12	c 21	i	10	c 12	Ť	6.0	C 38	Ť
1	14	C 21	1	10	C 12	т	6.0	C 14	т
2	13	C 21	i	10	c 12	i	6.0	C 14	Ť
3	12	C 21	1	10	C 12	T	6.0	C 14	T
4	11	C 21	1	10	C 12	Ţ	6.0	C 14 C 14	Ţ
15	12	C 21	1	10	C 12	Τ	6.5	C 14	T
16	11	8	т	10	C 12	т	7.0	C 14	Ţ
17	11		Ī	9.5	C 12	Ţ	8.0	C 14 C 14	Ţ
9	10 11	100	J 4	10 10	C 12 C 12	T T	9•0 8•5	C 14	T T
20	10	100	J 4 B 2	9.5	C 12	i i	8.0	C 14	ī
- [T	1	C 14	т
21	11 10	C 27	1	9.0	C 12	ļ ¦	7.0 8.0	C 14	į į
23	10	C 27	i	9.0	C 12	į į	8.0	C 14	į į
4	10	C 27	1	8.6	C 12	T	7.5	C 14	Ţ
25 • •	10	C 27	1	8.6	C 12	т	7.0	C 14	T
6	10	C 27	1	8 • 6	C 35	1	7•5	C 14	т
7	10	C 27	1	8.6		1	8.0	C 14	Ţ
9	10 10	190	A 5	8.6	C 35	1	7•4 7•0	C 14 C 14	Ţ
30	10		1 1	8.6	C 35	i	7.0	C 14	i
31	io	27	î	1	==		7.4	C 14	Ť
otal	362		39	286•2		13	226•6		15
		JANUAR'	Y	l	FEBRUAR	•	_	MARCH	
1	7.0	C 24	Т	92	1270	5 402	8+2		1
2	6.5	C 24	į į	52	1250	5 276	7-8	44	1
3	6.5 6.0	C 24	T T	196 50	2360 420	5 1340 57	7•8 7•8		1 1
5	6.0	C 24	'†	34	122	ii	8.2		i
l l		l	т	29	74	6	8.6	27	1
7	6.0 6.0		ļ ;	21	55	3	8.6		1
в	7.0	C 24	i i	28	68	5	8.2		î
9	7.5	C 24	T	22	55	3	7.8	C 17	T
.0	8.0	C 24	1	98	767	5 290	7.8	C 17	т
1	9.0	C 24	1	78	240	51	7-8	C 17	т т
2	9.5	C 24	1	50	105	14	7.8	C 17	Ţ
3	9.5	C 24	1	38	73	7	8 • 2	C 17	T T
5	9.0 9.0	C 24	1	34 35	69 73	6 7	8 • 2 5 4	594	5 102
- 1		1			i	·			ŀ
7	8 • 2 7 • 8		1	28 16	71 62	5 3	63 28	204 115	35
8	7.8		1	15	62	3	22	40	Ź
9	7.4		1	14	54	В 2	19	25	8 1
:0	7.4	32	1	13	C 34	1	15	120	A 5
1	7.0		1	12	C 34	1	12	100	В 3
2	7.0	7.7	1	12	C 34	1	10	66 54	2 2
3	7.0 6.5	46	E 1	12 10	C 34	1	13 59	230	A 37
5	6.0	48	i	10	C 34	i	57	160	25
6			1	10	85	A 2	50	61	8
7	6.0 6.5	57	1	9.0	44	B 1	44	53	6
8	7.0	65	1	8.2	38	1	34	50	5
9	7.8		1				24	44	3
1	8 • 2 9 • 0	100	1 2				29 16	71 64	5 7 K 4
•••	7.00	100		ļ			L		<u> </u>
otal	229.1		27	1026.2		2501	661.8		266

E Estimated.
S Computed by subdividing day.
T Less than 0.50 ton.
A Computed from partly estimated concentration graph.

B Computed from estimated concentration graph. C Composite period.
J Computed from partly estimated concentration graph and subdividing day.

MALHEUR RIVER BASIN--Continued

13-2270. BULLY CREEK NEAR VALE, OREG. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported, loads are estimated)

		APRIL			MAY		1	JUNE	
		Susper	nded sediment		Suspen	ded sediment		Suspen	ded sedimen
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	19	24	1	5.4	C 24	Ţ	7-8	51	1
2	32	260	K 27	5.4	C 24	Ī	7.8		2
3	37 24	140 74	A 14 B 5	5.8	C 24	Ţ	7.8 7.8	77	2
5	14	31	B 1	6.6	C 24	į į	7.8		2 2
						_	8.6		2
7	12 12	C 11	T	7.0 6.2	C 24	Ţ	8.6	119	3
8	12	c 11	÷	5.8	C 24	i i	7.8		
9	12	C 11 C 11 C 11	Ť	6.2	C 24	7	7.0		2 2 2
.0	10	C 11	T	6.2	C 24	T	7.0	83	2
1	8 • 2	C 11	1	7.0	C 24	ī	7.0		2
2	4.2	C 9	Т	6.6	C 24	ī	7.4		
3	4.0	C 9	<u> </u>	7.0	C 24	Ţ	7.0	76	1
5	2.5 2.5	C 9 C 9 C 9	1 1	7.0	C 32	1	6.6 7.0		2 1 1 1
					1				
6	2.5	C 9	T	7.4	C 32	1	7.0	63	1
7	2 • 5	C 9	Ţ	7.8	C 32	1 1	6.6 7.0		1 2
9	2•5 2•5	C 9	T	8 • 2	C 32	i	7.4	85	, ,
0	9.2		i	8.6	C 32	i	7.0		2
			-						2
1	4 • 8	C 16	Ţ	8.6	C 32	1 1	7.4 7.0	550	A 10
3	4.5 4.5	C 16	T	9.5	C 32	ı	7.4		10
4	4.8	C 16	l i	9.5	C 32	1	7.4		2 2
5	4.2	C 16	T	9.5	C 32	1	7-4		2
6	4.5	C 16	Т .	9.0	C 32	1	7.0		2
7			Ť	9.0	C 32	1	6.6		2
8	4.5	C 16	T	9.0	C 32	1	6.6		2
9	4 • 8	C 16	Ī		C 32	1	9•5 9•5	140 113	A 4
0	5.0	C 16		8 • 2 8 • 2	C 32	1	9.5	115	
_				+					
otal	27 •4		53	234.5		23	223.4		66
		JULY			AUGUST			EPTEMBE	₹
1	7.8		1	5.4		1	2•2	C 30	Т Т
2	7.4	55	E 1	5.4	66	1	2.2	C 30	l Ī
3	7.0 7.0		1	5 · 8		1 2	2 • 2	C 30	T
5	7.0	320	A 6	5.8	130	2	2.2	c 30	į į
- 1					1				_
6	7.0	130	B 2	5.8		2 1	2 • 2	C 30	1
7	7•0 6• 6	18	1 1	5 · 8 5 · 8	75	i	2 • 2 2 • 2	C 30	1
9	6+2	75	l ī	6.2		i	2.2	C 30	T T
0	6.2		1	5.8	75	1	2•2	C 30	T
1	5.8	150	2	5.4		1	2.2	C 30	1
2	5.8		1	5.0		1	2.2		T
3	5.4		1	5.0	130	2	2 • 2	C 30	T
4	5 • 8	56	1	5.0		1	2.2	C 30	Ţ
5	6 • 2		1	4.5	13	T	2 • 2	C 30	1
6	6.2		2	4.2		T	2 • 2	C 30	1
7	5.8	100	2	4.2	65	1	2.2 2.4 2.4	C 30	т т
8	5 • 8 5 • 8		2	4.0 3.5	23	T T	2.4	C 30	Ī
9••	6.2	69	1	3.2		<u>'</u>	2.4	C 30	;
- 1				-			1	1	
1	5 • 8		1	3.2	15	Ţ	2•4	C 30	T
3	5.4 5.4	92	1	3.2 2.8	80	T 1	2.4	C 30	i ;
4	5.4	88	i	2.8		T	2 • 4	C 30	ľ
5	5.4		1	3.0		Т	2•4	C 30	г
6	5.8	95	1	2.8	23	т	2.4	C 30	,
7	5.4	70		2.8		i i	2.2	C 30	l i
	5.4	190	A 3	2.2		Г	2 • 2	C 30	т
	5.8	120	В 2	2.4		T	2 • 2	C 30	T
9		95	1	2.4	28	T T	2 • 2	C 30	Ţ
9	5.8								
9 0 1	5 • 8		1	2.5			ļ		
9	189.4		44	131.1		23	67.8		5

E Estimated, T Less than 0.50 ton. A Computed from partly estimated concentration graph.

B Computed from estimated concentration

graph.
C Computed from estimated concentration
K Computed from estimated-concentration
graph and subdividing day.

MALHEUR RIVER BASIN--Continued

13-2270. BULLY CREEK NEAR VALE, OREG. --Continued

Particle-size analyses of suspended sediment, water year October 1960 to September 1961 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantion; N, in native water; D, control of stonery V, views of property of the line water;

	Mother	Jo	analysis	SBWC
İ			2,000	
			1.000	100
		eters	0.500	88
		millim	0.250	98
	Iment	Percent finer than size indicated, in millimeters	002 0.004 0.008 0.016 0.031 0.062 0.125 0.250 0.500 1.000 2.000	98 86
	Suspended sediment	e indica	0.062	97
	Suspen	han size	0.031	97
water)		finer t	0.016	92
stilled		ercent	0.008	82 69
, E		-	0.004	68 59
tabe; v			0.002	44
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)	Godfmont	discharge	(tons per day)	
S, steve; V, viv		concen- tration		908
P, pipet;		Discharge (cfs)		78
	Water tem-	per-	(*F)	36
	0	ling	pome	
		Time (24 hour)		2255 2350
		Date of collection		Feb. 3, 1961

MALHEUR RIVER BASIN--Continued

13-2340. MALHEUR RIVER NEAR ONTARIO, OREG.

LOCATION.--At bridge on State Highway 201, 0.4 mile upstream from mouth, 1.5 miles northwest of Ontario, Malheur County, and 5.8 miles downstream from Brosman Diversion Dam.
Brosman Diversion Dam.
RECORDS AVAILABLE.--Chemical analyses: August 1960 to August 1961.
REMARKS.--No discharge records available.

		Tur- bid- ity	35	45	97	35	35	75	09	110	55	22	09	70	위
l	<u> </u>		1	1	T	1	T	1		.04					!
		or -100		_		_		_			_			_	-
		рН		œ	œ	œ,	œ	8 1	8,5	8.4	8.0	8.2	8.0	8.0	0.8
	To-Specific tal conduct-	ance (micro- mhos at 25°C)	1,560	1,500	1,590	1,510	1,520	1,390	1,270	1,030	1,090	1,580	1,830	1,850	1,760
	년 달	ity (1		-	_	_	_						_	_	
	Hardness as CaCO,	Non- car- bon- ate								0	0	0	0	0	٥
	Hard as C	Cal- cium, mag- nesium						308		222					- 1
		solids (residue at 180°C)	L.					1,000		719					i
196	Phos-	trate phate (NO ₃) (PO ₄)	1	4.8	. 97	1.1	1.2	1.2	66	. 79	. 91	1.2	1.7	1.3	1.3
8t 16	ż	(NO ₃)		6.2		6	4	6	5.6	3.8	5.6	3.6	3.0	۳.	2.2
Augu	9	ride (F)	0.7	œ.	œ.	۰.	80.	1.1	45	9.	7.	80	6.	80	6.
August 1960 to August 1961		(CI)	99	62	55	28	29	54	8	38	20	70	68	87	98
n, Augus		Sulfate (SO ₄)	376	369	379	326	338	314	283	215	224	362	415	463	419
1116		g # g		0						1		0	0	0	0
per million,		bon- ate (HCO ₃	45	_	_	47	20	445	38	331					
	Am-	nium (NH 4)	!	!	0.0	•	۲.	Τ.	٠.	Τ.	Τ.	٥.	1.1	1.0	6.
in parts	Pot-	stum stum (K)	13	13	12	12	12	11	10		9.6	13	12	12	115
Chemical analyses,	:	Sodium (Na)	242	244	237	224	233	206	190	152	163	250	314	330	304
cal ar	Mag-	ne- sium (Mg)	59	58	32	56	58	56	27	21	55	30	31	33	33
Chemi	-[6]	cium (Ca)	7.5	78	82	83	89	81	70	54	22	69	09	57	67
	Man-	ga- nese (Mn)													
		(Fe)													
	Alu-	mum (A1)													
l		e (SiO ₂) mum (Al)	46	46	45	44	47	42	43	39	35	38	39	40	44
	Mean	discharge (cfs)													
		of collection	Aug. 25, 1960	Sept. 20	Oct. 25	Nov. 8	Dec. 14	Jan. 31, 1961	Feb. 28	Mar. 29	Apr. 25	May 22	June 27	July 25	Aug. 30

WEISER RIVER BASIN

13-2513. WEST BRANCH WEISER RIVER NEAR TAMARACK, IDAHO

LOCATION: --Temperature recorder at gaging station, at Price Valley guard station, 0.1 mile upstream from East Branch Weiser River, and 5.2 miles nortbewest of Temarack, Adams County.

DRAINGE ARRA, --3.96 square miles.

RECORDS AVAILABLE. --Water temperatures: Argust 1959 to September 1961.

EXTREMESS, 1966-61.--Water temperatures: Maximum, 61°F on several days during August; minimum, freezing point on many days during winter months.

Maximum, 62°F July 20, 1960; minimum, freezing point on many days during winter months. EXTREMES, 1959-61, -- Water temperatures:

terms (°F) of water

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 2 12 2 2 3 2 4 2 5 2 6 27 2 8 29 30 1 444 42 42 42 42 42 42 43 43 41 42 43 43 40 34 0 34 34 0 34 34 34 34 34 34 34 34 34 34 34 34 34																Day															•	
4, 18, 48, 48, 49, 47, 47, 47, 47, 45, 46, 45, 44, 40, 40, 42, 43, 43, 44, 44, 40, 40, 41, 37, 37, 36, 39, 39, 39, 39, 39, 39, 39, 39, 39, 39	Month	-	2	3	4	-	9		-	<u> </u>	-	112	-			9	17	18	19	20	21	22	23	24	25	-	_		_	-	1 Average	3
44 42 43 41 42 43 41 42 43 41 42 43 41 42 43 41 42 43 41 42 43 41 42 43 41 42 43<	Will.	_						_							42	43	43	643	43	43	43	44		643		0						4
44, 136, 39, 37, 34, 34, 37, 38, 38, 37, 34, 34, 34, 35, 36, 36, 36, 37, 37, 37, 36, 37, 37, 38, 39, 34, 34, 37, 37, 38, 39, 37, 37, 38, 39, 39, 39, 39, 39, 39, 39, 39, 39, 39	Ħ			_											37	33	33	36	39	39	41	40		1,		37				_		0 7
36 36<	Ε		38	_			_			_			36		36	34	36	37	37	36	36	35	34	34		_					-	9
35 36<	F	38	36	_			_		_	_			35		34	34	34	35	35	34	34	34	34	34	_					_	-	35
34 35 36<	,				_					_					35	35	34	34	34	35	34	34		35		4.		_		_	_	5
34 34<	Minimum												_		33	34	34	34	33	34	33	33		33	_	4			_			34
32 32 33 33 34<	E		34	_											34	35	35	34	34	33	34	33		33		- 4						*
32 32 34<	H		33		_		_		_	_					34	34	33	33	32	35	32	32		32		32		_		_		33
35 34 34 34 34 34 35 34 34 35 34 34 35 34 34 35 34 34 35 34 34 35 34 34 35 34 34 35 34 35 34 34 35 34 35 34 35 34 35 34 34 35 34 35 34 35 34 35 34 35 34 34 35 34 35 34 34 35 34 34 35 34 34 35 34 34 35 34 34 34 35 36<	5	32													36		35		35	35	36	35		35		_			_			7
36 36 36 36 36 36 36 36 37 36 37 36 37 36 37 36 37 36 37 36 37 36 37 36 37 36 37 36 37 36 37 36 37 36 37<	Minimum	32	_			_		_						_	35		34		34	35	35	34		34		_		_		_		34
39 39 39 40 40 40 40 38 40 40 40 40 40 40 40 40 40 40 40 40 40	811	36	35												37		38		38	38	38	38		3.8					_			~
39 39 39 40 40 40 40 42 42 40 41 40 43 42 42 40 41 40 40 43 42 42 40 41 40 43 42 42 40 41 40 40 42 42 40 41 40 43 43 43 43 43 43 43 43 44 47 49 50 44 50 50 51 53 38 39 40<	Minimum	35	33	_											36		36		36	37	36	36		37	_			_	_	_		35
38 38 37 37 37 37 38 38 38 38 38 38 38 38 38 39 38 39 38 39 38 39 39 38 39 38 38 39 38 38 39 38 39 38 38 39 38 39 39 38 39 38 39 38 39 40<	April		39					_	—					~	4		45	0,4	42	0,4	4.1	0.4	0,	43	_	_			_		1	7
43 42 40 41 43 42 43 45 40 40 40 40 50 44 50 50 44 50 40<	Minimum	38	38							_		_			38	38	38	39	38	38	38	39	39	38		_					-	38
36 36 36 36 36 36 40 39 40 50 60 60 50 50 50 50 60 60 60 50 50 50 60 60 60 50 50 50 60 60 60<	May	43													43		44	47	64	20	44	20		51	_	_			_			9
56 54 51 53 56 56 55 55 56 56 56 56 57 56 67 68 58 58 58 58 59 57 56 57 58 58 58 58 58 58 58 58 58 58 58 58 58	Minimum	38			_							_			39		0	,0	0 4	42	42	4.1		7 7						_	_	1
55 57 55 56 55 57 56 68 59 58 60 59 58 59 58 60 59 51 51 52 51 51 48 50 50 50 50 51 51 50 50 50 50 50 50 50 50 50 50 50 50 50	June .	4													7		ď	ď	ç	9	7.	24		ď						_	1	4
55 57 55 56 55 57 58 58 59 58 59 58 60 59 59 58 50 59 58 59 58 50 50 50 51 52 52 54 51 51 52 50 50 50 50 51 52 52 54 51 51 51 51 51 51 51 51 51 51 51 51 51	Maximum														4		5.1	51	52	27	2.2	4 60		2 2						_		50
47 49 51 52 52 51 51 51 51 51 51 51 51 51 51 51 51 51	July		57		9			_							59	58	58		57	57	58	59		58	_							80
52 52 54 55 66 57 53 54 54 53 53 54 54 68 60 61 61 60 61 61 60 62 53 53 52 50 60 64 64 64 64 64 64 64 64 64 64 64 64 64	Minimum		64	_					_				_		53	51	5		20	51	52	25		51	_			_	_	_		5
3. 52 52 54 55 66 57 53 54 54 53 53 54 54 65 55 55 55 56 56 56 56 56 56 57 58 58 54 55 56 54 56 54 56 54 56 57 58 58 58 58 58 58 58 58 58 58 58 58 58	August				- 5										9		09	9	59	ç	09	19	50	0.9	6			_				6
n 54 51 51 53 53 54 50 51 52 53 51 49 48 49 52 51 53 52 50 50 48 44 44 44 43 44 44 44 44 44 43	Minimum				- 52								_		56		53	53	52	28	54	55	26	54	56	_		_		_		54
6t tt tt tt tt tt tt tt tt tt tt tt tt t			_			_										ī	9	٠		0	0,		3	,		_			_			c
_ (d) + - + - (d) _ (d)					_	_	_		_		_		_		20		2 .	7 (2	2 :	•	* .	; ;	2		-						.

WEISER RIVER BASIN -- Continued

13-2660. WEISER RIVER NEAR WEISER, IDAHO

LOCATION. --Temperature recorder at gaging station, 0.4 mile upstream from County Road bridge, 1.8 miles downstream from Craek, and 6.5 miles northeast of Medser, Mashington County.

DRAINAGE AREA, --1.460 square miles, approximately,

RECORDS AVAILABLE. --Chemical analyses: November 1958 to September 1959.

Water temperatures: July 1959 to April 1961 (Ascontinued).

WATERERS, OCTOBER 1960 to April 1961.--Water temperatures: Minimum, freezing point on many days during January and February.

EXTREMES, 1959-61.--Water temperatures: Maximum (1959-60), 82°F June 28, July 15, 16, 18, 20, 1960; minimum, freezing point on many days during winter months.

Temperature (°F) of water, October 1960 to April 1961

980	Average .	55 50	4 4 9 4 0	35	32 32	3.6 3.7	433	11
_	31	46	11	33	32	11	52	11
	30	4 4 6	36	34	32	11	51	11
	29	84	36	33	32 3	11	0.4	11
	28	40	39	34	33	39	4 5	11
	27	4 9 4	39	88	33	37	427	Ħ
	26	50	43	33	32	37	49	11
	25	53	424	99	32	38	8 4 4	11
	24	505	40	33	32	30	47	11
	23	52	3 3 4 4	33	32	39	t 4 4	11
	22	56	t 0 4 1	33	32	41	47	11
	21	57	£ 43	33	32	40	4 2	11
	20	56	404	33	32	40	4 4 4 7	11
	19	50	41	33	32	37	4 4 7	11
	18	56	4 0 4	33	32	35	8 4 4	11
	17	56	38	33	32	39	47	11
Day	16	55	38	33	32	38	8 4 9 4 6 6	11
	15	53	38	34	32	39	47	11
	14	51	40	34	32	35	47	11
	13	53	4 4 4	34	32	35	104	11
	12	53	4.3	34	32	37	45	11
	-	52	44	35	32	39	6 4 0	11
	0	55	39	35	32	39	43	4.5
	6	54 48	43	35	32	37	44	4 4
	8	57 53	45	34	32	38	43 40	48
	7	60 56	4 5	34	33	38	42 37	0.4 0.7
	6	61 57	38	35	32	36	38	4 4 70
	5	64 57	43 38	35	33	36	39	4 4 6 6
	4	5.5	3 6	39	32	35	39	47
	3	64 57	47	41	34	36	38	55
	2	65 58	4 4 9	40	33	33	38	52
	-	58	4 4 4	36	33	33	39	50
7-74	Month	October Maximum Minimum	Maximum	Maximum	January Maximum Minimum	February Maximum	Maximum Minimum	Maximum

SNAKE RIVER MAIN STEM

13-2690. SNAKE RIVER AT WEISER, IDAHO

LOCATION .-- At bridge on U.S. Highway 30N, at Weiser, Washington County, 0.3 mile downstream from gaging station, and 0.6 mile downstream from Weiser

DRAINAGE AREA. --69,200 square miles, approximately, upstream from gaging station.
REMARES --Chemical analyses: August 1911 to August 1912, August 1960 to August 1961.
REMARES --Samples analyzed are a composite of samples taken at 3 lateral points. No inflow between gaging station and sampling point except during periods of heavy local runoff.

j		Tur- bid- ity	8	10	ß	'n	ß	400	ß	91	ເດ	10	20	15	2
	اع	gents (ABS)	1	T	1	1	1	Ī	0.05	.0	0.	0	.03	10.	5
		or or	H							_		_		_	7
		阻	7.8	8.0	8.3	8.1	8.0	7.7	8	8.0	8.1	8	80	8.1	8.1
	ശാധ	ance (micro- mhos at 25°C)	570	578	620	647	263	466	521	415	463	381	553	533	544
	E 3	as H+1	L			_	_				_	_	-		
	Hardness as CaCO ₃	Non- car- bon-	(r)			0		4		8					
İ		Cal- cium, mag- nesium	L					151		136					
	Dissolved	phate (residue (PO4.) at 180°C)						305		265					
1961	Phos-	phate (PO.)	0.12	. 23	60	. 17	. 15	.33	. 20	15	. 08	. 10	97	. 05	1.
ust 16	ž	NO NO	1	ď	e	5.5	4	4	3.9		1.5				1.6
o Aug	-0117	ride (F)	0.7	7	6.	9	80.	.7	.5	ε.		9.	8.	6.	.7
in parts per million, August 1960 to August 1961	:	Chloride (C1)	25	56	28	28	24	20	22	18	22	18	25	26	26
on, Augu	:	Sulfate (SO ₄)	75	77	84	86	29	21	29	49	26	48	72	75	79
11110	r CS	\$ # <u>\$</u>	0	0		0	_		0	0	0	0	0	0	0
per m	Bi-	ate (HCO,	215		_	248	_		, , ,	163	183	14(210	196	308
arts		NH (NH 4)		_	_	٥.	_		°.	۰.	_	_	_	₹.	.3
ın p	Pot-	stum (K)	5.2	5.2	5.3	5.5	4.7	5.2	4.7	3.7	4.6	3.7	5.8	5.6	5.4
Chemical analyses,	;	Sodium (Na)	52	25	26	26	46	37	44	34	\$	34	20	47	53
cal a	Mag-	ne- stum (Mg)	18	20	13	18	16	14	19	13	14	12	18	18	18
Chem	_[e]	cium (Ca)	42	\$	25	22	2	38	40	35	36	56	\$	36	38
i	Man-	ga- nese (Mn)													
		(Fe)													
	Alu-	(All mun													
		Silica mi- (SiO ₂) mum (AI)	56	28	32	32	31	31	31	58	22	17	23	22	27
	Mean	discharge (cfs)	13,700	13,100	10,900	11,300	11,400	16,500	11,300	13,200	10,200	12,700	7,970	8,380	9,520
		collection	Aug. 25, 1960	Sept. 20	oct. 31	Nov. 8	Dec. 14	Feb. 3, 1961.	Feb. 28	Mar. 29	Apr. 24	Zay 23	June 27	July 25	Aug. 30

POWDER RIVER BASIN

13-2771. POWDER RIVER BELOW BAKER, OREG.

LOCATION .--At county road bridge, 4.0 miles upstream from Pine Creek, and 4.5 miles north of Baker, Baker County. RECORDS ANALMELLS.-Chemical manayses: August 1960 to July 1961. REMARKS.--No discharge records available.

	Tur-	ity	0	ıo	ıc	20	75	240	10	ıc	ıO	ıc	9	2
	De- ter-	gents (ABS)	1	1	1	T	1	1	0.07	90	. 25	. 12	. 05	. 25
	Col-De- or ter				_					_				
	Ηď		8.5	7.4	8.7	7.2	7.2	9.9	7.9	8.1	8.4	7.9	8.	7.5
	Specific conduct- ance (micro-	mhos at 25°C)	312	324	318	248	204	150	169	152	191	250	256	285
	다 달 다 수 다 다 다 다 수		L	_	_	_	_						_	
	Hardness as CaCO ₃							•		0				
		cium, mag- nesium	88	95	96	79	92	20	67	57	28	92	91	96
	Dissolved solids (residue	(NO ₃)(PO ₄)at 180°C) of			_				119	107	112	120	172	188
	Ni- Phos- trate phate	PO4)	1	1.8	6.1	3.2	1.3	1.3	. 43	. 25	L.3	0.1	1.2	2.1
1961	Ii- F	<u>ğ</u>	7.0	2.3	2.5	8.2	4.6	2.5	es.	ď.	2.3	<u>س</u>		9.
uly	Fluo- Ni- Pl	<u>e</u>	0.3						87	8			~	۳.
to J	Flu ric	<u></u>	-		-	2	20	8	2	ıc.	•	2	0	
Chemical analyses, in parts per million, August 1960 to July 1961	Chloride (Cl)]	15	15	14	9	e E	e,	i	1.5	4	e,	4.	6
on, Augu	Sulfate (SO.)		24	22	25	17	16	9.2	12	11	11	11	14	14
1110	Car- bon-	है	4	0	3	0	0	•	•	0	4	0	0	٥
per mi	Bi- car- bon-	ate (нсо ₃)	117					69	88	_	_		_	
irts	Am-	HN)	1	1	0.2	٥.	0.	Ξ.	Τ.	۲.	٥.	٥.	Ξ.	٦.
in p	Pot- tas-	(K)	4.1	5.6	5.3	4.2	2.3			1.6	2.0	3.6	3.6	4.4
alyses,	Sodium (Na)		56	30	30	18	13	8.0	8.9	7.8	11	16	18	21
cal B	Mag- ne- sium	(Mg)	7.5	7.3	8.2	6.5	6.2	3.7	6.0	5.4	4.3	7.3	7.6	7.5
Chem	Cal- cium	(Ca)	23	56	22	21	20	14	17	14	16	22	24	26
	Man- ga-	(Mn)					_			_				
	Iron (Fe)													
	Alu- mi-	(A1)												
	Alu- Silica mi- (SiO.) mm		13	22	21	22	22	61	20	22	81	6.6	92	24
	Mean discharge	(cfs)												
	Date of		Aug. 25, 1960	Sept. 20	0ct. 24	Nov. 8	Dec. 14	Feb. 1, 1961.	Feb. 28	Mar. 28	Apr. 24	May 23	June 27	July 25

POWDER RIVER BASIN--Continued

13-2867. POWDER RIVER NEAR RICHLAND, OREG.

LOCATION: -- Temperature recorder at gaging station, 0.4 mile upstream from Upper Timber Canyon, and 6 miles west of Richland,

Baker County.

PRAINAGE AREA.-1,310 square miles, approximately.

RECORDS AVAILES.--Chemical analyses: November 1969 to September 1960.

Water temperatures: June 1959 to January 1961 (discontinued).

STYREMEN: 1959-60.--Water temperatures: Maximum, 86°P on several days during July 1959, July 17, Aug. 18, 19, 1960; minimum, freezing point on many days during winter months.

Temperature (°F) of water, October 1960 to January 1961

920001	ela Re	53	D	3.7	36	32	32	32	32	
-	-				_					_
	٤	24,2		!	l	_	32		33	_
	ဗ္က	2,5	}	32	35	32	32		33	
	29	643	}	32	32	32	32	33	33	
	28	2,5	}	93	32	32 32	32	33	33 33	_
	27	4.5	}	_	33	32	32	93	33	_
	26	4 v	}	37 37	37	32	32	93	33	
	25	05	}	37	37	32	32	33	32	
	24	52	. !	35 37	35	32 32	32 32	32	32 32	
	23	54		35	35			32	32	
	22	53	;	35	33	32	32 32	32 32	32	
	21	51	• ;	96	33 33	32	32	32	32	
	20	52		36	36	32	32 32	32	32	
	19	54 52	,	36	36 36	32	32	32	32 32	
	18 19	55	•	36	36	32	32	32	32	
	17	55	•	36	36	32	32	32	32 32	_
Day	16	54	;	36	34	32	32	32	32	
	15	51	,	37	34	32	32	32	32	
	11 12 13 14 15 16 17	51	:	37	37	32	32	32	32 32	
	13	50	7 .	37	37	32	32	32	32	
	12	50	;	37	37	32	32 32	32	32 32	
	Ξ	4 9		37	36	32	32			
	10	50	?	36	36 36	32	32 32	32	32 32	
	2 3 4 5 6 7 8 9 10	74	}	36	36	32	32			
	8	£5		36	36	32	32	32	32 32	
	7	56	;	36	36	32	32	32	32	
	9	6.0		36	34	32	35	32	32 32	
	5	69	,	37	35	32	32	32	32	_
	4	46	?	5			32	32	32	
	3	63	,	63	04	34	34	32	32	
	7	4,4	;	43	45 42	34	34	32	32	
	1	65	3	43	45	34	32	32	32	
Mean	Month	October Maximum	November	Maximum	Minimum	December	Minimum	January Maximum	Minimum	

POWDER RIVER BASIN -- Continued

13-2882. EAGLE CREEK ABOVE SKULL CREEK, NEAR NEW BRIDGE, OREG.

LOCATION: --Temperature recorder at gaging station, 0.5 mile upstream from Skull Creek, and 6.2 miles northwest of New Bridge, Baker County.

DRAINAGE AREA. --156 square miles.

RECORDS AVAILAREE. --Fater temperatures: June 1959 to August 1961 (discontinued).

EXTREMES, 1960-61. --Fater temperatures: Minimum, freezing point on many days during December and January.

EXTREMES, 1960-61. --Fater temperatures: Maximum (1959-60), 70°F Aug. 3, 4, 1961; minimum, freezing point on many days during winter months.

October 1980 to Sentember 1981 Tomnonature (0F) of water

								ř	embe	Temperature	8	£	of	Wate	ĭ	water, October 1960 to September 1961	į	198	위	Ser	tel	ğ	196	_						1	
Marit									ĺ						Day	i															America
Montn	-	2	3	4	5	9	7 8	8	9 10	10 11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October Maximum		50	51		51 5	50	49 47		7 4 47	7 47		43	42	43	5.4		45	4.5	94	4.5	46	_	4.5	43	42	42	42	0 7	39	4.2	4.5
Minimum	46	_		46		_	_		41 41	1 46	643	_				41	41	_	42		42	43	42	_	41		9	_	36	39	4.2
November	24	0.4				_	_			3.8				3.5			3.7		37		3.5		76			37	4			1	3.7
Minimum			38	35.	34	34	39 39		36 36		38	38	35.5		33	9,6	35	35	36	35	4	34	3.4	36	37		9 6	3 6	33	1	36
December	3,6						_	_		3.2				32			3		3.2		3.2		3.5		5		4			32	4
Minimum	4	36	35	3.5	33 3	33	32 32		32 32		32	35	35	35	35	32	32	35	35	35	32	35	32	35	32	32	3 6	33	3 6	35	35
January	_									-	_						2.5		7		7.		-		7.	5				4	35
Minimum	35	9 6	333	33	32 3	35	32 32	_	32 32	4 6	34	3,4	3 6	35	9 6	3 6	34	7 4	9 6	3 1	33	9 60	9 6	9 6	33		1 10	9 60	9 6	3 6	33
February				—		_	_							-									:		!		:	_			
Maximum	36	37	37	38	38	38	38 38		38 38	39	33	38	37	39	38	36	36	36	33	39	38	37	37	37	36	_	37	1	1	1	38
Minimum		_		_			_							37			33		35		34		36		34	34	35	1	!	1	36
March		,				_	_			_		_			_	_	;		-		9		•		٠,					.,	0
Maximum		2		-		_		_		_		_		_	-		7 :		- 0		2 6	2 6	2 5	2 9	2 6	2 !	2 !		_	* .	, ,
Minimum	37	36	33	32	36	32	35	35	37 37	1 36	96	36	<u>~</u>	38	5	8	9	9	W W	2	8	_	200		28		-	200		- -	'n
April	Ç			_		_	-	_			,			_	_	4.4	77			7	7		-		44		44	4.5	٤,	i	6.4
Minimum	_	3.4	36	38	39	39	_	9	39 39	07		19	33	4	9		42	9	0,	0,4	10	9	. 0	9	36	39	. [4		1,1	1	4
May				-																								_			
Maximum		£.	42	43	42 4	42	43 4	43 4	77 77	-	*	_	4 5		4	44	44		47	47	51	20	20	25	47	8	20		4.5	25	40
Minimum	14	41		_		_	_	_		4 43		43		4,3	_	43	43	14	42	45	40		1.		43		7	44	43	42	45
June	_	- :		_		_		_								5				9	9		9						-	1	7
Maximum	76	~	2	7	2	2	70	*	25		6	-	2	_	0	0	ń :	6	1	0 .		2		2	2		8 :	. :	2		9 6
Minimum		44		_		_		_	74 94	4 46		4		4	_	48	40		20	4.9	51		53		22		22		64	i	20
July		-		_		_								_		;	:	;	;	,			-;				:		-;	;	,
Maximum	28	29	2	-	20.0	19	94	92	99	99	99	_	9	_	9	6	0	0	0	8	6	9	0	0	60	2	0	0	0	-	0
Minimum		8				_		_				52		26		54	54	₹	4	26			22		20		5		7.	25	24
August	67	- 89		-02		- 69		_						67	67	!	1	1	-	1	1	1	;	1	:	1	1	ï	!	ŀ	;
TARKING III	; ;	7		-	;	_	1				:	: :	:			;										l		_	1	-	
Minimum	ç	9		_		_								ĉ	2	ç	!	ŀ	1	1	1		:	1	-		L	-	:	1	

SNAKE RIVER MAIN STEN

13-2902. SNAKE RIVER BELOW PINE CREEK, AT OXBOW, OREG

Baker County, 0.1 mile upstream from Hansaker Creek, 0.1 mile north of Oxbow School, 0,3 mile downstream from Dine Creek, and 3.2 miles north of Homestead. gaging station, at Oxbow, LOCATION. -- Temperature recorder at

EXTREMES, 1960-61. --Water temperatures: Maximum, 73°F Aug. 20-23, sometime during period Aug. 24 to Sept. 14; minimum, 36°F several days during January and February. DRAINAGE AREA. -- 73,150 square miles, approximately. RECORDS AVAILABLE. -- May 1956 to September 1961.

EXTREMES, 1956-61. --Water temperatures: Maximum, 81°F July 25, 1956; minimum,

freezing point on several days during January 1957,

SALMON RIVER BASIN

13-3042. BIG SPRINGS CREEK NEAR LEADORE, IDAHO

LOCATION .-Temperature recorder at gaging station, downstream from culvert crossing, on State Highway 28, and 2.7 miles northwest RECORD Leadure Leah. County.

RECORD Leadure Lear temperatures: July 1959 to September 1961 (discontinued).

EXTREMES 1960-61.—Tester temperatures: Maximum, 88°F July 14, minimum, 38°F page 26, 28, 29, Mar. 10, 1960.

EXTREMES 1960-61.—Tester temperatures: Maximum, 68°F July 5, 1660, July 44, 1961; minimum, 38°F peb. 26, 28, 29, Mar. 10, 1960.

Temperature (°F) of water, water year October 1960 to September 1961

-															Day																A
Month	-	2	3	4	2	9	7	8	0	11 01	1 12	13	14	15	16	17	18	16	20	21	22	23	24	25	26	27	28	29	30	31	Avelage
October Maximum	5.5	55	55	55	55 5	55	53 5	50 4	48 51				9 20	64	51	51	64	50	50	50	51	5.1	20	50	51		20		94	4.8	51
Minimum	8 4	47							4 6 4	46	9 4 9	4.5	_	4	_	45	46	4.5	9 +	9	47		47		45	4.5	9	7 7	43	7 7	94
Maximum	48	47		_		47	7 9 7	4 9 4	94 94				3 46	4	46	46	45	45	44	46	45	45	7 7	45	45		45	44	45	ł	94
Minimum	44	44	4	£3	43 4		_			2 44	4	4		45		43		45	45	43	7 5		43	44	44	43	45	_	7 7	!	43
December	5	94	9 4	42	7 7 7 7		7 7 7 7	_	7 7 7 7 7	47	44	4	4	4	43	43		43	7 7	44	4 4	44	7 7	44	44	5 7	7 7	44	3	7 7	77
Minimum	45	43			_	7 0 4		41						40		45	45	45	04	42	42		0.4	41	41		0,4	0,4	39	38	41
January Maximum	43	43	_					45				_		44		45		4.5		45	45		4.5	45	7 7		43	6.3	46	4	77
Minimum	9	39	33	30	39	04	404	_	040	9	0	- -	4	9	0 4	40	41	9	0 4	0 4	0,4	9	0 4	0,4	36	98	3,6	39	3	7	0
February Maximum	4 0	60	4 7	4 0	45 4	9 7	45	4 4	43 45	6 4 4	44	4.9	4 4	64	2 4 2	4 4	43	649	44	4 0	4 4	7.0	2 4 5	2 4 5	2 4 5	43	9 6	11	11	11	4 0
March	;	;														,		; ;	1 0	2	; ;) 0) (, ,	- 5	ç	0) a
Maximum	0	3 4						0 0	404	404			4 4	42	7	42		: 3	4 4	42	42		, 6	63	† 1		7 7	41	41	45	7
April	5					_												. ;				. !		- ;							· ;
Maximum	4 4	4 4	54	000	51 5	51	404	47 - 5	42 6	42 43	9 4 9	4 8	4120	52	U 4	5 4	4 6	250	2 7	451	v 4	1 0	2 7	43	υ 4 υ ω	4 2	436	\$ 4 5 4	27	11	42
May	!												_					_					_								
Maximum	5.5	55	56	51	52 4	45	55 5	56 4	5 2 4	54 52	2 52	58	52 49	56	57	52	5.5	54	58 4 6	52	9 9 7	58	62	61	5 4 6 8	63	63	50	50	63	57
June	7	7	7	9	_	<u> </u>										99				49	65	- 79	79	6.5	62	62	63	59	63	1	63
Minimum	200	200	21	200	50.0	2.5	51 5	50	52.5	51 52	2 52	200	200	21	2.5	5.5	25	52	25	25	200	53	52	52	25	52	52	52	20	1	51
July Maximum	65	99	63	5.8	63	49	62 6				64 65	65	5 68	67	49	65	55	9	29	65	65	49	6.5	65	63	65	79	62	63	65	79
Minimum	51	51	51	5.5	_			_		_	_				_	53		5		¥	_	5	2	4	55	5	4	53	53	53	53
August Maximum	55	67	55	5.5	555	56	56 5	57	55 5	54 56	6 65	57	2 67	5.6	57	56	5 6	65	58	57	66 56	61 56	67 56	63	65 55	5.5	55	60 54	63 53	57	56
September Maximum	28	59	09	61	61					29 -	58	58			57	57	54	55		53		51	52	50	20	50	50	44	46	}	55
	53	52	25	20	51	53	51 5	52	53 5	1 50		4 6	6 48	20		20		48	47	4	45	45	43	44	45	41	7 7	41	41	;	84

GRANDE RONDE RIVER BASIN

13-3190, GRANDE RONDE RIVER AT LA GRANDE, OREG.

LOCATION: --Temperature recorder at gaging station, 2 miles northwest of La Grande, Union County, and 5 miles downstream from Fivepoint Creek.

BOING AREA.--678 square miles.

RECORDS ALILABLE.--Water temperatures: September 1959 to August 1961 (discontinued).

EXTREMES, 1960-61.--Water temperatures: Minimum, freezing point on many days during winter months.

EXTREMES, 1959-61.--Water temperatures: Waximum (1959-61), 86°F July 27, 1960; minimum, freezing point on many days during winter months.

Temperature ('F) of water. October 1960 to August 1961

1 2 3 4 5 6 7 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 9 58 58 58 56 55 50 47 43 49 48 45 49 48 45 43 43 44 45 45 47 45 48 47 445 446 44 46 5 47 45 48 47 445 446 44 46 5 47 45 48 47 45 48 47 45 48 47 45 48 47 45 48 47 46 47 47 46 47 46 47 46 47 47 46 47 47 46 47 47 46 47 47 46 47 47 46 47 47 46 47 47 46 47 47 46 47 47 46 47 47 46 47 47 46 47 47 47 47 47 47 47 47 47 47 47 47 47																Ş															4
*** \$ 58	Month	-	\vdash	\vdash	<u> </u>	\vdash	<u> </u>	\vdash	L.	H	\vdash	-	L	-		16	\vdash	18	19	8	21	22	-	\vdash		-	-	\vdash	-	\vdash	Average
1	un d														47	6.4	4 9	64	50	64	49	49							_		
35 35 35 36 34 40 41 38 38 34 40 41 38 38 32 32 32 32 32 32 32 32 32 32 32 32 32	•						_						_	_	4	43	43	43	44	45	47	45		_	_		_			_	_
35 35 36 36 36 37 37 38 38 38 38 38 38 38 38 38 38 38 38 38		_			_	_						_	_	_								_			_	_		_	_		_
32 35 345 346 348 348 348 348 348 348 348 348 348 348	Maximum	!		-	_	_	_	_	•		_	_	_		!		36	37	37	38	38	33		9	_	_		-	_	-	_
32 32 32 32 32 32 32 32 32 32 32 32 32 3	Я	_		_						_	_		1		!		34	36	35	34	33	32		4							
32 32 32 32 32 32 32 32 32 32 32 32 32 3	Maximum										_		_		_		32	32	32	32		32		-					_	_	
32 32 32 32 32 32 32 32 32 32 32 32 32 3	Minimum		_				_		_	_			_		_		32	32	32	32	_	32			_	_			_	_	
32 32 32 32 34 35 34 35 35 36 37 36 37 40 39 36 36 36 37 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 37 38 38 38 38 38 38 38 38 37 38 38 38 38 38 38 38 38 38 38 38 38 38	January									_			_		,		2	33	2.2	33		22									
32 32 32 32 34 35 34 35 35 35 36 37 36 37 36 36 37 36 36 37 38 37 38 37 38 37 38 37 38 38 38 37 38 38 38 38 38 38 38 38 38 38 38 38 38	Maximum				_	~							_		3 6		3.0	30	10	4 6		3 %		4 0	_	_		_	_		
38 37 36 38 36 37 38 39 41 40 41 39 39 44 41 41 41 41 43 42 41 44 41 41 41 41 41 41 41 41 41 41 41													_		, ;		3.5	7 2	, ,	, ,		, ,								_	
38 37 36 37 36 37 38 39 41 40 41 39 39 44 41 41 41 41 42 42 46 46 46 46 47 39 39 42 42 44 41 41 41 42 42 46 46 46 47 39 38 34 34 34 34 34 34 34 34 34 34 34 34 34	Missimum						_	_						_	7	, «	2 4	, "	. "	, 4			_	2 9							
34 45 48 45 48 45 46 44 45 46 44 45 48 46 47 53 55 54 50 44 44 46 46 46 45 52 54 55 55 53 54 56 56 56 56 56 56 56 56 56 56 56 56 56	March Maximum															41	4.1	44	41	41	43	42		Ē							
42 46 44 5 48 45 46 46 46 46 47 48 47 48 47 48 47 48 40 47 53 55 54 50 44 46 46 46 46 45 54 55 52 54 55 55 56 59 57 57 58 48 40 50 49 46 46 46 46 46 45 45 49 59 73 73 73 88 40 40 40 40 40 40 40 40 40 40 40 40 40	Minimum	_		_	_	_		_	_		_					_	38	39		38		38	_	9	_			-		-	_
42 46 44 56 37 37 38 40 40 41 45 41 38 43 45 48 40 38 40 41 42 40 42 40 45 44 45 48 56 56 57 50 52 48 49 54 54 54 57 59 59 56 58 56 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 58 56 59 61 59 59 59 59 59 59 59 59 59 59 59 59 59	April														53		54	50		77		46		٠ <u>٠</u>							
54 64 64 64 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Minimum		_	_	_			_	_				_		_				_			, ;			_	_		-	_	_	_
50 49 46 45 44 48 53 52 50 52 48 49 54 51 51 54 64 57 59 59 56 59 61 58 56 59 61 58 55 55 52 60 56 44 42 240 41 41 44 44 47 64 44 42 47 64 45 45 47 59 59 56 59 61 58 55 55 55 55 50 60 52 56 56 54 54 55 51 53 54 53 56 53 55 76 61 64 66 62 64 63 60 61 64 63 60 61 79 75 79 79 79 79 70 76 81 71 78 72 77 78 80 81 82 83 84 86 84 85 82 82 82 81 82 86 81 82 82 80 82 79 80 81 82 59 62 66 62 65 61 60 60 63 62 63 64 66 66 65 62 62 61 65 66 61 60 64 64 62 59 60 61 89 85 83 84 73 81 81 80 79 79 79 80 77 71	May																2	?		;	_	;				_			_		
66 44 42 40 41 41 44 44 47 46 44 42 42 42 47 45 46 46 45 47 49 50 47 49 47 49 50 47 49 50 49 48 64 65 63 61 62 62 63 63 62 65 63 63 65 68 72 76 76 76 76 76 76 76 76 76 76 76 76 77 77	Maximum		_		_		_	_			_		_				54	57	20	5	_	98		-				-	_	_	_
64 65 65 64 64 65 65 64 65 65 65 65 65 65 65 65 66 77 76 76 76 76 77 76 76 76 76 77 76 77 76 77 76 77 77	Minimum					_	_	_	_							_	46	4.5	47	64	_	47					_	_			
52 56 56 56 54 54 55 51 53 54 53 56 53 55 57 61 64 66 62 64 63 60 61 64 63 60 61 64 65 60 57 60 57 60 57 60 57 60 57 60 57 60 50 50 50 50 50 50 50 50 50 50 50 50 50	ximix					_		_	_				_		16		73	78	4	76		75		80			_		_	_	
76 81 71 78 72 77 77 88 89 81 82 83 84 86 86 85 82 82 82 81 82 86 81 82 82 80 82 79 80 81 82 85 85 85 85 85 85 85 85 85 85 85 85 85			_		-	_			_				_	_	61		99	62	99	63	_	61	_	63		_		_	_		
76 81 71 78 80 81 82 83 84 85 84 85 82 81 82 80 81 8 2 8 2 8 2 8 1 8 2 8 0 8 1 8 2 8 2 8 1 8 2 8 0 8 1 8 2 8 3 8 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8	July																. ;		-;	- ;	7			-	_	_			-		
59 62 66 62 65 61 60 60 63 62 63 64 66 68 66 65 62 62 61 65 66 61 60 64 64 62 59 60 61 83 85 83 84 73 81 81 80 79 79 79 80 76 84 77	Maximum		_		_		_				_		_		_		82	78	0	20	9			70		_		_		_	_
83 85 83 84 73 81 81 80 79 79 79 80 76 84 77	Minimum								-		_		_		_		79	79	79	5	6	99			_	-		_	_		
	August						-		_							_	;	١	1	;	;			;						_	_
	Maximum		_	_	_		_	_	-		_				_								_	_	_	-	_	_	_	_	_

GRANDE RONDE RIVER BASIN--Continued

13-3235, GRANDE RONDE RIVER NEAR ELGIN, OREG.

LOCATION .--At bridge on State Highway 82, 0.1 mile downstream from gaging station, 1.6 miles downstream from Willow Creek, and 3.8 miles south of Elgin, Union County.

DRAINGE ARRA.--1,250 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: August 1911 to August 1912, September 1959 to August 1961.

REMARKS.--No inflow between gaging station and sampling point except during periods of heavy local runoff.

	į	genta ity	g g	10	ů		50	20	12	20	45	15	10
	-92	ter- gents (ABS)	1	1	1	1	0 02		.01				
		- 5 8		_									
		甁	7.7	7.6	7.5	7.6	7.6	7.6	7.2	7.4	7.3	7.6	2
	To-Specific tal conduct-	d- ance y (micro- s mhos at	149	140	129	107	84	8	77	27	86	153	151
	-07 Eal	H BS		_		_				_			4
	Hardness as CaCO,	Non- car- bon-	٥	•	_	0	•	۰	0	•	• _	•	
		Cal- cium, mag- nesium	49	46	46	38	31	29	_	_			4
		trate phate (residue C (NO ₃) (PO ₄) at 180°C) c:				104			81				
1961	Phos-	phate (PO ₄)	0.19	. 26	. 15	.20	. 24	97	. 08	1	.23	. 19	. 26
ust	1,2	(NO ₃)	0.3		ů.	1.0	∞ .	5.	65		4.	?	.2
to Aug	Fluo-	ride trate (F) (NO ₃)				0.		Τ.				~?	
Chemical analyses, in parts per million, October 1960 to August 1961	:	Chloride (CI)	3.0	3.0	3.0	1.8	1.0	80	1.0	٥.	Φ.	1.5	1.0
on, Octo		(SO4)	4.0	3.4	3.4	3.4	3.2	3.4	3.6	1.6	2.4	2.8	3.8
1111		\$ # 8		_						_		_	
per m		HCO,	83	77	74	28	46	44	44	33	57	92	92
arts	Am-	nium (NH4)		٥.	٥.	۲.	٥.		٠.	-	٦.	٠.	
in p	Pot-	tas- sium (K) (2.5			2.4		1.5	1.5	1.3	1.9	3.1	3.3
alyses,		Sodium (Na)	11	91	9.7	7.0	4.9	5.0	5.2	3.5	6.5	8.6	9.5
cal ar	Mag-	stum (Mg)	4.7	4.0	3.9	3.3	2.6	2.7	6.7	1.7	3.1	4.9	5.0
Chem		ctum (Ca)	12	12	12	9	8.0	7.0	6,5	5.0	8.5	14	15
	Man-	ga- nese (Mn)											
		(Fe)											
	Alu-	(All mur-											
		(SiO ₂) mum	31	31	34	30	31	33	31	22	- 82	35	, ,
	Mean	discharge (Si (cfs)	06	106	158	301	920	1,410	930	1,580	180	24	12
	ľ	of collection	Oct. 24, 1960	Nov. 8	Dec. 14	Feb. 1, 1961.	Feb. 28	Mar. 28	Apr. 24	May 23	June 27	July 24	Aug. 30

GRANDE BONDE RIVER BASIN--Continued

13-3314. WALLOWA RIVER ABOVE MINAM RIVER AT MINAM, OREG.

LOCATION: --At county road bridge, at Minam, Wallowa County, 100 yards upstream from Minam River, 125 yards upstream from bridge on State Highway 92, and 0.8 mile downstream from Big Carpon Creek.
RECORDS AVAILABLE. --Chemical analyses: August 1960 to August 1961.
REMARKS: --No discharge records available.

İ		Tur- bid- ity	0	0	ı,	60	0	90	2	9	0	60	ro Co	0	ه
Ì		ter-	Т	T	;		_	1	-10.	00.	8	8	0	5	8
		- 100 -100 -100 -100 -100 -100 -100 -100	\vdash				_		_	_			_		7
İ		рН	∞ ×		œ	œ	œ	۲.		7.9					
	To-Specific tal conduct-	ance (micro- mhos at 25°C)	263	254	249	245	224	198		150					
	To- tal	ity as H ⁺ 1				_	_								
	Hardness as CaCO,	Non- car- bon- ate		0						0					
	Harc as C	Cal- cium, mag- nesium	114	112	108	102	100	80	67	62	59	36	28	114	122
		solids (residue at 180°C)		173						117					
1961	Phos	phate PO ₄)		0				. 33	.16	.13	.07	. 08	90	. 15	60
st 1				6						. 7	Τ.		Е.	9	۲,
Aug		ride (F)	0.1	N	?	Ξ.				2		-:	Τ.	۳.	.2
Chemical analyses, in parts per million, August 1960 to August 1961		(C1)	1.5	2.0	2.0	1.5	2.0	2.0	1.2	1.0	1.0	63	œ.	2.0	2.0
on, Augus		Sulfate (SO ₄)	=	13					×	8.0	80	ຕໍ	·		
		g # g	5	010						0					
per m	H :	ate (HCO ₃	14	130						83			_	_	
arts	Am	(NH.	1	_	_			٥.		٥.			_	Ċ	
t i	Pot-	tas- stum (K)	m	3.0	'n	ď	ď	4	2.4	1.8	1.8	1.0	1.8	3,8	3.4
nalyses,	;	Sodium (Na)						8.0	7.3	9.9	5.9	2.8	5.8	12	13
cal a	Mag-	sium (Mg)	5.9	4.6	5.1	4.0	4.7	3.7	3.0	3.4	2.2	∞.	3.1	6.0	6.1
Chem	Cal.	ctum (Ca)	36	37	35	34	32	56	22	19	20	13	18	36	39
	Man-	ga- nese (Mn)													
		(Fe)													
	Alu-	mi- (Al)													i
		Silica mi- (SiO ₅) mum (Al)	25	25	23	24	24	25	56	28	24	13	16	22	28
	Mean	discharge (cfs)													
	Date	of collection	Aug. 25, 1960	Sept. 20	Oct. 24	Nov. 8	Dec. 14	Feb. 1, 1961.	Feb. 28	Mar. 28	Apr. 24	May 23	June 27	July 24	Aug. 30

GRANDE RONDE RIVER BASIN--Continued

13-3325. GRANDE RONDE RIVER AT RONDOWA, OREG.

