

CHAPTER 7 - PLATTE - NIOBRARA SUBBASIN

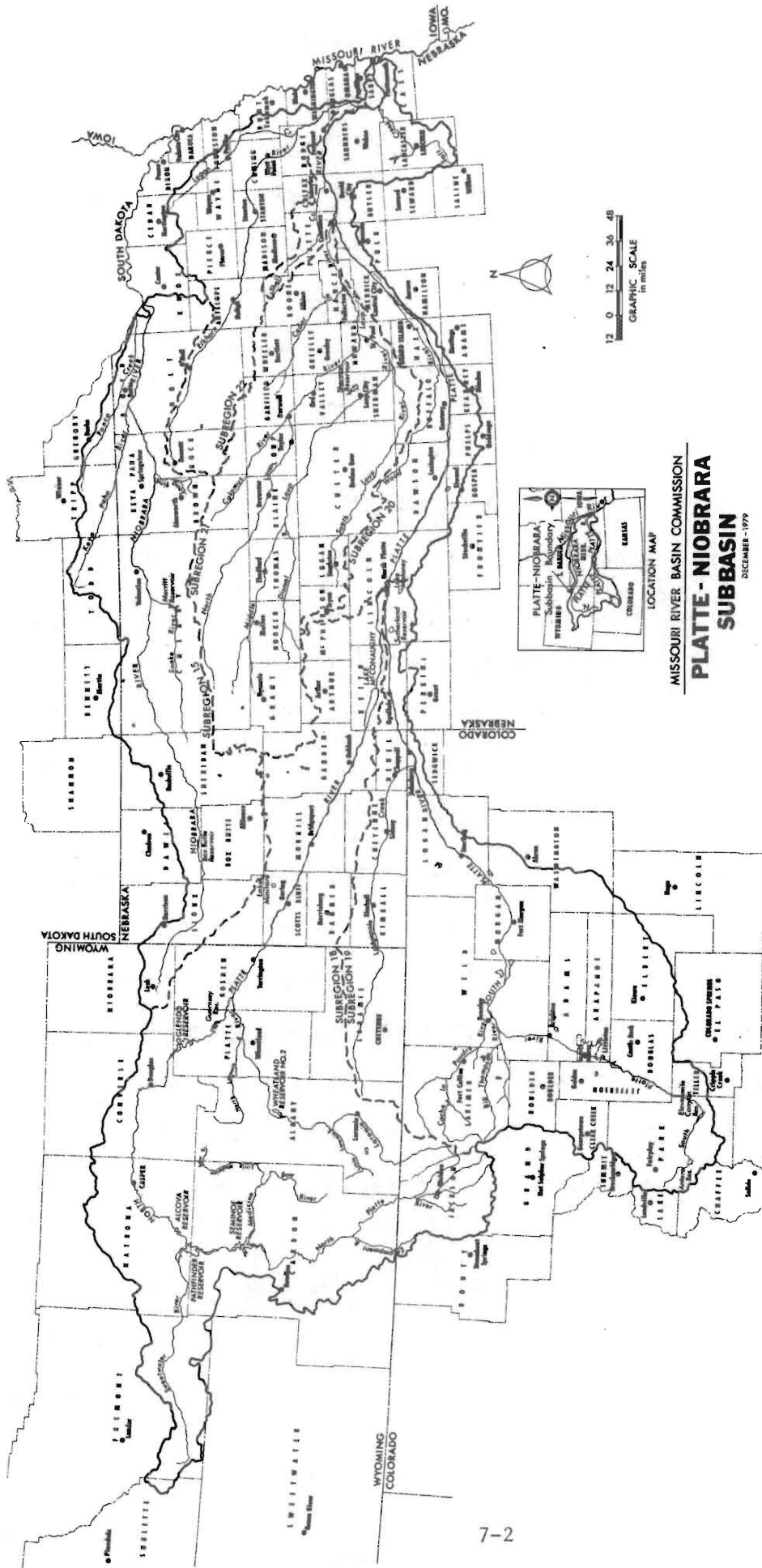
SUBBASIN DESCRIPTION

The Platte-Niobrara Subbasin extends from the southwestern portion of the Missouri River Basin in Colorado and Wyoming eastward through Nebraska to the Missouri River. As indicated in figure 7-1, the subbasin includes lands drained by the Platte and Niobrara Rivers and Ponca Creek for a combined area of 63.7 million acres in Colorado, Wyoming, Nebraska, and South Dakota. The subbasin extends about 600 miles in an east-west direction and about 300 miles in a north-south direction at its widest point. Topography varies greatly; its western boundary is the top of the continental divide in Colorado and Wyoming while the flood plain of the Missouri River forms part of its border in the east.

The Platte River is formed by the junction of the North and South Platte Rivers in west-central Nebraska; from there it flows across Nebraska to the Missouri River. The Niobrara River flows along the subbasin's northern edge, emptying into the Missouri River above Lewis and Clark Lake.

The character of the natural environment is highly diverse. Mountainous, forested tracts give way to foothills and high plains in the far west. These areas support large populations of big game animals and high quality cold water fisheries. Moving eastward, land use is dominated by intense agricultural activity. The subbasin's agricultural lands provide important habitat for a variety of birds and small animals. The streams, sand pits, ponds, and lakes across Nebraska and in eastern Wyoming and Colorado provide warm water fish habitat.

