Water Literate Leaders of Northern Colorado

December 14, 2017

History and Evolution of the Colorado-Big Thompson and Windy Gap Projects

Brian Werner
Public Information Officer
Northern Water

Northern Water

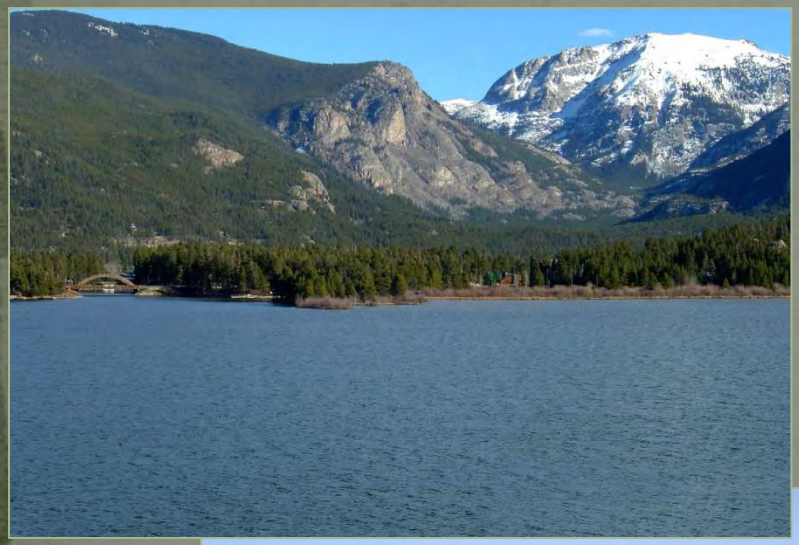
- Northern Water is a public agency created in 1937 to contract with the federal government to build the Colorado-Big Thompson Project (C-BT)

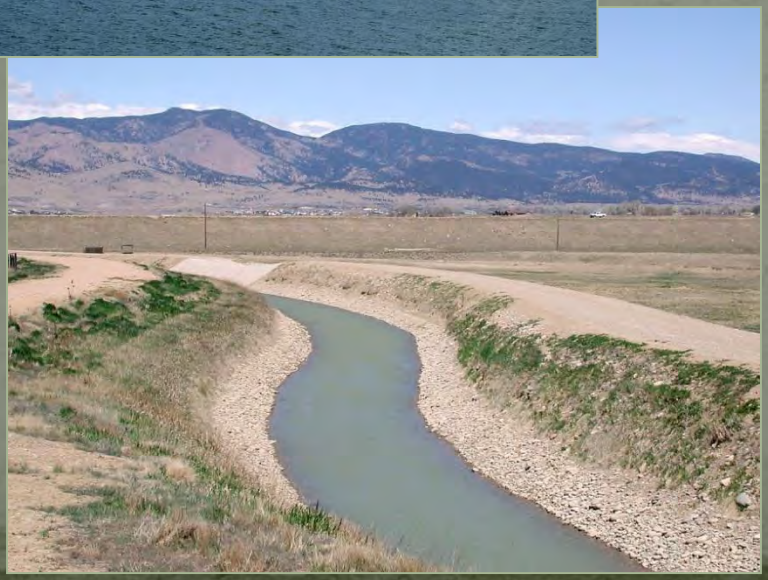
- The C-BT Project provides supplemental water to:
  - More than 640,000 acres of irrigated farm and ranch land
  - 120 irrigation, ditch and reservoir companies
  - Approximately 1,500 individual farmers

Northern Water

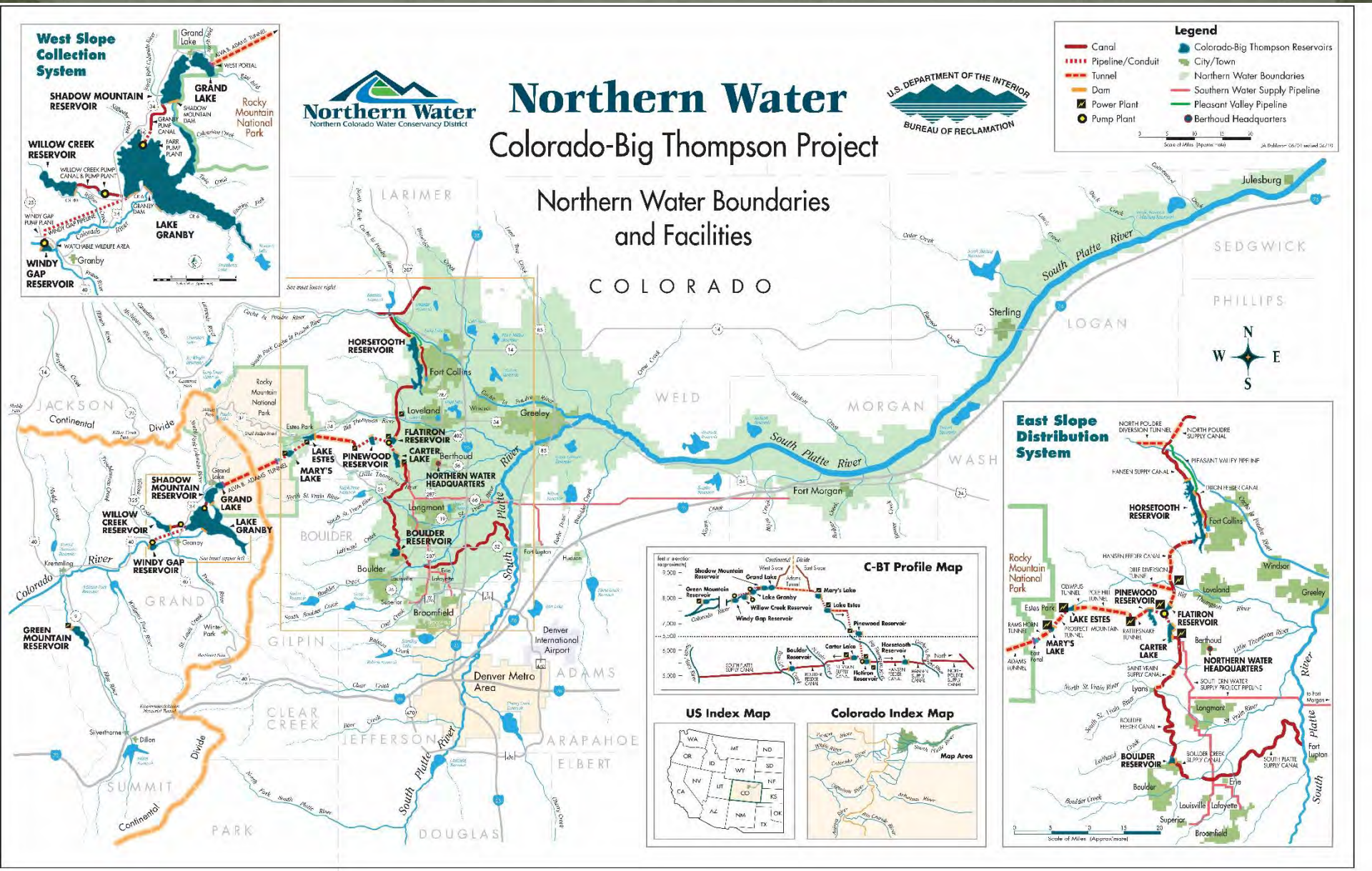
- The C-BT Project provides supplemental water to:
  - 33 cities and towns
  - About 925,000 people in Northeastern Colorado
  - 7 of 10 fastest growing communities in Colorado

Northern Water





- Northern Water and the U. S. Bureau of Reclamation jointly operate and maintain the C-BT Project, which:
  - Collects water on the West Slope
  - Delivers water through a 13-mile tunnel beneath Rocky Mountain National Park to portions of eight Northeastern Colorado counties