LOCATION. --Temperature recorder at gaging station at Rondowa, Wallowa County, 500 feet downstream from Wallowa River, 13 miles northeast of ERIGH, and at mile 81.4.

DRAINGE AREA. -2,555 square miles.

EXTREMES, 1960-61. --Water temperatures: Minimum, freezing point on several days during January and Rebruary.

EXTREMES, 1960-61. --Water temperatures: Maximum (1959-60), 77°F July 27-29, 1960; minimum, freezing point on several days during January and Rebruary.

January and Rebruary 1961.

June 1959 to June 1961 (discontinued).

Minimum, researing point on several days during January and Pebruary.

Maximum (1959-60), 77°F July 27.29, 1960; minimum, freezing point on several days during

1040+00 1040 +0 Tune 1041 Tommonatiing (OR) of water

								Te	per	Temperature ('F)	ر ده		10	water,		tope	ř	960	\$	June	October 1960 to June 1961	<u>,</u>									
Mean															Day	ıy															America
Month	-	2	3	4	5	9	7	8	9 1	101	-	12 1	3	4	5 16	16 17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AVCLABO
	57	56	5.5	-		95				-	4 6 4						_	5.		-		21				47		7		45	0.5
Minimum	52	51	20	51	52	53.6	53	8,4	46.4	46		4 8 4	47 44	_	44 46	47	47	47	4	4 8	4.7	4.8	46	4	47	4	9	4	4	4 69	8 4
	47	46	4.5	43	-04	0 4	43						74		41 43	43		43		45	0,4	38				7	38	34	35	1	4.2
Minimum	4.5	43	43	. 0		38	_	43	104	104	424	45 4	43 41				45	4.	10	3	_	38	38	45	4.1	38	34	34		1	3
	ć	9											_		_		,					,		_		-	u c	ć		č	
Maximum	35.	36	9	37	33.	9 6	33.4	3 6	330	0.60	999	9 6	33 33		33 33	99		34.0	3,00	35	95.0	34	n n	3.4	35	35	3 0	34	3,4	3 4	3,6
January	,	- 4											_									-:				,		- 6			
Minimum	34	35	33.0	33	33	9.4			35	35	36 3	36	36 36	_	37 37	_		32	330	32.5	35	32	35	36	9 4	35 4	35	32	9 6	35	34
February Maximum	36	37	38	38	39	39	39	39	39		41	41	39		04	34		34		. 7		0.4	0 4	39		39	40	- 1	_ 1	ŀ	38
Minimum	35	36	36	38	38	39	38	38	39	36	403	39 3	34 3	33 3	34 34	32	32	32	34	36	37	38	39	38	37	36	38	1	1	1	36
March Maximum	0,4	39	38	39	39	38	0 4				4 1 4		-11		45 43	43		4.5		4		4.2	43	43	_	42	45	46	41	47	4.2
Minimum	39	37	36	36	37	37	37	37	37	38	39 3		39 4	41 4	42 41	7 40	41	4,	41		41	41	45	45	47	38	39	4	45	4	04
April Maximum	47	48	84	4		4	_					_		45	64	53		43	43		4.5	4.5	4	20	52	53	55	54	51	- 1	47
Minimum	43	46	43	38	38	38	39 1	41	41	-	444	7 94	45 4		43 46		45			45		45				45		49		1	43
May	ç	0.7	47	4		- C							2 4 5					24				52				20		2		52	5.1
Minimum	47	9	11	643	43	4	794	14	84	8 4	454	42	45 49		47 48		9 7	47	47	4	43	45	7	44	48	45	45	47	4	45	94
June	Š		Č	5						_						- 2		_				4	_	-		- !	4	- 7	- !	1	24
Maximum	4 .	* !	20	6		7 .			26	7	25	* .		0 0	0 0		200			_	7 :	}		_				3			? :
Minimum	949		446	94	7 / 4	- 64	52	94		_		_	47	-	26 16	25		4	2	ž		!	<u>ک</u>	ž	5	ŝ	8	!	4	!	21

SNAKE RIVER MAIN STEM

13-3343. SNAKE RIVER NEAR ANATONE, WASH.

LOCATION.--Temperature recorder at gaging station, 1.5 miles downstream from Grande Ronde River, 7.8 miles east of Anatone, Asotin County, 221 miles south of Clarkeron, and at mile 28.4 from Lewiston.

RECORDS AVAILABLE.—98.960 square miles, approximately.

RECORDS AVAILABLE.—98.4er temperatures: October 1599 to September 1961.

EXTREMES, 1966-61.—78 are remperatures: Minimum, 35° g Jan. 22.9 minimum, 33° F Jan. 15, 16, 20, 21, 1960.

Temperature (°F) of water, water year October 1960 to September 1961

١	Į					•					;					1	-			ì		The second			,						
															Day	ay															A
-		2	3	4	5	9	7	8	6	10	_	2	3	4	5 1	16 1	17 18	18		20 2	21 2	22 2	23 2.	24 2:	25 20	26 2	27 28	8 29	9	31	Avelage
49		63	63	63	63	63	62	61	_						1					_		-				<u> </u>		1			
63		62	61			_				_																	_	_	_	_	
1 1		1 1	11	11	400	640	6 6 6	200	4004	64	4 4 4 8 4 8 4 8	7 4 8 7 8 7	48 48 48		48 48 48 47		47 47		47 47		47 46		46 46 46 46		46 46	4 4 5	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 43	43		47
43		44	7 7 7 7	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	4 7	4 5 6 7	417	1,1	404	040	4 0 4	40	040		040		04 04		040		040		40 40		40 40	0 0	0 4 4	0 0 0 0	39	3.9	41
39		3.9	38			3.88											39 39		38 37		36 36						7 36				
38		38	39	38	39.0	0 0	0 0	30	39 4	39	¢ 1 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0	40 4	40 40		40 41		41 40		40 41 39 40		42 42		41 41 40 40	1,1	1 41	44	1 42	11	11	1 1	9 9
43		43	43	45	623	4 4 2	44	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	3 3 3 3 3 4	44	4 4 4	44	44 44 44 44		47 47		46 47		47 48		47 46		46 46 46 46		47 47		46 47 46	44	48	50	4 4
50		52	52 51	52	0 8	4 4 0 80	50 84	0.6	6 4 8 4	644	40 4	51 5	51 49		50 50 50 50		55 55 53 51		51 49		64 64		49 64		52 53 50 52	5.2	2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2	8 2 2	2.5	11	503
53		53	51	50	6 4 6	51	52	52	522	53	53 5	53 5	53 54		54 54		56 57		58 59		58 57 57 55		57 57		57 57 56 55	5 2	5 2 2 2 4	5,5	5.5	55	53 4
5.08		60 57	58	58	58	58	5 20	2 2 2	59 5	969	61 6	61	62 63 60 61		64 66		99 99		68 68 65 66	-	67 67 66 66		69 70		71 71 69 69	71	9 68	699	9 68	11	63
70		71	70	0 4 9 9 9	02	71	717	71	72 7	73	747	75 7	76 74	76 7	77 77		77 77	-	76 77 73 73		78 77		76 77		77 75 72 73		75 75	74	74 72 72	74	74 72
76		76 73	11	11	11		$\dot{\pi}$	11	ii	11	$\frac{1}{1}$	- 	+	 	11		75 75		75 76		74 7	77 75	76 76		74 73		75 75	27.5	3 73	73	11
72	_	70	70 67	71	71	71	70 68	69	69 69	69	69 69	69 69	69 69	69 7	70 70 68 69		71 69		69 68		68 67 67 64		64 64		63 63	64	3 62	61	2 61	11	6.8 6.6

CLEARWATER RIVER BASIN

13-3355. SELWAY RIVER NEAR SHEARER GUARD STATION, IDAHO

LOCATION: --Temperature recorder at Shearer Ranch, 1.5 miles north of Shearer guard station, Idaho County. RECORDS AVAILABLE.--Water temperatures: June 1960 to January 1961 (discontinued).

Temperature (°F) of water, October 1960 to January 1961

4.0000	Service	84	4.5		37	36		33	33		ţ	
	31	04	38		1	1		33	33		Ī	1
	0ε	14	37		34	34		33	33		1	
	56	43 41	41		34	34 34		33	33		1	1
	28	44	45		35	34		33	33		;	
	22	24	41		36 35	35 34		33 33	33 33		1	
	26	77	4,1		37	36			33		;	
	25	24	45		37	36		33 33	33		t	-
	21 22 23 24 25 26 27 28 29	46 45 45 46 45 46 46 47 47 44 42 44	4		36	36 36 35 34 35 36 36		33	33		1	
	23	46	43		35	34		33 33 33 33	33		1	-
	22	94	44		36	35		33	33 33		1	-:-
	21	45	43		36	36		33	33		ŀ	
	20	94	43		36	36		33	33		1	
	19 20	45	4		37	36		33 33	33		I	!
	18	45	45								1	
	17	94	45		37 38	36		33 (33	33		1	!
Day	91	97 97	45		36	35		34	33		-	
	15	94	£3		37	36 35		34 34	33		1	1
	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	24	5					33	33		1	1
	13	48 47	94		38	36 37		33	33		ŀ	1
	12		48		36	35 35		34	33		ī	1
	11	51 49	4		36	35		34 34	33		1	1
	10	52	84		35	34 34			33		1	-
	6	51 52	6		35	34		34 34	33 33		1	ł
	8	53	2		36	35		34	33		33	33
	7	53 53	2		36	35 35		34 34	34 33		33 33	33 33
	9	53	64		36	34		34 35	34		33	33
	5	54 53	4		39	35 34		34	34		34 33	33 33
	4	53	8		41	33		34	34		34	23
	3	54 53	48		45	40 39		34 34	34			33 33
	2	55 55	64		-	40 40		34	34		33 34	33
	-	5.5						34	34		33	33 33
Meady	MOULT	October Maximum	Minimum	November	Maximum	Minimum	December	Maximum	Minimum	January	Maximum	Minimum

13-3356. BEAR CREEK NEAR SHEARER GUARD STATION, IDAHO

LOCATION: --Temperature recorder at Forest Service pack bridge, 0.2 mile upstream from mouth, and 3 miles northeast of Shearer gnard station, Indaho County. REXONS ANAILABLE. -- Water temperatures: June 1960 to January 1961 (discontinued).

EXTREMES, June 1960 to January 1961. -- Water temperatures: Maximum, 72°F July 21, 1960.

Temperature (°F) of water, October 1960 to January 1961

40000	UNCIARC	4 4 4 3	36	34	1.1
_	31	38	11	33	11
	30	40	34	33	11
	29	41 40	4 4	333	11
	28	41	36	33	11
	27	104	36	9.9	11
	26	41	38	93	11
	25	43	36	93	11
	24	43	35	33	11
	23	43	35	33	11
	22	43	35	33	11
	21	42	36	34	11
	20	04	37	34	11
	19	04	37	34	11
	18	94	37	4 4	11
	17	04	35	3 4	34
Day	16	43	35	4 4	33
	15	43	37	34	33
	14	43	37	34	933
	13	46	36	34	33
	12	47	35	4 4	33
	11	47	35	34	333
	10	47	34	34	33
	6	64	35	34	33
	8	51	35	34	33
	7	.51 48	35	34	33
	9	48 47	34	4 4	93
	5	48	37	34	333
	4	4 8 4 6	39	4 4	88
	3	94	39	34	. e
	2	64	39	4 %	333
	_	51	3.8	9 4	33
Mean	Month	October Maximum Minimum	November Maximum Minimum	December Maximum Minimum	January Maximum Minimum

CLEARWATER RIVER BASIN--Continued

13-3410. NORTH FORK CLEARWATER RIVER AT AHSAHKA, IDAHO

LOCATION .-- Temperature recorder at cableway at Ahsabka, Clearwater County, 0.4 mile upstream from mouth, and 1.6 miles downstream

from gaging station.
DRAINAGE AREA.--2,440 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: August 1959 to August 1960.
Mater temperatures: October 1957 to September 1961.
EXTREMES; 1960-61.--Water temperatures: Maximum, 79°F Aug. 4, 6, 7; minimum, freezing point on many days during December and January.
EXTREMES; 1960-61.--Water temperatures: Maximum, 79°F July 20, 1960, Aug. 4, 6, 7, 1961; minimum, freezing point on many days during winter months.

						-	e la la la la la la la la la la la la la	l'emperature	e l	(L	0		water,		5	water year		October	1	1990	3	September			1961							
7															Ä	Day					1										-	9
Month	-	2	၈	4	5	9	7	ω	6	2	=	12 1	13	4	5	10	17	8	19 2	20	21 2	22 2	23 2	24 2	25 2	26 2	27 2	28 2	29 3	30	· -	UNCTARGE
October Maximum	9.4	8 4	72	57	56	56	54.5	53	52 5	51	50 49		48 48		64 64 64 64 64 64 64 64 64 64 64 64 64 6		50 50		50 50		49 50		50 50		50 49		48 47		94 94 94		4 4	51
November	; ;	, ,				(:																					_					, ,
Maximum		7 7		7 7		1 0		37			37 37		37 38		39 39			_	39 39	_											1	38
December Maximum	33	34	35	35	34	33	32 3	32	32 3	32	32 32		32 32		32 32		32 32		32 32		32 32		32 32		32 32		32 32		32 33		33	32
Minimum		33		34		32	_			_				-							_			_						-	~	32
January Maximum Minimum	333	933	6 6	88	333	88	333	333	333	33	33 34		35 35		35 35		35 35				333		33 33 32 32		33 33		33 33		32 3	33 3	88	8 8
February Maximum	33	34	33	36	37	37	37	37	37 3	37 3	37 38		38 38		39 40		40 39		39 38		39 39		39 39		39 39		39 39				11	38
March		39		38		- 80																										96
Minimum		33		37	36	37	38	38		-	38 38		38		1 4 1	_		_						_		-			_	4 9 4	45	38
April Maximum	4 4 6 5 6	4 4 7 70	4 4 7 7	443	643	4 t 4 t	44	44	43	43	4 t t t t t t t t t t t t t t t t t t t		44 43 42		43 42 43		48 48 44		44 44 45 45		44 45 47 46		46 45		47 47 45 46		47 48		44	44	11	44
May Maximum	44	47	4 4 U U	t 4 0 4	4 4	9 4	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	452	46	- 48 - 49 - 49	48 46		48 48		64 64		48 49		0.04	05.5	50 49		51 51		50 51		50 49 48		510	50	0.4	844
June Maximum Minimum		53		53													9 6 9	60			62 6	662	62 64				99 99			64	11	59
July Maximum Minimum	4 0	66	979	63	65	6.4	70 7	71	727	73	73 7	44	75 75 69 71		76 77		76 7	7.7	74 7	75	7 77	78 7	77 87	-	76 75		75 7.	74 7	73 7	75 7	75	73
August Maximum Minimum	76	77	78	79	78	73	79 7	7.1	78 7	77 77	77 7	69	76 77 17 07		17 17		77 77		11		11	- -	<u></u>		76 76		76 76 72 71		76 7	76 07	69	11
September Maximum Minimum	72	63	4 6 6 4	65	69	62	9 19	999	909	99	66 6	65 65	64 63 59 58		58 58 58 58		66 65		9 9 9	40	61 59 58 56		58 57 56 53		57 56 53 52		56 55		54 5	52 -	11	62 58

CLEARWATER RIVER BASIN--Continued

13-3425. CLEARWATER RIVER AT SPALDING, IDAHO

LOCATION.—Temperature recorder at gaging station, 0.2 mile downstream from Lapwai Creek, 0.4 mile northwest of Spalding Post Office, Nez Perce County, and 2,300 feet domastream from bridge on U.S. Highway 95.

NECOMOS AVAILABLE.—Grented analyses: August 1959 to Dottober 1960.

Water temperatures: September 1959 to September 1961.

Water temperatures: September 1959 to September 1961.

EXTREMES, 1969-61.—Water temperatures: Maximum, 81.7 July 22, Aug. 3-5; minimum, freezing point on several days during December.

EXTREMES, 1969-61.—Water temperatures: Maximum, 81.7 July 22, Aug. 3-5, 1961; minimum, freezing point on many days during winter

months

• (40)

;															Ω	Day															
Month	-	2	ဗ	4	5	9	7	80	٥	0	=	12	3	4	15 1	16 1	17 1	- 8	9 2	20 2	21 2	22 2	23 24	4 25	26	27	28	29	30	3	Average
October Maximum	69	58	57	56	56	56	55	53	53	51	20	64	6 6 7	8,	48	7 8 7	48 50		50 5	50	50 49		51 51	50	50	64	8 4	47	94	77	51
Minimum	28	57	26	26		55		53				<u>. </u>														4		9	4	5 7 7	Ñ
Maximum	44	44		55		45		4.1		39		39		38	38	39	39 39		39 39	_	39 39		39 39			38	38	37	36	;	40
Minimum	4	7 7	44	43	45	T 7	7	-	36	36	36	39	38			_	36							36	38	38		36	36	1	m
Maximum		35		35		34		32		32		32	_													_		33	33	33	33
man	35	35	35	35	34	32	32	32	32	32	32	32	32 3	32	32 32		32 32		32 32		32 33		33 33	33	33	33	33	33	33	33	'n
January		33	33	33	33	33	33	33	33	33	34	4	34		35		36						35 34	34	- 2	34		34	34	34	ñ
Minimum	33	33		33		33		33		33		34		34	35 35	_	36 36	_	36	36	35 35					34	34	34	34	34	34
February		77	74			36	00	g		a	a		- 0							_				,					1	-	•
Minimum	34	34	34	36	35	36	36	3 8	38	380		38.		3 80	38	36	39 39		39 39		39 39		39 39		36	9	4	1	1	1	80
March		- 0		0	0		_		- ;				-,				7						44	77	7,	77	4	44		8 7	4
Minimum	4 0	9 9	4	36		9 6	38	9 9		; ;		_		14	43 43	_	43 44		4 7 7 4	45	44 44					4		4	4 9	4,7	45
April				-																		_				. :	_				
Maximum		9 4	94	9		44		4		45		47		-			51 51		50 4	48	46 47	_		_		8	2	2	25	;	41
Minimum	46	94	46	5	44	44	4	44	4	44	45	46	46	45	4 2 4	45	4.8 5.			_	949		47 47	41	64	4		51	21	ŀ	46
May	2	- 1	ç	6 7	8	4.7		8.4	9			-					50						_		_	5		52	5	5.1	S.
Minimum		20	6 4	48		7.	42	8		6 4	200	0 4	6,4	200	50 5	20	64 64		50 51		51 50	_	50 52	52	51	50	20	20	27	20	S
June	- 1		;	- ;		-	_											-										:			•
Maximum	50	7 0	3 (4 6	2	3	5	5	2	9 :	96	9:	9	20.0	6	2 6	61 62		9 7 9	62	69 69		99 99	9 :	6	\$;	9 (2 5	8	1	4 6
Minimum	2	2	ç	7		, 4	_	*		<u>*</u>		<u>-</u>			_	_		_		_						•		ò		1	n
July Maximum	89	69	69	20	20	10		73		75	16	11	78 7	18	79 7		79.7	78 7	78/7				-	78	177	78	11	76	77	77	7
Minimum	65	99	68	68	2	89	69	20	72	73		7.4		16		11	75 74	_		75 7	75 7	76 7	77 75	74	14	7.4	73	7	7.	72	73
August	4	10	ď	ä	ã	70	10	7.0		11	12				1	_	7 4 7	-	75.7				_					7.3	7.3	7.3	1
Maximum	2 6		; ;	1,4				2 %	2 6	- 2		2 2	2 6	2 %	- 22	7 7				2 4	75.	75.	75 75	7 .	12		, -	; ;	; ;	9	7.3
September	2	:	•			`	•	:		_		-			_				_							_		:	:	;	•
Maximum	69	65	63		99	65	65	99	49	94	49	64	63	63	63	63	94 94		63 6	62	26	59 5	57 57	26	26	56	54	54	23	;	61
Minimum	4.5	7	,	•		•		:		,																					

SNAKE RIVER MAIN STEM

13-3435. SNAKE RIVER NEAR CLARKSTON, WASH .-- Continued

2 miles upstream from Alpowa Creek, 7 miles downstream from Clarkston, Whit-.--Temperature recorder at gaging station, man County, and 134 miles upstream from mouth LOCATION

December 1959 to September 1961. Maximum, 78°F on several days during July and August; minimum, 38°F on several days DRAINAGE AREA. -- 103, 200 square miles, approximately. RECORDS AVAILABLE .-- Water temperatures: EXTREMES, 1960-61. -- Water temperatures:

days during July and August 1961; minimum (1960-61), 78°F July 19-21, 1960, several 38°F on several days during January and February 1961 Maximum, during January and February. EXTREMES, 1959-61. --Water temperatures:

PALOUSE RIVER BASIN

13-3510. PALOUSE RIVER NEAR HOOPER, WASH.

LOCATION. --At bridge on State Highway 11B, 3.3 miles downstream from Cow Creek, 2.7 miles southwest of Hooper, Whitman County, and 3.7 miles downstream from gaging station.

DRAINAGE AREA.--2,540 square miles, approximately, upstream from gaging station.

RECORDS AVAILABLE. --Chemical analyses: July 1959 to September 1961.

REMARKS.--Minor inflow between sampling point and gaging station except during periods of heavy local runoff.

		Hď	8.5	7.4	7.7	7.8	7.6	181 7.6	1.7 671	7.7	œ.	8.0	7.8	8.7
	Specific con-	duct- ance (micro- mhos at 25°C)	356	198	260	200	177	181	179	197	291	369	379	382
		ad- ad- Borp- tion ratio												
		Non- car- bon-	0	0	0	0	0	•	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	127	2	97	76	65	99	99	74	11	126	144	143
	(၁)	Tons per day									_			
r 1961	Dissolved solids esidue at 180°	Tons per acre- foot												
Septembe	Dis (resi	Parts per million	212	139	176	146	144	139	129	138	185	228	225	231
30 to		Phos- phate (PO4)	0.70					. 42	.28	. 46	.31	8	33	.19
r 196		Ni- rate No ₂)	1.2	5.2	8.3	7.9	13	7.6	3.9	3.3	9	1.6	7	3.0
tobe		Fluo- Ni- Ph ride trate ph (F) (NO ₃) (F	9.4	۳.	۳.	~	e.	°,	7	9	6	4.	4	4.
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	15	7.0	5.2	3.5	2.2	2.5	2.8	3.0	5.0	7.5	8.0	8.5
ion, wat		Sulfate (SO ₄)	01	8,8	8.8	7.0	9.3	6.4	8.9	6.2	8.6	12	12	12
1111			4	0	0	0	0	0	0	0	9	0	0	9
ts per		car- bon- ate (HCO ₃)	184	97	138	103	62	8	96	108	148	208	218	196
n par	20	Sium (K)	5.2	3.6	3.6	3.2	2.9	6.2	2.4	3.3	5.2	6.5	6.5	5.6
lyses, to		Sodtum (Na)	27	13	16	12	11	#	173	173	19	88	22	56
а1 апа	762	sium (Mg)	13	6.1	8	8.9	5.5	5.6	5.2	6.5	=	12	14	14
Chem1c		Cal- ctum (Ca)	56	16	25	19	11	17	18	19	98	8	34	34
		Iron (Fs)												
		Silica (SiO _e)	16	23	56	28	62	27	25	23	20	21	28	25
		Mean discharge (cfs)	11	202	756	360	2.020	1,600		484 23				
		Date of collection	Oct. 24, 1960,	Nov. 23.	Dec. 20	Jan. 24. 1961	Feb. 28.	Mar. 28	Apr. 24	May 24	June 27	July 25	Aug. 29.	Sept. 25

SNAKE RIVER MAIN STEM

13-3532. SNAKE RIVER NEAR PASCO, WASH.

LOCATION.--At Northern Pacific Railway bridge, 0.3 mile upstream from mouth, 0.7 mile downstream from U.S. Highway 395 bridge, and 2 miles southeast of Pasco, Franklin County.
REGENS.--Chemical analyses: July 1960 to August 1961.
REMANKS.--RO discharge records available.

		H d	8.3			8.2	7.9	8.2	8.1	223 7.7	7.7	7.4	7.0	7.8	7.7	7.9
	Specific	duct- ance (micro- mhos at 25°C)	203	323	419	411	336	403	362 8.1	223	204	117	63	132	183	312
		drum ad- sorp- tion ratio														
	co,	Non- car- bon-	0	ō	•	0	0	0	က	-	0	0	0	•	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	69	100	130	136	110	134	124	9,	20	38	21	43	62	66
	Dissolved solids (residue at 180°C)	Tons per day													-	
	Dissolved solids esidue at 180°	Tons per acre- foot														
1961	Dis (resi	Parts per million	124	200	262	256	216	253	232	148	144	87	20	82	113	187
ust 1		Phos-	0.01				.41	.13	10			.07	90.	8.	.04	.03
O Aug		Fluo- Ni- Pride trate p (F) (NO ₂) (0.0	e.	80.	1.8	1.9	2.7	2.6	2.2	1.6	4.	ď.	۲.	.2	4.
1960		Fluo- ride (F)	0.7	₹.	9.		4.		ĸ.	4.	.3	.2	.1	.2	.4	.4
1, July		Chloride (Cl)	7.0	14	17	16	14	16	14	8.2	7.8	3.2	1.0	4.5	7.0	14
Chemical analyses, in parts per million, July 1960 to August 1961		Sulfate (SO ₄)	20	38	25	21	38	48	38	23	77	9.3	4.0	12	17	37
ts pe	į	te pour le constant le constan	1	0	0	0	0	0	•	•	0	0	0	•	0	•
in par	Bi-	car- bon- ate (HCO ₂)	98	126	162	165	136	163	147	92	86	22	30	22	8	126
ses,	Ė	tas- sium (K)	2.2	3.2	4.0	4.1	3.0	3.3	3.2	2.2	2.1	1.3	6.	1.6	5.0	3.4
al analy		Sodium (Na)	16	27	36	34	56	31	22	16	15	8.0	3.7	9.4	13	27
Chemic	7	sium sium (Mg)	5.8	8.6	13	14	9.6	12	12	7.0	9.9	5.6	1.2	3.7	4.7	9.5
٦		Call-	18	24	31	32	28	34	30	16	11	=	6.5	11	17	24
		Iron (Fe)														
		Suica (SiO ₂)	13	16	19	22	22	24	24	23	23	18	12	11	13	14
		Mean discharge (SiO ₂) (cfs)														
		Date of collection	July 28, 1960	Aug. 22	Sept. 27	0ct. 24	Nov. 22.	Dec 19.	Jan. 24, 1961	Feb. 28	Mar. 27	Apr. 24	May 24	June 26	July 25	Aug. 29

PART 14. PACIFIC SLOPE BASINS IN OREGON AND LOWER COLUMBIA RIVER BASIN

WALLA WALLA RIVER BASIN

14-100. SOUTH FORK WALLA WALLA RIVER NEAR MILTON, OREG

LOCATION .-- Temperature recorder at gaging station, 1 mile downstream from Elbow Creek, and 13 miles southeast of Milton, Umatilla County.

DARINAGE A. AERA. — 63 square males, approximately.

EXTREMES AVIIABLE.— Water temperatures: June 1959 to September 1961 (discontinued).

EXTREMES 1960-61.— Water temperatures: Maximum, 62°F June 18, 23-25, Aug. 4; minimum, 34°F Jan. 27.

EXTREMES, 1959-61.— Water temperatures: Maximum, 63°F July 19, 20, 1959, July 17, 18, 1960; minimum, 34°F Feb. 27, 28, 1960, 38n. 27, 1861.

Temperature (°F) of water water year October 1960 to Sentember 1961

																Day		- Andrews			1											-	
Month	-	2	3	4	5	9	7	8	٥	10	=	12	13	14	15	9	17	18	19	20	21	1 22	2 23	3 24	4 25	-	26 27	27 2	28 2	29 30	0 3	<u> </u>	Average
October Maximum	47	27	8 7	747	47	24	47	94	77	44	55	77	77	77	77	44	44	44	77	4 4	77	44	4.5	5 45	44	444	43	3 44		43 42	444	40	4.5
November	} :		} :		} :	? :	2		? ?		: :	: :	: :	;	,		* :													_	_		} ;
Maximum	44	4 7 7	4 7 0	39	39	39	47	4 4	3 6	39	† 1 0	4 to 4	410	4 0 4	39	3.9	39	4 4	3 4	4 4	3 6	39	39	4 4	410	4 4	3	1 1		1 40			4 t
Secember	0.4	4.1	- [4	0,4	39	38	38	38	38	38	0,4	0.7	0.4	0,4	39		9		4						4					_	_		39
Minimum	39	0	0,4	39	38	37	37	37	37	38	38	40	40	39	37	37	39	0,4		33	39	33	36	9 39	_	0 39	38	8 37		37 38	37	-	38
anuary Maximum Minimum	38	37	37	38	38	0 4 0	0 4	41	41 40	0 4	4 4 0 0	0 7	39	41	4 4	4 T	39	4 0 3 8	388	38	38	3 38	38	3 38		38 38	3 4 6	4 35 35		39 39 37 39	3.6	0.6	38
February Maximum	39	4 4	4 4	0 0	410	4 1 4 1 0 4	39	41	4 4 0 0	0 4 4	4 4 0	39	39	4 4 0 0	4 7 6 7 0 4	4 4	3.60	39	3.60	4 7 0 4	4 4	4 10 4 10	4 4	4 4 0		40 39 39 38	36	9 40		11		11	39
March Maximum	39	38	39	38	38	39	3.9	38	38	39	39	39	39	4 4 6 0	4 2 4 1	42	42	43	4 1 4 1	4 7 7	4 9	3 42	41	4 3 4 1 4 1		41 40		41 43		43 43		4,1	4 t 1 0
April Maximum	43	43	4 4	42	39	39	39	41	4 4	43	42	42	41	34.5	4 4 4 0	4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	4 4	4 0	9 6	39	4 2 0 4	2 4 5	41	2 43		47 48		48 49		46 45			43
May Maximum Minimum	45	43	40	42	41	4 0 4	44	4 2 4 2	44	45	44	42	47	4 4 0 6	4 4 3	4 7	4 4	50	50	0 4	4 4 5 5	5 50	4 4	0 4 0 4		52 48		50 45 44 45		48 47		51	43
June Maximum Minimum	54	54	54 4 8	53	55	54	55	55	53	55	4 4 4 8	4 8 5	56	5.9 4.8	50	51	52	52	61	30	50	61	50	5 6 2 0 5 0		62 61 50 50		59 58		53 58		11	57
uly Maximum Minimum	60 84	60	52	64	50	58	58 8	58	59	0 4	6.0 6.4	61	61	50	61	6 4	50 4 8	6 4	58	094	61	1 61	200	6 4 9		60 59		60 60 58 49 49		58 59		09	64
August Maximum	67	61 49	61	50	54	64	60	64	50	50	59	3 8	58	49	55	52	57	48	5.8 4.8	51	58	9 8 9 9	50.8	6 4 9		52 55		56 56		56 55		52	58
September Maximum	50	50 48	53	44	53	51	51 45	51	52	47	5.3 4.8	124	11	11	11	11	11	11	11	11	11			11		11		11		11		11	1 1

WALLA WALLA RIVER BASIN--Continued

14~185. WALLA WALLA RIVER NEAR TOUCHET, WASH

(revised) .-- At county bridge, 0.9 mile downstream from Warm Springs Canyon, 2.5 miles downstream from gaging station, and 3.7 miles west of Touchet, Walla Walla County.

DRAINACE AREA.--1,660 square miles upstream from gaging station. RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1961

Water temperatures; July 1959 to September 1961

Witter remore attrees: July 1959 to September 1961.

Righter Farkman, 260 pan Ang. 7-Sept. 4; minimum, 98 ppm Apr. 3-6.

Bardness: Maximum, 260 ppm Ang. 7-Sept. 4; minimum, 30 ppm Reb. 11-2.

Specific conductance: Maximum, 262 ppm Ang. 4; minimum, 30 ppm Reb. 11-2.

Specific conductance: Maximum, 947 Ang. 4; minimum, 30 ppm Reb. 11-2. 1960.

EXTREMES, 1959-61.—Dissolved solids: Maximum, 30 ppm Reb. 11-2. 1960; minimum, 94 ppm Mar. 22-Apr. 2, 1960.

EXTREMES, 1959-61.—Dissolved solids: Maximum, 30 ppm Reb. 11-2. 1961; minimum, 30 ppm Reb. 11-2. 1961.

Specific conductance: Maximum, 947 Aug. 4; minimum, 1967 ppm Rep. 11-2. 1961.

Specific conductance: Maximum, 947 Aug. 4; minimum, foresing point Jan. 21, 23, Feb. 28, Mar. 2, 4, 1960.

Where respectatives: Maximum, 947 Aug. 4; minimum, foresing point Jan. 21, 23, Feb. 28, Mar. 2, 4, 1960.

Specific conductance of specific conductance of adulty samples available in district office at Portland, Orge. Station relocation Mar. 10, 1961, from bridge 410, 3, 5 miles downstream from present sampling point. Some inflow from Gardena Creek and Marm Springs Canyon between gaging station and sampling point during

		H	8 1	. o	.0.	6.1	6.7	7.8	7.6	185 7.7 220 7.7	6.8 7.5 7.9 8.0
	Specific con-	duct- ance (micro- mhos at 25°C)	477	343	214	581	261	196	161	185	308 159 171 205 127
		dum ad- gorp- tion ratto									
		Non- car- bon-	٥	00	0	0	0	0	00	00	00000
	Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	162	119	89	124	75	49	73	64	140 56 63 69 46
	Dissolved solids (residue at 180°C)	Tons per day		49.5				185	260 152	182 521	636 217 169 217 451
r 1961	Dissolved solids esidue at 180°	Tons per acre- foot	0.43	.32	200	.49	. 22	.19	217	. 22	29 17 17 20 20
Septembe	Dusi (resi	Parts per million		233				141	123	139	214 125 127 149 119
0 to		Phos- phate (Po.	0.46	1.0 .40	1.3	28	=	. 47	. 46	. 50	1.2 47 38 36 76
er 196		Fluo- Ni- iride trate iride (F) (NO ₃)	4.0	1.0	2	Î	4.6	2.1	2.3	2.2	22.1.2.2
Octobe		Fluo- ride (F)	0.4	w.e	10	1	1		- 2	4.6	
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	21	15	17	83	12	8.5	6.5 10	8.0	6.00 C. 8.
ion, wat		Sulfate (SO.)	38	ន្តន	0,8	9.6	7.2	15	0.6	7.8	5.8 7.8 5.2
m111		2 th a (0)									
rts per	Bi-	car- bon- ate (HCO ₃)		165					97	87 101	191 77 78 100 60
in pa	ŕ	5. tal 18. (X)	6.5	5.4	5.3	37	7.0	3.5	e, e,	3.1	24. 2.2.2.4. 2.8.5.4.
lyses,		Sodtum (Na)	40	26 5	13 6	40	14	12	9.0	11 14	7.2 9.5 11 14 6.8
cal ana	Mex	mag- ne- stum (Mg)	14	11:	6.1	18	8.5		4. 0 6. 0	5.4 2.2	0.4.0.0. 0.0.0.0
Chemi		Ctum (Ca)	42	30	17	20	16	17	18	17	40 118 118
		Iron (Fe)									
		Silica (SiQ,)	33	32	34	40	32	35	35	34	33 33 34
		Mean discharge (SiO ₂) (cfs)	57.1	103 32	294	756	492		783 368	486	1,100 644 492 540 1,405
		Date of collection	. 1-9, 1960	Oct. 10-Nov. 9	13-18	19.	. 20-22	. 23, 24	. 25-Dec. 1	Dec. 20- Jan. 4, 1961 Jan. 5, 6	Jan. 7
			oct	Oct	Now	Nov	Nov	Nov	No.	Dec Jan	Jan Jan Jan

WALLA WALLA RIVER BASIN--Continued

14-185. WALLA WALLA RIVER NEAR TOUCHET, WASH. --Continued

	Hq	2.7.7.2	106 7.3 138 7.3 118 7.4 143 7.3 124 7.2	146 7.4 180 7.7 212 7.7 282 7.6 331 7.7	543 7.8 746 8.0 748 8.0 748 7.8 624 8.1	:
Specific	duct- ance (micro- mhos at 25°C)	86 124 96 112 128	106 138 118 143	146 180 212 282 282 331 426	543 740 746 748 624 359	142
ģ,						
GO ₃	Non- car- bon-	00000	00000	00000	844 04 05 00	1
Hardness as CaCO ₃	Cal- cium, Mag- ne- stum	30 46 36 43 48	39 50 51 51 44	51 63 72 86 108	186 252 254 260 230 131	20
Dissolved solids (residue at 180°C)	Tons per day	783 564 728 518 361	377 257 291 211	209 138 130 120 78.8	33.2 16.7 6.64 9.34	197
Dissolved solids esidue at 180°(Tons per acre- foot	0.15 .15 .13 .16	21. 21. 21. 31.	115 117 21 25 25 35	4.0.0.0.0.1 6.0.0.0.1	0.17
Distriction Distriction (resid	Parts per million	111 113 99 114 111	98 110 103 110	107 128 152 185 185 210 258	338 464 476 497 412	122
Septer	Phos- phate (PO ₄)	0.64 .35 .45	34.	. 37 . 37 . 38 . 40 . 45	.39 41. 22. 22. 35.	0.45
2	Ni- Frate (NO ₃)	2.3 2.3 2.7 2.7	0.11.11.11.11.11.11.11.11.11.11.11.11.11	000165	11 .1 .1 200 8	2.4
r 196	Fluo- ride (F)	6.0 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	44464	<u> चं लं लं लं लं</u>	ल <u>बंबंबं</u> बंध	0.2
r Octobe	Chloride (Cl)	3.0 3.0 4.0	44 64 4 6 8 8 8 8 8 7	22.0 22.0 22.0 24.0	29 40 47 48 30	4.9
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued Dissolved solids This solved solids (residue at 180°C	Sulfate (SO ₄)	4.4.6.4.4. 0.8.4.4.	4.04.00	7.6 10 12 14 23 34	52 91 108 110 75	6.4
lon, u	2 de 100)					
r m1111	car- bon- ate (HCO ₃)	42 60 47 55 63	53 70 72 62 62	74 89 99 116 140	224 290 261 274 277 168	89
S De	fas- sium (K)	4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	40.000 10404	6.6.4.0.0 1.0.4.1.0	8.8 9.5 4.6 1	3.4
in par	Sodium (Na)	4.6.4 4.0.0 9.0.0	7.8.8.7. 0.0.8.4	12.0 15.0 31.3 31.3	40 61 62 67 54	8.3
llyses,	mag- ne- sium (Mg)	0.4.6.4.4. 0.6.6.4.6.	6.4.6.4.6. 8.4.6.4.4	4.0.0 4.4.0 9.00 13.00	11 2 2 4 1 1 1 2 2 4 1 1 1 1 1 1 1 1 1 1	4.5
cal an	Cal- ctum (Ca)	9.0 11 9.0 10	9.5 11 13 12	13 16 18 22 27 35	84 62 62 63 63 63 63 64 64 64 64 64 64 64 64 64 64 64 64 64	13
Chemi	Iron (Fe)					
	Silica (SiQ ₂)	28 34 25 32 35	32 31 30 30	31 33 33 32 32	35 27 33 13	32
	Mean discharge (cfs)	2,611 1,848 2,722 1,682 1,205	1,425 866 1,047 711 932	725 400 317. 240 139 70.2	36.4 13.3 5.2 7.0 31.2	597.3 32
	Date of collection	Feb. 11-22, 1961 Feb. 23-Mar. 13 Mar. 14-19 Mar. 20-27	Apr. 3-6 Apr. 7-12 Apr. 13-18 Apr. 19-May 1 May 2-8	May 9-24	June 22-26. June 27-July 7. July 8-Aug. 6. Aug. 7-Sept. 4 Sept. 5-29. Sept. 30.	Weighted average

WALLA WALLA RIVER BASIN--Continued

WALLA WALLA WALLA RIVER BASIN--Continued 14-185. WALLA WALLA RIVER NEAR TOUCHET, WASH.--Continued

	١,					
	Aver	age	53 42 38	0 4 1	54 62 77	94
		31	36	513	131	0.61
		ဗ္က	3 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 1 4	25.	118
		29	94 98 98	35	58 65 72	88 7 5 63
		28	0.60	36	48	\$ 1 3
		27	12 0 4 0 4	4 1 4	59 66 78	88
ᆏ		26	50 940 99	37	59 66 75	83 74 63
196		25	38	37	80.50	880
ber		24	0.4.0 0.00	6 4 10 0 10 0	9 7 7 8	82 77 62
ptem		23	2.41	3 3 3	50 62 79	85 81 65
Sej		22	39	7 4 7	4,9 7,8 7,8	11 29
t c		21	244	4 4 4 4 4 6 6	51 66 80	8 8 8
196		20	525	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	52 68 81	79 81 64
per.		6	50 41 39	4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0	51 69 82	81 78 62
cto		18	51 41 38	5 5 5 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	53 67 84	90
r.		17	344	4 4 6 4 9 6 4 9 6	58 65 86	77 84 62
ye	Day	16	440	4 4 4 6 6 0	5.6 4.6 8.9	76 81
ater		15	95 96	48 99 49	56 63 84	80 77
Temperature (°F) of water, water year October 1960 to September 1961		4	621	46 42 52	51 61 78	79 82 63
ater		13	945	4 4 7 7	6.0 0.0 0.0 0.0 0.0	84 83 61
f W		12	0.4.6 0.7.0	45 41 44	54 60 72	77 81 64
<u>ج</u> ه		Ξ	0.46	2 4 4 0 4	5.0	8 8 9 4 4
ິ		9	44	45	53 59	80 72 63
ture		٥	104	39 48 47	51	82
era		8	466	0 4 1	51	\$11
Cemp		7	9,00	449	53	78 80 62
•		9	39	51	51	77 78 60
		5	3.0 3.0 7.0 7.0	50 1	58 57	75 74 64
		4	57 43 40	36	51 54 75	3,6
		ო	58 45 40	94	53	73 91 71
		2	04 64 15	501	58 58 77	8. 6.9
		-	58 50 36	38	55 59 75	78 79 73
	M.	MOHILI	October November December	January February March	April May June	July August September

COLUMBIA RIVER MAIN STEM

14-192. COLUMBIA RIVER AT MCNARY DAM, WASH.

LOCATION ---At McNary Dam, Benton County, 1.2 miles upstream from gaging station, 2.5 miles east of Plymouth, and approximately 3 miles upstream from Unatilla River.

Rayer. --214,000 square miles, approximately, upstream from gaging station.

RECORDS AVAILARLE.--Chemical analyses: July 1959 to September 1961.

REMARKS.--No appreciable inflow between gaging station and sampling point except during periods of heavy local runoff.

		Hď	210 7.9	7.9	8.0	4.9	7.6	7.8	7.5	7.8	7.9	7.9	7.6
	Specific con-	duct- ance (micro- mhos at 25°C)	210	222	233	235	170	160	148	116	131	136	191
		ad- ad- Borp- tion ratio							_				
	ess CO ₃	Non- car- bon-	9	9	-	9	-	ß	9	9	9	9	9
	Hardness as CaCO _s	Cal- cium, Mag- ne- stum	84	86	92	92	02	65	63	25	9	63	20
1	Dissolved solids (residue at 180°C)	Tons per day						_					
er 196	Dissolved solids residue at 180°	Tons per acre- foot											
Septemb	Dis (res	Parts per million	126	136	141	144	112	104	96	72	79	78	97
60 to		Phos- phate (PO4)	80.0	.10	.13	.12	13		_	_	_	.03	60.
er 19		Fluo- Ni- ride trate r (F) (NO ₃)	1.1	1.1	1.3	1.2	1.7			.5			
Octob			0.4			6				۳.			
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (C1)	4.5	4.0	6.2	6.2	3.2	3.0	2.5	1.0	1.2	1.0	2.8
ion, wat		Sulfate (SO ₄)	22	22	54	22	12	15	13	9.6	#	10	14
r m111		bon- ate (CO ₃)											
ts per	Bi-	car- bon- ate (HCO ₃)	96	86	104	105	16	73	20	22	65	70	79
in paı	ŕ	tas- sium (K)	1.6	H	_	6		1.4	1.1	8 0.	۲.	∞.	1.2
lyses,		Sodium (Na)	11	11	12	1	7.9	6.7	5.4	3.2	2.6	2.5	
al ans	Vez	mag- ne- stum (Mg)	5.8			7.2		4.9	4.4	5.9	4.2	3.7	4.4
Chemi		Cal- cium (Ca)	24	24	24	22	19	18	18	16	17	19	77
		Iron (Fe)											
		Suica (SiO ₂)	9.7	9.4	=======================================	13	12	- 21	2	•	•	4.9	
		Mean discharge (cfs)											
		Date of collection	Oct. 24, 1960	Nov. 22	Dec. 19	Jan. 23, 1961	Feb. 28 164,000	Mar. 27 179,000	Apr. 24	May 24	June 26	July 25	Aug. 29

UMATILLA RIVER BASIN

14-200. UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OREG.

LOCATION.--Temperature recorder at gaging station, 0.8 mile downstream from Ryan Creek, 2.2 miles upstream from Meacham Creek, and 2.5 miles northeast of Gibbon, Umatilla County.

1.5 miles northeast of Gibbon, Umatilla County.

1.5 miles northeast of Gibbon, Umatilla County.

1.5 miles northeast of Gibbon, Umatilla County.

1.5 miles northeast of Gibbon, The District of Gibbon, Time 1961 (discontinued).

1.5 miles northeast of Meximum, Time Meximum, Meximum, Meximum, Meximum, Time Meximum, Meximum, M

Temperature (°F) of water, water year October 1960 to September 1961

						1	•														۱											
Month															1	Day	i															Average
Monta	-	2	3	4	5	9	7	8	6	10	11	12	13	14	15	16	17	18	61	20	21	22	23	24	25	26	27	28	29	30	31	Avelage
October Maximum	56	55	56	56	56	54	53	51	50	50	649	50	51 4	944	50	51	50 5	50	51	50	50	51	53	51	50	646	64	48	47	949	644	51
November	; ;	2 4	9 0	: ;	; ;	, ,																		ي .				. 0		; ;	? !	: 4
Minimum	4 4	4 4	t 4	1 9	10	39.	5.00	2 7	0 4	7 7	4 4	φ φ φ	4.50	1 4	404		_	7 4	7 4	0 4	_	107		t 4 0 0	427	77	30	38	38	1 0	1	45
December	4	42	6.7	- 7	ç	3.7		4		3,6		_	-04			~	7 0 7				7	30		0	_	90				9	38	30
Minimum	4 1	45	4.1	39	37	35	35	35	36	35	35	37		36	37	37	_	3		38		38	38	37	36	38	39	37	37	37	37	36
H H	40	36	35	37	37	39	3.0	39	39	41	104	4 to 4 to 4 to 4 to 4 to 4 to 4 to 4 to	39 4	40	404	42	39 3	38	37	39	38	36.8	36	38	3.8	36	336	36	3,8	38	41	38
February Maximum	38	41	39	41	40	4 1 0 4	39	4139	104		42 4	410	39 6	410	40 4	7 7 7 7 7	39 3	39	39	41	410	404	40	4 1 0	39	41	39	41	11	11	11	4139
March Maximum	40	41	4.1	45	0,4	4.1	4,	4.1	7 7 7	43		41		4,								43		7 7	6,3	45	43	46		8	45	43
Minimum	9	39	38	39	39	9	_	9			39	39	414	_	41	4 1	41.4	[7	2	2,	39		45 6	Ţ		0,4		66	33	0,	75	04
April Maximum	4 4	4.3	4 0	39	7 K	39	39	4 4 0 0	47	4 1	417	4 4 2 5	45 4	9 0 4	414	52	50 4	40	60	39	4 4	443	414	9 7 7	51	6.6	52	633	0 iv	64	11	41
Maximum	51	50	46	4 5 2	4 5	4 9	51	51	649	51	6.5	5.0	5.5	51	52	55	57	46	61	61	56	61	55	6.0	6 3	56	64		11	11	11	54 46
June Maximum	11		11	11	11	11	11	11	11	11	11	11	11	11	-ii	11	11	11	11		71 56	73	73	74	74	72	5.0	969	5.0	53	11	11
Maximum	72	74	65	74	99	72	72	73	74	52	52	76	77 7	76	77	74	74	75	58	75	77	76	75	73	73	73	74	71	72 57	72	73	74
August Maximum	74	75	11		69	72	72	71 58	71	70	71	71	11/1	72	66	69	69	69	69	7.1	71 58	71	0 4 0 9	99	563	57	57	57	69	57	58	5 8
September Maximum	59	61 54	65 53	55	56	62 53	52	61	53	53	61	51	909	59	53	53	54	57	51	55	55	56	46	46	4 80	4.8	4 72	52	51	52	11	58

UMATILLA RIVER BASIN--Continued

14-260. UMATILLA RIVER AT YOAKUM, OREG.

LOCATION: --At gaging station, at highway bridge, 0.5 mile northeast of Yoakum, Umatilla County, 2.5 miles downstream from abandoned Furnish Reservoir, and 11 miles downstream from Birch Creek.

BAININGE AREA.--1.260 square miles, approximately.

RECORDS AVAILABLE.-Chemical analyses: August 1911 to August 1912, August 1960 to August 1961.

Chemical analyses, in parts per million, August 1960 to August 1961

	Tur- bid- ity	12	- m	0	0	1,720			10				
2	ter-1 gents (ABS)	Ţ		1	!	Ï	0.04	00.	10	.01	.04	. 02	.02
	- 1 5 8		_									_	
	Hď		2.0				۲.	r	8.0	œ.	œ	œ	œ
	ance (micro- mhos at 25°C)	126	157	166	113	171	78	74	77	77	107	96	117
To I	ity as H ⁺ 1		3 6	_	_			_	_				
Hardness as CaCO ₃	Non- car- bon- ate								0			_	_
	Cal- cium, mag- nestum		52						56			•	Ī
Dissolved	solids (residue at 180°C)		109						80				
	phate (PO4)	15	0.42	. 42	. 45	1.2			. 26	_			. 24
2	trate (NO ₃)	0.5	0 0	1.0	9.	2.4	1.1	8.			1.0	∞.	4.
Plyo	ride (F)	0.1	, es	67		.3	=	=!	2	Ξ.	Τ.		
	ride ()	2.5	7.8	7.0	4.0	7.8	1.5	1.5	2.0	1.5	5.5	1.5	2.2
	Chloride r (C1)												
	Sulfate (SO ₄)	3.0	9 9	5.8	3.4	7.2	1.6	3.6	2.8	1.8	3.2	3.5	4.2
	5 # B		0 0				0	0	0			0	
HB -1-8	bon- ate (HCO ₃	9	74				36						21
	n 1 um (NH 4	!	10		Τ.		°.	_	٥.		_	_	_
Pot-	sium (K)	2.2	2	2.7	2.2	3.4	-	H	1.8	٠i	αi	ø	o,
	Sodium (Na)	7.2	===	=	6.8	12	4.5	4.8	4.5	5.0	7.5	5.3	7.4
Mag-	sium (Mg)	8.8	4.7	5.0	3.6	5.7			1.9				
160	cium (Ca)	11;	135	14	10	12	6.5	7.0	7.5	7.0	8.0	9.5	12
Man-	ga- nese (Mn)											_	
	Fe)												
Alu-	(Al)												
	Silica mi- (SiO ₂) mm (Al)	33	28	30	32	32	32	31	30	28	32	32	33
Mean	discharge (cfs)		6 6				1,140	1,450	882	654	476	468	340
	collection	Aug. 25, 1960	Oct. 24	Nov. 7	Dec. 13	Jan. 30	Feb. 27	Mar. 27	Apr. 24	May 21	June 26	July 24	Aug. 30

UMATILLA RIVER BASIN--Continued

14-335. UMATILLA RIVER NEAR UMATILLA, OREG.

LOCATION ---At gaging station, 1.5 miles downstream from West Diversion main canal of Umatilla Project, 1.8 miles southeast of Umatilla, Umatilla County, and 2 miles upstream from mouth.

BALINGER AREA.--2,280 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: August 1911 to August 1912, August 1961.

Chemical analyses, in parts per million. August 1960 to August 1961

		hur- bid- ity	0	0	0	0	0	ıO	22	320	ß	0	0	0	0
	-94	ter-bid-gents ity	1	!	Ţ	T	1	I	0.02	10	10	0.	9	.02	.02
		- col		_			_	_							
		Hd						8.4		7.5					
		ance (micro- mhos at 25°C)	352	383	415	364	359	355	114	110	203	374	397	365	332
	盾	actidity as H ⁺¹		_	_	_	_			_	_	_	_	_	_
	Hardness as CaCO ₃	Non- car- bon- ate		0						0					
	Hard as C	Cal- cium, mag- nesium	142	153	170	138	140	136	41	40	79	148	164	146	133
		solids (residue (and 180°C) con ne	241							102					
1001	Phos.	PO.		0.15						.13			-	•	
1	ž.	(NO ₃)	н	Н	8	က	ß		1.1	1.0	ıc.	2.3	2.8	œ.	1.5
n Muse o		ride t						4		2				_	
n neet n		(C1)	6.2	6.8	7.0	7.2	6.8	6.5		2.5					
chemical analyses, in parts per million, August 1900 to August		Sulfate (SO ₄)	01						4.4	4.0	0.9	9.4	11	10	#
1111	Car	G at a	23						0	0	16	0	80	10	24
Tad	Bi-	bon- ate (HCO ₃	173							9					
arts .	Am-	nium (NH4)	-			•				°.		_			
1 117	Pot-	tas- sium (K)	5.5	5.1	5.9	4.7	4.5	4.6	4	2,1					
aryses,		Sodium (Na)	24	22	56	22	23	22	6.6	7.2	13	21	23	22	24
cal at	Mag-	ne- sium (Mg)	14	14	12	=	9	12	3.9	3.8	6.4	9	13	14	13
Cuem	Cal-	cium (Ca)	34	38	44	37	39	35	10	9	21	42	44	36	32
	Man-	ga- nese (Mn)													
		Fe)													
	Alu-	mum (Al)													
		(SiO ₂) num (Al)	39	39	38	38	42	43	33	31	32	34	40	35	41
	Меап	discharge (cfs)	78	34	16	190	146	143	_	1,220			12		
	Date	of collection	Aug. 25, 1960	Sept. 19	Oct. 24	Nov. 7	Dec. 13	Jan. 30, 1961	Feb. 27	Mar. 27	Apr. 24	May 21	June 26	July 24	Aug. 30

JOHN DAY RIVER BASIN

14-388. JOHN DAY RIVER NEAR MOUNT VERNON, OREG.

