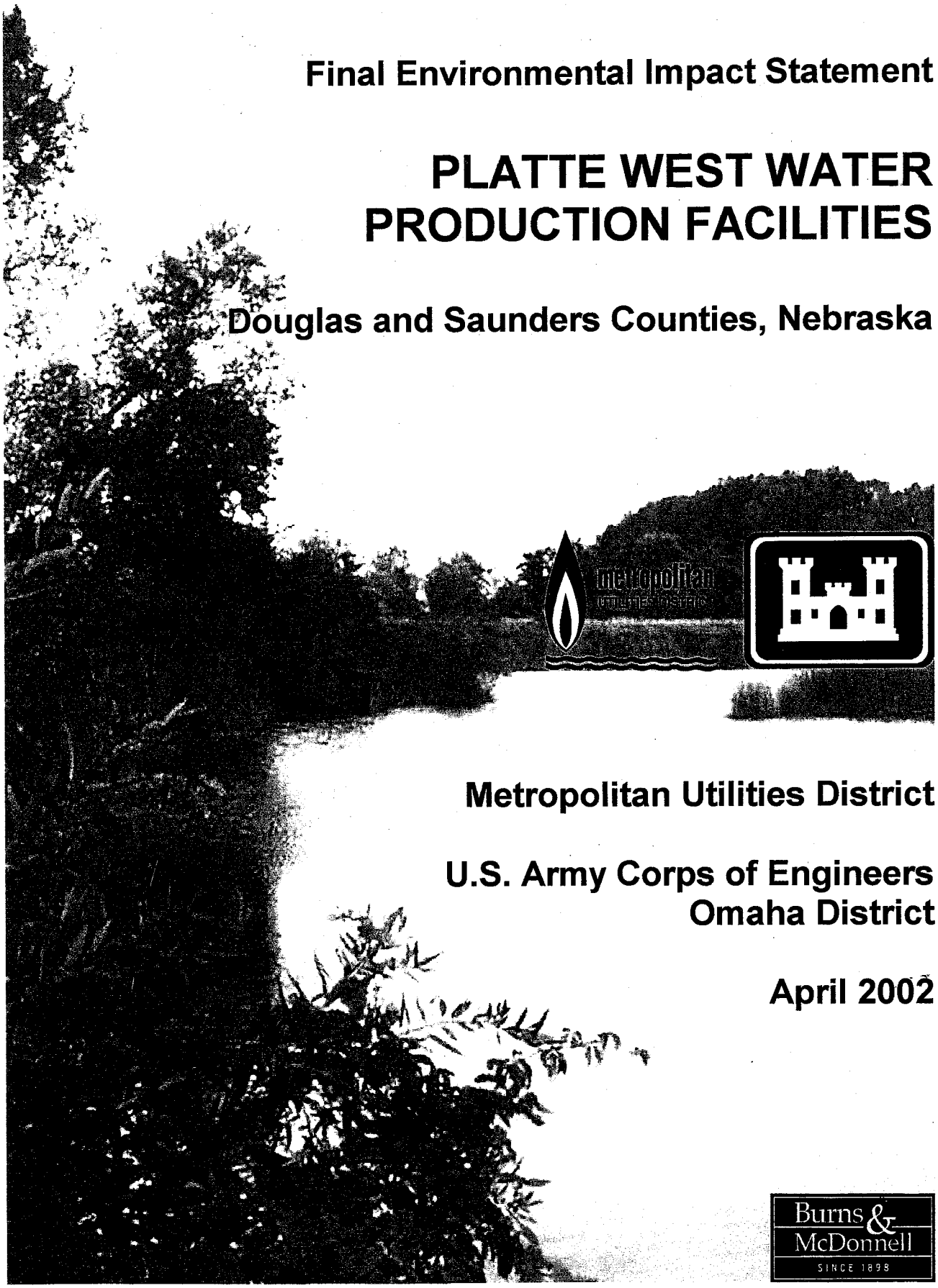


Final Environmental Impact Statement

PLATTE WEST WATER PRODUCTION FACILITIES

Douglas and Saunders Counties, Nebraska

Metropolitan Utilities District

U.S. Army Corps of Engineers
Omaha District

April 2002

Burns & McDonnell
SINCE 1898

FINAL ENVIRONMENTAL IMPACT STATEMENT

for the

PLATTE WEST WATER PRODUCTION FACILITIES

DOUGLAS AND SAUNDERS COUNTIES, NEBRASKA

Prepared for:

Metropolitan Utilities District
Omaha, Nebraska

U.S. Department of the Army
Corps of Engineers, Omaha District
Omaha, Nebraska

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Kansas City, Missouri

Project No. 20383

April 2002

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FINAL ENVIRONMENTAL IMPACT STATEMENT

April 2002

Lead Agency

U.S. Department of the Army
Corps of Engineers, Omaha District
Omaha, Nebraska

Cooperating Agencies

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
Natural Resources Conservation Service
Nebraska Department of Environmental Quality
Nebraska Game and Parks Commission
Nebraska Department of Natural Resources
Metropolitan Area Planning Agency
Papio-Missouri River Natural Resources District
Lower Platte North Natural Resources District
Saunders County, Nebraska
Douglas County, Nebraska
Sarpy County, Nebraska

Additional Information and Copies of Document

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ABSTRACT This Final Environmental Impact Statement (FEIS) discloses the environmental impacts from the Metropolitan Utilities District's (District) proposed new drinking water production facilities for the greater metropolitan area of Omaha, Nebraska. To meet peak-day demand through the year 2030, the District needs an additional maximum capacity of 100 million gallons per day (MGD). To provide for an acceptable level of water supply redundancy, the District needs an additional 62.8 MGD from a source other than the Missouri River (Chapter 1). From an initial list of 34 possible water supplies, six alternatives were selected for detailed evaluation: Platte West (PW), Platte North (PN), Platte South plus Platte West (PS+PW), Platte South plus Platte West, Douglas County only (PS+PWDC), Three-Way Combination (3-Way), and No Federal Action (Chapter 2). Each of the new water supplies would consist of one or more treatment plants and well fields. The well fields would be in the Platte River alluvial aquifer. The Three-Way combination would also include a new intake on the Missouri River. All the alternatives include implementation of a water conservation plan. Impacts to land, water, noise, wetlands, vegetation, wildlife, threatened or endangered species, socioeconomics, recreation, cultural resources, and hazardous wastes were evaluated (Chapter 4). For all of the alternatives, significant environmental impacts requiring mitigation are predicted for flow in the Platte River, wetlands, private wells, property values, and recreation. The well fields would pump water from the Platte River alluvial aquifer, which would lower the groundwater level around the well field and, through induced infiltration, would reduce the flow in the Platte River by approximately 15,700 (3-Way) to 25,400 (PN) acre-feet during the February through July period considered critical by the U.S. Fish and Wildlife Service to the endangered pallid sturgeon. Lowering the water table is predicted to adversely impact about 5 (several alternatives) to 30 (PW) private wells, cause the loss of 0.6 (PS+PWDC) to 14.7 (PW) acres of wetlands, potentially alter 62 (PS+PW) to 142 (PW) acres of wetlands, and remove subirrigation from 56 (PN) to 5,069 (PW) acres of land around the well fields. The loss of subirrigation could reduce property values because of impacts to crop yield and farm income. Recreation could be impacted by the lowering of water levels in private ponds and ponds and wetlands in the Two Rivers State Recreation Area. The impacts of flow depletion in the Platte River would be mitigated by the creation of a backwater habitat east of Plattsmouth, Nebraska along the Missouri River. Lost wetlands would be mitigated by the creation of new wetlands at a site near La Platte, Nebraska. Potentially altered wetlands would be monitored for over 30 years and replaced if found to be changed by operation of the well field. The District would negotiate compensation with private property owners for reductions attributed to groundwater drawdown in well performance, subirrigation, and pond water levels. Impacts to the Two Rivers State Recreation Area would be mitigated by monetary compensation to the Nebraska Game and Parks Commission and the possible opening to the public of certain District properties for limited recreational use. The District prefers the Platte West alternative because this alternative would provide the highest quality source water at the lowest cost.

Comments are solicited on all aspects of this FEIS and will be considered in the preparation of the Record of Decision. Comments should be sent to Rodney Schwartz at the address above by May 31, 2002.

SUMMARY

INTRODUCTION AND PROPOSED ACTION

The Metropolitan Utilities District (District) proposes construction of a well field, treatment plant, and transmission pipeline in Saunders and Douglas counties, Nebraska. The purpose of the new facilities is to meet the need of the District's customers for additional drinking water through the year 2030 and improve reliability of the drinking water system by increasing the redundancy of water sources. Because installation of the transmission pipeline would necessitate disturbing wetlands and the channels of the Platte and Elkhorn rivers, the District has applied to the U.S. Army Corps of Engineers (Corps) for a permit, pursuant to Section 404 of the Clean Water Act, to discharge dredged or fill materials into the waters of the United States. The consideration of this permit application by the Corps constitutes a federal action that requires the preparation of an environmental impact disclosure document pursuant to the National Environmental Policy Act of 1969 (NEPA).

The well field proposed by the District for the Platte West alternative would be located on 2,230 acres of land, straddling the Platte River, in Saunders and Douglas counties, Nebraska. The 42 wells in the well field would pump water from the Platte River alluvial aquifer. The water would be delivered to a new treatment plant in western Douglas County through a 3.5-mile long, 72-inch diameter pipeline. The treatment plant would be located on 158 acres at the northeast intersection of Q and 216th streets. The treatment plant would be designed with an average annual capacity of 50 million gallons per day (MGD) and a maximum capacity of 100 MGD. Treated water would be delivered to Skyline Reservoir at Pacific Street and Ranchview Drive and to a point near Harrison and 180th streets for distribution.

This Final Environmental Impact Statement (FEIS) was prepared in accordance with Council of Environmental Quality regulations 40 CFR Parts 1500 through 1508 implementing NEPA and provides a complete and objective analysis of environmental effects of the proposed project.

PURPOSE AND NEED

The purpose of the proposed project is two-fold. One is to meet the needs of the District's customers for potable water through the year 2030, which requires delivering water to a growing service area surrounding Omaha, Nebraska. The project is intended to provide a firm water supply to meet the maximum daily, or peak, demand within the projected service area. The second purpose is to enhance the reliability of the District's water supply system by diversifying water sources.

The District's existing water supply and treatment facilities include two treatment plants and a series of wells used for peaking purposes. These facilities are the Florence Plant, the Platte South Plant, and the Millard and Elkhorn peaking wells. **With all systems combined, the District currently has a maximum daily production capacity of 234 MGD.**

For planning purposes, firm capacity for water supply and treatment facilities is typically defined as the available capacity with the largest production unit out of service. For well fields with a large number of wells, a loss of 10 percent capacity is typically used in lieu of the largest unit out of service. For the Florence Plant, the loss of the 18 MGD bypass may occur when new Safe Drinking Water Act water quality criteria are imposed. Using this concept, the firm yield of the Florence Plant is 140 MGD. The firm yields of the Platte South Plant and Millard Wells are 90 percent of maximum capacity or 54

and 12 MGD, respectively. The largest well at the Elkhorn field is 0.9 MGD, thus, the firm capacity of the Elkhorn facility is 1.3 MGD. **Any new water supply developed by the District should be sized based on a firm capacity of 207 MGD for the existing facilities.**

Water use varies by year and throughout the year, with peaks typically occurring in summer. Long-term climatic cycles are the major determinant of annual water usage, while short-term fluctuations affect the peak demand in a given year. The maximum amount of water used in one day is a key factor in determining water production requirements and sizing of water treatment and transmission facilities. Average daily usage between 1970 and 2000 has ranged from a low of 69.8 MGD in 1970 to 96.9 MGD in 1988. The peak year for water use was 1988 when the District produced about 35.4 billion gallons of drinking water. The maximum daily delivery by the District, also reached in 1988, was 223 MG. In 1995, the total pumping and average daily use were the third highest levels on record. The maximum daily use in 1995 was the second highest at 216 MGD. Average daily and maximum daily demands show increasing trends over the 30-year period.

The maximum daily demands in 1988 and in 1995 exceeded the District's 1997 firm capacity by 16 and 9 MGD, respectively. These demands were met because all of the District's production facilities were operational and demands did not exceed the system's total capacity. If only the system's firm production capability had been functioning at those times, shortfalls would have occurred. Therefore, **the District has an existing need for additional firm capacity.**

Maximum daily demand in 2030 is projected to be 299 MGD, which includes a savings of 10 percent from the implementation of conservation measures. Using the firm system capacity of 207 MGD, **the net water need in the year 2030 would be 92 MGD.** To meet the projected maximum daily demand in 2030, the District proposes to add 90 MGD of firm capacity. When the 10 percent allowance for equipment outage (10 MGD) is added, the amount added to their systems maximum capacity would be 100 MGD.

The Missouri River, via the Florence Treatment Plant, is the District's largest water source and currently provides 68 percent of the District's drinking water production capacity. If the Missouri River were to become unavailable because of a contamination event, the District could only meet 86 percent of its current average daily demand. A reasonable reliability standard for meeting public health and safety needs is for a water utility to be able to provide 100 percent of average daily demand with their largest source out-of-service. A survey of 18 mid-western cities found the average utility with multiple water sources could provide 132 percent of average day capacity with their largest source out-of-service. Based on the current average daily demand of 87 MGD, the District has an existing need for an additional 10.8 MGD of capacity from sources independent of the Missouri River to meet average daily demand if the Missouri River were to become unavailable. Average daily demand in 2030 is estimated to be 139 MGD. For the District to meet this demand with its largest source out-of-service, **an additional 62.8 MGD of capacity needs to be developed from sources independent of the Missouri River.**

ALTERNATIVES

Thirty-four alternatives to meet the demand for additional water were initially identified by the District, the Corps, cooperating agencies, and the public. These alternatives fell into three groups: new single-source water supplies, new multiple-source water supplies, and alternatives that did not involve development of new sources. Single-source alternatives included well fields in the Platte

River alluvial aquifer, intakes in the Missouri River, well fields in the Missouri River alluvial aquifer, and well fields in the Dakota Sandstone aquifer. Multiple source alternatives included combinations of an expanded Platte South well field and direct withdrawal from the Missouri River, an expanded Platte South well field and a portion of the Platte West well field, and a combination of all three sources. Alternatives that did not involve developing a new water source included purchasing water from Council Bluffs, Iowa, tapping into the local flood control lakes, and aquifer storage and recovery.

The alternatives were evaluated using a three-step screening process to determine the alternatives that would meet the project purpose and need. The first step evaluated each alternative's ability to provide the required maximum and firm production capacity. Those alternatives which met the criteria for the first step were then evaluated on their ability to provide the required amount of water from a source other than the Missouri River. In the final step, the remaining alternatives within each group were compared on source water quality. The goal of the third step was to select at least one representative alternative from each group, which would allow this EIS to focus on contrasting alternatives.

In the first step of the alternatives evaluation process, the expanded Platte South, Dakota Sandstone aquifer, and alternatives that did not involve developing a new water source were eliminated from further consideration. In step two, all of the alternatives that used direct withdrawal from the Missouri River or indirect withdrawal through the Missouri River aquifer were eliminated from further consideration, except for the three-way combination. The Platte West alternative was retained for detailed analysis because this alternative is preferred by the District. The highest source water quality of the remaining Platte River aquifer alternatives was Platte North. Of the remaining alternatives that used two water sources, those that derived the least amount of water from horizontal collector wells were considered to have the best source water quality. Two alternatives, Platte South plus Platte West and Platte South plus Platte West DC, were essentially identical in this respect; therefore, both of these alternatives were selected for detailed analysis. Because only one alternative used three water sources, that alternative, the Three-Way Combination, was also selected for detailed analysis in the EIS.

The no federal action alternative is retained in the analysis because it is required by the NEPA process and serves as a baseline against which the impacts of the other alternatives can be compared.

The District's Water Conservation Plan was officially adopted in 1994 and is expected to reduce peak hour and maximum daily demands by five percent. The plan includes an inclined block rate for water use, a public education program, and an emergency operating plan with three action thresholds. Clearly, conservation by itself cannot meet the District's future needs because, even with the inclusion of a 10 percent reduction attributable to conservation, projections of future demand still indicated shortfalls of 92 to 104 MGD by the year 2030. **Because conservation was included in the projections upon which the 100-MGD need for additional maximum capacity was based, conservation will be a necessary and integral part of any action taken to meet the District's water supply needs.**

The **Platte West** alternative would include a well field, a water collection system, support facilities, a water treatment plant, and water delivery facilities from the well field to the treatment plant and from the treatment plant to the two delivery points. Water would be collected by 42 vertical wells and would be classified for treatment purposes as

groundwater. The well field would cover 1,040 acres in western Douglas County east and south of the Two Rivers State Recreation Area and 1,190 acres in eastern Saunders County. The two portions of the well field would be connected by a 60-inch diameter pipeline under the Platte River. The treatment plant would be located on a 158-acre site near the intersection of 216th and Q streets and would have an average annual capacity of 50 MGD and a maximum capacity of 100 MGD. A 3.5-mile long, 72-inch diameter raw water pipeline passing under the Elkhorn River would deliver water from the well field to the treatment plant. Two 54-inch diameter pipelines, totaling 7.5 miles in length, would deliver treated water to Skyline Reservoir and a delivery point near Harrison and 180th streets. Included with this alternative would be the creation of a wetland complex near La Platte, Nebraska, and a 400-acre backwater area off the Missouri River near Plattsmouth, Nebraska.

The **Platte North** alternative would consist of a well field adjacent to the Platte River and a new water treatment plant. The well field would be located entirely within Saunders County on a 575-acre site on the west bank of the Platte River approximately 2 miles northwest of Yutan, Nebraska. Test wells that were developed from 1976 to 1979 to determine the local characteristics of the Platte River aquifer would be upgraded to water supply wells and additional horizontal wells would be installed under the Platte River. For purposes of treatment, the water produced by this well field would be classified as groundwater under the influence of surface water. Like the Platte West alternative, groundwater would be pumped to a new treatment plant near 216th and Q streets. A 9.5-mile long, 72-inch diameter raw water pipeline passing under the Elkhorn River would deliver water from the well field to the treatment plant. Two 54-inch diameter pipelines, totaling 7.5 miles in length, would deliver treated water to Skyline Reservoir and a delivery point near Harrison and 180th streets. This alternative would also include the creation of a wetland complex near La Platte, Nebraska, and a backwater area off the Missouri River near Plattsmouth, Nebraska.

The **Platte South plus Platte West** alternative would expand the maximum capacity of the Platte South facility from 60 to 100 MGD by replacing most of the existing vertical wells with seven high capacity horizontal collector wells. The new well field would produce up to 87.5 MGD from the horizontal wells and 12.5 MGD from the old vertical wells. The existing treatment plant, which is designed to treat high quality groundwater, would be expanded and modified to treat lower quality groundwater under the influence of surface water.

Forty percent of the production from the expanded Platte South treatment plant would be directed to the two delivery points through 47 miles of 48-inch diameter pipelines.

The Platte West well field portion of this alternative would be similar to the Platte West alternative previously described except the number of wells would be scaled back to provide 60 MGD. The total number of wells would be 24 to 30 with 10 to 12 of these wells in Douglas County and the remainder in Saunders County. For purposes of treatment, the water produced by this well field would be classified as groundwater. A 54-inch diameter pipeline under the Platte River would connect the two well fields. Raw water from the well field would be delivered to the treatment plant through a 4-mile long, 60-inch diameter pipeline. This alternative would also include the creation of a wetland complex near La Platte, Nebraska, and a backwater area off the Missouri River near Plattsmouth, Nebraska.

The **Platte South plus Platte West DC** alternative would be like the Platte South plus Platte West alternative except the 24 to 30 vertical wells on the Platte West well field

would be located on the Douglas County portion of the well field.

The **Three-Way Combination** alternative would withdraw water from the Missouri River, the Platte South well field, and the Douglas County portion of the Platte West well field. The firm and maximum capacities of each source would be 30 and 34 MGD, respectively.

The new Missouri River intake would be located immediately north of Interstate 680. The intake would have a maximum capacity of at least 37 MGD and would be constructed at a depth to ensure full diversion capacity during periods of low flow in the Missouri River. The capacity of the intake exceeds the 34 MGD requirement by approximately 10 percent to compensate for the additional amount of residuals generated because of the treatment of river water.

Water from the Missouri River would be piped nine miles to a new treatment plant located on a 160-acre site west of State Highway 133 and south of State Highway 36 in northwest Omaha. The plant would have a maximum capacity of 34 MGD and be designed to treat surface water. Clarified residual water from the treatment process would be discharged into Thomas Creek.

The Platte South portion of this alternative would be essentially the same as the Platte South expansion described for the Platte South plus Platte West combination except the facility would be expanded by 34 rather than 40 MGD. Likewise, the Platte West portion of this alternative would be a smaller version of the Platte West alternative with only 13 to 15 vertical wells in Douglas County.

Connecting these three widely separated water sources to the two delivery points would require approximately seven miles of 54-inch transmission mains and 55 miles of 48-inch diameter distribution pipeline. This alternative would also include the creation of a wetland complex near La Platte, Nebraska, and a backwater area off the Missouri River near Plattsmouth, Nebraska.

The **No Federal Action** alternative consists of 7 options that do not require a Section 404 permit from the Corps. These options are:

a) expanded Millard well field
b) expanded Elkhorn well field
c) wells distributed throughout the Dakota Sandstone aquifer
d) discontinue water wholesaling
e) aquifer storage and recovery
f) conservation
g) a constructed project similar to the Platte West alternative that avoids placing fill in wetlands and rivers and the associated federal permit

No federal action options a through f combined could only produce approximately 38 MGD. Under these options, the District would limit water demand growth by not expanding its present service area boundaries. New customers, however, would still be added because the District is required by statute to serve new customers within its service area.

No federal action option g is a variation of the Platte West alternative that avoids direct impacts to wetlands and other waters of the United States by placing pipelines under rivers, streams, and wetlands using directionally drilling and relocating wells, pipelines and service roads on the well fields. As such, this alternative would not require a Section 404 permit from the Corps. Without this permit requirement, the Corps would not have the regulatory authority to require mitigation for wetlands or other waters of the United States that could be secondarily impacted by groundwater drawdown.

ENVIRONMENTAL CONSEQUENCES

The **Platte West** alternative would not affect general setting and geology. A total of 128 acres of prime farmland would be removed from potential agricultural production for the life of the project; however, this impact is not considered significant given that approximately 96,400 acres of Douglas County, where most of the prime farmland would be affected, are classified as prime farmland. A total of 188 acres of land would be taken out of agricultural production for the life of the project and feedlots and the use of fertilizers, insecticides, and most herbicides would be prohibited on the 2,230-acre well field. An insignificant amount of crops, hayfield, and pastures (184 acres), and upland forests (six acres), would be lost for the life of the project because of the installation of project facilities. These losses of vegetation are not expected to significantly impact wildlife. Wildlife could benefit substantially if the well field is allowed to revert to natural vegetation.

Transient groundwater modeling estimated pumpage from the well field would deplete flow in the Platte River by 40,521 acre-feet per year in an average water demand year at full annual capacity (50 MGD). The U.S. Fish and Wildlife Service (FWS), in their Biological Opinion, indicated the 18,406-acre-foot depletion of flow in the Platte River during February through July would, without mitigation, jeopardize the continued existence of the pallid sturgeon. The project would adversely affect, but not jeopardize the existence of the piping plover, and interior least tern. Other federally protected species, the western prairie fringed orchid, American burying beetle, and bald eagle would not likely be adversely affected.

Pumping from the well field would draw down the local groundwater. An estimated 14.7 acres of wetlands and aquatic beds could be lost because of de-watering and construction. Another 142 acres of wetlands could be altered to a drier type. Subirrigation is predicted to be lost on approximately 5,069 acres, which could reduce:

- crop yields on affected lands by approximately 20 percent
- farm income between 2005 and 2025 by about $16 million
- property value by $2.3 million (2000 dollars)
- annual property tax receipts by $118,000

In addition, the performance of approximately 30 private wells could be adversely affected. Recreational experiences could be degraded on privately owned ponds and on ponds in the Two Rivers State Recreation Area.

Some of the impacts from the **Platte North** alternative would be similar to the Platte West alternative because the two alternatives would have the same treatment plant and much of the same transmission pipeline route. A total of 113 acres of prime farmland would be removed from potential agricultural production for the life of the project. An insignificant amount of crops, hayfield, and pastures (188 acres), upland forests (six acres), and bottom land forest (two acres), would be lost for the life of the project because of the installation of project facilities. These losses of vegetation are not expected to significantly impact wildlife. If the well field is allowed to revert back to natural vegetation, wildlife could benefit.

Transient groundwater modeling estimated pumpage from the well field would deplete flow in the Platte River by 49,840 acre-feet per year in an average water demand year at full annual capacity (50 MGD). The depletion of flow in the Platte River during February through July by 25,400 acre-feet would, without mitigation, jeopardize the continued existence of the pallid sturgeon. The project would adversely affect, but not jeopardize the existence of the piping plover, and interior least tern. Other federally protected species, the western prairie fringed orchid, American

burying beetle, and bald eagle would not likely be adversely affected.

Pumping from the well field would draw down the local water table. An estimated 12 acres of wetlands and aquatic beds could be lost because of de-watering and construction. Another 66 acres of wetlands could be altered to a drier type. Subirrigation would be lost on approximately 56 acres, which could reduce:

- crop yields on affected lands by approximately 20 percent
- farm income between 2005 and 2025 by about $257,000
- property value by $17,000 (2000 dollars)
- and annual property tax receipts by $57,000

In addition, the performance of several private wells could be adversely affected. Over the period from 2005 to 2025, the Platte North alternative would cost $139 million more to construct, finance, and operate than the Platte West alternative.

The **Platte South plus Platte West** alternative would not affect land resources such as the general setting and geology. A total of 143 acres of prime farmland would be removed from potential agricultural production for the life of the project. An insignificant amount of crops, hayfield, and pastures (194 acres), upland forests (six acres), and bottom land forest (less than one acre), would be lost for the life of the project because of the installation of project facilities. These losses of vegetation are not expected to significantly impact wildlife.

Pumping from the well fields would deplete flow in the Platte River by 47,278 acre-feet per year in an average water demand year at full annual capacity (50 MGD). The depletion of flow in the Platte River during February through July by 22,005 acre-feet would, without mitigation, jeopardize the continued existence of the pallid sturgeon. The project would adversely affect, but not jeopardize the existence of the piping plover, and interior least tern. Other federally protected species, the western prairie fringed orchid, American burying beetle, and bald eagle would not likely be adversely affected.

Pumping from the Platte West well field would draw down the local water table. An estimated 12 acres of wetlands and aquatic beds could be lost because of de-watering and construction. Another 62 acres of wetlands could be altered to a drier type. Subirrigation would be lost on approximately 1,515 acres, which could reduce:

- crop yields on affected lands by approximately 20 percent
- farm income between 2005 and 2025 by about $5.2 million
- property value by $750,000 (2000 dollars)
- annual property tax receipts by $103,000

In addition, the performance of several private wells could be adversely affected. Over the period from 2005 to 2025, the Platte South plus Platte West alternative would cost $190 million more to construct, finance, and operate than the Platte West alternative. Recreational experiences could be degraded on privately owned ponds and on ponds in the Two Rivers State Recreation Area.

The **Platte South plus Platte West DC** alternative would not affect land resources such as the general setting and geology. A total of 137 acres of prime farmland would be removed from potential agricultural production for the life of the project. An insignificant amount of crops, hayfield, and pastures (194 acres), upland forests (six acres), and bottom land forest (less than one acre) would be lost for the life of the project because of the installation of project facilities. These losses of vegetation are not expected to significantly impact wildlife.

Pumping from the well fields would deplete flow in the Platte River by 47,278 acre-feet per year in an average water demand year at full annual capacity (50 MGD). The depletion of flow in the Platte River during February through July by 23,085 acre-feet would,

without mitigation, jeopardize the continued existence of the pallid sturgeon. The project would adversely affect, but not jeopardize the existence of the piping plover, and interior least tern. Other federally protected species, the western prairie fringed orchid, American burying beetle, and bald eagle would not likely be adversely affected.

Pumping from the Platte West well field would draw down the local groundwater. No wetlands and aquatic beds were predicted to be lost because of de-watering but construction could cause the loss of 0.7 acre. Another 118 acres of wetlands could be altered to a drier type. Subirrigation would be lost on approximately 2,585 acres, which could reduced:

- crop yields on affected lands by approximately 20 percent
- farm income between 2005 and 2025 by about $5.3 million
- property value by $1.6 million (2000 dollars)
- annual property tax receipts by $88,000

In addition, the performance of several private wells could be adversely affected. Over the period from 2005 to 2025, the Platte Platte South plus Platte West DC alternative would cost $186 million more to construct, finance, and operate than the Platte West alternative. Recreational experiences could be degraded on privately owned ponds and on ponds in the Two Rivers State Recreation Area.

The **Three-Way Combination** alternative would not affect land resources such as the general setting and geology. A total of 191 acres of prime farmland would be removed from potential agricultural production for the life of the project. An insignificant amount of crops, hayfield, and pastures (767 acres) upland forests (seven acres), and bottom land forest (less than one acre) would be lost for the life of the project because of the installation of project facilities. These losses of vegetation are not expected to significantly impact wildlife.

Pumping from the well fields would deplete flow in the Platte River by 32,440 acre-feet per year in an average water demand year at full annual capacity (50 MGD). The depletion of flow in the Platte River during February through July by 15,695 acre-feet would, without mitigation, jeopardize the continued existence of the pallid sturgeon. The project would adversely affect, but not jeopardize the existence of the piping plover, and interior least tern. Other federally protected species, the western prairie fringed orchid, American burying beetle, and bald eagle would not likely be adversely affected.

Pumping from the Platte West well field would draw down the local groundwater. No wetlands and aquatic beds were predicted to be lost because of de-watering but construction could cause the loss of 2.7 acres. Another 97 acres of wetlands could be altered to a drier type. Subirrigation would be lost on approximately 1,579 acres, which could reduced

- crop yields on affected lands by approximately 20 percent
- farm income between 2005 and 2025 by about $3.3 million
- property value by $988,000 (2000 dollars)
- annual property tax receipts by $91,000

In addition, the performance of several private wells could be adversely affected. Over the period from 2005 to 2025, the Three-Way Combination alternative would cost $392 million more to construct, finance, and operate than the Platte West alternative. Recreational experiences could be degraded on privately owned ponds and on ponds in the Two Rivers State Recreation Area. The discharge of clarified water treatment plant residuals (*i.e.*, wastewater consisting of filter backwash) would increase aquatic habitat in Thomas Creek by increasing flow in the stream.

Because construction activity would be modest and dispersed, the **No Federal Action** alternatives a through f are not anticipated to have a significant adverse

impact on natural resources. These no federal action alternative options would, however, require the District to stop expanding its service area. This action would tend to slow residential and business development in areas outside the District's current service area. As a result, the current rate of the conversion of farmland and the filling of wetlands as a result of suburban development could also be slowed. The population inside the District's service area would continue to grow for some time because the District is required by law to provide water to all customers within its service area. Eventually, peak-day water shortages would become more frequent and current trends of increasing population growth, economic expansion, and tax revenues would slow as the resulting decline in quality of life would discourage in-migration and encourage out-migration.

The impacts from the no federal action alternative option g would be the same as the Platte West alternative except 0.8 fewer acres of wetlands would be lost because of construction.

MITIGATION

Adverse impacts to wetlands and their associated functions would be mitigated by the replacement of wetlands predicted to be lost. For every acre of wetland predicted to be lost, 1.5 acres of new wetlands would be created at a site 1.1 miles east of La Platte, Nebraska. For the alternatives that would use the Platte West or Platte North well fields, wetlands and aquatic beds inside and outside of the predicted maximum groundwater cone of depression would be monitored annually for three to five years prior to operation and twice per year for at least the next 30 years thereafter to determine if additional impacts occur from groundwater drawdown. If wetland impacts exceed predictions, additional wetlands would be created at the La Platte site.

The flow reductions in the Platte River caused by the well field alternatives and the resulting possible loss of habitat in the Platte River for pallid sturgeon would be mitigated by the District's participation in a Cooperative Agreement with the Nebraska Game and Parks Commission (NGPC) to restore backwater habitat along a portion of the Missouri River approximately three miles downstream of the mouth of the Platte River. Biological resources from the backwater, such as aquatic macroinvertebrates and juvenile fish are anticipated to be exported into the main channel of the Missouri River. This export would benefit pallid sturgeons by providing additional food resources. The backwaters could also serve as a nursery for juveniles of this fish species.

The La Platte wetland mitigation site and the Douglas County portion of the Platte West well field could be opened to the public to mitigate for lost recreational opportunities caused by impacts to ponds and wetlands at the Two Rivers State Recreation Area. The District would also compensate NGPC for measures taken to offset other impacts on the recreation area, such as deepening ponds whose water levels are predicted to be lowered by the Platte West well field.

The District would work with private property owners whose lands and livelihoods are adversely affected by groundwater drawdown caused by the Platte West or Platte North well fields. The District would expand upon its existing network of groundwater level monitoring wells and survey the potential impact area for private wells to monitor the extent of groundwater decline. Damages to private property, such as well performance degradation, pond water level lowering, and crop production declines verifiably attributed to the well field would be mitigated at the District's expense. Mitigation could include well improvements or replacement, pond deepening or enlargement, or monetary compensation. Mitigation arrangements would be made on a case-by-case basis.

The District has indicated recognition of its duty to respond to proven damages to landowners arising from the operation of a new well field to the extent provided under Nebraska law. Upon a written claim by a landowner asserting damage, the District would accept and perform a good faith review of the claim and all submitted supporting evidence. The District would also share any monitoring information in its possession with a claimant. If the District concludes that the claim and the amount of claimed damages are valid, the District would pay the claim. If the parties cannot agree on the validity of the claim or the amount of damages, the remedy may be found under condemnation or inverse condemnation procedures (Nebraska Constitution Article 1, Section 21 and NRRS 76-701 et seq.), or the Political Subdivisions Tort Claims Act (NRRS 13-901 et seq.).

MAJOR CONCLUSIONS

- The District needs an additional 100 MGD of peak day production capacity to meet anticipated demands through the year 2030. The calculation of need includes an assumption that 10 percent of future demand could be met by water conservation.
- The District needs an additional production capacity of 62.8 MGD from a source other than the Missouri River to provide an acceptable level of source redundancy.
- The District's preferred alternative is the Platte West well field and treatment plant. The well field would be located on both sides of the Platte River west of Omaha, Nebraska, and would draw water from the Platte River alluvial aquifer.
- The Platte West alternative would provide the highest quality source water at the lowest cost of the five alternatives that require a federal permit.
- The Platte West well field would lower the groundwater in and around the well field and induce infiltration of water out of the Platte River into the aquifer. At maximum design capacity, an annual average of 50 MGD, flow in the Platte River would be reduced by 40,521 acre-feet.
- The Platte West alternative would deplete flow in the Platte River by 18,406 acre-feet during the February through July period considered critical to the federally protected pallid sturgeon.
- Groundwater drawdown caused by the Platte West alternative is predicted to cause the loss or alteration of 14.7 and 142 acres of special aquatic sites (wetlands and aquatic beds), respectively.
- Groundwater drawdown from the Platte West well field could remove subirrigation from an estimated 5,069 acres of land in Douglas and Saunders counties. The loss of subirrigation would reduce crop yields, farm income, property values, and county property tax receipts.
- The FWS has determined, that with mitigation, the depletion of the Platte River may adversely affect the pallid sturgeon but would not jeopardize their continued existence.
- Lost special aquatic sites would be mitigated by the construction of new sites of similar type at an off-site location. The replacement ratios would be 1.5 acres created for each acre lost and 1 acre created for each acre altered. Long-term monitoring would determine if additional impacts occur and more replacement of special aquatic sites is required.
- Potential impacts to the pallid sturgeon would be offset by the creation of a new backwater habitat along the Missouri River near the mouth of the Platte River. The biological production exported from the new backwater is expected to improve the habitat in the Missouri River for pallid sturgeon.
- To mitigate for the predicted loss of recreational opportunities at the Two Rivers State Recreation Area, the District has proposed to provide public access to the wetland mitigation site, and possibly to the Douglas County portion of the Platte West Well field, for limited types of recreational activities. In addition, the

District has proposed to create a fund of $125,000 for use by the NGPC to deepen ponds on the recreation area whose water levels could be lowered by groundwater drawdown.
- The District would monitor groundwater levels around the well fields and work with affected property owners to compensate them for damages such as degraded well performance, lost subirrigation, and lowered pond levels.

AREAS OF CONTROVERSY

The most prominent controversies concerning the Platte West Water Production Facilities Project have been the role of conservation in determining future water needs; mitigation for flow depletion in the Platte River; the selection of a Platte River aquifer-based alternative over an alternative featuring direct withdrawal from the Missouri River; and impacts to private property owners around the well fields from groundwater drawdown.