Northern Water
Northern Colorado Water Conservancy District
Northern Water
Colorado-Big Thompson Project
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Northern Water Boundaries and Facilities
Legend
Canal
Pipeline/Conduit
Tunnel
Dam
Power Plant
Pump Plant
Colorado-Big Thompson Reservoirs
City/Town
Northern Water Boundaries
Southern Water Supply Pipeline
Pleasant Valley Pipeline
Berthoud Headquarters
West Slope Collection System
SHADOW MOUNTAIN RESERVOIR
GRAND LAKE
WILLOW CREEK RESERVOIR
LAKE GRANBY
WINDY GAP RESERVOIR
Rocky Mountain National Park
COLORADO
LARIMER
WELD
MORGAN
WASH
SEDGWICK
PHILLIPS
LOGAN
JACKSON
GRAND
BOULDER
GILPIN
CLEAR CREEK
JEFFERSON
ADAMS
ARAPAHOE
ELBERT
SUMMIT
PARK
DOUGLAS
HORSETOOTH RESERVOIR
FLATIRON RESERVOIR
CARTER LAKE
PINEWOOD RESERVOIR
LAKE ESTES
MARY'S LAKE
NORTHERN WATER HEADQUARTERS
BOULDER RESERVOIR
GREEN MOUNTAIN RESERVOIR
Fort Collins
Loveland
Greeley
Berthoud
Longmont
Boulder
Broomfield
Denver Metro Area
Denver International Airport
Fort Morgan
Sterling
Julesburg
South Platte River
Colorado River
Continental Divide
C-BT Profile Map
US Index Map
Colorado Index Map
Map Area
East Slope Distribution System
NORTH POUDRE DIVERSION TUNNEL
NORTH POUDRE SUPPLY CANAL
PLEASANT VALLEY PIPELINE
HANSEN SUPPLY CANAL
DIXON FEEDER CANAL
HORSETOOTH RESERVOIR
Fort Collins
Windsor
Greeley
Loveland
PINEWOOD RESERVOIR
FLATIRON RESERVOIR
LAKE ESTES
MARY'S LAKE
CARTER LAKE
NORTHERN WATER HEADQUARTERS
Berthoud
Longmont
Lyons
BOULDER RESERVOIR
Boulder
Erie
Louisville
Lafayette
Superior
Broomfield
Fort Lupton
Scale of Miles (Approximate)

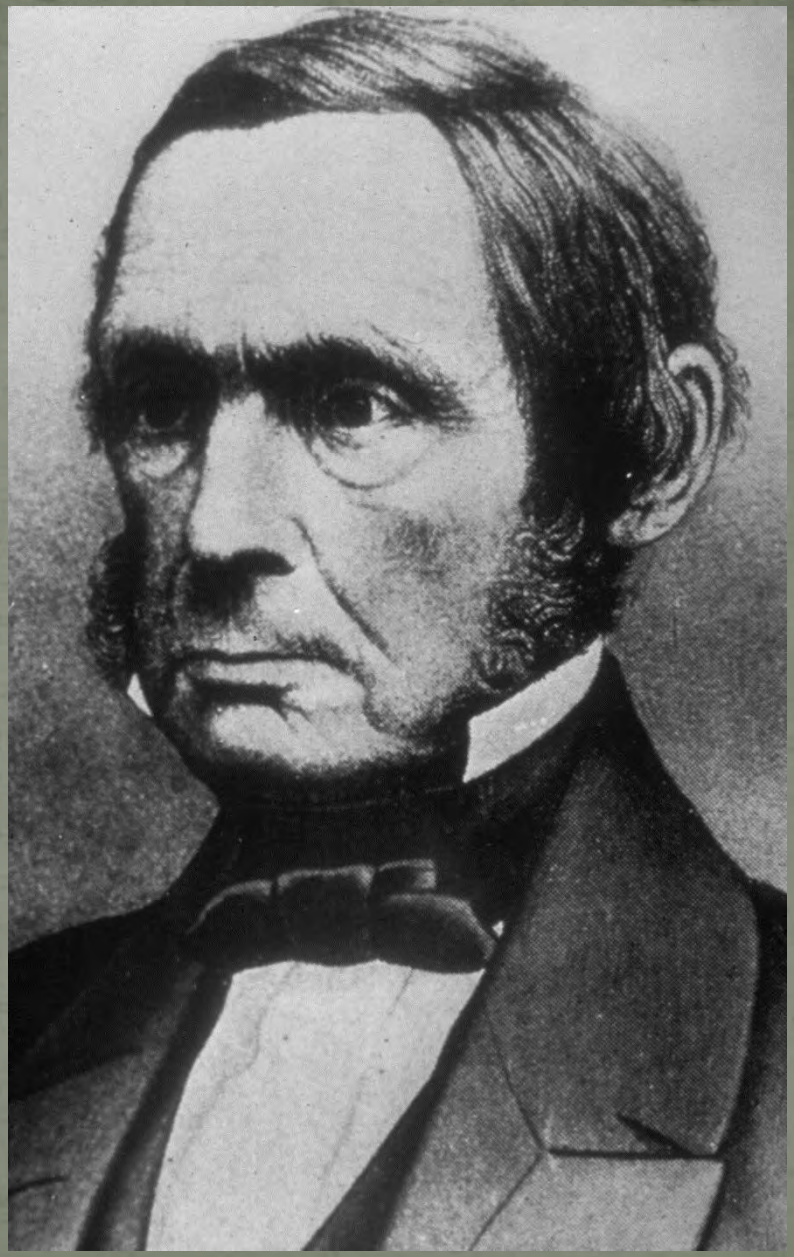
Historical Development Pre-C-BT 1800s – 1930s

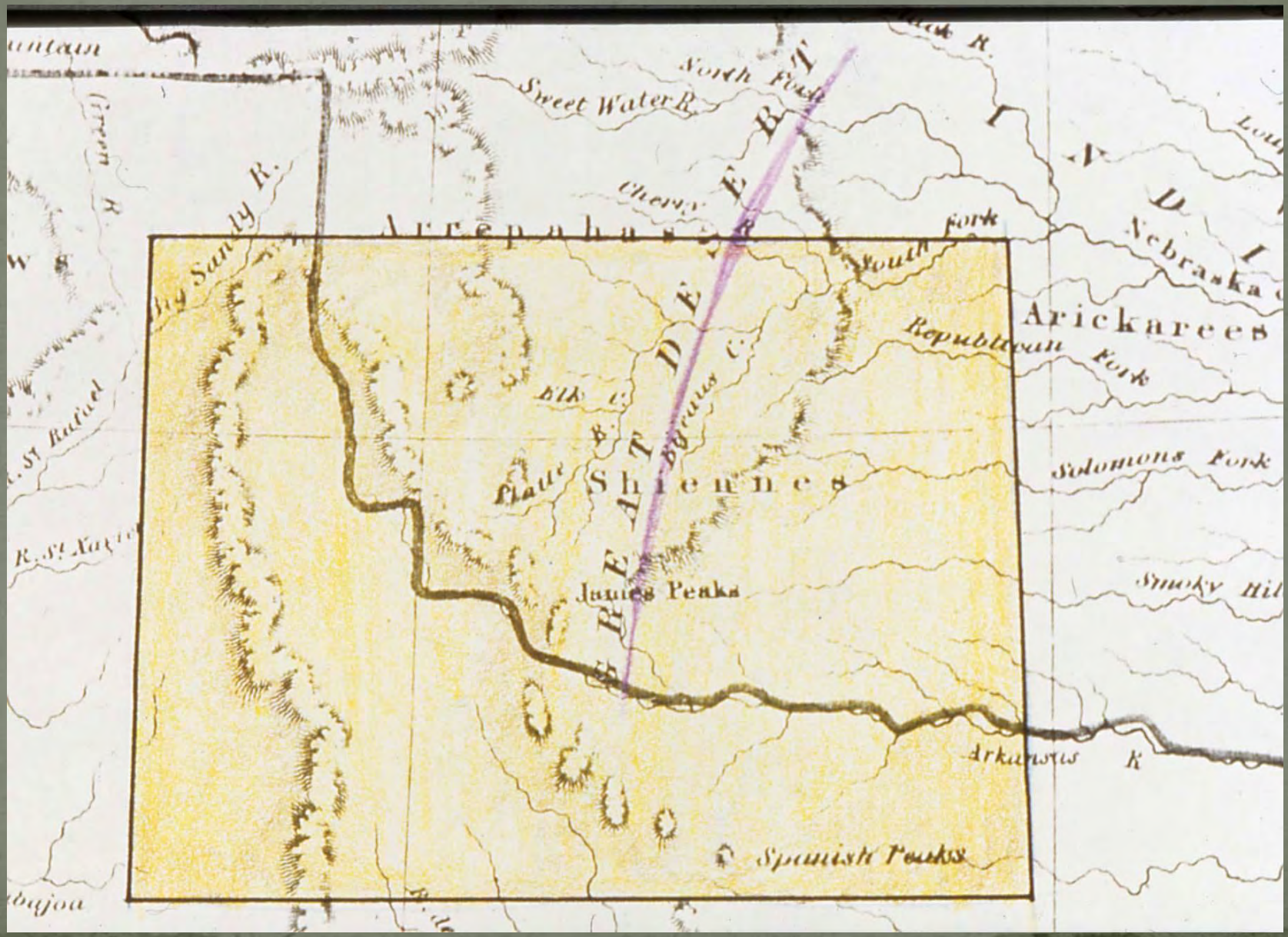
"These vast plains of the Western Hemisphere may become in time equally celebrated with the sandy desert of Africa."