LOCATION: --At bridge on U.S. Highway 26, 1.5 miles downstream from Harper Creek, and 1.5 miles west of Mount Vernon, Grant County. REMARKS. --Chemicial analyses: Angust 1960 to August 1961.
REMARKS. --Ah discharge records available.

		Tur- bid- ity	٥	0	0	0	0	0	Ŋ	ı,	ß	9	0	ı,	اه
ĺ		Be- Tur- ter-bid- gents ity	1	1	1	1	1	1	0.04	10	. 02	. 02	.01	00	티
		or -			_			_				•			7
		Hď	8.0	8.1	8.1	8.0	8.7	7.9	8.0	8.1	œ	œ	7	7.8	~
	To-Specific tal conduct-	ance (micro- mhos at 25°C)	481	512	270	229	192	191	197	188	193	233	288	498	482
	ह्यं दे	ity (i								_				_	
	Hardness as CaCO ₃	Non- car- bon- ate	ľ	0	0	0	0	0	_	0		_	_	•	٥
	Hard as C	Cal- cium, mag- nesium		238						87					
	Dissolved	solids (residue at 180°C)	301	318	176	150	138	152	128	136	138	120	288	319	316
19	Phos-	PO.	1	0.40	.33	28	30	. 25	. 20	15	. 13	.21	. 41	.45	. 42
st 16	ij		0.3	2	~	4.	0.		9.	8	Ŋ	2	9	9	.2
Augu	Fluo-	(F)	0.2	e.	7	Ξ.	2	4.	Τ.	T.	Τ.	Ξ.		e,	е.
Chemical analyses, in parts per million, August 1960 to August 1961		(CI)	2.5	2.8	2.2	1.5	1.5	2.0	1,5	1.5	1.2		2.5	3.0	3.2
on, Augus		Sulfate (SO ₄)	7.4	7.8	5.0	3.0	3.0	3.6	3.2	4.4	4.4	4.4	7.6	8.4	7.8
1110		g at 2	0		_	0		0	0	0	4	0	0	0	0
per m	Bi-	bon- ate (HCO ₂)		328		141	110	120	121	116	114	147	287	322	326
arts	A P	OH CANA	1		0.0	<u>.</u>	<u>°</u>	°.	°.	٥.	°.	°.	7.	٥.	-
in p	Pot-	sium (K)	4.2	4.1	3.2	3.0	2.4	2.1	1.9	1.7	1.8	2.4	4.9	3.8	2.0
alyses,	;	Sodium (Na)	21	22	11	9.1	7.4	7.5	7.3	6.7	7.2	8.0	17	21	23
cal a	Mag-	ne- sium (Mg)	28	59	16	12	11	=	12	==	#	14	56	28	27
Chemi		cium (Ca)	44	47	22	20	17	16	16	16	18	20	40	46	46
	Man-	ga- nese (Mn)									_				
		Fon (Fe)													l
	Alu-	F M (F)													
		Silica (SiO ₂)	41	43	36	36	32	33	31	32	30	31	43	5	43
	Меап	discharge (SiO ₂) num (cfs) (A1)												_	
		of	Aug. 24, 1960	Sept. 19	0ct. 25	Nov. 7	Dec. 13	Jan. 31, 1961	Feb. 27	Mar. 28	Apr. 25	May 21	June 26	July 26	Aug. 29

JOHN DAY RIVER BASIN -- Continued

14-480. JOHN DAY RIVER AT MCDONALD FERRY, OREG.

LOCATION: --At gaging station, at McDonald Ferry, 0.8 mile downstream from Rock Creek, and 10 miles east of Klondike, Sherman County. DALINKER AREA.--7, 580 square miles, approximately. RECORDS AVAILABLE.--Chemical analyses: August 1911 to August 1912, August 1960 to August 1961.

١		pity (3) 1 ty	。	0	90	ıo	5	0	03	80	ıcı	2	0	0	စ္က
Ì	<u>-</u>	gents (ABS)	T	1	1	ţ	1	-	02	.03	. 02	. 02	8	8	.01
		or the transfer of the transfe	-		_							_		_	
		5 ° 표	8.4				9.0		7.	8.0	80	6	10	۲.	9.6
	ffic		318							134					
	ശമ	ance (micro- mhos at 25°C)				_	_			_	_	_		-1	,
	10-15	ity as H+1	0	0	0	0	0	-	_	0	0	0	0	0	
	Hardness as CaCO ₃	Non- car- bon- ate		_	_	_	_								
	Harc as C	Cal- cium, mag- nesium						86		54			_	_	
	Dissolved	solids (residue at 180°C)	196						120	115	116	106	129	162	240
961	Phos-	(PO4)		0.01	. 03	. 04	.05	90.	. 17	. 07	.05	. 08	. 04	. 05	. 09
st 16	į.	trate phate (NO ₃) (PO ₄)	0.2	Ξ.	7	ı.	2	Τ.	ω.	67	4.	Τ.	7	.2	e.
Augu	Fluo-		0.2	<u>ښ</u>	7		Ξ.	4.	. 23	.2	۲.	۲.	Ξ.	7	.3
60 to			4.5	3.8	8.8	3.2	2.5	2.5	1.5	1.5	1.5	1.0	1.8	3.5	5.8
st 19	į	Chloride (C1)													
n, Augus		(SO ₄)	13	12	13	12	8.0	7.8	4.4	4. 2	5.8	4.4	8.9	8.6	16
11	13.	\$ 2 8 8	4	7	0	0	0	0		0			8		7
er m	Bi-		175	12	196	18	134	136	86	79	92	86	901	141	190
arts]	-wY	nium (NH.4)	I	1	0.0	٥.	Τ.	٥.	۰.		٥.			_	. 2
in p	Pot-	tas- sium (K)	3.1	2.8	2.5	2.5	1.5	1.8		1.5		1.4	2.1	2.9	4.2
Chemical analyses, in parts per million, August 1960 to August 1961	;	(Na)	24	23	19	18	12	12	6.8	7.8	8.2	7.4	10	19	30
cal a	Mag-	sium (Mg)	13	13	14	12	10	10	6.1	5.1	5.6	5.5	8	=	12
Chemi		cium (Ca)	25	22	30	30	77	23	15	13	16	14	18	22	24
	Man-	ga- nese (Mn)													
		(Fe)													
	Alu-	Mum (A1)								_			_		
		SiO ₂)	23	20	24	24	92	28	62	32	82	88	33	14	30
	Mean	discharge Silica mi- (cfs) (SiO ₂) num	94	110	275	372	360	588	2,440	4,660	2,280	3,000	604	105	09
		of	Aug. 25, 1960	Sept. 19	Oct. 23	Nov. 7	Dec. 12	Jan. 30, 1961	Feb. 27	Mar. 27	Apr. 24	May 21	June 26	July 24	Aug. 30

DESCHUTES RIVER BASIN

14-765. DESCHUTES RIVER NEAR CULVER, OREG.

LOCATION. --Temperature recorder at gaging station, 0.7 mile downstream from bridge on Cove-Grandview road, 2.5 miles upstream from Crooked Mtwo. 4 miles northwest of Culver, Jefferson County, and at mile 116.5.

DRAINGER AREA. --2,723 square miles.

RECORDS AVAILARE. -- Water temperatures: September 1952 to September 1957, January 1959 to August 1961.

EXTREMES, 1966-61. -- Water temperatures: Maximum, 60°F June 16, 20, 26; minimum, 39°F Jan. 4.

EXTREMES, 1959-57, 1959-11. -- Water temperatures: Maximum, 64°F July 13, 17, 1956; minimum, 36°F on several days during winter months of water years 1954-56.

Thomsomothern (9th) at matter Cottains 1000 to 100

								-	Temperature	era	ure	(°F)		of wa	ter	ŏ,	water, October 1960	er	0961	\$	August	ust	1961	_									1
Manch																Day																•	
MOHILI	-	2	3	4	2	9	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average	υ
October Maximum Minimum	53	53	53	53	53	533	53 51	51 50	50	50	50	51	51	51	51	51 50	51	51 50	51 50	51 50	51	50	51	51	51	51	50 40	0.04	0.4 0.8	49	64	50.	ı
November Maximum	94	4 8	4 4 4 7	47	4 4 2	4 4 5	4 4 55	4 t 6	45	4.0	4 4 5	- 9 4 4 6	9 4 9	4 6	4 4 5	4.5	4 6	4 6	46	4 2 2	47	44	4 4	4 4 5	4.3	6 4 4	£ 7 2 7	42	4 4	4 1	11	45	
December Maximum	4 3	4 3	43	43	43	41	0 4	0 4 0	0 4 0	0,0	4 1 4 0	42	43	6 4 6	4 4	t 3	43	4 6 4	4 4 8 4	4 4	4 4 4 4	4 4	4 4 4 4	44	43	43 43	4 4 2 2	45	45	42	4 4	45	
January Maximum	41	41	04	3.9	41	4 4 3	4 4 7	4 4 4 4	44	5 5 5 6	7 7 7 4	7	4 t 6 d	11	7 7 7 7	4 7 4 5	4 4	44	4 4 6 6	4 4 3	4 4 8 3	43	45	4 5 2	4 5	4 6 6	4 6	43	44	45	4 6 6	4 6 4	
February Maximum	46	46	46	9 4 9	4 4	47	4 7 2	47	47	47	4 4 5 5	7 7 7 7 7	4 4 4 4	4 6	4 5	4 4 2	4 4 5	4 4 6	44	4 6 5 5	46	47	4 4 25	44	4 4 4 5	4 4 4 3	4 7 4	4 4 5 5	11	11	11	46 45	
March Maximum	4 4	47	44	4 4	† † † †	1 7 4	44 43	4 4 5	45	44	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	46	40	47	47	47	4 6 4 6	47	4.6 4.6	4 4 9	47	48	4 4	64	48	64	4 8 4 7	4 4 5 2	47	5. 0.8 4.8	51 50	46	
April Maximum	52	54	5.4	53	51	5.0	50	50	51	51	51	52	51	51	54	53	53	52	51 49	51 50	51 50	51	50	51	53 49	53	54	53	54 53	54 52	H	52	
May Maximum Minimum	54	54	54	53	54	54	53	5.4	54	53	54	55	54	54	55	56 52	57	58	58	57	57	58	56	56	57	55	55	54	53	54	55	53	
June Maximum Minimum	57	56	57	58	58	55	53	56	55	53	56	57	€ 4 4	5.8	59	59	59	60	59	57	5.5	2,4	58	5.8	55	60 56	55	57	56 53	56 52	11	8 4	
Maximum	57	53	56	56	56	53	57	53	57	57	5.8	5.8	56	55	58	5.5	5 8 4	58	5.0	5.0	5.5	58 55	5.5	5.8	5.8	55	58	59	59	5.8 5.4	58 54	5,4	
August Maximum Minimum	58	5.8	57	57	5.5	53	53	53	53	53	5.50	54	57	53	5.6	53	53	56 53	53	57	56	57	. 92	11	11	11	1.1	11	11	11	11	11	
Minimum																																	

14-795. CROOKED RIVER NEAR POST, OREG.

12 LOCATION ... - At county highway bridge, 4.5 miles downstream from gaging station 795, 7 miles southeast of Post, Crook County, and miles upstream from gaging station 798.

DRAIMAGE AREA. -2,160 square miles, approximately, upstream from gaging station.

RECORDS AVAILABLE. - water temporatures: July 1959 to September 1961.

EXTREMES, 1960-61.- water temporatures: Milinium, freezing point on several days during December and January.

EXTREMES, 1960-61.- water temporatures: Milinium, freezing point on several days during December and January.

Sediment concentrations: Maximum daily, 554 ppm Feb. 10; minimum daily, 0 ppm on many days may to August.

Sediment concentrations: Maximum daily, 3,260 tons Peb. 10; minimum daily, 0,50 ton on many days.

Sediment concentrations: Maximum daily, 1,020 ppm Mar. 20, 1960; minimum daily, 0 ppm on many days way to August 1961.

Sediment concentrations: Maximum daily, 1,020 ppm Mar. 20, 1960; minimum daily, 0 ppm on many days each year.

REMANES.—Sediment records available for site near Princylle for period April 1958 to June 1959.

Temperature (°F) of water, water year October 1960 to September 1961

Aver-	ge				
Ý	a	111	1 6 4	211	111
	31	34	36	1 %	181
	30	811	37	11 22	4 19
	29	333	11%	0 8 6 8 8	111
	28	411	33	24	5 5
	27	131	1 4 4	63	121
	26	211	37 40 43	12	51.
	25	34	1 %	441	161
	24	\$ 1 1	36	51	22 22
	23	3881	1 8 4	441	111
	22	4 1	35	‡ 12	213
	21	37	1 4 4	67	121
	20	53	1 4 4	4 6	213
	19	37	124	67	121
	18	\$11	1 4 6	511	2 I S
	17	1 4 6	1 8 4	63	111
Day	16	1 26	86 4 4 4	56 78	72
	15	33	1 4 4	55	151
	14	54	37	54 11 78	75
	13	41	40	51 53	141
	12	52	36 36 42	1 1 20	78 189
	11	144	39	53	141
	10	7	339	50	14
	6	1 4 6	4 t 1 1 t 4 t 1 1 t 4 t 1 1 1 1 1 1 1 1	4.00	121
	8	12	35	46	94 16
	7	32	39	58	121
	9	11.25	38	8 9	72 76
	5	35	41	4.8	121
	4	65	3.6 3.9	\$	17 87
	က	1 4 3 4 4	38	53	129
	2	63	32 36 37	814	1 62
	-	1 4 6	1 4 6	51	111
Month	TATORICIA.	October November December	January February March	April May June	July August September

14-795. CROOKED RIVER NEAR POST, OREG. -- Continued

Suspended sediment, July to September 1959

		APRIL			MAY	I		JUNE	
_			led sediment			led sediment		Suspend	ed sedimen
ay	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
::									
:									
••									
tal									
		JULY			AUGUST			SEPTEMBER	
•••	23 16	=	T T		C 7	T T T	17 18	C 8 C 8 C 8	T T
	17 18 18		† † †	6	C 7 C 7 C 7	T T T	17 16 17	C 8 C 8	Ť
	18		1	Į.	1	т	18	c 8	т
•••	18 17	==	T T	5 5 5	C 7 C 7 C 7 C 7	Ţ	18 15 13	C 8 C 8	1
::	17 16		T	ı		T T	13	c 8	1
•••	14 13	11 10	T T	5.5 6	C 7	1	13 13	C 8	T
	11 9.2 8.7	10 C 9 C 9	T T T	6 6 7•2	C 7 C 7 C 7 C 7	T T	13 13 13	C 8 C 8	T T
	7 • 8	C 9	Ţ	7.5	C 7	ī	15 16	C 8	1
::	7.8 7.8 8.2	C 9	1 1 1	8 • 2 8 • 2 9 • 2	C 7 C 7 C 6	T T T	18 26 25	C 8	† 1 1
		1	Т	1		т	24	1 i	1
::	8 • 2 7 • 5	C 9 C 9 C 9	Ţ	14 14	C 6 C 6 C 6	Ī	22 21	C 11 C 11 C 11	1
::	9 • 2	C 9	T T		i .	1	20 18	C 11	1
::	9•6 8•7	C 9 C 9 C 9 C 9	1	11 12	C 6	1	20 22	C 11 C 11	1
	11 7.5	C 9	T T	13 13	C 6	Ţ	24 22	C 11	1 1
	7 7	C 9	1	13 15	C 6 C 6 C 6	T T	22	C 11 C 11	1
tal	367.8		10	28 •3		5	542		18
otal	discharge	for peri	Lod (cfs-days				• • • • • • • • •	• • • • • • •	1,190.1 33

14-795. CROOKED RIVER NEAR POST, OREG. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported, loads are estimated.)

		ост	OBER	1		NOVEMBER	t	l	DECEMBER	
÷		Su	spen	ded sediment		Suspen	ded sediment		Suspen	ded sedimen
Day	Mean dis- charge (cfs)	Me conc trat (pp	an en-	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	11			T	54	C 4	1	95	C 5	1
2	11	1	6	Ī	52	C 4	1	95	C 5	1
3	11 12		 26	T 1	54 51	C 4	1	91 93	C 5	1 1
5	13		38	A 1	49	C 4	i	82	C 5	i
6	13		44	2	47	C 4	1	70	C 5	1
7	13	ļ	44	A 2	51	C 4	1	49		1
8	14		36	1	51	C 4	1	60	C 5	1
9	17 17		22 12	A 1	51 51	C 4	1 1	64 66	C 5 C 5 C 5	1
11	16		6	т .	54	c 4	1	68	C 5	1
2	17	1	4		56	C 4	î	70	C 5	i
3	20			i	56	C 4	ī	66	C 5	ī
14	24		10	1 T	56	C 4	1	70	C 5	1
15	29	c	2	T	58	1	1	68	1	1
16	32	c	2	Ţ	60	C 4	1	72	C 5	8 3
17	33 36	c	2	T	64	C 4	1	76 95	1 1	5
19	39	c	2	l i	56	C 4 C 4	î	161	22	K 10
20	37	č	2	Ť	56	Č 4	1	128		7
21	39	c	2	т	56	C 4	1	116	12	4
22	37	c	2	Т	51	C 4	1	99		3
23	37	c	2	Ţ	72	23	K 5	101	8	2
24 • •	39 37	c	2	T T	80 106	22	6	90	C 6	1
26	40	c	3	т	110		6	90	C 6	1
27	44	c	3	Ť	97	18	5	87	C 6	1
28	60	\c	3	T	58		3	60	C 6	1
29	68	c	3	Ī	74	8	2	76	C 6	1 1
30	62 58	c	3	Ţ	99		2	64 66	C 6 C 6	i
Γotal	936			17	1892		57	2578		58
		JAN	UARY	,		FEBRUAR	1		MARCH	
1	65	c	4	1	451	198	5 242	250	7	5
2	58	C	4	1	470	81 80	103	235 208	4	3 2
3	56 55	c	4	1	520 41 7	84	112 95	196	4	2
5	65	c	4	ī	373	47	47	196	7	4
6	70	c	4	1	504	83	S 128	176	4	2
7	75		4	1	581	155	243	163	3	1
8	70	c	4	1	421	63	72	168	3	1
9	70 7 5	c	4	1	1260 2020	370 554	K 2200 S 3260	179 193	7	2 4
11	75	c	4	1	1220	176	580	187	8	4
12	70	c	4	1	694	83	156	168	7	3
13	70	C	4	1	505	44	60	309	33	S 38
14	80	c	4	1	520	29	41	1190	221	5 747
15	72	c	4	1	635	49	84	1310	250	\$ 884
6	64	c	4	1	495 405	35 20	47 22	994 786	104	279 98
17	66 68	c	4	1	324	16	14	721	33	64
19	68	lc	4	i	304	15	12	661	21	37
20	64	c	4	1	353	18	17	605	17	28
21	76 76	c	4	1	430 536	23 29	K 29 B 42	536 575	14 14	20 22
23	76	c	4	1	425	33	38	694	23	43
24	70 70	IC.	4	1	373	23 15	23 13	749 931	33 45	8 113
25		c	-	1	314			ĺ	1	
26	70	c	4	1	256	12	8 8	859	59	B 137 67
27	70 7 0	c	4	1	262 253	11	8	714 642	35 27	47
29	70	c	4	1	299	12		575	14	22
30	70	c	4	ī				611	19	31
31	427	2	226	5 389				714	31	60

S Computed by subdividing day.
T Less than 0.50 ton.
A Computed from partly estimated concentration graph.

B Computed from estimated concentration graph. C Composite period. K Computed from estimated-concentration graph and subdividing day.

14-795. CROOKED RIVER NEAR POST, OREG .-- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported, loads are estimated.)

1		APR				MAY				JUNE	
		Susp	ene	ded sediment		Suspen	ded	sediment	1	Suspen	ded sedime
Day	Mean dis- charge (cfs)	Mean concer tratio (ppm	n- on	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	842	7	3	166	274	4		3	139	C 2	1
2	1090	7		K 250	331	18	Α	16	106	C 2	1
3	1460	14		583	307	11		9	91	C 2	K 10
4	1240	10	9	335	271	7	1	4 5	174 193	10	K 10
5	1000	6	1	165	280	· '		,	193	10	1 3
6	834	4	a	97	310		1	5	141	3	1
7	728	2		57	324	6		5	134		i
8	680	2	í	39	283		1	5	118	c 0	T
9	587	2	3 I	36	321	25	K	24	99	C 0	1 7
0	558	4	8	B 72	369	24	Α	24	112	C 0	T
.	599	1 -	- 1			23		27	93	c o	T
1	735	2		44 B 69	438 505	23	A	31	99	c 0	
3	629	3 2	2	34	389	12	Ι^	13	93	اد م	T
4	558	1		26	338	16	A	8	66	c o	;
5	542	l î		25	349	20	1''	19	49	C 0	İ
			- 1			ł	1			1	Į.
6	587	2		33	334	18	Α	16	34	c 1	Ţ
7••	635	2		43	295	6		5	30	C 1 C 1 C 1 C 1 C 1	Ţ
8 • •	593	2		32	274	C 3		2	27	C 1]
9	500	2	4	32	250	C 3		2 2	19 13	c i	1
0	461	2	2	27	250	,	l	2	1 1,	1	1 '
1	413	1	, I	19	274	С 3		2	12	c 1	т
2	377	î		16	250	C 3	1	2	13	c i	1
3	345	i	5	14	214	c 3		2	14	C 1 C 1 C 1	1
4	320		7	6	176	C 1		T	13	C 1	1
5	265	1	5	4	158	C 1		T	12	c 1	7
.			.			c 1	1	T	13	c 1	,
6 • •	223		4	2	144		İ				
7••	211		4	2	137	C 1		Ţ	12	C 1	1
8 • •	199		3	2	121 118	C 1		T T	11 12	c 1	T
9	217 265		7	5	176	c i	J	i	13	C 1	l ;
1	203	_	<u> </u>		171	c i		Ť	1 11		<u>-</u> -
-		+					-			 	
otal	17693		-	2239	8431			234	1955		21
		JUL	Υ		1						
						AUGUST				SEPTEMBER	R
1	13	,	3	T	12	r		т	17	_	
1	13 13	c	3	T T	12 9.6	C 4		T T	17 19	C 5	7
2	13 14	c	3	Ť	9.6 7.6	C 4 C 4 C 4		T T	19 17	C 5	7 7
3	13 14 17	c c c	3 3	T T T	9.6 7.6 8.0	C 4 C 4 C 4		T T T	19 17 16	C 5	T T T
3	13 14	C C C	3	Ť	9.6 7.6	C 4 C 4 C 4		T T	19 17	C 5 C 5 C 5	T T T
3	13 14 17 17	c c c	3 3 3 3	† † † †	9.6 7.6 8.0 9.0	C 4 C 4 C 4 C 4		T T T	19 17 16 14	C 5 C 5 C 5 C 5	7 7 1
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17	0000	3 3 3 3	† † † †	9.6 7.6 8.0 9.0	C 4 C 4 C 4 C 4		T T T	19 17 16 14	C 5 C 5 C 5 C 5	7 7 7
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 14 15	c c c c c c	3 3 3 3 3	† † † † †	9.6 7.6 8.0 9.0	C 4 C 4 C 4 C 4 C 4		T T T T	19 17 16 14 14	C 5 C 5 C 5 C 5	7 7 1
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 14 15	c c c c c c	3 3 3 3 3 3	T T T T	9.6 7.6 8.0 9.0 11 13	C 4 C 4 C 4 C 4 C 4 C 4		T T T T T	19 17 16 14 15 15	C 5 C 5 C 5 C 5	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 14 15 15	c c c c c c	3 3 3 3 3 3 3	T T T T T	9.6 7.6 8.0 9.0 11 13 12	C 4 C 4 C 4 C 4 C 4 C 4		T T T T T T	19 17 16 14 14 15 15	C 5 C 5 C 5 C 5	1
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 14 15 15 17	00000	3 3 3 3 3 3 3	T T T T T T	9.6 7.66 8.0 9.0 11 13 12 11 9.6	C 4 C 4 C 4 C 4 C 4 C 4 C 4		T T T T T T	19 17 16 14 14 15 15 14	C 5 5 5 C 5 5 C C 5 5 C C 5 5 C C 5 5 C C C 5 5 C	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 14 15 15 17 16	00000 00000	3 3 3 3 3 3 3 3 3	T T T T T T T T T T T T T T T T T T T	9.6 7.66 8.0 9.0 11 13 12 11 9.6	C 4 C 4 C 4 C 4 C 4 C 4 C 4 C 4 C 4		T T T T T T T	19 17 16 14 14 15 15 15 14 13	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	7
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 17 14 15 15 17 16	00000 00000	3 3 3 3 3 3 3 3 3 3	T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6	C 4 C 4 C 4 C 4 C 4 C 4 C 4 C 4 C 4		T T T T T T T T T T T T T T T T T T T	19 17 16 14 15 15 14 13	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	1
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 17 14 15 15 17 16 14 13	00000 00000	3 3 3 3 3 3 3 3 3 3 3 3 3	T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6	C 4 C 4 C 4 C 4 C 4 C 4 C 4 C 4 C 4		T T T T T T T T T T T T T T T T T T T	19 17 16 14 15 15 14 13 13 14	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	7
2 · · · 3 · · · · · · · · · · · · · · ·	13 14 17 17 18 15 15 17 16 14 13 13	00000 00000	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6 11 13	C C C C C C C C C C C C C C C C C C C		T T T T T T T T T T T T T T T T T T T	19 17 16 14 14 15 15 14 13 13 14 14 12	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	7
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 17 14 15 15 17 16 14 13	טטטטט טטטטט טטטטט	3 3 3 3 3 3 3 3 3 3 3 3 3	T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6	C 4 C 4 C 4 C 4 C 4 C 4 C 4 C 4 C 4		T T T T T T T T T T T T T T T T T T T	19 17 16 14 15 15 14 13 13 14	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	7
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 14 15 15 17 16 14 13 13	טטטטט טטטטט טטטטט	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6 11 13	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		T T T T T T T T T T T T T T T T T T T	19 17 16 14 14 15 15 14 13 13 14 14 12	55555555555555555555555555555555555555	7
2	13 14 17 17 17 14 15 15 16 14 13 13 13 13	טטטטט טטטטט טטטטט ט	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6 11 13 13 13	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		T T T T T T T T T T T T T T T T T T T	19 17 16 14 15 15 13 13 14 14 12 13 13	55555555555555555555555555555555555555	7
2	13 14 17 17 14 15 15 17 16 14 13 13	טטטטט טטטטט טטטטט טטטטט	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 12 11 9.6 9.6 11 13 13	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		T T T T T T T T T T T T T T T T T T T	19 17 16 14 15 15 14 13 14 14 12 13 13 13 13 13	C	7
2	13 14 17 17 17 15 15 15 17 16 14 13 13 13 13 13 13 13	טטטטט טטטטט טטטטט טטטטט	3333 3333 3333 3333	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6 11 13 13 13 13 13 13 13 11	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		T T T T T T T T T T T T T T T T T T T	19 17 16 14 15 15 14 13 14 14 12 13 13 13 13 13 13	C	7
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 17 14 15 15 17 16 14 13 13 13 13 13	טטטטט טטטטטט טטטטט	333333333333333333333333333333333333333	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6 11 13 13 13 13 13	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		T T T T T T T T T T T T T T T T T T T	19 17 16 14 15 15 14 13 14 14 12 13 13 13 13 13	C	7
2 · · · · · · · · · · · · · · · · · · ·	13 14 17 17 18 15 15 15 17 16 14 13 13 13 13 13 13 13 13 13 13 13 13 13	טטטטט טטטטט טטטטט טטטטט	333333333333333333333333333333333333333	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6 11 13 13 13 14 12 11 11	CCCCC CCCCC CCCCC CCCCC CCCCC CCCCC CCCC		T T T T T T T T T T T T T T T T T T T	19 17 16 14 15 15 14 13 14 14 12 13 13 13 13 13 13 14 16	C C C C C C C C C C C C C C C C C C C	7
22 33 44 55 66 77 88 99 99 99 99 99 99	13 14 17 17 17 15 15 15 17 16 14 13 13 13 13 13 12 12	טטטטט טטטטט טטטטט טטטטט ט	333333333333333333333333333333333333333	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9.6 7.6 8.0 9.0 11 12 11 9.6 9.6 11 13 13 13 13 13 13 11 11 11	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			19 17 16 14 14 15 15 14 13 13 14 14 12 13 13 13 13 13 13 13 14 16	C C C C C C C C C C C C C C C C C C C	
22 33 44 55 66 88 89 99 11 22 88	13 14 14 15 15 15 17 16 14 13 13 13 13 13 13 12 12 12	טטטטט טטטטט טטטטט טטטטט ט	333333333333333333333333333333333333333	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6 11 13 13 14 12 11 11 11 11	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			19 17 16 14 15 14 13 14 14 12 13 13 13 13 13 14 16	C C C C C C C C C C C C C C C C C C C	7
22 33 44 55 66 77 88 99 90 90 90 90 90 90 90 90	13 14 17 17 17 14 15 15 17 16 14 13 13 13 13 13 13 12 12 12	טטטטט טטטטט טטטטט טטטטט ט	333333333333333333333333333333333333333	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9.6 8.0 9.0 11 13 12 11 9.6 9.6 9.6 13 13 13 13 13 13 13 13 13 13	C C C C C C C C C C C C C C C C C C C			19 17 16 14 14 15 15 14 13 13 14 14 12 13 13 13 13 13 13 13 14 16	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
22 33 55 66 77 88 99 99 11 22 88 99 90 90 90 90 90 90 90 90 90	13 14 14 15 15 15 17 16 14 13 13 13 13 13 13 12 12 12	טטטטט טטטטט טטטטט טטטטט ט	333333333333333333333333333333333333333	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6 11 13 13 14 12 11 11 11 11	C C C C C C C C C C C C C C C C C C C			19 17 16 14 14 15 15 14 23 13 14 14 12 13 13 13 13 14 16	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
2 · · · · · · · · · · · · · · · · · · ·	13 14 14 15 15 15 17 16 14 13 13 13 13 13 13 12 12 12 12	טטטטט טטטטט טטטטט טטטטט	3333 33333 33333 33333 33333	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 9.6 11 13 13 13 14 12 11 11 11 10 13 13 13 14 12 11 11	CCCCC CCCCC CCCCC CCCCC			19 17 16 14 14 15 15 14 13 14 14 14 14 14 14 14 14	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
22 33 45 66 77 88 99 12 78 89 66 78 89 66 78 89 66 78 89 66 78 89 66 78 89	13 14 17 17 17 14 15 15 15 17 16 18 19 19 19 19 19 19 19 19 19 19 19 19 19	טטטטט טטטטט טטטטט טטטטט טטטטט	3333 33333 33333 33333 33333 3	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 12 11 9.6 9.6 11 13 13 13 14 14 16 17 18 19 19 19 10 11 11 12 11 13 13 13 14 16 17 18 19 19 19 19 19 19 19 19 19 19	C 4 C 4 C 4 C 4 C 6 C 4 C 6 C 6 C 7 C 7 C 7 C 7 C 7 C 7 C 7 C 7 C 7 C 7			19 17 16 14 14 15 15 14 13 13 14 14 12 13 13 13 14 16 16	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
2 · · · · · · · · · · · · · · · · · · ·	13 14 14 15 15 15 15 17 16 14 13 13 13 13 13 13 12 12 12 12 11 11	טטטטט טטטטט טטטטט טטטטט טטטטט	3333 33333 33333 33333 33333 33	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 13 13 12 11 9.6 9.6 11 13 13 13 13 13 13 14 12 11 11 11 11 11 11 11 11 11 11 11 11	C 4 C 4 C 4 C 4 C 6 C 4 C 6 C 6 C 7 C 7 C 7 C 7 C 7 C 7 C 7 C 7 C 7 C 7			19 17 16 14 14 15 15 14 13 13 14 14 14 14 14 14 14	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	7
2 · · · · · · · · · · · · · · · · · · ·	13 14 14 15 15 15 17 16 14 13 13 13 13 13 13 12 12 12 12 11 11 11	טטטטט טטטטט טטטטט טטטטט טטטטט	3333 3333 33333 33333 33333 33333 3333	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9.6 6 8.0 9.0 9.0 111 13 13 13 13 13 13 13 14 14 16 18	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			19 17 16 14 15 15 15 14 12 13 14 14 12 13 13 14 14 14 14 14 14	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	7
22	13 14 14 15 15 15 17 16 14 13 13 13 13 13 13 12 12 12 12 11 11 11	טטטטט טטטטט טטטטט טטטטט טטטטט	3333 3333 33333 33333 33333 33333	T T T T T T T T T T T T T T T T T T T	9.6 7.6 8.0 9.0 11 13 12 11 9.6 11 13 13 13 13 14 12 11 11 11 11 11 11 11 11 11 11 11 11	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			19 17 16 14 14 15 15 14 13 14 14 14 14 14 14 14 14 14 14 14	555555 55555 55555 55555 55555 55555 5555	7
22	13 14 14 15 15 15 16 14 13 13 13 13 13 13 13 12 12 12 12 11 11 11 11 11	00000 00000 00000 00000 00000 00000	3333 33333 33333 33333 33333 33333	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9.6 7.6 8.0 9.0 11 13 12 11 9.6 11 13 13 13 14 12 11 11 11 11 11 11 11 11 11 11 11 11	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			19 17 16 14 15 15 14 14 14 14 14 14 14 14 14 14 14 14 16 16 15	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	7
22	13 14 14 15 15 15 16 14 13 13 13 13 13 13 12 12 12 12 11 11 11 11 11 11 11 11	00000 00000 00000 00000 00000 00000	3333 3333 33333 33333 33333 33333		9.6 7.6 8.0 9.0 11 13 12 11 12 11 13 13 13 13 13 14 12 11 11 11 11 11 11 11 11 11 11 11 11	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			19 17 16 14 14 15 15 14 13 13 14 14 12 13 13 14 14 14 14 14 14 14 14 14 14 16 16 16 15	555555 55555 55555 55555 55555 55555 5555	
22-3-3-44-4-55-5-66-77-33-3-44-55-5-66-77-58-8-8-99-50-11	13 14 14 15 15 15 16 14 13 13 13 13 13 13 13 12 12 12 12 11 11 11 11 11		3333 33333 33333 33333 33333 333333 -	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9.6 7.6 8.0 9.0 11 13 12 11 9.6 11 13 13 13 14 12 11 11 11 11 11 11 11 11 11 11 11 11	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			19 17 16 14 15 15 14 14 14 14 14 14 14 14 14 14 14 14 16 16 15	555555 55555 55555 55555 55555 55555 5555	

T Less than 0.50 ton.
A Computed from partly estimated-concentration graph. B Computed from estimated-concentration graph.

C Composite period.

K Computed from estimated-concentration graph and subdividing day.

:

Minimum

DESCHUTES RIVER BASIN---Continued

OREG. RIVER NEAR CULVER, 14-875. CROOKED

1.2 miles downstream from Cove powerplant, and from mouth, 1 mile upstream gaging station, County 4 miles northwest of Culver, Jefferson --Temperature recorder at COCATION

DRAINAGE AREA, --4,330 square miles, approximately, RECORDS AVAILABLE --Water temperatures; July 1955

March

14-915. METOLIUS RIVER NEAR GRANDVIEW, OREG.

LOCATION: --Temperature recorder at gaging station, 0.7 mile upstream from Street Creek, 7.5 miles northwest of Grandview, Jefferson County, and 13 miles northwest of Culver.

BRONAGE REAL. --State miles, bydrologic drainage boundary uncertain owint to ground-water exchange.

BRONAGE ANALIABLE. -- Mater temperatures: July 1952 to September 1961.

EXTREMES, 1960-61. -- Mater temperatures: Minimum, 38°F Dec. 7.

EXTREMES, 1965-61. -- Water temperatures: Maximum (1952-60), 56°F July 5, 1957; minimum, 38°F on several days during winter months in 1865 and 1960.

_	ŀ
L	١
Φ	ı
₽.	ł
봈	١
ĭ	1
Ω,	l
ø	ſ
Ø2	١
0	ł
ĕ	İ
_	ł
<u></u>	Į
š	ł
Ä	١
	1
Ħ	l
ŏ	ļ
7	۱
ب	J
×	I
_	١
ч	١
ಷ	ı
£	ĺ
٠.	l
н	ì
ø	ı
water year October 1960 to September	ĺ
ě	l
	ł
٠.	1
5	ł
ĕ	ł
æ	ł
-	ı
emperature ('F) of water,	
ö	١
_	ł
€.	1
5	Į
_	i
as.	Į
ĭ	i
j.	ļ
7	١
판	J
6	١
ō,	1
Ħ	ĺ
Ψ	١

3 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 44 45 46 46 46 46 46 47 47 46 45 46 46 46 46 46 46	Temperature (°F) of we	(°F) of	(°F) of	(°F) of	(°F) of	(°F) of	(°F) of	(°F) of	(°F) of	(°F) of	of			water,		ter	water year		October		1960	ಧಿ		September		1961						-	
1 2 3 4 5 6 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 2 5 5 2 2 2 2 3 2 4 5 6 4 4 4 4 4 4 4 4 4 5 4 4 5 4 5 4 5	Month		f	-		-	-		f					-	t	7	Jay	-	-	t		ľ	-		1	1	-	+	ŀ	+	}	7	verage
num		-	7	က	4	2	9	^	8	٥	2	=	17	-	7		_			-	20	21	22	+					_		\rightarrow	=	,
4			47		47		47		45		4 4		4.5								 9		47										94
42 42 42 42 42 42 42 42 42 42 42 42 42 4			7 7		_		45		43		4.2		43								77		4										44
42 42 43 42 42 41 41 41 41 42 42 42 42 42 42 42 42 43 43 42 42 43 41 41 41 41 41 41 41 41 41 41 41 41 41	5		44		43		4 2		43		77		43										45										43
42 42 42 43 43 44 46 46 47 41 41 41 41 41 41 41 41 41 41 41 41 41	E		43		41		7		7.5		7 7		42								43		41										42
4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2	E		45				0 1		36		40		4.1								41		17										41
40 40 40 40 42 42 42 42 42 42 42 42 42 43 43 43 43 43 43 44 44 41 41 41 41 41 41 41 41 41 41 41	mnu		7 5		7		ر ار		4		ر بر		- -								4		4							_			0 \$
43 43 43 44 44 44 44 44 44 44 44 44 44 4	mnu		39		39		452		42		42		42								42		41 41										42
42 42 42 42 42 42 42 41 41 41 41 41 41 41 41 41 41 41 41 41			6,3		43		7 7	42	43		42		75								1,		6										43
42 42 42 42 42 42 42 43 43 43 43 43 44 44 44 43 42 42 42 42 42 44 44 44 44 44 44 44 44	in un		45		42		45		45		41		41		—				_	_	43		41				_		_	_		_	42
42 41 41 41 40 40 40 40 40 40 40 40 40 40 40 40 40	mam		42		42		45		43				43								43		4							_		9	7 7
46 48 46 45 44 45 46 45 46 45 46 47 46 47 46 47 46 47 47 47 47 47 47 47 47 47 47 47 47 47	mnmit		41		41		0,4		74		41		4.2		_				_		42		43					_			_	4	75
4 4 4 4 4 1 4 1 4 2 4 1 4 3 4 2 4 1 4 3 4 2 4 1 4 3 4 2 4 1 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4 3 4 3 4 3	Maximum	46	9		45		4 4		94		46		4.5		7 9 4						4.5		7,7				_			_	_	-	94
46 47 46 45 47 46 48 47 47 46 48 47 47 47 49 49 50 50 49 48 47 47 49 48 47 47 49 48 48 47 47 49 48 48 47 47 47 47 47 49 49 50 50 49 48 47 47 47 49 49 48 47 47 47 47 47 47 47 47 47 47 47 47 47	Minimum	43	7 7		41	_	42	4.1	43	42	4 1		6,4		4.1		_				7.5		42				_					ŧ	43
91 91 49 49 49 49 49 49 49 49 49 49 49 49 49	Ay Maximum		47		4.5		94	46	47		9 †		8 4		47						64		4.8									89	8 4
51 51 49 50 49 48 50 49 49 50 51 51 52 51 51 52 51 51 51 51 52 52 51	Minimum		43		42		43	43	7,7		7 7		43		4 4						4.5		4.5						_			4	77
40 40 40 40 40 40 40 40 40 40 40 40 40 4	ne Maximum		51		50		8 7	20	8,				20		51						27		51									<u> </u>	51
4	Minimum		40		τ ,		46	4	ţ.		τ, υ		φ τ		4		_		_		0		τ, τ									<u> </u>	Q Q
4 4 4 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Aaximum	T	1		1		1	50	51	5.1		1	1		-		-				ł		1		-							<u>.</u>	ļ
99 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Minimum	Ī	!	ľ	;	~	1	44	4 م	94		1	1		1	_	;		-	_	1	!	1		;	_	_				_	1	;
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ngust Maximum	1	1	1	1		1	1	1	- ;	1	ľ	1		-		1				1		1		:							6	;
	Minimum	i	1	1	:	_	!	;	Ī	1	1	1	1		-		;		1	1	1	ł	1		-	_		_		_			;
	,	0,4	-	1	1		1	1	_!	;	- 1	1	1		!		- 1		-!	;	-		1								_		;
	Maximum				1			ŀ		1	,	í	-	_	-		!		_	_	!		;				_	_	_		_	_	;

COLUMBIA RIVER MAIN STEM

14-1057. COLUMBIA RIVER NEAR THE DALLES, OREG.

-OCATION: --At The Dalles Dam, 3.2 miles upstream from gaging station, and 2.6 miles northeast of The Dalles, Wasco County.

DRAINAGE ARRA.—237,000 equator mails separate and are considered by approximately, upstream from gaging station.

DRAINAGE ARRA.—237,000 equator miles, approximately, upstream from gaging station.

Water temperatures: December 1950 to September 1951.

Water temperatures: December 1950 to September 1951.

EXTREMES, 1960-61.—Dissolved solids: Maximum, 149 ppm Feb. 6-10; minimum, 71 ppm May 24-31.

Farchess: Maximum, 89 ppm Jan. 1-29; minimum, 40°F Jan. 2-5.

Farchess: Maximum dally, 236 minimum, 40°F Jan. 2-5.

FATREMES, 1950-61.—Dissolved solids: Maximum i 63 ppm May 18-31, 1961.

Marchess: Maximum i 04 ppm Dec. 21-31, 1952; minimum, 40°F Jan. 2-5.

FATREMES, 1950-61.—Dissolved solids: Maximum i 63 ppm May 18-31, 1968.

FATREMES i 1950-61.—Dissolved solids: Maximum i 63 ppm May 18-31, 1968.

FATREMES i 1950-61.—1950-61.—1950-61 ppm May 18-31, 1961.

Marchess: Maximum i 04 ppm Dec. 21-31, 1958; minimum, freeding point i on several days during winter months some years.

Water temperatures: Maximum, 81°F Aug. 12-1, 13, 1958; minimum, freeding point i on several days during winter months come years.

Water temperatures: Maximum, 81°F Aug. 12-1, 13, 1958; minimum, freeding point on several days during winter months come years.

REMARKS.—Records of specific conductance of daily samples available in district office at Portland, Oreg. No appreciable inflow between sampling point and

gaging station except during periods of heavy local runoff.

		Ħď	8.0	8.0	8.0	6.7	8.0	0.0	7.9	8.0	8.1	6.7	3.0	8.1	8.0	3.0	8.7	7.8	9.7	9.7
	Specific con-	duct- ance (micro- mhos at 25°C)			208				223	202	221	179	169	167	178	158	129	145	134	116
		ad- ad- Borp-(n tion m	0.4	1	ī	1	1	1	9.	!	ī	ľ	1	!	1	;	4	1	1	1
		Non- 86 car- t bon- r	4	4	4	4	4	n	9	က	n	4	က	0	4	ო	4	N	4	4
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	78	80	83	79	88	87	89	82	87	72	69	29	73	65	99	61	28	8
	да	0 5 % " %	-					_	_		_								_	_
	Dissolved solids (residue at 180°C)	Tons per day	30,050	32,270	36,890	32,890	36,490	35,130	39.460	43,500	58,490	54,830	51,400	50,100	47,430	49,970	54,430	45,250	62,420	99,190
ır 1961	Dissolved solids residue at 180°	Tons per acre- foot	0.16	.17	. 18	. 17	. 20	. 19	. 20	. 17	20	.15	.15	.15	.16	.14	.15	.13	.12	. 10
Septembe	Dds	Parts per million	115	124	130	126	147	140	146	125	149	112	101	108	114	106	112	86	85	17
30 to		Bo- (B)	1	1	ļ	!	¦	1	0.02	1	1	ì	1	}	ì	ł	90.	i	1	1
er 196		Fluo- Ni- ride trate (F) (NO ₃)	9.0	1	ŀ	;	;	1	1.4 0.	1	!	!	!	I	ļ	1	80	1	1	1
Octobe		Fluo- Ni- ride trate (F) (NO ₃	0.2	1	!	1	T	1	6	_	ł	1	1	1	ŀ	ł	~	1	1	T
analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	4.0	!	;	ł	1	1	5	1	;	!	1	;	;	i	3.5	1	;	;
lion, wat		Sulfate (SO.)	19	1	ı	1	í	ł	21	1	1	1	!	1	١)	15	}	1	1
r mil]	į	(CO)																		
ts pe	H	car- bon- ate (HCO ₃)	96	94	96	92	102	100	101	96	100	83	80	79	84	75	16	72	99	26
in par	É	stun Stum (K)	1.5	1	;	ŀ	1	1	8		ţ	1	;	1	1	}	1.9	;	1	1
lyses,		Sodlum (Na)	8.9	77	11	10	12	11	12	9.6	12	8.3	7.3	7.1	7.7	6.9	7.5	6,1	4.6	3.0
cal ans	3	sium (Mg)	5.5	ì	1	ł	1	1	10	}	1	1	1	1	1	1	5.2	i	1	1
Chemical		Cal- clum (Ca)	22	1	ţ	1	1	1	56	1	1	;	1	!	!	!	18	1	ŀ	!
8301		Iron (Fe)																		
24 19		Silica (SiO ₂)	8,1	1	1	1	1	1	14	!	1	1	!	-		!	15	1	!	!
		Mean discharge (SiO ₂) (cfs)	96.770	96,380	105,100	96,690	91,950	92,940	100.100	128,900	145,400	181,300	177,900	171,800	154.100	174,600	180,000	171,000	272,000	517,400
Secarification cacego during periods of measy aces, fullous Chemical analyses, it		Date of collection	Oct. 1-15, 1960	0ct. 16-31	Nov. 1-29.	Nov. 30-Dec. 22	Dec. 23, 24	Dec. 25-31 92,940	Jan. 1-29, 1961	Jan. 30-Feb. 5	Feb. 6-10	Feb. 11-17	Feb. 18-26	Feb. 27-Mar. 6 171,800	Mar. 7-22.	Mar. 23-31	Apr. 1-10	Apr. 11-30	May 1-23	May 24-31 517,400

COLUMBIA RIVER MAIN STEM--Continued

14-1057. COLUMBIA RIVER NEAR THE DALLES, OREG .--Continued

1		Ħ	7.7	7.7	7.6	7.9	7.9	2.7	;
	Specific con-	ance (micro- mhos at 25°C)	114 7.7	125	137	141	154	170	159
	ø;	ad- ad- Borp- tion ratio	1	1	0	¦	i	1	ŀ
		Non- car- bon- ate	3	ß	4	4	9	3	4
	Hardness as CaCO ₃	Cal- ctum, Mag- ne- stum	51	26	61	64	89	72	8
tinued	Dissolved solids (residue at 180°C)	Tons per day	127,000	103,700	49,590	31,100	23,330	.14 26,610	0.13 48,800
Con	solved in	Tons per acre- foot	0.10	10	0.11	7	. 13	. 14	0.13
nber 1963	Dis (resid	Parts per million		11	80	81	93	105	96
Septer		Bo-	;	1	0.01	;	;	1	ļ
0 to		Ni- trate (NO ₃)	;	1	0.4	ł	ł	-	;
r 196		Fluo- ride (F)	1	1	0.2	!	1	-	1
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride Fluo- Ni- (C1) (F) (NO ₂)	1	;	1.0	1	1	1	!
water yes		Sulfate (SO ₄)		1	10	1	1	1	1
ion,		CO)	L						
r mill		car- bon- ate (HCO ₂)	l				77	84	73
ts pe	Ĕ	stum (K)	1.		8		1		1
, in par		Sodium (Na)	2.6	2 7	00	oc or	2.0	7.3	5.7
alyses	2,000	sium (Mg)		!	6	: !	i	!	1
cal an		Cal (Ca)		1	10	: :	;	!	ŀ
Chemi		Iron (Fe)							
		Silica (SiO ₆)	;	;	7	: 1	1	1	ļ
		Mean discharge (cfs)	644.500	498 900	229,600	142 200	116,800	93,880	189,030
		Date of collection	Time 1-19, 1961	Tune 20-30	Tell W 1-31	1-8	4110 9-30	Aug. 31-Sept. 30., 93,880	Weighted average 189,030

Temperature (°F) of water, water year October 1960 to September 1961

epremoer rapr	Aver-	22 23 24 25 26 27 28 29 30 31 age	57 57 57 56 56 57 57 56 56 56 60 49 49 49 49 49 48 47 47 47 51 42 42 42 42 42 42 42 42 41 41 43	42 42 43 43 43 44 44 44 44 44 44 44 47 47 47 47 48 48 48 48 48 48 48 48 48 48 48 48 48	49 49 49 49 50 50 51 52 52 50 55 56 55 54 54 54 54 56 52 63 63 63 63 64 62 62 63 63 64 60	70 69 69 68 69 70 68 68 68 70 67 72 72 72 72 72 72 72 72 72 72 72 72 72
remperature (r) or water, water year October 1960 to September 1961	Day	13 14 15 16 17 18 19	60 59 59 58 58 58 58 58 58 58 44 43 43 42 42 42 43	41 41 42 43 44 44 44 44 44 45 45 45 45 45 45 45 46 46 46	50 49 50 50 50 50 50 54 54 54 54 54 54 54 54 58 59 59 59 59 60 63	68 68 68 69 69 69 69 72 72 71 71 71 71 71 71 71 71 71 71 71 71 71
remberarence (r) or		7 8 9 10 11 12	65 65 64 61 60 60 53 54 53 52 53 53 45 44 44 43 43 43	42 42 43 41 41 41 42 43 43 43 44 44 43 43 43 43 43 43	50 51 50 50 50 50 53 54 54 53 53 54 59 58 58 58 58 57	64 65 64 66 67 67 72 72 72 72 68 68 68 67 67
		2 3 4 5 6	65 65 55 54 47 47	40 40 40 40 41 42 42 42 42 42 43 43 42 42 42	53 53 53 53 53 53 53 53 53 53 53 53 53 5	62 63 63 64 65 71 71 72 72 72 69 68 68 68
	Moneh	1	October 65 November 55 December 47	January 41 February 41 March 44	April 49 May 53 June 55	July 62 August 70

KLICKITAT RIVER BASIN

14-1130. KLICKITAT RIVER NEAR PITT, WASH.

LOCATION .-- Temperature recorder at gaging station, 3.5 miles south of Pitt, Klickitat County, 5 miles upstream from Silvias Creek,

and 7 miles upstream from mouth.

DRANKGE AREA (revised).—1,297 square miles.

RECORDS AVAILABLE.—1-1987 square miles.

Water temperatures: August 1950 to September 1961.

EXTREMES, 1960-61.—Water temperatures: Maximum, 66°F July 14; minimum, 34°F Dec. 7, 30.

EXTREMES, 1960-61.—Water temperatures: Maximum, 69°F July 28, 29, 1958, July 18, 1960; minimum, freezing point Jan. 31, Feb. 1-4, 1956, Jan. 3-7, 1959.