The projection of need for an additional 100 MGD for the year 2030 includes an assumption of a 10 percent reduction in demand as a result of increased conservation efforts. The application of extraordinary conservation efforts, e.g., 20 percent savings, would only delay the need for additional capacity. Conservation alone, therefore, was not considered a viable alternative.

The Missouri River-based alternatives would have fewer adverse impacts on wetlands, federally protected species, and groundwater under private property. These alternatives, however, are not the District's preferred alternative because:
- The District's water supply is already heavily dependent on the Missouri River. By diversifying its water sources, the District can avoid a water supply crisis should water from the Missouri River suddenly become unavailable. The Missouri River-based alternatives do not meet the project need for a redundant source of water.
- The Missouri River alternatives do not fit well with the on-going pattern of growth of the Omaha Metropolitan Area and the District's long-term infrastructure planning. As such, these alternatives require nearly 40 miles of large diameter mains to transfer water to the specified delivery points on the west side of the Omaha Metropolitan Area. The longer length of these pipelines would significantly increase the cost of construction, operation, and maintenance of these alternatives and would disturb many more residences during construction than the Platte River aquifer alternatives.
- In addition to reliability, the District wishes to provide its customers with the highest quality and safest product for the lowest cost. By avoiding the direct withdrawal of surface water or the indirect withdrawal of surface water through horizontal collector wells, the District believes the risk of exposure of their customers to water-born parasites and man-made toxic chemicals is substantially reduced.

ISSUES TO BE RESOLVED

Most of the issues that still need to be resolved are related to the mitigation of impacts to wetlands, federally protected fish species, and recreation. Although conceptual plans for the mitigation of wetlands and pallid sturgeon habitat have been approved, final mitigation plans still need to be formulated. The District and NGPC have signed agreements for funding and construction of the backwater area along the Missouri River, the public use of the La Platte wetland mitigation site, and funding for pond deepening or other mitigation measures at the Two Rivers State Recreation Area.

Saunders County has raised several objections to the Platte West alternative. The County contends conditions in the Construction Permit issued to the District for

construction of seven test wells on the Platte West well field require the District to provide water at-cost to any desiring governmental sub-unit of Saunders County from those wells should they be converted from test wells into production wells. Saunders County further contends the demand for water from these wells should have been included in the calculation of need presented in this EIS. The District contends they are not bound by conditions in a permit they were not legally required to obtain. None-the-less, the District has expressed a willingness to discuss supplying water to customers in Saunders County. Based on the District's current wholesale customer demand, the amount of water that would be potentially used by Saunders County governmental subunits is not expected to exceed 5 percent of the output of Platte West Well field.

Saunders County recently enacted a new land use regulation requiring the loss of subirrigation or de-watering of wetlands caused by the withdrawal of groundwater for purposes other than agricultural to be mitigated by in-kind replacement in Saunders County. The District contends their power of eminent domain relieves them from complying with local land use regulations. Saunders County has also lodged a complaint with the Nebraska Department of Natural Resources contending the induced infiltration and water transfer permits issued to the District are not valid. The District disagrees with this claim. The Corps' position is that the resolution of these conflicts is beyond the scope of the EIS and the Section 404 permitting process.

Finally to be resolved is whether the Corps will issue a Section 404 permit to the Metropolitan Utilities District, issue a Section 404 permit with conditions, or deny the permit.

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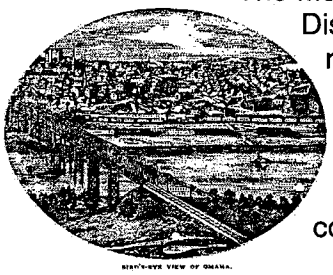
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CHAPTER 1
PURPOSE AND NEED



Historic sketch of Omaha, Nebraska on the Missouri River

The Metropolitan Utilities District (the District) is responsible for providing potable water to the Greater Omaha, Nebraska, Metropolitan Area. Because the continuing growth of population and water demand within its service area is approaching existing production capacity, the District seeks to construct additional water supply facilities. Historically and currently, the majority of the District's production capacity is based on water from the Missouri River and the Florence Treatment Plant. With the new water supply facilities, the District also seeks to reduce its dependence on the Missouri River as a water supply and thereby increase the reliability of the water supply system. The proposed water supply project involves the development of a new water supply, and the construction of new water storage, treatment, and transmission facilities.

Assuming population in the Greater Metropolitan Area continues to increase, demand for water will inevitably surpass current production capacity.

PURPOSE

The purpose of the proposed project is two-fold. The first is to provide a **sufficient supply of potable water** to the customers of the District, which requires delivering water to a generally westerly growing service area. In 1988 and 1995, maximum demand for water nearly exceeded the District's maximum production capacity. Assuming population around Omaha continues to increase and the general climate of the region does not change, demand for water will inevitably surpass current production capacity. The new water supply will be designed to meet the maximum daily, or peak, water demand through approximately the year 2030.

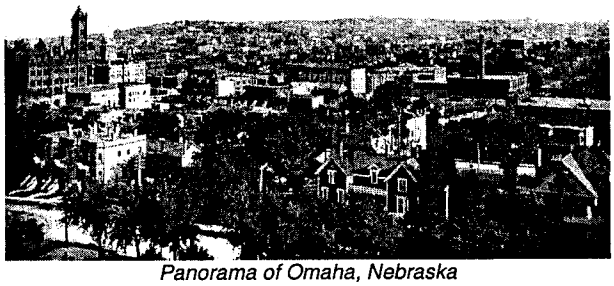
The second purpose of the project is to **increase the reliability of the water supply system by providing greater redundancy for the District's water sources.** Currently, the District depends on the Missouri River and the Florence Treatment Plant for approximately 68 percent of its maximum production capacity. The loss of water from this vital source would cause total or partial loss of service within portions of the District's service area, which could threaten public health and safety. Such a loss is considered possible given the industrial development along and the commercial barge navigation on the Missouri River and the history of the reliability of other Midwestern rivers as water supplies. The new facilities would be designed such that the District could still provide an acceptable level of water service if any one of its water sources was disrupted.

NEED

To meet water demands in 2030, the District needs an additional production capacity of 100 million gallons per day (MGD). This need has two qualifications. The first is that 90 MGD be firm capacity (see SYSTEM NEED FOR ADDITIONAL WATER SUPPLY, page 1-5) and the second is that at least 62.8 MGD be from a source other than the Missouri River (see NEED FOR ADDITIONAL WATER SOURCE REDUNDANCY, page 1-15). These specific needs are based on the District's water facilities, existing supply, existing demand, conservation programs, water use projections, and industry and regional standards for system-wide water source redundancy.

METROPOLITAN UTILITIES DISTRICT

The Metropolitan Water District, Omaha's first public water supply and a political subdivision of the State of Nebraska, was formed in 1912 through the purchase of a private water company. The Metropolitan Utilities District was formed in 1921 when natural gas customers were added. The District serves customers within the City of Omaha and the surrounding area with treated water and natural gas. The majority of the District's water supply customers fall within Douglas and Sarpy counties. The District also wholesales water to Offut Air Force Base, Waterloo, Nebraska, Carter Lake, Iowa, and the Papio-Missouri River Natural Resources District. The natural resources district distributes water to Fort Calhoun and other Washington County customers.



Panorama of Omaha, Nebraska

Existing Demand

In 1999, the total number of customers and total population served by the District were 164,086 (Metropolitan Utilities District 1999) and 510,850 (estimated from Metropolitan Area Planning Agency 1996), respectively, to which 31.5 billion gallons of treated water were supplied. The majority of this water (70.1 percent) was supplied to residential and general commercial (i.e., Group 1) customers (Figure 1-1). The remaining customer group, Group II, consists of large-volume users such as industries and wholesale customers. Group II consumed 22.3 percent of the water produced by the District in 1998. The remaining 7.7 percent of the District's water was unaccounted for in 1998 or used for system operations. The District's 1998 service area encompassed the City of Omaha, the towns of Elkhorn, Ralston, LaVista, and Bellevue (Figure 1-2).

Existing Water Supply Facilities

The District's existing water supply and treatment facilities include the Florence treatment plant and intake on the Missouri River, the Platte South well field and treatment plant, and the Millard and Elkhorn peaking wells (Figure 1-2). **With all systems combined, the District currently has a maximum daily production capacity of 234 MGD and a firm capacity of 207 MGD.**

The **Florence Plant** is a surface water treatment plant located in northeast Omaha, which draws water from the Missouri River. During non-peak periods, this plant generally serves the portion of Omaha north of U.S. Highway 6. During peak periods, the Florence Plant service area expands southward and, in the eastern part of Omaha, may extend as far south as Bellevue. The facility was constructed in 1889 and has been

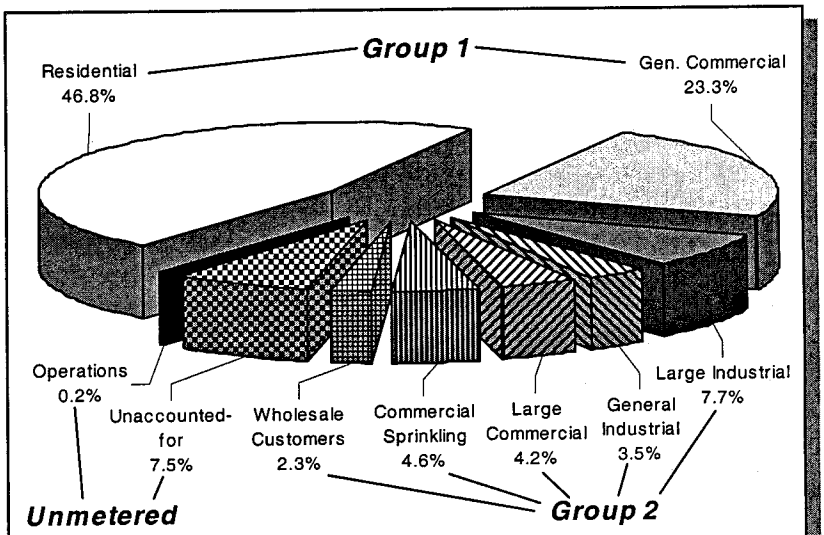


Figure 1-1 Distribution of Water Use by Customer Type in 1998

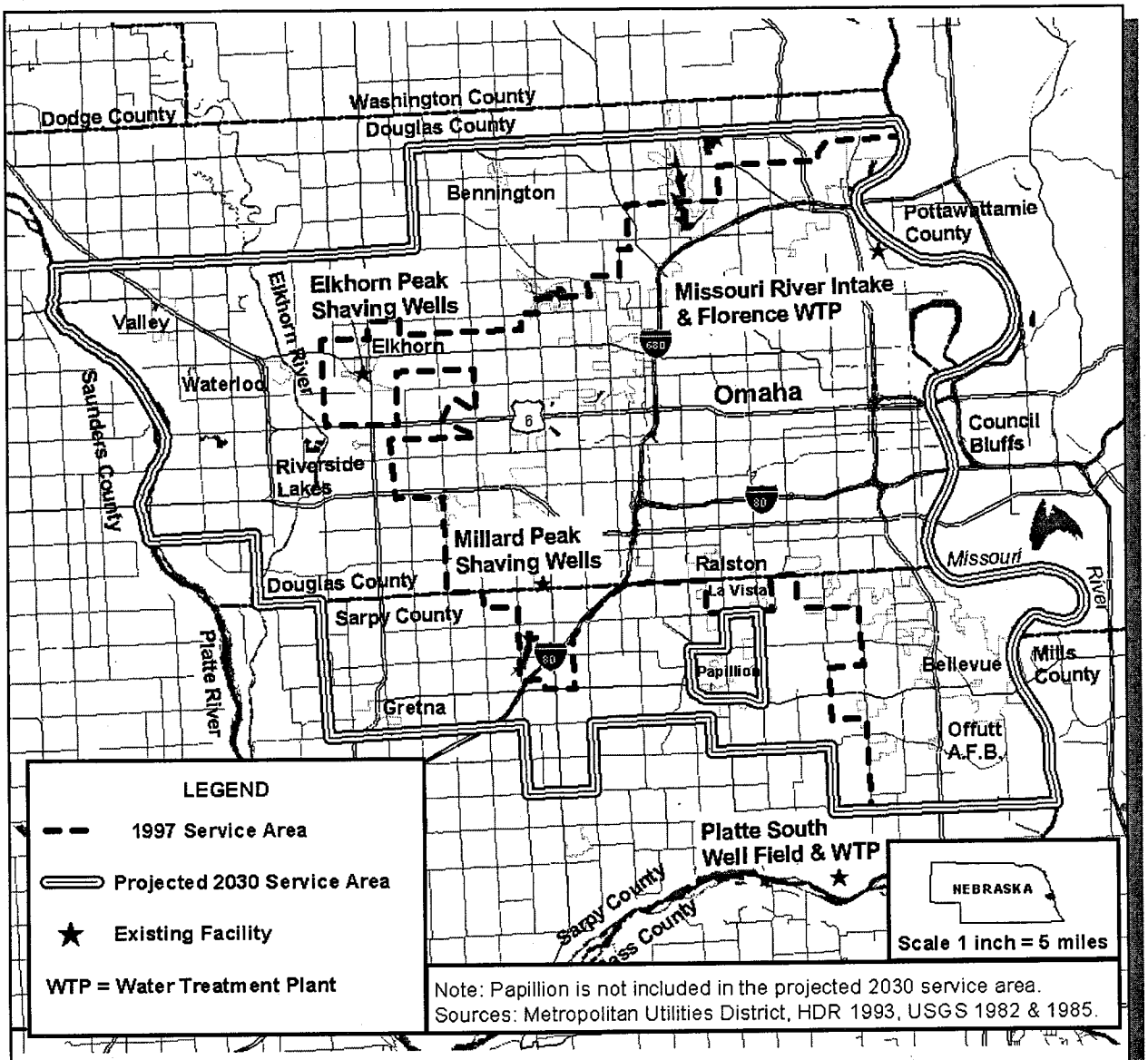


Figure 1-2 Metropolitan Utilities District Facilities and Service Area

expanded to a maximum capacity of 158 MGD. Filter beds and water softening facilities were added to the Florence Plant in 1923 and in 1958 to increase production and improve treated water quality.

The second water treatment facility is the **Platte South Plant**, a groundwater treatment facility located south of Omaha, that processes water from wells located in the Platte River alluvial aquifer. This plant serves the southern portion of Omaha during non-peak periods. During peak periods, the service area of the Platte South Plant gets smaller in deference to the larger capacity of the Florence Plant and the activation of the Millard and Elkhorn wells. The Platte South Plant began operation in 1968 and has a maximum capacity of 60 MGD with all wells operating.

The **Millard wells**, located in southwest Omaha in the Dakota Sandstone Aquifer, were acquired by the District in 1971 when

the Village of Millard was annexed by the City of Omaha. The District added seven peaking wells for a maximum capacity of 14 MGD. During periods of peak demand, the Millard wells serve an area generally south and west of the intersection of Interstate Highways 80 and 680 in southwestern Omaha. Water from the aquifer currently only requires disinfection before use.

The **Elkhorn wells**, located in the village of Elkhorn approximately 3 miles west of Omaha, were acquired by the District in 1997. The well field consists of three wells with a combined capacity of 2.2 MGD. These wells operate as peaking wells for the area around Elkhorn. Water from the aquifer currently requires only disinfection before use.

For planning purposes, firm capacity for a water supply and treatment facility is typically defined as the available capacity with the largest production unit out of service (Harberg 1997). For well fields with a large number of wells, a loss of 10 percent capacity is typically used in lieu of the largest unit out of service. For the Florence Plant, the District considers the most likely "unit to be out of service" the bypassing of up to 18 MGD around the clarifiers. New Safe Drinking Water Act water quality criteria are likely to prohibit this practice. The District, therefore, considers the firm yield of the Florence Plant to be approximately 140 MGD (Table 1-1). The firm yields of the Platte South Plant and Millard Wells are 90 percent of maximum capacity or 54 and 12 MGD, respectively. The largest well at the Elkhorn field is 0.9 MGD, thus, the firm capacity of the Elkhorn facility is 1.3 MGD. **Any new water supply developed by the District should be sized based on an existing firm delivery capacity of 207 MGD.**

In addition to the water production and treatment facilities, the District also maintains five treated water storage reservoirs with a total capacity of 110 million gallons.

Historical Water Use

Water use varies by year and throughout the year. Long-term climatic cycles are the major determinant of annual water usage, while short-term fluctuations affect the peak demand in a given year. The District's average annual daily demand since 1970 has ranged from 69.8 to 96.9 MGD. Annual maximum daily production has varied from 149.0 million gallons (MG) in 1993 (an extremely wet year) to 223 MG in 1988 (a very hot and dry year). The maximum daily use in 1995 was the second highest at 216 MGD. Average daily and maximum daily

Table 1-1 Maximum Daily Water Supply/Treatment Capacity Summary

	Existing Capacity								Firm Delivery Capacity[2]	
	Supply				Treatment					
	Peak		Firm		Peak		Firm			
Facility	MGD[1]	%	MGD	%	MGD	%	MGD	%	MGD	%
Florence[3]	158	67.5	140	67.6	158	67.5	140	65.7	140	67.6
Platte South[4]	60	25.6	54	26.1	60	25.6	60	28.2	54	26.1
Millard[5]	14	6.0	12	5.8	14	6.0	12	5.6	12	5.8
Elkhorn[5]	2.2	0.9	1.3	0.6	2.2	0.9	1.3	0.6	1.3	0.6
Total	**234**	**100.0**	**207**	**100.1**	**234**	**100.0**	**213**	**100.1**	**207**	**100.1**

[1]MGD = million gallons per day. [2]Firm delivery capacity is based on the lowest firm supply and capacity values. [3]Assumes the practice of bypassing raw water around the clarifiers will be discontinued to meet SDWA Amendments. [4]Firm yield based on 90% of maximum available pumpage in lieu of the largest well out of service due to the large number of wells in the well field. [5]Firm supply based on the largest well out of service.

demands both show increasing trends over the past 29 years (Figure 1-3). The maximum amount of water used in one day is a key factor in determining water production requirements and sizing of water treatment and transmission facilities.

From 1980 to 1999, Group I use (residential and general commercial) has steadily increased while Group II use (all other metered uses) has slightly decreased (Figure 1-3). Unaccounted for water (system losses) ranged from 4.7 to 10.4 MG and averaged 9.6 percent of total use. The District currently has leak detection, meter rehabilitation and replacement, and distribution system replacement programs in place. As a result, the annual amounts of unaccounted for water have been declining (Figure 1-3). During this same period, average daily and maximum daily per capita consumption tended to decline (Figure 1-4).

Annual peak use typically occurs between late June and mid-August (Figure 1-5a). Generally, peaks start with a sudden increase that is at least 10 percent greater than the previous day. Peaks usually end with a sharp drop in daily use (Figure 1-5b) brought about by a rain event.

SYSTEM NEED FOR ADDITIONAL WATER SUPPLY

Water demand through the year 2030 was estimated based on the number of anticipated users, their consumption pattern, and efforts to reduce consumption through conservation. The year 2030 provides a 30-year planning horizon for the District, which is typical for estimating future water supply requirements.

Population Projections

Future demands for water were based on two sets of population projections. The first set of projections (HDR Engineering, Inc. 1993) was prepared in 1987 by the Metropolitan Area Planning Agency (MAPA), a technical planning assistance agency serving the five-county greater Omaha/Council Bluffs area. MAPA projections have been relatively consistent with actual population growth and

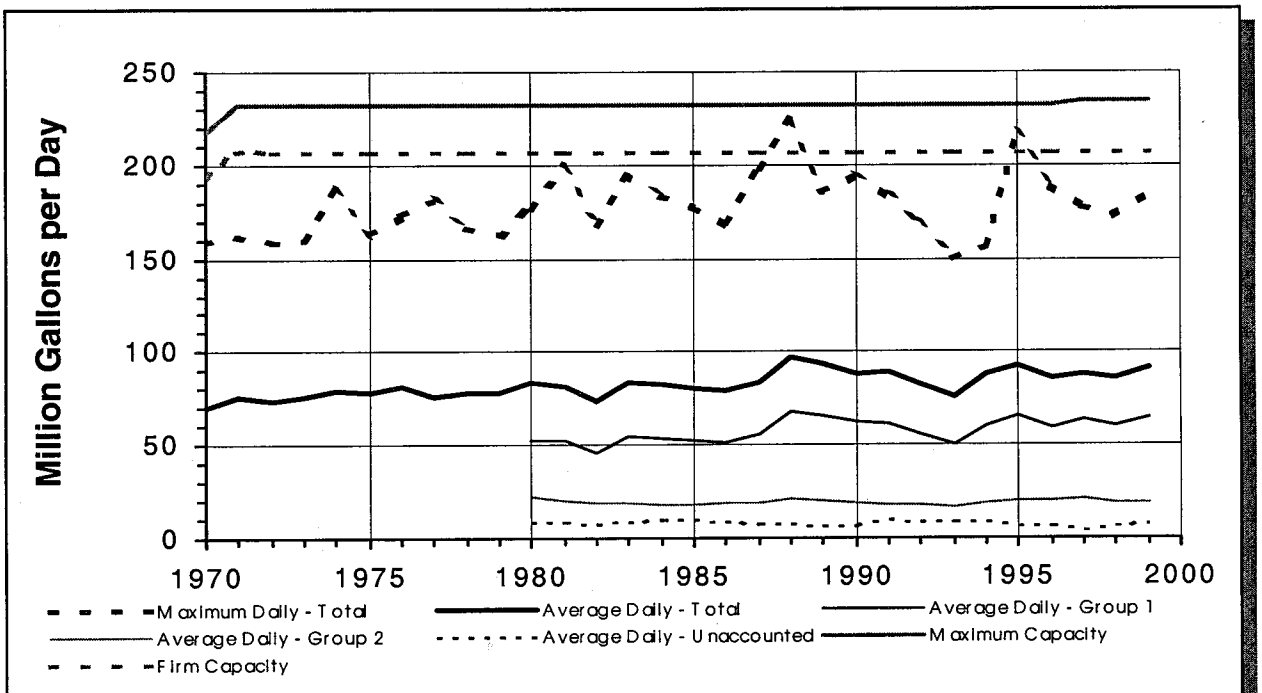


Figure 1-3 Historical Water Use and Production Capacity

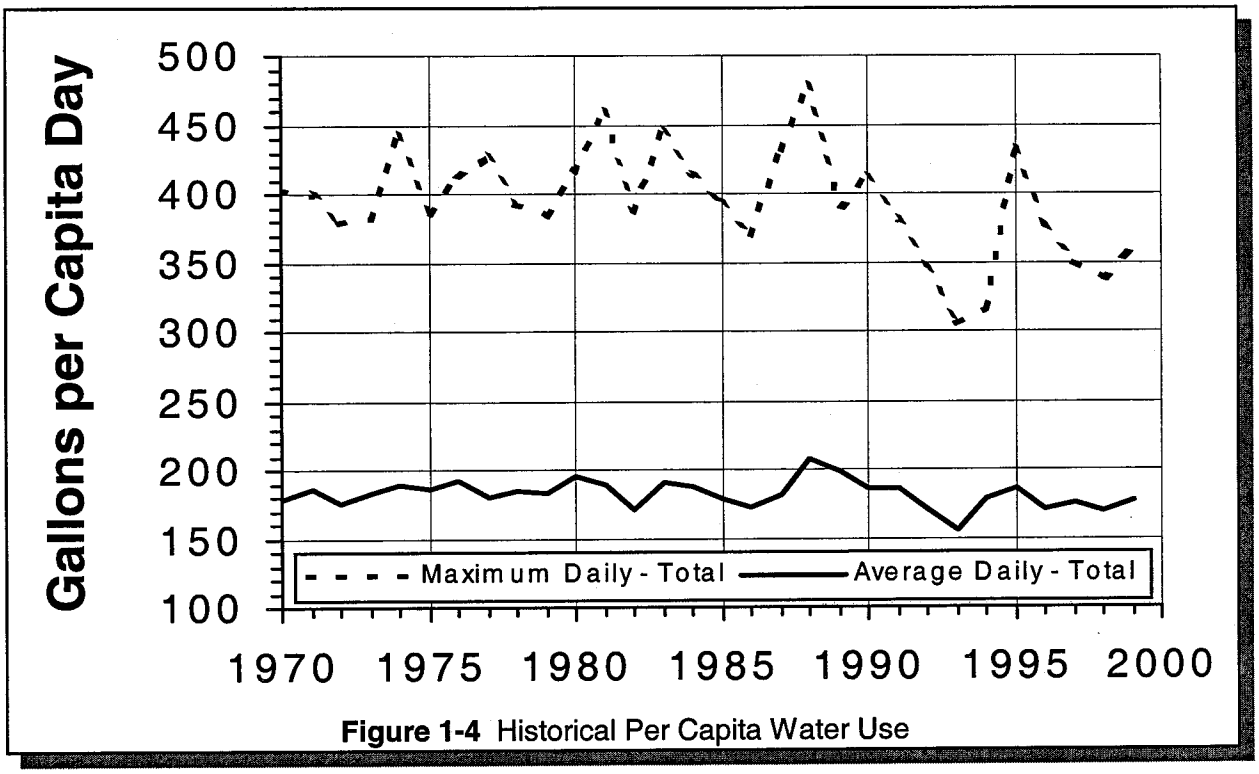


Figure 1-4 Historical Per Capita Water Use

are accepted by local communities for planning purposes. This study was based on birth, death, and migration rates, and land use development potential. The population in 2020 for the District's service area is predicted to be 578,201. The population of the two counties in which the District is located, Douglas and Sarpy, is predicted to be 604,021.

In 1994, MAPA prepared population projections through the year 2030. The populations for the District's service area and for Douglas and Sarpy counties were projected to increase steadily through the year 2020 to 602,500 and 625,500, respectively (Figure 1-6). These projections are slightly higher than the 1987 projections because a lower out-migration rate, based on the findings in the 1990 Census, was used in the 1994 study. The population growth rate was projected to slow slightly after 2020 reaching 627,000 people in 2030 in the service area and 651,100 for the two counties.

According to the projections, MAPA planners expect a shift in population from the central city to the surrounding areas to the west, south and northwest. This shift is consistent with the projected expansion of the District's service area (HDR Engineering, Inc. 1993). By the year 2030, the District expects to supply water to almost all of Douglas and Sarpy counties with the exception of the town of Papillion and some undeveloped portions of the two counties (Figure 1-2). An unresolved issue is the possibility of the District's service area extending into Saunders County. Expanding the service area to Saunders County could increase water demand by about two percent, assuming the demand from Saunders County customers would be equivalent to the District's current wholesale customers.

Water Demand Projections

The District currently has adequate firm capacity to meet average daily demands to the year 2030 but lacks the firm capacity to meet maximum daily demands in excess of 207 MGD. According to industry standards,

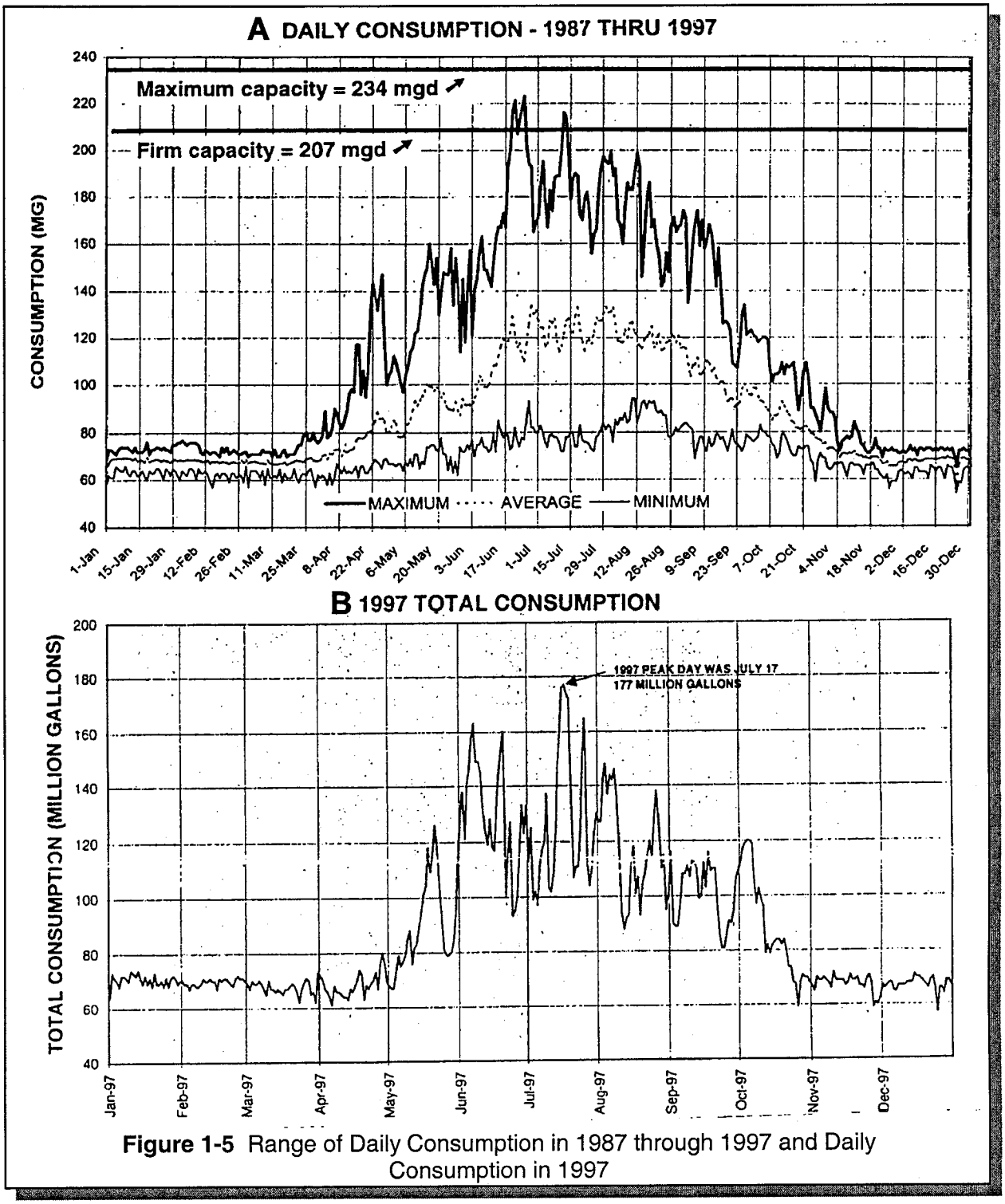


Figure 1-5 Range of Daily Consumption in 1987 through 1997 and Daily Consumption in 1997

water sources and water supply facilities such as intakes, wells, and treatment plants should be sized to supply the customers' **maximum** daily demand to assure that water for essential public services related to human health and safety (i.e., firefighting and sanitation) can be delivered at all times. Without reliable water sources and facilities

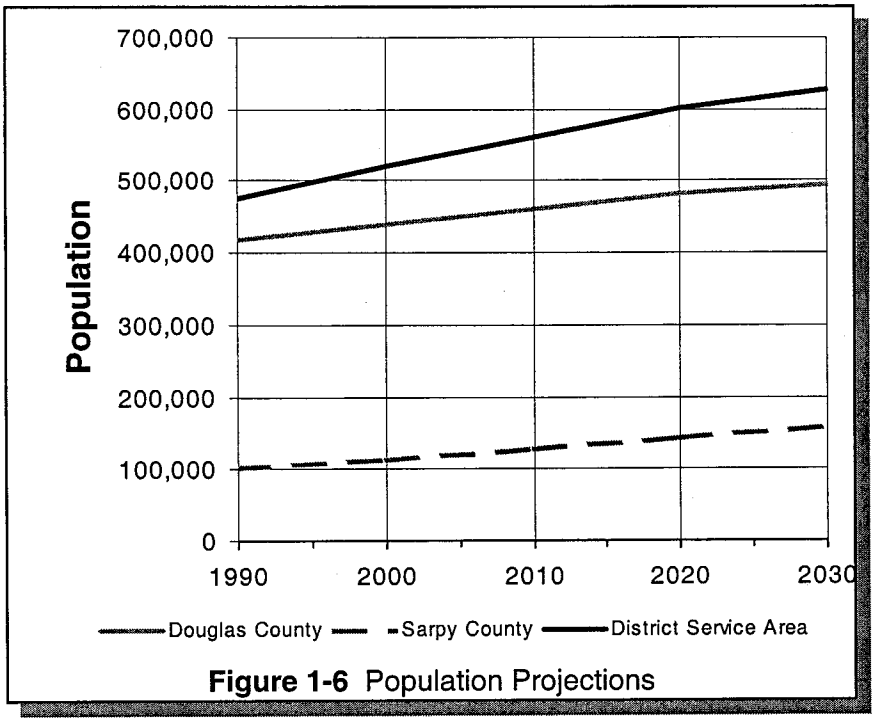


Figure 1-6 Population Projections

capable of meeting the maximum daily demand, water deficits can occur and cause low system pressures, inadequate flows for fire fighting, and inadequate supply for drinking and other purposes.

Three separate projections were developed to estimate maximum daily demand: (1) HDR's 1993 composite projection based on the 1987 population projection and customer numbers (HDR Engineering, Inc. 1993); (2) the updated projection based on the 1994 population projection; and (3) the updated projection based on 1994 projections of customer numbers.

1) The 1993 HDR composite projection was an average of two projections, one based on population and maximum per capita consumption, and another based on the number of customers and maximum per customer consumption. The population projections, prepared by MAPA in 1987, were considered to be slightly pessimistic and the customer projections, based on historic records from the District, were considered to be slightly optimistic (HDR Engineering, Inc. 1993). Both sets of projections estimated maximum demand from average demand by multiplying average demand by the maximum-day to average-day ratio of 2.43. The increase in customer numbers was estimated to be 1.44 percent annually. Even though per capita consumption is projected to increase, average customer usage is projected to slowly decrease from 655 gallons per day (GPD) per customer in 1995 to 620 GPD per customer in 2030, respectively. This decrease reflects a projected decrease in number of persons per household customer. The 1993 HDR composite projection indicated that the maximum daily demand would reach 345 MGD in the year 2030 (Figure 1-7).

2) The second maximum daily water demand projection was based on the 1994 population projections. MAPA used its population projections along with the year 2030 service area boundary (Figure 1-2) to provide an estimate of the population in the District's proposed service area through the year 2030. Using the historic high maximum-day to average-day ratio of 2.43, the maximum daily demand in the year 2030 was projected to be 332 MGD (Figure 1-7). Because the projected maximum daily demands are based on the historic high maximum-day to average-day ratio, the projections continue the upward trend set by the historical peaks in annual maximum daily demand.

3) The third maximum daily demand projection used the estimated number of customers in both Groups I and II and the projected average customer use. In this case, the number of customers served by the District was assumed to increase at an

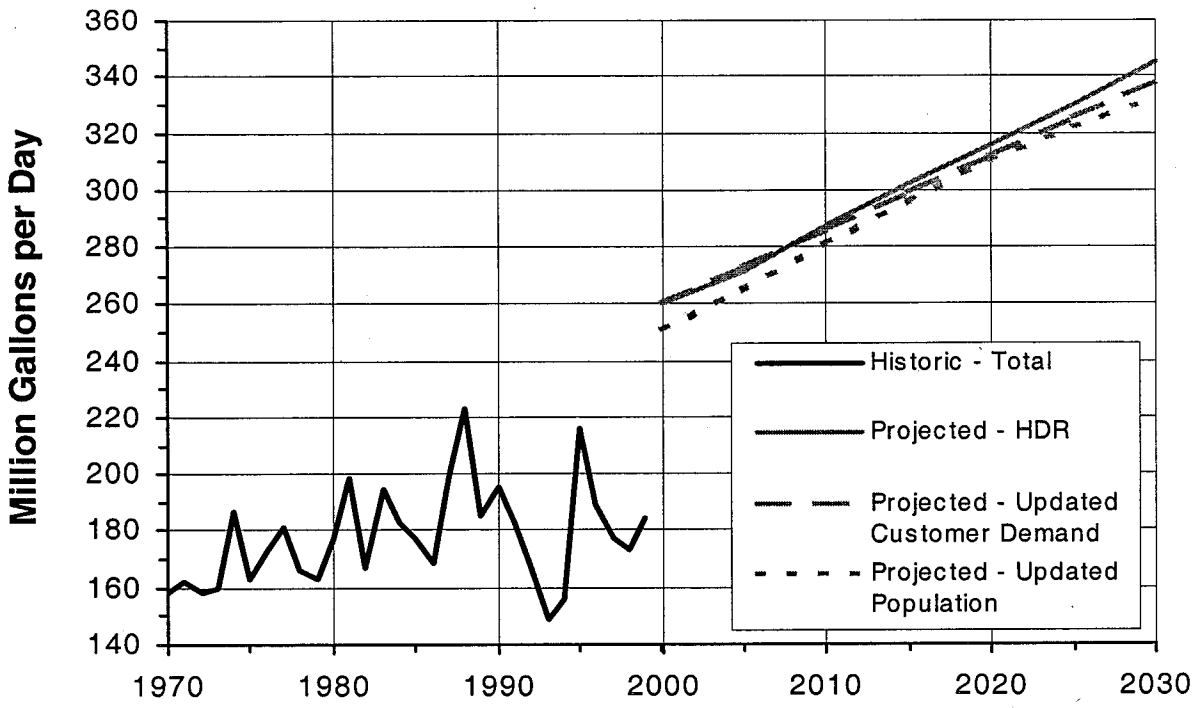


Figure 1-7 Historical and Projected Maximum Daily Demand

average rate of 2,000 connections each year (HDR Engineering, Inc. 1993). Approximately 225,000 customers were projected to receive water service from the District in the year 2030. As previously described, the average daily demand per customer was projected to decrease to 620 gallons per customer per day by 2030. After applying the maximum-day to average-day ratio of 2.43, the maximum daily demand was projected to be 339 MGD in the year 2030 (Figure 1-7).