Natural formations of significant esthetic values exist in the subbasin, especially the scenic vistas in the Rocky Mountains and the unique Sand Hills terrain. The area is also historically rich, providing traces of the history



MISSOURI RIVER BASIN COMMISSION
PLATTE-NIOBRARA
SUBBASIN
 DECEMBER - 1979

Figure 7-1 - Platte - Niobrara Subbasin

of the pioneer settlers, westward railroad development, military outposts, and mining activities.

The subbasin's 1975 population was estimated to be 2.7 million persons. Eighty percent lived in urbanized areas; most of these in the three Standard Metropolitan Statistical Areas along Colorado's front range. The rural component of the population is projected to decline further during the remainder of the century.

The subbasin supports a diverse economy, including agriculture, manufacturing, mining, forestry, and recreation. Denver, Colorado, is the dominant economic nucleus, supported in part by the vast agricultural activities and natural resources found throughout the basin.

Typical of the entire Missouri River Basin, water availability is highly variable across the Platte-Niobrara Subbasin. Flows in the Platte River drainage are subject to extreme seasonal fluctuations caused by high spring runoff and extensive irrigation development. Flows in the Niobrara and its tributaries are more regular due to subsurface inflows from the Sand Hills, under which lie vast ground-water reservoirs. Outside of the Sand Hills, major sources of ground water are the Ogallala aquifer and stream alluvia. Extensive ground water pumping occurs along the Platte, South Platte, and Niobrara Rivers.

Irrigation is the dominant water use in the subbasin; withdrawals totaled some 12.4 million acre-feet in 1975.

Municipal water supply is another important consideration, especially along Colorado's front range. A number of diversions from the Colorado River Basin supplement Platte River Basin sources.

Water quality in the subbasin's streams and underground aquifers is generally good. Seasonal degradation of some watercourses is caused by runoff from agricultural lands.

Use of water from the subbasin's major streams is subject to interstate compacts or court decrees. A court decree involving the waters of the Laramie River limits Colorado's aggregate diversions and assures flows into Wyoming. The North Platte River is apportioned by decree among Colorado, Wyoming, and Nebraska. The South Platte interstate compact calls for minimum flows at the Colorado-Nebraska State line. Finally, the Upper Niobrara River Compact allocates Niobrara River streamflow and related ground water between Wyoming and Nebraska.

The subbasin States for the most part adhere to the system of prior appropriation in determining water allocation for beneficial uses. Beneficial uses are specifically defined and generally include domestic, municipal, and agriculture. Colorado further recognizes water use for instream flows for fisheries habitat and recreation, and will issue water rights for such reservations.

Management of ground water in Nebraska is limited to the creation of optional water management districts in areas of critical concern. Colorado apportions ground water in a manner similar to surface waters, requiring the granting of a water right by the State regulatory agency.

PROBLEMS AND OPPORTUNITIES

The major water-related problems in the Platte-Niobrara Subbasin are irrigation water supply, flooding, municipal water supply, and fish and wildlife habitat.

Irrigation water problems involve declining ground-water tables, surface water shortages, and limited opportunities for increased development.

Ground-water levels are declining in localized areas in the central Platte valley in Nebraska; Alliance, Nebraska area; areas of intense irrigation in the lower Niobrara River basin; and portions of the Ogallala

aquifer in Colorado. Regulatory measures to stem the declines have not succeeded to date.

Surface water shortages occur most frequently in the South Platte basin in Colorado and Nebraska and the North Platte drainage throughout Wyoming and into western Nebraska. Additional storage, system rehabilitation, and improved water management are needed to reduce annual and seasonal shortages.

Opportunities exist for irrigating additional lands in the Loup, upper Elkhorn, and Niobrara basins, and areas on the high plains separating the North and South Platte Rivers. Water availability, cost, and other factors limit development.

A considerable amount of the subbasin's lands are subject to flooding. Severe and recurring urban flooding occurs at communities with flood-plain areas adjoining the basin's major streams and tributaries. These include--but are not limited--to the South Platte River and tributaries along Colorado's front range; the North Platte River from Casper, Wyoming to Glendo Reservoir; the lower Loup River Basin near Columbus, Nebraska; the middle and lower Platte River in Nebraska; and the lower Elkhorn River Basin in Nebraska. Ice jams further aggravate spring flooding upstream from the confluence of the Platte and Elkhorn Rivers in eastern Nebraska.

Rural flooding is also widespread in the Platte-Niobrara Subbasin. Flash floods caused by summer thunderstorms occasionally flood agricultural lands on the eastern plains in Wyoming and Colorado, often damaging irrigation systems. The North Platte and South Platte Rivers and their tributaries are subject to frequent spring floods which damage rural lands, farmsteads, and utilities. The steeper-sloped tributaries rapidly carry excess flows to the rivers, often causing overbank flooding.

The most significant municipal water supply problems exist in Colorado's front range, including the Denver metropolitan area. Water available from the South Platte River Basin is limited and additional transbasin diversions from the Colorado River are becoming more difficult and expensive to implement.

Poor ground water quality and unreliable supplies create problems for some rural residents dependent upon underground reserves. Localized problems of this type occur in the South Platte basin, eastern Nebraska, the lower Niobrara basin, and in parts of eastern Wyoming.