							I C	bers	emperature	- 1	(F)	M IO	Water		1916	water year		October		1960	20		meac	September	1961	, 	į	i	1				
Manch	<u> </u>							i							_	Day																Average	ı
Month	-	2	3	4	5	9	7	8	٥	10	=	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average	
October Maximum	52	52	25	52	52	52	52	51	50	47	46	64	8 4	46		6,4	6,4	8,	48	8 4	4.7	50	50	Š	20	8 4	8,	80	8 4	45	4.7	6.4	ı
Minimum	49	-64	46	_	64	2	21	8 4	46				44	4	9 †	4 7	<u> </u>			7-4		- 4	_	0		84		74		£3	£4	4.7	
November Maximum	74	46	4.5	63	41	0 4 0	42	63	43	43	4 6	4 7	4 6	4 5	6,0	5.5	45	4 5	6,	4 .	£ 4	0 0	1,1	643	45	141	39	37	38	39	11	643	
Minimum		<u>,</u>	}		,	٠ -	?	;	;			÷	?	 }		?	_			 }		?		;		<u>`</u>				2		;	
Maximum	33	9 6	9 9	9,0	37	35	35	35	35	36	36	37	38	38	38	36	36	38	37	37	27	37	27	37	37	36	38	38	37	36	37	37	
Minimum		ý	?		0	n	*	ć	6		n n	9	'n	000		0	_	D	_	0		<u> </u>			_	9	_			ŧ	9	o n	
Maximum	37	37	36	36	35	38	38	38	39	0 4	9 9	39	39	45	42	42	407	41	38	38	38	38	338	38	38	38	38	37	37	39	39	39	
February			3				, ,,				- 3			,		,		•				. ;		;		;			_	. 1			
Minimum	38	36	39	5 9	1 6	1 4	45		4,2	7 7		42		£ 1		45		7 7 7	_	1 4	4	7 7	7 17	4 7	42	417		45		;	1	4 4	
March	_;	-:	•		-	-:	- 5		_;	_			- ;							- ;		-			_		_		_		-	,	
Maximum	4 6	4 6	4 4	1 4	3 6	3 4 1	45	42	‡ °	444	5 4	4 4	4 4	t 4 t 4	4 5	t 4	† † † †	t 4 t 4	4 4	t t	4 4	t t	0 4	4 4 6 5	45.5	0 4	0 4	 0 4 4 6	2 4	4 4	2 7	4 4	
April	:	!	•		:	:	!	:	!		_		!	:				_				_			_	:			_	:		!	
Maximum	61	64	46	74	42	46	46	9 :	9:	46	46	44	7 4	9,	64	61	6,1	84		4,	4 .	4:	74	8 1	64	64	20	200	200	19	1	747	
Minimum	14	φ φ	ż		43	‡	÷		ç	_	4		0	Ç.		÷		÷		- -		-	_	t t	_	o o	_	ž Š	_	÷	<u> </u>	4	
Maximum	48	8,4	8.4	9	4.5	84	64	64	4,8	84	20	51	50	51	52	52	53	53	53	52	52	52	21	27	53	52	21	12.	51	53	53	20	
Minimum	7	94	9		4	5	4	7	8	_	4		ę,					<u>م</u>		7						2		<u> </u>	_	2	2	\$	
Maximum	55	56	5.5	56	55	53	52	53	53	54	53	55	57	29	9	9		09	9	9	58	9	62	62	63	6.2	9	59	58	28	1	58	
Minimum	51	53	53		53	20	49	21	51	20	52		25	53		96	26	56	_	26	_	54		57		58		54	5	53	!	54	
July		62	61		63		9	62	63		63	63	49			63	62	- 79		64	6.5	- 49		62		63		62	62	62	63	63	
Minimum	3,4	26	57	58	59	26	53	55	57	58	58		58	9	9	53		57	57	58		9	59	58	26	57	28	24	57	99	96	57	
August	49	49	64		62		63	63	63	_	6.1		62	62		49		29	62	49	63	49	49	63	9	58	61	61	62	62	62	62	
Minimum	58	28	59	9	9	57	57	57	58	57	57	22	28	28	9	9	80	57	_	59		58		58		26		- 96	_	58	26	58	
September		57	59		9	58	57		57							58		28		26		53		52		52				20	1	56	
Minimum	57	53	54	55	56	53	53	52	52	53	54	25	51	52	53	54	55	55	54	53	51	64	64	8 7	84	64	84	20	48	84	1	52	

WHITE SALMON RIVER BASIN

14-1235. WHITE SALMON RIVER NEAR UNDERWOOD, WASH.

LOCATION.--At gaging station, 1,000 feet downstream from Pacific Power and Light Company's Condit powerplant, and 2 miles north of Underwood, Skamania County. DRAINAGE AREA.--S86 square miles. RECORDS AVAILABLE.--Chemical analyses: August 1960 to August 1961 (discontinued).

۱		Hd	7.7					0.0		7.3	7.5	7.4	7.4	4.	7.4	7.3
	Specific	duct- ance (micro- mhos at 25°C)	69	9 6	2 (9	200	64	5	54	26	19	52	63	99	65
	8;	ad- ad- Sorp- tion ratio														
		Non- car- bon- ate	0	0	٠ د	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	24	2 2	0	24	50	55	17	20	21	18	18	22	24	24
	Dissolved solids (residue at 180°C)	Tons per day		_												
	Dissolved solids	Tons per acre- foot														
1961	Dis (resi	Parts per million	65	70	65	69	55	61	25	5	49	48	53	64	62	70
ugust		Phos- phate (PO4)	0.10	60.	. 14	2	80.	8	60.		.02					
to A		Ni- Phos- trate phate (NO ₂) (PO ₄)	0.0	S.	?	œ.	Ľ,	~		۰		7	۲.	-	۲.	« :
1960		Fluo- ride (F)	0.1	-	7.	Τ.	•	۳.	7.	_	! "		۲.	۲.	۲.	۲.
Chemical analyses, in parts per million, August 1960 to August 1961		Chloride (C1)	1.0		1,0	1.5	ď.	G.	ı.	ď	, rc	2	27	ς.	œ.	5.
million		Sulfate (SO4)	2.8	3.4	3.2	3.6	2.4	2.2	1.8	•	4	8	1.8	2.6	3.6	4.2
s per		Pon Ste														
in par	Bi-	car- bon- ate (HCO ₂)	36	37	38	35	31	35	27	6	2 6	29	56	34	36	37
ses,	Ė	stun (K)	1.6	.3	1.6	1.3	1.1	6.	1.0	-		1.1	1:1	6	1.3	1.4
al analy	i	Sodium (Na)	3.8	3.6	3.6	3.5	3.0	3.0	2.4		9 6					3.5
Chemic		Mag- ne- stum (Mg)	2.3	3.0	2.4	2.1	1.9	2.2	1.1	,	2.7	-	2.0	2.0	2.2	2.3
		Cal- clum (Ca)	9.0	5.0	0.9	6.0	5.0	5.5	5.0	-		200	4.0	5.5	9	6.0
		Fron (Fe)														
		Silica (SiO ₂)	22	88	88	28	25	27	22	į	0 0	23	23	27	28	56
		Mean discharge (cfs)	796	672	009	900	1,100	850	2,160	9	2,820	940	1,550	1 070	867	710
		Date of collection	Aug. 1, 1960	Aug. 31	Sept. 30	Oct. 31	Dec. 2	Jan 3, 1961.	Feb. 1		Feb. 28	May 1	June 1	Time 30	July 31	Aug. 30

WILLAMETTE RIVER BASIN

14-1448. MIDDLE FORK WILLAMETTE RIVER NEAR OAKRIDGE, OREG.

LOCATION.--Temperature recorder at gaging station, 0.2 mile downstream from Cone Creek, 1.1 miles upstream from Hills Creek Reservoir, and 10 miles south of Omkridge Lane Country.

RECORDS AVAILABLE.--358 square miles, including those of Gold and Buck Creeks.

RECORDS AVAILABLE.--Water temperatures: October 1958 to Jannary 1959, September 1959 to September 1961.

EXTREMES, 1960-61.--Water temperatures: Maximum, 6678 Aug. 2, 3, 6, 7; milmum, 367 sometime during period Jan. 1 to Feb. SEP. Sometime during period Jan. 1 to Feb. (7) 1961, milmum, 367 south and 15, 13, 1960.

ë

	Average	39.17.1	67	4 t 9 t	4 1	11	44	43	4 4 9 9	4 4 4 2	57 50	6 3	53	56
		31	4.6	11	9.6	11	11	9 4	11	22.4	11	7 7 2	200	11
		30	46	. 5 7 . 6 5 .	3.0	11	11	4 7 7 7	8 5	6 4 9	500	7 7 7	563	51
		29	42 4	45	39	$\frac{1}{11}$		4 6 4	47 42	4 9 4	51	54 6	55	52 5
		28	L 4 4	7 7 7	39	11	4 1 1 3	* 5 * 5	8 4	4 5 6	2.0	4 5	55	51
		27 ;	4 4	43	42 4	11	42 4	43 4	43 64	4 2 4	53 5	55 5	55.5	54 24
		26	9 4 4			11		43	48 7	649		55	5.58	54 48
1961		25 2	4 4	43 43	41 42	11	42 42	43 4	47 4	51 4	63 61 53 54	53 5	55 5	54 5
		24 2	4 4 4							0 4	53	533	55 5	53
September		23 2	4 4	44 46 475	41 41	11	42 42	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	41 46	42 4	53 5	55 5	56 6	53 5
ept														
ţ,		1 22	4 6 4 6	3 42	2 41	++	4 5 2	4 4 5 4 4 5	4 3	4 4	3 52	7 4	5 6 4	54 53 50 48
		2	4 4	443	42	11	44	44	43	4 4 7	53	5,4	5.5	
1960		20	4 4 80 4	4 4	4 5 7	11	4 6		413	4 4 6	53	2 2 2	55	53
October		19	47	4 4	42	11	4 4		4 3 4 0	4 5	53	5 4 7 4 7	55	58
)cto		18	4 8 4 6	11	42	11	45	4 1 4 3	4 P	51 45	61 53	2 4	5. 5. 4.	53
ar		1	4 4	4 4	45		£ 7 2	42	4 4 6 4	50	53	64 54	63	53 52
year.	Day	16	49	777	42	11	43 43	42	50	50	57	55	4 4	54 52
water		15	44	4 4 6 4	41		44	42	6 4 4	50	52	0 v	63 55	57 52
		4	47	2 4	39	11	4 4	4 7	4 9	44	59	54	8 12 13 13	55 52
water,		13	4 4 5 60	4 5 5	39	11	43	42	4 4	4 0 4 3	57	5.5	63	57 50
of W		12	46	4.5	39	11	6 4	42	4 4 6	44	5.4 4.8	55	56	59 51
		Ξ	4 4	4 4	39	11	4 6	1,1	43	4 4 4 4 5	51	54	56	58 51
(°F)		0,	4.5	44	39	11	7 7 7	41	43	t 4 0 4	54	53	54	59
Temperature	İ	٥	50	44	39	11	43	117	43	47	53	53	2 4	58 50
erat	l	80	0 80	4 4 6	39	11	43	41	45	4 4 5 5	6 4 8	51	565	59
emp		^	52	4 4 5 50	39	11	4 4	40	45	9 4	52	500	56	59 52
-		9	5.2	7 4 0 6	41	11	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0 4	45	4 4 50	47	300	57	60
		2	4 8	47	417	11	4 4	104	4 2 4 2	6,7	0 80	52	583	53
		4	4 8	7 1 7	43	11	6 4	45	4 5 2	4 7 7 7 7 7	52	57	583	53
		က	6.83	44	6,4	11	11	77	4 4 4 5	7 4 4 4 5 5	υ φ ω φ	3.62	56	51
		7	4 % 4 %	44	453	11	11	4 5 7 7 7 7	4 to	t 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	6.0	52	55	53
		_	54	640	45 6	 	$\dot{\pi}$	45	43	4 6 6 6	44	51	5.4	5.5
	ш		::	::	::	-::	::	::	::	::	::	::	::	::
	Month		um	um	man man	un	um mm	 mn	un ma	 mn	un	un	wn	er um um
	ځ		October Maximum Minimum	November Maximum Minimum	December Maximum Minimum	anuary Maximum Minimum	February Maximum Minimum	March Maximum Minimum	April Maximum Minimum	y Maxim Minim	nne Maximum Minimum	July Maximum . Minimum .	August Maximum Minimum	September Maximum Minimum
			ō	ž	దో.	a ~ ~	무	Z ~ ~	₹~;	Z .	Jun M. M. M.	5~~	₹~~	มักก

14-1449. HILLS CREEK ABOVE HILLS CREEK RESERVOIR, NEAR OAKRIDGE, OREG.

LOCATION: --Temperature recorder at gaging station, 0.2 mile downstream from Tufti Creek, 0.7 mile upstream from Hills Creek Reservoir, and 6.5 miles southeast of Oakridge, Lane County.

PADIANGE AREA.--52.7 square miles.

PADIANGE AREA.--52.7 square miles.

COTOBER 1958 to September 1958.

EXTREMES; 1960-61.--Water temperatures: Asximum, 67°F July 11, 12, 14, 15; minimum, 37°F Jan., 2-5.

EXTREMES; 1960-61.--Water temperatures: Maximum, 69°F July 28, 1960; minimum, 34°F Jan. 4, 1959.

Temperature (°F) of water, water year October 1960 to September 1961

															Day	il L	3 I	! -	1 H	: I -	. 1	4 I -			: 1 ⊢				1		Average
1 2 3 4 5 6 7 8 9 10 11 12 13	3 4 5 6 7 8 9 10 11 12	4 5 6 7 8 9 10 11 12 1	5 6 7 8 9 10 11 12 1	6 7 8 9 10 11 12	7 8 9 10 11 12	8 9 10 11 12	9 10 11 12	10 11 12	11 12	-	-	621	-+	4	5 16	2 17	- 8	6	8	2	72	23	24	22	56	27	28	29	30	31	,
55 54 54 54 54 55 55 52 60 49 48 49 4 52 52 52 52 54 55 55 51 49 46 47 48 4	54 54 54 54 55 55 52 50 49 48 49 52 52 52 52 54 52 51 49 46 47 48	54 54 55 55 50 49 48 49 52 52 54 52 51 49 46 47 48	54 55 55 50 49 48 49 52 54 52 51 49 46 47 48	55 55 50 49 48 49 54 52 51 49 46 47 48	55 52 50 49 48 49 52 51 49 46 47 48	52 50 49 48 49 51 49 46 47 48	50 49 48 49	49 48 49	48 49	4 4 0 8			4 6 4 8 4 6 4 6 4 6 4 6 4 6 6 6 6 6 6 6		48 46	0.84	50 4	50	50	0.4	50	51	51	0.4 0.8	6 4	4 4 6 4	0.04	50	49	4 4 0 8	51
94 94 94 94 94 94 94 94 94 94 94 94 94 9	0 4 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	94 94 94 94 94 94 94 94 94 94	45 46 46 46 46 46 46 46	94 94 94 94 94 94 94 94 94 94 94 94 94 9	46 46 46 46 46	94 94 94 94	94 94 94 94 94 94 94 94 94 94 94 94 94 9	9 4 9 4 9 4 9 4 9 4 9 4 9 4 9 4 9 9 9 9	40	9 ;			4.5		44	24.5	5 5	45	4.5	4 ;	4	4 .	4 .	643	4.2	4.2	7	7;	4.2	1	4.5
0 1 1 0 0 1 1 0 0 0 1 1 0 0 0 1 1 1 1 0 0 0 1	0 1 1 0 0 1 1 0 0 0 1 1 0 0 0 1 1 1 1 0 0 0 1	44 45 45 45 45 45 45 45 45 45 45 45 45 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	6 4 4 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4	40 40 40 40 40 40 40 40 40 40 40 40 40 4	64 44 64 64 64 64 64 64 64 64 64 64 64 6	6	40 40	0 7	÷ :		7 4												7 .	7 7		; ;		1 0	1 4	; ;
43 43 42 41 40 40 40	43 43 42 41 40 40 40 40 40 40	42 41 40 40 40 40 40 40	41 40 40 40 40 40	04 04 04 04 04	04 04 04 04	04 04 04	04 04 04	0 7 0 7	4 0		. 0	- 4	040	_	1 4 1	. 1	17	1.1	4,1	104	9	4	4	; ;	4	41	0.4	0.4	9	0,4	4 1
40 39 37 37 39 40 40 41 41 41 41 41 41 41 39 37 37 37 37 39 40 40 40 40 40 60 60	39 37 37 39 40 40 41 41 41 41 41 41 37 37 37 39 40 40 40 40 40 40 40 40	37 37 39 40 40 41 41 41 41 41 37 37 37 39 40 40 40 40 40 40	39 40 40 41 41 41 41 41 37 39 40 40 40 40 40 40 40	40 40 41 41 41 41 41 39 40 40 40 40 40	40 41 41 41 41 40 40 40 40 40 40	41 41 41 41 41 40 40 40	41 41 41 41 40 40 40	41 41 41	41 41 40 40				40 4I 39 40		41 41 40 41	1,4	9 6 6	3.9	39	40	14,	4 2 4 1	42	4 1 4 1	40	41	41	42	43	43	4 4 1 0
43 44 44 44 44 43 43 44 44 44 45 43 4	43 43 43 43 43 42 42 43 44 44 45 43	44 44 44 43 43 44 44 44 43 42 43 44 43 45	44 44 43 43 44 44 44 43 43 43 42 43 44 43 42	44 43 43 44 44 44 43 42	43 43 44 44 44 43 45 42	43 44 44 44 43 42	44 44 43 43	44 44 43	4 4 4 4 3 4 5 4 5 4 5 4 5 4 5 6 6 6 6 6 6 6 6 6 6	43			43 43		43 43	4 7 7	4 7 4 7	44	43	43	4 4 3	47	43	42	4 to	42	42	11	11	11	4 4 2
42 42 41 42 41 42 42 42 42 42 42 42 42 42 42 42 42 42	42 41 42 41 42 42 42 42 42 42 42 42 42 42 42 41 41 41 41 41 41 41 41 41 41 41 41 41	42 41 42 42 42 42 42 42 42 41 41 41 41 41 41 41 41 41	41 42 42 42 42 42 42 42 41 41 41 41 41 41 41 41 41	42 42 42 42 42 42 42 41 41 41 41 41 41 41	42 42 42 42 42 42 41 41 41 41 41 41	42 42 42 42 42 41 41 41 41 41	42 42 42 42 41 41 41 41	42 42 42 41 41 41	42 42 41 41	42			43 43		42 42	4 4 2 2	2 4 1	4 2 2	4 1 4 2	43	444	4 4 6	4 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	45	42	43	4.4	4 4	45	4 t 4 3	4 4 3
45 46 45 44 44 44 45 45 46 45 45 46 45 45 46 45 47 47 47 47 47 47 47 47 47 47 47 47 47	46 45 44 44 44 44 45 45 46 45	45 44 44 44 44 45 45 46 45	44 44 44 44 45 45 46 46 45 42 42 42 41 42 43 43 43 44	44 44 45 45 46 45 44 41 42 43 43 43 43	44 44 45 45 46 45	44 45 45 46 45	45 45 46 45	45 46 45	46 45 44	24			44 45 43		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4 5 4 7	4 4 3 6 5	444	4 4	444	44	453	4 4 2	47	4 9 8	4 4 4 4	64	8 t 7 t	4 4 7	11	4 4 8
48 48 46 45 45 46 47 48 47 46 46 47 46 47 46 47 46 47 46 45 45 45 46 46 46 45 45 45 45 46 46 46 46 45 45 45 45 45 45 45 45 45 45 45 45 45	48 46 45 45 46 47 48 47 46 46 47 45 44 44 45 45 46 46 45 45 45	46 45 45 46 47 48 47 46 46 47 44 44 45 45 46 46 45 45 45	45 45 46 47 48 47 46 46 47 44 44 45 45 46 46 45 45 45	46 47 48 47 46 46 47 45 45 46 46 45 45 45	47 48 47 46 46 47 45 46 45 45 45 45	48 47 46 46 47 46 46 45 45 45	47 46 46 47	46 46 47	46 47	42			47 47		46 46	4 6 21	5 47	51	44	4 4 6 4	44	4 4 6	0.0 4	51	4 4 0 8	50	50	4 4 8 8	49	52	4 4 8 9
54 53 53 54 52 51 52 50 53 54 52 54 49 50 50 50 50 49 48 49 49 49 50 50 50	53 53 54 52 51 52 50 53 54 52 54 50 50 50 50 49 48 49 49 49 50 50	53 54 52 51 52 50 53 54 52 54 50 50 50 49 48 49 49 49 50 50	52 51 52 50 53 54 52 54 50 50 49 49 49 50 50	51 52 50 53 54 52 54 49 48 49 49 49 50 50	52 50 53 54 52 54 48 49 49 49 50 50	50 53 54 52 54 49 49 49 50 50	53 54 52 54 49 49 50 50	54 52 54 49 50 50	52 54 50 50	54			57 61		62 61 56 57	64	4 6 6 4 8 5 8 8 5 8 8 9 8 9 8 9 8 9 9 9 9 9 9 9	63	57	62 56	5 57	585	58	59	59	62 58	61	56	61 53	11	5.4
63 63 64 61 59 59 61 63 65 66 67 67 6 55 56 58 58 57 54 54 55 58 59 59 59 61 6	63 64 61 59 59 61 63 65 66 67 67 56 58 58 57 54 54 55 58 59 59 61	64 61 59 59 61 63 65 66 67 67 55 58 58 59 59 61	59 59 61 63 65 66 67 67 57 54 54 55 58 59 59 61	59 61 63 65 66 67 67 54 54 55 58 59 59 61	61 63 65 66 67 67 54 55 58 59 59 61	63 65 66 67 67 55 58 59 59 61	65 66 67 67 58 59 59 61	66 67 67 59 59 61	67 67 59 61	67			65 67		67 66	966	5 6 5 8	58	5 6 5	59	400	60	58	53	5.8	64 58	63	52	62 57	62 57	64 58
62 63 64 64 63 64 63 62 61 62 61 62 65 65 65 65 65 65 65 65 65 65 65 65 65	63 64 64 63 64 63 62 61 62 61 62 57 59 60 61 59 58 58 56 57 59 59	64 64 63 64 63 62 61 62 61 62 59 60 61 59 58 58 56 57 59 59	64 63 64 63 62 61 62 61 62 60 61 59 58 58 56 57 59 59	64 63 62 61 62 61 62 59 58 58 56 57 59 59	63 62 61 62 61 62 58 58 56 57 59 59	62 61 62 61 62 58 56 57 59 59	61 62 61 62 56 57 59 59	62 61 62 57 59 59	61 62 59 59	65 59			62 61 59 58		62 62 59 59	57	1 62	58	59	59	609	62	58	58	61	61 58	61 58	61 58	61	58	62 58
60 56 56 58 58 57 55 55 55 55 56 56 56 56 56 56 56 56 56	56 56 58 58 57 55 55 55 55 56 56 56 55 55 56	56 58 58 57 55 55 55 55 55 56 52 54 55 55 54 53 53 53 53 53 53	58 58 57 55 55 55 55 56 56 56 55 56 56 55 56 56	58 57 55 55 55 55 56 55 54 53 52 53 53 53	57 55 55 55 55 56 54 53 52 53 53 53	55 55 55 55 56 53 52 53 53 53	55 55 55 56 52 53 53 53	55 55 56 53 53 53	55 56	53			57 57		55 55	5,4	5 5 4	55	5.5	52	4 2 5	51	51	51	51	51	51	50	50	11	55

14-1455. MINDLE FORK WILLAMETTE RIVER ABOVE SALT CREEK, NEAR OAKRIDGE, OREG

upstream from highway bridge, 0,3 mile upstream from Salt Creek. 1.1

14-1480. MIDDLE FORK WILLAMETTE RIVER BELOW NORTH FORK, NEAR OAKRIDGE, OREG.

LOCATION: --Temperature recorder at gaging station, 0.5 mile downstream from Whitehead Creek, 4.2 miles downstream from North Pork of Middle Pork Willamette River, and 7 miles northwest of Oakridge, Lane County.

DRAINAGE AREA.--894 square miles.

EXTREMES AVAILEMEL.--Water temperatures: Softember 1950 to October 1960, June to September 1961.

EXTREMES, 1960-61.--Water temperatures: Maximum, 74°F Aug. 3, 1961; minimum, 35°F on several days during winter months.

Temperature (°F) of water, October 1960, June to September 1961

							'	and the same		- 1							•			2			- 1							İ	
Ment															Day	Α															Amerada
Month	-	2	က	4	5	9	7	8	6	10	11	2	13 14	15	16	17	18	16	20	21	22	23	24	25	26	27	28	29	30	31	TACTARE.
October Maximum	57	99	56	56		57		53	53 5	53	52 5	51 5	51 51			52	- 1	1	1	- !	!	1	- 1	1	ŀ	!	;	1		-	ł
Minimum	35		24	54	4	92	5.	25					64	48	8 40		ţ	1	L	1	1	1	1	1	1	!	-	1	1	!	1
Maximum	¦	ł	-	1	i	1	1	-	1	<u> </u>	+	-	<u> </u>	1	-	1	1	;	!	1	į	1	1	1	1	1	-	1	1	1	;
Minimum	1	I	1	1	1	1	;	-	+	<u>.</u>	+	1	1	1	1	1	1	1	ł	1	ł	ł	1	1	1	1	-	1	-	1	;
December		_		_									_	_		-														-	,
Minimum	1 1		1 1	1 1	11	: :	1 1	1 1	1 1	1 1		_	<u> </u>		1 1	1 1		11	11				1 1							1	1
	!	1	- 1		1		1	- 1	1		- 1		- 1	- 1	- 1	ł	ł	i	1	1	ļ	- 1		- 1	1	1	!	- <u>i</u>	ŀ	;	1
Ę	ļ	-	1	;	i	<u>'</u>	1	1	1	1	1	-	1	1	1	1	1	ŀ	1	1	!	1	1	ļ	1	;	1	1	!	!	;
February Maximum	;	1	1	1	÷	1	-	-	-	-		_ <u>_</u>		-	- 1	- 1	1	- 1	- !	1	1	1	1	1	- 1	1		1	1	1	1
E E	1	1	1	1	1	-	1	1	1	<u> </u>	1	-	1	<u> </u>	1	-	ł	1	ł	1	1	1	1	1	1	ŀ	;	1	1	1	;
March				-		-			_		-		-	-	- 1	- 1	-	- 1	_ !	- 1	_ !	:	í	1	-	-			-	-	1
Minimum	1 1		1	1 1		1 1		_										1		-			1		Į.		1		1	1	1
April												_									~~							_			
Maximum	İ		1		1	!	1		1	1	1		1	1		1 1				1 1		1 1) 1			1 1		1			¦ ¦
Minimum			1	!		<u> </u>			_					-			_		_							_					
Maximum	1	ļ	1	-	1		i	1	+	1	+	-	1	-	1	1	1	1	1	1	1	ŀ	1	1	1	1	1	1	1	1	1
Minimum	1	1	;	1	i	1	<u>;</u>	1	1	1	1	;	<u>:</u>	1	1	1	1	1	1	!	!	1	}	1	1	1	1	!	:	;	;
June Maximum	1	1	1	1	i	1	1	-	1	-	1	- 1	1	-	- 1	-	1	1	1	1			65		65		63		65	1	1
Minimum	1	1	1	1	i	!	:	1	<u>'</u>	1	1	<u>.</u>	1	1	1	1	1	1	1	1	29	59	59	09	61	9	29	28	57	1	¦
Maximum	69		89	99		63		69		72	73 7	73 7		72	2 71			72		72			7.1		7.2		71		71	7.1	20
Minimum	59	62	62	61	26	58	28	61	49		9 99		67 64		5 65	65	9	65	99	99	99	99	65	49	65	99	99	49	65	65	9
August Maximum	7.1			73		73	73	-11			70/7		71 68	9 67	7 70	70	7.1	70	71	72	7.1	69	67	67	65		6.8		89	67	20
Minimum	69	99	67	2	67	99		99	65	79	67 6	9 99	99 99					65		99			49	63	63	19	62	63	62	63	65
September Maximum	64	61	63	59	69	5.9	58	63	62	69	63 6	57	63 61 57 58	62 58 58	2 61	58	5 2	57	57	5.5	53	57	57	57	57	57	56	52	50	11	96
_	_	-	-	-	-	-	-	-	-	-	-	-	_			_	_	_				_	_					-			

14-1500. MIDDLE FORK WILLAMETTE RIVER NEAR DEXTER, OREG.

LOCATION .--Temperature recorder at gaging station, 0.6 mile upstream from Lost Creek, 2 miles northwest of Dexter, Lane County, and 2.7 miles downstream from Dexter Dam.

DRAINGER AREA.--1,001 square miles.

RECORDS AVAILABLE.--Textre temperatures: August 1955 to September 1961.

EXTREMES. 1960-61.--Textre temperatures: Maximum, 867 fon several days during September; minimum, 42°F on several days during

65°F on several days during September 1961; minimum, 38°F on several days during Maximum, January. EXTREMES, 1955-61. --Water temperatures: January and February 1957.

100

						=	Temperature	erat	ure	(°F)		of wa	water,	*	ater	water year October	٥ ي	ctol	per	1960	o to		pte	September	1961	19							
1														i		Day													1			A	١
Month	-	2	3	4	5	9	7	8	٥	10	Ξ	12	13	14	15	7	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average	26
October Maximum	46	62	64	62	62 6	469	63	61	200	580	59	20	61	61	60	59	90	60	090	099	60	60 60	61	6.0 6.0	61	999	59	200	59	59	59	661	
November Maximum	5.9	59	5.9	58	58 5	58	57	58	57	57	52	56	56	56	55	55	10 10 10 10	55	53	53	53	51 51	50	5.2 4.9	5 0 4 0	4 4 0 8	4 4 8	4 4 4 7	47	4 4	11	10 to 10	
December Maximum	47	47	4 6	9 4 9	9 4 9 4	4 4 0 0	4 5 5 5	4 4 70 70	45	4 4 U U	4 4 70 0	4 t	1 4 U 4	4 4	4 4 5	4 4 5	4 4 10 10	4 4 7 7	4 4 ஸ ஸ	7 t 7 t	4 7 7	4 4 50	4 4 4 4	4 4 4 4	4 4	4 4	4 4	4 4	4 4	4 4	1 1	4 4 5	
Maximum	4 4	4 4 6 9	6 6	643	43 43 43	# # # #	444	4 4	1 1	4 4	4 4	7 7 7 t	44	4 4	4 4	4 4	111	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	44	43	4 4 7 7	£ 7 2 7	45	4 5 5	452	44	43	4 7	4 4	4 4	44 6	44	
February Maximum	4 t	4 4	4 4	44	4 5 4	4 4 7 0	4 t 5 t 5 t 5 t 5 t 5 t 5 t 5 t 5 t 5 t	4 4 6 5 5	4 5 6	47	4 t 6 4	9 4 9	4 4 0 7	2 4 2 7	t, t,	4 4 70 70	2 4 2 70	4 4 v v	4 4 70 70	4 5	4 4 6 6	4 4 9	4 4	4 4 6	4 4 6 4	4 4 0 70	4 4 70 10	4 4		11	- 1 1	4 4 5 6	
Maximum	4 5 5	4 4 7 7	2 4	4 t5	45 4	4 4 v v	45 4	2 4	4 2 2	2 2 2	4 4	7 4 7 2	4 4 10 10	4 to 50	4 50	4 t 0 t	2 t 2 t	4 to 20	4 5 5	4 4 7 70	2 4 5 5 5	4 4 70 70	4 6 5 6	4 6 7 5	4 5	4 4 5	4 4 5 6	4 4 5	4 5	4 4 8 9	44	4 4 5 5 5	
April Maximum Minimum	4 4	4 4	8 1 4	4 4 4 7	4 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	6 7 4	64 8 4	6 4 9	50	51	51	50	0.4	50	02	51	50	64	0.64	50	4 4 8 4	4 9	4 4 8 4	50 48	51	51	52	6 4	53	50	11	0.50	
Maximum	54	54	53	52	52 5	52	52	51	52	51	4 4 0 8	0.8	0.8	50	52	50	20	52	53	51	53	53	52	54	54	54 51	54	53.5	5.6	5 5 5	54	53	
June Maximum Minimum	3.7	5,2	3.56	54	5.5	56	5 4	5.5	53	5.6	55	5 50 5 50	57	54	53	5.8	53.6	53	53	56 51	55	56	52	52	53	53	5.6	53	8.2	20.00		53.6	
Maximum	8 4 4	54	8 4	5.5	55	54	57	53	8 4	5.8	5.4	5.8	57	54	55 55	57	54	57	5.5	58	5.5	57	52	52 55	57 54	55	52	55	55	52	52	54	
August Maximum	5.08	57	52	55	55	57	52	52	5 28	59	57	57	58	57	57	58	59	58	59	60 57	58	58	59	59	61	99	60	60	62	60	61	59	
September Maximum	62	62	63	63	62	63	63	63	64	64	64	64	62	64	4 4	49	6.5	64	63	4 4	65	63	63	63	63	64	64	4.6	62	64	11	4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	

WILLAMETTE RIVER BASIN---Continued

14-1510. FALL CREEK BELOW WINBERRY CREEK, NEAR FALL CREEK, OREG.

LOCATION: --Temperature recorder at gaging station, 10 feet upstream from highway bridge, 1.6 miles downstream from Winberry Creek, 2.3 miles southeast of town of Fall Creek, Lane County, and 6.1 miles upstream from mouth.

DRAINAGE MARA.--186 equare miles.

RECORDS AVAILABLE.--Mater temperatures: Maraimum, 76°F July 12, 13; minimum, 36°F Jan. 4, 5.

EXTREMES, 1960-61.--Water temperatures: Maximum, 78°F July 26, 1958; minimum, 34°F Jan. 30, 31, 1951, Nov. 14-17, 1955.

Temperature (°F) of water, water year October 1960 to Sentember 1961

						•	dina.	5	emperature	(1)			water,		Ta.	water year		October		1300	2		September		1001	٠.						
Month															1	Day																Average
MORE	-	2	က	4	5	9	7	œ	٥	0	Ξ	12	13	14	15	9	17	8	61	20	21	22	23	24	25	56	27	28	56	30	3.	TACION .
October Maximum	9	09	58	57	58	59	59	55	53	51	50	50		50			52 5			-	52	54		_				50		9	50	53
Minimum	57	96	26	26	55	57		53		4 8		64	48	64	4 6 4			21	52	25		25	53 5	25	51	25	20		20	47	64	25
Maximum	51	51		8 +	44	43		9 †	9 +	46		47	7 9 4	9			4 8 4	80				45				_			7 7 7	4	1	94
Minimum	20	64	4 8	7,4	45	45	£	5	_	45	9	9 4	_	-	454	46			46	94	7 4 4		* **	46	40	5 4	7 7	43		43	1	4 5
December	4.5	4.5	45	4.5	45	4.2		0		0.4	4.2	6.2			7 7 7 7	45	454		7 9 7		45	4	43 4		_		454	43 7			0.4	43
Minimum	77	45	45	45	45	1,	04	0 4	0,4	0 4		45	77	45		_		45		7 7		43		£ 4	43	4			39	39	39	4.2
January Maximim	0,4	39	39	37	04	43		7,		7 7		43			454		7 94	_			41		45	_	_					_	9 4	43
Minimum	39	39	37	36	36	04	43	43	43	7 7	43	45	77	42	454	45		45	41 4	41	7 0 4	9	414	42	41 4	04	40	39 6	41	43	45	41
February	77	44	4	47	47	8 7		4		7.7	-7	- 44		_			4 5 4		7 4 2 7	47	7 2 7	4.7	45.4		_				_ <u></u>	;	1	44
Minimum	4	45	4	4	47	1,7	5	5.0	4	4.7	_	4.5	42	7.0	4 9	_		. 6				45			45.4	, ę	43.4	. 4		;	1	5.0
March			:	-:	:	:		-;				:		•		_	_			_												:
Maximum	9 4	4 0 1	\$ 4 0 4	4 4	† † † †	4 4	4 4	6.4	t 4 7	4 4	0 4	4 4 5	4 4 2	- v	7 7 7	- 4	7 4 7 4 7 4	- 4	7 4	- 4	0 4	0 4	2 4	0 7	 	: :	<u> </u>		7 7 7	5 4 7 0	0 00	4 4 0 4
Anril	?			}		:		:		:					_	_		-				?		-		_	_	_			:	:
Maximum	20	53	52	64	64	64	64	48		51	51	20	64	64	53	23	52 5	20	_	9 7		94	454	48	51	25	53	54	53	55	1	20
Minimum	41	20	4	94	42	4 5		- 4	8	9 4	-	64	_			_		-	7 7 7	-	94	4			_			-			!	4.1
May	54	53	52	50	48	50		52		51	50	50		52	_			_		9		57									- 7	55
Minimum	52	21	20	8 4	47	48	64	20	51	20	64	64	64	- 21	51	25	54	55	26	25	75	55	54 5	53	55	57	54	55	56	26	55	25
June Maximum	65	65	64	99	99	94	_	62	62	63	63	79			72		-	7.	-69	69	69	0,	-62	7.1	72	72	- 89	99	65	99	1	67
Minimum	28		9	9	63	9	96	58	57	58	59	57		62	_	- 89		_		65	_	49	$\overline{}$	9		_	_	_	_	-	1	62
July Maximum	69		7.0	69	79	63			7.1	7.2	7.5	76	_						73	74		73	-02	-02	-12		72	71		7.2	72	1,1
Minimum	63	65	65	49	62	9	29	62	65	67	69	7.	74	69	88	69	67 6	89		69	69	69		99		89		_	67	_	69	4
August	73		75	75	74		7.	73	73	73	73	73		-4		-1.	-11			72		73	-1				-89	69				7.2
Minimum	89	69	7.1	73	7.1	69	69	2	69	6.8	20	20	7	0.4	89	67	_	29	89	89	69	2		99	62	65	79	9	69	65	65	89
	65	62	62	45	49	62	62	62	62	61	61	62	62	19	09	50	200	28	09	0,9	2 28	57	55	54	45.	45.4	54	5.4	25.	52	11	59
Minimum	70			7	70	7		9		- 0	0	٠ -		_	_	_		_		_ °		-		-	_	_				- :	-	2

14-1520. MIDDLE FORK WILLAMETTE RIVER AT JASPER, OREG.

gaging station, 25 feet downstream from highway bridge at Jasper, Lane County, and 650 feet LOCATION, -- Temperature recorder at

October 1953 to September 1961. Maximum, 65°F Oct. 1, Sept. 4, 11-13; minimum, 40°F Jan. 4. Maximum, 66°F Oct. 78, 1998; minimum, 36°F Feb. 1-3, 16, 1956. downstream from Hills Creek.
DALINGE AREA. --1,340 square miles.
RECORDS AVAILABLE. --Water temperatures:
EXTREMES, 1960-61. --Water temperatures:
EXTREMES, 1963-61. --Water temperatures.

															Day																
Month	-	2	9	4	5	9	7	8	9	1.	112	13	14	15	2	-	18	19	8	2	22	23	24	25	76	27	28	29	30	31	Average
October Maximum	65	49	63	49	9 49	63	63	61 5	29 60		58 59	09	61	09	90	09	09	59	59	59	09	90	09	09	59	50	58	57	57	57	09
Minimum		- 62			_													56	59	ر پ		59	59	59	ر ب		2.4	_			5.9
Maximum	58	57		56	56 5	26	55 5	56 5	56 56	52	5 52	52	52	51	4 6	20	50	20	20	200	64	64	0.5		14		94	_	9+	-	52
Minimum			9	ر د				_	ر در					4		4		2	20	4	4	4	4 D	3	4	4 0	9	9	_	<u> </u>	7 6
E 1	4 6	949	46	949	4 6 4	45	44	4 4 4 4 4 4	44 43		43 44	44	43	4 4 4	44	45	4 6	46	46	4 5	45	44	44	43	44	44	44	245	45 6	42	44
January		2 2														,		7	, ,	, 4		. 4	. 4		. "						
Minimum	45	42	7 7	104		7 7 7	43	43	44 44	43	4 3	43		4.0	4.5	4	43	45	45	4	1.1	45	6		45		41	5	7 7 7 7	45	63
February Maximum	4 4	44	47	47	48 47 47	8 8 8	4 8 4 4 4 4 4 4	4 4	64 64		49 48	47	47	47	44	9 4 9	4 6	46	9 4 6	46	94	4 4 5 5	9 4 9	4 6	4 4	2 4 5	4 4 5 5	11			47
March Maximum		9 4	45		4 4 4									46		46		94	9	47		8 4	48		94			64	6,4	20	4 6
Minimum	9 4	45	7 7 7	44	4 4 4		4 4 4	4 9 4				9 4	9 4 6	46		4 6	45	4,6	46	\$	41	4	47	45	9 4	4.5	7,	4.5		8,	45
April Maximum	21	54	52	20	50 5	20	51 5	50 5	52 54		52 52	51	1 52		55	52	51	50	50	49	49	4.8	52	53	53	54	55	53	55	-	52
Minimum		20		47										4		51		4.7	49	4	4.7	4 6	4.1		74		00		_	1	4
Maximum	52	54	52	51	40 04	164	50 5	50 5	52 51 51 50		50 50 49 49	50	50	55	3.5	52	52	52	54	52	5.4	55	55	56	55	56	56	57	5.6	538	54 51
June Maximum	59	26		59	58 5	26	58	55 5	57 58		55 60	9	09	61	61	61	59	59	9	6.1	61	6.1	61	62	59	5.9	59	99	. 61		59
Minimum		55	55	55					53 53		5 55		_			57		54		52	53	53	53	54	55		52	_		1	54
July Maximum	900	9 60	9 5	55	57 5	5.6	60 6	61	61 61		62 62	5.5	0 6 6	9	9 2	60	61	61	61	0.95	57	5.8	59	53	09	5.5	59	09	09	60	5.0
		3 9		20									_	_		6		62		63	63	, 29	, 0				7 9				61
Minimum	55	55	55	26	56 5	55	56 5	56 5	56 56		57 58	58	38	5.9	53	58	8	28	29	59	9	9	9	29	09	9	09		19	62	58
September Maximum	62	63	79	65	62	49	63	- 49	64 64		65 65	65	5 62		62	63		49	62	•	63	63	63	63	62		61	62	. 61	-	63
		62	_	;	_	-	_	-				-		,	-	,	:	:		,	;	,	۶						-		,

14-1525. COAST FORK WILLAMETTE RIVER AT LONDON, OREG.

LOCATION.--Temperature recorder at gaging station, 0.6 mile north of London, Lane County, and 11 miles south of Cottage Grove.

BRAINAGE ARM (revised).---7.1 square mailes.

BRAINAGE ARM (revised).---7.1 square mailes.

BRAINAGE ARM (revised).---7.1 square mailes.

BRAINAGE ARM (revised).---7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).--7.1 square mailes.

BRAINAGE ARM (revised).-

Temperature (°F) of water, water year October 1960 to September 1961

						Te	emperature	ratu		('F)	of	water		water	r year		October		1960	to		September		1961	ĺ						
761															Day	>-														_	90000
Month	-	2	3	4	5	9	7	8	6	1 0	-	2 13	3 14	1 15	16	17	18	19	20	21	22	23	24	25	26	27	28	29 :	30	31	Average
October Maximum	55	55	75	56	55	-	5 55 5	54 5	52 50		67 67	_			3 49		20	51	51	51	19	52		49 5	50	50.5		50 4		64	51
Minimum		51				4 4				6 47		46	9 4 9	94		8 4		48	4.1	4.7			φ 2				4 -		9	-	4.1
Maximum		64		9+		4.2		45 4	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7								48	4	47	94	45		8 4	484		4 9 4		_		1:	9†
Minimum	46	94	94		94		43		41	7 + 4	* * * * *	7,7	7	7 4	4	46		4	9	46	ئ	7 7 7	4		450		4 2	43 4	7	7	†
December Maximum	94	46	94	46	7 7 7	4 3			41 41	_						46		46	45	45	1,	7 7 7		7 7 7 7			43	45	41	4,1	7,7
E T	4.2	42		39			7 7 7 7	7 77	77 77		77 77		4 46	4	9 4 6		4	4		45	45		44				_	_		9	44
January Maximum	_	42	39	38	38			-	77 77		* *		4 4	- 9	4 6	4	‡	45	41	4.1	7		_	4 4	43	45 4					43
E		47	_			8,4	48 4		48 48		48 48	48			_		_	41	8 4	48	84	7 4 4	9 +			_	9+	1	<u>.</u>	1	4.1
February Maximum		46											4 0	_		47	4	7		48	47		9	404				_		-	47
mnum	94	46	94	94	7 9 7	9 4	4 9 4	7 94	94 94	9 + 9	9 49	9 4 6		9	9 + 9	4 6		46	9 †	47	47	47			94	4 9 4	7	484	7 84	84	94
March	7	94	94		7 9 7	94	4 9 4		46 46		46 46		46 46	-		7		46		46	47	7 24	94		9 †		45			-	94
Minimum	20	52	200	8,4		-		7 8 7						25	52		5.	47	47	9 4	9	_		52 5		52 5		52 5	- 25	1	64
April	4.7	67	4.8		7 9 7		45 4		47 46		46 47	46	46	49		_		7 7		9 7			44	- 1	9 4	- 4	849			-	14
Minimum	52	20		6.4		4.7		6 4						_	53	55	96	58	57	53	53	52					_	55	54	58	52
May		6.4	4.8		7 9 7	9	47 4	- 84	4.8		47 47	7	7 48	4				52		51	52	5	0,0							25	0.4
Minimum	61	9	62	65	63	61		_				_			9 72	72	69	99	65	65	67		89	2	29	63	19	62 6	7.	-	49
June Maximum	54	57	57	58	9	56	54-5	55	54 54		55 55	26					3	62	3	59	9	<u>و</u> ور	- 19	62 6		58	- 89	58		-	2
Minimum	99	67	67	65	9	09	63 6	65	69 89		72 74		3 71	2			2	2	7.1	7	69	99	99	67 6	69	9 89	99	67	89	89	99
July Maximum	50	61	61	09	_	_	55 5		61 62		99 +9		68 65	49	4 65	63	63	79		49	65	63	9) 9	62	- 9				25	62
Minimum	_	20	70	20	67	89	_	89	68 69		69 89	_	1 71		7 68	6.8		69	2	7.1	69	89	29			67 6	29	67	89	80	99
August Maximum		62	79	99	65	62	62 6	63	62 62		65 65		65 66	64	63	63	63	64		65	99	65	63	26	63	63		63	63	65	49
	65	62	63	79		51	_				61 62	61			_	-		9	_	28	25		24	-	_		53			1	65
September Maximum	60	59	58	200	8 9	20	60 5	55	54 5	52 5	51 50		51 50	28	1 51	51	52	51	51	51	5 53	53	52	52	51	50.5	51	50.5	50 64	51	53
		,		-		-		-		-		-		-		-				_	_		_		-		-		-	-	

14-1592, SOUTH FORK MCKENZIE RIVER ABOVE COUGAR RESERVOIR, NEAR RAINBOW, OREG.

Temnerature (°F) of water, water year October 1960 to September 1961

						í	emperature	rat	er Er	(F)	01	Wa	water,	Water	er	year		October	6	1961	to Si	epte	September	<u> </u>	1961							
1															Δ	Day									'							
Month	-	2	3	4	5	9	7	8	6	10	11	12	13	14 1	15 1	16 1	17 1	18 1	19 2	20 2	21 2	22 2	23 2	24 2	25 2	26 2	27 2	28 2	29 3	30 3	-	Avelage
October Maximum	50	50	64	64	64	64	64	47	94	4.5	5.	9 4	45	45	45 4	7 97			94 94		46 47		47 46		45	7 7 7	44 45		45 44	4.5		94
Minimum	4.7	47	4 5			4 8		9 4		45		4.5	_				45 45	_							_							č
Maximum	45	7 7	44	43		77		7 7		44		7 7		_						_	_								41 41	<u> </u>		43
Minimum	7 7	4	45	0,4	74	7 7	£4	43	41	42	7 7 7	7 7	43	7	45	43 4	77 77		43 42		41 40		41 41	_	404	40	39 40		0 7	!		42
December	4.1	4.1	42	4.1	4,1	39	39	0,	0,	41	-	4.1			45 4		42 43				42 42		42 42		43 43	_	42 41		404	_		41
Minimum	4]	1,1	41	04		39		39	_	04	41	4.1			45 4	42 4			42 42	-			42 41		42 42		41 40		40 40	40		41
January Maximum	0 1	39	38	39		4.2	_	4.2	7,5	4.2		4.2		7 7															42 42	6.4		4.1
Minimum	39	38	38	38	33	0 4	7	7 7	_	 	7		41		45	7 7	42 41		41 41		4 1 4 0		41 41		40 40		40 40	4.1		-		-
February Maximum	43	43	43			44		42		43		7 7													_	_	41 42		+	- 1		7 7
	4.1	43	42	7 7	43	64	7	4.1	45	42	41	41	41 4	7 7 7	45 4	41 4	41 41	_	41 42	_	41 41		41 41		4 0 4	40 3	39 40		<u> </u> 	!		41
March Maximum	4.1	4.1	40	4.1	41	39	41	41	-14	41	41	4.1	41	45	42 4	42 4	42 42		42 41		43 42	_	42 42		42 41		42 42		43 44	43		42
Minimum	4,	9	¢	0.4	39	30	39	Ç	40	40	36	40	417	7	414	41 4	41 40	_	41 40		41 41	_	41 41	_	40	39 3	39 40	_	40 40	24 0		o,
April	77	77	4	43	43	43	43	43	43	44	44	- 4	42		45 4	45	45				42 42		41 44	_	45 46		46		7 7 7 7	- 1		4
Minimum	4	42	41	¢		0 4		41		41		41		0,4			42 39		39 40	_						_	41 42	-	43 43	1		4.1
	7	77	7		7	- 64	74		77	44	77	<u>ب</u>	4 5		7 4 7	- ×	7 0 7	- 01	5.0 4.7		4 4		7		5.0	4	0 7		48	-		ç
Minimum	24	42	0.4	0,4		7,		7 2 4		7.5		43		. 4						_		_							46 46	2 46		64.
June	5.2	r v	5.3	5.3	52	5.0	_	20	22	5,3		54					20		80		57 58		58		5.7		5.6		52 55	!		ı,
Minimum	4	84	8	64	50	84	47	84		47		48	4 8		51 5	52		52 5	51 51	_					51 51				_	_		64
July Maximum	56	57	57			52		57		58		28			_		57 5		57 57		57 5		57 56		56 5		57 56					9
Minimum	64	20	20	51	20	84	14	84	20	20	20	51	52	51	50 5	51 5		50 5	20 50		50 50		51 50	_		50 5	50 50		64 64	64		50
August Maximum	57	57	57	56	54	57	56	56	56	56	4	55	2,0	53	55 5	55 5	55 5	56 5	55 56		56	56	56 54		54 52	_	55 55		55 54	4 52		55
Minimum	64	20	50			51		20		64		51												_		_		-				0
September Maximum Minimum	52	52	53	53	53	52	52	51	5.1	52	52	52	51	0.8	51 4 4	644	4 4	4 8 4	50 48		46 46 44		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		4 4	4 4 6 4 4 5 4 4	44 46		47 47			47

14-1595. SOUTH FORK MCKENZIR RIVER NEAR RAINBOW, OREG.

July 1955 to September 1961.

Maximum, 65°F on severati daye during summer months; minimum, 38°F Jan. 2-5.

Maximum, 68°F July 28, 1998; minimum, 34°F sometime during period Feb. 16°to Mar. 23, 1956. LOCATION.—Temperature recorder at gaging station, 0.2 mile upstream from Cougar Creek, 2 miles south of Rainbow, Lane County, and 5 miles southeast of Yown of Blue River.

BRICHER AREA.—208 square miles.

RECORDS AVAILABLE.—Water temperatures: July 1955 to September 1961.

RETIREES: 1960-61.—Water temperatures: Maximum, 66°F July 28, 1965; minimum, 34°F sometime during period Peb. 16 to Mar. 23, 877 REMES: 1955-61.—Water temperatures: Maximum, 68°F July 28, 1965; minimum, 34°F sometime during period Peb. 16 to Mar. 23,

															Ω	Day															
Month	-	7	က	4	2	٥	7	æ	٥	101		12 1	13	14	15 1	9	17.	8	9	20 2		22 23	3 24	2	5 26	27	28	29	8	<u>ج</u>	Average
October Maximum	56	55		54		4	54	2.1		2 0 5	4 8 4	6.4	51 49		49 51		1 51		49 50		49 52	20	0 51	50	64	8 4	8 7	49	47	84	51
Minimum	20	20	64	64	20	53		20	484	_		_	_				47 42	_						_		_		÷	_	4.7	8+
November	64	8 7	47	45	4.5		45		45	45	4 6 4	7 9 7	45 45		44 45	_	45		45 45		5 43	45	5 45	43	43	43		42		-	45
Minimum	48	47		45	_	, t		45		_						-	45 45	_	45 45		43 43						45	45	45	!	7,
Secember		-	_			-				_				_			_		_	_		_	_				_		_		
Maximum	7 7	42	4 3	423	2 0 4	39	39	9 9	4 0 4 0 4 0	99	† † † 0 † 0	42 4	41 41		42 42 41		42 43		43 43		42 45	7 7	2 4 5	45	45	47	4 4	3 3	9 0	3 3	41
anuary	0,4	39	38	38	-7	4.2	43	£3	43	43	43 4	43	43 43		43 44		7 7 7 7 7 7 7		43	-	43 43		43 43	45	43	42	4.2	43	43	45	45
Minimum	39	38	38	38		41						_	42 42	_	43 43	_	44 42	-	42 42		43 45	_	43 42	41	1 42	41	41	42	43	43	45
February	44	4.5	4.5	45	4.5	4.5	7 7 7	4	45	45	777		77		77 77		43 43		43 46	_	43	43	3 43	43	3 42	42	43	_	1	!	7,
finimum	43	7,	4 4	4		7.	_				_	<u>.</u>	+				_		42 43		43 43			_	_	41		!	1	1	43
March	4	. 4	6,4	-	Ī	-	6.4		7				43 43		43	43	43		43	_	_			_		43	44	4.5	45	45	43
Minimum	4	45	43	1		:		7 7		45	45 4	7 27		_		_	43 42		43 42		43 44	-	43 43	45	7			_		7 7	45
April	44	46	4	77	7,		45	4	7 9 7		46		44 45		48	47 4	46 45		43		44		2 46	47		4	47	4.7	4	ŀ	45
Minimum	13	4 4	6,4	42		7 7		_		_		44	_						41 42		43 42	_	42 42	_	2 43			_		1	43
May									_				_											_							
aximum	9	9 :	4 2	†		4.		_		_	_		_	_		_	_		2 2	_	9 00	-	10 2	25		_		-	2 .	2 .	4 .
Inimum	¢	*		9		‡																						_		}	
Maximum	S	26	_	22	24	23		24	_	_	55	28	_				65 64		64 64	-	63 64		9 49	_		_				!_	9
finimum	4	21	21	25	_	- 21	20	25	<u></u>		_		53 55	_	200	5 - 15	28 2	_	2 / 2		26 26			28	28	2	22	5	5	<u> </u>	٠ 4
Maximum	63	49		61	58	56	09	62	79	79	65 6	65	62 6	65 6			64 64		_		65 65		65 64	63		79		-	63	63	63
Minimum	55	26	24	28	_	52		-						_	26	57 5	200		26 56						2 20		26	55	_	52	26
August	63	65		65		65	65	- 49				62	9 49		61 6	63 6	62 6		62 64	_					1 57	62	62	62		58	62
Minimum	55	56	57	59	58	96		96	55	25	57 5		57 56			55 5	55 55		56 56		57 57	_	57 56	55				-	55	56	26
September	4	7	α	0.4	ď	α	57	5.7	-7.	- 7.	5.7	- 2	5.7	24	5.6	- L	54 53		56 54		52 52		52 52	52	52	52	0	2	5	- 1	2.
Waximum		. :	_	; ;			-		_	-			-			_						-		-				-	-	_	

14-1620. BLUE RIVER NEAR BLUE RIVER, OREG

Blue LOCATION .-- Temperature recorder at gaging station, 3 miles upstream from Quartz Creek, and 3.5 miles northeast of town of River, Lane County.