The three projections produced reasonably consistent estimates of maximum daily demand in 2030 ranging from 332 to 345 MGD. The best estimate is considered to be 332 MGD from the second method, because this estimate was based on MAPA population projections that contained the most current data.

Recently, MAPA prepared population projections for Douglas and Sarpy counties bases on results of the 2000 Census. The new population estimate for 2050 is 725,000, which is 80,000 more than estimated in 1994. If this new projection is correct, the District may have to start looking for additional water supply sooner than 2030. Given the inherent uncertainties in making a 50-year population projection and then further extrapolating water demand, the estimate of water demand in 2030 made in 1994 is considered sufficiently accurate for planning purposes and this Environmental Impact Statement (EIS).

The best estimate of maximum daily demand in 2030 is 332 MGD

Water Conservation Measures

One factor that can affect water demand is conservation. The District's current Water Conservation Plan (Plan) was officially adopted in 1994 and was originally expected to reduce peak hour and maximum day demands by five percent. The Plan

includes an inclined block rate for water use, a public education program, and three levels of emergency operating plans.

The District began a program of using the price rate structure of water to encourage conservation in 1976 when it abandoned declining block rates (lower prices at higher usage) and instituted flat rates for residential customers. In 1979, the District introduced an inclined block rate structure that increased the cost of water at higher use rates in summer (mid-May through mid-October). In 1988, summer residential water usage between 4,400 and 5,000 cubic feet (cf) per month cost 20 percent more than the base rate and water use greater than 5,000 cf per month cost 40 percent more. Typical commercial and industrial users got a 3.75 percent discount on water use over 30,000 cf except during summer when water use over 30,000 cf per month was surcharged 16.25 percent. High volume industrial users got a 10.5 percent discount on water use over 500,000 cf per month except during summer when the rate was flat.

In 1991, the slope of the inclined block rate structure for residential customers was steepened to 27 percent after 900 cf per month and 64 percent after 3,000 cf per month. In 1992, all commercial and industrial accounts were brought under a summer incline block schedule. The summer surcharge for usage over 30,000 cf per month was raised to 27 and 16 percent for typical and high volume industrial users, respectively. In 1996, the inclined block, summer rate structure was increased to its current levels. Residential users are surcharged 40 and 80 percent for water use over 900 and 3,000 cf per month, respectively. Typical commercial and industrial customers are charged 34 percent more for all water used in the summer and high volume industrial users are charged an extra 65 percent for water usage over 30,000 cf per month. Current base rates are $0.704 and $0.618 per 100 cf for residential and commercial/industrial users, respectively. An across-the-board increase of three percent took effect in 1999.

The District's efforts to educate the public about water conservation predates the adoption of the Plan. Conservation tips have been periodically included in billing statements during the summer months since 1990. The District's program includes such items as the development and use of brochures for presentations, tips for new customers, TV and radio public service announcements, paid newspaper advertisements, xeriscaping information, and an employee speakers bureau. Evidence of the impact of the education program is the change that has occurred over the last 15 years in the pattern of daily water use in summer. Water use during the middle of the day (10:00 am to 6:00 pm) has declined substantially as customers have become

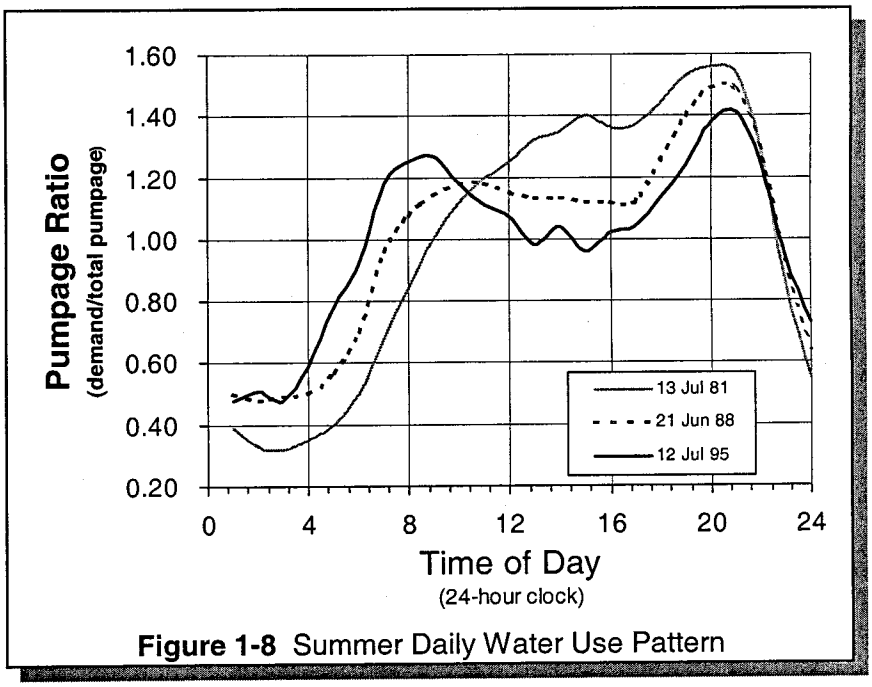


Figure 1-8 Summer Daily Water Use Pattern

more aware of the importance of watering lawns only in the morning and evening (Figure 1-8).

The District's Water Conservation Emergency Operation Plan contains three water alert levels. A **Level 1 Water Alert** is triggered when water consumption reaches 95 percent of available supply or system capacity, after the District is not able to refill reservoirs from day to day, or when low pressure hampers fire fighting or causes numerous customer complaints. In the first level, the District curtails hydrant flushing and main filling, adheres to odd/even water restrictions, and shuts down all decorative fountains in Omaha. The public is asked to voluntarily implement odd/even watering, discontinue vehicle washing and swimming pool filling, and shut off decorative fountains. No enforcement is actively used in Level 1.

A **Level 2 Water Alert** is triggered when water consumption meets or exceeds available supply or system capacity, useable reservoir storage has been reduced by 50 percent or more, or widespread pressure problems exist. Once a Level 2 alert is issued, odd/even watering is mandatory and the use of water to fill swimming pools, wash vehicles, and run decorative fountains is prohibited. All municipal water use that is not required for public health and safety will be curtailed. Violators will first be warned; continued violations may result in service shutoff.

A **Level 3 Water Alert** is triggered when water usage exceeds production capacity because of emergency situations. A Level 3 alert means that all non-sanitary use of water is curtailed. Enforcement is the same as Level 2.

Since the water alert system was established in 1994, two significant water use events have occurred. In July 1995, press releases requesting the public's help in implementing voluntary conservation measures were made over a five- to six-day period. In August 2001, the District formally declared a Level 1 Water Alert for a period of approximately eleven days.

The District actively practices conservation through a variety of other normal operating activities:

- A leak detection program is employed by the District to actively identify and locate leakage in the treated water distribution system. Unaccounted for water loss has averaged 9.8 percent since 1980, which is below the average of 12 percent normally used in standard industry design estimates. In 1997, unaccounted for water loss was 5.3 percent of total pumpage -- a record low for the District.
- All Group I and Group II customers are metered, which increases awareness of water use. The District also operates a strict meter rehabilitation and replacement program which includes a systematic review of meter reliability and length of service.
- Water distribution system improvements are constantly being made through the replacement or paralleling of aging segments. System improvements are designed to maintain and increase system capacity and pressure, while improving total system reliability.

The District also makes system improvements that may not be normally considered a conservation measure but maximize the efficient use of existing water supplies. Two of these improvements were:

- Pumps at the Florence Plant intake structure were recently replaced. This replacement improved the efficiency and reliability with which water is delivered to the Florence Plant under low-flow conditions in the Missouri River.
- Continuous well field and system improvements in the Platte South and Millard water systems are made by redeveloping wells to maintain design production capacity and by replacing

pumps and other facilities to maintain system efficiency and reliability.

In 1994, the federal government adopted new standards for low-use water fixtures as part of the Energy Policy Act of 1993. This act reduced toilet flush volumes to a maximum of 1.6 gallons per flush and shower head flow rates to a maximum of 2.5 gallons per minute. Installation of these water-efficient fixtures in new homes and replacement or retrofitting of these fixtures by owners of pre-1993 homes help reduce average daily demand.

The U.S. Environmental Protection Agency (EPA) has proposed a series of conservation measures for consideration in developing water conservation plans (U.S. Environmental Protection Agency 1998). These measures are grouped into 12 categories with two to seven specific measures per category (Table 1-2). The District has implemented measures in eight of the categories, particularly in the areas of universal metering, water accounting and loss control, costing and pricing, information and education, and pressure management (Table 1-2).

Each of the three 2030, maximum daily water need projections was reassessed assuming that 10 percent of the maximum daily demand could be conserved by increasing public awareness and encouraging the use of conservation practices. With 10 percent conservation, HDR's 1993 composite projection would decrease to 311 MGD, the projection using recent MAPA population estimates would reduce to 299 MGD, and the projection based on number of customers would decrease to 305 MGD (Figure 1-9). To date, insufficient historical data exists to quantify the impacts of the 1994 Water Conservation Plan or the 1993 Energy Policy Act on the District's water usage.

Projected Water Requirements

The District's water supply system has a total capacity of 234 MGD when all facilities are

Table 1-2 Water Conservation Measures for Systems Serving More Than 100,000 People[1]

Measure	District Use
Universal Metering	
Source-water metering	Yes
Service-connection metering and reading	Yes
Meter public-use water	Yes
Fixed-interval meter reading	Yes
Meter accuracy analysis	Yes
Test, calibrate, repair, and replace meters	Yes
Water Accounting and Loss Control	
Account for water	Yes
Repair known leaks	Yes
Analyze non-account water	Yes
Water system audit	Yes
Leak detection and repair strategy	Yes
Automated sensors and telemetry	Yes (on mains)
Loss-prevention program	Yes
Costing and Pricing	
Cost-of-service accounting	Yes
User charges	Yes
Metered rates	Yes
Cost Analysis	Yes
Non-promotional rates	Yes (inclined block)
Advanced pricing methods	Yes (seasonal rates)
Information and Education	
Understandable and informative water bill	Yes
Water system information available	Yes
Water bill inserts	Yes
School programs	Yes
Public education program	Yes
User group workshops	No
Advisory committee	No[2]
Water-Use Audits	
Audits of large volume users	Yes
Large landscape audits	No
Selective end use audits	No
Active Retrofit Program	
Retrofit kits available	No
Distribution of retrofit kits	No
Customer group targeted program	No
Pressure Management	
System-wide pressure management	Yes
Selective use of pressure reducing valves	Yes
Landscape Efficiency	
Promotion of landscape efficiency	Yes - some demos
Selective irrigation submetering	No
Landscape planning and renovation	No
Irrigation management (high volume users)	No
Replacements and Promotions	
Rebates and incentives (nonresidential)	No
Rebates and incentives (residential)	No
Promotion of new technology	No
Reuse and Recycling	
Industrial applications	No
Large volume irrigation applications	No
Selective residential applications	No
Water-Use Regulation	
Water-use standards and regulation	Yes
Requirements for new developments	No
Integrated Resource Management	
Supply-side technologies	No
Demand-side technologies	No

[1]From EPA 1998 [2]Elected Board of Directors

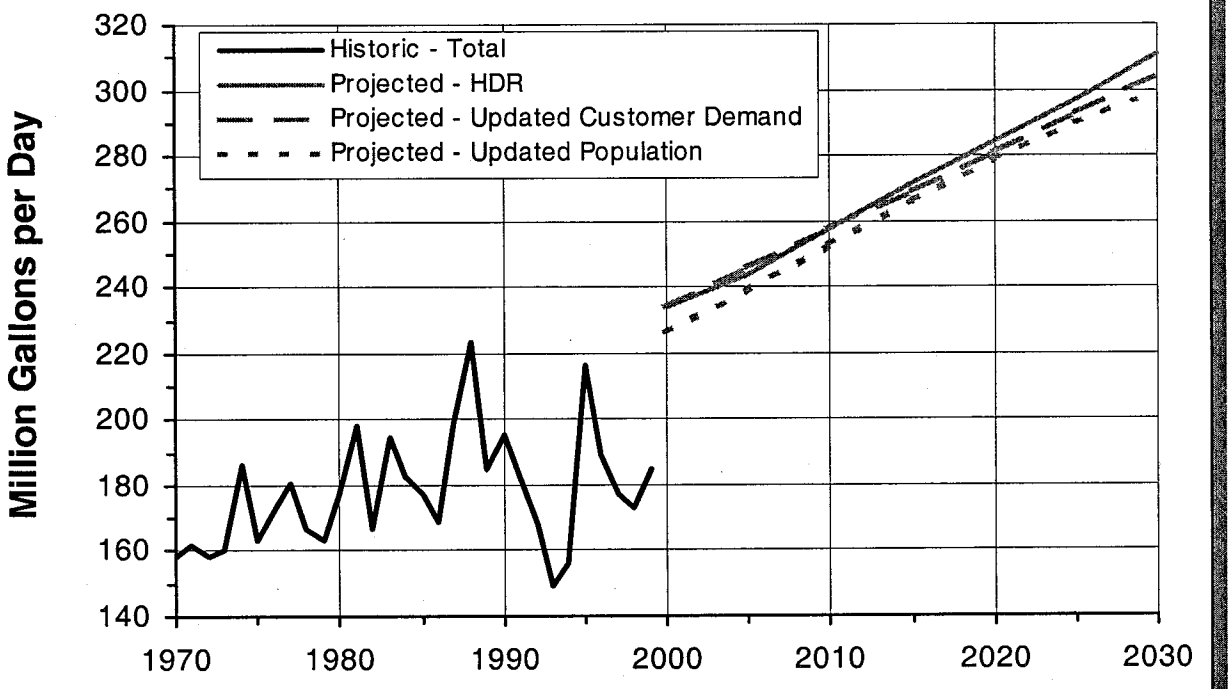


Figure 1-9 Historical Maximum Daily Demand and Projected Maximum Daily Demand with a 10 Percent Reduction Attributable to Conservation

operational (Table 1-1). As discussed in Existing Water Supply Facilities, the firm capacity of the District's system for planning purposes is currently 207 MGD.

To assure a reliable water supply, a water system should have a firm capacity that will meet maximum daily demand. In 1988 and 1995, the maximum daily demands reached 223 MGD and 216 MGD, respectively (Figure 1-3). These demands exceeded the District's 1997 firm capacity of 207 MGD by 16 MGD in 1988 and 9 MGD in 1995. These demands were met because all of the District's production facilities were operational and the demands did not exceed the system's total capacity. If only the system's firm production capability had been functioning at those times, shortfalls would have occurred. Therefore, **the District has an existing need for additional firm capacity.**

Depending on the projection used, maximum daily demands range from 299 to 311 MGD in 2030 with 10 percent conservation (Figure 1-9). Using the firm system capacity of 207 MGD, the net water need in the year 2030 would range between 92 and 104 MGD (Figure 1-10). The need for 92 MGD in 2030 was based on the updated population projection (332 MGD without conservation) and was considered to be the most accurate because of the use of the more recent data. The District also believes that 10 percent conservation can be achieved. Therefore, **to meet the projected maximum daily demand in 2030, the District proposes to add 90 MGD of firm capacity, which, when the 10 percent allowance for equipment outage (10 MGD) is added, is equivalent to an additional 100 MGD of maximum capacity.**

Because the Omaha Metropolitan Area is bounded on the east by the Missouri River, the direction of growth of the area has been and will continue to be to the south, north, and primarily in a westerly direction. Since at least 1963, the District's long-range planning

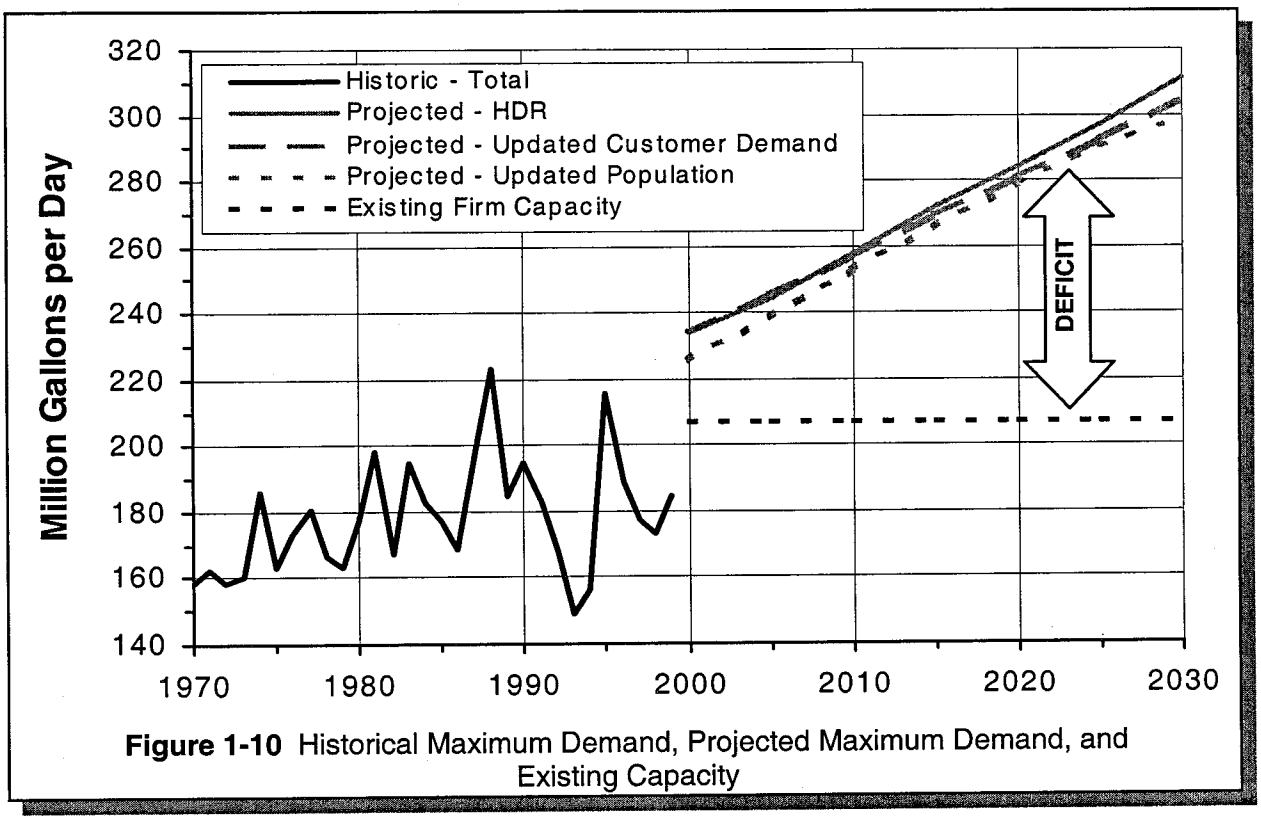


Figure 1-10 Historical Maximum Demand, Projected Maximum Demand, and Existing Capacity

and subsequent infrastructure development has assumed a major water distribution point in the western portion of the service area presumably supplied by a nearby source (Henningson, Durham, and Richardson 1963, 1972, 1975; District 1983, 1987, 1993). To be compatible with these plans and development, **the District's next new water supply must be capable of delivering its production to two delivery points in western Douglas County.** These points are the Skyline Reservoir and Pump Station at 216th and Pacific streets and a point near 180th and Harrison streets.

Summary of System Need for Additional Water Supply

Planning forecasts indicate a shift of population from the central city to surrounding areas west, south, and northwest of Omaha (Metropolitan Area Planing Agency 1996) (Figure 1-2). Water supply needs, therefore, are expected to increase in those geographic areas during the 30- to 35-year planning horizon of this study. In 1997, the District had a maximum water supply capacity of 234 MGD and a firm capacity of 207 MGD. Average daily demand, currently approximately 90 MGD, is estimated to increase to 139 MGD by 2030. The District can meet current and projected average daily demands with its existing facilities; however, in order to reliably protect public health and safety, the water system should have sufficient **firm** capacity to meet **maximum** daily demands. In the past 12 years, maximum daily demand has twice exceeded the Districts' firm system capacity. The historical trend in maximum daily demand is increasing. By 2030, maximum daily demand is projected to exceed current firm capacity by approximately 90 MGD. New water system production facilities, therefore, are needed now to

To meet maximum daily demand in 2030, the District will need an additional 90 MGD of firm capacity

overcome the current shortage and to accommodate the water supply needs of the District through the end of the planning period. Based on historic uses, an additional maximum capacity of 100 MGD, of which 90 MGD is firm system capacity, should meet the District's maximum daily demand through the year 2030.

NEED FOR ADDITIONAL WATER SOURCE REDUNDANCY

The use of water source **redundancy** (i.e., having more than one source that can meet the water demand) as a project need was evaluated using literature searches, reviews of professional society publications, interviews with Midwestern municipalities, and other information sources. This analysis indicated **the District needs to develop at least 62.8 MGD of water production capacity from a source other than the Missouri River to meet average daily demand in 2030 with its largest source of water out-of-service.** An expanded discussion of water system reliability with regard to water source redundancy is presented in Appendix A.

Water Supply Planning Policies

The American Water Works Association (AWWA) believes that "sound water resources planning and management must provide an adequate supply of high-quality water for people, giving careful consideration to regional water resource conditions, environmental impacts, and project cost." (American Water Works Association 2000). The Association of State Drinking Water Administrators lists one of the capabilities of a water system that produces safe water as the ability to operate in an emergency (Association of State Drinking Water Administrators 1996). Thus, water supply systems should have the redundancy needed to readily adjust to emergencies that can render a source of water unusable. Examples of such emergencies are acute contamination, mechanical failure, and drought. Correspondingly, the Panel on Water Resources Planning of the U.S. National Water Commission (1972, cited in Goodman et al. 1984) lists maintenance of flexibility as one criterion of a good supply plan. A basic method of meeting this criterion is to have redundant water sources.

The District wishes to avoid the pitfall of relying too heavily on a single source of water, as was the case for San Diego County, California. In a 15-month period from December 1990 to February 1992, a drought in the Southwestern United States left San Diego County residents faced with a 20 percent water shortage as a result of curtailments from their primary supplier of up to 31 percent (San Diego County Water Authority 1997). The shortage could have reached 50 percent if the drought had continued (San Diego County Water Authority 1997). The county's nearly total dependence on a single supplier, the Metropolitan Water District of Southern California, significantly diminished the reliability of the San Diego region's water supply because "there were few or no alternatives for back-up supplies." (San Diego County Water Authority 1997). By the time the drought was broken in March 1992, the Authority had heard from

"... a number of citizens and business leaders whose jobs, businesses and quality of life were jeopardized by the growing water crisis. The episode forever changed the attitudes in the community and underscored the importance of water supply reliability. Never again, they clearly said, should our community be placed at such peril. The Water Authority was asked to secure a more reliable water supply that will help prevent prolonged, or even short-term, water supply shortages" (San Diego County Water Authority 1997).

As further indication of the importance of water supply reliability, the 1998 Annual Report of the San Diego County Water Authority was entitled *Investing in Reliability.*

The central theme of the report identified the Authority's commitment "... to make the necessary investments to secure and deliver a reliable water supply." (San Diego County Water Authority 1998).

Trends in Water Sources

Water supply providers today continue to search for and pursue water supply sources that accomplish the objectives described in the preceding paragraphs. To determine the trends occurring today, a survey was conducted of other water utilities. The utilities surveyed were roughly of similar size and geographic location to Omaha, Nebraska to avoid making comparisons among municipalities that would have very different water demands because of great differences in climate or would have very different levels of infrastructure because of great differences in population. Twenty-eight metropolitan water supply utilities were contacted either by telephone or through the Internet (Table 1 in Appendix A) to determine typical standards of practice for water supplies of approximately similar size and locality. Of this total, 19 municipalities, or 68 percent, had multiple sources of water supply and nine had one supply source. A survey conducted by EPA also found that 68 percent of water supply systems serving populations over 100,000 could draw on another source from within their own system if their primary water source became unusable (U.S. Environmental Protection Agency 1997). Of the municipalities with multiple water supply sources, eight had both groundwater and surface water sources, six had multiple surface water supply sources, and five had multiple groundwater sources. Of the municipalities with single sources of water supply, seven used surface water sources (rivers) and two used groundwater sources. The average population of cities with multiple sources was 63 percent larger than cities with single sources.

Major losses of water supplies in the Midwest have been caused by:
Contamination
Ice Jams
Flooding

Six of the cities surveyed relied exclusively on groundwater for their water supply. Waterloo, Iowa; Dayton, Ohio; Rockford, Illinois, and South Bend, Indiana, do not use nearby rivers as water sources because groundwater provides higher quality water that requires less treatment and is less vulnerable to interruption. In 1964, Cedar Rapids, Iowa, switched from the Cedar River to groundwater because of flooding and water quality issues (Lynch 2000). Lincoln, Nebraska, uses exclusively groundwater because a suitable nearby source of surface water does not exist.

Three cities surveyed that currently have single surface water sources, Louisville, Kentucky (Ohio River), St. Joseph, Missouri (Missouri River), and Kansas City, Kansas, (Missouri River) are in the process of switching from surface water to groundwater sources to obtain a more reliable water supply of higher and more consistent quality. The switch to groundwater in St. Joseph was caused by the unreliability of the Missouri River, which has disrupted service because of very low (ice jam) and very high flows (i.e., the flood of 1993), and a desire to have a higher quality source water. The choice of higher quality groundwater over lower quality surface water is in keeping with the current water quality policy of AWWA (American Water Works Association 2000). A fourth city with a single surface water source, Minneapolis, Minnesota, is considering an interconnection with St. Paul to maintain a high level of public health and safety should their existing source, the Mississippi River, become unusable (Streed 2000). St. Paul has a multiple-source water supply consisting of several surface water sources (the

Mississippi River and a series of lakes), groundwater, and a reservoir impounding system to improve raw river water quality (St. Paul Regional Water Services 2000).

Six of the cities surveyed have experienced the temporary loss of a major water source:

- Because of contamination in the White River, Indianapolis, Indiana, had to shut down its White River treatment plant for 10 days in 1999. The City's three remaining surface water sources and four well fields, however, were able to meet water supply needs without jeopardizing water quality.
- In the 1970s, Waterloo, Iowa, had to shut down one of its well fields because contamination in the Cedar River infiltrated into the alluvial aquifer. The remaining unaffected well field was able to meet the water needs of the city without a disruption in service.
- Portland, Oregon's, surface water supply, Bull Run Reservoir, has been rendered unusable several times because of poor water quality (1986, 1996, and 1998) and a pipeline failure (1995). At those times, water needs of the city were met by groundwater and conservation.
- An oil spill in the Missouri River caused Kansas City, Missouri, to shut down their surface water intake for two days in March 1999. The City used water from their well field and stored finished water while the slick passed.
- St. Joseph, Missouri lost their water supply from the Missouri River in 1989 when an upstream ice jam caused the water level in the river to drop below the City's intake.
- In 1993, St. Joseph's water supply was interrupted again, this time by the Missouri River flooding.
- The flood of 1993 inundated Des Moines, Iowa's only water treatment plant and left the City without water for 12 days. A new treatment facility is expected to be operational in April 2000 to supplement the existing plant.
- In January 2000, contamination of Raccoon Creek forced the closure of Des Moines, Iowa's Racoon Creek intake. This time, the City was able to meet their needs with water from their remaining sources because the treatment plant was unaffected.

Of the eight interruptions reported above, all directly or indirectly involved a surface supply, seven involved a river or creek, and six were caused by contamination. These incidents illustrate the greater vulnerability to interruption of surface water sources, particularly rivers, relative to groundwater sources.

Surface water sources, particularly rivers, are more vulnerable to interruption than groundwater sources.

For the cities with multiple sources, the proportion of system capacity of the largest single source ranged from 32 (Cedar Rapids, Iowa) to 92 percent (Lincoln, Nebraska) and averaged 58 percent. Omaha, Nebraska, (i.e., the District) depends on the Florence Treatment Plant for 68 percent of maximum capacity. See Appendix A for the ranking of the other cities in the survey with multiple water sources.

To be truly redundant, a water supply system should not rely on a single source for more than 50 percent of its maximum capacity. **This standard, however, is not appropriate for systems with typical demand less than 50 percent of system capacity.** For example, 63 percent of Waterloo, Iowa's water production capacity is from one well field (Folkers 2000). The loss of the use of this well field, however, would not necessarily disrupt water service because Waterloo's typical demand is only 10.2 percent of maximum capacity. The remaining well field,

though smaller, has sufficient capacity to meet the demand. **To have wide applicability, therefore, a redundancy standard for water system sources must be relative to demand.**

No industry standards exist for comparing water system source redundancy among numerous municipalities; therefore, a measure was devised. **Source redundancy was calculated by dividing maximum system capacity with the largest source out of service by the average daily demand in 1998.** The resulting "redundancy ratio" is analogous to firm yield, which is a standard measure of reliability for individual drinking water sources. The greater the redundancy ratio, the greater the proportion of 1998 average daily demand could be met with the largest source out of service and hence, the greater the overall system reliability. Average daily demand is a reasonable level for expected service because loss of the primary water supply could occur at any time in the seasonal demand cycle. During periods of higher than average demand, customers should be expected to rapidly reduce demands to average levels by eliminating non-essential water uses. Being able to meet average daily demand would also ensure sufficient water for public health and safety, barring any distribution system constraints. This ratio has several characteristics that, in the best professional judgement of the authors of this EIS, are particularly valuable in the context of comparing municipal water supplies in the context of the NEPA process. First, the redundancy ratio is based on data that are well known to any municipal water supply and can readily be obtained for a large number of municipalities. Second, the ratio is an objective measure, based on common sense and data that are in the public record. Third, the ratio is simple enough to be understood by the general public, which is in keeping with NEPA regulations (40 CFR 1502.8).

The redundancy ratios were based on the 1998 average daily demand because that was the year for which data were readily available from the cities surveyed. Because average daily demand varies annually depending on weather conditions, the 1998 water use rate was compared to historical average daily demands to evaluate how representative 1998 was of typical conditions. Historical annual average daily demand data were readily available for the District. Over the period of 1986 through 1998, annual average daily demand varied greatly in response to a wide range of climatic conditions but did not manifest a significant long term-trend (Figure 1-11). During this period, average daily demand was 87 MG. The District's average daily demand in 1998, 86 MG, was nearly identical to the 1986 through 1998 average. Assuming the annual

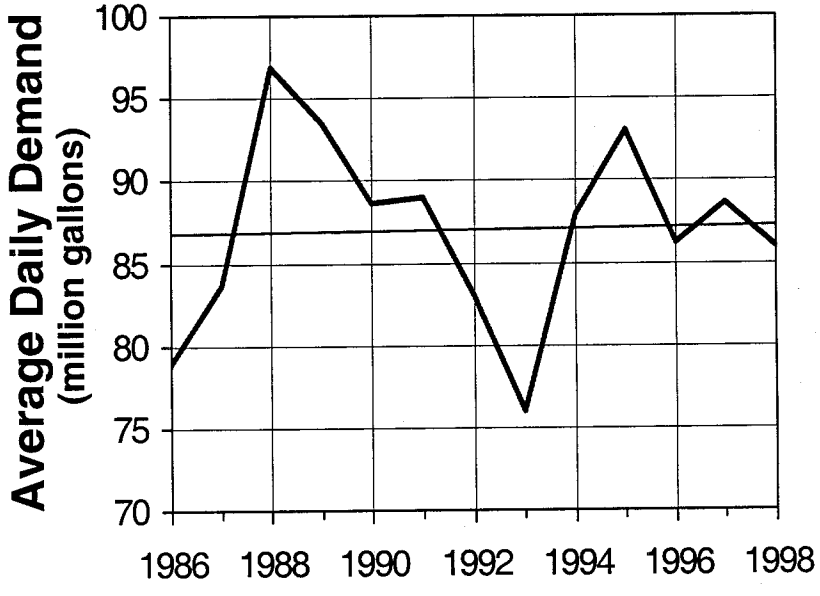


Figure 1-11 Annual Average Daily Demand for the Metropolitan Utilities District

variation in average day demand for the District is similar to the other cities surveyed in the Midwest, then 1998 appears to be an appropriate year on which to base a redundancy standard.

For the cities surveyed, redundancy ratios averaged 1.26 and ranged from 0.29 for Lincoln, Nebraska, to 3.01 for Wichita, Kansas (Figure 1-12). A reasonable standard for the redundancy ratio is 1.00. Eleven of the 18 cities in this analysis had redundancy ratios greater than 1.00 (Figure 1-12).

The redundancy ratio is a simple indicator that does not take into account local factors that enhance, or will enhance, overall system reliability and reduce the need for an additional water source as implied by a ratio less than 1.00. For six of the seven cities surveyed with multiple water sources and redundancy ratios less than 1.00:

- Little Rock, Arkansas, derives 80 percent of its drinking water capacity from one reservoir and the remaining water from another reservoir. Both reservoirs are located in rural, relatively pristine areas. One reservoir is surrounded by U.S. Forest Service and city-owned land. The city of Little Rock is in the process of purchasing a 0.25-mile wide buffer around the other to prevent development. These conditions enhance the reliability of these sources by reducing the opportunity for conditions to occur in the watershed that could seriously jeopardize water quality (Hum 2000).
- Eighty-six percent of Kansas City, Missouri's drinking water capacity is from the Missouri River. For the City's next expansion of their water supply, however, connection to a large surface water reservoir is being considered to diversify sources (Clender 2000).
- Columbus, Ohio's water sources are two reservoirs and a well field. The City has established watershed and wellhead protection programs and water quality monitoring devices in the reservoirs (Columbus, Ohio no date).

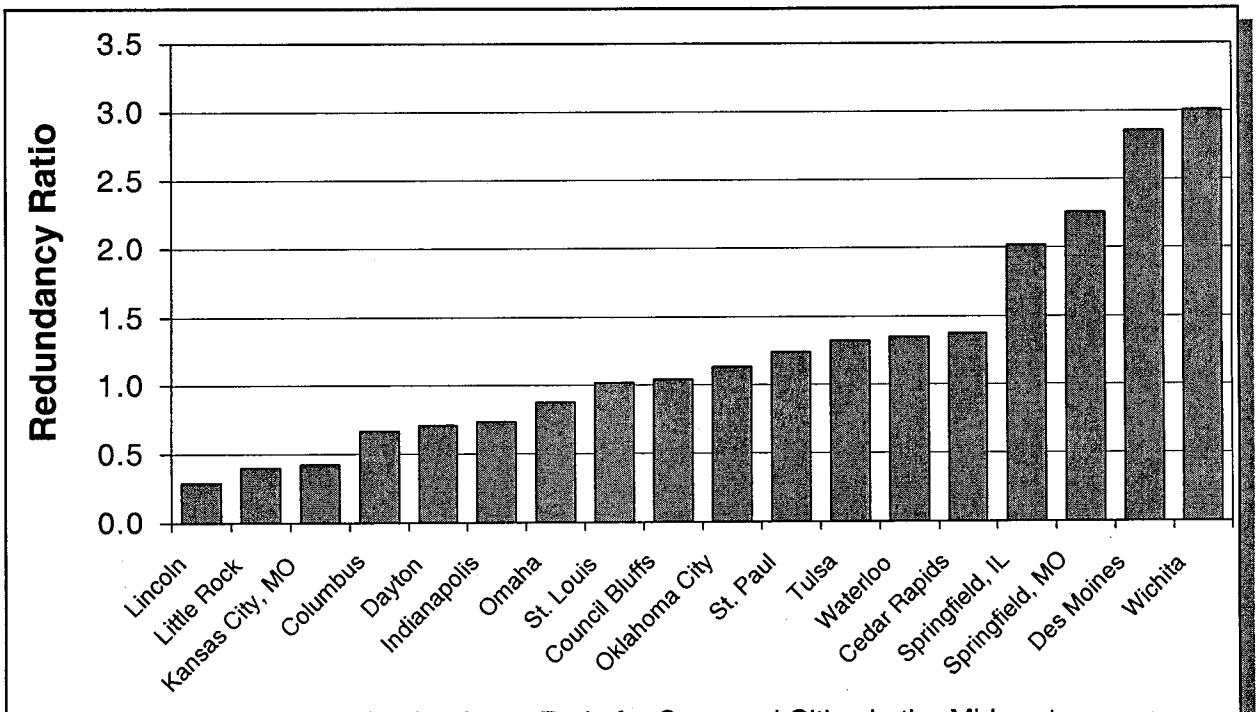


Figure 1-12 Redundancy Ratio for Surveyed Cities in the Midwest

- Drinking water for Dayton, Ohio is provided by two well fields, each with a separate treatment plant. The City is in the process of building an interconnect between the two treatment plants that will allow one plant to use water from both well fields (Schwinderman 2000). As described below, well fields are much less vulnerable to contamination and interruption of service than surface water sources, particularly rivers.
- Indianapolis, Indiana is in the process of expanding one of their well fields from 11 to 45 MGD (Petterson 2000). When completed, the new redundancy ratio will be 0.96.
- Lincoln, Nebraska's well field on the Platte River consists of two separate systems. The first system is a field of vertical wells that produces water classified and treated as groundwater. The second system is a pair of horizontal collector wells that produces water classified as groundwater under the influence of surface water, which is treated as surface water.