Preservation of suitable habitat for fish and wildlife is an area of major concern and conflict in the Platte-Niobrara Subbasin. A portion of the Platte River valley in central Nebraska serves as an important stopover point for many species of migratory waterfowl, including the endangered whooping crane. Possible changes in stream regimen caused by depletions and reservoir operations are being investigated to determine waterfowl needs.

A related problem for waterfowl is drainage of wetland habitat for conversion to farmland. Declining water tables caused by pumping also have negative effects on the occurrence and quality of wetlands.

Fisheries in the subbasin are sometimes degraded due to low flows caused by extended droughts, subnormal snowpack, land treatment measures, and depletions for other uses. In the North Platte River, the annual "silt run" at Guernsey Reservoir may affect the fishery. Each year, silt-laden water is flushed out of the lake to seal irrigation canals in Wyoming and Nebraska.

PLANNING OBJECTIVES

The three subbasin States differ in their views of comprehensive water planning and in the preparation of a State water plan. Colorado has completed two of three phases of a traditional State water plan--a resource inventory and legal framework--both done in cooperation with the Water and Power Resources

Service. The State's near-term objective is to prepare phase III, the water resources management plan.

Nebraska has abandoned the concept of a State framework plan in favor of a recently legislated State water planning and review process. The process is intended to be issue-oriented with the near-term objective of providing the basis for wise legislative decisions concerning the State's water resources.

Wyoming's water plan will give consideration principally to identifying of multipurpose projects to facilitate the most beneficial utilization of the resources.

It is an objective of all three States to promote the development of irrigated agriculture. Each recognizes irrigation as a high-priority beneficial use of water necessary for the State's economy. A specific objective of Colorado is to provide additional storage for irrigation water on the South Platte River and its tributaries and to promote system rehabilitation and other water conservation measures. Further, Colorado opposes the conversion of prime agricultural lands and water suitable for irrigated agriculture to other uses. In Nebraska, the use of water for irrigation has been declared "a natural want" in the State statutes, underscoring the State's support for continuous irrigation development. Wyoming's objective is to maintain at least the current level of irrigated agriculture, improve water supplies, and develop additional feasible projects.

Each of the three States desires to reduce damages caused by floods through a combination of structural and nonstructural measures.

Although it is an objective of each State to preserve fish and wildlife resources and habitat, only Colorado officially recognizes the maintenance of instream flows for habitat as a beneficial use. Wyoming specifically calls for fish and wildlife resources to be considered in all planning processes.

The three States desire to provide increased quantity and improved quality of municipal, industrial, and rural domestic water. Colorado objectives call for cooperation between Federal, State, and local entities to provide for the water supply needs. The State specifically promotes employment of water conservation measures to reduce per capita use in municipal systems. A sound State plan for development of storage, distribution, and conservation of water supplies is an objective of the State of Wyoming.

State objectives concerning the preservation of natural, historic, and cultural resources differ slightly among the Platte-Niobrara Subbasin States. Colorado calls for an identification of significant natural areas, studies of riparian habitat, and an updated wetlands inventory leading to restoration of certain wetlands. Nebraska objectives call for investigations of potential protected streams in upcoming policy issues analyses. Wyoming desires to inventory and classify the State's natural, historic, and cultural resources.

Each of the States wants to provide improved water-based outdoor recreation for its citizens. A goal in Colorado is to expand recreational use of private and public water bodies. The State calls for operational studies to improve recreation opportunities and for local entities to work toward providing recreational access to private reservoirs. Wyoming objectives seek to provide recreational opportunities for the expanding populations resulting from energy development. The State calls for expansion of existing facilities and development of new recreation areas. Nebraska encourages local political subdivisions to provide recreational opportunities.

PLAN OVERVIEW

The plan for the Platte-Niobrara Subbasin includes the programs and conclusions and additional recommendations in this chapter, the basinwide recommended programs listed in chapter 2, and the statewide programs

recommended for Colorado, Wyoming, and Nebraska also contained in chapter 2. Many of the plan elements for the Platte-Niobrara Subbasin were originally recommended in the Commission's Platte River Basin, Nebraska, Level B Study, completed in 1976.

An element of the recommended plan is Department of the Interior's "Platte River Studies." The analysis is being conducted in three parts--an hydrology study, an ecology study, and an operations study--by the Geological Survey, Fish and Wildlife Service, and Water and Power Resources Service, respectively. Results of the studies should provide information needed to resolve a number of problems involving the future management of the Platte River.

In the area of comprehensive planning, the recommended plan calls for the Water and Power Resources Service to assist the State of Colorado beginning in FY 1982 in completing its State water plan.

The plan emphasizes the effort of several agencies to deal with the subbasin's identified urban and rural flooding problems. In the densely populated Denver metropolitan area, it is recommended that the Urban Drainage and Flood Control District continue its programs to delineate flood hazards and to plan for and construct measures to control them. The District is further called upon to cooperate with the Corps of Engineers to construct flood control measures at Westerly Creek near Denver. The plan also recommends that the Corps complete channel improvements on the South Platte River below Chatfield Dam.

The plan recommends local flood control projects by the Corps at chronic flood-prone areas in Nebraska that include Pender, and Columbus.

To help control flooding in upstream watershed areas, the plan calls for planning and construction of 30 Soil Conservation Service watershed projects. Eight projects are recommended for Colorado; 20 for Nebraska; and two in Wyoming.

