

ANNUAL REPORT FOR WATER YEAR 1954  
LOVELAND OFFICE  
IRRIGATION DIVISION NO. 1

The preliminary stream flow data for the year 1954 shows that the annual run-off for this year is the lowest on record. The annual precipitation for the first nine months of this water year was approximately 50 percent below normal. The combination of these two facts for this Northern Colorado area would ordinarily indicate an extreme drought condition and also a serious crop failure.

In Water District No. 3, the annual runoff for 1954 was approximately 98 percent of the 1934 annual runoff. In Water District No. 4, the 1954 annual runoff was about 72 percent of the 1934 annual runoff. In Water District No. 5, the 1954 annual runoff was about 58 percent of the 1934 annual runoff. The above comparison was made because annual runoff for the water year 1934 was the lowest on record up to the present time.

The Colorado-Big Thompson Project water delivered to the various Districts mentioned above undoubtedly saved this area from a very extreme drought. There was approximately 158,000 acre-feet of water delivered to Water District No. 3; 79,000 acre-feet delivered to District No. 4; and, 52,000 acre-feet to District No. 5. The following tabulation lists the exact amounts of project water delivered to the different water districts during the irrigation season of 1954:

Total 'Project' Water to All Districts Irrigation Season 1954

Water Dist.	April	May	June	July	August	September	October	Totals
No. 1	---	---	3,228.0	7,118.2	2,321.8	---	---	12,668.0
No. 3	5,077.8	32,447.9	31,934.5	33,933.1	38,243.2	14,539.2	1,490.2	157,665.9
No. 4	161.4	13,578.3	16,742.5	15,580.1	17,333.9	9,895.5	5,463.3	78,755.0
No. 5	---	340.4	20,811.8	8,964.4	12,442.2	8,635.9	1,202.4	52,397.1
	<u>5,239.2</u>	<u>46,366.5</u>	<u>72,716.8</u>	<u>65,595.8</u>	<u>70,341.1</u>	<u>33,070.6</u>	<u>8,155.9</u>	<u>301,486.0</u>

(The above totals include all 'Project' water delivered to water users in various districts.--1134 acre-feet Replacement and 300,352 acre-feet of Rental--)

An additional expansion of the facilities of the Colorado-Big Thompson Project was accomplished this year:--namely, the completion of the St. Vrain Supply Canal which is the canal that furnishes water to the St. Vrain River and Boulder Creek Supply Canals. The initial delivery of water through this facility was started on the 29th of May with the first water delivered to the water users on the 30th of May.

All the orders for project water were received in this office from the various water commissioners in their districts, tabulated, and forwarded to the Northern Colorado Water Conservancy District, which agency then releases the water from the project reservoirs into the canals supplying the various districts. The close cooperation between the Northern Colorado Water Conservancy District, the Bureau of Reclamation and the State Engineer's office made it possible for us to deliver the water with very little or no administrative difficulty.

The storage of project water during the water year from October 1, 1953 to October 1, 1954 is as follows:

East Slope Project Storage from 12:01 AM Oct. 1, 1953 to 12:01 AM Oct. 1, 1954

	<u>Marys</u>	<u>Estes</u>	<u>Rattlesnake</u>	<u>Flatiron</u>	<u>Carter</u>	<u>Horsetooth</u>
Oct. 1, 1953	739	2823	149	147	0	47,320
Oct. 1, 1954	734	3006	1901	636	5378	16,430
	-5	+183	+1752	+489	+5378	-30,890

Therefore there was 23,093 acre-feet released from Storage during the above indicated period.

The total amount of water diverted from the Colorado River for the water year from October 1, 1953 to September 30, 1954 inclusive, was 152,295 day second feet or 302,070 acre-feet. The amount of water diverted from Lake Estes to

the Estes Foothills Canal during the 1954 water year was 120,232 day second feet or 238,477 acre-feet. The amount of water diverted from the Big Thompson River through the Dille Tunnel to the Horsetooth Feeder Canal for the water year 1954 was 26,115 day second feet or 51,798 acre-feet.