The seventh city with a redundancy ratio less than 1.00 is Omaha (i.e., the District). Currently, the District does not have any local factors that mitigate for its low redundancy ratio (0.88). Indeed, the District's primary water source, a river, is the type of source universally associated with regional water supply disruptions. One of the purposes of the proposed project to is improve the District's water source redundancy.

Metropolitan Utilities District Water Supply

Although the District has never had an unplanned loss of service for the Florence Treatment Plant and Intake, **historical conditions on the Missouri River indicate the possibility of future supply interruption exists.** In the winter of 1988-1989, the District came within a few inches of losing the production capabilities of the Florence Plant when an upstream ice jam nearly dropped the water level in the river below the Florence Plant intake (Tobin 2000). Since then, the District has installed new low-service pumps that lowered the minimum operating water level in the river by about three feet. This modification reduced, but did not eliminate, the risk of loss of service from an ice jam. An ice jam on the Missouri River upstream of the intake could halt water production at the Florence treatment plant for the duration of the jam, typically two to three days, if water level in the river dropped below the water intake elevation (Tobin 2000). An ice jam at the location of the intake could block and damage the intake, which could take a week to repair (Tobin 2000).

Since 1966, the District's major water supply has had close calls with spills into the Missouri River of:
Fertilizer
Pesticides
Chromated water
Soybean oil
Diesel fuel

In May 1965, the District came within approximately 150 feet of having to shut down the Florence intake when water from fighting a fire at an agricultural chemical warehouse ran off into Mill Creek and then into the Missouri, just below the Florence intake. Although much of the material was inert pesticide carrier, several thousand pounds of parathion, dieldrin, endrin, DDT, DDE, aldrin, and heptachlor were involved in the fire and the water intakes at Council Bluffs, Iowa, and Leavenworth, Kansas were shut down for 14 and 40 hours, respectively (Clare 1965).

A search of the EPA's Emergency Response Notification System (ERNS) database provided a general picture of acute contamination events in the lower Missouri River (Gavins Point Dam to St. Louis). In the period of 1981 through 1999, 62 major spills were reported. Approximately 70 percent of

the spills involved petroleum products and the remainder involved sewage, solvents, acids, or other substances. Five of these incidents occurred adjacent to Omaha, Nebraska, or Council Bluffs, Iowa:

- August 1981, Council Bluffs, Iowa; an oil slick, apparently soybean oil, was reported on the Missouri river at the waterworks intake, requiring deployment of the Iowa Department of Environmental Quality's response team.
- November 1986, Omaha, Nebraska; Omaha Public Power District representative observed an oily sheen of diesel fuel "covering half the river."
- December 1986, Council Bluffs, Iowa; Water Works representative reported an oily sheen on the Missouri River.
- August 1998, Council Bluffs, Iowa; an oily sheen 6 miles long and 30 feet wide was reported, requiring deployment of the Council Bluffs Hazardous Materials Response team.
- August 1999, Omaha, Nebraska; Burt Street Confluence, report of oil in creek heading toward river, possibly from flooding.

Other major spills in the Missouri River near or above Omaha not recorded in the ERNS database were a liquid fertilizer spill in January 1966 at Sioux City, Iowa (Clare 1966), an ammonium phosphate fertilizer spill in February 1975 at Denison, Iowa into the Boyer River (a tributary of the Missouri River) (Hawes 1975), and the release of chromated water from the Fort Calhoun Power Station in April 1981 (Jaworski 1981). The liquid fertilizer spill in 1966 resulted in substantial increases in the amount of alum and chlorine used at the Florence Plant and a slight increase in objectionable tastes and odors in the District's finished water (Clare 1966).

Potential chemical contaminants of the Missouri River at Omaha:
Commercial barge traffic
fertilizer
asphalt, tar, and pitch
Pipelines
liquid petroleum products
anhydrous ammonia

Other possible sources of contamination are pipeline breaks and barge accidents. Based on the issuance of Section 10 or Section 404 Dredge and Fill permits by the U.S. Army Corps of Engineers and information from the Iowa Utilities Board, eight pipelines cross the Missouri River above the Omaha, Nebraska, and below Gavins Point Dam. Three of these pipelines carry liquid petroleum products, two carry anhydrous ammonia, and three carry natural gas. According to the Corps, approximately 235 barges carrying 246,000 tons of cargo passed the Florence Intake at river mile 626 (Gjesdahl 2000). The primary cargos were fertilizer (52 percent), asphalt, tar, and pitch (16 percent), and animal feeds (15 percent) (Gjesdahl 2000).

"If contaminants were allowed into the plant facility, investigation, cleaning, disinfection, testing, and modification of procedures would need to be completed ahead of plant start-up" (Tobin 2000). Contamination of the Florence Plant by a water soluble chemical, such as fertilizer, could probably be flushed out and production restored in about two days (Tobin 2000). Contamination by a petroleum-based products could cause the plant to be shut down for one to two weeks to clean the basins. Contamination by *Cryptosporidium* would likely cause a loss of service similar in duration to that experienced by Milwaukee, i.e., 7 weeks.

The District currently has a treated water reservoir system with a capacity of 110 MG. About 55 MG, or 63 percent of 1998 average daily demand, would be available from this system during a water shortage emergency (HDR Engineering, Inc. 1993). **In comparison, Omaha ranks second lowest among the surveyed cities with redundancy ratios less than 1.00 for**

relative emergency storage capacity (Table 1-3).

How long the District's reserve supply would last is equal to the amount of reserve divided by the difference between daily demand and daily production. Because 1) daily demand varies through the year, 2) a water supply emergency could occur at any time of the year, and 3) a delay would exist between the start of the emergency and reduction in water use by the public, average daily demand was selected as the demand rate for estimating how long the District's reserve supply would most likely last. The combined maximum daily production from the Platte South and peak shaving wells is 76.2 MG. The District's current average daily demand is about 87 MG. The reserve of 55 MG, therefore, would be exhausted after about 5 days. In 2030, the District's average day demand is estimated to be 139 MG. At that rate, the reserves would be exhausted in one day. At the projected 2030 summer use rate (i.e., twice the average rate), the reserve would last about 7 hours.

For the cities surveyed with multiple water supplies (including Omaha), the average proportion of total production capacity provided by the largest water source is 58 percent (see Figure 1 in Appendix A). The Missouri River, via the Florence Treatment Plant, is the District's largest water source and currently provides 68 percent of the District's drinking water production capacity, which exceeds the regional average. If the regional averages for percent dependencies are considered to be an industry standard, then the District has a justifiable need to increase the diversity of its water sources. The District proposes to develop a 100-MGD water supply from the Platte River aquifer. This development would decrease the District's dependence on its largest source to 47 percent, which is below the regional average.

The average redundancy ratio for surveyed cities with multiple water sources is 1.32. In other words, the average city could supply 132 percent of its 1998 average-day demand with its largest source out-of-service. With the Florence treatment plant out-of-service, the District would have enough remaining capacity to nominally meet only 88 percent of the District's 1998 average day demand for a redundancy ratio of 0.88. The District's redundancy ratio is currently well below the average for comparable cities and less than the level that can be considered to indicate the existence of adequate backup supply (*i.e.*, 1.00). Base on a current average daily demand of 87 MGD and a maximum capacity with the largest source out of service of 76.2 MGD, the District has an existing need for an additional 10.8 MGD of capacity from sources independent of the Missouri River to have a redundancy ratio of 1.00. Average daily demand in 2030 is estimated to be 139 MGD. For the District to meet this demand with its largest source out-of-service, **an additional**

Table 1-3 Emergency Storage Capacity of Survey Cities with Redundancy Ratios Less than 1.00

City	Available Storage Capacity (MG)	1998 Average Daily Demand (MGD)	Relative Storage Capacity (%)
Dayton	90	85	106
Columbus	130	130	92
Kansas City, MO	95	120	79
Little Rock	42	57	73
Omaha	55	86	63
Indianapolis	0	149	0

62.8 MGD of capacity should be developed from sources independent of the Missouri River.

In 2030, the District will need 62.8 MGD from sources other than the Missouri River to meet expected average daily demand with its largest source out-of-service.

Summary of System Need for Additional Water Supply Redundancy

The policies of various organizations and the prevailing conditions and trends among Midwestern cities combine to create a regional water supply industry standard for reliability based on source redundancy that the District does not meet. For larger cities, the standard practice to reduce vulnerability to supply interruption is to have more than one source of drinking water. The typical Midwestern city with multiple drinking water sources can more than meet average daily demand with their largest source out-of-service. In comparison, the District is overly dependent on its largest source of drinking water and this source is relatively vulnerable to interruption compared to other types of sources. Without the Missouri River, the District's remaining water production capacity is currently 10.8 MGD less than average daily demand. In 2030, the District is predicted to need 62.8 MGD from sources other than the Missouri River to meet expected average daily demand with its largest source out-of-service.

CHAPTER 2
ALTERNATIVES

Thirty-four diverse alternatives were identified as possible and reasonable means to meet the need for additional potable water (Table 2-1). The alternatives were proposed by the public, cooperating agencies, the U.S. Army Corps of Engineers (Corps), and the Metropolitan Utilities District (District). Many of the alternatives would provide water from the same source but in slightly different ways.

Four groups of single-source alternatives were identified:

- Platte River alluvial aquifer
- Missouri River
- Missouri River alluvial aquifer
- Dakota Sandstone aquifer

Three groups of multiple-source (combination) alternatives were identified:

- expanded Platte South and Missouri River combinations
- expanded Platte South and Platte West combinations
- expanded Platte South plus Platte West Douglas County only (DC) plus New Missouri River

Thirty-four diverse alternatives were identified as possible means to meet the need for additional potable water.

Six of the 34 alternatives did not correspond with an identifiable group:

- purchase water from Council Bluffs, Iowa
- discontinue water wholesaling
- local flood control reservoirs
- aquifer storage and recovery
- conservation
- no federal action

The principal structural alternatives are shown in Figure 2-1.

PREFERRED ALTERNATIVE

The Platte West well field and treatment plant is the District's preferred alternative because this alternative has the best available source water quality and is the least expensive to construct and operate.

The identification of a federally preferred alternative or alternatives in an Environmental Impact Statement (EIS) is required by Council of Environmental Quality (CEQ) regulations if a preference exists or unless another law prohibits the expression of such a preference (40 CFR 1502.14e). Corps regulations, however, state that in regulatory permit actions, the Corps takes an impartial position on whether to permit or deny a particular action until public interest review is complete. The regulations further state that the Corps is neither a proponent nor an opponent of the applicant's proposal (33 CFR 325, Appendix B ¶9(b)(5)) but rather determines whether or not actions proposed by the applicant are in the public interest. Based on this regulation, the Corps does not identify a preferred alternative in the EIS. A Record of Decision on whether to issue a permit (for the applicant's preferred alternative), issue a permit with conditions, or deny issuance of a permit will be made taking into consideration the information presented in the final EIS, the Section 404(b)(1) analysis, and the public interest review.

DESCRIPTIONS OF THE ALTERNATIVES

SINGLE SOURCE ALTERNATIVES

Platte River Alluvial Aquifer Group

The Platte River alluvial aquifer consists primarily of saturated sand and gravel deposited over time by the Platte River. In periods of high river flow, water tends to flow out of the river into the aquifer. When flow in the river is low, water tends to move out of

Table 2-1 List of Alternatives

SINGLE SOURCE ALTERNATIVES

Platte River Alluvial Aquifer Group

1. Platte West well field and treatment plant, vertical wells (Platte West)
2. Platte West well field and treatment plant, horizontal wells (Platte West 2)
3. Platte West 2, Douglas County only (Platte West 2DC)[1]
4. Platte North well field and treatment plant (Platte North)
5. Expanded Platte South well field and treatment plant, horizontal wells (Platte South H)
6. Expanded Platte South well field and treatment plant, vertical wells (Platte South V)
7. New Platte South well field and treatment plant (Platte South 2)

Missouri River Group

8. Expanded Florence intake and treatment plant (Expanded Florence)
9. New Missouri River intake and treatment plant (New Missouri River)
10. Missouri River North intake and treatment plant (Missouri River North)
11. Missouri River South intake and treatment plant (Missouri River South)

Missouri River Alluvial Aquifer Group

12. Dodge Park well field and treatment plant, vertical wells (Dodge Park)
13. Dodge Park well field and treatment plant, horizontal wells (Dodge Park 2)
14. Eppley Airfield well field and expanded Florence Treatment Plant (Eppley Airfield)
15. Fontenelle Forest well field and treatment plant (Fontenelle Forest)
16. Well field on the Iowa side of the Missouri River and treatment plant (Iowa well field)
17. Fort Calhoun well field and treatment plant (Fort Calhoun)
18. California Bend well field and treatment plant (California Bend)

Dakota Aquifer Group

19. Expanded Millard well field (Millard well field)
20. Expanded Elkhorn well field (Elkhorn well field)
21. Distributed wells in the Dakota aquifer (Distributed wells)

MULTIPLE SOURCE ALTERNATIVES

Expanded Platte South and Missouri River Combination Group

22. Expanded Platte South well field and treatment plant plus expanded Florence intake and treatment plant (Platte South plus expanded Florence)
23. Expanded Platte South well field and treatment plant plus new Missouri River intake and treatment plant (Platte South plus new Missouri River)

Expanded Platte South and Platte West Combination Group

24. Expanded Platte South well field and treatment plant plus Platte West well field and treatment plant, vertical wells at Platte West (Platte South plus Platte West)
25. Expanded Platte South well field and treatment plant plus Platte West well field and treatment plant, vertical wells at Platte West, Douglas County side only (Platte South plus Platte West DC)
26. Expanded Platte South well field and treatment plant plus Platte West well field and treatment plant, horizontal wells at Platte West (Platte South plus Platte West 2)
27. Expanded Platte South well field and treatment plant plus Platte West well field and treatment plant, horizontal wells at Platte West, Douglas County side only (Platte South plus Platte West 2DC)

Three-Way Combination

28. Expanded Platte South well field and treatment plant plus Douglas County portion of Platte West well field and treatment plant plus new Missouri River intake and treatment plant (Three-Way Combination)

OTHER ALTERNATIVES

29. Purchase water from Council Bluffs, Iowa
30. Discontinue water wholesaling
31. Local flood control reservoirs
32. Aquifer storage and recovery
33. Conservation
34. No federal action

[1]DC = Douglas County Only

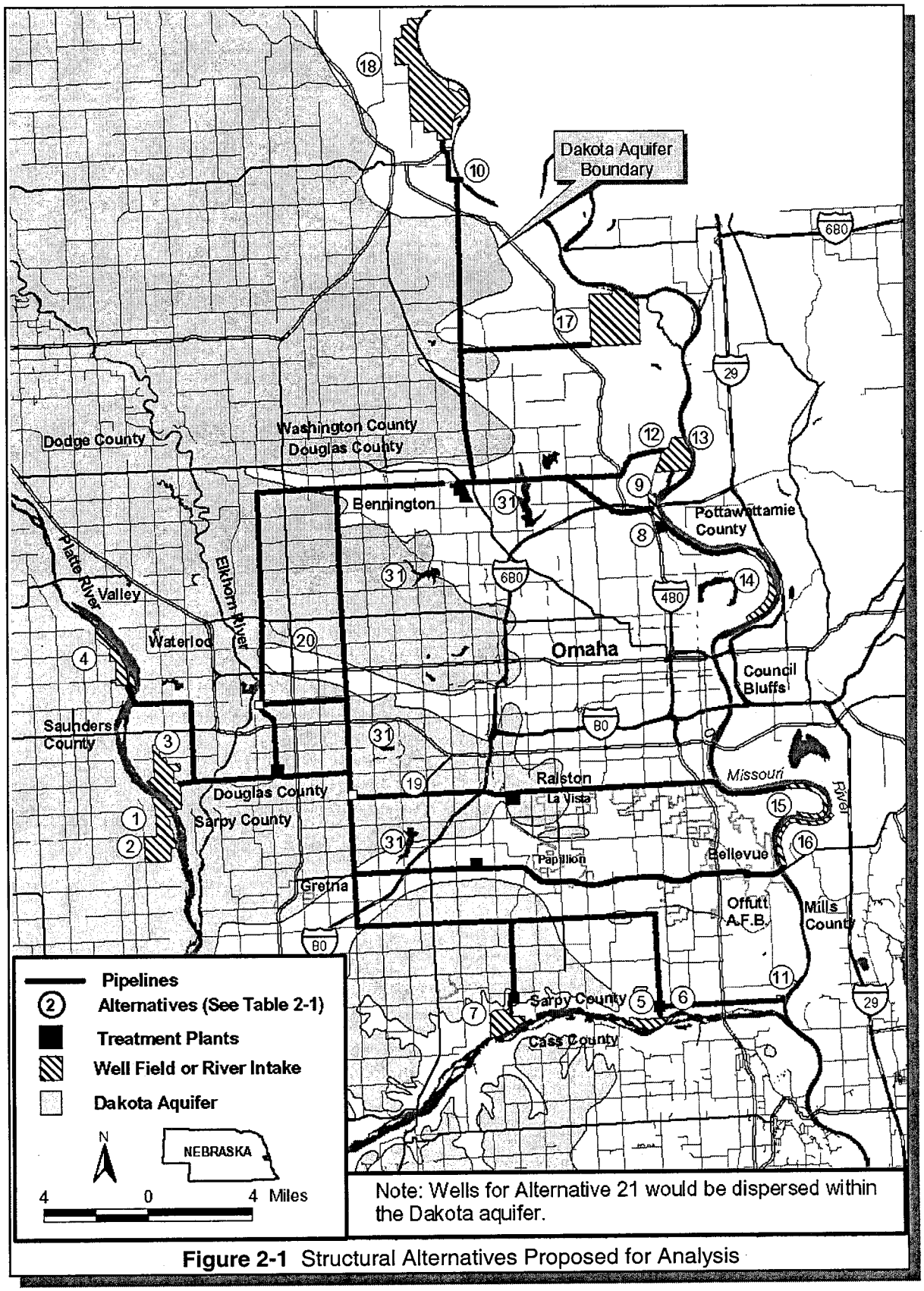


Figure 2-1 Structural Alternatives Proposed for Analysis

the aquifer into the river. Water in the Platte River aquifer is used extensively for irrigation and potable water supplies. The Platte River Watershed Protection Project (no date) estimates 70 percent of Nebraskans get their drinking water from this aquifer.

Platte West. This alternative would take groundwater from the Platte River aquifer from two well fields, one on the western edge of Douglas County and the other on the eastern edge of Saunders County (see Figure 2-3 on page 23). This well field configuration was the result of groundwater modeling, groundwater geology field investigations, and a review of previous groundwater studies (Layne GeoSciences, Inc. 1990). Numerous well field locations in western Douglas and eastern Saunders counties were evaluated including:

- a 4-square mile area in Saunders County at the location of the Platte North alternative
- the previous alternative plus 4 square miles to the east and southeast of the Two Rivers State Recreation Area
- A 3-mile square in Douglas County bounded on the south by Highway 92 and on the east U.S. Highway 275
- a six-square mile area covering most of Vencil's island
- a 6.5-square mile area along the Platte River north of Highway 92

Almost all of the well field scenarios produced excessive drawdown when analyzed at a pumping rate of 50 MGD for 12 months using groundwater modeling techniques. Excessive drawdown was defined as a decrease in the average saturated thickness of the aquifer within a model cell of more than 25 percent. Model cells were 1 or 0.5 mile in the east-west direction and 1 mile in the north-south direction. The 25 percent drawdown criterion is an industry standard for well design because, below this level, the water transmitting ability of the aquifer typically begins to deteriorate and yield can be reduced. The long-term impacts of constructing a well field that has excessive drawdown would be a well field that does not provide the expected yield.

The best yielding areas were found to be over an ancestral channel of the Platte River where the depth to bed rock and saturated thickness of the aquifer were greatest. Other considerations for the design of the well field included:

- ability to induce infiltration during periods of normal and high flow in the river
- ability to tap groundwater stored in the aquifer during periods of low river flow
- avoid known groundwater pollution sources such as feed lots, hazardous waste sites, and wastewater sludge disposal sites
- minimize impacts to residential areas around sand pit lakes, irrigation wells, and Two Rivers State Recreation Area
- avoid impacting City of Lincoln's Ashland well field

When all of the above variables were considered, the optimal Platte West well field consisted of an area east of Two Rivers State Recreation Area and north of the Platte River in Douglas County plus an area immediately south of the Platte River in Saunders County.

The Douglas County portion of the Platte West well field would contain 16 to 18 wells on 1,040 acres just east and south of the Two Rivers State Recreation Area. The Saunders County portion of the Platte West well field would contain 24 to 28 wells on 1,190 acres across the river to the south of the Douglas County well field. Within each well field, the wells would be distributed in a grid-like pattern. The two well fields in the two counties would be connected by a 60-inch diameter pipeline running under the Platte River.[1]

[1]The diameter of pipeline is a function of the rate at which water would be transferred - the higher the desired transfer rate, the larger the diameter.

In the preliminary engineering study for the Platte West alternative, 21 potential water treatment plant sites were evaluated considering floodplain/floodway location, access, site development cost, land cost, zoning/public acceptance, Corps Section 404 permits, connecting pipeline costs, environmental issues, and location for system growth (HDR Engineering, Inc. 1993). The selected treatment plant site is on 158 acres near the intersection of 216th and Q streets (Woodward-Clyde 1994). The new plant would treat water delivered from the well fields through a four-mile, 72-inch diameter pipeline. The plant would be designed to treat groundwater at a maximum rate of 100 MGD. Finished water would be transferred from the treatment plant to the delivery points through seven miles of 54-inch diameter pipeline.

Platte West 2. This alternative would be similar to the Platte West alternative described above except the vertical wells would be replaced with seven high capacity horizontal collector wells along the banks of the Platte River. A horizontal collector well consists of a large diameter vertical casing from which well screens radiate horizontally from the bottom (Figure 2-2). This type of well can produce a large amount of water from a small area when the source of aquifer recharge is nearby and the flow of water through the aquifer is relatively rapid, such as in an alluvial aquifer. The disadvantage of this type of well is that the short distance from the river to the well screens allows contaminants in the river water to pass into the well water.

Based on the extent of shoreline for the proposed Douglas and Saunders county portions of the Platte West well field, three horizontal wells would be installed on the Saunders County side of the river and four wells would be placed on the Douglas County side. The pipeline under the Platte River connecting the two well fields would be 54 inches in diameter. Water would be delivered to the new treatment plant through a five-mile, 72-inch diameter pipeline. The new treatment plant, at 216th and Q streets, would be designed to meet standards for

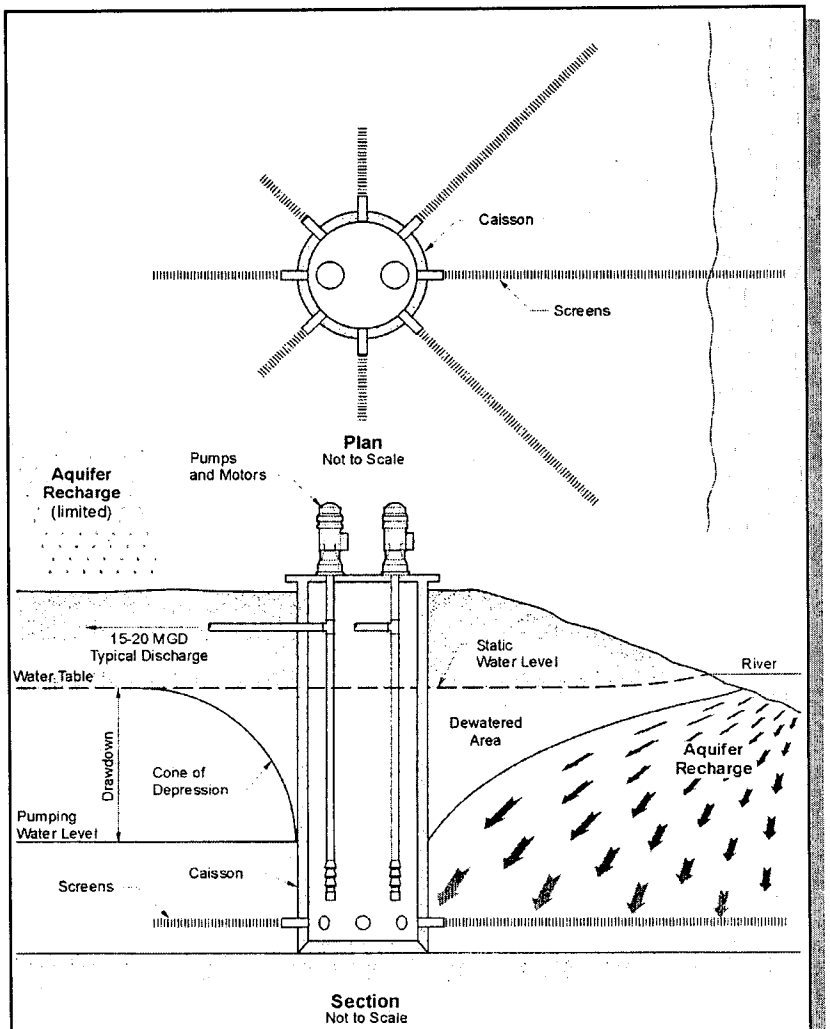


Figure 2-2 Schematic Drawing of a Horizontal Collector Well

treating groundwater under the influence of surface water.

Platte West 2DC. This alternative would be like the Platte West 2 alternative except the seven high capacity horizontal collector wells would be placed along a 2.6-mile stretch of the east bank of the Platte River in Douglas County. The northern-most well would be just south of the Two Rivers State Recreation Area. Water would be delivered to the new treatment plant through a five-mile, 72-inch diameter pipeline. The new treatment plant, at 216th and Q streets, would be designed to meet standards for treating groundwater under the influence of surface water.

Platte North. This alternative, previously known as the Platte River alternative, was identified in a 1977 water supply study (Metropolitan Utilities District 1977). The well field would consist of 10 to 15, 2.7-MGD vertical wells and six 12.5-MGD horizontal collector wells on 575 acres adjacent to the west bank of the Platte River in Saunders County. The well field would be located approximately four miles west of Elkhorn, two miles south-southeast of Valley, and two miles northwest of Yutan (see Figure 2-5 on page 2-26). Included in this alternative is an approximately 90-acre, permanent island in the Platte River. Two of the six horizontal wells would be placed on this island. Water would be delivered to the new treatment plant through a 10-mile, 72-inch diameter pipeline. The new treatment plant, at 216th and Q streets, would be designed to meet standards for treating groundwater under the influence of surface water. The maximum and firm capacities of the well field and treatment plant would be the same as the Platte West alternative.

Expanded Platte South H. The capacity of the existing Platte South facility would be expanded by replacing 30 of the 38 vertical wells with five 17.5-MGD horizontal collector wells. The existing Platte South treatment plant would be expanded and modified to treat groundwater under the influence of surface water. To enhance reliability of the distribution system, standard practice is to connect the treatment plant to each delivery point with a separate pipeline. Finished water, therefore, would be routed to the two distribution points through two parallel 54-inch diameter pipelines, totaling 47 miles in length.

Expanded Platte South V. This alternative would be like the Expanded Platte South H alternative except more vertical wells would be added to the well field instead of horizontal wells. The existing treatment plant would be expanded but would not have to be modified to treat groundwater under the influence of surface water.

Platte South 2. A new well field would be developed on the north bank of the Platte River approximately five miles west of the existing Platte South well field and in between the unincorporated communities of The Meadows and Sheib's Place. Previous estimates of yield indicate horizontal collector wells would be needed to produce the required 100 MGD maximum rate from this site (Henningson, Durham, and Richardson 1972). A new treatment plant would be constructed at an undetermined location north of the well field and out of the floodplain. The new plant would be designed to treat groundwater under the influence of surface water. Finished water would be routed to the two distribution points through 32 miles of 54-inch diameter pipeline.

Missouri River Group

The alternatives in this group would draw surface water directly from the Missouri River. The water treatment facilities would be designed to meet standards for treating surface water.

Expanded Florence. Intake and treatment capacity would be added to the existing Florence Intake and Treatment Plant by enlarging the intake and constructing new

treatment facilities on 19 acres of District owned property adjacent to the south side of the existing plant (Burns & McDonnell Engineering Company, Inc., Inc. 1956). Like the existing Florence treatment plant, the expansion would be designed to treat surface water. Finished water would be delivered to the distribution points in western Douglas County through 53 miles of 54-inch diameter pipelines.

New Missouri River. For this alternative, a new intake would be constructed on the Missouri River in the vicinity of the Interstate 680 bridge. Raw river water would be sent through 9.5 miles of 72-inch diameter pipeline to a new surface water treatment plant located on a 160-acre site roughly bounded by Bennington Road, 126th Street, Rainwood Road, and Thomas Creek. Finished water would be delivered to the distribution points through 33 miles of 54-inch diameter pipelines.

Missouri River North. This alternative would be like the New Missouri River alternative except the new intake would be located about 15 miles north of Omaha, four miles east of Blair and four miles north of De Soto, Nebraska. A 13-mile, 72-inch diameter pipeline would bring raw water from the river to a new surface water treatment plant at Bennington Road and 126th Street. Finished water would be delivered to the distribution points through 33 miles of 54-inch diameter pipelines.

Missouri River South. For this alternative, a new intake would be constructed on District-owned property on the west bank of the Missouri River about 0.5 mile north of the confluence with the Platte River. River water would be conveyed through 4.5 miles of 72-inch diameter pipeline to a new, 100-MGD, surface-water treatment plant next to the Platte South treatment plant. Treated water would be sent to the delivery points through 49 miles of 54-inch diameter pipeline.

Missouri River Alluvial Aquifer Group

Like the Platte River, an alluvial aquifer exists along the Missouri River that could be a potential source of water for the District. The experience of the City of Council Bluffs, Iowa, and a dewatering project at Eppley Airfield suggested the Missouri River alluvial aquifer in the area of the proposed alternatives could support vertical wells that yield up to three MGD (2,000 gallons per minute) (Henningson, Durham, and Richardson 1972).

Dodge Park. The Dodge Park well field would occupy approximately 775 acres next to the Missouri River immediately north of the City of Omaha's Dodge Park, in extreme northeast Omaha. The site is bounded on the west by River Drive North and on the north by a private drive. The northern extent of the well field is limited by the encroachment of the Missouri River bluffs and a narrowing of the alluvial aquifer. Thirty to 40 vertical wells would be developed in a grid-like pattern at this site. Raw water would be delivered through an eight-mile long, 72-inch diameter pipeline to the new treatment plant described in the New Missouri River alternative. In this case, the plant would be designed to treat groundwater instead of surface water. Finished water would be delivered to the distribution points through 33 miles of 54-inch diameter pipeline.

Dodge Park 2. This alternative would use the same well field and water treatment plant sites and finished water distribution system as the Dodge Park alternative. The differences would be the use of horizontal collector wells instead of vertical wells and the treatment plant would be designed to process groundwater under the influence of surface water.

Eppley Airfield. The well field for this alternative would be located on an approximately 22,000-foot long strip of land between the Missouri River levee and the eastern perimeter road of Eppley Airfield. A

linear arrangement of 30 to 40 vertical wells would be installed. Water from the well field would be sent through three miles of 72-inch diameter pipeline to an expanded Florence treatment plant. The new portion of the Florence plant would be designed to treat groundwater. Finished water would be delivered to the distribution points in western Douglas County through 53 miles of 54-inch diameter pipeline.

Fontenelle Forest. The Fontenelle Forest well field would be located on a 19,500-foot long, 1,000-foot wide strip of land along the Gibson Bend of the Missouri River east of the Fontenelle Forest. A single line of 30 to 40 vertical wells would be developed on the site. Raw water from these wells would be pumped through a 12-mile long, 72-inch diameter transmission main to a new treatment plant located in or adjacent to the Brook Valley Business Park near 108th and Emiline Streets. The plant would be designed to treat groundwater. Twenty miles of 54-inch diameter pipeline would take finished water from the treatment plant to the distribution points.

Iowa Well Field. The well field for this alternative would be a 20,500-foot long, 1,000-foot wide strip of land along the Missouri River. The site would extend from approximately 0.5 mile downstream from the mouth of Mosquito Creek south to Iowa Highway 370. Water from a single array of 30 to 40 vertical wells would be pumped under the Missouri River through two 54-inch diameter transmission mains. The mains would follow Nebraska Highway 370 to a new treatment plant located on the highway between 114th and 132nd streets. The plant would be designed to treat groundwater. From the treatment plant, the pipelines would continue west to 180th Street, then turn north to the distribution points. The total length of 54-inch diameter pipeline would be approximately 53 miles.

Fort Calhoun. The Fort Calhoun well field would be located approximately two miles east of Fort Calhoun, Nebraska. The approximately 2,250-acre well field would contain 60 to 70 vertical wells. Water from the well field would be delivered through a 13-mile long, 72-inch diameter pipeline to the same treatment plant described for the Dodge Park alternative. The pipelines connecting the treatment plant to the distribution points would also be the same as the Dodge Park alternative.

California Bend. This alternative is named after a bend in the Missouri River approximately four miles northeast of Blair, Nebraska. The well field would cover 3,620 acres and contain 50 to 60 vertical wells. Fifteen miles of 72-inch diameter pipeline would be required to deliver raw water to the treatment plant site on Bennington Road. The treatment plant would be designed to treat groundwater. The pipelines connecting the treatment plant to the distribution points would be the same as the Dodge Park alternative.

Dakota Aquifer Group

Alternatives in this group would draw water from the Dakota Sandstone formation. In the vicinity of the District's service area, the water from this aquifer is of sufficient quality so that only chlorination is required before distribution. The District's Millard and Elkhorn wells are located in the Dakota aquifer. Based on the typical yield of these wells, approximately 1.5 MGD, each of the alternatives in this group would consist of approximately 65 new wells, a collection system, chlorination facilities, and transmission pipelines to the two distribution points.

Millard Well Field. Approximately 65 new wells would be added to the existing Millard well field. Each well would send water to one of two collection points. Water from each collection point would be chlorinated and delivered to one of the two distribution points.

Assuming the collection points are within a four-square mile area surrounding the former town of Millard, 12 to 14 miles of 54-inch diameter pipeline would be required to deliver water to the distribution points.

Elkhorn Well Field. This alternative is essentially the same as the Expanded Millard Well Field alternative except the new wells would be added in and around the existing Elkhorn well field.

Distributed Wells. Approximately 65 new wells would be located in the Dakota aquifer throughout the District's service area. Specific estimates of where these wells and collection points would be located have not been made.

COMBINATION ALTERNATIVES

The alternatives described above represent a reasonable list of stand-alone, single sources. As will be discussed in the EVALUATION OF THE ALTERNATIVES section (page 2-12), each of the sources have advantages and disadvantages. For some sources, the disadvantages can be lessened by using more than one water source, thereby reducing the amount of water taken from any one source. Each of the combination alternatives would be designed to deliver up to 60 percent of the water produced from each source to either distribution point.

Platte South Plus Missouri River Combinations

The two alternatives in this group would combine a 40-MGD expansion of the Platte South well field and treatment plant with 60 MGD from the Missouri River. One alternative would use an expanded Florence intake and treatment plant (Platte South plus expanded Florence) and the other would use a new Missouri River intake and treatment plant (Platte South plus new Missouri River).