Development of additional irrigated acreage is the focus of several recommended plan elements. The plan calls for the Water and Power Resources Service to proceed with construction of three major multipurpose projects--North Loup and O'Neill Units in Nebraska and the Narrows Unit in Colorado. Feasibility or appraisal studies are recommended for three other projects in the subbasin. Also, rehabilitation and betterment is recommended for the existing North Platte Project.

The Soil Conservation Service is called upon to implement seven irrigation-oriented watershed projects and to conduct irrigation water conservation studies in Colorado and Wyoming.

To address the serious problem of water supply for the Denver area, the subbasin plan recommends construction of the Foothills Project, which includes a storage reservoir on the South Platte River, a treatment plant, and related distribution facilities. The subbasin's rural water supply problems are addressed by the basinwide recommended program "Water Supply and Waste Water Disposal Systems" of the Farmers Home Administration.

Finally, the recommended plan contains a number of proposals intended to increase the production of electric power for use within and outside the subbasin. One plan element is construction by the Central Nebraska Public Power and Irrigation District of a hydroelectric plant at Kingsley Dam on the North Platte River in Nebraska. Feasibility studies are called for by the Water and Power Resources Service to investigate installation of hydroelectric facilities at the Colorado/Big Thompson Project and in the Cache la Poudre River Basin. It is also recommended that water and power conduct the "North Platte Hydroelectric Study" in Wyoming, to look at pumped storage opportunities at the existing reservoirs. Finally, the plan calls for integration of wind turbine electric power generation into the existing hydroelectric system.

RECOMMENDED PROGRAMS - PLATTE-NIOBRARA

DESCRIPTION

NAME, LEAD AGENCY, AND FUNCTIONS ADDRESSED

COMPREHENSIVE PLANNING AND SUPPORT ACTIVITIES

<p>1-UPPER PLATTE RIVER STUDIES DOI/Water and Power Resources Service Comprehensive</p>	<p>Ongoing three-part special study of issues on the Platte River drainage above Columbus, Neb; FWS--ecology study; GS--hydrology study; WPRS--operations study; coor. by DOI & MRBC; cost \$2.3 mil.</p>
<p>2-COLORADO STATE WATER PLAN, PHASE III DOI/Water and Power Resources Service Comprehensive Also in Kansas Subbasin</p>	<p>Proposed new start studies to prepare the phase III development plan; cost estimated at \$570,000 in FY 83; \$290,000 in FY 84; Colorado State agencies will participate.</p>
<p>3-EAST-CENTRAL COLORADO RC&D PROJECT USDA/Soil Conservation Service Comprehensive Also in Kansas Subbasin</p>	<p>Ongoing project in Elbert, Lincoln, Kit Carson, Cheyenne counties; annual funding requirements are \$70,000 through FY 82.</p>
<p>4-OVERLAND TRAILS RC&D PROJECT, COLORADO USDA/Soil Conservation Service Comprehensive Also in Kansas Subbasin</p>	<p>Proposed FY 80 project start in Logan, Morgan, Sedgwick, Phillips, Washington, and Yuma counties; annual funding requirements are \$70,000 through FY 82.</p>
<p>5-PANHANDLE RC&D PROJECT, NEBRASKA USDA/Soil Conservation Service Comprehensive</p>	<p>Ongoing project in eleven northwestern Nebraska counties; annual funding requirements are approximately \$500,000.</p>
<p>6-NORTH-CENTRAL RC&D PROJECT, NEBRASKA USDA/Soil Conservation Service Comprehensive</p>	<p>Ongoing project in six counties in Nebraska's sandhills; annual funding requirements are approximately \$500,000.</p>

7-SOUTHEASTERN WYOMING RC&D PROJECT, WYOMING
USDA/Soil Conservation Service
Comprehensive

Ongoing project in Laramie, Platte, Goshen, and
and Converse counties; funding requirements are
\$51,000 for FY 80; \$100,000 for FY 81-82.

8-NEBRASKA RIVER BASINS SPECIAL STUDIES
USDA/Soil Conservation Service
Comprehensive

Ongoing special studies of erosion, sediment,
rural water, & flooding in Mo. tribbs & White-Hat
basins; prime farmland mapping in Platte critical
habitat areas. Cost is \$1.3 million; FY 79-84.

Also in W. Dakotas, E. Dakotas, & Middle Mo. Subbasins

9-SNOW SURVEYS

USDA/Soil Conservation Service
Comprehensive

Ongoing program of manual and remote measurement of
hydrometeorological snow survey data stations in
mountain snow courses in WY, CO, and MT; total
FY 81 funding requirement for MRB is \$328,000.

Also in Upper Missouri and Yellowstone Subbasins

FLOODING

10-DESIGN AND CONSTRUCTION PROGRAM, DENVER, COLORADO
Urban Drainage and Flood Control District
Flooding

Ongoing design and construction of flood control
measures for Denver metro area; local governments
are cooperating agencies; annual joint expendi-
tures are approx. \$4 million through FY 82.

11-FLOOD HAZARD AREA DELINEATION PROGRAM, DENVER, COLORADO
Urban Drainage and Flood Control District
Flooding

Ongoing studies to define 100-year flood plain for
further management by local entities; Colo. WCB &
local gov'ts contribute; annual requirements are
\$95,000 through FY 82.