The Rattlesnake and Flatiron Power Plants were started early in January, 1954. Until that time, the project water was released directly into the Thompson River from Lake Estes and re-diverted from the Thompson River through the Dille Tunnel into Horsetooth Feeder Canal. After the first part of January, the Estes Foothills Canal was used entirely and no project water was released directly into the Big Thompson River below Lake Estes. The Horsetooth Feeder Canal then received all its water from the Estes Foothills Canal.

The first water was pumped into Carter Lake on the 26th of February. The water storage in Carter Lake can be released to the St. Vrain Supply Canal, thence to the St. Vrain River and Boulder Creek Supply Canals or it can be released to the Horsetooth Feeder Canal through the Flatiron Afterbay.

The most difficult thing we had to do this year was to run storage water through the natural streams for long distances. It was hot and dry and the normal carrying charge for transporting storage water could not be used. Fortunately, most of the project water that was to be delivered in the districts was only run in the natural streams a short distance, however, we delivered project water from the mouth of the Big Thompson Canyon through District No. 2 for use of water users in District No. 1. The normal carrying charge from the mouth of the canyon to District No. 2 was .25 percent per mile. During this year that charge had to be increased to .35 percent per mile. A Hydrograph of the Big Thompson River at the mouth, near La Salle, which includes both the Big Thompson River and the project water and the Colorado-

Big Thompson Project only, is included at the end of this report. This Hydrograph shows that, with this charge of .35 percent per mile, the normal river flow was not depleted. The tables at the end of this report contain the project and stream flow data for the different districts.

There will be one more stream flow data chart which will be made up for the calendar year and sent to you as soon as possible.

The location of the Special Deputy State Engineer in the Loveland office was changed from its old location to its new location in the new Conservancy District building West of Loveland on the 1st of May. This office is furnished by the Northern Colorado Water Conservancy District. The District also furnishes part-time secretarial services for the State Engineer. This District secretary also answers the phone and takes care of office when the State Engineer personnel is away.

I wish to express my appreciation to Mr. Ken Dickey of the United States Bureau of Reclamation for his cooperation and help in the measurements of and establishing the Parshall flume data along the various project canals. I also wish to thank him for the loan of the calculator.

I would also like to express my appreciation for the cooperation received from Mr. Johns and the personnel of the Bureau of Reclamation office in the Estes Park area. This enabled me to make an accurate release of the Big Thompson River water into and out of Lake Estes.

The Hydrographer in this area made over 353 stream and ditch measurements during the present water year. An attempt was made to make at least one check on the rating flumes of each of the major irrigation company ditches in this area. The Parshall flumes of the project facilities were all measured at least once during the irrigation season.

The Colorado-Big Thompson Project facilities will be increased next year to include the delivery of water to Boulder Creek through the Boulder Creek Supply Canal. This canal was completed and used for the delivery of water this year to Left Hand Creek. The further extension of Boulder Creek Supply Canal will make it possible for the Conservancy District to furnish water to the users in that area during the next irrigation season. It will also be possible for some water to be delivered to the water users through the Coal Ridge Extension to the South Platte River.

Respectfully submitted,

  
Clark E. Schnurr  
Special Deputy State Engineer

OFFICE OF STATE ENGINEER

Colorado-Big Thompson Project Water  
Delivered to Water Users in Water District No. 3  
During Irrigation Season - 1954

Note: All Quantities are in Acre-Feet based on 1 c.f.s. for 24 hrs. equals 2 Acre-Feet.

From Poudre Supply Canal Direct to Cache la Poudre River  
Except as Noted.