Platte South Plus Platte West Combinations

The four alternatives in this group would combine a 40-MGD expansion of the Platte South well field and treatment plant with 60 MGD from a portion of the Platte West well field. Two alternatives would use the Douglas County portion of the well field with either 24 to 30 vertical wells (Platte South plus Platte West DC) or four high capacity horizontal collector wells (Platte South plus Platte West 2DC). The other two alternatives would use similar numbers of vertical or horizontal collector wells on the Saunders and Douglas county portions of the well field (Platte South plus Platte West (see Figure 2-6 on page 2-28) and Platte South plus Platte West 2). A new 60-MGD treatment plant would be constructed at 216th and Q streets and designed to treat groundwater if vertical wells were used or groundwater under the influence of surface water if horizontal collector wells were used. Alternatives using the Saunders County portion of the well field would require a 54-inch diameter transmission pipeline be placed under the Platte River.

Three-Way Combination

This alternative would produce approximately 34 MGD of water each from the Missouri River, an expanded Platte South well field, and the Douglas County portion of the Platte West well field (see Figure 2-7 on page 2-31). Missouri River water would be withdrawn and treated with smaller versions of the facilities described in the New Missouri River Intake and Treatment Plant alternative. The Platte West well field would contain 13 to 15 vertical wells and a new treatment plant would be constructed at 216th and Q streets. The Platte South well field would be expanded by installing high capacity horizontal collector wells. The Platte South treatment plant would be correspondingly expanded and modified to treat groundwater under the influence of surface water.

OTHER ALTERNATIVES

Several alternatives were suggested that do not involve the development of a new source of water.

Purchase Water From Council Bluffs, Iowa

The District could purchase water from Council Bluffs, Iowa. This alternative would require the construction of a pipeline under the Missouri River to connect the two water systems.

Discontinue Water Wholesaling

The District currently wholesales water to Carter Lake, Iowa, and the Papio-Missouri River Natural Resources District. This practice could be discontinued and the water reserved for the District's immediate service area.

Local Flood Control Reservoirs

As described in CHAPTER 3 - EXISTING ENVIRONMENT, four flood control reservoirs, 90 to 360 acres in surface area, border the western half of Omaha. Water could conceivably be withdrawn from these lakes and treated for potable use.

The District expects conservation to reduce future water use by 10 percent.

Aquifer Storage and Recovery

During periods of low demand, the existing treatment facilities could produce extra water that would be pumped into an existing dewatered aquifer and stored for use during periods of high demand. No aquifers in the Omaha area currently have available storage space. The recharge rate of the Dakota aquifer, however, is sufficiently low that high volume pumping by the Distributed Wells alternative would create storage space.

Conservation

Demand for water could be reduced by using the conservation measures described in CHAPTER 1. The District's Conservation Plan, adopted in 1994, has three basic components: monetary incentives, public education, and the Emergency Operations Plan.

Since 1979, the District has used the cost of water as an incentive to reduce usage by having higher per gallon rates at higher usage. This inclined block rate structure has become progressively steeper since its introduction. Today, residential customers pay a 40 percent surcharge on water use over 900 cubic feet per month and an 80 percent surcharge on use over 3,000 cubic feet per month.

Public education efforts by the District include conservation tips in billing statements, development and use of brochures, TV and radio public service announcements, paid advertisements, xeriscaping information, and a speakers bureau.

The Emergency Operation Plan specifies three levels of increasing water use restrictions that correspond to increasing degrees of water shortage. In Level 1, water use restrictions, such as odd/even watering and not washing vehicles or filling swimming pools are voluntary. In Level 2, the voluntary restrictions become mandatory. In Level 3, the discontinuation of all non-sanitary water use is mandatory.

Other water conservation measures the District implements as part of normal operations include a leak detection program, universal metering, and constant distribution system improvements. The implementation of the Energy Act of 1993, which adopted low water use standards for new plumbing fixtures, will also reduce water use as older fixtures are replaced.

To determine the effectiveness of how conservation measures have performed, a comparison was made between water use projections made in 1972 and actual peak

usage. The water use projections made in 1972 for peak usage years of 1988, 1995, and 2001 were 262, 300, and 335 MGD, respectively (Henningson, Durham, and Richardson, 1972). These projections were based on water service population projections of 590,000 for 1988, 655,000 for 1995, and 700,000 for 2001. After adjusting for the estimated populations presented in Chapter 1 (475,000 in 1988 (extrapolated), 500,000 in 1995, and 525,000 in 2001) and for current peaking factors, the predicted peak usage were 229, 249, and 269 MGD for 1988, 1995, and 2001, respectively. Actual peak water usage for these years was 223 MGD for 1988 or a reduction of 3 percent from the adjusted 1972 projection, 216 MGD for 1995 or a 13 percent reduction from the adjusted 1972 projection, and 200 MGD in 2001 or a 26 percent reduction from the adjusted 1972 projection. The peak water use period in 1995 included a request from the District for its customers to voluntarily reduce water consumption; this peak period was relatively short in duration. During the 2001 peak period, the District formally placed a Level 1 Water Alert in effect, which received considerable media attention. The increasing reductions in peak water use relative to the adjusted 1972 projections provide an indication of the effect of the District's conservation measures.

The most effective conservation measures (i.e. conservation rate structure and universal metering) have already been implemented by the District. Regardless, continued use of its Water Conservation Plan, implemented in 1994, together with continued education efforts and other measures, will provide an additional 10 percent reduction in water use through the 2030 planning period. The past performance of the District's water conservation efforts and its future reduction goal compare favorably with water conservation plans instituted by other utilities and municipalities (Denver, Seattle, Wichita, and Albuquerque). Given the perception of an abundance of surface water and groundwater around Omaha, the public is likely to resist the more stringent, mandatory restrictions necessary to achieve additional water use reductions through conservation significantly greater than 10 percent.

No Federal Action

According to the National Environmental Policy Act (NEPA) and implementing regulations, an environmental analysis is required whenever a major Federal action could significantly affect the quality of the human environment. For the Platte West project, the Federal action would be the issuance of a Section 404 permit by the Corps in accordance with the Clean Water Act. Receiving a permit from the Corps would not relieve the applicant of the responsibility to work with other federal agencies (e.g., the U.S. Fish and Wildlife Service) to be consistent with all federal laws. The following previously described alternatives are not expected to require federal permits for their construction:

a) Millard well field
b) Elkhorn well field
c) distributed wells
d) discontinue water wholesaling
e) aquifer storage and recovery
f) conservation
g) a construction project similar to Platte West that avoids placing fill in wetlands and rivers and the associated federal permit

No federal action option g is a variation of the Platte West alternative that avoids direct impacts to wetlands and other waters of the United States by placing pipelines under rivers, streams, and wetlands using directionally drilling and relocating wells, pipelines and service roads on the well fields. As such, this alternative would not require a Section 404 permit from the Corps. Without this permit requirement, the Corps would not have the regulatory authority to require mitigation for wetlands or other waters of the United States that could be secondarily impacted by groundwater drawdown. Option

g has been determined to be technically feasible. In keeping with the intent of NEPA for full and fair discussion (40 CFR 1502.1), therefore, discussion of option g within the no federal action alternative has been included in the EIS.

ALTERNATIVES NOT INCLUDED IN THE SCREENING PROCESS

The applicant's preferred alternative is automatically carried through the EIS; and therefore, is not subject to the screening process. Additionally, the no federal action alternative is a NEPA requirement and therefore, is automatically carried through the EIS.

Two additional alternatives were considered but determined to be unreasonable and not included in the alternative screening process. An alternative consisting of a new dam and reservoir was eliminated from consideration because no suitable locations for a large reservoir are know in the vicinity of Omaha and the environmental impacts of inundating thousands of acres of land were considered unreasonable in comparison to the other alternatives. Another proposed alternative would consist of a 100-MGD intake on the Missouri River with an approximately 500-acre storage reservoir to provide approximately 2 weeks of water in case the Missouri River became contaminated. This alternative was not considered reasonable because of the environmental impacts associated with inundation by the reservoir, the additional cost of the reservoir, and the high operation and maintenance costs associated with maintaining the water level in the storage lake.

EVALUATION OF ALTERNATIVES

In accordance with CEQ regulations, only reasonable alternatives need to be considered in detail (40 CFR 1502.14(a)). Reasonable alternatives must be those that are feasible and such feasibility must focus on the accomplishment of the underlying purpose and need (of the applicant or public) that would be satisfied by the proposed Federal action (33 CFR 325 Appendix B ¶(9)(b)(5)(a)). A three-step screening process was used to determine the reasonable alternatives that would meet the project purpose and need. The first step evaluated each alternative's feasibility from an engineering perspective to provide the required maximum and firm production capacity. Those alternatives that met the criteria for the first step were evaluated on their ability to provide the required amount of water from a source other than directly from the Missouri River. In the final step, the remaining alternatives within each group were compared on water quality, which is in keeping with water supply industry standard practice to develop drinking water supplies from the source with the best available water quality (see Chapter 1 and Appendix A). The goal of the third step was to avoid studying a large number of very similar alternatives by selecting at least one representative alternative from each group of similar alternatives to ensure the full spectrum of reasonable alternatives would be analyzed and compared in this EIS (Council on Environmental Quality Guidance Memorandum of March 16, at 46 FR 18026-18027, question 1b).

The applicant's preferred alternative, Platte West, and the no federal action alternative are automatically included in the EIS. As such, these two alternatives are not included in the screening process.

STEP 1: PRODUCTION CAPACITY

To meet the project need for additional production capacity described in CHAPTER 1 - PURPOSE AND NEED, an alternative must have a firm water production capacity of at least 90 MGD and a maximum capacity of at least 100 MGD. To pass this step of the screening process, an alternative must be capable of being constructed and provide the required capacities without resorting to

extraordinary or untested engineering solutions.

Platte River Alluvial Aquifer Group

The Platte River alluvial aquifer is a source of abundant but not limitless groundwater. Preliminary conceptual estimates indicate that additional vertical wells could not be added to the Platte South well field (Stous 1996, French 1996). The well field, however, could be expanded by placing high capacity horizontal collector wells along the edge of the Platte River. The horizontal wells would effectively replace many of the existing vertical wells. The net increase in production from the well field, however, would at most be 40 MGD because of physical limitations of the aquifer (Stous 1996, French 1996). ***The Platte South V and Platte South H alternatives are eliminated from further consideration because they can not provide the required 90-MGD firm or 100-MGD maximum capacity.***

The first step in the screening process evaluated each alternative's ability to provide the required maximum and firm production capacity.

The two-county Platte West well field would have a maximum capacity of over 100 MGD and a firm capacity of at least 90 MGD based on the 10 percent out-of-service standard for large well fields. The treatment plant for the Platte West alternative would have a maximum capacity of 100 MGD.

The well fields for the remaining Platte River aquifer alternatives (Platte West 2, Platte West 2DC, Platte North, and Platte South 2), could meet the project need for 90 MGD and 100 MGD of firm and maximum capacity, respectively, but would require high capacity horizontal collection wells for some or all of their production capacity.

The Platte West 2, Platte West 2DC, Platte North, and Platte South 2 alternatives are carried through to Step 2 of the alternatives evaluation.

Missouri River Group

The Missouri River represents an ample source of water. The Expanded Florence, New Missouri River, Missouri River North and Missouri River South alternatives could supply the required 90 MGD of firm production capacity without resorting to extraordinary or untested engineering solutions. The incorporation of membrane filters into the Missouri River alternatives to control certain pathogens has been suggested. The use of such filters at the scale of the proposed facilities, however, has not yet been demonstrated to be a sound engineering practice.

The Expanded Florence, New Missouri River, Missouri River North and Missouri River South alternatives are carried through to Step 2 of the alternatives evaluation.

Missouri River Alluvial Aquifer Group

The Missouri River alluvial aquifer in the vicinity of Omaha is capable of supporting high yield vertical wells. Previous studies indicated sites similar to some of the proposed alternatives would have potential yields in excess of 350 MGD (Henningson, Durham, & Richardson 1972). Based on these studies, the Eppley Airfield, Fontenelle Forest, and Iowa well field sites were considered capable of producing the required 90 MGD of firm yield with a maximum capacity of 100 MGD. Existing data on the geology and wells in the vicinity of the Fort Calhoun and California Bend alternatives indicated these alternatives could produce the required amount of water from vertical wells.

More detailed hydrogeologic investigations were conducted at the Dodge Park site including the boring of two test holes to bedrock. The alluvial material collected from

these holes consisted of larger amounts of clay and fine sand than expected and the depth to bedrock was less than 80 feet. The coarse-grained sand and gravel layer, which would produce high water yields, was less than 20 feet thick. Combined, these results indicated vertical wells developed at this site could be expected to yield less than 0.5 MGD each. To produce the required 100 MGD, therefore, the well field would require over 200 wells. Based on best professional judgement of experienced hydrogeologists, the potential well field was determined not to be large enough to contain the necessary number of vertical wells. ***The Dodge Park alternative is eliminated from further consideration.***

The Dodge Park site, however, would likely meet the 100-MGD requirement if horizontal collector wells were used instead of vertical wells. ***The Dodge Park 2 alternative, therefore, passes step 1 of the screening process along with the Eppley Airfield, Fontenelle Forest, Iowa well field, Fort Calhoun, and California Bend alternatives.***

Dakota Aquifer Group

In the Omaha area, the Dakota sandstone aquifer is a 71-square mile artesian aquifer (the water in the aquifer is under pressure) in an 80-foot thick layer of sandstone. Recharge to the aquifer in this area is primarily infiltration following precipitation. The recharge rate has been estimated to be five percent of precipitation (Burns & McDonnell Engineering Company, Inc., Inc. 1996). Based on an annual precipitation rate of 30 inches, the recharge rate and, therefore, the sustainable withdrawal rate for the entire aquifer is 5.07 MGD. Current withdrawals from the Dakota Aquifer exceed 5 MGD, which indicates the estimate of recharge rate is low. Additional recharge is probably coming through connections to the Platte River alluvial aquifer (Lawton et al. 1984). For the Dakota Aquifer to be a feasible alternative, however, the recharge rate would have to be approximately 20 times greater than currently estimated. Because a 20-fold underestimation of the recharge rate is highly unlikely, the ***Dakota Aquifer alternatives are eliminated from further consideration.***

Expanded Platte South and Missouri River Combinations

As described above, the Platte South facility can be expanded by 40 MGD. The remaining 60 MGD could be provided from the Missouri River by expanding the Florence facilities or constructing a new intake and treatment plant.

Expanded Platte South and Platte West Combinations

The four alternatives in this group use the Platte South alternative for 40 MGD plus all or just the Douglas County portion of the Platte West well field for 60 MGD. Either high capacity horizontal collector wells or vertical wells would be used at Platte West. ***All four of the possible combinations in this group could meet the 90-MGD firm and 100-MGD maximum capacities criteria and are retained for analysis in Step 2.***

Three-Way Combination

This alternative requires at least 30 MGD of firm and 34 MGD of maximum capacity from each of three sources: the Platte South alternative, the Platte West DC alternative, and the New Missouri River alternative. Each of these sources can provide the required amount of water. Water from the Platte South alternative would be groundwater under the influence of surface water because of the need to use horizontal collector wells. ***The Three-Way Combination is retained for analysis in Step 2.***

Purchase Water from Council Bluffs, Iowa

The Council Bluffs, Iowa, water supply currently has a maximum capacity of 30 MGD and an annual daily average demand of 9.6 MGD (Elliott 2000). Based on a maximum daily to average daily demand ratio of 2.4,

Council Bluffs' maximum daily demand would be 23 MGD. Currently, therefore, Council Bluffs has approximately 7 MGD of excess capacity that theoretically could be purchased by the District. The purchase of 7 MGD would not meet the project needs for additional capacity plus Council Bluffs would likely want to reserve their current excess capacity to meet their own future needs. ***The alternative of purchasing water from Council Bluffs is eliminated from further consideration.***

Discontinue Water Wholesaling

In 1998, wholesaled water accounted for 2.3 percent of the District's demand. In 2030, this percentage will likely be less because the population of the Omaha Metropolitan Area, which is the District's primary service area, is growing faster than the outlying areas to which the District wholesales water. Conservatively assuming wholesale water would still be 2.3 percent of total average daily demand of 137 MGD in 2030, stopping water wholesaling would save the equivalent of 3.2 MGD. ***Because discontinuing water wholesaling could not meet the project needs for additional capacity, this alternative is eliminated from further consideration.***

Local Flood Control Reservoirs

The four lakes around Omaha - Cunningham, Standing Bear, Zorinsky, and Wehrspann - were built for the purposes of flood control and recreation in Papillion Creek watershed. No storage capacity in these lakes was allocated for municipal water supply (Burnett 1971). A recent hydrologic analysis indicated these lakes combined could only yield 3.02 MGD (Foster 1999). Because this yield is far below that necessary to meet the project need, ***the watershed lakes alternative is eliminated from further consideration.***

Aquifer Storage and Recovery

The implementation of an aquifer storage and recovery (ARS) system requires the presence of a discrete aquifer that has been dewatered and thus has room to store added water. Such an aquifer does not currently exist in the Omaha area. The Dakota Aquifer contains an estimated 1.64 billion gallons of water that could be pumped out (W.G. Keck & Associates 1971), which would leave a void that could be filled by injecting treated water into the aquifer.

Dewatering the Dakota Aquifer could impact other wells and eventually create an empty area in the limestone that might not be able to support the weight of the overlaying rock and soil. The overlaying material could collapse into the void resulting in ground subsidence. Injecting lime-softened treated water into the aquifer could form deposits in the wells and the aquifer that would degrade the capacity of both (Christensen 1995). Even if these technical problems could be solved, the yield from the aquifer, 1.64 billion gallons, would provide 18.2 MGD on the basis of pumping three months per year (i.e., in the summer when maximum demands occur) or 4.5 MGD on an annual basis. Because this yield is far below that necessary to meet the project need, ***the ARS system alternative is eliminated from further consideration.***

Conservation

For conservation alone to be a viable alternative, maximum daily demand in 2030 would have to be reduced from 332 MGD (projected maximum day demand without conservation) to 207 MGD (current firm capacity) or 38 percent. A number of metropolitan areas, particularly in the western United States have announced ambitious water conservation programs. Seattle plans to conserve 10 percent between 2001 and 2010 (Anonymous 1998). Albuquerque plans to reduce demand by 30 percent between 1995 and 2005 through increased conservation (Anonymous 1998). Denver agreed to a 20 percent reduction in per capita use over 20 years (Gardner 1998). These goals are to be achieved by implementing measures such as universal metering and

implementing inclined-block price structures, practices the District has had for many years. These examples indicate that even cities that have only recently begun to implement water conservation programs do not expect to reduce per capita consumption by more than 30 percent. For the District, which has already implemented many water conservation mechanisms, to further reduce consumption by an additional 38 percent through conservation is not considered achievable. A 10 percent reduction in demand through conservation, about 33 MGD, is considered achievable by 2030 (CHAPTER 1). Because of the inclusion of conservation in the projections, however, the conservation alternative will be a necessary and integral part of any action taken to meet the District's future water supply needs.

The District would continue to be motivated to achieve a conservation rate greater than 10 percent because additional water savings would postpone the need to develop more system capacity. Savings beyond those which are expected to result from the current conservation plan could be realized by increasing water rates to encourage development of water reuse programs, actively promoting the use of water efficient appliances and fixtures in remodeling, and continuing to promote low water use landscaping and other conservation techniques.

The conservation alternative will be a necessary and integral part of any action taken to meet the District's future water supply needs.

Summary of Step 1

In Step 1 of the alternatives screening evaluation, the following alternatives were eliminated from further consideration as stand alone alternatives because they could not meet the project need for an additional 90 MGD of firm and 100 MGD of maximum capacity:

- Platte South V
- Platte South H
- Dodge Park
- Millard well field
- Elkhorn well field
- Distributed wells
- Purchase water from Council Bluffs, Iowa
- Discontinue wholesaling
- Local flood control reservoirs
- Aquifer storage and recovery
- Conservation

The alternatives carried forward to Step 2 are:

- Platte West 2
- Platte West DC
- Platte North
- Platte South 2
- Expanded Florence
- New Missouri River
- Missouri River North
- Missouri River South
- Dodge Park 2
- Epply Airfield
- Fontenelle Forest
- Iowa well field
- Fort Calhoun
- California Bend
- Platte South + expanded Florence
- Platte South + new Missouri River
- Platte South + Platte West
- Platte South + Platte West DC
- Platte South + Platte West 2
- Platte South + Platte West 2DC
- Three-Way Combination

STEP 2: CAPACITY FROM A SOURCE OTHER THAN THE MISSOURI RIVER

The second need established in CHAPTER 1 was for redundancy of sources for the District's water supply system to improve the reliability of the District's water system. To meet average daily demand in 2030 with the largest source out-of-service, 62.8 MGD should come from a source other than the Missouri River.

Platte River Alluvial Aquifer Group
All of the alternatives remaining in this group would provide at least 100 MGD of maximum capacity from a source other than the Missouri River. ***The Platte West 2, Platte West 2DC, Platte North, and Platte South 2 alternatives are retained for analysis in Step 3.***

Missouri River Group
Because they produce no water from sources other than the Missouri River, the ***Expanded Florence, New Missouri River, Missouri River North, and Missouri River South are eliminated from further consideration.***

Missouri River Aquifer Group
The Missouri River alluvial aquifer is directly connected to the Missouri River. Under natural conditions, water flows between the river and the aquifer. When water levels are high in the river, water tends to flow out of the river and the water table in the aquifer rises. The opposite occurs when flow in the river is low. The removal of water from the aquifer by wells lowers the water table in the aquifer and causes water to infiltrate into the aquifer from the river (i.e., induced infiltration). Water infiltrating from the river into a well field can carry contaminants. Although the passing of the river water through the alluvial material can filter out some contaminants and give time for others to degrade, river-borne contamination can cause alluvial aquifer well fields to shut down to avoid contamination of municipal water supplies. An example, described in Chapter 1, was the shut-down of one of Waterloo, Iowa's well fields.

Based on their similarity in general design to Platte West, at least 80 percent of the water that would replace the water removed by the Fort Calhoun and California Bend well fields is estimated to be from induced infiltration from the Missouri River. Because of their close proximity to the river, like the Platte South well field, over 90 percent of the water recharging the Eppley Air Field, Fontenelle Forest, and Iowa well fields would likely be induced infiltration. The horizontal collector wells of the Dodge Park 2 alternative would be located so close to the Missouri River that the water produced by these wells would likely have to be treated like surface water.

Because of the connection between the Missouri River and the alluvial aquifer, a single contamination event on the Missouri River has the potential to simultaneously shut down a Missouri River aquifer alternative and the Florence water treatment plant. ***Because of their dependence on the Missouri River, none of the remaining Missouri River aquifer alternatives were considered capable of providing 62.8 MGD from a source other than the Missouri River and are eliminated from further consideration.***

In Step 2, the remaining alternatives were evaluated for their ability to provide 62.8 MGD from a source other than the Missouri River.

In addition to not meeting the need for 62.8 MGD from a source other than the Missouri River, several of the Missouri River alternatives had additional flaws that would prevent or complicate their implementation. The Eppley Airfield site is compromised by the existence of runway protection requirements, which extend from the end of each runway in a widening fan to the Missouri River. For safety and security reasons, construction in these areas is essentially prohibited (Holtmann 2000). The remaining portion of the site is not large enough to support the required number of vertical wells and, even if horizontal wells were used, all of the pipeline routes from the wells to the treatment plant are blocked by runways or runway protection zones.

Statutory limitation would make the acquisition of a well field by the District in

Iowa very difficult. As a municipal corporation and a political subdivision of the State of Nebraska, the District has been granted the powers necessary to construct and operate a water utility for the greater Omaha Metropolitan Area (Neb. Rev. Stat. §14-2101 et seq.). One of the powers granted to the District is eminent domain authority (Neb. Rev. Stat. §14-2116), which is an attribute of the State of Nebraska's sovereignty. The District's authority to compel the sale of real property, therefore, is limited to within Nebraska. Without the power of eminent domain, obtaining property in Iowa for a well field could become a practical impossibility because, if negotiations failed, the District could not condemn the required property.

The Fort Calhoun well field is just west of the Boyer Chute restoration project. The chute cuts across a bend in the Missouri River. All of the land between the chute and the river has been acquired by the U.S. Fish and Wild Service (FWS) and is now designated as a wildlife refuge. Additional lands to the west and south of the chute, including parcels in the proposed well field, have also been acquired by FWS and the Papio-Missouri Natural Resources District for expansion of the refuge. Ultimately, the refuge will cover 10,600 acres, including 8.6 miles of the Missouri River, about 2,000 acres in Iowa, and all of the proposed Fort Calhoun well field. These lands would be protected by the National Wildlife Refuge Improvement Act of 1998.

Expanded Platte South and Missouri River Combination Group

The two alternatives in this group would only develop 40 MGD of their maximum capacity from a source other than the Missouri River. ***The two Platte South plus Missouri River combination alternatives, therefore, are eliminated from further consideration.***

Expanded Platte South and Platte West Combination Group

All four of the alternatives in this group would have a firm and maximum capacity of at least 90 and 100 MGD, respectively, all of which would be produced from a source other than the Missouri River. ***The Platte South plus Platte West, Platte South plus Platte West DC, Platte South plus Platte West 2, and the Platte South plus Platte West 2DC alternatives are retained for analysis in Step 3.***

Three-Way Combination

This alternative would produce 34 MGD from the Platte W est well field and 34 MGD from the Platte south well field for a total of 68 MGD from a source other than the Missouri River. ***The Three-Way Combination is retained for analysis in Step 3.***

Summary of Step 2

The second step of the alternatives screening evaluation eliminated the following alternatives from further consideration because they could not meet the project need for an additional 62.8 MGD from a source other than the Missouri River:

- Expanded Florence
- New Missouri River
- Missouri River North
- Missouri River South
- Dodge Park 2
- Eppley Airfield
- Fontenelle Forest
- Iowa well field
- Fort Calhoun
- California Bend
- Platte South plus expanded Florence
- Platte South plus new Missouri River

Alternatives carried over to Step 3 are:

- Platte West 2
- Platte West 2 DC
- Platte North
- Platte South 2
- Platte South + Platte West
- Platte South + Platte West DC
- Platte South + Platte West 2

- Platte South + Platte West 2DC
- Three-Way Combination

In Step 3, alternatives within each group of similar alternatives were evaluated based on source water quality.

STEP 3: WITHIN GROUP COMPARISONS

Of the nine federal action alternatives remaining after the first two screening steps, five are in the Platte River Alluvial Aquifer Group and four are in the Expanded Platte South and Platte West Combination Group. The tenth alternative is the Three-Way Combination. Within each group, the alternatives are much more similar among themselves than to alternatives in other groups in terms of water sources, characteristic environmental impact, and costs. In addition, the policies of several nationally recognized professional drinking water supply organizations clearly articulate the industry standard practice that new drinking water supplies should be developed from the highest quality, economically feasible source available (see Appendix A). A reasonable next step in the screening process, therefore, is to select the alternative(s) within each group with the best water quality for detailed analysis in the EIS.

For the comparisons within groups, relative water quality was equated to water source. Groundwater was considered to be of the highest quality for two reasons. First, the passage of water from the surface through the aquifer provides for natural filtration of suspended materials including pathogens such as coliform bacteria, *Girardia*, and *Cryptosporidium.* Secondly, the time required for water to get from the surface source to the well screen allows for the natural degradation of contaminants such as pesticides. Groundwater under the influence of surface water was considered to be of relatively lower quality because the distance and travel time from the surface water source to the well screens is less than for groundwater. Therefore, less natural filtration and degradation occurs. Surface water was considered to have the lowest relative water quality because no natural filtration or additional degradation occurs.

RELATIVE WATER QUALITY OF SOURCES AROUND OMAHA

Worse ← → Better

Surface water directly from rivers	Groundwater under the influence of surface water (horizontal collector wells)	Groundwater (vertical wells)

Platte River Alluvial Aquifer Group

All of the remaining alternatives in this group could provide the required amounts of water to meet project needs using a combination of vertical wells and high capacity horizontal collector wells or solely high capacity horizontal collector wells. Water produced by the vertical wells would be considered groundwater and would be expected to have relatively low concentrations of pesticides and microbial pathogens relative to the water from high capacity horizontal collector wells. Water from the horizontal collector wells in alluvial aquifers is typically classified as groundwater under the influence of surface water. If travel distance and time between the surface water and the well screens is long enough, water from horizontal collection wells can sometimes be classified as groundwater and requires different treatment. This determination, however, can not always be made with certainty until after the well is constructed. For planning purposes such as treatment plant design, prudence dictates the assumption of the lower quality classification.

Of the remaining alternatives in this group, the Platte North alternative would provide the highest source water quality because not all of the wells would be high capacity horizontal collector wells. ***The Platte North***

alternative, therefore, is selected for detailed consideration in the EIS.

Expanded Platte South and Platte West Combination Group

Two of the alternatives in this group would use high capacity horizontal collector wells at the Platte West well field. Because superior raw water quality can be obtained from vertical wells, the horizontal well alternatives are dropped from further consideration. The two alternatives that use vertical wells at the Platte West well field would have essentially equal water quality. ***The Platte South plus Platte West and Platte South plus Platte West DC alternatives, therefore, are both selected for detailed analysis in the EIS.***

Three-Way Combination

Because only one three-way combination alternative exists, this alternative will be carried through the EIS.

Five action alternatives, representing three distinct types of facilities, emerged from the selection process and will be described and evaluated in detail in this EIS.

SUMMARY OF ALTERNATIVES SCREENING EVALUATION

Thirty-two alternatives were evaluated in a three-step process based on meeting project needs for production capacity, source diversity, and source water quality (Table 2-2). No other alternatives were proposed that were feasible based on engineering and economic considerations. This list, therefore, represents the full spectrum of reasonable alternatives. From this list, four structural alternatives, representing three distinct types of facilities, emerged and will be described and evaluated in detail in this EIS. Two additional alternatives, Platte West and no federal action, are included in the EIS as per NEPA regulations. The alternatives carried forward are:

- Platte West
- Platte North
- Platte South plus Platte West
- Platte South plus Platte West DC
- Three-Way Combination
- No Federal Action

These alternatives represent the full spectrum of reasonable alternatives that meet the project's purpose and need.

DETAILED DESCRIPTIONS OF SELECTED AND REQUIRED ALTERNATIVES

PLATTE WEST

This alternative would include the development of a new well field containing 42 wells, a water collection system, support facilities, a new water treatment plant, and water delivery facilities from the well field to the treatment plant and from the treatment plant to the two delivery points (Table 2-3). The proposed Platte West Well Field alternative, identified in 1993 after a hydrological analysis (HDR Engineering, Inc. 1993), would take groundwater from the Platte River aquifer on the western edge of Douglas County and the eastern edge of Saunders County (Figure 2-3).

At the proposed well field the aquifer is up to 98 feet thick and consists of unconsolidated alluvial deposits of sand and gravel with lenses of silt and clay (HDR Engineering, Inc. 1993). The well field would cover a total of 2,230 acres of which 1,040 acres would be in Douglas County east and south of the Two Rivers State Recreation Area. Because of its proximity to the Platte River, the land within the well field is fairly flat. Land use and land cover are primarily row crops, pasture, and hay fields. Some riparian forests exist near the Platte River. Wetlands and other waters of the United States occupy 222 acres of the two well fields (HDR Engineering, Inc. 1995, Burns & McDonnell Engineering Company, Inc. 1995).

Table 2-2 Summary for Each Alternative in the Screening Evaluation

Alternative	Step 1 Yield	Step 2 Source Other Than Missouri River	Step 3 Within Group Comparison
Platte West[1, 2]	n/a	n/a	District's preferred alternative
Platte West 2	Pass	Pass	Not selected
Platte West 2DC	Pass	Pass	Not selected
Platte North	Pass	Pass	Selected - relatively better source water quality
Platte South V	Fail		
Platte South H	Fail		
Platte South 2	Pass	Pass	Not selected
Expanded Florence	Pass	Fail	
New Missouri River	Pass	Fail	
Missouri River North	Pass	Fail	
Missouri River South	Pass	Fail	
Dodge Park	Fail		
Dodge Park 2	Pass	Fail	
Eppley Airfield	Pass	Fail	
Fontenelle Forest	Pass	Fail	
Iowa Well Field	Pass	Fail	
Fort Calhoun	Pass	Fail	
California Bend	Pass	Fail	
Millard Well Field	Fail		
Elkhorn Well Field	Fail		
Distributed Wells	Fail		
Platte South + Expanded Florence	Pass	Fail	
Platte South + New Missouri River	Pass	Fail	
Platte South + Platte West	Pass	Pass	Selected - relatively better source water quality
Platte South + Platte West DC	Pass	Pass	Selected - relatively better source water quality
Platte South + Platte West 2	Pass	Pass	Not selected
Platte South + Platte West 2DC	Pass	Pass	Not selected
Three-Way Combination	Pass	Pass	Selected
Purchase Water from Council Bluff, Iowa	Fail		
Discontinue Water Wholesaling	Fail		
Local Flood Control Reservoirs	Fail		
Aquifer Storage and Recovery	Fail		
Conservation[2]	Fail		
No Federal Action	n/a	n/a	Carried through the EIS per NEPA requirements.

[1]Shaded alternatives will be evaluated in detail in the EIS. [2]A 10 percent reduction in demand attributable to conservation is included in all alternatives.

Table 2-3 Characteristics of the Platte West Alternative

Characteristic	Description
Water Source	**Platte River alluvial aquifer**
Collection method	New well field, 42 vertical wells
Source water class.	Groundwater
Location	Western Douglas and eastern Saunders counties, straddling the Platte River
Maximum capacity	104 MGD
New land needs	2,230 acres
Current land use	Mostly agriculture
Treatment Plant	**New**
Process	Split-treatment softening, filtration, and disinfection
New land needs	Plant: 158 acres Effluent pipeline: 11.5 acres permanent and 11.5 acres temporary[1]
Current land use	Plant: agriculture Effluent pipeline: agriculture and upland forest
Transmission Pipelines	**72-inch diameter main, 54-inch diameter distribution**
Total length	11 miles
New land needs	67 acres permanent, 67 acres temporary[1]
Current land use	Primarily agriculture with some upland forest
Crossings	1 river, 3 creeks, 5 wetlands, 5 roads, 1 electric transmission line
Costs[2]	
Well field	$37.25 million
Pipelines[3]	$26.70 million
Treatment plant	$127.50 million
Land	$7.53 million
Mitigation	$9.67 million (add $1.95 million if in-kind mitigation required[6])
Total capital cost	**$275.35 million[7]**
Annual OM&E[4, 5]	$7.33 million
Cost per 1,000 gal[5]	$2.19
Total 25-year cost[8]	$726.04 million

[1]Based on 50-foot permanent and 100-foot construction easements. [2]All cost in 2003 dollars unless otherwise noted. [3]Includes cost of easements at $0.12 per square foot. [4]Operations, maintenance, and electricity. [5]Averaged over the period 2005 through 2030. [6]Required if Saunders County resolution 25-1999 is determined to be applicable to the District. [7]Includes 20 percent for contingencies and 10 percent for engineering and design. [8]Includes capital costs amortized over 20 years with 6.5 percent interest plus OM&E.