12-MASTER PLANNING PROGRAM, DENVER, COLORADO
Urban Drainage and Flood Control District
Flooding

Ongoing studies on major drainageways in Denver
area to define flood plain, estimate anticipated
damages, evaluate alternatives, & select flood con-
trol designs; annual costs are \$235,000 thru FY 82.

13-DOWNSTREAM CHANNEL IMPROVEMENT AT CHATFIELD DAM, COLORADO
Army Corps of Engineers
Flooding, Recreation

Proposed new start implementation of flood control
and erosion control measures on the S. Platte River
channel from Chatfield Dam down to Denver;
schedule is not yet determined; cost \$9.9 million.

- 14-METROPOLITAN DENVER AND SOUTH PLATTE RIVER BASIN, COLORADO
Army Corps of Engineers
Flooding
.....
Proposed construction of flood controls measures on Westerly Creek in Denver; authorization is pending; includes 1 new dam, channel mod., and dam mod.; Federal and local costs total \$18 million.
- 15-LOGAN CREEK, PENDER, NEBRASKA LOCAL FLOOD CONTROL PROJECT
Army Corps of Engineers
Flooding, Recreation
.....
Proposed construction of levee and recreation lake at Pender, Neb.; Local sponsors currently acquiring right-of-ways; construction to begin FY 81; total cost \$3.1 million; Federal share \$2.5 million.
- 16-LOST CREEK, COLUMBUS, NEBRASKA LOCAL FLOOD CONTROL PROJECT
Army Corps of Engineers
Flooding
.....
Resumption of work on detailed project report for flood protection at Columbus, Neb.; studies should be completed FY 81, when construction of Lost Creek diversion should begin; cost \$180,000 for study.
- 17-BOULDER VALLEY WATERSHED PROJECT, COLORADO
USDA/Soil Conservation Service
Flooding
.....
Watershed project authorized for planning on St. Vrain Creek, Boulder County; includes 5 flood protection dams and 5 miles of floodway; construction cost estimated at \$5 million.
- 18-COAL CREEK WATERSHED PROJECT, COLORADO
USDA/Soil Conservation Service
Flooding
.....
Watershed project recommended for planning in Jefferson County; includes 5 miles of floodway; construction cost estimated to be \$200,000.
- 19-EAST BIJOU WATERSHED PROJECT, COLORADO
USDA/Soil Conservation Service
Flooding and Land Conservation and Management
.....
Watershed project recommended for planning in Elbert and Arapahoe counties; will include land treatment; total cost \$1 million.
- 20-EAST PLUM WATERSHED PROJECT, COLORADO
USDA/Soil Conservation Service
Flooding
.....
Watershed project authorized for planning on Plum Creek in Douglas County; includes six flood protection dams; cost estimated at \$10 million.

- 21-EVANS WATERSHED PROJECT, COLORADO
USDA/Soil Conservation Service
Flooding
.....
Watershed project recommended for planning in Weld County; includes one flood protection dam; total cost estimated at \$1 million.
- 22-PLUM CREEK WATERSHED PROJECT, COLORADO
USDA/Soil Conservation Service
Flooding
.....
Watershed project recommended for planning in El Paso, Douglas, and Teller counties; includes eight flood protection dams; total construction cost estimated to be \$8 million.
- 23-OGALLALA WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding
.....
Watershed project with approved application planning authorization expected FY 84; located in Keith County; includes two flood retention structures; total cost estimated at \$100,000.
- 24-BUFFALO-ELM WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding
.....
Watershed project with approved application; planning authorization expected FY 84; located in Custer, Dawson, & Buffalo counties; includes 7 flood retention structures; total cost \$2 million.
- 25-WAHOO CREEK WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding
.....
Watershed project with approved application; planning authorization expected FY 85; located in Saunders County; includes 13 flood retention structures; total cost \$5 million.
- 26-UPPER PRAIRIE CREEK WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding
.....
Watershed project with approved application; planning authorization expected FY 86; located in Buffalo and Hall counties; includes 6 flood retention structures; total cost estimate \$1.5 million.
- 27-SKULL CREEK WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding and Land Conservation and Management
.....
Watershed project with approved application; planning authorization expected FY 85; located in Butler County; includes 20 grade stabilization structures; cost estimated to be \$1.5 million.

- 28--SOUTHERN SARPY WATERSHED PROJECT, NEBRASKA
 USDA/Soil Conservation Service
 Flooding and Land Conservation and Management

 Watershed project with approved application; planning authorization expected FY 83; located in Sarpy County; includes 36 grade stabilization structures; cost estimated to be \$2 million.

- 29--NORTH BRANCH WATERSHED PROJECT, NEBRASKA
 USDA/Soil Conservation Service
 Flooding

 Watershed project with approved application; planning authorization expected FY 85; located in Buffalo and Hall counties; includes 28 miles of channel; 217 miles of laterals; cost \$4 million.

- 30--WARM SLOUGH/SILVER CREEK WATERSHED PROJECT, NEBRASKA
 USDA/Soil Conservation Service
 Flooding

 Watershed project with approved application; planning authorization expected FY 85; located in Hall and Merrick counties; includes 45 miles of channel; 251 miles of laterals; cost \$4 million.

- 31--ROCK CREEK WATERSHED PROJECT, NEBRASKA
 USDA/Soil Conservation Service
 Flooding and Fish and Wildlife

 Watershed project with approved application; planning authorization expected FY 80; located in Saunders & Lancaster Co.; includes 9 floodwater retention & 1 fish & wildlife struc.; cost \$6 million.

