

RESERVOIR SEDIMENTATION
DATA SUMMARY

Morris Reservoir

70-22a

NAME OF RESERVOIR

DATA SHEET NO.

DAM	1. OWNER Metropolitan Water Dist		2. RIVER San Gabriel		3. STATE California			
	4. SEC.	TWP.	RANGE		5. NEAREST TOWN Azusa	6. COUNTY Los Angeles		
	7. STREAM BED ELEV. 935		8. TOP OF DAM ELEV. 1,175.0' (Crest) SPI-1 DAY CREST ELEV. 1,170.0					
RESERVOIR	10. STORAGE ALLOCATION	11. ELEVATION TOP OF POOL	12. SURFACE AREA ACRES	13. STORAGE ACRE-FEET	14. ACCUMULATED ACRE-FEET	15. DATE STORAGE BEGAN		
	a. FLOOD CONTROL							
	b. POWER							
	c. WATER SUPPLY	1,170	393	39,316	39,316	16. DATE NORMAL OPER. BEGAN		
	d. IRRIGATION							
	e. CONSERVATION							
	f. INACTIVE					Jan 34		
17. LENGTH OF RESERVOIR 3.127		MILES		AV. WIDTH OF RESERVOIR 0.197		MILES		
WATERSHED	18. TOTAL DRAINAGE AREA 2/ 211.3		SQ. MI.		22. MEAN ANNUAL PRECIPITATION 29.81		INCHES	
	19. NET SEDIMENT CONTRIBUTING AREA 210.7		SQ. MI.		23. MEAN ANNUAL RUNOFF 7.04'		INCHES	
	20. LENGTH 3.1	MILES	AV. WIDTH 2.8+	MILES	24. MEAN ANNUAL RUNOFF 79,290 (23)		AC.-FT.	
	21. MAX. ELEV. 10,059		MIN. FLEV. 1,170.0		25. CLIMATIC CLASSIFICATION Subhumid			
	26. DATE OF SURVEY	27. PERIOD YEARS	28. ACCL. YEARS	29. TYPE OF SURVEY	30. NO. OF RANGES OR CONTOUR INT.	31. SURFACE AREA ACRES	32. CAPACITY ACRE-FEET	33. C/W RATIO AC.-FT. PER SQ.MI.
Jan 34					414	39,316	186	
Jan 36	2.0	2.0			415	38,692	183	
Feb 38	2.1	4.1			396	37,175	176	
Oct 38	0.7	4.8			395	36,655	173	
Dec 49	11.2	16.0			393	35,174	166	
Sep 56	6.7	22.7			389	34,861	165	
SURVEY DATA	26. DATE OF SURVEY	34. PERIOD ANNUAL PRECIPITATION	35. PERIOD WATER INFLOW ACRE-FEET			36. WATER INFL. TO DATE AC.-FT.		
			a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	a. MEAN ANNUAL	b. TOTAL TO DATE	
	Jan 34							
	Jan 36	23.2	58,500	80,830	117,080	58,500	117,080	
	Feb 38	42.6	11,100	339,300	221,600	32,600	338,680	
	Oct 38	34.8			269,260	126,650	607,940	
	Dec 49	29.0	88,800	304,140	994,920	100,180	1,602,860	
	Sep 56	21.3	23,080	71,578	154,665	77,420	1,757,520	
SURVEY DATA	26. DATE OF SURVEY	37. PERIOD SEDIMENT DEPOSITS ACRE-FEET			38. TOTAL SED. DEPOSITS TO DATE ACRE-FEET			
		a. PERIOD TOTAL	b. AV. ANNUAL	c. PER SQ. MI.-YR.	a. TOTAL TO DATE	b. AV. ANNUAL	c. PER SQ. MI.-YR.	
	Jan 34							
	Jan 36	624	312	1.48	624	312	1.48	
	Feb 38	1,517	722	3.43	2,141	522	2.48	
	Oct 38	520			2,661	554	2.63	
	Dec 49	1,484	133	0.63	4,145	259	1.23	
	Sep 56	310	46.3	.22	4,455	196	.93	
SURVEY DATA	26. DATE OF SURVEY	39. AV. DRY WGT. LBS. PER CU. FT.	40. SED. DEP. TONS PER SQ. MI.-YR.		41. STORAGE LOSS PCT.		42. SED. INFLOW PPM	
			a. PERIOD	b. TOTAL TO DATE	a. AV. ANNUAL	b. TO DATE	a. PERIOD	b. TO DATE
	Jan 34							
	Jan 36				0.76	1.58		
	Feb 38				1.30	5.45		
	Oct 38				1.38	6.77		
	Dec 49				0.65	10.54		
	Sep 56				.50	11.33		