DRAIMAGE AREA.-75.0 square miles. RECORDS AVAILABLE.-Water temperatures: July to September 1961. RETREMES, July to September 1861.--Water temperatures: Maximum, 76°F Aug. Temperature (°F) of water, July to September 1961.

ë

1 2 3 4 5 6 7 8 9 10 11 12 13 	7	Day 15 16 1													
1 2 3 4 5 6 7 8 9 10 11 12 12 13 4 5 6 7 8 9 10 11 12 12 13 14 5 6 14 12 14 14 14 14 14 14 14 14 14 14 14 14 14	7	191			i			İ							4.02000
			17 18	19	20	21 2	22 23	3 24	25	26	27	28 2	29 30	31	Average
66 68 69 65 64 61 64 67 69 70 70 72 58 60 61 62 61 57 57 57 62 62 62 64 64 64 64 65 65 64 65 69 70 70 72 64 65 65 65 65 65 65 65 65 65 65 65 65 65	1	1	1	- 1	1			_^2	70	69	68 65	62	- 4 4	1	1
66 68 69 65 64 61 64 67 69 70 70 72 58 60 61 62 61 62 62 62 62 64 61 67 69 75 75 62 62 64 64 64 64 64 63 63 69 64 66 64 64 68 69 69 69 69 69 69 69 69 69 69 69 69 69	1	I	1	ł	1	1	!	4	49	4	64 60	28	8	1	1
58 60 61 62 61 57 57 57 62 62 62 64 72 74 76 74 70 74 74 72 71 72 69 71 64 65 67 70 68 64 64 64 63 63 69 64 66		7	1 71	7.1		72 72						72		72	0,
76 74 70 74 74 72 71 72 69 71 67 70 68 64 64 63 63 64 64 66	65 64	65	63 63	63	7,0	4 9 4 9	9	\$	63	63	94 94		4	4	63
64 65 67 70 68 64 64 64 63 63 64 66 66	89	20	11 11	2	72	74 74								65	7.1
	9 49	63	62 62	62		9 9 9	65	63	63	63	63 62	63	9 62	63	49
62 62 61	50 80	58	99 28	9		57 55		52	55		55 54	- <u>*</u>		1	56
58 58	57 57	57	57 57	26	26	54 55	2 52	25	25	52	52 5		2 25	1	26

14-1625. MCKENZIE RIVER NEAR VIDA, OREG.

LOCATION .--Temperature recorder at gaging station, 1 mile upstream from head of Martin Rapids, and 5 miles east of Vida, Lane DRAINAGE AREA. -- 930 square miles at cableway 0.4 mile downstream, where all discharge measurements are made.

RECORDS AVAILABLE. -- Water temperatures: June to September 1961

WILLAMETTE RIVER BASIN--Continued

14-1660. WILLAMETTE RIVER AT HARRISBURG, OREG.

LOCANTOM.--Temperature recorder located 500 feet downstream from gaging station, at bridge on U.S. Highway 99 at Harrisburg, Linn County, and at mile 162, 90 square miles, approximately.

BEAINAGE AREA.--3, 420 square miles, approximately.

RECORDS MAILABLE.-Water temperatures: June to September 1961.

RECORDS ANIABLE.-Water temperatures: Maximum, 69°F July 12, 13.

Temperature ('F) of water, June to September 1961

9	verage	1	:	6.5	7 7 9	62 62
_			_			
	31		1	63	65	11
	30	9	9	63	65	59
	29	61	61	63	99	69
	28		61	63	6.5	60
	27	63	61	65	64	909
	26	65	63	65	62	99
	25	65	64	64 63	62	909
	24	99	29	64	64 62	09
	23	64	62	66	49	62
	22	63	62	67	65	62
	21	63	62	68	62	62
	20	63	62	68	63	62
	19	1	1	68	63	62
	18	1	1	67	63	63
	17	- 1	ŀ	67	63	63
Day	16	1	1	67	63	62
	15	- 1	l i	66	63	63
	14	}	1	68	66	64
	13	1	1	69	65	63
	12 13 14 15	1	1	69	66	64
	11	1	ł	6.8	66	63
	10	-	1	65	66	63
	6	- ;	;	66	65	63
	8	1	ļ	64	65	62
	7 8	- 1	!	61	65	62
		- 1	:	61	65	64
	5	1	1	61	6.5	4 4 9
	3 4 5 6	1	!	64	66	64
	3	1	1	63	65	63
	2	1	1	63	6.5	64
	-	- 1	1	64	63	6.5
176	Month	June Maximum	Minimum	Maximum	August Maximum	September Maximum

14-1780, NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OREG.

April 1951 to September 1961. Maximum, 61°F July 11, 12, 14, Aug. 3, 22; minimum, 35°F Jan. 2-4, 27, 28. Maximum, 64°F July 28, 1958; minimum, freezing point Dec. 1, 1954, Mar. 5, 1955, Feb. 16, LOCATION.--Temperature recorder at gaging station, 0.5 mile downstream from Boulder Creek, and 3.0 miles southeast of Detroit, Marion County.

DRAIGE AREA.--216 square miles.

RECORDS AVAILABLE.--Water temperatures: April 1951 to September 1961.

EXTREMES, 1960-61.--Water temperatures: Maximum, 61°F July 21, 12, 14, Aug. 3, 22; minimum, 35°F Jan. 2-4, 27, 28.

EXTREMES, 1551-61.--Water temperatures: Maximum, 64°F July 28, 1958; minimum, freezing point Dec. 1, 1954, Mar. 5, 1955, Feb. 17, 1956.

	ı		ı																					
	Average	Average	747	5 4	41	04	39	38	2	39	33	04	39	43	1,4	46	43	56	90	59	52	66	54	55 49
		31	45	1	1	37	37	33	ž	1	1	64	42	- 1	1	5.1	4	1	1	59	52	56	54	11
		30	44	7.	04	37	37	39	عر 	1	-	44	0,4	45	42	47	94	56	64	58	52	58	53	47
		29	245	04	39	37	37	38	·	1	1	43	04	45	43	47	47	53	51	59	52	59	54	4 9 4 6
		28	645	- 6	39	38	37	37	ç	0,4	38	43	4.1	45	45	6,4	5	26	20	59	53	88	53	8 4 8
		27	45		_	39		37		39		41		45		64		58		09			54	8 4 4
		26	4 4 10 11	t 4	17	39	39	37	<u> </u>	39	8	42	39	9 4	0	64	14	59	53	- 09	53	5.5	23	8 4 8 4 6 4 6
1961		25	747			04		37		36		42		45		51		9		59				6 4 9
)r 1		24	747		1.1	0 4	04	38		39	 8	42	4.1	44	0 4	64	643	59	52	59	52		54	8 4
September		23	7 4 7			707		38		39		45			_	7		- 65		9	_		55	4 5 4
ept		22	7 4 4		17	•	0 7	38		39	 80	4.1	4.1	4.1	39	47	45	59	51	09	53		96	4 4 5 7
to S		21	47 47		_	404		38		39		41		41	_	48	_	57	_	-9	_		54	50 4
1960		20	7.47		_	4.1		37		39	<u>.</u>		_	7	39	46	_	8	52		53	09	54	52
16		6	46		454	41	41 4	37		39	_	-0		7 0 7			7 7 7	65		909		58		503
October		8	9 4 9		45		04	0 10		38				43		- 64		09		09	52	58		52
		17 1	46			404		04		39		-04		- 4		4 8 4		59		909	_			53
water year	Day	16 1	94		104		39	0,0	_	39	_	0 4		- 54			7 7	5.2	_	09	_	09		52
r y	Ω	15 1	4 5 4 4			4 0 4	39	404		39 3		404	39 3	- 7		474		58		909		57 6		52 5
wate		4 1	645			-04	_		رد 	39		- 68		7 7 7 7	_			- 89			_	- 28		52
		3 1	4.5			404	39		5	39 3		39		42-4		44 45		56	_	57 61	_	59-5		5.2 7.8 5.5
water,		12 1									_	_	_								_			
of		-	44			40			76.	39 39	39	39	38 38	77 77		43 44		52 54		61 61		57 57		53 53
(°F)											_						_				_			
- 1		10	44 64 64 64			38 39	38 38	39 39		40 40		40 39		43 45		45 43		51 54		09 09		59 59		54 54 50 50
tur		6			-				_		-		_								_		_	
pera		8	8 7 7				38		, S	39			1 39	+ 42	_	4.5		- 20		- 58	_	9	_	54
Temperature		7	51			38	_	38		0 4	_	39		44	_	77	_	51		56	_	9		50
-		9	20.0		_	39			28		40	37	_	43		43		20		53	_	5,0		400
		5	0.00		4	04	39		8	41	4	36	37	43	39	42	_	51	_	53	52	29	26	55
		4	644		_	4.1	_	36	_	9		_	38	43		-7		5		58	_	9		57
		3	50			41	41	36	5	40	3		38	43	41	43	41	5		58	52	61	54	56
		2	000		4.5	4.1	4.1		32	04	_	39		7,		43	_	53		59	_		54	53
		-	50	4	45	4 1	40	37	ñ	39	38	40	39	4	41	77	45	53	47	58	50	09	55	54
	Month	Month	October Maximum	November	Minimum	December Maximum	Minimum	anuary Maximum	Minimum	Maximum	Minimum	March Maximum	Minimum	April	Minimum	Maximim	Minimum	June	Minimum	July Maximum	Minimum		Minimum	September Maximum
		,	_	-		_		_	4	_		~		7		~		-		_		7		•,

WILLAMETTE RIVER BASIN--Continued

14-1790. BREITENBUSH RIVER ABOVE CANYON CREEK, NEAR DETROIT, OREG.

LOCATION: -- Temperature recorder at gaging station, 600 feet upstream from Canyon Creek, and 1.5 miles northeast of Detroit,

Marion County.

DAAINAGE AREA.—106 square miles.

EXTREMES 1960-61.—"Water temperatures: December 1950 to July 1961.

EXTREMES 1960-61.—"Water temperatures: Marimum (1950-60). 58°F July 17, 1951, Aug. 4, 13, 14, 1952, July 23, 24, 1956, Aug. 22, 25, 1958; minimum, 33°F Mar. 3-7, 1951. Peb. 17, 1956.

October 1960 to July 1981 Temmerature (°F) of water

A	Avelage	4 4 4 7	6 4 3	0 0	39	044	41 41	11	11	5.2 5.0	1 1
	31	45	11	39	39	11	42	11	4 8 4 6	11	11
	8	949	41	39	39	11	42	11	4 6 4 6	52	1 1
	29	47	41	39	39	11	42	11	4 4 6 4	52	11
	28	47	411	39	39	0 0	42	1.1	4 4 4 6	53	11
	27	4 4 70 70	41	39	39	0 0	45	11	46 46	53	1 1
	26	4 to 0	4 1 1	39	39	0 0 4	42	11	47	54	1
	25	4 4 0 0	42	39	39	4 0	41	11	47	54 52	1.1
	24	4 4 6 6	41	39	39	0 4	41	11	4 4 5 5	53	1 1
	23	94	42	39	39	0 4 0	417	11	45	53	1 1
	22	4 4 0 70	43	39	39	040	41	11	45	53	11
	21	94	43	39	39	0 0 4	41	11	44	53	11
	20	4 4 6 4	43	39	39	04	41	11	44	53	11
	19	L 9 4	6 4	39	39	0 0 4	41	11	44	53	11
	18	44	£3 £3	39	39	0 4 0	41	42	44	54	55
	17	47	4 4 3	39	39	044	41	42	44	54	5.5 4.
Day	9_	47	44	39	39	40	41	45	44	53	5.5
	15	4 4 7 4 7	4 4	39	39	0 4	41	42	43 43	53	5.5
	14	48	4 4	39	39	0 0	41	45	43	52	ภ 4
	23	8 4 4	4 4 4 7	39	39	0 4 0	41	45	4 4 3	51	5.5
	12	4 4 7 7	4 4 4 4	0 4 0	39	0 4 0	41	45	4 4 3	50	55
	=	6 4 8	4 4	0 4	3.9	39	4 1 4 1	42	43	50	5.5
	2	64	44	0 4 0	39	0 4 4	40	42	43 43	50	54
	٥	94	4 5	044	38	0 4	0 4 0	42	11	4 6	5.4
	8	64	45	41	38	0 4 0	0 4 0	42	11	64	53
	_	50	4 5	41	3 3	0 4 0	0 4 4	45	11	4 8 4	52
	9	0.04	45	41	38	0 4 0	044	45	11	50	52
	5	64	45	417	38	39	04	42	11	50	53
	4	64	45	41	39	39	04	42	11	50	53
	က	64	4 5 4 5	41	39	39	4 4 C 0	45	11	r. 4	53
	2	50	46	41	39	39	04	45	11	8 4 9	53
	-	50	4 4 5	41	39	39	0 4 4	42	11	44	53
,	Month	October Maximum	November Maximum	Maximum	January Maximum	February Maximum	March Maximum	April Maximum	Maximum	Maximum	Maximum

14-1815, MORTH SANTIAM RIVER AT MIAGARA, OREG.

Big 0,1 mile downstream from Little Sardine Creek, 0,8 mile downstream from LOCATION. --Temperature recorder at gaging station, 0.1 mile Cliff Dam, and 2.1 miles east of Niagara, Marion County. DRAIMAGE AREA.--453 square miles.

EKTREES, 1960-61.—Water temperatures: EKTREES, 1960-61.—Water temperatures: days during January to March. FEDRUARY, 1953-61.—Water temperatures: February 1957.

. January 1953 to September 1961. : Maximum, 55°F on several days during October and September; minimum,

ıres: Maximum, 62°F July 28, 29, 1958; minimum, 35°F on several days during January Temperature (°F) of water, water year October 1960 to September 1961

many

ö

41°F

14-1865. MIDDLE SANTIAM RIVER AT MOUTH, NEAR FOSTER, OREG.

LOCATION: --Temperature recorder at gaging station, 0.7 mile upstream from mouth, and 2.7 miles northeast of Foster, Linn County. DRAINAGE AREA.--287 square miles.
RECORDS AVAILABLE.--Water temperatures: September 1953 to September 1961.
RETYREMES, 1960-61.--Water temperatures: Maximum, 75°F July 12, 13°, Aug. 3, 4, 22; minimum, 38°F Jan. 3-5.
EXTREMES, 1963-61.--Water temperatures: Maximum, 77°F July 28, 1958; minimum, 34°F Feb. 1, 2, 1956.

Temperature (°F) of water, water year October 1960 to September 1961

_											ŀ			٥						ŧ										
														Day																Amerane
	2	3	4	5	9	7	8	6	10	-	12 13	3 14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	-Garage
62	61	5,9	66	59	61	59 5	96		50 4	64 64		50 49		51	52	51	51	51	51	52	52	52	52	51	20	64	64	47	8 7	53
~	_	55			96			4 6 4		48 46		9 4 8	48				3	20	51	51	52	25	51	20	4 8	8 4	47	94	47	51
49		47	94	7 7	5 7	45	94		45 4	46 46				4 5	_		45	45	45	43	45	4 5	43	43	43	7 7	42	42	ł	45
48	47	46			43			7 77	-	5 45	5 45	5 43	43		45	42	4.5		43	43	43	43	43	43	41	7	45	7 7	!	77
7	7	7						7		41 42	42		42		4		4		4	6.4	4.2	4.2	43	7 7	44	6.4	7		7	6.7
45		43	43	7	1 0	400	7 0 4	_	4 0 4			2 45	_	45	_	43	4	4.2	7.7	7	45	45	45	64	43	7 1	7	9	9	45
4	- 7	4	38			_		7 7 7 7		44	43		45		46		44		4		7 7	7 7	4	64	43	42	7,	45	94	77
41		38		38	1,	7 7 7	7 7 7		7 77			3 43		5 4 5		7,	77	43	43	43	43	7 7	43	4 2	42	41	42	44	45	43
:		:									4							ų	4		4	4	3	,	, 3				-	4
4 4	4 5 2	4 4	9 4	_	0 7	45.4	45	_	4 4	40 4	_					4 4	t 4		, 4	† †	4	4 4	45	45	45	42	1	1	-	3
					: :				_						_				_ :			_ :	;	;	,	ļ	:	```	_;	;
\$	4 4	44		6,	7 7		4 5	4 4 4 4 4 4	4 .	43		43 44	†	4 2	2 .	5 5	4.5	7 (4 ;	4 4	4 5	† ¢	4,4	4 .		ψ, ,	9 6	9 6	9 4	4 7
į		5	7 +	-	7 #	7 +					_	_			‡		‡ —		ì	;	ř	t t	7	<u>;</u>	;	7)	}	î,	n ‡
41		47	45		9 7	4 9 4	45							9 4 8			43		43	43	43	46	48	64	4 8	48	48	4.8	1	94
4	4.5	45		43	43			4 2 4	45 4	45 45	_	44 43	45		47	43	47	7 7	42		45	43	7 7	45	94	47	47	94	1	77
۲,	77	4.6	5 7	77	7 7	7 47	8 7		7 4	46 47		47 48	2		7		7		5.2		5.0	5.4	2	5	7,5	5	75	74	67	5.0
1		9 4			,	-	_		_	_	_			1 0		1 0	\ u	, ,	, ,	1 0	0		, ,	, ,		, ,	1 0			
0	_	}		_	 ‡		_			_					_		2		ř		Ì	ř	3	:	3	7	3	3	;	o †
9	_	61	63	9	29	58	58		59 5	9 69		64 67	70	2 72		73	70		29		89	89	69	69	67	69	63	63	1	65
53	26	96	58	59	55		96	54 5	54 5	26 5	_	58 61	99		2	69	99	99	65	69	99	67	89	29	65	63	62	61	ł	61
5		68		49	- 29		_	70/		_	_	75 74	74		_		7.2		74		89	8	2	7.2	7.1	20	71	72	7.2	7.0
63	65	99	79	62	61	909	63	_	69 7	70 72	-	74 72	_	2 70	7.0	2	70	7.	72	89	67	67	67	89	69	69	89	89	68	89
72		7.5			73								- 69	69			73		74		73		67	67	89	7.	7	7.1	69	7.2
68	69	71	72	20	69	70	10 6	9 69	68 7	70 70		40 69	_	99	67	99	68	89	69	2	20	99	63	9	49	65	69	99	99	89
Ý		61			62					62 6:		63 62		9		59	90		58	26	96	56	57	26	56	56	54	54	1	09
66	57	56	9	61	09	9 09	9	9 09	9 09	0.0			60		58		58	98	55		55		53	53	53	53	53	52	1	57

WILLAMETTE RIVER BASIN--Continued

14-1910. WILLAMETTE RIVER AT SALEM.

LOCATION. --At bridge on State Highway 22, 300 feet downstream from gaging station at Salem, Marion County. DRAINAGE ARBA.--7,280 square miles, approximately.

RECORDS AVAILABLE. --Chemical analyses: August to December 1910, August 1911 to August 1912, February 1951 to September 1961. Water temperatures: February 1951 to September 1961.

EXTREMS, 1860-61.—1918 Follats. Maximum, 66 ppm Doc. 20-23; minimum, 47 ppm Jan. 7-23, Feb. 19-Mar. 7.

Rarchess: Maximum, 23 ppm Sept. 18-24, Feb. 12-18.

Rarchess: Maximum, 23 ppm Sept. 18-20; minimum, 15 ppm Nov. 16-24, Feb. 12-18.

Specific conductance: Maximum, 69 ppm Nov. 16-20, 18-21, minimum, 38 pp. 12.

Fater temperatures: Maximum, 74 F July 13; minimum, 38 F Jan. 27, 26.

Fater temperatures: Maximum, 74 F July 13; minimum, 99 ppm Nov. 1-20, 1952; minimum, 38 ppm Nov. 22-30, 1953.

Rarchess: Maximum, 78 P July 13; micromhos Nov. 7, 1954; minimum daily, 35 micromhos Jan. 20, 1953; minimum, 13 ppm Feb. 1-26, 1956.

Specific conductance: Maximum daily, 132 micromhos Nov. 7, 1954; minimum daily, 35 micromhos Jan. 20, 1953; Feb. 12, 1961.

Fater temperatures: Maximum, 78 F July 22, 1959; minimum, freezing point on several days during February 1956.

Rakhars.—Records of specific conductance of daily samples available in district cat office at portland, 0reg.

		Нq	7.1	۰.	9 60	68.	6.8	6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.
	Specific con-		54 7	46	48	50 6	53 6	50 44 48 60 61 7 7 7 7 7 7 7 7 7 7 7 7
		<u>- 58</u>	₹ -	_			101	111101
	& ;	ad- ad- sorp- tton ratio	0.4			11	181	111181
	ness ICO3	Non- car- bon- ate	0	0.0		0-	NOF	400000
	Hardness as CaCO,	Cal- ctum, Mag- ne- stum	20	15	91	19	21 16 21	17 15 16 17 20
1	Dissolved solids (residue at 180°C)	Tons per day	1,270 2,110	7,580	9,120	4,330 9,140	3,740 4,310 2,800	9,100 19,580 9,970 6,970 2,910 3,240
r 196	Dissolved solids	Tons per acre- foot	0.07	. 07	80.	. 08 . 10	.09 .18 .08	.07 .06 .06 .08
Septembe	Dis (resid	Parts per million	53	25	26	61 66	63 47 51	53 44 48 48 57 50
30 to		Bo- ron (B)	0.7 0.02	1			19.1	111181
er 196		Ni- trate (NO ₃)	0.7	1	1		1.0	111101
ctobe		Fluo- ride (F)	0.0	I	П	11	191	
Chemical analyses, in parts per million, water year October 1960 to September 1961		Chloride (Cl)	2.2	!		11	2.0	
lion, wat		Sulfate (SO4)	2.0	1		11	3.6	4
r mil	į	ate (CO ₃)						
ts pe	Bí-	car- bon- ate (HCO ₃)	30	18	22 2	23	222	20 22 23 25 25 25
in pa	ŕ	tas- stum (K)	0.6	;			4.	1 %
lyses,		Sodium (Na)	3.7	9.0	2.5	22.0		9.9.9.9.9.9
al ans	700	mag- ne- sium (Mg)	1.7	ł		11	1.2	11117
Chemic	-	Cal- cium (Ca)	5.5	1	11	11	5.5	11110:1
		Iron (Fe)						
		Silica (SiQ ₂)	91	1		11	4	1
		Mean discharge (Silca (cfs)	8,900	53,980	60,320	26,290 51,300	22,010 33,930 20,370	63,610 148,000 78,530 53,810 18,900 23,980
		Date of collection	Oct. 1-28, 1960 8,900 Oct. 29-Nov. 15 14,720	Nov. 16-24	Nov. 28-Dec. 7	Dec. 20-23	Jan. 6, 1961 Jan. 7-23 Jan. 24-Feb. 2	Feb. 3-11

WILLAMETTE RIVER BASIN--Continued

14-1910. WILLAMETTE RIVER AT SALEM, OREG. --Continued

		Hď	6.8	8.9	7.1	7.0	7.0	66 7.2	ł
	Specific con-	duct- ance (micro- mhos at 25°C)	59	99	89	65	64	99	
	ģ.	atto					ŀ		ŀ
		Non-car-bon-rate	٥	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- clum, Mag- ne- sium	18	22	22	21	22	23	17
tinued	Dissolved solids (residue at 180°C)	Tons per day	2,190	1,250	860	839	196	1,030	
Con	Dissolved solids residue at 180°C	Tons per acre- foot	0.08	80.	.07	.07	.07	80.	
mber 196	Dis (resi	Parts per million	56					61	52
Septe		Bo- ron (B)	-	I	0.01	ŀ	:	1	
0 to		Fluo- Ni- ride trate (F) (NO ₃)	ŀ	;	6.0	!	ł	ŀ	
r 196		Fluo- ride (F)	1	!	0.1	!	1	!	
Chemical analyses, in parts per million, water year October 1960 to September 1961Continued		Chloride rid (F)	I	!	3.2	1	1	1	
water ye		Sulfate (SO ₄)	ł	-	3.4	1	1	1	
ion,	į	ate (CO ₃)							
r mill	Bi-	car- bon- ate (HCO ₃)	22					32	22
ts pe	ģ	tas- sium (K)	ì				;	1	
, in par		Sodium (Na.)	3.6	4.2	4.1	4.2	4.0	4.2	3.0
alyses	707	mag- ne- stum (Mg)	!	ł	1.7	i	ļ	I	1
cal an		Cal- ctum (Ca)		;	6.0	ł	1	i	ŀ
Chem1		Iron (Fe)							
		Silica (SiO ₂)	-	-	17	-		1	1
		Mean discharge (cfs)	14,490	7.604	6,243	6,092	6,589	6,248	1
		Date of collection	May 22- June 21, 1961	June 22-July 5	July 6-Aug. 4	Ang 5-Sept 4	Sept. 5-18.	Sept. 19-30	Weighted average 28,345

Temperature ('F) of water, water year October 1960 to September 1961

Aver-	age.	.		- 16 C	va eo (v
<		57	644	51 55 62	66 68 62
	31	24 25	218	121	231
	30	53 45 43	915	4 6 5	89 66
	29	40.4	3 4 6 8	5.00	6.00
	28	214	38 45 47	58	9 6 8
	27	214	4 4 5 4 5 4 5	57	65
	26	8 1 4 4 1 4	444	1 20	6.8 5.9 5.9
	25	56 48 45	4 4 4	4 % 0 0 %	6.09
	24	5 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4 4 9 9	4 70 40 80 70 40	0.60
	23	5.4 4.4 4.4	4 4 4	4 & & 6 & &	69
	22	57 48 45	4 4 4 7	\$ 0.0 0.0 0.0	223
	21	56 48 45	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	6.6 6.0 6.0 6.0 6.0	70 70 61
	20	56 49 45	45 48 47	4.9 6.0 6.8	70 69 62
	19	57 49	4 4 4 4 7	69	70 69 62
	18	57 49 46	47 47 47	533	70 68 62
	17	5.6 	4 4 4 6 8 4	53 57 71	71 66 62
Day	16	56	4 4 4 6 4 8 4	53 70	71 65
	15	55 50 45	4 4 4 6 8 8	52 52 66	71 66 64
	14	55 50 44	45 48 47	52 51 62	72 69 64
	13	55 50 44	4 8 8 8	52 51 60	74 70 63
	12	55 50 44	9 4 1	52 51 60	72 70 63
	=	56 50 44	4 0 4 0 0 0	51 52 60	71 70 63
	10	59 51 44	4 6 4 6 4 6	51 52 60	68 70 63
	٥	56 50 54	2 2 2 3 3 3 3	52	61 68 63
	8	60 51 45	4 4 4 70 8 4	51 52 60	69
	7	61 51 45	4 4 4 7 60 70	220	6.9
	9	60	4 4 4 6 80 80	53	57 68 65
	5	60 51 46	041	58	57 70 65
	4	60 51 46	0 4 4 0 6 70	50 53 61	57 72 65
	3	62 52 45	444	52 54 61	57 65
	2	62 52 45	47 45 45	0 4 0 0 4 0	56 70 65
	_	61 52 45	1 4 4	00 00 00 00 00 00	1 69
Mooth	MODIFIE	October November December	January February March	April May. June	JulyAugust

LEWIS RIVER BASIN

14-2205. LEWIS RIVER AT ARIEL, WASH.

LOCATION: --Temperature recorder at gaging station, at Ariel, Cowlitz County, 0.5 mile downstream from Ariel Dam and powerplant, and 3 miles upstream from Cedar Creek.

DAMINAGE AREA, --Class miles.

RECORDS AVAILABLE. --Chemical analyses: July 1959 to June 1960.

Mater temperatures: October 1960 to september 1961.

Mater temperatures: October 1960 to september 1961.

EXTREMES, 1960-61.--Water temperatures: Maximum, 75°F Aug. 10; minimum, 41°F Dec. 28, Jan. 4.

EXTREMES, 1950-61.--Water temperatures: Maximum, 75°F Aug. 10, 1961; minimum, 36°F Feb. 28, 29, Mar. 1, 2, 11, 12, 1956.

						-	emb	erat	Temperature	(.F)	ot.		water,		ter	water year		October	er	1960	ţ		September	Jer	1961	_						
134																Day																A
Month	-	2	က	4	5	9	7	8	6	10	Ξ	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	луставс
October Maximum	51	50	0,0	51	51	51	51	51	51	40.0	20	51	52	54	52	52	500	52	51	57	00.0	5.2	52	51	51	51	51	51	51	640	1 0	51
November	`	;	;	;	;	`		;	;	;	`	ì	`	`	`	`	`	`	`	ì	`		`	`		3	`	2	2	`	ì	
Maximum	58	58	200	28	28	59	50	28	28	58	58	28	58	28	58	58	28	28	58	58	58	58	28	58	28	58	58	28	58	58	59	58
Minimum	66	ž	č	ç	Ď	ŗ		,	ŗ	ý	;	!	1	1	!	Ĺ	!	_	<u> </u>	}	_	1	-	1	1	1			i	!	!	!
Maximum	59	æ .	۳, 8	£ .	5.8	بر 90	50	59	49	50	1 3	13	1 3	1 3	13	1 4	1 "	4	1 4	1 4	1 4	1 4	1 4	1 4	1 4	13	1 3	13	13	13	13	1 !
January	1			1				ę F	Ì			P	ř		P	}	<u>}</u>		}	ì	÷			ĵ.		‡		‡		ţ	‡	i
Wnw.	14	14	144	1 4	- 7 7	1 4	1 4	9 7 7	944	94	9 4 4	9 7 7	944	45	45	45	45	45	45	4 5	45	4 5	45	4 4 5 4 5	7 7 7	7 7 7	44	1 7 7	44	44	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	7
February				:		:		:						:	:		:	:			:	:		1		:	_	?		;	?	
Maximum	44			41	43	7 7	_	74	7,7	77		43	44		43	44	7 7	7,	44	74	7,7	77		43		4.2	43	43	_	45	45	43
Minimum	45	45	45	45	45	45	45	45	45	45	45	45	74	45	45	45	45	45	45	7 4 5	45	45	4.2	7 7	45	45	45	45	1	ŀ	!	45
March Maximum	42	42	42	42	42	42	45	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42		42		42	42	42	1	ł	1	42
Minimum	45	45			45	45		45	45	43		7 7	45	45	42	45	42		43	43	43	43	43	43	43	43	43	43	43	43	43	45
April	42		4.2	42	42	42		42	42	42	42	42	42	42	42	42	42		42	43	43	43	43	43	43	43	43	42		43	43	42
Minimum	7 7	46			43	43	43	43	46	44	43	43	43	43	77	44	44	77	7 7	45	45			46	94	46		94	46	47	;	4.5
May	,	۲,	,	,	7		7		7		,	۲,	7.7	۲,	, ,	7.7	,,	4,4	7,7	· ·	7	,	77	4 1	7.7	7.7	7,	4,	4	- v	-	74
Minimum	47	9	46	9	4			4 6	46	9	4	4 6	94	_	46	46	46	9 4	46	7 9	47		41	47	47	7.4	47	47	47	47	47	. 9
June			:		-;	:			:		:				:		-;						_!	_ ;		!	!			1		;
Maximum	47	4 4	4 4 8	50	\$ 4 6	4 4 0 8	4 4 0 8	4 4	4 4	0 80	4 0 8	4 6	4 4	4 6 4 0	0 0 0 0 4	4 0 4	1 †	1	4 1	\$	1	}	}	7 1	}	}	}	÷ !	, !	}	}	4 I 0 I
July			!			_ :		;		•			3		:																	
Maximum	4	, 1	}	\$ 1 0 1	4 /	, t	,	+ !	4 1 0 1	\$ I	4 I	4 I	4 1 0 1	2 7	9,0	5 4	51	50	50	52	1 %	54	1 19	58	79	1 5	52	50	57	7.1	58	1 1
August																	- 5		,		-		-:		_			-			:	
Maximum	73	73	1.2	199	7.1	74	72	55	65	75	73	62	1 80	50.0	59	55	6.0	56	66	57	57	26	53.	54	55	56	57	56.	56	56	26	62
	51	20	5.1	53	59	ۍ د د	55	51	53	54	57	51	51	52	53	54	53	53	53	53	53	52	51	51	51	51	51	51	52	52	52	53
mnminim	76		:		`		_		5	5	;		3	_	`		`		7		;			7	_	1	1	;		7,		2

LEWIS RIVER BASIN--Continued

14-2225. EAST FORK LEWIS RIVER NEAR HEISSON, WASH.

LOCATION. --Temperature recorder at gaging station, 80 feet downstream from Basket Creek, 1.5 miles northeast of Heisson, Clark County, and 20 miles upstream from mouth.

DRAINAGE AREA. --125 square miles.

RECORDS AVAILABLE. -- Water temperatures: June 1950 to September 1961.

EXTREMES, 1960-61. -- Water temperatures: Minimum, 37°F Jan. 3, 4, 27.

EXTREMES, 1950-61. -- Water temperatures: Maximum (1950-60), 74°F Aug. 4, 1952; minimum, freezing point on several days during Juary and Pebruary 1957.

June 1950 to September 1961. Minimum, 37°F Jan. 37°, 4, 27. Maximum (1950-60), 74°F Aug. 4, 1952; minimum, freezing point on several days during Jan-

Temperature (°F) of water, water year October 1960 to September 1961

-																Day																
Month	_	2	က	4	2	9	^	8	٥	9	=	12	13	14	15	16	17	18	6	20	21	22	23	24	25	26	27	28	29	30	31	Average
October Maximum	57	57	n n n	52	56	55	5.6	54	51	844	47	64	94	643	0.4	50	52	52	52	52	52	53	54	54	53 52	52 50	200	50	0.4	448	0 4 0 8	52 51
November Maximum	0 C	50	4 4 6 4	9 7 7	4 4	4 4 2	9 4	47	14	9 4 4	4 6 4	9 4 9	9 4 6	45	4 4	9 4 9	44	47	47	47	46	45	4 4 7 7	47	46	9 4 4	5	4 4	4 4	43	11	4 5
December Maximum	44	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4	44	404	39	39	38	38	38	39	6 t 1	4 1 1 3	41	39	39	1,0	4 1 4 1	43	43	45	42	45	42	42	42	45	4 0 4 0	39	39	3 3 3 3	45
anuary Maximum Minimum	4 4	39	39	38	38	6 4 2	2 4 4	6 4 9	4 4	4 6	3 3 3 4	1	4 4	4 4	4 7 4	4 to	5 2 2	4 4 4 4	7 7 7 7	44	43	40	4 0	4 1 1	41	39	39	38	4 1 4 1	43	43	. 7 7
February Maximum	43	44	4 4 4 4 7	4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 6 4 6 4	9 4 4	4 4	4 4 5	4 4 22	4 4 2	7 7 7 7	4 4	4 4	4 4 4 4	4 4 2	4 4 5 4 4 5	4 4	4 4 5	4 5	45	45	4 4 50	4 4 0 0	44	44	4 4	3 to	11	11	11	4 4 2
March Maximum	7 7 7	44	4 4	43	43	4 5 7	4 4 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	4	4 4	44	45	43	43	44	4 4	7 7 7 7	7 7	44	4 5	11	11	11	11	11		11	11	11	11	11	11	1 1
April Maximum	11	11	11	11	11	11	11	11	11	11	9 4 4	46	9 4 4	4 6 5 5	8 4	6 4 4	6 4 9	46	43	43	44	4 7 4 7	42	44	4 4	9 4 4	7 7 7	0 4 4 6 9	47	47	11	11
May Maximum	4 6	4 5 6	4 4	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	44	2 4	427	44	47	47	4 5 4	9 4	46	4 t t t t t t t t t t t t t t t t t t t	52	53	6.4	4.5	57	57	51	5 C 4 9	50	53 48	54	54	52	52	52	54	57	2, 4 3, 8
une Maximum Minimum	55	60	60	58	61	55	53	55	53	55	5 5	538	260	59	66	6.5	0 2	70	69	69	63	64	66	63	68	62	58	58	58	53	11	59
Maximum	62	64	65	64	61	58	560	58	67	63	71	73	72	72	71	69	63	70	71	72 65	70	64	64	6. 4	66 59	70	11	11	11	11	11	62
Maximum	11	11	11		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11		11	1 1	11	66	1 1
September Maximum Minimum	δη. κ α	8.5	A. A.		11	11	11	1 1		11	11	11		11	11	11	11	11	1 1	11	11		11	11	11	11	11	52	52	52	11	1 1

KALAMA RIVER BASIN

14-2235. KALAMA RIVER BELOW ITALIAN CREEK, NEAR KALAMA, WASH.

at gaging station, 2.5 miles northeast of Kalama, 3 miles upstream from mouth, and 5 miles

LOCATION: -- Temperature recorder at gaging station, 2.5 miles northeast of Kalama, 3 miles upstream from mouth, an downstream from fialian Creek.

DRAINAGE AREA (revised): --188 square miles.

RECORDS AVAILABE. - Water temperatures: October 1954 to September 1961.

EXTREMES, 1960-61. - Water temperatures: Maximum, 66°F July 28, 1958; minimum, 78°F Jan. 3, 4.

EXTREMES, 1954-61. - Water temperatures: Maximum, 66°F July 28, 1958; minimum, freezing point Nov. 19, 20, 1958.

	Average	9	0.0.4 0.0.4	4 4 7 4	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 	42	44 43	11	4 4 10 4	49	53	61 56	61 58	55
		31	7 4 4 4 6	11	104	6 4	11	2 4 5 5 5	11	£ 8 8 +	11	58	58	11
		30	44	4 6 4	404	4 4 3	11	44	4 5 7	12.64	57	62 57	28	50
		29	4 4 0 17	4 4	9 9	42	11	4 4 5	4 8 4 6	52	52	55	60 58	51
		28	4 4 80 80	6 4	604	39	64	4 4	84	64	55	5.8	56	51
		27	4 4 80	44	64	39	43	44	4 4 4	50	53	57	55	51
		26	0.84	4 4 5	43	141	64	4 4	944	52	61	61	58	52
-		25	0.4	4 4 5 5	42	42	4 4	4 4	4 4	53	57	55	55	52
1961		24	51	4 50	45	42	44	4 4	43	51	62 56	58	58	52
ı ı		23	501	4.4	4 5 7	41	11	4 4 5	43	0.4	55	58	58	52
September		22	50	44	42	42	11	44	4 4 6 3 4	644	61	58	63	53 50
Sept		21	50	£ \$	43	43	11	4 4 6 4 9 9	4 4 6	4 8 4 8	54	59	64	54 52
ţ		20	50	46	43	43	4 4	4 4 2	4 5 7	52	57	63	63	55
096		19	64	4 4 5	4 6	4 4	4 6	4 4 70 4	4 4 3	52	61 58	50	59	55
1		18	0.04	949	4 6	643	64	2 4 4 5	4 th	52	58	63	59	56 55
tope		17	50	4 6 6 5	43	4 4	4 4 6 4	4 4 4 5	4 4 5	51	58	60 56	61 57	55
8	Day	16	0.4	4 4 5	41	4 4	4 4	4 4	9 4 9	51	63	63	57	5.5
year October 1960		15	4 8 8 4	4 4	413	6 4	44	4 4	4 4	50	62 55	63 59	58	55
er		14	48	4.5	5 5	£ 4 3	4 4 6 3	44	44	4 6	53	59	61	55
water		13	48	4 4 5	4 4	4 4	4 4	11	4 4 5	46	51	64 60	61	57 53
water,		12	4 4 6 6	45	6 4	6 4	44	1 1	45	47	55	59	62	5.5
		1	4 7 7 7	4 4 5	4 4 0 4	4 4	4 4		4 4 4	47	52	6.4 5.8	63	54
of		10	4 9 6 9	4 4 5	0 0	43	44	11	44	47	53	63	59	55
(F)		6	50.0	2 4 2 4	9 4	43	11	11	4 4 5	47	51	55	59	55
ıre		8	52 50	44	39	6 4	4 4	11	2 4 2 5	47	53	53	61 58	55
Temperature		7	52	4 4 6 4	3.9	4 4 8 8	1 1	11	4 4 0	47	4 °4	52	58	5. 7.
educ		9	52	4 7	1,0	6 4	2 4 4 5	11	4 4 0 4	4 4 5 5	54	54	62 57	57 54
Ĕ		5	52	4 4 2 2	£ 1 1	39	2 4	11	4 4	2 4	56	53	58	58 57
		4	52	43	44	39	44	11	45	4 4	54	59	63	58 54
		3	53	47	4 4 7 4	98	4 4	11	4 4 0 0	4 4 4	5. 5.	60 56	64	55
		2	53 52	47	45	41 40	4 4	4 4	45 45	4 5 5	56	61 54	63 59	56 54
		-	53	47	4 4 5	41	43 643	4 4	4 4	4 4 6	56	58 53	63 58	58
			::	11	::	::	::	::	::	::	::	::	::	::
	Moneh	Outr	88	8 8	88	um um	H H	num .	mum .	mum.	mum .	mum .	-	9 4 1
	>	4	October Maximum Minimum	Maximum	Maximum Minimum	Maximum Minimum Minimum	Maximum Minimum March	Maximum Minimum	Maximum . Minimum .	Maxir Minir	Maximum Minimum July	Maximum Minimum	Maximum Minimum Serember	Maximum Minimum

14-2235.1. KALAMA RIVER ABOVE KALAMA, WASH.

LOCATION: -- At bridge on U.S. Highway 99, 1.1 miles upstream from mouth, 1.8 miles north of Kalama, Cowlitz County, and 1.9 miles downstream from gaging station.
MEINAGE AREA (revised). --198 square miles, upstream from gaging station.
RECORDS AVAILABLE. --Chemical analyses: July 1960 to September 1961.

ı			0 4 4	o 4*	m	ოო	06	N 64	o o	000	,	# 01
	-5-	. т	2.7.2			7.3			7.	1 0	- 1	4.2
	Specific con-	duct- ance (micro- mhos at 25°C)	58	ດິທິ	4	39	ññ	* ਲ	8	4	òù	57
	8;	dium ad- sorp- tion ratio										
		Non- car- bon- ate	000	0	0	00	0 0	0	0	0 0	5 0	0
	Hardness as CaCO,	Cal- clum, Mag- ne- stum	18	16	12	12	175	12	12	122	20 9	18
	Dissolved solids (residue at 180°C)	Tons per day										
	Dissolved solids esidue at 180°	Tons per acre- foot										
r 1961		Parts per million	51			34	35	388	34	4.	2	24.0
tempe		Fluo- Ni- Phos- ride trate phate (F) (NO ₂) (PO ₄)	0.0 0.04		.05	.00			.03	.05	5.0	80.
o Sep		Ni- trate (NO ₃)	0.0	. ω.	ı.	დ. 4	6.		4	- ا	Ņ	
960 t		Fluo- ride (F)	0.1	. . .	٥.	~ -	Η.	<u>о</u> г.	0.	Η,	7.	
million, July 1960 to September 1961		Chloride (C1)	3.0	. 4 8 0	2.5	0.0	1.8	1.5	1.8	20.0	0.6	2.0
		Sulfate (SO ₄)	0.4	xi 4.	o.	0.0	1.0	1.4	٥.	0.	0.	1.28
ed so	į	bon- ate (CO ₃)										
n par		car- bon- ate HCO ₃)	27	2 28	23	19	16	8 8	19	22	27	8 8
es, i	É	Situm (K)	0.4	4. 0.	Τ.	10.0	N.	. 7	8	ı,	e.	ı, ı
Chemical analyses, in parts per		Sodium (Na)	1.4	3.6	2.9	2.5	8	2. S.	2.4	3.5	4.1	4.4
Chemica		mag- ne- stum (Mg)	1.2	٠. د.	1.0	1.0	· 63	r. 00	ıç.	1.2	1.2	6.1
•		Cal- ctum (Ca)	6.5	6.0	4.5	3.5	4.0	3.0	4.0	4.0	2.0	
		Iron (Fe)										•
		Silica (SiO ₂)	19 19	17	12	45	12	44	4.	91	61	<u>ର ର</u>
		Mean discharge (cfs)	330	285 354	516	1,220	3,620	2,800 1,220	1,650	268	352	266 230
		Date of collection	July 18, 1960	Sept. 12	Nov. 8	Dec. 5	Feb. 7.	Apr. 11	Мау 9	June 13	July 11	Aug. 8

COWLITZ RIVER BASIN

14-2325. CISPUS RIVER NEAR RANDLE, WASH.

LOCATION.—Temperature recorder at gaging station, 60 feet upstream from bridge to Tower Rock ranger station, 4 miles downstream from North Fork, and 8 miles southeast of Randle, Lewis County.

DAINAGE AREA.—231 square miles.

RECORDS AVAILABLE.—Water temperatures: May 1950 to September 1961.

EXTREMES, 1960-61.—"Reter temperatures: Maximum, 59°F July 13, 14; minimum, 37°F on several days during December and January.

EXTREMES, 1960-61.—"Reter temperatures: Maximum, 62°F July 27-29, 1958; minimum, freezing point Jan. 20, 1954.

Temperature (°F) of water, water year October 1960 to September 1961

												í									•											
1																Day																en caera y
Month	-	2	က	4	5	9	7	8	6	10	Ξ	12	13	14	1.5	91	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	луставс
October Maximum	53	53		52	52	52	52	50		64	47	4.8		64		53	53	52		52	51	51	52	51	50	50	8 4	8 7	48	94	47	05
Minimum	4 8	84	48	47	_	21		84	9 4	44	4	47	47	94	8 4	64		o 5	64	20		20		000		4 8	47	47	46	45	42	84
November	47	46	46			7 7	43	46		45	45	7 7		44		44	7 7 7	7,	43	43	45	4 1	7	42	45	42	40	0.4	41	41	1	43
Minimum	94	94		45	<u> </u>	43	_	43	42	43	_	43	44	45	_	7 5				45	_	41		45	_	0,	_	0 4	04	04	1	45
December	,	- ;					_	0		a						9	- 0			ç				C	_			0.4	0	0,4	0	0,
Minimum	_	41,	104	36	37	37	3 6	3 6	3 6) F	9 6	36	30	38	37	3.7		19		36	9	0 0	404	0 0	0 0	0 0	10	38	38	39	38	9 6
January Maximum	39	39	37	38	9,0	39	39	39		4.1	4.1	41		4.1		4.1		41		41		0.4	717	4.2		0,4	38	0.4	4.1	4.1	41	0,4
Minimum		37				39	_	39	36	0,4	0 4	0,4	9	0 4	7	0,4	0,4	9	0,4	0 4	0	39		41	39	38		38	0,4	7	41	9
February Maximum	4 1	4.1	41		45	4.2		4.1		4.1	4.1	4.1		4.1		41		41		41		40	_	4 1		0,4	6,0	0,4	1	1	1	41
Minimum	40	41	41	41		41	0,4	41	41	4.1	41	0,4	04	0 4	7	9	0,4	40	0,	41	9	04	9	9	39	9	33	0,	1	1	1	0,4
March		;		_		-;		:	_		,		-	:						:					_					_;		,
Maximum	0 0	6 K	9 8	9 8	9.8	0 K	4 6	7 0	4 4 2	7 0	0 %	2 0	4 4	1 4 1	7 0	1 0 7	7 7	£ 4.	7 -	7 7	7 6	ψ T	444	2 4	2 4	4 1 2 -	4 7	v 4	¢ 7	† † † †	4 4	7 0 4
April	;	;		_		:						ì		!				!				!				!			_			
Maximum	45	4	_	_		77	_	43	7 7	4.5	44	7 7	43	63	_	9 4		43	_	45		7 7	_	4.5	_	6,4	48	47	9 4	45	1	54
Minimum	43	64	41	39	04	41	,	£		45	43	43	41	04	45	43	43	1,	9	0	0 4	39	36	45	6,3	43	45	45	44	44	ŀ	4.2
May	45	4	43	42	43	77	46	45	45	45	46	46	45	47	8	64	47	64	64	47	47	46	46	47	6 4	84	47	94	4 8	46	49	94
Minimum	44	43	42	74	77	42	777	77	77	43	42	77	44	77	45	77	7 7 7	44	7,7	77	45	77	7 7 7	43	77	7,	7,7	77	46	45	45	77
June Maximum	51	51	50	49	84	47	8 4	47	46	64	80	50	51	52	52	53	52	53	53	52	52	54	54	54	54	52	52	53	50	53	- 1	51
Minimum	4	94	47	45		45		45		7 7	46	46	48	47		64		64	_	64		8 4	_	64		20	48	4 8	48	47	Ī	47
July Maximum	55	55	55	55	52	20		56		57	58	8	59	59	57	53	57	57		28	58	8		56		58	57	54	57	57	58	56
Minimum	4 8	20	_	20	_	8 4	48	48	50	51	52	52	53	54		51		51	51	21	_	53	5	20	20	51	51	51	20	50	20	51
August Maximum	57	57	58	55	55	56	57	26	57	57	55	57	56	57	53	54		54	57	58	56	58	26	54	55	51		57	57	56	54	56
Minimum	20	20	_	_		8 4		64	_	20	20	20	51	20	_	20	4 8	64		51	46	21		51		64	64	64	20	21	2	20
September Maximum	51	51	53	57	53	4 6 4	6 4	52	53	53	53	53	52	51	6 4 9	52	6. 4	51	52	44	50	8 t 7 t 8 t	6 4 6	0 4 4	0 4	4 4 7 3	48	47	4 4	44	11	51
	-			_				-	-	-	-		-	-		-		-		-			_	-	_				_			

14-2335, COWLITZ RIVER NEAR KOSMOS, WASH.

LOCATION .-- thingge on State Highway 5, 0.8 mile upstream from Shelton Creek, 4.3 miles southwest of Kosmos, Lewis County, and 13 miles downstream from

gaging station.
DRAINAGE ARRA.--1,042 square miles upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to July 1960.
Water temperatures: November 1952 to September 1961.

Chemical analyses, in parts per million, October 1960 to July 1961

	Н	71 7.5 42 7.1 52 7.4 40 7.1
Specific con-	duct- ance (micro- mhos at 25°C)	71 42 52 40
& :	ad- ad- Borp- tion ratio	
ess CO ₃	Non- car- bon- ate	0
Hardness as CaCO ₃	Cal- cium, Mag- ne- sium	26 16 19 14
Dissolved solids residue at 180°C)	Tons per day	
solved idue at	Tons per acre- foot	
	Parts per million	58 43 43 39
	de ride trate phate p (F) (NO ₂) (PO ₄)	0.2 0.04 .1 .07 .1 .02 .1 .03
	Ni- trate (NO ₂)	0.2 .1 .1
	Fluo- ride (F)	2.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0
	Chloride (Cl)	
	Sulfate (SO4)	3.2 1.2 1.0
	bon- ate (CO ₃)	
	car- bon- ate (HCO ₂)	.37 23 28 28 22
ŕ	tas- sium (K)	3.8 0.6 2.1 .2 2.6 .2 2.0 .3
	Sodium (Na)	
Mer	mag- ne- sium (Mg)	1.7
	Cal- ctum (Ca)	7.5 5.5 6.5 5.0
	Iron (Fe)	
	Silica (SiQ ₂)	17 12 14 11
	Mean discharge (cfs)	1,060 9,980 4,700 4,390
	Date of collection	Oct. 21, 1960 Jan. 18, 1961 Apr. 21 July 14.

COWLITZ RIVER BASIN--Continued

14-2335. COWLITZ RIVER NEAR KOSMOS, WASH. -- Continued

Į.						Ten	per	Temperature (°F)	ိ		of wa	water	Wa	, water year	уеа	90	October 1960	er 1		\$	September	emp	er 1	1961						
														Δ	Day															Average
2	~ 1	က	4	2	9	_	ω	٥	9	=	12	13	4	15	9		8	6	20	21 2	22 2	23 2	24 25	5 26	5 27	7 28	3 29	30	က	A A A C I I I I I I I I I I I I I I I I
55 55			54	4. 4.	54	54	53	51	64	4.8	84	84	8	50	51	52 5	52	52 5	52	52 52		52 52	_	1 50	4		47	4 6	4	51
55 54			24 54					_			8 4					_							- 20			7 47			46	20
46 46		46	6 45	44	_	77		43			44	7 7 7 7		44		7 7 7							_	3 43	43		_		1	44
94 94					3 44		43		43	44	7 7		7 7		7 7 7		7 7 7	7 7 7	7 7 7	43 43		43 43	3 43			2 4 2	45	45	1	44
43 43			43 43	43	3 43	42	41	41	41	42	42	42		45		45		45	45	42 42		42 42	4 5	2 4 2	4 2	42	45	41	41	42
43 43		3 43	3 43	43	3 42	4.1	4 1	4.1	41	4 1	42	42	42	4 1 4	- 7	41 4	42 4	45 4		42 42		42 42	_		45			7	4,1	45
41 41		1 41		1 40		41	4.1	4.2	4.2	4 2	4.2	45		45		4 5 4									-		41	. 4	4.1	41
41 41		1 41	1 40	04	40	04	41	4.			74	45	45	42 4	45		42 6	45 4	7 24	42 42		42 42	2 42	2 41	40	0 40			4 3	41
								45	1	4.2	1		41			41	42 4	42 4	45	42 42		42 42	2 45	2 4 2	45	4 2	-	1	1	42
41 41		1 41	1 41	1 41	4	!	- 45	45	1	42	1	7 7		414				_					_				1	!	!	41
								45	42		42		745		7 7		43		43	43 43	_	43 43	43			643			4	42
4 2 4	41	1 41	1 41	1 41	141	4.	4.1	4.	45	42	45	7 7 7	-	45 4	-	45		43 4		15 43	÷	3 43		3 43	43		43	43	43	45
45		45 44	77	+ 43	4.3	44		77	4.5	4.5	4.5	45		45		4 9 4		45 4			_	4 4 5	_	5 47			48	48	;	45
7 7 7	~	77 77		2 45	43	43	7 7	7 7	77	45	4.5	7 7 7	77	7 7 7	45	46 4	45 4	7 7 7	7 7 7	77 77		43	3 45	9 4 9	47	48	48		1	45
47 4		47 46	46	4.5	5 4 5	47	47	4 7	47	47	8 4	84		51		_				50 4		9 4 8							49	84
474	-	94 94	6 45	5 45	5 4 5	4 5	47	4	47	4 7	47	8 4	8 4	_	51	51 5	20	50 5	20 6	6 4 8		48 4	4 8	8 4 8	4.7	4 8	48	48	48	48
20	- !		5	4	4 8	47	74	47	47	8 4	50	20	- 19	51				_				2 52		_				52	_!	51
		1	48	8 48		74	47	4 7	47	47	48	_	20		21	20 5	51	51 5	51	51 51		52 5	2 52	2 52	51	1 52	52	_	1	20
	್ಷ										59	09	- 19	-1 9		_								_				_	9	59
52 5		54 56	56 56	53	51	21	54	26	58	58	- 69		09		58	57 5	57	59 5	29	9 09		29 56	5 57	7 58	5	58	55	57	57	57
								9			59						_												9	
58		58 5.	29 60	0 59	9 57	57	28		58	58	58	66	58	59	96	56 5	57	57 5	69	09 09	_	61 59		58 58	57	7 57	59	69	59	58
								57		57	57			56						53 52		1 51		1 51				51	- 1	55
54 5		52 5	52 54	58	3 57	57	99 1		99	57	57	26	26	_	53	53 5	54	53 5	53	52 51		51 50		50 50	51	1 51	50	20	1	53
1	J		I		1																					I				

WEST FORK TILTON RIVER NEAR MORTON, WASH 14-2355.