Of the total of 42 wells, 16 to 18 would be in Douglas County and 24 to 28 would be located in Saunders County (Figure 2-3). The spacing of wells would be dependent on groundwater storage and aquifer flow characteristics and would vary from 500 to 1,200 feet depending on location within the well field. Wells adjacent to the Platte River channel would be located closer together with a nominal spacing of approximately 500 feet. All of the wells would be located behind a levee along the Platte River and out of the floodway. The wells would be designed and constructed so that motors, electrical control equipment, and the tops of the well casings would be protected from a 100-year flood. The wells would be connected to a collector pipeline system consisting of an approximately 10-mile network of pipes ranging in diameter from 16 to 60 inches. The Saunders County and Douglas County portions would be connected by a 60-inch diameter pipeline laid under the Platte River. Vehicular access to the wells would be provided by an approximately 10-mile network of gravel roads. The connector pipelines would be located under these roads to minimize the impacts on well field wetlands and vegetation from initial construction or

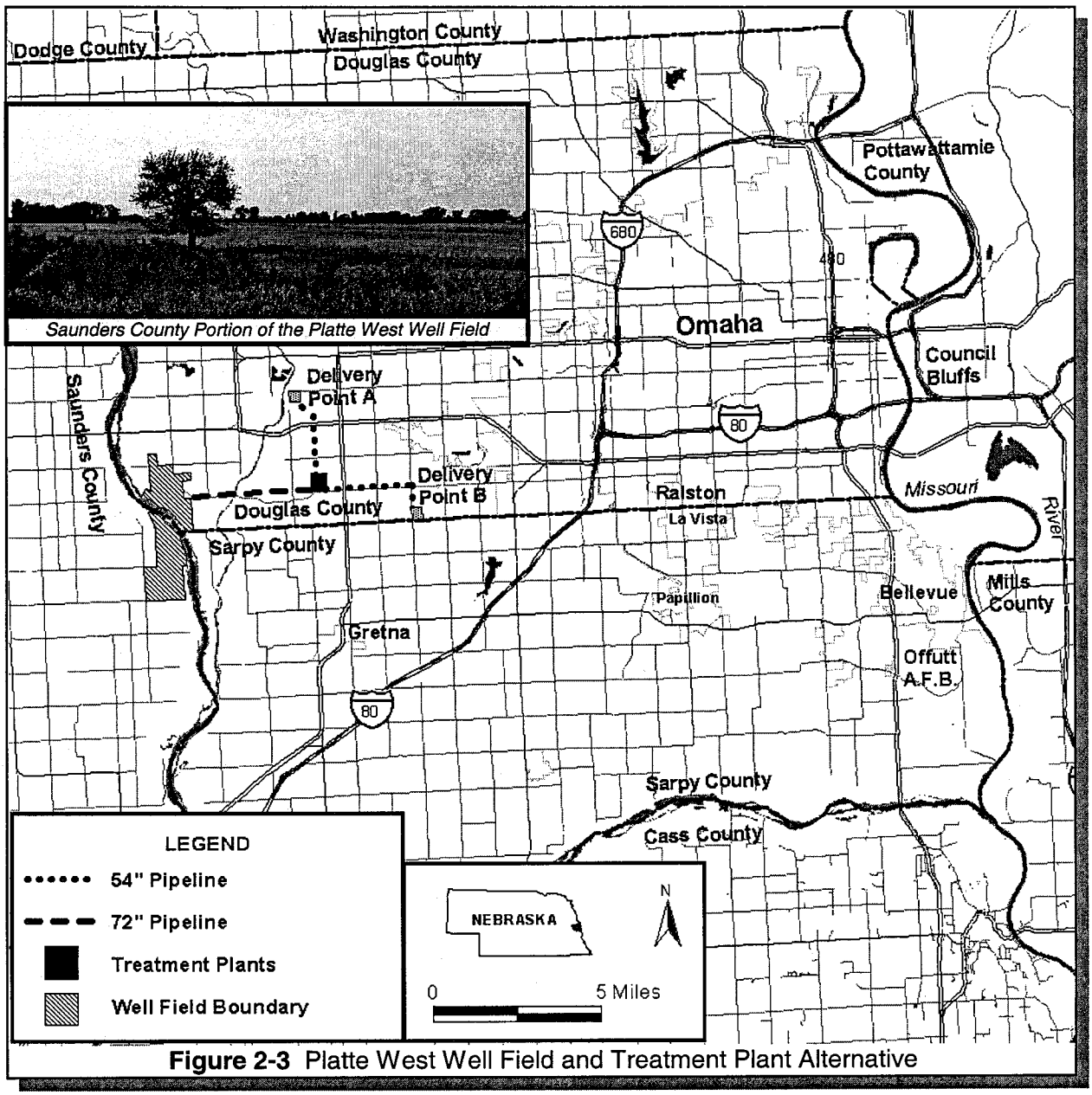


Figure 2-3 Platte West Well Field and Treatment Plant Alternative

later repair. Operation and monitoring of the well field would be by remote control.

The well field would be operated at an average annual pumping rate not to exceed 52 MGD (58,250 acre-feet per year). Using historical data provided by the District, monthly and annual pumpage projections for the year 2030 were calculated for the 52-MGD average annual water supply rate (Figure 2-4). Chapter 1 provides details on the assumptions and rationale for these projections. Based on historic averages, average monthly pumpage would be greatest during the summer but comfortably below the maximum capacity of the well field even in high water demand years (Figure 2-4).

The treatment plant would generate a wastewater stream approximately equal to four percent of the amount of water treated. This water is expected to have a quality

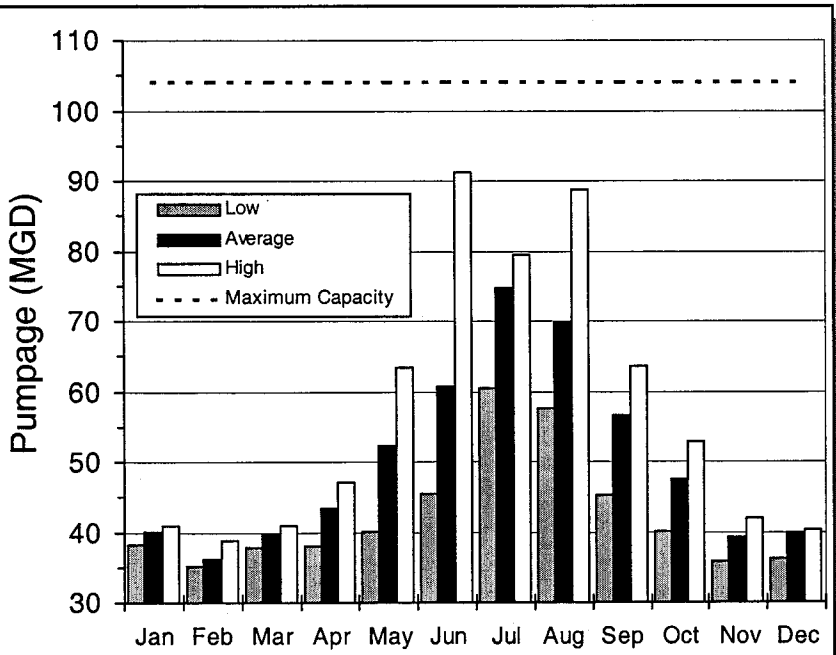


Figure 2-3 Monthly Pumpage Projections for the Year 2030

similar to raw river water and would be discharged to the Elkhorn River through a 36-inch diameter pipeline. This pipeline would be placed in the same right-of-way as the raw water pipeline. Solid wastes, consisting of mostly calcium carbonate and alum, would be generated by the settling basins. This material would be disposed of by spreading on cropland, mixing with biosolids from the City of Omaha's wastewater treatment plant and subsequent land application, or deposited in an on-site monofill (Tobin 1997).

The construction cost for this alternative, including costs for environmental mitigation is estimated to be $275,350,000 (2003 dollars). From plant start-up in 2005 through the end of the planning period in 2030, annual operation, maintenance, and electricity (OM&E) costs are estimated to average $7,330,000 and the cost per 1,000 gallons of water is estimated to average $2.19. The cost to the average customer using 177,400 gallons per year would be $389.

PLATTE NORTH

The Platte North well field alternative would consist of a well field on the Platte River and a new water treatment plant (Table 2-4, Figure 2-5). This alternative would convert the existing test wells into production wells and develop additional wells, a collection system, support facilities, and a water treatment plant. The treatment plant and site would be the same as described for the Platte West well field alternative.

The Platte North well field would be located entirely within Saunders County on the west side of the Platte River approximately 2 miles northwest of Yutan, Nebraska. The topography of this 575-acre site is similar to the Saunders County portion of the Platte West well field. The land is used mostly for pasture except for a 77-acre island in the Platte River which is covered with riparian forest. The amount of row cropping in this area is low compared to the Platte West area because saturated soils are more wide-spread.

According to National Wetland Inventory (NWI) maps, the entire island in the Platte River is classified as wetland and accounts for the majority of the approximately 92 acres of wetlands on the site. Based on the proportion of wetlands not shown on NWI maps for the Platte West well field, however, it is possible an additional 40 acres of wetlands exist on the site for a total of 132 acres.

Test wells that were developed from 1976 to 1979 to determine the local characteristics of the Platte North aquifer would be upgraded to water supply wells and additional horizontal wells would be installed under the Platte

Table 2-4 Characteristics of the Platte North Alternative

Characteristic	Description
Water source	**Platte River alluvial aquifer**
Collection method	Converted test well field, 10 to 15 vertical and 6 horizontal collector wells
Source water class.	Groundwater under the influence of surface water
Location	Eastern Saunders County along the Platte River
Maximum capacity	104 MGD
New land needs	575 acres
Current land use	Mostly agriculture with some lowland forest
Treatment plant	**New**
Process	Split-treatment softening, filtration, and disinfection
New land needs	Plant: 158 acres Effluent pipeline: 11.5 acres permanent, 11.5 acres temporary[1]
Current land use	Plant: agriculture Effluent pipeline: agriculture and upland forest
Transmission Pipelines	**72-inch diameter main, 54-inch diameter distribution**
Total length	17 miles
New land needs	103 acres permanent and 103 acres temporary[1]
Current land use	Primarily agriculture with some lowland and upland forest
Crossings	2 rivers, 3 creeks, 9 wetlands, 10 roads, 1 electric transmission line
Costs[2]	
Well field	$32.56 million
Pipelines[3]	$41.04 million
Treatment plant	$130.83 million
Land	$4.54 million
Mitigation	$6.05 million (add $0.04 million if in-kind mitigation required[6])
Total capital cost	**$283.82 million[7]**
Annual OM&E[4, 5]	$10.97 million
Cost per 1,000 gal[5]	$2.50
Total 25-year cost[8]	$837.07 million

[1]Based on 50-foot permanent and 100-foot construction easements. [2]All cost in 2003 dollars unless otherwise noted. [3]Includes cost of easements at $0.12 per square foot. [4]Operations, maintenance, and electricity. [5]Averaged over the period 2005 through 2030. [6]Required if Saunders County resolution 25-1999 is determined to be applicable to the District. [7]Includes 20 percent for contingencies and 10 percent for engineering and design. [8]Includes capital costs amortized over 20 years with 6.5 percent interest plus OM&E.

River. All motors and electrical control equipment used with the system would be upgraded or designed to withstand a 100-year flood. The wells would be connected to a collection pipeline system and accessed by a road network similar to those described for the Platte West well field; however, the lengths of the pipeline and roads would be less because the site is smaller. In addition, a bridge over the Platte River would be required to link the main part of the well field to the portion of the well field on the island in the Platte River.

To meet the Districts' maximum daily capacity need and average annual water supply rate, the Platte North well field would be designed to have a maximum capacity of 104 MGD and an average annual pumping rate of 52 MGD. Pumpage projections for 52 MGD average annual production would have the same magnitude and monthly distribution as those for the Platte West alternative (Figure 2-3).

The geohydrologic setting of the Platte North well field is similar to the Platte West well field except that the alluvial aquifer is only 48 to 68 feet thick (HDR Engineering, Inc. 1993),

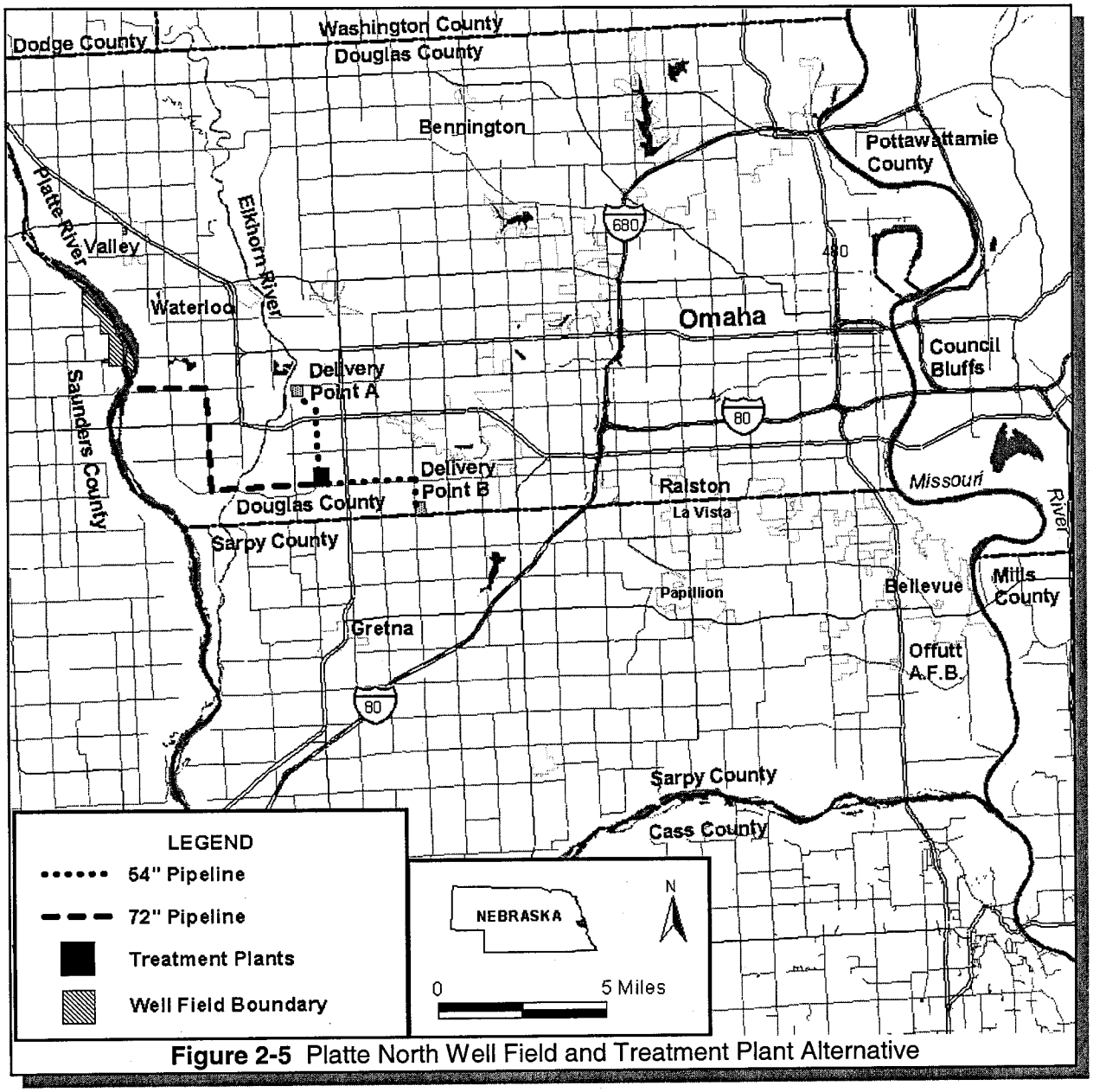


Figure 2-5 Platte North Well Field and Treatment Plant Alternative

which limits this well field's storage capacity. The aquifer is also somewhat more laterally confined at this location because the western edge of the alluvial floodplain is only about 1.5 miles west of the well field. The hydraulic connection which exists between the aquifer and the Platte River is compromised by a clay layer located 30 to 50 feet below ground level (Layne GeoScience, Inc. 1990). At this site, vertical wells alone could not reliably produce 104 MGD. To achieve this rate, horizontal wells would have to be placed under the Platte River.

Approximately 9.5 miles of 72-inch diameter pipeline would be required to deliver water from the well field to the treatment plant. The pipeline would cross the Elkhorn River at Q street. Water would be moved from the treatment plant to the delivery points through the same arrangement of 54-inch diameter

pipelines as described for the Platte West alternative.

The construction cost for this alternative, including the cost for environmental mitigation, is estimated to be $283,820,000 (2003 dollars). From plant start-up in 2005 through the end of the planning period in 2030, annual OM&E costs are estimated to average $10,970,000 and the cost per 1,000 gallons of water is estimated to average $2.50 or $443 per year for the 177,400 gallons used by the average customer.

PLATTE SOUTH PLUS PLATTE WEST

This alternative would expand the maximum capacity of the Platte South facility from 60 to 100 MGD by adding seven high capacity horizontal collector wells, expanding the capacity of the existing treatment plant, and adding new support and water delivery facilities to move water from the treatment plant to the two delivery points (Table 2-5, Figure 2-6). The horizontal wells would take groundwater under the influence of surface water from the Platte River aquifer on the southern edge of Sarpy County. The location

Table 2-5 Characteristics of the Platte South Plus Platte West Combination Alternative

Characteristic	Description
Water source	**Platte River Aquifer**
Collection method	Expanded Platte South well field with 7 horizontal wells and 9 vertical wells and a new Platte West well field with 24 to 30 vertical wells
Source water class	Groundwater under the influence of surface water at Platte South, groundwater at Platte West
Location	South-eastern Sarpy County, western Douglas County, and eastern Saunders County
Maximum capacity	104 MGD
New land needs	2,230 acres for the Platte West portion
Current land use	Crop land and bottomland forest
Treatment plant	**New**
Process	Split-treatment softening, filtration, and disinfection
New land needs	158 acres
Current land use	Agriculture
Transmission Pipelines	**60- and 54-inch diameter mains, 48-inch diameter distribution**
Total length	61.5 miles (33 miles of easement)
New land needs	215 acres permanent, 200 acres temporary[1]
Current land use	Primarily agriculture with some suburban
Crossings	1 river, 1 creek, 29 wetland, 26 roads, 3 rail roads, 4 electrical transmission lines
Costs[2]	
Well fields	$38.75 million
Pipelines[3]	$56.94 million
Treatment plant	$147.46 million
Storage tank	$8.43 million
Land	$7.95 million
Mitigation	$5.81 million (add $0.71 million if in-kind mitigation required[6])
Total capital cost	**$350.25 million[6]**
Annual OM&E[4, 5]	$11.12 million
Cost per 1,000 gal[5]	$2.91
Total 25-year cost[7]	$970.05 million

[1]Based on 50-foot permanent and 100-foot construction easements. [2]All cost in 2003 dollars unless otherwise noted. [3]Includes cost of easements at $0.12 per square foot. [4]Operations, maintenance, and electricity. [5]Averaged over the period 2005 through 2030. [6]Includes 20 percent for contingencies and 10 percent for engineering and design. [7]Includes capital costs amortized over 20 years at 6.5 percent interest plus OM&E.

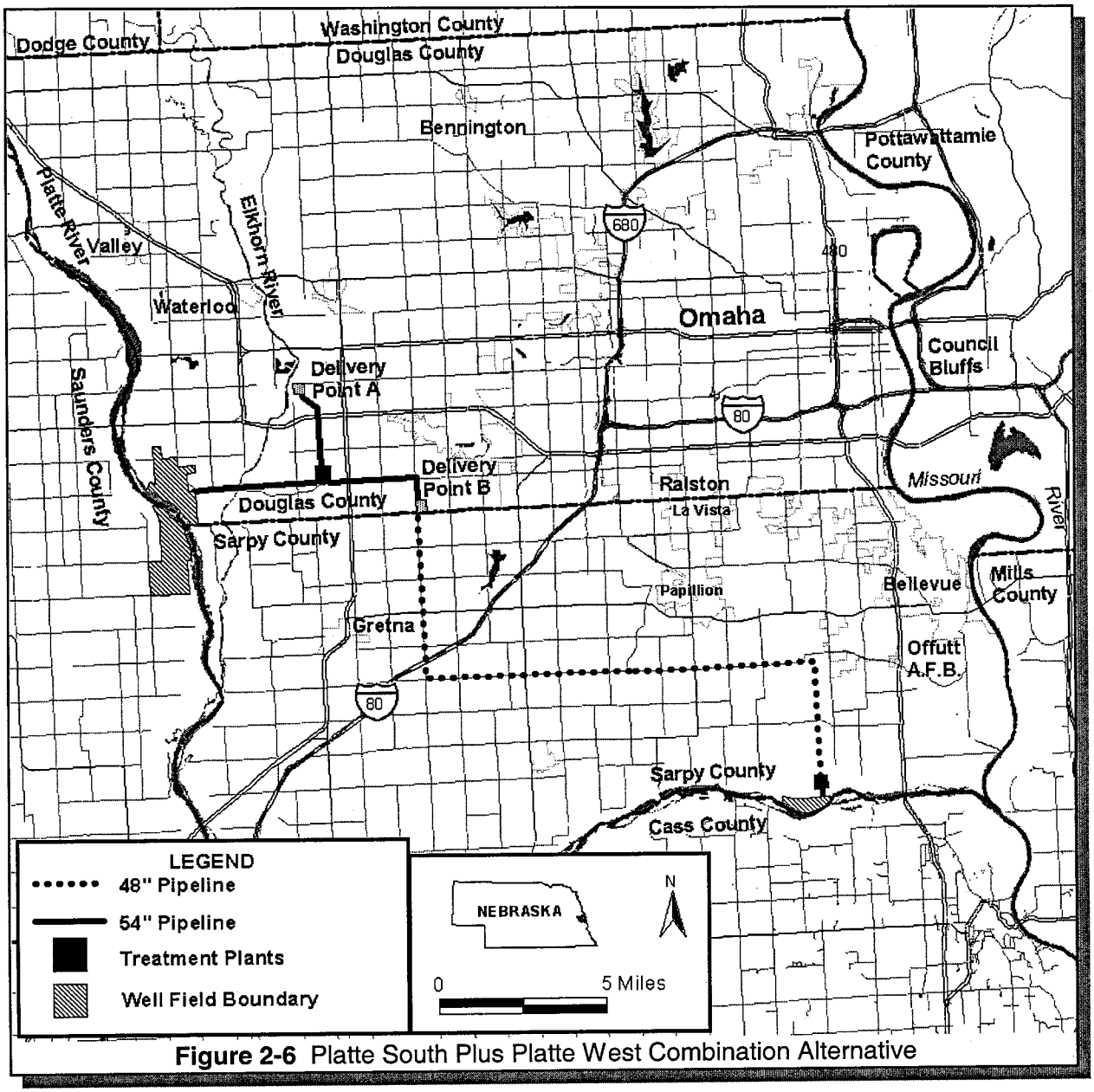


Figure 2-6 Platte South Plus Platte West Combination Alternative

of the horizontal wells along the river bank would cut off the source of recharge to many of the existing vertical wells, effectively decommissioning 29 of the 38 existing vertical wells. The new well field would produce up to 87.5 MGD from the horizontal wells and 12.5 MGD from the vertical wells. Water from the expanded Platte South well field would be treated at an expanded Platte South Treatment Plant. Water from the vertical wells would continue to be classified as groundwater and would be treated as is currently done at the Platte South facility. New treatment trains would be built to treat the water from the horizontal collector wells. Because this water would be groundwater under the influence of surface water, the water would have to be treated like surface water.

Forty percent of the production from the expanded Platte South treatment plant would

be directed to the two delivery points through 47 miles of 48-inch diameter pipelines.

The Platte West well field portion of this alternative would be similar to the Platte West alternative previously described except the number of wells would be scaled back to provide 60 MGD. The total number of wells would be 24 to 30 with 10 to 12 of these wells in Douglas County and the remainder in Saunders County. The two well fields would be connected by a 54-inch diameter pipeline under the Platte River. Raw water from the well field would be delivered to the treatment plant through a 4-mile long, 60-inch diameter pipeline.

The construction cost for this alternative, including costs for environmental mitigation, is estimated to be $350,250,000 (2003 dollars). From plant start-up in 2005 through the end of the planning period in 2030, annual OM&E costs are estimated to average $11,120,000 and the cost per 1,000 gallons of water is estimated to average $2.91 or $517 per year for the 177,400 gallons used by the average customer.

PLATTE SOUTH PLUS PLATTE WEST DC

This alternative would be like the Platte South plus Platte West alternative except the 24 to 30 vertical wells on the Platte West well field would be located on the Douglas County portion of the well field.

The construction cost for this alternative, including costs for environmental mitigation, is estimated to be $352,660,000 (2003 dollars). From plant start-up in 2005 through the end of the planning period in 2030, annual OM&E costs are estimated to average $11,120,000 and the cost per 1,000 gallons of water is estimated to average $2.93 or $519 per year for the 177,400 gallons used by the average customer.

THREE-WAY COMBINATION

This alternative would withdraw water from the Missouri River, the Platte South well field, and the Douglas County portion of the Platte West well field (Table 2-6 and Figure 2-7). The firm and maximum capacities of each source would be 30 and 34 MGD, respectively.

The new Missouri River intake would be located immediately north of Interstate 680 (Figure 2-7). The intake would have a maximum capacity of at least 37 MGD and would be constructed at a depth to ensure full diversion capacity during periods of low flow in the Missouri River. The capacity of the intake exceeds the 34 MGD requirement by approximately 10 percent to compensate for the expected amount of wastewater generated in the treatment process. The average annual water diversion rate for this intake would be 17 MGD.

Water from the Missouri River would be piped nine miles to a new treatment plant located on a 160-acre site west of State Highway 133 and South of State Highway 36 in northwest Omaha. The plant would have a maximum capacity of approximately 34 MGD and would treat water using split-treatment softening, filtration, and disinfection. Water from the treatment plant would be sent to the delivery points through 15 miles of 48-inch diameter pipe. Wastewater from the plant would be discharged into Thomas Creek.

The Platte South portion of this alternative would be essentially the same as the Platte South expansion described for the Platte South plus Platte West combination except the facility would be expanded by 34 rather than 40 MGD. Likewise, the Platte West portion of this alternative would be a smaller version of the Platte West alternative with only the Douglas County well field. For the three-way alternative, the Platte West well field would contain 13 to 15 vertical wells.

Connecting these three widely separated water sources to the two delivery points would require approximately 7 miles of 54-

Table 2-6 Characteristics of the Three-Way Combination Alternative

Characteristic	Description
Water sources	**Missouri River and Platte River Aquifer**
Collection method	New Missouri River intake, expanded Platte South well field with 5 horizontal wells and 8 vertical wells, and a new Platte West well field (Douglas County side only) with 13 to 15 vertical wells
Source water class	Surface water for New Missouri River intake, Groundwater under the influence of surface water for Platte South, groundwater for Platte West
Location	Eastern Douglas County, south-eastern Sarpy County, and western Douglas County
Maximum capacity	108 MGD
New land needs	1,040 acres for the Platte West Douglas County portion
Current land use	Crop land and bottomland forest
Treatment plants	**New**
Process	Split-treatment softening, filtration, and disinfection
New land needs	318 acres
Current land use	Agriculture
Transmission pipelines	**48-inch diameter mains, 48- and 54-inch diameter distribution**
Total length	94.5 miles (61.5 miles of easement)
New land needs	388 acres permanent, 373 acres temporary[1]
Current land use	Primarily agriculture with some suburban, and industrial; village of Bennington
Crossings	1 river, 9 creeks, 48 wetland, 63 roads, 5 rail roads, 8 electrical transmission lines
Costs[2]	
Well fields and intake	$35.38 million
Pipelines[3]	$96.65 million
Treatment plants	$166.76 million
Storage tank	$8.43 million
Land	$7.35 million
Mitigation	$5.83 million
Total capital cost	**$416.33 million**[6]
Annual OM&E[4, 5]	$14.20 million
Cost per 1,000 gal[5]	$3.53
Total 25-year cost[7]	$1,178.69 million

[1]Based on 50-foot permanent and 100-foot construction easements. [2]All cost in 2003 dollars unless otherwise noted. [3]Includes cost of easements at $0.12 per square foot. [4]Operations, maintenance, and electricity. [5]Averaged over the period 2005 through 2030. [6]Includes 20 percent for contingencies and 10 percent for engineering and design. [7]Includes capital costs amortized over 20 years at 6.5 percent interest plus OM&E.

inch transmission mains and 55 miles of 48-inch diameter distribution pipeline.

The construction cost for this alternative, including costs for environmental mitigation, is estimated to be $416,330,000 (2003 dollars). From plant start-up in 2005 through the end of the planning period in 2030, annual OM&E costs are estimated to average $14,200,000 and the cost per 1,000 gallons of water is estimated to average $3.53 or $626 per year for the 177,400 gallons used by the average customer.

NO FEDERAL ACTION

The no federal action alternative describes feasible options available to the applicant in the absence of a federal action, which in this case would not be a granting a Section 404 permit. Another way to put this is, in the absence of a federal permit for the Platte West project and continued growth within the

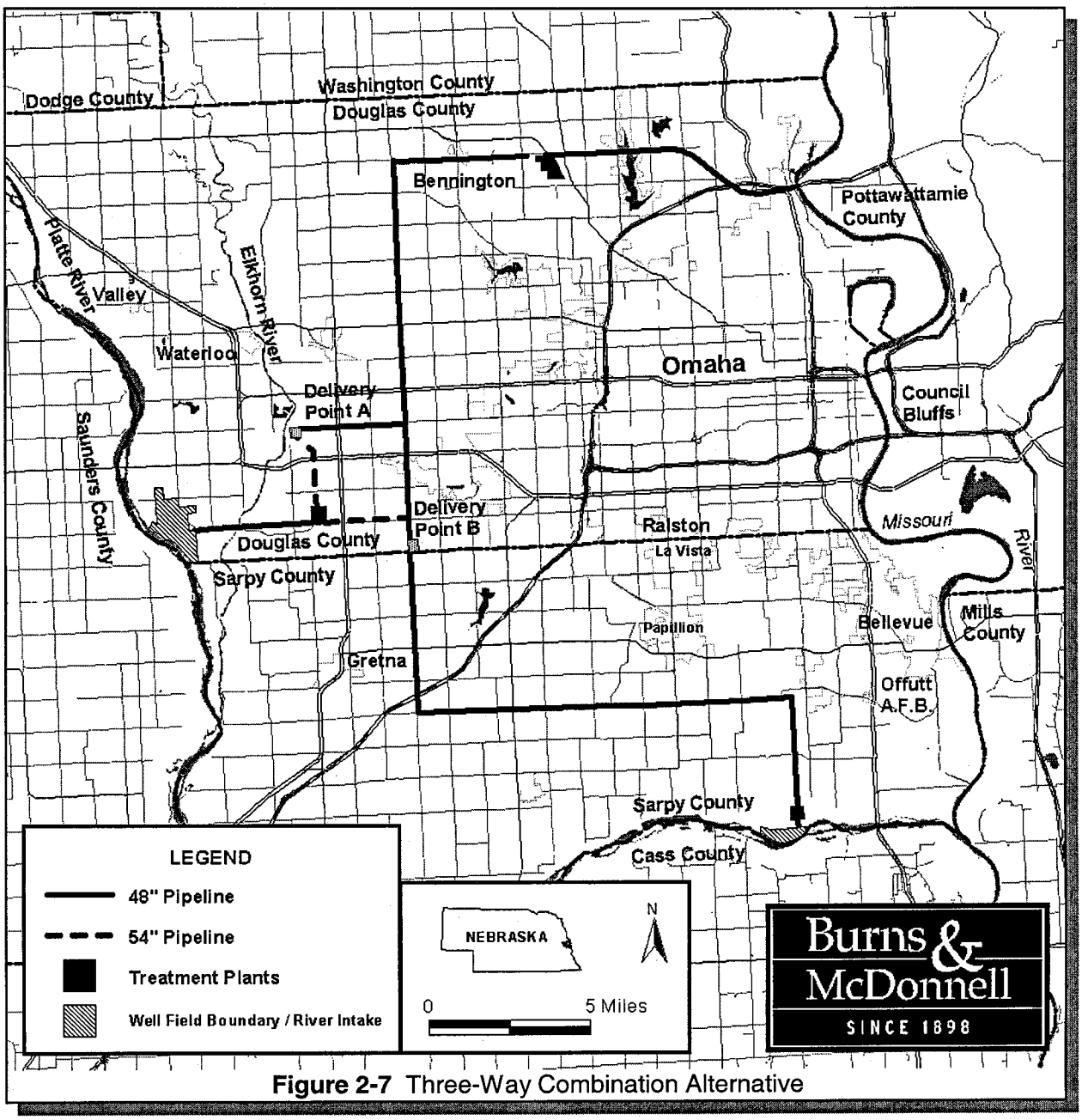


Figure 2-7 Three-Way Combination Alternative

Omaha metropolitan area, what could be considered as part of the "future of Omaha without Platte West" is described. Some of these options are identified and labeled "a" through "g" for ease of discussion; however, the list may not be inclusive. The options are:

a) Millard well field
b) Elkhorn well field
c) distributed wells
d) discontinue water wholesaling
e) aquifer storage and recovery
f) conservation
g) a construction project similar to Platte West that avoids placing fill in wetlands and rivers and associated federal permit

Options a through f could be implemented individually for minor water production gains or as a group for more substantial gain.

Options a through f combined, however, would not meet the purpose and need of the project for an additional 100 MGD of production capacity. Option g would meet the project purpose and need.

As the metropolitan area of Omaha has grown, the District has provided water to generally contiguous development outside its official boundaries. This area and the area within the official boundary together constitute the District's service area. In addition to normal development, smaller, nearby public water suppliers have requested the District take over their operations, thereby further expanding the District's service area. The District has also agreed to supply water to areas outside its service area through wholesale arrangements. The District, however, is required by law to provide water only within its current service area. In the absence of sufficient additional water supply the District may stop expanding its service area and could conceivably stop wholesaling water to meet the increasing demand from new customers that move into the District's existing service area.

Option g would be similar in general design to the Platte West alternative. The primary differences would be how the large diameter pipelines would be installed and the layout of wells and service roads on the well field to avoid all impacts to wetlands and waters of the United States. Disturbances to rivers, streams, and wetlands along the well field connector and transmission pipeline routes would be avoided by installing the pipelines under these habitats using directional drilling instead of open cut trenching. Directional drilling is available for pipes up to 60 inches in diameter for distances up to 6,000 ft. This capability is adequate to pass the 60-inch diameter well field connector pipeline under the Platte River - a total drilled distance of approximately 4,000 feet. Directional drilling the raw water pipeline from the well field to the treatment plant under the Elkhorn River and other waters with would require substituting two 54-inch diameter pipelines for the single 72-inch diameter specified for the Platte West alternative.

Impacts to wetlands on the well field would be avoided by relocating several wells initially specified to be installed in wetlands. Three to four wells in the northern most part of the Saunders County portion of the well field would be moved east to the river-side of the levee in Saunders county and consequently into the floodway (Figure 2-8)[2]. The design of these wells would have to reflect the greater possibility of flooding and avoidance of raising the flood elevation. An additional three to four wells in the northern most part of the Saunders County portion of the well field would be moved west to land outside the boundary of the well field delineated for the Platte West well field. Approximately 370 acres of additional land would have to be purchased, bringing the total well field size to 2,600 acres of which 1,560 acres would be in Saunders County. Service roads on the wellheads would also be rerouted to avoid wetlands (Figure 2-8).

The construction cost for option g, including costs for environmental mitigation, is estimated to be $287,900,000 (2003 dollars). From plant start-up in 2005 through the end of the planning period in 2030, annual OM&E costs are estimated to average $7,330,000 and the cost per 1,000 gallons of water is estimated to average $2.28 or $404 per year for the 177,400 gallons used by the average customer (Table 2-7).

[2]The locations of wells and service roads on the well field depicted in Figure 2-8 are tentative. Final placement would depend on the precise location of wetlands as determined by a formal wetland delineation.

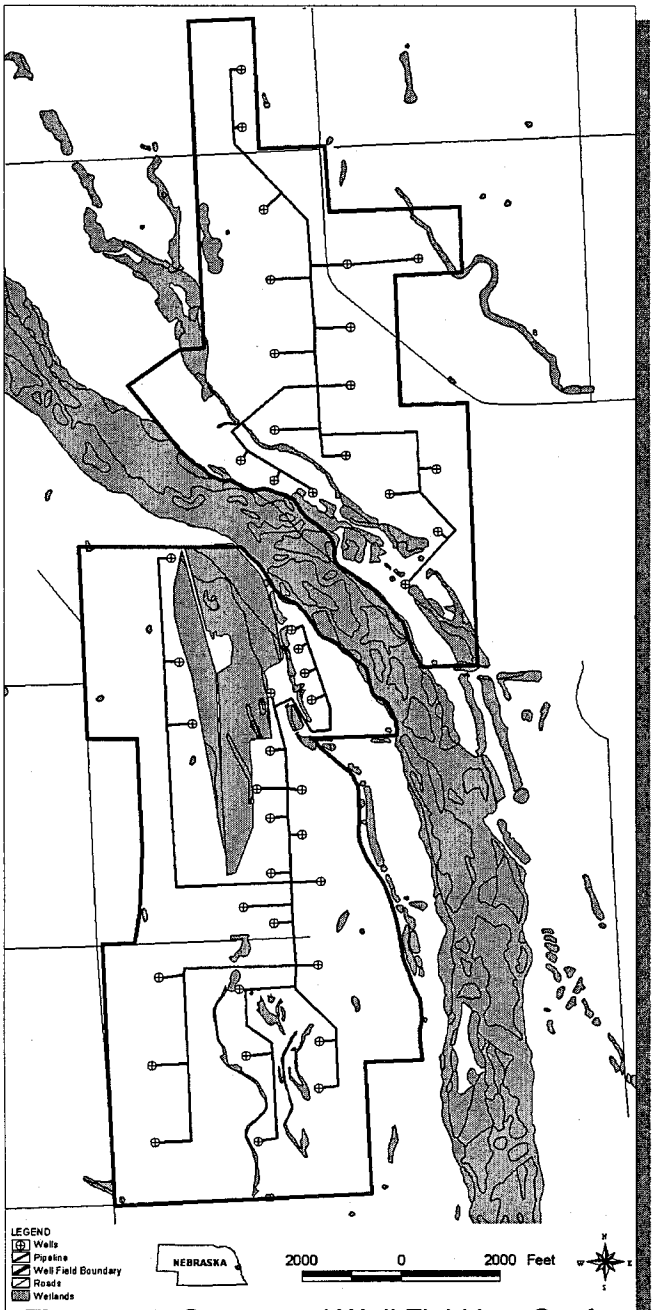


Figure 2-8 Conceptual Well Field Lay Out for the Option G No Federal Action Alternative

COMPARISON OF THE SELECTED AND REQUIRED ALTERNATIVES

The five action alternatives vary in engineering complexities and costs. Since at least 1963, the District's long-range planning has included a new water source in the Platte River valley west of Omaha (Henningson, Durham, and Richardson 1963). Platte West is the least costly alternative because its location, nearest to the planned distribution points on the west side of the District's service area, requires the least amount of new pipeline (Table 2-8). In addition, the high quality water from the Platte River aquifer can be treated economically. The relatively higher costs of the combination alternatives reflect the lower compatibility of these alternatives with the direction of Omaha's urban development and hence greater amounts of transmission pipeline (Table 2-8).