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET ABOVE, AND BELOW CREST ELEVATION											
	216-220	200	180	160	140	120	100	80	60	50-40	40-20	Crest -20
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION											
Jan 36		8	9	10	16	18	12	10	6	5	2	4
Feb 38	2	8	8	6	5	7	1	7	8	8	16	24
Oct 38			4	3	5	2	6	13	8	11	41	7
Dec 49		4	3	3	3	7	17	14	16	19	8	6
Sep 56									24	56	18	2

26. DATE OF SURVEY	44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR														
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	-105	-110	-115	-120	-125
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION														

45. RANGE IN RESERVOIR OPERATION							
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.
1933-34	ND	ND	43,135	1945-46	1,169.2	1,143.1	53,380
1934-35	ND	ND	80,830	1946-47	1,152.6	1,135.1	60,440
1935-36	ND	ND	23,680	1947-48	1,167.0	1,133.0	14,000
1936-37	ND	ND	177,450	1948-49	1,135.6	1,130.4	5,380
1937-38	1,174.4	1,140.2	399,300	1949-50	1,134.6	1,132.6	596
1938-39	1,166.3	1,145.2	63,370	1950-51	1,138.3	1,130.5	5,493
1939-40	1,140.8	1,098.8	41,370	1951-52	1,170.3	1,132.1	71,578
1940-41	1,170.0	1,167.5	304,137	1952-53	1,151.3	1,124.7	46,281
1941-1942	1,168.2	1,155.7	13,740	1953-54	1,170.3	1,132.1	27,617
1942-43	1,166.4	1,152.7	250,390	1954-55	1,134.4	1,132.0	703
				1955-56	1,139.3	1,131.1	2,590
1943-44	1,166.7	1,159.2	149,880				
1944-45	1,169.8	1,160.1	48,240				

46. ELEVATION-AREA-CAPACITY DATA (Sep 1956)								
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY
968	0	0	1,060	145	6,261	1,160	360	31,115
970	1	2.0	1,070	169	7,860	1,170	389	34,861
980	20	127	1,080	187	9,651	1,176	409	37,248
990	22	332	1,090	216	11,675			
1,000	47	690	1,100	230	13,910			
1,010	61	1,247	1,110	251	16,292			
1,020	70	1,904	1,120	261	18,854			
1,030	96	2,748	1,130	279	21,544			
1,040	103	3,756	1,140	299	24,460			
1,050	126	4,898	1,150	333	27,627			

47. REMARKS AND REFERENCES

1/ Item 9 - With drum gates raised crest 1,170. With drum gates lowered crest 1,152.

2/ Item 18 - 8.7 sq. mi. of total is below San Gabriel Dam #1.

48. AGENCY SUPPLYING DATA City of Pasadena, Metropolitan Water District, LACFCD & C of E 49. DATE Revised June 1962

RESERVOIR SEDIMENT
DATA SUMMARY

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

MORRIS RESERVOIR

NAME OF RESERVOIR

70-22b

DATA SHEET NO.