- 32--NORTHEAST CASS WATERSHED PROJECT, NEBRASKA
 USDA/Soil Conservation Service
 Flooding and Land Conservation and Management

 Watershed project with approved application; planning authorization expected FY 82; located in Cass County; includes 43 grade stabilization structures; cost is estimated at \$2.5 million.

- 33--STEVENS-CALLAHAN WATERSHED PROJECT, NEBRASKA
 USDA/Soil Conservation Service
 Flooding, Fish and Wildlife, and Recreation

 Active planning underway; expected approval for operation FY 81; located in Lancaster, Saunders, and Cass counties; includes two multipurpose & one flood retention structure; cost is \$3.5 million.

- 34--BONE CREEK WATERSHED PROJECT, NEBRASKA
 USDA/Soil Conservation Service
 Flooding, Fish and Wildlife, and Recreation

 Active planning underway; expected approval for operation FY 82; located in Butler County; includes one multipurpose and five flood retention structures; cost estimate is \$1 million.

35-MAPLE CREEK WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding, F&W, Rec., and Land Cons. Mgmt.

Active planning underway; expected approval for operation FY 81; located in Stanton, Colfax, and Dodge counties; includes 13 grade stab., 25 flood, and 3 multipurpose structures; cost \$5.5 million.

36-DOUGLAS WATERSHED PROJECT, WYOMING
USDA/Soil Conservation Service
Flooding, and Land Conservation and Management

Active planning underway; expected approval for operation after FY 79; located in Converse County; includes three flood retention structures, pipe-lines, channel, and land treatment; cost \$2.1 million.

37-BOX ELDER WATERSHED PROJECT, COLORADO
USDA/Soil Conservation Service
Flooding, and Land Conservation and Management

Project under construction; completion scheduled FY 81; located in NE Colo. and SE Wyo. in the Cache la Poudre Basin; includes one grade stab. & five flood protection dams; cost is \$6.7 million.

38-SEDGWICK-SAND DRAWS WATERSHED PROJECT, COLORADO
USDA/Soil Conservation Service
Flooding

Project under construction; completion scheduled FY 85; located in NE Colo, S. Platte River Basin; includes 3 miles of floodway and 10 flood protection dams; cost will be \$7 million.

39-BELLWOOD WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding

Project under construction; completion scheduled FY 86; located in Butler County; includes 14 flood retention structures, 15 miles of channel; cost is estimated to be \$2.3 million.

40-CLEAR CREEK WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding, and Land Conservation and Management

Project under construction; completion scheduled FY 84; located in Saunders County; includes 3.5 miles channel; one grade stab. and 3 flood retention structures; cost will be \$1.2 million.

41-COTTONWOOD WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding, and Land Conservation and Management

Project under construction; completion scheduled FY 84; located in Saunders County; includes 12 flood retention structures; cost estimated at \$2.3 million.

42-GERING VALLEY WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding

Project under construction; completion scheduled
FY 86; located in Scotts Bluff County; includes
9 flood retention structures; 22 miles of channel;
cost is \$6.7 million.

43-OAK/MIDDLE & NORTH OAK WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding, Land Cons. & Mgmt., Recreation

Project under construction; completion scheduled
FY 84; located in upper Salt Creek Basin;
includes 9 flood retention structures; 22 miles
of channel; cost is \$6.7 million.

44-SPRING CREEK (DAWSON COUNTY) WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding

Project under construction; completion scheduled
FY 81; located in Dawson and Custer counties;
includes 6 flood retention structures; cost is
estimated at \$2.7 million.

45-WINTER'S CREEK WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding

Project under construction; completion scheduled
FY 80; located in western Neb, in N. Platte Basin;
includes 1 flood retention structure; 7.2 miles of
channel; cost estimated at \$4 million.

46-SPRING CANYON WATERSHED PROJECT, WYOMING
USDA/Soil Conservation Service
Flooding, and Land Conservation and Management

Project under construction; completion scheduled
FY 82; located in Goshen County, N. Platte Basin;
includes one flood retention structure, pipeline,
and land treatment; cost is \$1.1 million.

FISH AND WILDLIFE

IRRIGATION

47-COOPERATIVE IRRIGATION WATER CONSERVATION STUDY, WYOMING
USDA/Soil Conservation Service
Irrigation
Also in Yellowstone and Western Dakotas Subbasins

FY 80 new start special study of irrigation water
conservation throughout Wyoming; scheduled for
effort by SCS, FS, and ESCS through FY 85; total
cost \$1.1 million.

48-SOUTH PLATTE RIVER BASIN COOPERATIVE STUDY, COLORADO
USDA/Soil Conservation Service
Irrigation, M&I and Rural Supply, Land Conserv. & Mgmt.

Proposed FY 81 new start regional study of irrig.
water mgmt., rural water supply, and erosion in
the S. Platte Basin; SCS, FS and ESCS effort
scheduled FY 81-84; total cost \$850,000.

49-FARWELL UNIT WATER CONSERVATION STUDY, NEBRASKA
DOI/Water and Power Resources Service
Irrigation, Water Quality, Land Conserv. & Mgmt.

FY 80 new start study of water use and rising
ground water table problems in Nebraska's Middle
Loup River Basin; total funding requirement is
\$350,000 for FY 80-82.