RECORDS AVAILABLE.-Water temperatures: August 1950 to September 1956, July 1957 to September 1959, October 1960 to September 1961 EXTREMES, 1960-61.-Water temperatures: Maximum, 70° July 12, 14-16, minimum, 36° po isvereral days during January. EXTREMES, 1960-61.-Water temperatures: Maximum, 70° July 12, 14-16, 1961; minimum, 33° po isveral days during winter with the september 1961 and 1960-61.-Water temperatures: Maximum, 70° July 12, 14-16, 1961; minimum, 33° po isveral days during winter and 4 miles northeast of Morton, Lewis County. mouth. from 0.8 mile upstream station. EXTREMES, 1960-61. --Water temperatures: Maximum, EXTREMES, 1960-61. --Water temperatures: months during 1953 and 1955 water years. gaging LOCATION. -- Temperature recorder at DRAINAGE AREA. -- 16.4 square miles.

:

14-2380. COWLITZ RIVER NEAR MAYFIELD, WASH.

LOCATION. --Temperature recorder at gaging station, 1 mile upstream from Mill Creek, 2 miles downstream from Winston Creek, and 2.2 miles west of Mayifield, Lewis County.

MILIABLE AREA --1,400 square miles.

RECORDS AVAILABLE --Water temperatures: October 1950 to September 1961.

EXTREMES, 1960-61 --Water temperatures: Maximum, 67°F Aug. 2-4; minimum, 38°F Jan. 28, 29.

EXTREMES, 1960-61 --Water temperatures: Maximum, 70°F July 28, 29, 1998; minimum, 33°F Jan. 28-31, Feb. 1-2, 1956.

October 1950 to September 1961. Maximum, 67°2 hus. 2-4; animum, 38°7 Jan. 28, 29. Maximum, 70°7 July 28, 29, 1955; minimum, 33°7 Jan. 28-31, Feb. 1-2, 1956. 1000 40 (40)

							Lei	per	Temperature		£	of water,	Wate		Wate	'n	water year October 1960 to	oct	5 Dei	18	90	9	epte	September 1961	18	19						
March																Day																Avenue
Month	-	2	3	4	5	9	7	8	6	2	Ξ	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October Maximum	56	99	55	55	55	55	55	54	51	64	48	4.8	84	84	50	52	52	52	55	52	52	52	25	52	51	09	64	8 7	47	94	45	51
Minimum	55		55	55	55		54	51	64	8 4	48		8 4	48	48	20	51	25	52		52			21	20	64		47	9,	45	4.5	51
November	46		46	4.5	44		43	43	43	43	44	4 4	7 7	44	43	43	43	43	43	43	43	42	42	42	43	64	4.1	4.1	41	42	- 1	43
Minimum	4 5	46	45	4	43	43	43	43	43	43	43	77	77	43	43	43	43	43	43	43	45		42	42	42	4.1	41	7	4.1	41	1	43
December	7	7	4	4.3	7		0	90	ď	Ç		4 2	4	۲,	,	۲,	6.4	6.7	7		4		4.5	4.2	,	6.4	4.5	6.4	7	, ,	4,1	6.7
Minimum	42		. 6	64	41	36	39	36	39	0,4	104		43	43	4.1		104		42	45	4.2	7.5		41	41	4.2	42	1 1	104	4.1	† 1	; ;
January	41	4.1	4.1	4.1	45		43	43	43		44	4	44	7 7	4	4	43	4.2	42	4.2	45		41	42	42	42	41	39	0,4	41	4.1	45
Minimum	4.1	4 1	41	0.4	04	45	43	43	43	43	44	44	77	77	77	43	42	42	45	42	45	4 1	4 1	4.1	42	41	39	3.8	38	40	41	7 7
February Maximum	4.1		4.1	42	43	43	43	4.2	42	42	42		42	42	42		4.2	42	42	42	42	4.2	42	42	4.2	41		4.1	1		ŀ	4.2
Minimum	4 1	4 1	4.1	4.1	42		45	45	45		45	45	45	45	45	45	45	45	45	45	45		45	45	4 1	41	41	41	!	1	!	45
March Maximum	4 1		41	4.1	4	4.1	4.1	4.2	42	42	42		42	4.2	42		43		44		43	43		43	43	7,	7.4	7 7	45	45	45	43
Minimum	41	41	4.1	41	41		0,4	4.1	42		42	45	45	42	45	45	43	43	7 7	43	45		43	43	43	43	44	5 4	43	77	45	45
April Maximum	45		4.5	44	43	_	4.5	4.5	4	4 4	44		45	44	46		47	47	44		44		43	45	94	9 4		48	48	47	1	4.5
Minimum	45	4 5	7,4	42	41	42	43	44	44	44	44	44	7 7	43	74	94	47	44	43	43	43	43	42	4.2	4.5	94	94	8.4	47	94	ŀ	7,7
Maximum	46		45	4	43	4	4	47	47	9 \$	4		46		49		51	50	50	64	47	46	8 4	84	50	50		48	20	20	51	84
Minimum	46	4 5	44	43	43	_	44	46	46		45	42	45	45	46	4.8	4 8	47	4 8		46		46	9+	47	8 4	9 7	47	48	84	6	46
June Maximum	54	54	53	53	52	5,	6,4	51	51	51	52	54	57	58	59	29	59	58	58	57	57	58	09	09	09	09	57		56	57	1	56
Minimum	51		52	25	51	_	4 8	64	20	64	51	_	53		55		56	26	26	_	54	54	26	26	57	57	55	55	96	54	1	53
July Maximum	9		61	61	90		58	9	62	63	64	65	99		99		63	49	65	99	99		63	63	63	64	79	49	63	49	49	63
Minimum	56	28	59	59	28		54	57	9	19	62		63	9	63	63	9	9	94	94	65	63	63	61	61	63	94	63	62	63	63	61
August Maximum	65	67	67	67	99	65	6.5	65	65	6.5	99	99	99	99	65	49	63	63	49	6.5	65	99	99	65	49	49	63	63	49	99	65	65
Minimum	94		99		65		4	_	49		65		90		40		63	63	63		65		65	79	63	63	79	79	69	\$	49	7 9
September Maximum	64	58	58	57	63	61	61	59	59	58	60 58	59	59	58	58	58 57	57	58	58	58	57	0 v 0 v	55	54 53	54 53	53	54 53	45.	54	53	11	58

14-2425. TOUTLE RIVER NEAR SILVER LAKE, WASH.

LOCATION: --Temperature recorder at gaging station, downstream from highway bridge, 0.5 mile downstream from confluence of North and South Forks, and 5 miles northeast of Silver Lake, Cowlitz County.

DRAINAGE AREA.--474 square miles.

EXTREMES AVAILABLE.--Water temperatures: October 1960 to September 1961.

EXTREMES, 1960-61.--Water temperatures: Maximum, 65° g July 29.

EXTREMES, 1960-61.--Water temperatures: Maximum, 72° F Aug. 4, 1962; minimum (1950-60), freezing point Jan. 4, 5, 1959.

Temperature (°F) of water, water year October 1960 to September 1961

											1			-	"	Day											-			-	*	Average
1 2 3 4 5 6 7 8	3 4 5 6 7	4 5 6 7	5 6 7	6 7	7		80		٥	0	=	12	2	4	15	16	17	8	6	2	21	22	23	24	25	26	27	28	29 3	30	31	,
		11	11	11	11	11			11	11		11	11	11	11	51	52 5	53	51	51	51	51	51	52	52 5	53	++		11	11	11	1 1
				1 4 1 1	1 4	11		1 1		11	++	<u> </u>	11	11	11	11	11	-			11	1 1	11	1 1	++	11	11		11		11	11
		11	11	11	11	11		1 1		11	11	11	+		Ti	11	11	11	11		11	11	11	11	+	11	-	- <u></u> -	<u> </u> 		11	11
42 42 42 42	42 42 42 41 42 42	42 42 42 41 42 42	42 42 42 41 42 42	42 42 42 41 41 42 42	42 42 42 42	42		42		45	45 4	6 4 2 7	43 4	43	42 4	45	42 4	43	4 6	444	44	44	44	444	43 4	44	4 4 7	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	44 45		42 4	43
42 42 42 42 42 42 42 42 42 42 42 42 42 4	42 42 42 42 42 42 42 42 42 41 41 42 42 42	42 42 42 42 42 42 42 41 41 42 42 42	42 42 42 42 42 41 41 42 42 42	42 42 42 42 41 42 42 42	42 42 42	42 42	42			452	45 4	43	43 4	43	45 4	43	43 6	6 4 8 9	43	42	42	43	4.4	4 4 4 3	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4 4 4 5 7	44 44	4 6 4	11	11	11	43
44 44 44 44 44 43 43 44 43 44 43 44 43 44 43 44 44	45 45 45 44 44 43 44 44 44 43 43 43	45 45 44 44 43 43 44 44 44 43 43 43	45 44 44 43 44 44 44 43 43 43	44 44 43 44 44 43 43 44	44 43 44	43 44 43 43	44		4 4	4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4	43 4	43	43 6	6 4 9	43	43	43	43	44	43	45	42	45 4	45	43 4	43	45 40 40	45 40	7 7 7	43
41 41 41 42 42 41 42 40 41 4 41 41 39 39 39 39 38 39 40 4	41 42 42 41 42 40 41 39 39 39 40	42 42 41 42 40 41 39 39 39 38 39 40	42 41 42 40 41 39 39 38 39 40	41 42 40 41 39 38 39 40	42 40 41 38 39 40	40 41 39 40	41		4 4	4 1 1 0 4	417	411	41 4	41	38	39	39	4 0 4 0	11	11	11	11	11	11	11	11	++		11	11	11	11
			11	11	11	11	11		, ,	11	$\frac{1}{1}$	11	11	11	ii	11	11	5.0	58	5.5	59	60	09	61	560	59	58 5	209	59 5	58	5.5	; ;
58 57 57 58 56 58 59 59 59 59 5 53 53 54 54 55 56 57 58 5	57 58 56 58 59 59 59 54 54 54 55 56 57 58	58 56 58 59 59 59 54 54 55 56 57 58	56 58 59 59 59 54 55 56 57 58	58 59 59 59 55 56 57 58	59 59 59 56 57 58	59 59 57 58	59		ດດ	58	58	55	54	53	52	56	55	53	54	57	58	53	53	57	53	53	58 5	5.80	59 6	99	11	5.8
59 58 58 58 59 60 60 60 59 5 56 54 54 57 58 59 57 55 54 5	58 58 59 60 60 60 59 54 57 58 59 57 55 54	58 59 60 60 60 59 57 58 59 57 55 54	59 60 60 60 59 58 59 57 55 54	60 60 60 59 59 57 55 54	60 60 59 57 55 54	60 59 55 54	0 4 4			5.9	54	53	53 5	55	59	58	58	57	61	61	60	61	60	62	59 5	58	63 6	63	65 6	59 5	593	61
63 63 63 61 62 63 63 62 61 58 57 57 58 60 58 57 58 58	63 61 62 63 63 62 61 57 58 60 58 57 58 58	61 62 63 63 62 61 58 60 58 57 58 58	62 63 63 62 61 60 58 57 58 58	63 63 62 61 58 57 58 58	63 62 61 57 58 58	62 61 58 58	61 58			62	61 6	28	58 5	61	59	61	57	61	55	5.5	99	55	56	5.9	560	58	59	54	58 5	5.88	58	61
58 60 61 61 61 64 63 64 62 57 58 60 57 59 61 60 60 59	61 61 61 64 63 64 62 60 57 59 61 60 60 59	61 61 64 63 64 62 57 59 61 60 60 59	61 64 63 64 62 59 61 60 60 59	64 63 64 62 61 60 60 59	63 64 62 60 60 59	64 62 60 59	65 59			59	58 5	61	57 5	59	60	59	59	58	59	58	58	59	58	5.5	55 6	57	57 5	53	56 5	55	11	59

COWLITZ RIVER BASIN--Continued

14-2427. TOUTLE RIVER NEAR CASTLE ROCK, WASH.

LOCATION.--At bridge on U.S. Highway 99, 1 mile upstream from mouth, 2.6 miles north of Castle Rock, Cowlitz County, and 14.4 miles downstream from gaging station.

BRAINAGE AREA.--474 square miles, upstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: July 1960 to September 1961.

REMARKS.--Records of discharge given for Toutle River near Silver Lake. Appreciable inflow between sampling point and gaging station.

				.							
		Hd	63 7.4	7.	. 6	7.3	33 7.1	7.,	7.1	7.1	7.4
	Specific	duct- ance (micro- mhos at 25°C)	63	76	56	44	333	41	48	9 2	818
	&;	ad- ad- Borp- tion ratio									
	co,	Non- car- bon-	0	0	00	00	00	0	0	0	0
	Hardness as CaCO,	Cal- cium, Mag- ne- stum	18	88	16	13	112	7 .	14	17	222
	solids 180°C)	Tons per day									
	Dissolved solids (residue at 180°	Tons per acre- foot									
er 1961	Dis (resi	Parts per million	54 65	49	21	4 4	38	4 6	41	26	29
ptemb		Phos- phate (PO4)	0.04	.05	0.00	.03	88	6	0.0	.05	90.
to Se		Ni- trate (NO ₃)	0.1			2.5	4.00	٠, ١		т.	O. E.
1960		Fluo- Ni- pride trate program (F) (NO ₃) (0.1	щ.	,0	-:- :		٦. ١	. r.	τ.	
Chemical analyses, in parts per million, July 1960 to September 1961		Chloride (Cl)	4.0	5.2	3.5	2.2	11.2	0.0	2.67	0.4	5.8 8.8
er millio		Sulfate (SO ₄)	2.2	3.0	4 4	1.8	1.2	4. 1.	1.6	2.6	, e,
rts p		bon- ate (CO ₃)									
in pa	Bi-	car- bon- ate (HCO ₃)	29	33	37	20	16	19	27.5	88	36
yses,	É	tas- stum (K)	0.5		- 4	20.00	2.4	o. (ν. io	9.	. o.
al anal		Sodium (Na)		9.9	5.6	3.1	4.6	6. d	n 60	5.3	7.6
Chemic		mag- ne- stum (Mg)	1.4	2.0	1.6	6.	1.1.2	o. ,	1.6	1.1	1.8
		Cal- cium (Ca)	5.0	5.0	4.0	0.4	3.0	e	0.0	5.0	0.9
		Iron (Fe)									
		Silica (SiQ ₂)	19 20	8	19	15	13	14	412	19	22
		Mean discharge (SiO ₂) (cfs)	594 408			2,500	6,050 3,600	2,560	1,490	710	452 419
		Date of collection	July 18, 1960	Sept. 13	Nov. 8	Dec. 5. 1961	Feb. 7.	Apr. 7	May 9	July 11	Aug. 8

COWLITZ RIVER BASIN--Continued

14-2430, COWLITZ RIVER AT CASTLE ROCK, WASH.

LOCATION.—Temperature recorder at gaging station, at highway bridge in Castle Rock, Cowlitz County. 2.5 miles downstream from Toutle River, and 14 miles upstream from mouth.

DRAINGE AREA.—2, 238 square miles.

RECORDS AVAILABLE.—Chemical analyses: October 1958 to September 1959.

Reter temperatures: August 1950 to September 1961.

EXTREMES. 1960-61.—Water temperatures: Maximum, 68°F Aug. 3-5; minimum, 38°F Jan. 4-7.

EXTREMES. 1950-61.—Water temperatures: Maximum, 75°F July 28-30, 1958; minimum, freezing point Jan. 29, 30, 1951.

(Temperature (°F) of water, water year October 1960 to September 1961

ſ	ļ																		l			-				ŀ					ŀ	
															Д	Day																Amorno
1 2 3		3		4	5	9	7	80	6	0	-	12 1	3	1 1	15 1	16 1	17 1	8	6	20 2	21	22	23	24	25	26	27	28	29	30	31	nverage.
58 58 58 58 58	58	58 58		58	57 56	57	57 5	57	555	53 5	52 5	52	51 51 51 51		52 5 51 5	53 5	53 5	54	54	24	53	53	53	53	53	53	52	50	7 64	L 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	47	53 53
47 47 46	44			4 6	4 4 25	4 4 4	7 7 7		7 7 7 7 7 7	4 4 4 4 4 7	4 4 4 4 4 4	7 7 7 7 7 7	4 4 4 7 4 7	4 7 7 7 7 7 7 7 7 7 7	43 4	643	4 4 4 4 4	t 3 t 3	4 4	43 43	43 4	7 7	45 4	45	45	45	45	41	42 4	7 7	11	4 4 4 3
43 43 43	4 43			4 43	43	43	45	417	417	4 T	45 4	7 2 4 7 7	43 4	43	43	41 4	42 4	45 4	42 4	7 7	41 4	104	0 7 0 7	00	000	410	4 1 1 7	t 1 4 1	41 6	1,3	9 9	42
40 40 40	0 0 0			39	39	39	3 6 6	0,0	417	4 T T T T T T T T T T T T T T T T T T T	41 4	417	41 41		43 4	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	4 4 7 7 7 7	43 4	43 4	43 43	43	4 2 2	45	45	45	45	4 4 55	2 4 50	45	4 5 5 5	45	45
45 45 45	45			45	4 4 55	4 5 5	4 2 4	2 4 2 2 2	454	45 4	45 4	45	45 4	45	45 4	45 4	45 4	45	45 4	45	454	45	45 4	2 4 5 5 5	45	4 5 5	2 2 2	45	11	11	11	45 45
46 46 46	9 7 9 7		.0 .0	94	94	94	9 4 9	94	7 9 4	94	4 9 4	94	4 9 4	94	4 9 4	7 97	7 9 7	94	4 6 4	47	47 4	47	47 4	t 4 4 7	47	47	4 6 6	9 7	9 7 9 7	9 4 9	47	94
47 47 47	47	-	~ ~	47	4 6	46	4 6 6 4	9 4 9	4 9 4	4 6 4	45 4	45 4	45 4	45	45 4	46 4	4 9 4	94	464	2 4 5 5 5	45 4	4 5 5 5	44	4 4 52	46	9 4 9	44	47	64	200	11	9 9 4
50 50 4	50		4 9 4 8	64	49	8 4 8	0 4 4	6 4 6	51	51	51 5	51	51 5	52	54 5	55	55 5	55	55	55	5 2	54	52	52	53	53	533	533	53	52	52	52 51
54 55 5	5.5		5 2	55	55	54	53	51	51	51	51 5	53	53 5	56	58	8 8	58	8 88	5 8 8	8 8	58	5.8	8 8	5.9	53	59	59	59	59	5.0	11	56 56
59 69	260		90	61	09	09	09	99	9 09	60 6	63 6	63	65 6	65	65 6	65	65 6	65	65 6	6.5	65 6	65	65	65	65	66	99	99	99	66	65	64
66 67	66		68 67	89	68	67	67	99	999	66 6	999	99	9 99	99	9 9 9 9 9 9	99	65 6	65	9 69	99	999	65	65	65	65	65	65	6.5	79	49	49	99
49 49 ····			63	63	63	63	63	63	63	63	63 6	62 6	62 6	62 6	62 6	62 6	62 6	62	62 6	61	60	29	0. 80	58	57	57	57	57	56	2.6	11	61

14-2450. COWEMAN RIVER NEAR KELSO, WASH.

LOCATION. --Temperature recorder at gaging station, 3 miles downstream from Goble Creek, 3.8 miles southeast of Kelso, Cowlitz
County, and 7 miles upstream from mouth.
DRANGE AREA. --119 square miles.
RECORDS AVAILABLE. --mater temperatures: July 1950 to September 1961.
EXTREMES, 1960-61. --Water temperatures: Maximum, 80°F July 12; minimum, 36°F Jan. 27.
EXTREMES, 1960-61. --Water temperatures: Maximum, 82°F July 27, 28, 1958; minimum, freezing point on several days during winter months.

July 1950 to September 1961. Maximum, 80°F July 12; minimum, 36°F Jan. 27. Maximum, 82°F July 27, 28, 1958; minimum, freezing point on several days during winter

Temperature (°F) of water, water year October 1960 to September 1961

	Average	53	4 4 6 2	244	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	44	2 4 4 5	7 4 4	4.9	2,82	65	71 65	96
	3	0.74	11	99	2 4	11	8 4 4	11	2.5	11	74	9 \$	11
	3	44	4 4	33	2 6 4	11	44	\$ 4	53	4.2	2 9	8 4	54
	29	574	4 4	4 4	6 4	11	47	0.4	58	57	72	2 4	55
	28	52	4 2	4 4	37	6 4	3 3	51	40	61	8 4	68	5 4
	27	88	6 4	6.4	36	4 4	4 4 3	4 4	¥ %	62 58	67	69	55
:	26	20	4 5 6 6	64	38	4 4	4 4 4	4 5 5	52	62	74	63	52
	25	52	45	33	4 0 4	4 3	4 5	4 5 5	58	12	73 63	69	5 4
	24	52	4 4	4 4	43	4 4	4 5 5	4 4 6	57	51	69	63	52
	23	₩. 4	44	3 3	39	11	4 4 6 4	6 4	40	69 61	6.5 6.5	69	56
	22	54	9 9	9 9	39	4 4	4 to	£ 4 £ 3	20 0	59	71	74	56 53
	21	4.6	4 9 4	1,04	404	4 4	45	2 4 2 4	54	58	4202	4,00	55
	20	4%	4 4 4 7 4	43	42	9 4	9 4	44	54	67	76	74	59 57
	61	22	6 6	4 7	5 3	4.6	4 4 0 10	4 %	25	63	92	4 %	59
	8	40	0. 60	4.4	24	6.6	47	7 4	2.58	12 99	49	L \$	61
	7	42	0.00	39	2 2	4 6	6 4	50	51	6,9	5 4	2.2	62
Dav		42	844	37	4 4 2 2	4 4	2 4	50	20	72	71	62	58
"	15	503	7 9 4	37.3	454	2 4	\$ \$ \$ \$	0.4	55	6.10	68 6	69	286
	4	0.4	7 9 4	44	4.5	2 4	2 4	0 1	51	58	920	12 89	60
	2	0.04	4 4 4 4	2 4 4	43 4	4 4	2 4	4 4 4	84 4	4 4 6	727	73 7	57 6
:	12 1	0.74	7 9	2 2	4 6	4 4	47	49	49	53	9 0 2	75	63
	=	24	8 4 4	38 4 4	4 4 4	4 4 4	45 4	4 4	0 9	54 6	77 8	75 7	59 5
	10												-
	6	51 49	49 44	37 38 37 37	43 43	45 45	44 43	49 44	49 49	56 56	71 73 62 63	72 74 65 65	62 63 56 59
	8												
	F.	57 54	44 46	38 38 37 37	444	44 44	44 44 44	48 48	49 49	52 54	65 68 57 58	74 69 65 66	63 62 58 56
	9	2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4	38	4 4 4	4 4 5 5	2 4 3	4 4	5 4 6	5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	57	7 65	3 6
	3	3,5	4 4 7	43	39	3 °	45	45	4 5	69	63	17 67	63
	4	34	2 4	£ £	37		45	7 64	4 4 6 %	5 6	63	69	2 6
	က	5.5	4 4 0 0	4 ¢	3.8	11	45	48	4 6	5.0	69	78	59
	2	57	6 4	4 4 7 0	4 6	44	4,2	44	47	58	69	77	3 g
	-	85.72	50	4. 5.	404	4 5 6 8	44	44	4 4 8	45.0	65	75	59
		::	::	::	::		::	::	::	::	::	::	::
	Month	October Maximum Minimum	Maximum . Minimum .	88	mum num	Maximum .	Maximum .	April Maximum . Minimum .	Maximum . Minimum .	Maximum .	Maximum .	Maximum . Minimum .	88

ELOCHOMAN RIVER BASIN

14-2475, ELOCHOMAN RIVER NEAR CATHLAMET, WASH. (Formerly published as Elokomin River near Cathlamet)

LOCATION: --Temperature recorder at gaging station, 125 feet upstream from railroad bridge, 2.5 miles northeast of Cathlamet,
Wahkiakum Courty, and 4.5 miles
DALIMER AREA.--65.8 square miles
RECORDS AVAILABLE.--Water temperatures: June 1950 to September 1961.
RECORDS AVAILABLE.--Water temperatures: Maximum, 75°F July 11, 12; minimum, 39°F Dec. 8-10, Jan. 3-5.
KETRERS, 1960-61.--Water temperatures: Maximum, 75°F July 11, 12, 1961; minimum, freezing point Feb. 17, 1956.

Temperature (°F) of water, water year October 1960 to September 1961

9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 446 46 48 47 47 47 49 50 50 51 52 50 52 52 52 52 51 50 50 50 6 47 46 47 51 47 47 47 47 47 47 48 49 50 51 52 50 52 52 52 51 50 50 50 6 1 7 46 47 51 47 47 47 47 48 49 50 51 52 50 52 52 52 51 50 50 50 6 1 7 46 47 51 47 47 47 47 48 49 49 50 51 52 50 52 52 51 50 50 50 6 1 7 46 47 61 47 47 47 47 47 48 49 49 49 49 49 47 47 47 48 49 49 49 49 49 49 49 49 49 49 49 49 49				1											, ac	٦		1												
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 31 47 47 49 49 50 50 50 50 50 50 50 50 50 50 47 46 47 47 47 47 49 48 50 50 50 50 50 50 50 50 50 50 50 50 50				-		-	- 1									Zay		L	ļ		-			-	1	-	ļ		Ĺ	Average
46 49 50 50 50 50 50 51 52 54 54 54 54 54 55 52 52 52 52 52 52 52 52 52 52 52 52	2 3 4 5 6 7	3 4 5 6	5 6	9	9	7		œ	٥	0	=	12	13	<u>-</u>	15	16		_	-	_		22	_		_	_			 _	9
46 46 46 46 47 46 47 46 47 46 47 46 47 46 46 47 46 46 47 46 46 47 46 46 47 48 48 47 46 46 47 46 46 47 46 46 47 46 46 47 46 46 40<	58 57 57 56 56 57 57 55 55 55 54 53 56 54	57 5 6 56 57 55 5 4 53 56	56 56 57 54 53 56	57 56	57 56	57 54		51.5	49		4 4 7 4		0.04		53				52				2,4	 52		50		50	 50	53 51
37 38 42 45 42 42 42 37 37 39 42 44 44 3 41 40 40 40 40 40 40 40 40 40 40 40 40 40	50 49 48 45 44 43 44 49 48 45 43 42 42 42	48 45 44 43	45 44 43	43	43			3 4	4 4		4 4		46	7 4 4 6	7 4 7 4		4 4		4 4		7 4		7 4 4	 4 7		43		4 4 2	 11	4 6 7
4.5 4.6 4.6 <td>45 46 46 45 43 41 38 45 45 45 43 41 38 37</td> <td>46 45 43 41 45 45</td> <td>45 43 41 43 41 38</td> <td>43 41 41 38</td> <td>41 38</td> <td></td> <td>····</td> <td>38</td> <td>37</td> <td></td> <td>38</td> <td></td> <td>4 4 2 2</td> <td></td> <td>37</td> <td></td> <td>39</td> <td></td> <td>4 4</td> <td></td> <td>14 9</td> <td></td> <td>4 4</td> <td> 3 3</td> <td></td> <td>4 4</td> <td></td> <td>3 3</td> <td> 33</td> <td>45</td>	45 46 46 45 43 41 38 45 45 45 43 41 38 37	46 45 43 41 45 45	45 43 41 43 41 38	43 41 41 38	41 38		····	38	37		38		4 4 2 2		37		39		4 4		14 9		4 4	 3 3		4 4		3 3	 33	45
45 45 44 44 45 45 46 44 43 43 44 46 46 46 46 47 43 43 42 42 42 43 43 43 42 44 45 45 45 46 44 43 43 43 44 46 46 46 46 46 46 46 46 46 46 46 46	41 41 40 39 43 44 44	40 39 43 44 44 38 37 39 43 44	39 43 44 44 37 39 43 44	43 44 44 39 44	44 43 44 43	11		4 4	4 4		4 4		4 4 9 9		4 5 5				43		4 9		39	 7 0 4		38		4 0	 4.5	43
42 42 42 44 45 45 45 46 47 46 45 46 46 46 46 46 46 46 46 46 46 46 46 47 47 47 48 44 44 45 45 45 44 45 45 45 46 45 45 45 46 45 45 46 45 46 46 46 46 46 46 46 46 46 46 46 46 46	45 44 45 46 46 46 49 44 43 44 44 45 45 45 44 44	44 45 46 46 45 44 44 45 45 45	45 46 46 45	46 45 45 44	46 45 45 44	4 5 4		4 4	3 \$		2 4		4 4	4 4 4 4	4 4 4 5		4 4 8		44		4 4 4		33	 4 4		43		11	 11	4 4 4 4
47 45 46 45 46 46 46 47 47 47 44 45 45 45 45 46 46 46 46 48 51 50 49 47 45 46 45 46 46 47 47 47 44 42 43 42 43 42 43 45 45 45 45 46 48 51 50 49 8 47 50 49 48 51 55 56 57 58 60 59 54 52 50 50 45 51 52 50 50 49 87 58 57 60 56 56 61 64 67 70 72 73 71 69 67 66 68 69 70 71 68 62 51 51 50 50 50 57 73 77 80 79 76 75 71 70 73 76 68 68 70 66 69 69 73 74 70 68 72 75 75 58 57 70 72 70 71 70 73 76 76 88 87 70 76 65 64 63 67 67 67 68 69 69 70 71 68 62 69 69 70 71 68 68 69 69 70 71 69 69 69 69 70 70 70 69 69 69 69 70 70 70 69 69 69 69 70 70 70 69 69 69 69 70 70 70 69 69 69 69 70 70 70 70 70 70 70 70 70 70 70 70 70	44 43 42 42 42 43 44 44 63 42 42 42 42 43 44	42 42 42 43 44 43 42 43	42 42 43 44	43 44 42 43	43 44 42 43	4 4 6			4 &		4 5		4 4		2 4 4		4 4		4 4		2 2 2 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		4 4	 4 4 5 5		4 4		47	 48	4 4 4
49 50 49 48 51 55 56 57 58 60 59 54 52 54 57 58 57 54 54 59 50 50 69 69 51 52 50 50 51 51 52 54 57 54 54 58 57 54 54 58 57 50 50 52 53 52 52 52 50 50 69 51 51 52 59 50 50 52 53 52 52 52 50 50 69 51 51 52 59 50 50 52 53 52 52 52 52 52 52 52 52 52 52 52 52 52	48 48 47 47 48 48 48 47 47 47 43 42 44 43 47	48 47 47 48 48 47 43 42 44 43	47 47 48 48 43 42 44 43	4 4 4 4 4 4 4 4 4 3	4 4 4 4 4 4 4 4 4 3	4 4 8 6			4 6		47		4 5		504				4 4				4 4	 4 4		4 4		50	11	47
56 56 61 64 67 70 72 73 71 69 67 66 68 69 70 71 68 62 61 61 64 67 57 55 55 55 55 55 55 55 55 55 55 55 55	49 49 47 46 48 47 49 49 48 47 46 45 45 46 46 47	47 46 48 47 49	46 48 47 49	48 47 49	47 46 46 46				4 4		0.4	64	4 4 6 4	51	55		57		52		52			 51		500		58	 52	53
7.3 7.7 80 7.9 7.6 7.8 7.1 68 69 7.3 7.4 7.0 7.2 7.5 7.1 7.6 6.5 6.4 6.3 6.7 6.7 6.6 6.5 6.4 6.3 6.7 6.7 6.6 6.8 7.0 7.7 7.4 7.4 7.4 6.5 6.4 6.3 6.7 6.6 6.8 6.5 6.9	55 58 59 59 60 55 52 54 54 55 55 54 57	64 65 63 62 59 59 59 60 55 52	65 63 62 59 59 60 55 52	63 62 59 60 55 52	62 59 55 52	52			58		54		4.0		70		73		63		58		63	 		58		61	 11	58
74 75 72 73 71 69 67 70 71 74 74 74 74 69 65 69 65 69 68 70 68 66 64 64 65 65 67 65 63 61 63 61 62 64 64 64 64 63 64 61 60 61 62 61 59 59 59 56 56 56 56 55 55 55 55 55 57 75 75 75 75 75 75 75	65 69 69 68 63 60 65 68 60 60 62 63 60 57 57 58	69 68 63 60 65 62 63 60 57 57	68 63 60 65 63 60 57 57	63 60 65 60 57 57	60 65 57 57	57			71		77		79		75				76				6.68	 63		20		72	 74	71
63 64 63 64 61 60 61 62 61 59 59 59 56 56 56 56 55 55 55 55 55 54	55 77 78 73 71 74 74 69 66 68 69 69 67 65 65 65	78 73 71 74 74 69 69 67 65 65	73 71 74 74 69 67 65 65	71 74 74 67 65	74 74 65 65	74			72		75		73 68		69		70		74				69	 69		61		20 49	99	71
	54 60 59 66 66 64 63 62 59 58 57 59 63 58 58 56	59 66 66 64 63 57 59 63 58 58	66 66 64 63 59 63 58 58	66 64 63 63 58 58	64 63 58 58	63 58							64 57		58		-		59		_			5 42		55		52	 <u> </u>	96

GRAYS RIVER BASIN

14-2505. WEST FORK GRAYS RIVER NEAR GRAYS RIVER, WASH.

LOCATION: --Temperature recorder at gaging station, 1 mile upstream from mouth, and 3.2 miles northeast of town of Grays River, Wahkiakum County.

Mahkiakum County.

DRAINIGE AREA.--15.2 square miles.

RECORDS AVAILEMELS. --Water temperatures: June 1950 to December 1958, August to September 1961.

EXTREMES, 1950-58.--Water temperatures: Maximum, 69°F July 27, 28, 1958.

i	90000	verage	ı	ŀ	59	2
	•	; 				
		31	3 61		53	1
		30	83			
		3 29	65		54	
		28	65		56	
		27	63		55	21
		26	63	59	54	51
		25	63	28	26	
=		24	62	90	55	20
196		23	61	29	25	51
ber		22	99	28	57	51
tem		21	99		28	
Ser		20	67		58	
\$		19	65	28	58	
gust		18		28	19	
Temperature (°F) of water, August to September 1961		2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1	ł	61	
ter,	Day	16	- 1	1	61	
Z A	-	15	1	1	28	
9		7	I	1	59	
°.		13	1	!	61	
ure		12		T	62	22
rat		=	1	1	62	
edine		10	1	Ť	62	
ř		6	1	1	61	
		8	İ	i	61	54
		^	- 1	1	61	_
		9	1	i	61	22
		5	;	1	62	
		4	Ť	i	63	
		8	1	1	28	
		2	$\dot{}$	÷	59	22
		_	1	1	8	22
					:	:
	March	MOREI	August Maximum	Minimum	Maximum	Minimum

NEHALEM RIVER BASIN

14-3010. NEHALEM RIVER BELOW FOSS, OREG.

LOCATION: --At county bridge, 0.4 mile downstream from Foley Creek, 2.5 miles west of Foss, Tillamook County, and 6.2 miles downstream from gaging station. DALINAGE AREA.--667 square miles upstream from gaging station.

RECORDS AVAILABLE. --Chemical malyses: August 1860 to September 1961 (discontinued).

REMANKS.--Minor inflow between gaging station and sampling point except during periods of heavy local runoff.

Tur-bid-1ty 0202000 De-ter-gents (ABS) 1288282 ö Col-86 7.4 86 7.3 63 7.1 49 7.1 51 7.2 1.7.2 Ħd To-Specific tal conduct-(micromhos at 25°C) ance 눥 ity as H+1 000000 000000 Noncarbon-Hardness as CaCO, mag-nesium ctum, 2 4 8 2 4 2 20144 1019 1019 1019 Fluo- Ni- Phos- Dissolved ride trate phate (residue (F) (NO₃) (PO₄) at 180°C) 288211600 Chemical analyses, in parts per million, August 1960 to September 1961 0.05 2.09.74 @ 10 CO 41 CO ---9 -----0.448444 Chloride T 10 00 00 00 to 00000000 500000 0,0,0,0,4,€,00 4.000.000 Sulfate (SO₄) 88004840 S S Se Se ate (HCO₃) Bi-car-bon-34 24 17 19 16 16 15 20 20 32 35 35 (NHV) 0000 Am-mo-n tum Pot-tas-Sium (K) 0.8 1.1 6. ru∵ru 4.∞ o o 0.00.00.4.6. 6.6.4.4.0.0 6.0.2.7.0.0 Sodium (Na) 1.3 4.1 8. 7. 68.09.11.19.19.19 sium (Mg) Mag-ne-0 7 5 6 4 4 5 5 0 5 5 0 Cal-cium (Ca) 0.64.4.0.7. Manga-nese (Mn) Iron (Fe) Alu-mun (Al) Silica (SiO₂) 4113134 1124 113 Mean discharge 6,400 11,400 2,070 2,280 491 219 94 1,400 5,330 2,750 9,110 (cfs) Oct. 26.... Nov. 29.... Dec. 28.... Jan. 10, 1961 Mar. 7.
Apr. 5.
May 9.
June 6.
July 3. 1960 Date of collection 30° Aug. 3 Sept. Oct. 2 Nov. 5 Feb.

WILSON RIVER BASIN

14-3015, WILSON RIVER NEAR TILLAMOOK, OREG.

LOCATION.—At bridge, on State Highway 6, 0.1 mile upstream from Little North Fork, 0.9 mile downstream from gaging station, and 5.2 miles east of Tillamook, Tillamook County Station.

DRAINAGE AREA.—1615 square miles upstream from gaging station.

RECORD ANALIALIAL.—Chemical mailyses: August 1960 to September 1961 (discontinued).

REMARKS.—No appreciable inflow between gaging station and sampling point except during periods of heavy local runoff.

ļ		Tur- bid- ity	ه	0	ıc)	S	0	10	ıo	z.	0	0	0	0	0
ł	ģ	gents b	1	¦	1	1	1	1	1	0.0		00			
		or Section 1		-	-	_		-	-	0					
		<u>у</u>	7.8	9.7	7.4	7.1	7.5	7.2	7.3	48 7.2	7.3	7.3	7.1	7.4	9.7
	Specific conduct-	ance (micro- mhos at 25°C)	74	29	61	55	51	47	45	48	48	20	63	99	74
	F 12	as H+1													
	Hardness as CaCO ₃	Non- car- bon- ate	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hard as C	Cal- cium, mag- sesium	24	24	20	17	17	14	14	15	16	16	20	22	24
	Dissolved	solids esidue 180°C)	47	47	45	46	38	41	36	38	39	40	46	22	22
196	Phos-	phate (r) (PO4) at	;	0.01	.04	90.	90.	90.	.05	.03	. 02	.02	. 17	.03	10.
September 1961	ž	(NO)	0.2	Ξ.	9.	₹.		7	23	87	۲.	۳.	2	۲.	۲.
to Sep	Fluo-	ride (F)	0.0	0.	۲.	Τ.	0.	0.	0.	0.	7	7	Ξ.	Ξ.	٦.
1960	:	Chloride (C1)		3.2	'n	e,		2	2.0	3.0	2.0	2.2	2.0	2.5	4.0
parts per million, August		(SO ₄)	2.6	2.4	3.4	2.4	2.0	2.0	9.	1.8	2.0	2.4	2.4	2.8	3.8
111		G # G	4	34	9	4	4	_	- 01	22	2	3	_	4	4
per n	- FS														
arts		<u> </u>		!	0.0	٥.	_	۲.	۰.	•	٥.	٥.	۳.	٥.	۲.
in p	Pot-	sium Sium (K)	0.2		_		٥.	_	-:	_		°.		_	
Chemical analyses, in	:	Sodium (Na)		4.0					3.1	3.4	3.1	3.4	4.2	4.6	4.8
cal a	Mag-	sium (Mg)	1.8	1.5	1.2	1.0	œ.	ů.	6.	1.2	6.	E.	1:1	1.7	1.7
Chemi	2,	ctum (Ca)	6.5	7.0	6.0	5.0	5.5	5.0	4.5	4.0	5.0	6.0	0.9	6.0	7.0
	Man-	ga- nese (Mn)													
		(Fe)													
	Alu-	mun (Al)			_	_									
		Silica mi- (SiO ₂) num (Al)	12	12	12	14	13	12	13	14	12	13	14	14	12
	Mean	discharge (Sid (cfs)	117	92	1,190	1,850	1,090	3,010							
		of collection	Aug. 30, 1960	Sept. 29	Oct. 26	Nov. 29	Dec. 28	Jan. 10, 1961	Feb. 8	Mar. 7	Apr. 5	May 9	June 6	July 3	Sept. 28

SILETZ RIVER BASIN

14-3058. SILETZ RIVER NEAR SILETZ, OREG.

LOCATION.--at Ojalla bridge, on State Highway 229, 1.5 miles downstream from Thompson Creek, and 2.9 miles north of Siletz, Lincoln County. RENGORS AVALLARE.--Chemoical analyses: August 1911 to August 1912, August 1960 to July 1961 (discontinued).

		Tur- bid- ity	0	0	0	ß	0	0	2	2	0	0	0	이
	اع ا	ter- gents (ABS)		ł	1	1	1	1	1	0.02	.01	8	8	8
		or B												
		Hď	1 1	7.0	7.1	40 7.3	7.3	7.1	7.0	40 7.1	7.1	6.9	7.3	7.3
		ance (micro- mhos at 25°C)	59	9	63	40	44	41	38	40	42	42	48	23
	다 캠	achd- ity as H+1		_	_	0	_	_		_	_	_	_	_
	Hardness as CaCO ₃	Non- car- bon-								0				
		Cal- cium, mag- nesium				2				10				
		solids (residue at 180°C)				37				32				
1.9	Phos-	trate phate (NO ₃) (PO ₄)	-	0.01	.02	. 04	.02	.03		. 02				- 1
y 19	ž	ride trate (F) (NO ₃)(1.7	1.1	1.2	1.1	1.3	9.		?	-
o Jul	Phio-	ride (F)	0.0	0	٥.	Τ.	Ξ.	Τ.	0.	Τ.	۲.	Τ.	0.	구.
960 t		e E	3.8	4.0	3.5	3.2	3.5	3.2	3.0	8.2	3.0	3.0	3.0	3.5
18t 19	;	Chlori (CI)												
on, Augu		Sulfate (SO₄)	1.4	2.4	2.6	1.2	1.4	1.2	2.0	2.0	1.4	1.6	2.5	2.4
1111	ţ.	G at 6		"	_	_	_			_		_	_	
per m		bon- ate (HCO ₃	32	26	×	14	17	17	77	14	16	16	22	73
arts	Ā	moinm (NH4)	-		0.1	٥.	°.	Ξ.		٥.	_		_	•
tn 1	Pot-	tas- stum (K)	9.0			щ.		<u>.</u> .		۳.			9.	4.
Chemical analyses, in parts per million, August 1960 to July 1961	;	Sodium (Na)	4.2	4.6	3.6	3.0	3.6	3.2		3.3				
ical s	Mag-	sium (Mg)							7.	∞.	9.	?	® .	1.3
Среп	Cal-	cium (Ca)	4.5	4.5	4.0	3.0	3.5	3.0	3.0	3.0	3.5	4.0	4.0	4.0
	Man-	ga- nese (Mn)												
		Iron (Fe)												
	Alu-	mum (Al)												
		(SiO ₂) mm (SiO ₂) mm (Al)	11	11	9.7	01	11	10	9.8	10	10	10	11	12
	Mean	discharge (Si (cfs)												
		of	Aug. 30, 1960	Sept. 26	Oct. 25	Nov. 28	Dec. 27	Jan. 10, 1961	Feb. 6	Mar. 7	Apr. 4	May 9	June 6	July 5

ALSEA RIVER BASIN

14-3061. NORTH FORK ALSEA RIVER AT ALSEA, OREG.

LOCATION.--Temperature recorder at gaging station at Alsea, Benton County, 0.2 mile upstream from bridge on Lobster Valley Road, and 0.7 Mile upstream from confluence with South Fork.

DALINGE ATERIA.--S. Square miles.

EXTREMES 1.946-61.--Water temperatures: March 1988 to September 1961.

EXTREMES 1.966-61.--Water temperatures: Maximum, 75°F July 12; minimum, 41°F Jan. 3, 4.

EXTREMES 1.966-61.--Water temperatures: Maximum, 76°F July 27, 22, 1985, minimum, 39°F Feb. 14, 1959, Feb. 29, 1960.

March 1958 to September 1961. Maximum, 75° Puly 12; minimum, 41°F Jan. 3, 4. Maximum, 76°F July 27, 58, 1958; minimum, 39°F Feb. 14, 1959, Feb. 29, 1960.

1961	
September	
ţ	
1960	
year October	
year	
Water	
water,	
of	
(F)	
Temperature	

						-	d mp	emperarure	n Le	(1)	5		MALCEL		Water year		Terono	3	POGT	3		September	Tag	1001							
Ment				•											Day	Α.														4	Asserance
Month	-	2	3	4	5	9	7	8	6	101	-	12 1	3 14	1 15	91 9	17	18	19	20	21	22	23	24	25	26	27	28	29	30 3		verage
October																							,	- 1	-						:
Minimum	9 60	5.50	55	9.0	2 2	50	550	5 2	53	25.4	50	49	52 49 48 48	2 G	9 56	52	50.00		50	5 5 4	53	56	2 2	53.5		52	525	52 49 49	0 t 4 0 t 4	2 6	52
	2			9									04					,	~	9	9		5	9				4			9
Minimum	5 5	200		2 4		- 4	_	0 00	_		500	2 0		4	8 50	15	10	4	9	4	, 9		10	9	2 4					1	64
December			_					_		_		_		_	-			: 9	_		: }		:			_			_	_	: :
Minimim	4	. 0	2 9) d	9 4	0 4	4	: 4	1 6	: 3	_	0 1	40 44	4 4		-	2 4	• •	; ;	4	• 4	9 4	- 4	- 1	•	0 4	2 4	1 4	2 4	: :	. 4
January				2 9		. :												: :		? !	? :		; ;	; ;			-			, ,	? !
Maximum	*		_	7		D		P		_				2 (2 :		P	•	_	÷ :	•		÷ :		_	_	•	-	_	·	
February	43	7 4	7	7	63	-	# # #		4 10 4	4 4	* 80 *	84	48		_			\$	9	\$	4	ş	ę	‡	٠	‡ -	-	9	•	•	9
Maximum	50		6,4	64		50	_	_					4 6 4					4		6	8	84	84	47	14		_	i	<u>'</u>	-	64
Minimum	8	64	64	64	64	84	7 1 7	89	48	64		48	48 49	84	8 48	47	4	47	6	48	4	47	47	9	94	7 2 4	-	1		1	48
March		_				-			_	_							_								-			_			
Maximum	8			7		_	48	84				48 4	64 64		9 48	-		\$		4	2	51	20		_	_		51.5	51 5	52	49
Minimum	84	74	94	94	9	46			124	9	4 9 4	_	48	6.8		84	4	4	4	7	6		\$	47	7	7	9			•	47
April Maximum				25		53		25										47		47	8		51							-	52
Minimum	50	52	3	47	48	14	48	6,	4 6 4	7 84	49	20	49 47		50 51	27	7	4	9	47	9	4	47	47	8	84	20	51	- 25	1	64
May Maximum	53	52	51	51	50	21		25			51	51						61		55	\$	54	57	58							5
Minimum	51	20	6,4	84	64	20	64	20	50	20		7 64	49 50		51 52	53	\$	55	5	53	23	2	20	25	53	25	2	52	53	53	51
June Maximum	49		63	49	09	62		99						69	-02		67	67	67	99		67	69	69						- 1	49
Minimum	26	28		86		22	3	55	3	53	545	55	55 57	_	_	99		19		2	20	9	19	62	62	59	28	57	- 26	1	28
July		-											_		_												_			_	
Maximum	99	67		62	3	29	*9	- 29	69	0,	_	- 22	72 71			_		73		7	=	7.1	2	7		2	-	_	<u>-</u>	-12	69
Minimum	29	9	5	9	_	21		20			9 2 9		_	5 64	4 65	63	9	99	99	99	29	69	49	4	65	_	63	63	-	80	63
August	7.	7	1	1	<u>.</u>	1	- i	-	- ;	-;	'	<u>'</u> 	_ <u>}</u>	-	- 1	!	1	-	-	1		}	ŀ	ŀ	1	1	-	-	-	-1	1
Minimum	. 4			1	_	-	_	-	_	_						_	_	ł		ŀ			ŀ	1	-	ŀ		-		-	1
		-		-		-	-	_		-		-		-			_	_		,			-		-	_	-		-	_	1

14-3062. SOUTH FORK ALSEA RIVER NEAR ALSEA, OREG.

LOCATION .-Temperature recorder at gaging station, 0.8 mile upstream from confluence with North Fork, and 1.1 miles south of

April 1958 to September 1961.
Maximum, 73°F July 12, Aug. 3; minimum, 39°F Dec. 9.
Maximum, 76°F July 27, 26, 1958; minimum, 35°F sometime during period Dec. 31, 1959

Ç

Temperature (°F) of water, water year October 1960 to September 1961

ı	<u>u</u>	ı											
L.	Average	53	47	44 43	4 4 4 4	47	44	50	54	4 8	62	6 4 9	61
	31	50	11	41	47	11	50	11	53	11	70	66 64	11
	30	47	47	0,4	47	11	46	52	53	63 55	63	63	57
	29	51	44	41	4 t 4 t	11	49	51 50	55	60 56	68 61	68	57
	28	52	4 5	43	44	47	4 8	52	57	61 57	67 61	67	57
Ì	27	52	4 6 5	4 4 3	43	47	47	50	56	64 59	68	66	60
	26	53	L 4 4 0	4 2 2	43	4 4 5	8 4 4 0	50	53	69	69	63	57
	25	53	4 4 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7	4 4 4 5	43	4 4	4 6	50	57	69	69	99	59
	24	54	44	444	44	4 0 0 0	6 4 8	4 5	50	68	68	65	58
	23	55	4 4 6 4	44	44	4 6 6 4 5	50	9 4 4	53	67	69	69	57
	22	56	4 5	44	43	47	50	47	53	67	70	69	58
	21	53	44	4 4 4 4	44	48	4 4 4 6	4 6	53	99	72	72	60
	20	54	44	427	44	8 4 4	47	46	54	99	71	71	60
	6	52	t 4 4 6 4	47	4 6	8 4 9	44	2 4	54	62	71	2 4 9	55
ŀ	18	52	4 9	46	9 7 7	4 5	4 4 0 0	4 4 0	54	6 4	70	63	59
	17	53	20	4 6	47	4 t t t t t t t t t t t t t t t t t t t	47	51	5 8	71	69	68	57
Day	92	52	6 4 8	4 4 0	4 4	44	47	52	57	71	1- 49	66	59
	15	50 4	4 t 8 t 5 t 5 t 5 t 5 t 5 t 5 t 5 t 5 t 5	4 4 6	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 8	4 4 4 7	53	56	69	63	63	59
	7	4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	4 4 5 5 5	46	48	4 4 4 4 7 4 7	8 4 4	64	52	58	6 4	6.5	60
	73	6 4 9	4 4 5 5	4 4 5 5	4 6 2 2	47	44	50	50 48	53	72	72	62 56
	12	4 4 7	4 4 0 0	2 4	9 4	4 4 4 4	8 † 4 6	51	0.4	54	73	70	63
	=	4 4 4 4 6	4 4	4 7	4 6	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 6 6 6	51	51	56	72	70	63
·	2	4 4 0 0 0	4 4 9 9	40	9 4 9	8 4 9	4 4 2	50	51	5.08	69	71	53
	٥	51	444	39	9 4 9	48	4 5	50	52	57	68	29	62 56
	8	53	9 4 4	40	4 6	47	47	50	51	58	66 58	70	61
	7	53	4 4 9	42	4 4 6	4 4	4 4 7	51	50	54	63 56	71	52
	9	52	6 4 9	43	9 4	6 4 9	4 4 5 5	50	50	59	59	71	58
	5	52	43	4 4 6 3	44	6 4 8	44	50	64 4	61	61 59	70	64
	4	52	45	9 4 4	41	48	44	51	47	58	62	71	99
	က	5.6	4 4 5 2	44	0 4 0	48	4 4 4 5	53	50 4 8	58	65	73	59
	7	53	50	44	0 0 0	8 4 8 9	4 5	54	51	58	99	71	63
	-	5.2	50	44	4 1 4 0	4 4 5 2	47	52	52	56		70	64
	<u> </u>	::		::	::	::	::	::	::		::	::	::
3.6	Month	October Maximum Minimum	November Maximum Minimum	Maximum Minimum	January Maximum Minimum	rebruary Maximum Minimum	March Maximum Minimum	April Maximum Minimum	May Maximum . Minimum .	June Maximum Minimum	Maximum. Minimum.	August Maximum Minimum	September Maximum Minimum

14-3066. DRIFT CREEK NEAR SALADO, OREG

LOCATION. --Temperature recorder at gaging station, 0.3 mile downstream from Cape Horn Creek, 4.1 miles southwest of Salado, Lincoin County, and 8.6 miles southeast of Toledo.
DALINGA AREA. --20.6 square miles.
RECORDS AVAILABLE. --7 ater temperatures: October 1965 to September 1961.
RETUREMES 1960-61.--7 mater temperatures: Maximum, 74°F July 12; minimum, 39°F Jan. 3, 1960.
RETUREMES 1966-61.--7 mater temperatures: Maximum, 74°F July 12, 1961; minimum, 38°F Mar. 3, 1960.