Zebulon Pike
1807

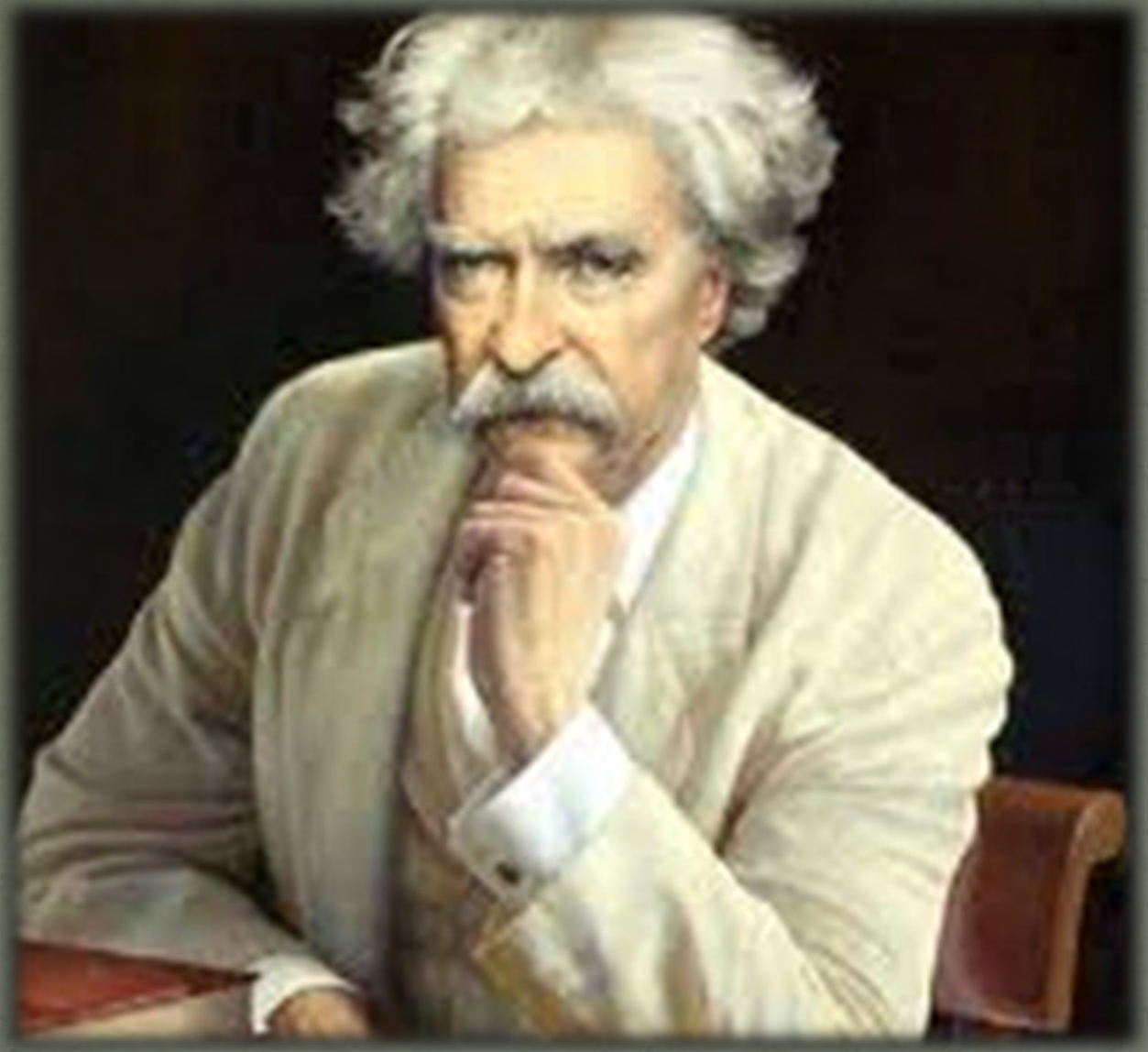
"A barren region unfit for the habitation of civilized man."

Stephen Long
1820





Sweet Water R.
North Fork
Cherry
Arrepahas
South Fork
Nebraska
Arickarees
Republican Fork
Elk C.
Platte R.
Shiennes
Solomons Fork
James Peaks
Arkansas R
Spanish Peaks
Big Sandy R.
Green R.
R. St Rafael
R. St Xavier



"....the Platte was 'up' they said – which made me wish I could see it when it was down, if it could look any sicker and sorrier."

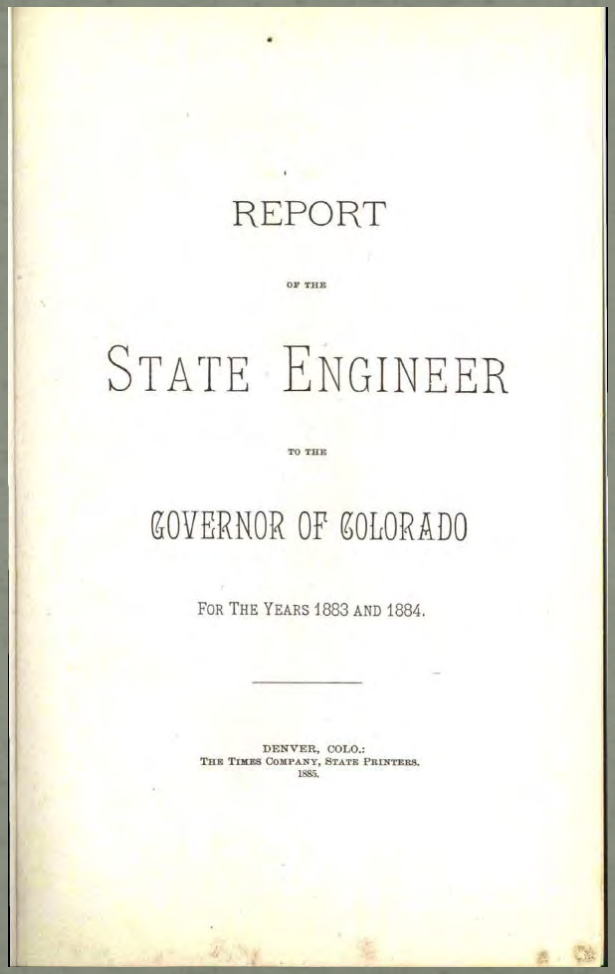
Mark Twain
1861 in *Roughing It*

PIKESPEAK
POST

Transmountain Diversion Studied

- 1880's– First preliminary surveys of possible diversion projects to import West Slope water to the Northern Front Range