Ditch Company	April	May	June	July	August	September	October	Season's Totals
North Poudre	2,397.4	14,014.2	8,225.0	5,456.0	4,960.0	983.3	---	36,036.5
Box Elder Chan.	10.4	83.6	82.0	88.8	93.0	89.4	34.8	482.0
Larimer County	2,433.4	7,066.8	600.0	7,274.8	10,852.4	6,151.6	---	34,379.0
Jackson	---	---	9.0	57.2	131.0	14.0	32.8	244.0
Larimer & Weld	---	9,150.4	10,700.0	14,850.2	16,050.4	3,848.4	---	54,599.4
Lake Canal	---	566.0	1,228.0	1,297.2	1,272.4	217.4	---	4,581.0
Arthur	---	24.0	59.8	227.2	392.8	225.2	7.0	936.0
New Mercer	---	297.4	512.6	803.8	473.2	131.5	---	2,218.5
Poudre Valley	---	99.2	402.6	176.2	145.6	68.0	182.4	1,074.0
Pl. Valley & Lake	--	217.8	693.6	617.0	734.2	487.8	112.6	2,863.0
Webster	---	---	56.0	18.0	22.0	---	---	96.0
Lar. Co. No. 2	---	679.0	1,330.4	897.8	758.8	396.2	22.3	4,084.5
Cache la Poudre No. 2 (New Ca. la Poudre)	---	---	7,500.0	1,664.0	1,347.8	1,197.2	---	11,709.0
Oglivie	---	---	---	92.0	---	---	---	92.0
Ideal Cement	---	---	---	17.8	74.4	53.8	---	146.0
Josh Ames	---	---	---	---	183.9	87.2	---	271.0
Box Elder	---	28.0	---	---	165.6	317.4	---	511.0
City of Ft. Collins	---	---	---	---	170.0	40.0	40.0	* 250.0
Emma B. Lamb	---	---	---	---	13.8	6.2	---	20.0
Ltl. Ca. la Poudre--	---	---	---	---	197.6	170.0	7.9	375.5
G. W. Sugar Co.	---	---	---	---	---	---	782.0	782.0
City of Greeley	---	---	---	---	---	---	42.1	* 42.1
<b>Totals</b>	<b>4,841.2</b>	<b>32,226.4</b>	<b>31,399.0</b>	<b>33,538.6</b>	<b>38,038.8</b>	<b>14,484.6</b>	<b>1,263.9</b>	<b>**155,792.5</b>

(\*\*) Subtract Windsor Extension (<sup>1,973.0</sup>~~2,392.0~~) from this total to obtain flow direct to River.  
 (\*) Add to these totals the amount of water diverted directly from Project Canals to obtain total amount rented by these Cities.

Windsor Extension	<del>888.8</del> <sup>469.0</sup>	600.4	201.0	49.8	49.2	603.6	<del>4,392.0</del> <sup>1,973.0</sup>
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(Dist. No. 3 - Con't on next page)

(Dist. No. 3 - Con't)

Thru turnouts direct from Poudre Supply Canal

Ditch Company	April	May	June	July	August	September	October	Season's Totals
Brewster	4.2	.6	27.0	41.0	47.8	15.4	35.4	171.0
Herring	12.0	---	---	9.0	27.0	---	5.0	53.0
Kilburn	---	---	16.6	11.4	24.4	1.4	11.2	65.0
Graves	20.2	---	---	33.2	25.2	.8	16.1	95.5
City of Greeley	---	---	286.9	60.0	40.0	---	---	386.9
<b>Total to Poudre Supply Turnouts</b>	<b>36.4</b>	<b>.6</b>	<b>330.5</b>	<b>154.6</b>	<b>164.4</b>	<b>17.6</b>	<b>67.3</b>	<b>771.4</b>

Thru Turnouts Direct from Dixon Canal

Dixon Res. Co.	---	---	---	---	---	25.0	---	25.0
P. Maxwell	---	24.0	42.4	66.4	1.2	---	---	134.0
Aranci	---	8.0	---	6.0	8.0	---	---	22.0
R & S. Maxwell	---	---	---	---	30.8	12.0	40.2	83.0
College Lake Replacement	200.2	36.4	13.6	---	---	---	99.8	350.0
Dixon Res. Replacement	---	152.5	149.0	167.5	---	---	---	469.0
City of Ft. Collins	---	---	---	---	---	---	19.0	19.0
<b>Totals</b>	<b>200.2</b>	<b>220.9</b>	<b>205.0</b>	<b>239.9</b>	<b>40.0</b>	<b>37.0</b>	<b>159.0</b>	<b>1,102.0</b>

(The date concerning ditches direct from Project Canals is furnished by the Northern Colorado Water Conservancy District.)