DAM	1. OWNER Metropolitan Water Dist		2. STREAM San Gabriel		3. STATE California											
	4. SEC. 13 TWP. 1N RANGE 10W		5. NEAREST P.O. Azusa		6. COUNTY Los Angeles											
	7. LAT. 34° 10' 30" LONG. 118° 52' 45"		8. TOP OF DAM ELEVATION 1175.0		9. SPILLWAY CREST ELEV. 1170.0											
RESERVOIR	10. STORAGE ALLOCATION		11. ELEVATION TOP OF POOL		12. ORIGINAL SURFACE AREA, ACRES											
	a. FLOOD CONTROL															
	b. MULTIPLE USE															
	c. POWER															
	d. WATER SUPPLY		1170		393											
	e. IRRIGATION															
	f. CONSERVATION															
	g. INACTIVE															
				13. ORIGINAL CAPACITY, ACRE-FEET		14. GROSS STORAGE, ACRE-FEET		15. DATE STORAGE BEGAN								
								16. DATE NORMAL OPER. BEGAN								
								Jan 34								
WATERSHED	17. LENGTH OF RESERVOIR		3.127		MILES		AV. WIDTH OF RESERVOIR		0.197							
	18. TOTAL DRAINAGE AREA		211.3		SQ. MI.		22. MEAN ANNUAL PRECIPITATION		29.02							
	19. NET SEDIMENT CONTRIBUTING AREA		2/ 210.7		SQ. MI.		23. MEAN ANNUAL RUNOFF		7.59							
	20. LENGTH		21.7		MILES		AV. WIDTH		9.7							
	21. MAX. ELEV.		10,059		MIN. ELEV.		935		24. MEAN ANNUAL RUNOFF							
								85,572 (37)								
								25. ANNUAL TEMP MEAN								
								62.2°								
								RANGE 48.8°-75.6°								
SURVEY DATA	26. DATE OF SURVEY		27. PERIOD YEARS		28. ACC'L. YEARS		29. TYPE OF SURVEY		30. NO. OF RANGES OR CONTOUR INT.		31. SURFACE AREA, ACRES		32. CAPACITY, ACRE-FEET		33. C/I. RATIO, AC.-FT. PER AC.-FT.	
	Jan 36		2.1		2.1						415		38,692		0.45	
	Feb 38		2.1		4.2						396		37,175		.43	
	Oct 38		0.7		4.9						395		36,655		.43	
	Dec 49		11.2		16.1						393		35,174		.41	
	Sep 56		6.8		22.9						389		34,861		.41	
	Nov 60		4.2		27.1						376		33,827		.40	
	26. DATE OF SURVEY		34. PERIOD ANNUAL PRECIPITATION		35. PERIOD WATER INFLOW, ACRE-FEET				36. WATER INFL. TO DATE, AC.-FT.							
					a. MEAN ANNUAL		b. MAX. ANNUAL		c. PERIOD TOTAL		a. MEAN ANNUAL		b. TOTAL TO DATE			
	Jan 36		23.2		49,210		80,830		117,080		55,752		117,080			
	Feb 38		42.6		258,370		339,300		221,600		80,638		338,680			
	Oct 38		34.8		384,657		339,300		269,260		124,069		607,940			
	Dec 49		29.0		91,300		304,140		994,920		99,557		1,602,860			
	Sep 56		21.3		22,743		71,578		154,665		77,084		1,757,520			
	Nov 60		23.2		57,485		216,335		241,437		73,762		1,998,960			
	26. DATE OF SURVEY		37. PERIOD CAPACITY LOSS, ACRE-FEET				38. TOTAL SED. DEPOSITS TO DATE, ACRE-FEET									
			a. PERIOD TOTAL		b. AV. ANNUAL		c. PER SQ. MI. YEAR		a. TOTAL TO DATE		b. AV. ANNUAL		c. PER SQ. MI. YEAR			
	Jan 36		624		297		1.41		624		297		1.41			
	Feb 38		1,517		722		3.43		2,141		510		2.42			
	Oct 38		520		743		3.53		2,661		543		2.58			
	Dec 49		1,484		133		0.63		4,145		257		1.22			
	Sep 56		310		45.6		.22		4,455		194		.92			
	Nov 60		1,034		246		1.17		5,489		203		.96			
	26. DATE OF SURVEY		39. AV. DRY WGT., LBS. PER CU. FT.		40. SED. DEP., TONS PER SQ. MI.-YR.		41. STORAGE LOSS, PCT.		42. SED. INFLOW, PPM							
					a. PERIOD		b. TOTAL TO DATE		a. AV. ANN.		b. TOT. TO DATE		a. PERIOD		b. TOT. TO DATE	
	Jan 36								0.76		1.58					
Feb 38								1.30		5.45						
Oct 38								1.38		6.77						
Dec 49								.65		10.54						
Sep 56								.50		11.33						
Nov 60								.52		13.96						