The Three-Way Combination alternative is the most costly because it requires the greatest amount of new pipeline and uses the highest proportion of surface water and groundwater under the influence of surface water. These water sources require a higher level of treatment than groundwater. As a result, the capital and OM&E costs of the treatment facilities are greater (Table 2-8).

The primary impacts to the natural environment produced by proposed alternatives would be caused by construction of the pipelines and treatment facilities, drawdown of the water table, and removal of water from the Platte River by induced infiltration. For most of the alternatives, the magnitude of these two impacts are inversely related. The alternatives that produce the least amount of water table drawdown do so because they get more aquifer recharge from the Platte River, thereby creating a greater reduction in river flow. Conversely, alternatives which get a higher proportion of aquifer recharge from groundwater storage create more water table drawdown but less flow depletion in the Platte River.

Depletion of flow from the Platte River would potentially impact several federally protected species of fish and birds - the least tern, piping plover, and pallid sturgeon. The Platte

Table 2-7 Characteristics of the No Federal Action Option G Alternative

Characteristic	Description
Water Source	**Platte River alluvial aquifer**
Collection method	New well field, 42 vertical wells
Source water class.	Groundwater
Location	Western Douglas and eastern Saunders counties, straddling the Platte River
Maximum capacity	104 MGD
New land needs	2,600 acres
Current land use	Mostly agriculture
Treatment Plant	**New**
Process	Split-treatment softening, filtration, and disinfection
New land needs	Plant: 158 acres Effluent pipeline: 11.5 acres permanent and 11.5 acres temporary[1]
Current land use	Plant: agriculture Effluent pipeline: agriculture and upland forest
Transmission Pipelines	**72-inch diameter main, 54-inch diameter distribution**
Total length	11 miles
New land needs	67 acres permanent, 67 acres temporary[1]
Current land use	Primarily agriculture with some upland forest
Crossings	1 river, 3 creeks, 5 wetlands, 5 roads, 1 electric transmission line
Costs[2]	
Well field	$38.18 million
Pipelines[3]	$40.41 million
Treatment plant	$127.50 million
Land	$8.58 million
Mitigation	$4.20 million (add $1.95 million if in-kind mitigation required[6])
Total capital cost	**$288.90 million[7]**
Annual OM&E[4, 5]	$7.33 million
Cost per 1,000 gal[5]	$2.28
Total 25-year cost[8]	$752.41 million

[1]Based on 50-foot permanent and 100-foot construction easements. [2]All cost in 2003 dollars unless otherwise noted. [3]Includes cost of easements at $0.12 per square foot. [4]Operations, maintenance, and electricity. [5]Averaged over the period 2005 through 2030. [6]Required if Saunders County resolution 25-1999 is determined to be applicable to the District. [7]Includes 20 percent for contingencies and 10 percent for engineering and design. [8]Includes capital costs amortized over 20 years with 6.5 percent interest plus OM&E.

North and Platte South plus Platte West DC alternatives would cause the greatest depletion because the least amount of water for aquifer recharge would come from aquifer storage. The new Missouri River intake portion of the Three-Way Combination alternative would not deplete flows in the Platte River. Of all the action alternatives, the Three-Way Combination would cause the lowest depletion of flow in the Platte River. The Platte West and no federal action option g alternatives would cause the second lowest depletion of flow in the Platte River. The FWS has determined that any further depletion of flow in the lower Platte River constitutes a jeopardy to the continued existence of the pallid sturgeon. To comply with the Endangered Species Act, therefore, the implementation of any of the above alternatives would require mitigation. The proposed mitigation is the creation of a backwater habitat along the Missouri River south of the mouth of the Platte River. Wetlands and ponds in the vicinity of the proposed well fields could be affected by lowering the water table if direct contact with groundwater is responsible for maintaining the water levels in these habitats. Those

Table 2-8 Summary of the Characteristics of the Selected and Required Alternatives that can Meet the Project Purpose and Need

Characteristic	Platte West	Platte North	Platte South plus Platte West	Platte South plus Platte West DC	Three-Way Combination	No Federal Action Option G
Water source	Platte River alluvial aquifer	Platte River alluvial aquifer	Platte River alluvial aquifer	Platte River alluvial aquifer	Platte River alluvial aquifer and Missouri River	Platte River alluvial aquifer
Water withdrawal method	Vertical wells	Vertical and horizontal wells	Vertical and horizontal wells	Vertical and horizontal wells	Vertical wells, horizontal wells, direct intake	Vertical wells
Source water classification	100% groundwater	29% groundwater, 71% groundwater under the influence of surface water	60% groundwater, 40% groundwater under the influence of surface water	60% groundwater, 40% groundwater under the influence of surface water	34% groundwater, 33% groundwater under the influence of surface water, 33% surface water	100% groundwater
Treatment plant	1, new 100-MGD	1, new 100-MGD	1, new 60-MGD 1, 40-MGD expansion 1, 60-MGD upgrade	1,new 60-MGD 1, 40-MGD expansion 1, 60-MGD upgrade	2, new 34-MGD 1, 40-MGD expansion 1, 60-MGD upgrade	1, new 100-MGD
Transmission and distribution	11 miles of pipeline[3]	17 miles of pipeline[3]	61.5 miles of pipeline, 25-MGD pump station	61.5 miles of pipeline, 25-MGD pump station	94.5 miles of pipeline, 25-MGD pump station	11 miles of pipeline[3]
Costs						
Total capital	$275.35 million	$283.82 million	$350.25 million	$352.66 million	$416.33 million	$288.90 million
Annual operations	$7.33 million	$10.97 million	$11.12 million	$11.12 million	$14.20 million	$7.33 million
Per 1000 gallons	$2.19	$2.50	$2.91	$2.93	$3.53	$2.28
Total 25-year cost	$726.04 million	$837.07 million	$970.05 million	$974.73 million	$1,178.69 million	$752.41 million

[3]Source of water is close enough to the delivery points to avoid the necessity of an additional pump station.

alternatives with the most vertical wells would tend to create the larger drawdowns and potentially impact more ponds and wetlands. The Platte West alternative would create the the largest cone of depression and could indirectly impact the most wetlands and special aquatic sites. The analysis and prediction of impacts on wetlands from groundwater withdrawal is complicated and contains large degrees of uncertainty. The analysis, therefore, tended to assume worst-case conditions. The ultimate impacts on wetlands from drawdown could be much less than predicted. If a permit is issued for a well field containing alternative, a long-term groundwater and wetland monitoring program would be a condition of the permit. Wetlands and aquatic habitats can also be impacted by construction, particularly pipeline construction. Those alternatives with the longer pipelines, the Three-Way Combination and the Platte South plus Platte West combinations, would have the greater adverse impacts on aquatic habitats from construction.

Direct and indirect adverse impacts to wetlands caused by implementation of one of the action alternatives would be offset by the creation of new wetlands at a site owned by the District near the confluence of the Platte Missouri Rivers in Sarpy County. After mitigation, no net loss of wetlands are expected. With the no federal action option g alternative, no dredge or fill material is expected to be discharged into wetlands or other waters of the United States. As such, this option would be beyond the authority of the Corps to regulate under the Clean Water Act. If option g is implemented, therefore, the Corps could not require mitigation for the indirect impacts on wetlands associated with operation of the well field and subsequent groundwater drawdown. The result with the no federal action option g alternative could be the net loss of up to 13.9 acres and the alteration of up to 142 acres of wetlands. Over the first 25 years of operation, option g would cost $26.37 million more than the Platte West alternative (Table 2-8) of which $13.55 million would be attributable to greater capital cost. Option g would also cause a greater reduction in property tax receipts for Saunders County than the Platte West alternative (Table 2-9).

A comparative summary of the major environmental impacts of the selected alternatives is presented in Table 2-9. Detailed descriptions of environmental impacts are presented in CHAPTER 4.

Table 2-9 Summary of Major Environmental Impacts
Significant impacts requiring mitigation are shaded.

Characteristic	Platte West	Platte North	Platte South + Platte West	Platte South + Platte West DC	Three-Way Combination	No Federal Action	
						Options A - F	Option G
Water Quantity							
River Flow	Depletion of 40,521 acre-feet from the Platte River in an average demand year	Depletion of 49,840 acre-feet from the Platte River in an average demand year	Depletion of 47,278 acre-feet from the Platte River in an average demand year	Depletion of approximately 47,278 acre-feet from the Platte River in an average demand year	Depletion of 32,440 acre-feet from the Platte River and 18,500 acre-feet from the Missouri River in an average demand year	None (options a - f)	Depletion of 40,521 acre-feet from the Platte River in an average demand year
Groundwater	Drawdown of up to 5 feet in Two Rivers; 30 wells impacted; 5,069 acres lose subirrigation	5 wells impacted; 56 acres lose subirrigation	Drawdown of up to 3 feet in Two Rivers; 20 wells impacted; 1,515 acres lose subirrigation	Drawdown of up to 13 feet in Two Rivers; 5 wells impacted; 2,585 acres lose subirrigation	Drawdown of up to 7 feet in Two Rivers; 5 wells impacted; 1,579 acres lose subirrigation	Dakota Sandstone aquifer dewatered (Options a, b, and c)	Drawdown of up to 5 feet in Two Rivers; 30 wells impacted; 5,069 acres lose subirrigation
Water Quality	Source water classified as groundwater	Source water classified as groundwater under the influence of surface water	Raw water classification for the Platte South Treatment Plant degraded from groundwater to groundwater under the influence of surface water; water from Platte West classified as groundwater	Raw water classification for the Platte South Treatment Plant degraded from groundwater to groundwater under the influence of surface water; water from Platte West classified as groundwater	Raw water classification for the Platte South Treatment Plant degraded from groundwater to groundwater under the influence of surface water; water from Platte West classified as groundwater; water from Missouri River classified as surface water	Water from Dakota Sandstone aquifer classified as groundwater (Options a, b, and c)	Source water classified as groundwater
Wetlands							
Construction impacts	0.3 acres temporary, 0.8 acres lost	1.3 acres temporary, 1.6 acres lost	0.6 acres temporary, 1.0 acre lost	0.6 acres temporary, 0.6 acres lost	2.6 acres temporary, 2.6 acres lost	None (options a - f)	None
Drawdown impacts	141.6 acres altered, 13.9 acres lost	66.1 acres altered, 10.4 acres lost	62.1 acres altered, 11.0 acres lost	117.9 acres altered	97.3 acres altered	None (options a - f)	141.6 acres altered, 13.9 acres lost

Table 2-9 Summary of Major Environmental Impacts
Significant impacts requiring mitigation are shaded.

Characteristic	Platte West	Platte North	Platte South + Platte West	Platte South + Platte West DC	Three-Way Combination	No Federal Action	
						Options A - F	Option G
Net impact after mitigation	plus 148.9 acres with potential for additional protection from development because of District ownership of well field	plus 105.2 acres with potential for additional protection from development because of District ownership of well field	plus 68.2 acres with potential for additional protection from development because of District ownership of well field	plus 117.9 acres with potential for additional protection from development because of District ownership of well field	plus 99.6 acres with potential for additional protection from development because of District ownership of well field	No change (options a - f)	141.6 acres altered, 13.9 acres lost with potential for additional protection from development because of District ownership of well field
Vegetation	Loss of 6 acres of upland forest and 184 acres of cropland, hayfield, and pasture	Loss of 188 acres of cropland, hayfield, and pasture; 2 acres of riparian forest; and 6 acres of upland forest	Loss of 194 acres of cropland, hayfield, and pasture; <1 acre of riparian forest; and 6 acres of upland forest	Loss of 194 acres of cropland, hayfield, and pasture; <1 acre of riparian forest; and 6 acres of upland forest	Loss of 346 acres of cropland, hayfield, and pasture; <1 acre of riparian forest; and 7 acres of upland forest	None (options a - f)	
Federally Protected Species							
Pallid sturgeon	May adversely affect because of 18,406 acre-feet flow depletion in the Platte River during the critical period; jeopardy opinion avoided by mitigation (construction of backwater)	May adversely affect because of 25,400 acre-feet flow depletion in the Platte River during the critical period; jeopardy opinion avoided by mitigation (construction of backwater)	May adversely affected because of 22,005 acre-feet flow depletion in the Platte River during the critical period; jeopardy opinion avoided by mitigation (construction of backwater)	May adversely affected because of 23,085 acre-feet flow depletion in the Platte River during the critical period; jeopardy opinion avoided by mitigation (construction of backwater)	May adversely affected because of 15,695 acre-feet flow depletion in the Platte River during the critical period; jeopardy opinion avoided by mitigation (construction of backwater)	None (options a - f)	May adversely affect because of 18,406 acre-feet flow depletion in the Platte River during the critical period; jeopardy opinion avoided by mitigation (construction of backwater)
Bald eagle	Potential increase in nesting and roosting habitat	Potential increase in nesting and roosting habitat	Potential increase in nesting and roosting habitat	Potential increase in nesting and roosting habitat	Potential increase in nesting and roosting habitat	None (options a - f)	Potential increase in nesting and roosting habitat
Interior least tern	May adversely affect because of flow depletion in the Platte River	May adversely affect because of flow depletion in the Platte River	May adversely affect because of flow depletion in the Platte River	May adversely affect because of flow depletion in the Platte River	May adversely affect because of flow depletion in the Platte River	None (options a - f)	May adversely affect because of flow depletion in the Platte River
Piping plover	May adversely affect because of flow depletion in the Platte River	May adversely affect because of flow depletion in the Platte River	May adversely affect because of flow depletion in the Platte River	May adversely affect because of flow depletion in the Platte River	May adversely affect because of flow depletion in the Platte River	None (options a - f)	May adversely affect because of flow depletion in the Platte River

Table 2-9 Summary of Major Environmental Impacts
Significant impacts requiring mitigation are shaded.

Characteristic	Platte West	Platte North	Platte South + Platte West	Platte South + Platte West DC	Three-Way Combination	No Federal Action	
						Options A - F	Option G
Social and Economic Conditions							
Property value	Could decrease $1,153,000 in Douglas County and $1,172,000 in Saunders County for farmlands that lose sub-irrigation	Could decrease $21,000 in Saunders County for farmlands that lose sub-irrigation	Could decrease $329,000 in Douglas County and $423,000 in Saunders County for farmlands that lose sub-irrigation	Could decrease $1,605,000 in Douglas County for farmlands that lose sub-irrigation	Could decrease $988,000 in Douglas County for farmlands that lose sub-irrigation	Decrease for properties that could not connect to a municipal water supply (options a - f)	Could decrease $1,153,000 in Douglas County and $1,172,000 in Saunders County for farmlands that lose sub-irrigation
Income	Could reduce total farm revenue $355,700 annually and $16,021,000 over 2005 - 2030 because of lost subirrigation; no excess expense imposed on District customers	Could reduce total farm revenue $5,700 annually and $257,000 over 2005 - 2030 because of lost subirrigation; $138,5120,000 in excess cost to District customers over 2005 - 2030	Could reduce total farm revenue $121,700 annually and $5,481,000 over 2005 - 2030 because of lost subirrigation; $189,920,000 in excess cost to District customers over 2005 - 2030	Could reduce total farm revenue $118,000 annually and $5,315,000 over 2005 - 2030 because of lost subirrigation; $185,670,000 in excess cost to District customers over 2005 - 2030	Could reduce total farm revenue $73,600 annually and $3,315,000 over 2005 - 2030 because of lost subirrigation; $391,660,000 in excess cost to District customers over 2005 - 2030	Area economic growth hindered, which would reduce employment opportunities and limit overall income (options a - f)	Could reduce total farm revenue $355,700 annually and $16,021,000 over 2005 - 2030 because of lost subirrigation; $26,370,000 in excess cost to District customers over 2005 - 2030
County tax revenues	Saunders County: possible 0.195 percent reduction; Douglas County: possible 0.017 percent reduction	Saunders County: possible 0.122 percent reduction; Douglas County: possible 0.007 percent reduction	Saunders County: possible 0.146 percent reduction; Douglas County: possible 0.016 percent reduction	Douglas County: possible 0.019 percent reduction	Douglas County: possible 0.020 percent reduction	Douglas and Sarpy counties: decline in future revenues if regional economic growth is curtailed (options a - f)	Saunders County: possible 0.233 percent reduction; Douglas County: possible 0.017 percent reduction
Cultural Resources	None likely	None likely	None likely	None likely	Some possible around Thomas Creek	None (options a - f)	None likely
Recreation Resources	Water level decline of 1 to 3 feet in several small lakes at the Two Rivers State Recreation Area; possible water level declines in nearby private ponds used for fishing and swimming	Possible water level declines in nearby private ponds used for fishing and swimming	Possible water level declines in nearby private ponds used for fishing and swimming	Water level decline of 1 to 7 feet in several small lakes at the Two Rivers State Recreation Area; possible water level declines in nearby private ponds used for fishing and swimming	Water level decline of 1 to 3 feet in several small lakes at the Two Rivers State Recreation Area; possible water level declines in nearby private ponds used for fishing and swimming	Possible eventual loss of use of public and private swimming pools (options a - f)	Water level decline of 1 to 3 feet in several small lakes at the Two Rivers State Recreation Area; possible water level declines in nearby private ponds used for fishing and swimming

CHAPTER 3
EXISTING ENVIRONMENT

The purpose of Chapter 3, *Existing Environment*, is to describe aspects of the natural and human environment that currently exist within the general vicinity of the proposed project and its alternatives. For the Platte West Water Production Facilities Project, the aspects of the environment considered are:

- general setting
- geology and soils
- land use
- floodplains and floodways
- surface water and groundwater
- noise
- wetlands and special aquatic sites
- vegetation
- wildlife
- threatened or endangered species
- species of special concern
- population
- property values
- county tax revenues
- cultural resources
- visual resources
- recreation resources
- hazardous materials

The topic of subirrigation is discussed in the context of property values.

The purpose of Chapter 3 is to describe the natural and human resources that could be affected by the proposed project.

The impacts of each of the proposed alternatives on these resources are described in Chapter 4, *Environmental Consequences* under similarly titled sections. Other aspects of the natural and human environment, such as air quality, employment and income, housing, transportation, law enforcement, health care, and public schools are not expected to be significantly affected by the proposed project. For this reason, no further discussion of these aspects is required in this Environmental Impact Statement (EIS) (40 CFR 1502.15).

As the population of Omaha and its surrounding suburbs grows, so does the demand for potable water. The Metropolitan Utilities District's (District) current maximum daily production capacity for potable water is 234 MGD of which 207 MGD is considered firm capacity. To assure the water supply meets the health and safety needs of the population in the District's service area, the water system should have a firm capacity that will meet maximum daily (i.e., peak) demand. By the year 2030, maximum daily demand is expected to exceed current firm capacity by approximately 100 MGD (Figure 1-10, page 1-14).

Five supply alternatives requiring federal action have been identified to provide the District with an additional 100 MGD of maximum daily demand capacity (Chapter 2). They are as follows:

1) **Platte West:** a well field west of Omaha straddling the Platte River and a new water treatment plant in the western portion of the District's service area (Figure 2-3, page 2-23).
2) **Platte North:** a well field northwest of Omaha on the west side of the Platte River in Saunders County and a new water treatment plant in the western portion of the District's service area (Figure 2-5, page 2-26).
3) **Platte South plus Platte West:** expansion of the existing Platte South well field and treatment plant by 40 MGD and a 60-MGD version of the Platte West well field and treatment plant (Figure 2-6, page 2-28).
4) **Platte South plus Platte West Douglas County (DC):** like the preceding alternative except the Platte West well field would be only in Douglas County.
5) **Three-Way Combination:** expansion of

the Platte South well field and treatment plant by 34 MGD, a 34-MGD Platte West well field in Douglas County and treatment plant, and a 34-MGD water intake in the Missouri River and water treatment plant in the northern portion of the District's service area (Figure 2-7, page 2-31).

A sixth supply alternative would not require a federal permit. This alternative would be a variation of the Platte West alternative in which all construction impacts to the aquatic environment would be avoided by the realignment of facilities or the use of directional drilling to install pipelines under rivers, streams, or wetlands.

All of these alternatives could impact the natural and human environment through construction activities and the removal of water from rivers, alluvial aquifers, or both.

LAND FEATURES

GENERAL SETTING

The project area, in east-central Nebraska, includes the City of Omaha and Douglas, Sarpy, and Saunders counties (Figure 3-1). Geographically, the area is bounded on the east by the Missouri River and on the south and west by the Platte River valley. The Elkhorn River flows from north to south in the western portion of the project area, joining the Platte River in the south-west corner of the project area.

The topography of this region is a result of late Pleistocene glaciation and riverine erosion and deposition. The project area is in the Rolling Hills topographical region (Conservation and Survey Division 1973). Here, the Missouri River meanders within a floodplain bordered by steep bluffs. Above their confluence, the Platte and Elkhorn rivers share a broad floodplain with less distinct boundaries. Between the two major floodplains are rolling hills.

The project area is in the Drift Loess Hills vegetation region (Weaver 1965). The dominant natural community prior to permanent human settlement was tall-grass prairie uplands with eastern deciduous forest bottomlands. Today, most of the natural vegetation has been replaced by agriculture and urban development. The climate in the area is typically continental with highly variable winter temperatures, and hot and humid summers punctuated by severe thunderstorms. The record extreme temperatures at Omaha's Eppley Airport are 110 and minus 23 degrees Fahrenheit. Annual precipitation averages 30 inches. Normally, May is the wettest month (4.3 inches) and January is the driest (0.8 inches).

GEOLOGY AND SOILS

Geology

The geologic formations beneath the soils in the project area are mostly Quaternary terrace and alluvial deposits or lower Cretaceous sandstone and shale of the Dakota group (Figure 3-2). The bedrock is much older, however, in eastern Douglas County, eastern and central Sarpy County, and the west to east flowing portion of the Platte River channel.

Alluvial deposits are located along the floodplains of the Platte, Elkhorn, and Missouri rivers, Papillion Creek in Douglas and Sarpy counties, and Sand Creek in eastern Saunders County (Figure 3-2A) (Weeks and Larrabee 1948). These deposits consist of mostly sand and gravel interspersed with lenses of clay. In some areas of the Platte-Elkhorn floodplain, the alluvium is over 90 feet thick. The alluvial material in the Missouri River floodplain can be over 140 feet thick. Because of the porous nature of the alluvial material, the volume of material present and the proximity of the rivers that created the formation, these alluvial deposits are a significant source of groundwater. Numerous sites for the extraction of sand and gravel have also been developed in the alluvial and terrace deposits of the Platte River in western Douglas County

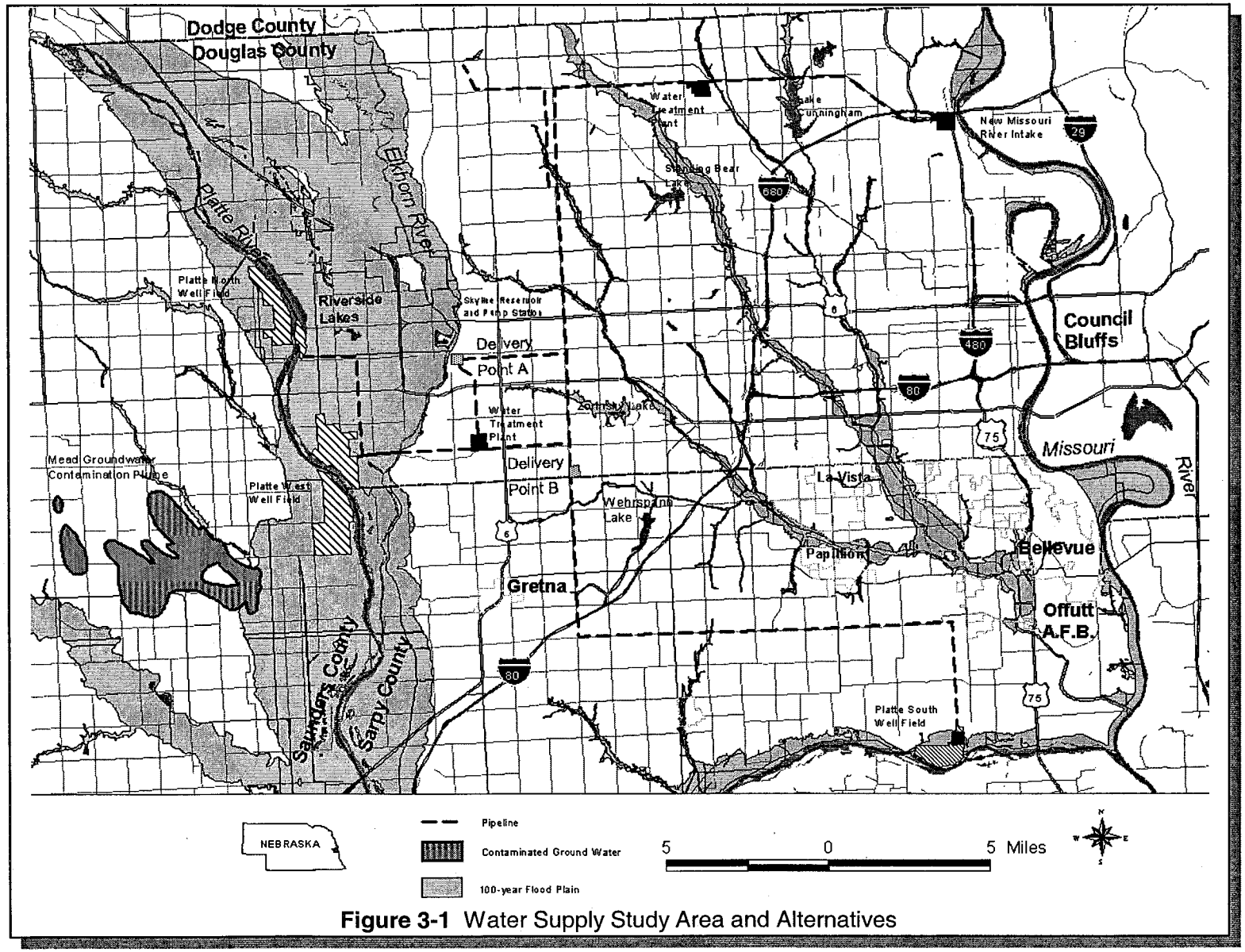


Figure 3-1 Water Supply Study Area and Alternatives

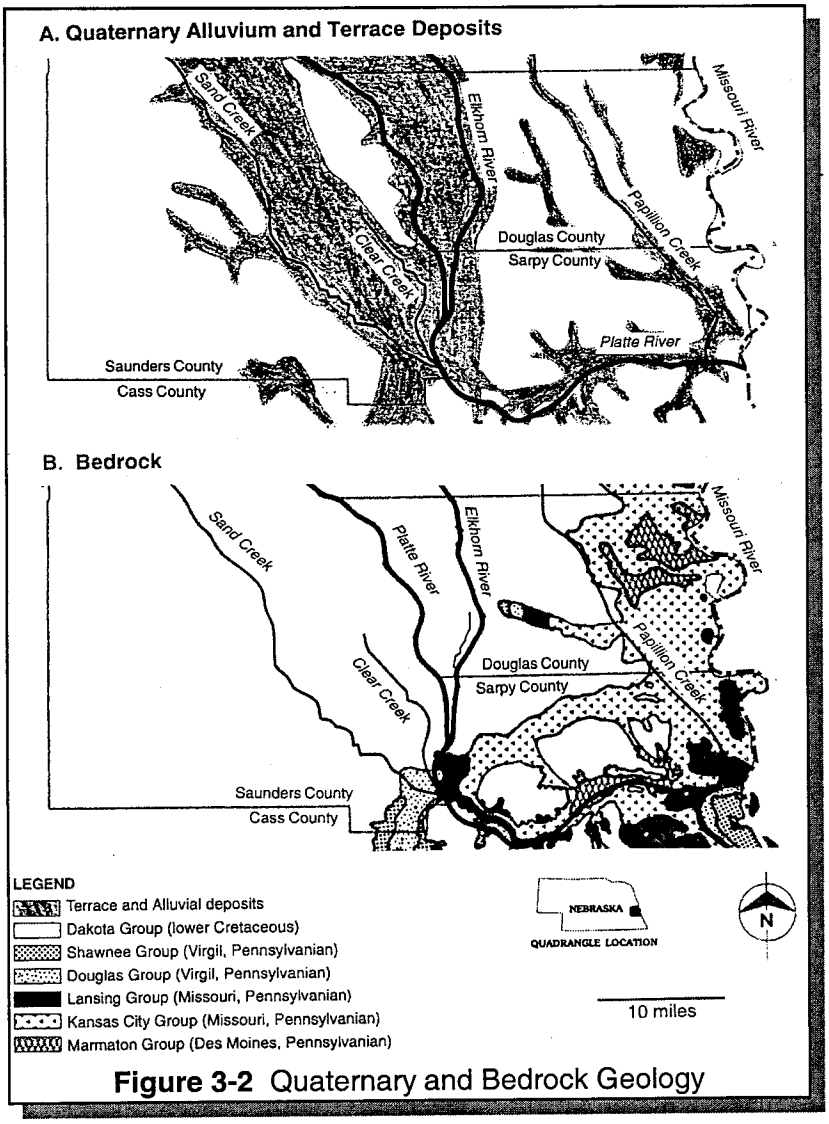


Figure 3-2 Quaternary and Bedrock Geology

and northern Sarpy County (Weeks and Larrabee 1948).

The Dakota group is the lowermost Cretaceous geologic unit in Nebraska. In eastern Nebraska, it subcrops beneath quaternary deposits as a south-southwest to north-northeast trending band about 25 miles wide centered roughly in Sanders County west of the project area (Burchett et al. 1988). The group consists of complex associations of sandstone, shale, siltstone, and claystone. In areas of the Dakota group where substantial thicknesses of sandstone exist, high capacity water wells can be developed (Lawton et al. 1984).

In the eastern and southern portions of the project area, erosion by the Platte River has cut through the Dakota group into rock of much older age (Figure 3-2B). These bedrock formations are primarily lower Pennsylvanian limestone of the Lansing, Kansas City, and Marmaton groups (Burchett et al. 1988).

Soils

The project area in Douglas and Sarpy counties contains six major soil associations (Soil Conservation Service 1975) (Figure 3-3):

1. Cass-Inavale-Wann
2. Gibbon-Eudora-Wabash
3. Ponca-Ida
4. Marshall-Ponca
5. Monona-Ida
6. Albaton-Haynie

The bottomlands adjacent to the Elkhorn River and north to south flowing portions of the Platte River consist of soils of the Cass-Inavale-Wann association. These soils are deep, nearly level, and composed of primarily loam and sand. At slightly higher elevations above the Cass-Inavale-Wann association and adjacent to the east to west flowing portion of the Platte River are soils of the Gibbon-Eudora-Wabash association. These soils are also deep and nearly level but contain primarily silts and clays. On the bluffs adjacent to the Elkhorn River floodplain are the deep, strongly sloping, silty soils of the Ponca-Ida association. Most of the uplands between the Platte, Elkhorn, and Missouri river floodplains contain soils of the Marshall-Ponca association. These soils are deep, nearly level to moderately steep, and silty. Along the bluffs of the Missouri River floodplain are the deep, nearly level to very

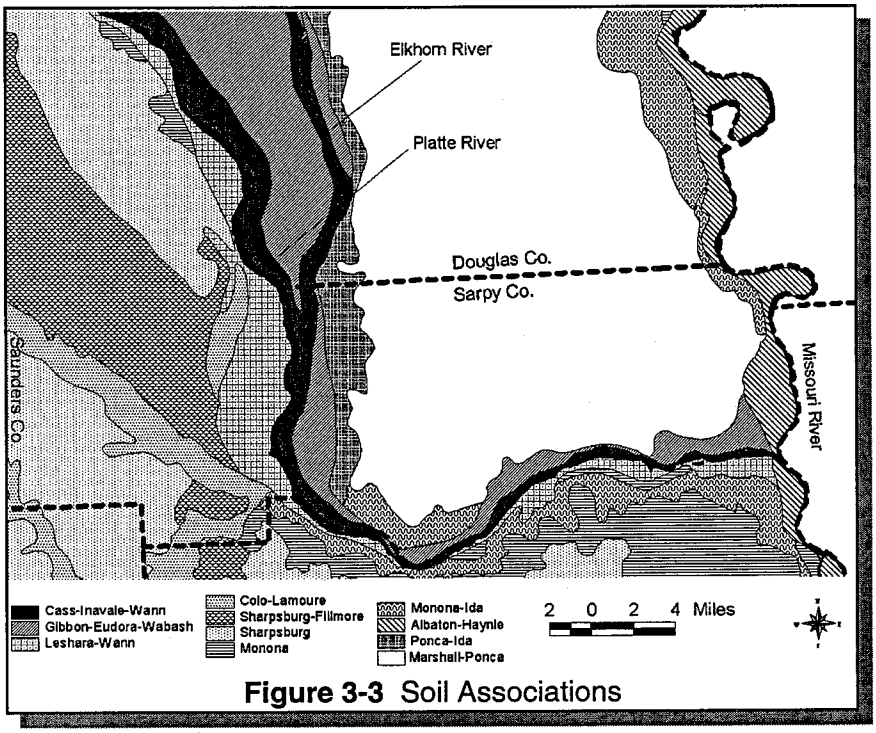


Figure 3-3 Soil Associations

steep, silty soils of the Monona-Ida association. The Missouri River floodplain contains deep, nearly level, clayey and silty soils of the Albaton-Haynie association.

West of the Platte River in Saunders County, the study area contains six major soil associations (Soil Conservation Service 1965) (Figure 3-3):

- Sarpy-Barney
- Leshara-Wann
- Colo-Lamoure
- Sharpsburg-Fillmore
- Sharpsburg
- Monona

Most of the west bank of the Platte River has Sarpy-Barney soils which are well to poorly drained soils on sandy alluvium in bottomlands. Generally further west in the Platte River bottomlands on silty and sandy alluvium are the imperfectly drained soils of the Leshara-Wann association. The Colo-Lamoure association soils are found adjacent to Salt Creek and some of its tributaries. These soils are imperfectly drained, moderately clayey soils on alluvium in nearly level bottomlands. Upslope of the Colo-Lamoure soils are soils of the Sharpsburg-Fillmore association. These soils are deep, dark, moderately clayey to clayey, and nearly level. Most of the upland areas west of the Platte River contain Sharpsburg association soils which are deep, dark, and moderately clayey. On steeply sloping uplands, deep, silty soils of the Monona association are found.

Prime farmland soils, are generally defined as having an adequate and dependable source of water, favorable temperatures and growing season, an acceptable acidity/alkalinity level, few or no rocks, sufficient permeability to water and air, and slopes averaging zero to six percent (7 CFR 658.2). Douglas, Sarpy, and Saunders counties contain 99,300, 66,700, and 246,100 acres, respectively, of soils that are classified as prime farmland. Prime farmland accounts for 45, 44, and 51 percent of the surface area of these counties.

The well fields of the Platte West alternative and the Platte North alternative that would be located west of the Platte River in Saunders County contain Sarpy-Barney and Leshara-Wann soils. East of the Platte River in Douglas County, the Platte West well field site contains Cass-Inavale-Wann and Gibson-Eudora-Wabash association soils. Based on soil types, the Platte West and Platte North well fields contain 1,215 (55 percent) and 38 (7 percent) acres of prime farmland, respectively (Table 3-1). The new treatment plant proposed for these two alternatives would be built on Marshall-Ponca association soils of which 112 acres (71 percent) are prime farmland.

The proposed new treatment plant for the Missouri River portion of the Three-Way

Table 3-1 Total and Prime Farmland Acres in the Water Supply Alternatives

Alternative Component Soil Quality	Alternative				
	Platte West	Platte North	Platte South plus Platte West	Platte South plus Platte West DC[1]	Three-Way Combination
Well Fields					
Prime Farmland	1,215	38	1,646	577	577
Total	2,280	575	2,913	1,672	1,672
Treatment Plants					
Prime Farmland	112	112	112	112	166
Total	158	158	158	158	324
Pipelines					
Prime Farmland	34	86	156	156	314
Total	156	229	388	388	703
Alternative Total					
Prime Farmland	1,361	236	1,914	845	1,057
Total	2,594	962	3,458	2,218	2,699

[1]DC = well field in Douglas County only

Combination alternative would be built on land with Marshall-Ponca and Monona- Ida association soils of which 54 acres (34 percent) are prime farmland. Construction associated with the New Missouri River intake structure would occur on soils of the Albaton-Haynie association.