50-NARROWS UNIT, COLORADO

DOI/Water and Power Resources Service
Irrigation, Recreation, Flooding, F&W, Transportation

Authorized project for irrigating 287,000 acres in
S. Platte Basin; construction funds deferred pending
alternatives analysis in FY 80; total project
cost is \$169 million.

51-NORTH LOUP DIVISION, NEBRASKA

DOI/Water and Power Resources Service
Irrigation, Recreation; Nat., Hist. & Cult., Rec., F&W

Ongoing construction of project to irrigate 53,000
acres in central Neb.; completion scheduled post-
FY 85; total cost estimated to be \$160 million.

52-O'NEILL UNIT, NEBRASKA

DOI/Water and Power Resources Service
Irrig.; F&W; Recreation; Nat., Hist., & Cult.; Flooding

Ongoing project for irrigation of 77,000 acres in
north-central Neb.; construction is enjoined
pending supplementing the ES; includes Norden Dam on
Niobrara R; cost estimated to be \$226 million.

53-NORTH PLATTE PROJECT, REHAB. AND BETTERMENT, NEB. & WYO.

DOI/Water and Power Resources Service
Irrigation, Fish & Wildlife

Ongoing special study of the Guernsey Res. siltrun
and alternatives for improving irrigation effi-
ciency on N. Platte project systems; study cost
estimated at \$936,000 through FY 83.

54-PRAIRIE BEND UNIT FEASIBILITY STUDY, NEBRASKA

DOI/Water and Power Resources Service
Irrigation, Fish & Wildlife, Water Quality, Instream Flows

Proposed feasibility study to begin in FY 82 for
irrigation project on 70,000 acres in central
Platte River area; will include study of conjunc-
tion use and wildlife habitat; cost \$1.6 million.

- 55-SPARKS UNIT APPRAISAL STUDY, NEBRASKA
 DOI/Water and Power Resources Service
 Irrigation, Instream Flows, Fish & Wildlife, Recreation

 Ongoing regional appraisal of potential for irrigating 35,000 acres in northern Neb. using the Niobrara River; completion scheduled FY 81; cost is \$355,000.

- 56-LITTLE BLUE WATER RESOURCES PROJECT STUDY, NEBRASKA
 Little Blue Natural Resources District
 Irrigation
 Also in Kansas Subbasin

 Proposed feasibility study for a project to divert 115,000 AF of Platte River flows to storage and delivery system in the L. Blue basin to irrigate 40-60,000 acres; study cost \$240,000 over 5 years.

- 57-HENRYLYN WATERSHED PROJECT, COLORADO
 USDA/Soil Conservation Service
 Irrigation

 Watershed project with approved application; located in Adams and Weld counties; planned improvement of 20 miles of irrigation canals; cost estimated at \$5 million.

- 58-LEFT HAND DITCH WATERSHED PROJECT, COLORADO
 USDA/Soil Conservation Service
 Irrigation

 Watershed project with approved application; located in Boulder Co.; St. Vrain Creek; includes 5 miles of irrigation canal improvement; cost estimated to be \$1 million.

- 59-WESTERN CANAL WATERSHED PROJECT, COLORADO
 USDA/Soil Conservation Service
 Irrigation

 Watershed project with approved application; located in Weld County; Cache la Poudre River basin; will improve 44 miles of irrigation canals; cost will be \$750,000.

- 60-LAPRELE WATERSHED PROJECT, WYOMING
 USDA/Soil Conservation Service
 Irrigation

 Watershed project with approved application. Rehabilitation of existing irrigation distribution system and land treatment. Located in Converse County; N. Platte River basin.

- 61-CORN CREEK IRRIGATION PROJECT, WYOMING
 Corn Creek Irrigation District and State of Wyoming
 Irrigation

 Further planning may be conducted to determine project feasibility using State and local funds; irrigation project in Gosehn and Platte Counties; water would be pumped from North Platte River near junction with Laramie River.

62-HOME SUPPLY WATERSHED PROJECT, COLORADO
USDA/Soil Conservation Service
Irrigation

Project under construction, to be completed FY 81; located near S. Platte in Laramie and Weld counties; includes ditch lining, siphons, and water supply reservoirs; cost is \$4.3 million.

63-UPPER NORTH LARAMIE WATERSHED PROJECT, WYOMING
USDA/Soil Conservation Service
Irrigation, Recreation, and Land Conservation and Mgmt.

Project under construction, to be completed FY 85; located in Albany County; will include a multi-purpose reservoir, recreation facilities, and land treatment; cost estimated at \$1.4 million.

MUNICIPAL, INDUSTRIAL, AND RURAL DOMESTIC WATER SUPPLY

64-FOOTHILLS MUNICIPAL WATER TREATMENT PLANT & REL. FACILITIES
Denver Board of Water Commissioners
M&I Supply

Ongoing construction of municipal water supply treatment and conveyance facilities to serve Denver area; plant will use S. Platte River water stored at Strontia Springs Dam; cost \$150 million.

NATURAL, HISTORIC, AND CULTURAL RESOURCES

65-WIND-HYDROELECTRIC ENERGY INTEGRATION STUDIES
DOI/Water and Power Resources Service
Power & Energy

Ongoing special studies of feasibility to integrate wind turbine generators with existing hydroelectric system; pilot project near Medicine Bow, Wyo.; study costs are \$13.1 million; FY 78-83.