State Engineer Report – 1883-1884



REPORT

OF THE

STATE ENGINEER

TO THE

GOVERNOR OF COLORADO

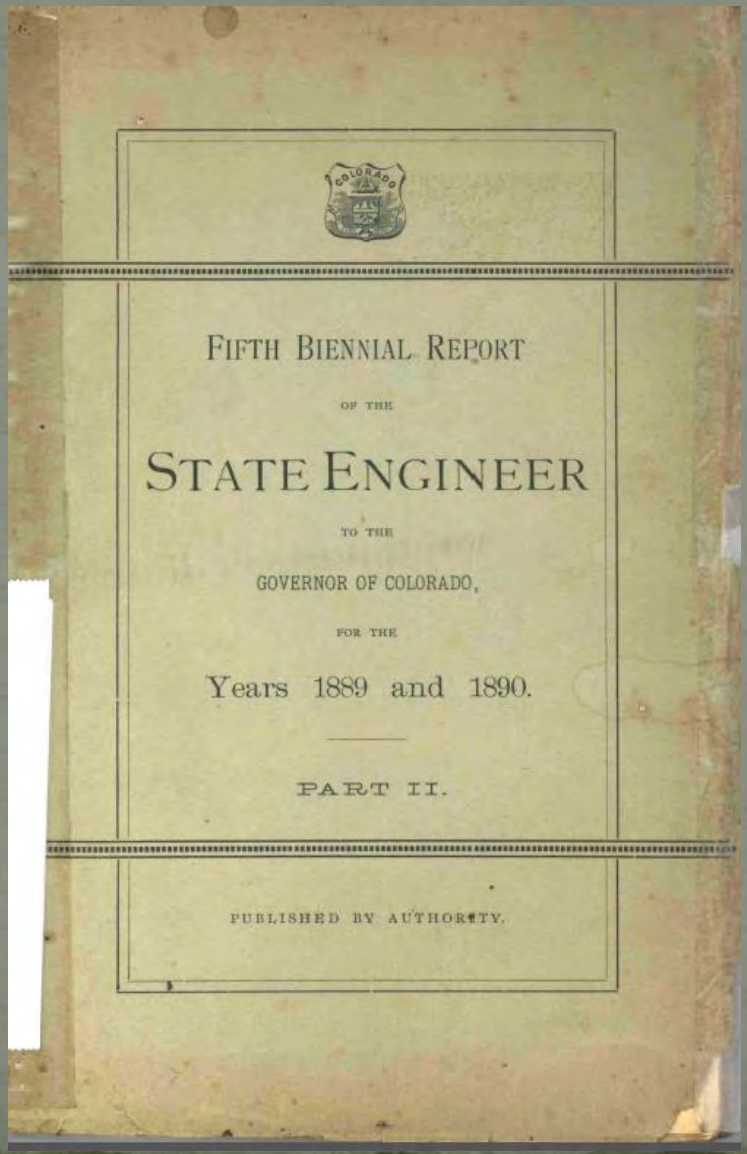
FOR THE YEARS 1883 AND 1884.

DENVER, COLO.:
THE TIMES COMPANY, STATE PRINTERS.
1885.

Grand Lake to either St. Vrain Creek or Boulder Creek

- Tunnel 14 to 17 miles long
- Requiring millions to construct
- Proposition declared “impractical”

State Engineer Report – 1889-1890



FIFTH BIENNIAL REPORT

OF THE

STATE ENGINEER

TO THE

GOVERNOR OF COLORADO,

FOR THE

Years 1889 and 1890.

PART II.

PUBLISHED BY AUTHORITY.

Two studies funded

- SB248
  - $3,000 to survey Grand, Laramie to S. Platte
  - $10,000 for construction if feasible
  - Determined infeasible, money left in account

- HB 161 - $25,000
  - Grand River to S. Boulder Creek
  - 2 months, $1,500 spent
  - Determined infeasible – engineering and economic
  - Remainder returned to State!

1902 Reclamation Act

ROCKY MOUNTAIN
NATIONAL PARK
ESTABLISHED IN 1915

Colorado River Compact - 1922

WYOMING
NEVADA
UTAH
COLORADO
CALIFORNIA
ARIZONA
NEW
MEXICO

The Window Opens – 1930s

12

Greeley Chamber of Commerce Grand Lake Committee 1933

Northern Water Origins

- 1930's - Great Depression – drought and dust storms forced many farmers to quit

- 1935 – Northern Colorado Water Users Association established in favor of Grand Lake Project

1937 – Pivotal Year

- Colorado Water Conservation Board
- Colorado River Water Conservation District
- Northern Colorado Water Conservancy District

Northern Water

- Conservancy District Act – May 1937

- Northern Water established – Sept. 20, 1937
  - Board created
  - 11 members (12 now)
  - Negotiations with Reclamation
  - District-wide vote
  - Repayment Contract

BIG THOMPSON PROJECT WINS FAVOR BY LANDSLIDE VOTE

Majority of 7,538 to 439 Clears Way for Actual Construction on $44,000,000 Water Diversion Program.

Greeley, Colo., June 29.—(A. P.)—The way was cleared Wednesday by a landslide vote of 17 to 1 in the northern Colorado conservancy district for contract letting and beginning actual construction of the 44-million-dollar Colorado-Big Thompson project, designed to supply additional water to 615,000 acres in northern and northeastern Colorado.

The district voted Tuesday 7,538 to 439 to enter into a repayment contract with the reclamation bureau for construction of the project, termed by Senator Ed C. Johnson "the most important undertaking in Colorado in a generation."

Only one step, letting of contracts, remains before actual construction is started. Porter Preston, reclamation engineer in charge, said two major contracts for work in connection with the diversion system may be let before the year is out.

The system involves carrying of water under the continental divide thru a 13.1-mile-long tunnel to northern Colorado farm lands from the Colorado river basin.

RESERVOIRS AND POWER PLANTS PLANNED.

Construction of reservoirs on eastern and western slopes and setting up of power plants also is included.

By its vote Tuesday, the district promises to repay an estimated 20 million dollars to the government for irrigational advantages. Sale of power would repay the remaining 24 million dollars of the project's cost.

Already $4,150,000 has been made available for construction thru congressional appropriations and public works administration grants.

A total vote of 7,977 votes were cast in twenty-four precincts. The vote by counties follows:

Boulder, 701 for and 112 against; Larimer, 2,716 for and 77 against; Weld, 3,083 for and 125 against; Morgan, 429 for and 55 against; Logan, 475 for and 50 against; Sedgwick, 165 for and 15 against; Washington, 18 for and 1 against.

JOHNSON AND ADAMS PLEASED.

Senator Johnson and his colleague, Senator Alva B. Adams, were highly pleased over the vote.

"A mighty good thing," Johnson called it. "I regard the project as the most important undertaking of a generation as far as Colorado is concerned."

Adams declared the sentiment voiced by the conservancy district ranked in importance with "the coming of the railroad to Colorado and the discovery of gold in her hills."

LOWRY STUDENTS TAKE BIG THOMPSON PICTURES FROM AIR

News 7/12/38

Photograph Streams for Reclamation Bureau On High Flight.

Student photographic officers at the army air corps technical school went on their first mission high over the continental divide Monday to "shoot" pictures of rivers and streams involved in the Colorado-Big Thompson project for the reclamation bureau.

Taking off from the municipal airport in the huge B-18 bombing plane, the class of five officers expected to spend most of the day flying over the mountains. Regulations heretofore have prevented army flyers from flying any photo missions over the high mountains.

The average altitude of the flight was expected to be between 20,000 and 25,000 feet above sea level. Six oxygen tanks were installed in the bomber and officers expected to use [illegible] air freely in the high

Vote Appr
Big Thomp

17 to 1 Margi Of Victory Re

By Associated Press

GREELEY, Colo., Jur way was cleared today slide vote to 17 to 1 in tl Colorado Conservancy contract letting and be tual construction of the dollar Colorado - Big project, designed to su tional water to 615,00 Northern and Northea rado.