North Poudre Ditch Co. Exchange from Poudre River to the Munroe Canal.  
Exchange for Project Water delivered to River via Poudre Supply Canal

Munroe Canal	626.0	11,112.0	6,754.0	4,970.0	4,568.0	2,503.0	---	30,533.0
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RECAP OF 'PROJECT' WATER DELIVERED TO WATER USERS IN WATER DIST. NO. 3

Source	April	May	June	July	August	September	October	Total
Poudre Sup. Canal	4,841.2	31,757.4	30,798.6	33,337.6	37,989.0	14,435.4	660.3	159,819.5
Windsor Ext.	---	<del>888.8</del> 469.0	600.4	201.0	49.8	49.2	603.6	<del>2,222.8</del> 1,473.0
Poudre Supply Turnouts	36.4	0.6	330.5	154.6	164.4	17.6	67.3	771.4
Dixon Canal	200.2	220.9	205.0	239.9	40.0	37.0	159.0	1,102.0
<b>TOTAL TO DIST. NO. 3</b>	<b>5,077.8</b>	<del>32,078.1</del> <b>32,447.9</b>	<b>31,934.5</b>	<b>33,933.1</b>	<b>38,243.2</b>	<b>14,539.2</b>	<b>1,490.2</b>	<del>159,246.7</del> <b>157,665.9</b>
		<b>32,447.9</b>						<b>157,665.9</b>

OFFICE OF STATE ENGINEER

Colorado-Big Thompson Project Water  
Delivered to Water District No. 4  
During Irrigation Season of 1954.

Note: All quantities are in Acre-Feet based on 1 c.f.s. for 24 hrs. equals 2 Acre-Feet.

<u>DITCH</u>	<u>APRIL</u>	<u>MAY</u>	<u>JUNE</u>	<u>JULY</u>	<u>AUGUST</u>	<u>SEPTEMBER</u>	<u>OCTOBER</u>	<u>TOTALS</u>
<u>From Horsetooth Feeder Canal to Big Thompson River</u>								
Handy		3,143.0	2,829.2	2,485.4	1,951.6	1,723.0	1,766.0	13,898.2
City of Loveland	56.0	---	---	---	72.8	113.2	10.0	252.0
Home Supply		976.8	2,400.0	2,480.0	2,494.2	3,000.0	3,208.0	14,559.0
South Side		273.4	224.4	114.0	215.2	47.6	55.4	930.0
Louden		2,676.2	2,034.8	1,742.4	2,307.6	1,071.0	11.6	9,843.6
Buckhorn Exchange		60.0	20.0	---	---	---	---	80.0
Barnes, Greeley- Loveland		5,358.4	4,920.8	4,879.2	8,241.6	3,010.0	---	26,410.0
Rist and Goss			9.0	21.6	6.4	---	---	37.0
Big Thomp. Mfg. Co.	---	---	---	---	23.0	92.0	93.0	208.0
Farmers	---	474.2	509.8	108.0	196.0	94.0	1.0	1,383.0
Hillsboro	---	75.0	192.0	178.0	268.0	192.0	---	905.0
Hill & Brush	---	---	---	---	70.0	---	---	70.0
Sub-Total	56.0	13,037.0	13,140.0	12,008.6	15,846.4	9,342.8	5,145.0	68,575.8
<u>Through Big Thompson River to Water Dist. No. 1</u>								
Bijou	---	---	2,268.0	4,536.0	1,308.4	---	---	8,112.4
Riverside	---	---	960.0	2,582.2	1,013.4	---	---	4,555.6
Sub-Total	---	---	3,228.0	7,118.2	2,321.8	---	---	12,668.0
Totals	56.0	13,037.0	16,368.0	19,126.8	18,168.2	9,342.8	5,145.0	81,243.8
<u>From Horsetooth Feeder Canal to Dry Creek</u>								
Williams	---	---	11.2	6.8	---	---	---	18.0
<u>From Horsetooth Feeder Canal to Buckhorn Water Users Ass'n.</u>								
To all Ditches & Pumps	105.4	541.3	375.5	523.1	447.0	326.9	306.8	2,626.0