66-NORTH PLATTE HYDROELECTRIC STUDY, WYOMING
DOI/Water and Power Resources Service
Power & Energy

Proposed study to begin in FY 82 of the feasibility of large-scale pumped storage hydro units at existing N. Platte River reservoirs in Wyoming; estimated cost is \$1.1 million over 4 years.

67-COLORADO/BIG THOMPSON HYDROELECTRIC STUDY
DOI/Water and Power Resources Service
Power and Energy

Proposed study to begin in FY 82 of the feasibility of additional hydroelectric facilities for the Big Thompson Project; includes Pinewood-Carter pumped storage unit; study costs estimated at \$900,000.

68-CACHE LA Poudre HYDROELECTRIC FEASIBILITY STUDY, COLORADO
DOI/Water and Power Resources Service
Power and Energy

Proposed study of the feasibility of developing hydroelectric generating facilities in the Cache La Poudre River Basin.

69-KINGSLEY HYDROELECTRIC PROJECT, NEBRASKA
Central Nebraska Public Power & Irrigation District
Power and Energy

Proposed construction of 50 mw hydroelectric plant at existing Kingsley Dam on the N. Platte River; application has been submitted to FERC; cost estimate is \$60 million; construction over 3.5 yrs.

WATER-ASSOCIATED OUTDOOR RECREATION

70-DENVER-SOUTH PLATTE RIVER DEVELOPMENT, COLORADO
City of Denver
Recreation

Ongoing planning and development of recreation facilities along the S. Platte River corridor in Denver; H.C.R.S. is cooperating agency; costs are \$5 million in FY 81 and again in FY 82.

TRANSPORTATION

WATER QUALITY

LEGAL AND INSTITUTIONAL

INSTREAM FLOWS

WEATHER MODIFICATION

CONCLUSIONS AND ADDITIONAL RECOMMENDATIONS

- A. The State of Colorado, in cooperation with the Water and Power Resources Service, has completed two phases of its State water plan--a legal framework and a resource inventory. The State needs to develop the water resources management plan. It is recommended that the Water and Power Resources Service accelerate its schedule for assisting the State of Colorado in preparing the State water plan.
- B. Studies indicate that no reliable source of water is available for irrigating high-quality lands along the Cedar River and Loup River in Nebraska. A feasibility study for a multipurpose Federal project has been terminated. It is recommended that the Water and Power Resources Service conduct a broad water management study for parts of the Loup River Basin which includes the Cedar River drainage.
- C. The recommended plan elements contained in the Missouri River Basin Commission's "Platte River Basin, Nebraska, Level B Study" were adopted in 1976 to constitute the approved regional plan for the area studied. All of those recommendations were reconsidered during the current update and preparation of the recommended plan for the Platte-Niobrara Subbasin. Several of the level B recommendations have been completed; most of the remainder have been incorporated in the current recommended plan elements or have been deferred from further consideration. A number of other Platte level B plan elements continue to be recommended including:

Recommended legislative and institutional policy actions:

- Enact Nebraska Environmental Policy Act
- Implement Land Use Planning and Management Program
- Mitigate Fish, Wildlife, and Environmental Damages
- Regulate Channel Alterations
- Manage Public School Land and Right-of-Way for Wildlife Habitat

Expand Monetary Incentive Programs for Wildlife Habitat
 Expand Environmental Education and Research Programs
 Expand Wetland Acquisition and Restoration Program
 Revise Federal Flood Control and Recreation Project Acts
 (P.L. 83-566 and P.L. 89-72)
 Amend Nebraska Flood Plain Management Act
 Establish Protected Stream System
 Implement Ground Water Quality Management Program
 Accelerate Land Conservation Measures

Fencing and bank stabilization of trout streams: Nine Mile Creek, Red Willow Creek, Tub Springs, Wild Horse Creek, and Winters Creek in western Nebraska.

Development of flood plain municipal parks:

Arlington	Albion	Bridgeport	Ashland
Clearwater	Broken Bow	Cairo	Ceresco
Lyons	Dannebrog	Central City	Columbus
Nickerson	Genoa	Cozad	Denton
Oakdale	Loup City	Gibbon	Eagle
Pender	Pleasanton	Grand Island	Fremont
Pilger	Spalding	Kearney	Greenwood
Scribner	St. Edward	North Platte	Gretna
Stanton	St. Paul	Ogallala	Lincoln
Winslow	Scottsbluff	Lindsay	Manley
Terrytown	Wood River	Pleasant Dale	Springfield
Wahoo	Yutan		

Development of river access and recreation facilities:

Neligh to Mouth Elkhorn R.--170 mi., 7 locations
 Upper reaches--Dismal, Middle Loup, North Loup, Calamus,
 and Cedar Rivers--540 mi., 29 locations
 North Platte and Main Platte Rivers, Scottsbluff to Central
 City, 7 locations
 Platte River, Columbus to mouth, 100 mi., 6 locations

Sandpit lakes recreation developments:

Elkhorn River, Battle Creek to Platte River, 7 locations
 Loup, North Loup, Middle Loup Rivers, 5 locations
 Platte River, Grand Island to Scottsbluff, 4 locations
 Platte River, Gretna to Schuyler, 4 locations

Regional park development at Willow Creek, near Pierce, Nebraska