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION												
	236-220	220-200	200-180	180-160	160-140	140-120	120-100	100-80	80-60	60-40	40-20	Crest	20
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION												
Jan 36		8	9	10	16	18	12	10	6	5	2	4	
Feb 38	2	8	8	6	5	7	1	7	8	8	16	24	
Oct 38			4	3	5	2	6	13	8	11	41	7	
Dec 49		4	3	3	3	7	17	14	16	19	8	6	
Sep 56									24	56	18	2	
Nov 60			4	2	3	3	3	14	10	17	27	17	

26. DATE OF SURVEY	44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR														
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	-105	-110	-115	-120	-125
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION														

45. RANGE IN RESERVOIR OPERATION							
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.
1941-42	1168.2	1155.7	13,740	1953-54	1170.3	1132.1	27,617
1942-43	1166.4	1152.7	250,390	1954-55	1134.4	1132.0	703
1943-44	1166.7	1159.2	149,880	1955-56	1139.3	1131.1	2,590
1944-45	1169.8	1160.1	48,240	1956-57	1139.45	1131.62	9,968
1945-46	1169.2	1143.1	53,380	1957-58	1170.15	1131.94	216,335
1946-47	1152.6	1138.1	60,440	1958-59	1137.70	1132.04	10,152
1947-48	1167.0	1133.0	14,000	1959-60	1134.68	1130.20	2,719
1948-49	1135.6	1130.4	5,380				
1949-50	1134.6	1132.6	596				
1950-51	1138.3	1130.5	5,493				
1951-52	1170.3	1132.1	71,578				
1952-53	1151.3	1124.7	46,281				

46. ELEVATION-AREA-CAPACITY DATA								
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY
968	0	0	1050	124	4,774	1140	285	23,708
970	0	0	1060	148	6,126	1150	328	26,768
980	18	99	1070	166	7,709	1160	352	30,176
990	21	283	1080	180	9,444	1170	376	33,827
1000	48	629	1090	208	11,377	1176	396	36,077
1010	60	1,184	1100	220	13,536			
1020	69	1,832	1110	248	15,888			
1030	95	2,657	1120	250	18,391			
1040	102	3,644	1130	268	20,966			

47. REMARKS AND REFERENCES

1/ Item 9 - With drum gates raised crest 1,170. With drum gates lowered crest 1,152.

2/ Item 19 - 8.7 sq. mi. of total is below San Gabriel Dam #1.

3/ Item 25 - Temperature taken at Pasadena, California.

City of Pasadena, Metropolitan Water District, and
 LACFCD
 C of E

48. AGENCY MAKING SURVEY

49. AGENCY SUPPLYING DATA

50. DATE 4 Feb 66

RESERVOIR SEDIMENT
DATA SUMMARY

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

Morris Reservoir

NAME OF RESERVOIR

70-22b

DATA SHEET NO.