October 1958 to September 1961. Maximum, 74° F 101y 12; minimum, 39°F Jan, 3. 7°F F July 12, 1961; minimum, 38°F Mar. 3, 1960.

1961 weter year October 1960 to Sentember Temnerature (°F) of water.

14-3067, NEEDLE BRANCH NEAR SALADO, OREG.

LOCATION.—At gaging station, 500 feet upstream from mouth, 4.6 miles southwest of Salado, Lincoln County, and 8.5 miles southDRAINGA ARRA.—32 square miles.

RECORDS AFAILERE.—Water temperatures: October 1968 to September 1961.

Settliment records: November 1988 to September 1961.

SETIRERES, 1960-61.—Water temperatures: Baximum, 617 F Aug. 29, 31, Sept. 1; minimum, 417 Jan. 3, 4.

SETIRERES, 1960-61.—Water temperatures: Maximum daily, 220 ppm Nov. 24; minimum, 4117 no flow on many days during October, August, and
Sediment concentrations: Maximum daily, 220 ppm Nov. 24; minimum daily, no flow on many days during October, August, and

September.
September.
Sediment loads: Maximum daily, 15 tons Nov. 24; minimum daily, 0 ton on many days during October, August, and September.
Sediment loads: Maximum daily, 15 tons Nov. 24, 1960; minimum daily, no flow at times during August to October.
Sediment concentrations: Maximum daily, 220 ppm Nov. 24, 1960; minimum daily, no flow at times during August to October.
Sediment loads: Maximum daily, 15 tons Nov. 24, 1960; minimum daily, 0 ton at times during August to October.

						Ē	Temperature	rati		.E		of water, water year October 1960	er,	wat	er	year	0ct	ope	r 19		to S	epte	inbe.	September 1961	61						
, A															Day	λî															Average
Month	-	2	ო	4	5	9		80	6	0	=	12	3	4	5 10	16 17	7 18	19	, 20	2	1 22	23	24	25	26	27	28	29	30	31	Avelage
October Maximum	it.	56		r.	5.4	26	5.6	53	5.2	0	50	2.	50 49		49 52	5.5	2 52	51	1 52	52	E 1	54	50	5.2	52	52	52	5	64	51	52
Minimum	25	54	24	_		_	_	_	_					_	8 7	_	_				_			_	_	21		6	4,	64	51
November Maximum	5.1	50		6,4	4 8 4	47			47 5			4 6 7			50 50	_			_							4.7	4	9.4	46	-1	64
Minimum	50	64	47	47	47 4	7 9 7	47 4	47 4	4 9 4	47	4 6 4	7 67	48 47	-	48 50	_	67 09	64	6 4 6	49	6 4 6	64	4 9	4	47	46	4	46	4.5	l	48
December	4.6	46	46	4.6	4514	7 7 7	43 4	43 4	4 2 4	7 77	45 4	46	46 47		47 46		47 48	4.8	4	47	46	4.5	4.5	46	4 6	4.6	4.5	77	43	77	4.5
Minimum		46		4.5					_	_				_	45 45		_	_	_	_	_	_		_		45		43	43	43	4.5
January	44	42	, ,	4.2	4 2 4	- 4	4 A 4	47 6	474	7 67	4 0 4	4.8	48 49		64 64		6.4	4.8	47	47	46	46	4	46	4.5	4.5	4.5	47	4.8	4	47
Minimum	42	42		4.1	424		47 4	7 14	47 4	_	4 8 4	_	48 48		67 67		_	_	7 47	_				_		44		4 5	47	47	94
February	6 4	84	¢,	6.4	4 6 7	- 64	- 8 4	47 74	4 6 7	64	4 6 4	48	48 48		48	8 47	7 47	4.7	- 4	48	84	4.8	- 4	47	4.7	47	47	- 1	_1	1	8 7
Minimum	4.7	8 4	6.4	4.9	484	6.4	47 4	7 44	47 4	6 7	48	4 8 4	48 48		48 47	7 47	7 47	47	7 47	8 7	8 4 8	40	4.7	4.7	4	47	4,7	1	1	1	8 7
	4	α 7	4	47	7 4	- 4	47 4	7 7 7	47.4	7 47	7 2 7	7 47	47 48		48		4 4	4	4.7	4.7	4.8	4	4	47	47	4.7	4	4.7	8,4	4	4.7
Minimum	47	8 4		4.7	47 4					_				_			_		_									4	41	48	4.7
April	64	20	C.	_	4.8	47	47 4	7 24	474	47 4	4 8 4	4 8 4	47 47	_	48 48		48 46			4 6	4 6	46	4	46	4.7	47		48	48	;	47
Minimum	48	64	47	4.5	45 4	45	45 4	7 24	47 4	47 4	46 4	47 4	46 45	_	46 47	_	46 42	4.2	2 44	4.5	9 4 9	46	4	4.5	45	4	4.7	84	84	1	46
May Maximum	64	48		47									_				_	52						50				50	50	51	64
Minimum	48	84	47	9+	474	6 4	47 4	7 44	4 8 4	48	4 8 4	4 8 4	48 48	_	48 49	_	20 20		1 51	50	64	4 9	4 8	4 8	64	4.0	4 6	64	20	20	64
June Maximum	52	52	£ 5	53	53	53	52 5	52	51 5	2.6	51 54		54 55		57 58		58 57	55	5 54	55	5 55	55	53	57	5.5	55	4 6	53	55	11	46
Maximum	55	56	5.5	55	5.5	4 6	55 5	8 6	57 5	57	59 6	58 5	58 57 58 57		58 58		58 59	58	9 59	59	5 6	59	5.6	58	5.7	5.8	5 8	57	58	58	58
August Maximum	5.6	8.5	0,0	9.0	0.00	5.0	578 5	5.8	59 57	57	5 t r	0 K	58 59		2 2 2 2 3 8 3 5 9 5 9 5 8 5 9 5 9 5 9 5 9 5 9 5 9 5 9		59 59	58	59	5.8	58	69	58	58	58	59	59	61	966	61	58
September Maximum Minimum	60	60	57	59	59.5	56	55 5	55	57 5	5.8	57 5	56 5	56 56	-	56 56 55 56		57 57 56 56 56	55	5 56	5.5	5 5 5 5 5 5	53	52	54	53	53	54	52	53 51	11	77.77. 73.75.

14-3067. NEEDLE BRANCH NEAR SALADO, OREG. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported, loads are estimated.)

		остовы	R		NOVEMBER	₹		ECEMBER	
1		г	ded sediment		-	ded sediment	-		ded sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	0		0	9.9		т	1.3		T
2	• 1		Ţ	.7	==	I	1.1		l I
3	•1		T 1	•5 •4	==	T T	1.3 1.5	3	T T
5	:1		į į	:4		į į	1.5	0	Ť
6	•1	3	т	-3		Т	1.4		т
7	• 5	11	Ţ	•3	4	Ī	1.2		l I
9	•2 •1	12	T	•2		Į Į	1.1		T T
10	.1		i	3.2	57	s 0.8	.9		Ť
11	•2		т	3.4	14	•1	•9		т
12	• 1		T	1.6	C 4	Ţ	-8		Ţ
13	• 1 • 1		T	1.2	C 4	T T	•7		T T
15	.1	==	Ť	7.8	66	J 1.6	.6		Ť
16	•1		т	6.1	12	• 2	.7		т
17	0 1		T O	6.8 8.0	37 23	J •9	•9 3•0	3	B 0.1
19	Ö		0	4.5	6	.1	3.6	5	T
20	ő		ŏ	4.6	7	:î	2.2		Ť
21	0		0	5.3	5	.1	1.7		т
22	0		0	4.5	3	, ,	1.4		Ţ
23	•3 •1	10	T	8.7 22	220	S 1.3 J 15	1.2		T T
25	.1	==	Ť	15	80	s 3.6	1.0		Ť
26	• 3	12	Ţ	5.6	12	В •2	1.0	1	Ţ
27	*6 1.2	9	T T	3.2 2.2	C 3	T .1	• 9		T
29	• 5		i i		C 3	i	.8		T
30	•3	 8	Ţ	1.4	C 3	т	.7		T T
Total	6.1		0.1	122.8		24.8	37.7		0.3
		JANUAR'		12200	FEBRUARY			MARCH	
1	0.7	0	ı	2.5	5	т	7.5	20	A 0.4
2	.6		i i	2.6	9	в 0.1	6.5	3	в •1
3	•6		Ţ	2.5	4	<u> </u>	4.6		•1
5	.6 2.1	13	A 0.1	2.4	C 1	T T	3.5 6.1	14	B •1
6	8.8	48	S 1.2	2.6	C 1	т	8.0	8	•2
7	5.6	12	•2	2.6	C 1	Ţ	6.3	5	•1
9	3.9	3 0	Ī	2 • 2 7 • 8	C 1 52	J 7 2.3	4 • 8	2	T T
10	3.3	0	T	24	114	S 7.8	4.5	5	•1
11	2.2		т	13	33	1.2	7.2	9	• 2
12	2.0		т	8.5	16	B •4	5.6	2	T
13	2.3		В т	15 9.0	59 23	A 2.4	8 • 8 9 • 3	28 21	J •8
14	4•7 4•0	12 6	B •2 B •1	9.3	17	•4	5.9	12	B •2
16	5.3	8	В •1	6.8		•2	4.2	7	в •1
17	4 • 4		т т	5.1		• 2	3.0	3	т
18	3.0		T	4.2		•1	2 • 4	2	T ,
20	2 • 2 1 • 7		T T	3.9 5.2	9	•1	3 • 4 5 • 2	11 9	B •1
21	1.4		т	6.6	14	A .2	4.0	5	в •1
22	1.2		T	6.7	15	B • 3	3.0	C 5	Ī
23	1.1		Ţ	4.6	6	B •1	2 • 6 2 • 3	C 5	T T
25	• 8		T T	5.6	4	•1	2.0	C 5	į į
26	• 7		т	4.8	С 3	т	2.8	C 5	Ţ
27	• 7		Ī	4.6		Ţ	3.5	C 5	Ţ
28	•6 1•0		T T	4.0	C 3	т	3 • 2 2 • 5		T T
30	1.2	2	'T			==	1.9	C 5	į į
	2.2	9	B .1				1.6		l t
31	3.2	,							

S Computed by subdividing day. T Less than 0.05 ton. A Computed from partly estimated-concentration graph.

B Computed from estimated-concentration graph. C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

14-3068. FLYNN CREEK NEAR SALADO, OREG. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported, loads are estimated.)

		остовея	2		NOVEMBE	₹		0	ECEMBER		
-			ded sediment				sediment			ded se	diment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Fons per day
1	0.2		T	1.8			1	5.3	3		T
2	• 2		T	1.4			Ţ	4.6	3		Ţ
3	•2		Ţ	1.1	ں 		T I	4•7 4•6	4	1	0 • 1 T
5	• 2		T	.8			Ť	4.6	1		Ť
6	•3	4	т	•7			1	4.2			T
7	1.4	15	A 0.1	•7	U		Ţ	4 • 1		(Ţ
8 • •	•7 •4	==	T T	•6			T	3.9 3.6		1	T T
9	• 4		't	4.7	30	s	0.7	3.4			Ť
11	•5	7	т	5.7	14	s	.3	3.3			T
12	• 4	6	Т.	3.4	6	В	•1	3•1			T
13	• 3		T	2.9	4		Ţ	2.8		ļ	Ţ
14	•3		T	4.5 14	59	1	⊺ 2•2	2•7 2•5			† T
1.			т	15	17		•7	2.6		Į	т
16	• 2 • 2		' <u>'</u>	18	36	J	2•4	3.5	6	A	•1
18	•2	2	1	23	31	S	2.1	8.5	2∪	В	• 5
19	• 2		T	14 14	13 19	А	•5	8.7	6		T - 2
21	• 2		7	15	27		1.1	7.2			т
22	• 2		T	14	10		•4	6.1			T
23	•6		T	22	96	s	7.7	5 • 2			T
24 • • 25 • •	•5 •4	6]	55 45	365 136	S	58 18	4•5 4•0			T T
- 1	1.1	5	, T	22	53	В	ا• اد	3.8	2		т
26 • •	1.1		<u> </u>	13	22	8	•8	3.4			ř
28	2 • 8	8	•1	10	10	ļ .	• 3	3.1		!	1
29 • •	1.5		Ţ	7.3	3	В	•1	3.0			T T
30	1.0 1.1	4	T	6.4		1		2 • 8 2 • 9		İ	Ť
Total	17.6		0.3	337.5			99.4	137.7			1.4
		JANUAR'	Y		FEBRUAR'	Υ			MARCH		
1	2.6	2	Т	6.2	11	E	0.1	21	26	В	1.5
2	2 • 4		T	7.1	9	E	•1	21	15	В	• 9
3	2 • 4		1	7•2 6•7	 5	E	•1 •1	16 14	6 2	B	•3
5	2 • 4 4 • 5	14	A 0.2	6.2	- -	-	.1	16	13	ь	•6
6	16	51	J 2.5	6.8			•1	25	10		• 7
7	15	15	•6	6.8		1	•1	21	2	ь	. • 1
8	12 10	9 7	B •3 •2	6 • 2 18	65	J	•1 6•7	16 14	U	İ	T T
10	9.0	6	•1	59	200		32	15	7		• 3
11	8 • 2	6	B •1	39	78		8•2	22	15	ļ	• 9
12	7.5	5	B •1	29	41	В	3.2	19	7	ь	• 4
13	8.0	6	A •1	42	74 45	1	8 • 4 '	24	82 74	J	6 • 4 5 • 8
14	14 14	17	B •6	30	27		2.2	20	26	В	1.4
16	15	14	в .6	27	17	В	1.2	15	8	В	• 3
17	14	11	В •4	20	9	В	•5	11	2	В	- 1
18	11 9.0	8	B •2	15 14	2 1	В	,·1	9•2 10	8	В	† •≥
19	7.4	4	E .1	16	5		• 2	13	4	Ь	•1
21	6.2		.1	21	14	В	.8	11	2	В	•1
22	5.3		•1	23	20	В	1.2	10		i	Ī
23	4.7	4	E •1	18	12 8	В	•6	8 • 5 7 • 2	U		T T
24	4.1 3.7		T T	16 18	1		T	6.2		İ	Ť
26	3 • 4		т	16			т	8 • 2	2		т
	3 • 2		T	15	5	A	•2	11	2	1	• 1
27			1 7	14	1		т '	11			T
28	2.9	4						9.4			I
29	3•7 3•7	6	B •1 A •1					9•4 7•8			Ţ
28 • •	3•7		B •1	==				9•4 7•8 6•7			

E Estimated.
S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.

B Computed from estimated-concentration graph.

J Computed from partly estimated-concentration graph and subdividing day.

14-3068. FLYNN CREEK NEAR SALADO, OREG. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported, loads are estimated.)

L		APRIL			MAY		Ì	JUNE	
		Suspen	ded sediment		Suspend	led sediment		Suspend	led sedimen
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	5.8		T	3.0	C 4	Ţ	1.5		1
2	5.1		Ţ :	3.2	C 4	Ţ	1.4		Ţ
3	4.5	0	Ţ	3.1	C 4	î	1.4		1
5	4.0 3.7		Ţ	3•2 3•3	C 4	T T	1.3 1.3		Ţ
7	3.1	"	' '	3.0	}	'	1.0	1	
6	3.4		Т	3.4		т	1.4		T
7	3 • 2		Ť	3.3		Ť	1.2		T
8	2.9		T	3.3	U	Ţ	1.1		T
9	2 • 8		T	3.4		Ţ	1.1	4	Ţ
0	2•5	0	T	4.1	1	T	1.1		T
1	2 • 4		т	3.9		т	1.1		T
2	2 • 5		l T	3.8		Ţ	1.0		T
3	2 • 4		T	3.7		T	1.0	8	T
4	2 • 2		T	3.7		Ţ	• 9		Ţ
5	2 • 1		T	3.4	ú	T	•9		T
6	2.0		т	3.2		T	•8	4	T
7	2.0		Ť	3.1	(Ť	.8		T
8	2.3		Ì	2.8	0	Ť	.8		Т
9	2 • 2	8	T	2.7		Ţ	• 7		Ī
0	3.1		B 0.1	2.5		τ	•7		T
1	7.4	11	•2	2.4		T	.7	[T
2	6.7	7	B •1	2.2	2	τ̈́	. 7		Ť
3	5.4	5	B •1	2.2	ū	Ť	• 7		Ť
4	4 • 8	4	.1	2.0	1	T	•6		T
5	4.2		1	1.9		Ţ	•6		т
6	3.8		, , T	2.1	3	т	.6		1
7	3.4		Ť	2.0	(Ť	.6	2	τ
8	3.2		į į	1.8		Ť	.6		Ť
9	2.9	4	Ť	1.7	U	T	• 6	1	T
0	2 • 8		T	1.6		7	•6		т
1				1.5		Т	i		-
otal	105.7		0.9	87.5		0.3	27.8		v.
-		JULY			AUGUST			EPTEMBER	
-+					r		<u> </u>		
1	0.6		Ţ	0.3		Ţ	0.7	4	T T
3	•5	3	T	•2		T T	•5		Ť
4	•5		į į	.2		Ť	.3	0	Ť
5	.6	4	Ť	• 2		Ť	• 3	1	Ť
- 1		1		i	}	_			_
6	• 5		Ţ	•2		Ţ	•2		Ţ
7	• 5		Ţ	•2	0	T T	•2		T T
8	•5 •4		T	•2		÷	• 2		Ť
9 • •	•4	2	, t	• 2		Ť	• 2		Ť
- 1		1	l .				ľ		
1	•4		T	•2		Ţ	• 2	0	T
2	• 4		Ī	•2		Ţ	• 2		Ţ
3	• 4		Ţ	•2		Ţ	•2		Ţ
	•4		T	•2	0	T T	•2		T T
4			1	i • • •			i		
5	• 4	1		IF.		_			T
4 · · · · · · · · · · · · · · · · · · ·	•4		т	•3		T	•3		Ť
6 · · · · · · · · · · · · · · · · · · ·	•4	2	T	•3		T	• 2		
6 · · · · · · · · · · · · · · · · · · ·	•4	2	T	•3		T T	•2		Ţ
6 · · · · · · · · · · · · · · · · · · ·	•4 •4 •4	2	T T	•3 •2 •2	==	T T T	•2 •3 •2		т
6 · · · · · · · · · · · · · · · · · · ·	•4	2	T	•3		T T T	•2 •3 •2 •2		Ť
6 7 8 9	•4 •4 •4 •4	2 	T T	•3 •2 •2	 0	T T T	• 2 • 3 • 2 • 2		T T
6 7 8 9 0	•4 •4 •4 •4	2 	T T T T	•3 •2 •2 •2 •2	 0	T T T T	•2 •3 •2 •2 •3 •2		1 1 1
5 · · · · · · · · · · · · · · · · · · ·	•4 •4 •4 •4 •4	 	T T T T T T T T T T T T T T T T T T T	•3 •2 •2 •2 •2 •2 •2 •2	 0	T T T T T	•2 •3 •2 •2 •3 •2 •2	=======================================	T T T T
6 7 8 9 0	•4 •4 •4 •4 •4 •3 •3	 0	T T T T T T T T T T T T T T T T T T T	•3 •2 •2 •2 •2 •2 •2 •2	0 	T T T T T	•2 •3 •2 •2 •3 •2 •2 •2		T T T T T
6 7 8 9 0 1 2 3	•4 •4 •4 •4 •4	 	T T T T T T T T T T T T T T T T T T T	•3 •2 •2 •2 •2 •2 •2 •2	 0	T T T T T	•2 •3 •2 •2 •3 •2 •2	=======================================	T T T T
6 7 8 9 0 1 2 3 4 5	.4 .4 .4 .4 .4 .3 .3	 0	T T T T T	•3 •2 •2 •2 •2 •2 •2 •2 •2 •2 •2	0 	T T T T T T T	•2 •3 •2 •2 •2 •3 •2 •2 •2 •2 •2		T T T T T
4 5 7 8 9 0 1 2 3 4 5	.4 .4 .4 .4 .4 .3 .3 .3 .3	 0	T T T T T T T T T T T T T T T T T T T	.3 .2 .2 .2 .2 .2 .2 .2 .2	0	T T T T T T T	•2 •3 •2 •2 •3 •2 •2 •2 •2 •2		T T T T T T T T T T T T T T T T T T T
4 6 7 8 9 1 2 3 4 5	.4 .4 .4 .4 .4 .3 .3 .3 .3	 0	T T T T T T T T T T T T T T T T T T T	•3 •2 •2 •2 •2 •2 •2 •2 •2 •2 •2	0	T T T T T T T	.2 .3 .2 .2 .2 .2 .2 .2 .2 .2	0	T T T T T T
4 6 7 8 9 0 1 2 3 4 5 6 7 8 9	.44 .44 .44 .43 .33 .33 .33	2	T T T T T T T T T T T T T T T T T T T	.3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2	0	T T T T T T T T	.2 .3 .2 .2 .2 .3 .2 .2 .2 .2 .2 .2	0	T T T T T T T T
4 6 7 8 9 1 23 4 5 6 7 88 99 00	.4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3	0	T T T T T T T T T T T T T T T T T T T	.3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2	0	T T T T T T T T	.2 .3 .2 .2 .2 .2 .2 .2 .2 .2	0	T T T T T T T T
6 · · · · · · · · · · · · · · · · · · ·	.44 .44 .44 .43 .33 .33 .33	2	T T T T T T T T T T T T T T T T T T T	.3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2	0	T T T T T T T T	.2 .3 .2 .2 .2 .3 .2 .2 .2 .2 .2 .2	0	T T T T T T T T
5 · · · · · · · · · · · · · · · · · · ·	.4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3	0	T T T T T T T T T T T T T T T T T T T	.3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2	0	T T T T T T T T	.2 .3 .2 .2 .2 .3 .2 .2 .2 .2 .2 .2	0	1 1 1 1 1 1 1 1 1 1

T Less than 0.05 ton.
B Computed from estimated-concentration graph.

C Composite period.

14-3068.1. DEER CREEK NEAR SALADO, OREG.

LOCATION ... At gaging station, 1,000 feet upstream from mouth, 4.6 miles west of Salado, Lincoln County, and 6.5 miles southeast

DRAINAGE, "LO square nailes.

RECORDS AVELLEE. "Recer temperatures: Soytember 1958 to September 1961.

RECORDS AVELLEE. "As experiences: Soytember 1961 to September 1961.

RECORDS AVELLEE. "As experiences and the september 1961 to September 1961 to September 1962 to September 1963

Temperature (°F) of water, water year October 1960 to September 1961

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 15 15 15 15 15 15																Day	_													_	
93 56 57 57 57 57 57 57 57 57 57 57 57 57 57	Month	~	2	က	4	5	9	7	80		<u> </u>		-		-	-		_		\vdash	_	22		 	26	27	28	29	-		werag
9 5 5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6	October Maximum	53	54		52		5.3												51		51		53	5.2	51		51		0 3	51	51
2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	===	20	52		20		52										_		5.1		51		52	20	50		20		- 4	64	20
10 4 9 4 1 4 6 4 6 4 6 4 6 4 7 4 5 5 4 6 4 7 4 7 4 8 8 8 8 4 4 7 4 7 4 7 4 7 4 7	۶		_		47	_	_				_		_	_	-		_		4.8		48			7	8 7		47		47	1	8 7
4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1	8		-		94	_					_	_	_	_					48	_	4.7		_	4 8	8 4		47		r ₄	;	47
4.5 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4					2.5							_		_				_	4.8		47	_	46	46	4.7	_	46		10	4.5	94
4 4 4 4 4 5 4 7 4 7 4 7 4 8 4 8 8 4 8 4 9 4 9 4 9 4 9 4 9 4 9 4					47							_	_						4.8		7		4.5	46	9 7		4.5		5 2	4.5	45
20 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	anuary			_			_														4		4,8	47	4.7		4.7			8 7	8
4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8	Minimum		-	-	43												_		_		47		47	46	94	_	94			47	47
					α					_	_			_			_	_		_	- 3			, a	,		ď		-		or S
4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.9 4.8 4.8 4.9 4.8 4.8 4.9 4.8 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9			_		0 00								_	_					4 4		64		4 8	4 4	47		8 4		1	!	t 4 0
2		4	8.4		- 1					_													- 20	4	4		50		0,1	50	6 7
20 51 51 51 50 50 60 60 60 60 60 60 60 60 60 60 60 60 60	Minimum	8	89		47					_	_	_					_	_		-	64		49	4.8	9		47		84	6.4	8
1	April						-:	_	_	_	_				-					_				,	,		- (,
4 9 9 9 4 9 4 8 4 8 4 9 4 7 4 7 4 8 4 8 4 9 9 9 9 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9	Maximum	0 (2:		7 .		-		_			_	-		_		-		4 .		_	; ;	÷ .		÷ ;		-		, t
2	Minimum	4	<u>_</u>		-	_		_			_			_	_			_	_	_	4			4	4	0	o t	_		1	3
4 4 8 4 7 4 7 4 7 4 8 4 8 6 4 7 4 7 4 7 4 8 4 6 4 7 4 7 4 7 4 8 4 8 4 9 4 9 4 9 6 4 7 4 7 4 7 4 8 4 8 4 9 4 9 4 9 4 9 6 4 7 4 7 4 7 4 7 4 7 4 8 8 6 8 4 7 4 7 4 7 4 7 4 8 8 6 8 7 5 7 5 9 6 0 6 9 7 5 8 5 7 5 7 7 7 7 8 6 5 7 7 7 7 8 8 7 7 7 7 8 8 7 7 7 7 7 8 7 7 7 7 8 7 7 7 7 8 7 7 7 7 8 7 7 7 7 8 7 7 7 7 8 7 7 7 7 7 7 8 7	Maximum		64	_	48	_	8 7		_			_								_	50		_	49	64	49	64	_	64	51	64
	Minimum		8 4		47	_	47		_		_	_			_			_	_	_	32		-	4 8	64	48	48	_	54	64	48
13 55 52 52 52 52 53 53 53 53 54 55 54 53 51 51 52 50 51 52 52 52 52 53 51 52 52 52 53 51 52 52 52 52 52 52 52 52 52 52 52 52 52		1			55		- 75	_	53									_	- 20		-5			57	54	53	5.1		53	1	55
53 55 52 52 51 53 55 56 56 59 60 58 57 58 56 55 59 59 59 59 59 59 57 58 57 58 56 56 57 57 58 58 58 58 58 58 58 58 58 58 58 58 58	Minimum	1	1	_	53		53		51		_	_	_	_	_		_	_	54	_	5		_	52	25	90	50	_	84	1	52
31 50 52 51 50 49 48 50 50 50 50 50 50 50 50 50 50 50 50 50	July	:	4	_				_	4	_	_		_	_	_		_		-	_	_		_		7	ų	1		0	0	7 9
3 5 5 6 5 6 5 6 5 7 5 4 5 6 5 5 5 6 5 5 5 7 5 7 6 0 5 7 5 7 5 6 5 5 5 5 7 5 7 5 7 5 7 5 7 5	Maximum	0	2 1	_	7.	_	-		0 1	_	_	_	_		_		_	_	2	_	'n :		_	_	2	9 .	ñ .	_	0 1	0 :	? .
58 59 66 158 58 59 59 59 59 59 57 57 60 57 56 55 57 56 58 58 58 59 56 58 56 57 55 58 57 58 57 57 57 57 57 57 57 57 57 57 57 57 58 57 58 57 58 57 58 57 58 57 58 57 58 57 58 57 58 57 58 58 58 58 58 58 58 58 58 58 58 58 58	Minimum	2	25				64		20	_				_			_		~	_	2		~		4	54	45			55	5
57 56 56 56 56 57 54 54 54 56 55 56 57 57 57 58 57 58 57 59 57 59 57 57 57 58 57 57 57 58 57 57 57 58 57 57 58 57 57 58 57 57 58 57 57 58 57 57 58 57 57 58 57 57 58 57 57 58 57 57 58 57 57 57 58 57 57 57 57 57 57 57 57 57 57 57 57 57	Maximum	58	- 65		58		59		- 69				-	_					- 28	_	_			57	55	58	57		57	57	58
57 56 56 56 58 57 54 54 54 54 55 54 55 53 53 53 53 54 55 54 55 53 53 53 53 53 53 53 53 53 53 53 53	Minimum	53	55	_	99		54		54	_	_			_	-		_		54	_			_	53	54	54	53		- 24	56	55
10 10 10 10 10 10 10 10 10 10 10 10 10 1	September				0		· ·		Ý		_								_		-		_	-	0	ū	-		- 0		4
		7	0 :	_	0 1	_	:	_	1 0		_	_			_		_		_	_	_		_	7 .	; ;	7 5	1.5		-	_	1

14-3068.1. DEER CREEK NEAR SALADO, OREG. -- Continued

Suspended sediment, water year October 1960 to September 1961 (Where no concentrations are reported, loads are estimated)

-		OCTOBE	•		NOVEMBE	К			DECEMBER		
		Suspen	ded sediment		Suspen	ded sed	iment		Susper	ded	sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Te	ons er lay	Mean dis- charge (cfs)	Mean concen- tration (ppm)		Tons per day
1	0.3		Т	3.3	10	A	0.1	7.3	C 4		0.1
2	• 3		T	2 • 6	0		T		C 4		•1
3	•3		Ţ	2 • 2			Ţ	6+5	C 4		1
5	•3		Ť	1.7	==		Ŧ	6•7 6•7	1		Ť
6	.5	6	т	1.2		1	т	6.4			T
7	2.0	21	0.1	1.1			т ;	5.9			т
8	1.1		Ţ	1.0			Ţ	5.3			Ţ
10	•6 •5		T T	1.0 6.9	50	K	T 1.4	4.8 4.4	==		Ţ
11	•7	7	Т	9.6	11	A	•3	4.3		1	т
12	•7	8	T	6.6	7	A	.1	3.8			T
13	•6		T	5.2	3		T	3.6			Ţ
14	•5 •4	1 	T T	7•5 23	10 99	B S	•2 6•5	3.3 3.2			T T
16	.4		T	27	27		2.0	3.3			т
17	.4		т .	33	71	s	8 • 4	4.8	8	В	•1
18	.4	0	T	36	35	S	3.8	11	25	В	• 7
19	.4		T	18 20	13 14	A	•6 •8	15 11	c 3		•4
21	.4		т	21	7		.4		С 3		•1
22	• 4		T	18	4	1_	• 2		C 3	1	_•1
23	•9	13 8	J -1	36 85	122	S	16	6+3			Ţ
25	•8 •7	8	Ť	58	359 110	S S	87 19	5•4 5•1			T T
26	2.0	11	•1	28	32	A	2•4	5.0	1		T
27	2 • 3 4 • 6	4 7	, T	16 12	14	A	•6	4.4 4.1		į	Ţ
29	2.6		T*1	9.6			•1	3.9			÷
30	1.8		ļ į	8.4	3	A	.1	3.7			Ť
31	2.1	4	T					3.9			Т
Total	29.7		0.6	500.3			150.2	181.9		L,	2 • 1
		JANUAR			FEBRUAR				MARCH	_	
2	3.5 3.2	C 1	T T	11 12	6 C 2	A	0.2 .1	34 30	34 23	K A	3.4 1.9
3	3.2	c i	ļ ;	11	C 2		.1	21	9	Â	•5
4	3.2	č i	Ť	10	C 2	İ	.1	17	7	A	• 3
5	6.6	15	B 0•3	9.6	C 2	ĺ	-1	24	24	J	2.0
6	32	50	A 4.3		C 2		•1	41	34		3.8
7	24	16	1.0	11	C 2 C 2	l	•1	28	13	١.	1.0
9	15 13	c 3	A .4	9•7 32	C 2	s	20	21 18	11	Α	•6 •4
10		c 3	:1	94	229	s	61	20	ŕ	A	.4
11	11	C 3	•1	54	72		10	32	17		1.5
12	9•8 10	C 3	A •1	40	35 83	A B	3•8 15	25 44	6 52	A	7•4
13	20		A •2	65 46	34	Р	4.2	49	38		5.0
15	19		1.2	44	32		3.8	31	18	А	1.5
16	24		1.2	36	22	A	2.1	22	12	Α	.7
17	19	24	E 1.2	25	14	1.	•9	16	8	A	•3
18	14 11	17	1 • 2 A • 5	20	9	A	•5 •5	12 14	6 15	В	• 2
20	9.2	14	A •5	19 24	23	<u> </u> ^	1.5	19	10	6	•6 •5
21	8 • 2	9	A •2 A •1	37	26	A	2.6	15 12	6	A E	•2
22 • • 23 • •	7•1 6•5	5	A -1	25 23	15 C 4	^	1.0	112	4	[=	•1
24	5.8	1	T T	21	C 4		•2	10 9.2			•1
	5•2			l			•3	12	7		•2
26	4 • 8 4 • 5		T T	20	C 4		•2	16	8		• 3
	4.3		T	18	C 4		•2	14			•1
28							1	11		1	.1
29	5.8	7	A •1								
28	5.8 6.2 11	7 3 12	A •1	=	==			9•4 8•2		E	•1

E Estimated.
S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.

B Computed from estimated-concentration graph, C Composite period. J Computed from partly estimated-concentration graph and subdividing day.

K Computed from estimated-concentration graph and subdividing day.

14-3068.1. DEER CREEK NEAR SALADO, OREG. -- Continued

Suspended sediment, water year October 1960 to September 1961--Continued (Where no concentrations are reported, loads are estimated.)

			(where no con	centrations		orteu, losus	are estimat		
		APRIL		ļ	MAY			JUNE	
		Suspen	ded sediment		Suspen	ded sediment		Suspen	ded sediment
Day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1	7 • 1	C 4	0.1	4.2	4	T	2.0		т
2	6.4	C 4	•1	4 • 8		0.1	2.0		Ī
3	5.8	C 4	•1	4.9 5.3	5	€ •1	1.8		T
5	5.0 4.5		τ*1	5.8		i :i	1.7	0	į į
-			i						_
6	4 • 2		Ţ	5.9		·1	1.9 1.7		T T
7	3.9 3.5		Ţ	5.6 5.2	2		1.6		i
9	3.3		T	5.3		T	1.6	6	T
10	3.1	1	т	6.3	1	1	1.5		T
11	3.0		т	6.1		т	1.5		T
12	3.2		T	5.9		T	1.5		T
13	3.1		Ţ	5.5		T T	1.4		T T
14	2 • 8 2 • 6			5.3 4.7		<u> </u>	1.3		
		1		li .	1		ļ.		
16	2 • 6		Ţ	4 • 2		T T	1.3 1.2	3	T T
17	2.4 3.0		Ť	3.9 3.5	2		1.2		
19	3.1	4	T	3.3		T	1.1	4	T
20	4.8	13	A •2	3.1		T	1.1		T
21	13	24	J 1.0	2.9		1	1.1		T
22	12	10	A •3	2.7	3	T	1.1		T
23	9.0	6	A •1	2.8	4	Ţ	1.0		Ţ
24	7.3 6.1	4	A •1	2.6		Ţ	1.0		T T
			· -				ĺ		
26	5.1	C 3	Ţ	2.6		Ţ	.9		Ţ
27	4.3 3.8	C 3 C 3	T	2.6		T T	.9	4	T T
29	3.5	C 3	į į	2.3	2	į į	.9		1
30	3.5		T	2.3		T	•8	4	Ţ
31				2.1		Ť			
Total	145.0		2.8	126.5		1.3	39.9	+-	0.4
		JULY			AUGUST			SEPTEMBER	₹
1	0.8		T	0.5		T	1.0	5	T
2	•8		Ţ	-5		Ť	• 7		T 7
3	•8 •8		T T	•5 •5		Ť	.5 .5	0	;
5	.9	5	Ť	.5		Ť	.5		Ť
6	•8		т	.5		т		0	T T
7	•8	2	T	.4	0	T	.4		T
8	•7		Ţ	.4		Ţ	•4		Ţ
9	•7		T T	.4		T T	•4		T T
				1					
11	•6		Ţ	•4		T T	•4	0	T T
12	•6		T T	.4		+	.4		ļ ¦
14	•6		T	•4	0	T	•4		T
15	•6		T	.6		T	-4		, т
16	•6		т	.6		T	-4		. т
17	•6	0	T	.5		T	• 4		T
18	•6		Ţ	•4		Ţ	.4		T T
20	•6 •6		7	:4	==	T T	:4		Ť
21	•6		т	.4	0	T	.5		т
22	.5		T	.4		Ţ	•4		<u> </u>
23	•5		Ţ	•4		T	.4		T T
25	•5 •5		T T	.4	==	Ť	:4	0	Ť
26	.5		т	.4		т	.4		т
27	•5		T	.4		T	.3		T
28	•5		T	.4		T	-4	0	Т
29	•5 •5		Ţ	•4		T T	.4		T T
31	•5	0	Ť	.9		į į			
-+	19.4		0.1	14.0		0.1	13.2		т
Total			L	14.0		V.1	1,5.2		
Mot - 1	dischange	for von	n (ofc-days)						2 820 1

2,820.1 335.0

E Estimated. T Less than 0.05 ton. A Computed from partly estimated-concentration graph.

C Composite period.
J Computed from partly estimatedconcentration graph and subdividing day.

SIUSLAW RIVER BASIN

14-3076.3. SIUSLAW RIVER AT MAPLETON, OREG.

LOCATION. --At covered bridge, at Mapleton, Lane County, 0.1 mile downstream from Knowles Creek, and 0.5 mile upstream from Hadsoll Creek. RECORDS AVAILABLE. --Chemical analyses: August 1960 to July 1961 (discontinued). REMARKS. --No discharge records available.

l		Tur- bid- ity	0	0	0	ī,	0	0	2	20	0	0	0	اه
	De-	1 00 25	1	i	1	1	1	1	-	0.02	.01	00.	8	00
	-	or								<u> </u>	_			
		Hď	9		,	۲.	7.2	ζ.	7	7.0	'n.	۲.	۲.	6.9
		ance (micro- mhos at 25°C)	53	88	29	37	40	40	38	34	38	41	45	47
	眶염	ity as H ⁺ 1	L								_			
	Hardness as CaCO,	Non- car- bon- ate	0	0	0	0	0	0	0	0	0	0	0	۰
	Hard as C	Cal- cium, mag- nesium					10			80				
	Dissolved	solids (residue at 180°C)					39		32	32	35	35	37	36
	Phos.	trate phate (NO ₃) (PO ₄)a	0.01	. 02	. 04	90	. 02	.03	.04	.02	.02	.02	. 02	.02
1961	į	rate NO ₃)(0.2			. 5	=	1.1	80	.7	е.	S.	۲.	7.
July		ride t	0.0	0	0.	0.	т.	٦.	0.	٦.	7	٦:	٦.	링
0 to			5.0	4	5.2	3.2	3.2	2	3.0	2.8	3.2	3.0	3.2	2.2
t 196	į	Chloride (C1)		_										
Chemical analyses, in parts per million, August 1960 to July		(SO4)	2.2	4.6	1.4	1.6	1.2	9.	1.6	1.6	9.	0.1	1.2	4.
1110	₫.	g at g			_	_				_			_	1
er m	Bi-	bon- ate (HCO ₂)	2	55	2	7	15	:	14	14	16	17	13	20
rts	Am-	nium (NH 4)	1	1	0.1	0.	0.	•		0.				o.
in p	Pot-	stum (K)	1				. 3		9.	9.	₹.	4.	1.0	æ
alyses,	;	Sodium (Na)	4.8	11	5.0	2.8	3.0	e. 	3.2	3.2	3.3	3.7	4.1	4.1
cal an	Mag-	ne- sium (Mg)	1.3	1.9	1.2	7.	6.	6.	ů.	Ħ	œ.		'n	1.0
Chemi		cium (Ca)					2.5		3.0	3.0	2.5	4.0	4.0	3.0
	Man-	ga- nese (Mn)												
		(Fe)												
	Alu-	(A) II I									_			
		(SiO ₂) mum	11	- 11		=	12	=		01	=		=	2
	Mean	discharge ((cfs)												4
		of	Aug. 30, 1960	Sept. 26	Oct. 25	Nov. 28	Dec. 27.	Jan. 10, 1961	Feb. 6	Mar. 6	Apr. 3	May 9	June 6	July 5

COQUILLE RIVER BASIN

14-3249. SOUTH FORK COQUILLE RIVER NEAR POWERS, OREG.

LOCATION .-Temperature recorder at gaging station, 0.8 mile upstream from Hall Creek, and 7 miles southeast of Powers, Coos County.
DRAINGA REA.--32. Square miles.
RECORDS ATABLE S.-Water temperatures. November 1956 to September 1961.
EXTREMES, 1960-61.--Water temperatures: Maximum, 75°F July 12; minimum, 38°F Jan. 3-5.

		Ayerage	1000	54 53	44	44 43	44	47	4 6 5	50	55	67	70 66	70	61 59
			٠ ١	52	11	40	47	11	8 4 8	11	59	11	71	68	11
			93	50	64.9	104	7 4 4 7	<u> </u>	4 4 8	51	58	65	71	99	53
			29	52	44	42 4	7 9 7	$\frac{1}{11}$	7 4 4	51	20 65	65	71	69	54
0			28	53	4 %	43	9 4	4 4 5 5 6	4 7	51	60	66	71	69	57
1960	1		27	53 5	4 6 7 4 7 4 7 4 7 4 7 4 7	43 64	46	4 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	45.4	50.0	58	0 2 9	70	70 6	55
5			26	53	4 4 5 5	45	4 4 5	2 4	4 t U U	52	58	70	69	67	57
4	1961		25	54	4 9 4	4 3 4 4	43 6	442	4 2 4	50	5 8	70 2	0,49	63	56
Jan.	er		24	5.5	6 7 7	6 6	4 4	4 4 5 6	9 9	0 8 4	55	69	53	67	5.5
35°F	September		23	5.55	454	4 6 4 6 4 9 4 9 4 9	44 4 4 4 4 5	4 2 4	9 4 9 4	8 4 8 4 4 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4	56 5	69	63	69	56
			22	5.55	2 5	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	43	47	44	448	59	69	71	69	59
1 mm	\$		21	53.5	424	44	43	4 2 4	11	8 4 8 4	58.9	65	72 1	71 6	58
minimum,	1960		20	53	7 9 4	4 4 5	4 6 4	8 7 7	11	£ †	58	71	72 67	71	59
1958;			6	53	44	420	3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	47 4	ii	48 4	58	72 70	73	71	58
	October		8	53	47	2 4	9 4	2 4	4 4 4 4 4	48	58	73	72	71	60
٦.			17	53	4 8 4	7 2 2	9 4 9 4	46	456	53	5.5	73	72	7.1	59
Aug.	water year	Day	91	52	4 8	4 4 2	9 4 6	4 4 6 4	4 6 6	53	5.2	73	72	72	61
31,	ter	1	15	50	44	4 4	45	47	9 4 9	50	52	71	71	70	59
30,	- 1		14	52	4 6	4 4	4 4 5	47	46	50	52	6.5	72	70	61 59
July	water,		13	53	4 4 9	5 5 4 5 4 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5	44	47	9 4	50	51	63	73	71	62
5	of WE		12	53	47	4 6	3 3 3 3	t 1 t 9	4 4	51	51	64	7.2	71	63
16°F			Ξ	52	4 4	43	4 t u	44	4 4	51	6,0	62	73	70	63
Ì	(F)		2	53	4 8 4 6 6	43	44	64	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	51	52	62	71	72	61
Maximum,	ture		6	54	47	42	4 4	40	4 4 5	50	52	63	70	71	59
Ä	era		80	53	47	45	44	46	45	648	52	63	68	70	63
res	Temperature		7	5.0	47	45	4 43	47	4 4 5	47	50	63	66	72	64
temperatures			9	58	47	43	43	47	4 4 2	49	50	63	64	73	64
прет			5	57	4 4 6	43	38	47	4 5 5	4 4	50	99	99	70	63
			4	57	64	45	38	46	45	50	50	99	67	71	63
ate			က	58	51	45	38	47	45	50	50	65	69	73	62
#			2	59	53	45	39	47	4 5	51	51	63	69	71	63
1956-61Water			-	61 58	53	4 4 70 70	41	47	4 6	4 8	51	63	68	71	66
1956				::	::	::	::		::	::	::	::	::	::	::
EXTREMES, 1		Mank	MOIII		November Maximum . Minimum .	Maximum .	January Maximum Minimum	February Maximum Minimum	March Maximum . Minimum .	April Maximum . Minimum .	Maximum . Minimum .	Maximum . Minimum .	Maximum . Minimum .	9.5	Maximum . Minimum .

COQUILE RIVER BASIN--Continued

14-3250. SOUTH FORK COQUILLE RIVER AT POWERS, OREG.

LOCATION .--At State Highway bridge, 0.2 mile downstream from Woodward Creek, 0.6 mile north of Powers, Coos County, and 1.1 miles downstream from gaging station.
DRAINAGE AREA.--169 square miles upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: August 1960 to July 1961 (discontinued).
REMARKS.--Minor inflow between gaging station and sampling point except during periods of heavy local runoff.

١		Tur- bid- ity	ا	0	0	10	0	_					_	_
			-	1	1	1	1	1	1	02	01	01 3	00	170
	A	Col- ter- or gents (ABS)	_							0		_	_	_
		Hd.	9.0	8.2	9.7	9.7	7.5	9.7	7.5	7.5	7.4	8.3	8.0	8.4
	To- Specific tal conduct-	ance nicro- nhos at 25°C)	124	135	124	64	72	78	70	09	62	65	84	101
	F 를	ity (r			_	_						_		
	Hardness as CaCO3	Non- car- bon- ate	1	87	4	0	7	0	0	0	0	0	0	0
	Hard as C	Cal- cium, mag- nesium	48	54	52	26	30	31	28	24	24	24	34	40
	Dissolved	solids (residue at 180°C)					49		49	51	46	47	55	29
_	Phos-	phate (PO4)	0.11	. 07	.03	. 05	.03	.1 .03	.04	00	.03	10	.03	.07
y 196	ž		0.0	2	2	₹.	2	۳.	7	4.	۲.	Ξ.	0.	۲.
Jul	F 100-	ride (F)	0.1	-!	0.	Ξ.	0.	۲.	0.	۲.	Ξ.	0.	Ξ.	Τ.
Chemical analyses, in parts per million, August 1960 to July 1961		Chloride (C1)	4.2	4.8	4.2	2.8	3.2	2.5	2.2	2.8	2.0	2.5	2.5	3.2
on, Augu		Sulfate (SO ₄)	7.0	9.0	8.8	4.0	4.0	3.6	3.6	3.2	3.4	3.6	4.8	6.4
1111		\$ # B					9						0	
per 1	Bi-		4		9		36	m	E	Ñ	ñ	60	42	4
arts	Am-	mo- mium (NH4)		1	0.1	°.	°.	٠.	۰.	°.	٥.	<u>.</u>	°.	°.
tu i	Pot-	tas- sium (K)	0.5	.5	.5		٥.		_			_	4.	
nalyses,	;	Sodium (Na)	5.1	5.3	4.8	2.4	2.7	3.0	2.8	2.8	2.6	2.9	3.5	4.1
cal a	Mag-	sium (Mg)	6.1	7.2	7.1	3.2	3.6	4.2	3.6	3,3	2.8	3.3	4.4	4.7
Chemi	165	cium (Ca)	9.5	10	9.5	5.0	6.0	5.5					6.5	8.5
	Мап-	ga- nese (Mn)			_									
		Iron (Fe)												
	Alu-	mur (Al)												
		Silica mi- (SiO ₂) mm (Al)	9.5	9.2	9.3	11	12	11	11	10	11	11	12	12
	Mean	discharge (cfs)						515	866	2,990				74
		of	Aug. 29, 1960	Sept. 28	Oct. 26	Nov. 29	Dec. 27	Jan. 11, 1961	Feb. 7	Mar. 6	Apr. 4	May 9	June 6.	July 5

COQUILLE RIVER BASIN--Continued

14-3270. NORTH FORK COQUILLE RIVER AT MYRTLE POINT, OREG.

LOCATION: --At bridge on State Highway 42, 0.3 mile upstream from mouth, 0.4 mile north of Myrtle Point, Coos County, and 1.0 mile downstream from Llewellen RECORDS AVAILABLE. --Chemical analyses: September 1960 to July 1961 (discontinued).

		Tur- bid- ity	0	0	0	10	0	2	15	20	;	2	ıc	0
		ter- gents (ABS)	7	I	1	1	1	1	Ī	0.02		00.	8	00 .
		op p		_						_				
		Hď	7.1	7.0	7.3	6.9	7.0	7.2	9	9	ć	6.9	۲.	
	ശാ	ance (micro- mhos at 25°C)	126	132	120	51	26	22	51	44	53	53	63	72
	를 <mark>하</mark>	ity as H+1		_	_	_	0	_	_	0	_	_	_	_
	Hardness as CaCO ₃	Non- car- bon- ate									!	_	_	0
	Haro as C	Cal- cium, mag- nesium					16			12	1	15		
	Dissolved	solids (residue at 180°C)					48			36	1	43		
1961	Phos-	trate phate ((NO ₃) (PO ₄) at	0	. 15	. 12	.05	.01	.02	.05	.01	1	.03	.04	. 04
11y 1	Ž.	(NO ₃)	9.0	.5	4.	1.1	. 7	1.4	69	7	1	9.	7	.2
to	Fluo-	ride (F)	0.1	Ξ.	0.	۲.	Ξ.	٦.	0.	Τ.	1	۲.	٥.	.1
Chemical analyses, in parts per million, September 1960 to July 1961		Chloride (C1)	5.0	4.8	4.5	4.0	3.8	4.0	3.2	3.8	1	3.5	3.8	3.5
n, Septe	:	Sulfate (SO ₄)	5.2	3.4	5.6	3.0	3.0	2.8	3.0	2.4	1	2.8	2.8	3.6
1116		ate (Co)	2	4	6	80	22	2	_	2	_	_	<u></u>	_
per m		ate (HCO ₃	°				~	Ñ		_		21		
arts	Am-	mium (NH4)	!		0.1		•	°.	°. 	•	-	•	•	•
1n P	Pot-	tas- sium (K)	1.3	1.0	8.	.7	4.	9.	9.	.5	;	4.	1.0	1.0
alyses,	;	Sodium (Na)					4.3			3.7	1	4.3	4.9	5.2
cal ar	Mag-	sium (Mg)					1.2		1.1	. 7	1	6.	1.3	1.5
Chem1	- Le	cfum (Ca)	11	10	10	3.5	4.5	4.0	4.0	3.5	1	4.5	5.5	6.5
	Man-	ga- nese (Mn)												
		(Fe)												
	Alu-	(A)		_										
		Silica (SiO ₂)	10	11	10	=	12	12	12	10	L	11	12	12
	Mean	discharge (SiO ₂) mum (cfs) (Al)												
		collection	Sept. 20, 1960	Sept. 28	Oct. 26	Nov. 29	Dec. 27	Jan. 11, 1961	Feb. 7	Mar. 6	Apr. 4	May 9	June 6	July 5

ROGUE RIVER BASIN

14-3350. ROGUE RIVER BELOW SOUTH FORK ROGUE RIVER, NEAR PROSPECT, OREG.

LOCATION ---At gaging station, at County Road bridge, 0.5 mile downstream from Cascade Gorge, 3.1 miles downstream from South Fork Rogue River, and 6.6 miles southwest of Prospect, Jackson County.

		į	lur- bid- ity	0	0	0	00	0	10	0	00	0	0	-
	Ì		1 10/	T	-	1		1	0.00	00	38	00	00	8
	l		Col-		_									_
			рН		7	,	- 1				7.0			
		ശാ	ance (micro- mhos at 25°C)	9	.		99		26	20.1	54.0	48	62	67
		To- tal	actidity as H ⁺¹		_	<u> </u>	~ -		_	0	20	0	_	
		Hardness as CaCO ₃	Non- car- bon- ate		_									
			Cal- cium, mag- nesium				2 23				190			
	F	Dissolved	trate phate (residue (NO ₃) (PO ₄) at 180°C)				0.7				5 0			
	1961	Phos-	phate (PO4)	0.04	. 17			133	. 12	60	80.	. 08	13	.14
	empe	ž	(NO ₃)	0.0	0.	٦.			0	. 13		Τ.	Ξ.	Ŧ.
	Sept	Fluor	ride (F)	0.1	0.	0.0	5 F	! न	0.	0.		m.	٦.	• l
	million, August 1960 to September		(C1)	1.0	œ.	1.0	0 a	, rů	œ	œ (ů rů	. 2	00	8.
ċ	n, Augus		Sulfate (SO ₄)	1.4	1.2	н 0	н 0 с	10	. 2	9.	ο e.	4.	7	æ.
nued	1111		Co at e	6	6	0	50 tt		==	٠.	2 0	200		_
sconti	per m		bon- ate (HCO ₃	, m			38				3 22	_	_	
1 (dis	arts	A.	CNH (NH 4)	1		0.0	9.0	? ?	°.				0	_
196	t I	Pot-	tas- sium (K)	•							1.2			1.4
August 1960 to September 1961 (discontinued)	analyses, in parts per	;	Sodium (Na)								3.0			
) to S		Mag-	sium (Mg)	2.2	2.2	2.0	9 0	2 2	1.8	2.0	2.4	1.6	2.2	4.
st 196	Chemical	1.5	cium (Ca)	5.5	5.5	0.9		5.0	5.0	5.0	6.0	4.0	5.5	5.5
y. Augus		Man-	ga- nese (Mn)											
rounc yses:			(Fe)											
iles.		Alu-	mum (A1)											
are mismical			Silica (SiO ₂)	32	32	32	31	88	52	27	232	23	32	32
or Prospe 650 sq. ABLECh		Z Lesan	discharge (SiO ₂) mum (Cfs) (Al)					1,260			2,620			
Southwest of Prospect, Jackson County DRAINAGE AREA650 square miles. RECORDS AVAILABLEChemical analyses:		Date	no	Aug. 29, 1960	Sept. 7	0ct. 11	Nov. 14	Jan. 10, 1961	Feb. 27	Mar. 13	May 1	June 12	July 10	Sept. 11

ROGUE RIVER BASIN-~Continued

14-3375. BEAR CREEK AT CENTRAL POINT, OREG.