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Tunnel Planned

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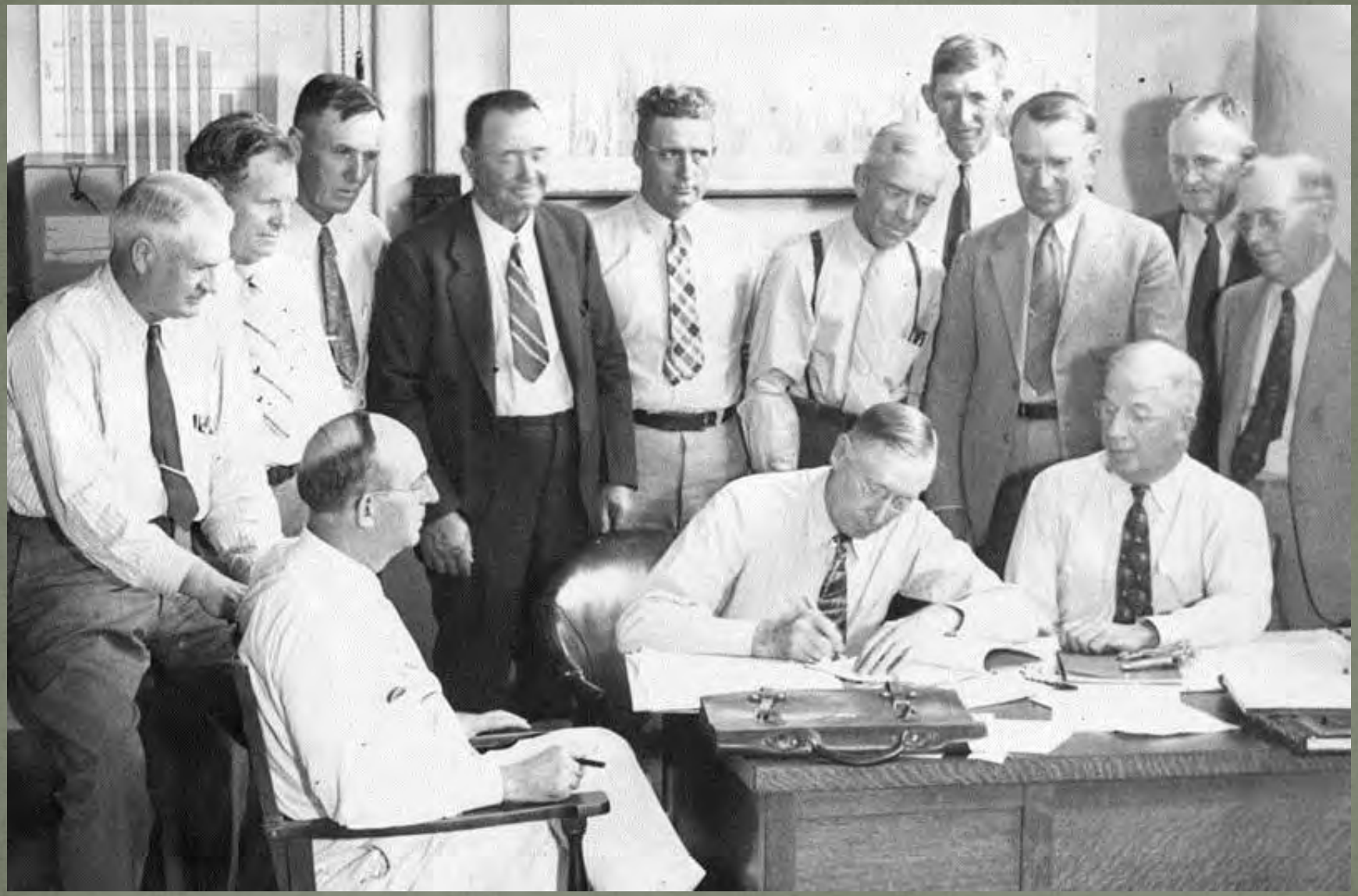
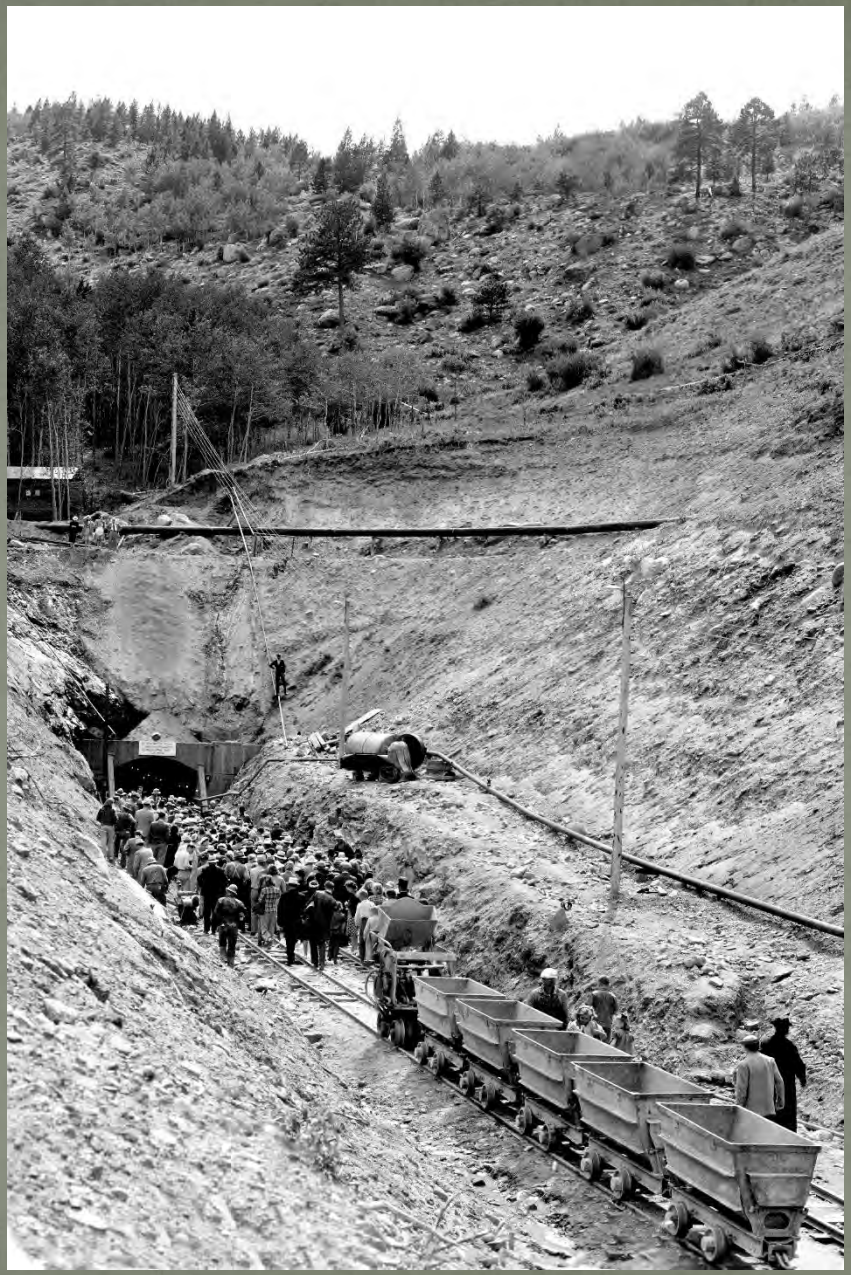


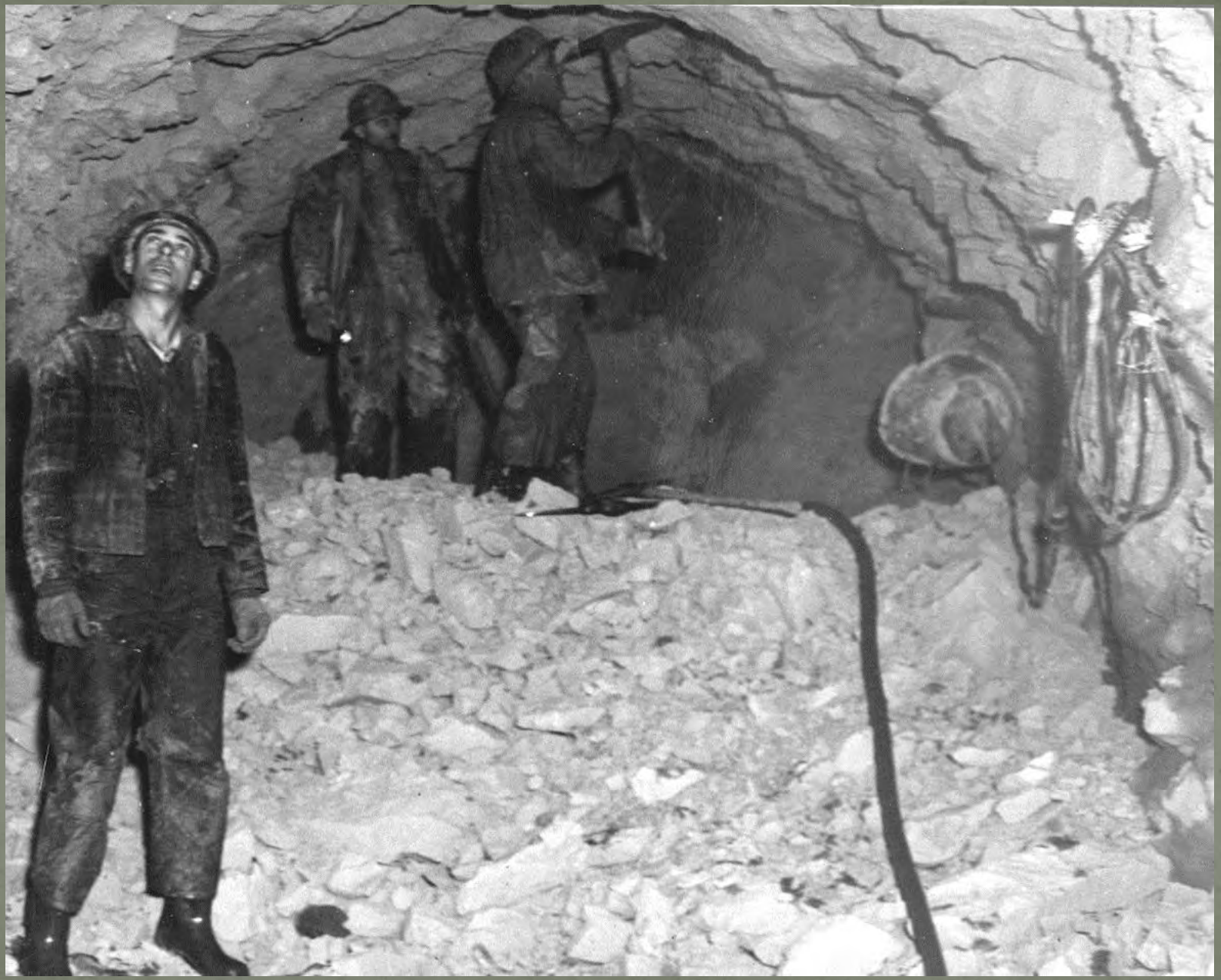
Colorado-Big Thompson Project Construction 1938-1957