<u>Ditch</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>Totals</u>
<u>From St. Vrain Supply Canal to Little Thompson River</u>								
Culver	---	---	390.2	137.4	26.8	35.0	---	589.4
Ish	---	---	1,020.4	2,701.8	717.3	---	---	4,439.5
Boulder & Larimer Co.	---	---	1,500.0	---	117.0	---	---	1,647.0
Blower	---	---	103.0	72.6	58.0	27.4	---	261.0
Eagle	---	---	45.4	34.0	---	100.6	---	180.0
Rockwell	---	---	12.0	70.4	83.6	50.3	10.3	342.5
Miner & Longan	---	---	---	---	---	12.0	---	12.0
Totals			3,187.0	3,016.2	1,032.7	225.2	10.3	7,471.4

From St. Vrain Supply Canal Individual Turnouts

Hertha	28.8	---	---	---	---	---	28.8
Miller	---	25.4	7.8	0.6	1.2	35.0	
Totals	28.8	25.4	7.8	0.6	1.2	63.8	

Recapitulation of Project Water Delivered to Water Dist. No. 4

From all Sources	161.4	13,578.3	16,742.7	15,580.1	17,333.9	9,895.5	5,462.1	78,755.0
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The above total includes only project water used by water users in Water District No. 4. The amount of Project water run through District No. 4 will be shown elsewhere in this report.

OFFICE OF STATE ENGINEER

Colorado-Big Thompson Project Water Delivered to Water District No. 5  
During Irrigation Season - 1954

Note: All quantities are in Acre-feet based on 1 c.f.s. to 24 hrs. = 2 Acre-feet.

From St. Vrain Supply Canal to St. Vrain River

Ditch	May	June	July	August	September	October	Totals
Highland	286.8	14,037.4	5,472.4	7,135.0	5,952.8	---	32,884.4
Highland Lake Res. Co.	---	432.0	289.6	85.4	---	---	857.0
Swede	---	924.0	335.0	279.2	25.8	---	1,564.0
South Ledge	---	120.0	36.0	24.0	11.2	12.8	204.0
Oligarchy	---	---	---	1,106.3	211.2	---	1,318.0
Peck	---	100.0	---	148.6	55.4	40.0	344.0
James	---	237.8	60.0	40.2	---	---	338.0
Rough & Ready	---	905.0	920.0	665.0	130.5	---	2,620.5
Longmont Supply	---	---	---	76.0	111.0	43.0	230.0
G. W. Exp. Sta.	---	---	---	---	---	165.0	165.0
Niwot	---	---	---	31.8	12.0	64.2	108.0
Palmerton	---	---	---	30.2	13.6	27.2	71.0
**Town of Meade	---	---	---	---	---	---	---
Davis & Downing	---	89.8	22.0	178.6	37.6	37.0	365.0
City of Longmont	---	288.2	434.0	617.6	600.0	560.2	2,500.0
Clover Basin	---	8.0	3.6	214.6	65.6	5.2	297.0
McConnell*	---	---	---	---	---	17.5	17.5
<b>Totals</b>	<b>286.8</b>	<b>17,192.2</b>	<b>7,572.6</b>	<b>10,633.0</b>	<b>7,226.7</b>	<b>972.1</b>	<b>43,883.4</b>

(\*) Delivered Direct to Ditch except during month of October.

(\*\*) Delivered through the Supply Ditch.

From St. Vrain Supply Canal Direct to Ditches

Supply	53.6	3,610.0	1,379.0	1,169.6	862.2	206.3	7,280.7
McConnell	---	9.6	12.8	8.0	12.1	---	42.5
<b>Total</b>	<b>53.6</b>	<b>3,619.6</b>	<b>1,391.8</b>	<b>1,177.6</b>	<b>874.3</b>	<b>206.3</b>	<b>7,323.2</b>

From Boulder Creek Supply Canal Direct to Ditches

Holland & Williamson (***)	---	---	---	631.6	534.9	24.0	*1,190.5
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Recapitulation of Project Water Delivered to Water District No. 5