DAM	1. OWNER Metropolitan Water Dist		2. STREAM San Gabriel		3. STATE California			
	4. SEC. 13 TWP. 1N RANGE 10W		5. NEAREST P.O. Azusa		6. COUNTY Los Angeles			
	7. LAT 34° 10' 30" LONG 118° 52' 45"		8. TOP OF DAM ELEVATION 1175.0		9. SPILLWAY CREST ELEV. 1170.0			
RESERVOIR	10. STORAGE ALLOCATION	11. ELEVATION TOP OF POOL	12. ORIGINAL SURFACE AREA, ACRES	13. ORIGINAL CAPACITY, ACRE-FEET	14. GROSS STORAGE, ACRE-FEET	15. DATE STORAGE BEGAN		
	a. FLOOD CONTROL							
	b. MULTIPLE USE							
	c. POWER							
	d. WATER SUPPLY	1170	393	39,316	39,316	16. DATE NORMAL OPER. BEGAN		
	e. IRRIGATION					Jan 34		
	f. CONSERVATION							
	g. INACTIVE							
WATERSHED	17. LENGTH OF RESERVOIR 3.127 MILES		AV. WIDTH OF RESERVOIR 0.197 MILES					
	18. TOTAL DRAINAGE AREA 211.3 SQ. MI.		22. MEAN ANNUAL PRECIPITATION 29.02 INCHES					
	19. NET SEDIMENT CONTRIBUTING AREA 2/ 210.7 SQ. MI.		23. MEAN ANNUAL RUNOFF 7.59 INCHES					
	20. LENGTH 21.7 MILES		AV. WIDTH 9.7 MILES		24. MEAN ANNUAL RUNOFF 85,572 (37) AC.-FT.			
	21. MAX. ELEV. 10,059		MIN. ELEV. 935		25. ANNUAL TEMP MEAN 62.2 RANGE 48.8°-75.6°			
SURVEY DATA	26. DATE OF SURVEY	27. PERIOD YEARS	28. ACCL. YEARS	29. TYPE OF SURVEY	30. NO. OF RANGES OR CONTOUR INT.	31. SURFACE AREA, ACRES	32. CAPACITY, ACRE-FEET	33. C/I. RATIO, AC.-FT. PER AC.-FT.
	Jan 67	6.2	33.3	Contour	5'	358	32,961	0.39
	Oct 70	3.8	37.1	"	5'	319	30,085	0.35
SURVEY DATA	26. DATE OF SURVEY	34. PERIOD ANNUAL PRECIPITATION	35. PERIOD WATER INFLOW, ACRE-FEET			36. WATER INFL. TO DATE, AC.-FT.		
			a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	a. MEAN ANNUAL	b. TOTAL TO DATE	
	Jan 67	21.31	56,220	200,376	348,564	70,496	2,347,520	
Oct 70	31.18	216,141	567,390	821,335	85,414	3,168,855		
SURVEY DATA	26. DATE OF SURVEY	37. PERIOD CAPACITY LOSS, ACRE-FEET			38. TOTAL SED. DEPOSITS TO DATE, ACRE-FEET			
		a. PERIOD TOTAL	b. AV. ANNUAL	c. PER SQ. MI. YEAR	a. TOTAL TO DATE	b. AV. ANNUAL	c. PER SQ. MI. YEAR	
	Jan 67	866	140	0.66	6,355	191	0.91	
Oct 70	2,876	757	3.59	9,231	249	1.18		
SURVEY DATA	26. DATE OF SURVEY	39. AV. DRY WGT., LBS. PER CU. FT.	40. SED. DEP., TONS PER SQ. MI.-YR.		41. STORAGE LOSS, PCT.		42. SED. INFLOW, PPM	
			a. PERIOD	b. TOTAL TO DATE	a. AV. ANN.	b. TOT. TO DATE	a. PERIOD	b. TOT. TO DATE
	Jan 67				0.49	16.2		
Oct 70				0.63	23.5			

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION														
	200-180	180-160	160-140	140-120	120-100	100-80	80-60	60-40	40-20	20-Crest					
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION														
Jan 67 Oct 70	1 7	6 10	5	-16 7	4 8	-6 13	16 13	17 9	22 8	56 20					
26. DATE OF SURVEY	44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR														
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	-105	-110	-115	-120	-125
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION														
45. RANGE IN RESERVOIR OPERATION															
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.								
1960-61	1145.76	1131.08	6,006												
1961-62	1155.25	1132.42	74,783												
1962-63	1145.30	1141.04	1,708												
1963-64	1141.04	1136.29	1,001												
1964-65	1157.43	1135.94	10,093												
1965-66	1173.15	1135.53	200,376												
1966-67	1169.99	1151.09	203,234												
1967-68	1169.92	1148.95	35,015												
1968-69	1175.00	1145.30	567,390												
1969-70	1170.35	1162.29	68,544												
46. ELEVATION-AREA-CAPACITY DATA															
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY							
978	0	0	1040	102	2874	1110	214	14015							
980	1	2	1050	119	3996	1120	233	16258							
990	19	66	1060	133	5255	1130	252	18694							
1000	25	286	1070	148	6664	1140	269	21311							
1010	47	638	1080	165	8238	1150	283	24069							
1020	67	1223	1090	184	10002	1160	300	26985							
1030	81	1954	1100	200	11936	1170	318	30085							
						1175	328	31705							
47. REMARKS AND REFERENCES															
1/ Item 9 - With drum gates raised crest 1170. With drum gates lowered crest 1152.															
2/ Item 19 - Includes Cogswell & San Gabriel Dam #1. Drainage areas (203 sq. mi.). Sediment is sluiced into this area.															
3/ Item 25 - Temperature taken at Pasadena, California.															
48. AGENCY MAKING SURVEY LACFCD															
49. AGENCY SUPPLYING DATA C of E															
50. DATE 11 Feb 71															