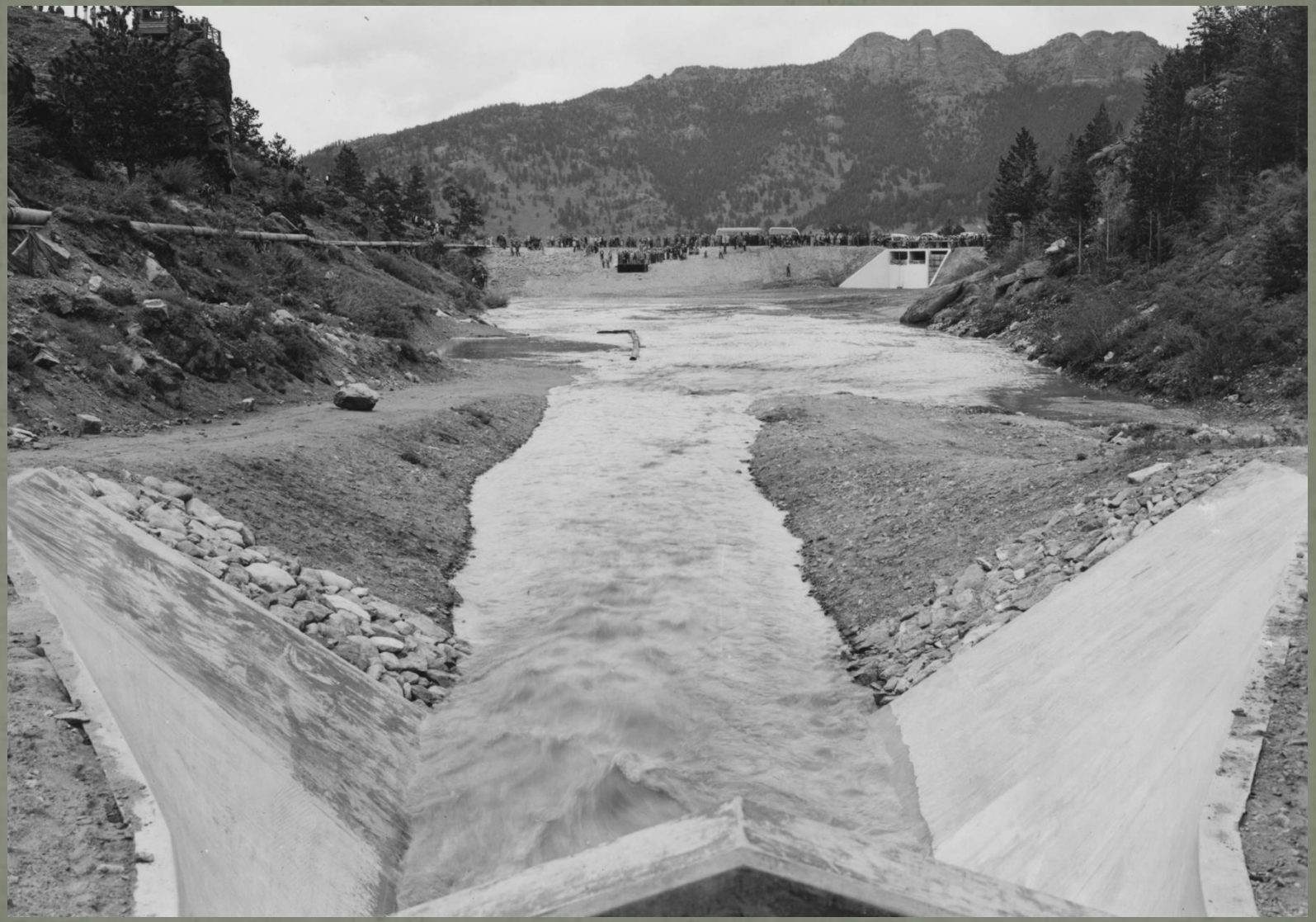
Alva B. Adams Tunnel

1940-1947

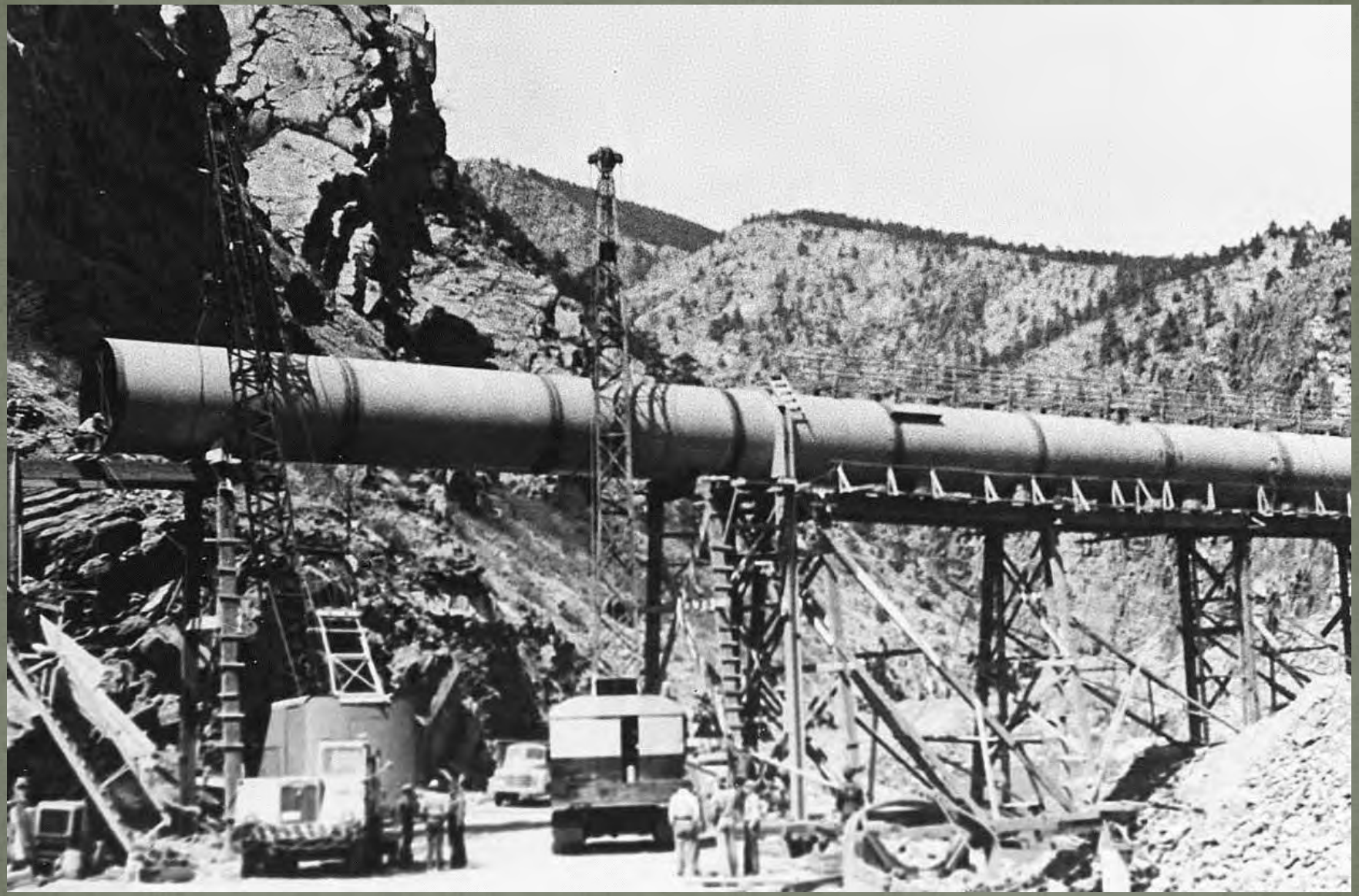
THRILLS · SPILLS







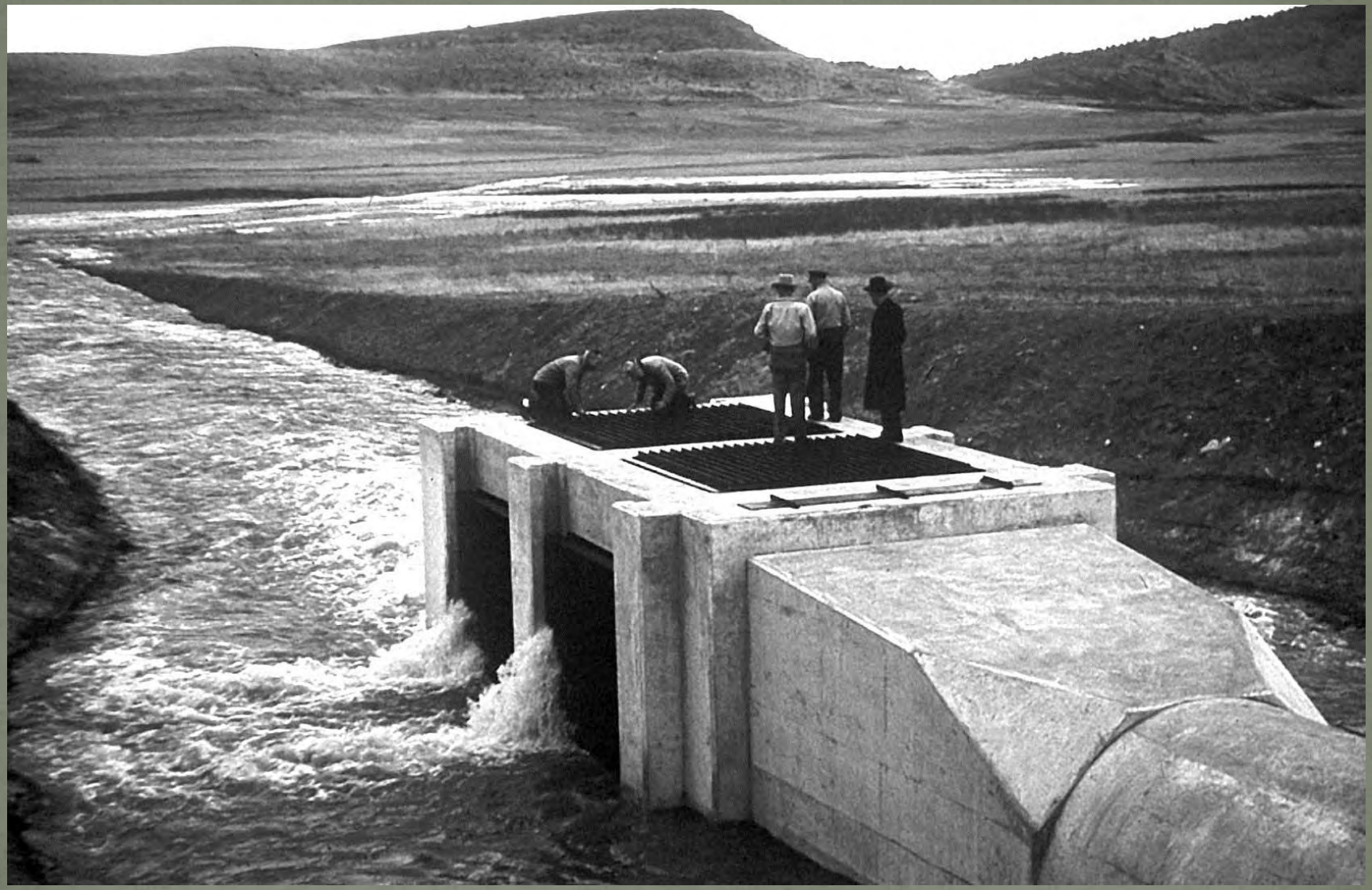
Big Thompson Siphon



EMERGENCY
PARKING
ONLY

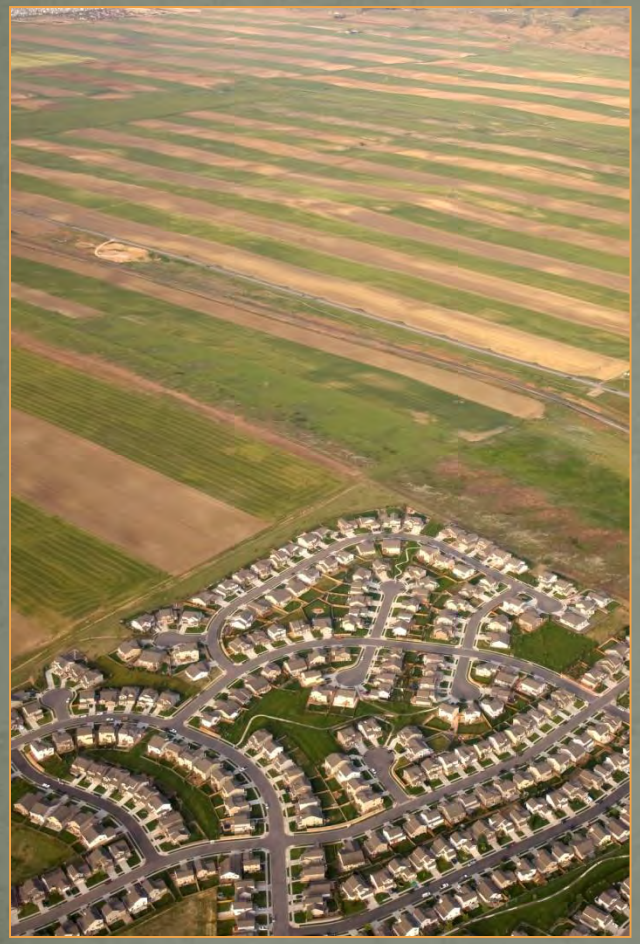
East Slope Distribution Facilities

KLZ



Northern Water and C-BT operations today

Growth



1957

Population = 150,000

C-BT Deliveries:
98% Agricultural
2% Municipal-Industry

C-BT Ownership:
85% Agricultural
15% M & I

2017

Population = 925,000

C-BT Deliveries:
50-55% Agricultural
45-50% M & I

C-BT Ownership:
30% Agricultural
70% M & I

West Slope Collection System

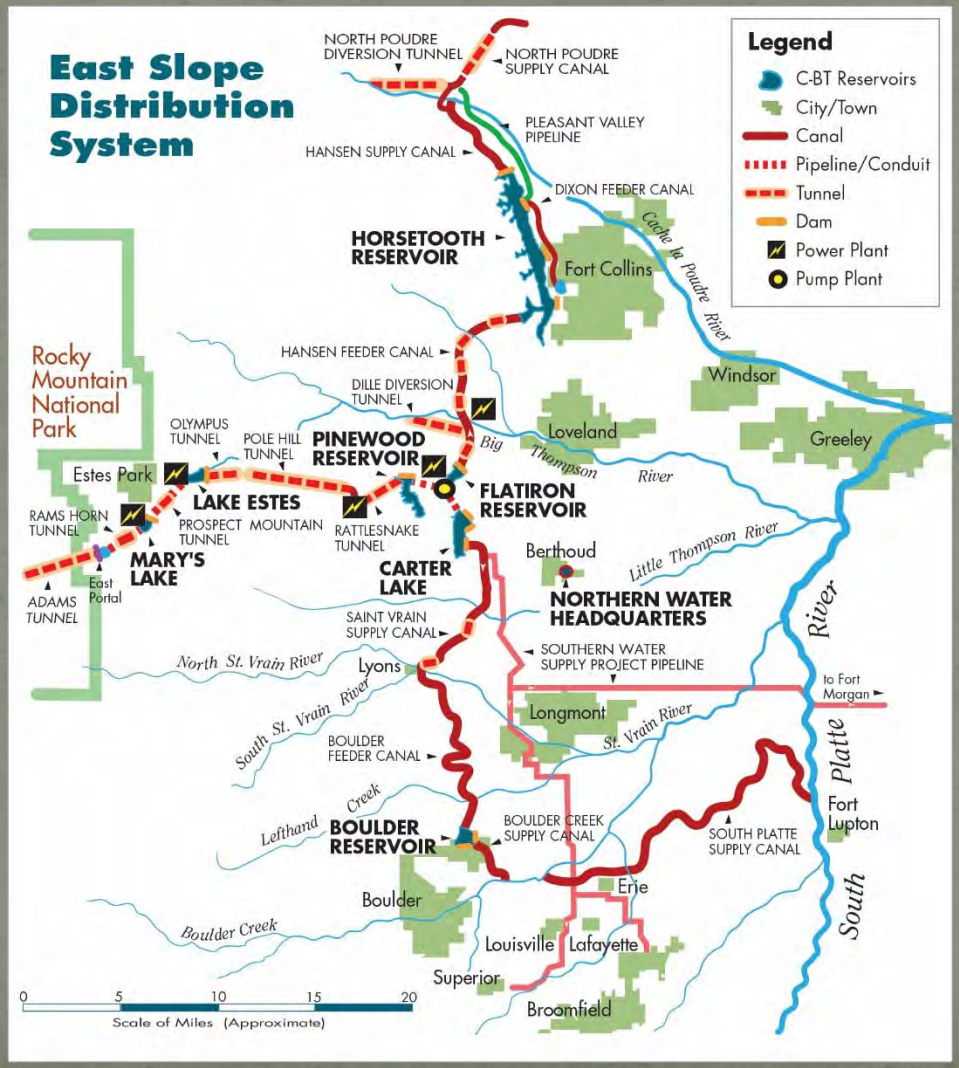
West Slope Collection System

Grand Lake and Shadow Mountain

Willow Creek Reservoir

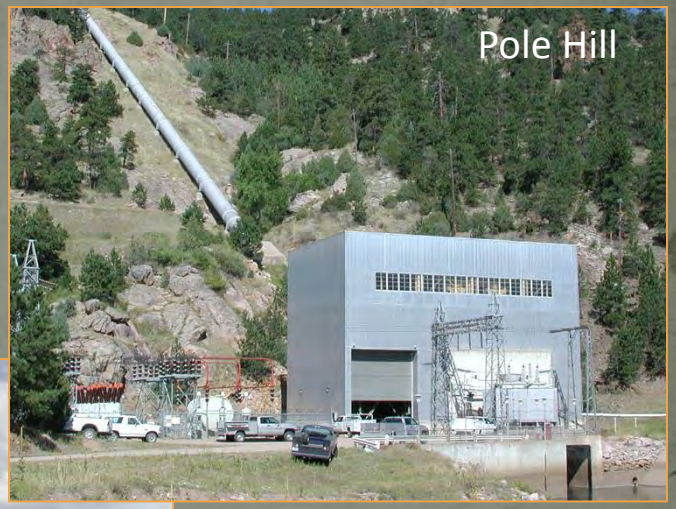
Green Mountain Reservoir

East Slope Distribution System

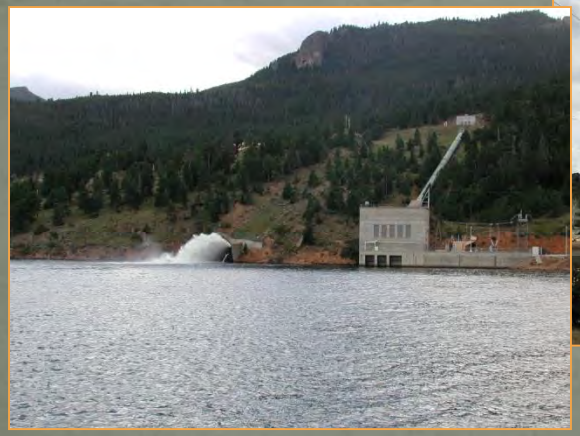