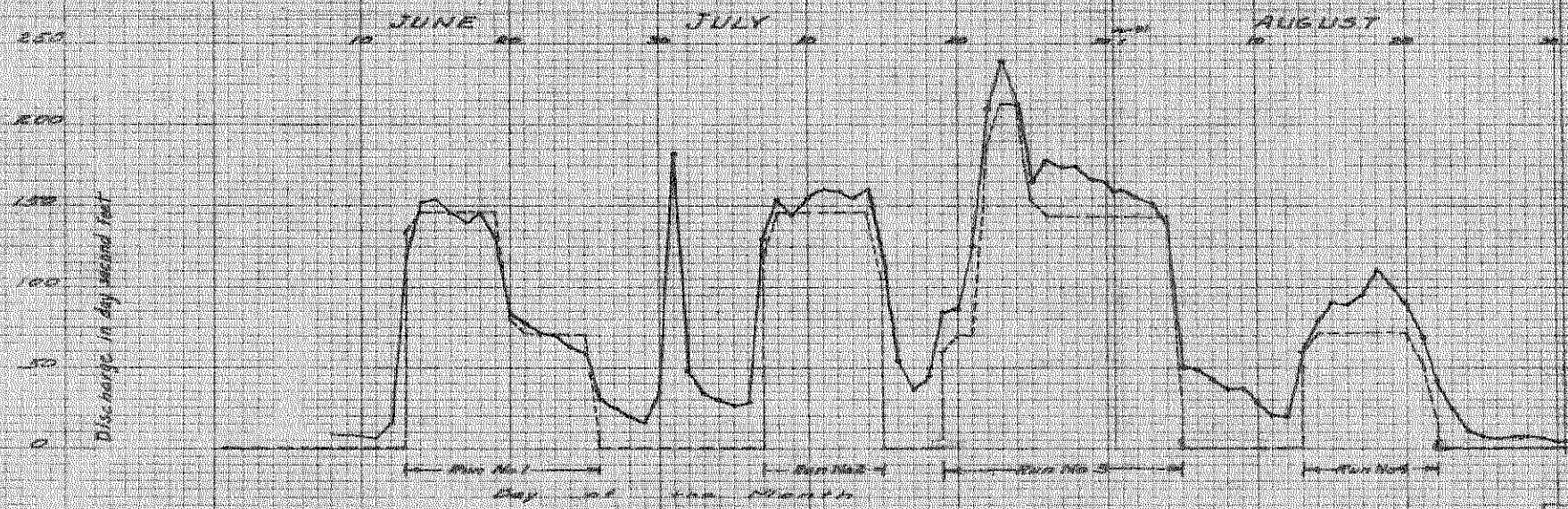
Delivered from all Sources	<u>340.4</u>	<u>20,811.8</u>	<u>8,964.4</u>	<u>12,442.2</u>	<u>8,635.9</u>	<u>1,202.4</u>	<u>52,397.1</u>
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(\*\*\*) Of this total 423.9 acre-feet was delivered to Williamson on Left Hand Creek (250 in Aug. & 173.9 in Sept.)

HYDROGRAPH OF BIG THOMPSON RIVER AT MOUTH NEAR LA SALLE  
AND  
COLD-BIG THOMPSON PROJECT WATER RELEASES RIVER

1954  
1984

DATE PLOTTED IN FEET



LEGEND:  
 Solid black line - Total flow of Big Thompson River at mouth near La Salle in day second feet.  
 Dashed black line - Project water released in Big Thompson River at mouth near La Salle in day second feet. Note: This is calculated by adding the flow of project water to the flow of water in Big Thompson River at mouth near La Salle.

Flows in Day Second during Runs of Project Water

Run No.	1954	1984	1954	1984
	Sum	Sum	Max	Max
No. 1	22425	24820	125	116
No. 2	1381	1177	140	178
No. 3	2787	3355	432	346
No. 4	226	421	127	197

Note: Figures for Big Thompson River at Mouth are preliminary calculated values and are subject to change when detailed data is obtained.

By C. E. SPANGLER  
 Special Deputy State Engineer  
 11-10-54

DISCHARGE IN SECOND FEET

Year: 1954  
 Max. Res.: 125  
 Max. C. H.: 140  
 Min. C. H.: 127  
 Plotted by: [blank]  
 Checked by: [blank]

Chief Hydrographer: [blank]

CURVE APPROVED BY: [blank]