LOCATION —At Comestant bridge on Central Point Road, 0.4 mile east of Central Point, Jackson County, 2.0 miles upstream from Griffin Creek, and 4.3 miles DRAINAGE ARRA.—2899 square miles upstream from gaging station.

RECORDS.AAILABLE.—Chemical manayses: August 1960 to September 1961 (discontinued).

REMENDS.A.AILABLE.—Chemical inflow between sampling point and gaging station except during periods of heavy local runoff.

ı		i j v	10	5	ıc	0	0	ıc	0	0	0	ı.	0	0	Οĺ
		r-Tur- ts bid- S) ity	-	115	!	14	- 19	•							3 170
		gents (ABS)	Ľ	_	_	_	_		0.1	-	-:	-	-	90.	-
		- to	21	2	63	_	0	4		N	0	9	5	9	7
	<u>5</u> 7	at bH	8	224 8	8	7.	1.8	8.4	55	8	6	7.	5 7.	260 7.6	1.7
		ance (micro- mhos at 25°C)	23	55	52	20	31	26	78	22	55	20	20	26	35
	12 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -	ity as H+1	L	_	_	_	_			_		_		_	
	Hardness as CaCO ₃	Non- car- bon-		0							_			0	
	Har as (Cal- I cium, mag- nesium	96	88	86	76	119	105	105	106	96	82	83	111	146
1		solids (residue it 180°C	155	148	191	133	210	169	174	173	157	139	139	181	220
r 196	-sode	trate phate (NO ₃) (PO ₄)	0.26	. 53	. 44	76	.68	. 59	96	. 48	. 63	32	. 50	. 49	.36
ешре	ž.	rate NO ₃)	0,4		6	1.3	3.6	2.5	1.6	2.1	۲.	۲.	9.	1.5	4
o Sept	Fluo-	ride (F)		Τ.						.2				.2	
Chemical analyses, in parts per million, August 1960 to September 1961	:	(C1)	9.0	9.2	11	8.5	14	=	9.0	8.0	7.5	0.9	5.8	8.2	12
on, Augu		Suirate (SO ₄)	8.8	9.6	7.2	8.0	20	11	14	16	14	8.2	7.6	12	20
1111	්දී.	g # 8					_	4				-	_	0	_
per m		ate (HCO,	L			66	141	128	129				_	140	_
arts	Am-	n tum (NH 4)	1		0.0	•	°.	Ξ.	=			_		۰.	
in F	Pot-	tas- stum (K)	2.0	1.9	1.8	2.6	2.4	1.9	2.2	1.8	1.4	1.9	1.9	3.0	2.2
nalyses,	;	Sodium (Na)	14	14	12	12	18	12						14	- [
cal a	Mag-	sium (Mg)	8.0	8.5	8	6.9	10	8.6	9.1	8.8	6.9	7.1	6.9	10	13
Chemi		chum (Ca)	23	77	22	1.9	31	28						78	٦
	Man-	ga- nese (Mn)													
		(Fe)													
	Alu-	Mum (Al)													
		(SiO ₂) num	25	25	30	21	22	23	22	22	18	19	52	56	23
	Mean	discharge (Si (cfs)							86						
		of	Aug. 28, 1960	Sept. 6	0ct. 11	Nov. 14	Dec. 5	Jan. 9, 1961.	Feb. 28	Mar. 13	Apr. 10	May 1	June 12	July 10	Sept. 12

ROGUE RIVER BASIN--Continued

14-3666. APPLEGATE RIVER AT APPLEGATE, OREG.

LOCATION: --At bridge on State Highway 238, at Applegate, Jackson County, and 0.8 mile downstream from Humbug Creek. RECOMDS AVAILABLE. --Chemical manipages: August 1980 to September 1961 (discontinued). REMARKS.--No discharge records available.

	i	Tur- bid- 1ty	0	0	0	0	0	0	2	ıo	0	0	0	0	0
	De-	ter- gents (ABS)	1	T	1	1	T	T	0.01	10.	.01	. 01	8	0.	.0
		C01-													
		Hd	8.3						8.0	7.9	8.0	7.7	7.9	7.9	8.
	ശാ	(micro- mhos at	221	213	212	191	173	142	140	150	114	103	120	178	228
	-5 <u>E</u>	actid- ity as H ⁺¹		_	_	~	21	01	_	_	_	_	_	_	_
	Hardness as CaCO ₃	Non- car- bon- ate	_	_	_									-	•
	Harc as C	Cal- cium, mag- nesium	106	103	100	88	80	67	99	72	26	49	26	86	111
	Dissolved	solids (residue at 180°C)	129	126	126	117	111	87	06	26	77	71	74	115	138
1961	Phos-	phate (PO4)	0.03	. 05	.02	.04	.08	. 17	.04	.03	. 02	.04	.04	90.	01.
ember		trate (NO ₃)(0.2	0	6	3	6.	. 7	4	4	'n		4	9.	۲.
Sept		ride (F)	0.2	7.	٦.	۲.	7	٦.	г.	0.	7.	٦.	7	ਜ.	т.
t 1960 to September 1961		(C1)	3.2	3.5	4.0	3.5	2.5	2.0	1.0	1.5	1.0	ı.	1.0	2.0	3.00
million, August		Sulfate (SO4)		_				5.0	5.0	0.9	3.6	3.2	2.8	5.2	8.0
111		Co at e			0					0		_	_	0	
s per m		bon- ate (HCO,	12	12	122	=	6.	80		87			_		_
arts	4	(NH ₄)	Ľ	1	0.0	٠.	٠.	•		°.					
in p	Pot-	tas- stum (K)	L		6.			9.		_	<u>د</u> .		<u>«</u>	6.	
analyses, in parts per	;	Sodium (Na)	ις.	S.	5.2	4	ω.	ci.	2.4	3.1	2.1	2.0	2.3	4.1	5.9
	Mag-	sium (Mg)	9.4	8.6	8.5	7.5	7.8	6.5	6.2	7.3	5.3	5.8	5.8	7.6	9.4
Chemical	[5	cium (Ca)	27	25	56	23	19	16	16	17	14	10	13	22	53
	Man-	ga- nese (Mn)													
		(Fe)								_				_	
	Alu-	(Al)													
		Silica mi- (SiO ₂) mum (Al)	14	14	16	12	16	13	15	17	14	12	14	16	12
	Мера	discharge (cfs)													
	Date	of	Aug. 28, 1960	Sept. 6	0ct. 10	Nov. 15	Dec. 6	Jan. 10, 1961	Feb. 28.	Mar. 13	Apr. 10	May 1	June 13	July 10	Sept. 11

ROGUE RIVER BASIN--Continued

14-3704. ROGUE RIVER NEAR MERLIN, OREG.

LOCATION: --At Robertson Bridge, 0.2 mile upstream from Pickett Creek, 3.8 miles southwest of Merlin, Josephine County, and 15.5 miles downstream from gaging station.
RECORDS ANALARIE. --Chemical analyses: August 1960 to September 1961 (discontinued).
REMARKS.--No discharge records available.

ĺ		Tur- bid- ity	0	0	0	0	0	0	ı,	ī.	2	2	0	0	0
ł		Lerb terb gents 1 (ABS)	1	1	;	ţ	1	1	02	.01					
-		or t		_			_		0	_	_	_	_	_	\dashv
-		<u> </u>	7.4	8.2	<u>د</u>	9.	7 . 7	9	7.7	2 2	. 7	0.	œ.	9.	6.
	To-Specific	ance (micro- mhos at 25°C)	. 26	92	102	107	104	101	101	1 26	89	92	82 7	91	95 7
Ì	To-S	ity (ity H+1	_						_		_				!
		Non- car- bon- ate	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hardness as CaCO ₃	Cal- cium, mag- nesium	32	33	38	40	42	40	41	40	37	37	32	34	32
	Dissolved	solids (residue at 180°C)	7.7	92	81	98	82	18	80	92	74	7.1	63	80	80
1961	Phos.	phate PO4)	0.09	. 27	. 23	. 25	19	. 20	.17	10	60	. 11	.13	. 21	. 23
ember		(NO ₃)	0.0	Н.	es.	4.	. 7	4.	۳.	4	~		~	7	.2
Sept	- Oil	ride (F)	0.1	0.	0.	0.	۲.	۲.	۲.	٦.	F.	7	۲.	۲.	7.
t 1960 to September		(C1)						2.8	2.0	1.8	1.5	1.5	1.5	2.0	2.5
n, August		Sulfate (SO ₄)	1,8	2.4	2.4	2.6	3.2	2.0	2.8	2.6	2.4	1.8	1.6	2.0	2.2
million,	rig U	Co at co		0						0					
per mi	Bi-	bon- ate (HCO ₃)	51	21	54	26	57	22	26	22	51	51	46	22	24
parts 1	Am-	ntum (NH4)	1	1	0.0	٥.	0.	٥.	°.	0.	٦.	۲.	٥.	٦:	۲.
	Pot-			1.2					1.1	9.	9.	6.	80 .	1.3	1.5
analyses, in		Sodium (Na)	5.3	5.3	5.6	5.1	4.5	4.5	4.0	3.7	3.7	4.0	3.8	5.1	5.6
al an	Mag-	ne- sium (Mg)	3.4	3.5	3.5	4.4	4.2	3.9	3.8	4.1	5.9	3.8	3.5	3.5	3.1
Chemica1	[6	ctum (Ca)	7.5	7.5	9.2	9.0	10	9.5	10	9.5	10	90	7.0	80	0.6
	Man-	ga- nese (Mn)													
		Iron (Fe)													
	Alu-	(All)													
		Silica (SiO ₂)	28	59	28	27	23	23	22	21	22	20	22	27	59
	Mean	discharge Silica mi- (cfs) (SiO ₂) mm (Al)													
		of	Aug. 28, 1960	Sept. 6	Oct. 10	Nov. 15	Dec. 6	Jan. 10, 1961	Feb. 28	Mar. 13	Apr. 10	May 1	June 13	July 10	Sept. 11

ROGUE RIVER BASIN -- Continued

14-3723. ROGUE RIVER NEAR AGNESS, OREG.

LOCATION.--Temperature recorder at gaging station, 0.7 mile upstream from Shasta Costa Creek, 1.5 miles north of Agness, Curry County, and 2.4 miles upstream from Illinois River. DRAINGE ARRA.--3,939 square miles.
DRAINGE ARRA.--3,939 square miles.
RECORDS AVAILEMES.--Water temperatures: October 1960 to September 1961.
EXTREMES, 1960-61.--Water temperatures: Maximum, 79°F Aug. 3, 10; minimum, 39°F Jan. 3-7.

Тепрел	Тепрет	Тещрет	Тещрех	Тепрет	Temperature	Тепрет	Гешрет	E I	is		(F)	of	water,		wat	water year	ear	S	October 1960	13	9	to Se	pter	September	1961	-					t	
										-	- [1	ŀ	-	-		-	-	-								T		T	ľ	Ť	Average
1 2 3 4 5 6 7 8 9 10 11	3 4 5 6 7 8 9 10	3 4 5 6 7 8 9 10	4 5 6 7 8 9 10	5 6 7 8 9 10	6 7 8 9 10	7 8 9 10	8 9 10	9 10	2	-	_	-	12 13	4	15	19	17	=	19	2	2	22	23	24	25	28	27	78	53	39	3	
October Maximum 60 58 57 56	60 58	60 58		60 58	60 58	60 58	60 58 58 57	60 58 58 57	58		r 9	5.5		55 55	**************************************	4 4 6	5.4	54	54	55	55	5.5	56	5.6	55	55	5.6	55	555	55	4 4	11
54 53 51 50 50 50 49 49	55 54 53 51 50 50 50 49 49	55 54 53 51 50 50 50 49 49	53 51 50 50 50 49 49	53 51 50 50 50 49 49	50 50 50 49 49	50 50 49 49	67 67 05	64 64	64										_			47	64	20		47				1	-	64
54 54 53 51 50 49 49 49 49 49	54 53 51 50 49 49 49 49 49	54 53 51 50 49 49 49 49 49	51 50 49 49 49 49 49	51 50 49 49 49 49 49	67 67 67 67 67	64 64 64 64	67 67 65	64 64	6 4	_		48 49		49 48	4.8	8 4 8	4 6	64	4	48	47		41	64	47	94	5 4	45	45	;	-	64
Maximum 42 40 40 4 Minimum 40 40 40 4	42 40 40	42 40 40	42 40 40	42 40 40	42 40 40	42 40 40	42 40 40	040	0 4			41 41		42 42	4 4	2 43	4 4	4 4	47	47	47	4 4 5 5	45	4 4 5	4 4	4 4	4 4	4 4	643	42	41	1 1
42 41 40 40 39 40 41 43 44 44	41 40 40 39 40 41 43 44 44	41 40 40 39 40 41 43 44 44	40 39 40 41 43 44 44	40 39 40 41 43 44 44	40 41 43 44 44	41 43 44 44	43 44 44	7 7 7 7	4												43		42			. t		. 72		47	8 4	7 7
41 40 39 39 39 39 39 41 42 44	40 39 39 39 39 39 41 42 44	40 39 39 39 39 39 41 42 44	39 39 39 39 41 42 44	39 39 39 39 41 42 44	39 39 41 42 44	39 41 42 44	41 42 44	45 44	7 7	_		44 44	_	77 77	45	9 4 6	_	45	77	43	45	42	42	42	77	44	5	45	45	46	47	43
Cornary Maximum 48 49 49 49 49 49 48 48 48 48 50 5 Minimum 48 48 49 49 49 48 48 48 48 48 48 5	49 49 49 49 49 48 48 50 48 49 49 48 48 48 48 48 48	49 49 49 49 49 48 48 50 48 49 49 48 48 48 48 48 48	49 49 49 48 48 50 49 48 48 48 48 48	49 49 49 48 48 50 49 48 48 48 48 48	49 48 48 50	49 48 48 50 48 48 48	48 48 50 48 48 48	48 48 48 48	50 84			50 50		64 64	5 6	0 20	4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	47	4 4	4 4 8 8	4 4 8 8	48	t 4 4 7	47	47	47	47	11		11	4 4 8 8
47 47 45 46 46 46 46 46 46 46 46 46 46 46 46	47 46 46 46 46 46 46 46 46 46 46 46	47 46 46 46 46 46 46 46 46 46 46 46	46 46 46 46 46 46 46 46 46 46 46 46 46 4	46 46 46 46 46 46 46 46	46 46 46 46 46 46 46 46 46 46 46 46 46 4	94 94 94 94 94 94 94 94 94 94 94 94 94 9	46 46 46 46 46 46	4 4 4 4 6 4 4	4 4 6 4		, v	4 4		47 48	4 4	8 4 8 4 7	4 6	47	47	47	4 4	4 4 4 7	4 4 8 8	8 8	4 4 8 8	8 4 4	8 8	47	4 4	0,4	50	4 T T T T T T T T T T T T T T T T T T T
. 52 53 54 53 52 51 51 52 52 52	53 54 53 52 51 51 52 52 52	53 54 53 52 51 51 52 52 52	53 52 51 51 52 52 52	52 51 51 52 52 52	51 51 52 52 52	51 52 52 52	52 52 52	52 52	52			53						29	4.0		52	20	50	52	53	4.0	55	9 7	56	25	1	53
51 52 53 52 51 51 50 50 51 51	52 53 52 51 51 50 50 51 51	52 53 52 51 51 50 50 51 51	52 51 51 50 50 51 51	52 51 51 50 50 51 51	51 50 50 51 51	50 50 51 51	50 51 51	51 51	7 3												3		4 (, t		7 (4 (9 9	! :	25
56 56 55 54 54 54 53 54 55 54	56 55 54 54 54 53 54 55 54	56 55 54 54 54 53 54 55 54	54 54 53 54 55 54	54 54 53 54 55 54	54 53 54 55 54	53 54 55 54	54 55 54	55 54	0.4			53 53		53 53	22	5 57	65	6 2	62	62	619	26	909	26	59	209	9 0	909	39	9	90	57
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1	1 1	1	1	-			<u> </u>		<u> </u>	!	1	- 1	1	_ i	1		!	- 1	1	1	1	!	1	1	1	1	;
					1 1	1 1		1	1			1	<u> </u>	1	<u> </u>	+	<u> </u>	1	<u> </u>	1	!	1	1	1	1	;	ļ	-	ï	<u> </u>	;	;
Maximum Minimum							1 1	11	1 1			11		78 78	77 3	7 78	78	74	78	78	78	78	78	78	77	77	73	77	78	73	77	1 1
August Maximum 77 78 79 78 78 78 78 78 78 79 7 Minimum 73 73 74 74 74 74 75 74 75 74 74 7	78 79 78 78 78 78 78 78 78 79 73 74 74 74 74 75 74 74	78 79 78 78 78 78 78 78 78 79 73 74 74 74 74 75 74 74	78 78 78 78 78 79 74 74 74 75 74 74	78 78 78 78 79 74 74 75 75 74	78 78 78 79 74 75 75 47	78 78 79 74 75 74 74	78 78 79 75 74 74	78 79 74 74	79			78 77		77 77	7 7	7 76 72	76	72	76	76	76	75	74	74	74	72 70	72	73	73	52	72	76
Potential Maximum 70 69 69 67 67 67 67 67 Minimum 70 69 68 67 67 67 66 65 64 64 64	71 70 70 70 69 69 67 67 67 67 69 69 68 64 64	71 70 70 70 69 69 67 67 67 67 69 69 68 64 64	70 70 69 69 67 67 67 67 67 67 66 65 64 64	70 70 69 69 67 67 67 67 67 67 66 65 64 64	69 69 67 67 67 67 66 65 64 64	69 67 67 67 64 64	67 67 67 65 64 64	67 67 64	64			67 67 64 65		66 66 65 64	4 4	4 65	64	69	63	62	62 61	62 60	60 59	61 59	60 59	60	58	60 58	58	59	11	65

ROGUE RIVER BASIN--Continued

14-3770. ILLINOIS RIVER AT KERBY, OREG.

LOCATION -- At gaging station, at Finch Bridge, 0.3 mile downstream from Holton Creek, and 0.5 mile west of Kerby, Josephine County. DALINGE ARBA.-- Sad square miles.

RECORDS AVAILABLE.-- Chemical analyses: august 1960 to September 1961 (discontinued).

1		Tur- bid- ity	0	9	0	ı,	0	0	10	2	0	0	0	0	0
		ter- gents (ABS)	7	i	1	T	ŀ	1						. 01	
		or ge		_	_	_				_		_		_	_
		H _d	7.5	7.6	7.6	7.8	7.9	7.9	7.8	7.8	7.7	7.8	7.8	7.8	7.7
	Specific conduct-	ance (micro- mhos at 25°C)	146	145	139	127	114	111	100	82	91	16	104	128	147
		actd- ity (as as H+1													
	Hardness as CaCO3	Non- car- bon- ate	0			2			0	0	0	0	0	0	0
	Hard as C	Cal- cium, mag- esium	72	72	89	63	26	54	48	40	46	44	20	64	73
_	Dissolved	solids residue t 180°C)		85						55	64	57	29	81	86
1961	Phos-	(PO ₄)	0.01	.05	.01	00	.03	.01	10.	.01	10	.01	. 02	.01	.01
ember		trate phate (NO ₃) (PO ₄) a	0.2				'n	. 7	T.	67	٦.	Ξ.	2	4	.2
Sept		ride t	0.1	0.	0.	0.	٦.	0.	Ξ.	0.	0.	Ε.	Ξ.	Τ.	0.
Chemical analyses, in parts per million, August 1960 to September 1961	:	Chloride (C1)	2.8	3.8		2.5		1.8	1.0	1.8	1.0	1.2	1.0	2.0	2.5
on, Augus		Sulfate (SO ₄)	3.0	1.4	1.6	2.8	1.6	4.	1.0	1.0	80.	9.	4.	1.8	2.8
1111		S at 6	00	88	2	2	6	∞	П	6	9	2	2	80	0
per n		bon- (HCO ₃			_	_	_		9	4					
parts I	-A-	nium (NH4)	!	1	0:0	٠.		°.	· 	٠.				°.	
tn p	Pot- tas- sium r (K)		0.3			~	_	-:	4.	ġ	_		_	ς.	
nalyses,	Sodium (Na)		2.6	2.6	2.5	2.1		_					÷	2.4	
cal a	Mag-	sium (Mg)		13			10		8.5	7.8	7.2	8.1	8.1	11	14
Chemi	[2]	clum (Ca)	7.0	7.0	7.5	5.0	2.0	0.9	5.5	3.0	6.5	4.5	6.5	7.5	7.0
	Man-	ga- nese (Mn)			_				_						
		(Fe)													
	Alu-	mum (A1)													
		Silica mi- (SiO ₂) mum (Al)	20	21	21	17	17	16	17	15	17	14	17	19	20
	Mean	discharge (cfs)	44	34	47	353	1,070	825	2,080	10,500	1,690	2,200	208	101	- 1
	Date	collection	Aug. 28, 1960	Sept. 6	Oct. 10	Nov. 15	Dec. 6	Jan. 10, 1961	Feb. 28	Mar. 13	Apr. 10	May 1	June 13	July 10	Sept. 11

A	Page		Page
Acidity	18-19	Borel Canal below Isabella Dam,	
Agness, Oreg., Rogue River near	669	Calif	254
Ahsahka, Idaho, North Fork Clear- water River at	587	Boron	14 517
Alameda Creek near Niles, Calif		Branscomb, Calif., South Fork Eel	01.
Alameda Creek basin	245-252	River near Breitenbush River above Canyon	440-441
Alderpoint, Calif., Eel River at	438	Breitenbush River above Canyon	
Alsea, Oreg., North Fork Alsea River	649	Creek, near Detroit, Oreg	626
at South Fork Alsea River near	650	Brentwood, Calif., Indian Slough	306
Alsea River basin		near Brewster, Wash., Okanogan River near	542
Aluminum	10	Driugeport, Calli., East walker	
American River, at Fair Oaks, Calif.	388-389	River near	215
at Nimous Dam, Calif	390	Bridgeville, Calif., South Fork Van Duzen River near	450
Anatone, Wash., Snake River near	585	van Duzen River near	451-453
at Nimbus Dam, Calif	120-125	Brigham City, Utah, Bear River at	200-201
Annapolis, Calif., South Fork Gualala River near	423	Brinnon, Wash., Duckabush River	503
Antelope Creek near mouth, near Los	423	Bromide	17
Molinos, Calif	344	Bryant, Wash., Pilchuck Creek near	524
near Red Bidii, Calli	343	Bryant, Wash., Pilchuck Creek near Bryson, Calif., Nacimiento River	
near Tennant, Calif	462	near	228-231
Antioch, Calif., San Joaquin River	318	Buchanan Damsite, Calif., Chowchilla	274
Applegate River at Applegate, Oreg	667	River at Buena Vista Lake basin	253-256
Arcata, Calif., Mad River near	456-460	Bully Creek near Vale, Oreg	568-571
Archuleta, N. Mex., San Juan River	110 115	Burnt Ranch, Calif., Trinity River	474
nearAriel, Wash., Lewis River at	631	near Butte City, Calif., Sacramento River	7/7
Arroyo De La Laguna at Verona,		at	356-358
Calif	247-248	Butte Creek near Chico, Calif	360
Arroyo Valle near Livermore, Calif		Butte Creek near Macdoel, Calif	463 305
Auberry, Calif., Willow Creek near Auburn, Calif., Middle Fork American	267	Byron, Calif., Italian Slough near	303
River near	383	С	
Auburn, Wash., Green River near	509-510		
В		Cache Creek, above Rumsey, Calif at Yolo, Calif	402-404
_		near Capay, Calif	405-406
Baker, Oreg., Powder River below Bakersfield, Calif., Kern River	576	near Capay, Califnear Lower Lake, CalifCalaveras River at Jenny Lind,	399
Bakersfield, Calif., Kern River	256	Calaveras River at Jenny Lind,	296
near	17	CalifCalcium	11
Barstow, Wash., Kettle River near Bartlett Dam, Ariz., Verde River	536	Cameo, Colo., Colorado River near	47-48
Bartlett Dam, Ariz., Verde River	100 100	Cameron, Ariz., Little Colorado	140 151
Battle Creek near Cottonwood Calif.	189-190 332-333	River at	321
Battle Creek near Cottonwood, Calif. Bear Creek at Central Point, Oreg	666	Canby, Calif., Pit River near Capay, Calif., Cache Creek near Carmel River near Carmel, Calif	405-406
Bear Creek at Merced, Calif	275	Carmel River near Carmel, Calif	227
Bear Creek near Shearer guard station, Idaho	586	Carnation, Wash., Tolt River at Cascade River at Marblemount, Wash	520 527
Bear River at Bear River Bird	380	Castle Rock, Wash., Cowlitz River at	642
Refuge, near Brigham City, Utah.	200-201	Toutle River near	641
Bear River near mouth, near Rio Oso,		Cathlamet, Wash., Elochoman River	
Califnear Wheatland, Calif	378 377	near	644 516
Bend. Calif Sacramento River at	334-335	near Landsburg, Wash	514-515
Bicarbonate, carbonate and hydroxide	12	Central Point, Oreg., Bear Creek at. Chalk Creek at Coalville, Utah	666
Diener, Califo, Fit Mives meaters	322	Chalk Creek at Coalville, Utah	204
Big Chico Creek at Chico, Calif near Chico, Calif	352 351	Chehalis, Wash., Newaukum River near Chehalis River at Porter, Wash	495 497
Big Creek, Calif., San Joaquin River	551	near Grand Mound, Wash	496
above	265	Chehalis River basin	495-498
Big Creek above Pine Flat Reservoir,		Chemical quality	4
Califbelow Huntington Lake, Calif	261 266	Chico, Calif., Big Chico Creek at Butte Creek near	351 360
Big River near mouth, near Mendo-	200	Chittenden, Calif., Pajaro River at.	240
cino, Calif	425	Chloride	13
Big Springs Creek near Leadore,	500	Chowchilla River at Buchanan Dam-	054
Idaho Big Trees, Calif., San Lorenzo	580	site, Calif	274 15
River at	242	Cibola Valley, Ariz., Colorado River	
River at	221	below	174
biora, carri, ban soaquin kiver	070 071	Cisco, Utah, Colorado River near	61 <i>-</i> 65 56-60
Bitterroot River near Corvallis.	270-271	Dolores River near	635
Calif	530	Clark Fork below Missoula, Mont	531
Calif	71-72	Clarkston, Wash., Snake River near Clear Creek near Igo, Calif	589
bloomileid. N. Mex San Juan River	116_110	Clear lake at Lakeport Calif	326 398
at	623	Clear Lake at Lakeport, Calif Clearwater River at Spalding, Idaho.	588
Bluff, Utah, San Juan River near	132-137	Clifton Court Ferry, Calif., Old	
Boise River at Notus, Idaho	565-567	River at	304

	Page		Page
Coalville, Utah, Chalk Creek at	204	Division of work	30 56-60
Weber River near	203	Dolores River near Cisco, Utah Dolores River basin	56-60
London, Oreg	620	Dos Rios, Calif., Eel River above Eel River near	431-434 429
Coleville, Calif., West Walker River near	216	Middle Fork Eel River at Dotsero, Colo., Colorado River near.	435-437 39-40
Collection and examination of samples	3-6	Drift Creek near Salado, Oreg	651
Color	20	Duchesne River near Randlett, Utah Duckabush River below Brinnon, Wash.	89-90 503
Colorado River, at Glenwood Springs,	43-44	Dunnigan, Calif., Sacramento River	
at Hot Sulphur Springs, Colo at Lees Ferry, Ariz	33-34 138-143	near Duwamish River at Tukwila, Wash	511-513
at Yuma, Arizbelow Cibola Valley, Ariz	194 174	Duwamish River basin	509-513
below Hoover Dam, ArizNev	170	E	
below Palo Verde Dam, Ariz	173	Eagle Creek above Skull Creek, near	
Califbelow Parker Dam, Ariz-Calif	172 47-48	New Bridge, Oreg Eagle River at Gypsum, Colo	578 35-37
near Cameo, Colonear Cisco, Utah	61-65	Eagle River basin	35-38
near Dotsero, Colonear Glenwood Springs, Colo	39-40 41-42	East Fork Carson River near Gardner- ville, Nev	218
near Grand Canyon, Ariz	152-157	near Markleeville, Calif East Fork Lewis River near Heisson,	217-218
near Topock, Ariz	171 33-198	Wash	632
miscellaneous analyses of streams in	198	East Walker River near Bridgeport, Calif	215
Columbia River, at McNary Dam, Wash. at Northport, Wash		Echo, Utah, Weber River at	205 431-434
near The Dalles, Oreg	609-610	Eel River, above Dos Rios, Calif at Alderpoint, Calif	438
Colusa, Calif., Sacramento River at. Colusa Trough near Colusa, Calif	359	at McCann, Califat Scotia, Calif	439 445-449
Colville River at Kettle Falls,	365	near Dos Rios, Calif	429
Wash	537 9-24	Eel River basin	-453,492 346
Cooperation	27-29	near Paskenta, Calif Elgin, Oreg., Grande Ronde River	345
Copco, Calif., Klamath River near Copper	464 15-16	near	582
Coquille River basin	662-664 349	Elochoman River near Cathlamet,	644
Corning, Calif., Thomes Creek near Cornville, Ariz., Oak Creek near	188	Wash Exchequer, Calif., Merced River at	278 6-9
Corvallis, Mont., Bitterroot River	530	Expression of results	0-9
Cory, Colo., Gunnison River near	49	F	
Cosumnes River at McConnell, Calif at Michigan Bar, Calif	315 314	Fair Oaks, Calif., American River	200 200
Cottonwood, Calif., Battle Creek near	332-333	at	502
South Fork Cottonwood Creek near	329	Fall Creek below Winberry Creek, near Fall Creek, Oreg	618
Cottonwood Creek near Cottonwood, Calif	330-331	Farad, Calif., Truckee River at Farmington, N. Mex., Animas River	225
near Ono, Calif	328 327	· · at	120-125
Coweman River near Kelso, Wash	643	Feather River, at Nicolaus, Calif below Shanghai Bend, near Yuba	379-381
Cowlitz River, at Castle Rock, Wash. near Kosmos, Wash	636-637	City, Calif	376
near mayileid, wash	639 635-643	near Oroville, Calif	369-373
Coyote Creek near Madrone, Calif	244	San Joaquin River near	264 13
Crab Creek near Smyrna, Wash Crescent City, Calif., Smith River	546-547	Fluoride Flynn Creek near Salado, Oreg Forest Glen, Calif., Mad River near.	
near	487	Forest Glen, Calif., Mad River near.	454-455 501
Crescent Mills, Calif., Indian Creek near	367-368	Forks, Wash., Hoh River near Fort Bragg, Calif., Noyo River near. Fort Jones, Calif., Scott River near	426 467
Crooked River near Culver, Oreg near Post, Oreg	607 603-606	ross, Oreg., Nenalem River Delow	646
Culver, Oreg., Crooked River near Deschutes River near	607 602	Foster, Oreg., Middle Santiam River	628
Descrictes River Hear	002	Freeport, Calif., Sacramento River	
D		Fremont Ford Bridge, Calif., San	
Dartford, Wash., Little Spokane	E20	Joaquin River at	277 273
River at	539 273	Friant, Calif., San Joaquin River	
Deer Creek near Salado, Oreg Delta, Calif., Sacramento River	658-660	below	269
at	319	G	
Delta, Colo., Uncompandere River at Delta Cross-Channel near Walnut	50-51	Gardnerville, Nev., East Fork Carson	
Grove, Calif	316	River near	218 206
pumping plant, near Tracy,		Gerber, Calif., Elder Creek at	346 597
califbelow Tracy pumping plant, near	299	Gerber, Calif., Elder Creek at Gibbon, Oreg., Umatilla River near Gila Gravity Main Canal at Imperial	
Tracy, Calif	300-301	Dam, ArizCalif	195 179-184
near Mendota, Calif	302 602	Gila River, at Kelvin, Ariz below Gillespie Dam, Ariz	191-193
Deschutes River basin Detroit, Oreg., Breitenbush River	602-608	near Gila, N. Mex	175-178
near	626	Gillespie Dam, Ariz., Gila River below	
North Santiam River near Dexter, Oreg., Middle Fork	625	Glenwood Springs, Colo., Colorado	
Willamette River near	617 14-15	River at	43-44 41-42
Diversions and return flows at and below Imperial Dam, Ariz		Roaring Fork at	45-46 518
NULUM IMPULLAR DAM, ALLESSOSSOS	T00-T01		

	Page	J	Page
Grand Canyon, Ariz., Colorado River	{	Jasper, Oreg., Middle Fork	
near	152-157	Willamette River at	619
Grand Junction, Colo., Gunnison	1	Jenny Lind, Calif., Calaveras River	296
River near	52-55	Jensen, Utah, Green River near	85-88
near	496	John Day River at McDonald Ferry,	
Grande Ronde River, at La Grande,		Oreg	601
Oreg	581	near Mount Vernon, Oreg	600
at Rondowa, Oreg	584 582	Jordan River at mouth, at Woods Cross, Utah	210-211
Grande Ronde River basin	581-584	at Salt Lake City, Utah	208-209
Grandview, Oreg., Metolius River		Jordan River basin	208-211
Grant Line Canal at Tracy Road	608	к	
Bridge, Calif	303	12	
Grays River, wash., west fork Grays		Kalama River above Kalama, Wash	634
River near	645	Kalama River below Italian Creek, near Kalama, Wash	633
Grayson, Calif., San Joaquin River	281	Kaweah River near Three Rivers,	030
Great Salt Lake, Utah	199	Calif	259
Green River, Utah, San Rafael River	107 100	Kelso. Wash Coweman River near	643
near	107-109 102-106	Kelvin, Ariz., Gila River at Kerby, Oreg., Illinois River at	670
near Auburn. Wash	509-510	Kerckhoff Powerhouse, Calif., San	
near Auburn, Washnear Green River, Wyo	66-70	Joaquin River below	268
near Greendale, Utan	76-77 85-88	Kern River, below Isabella Dam, Calif	255
near Jensen, Utah	93-99	near Bakersfield, Calif	256
Green River basin	66-109	near Kernville, Calif	253
Greendale, Utah, Green River near	76-77	Kernville, Calif., Kern River near Keswick, Calif., Sacramento River at	253 325
Guenoc, Calif., Putah Creek near Guerneville, Calif., Russian	411	Kettle Falls, Wash., Colville River	320
River at	422	at	537
dumitson kiver near cory, colo	49	Kettle River near Barstow, Wash	536
near Grand Junction, Colo	52-55 49-55	King Hill, Idaho, Snake River at Kings River, at Peoples Weir, near	363-364
Gunnison River basin	35-37	Kingsburg, Calif	263
Gypsum River at Gypsum, Colo	38	Kingsburg, Califbelow North Fork, Calif	260
**		below Pine Flat Dam, Calif	262 263
н		Kingsburg, Calif., Kings River near. Kiona, Wash., Yakima River at	
Hamburg, Calif., Klamath River near.	466	Klamath River, at Klamath River	
Hamilton City, Calif., Sacramento		School, near Hamburg, Calif	466
River near	350 355	at Somesbar, Calif below Fall Creek, near Copco,	470
Hardness	17-18	Calif	464
Harrisburg, Oreg., Willamette River		near Klamath, Calif	486
At	624 476	near Seiad Valley, Calif	468
Hayfork Creek near Hyampom, Calif Healdsburg, Calif., Russian River	410	Klamath River basin	611
near	421	Knights Ferry, Calif., Stanislaus	
Heise, Idaho, Snake River near	560-561	River near	286
Heisson, Wash., East Fork Lewis River near	632	River at	364
Henrys Fork at Linwood, Utah	73-75	Sacramento Slough near	366
near Rexburg, Idaho	562	Knightsen, Calif., Rock Slough near. Kosmos, Wash., Cowlitz River near	308 636_637
Hickman, Calif., Tuolumne River at Hills Creek above Hills Creek Reser-	283	Rosmos, wash., Cowiftz River hear	030-037
voir, near Oakridge, Oreg	614	L	
Hoh River near Forks, Wash	501	Is Granda Oreg Granda Bonda Biver	
Hoopa, Calif., Trinity River near Hooper, Wash., Palouse River near	590	La Grande, Oreg., Grande Ronde River	581
Hoover Dam, ArizNev., Colorado		La Grange, Calif., Tuolumne River	
River below	170	near	282
Lake Mead at	164-169	Lake Mead at Hoover Dam, ArizNev Lake Tahoe at Bijou, Calif	221
near	420	at Tahoe, Calif	223
Hot Sulphur Springs, Colo., Colorado	00.04	near Tahoe Vista, Calif	222 398
River at	33-34 220	Lakeport, Calif., Clear Lake at Lake Washington basin	
Humptulips River near Humptulips,	220	Lancha Plana, Calif., Mokelumne	
Wash	499	River at	311
Huntington Lake, Calli., Big Creek	266	Landsburg, Wash., Cedar River near Lawrence, Wash., Nooksack River at	520
below	476	Lead	16
Hyampom, Calif., Hayfork Creek near. South Fork Trinity River near	475	Lead Leadore, Idaho, Big Springs Creek	
Hydrogen-ion concentration	20	near Leavenworth, Wash., Wenatchee River	580
I		near	544
		Lebam, wash., willapa River at	493-494
Igo, Calif., Clear Creek near	326	Lees Ferry, Ariz., Colorado River	138_143
Illinois River at Kerby, Oreg Imperial Dam, ArizCalif., Gila	670	Paria River at	144-147
Gravity Main Canal at	195	Lewis River at Ariel, Wash	631
Indian Creek near Crescent Mills,	267.260	Lewiston, Calif., Trinity River at	471-473
Calif	301-308	Likely, Calif., South Fork Pit River	320
Calif	306	Lily, Colo., Little Snake River	
Introduction	1-3	aboveLindsay Slough near Rio Vista,	80-84
Iodide	17 10	Calif	413
Isabella Dam, Calif., Borel Canal		Linwood, Utan, Henrys Fork at	73-75
below	254	Literature citedLithium	30-32 12
Kern River below	255	Little Colorado River at Cameron,	
Calif	305	Ariz	148-151

	Page		Page
Little Potato Slough near Terminous,		Middle Santiam River at mouth, near	
Calif	317	Foster, Oreg	628
Little Snake River above Lily, Colo.	80-84	Mill Creek at mouth, near Los Molinos, Calif	347
Little Spokane River at Dartford, Wash	539	Millville, Calif., Cow Creek near	327
Littlefield, Ariz., Virgin River at. Livermore, Calif., Arroyo Valle	158-163	Milton, Oreg., South Fork Walla	500
Livermore, Calif., Arroyo Valle	245-246	Walla River near	592 583
near Lockwood, Calif., San Antonio River	243-240	Mineral constituents in solution	10-17
near	232-235	Miranda, Calif., South Fork Eel	440 444
London, Oreg., Coast Fork Willamette	600	River near	442-444
River at	620 540-541	Colorado River basin	198
Long Lake, Wash., Spokane River at Longvale, Calif., Outlet Creek near.	430	Oregon and Lower Columbia River	TOD 000
Los Banos, Calif., Salt Slough near.	276	Pacific slope basins in	592-670
Los Gatos Creek at Los Gatos, Calif	243	California	488-492
Los Molinos, Calif., Antelope Creek		Sonoma River basin	491
near	344	Washington and Upper Columbia River basin	493-559
Mill Creek near	347	Missoula, Mont., Clark Fork below	531
River near	384-386	Modesto, Calli., San Joaquin River	005
Lower Lake, Calif., Cache Creek	200	Mokelumne Hill Calif Mokelumne	285
North Fork Cache Creek near	399 400-401	Mokelumne Hill, Calif., Mokelumne River near	310
Lynndyl, Utah, Sevier River near		Mokelumne River, at Lancha Plana,	
N.		at Woodbridge, Calif	311
М		near Mokelumne Hill, Calif	310
McCann, Calif., Eel River at	439	Montgomery Creek, Calif., Pit River	
McCloud River above Shasta Lake,	204	Morgan Hill Calif. Ilvas Creek near	323 238
Calif McConnell, Calif., Cosumnes River	324	Morgan Hill, Calif., Uvas Creek near Morton, Wash., West Fork Tilton	200
at	315	River near	638
Macdoel, Calif., Butte Creek near	463	Mossdale, Calif., San Joaquin River	294
McDonald Ferry, Oreg., John Day River at	601	Mount Vernon, Oreg., John Day River	201
McKenzie River near Vida, Oreg	623	near Mount Vernon, Wash., Skagit River	600
McNary Dam, Wash., Columbia River	500	Mount Vernon, Wash., Skagit River	528
at Mad River near Arcata, Calif	596 456-460	near	
near Forest Glen, Calif	454-455	Coquille River at	664
Mad River basin		N	
Madrone, Calif., Coyote Creek near Magnesium	244 11	**	
Malheur River near Ontario, Oreg	572	Naches River at Yakima, Wash	548
Malheur River basin	568-572	Nacimiento River near Bryson, Calif	228-231
Mandeville Island, Calif., Old River at	309	Napa River near St. Helena, Calif	415-419
Manganese	10-11	Napa River basin	415-419
Mapleton, Oreg., Siuslaw River at	661	National, Wash., Nisqually River near	507
Marblemount, Wash., Cascade River	527	Navarro River near Navarro,	
Skagit River near		Calif	424
Markleeville, Calif., East Fork Carson River near	217-218	Needle Branch near Salado, Oreg Nehalem River below Foss, Oreg	646
Marston, Wyo., Blacks Fork near	71-72	New Bridge, Oreg., Eagle Creek near.	578
Marysvale, Utah, Sevier River near	212	Newaukum River near Chehalis, Wash	495
Marysville, Calif., Yuba River at Mattole River near Petrolia, Calif	375 427	Newman, Calif., San Joaquin River	280
Maybell, Colo., Yampa River near	78-79	near Newport, Wash., Pend Oreille River	
Mayfield Dam, Wash., Cowlitz River		a.t	532
mear Mendocino, Calif., Big River near	639 425	Niagara, Oreg., North Santiam River	627
Mendota, Calif., Delta-Mendota		Nickel and Cobalt	15
Canal near	302	Nicolaus, Calif., Feather River at Niles, Calif., Alameda Creek near	249-252
San Joaquin River near Merced, Calif., Bear Creek at	272 275	Nimbus Dam, Calif., American River	210 202
Merced River at Exchequer, Calif	278	at	387
near Stevinson, Calif	279	Nisqually River near National, Wash	507
Merlin, Oreg., Rogue River near Metaline Falls, Wash., Pend Oreille	668	Nitrate	13-14
River at	533	Nooksack River at Lawrence, Wash	529
Methow River at Pateros, Wash Metolius River near Grandview, Oreg.	543 608	North Fork, Calif., Kings River below	260
Michigan Bar, Calif., Cosumnes	000	North Fork Alsea River at Alsea,	
River at	314	North Fork American River at North	649
Middle Fork American River near Auburn, Calif	383	Fork Dam, Calif	382
Middle Fork Eel River at Dos Rios,		North Fork Cache Creek near Lower	400 400
Calif	435-437	Lake, Calif	400-401
Middle Fork Kaweah River near Potwisha Camp, Calif	258	Ahsahka, Idaho	587
Middle Fork Willamette River, above	200	North Fork Coquille River at Myrtle	
Salt Creek, near Oakridge,	c1 =	Point, Oreg	664
at Jasper, Oreg	615 619	American River at	382
below North Fork, near Oakridge,		North Santiam River at Niagara,	e 00
Oregnear Dexter, Oreg	616 617	below Boulder Creek, near Detroit,	627
near Oakridge, Oreg	617 613	Oreg	625
Middle River, Calif., Old River	307	Northport, Wash., Columbia River	534-535
near	307		000

	Page		Page
Notus, Idaho, Boise River at 50 Noyo River near Fort Bragg, Calif	65-567 426	Putah Creek near Guenoc, Calif near Winters, Calif Puyallup River at Puyallup, Wash	411 412 508
0		Pyramid and Winnemucca Lakes basin	221-22
Oak Creek near Cornville, Ariz Oakley, Utah, Weber River near Oakridge, Oreg., Hills Creek near	188 202 614	Queets River at Queets, Wash	500
Middle Fork Willamette River near	1	R	
Okanogan River near Brewster, Wash	542	Rainbow, Oreg., South Fork McKenzie	
Old River, at Clifton Court Ferry,	304	River near	621,623 635
Califat Mandeville Island, Califat Orwood Bridge, near Middle	309	Randlett, Utah, Duchesne River near. Red Bank Creek near Red Bluff,	89-90
River, Calif	307	Calif	34
Tracy, Calif	298 328	near Paynes Creek near	343 336
Ontario, Oreg., Malheur River near	572	Red Bank Creek near	34
Organics	21	Sacramento River at	338-341
Orick, Calif., Redwood Creek at	461	Sacramento River near	337
Orland, Calif., Stony Creek near 35	03-354	Redwood Creek at Orick, Calif	461 51 (
Oroville, Calif., Feather River	69_373	Renton, Wash., Cedar River at Rexhurg Idaho Henrys Fork near	56
near	00-075	Rexburg, Idaho, Henrys Fork near Richland, Oreg., Powder River near	57
near	538	Rindge Tract, Calif., Stockton Ship	
Ouray, Utah, Green River near	93-99	Channel on	291
Outlet Creek near Longvale, Calif	430	Rio Oso, Calif., Bear River near	378
Oxbow, Oreg., Snake River at	579	Rio Vista, Calif., Lindsay Slough	413
Oxygen consumed	21	near	414
P		Roaring Fork at Glenwood Springs,	
	ļ	Colo	45-46
Pacific slope basins in	27-402	Rock Slough near Knightsen, Calif Rogue River, below South Fork Rogue	308
California	27-492	River, near Prospect, Oreg	66
basin	92-670	near Agness, Oreg	669
Washington and upper Columbia		near Agness, Oreg	661
River basin 49		Rogue River basin	665-670
Pajaro River at Chittenden, Calif	240	Rondowa, Oreg., Grande Ronde River	584
Pajaro River basin	38-240	Roosevelt, Ariz., Salt River near	18
Colorado River below	173	Rumsey, Calif., Cache Creek above	
Palouse River near Hooper, Wash	590	Russian River, at Guerneville,	
Paria River at Lees Ferry, Ariz 14	44-147	Calif	423
Parker Dam, ArizCalif., Colorado	1.70	near Healdsburg, Calif	421 420
River below	172	near Hopland, Calif	420-42
Parker, Wash., Yakima River near 54 Pasco, Wash., Snake River near	591	Rye Patch, Nev., Humboldt River	
Paskenta, Calif., Elder Creek near	345	near	220
Thomes Creek at	348		
Thomes Creek at	543	S	
Paynes Creek near Red Bluff, Calif	336	Secrements Colif American Divor	
Pend Oreille River at Metaline Falls, Wash	533	Sacramento, Calif., American River	390
at Newport, Wash	532	Sacramento River, above Colusa	
	30-533	Trough, at Knights Landing,	
Petrolia, Calif., Mattole River		Calif	364
near	427	at Bend. Calif	334-33
PhosphatePilchuck Creek near Bryant, Wash	14 524	Calif	361-363
Pine Flat Dam, Calif., Kings River	021	at Butte City, Calif	356-358
below	262	at Colusa, Calif	359
Pine Flat Reservoir, Calif., Big	001	at Delta, Calif	319 395-397
Creek above Pit River, near Bieber, Calif	261 322	at Freeport, Calif	325
near Canby, Calif	321	at Red Bluff, Calif	
near Canby, Califnear Montgonery Creek, Calif	323	at Sacramento, Calif	391-394
Pitt. Wash Klickitat River near	611	near Hamilton City, Calif	350
Plain City, Utah, Weber River near.	207	near Red Bluff, Calif	33°
Pleyto, Calif., San Antonio River at Porter, Wash., Chehalis River at	236 497	near Rio Vista, Calif	
Porterville, Calif., Tule River near	257	Sacramento Slough near Knights	
Post, Oreg., Crooked River near 60	03-606	Landing, Calif	366
Potlatch, Wash., Skokomish River		St. Helena, Calif., Napa River near.	415-419
near	05-506	Salado, Oreg., Deer Creek near	658-660
South Fork Skokomish River near Potter Valley powerhouse tailrace	504	Drift Creek near	
near Potter Valley, Calif	428	Needle Branch near	652-654
Potwisha Camp, Calif., Middle Fork		Salem, Oreg., Willamette River at	629-630
Kaweah River near	258	Salinas River near Spreckles, Calif.	237
Powder River below Baker, Oreg	576	Salmas River basin	228-237
near Richland, Oreg	577	Salmon River at Somesbar, Calif Salt Lake City, Utah, Jordan River	469
Powder River basin	10-018	at	208-209
River at	663	Salt River below Stewart Mountain	
South Fork Coquille River near	662	Dam, Ariznear Roosevelt, Ariz	186-187
Price River at Woodside, Utah 10	00-101	Salt Slough near Los Bancs Calif	185
Properties and characteristics of	17-23	Salver, Calif., South Fork Trinity	210
water Prospect, Oreg., Rogue River near	665	River near	477-480
Dubliostions	26-27	Sammamish River at Bothell Wash	517

Pa	ge		Page
	36	South Fork Eel River near Branscomb, Calif	440-441
at Sam Jones Bridge, near Lockwood, Calif	35	near Miranda, Calif	442-444
	39	Annapolis, Calif	423
	65	Cougar Reservoir, near Rainbow,	601
at Fremont Ford Bridge, Calif 2	77	Oreg near Rainbow, Oreg South Fork Pit River near Likely,	621 622
at Garwood Bridge, near Stockton, Calif	95	Calif	320
Calli 2	85	South Fork San Joaquin River near Florence Lake, Calif	264
at Mossdale, Calif 2	94	South Fork Skokomish River near Potlatch, Wash	504
	68	South Fork Trinity River near Hyampon, Calif	475
near Grayson, Calif 2	272	near Salyer, Calif	477-480
near Newman, Calif	80 93	Bridgeville, Calif	450
San Joaquin River basin 264-318,4 San Juan River, at Bloomfield	88	Milton, Oreg	592
N. Mex. 116-1 at Shiprock, N. Mex 126-1 near Archuleta, N. Mex 110-1 near Bluff, Utah 132-1	19 31	at	588 19
near Archuleta, N. Mex 110-1	15	Spokane River at Long Lake, Wash near Otis Orchards, Wash	540-541 538
San Juan River basin	37	Spokane River basin	538-541
Calif 2	242	near	237
San Rafael River near Green River, Utah	09	Damsite, near Knights Ferry,	286
Scotia, Calif., Eel River at 445-4		Califnear mouth, near Vernalis, Calif Stevinson, Calif., Merced River near	287 279
Scott River near Fort Jones, Calif 4 Sediment	24	Stewart Mountain Dam, Ariz., Salt River below	
River near	168	Stillaguamish River near Silvana,	523
Selway River near Shearer guard station, Idaho	86	Wash Stockton, Calif., San Joaquin River	295
Sevier Lake basin		near	
near Lynndyl, Utah 213-2	212	Pump on Rindge Tract, Calif Stony Creek at Black Butte Damsite,	297
	24	near Orland, Califnear Hamilton City, Calif	353-354 355
Shasta River near Yreka, Calif 4 Shearer guard station, Idaho, Bear	165	Streamflow	24-25 11
	86 86	Sulfate Sultan River at Sultan, Wash	13 519
Shiprock, N. Mex., San Juan River at	.31	Susan River at Susanville, Calif Susanville, Calif., Susan River at	226 226
Siletz River near Siletz, Oreg 6 Silica6	10	T	
Silvana, Wash., Stillaguamish	23	Tahoe Vista, Calif., Lake Tahoe	
Silver Lake, Wash., Toutle River	40	near	222
	26	River near	573 5,21-22-
near Mount Vernon, Wash 5	28	Tennant, Calif., Antelope Creek	462
Skagit River basin	06	Terminous, Calif., Little Potato Slough near	317
Smartville, Calif., Yuba River near. 3 Smith River near Crescent City,	374	The Dalles, Oreg., Columbia River near	609-610
Calif 4	187	The Great Basin	199-225 348
Smyrna, Wash., Crab Creek near 546-5 Snake River at King Hill, Idaho 563-5 at Weiser, Idaho 5	564	near mouth, near Corning, Calif Three Rivers, Calif., Kaweah River	349
below Pine Creek, at Oxbow, Oreg 5	579 585	near	259 647
near Clarkston, Wash	589	Tolt River at Carnation, Wash Topock, Ariz., Colorado River near	520 171
near Heise, Idaho	91	Touchet, Wash., Walla Walla River near	593-595
Snohomish River at Snohomish, Wash 521-5	22	Toutle River near Castle Rock, Wash. near Silver Lake, Wash	641 640
	19	Tracy, Calif., Delta-Mendota Canal near 299,	
Soleduck River near Fairholm, Wash 5	12 502	Old River near	298
Salmon River at 4	170 169	Line Canal at	303
	191		471-473 474
South Fork Alsea River near Alsea,	241	near Hoopa, Calif	481-485 225
South Fork American River near	350	near Truckee, Calif	224 511-513
Lotus, Calif	- 1	Tulare Lake basin	257-263 257
near Powers, Oreg	662	Tuolumne River, above La Grange Dam, near La Grange, Calif	282
South Fork Cottonwood Creek near	329	at Hickman, Calif	283

Page		Page
Tuolumne River at Tuolumne City, Calif	West Fork Carson River at Wood- fords, Calif	219 645 638
Umatilla River above Meacham Creek, near Gibbon, Oreg	West Walker River below Little Walker River, near Coleville, Calif	216 377 91-92 612 624 629-630 613-630 493-494
Vale, Oreg., Bully Creek near	Willow Creek at mouth, near Auberry, Calif	219 210-211
Walla Walla River near Touchet, Wash. 593-595 Walla Walla River basin. 592-595 Wallace River at Gold Bar, Wash. 518 Wallace River above Minan River, at Minan, Oreg. 583 Walnut Grove, Calif. Delta Cross-Channel near. 316 Watson, Utah, White River near. 91-92 Weber River, at Echo, Utah. 205 at Gateway, Utah. 206 near Coalville, Utah. 202 near Plain City, Utah. 207 Weber River basin. 200-207 Weiser, Idaho, Snake River at. 575 Weiser River near Weiser, Idaho 574 Wenatchee River at Wenatchee, Wash 545 near Leavenworth, Wash. 544	near Parker, Wash Yakima River basin Yampa River near Maybell, Colo Yoakum, Oreg., Umatilla River at	548 551-552 549-550 548-552 78-79 598 407-410 465 376 375 374 194
West Branch Weiser River near Tamarack, Idaho	Zinc	16