Power Generation

Flatiron Penstocks



Pole Hill

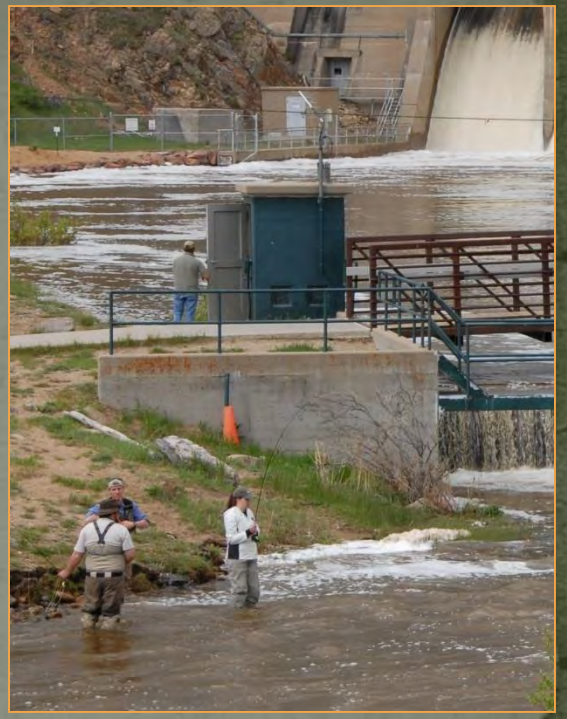


Mary's Lake

Estes Power Plant

Flatiron

Recreation



Water Deliveries

- Supplemental supply to:
  - 33 cities and towns
  - 120 ditch, reservoir and irrigation companies
  - 1,500 individual allottees

C-BT Quota

- Initial quota in November since 2002
- April quota
-
- Supplemental quota as necessary

Windy Gap Project

West Slope Collection System
Grand Lake
North Inlet
ALVA B. ADAMS TUNNEL
WEST PORTAL
East Inlet
North Fork Colorado River
GRAND LAKE
SHADOW MOUNTAIN RESERVOIR
34
SHADOW MOUNTAIN DAM
GRANBY PUMP CANAL
Stillwater Creek
64
Rocky Mountain National Park
Columbine Creek
FARR PUMP PLANT
WILLOW CREEK RESERVOIR
WILLOW CREEK PUMP CANAL & PUMP PLANT
Twin Creek
CR 40
Willow Creek
CR 6
125
GRANBY DAM
Roaring Fork
WINDY GAP PUMP PLANT
WINDY GAP PIPELINE
34
CR 6
LAKE GRANBY
Colorado River
40
Kremmling
WATCHABLE WILDLIFE AREA
Monarch Lake
40
Granby
WINDY GAP RESERVOIR
Strawberry Lake
Blue River
9
Fraser River
40
GREEN MOUNTAIN RESERVOIR

Windy Gap Project

- Original part of C-BT design
- 1960s
  - Northern Conference Water Commission – 1965
  - 1966 – Five City Water Meeting
  - 1967 – 6 Cities Water Committee
- Water rights filing – July 17, 1967

Windy Gap Project

- 6 Cities formally established – Feb. 24, 1969
- Municipal Subdistrict established – July 6, 1970

Windy Gap Project

- Critical issues
  - Carriage Contract with Reclamation
  - Completion of EIS
  - Financing

Windy Gap Project

- Settlement Agreement – 1980
  - West slope negotiations - $$$$$
- EIS approval - 1981
- Supplemental Agreement – 1985
  - $$$ instead of reservoir

Construction

- 1981-1985
- Dedication and first water pumped – June 29, 1985

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