Assuming 100-foot wide pipeline corridors, the transmission and effluent pipelines would contain 34 acres (25 percent) of prime farmland for the Platte West alternative, 86 acres (42 percent) for the Platte North alternative, 156 acres (40 percent) for both Platte South Plus Platte West alternatives, and 314 acres (45 percent) for the Three-Way Combination alternative. The total amount of prime farmland covered by each of these alternatives ranges from 236 acres for the Platte North alternative to 1,914 acres for the Platte South Plus Platte West alternative (Table 3-1). The Platte West alternative would involve a total of 1,361 acres of prime farmland.

LAND USE

Douglas and Sarpy counties contain 214,200 and 152,700 acres, respectively, for a total area of 574 square miles. Approximately one-fifth of this area, 112 square miles, is occupied by the City of Omaha. Nearly half the land in these two counties, 283 square miles, is used for crops and 52 square miles is used for other farm uses such as pasture (U.S. Department of Agriculture 1997). The remainder of the land in the two counties, 127 square miles, is mostly woodlots and rural communities.

Saunders County encompasses a total area of 754 square miles, most of which is rural. Approximately 79 percent of the land in the county, 597 square miles, is used for crops and 11 percent, 84 square miles, is used for pasture and other farm uses (U.S. Department of Agriculture 1997). The remaining 10 percent of Saunders County is used for all other non-farm uses such as rural housing and businesses.

Land areas included in the proposed well fields along the Platte River contain mostly cropland, pasture, and bottomland forest. The two proposed sites for new treatment plants are completely devoted to agriculture as either cropland or pasture. Delivery Point B is in an area currently being transformed from pasture, old fields, and upland forest into suburban residential.

The well fields for the Platte West and Platte North alternatives that are located in Saunders County would be on land zoned Agriculture. In addition to farming, numerous other uses are allowed with a special use permit. Among these uses is public utility distribution.

The Douglas County portion of the proposed well fields is under the jurisdiction of the Douglas County Planning Commission and is zoned AF1 (agriculture). Other permitted uses of this land are utility substation, pumping station, water reservoir, and telephone exchange.

The two proposed treatment plant sites are within the Omaha Planning Commission's jurisdiction and are zoned AG (agriculture). Other permitted uses are minor structures for local utility services. The site near Bennington and Blair High roads north of Omaha is within the City of Omaha Master Plan's Current Zone of Development and is earmarked for industrial development. The site at 216th and Q streets is not within the Current Zone of Development.

The vision statements and goals in the land use element of Omaha's Master Plan (Omaha Planning Department 1995) relevant to the proposed project are:

- Omaha's urban form should be designed to eliminate land use conflicts.
- City growth should be managed to establish a contiguous and compact pattern of growth.
- City growth should protect natural systems and environmental quality.
- City growth should provide public services efficiently and equitably.

On August 10, 1999, the Saunders County Commission passed resolution No. 25-1999 prohibiting land uses, except those related to agriculture, that reduce levels of subirrigation or de-water wetlands without mitigation by in-kind replacement in Saunders County.

FLOODPLAINS AND FLOODWAYS

The well fields of the proposed water supply alternatives are located adjacent to the Platte River. The channel of the Platte River is located within a broader floodplain. The floodplain is characterized by low topographic relief and generally represents the area in which the main channel of the river has meandered within recent geologic history.

The area of land inundated during a flood is defined in terms of the frequency of recurrence of a flood of a given magnitude. The more severe a flood, the less frequently they occur. The benchmark flood event for insurance purposes is the flood with a magnitude that occurs once in 100 years. Special consideration should be given to the design of structures located within the 100-year flood area.

Within the floodplain, the area where most of the flood flow passes is called the floodway. Structures built in this area must not diminish the area of the floodway because reducing the floodway area in one location will increase the floodway area in another.

The Platte West well field is entirely within the 100-year floodplain. In Douglas County, the floodway covers an approximately 2,000-foot wide zone of the well field adjacent to the river. In Saunders County, most of the well field is behind a levee and out of the floodway. The exception is a triangular shaped piece of land in the northeast part of the well field adjacent to the river. The Platte North well field is also located entirely within the 100-year floodplain. A levee adjacent to the Platte River, however, keeps almost all of the mainland portion of the well field out of the floodway. The island portion of this well field is in the floodway. At the existing Platte South water production facility, all of the wells are in the 100-year flood plain and 18 wells are in the floodway. The treatment plant is not in the floodplain.

WATER RESOURCES

The major water resources in the area potentially affected by the proposed water supply project are the Missouri and Platte rivers and the alluvial aquifers associated with these rivers. The Platte River and Platte River alluvial aquifer could be affected by the Platte West, Platte North, Platte South plus Platte West, and Platte South plus Platte West DC alternatives. The Three-Way Combination alternative could affect the Missouri River, Platte River, and Platte River alluvial aquifer.

SURFACE WATER

The Platte and Missouri rivers have been monitored for discharge and water quality with varying degrees of intensity for most of the 20th century. This monitoring has been conducted at a series of fixed gaging stations established and operated by the U.S. Geological Survey (USGS).

Hydrology

The Platte River watershed covers most of Nebraska and parts of Colorado and Wyoming. The main stem of the Platte River begins in west-central Nebraska where the North Platte and South Platte rivers join, and ends at the Missouri River south of Omaha. Other major tributaries of the Platte River are the Loup and Elkhorn rivers. Flow in the Platte River is partially controlled by Kingsley Dam at Lake McConaughy on the North Platte River. In the study area and throughout much of Nebraska, the Platte River is broad and shallow with a sand bottom. The channel is typically braided with numerous islands and sand bars. Water from the Platte River and its tributaries is diverted extensively for agricultural (irrigation), municipal, and industrial uses. The lower Platte River is infamous for winter ice jams, which have been known to cause significant upstream flooding. Ice jams are occasionally removed by aerial bombardment with dynamite.

The Missouri River, with its headwater in Montana and mouth at St. Louis, Missouri, is the longest river in the United States. With its watershed covering portions of Missouri, Kansas, Colorado, Iowa, Nebraska, Wyoming, South Dakota, North Dakota, and Montana, the Missouri River is the major drainage system for the northern Great Plains. Major tributaries of the Missouri River are the Yellowstone, Cheyenne, James, Platte, and Kansas rivers. Commercial use of the Missouri River includes shipping by barge. To maintain this usage, significant portions of the channel have been modified by dikes and dredging. Flow in the river is regulated by releases from a series of large reservoirs in South Dakota, North Dakota, and Montana. Other commercial uses of the Missouri River include irrigation, municipal water supply, hydropower, power plant cooling water (coal-fired and nuclear), recreation access, and fishing.

Table 3-2 Physical Characteristics of the Platte and Missouri Rivers

	Platte	Missouri
Measurement location	near Ashland, NE	at Omaha, NE
Period of record	1989-2000	1953-2000
Watershed area (sq. miles)	84,200	322,800
Average annual discharge (acre-feet)	5,347,000	24,110,000
Flow exceeded 10% of the time (cfs[1])	12,100	52,900
Median flow (cfs)	6,210	32,700
Flow exceeded 90% of the time (cfs)	2,700	13,600
10% exceeded/90% exceeded	4.5	3.9

[1]cfs = cubic feet per second. Source: USGS Water Resources Data, Nebraska, Water Year 2000.

Physical parameters of the Platte and Missouri rivers (Table 3-2) illustrate the difference in size among these two rivers. At Omaha, the average annual discharge from the Missouri River is approximately five times greater than the Platte River near Ashland. The ratio of the flow value which is exceeded 10 percent of the time (high flow) to the flow value which is exceeded 90 percent of the time (low flow) provides an indication of annual variation in flow. This ratio is highest for the Platte River and lowest for the Missouri River. This pattern is consistent with the degree of flow regulation which exists on these rivers: partial regulation on the Platte, and extensive regulation on the Missouri.

Flow regulation is also evident in the seasonal flow patterns of these two rivers (Figure 3-4). The less regulated Platte River has peak flows in March and June, reflecting spring snow-melt and early summer rains, respectively; and low flows from August through January. Under the current Water Control Plan, flows in the Missouri River are kept relatively steady from March through November to accommodate barge traffic (McAllister 2002).

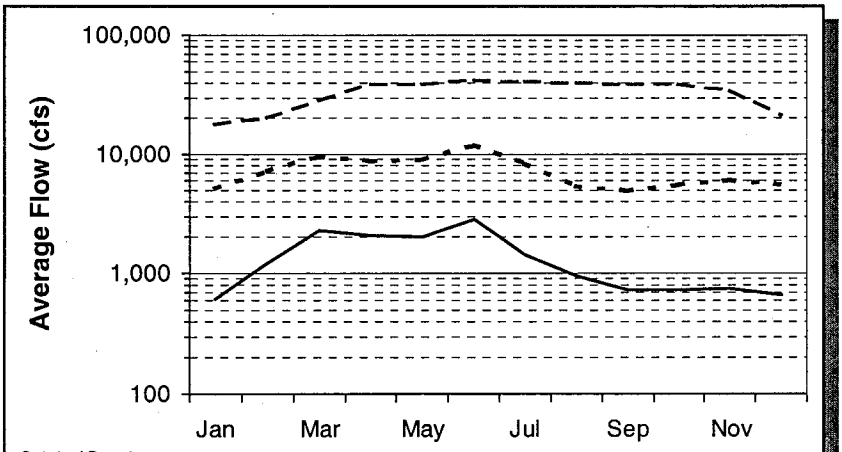


Figure 3-4 Average Seasonal Flow in the Platte, Elkhorn, and Missouri Rivers

Quality

In the project area, the water in the two major rivers is generally well oxygenated, moderately hard, moderately buffered, and slightly alkaline (Table 3-3). The annual average chloride concentration in the Platte River at Louisville (50.2 mg/l), although low by state drinking water standards (250 mg/l), is approximately four times higher than in the Missouri River (13.0 mg/l at Omaha). Chloride content in the Platte River was measured downstream of the Platte West and Platte North well fields and downstream of the confluence of Salt Creek. Chloride concentration in Salt Creek typically ranges between 1,000 and 2,000 mg/l (U.S. Geolgical Survey Water Resources data for 1976 through 1986). Average chloride concentration in the Platte River at the well field sites, therefore, would be lower than 50.2 mg/l. Total dissolved solids concentration, as measured by electrical conductivity, however, is typically highest in the Missouri River (Table 3-3). Concentrations of the inorganic plant nutrients, nitrogen and phosphorus, in the Platte and Missouri rivers are similar (Table 3-3). Suspended solids concentration in the two rivers is similar most of the year except for June and December when concentrations are higher and lower, respectively, in the Platte River (Figure 3-5).

Most of the water quality parameters have distinct seasonal variations. Water temperature generally rises and falls in accordance with ambient air temperature. Dissolved oxygen concentrations are inversely related to temperature. In the three rivers, alkalinity (buffering capacity), hardness, and chloride tend to be highest in the winter and lowest in the summer. Inorganic nitrogen and phosphorus also follow this seasonal pattern in the Platte

Table 3-3 Water Quality Parameters for the Platte and Missouri Rivers[1]

	Platte	Missouri
Measurement location	Louisville, NE	at Omaha, NE
Temperature (°C)	12.4	12.4
Dissolved oxygen (mg/l)	11.1	9.8
pH	8.3	8.1
Conductivity (μSeimens/cm)[2]	666	752
Alkalinity (mg/l as $CaCO_3$)	180	171
Hardness (mg/l as $CaCO_3$)	204	264
Chloride (mg/l as Cl)	50.2	13.0
Nitrate + nitrite (mg/l as N)[3]	1.36	1.03
Ammonia (mg/l as N)[3]	0.08	0.11
Phosphorus (mg/l as P)[3]	0.18	0.07
Suspended solids (mg/l)	811	538
Turbidity (NTU)	61.5	110

[1]Annual averages [2]Microseimens/cm = micomhos/cm [3]Dissolved
Source: USGS water resources data, Iowa and Nebraska, water years 1979-1995

River. Nutrient concentrations in the Missouri River are typically greatest in early spring. Suspended solids concentration is highest in the late spring for both rivers (Figure 3-5).

Nineteen pesticides were detected in the water of the lower Platte River during 1993 through 1997. Atrazine, metolachlor, cyanazine, and alachlor were herbicides regularly analyzed for and detected in the Platte River (Table 3-4). Other herbicides occasionally detected were acetochlor, propachlor, metribuzin, simazine, trifluralin, prometon, pendimethalin, tebuthiuron, and butylate.

Atrazine was detected in all but one of 142 samples collected from the lower Platte River at an average concentration of 1.07 micrograms per liter (µg/l) (Table 3-4), just above the Nebraska water quality standard for the protection of aquatic life of 1.0 µg/l. The maximum observed concentration of atrazine was 34 µg/l. The average concentrations for all of the other herbicides were less than 0.5 µg/l. Notable maximum concentrations were 11 µg/l for metolachlor and cyanazine and 4 µg/l for acetochlor and alachlor. The only water quality standard for herbicides, other than atrazine, exceeded in the lower Platte River was the state drinking water standard for alachlor of 2 µg/l.

Insecticides detected in the lower Platte River were carbofuran, diazinon, chlorpyrifos, carbaryl, malathion, and permethrin (Table 3-4). Of all the insecticides detected, only chlorpyrifos, with a maximum observed concentration of 0.09 µg/l, exceeded a Nebraska water quality standard. In this case, the standard is 0.04 µg/l for aquatic life support. No other water quality standards for insecticides were exceeded primarily because standards have not been set for most of the insecticides detected. Insecticides generally have much lower concentrations in ambient surface waters then herbicides because insecticides are

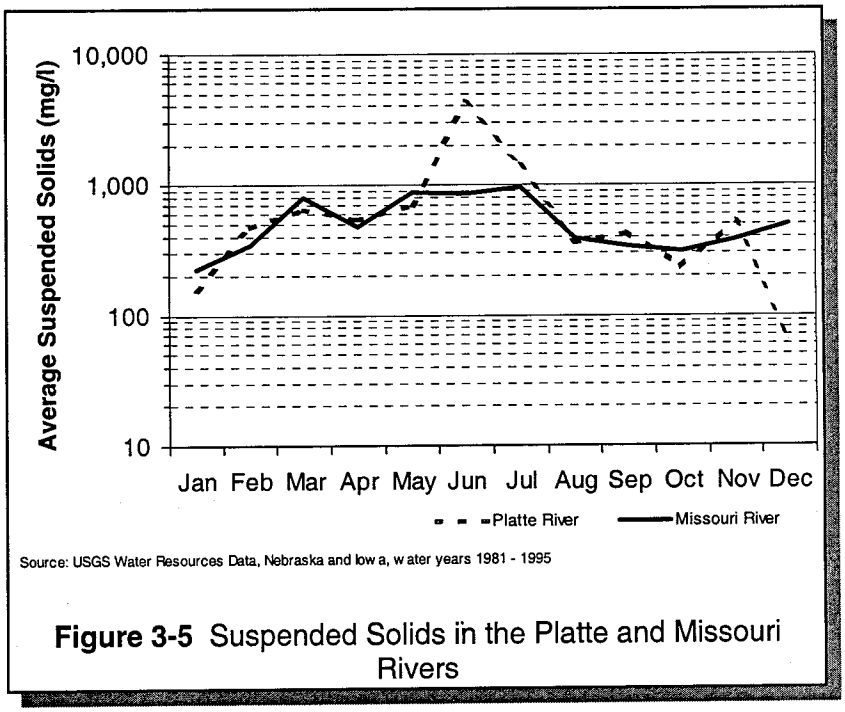


Figure 3-5 Suspended Solids in the Platte and Missouri Rivers

Table 3-4 Summary of Pesticide Detections and Concentrations in the Lower Platte River and Missouri River at Omaha

Pesticide	Lower Platte River				Missouri River			
	No. Samples	Percent detection[1]	Mean (µg/l)	Maximum (µg/l)	No. Samples	Percent detection[1]	Mean (µg/l)	Maximum (µg/l)
Herbicides								
Atrazine	142	99.3%	1.072	34.000	57	98.2	0.262	4.000
Acetochlor	20	60.0%	0.440	4.200	57	78.9	0.067	0.382
Metolachlor	120	50.0%	0.392	10.600	57	98.2	0.147	1.600
Cyanazine	142	50.7%	0.317	11.500	57	82.5	0.079	0.980
Alachlor	145	34.5%	0.108	3.900	57	52.6	0.007	0.069
Propachlor	28	32.1%	0.012	0.160	57	1.8	0.000	0.005
Metribuzin	120	10.8%	0.006	0.240	57	15.8	0.003	0.039
Simazine	120	19.2%	0.006	0.200	57	52.6	0.003	0.020
Trifluralin	28	39.3%	0.005	0.068	57	31.6	0.019	1.000
Prometon	120	21.7%	0.004	0.040	57	78.9	0.005	0.028
Pendimethalin	28	21.4%	0.003	0.020	57	5.3	0.001	0.021
Tebuthiuron	28	35.7%	0.003	0.020	57	0.0	0.000	0.000
Butylate	28	3.6%	0.000	0.013	57	1.8	0.000	0.007
Insecticides								
Carbofuran	28	35.7%	0.013	0.080	57	1.8	0.001	0.054
Diazinon	31	51.6%	0.011	0.100	57	5.3	0.001	0.022
Chlorpyrifos	28	25.0%	0.008	0.090	57	1.8	0.000	0.016
Carbaryl	28	14.3%	0.007	0.140	57	8.8	0.002	0.068
Malathion	28	10.7%	0.003	0.040	57	0.0	0.000	0.000
Permethrin	28	3.6%	0.000	0.009	57	1.8	0.002	0.110

[1]Percent of samples which contained a detectable concentration of the pesticide.
Sources: USGS water resources year books, EPA water quality database (STORET), and Nebraska Department of Environmental Quality

used in lower quantities and most degrade in the environment relatively rapidly. For example, the half-life of herbicide atrazine is on the order of several months while the half-life of the insecticide diazinon is less than a day.

In the Missouri River at Omaha, 12 herbicides and five insecticides were detected. All of the pesticides for which reasonable amounts of available data existed (atrazine, cyanazine, simazine, metribuzin, alachlor, and metolachor) exhibited distinct peaks in concentration in the rivers in May and June. These peaks are the result of spring herbicide applications coinciding with heavy spring rains.

Bacterial analyses of the water from the Platte and Missouri rivers indicate contamination by animal wastes, presumably from livestock. Fecal bacteria in the two rivers usually exceed the 200 cells/ml standard for whole-body contact recreation and often exceed the non-contact recreation standard of 2,000 cells/ml (USGS Water Resources data for Nebraska and Iowa from 1979 through 1995). These standards were exceeded at all times of the year, but most commonly in spring and summer.

GROUNDWATER

The proposed project would withdraw water from one of the most important groundwater resources in Nebraska: the Platte River alluvial aquifer. In 1990, approximately 314 billion gallons (963,000 acre-feet) of water were removed from this aquifer. Eight-nine percent of this water was used for irrigation and 9.1 percent was used for public and

private potable water supplies. Seventy percent of Nebraskans get their drinking water from this aquifer (Platte River Watershed Protection Program, no date).

Hydrology

The Platte River alluvial aquifer is composed of poorly sorted, fine to coarse sand, with numerous clay lenses (HDR Engineering, Inc. 1993). The maximum thickness of this material in the project area is approximately 100 feet. The overall direction of water flow within the aquifer parallels the north to south flow of water in the Platte and Elkhorn rivers. Considerable exchange of water occurs between the rivers and the aquifers. At high river stage, water from the rivers recharges the aquifer. At low river stage, water drains from the aquifer into the rivers.

Data from three test wells in the Platte West well field indicated the aquifer has the potential for the development of individual wells with pumping capacities in excess of 3,000 GPM (HDR Engineering, Inc. 1993).

The proposed project would withdraw water from one of the most important groundwater resources in Nebraska: the Platte River alluvial aquifer.

West and south of the Platte West well field in Saunders County, the Platte River aquifer is joined by the Todd Valley aquifer. This aquifer is composed of material similar to the Platte River aquifer (Figure 3-2a) because the Todd Valley is an ancestral floodplain of the Platte River. The groundwater in the Todd Valley aquifer flows from north-northwest to south-southeast into the Platte River aquifer. The Todd Valley aquifer is recharged by precipitation.

In the Omaha area, the Dakota sandstone aquifer is a 71-square mile artesian aquifer (the water in the aquifer is under pressure) in an 80-foot thick layer of sandstone. Recharge to the aquifer in this area is primarily infiltration following precipitation. The recharge rate has been estimated to be five percent of precipitation (Burns & McDonnell Engineering Company, Inc., Inc. 1996). Based on an annual precipitation rate of 30 inches, the recharge rate and, therefore, the sustainable withdrawal rate for the entire aquifer is 5.07 MGD. Current withdrawals from the Dakota Aquifer exceed 5 MGD, which indicates the estimate of recharge rate is low. Additional recharge is probably coming through connections to the Platte River alluvial aquifer (Lawton et al. 1984).

Quality

Water quality in the Dakota aquifer is highly variable and appears to be related to the degree of connection between shallow Quaternary (e.g. alluvial) aquifers (Lawton et al. 1984). In areas of the aquifer with little connection to shallow aquifers, concentrations of dissolved solids exceed 2,000 mg/l with accompanying high levels of sodium, calcium, magnesium, sulfate, boron, and fluoride. In some areas, the levels of boron and fluoride make the water unsuitable for irrigation or drinking (Lawton et al. 1984). In other areas, water quality from the aquifer is acceptable for irrigation and drinking water. Approximately 400 irrigation wells are located in the Dakota aquifer with most of the wells in the central and south-central portion of the aquifer. Approximately 35 municipalities, located mainly along the eastern margin of the aquifer, get their drinking water from the Dakota. In the vicinity of the project area, the Dakota aquifer appears to be well connected to shallow groundwater because the water quality is good with dissolved solids concentrations of 225 to 425 mg/l (Lawton et al. 1984). The District's Millard and Elkhorn wells are located in the Dakota aquifer. Water from these wells is of sufficiently high quality to require only chlorination and blending before distribution.

The Platte River alluvial aquifer is located in a highly agricultural area. The soils over the aquifer are generally quite permeable and the aquifer is in direct connection with the river. Data summarized from several sources indicate water in the aquifer is moderately hard, slightly alkaline, generally low in nitrates, reasonably low in organic carbon and trihalomethane production potential, and contains moderate amounts of iron and manganese (Table 3-5). The most consistent difference between river water and aquifer water is pH, which is slightly lower in the groundwater.

The interchange of water between the Platte River and its alluvial aquifer is indicated by the presence of atrazine in the aquifer. Seven pesticides were detected in groundwater samples from the lower Platte River aquifer collected from 1993 through 1997 (Burns & McDonnell Engineering Company, Inc., Inc. 1999). The most frequently detected pesticide, at 84.3 percent of samples for which it was tested, was atrazine. Other commonly detected pesticides were metolachlor (41.8 percent), cyanazine (28.1 percent), and simazine (16.9 percent). At up to 2.1 µg/l, atrazine had the highest observed concentrations; however, the 3.0 µg/l drinking water quality standard was not exceeded. Other pesticides detected in the groundwater from the lower Platte River valley were metribuzin, prometon, and alachlor. Each of these herbicides was detected in less than 10 percent of samples and at concentration below 0.5 µg/l.

NOISE

The environments potentially affected by the proposed project range from urban to suburban to rural, and have correspondingly different noise conditions. The proposed well field and new treatment plant alternatives are located in rural settings (Figure 3-1). Delivery Point B, at 180th and Harrison streets, is next to an expanding, residential, suburban area. The new Missouri River intake would be located in an urban area. Most of the pipeline routes for the Platte West and Platte North alternatives would pass through rural environments dominated by agriculture. Approximately 0.5 mile of the route between the new treatment plant and Skyline Reservoir (Delivery Point A) and approximately 0.5 mile between the plant and Delivery Point B would pass through suburban areas. The pipeline route from the Missouri River intake would pass through mostly rural and agricultural areas. However, they would also pass through approximately 8.3 miles of suburban environment west and north-east of Omaha; approximately 1.5 miles of urban environment in northeast Omaha; and 0.8 mile of urban environment in the small town of Bennington northwest of Omaha.

Background noise levels increase with increasing human population density. Rural

Table 3-5 Selected Water Quality Parameters for the Platte River Alluvial Aquifer

Parameter	Range of Ambient Concentration[2]	Drinking Water Quality Standards[3]
Hardness	160 to 250 mg/l as $CaCO_3$	none
Alkalinity	135 to 215 mg/l as $CaCO_3$	none
pH	7.5 to 8.3	6.5 to 8.5
Nitrate	0.2 to 11 mg/l N	10 mg/l
Total Organic Carbon	2.0 to 3.5 mg/l	none
THM[1] Potential	65 to 100 µg/l	none
Iron	0.02 to 0.6 mg/l	0.03 mg/l
Manganese	0.01 to 0.7 mg/l	0.05 mg/l

[1]THM = Trihalomethane [2]Source: HDR 1993 [3]Nebraska Administrative Code Title 117, Chapter 4

environments are characterized by low background noise levels. In rural areas, the major noise sources are farm equipment and light vehicular traffic on roadways. Typical daytime and nighttime sound levels in rural areas are approximately 35 and 25 decibels (dBA), respectively. In suburban environments, noise sources are primarily vehicular traffic and small gasoline engines. Typical daytime and nighttime suburban sound levels are 45 and 33 dBA, respectively. Daytime and nighttime sound levels in urban areas, typically 65 and 55 dBA, respectively, are generated primarily by vehicular traffic. These sound levels can be put in perspective by comparison to common sound levels listed in Table 3-6.

As population density increases from a rural to an urban environment, so does the density of sensitive noise receptors. Rural areas are characterized by isolated residences and farmsteads and have densities of sensitive noise receptors of roughly 1 to 10 per square mile. Suburban areas have residential densities of 3 to 4 per acre with an occasional school, business area, church, or health care facility. Urban areas can have residential densities of 6 to 8 per acre and greater concentrations of schools, businesses, churches, and health care facilities.

Table 3-6 Common Sounds and Sound Levels

Source	Sound level (dBA)
Threshold of hearing	5
Quiet rural night	23
Library	32
Quiet suburban nighttime	33
Rural daytime	35
Soft whisper at 2 meters (6.6 feet)	35
Small theater background	40
Suburban daytime	45
Dishwasher in next room	50
Large business office	55
Normal speech at 1 meter (3.3 feet)	65
Gas lawn mower at 30 meters (98 feet)	70
Shouting at 1 meter (3.3 feet)	80
Diesel truck at 15 meters (49 feet)	85
Gas lawn mower at 1 meter (3.3 feet)	95
Jet flyover at 300 meters (980 feet)	105
Rock band at 5 meters (16 feet)	110

BIOLOGICAL RESOURCES

WETLANDS AND SPECIAL AQUATIC SITES

Section 404 of the Clean Water Act (CWA) gives the U.S. Army Corps of Engineers (Corps) the authority to regulate discharges of dredged or fill materials into waters of the United States, which include wetlands, rivers, creeks, ponds, and lakes. For regulatory purposes, wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR 230.3, 33 CFR 328.3). Wetlands are valuable and sensitive areas.

When discussing "waters of the U.S." the Corps uses the Cowardin classification (Cowardin et al. 1979) which classifies wetlands and deep-water habitats. The U.S. Fish and Wildlife Service (FWS) also uses this classification system on the National Wetland Inventory (NWI) maps. The Cowardin classifications relevant to this project includes palustrine, riverine, and lacustrine systems. These systems can be further broken down by class and water regime (see Table 3-7 for complete classifications).

In addition to wetlands, the NWI maps for the project area were also reviewed for other special aquatic sites per 40 CFR 230.40-45. The only other type of special aquatic site found on the NWI maps was vegetated shallows. These sites are identified in the Cowardin classification system as aquatic beds (AB). Aquatic beds (i.e., vegetated shallows) are areas of submerged and floating-leaf, aquatic plants that grow in the

shallow areas of lakes, ponds, rivers, and streams. In this EIS, the term "aquatic beds" is considered equivalent to the special aquatic site type "vegetated shallows" as listed at 40 CFR 230.43.

The majority of wetlands in the project area are located in the floodplains of the Platte and Elkhorn rivers where the relief is generally flat, the groundwater table is high, occasional flooding occurs, and permanent surface waters exist. Riverine wetlands are located on islands in the rivers, on sand bars, and along the banks of the rivers. Occasional wetland flood plain forests and numerous, small, shrubby and emergent, depressional wetlands occur outside of the main river channels. Many of these depressions, particularly along the Elkhorn River, are old river oxbows. Some wetlands in the flood plain exist around the edges of small lakes that were formed when sand and gravel mining pits filled with groundwater.

Wetlands outside of the flood plain are less abundant and consist primarily of fringes along streams and other drainage ways, or as the remnants of old farm ponds.

Well Fields

The location of the proposed Platte West well field straddles the Platte River. Based on NWI maps and selective field verification (HDR Engineering, Inc. 1995, Burns & McDonnell Engineering Company, Inc. 1995a), 222.1 acres of the 2,230 acres occupied by this site (10.0 percent of the well field area) were considered to be wetlands or other waters of the United States (Figure 3-6). Wetlands, as strictly defined by the Corps, occupied approximately 188.6 acres within the Platte West well fields (8.5 percent of the well field area, Table 3-7). Ninety-nine percent of the acres of identified wetlands were classified as palustrine and one percent (1.8 acres) were classified as riverine (Table 3-7). Over 42 percent (94.8 acres) of the wetlands and other waters of the United States were comprised of one wet meadow[6] located in the northern portion of the Saunders County well field (Figure 3-6). This wetland was absent from the NWI maps. Special aquatic sites on the well field property consisted of 5.3 acres of aquatic beds in a stream channel in the Douglas County portion of the well field.

Wetlands provide a wide-variety of beneficial functions such as floodflow alteration, nutrient removal, sediment and toxicant retention, wildlife habitat, and recreation. The functions of representative wetlands on the Platte West well field and within an approximate cone of depression around the well field were evaluated using the Wetland Evaluation Technique (Adamus et al. 1987). In general, the emergent wetlands were considered to function poorly for groundwater recharge because of underlying impervious soils or because channels through the wetlands reduced the retention time of water flowing through wetlands (Burns & McDonnell Engineering Company, Inc. 1995a). These channels also reduce the functioning of the emergent wetlands for floodflow alteration, sediment and toxicant retention, and nutrient removal. A lack of open water reduced the functioning of the emergent wetlands for wildlife. The emergent wetlands, with the exception of those on the Two Rivers Recreation Area, were also considered to function poorly for recreation because of limited public access (Burns & McDonnell Engineering Company, Inc. 1995a).

The shrub/scrub wetlands evaluated were considered to function well for sediment stabilization. Their importance was further enhanced because shrub/scrub wetlands are relatively uncommon in the area. The forested wetlands were considered to function well for floodflow alteration, sediment and nutrient retention, and wildlife habitat

[6]Cowardin classification PEMY.

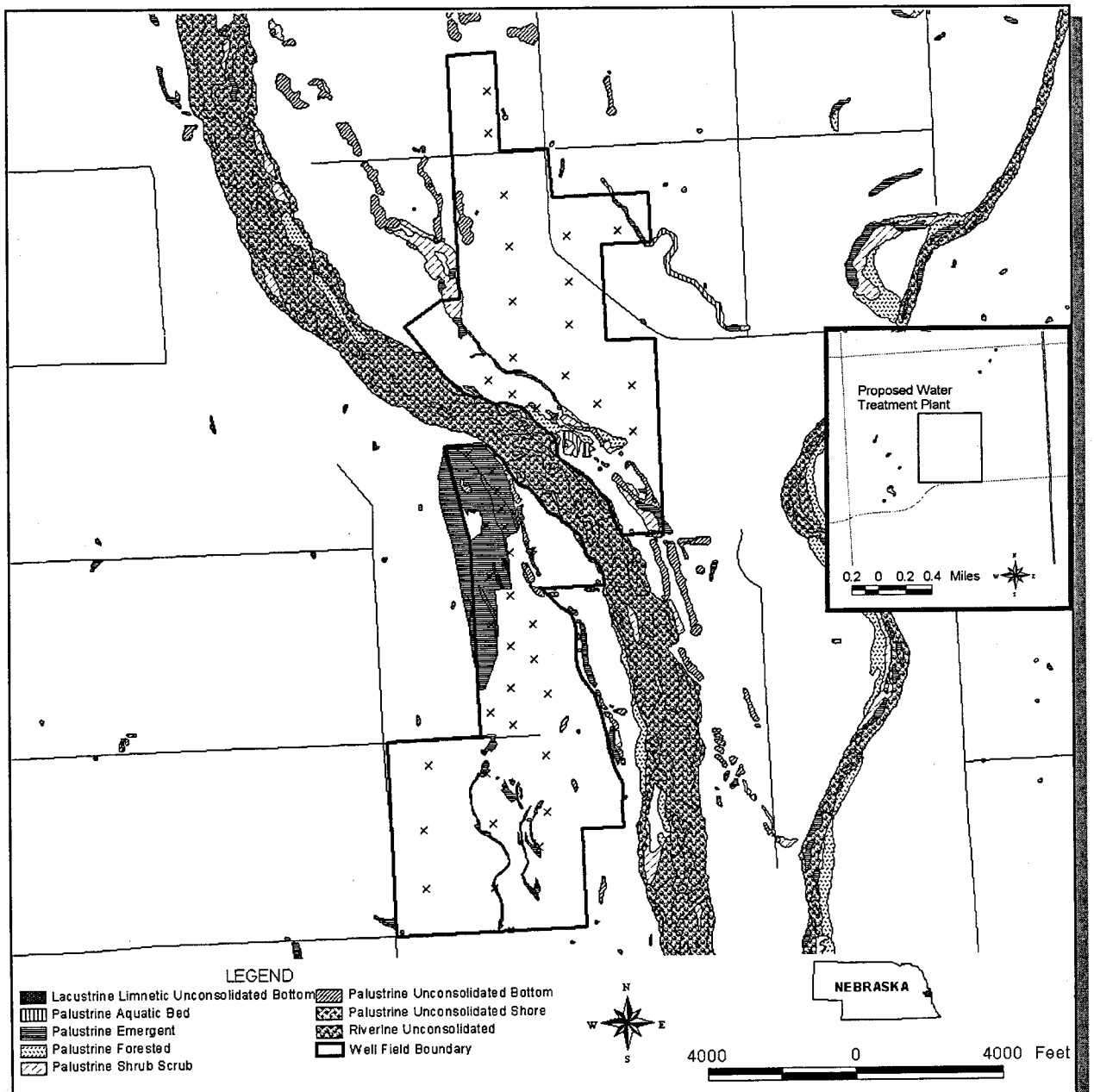


Figure 3-6 Wetlands in the Platte West Well Field and Treatment Plant Site

(Burns & McDonnell Engineering Company, Inc. 1995a).

Based solely on NWI maps, 92.3 acres of the 575-acre Platte North well field (16.1 percent of the well field area) were considered wetlands and other United States waters (Table 3-7). Part of this site is a 77.4-acre, permanent island in the Platte River (Figure 3-7). The entire island is classified as containing waters of the United States, with 90 percent categorized as wetland forest. The mainland portion of the well field contains numerous small wetlands with a combined area of 14.9 acres. All of these wetlands are classified as palustrine and most are unconsolidated bottom or emergent (Table 3-7). For the entire site, 79.0 acres

Table 3-7 Cowardin Classified Waters and Wetlands in the Well Fields

Classification[1]	Acres			
	Platte West		Platte North	Platte South
	all	DC only[4]		
Palustrine				
PABFx[2] (Aquatic bed, semipermanently flooded, excavated)	5.3	5.3	0.3	0.0
PEMY[3] (Emergent, saturated/semipermanent/seasonal)	98.7	3.9	0.0	0.0
PEMC[3] (Emergent, seasonally flooded)	28.7	11.0	5.2	20.3
PEMCx[3] (Emergent, seasonally flooded, excavated)	4.3	0.6	0.3	0.0
PEMF[3] (Emergent, semipermanently flooded)	13.6	13.6	0.5	0.0
PEMFx[3] (Emergent, semipermanently flooded, excavated)	1.4	0.0	0.4	0.0
PEMA[3] (Emergent, temporarily flooded)	0.0	0.0	0.2	4.4
PFOA[3] (Forested, temporarily flooded)	13.1	13.0	69.4	0.0
PFOC[3] (Forested ,seasonally flooded)	0.0	0.0	0.0	0.0
PSSA[3] (Scrub-shrub, temporarily flooded)	28.8	26.3	3.0	0.0
PUBF (Unconsolidated bottom, semipermanently flooded)	0.1	0.1	1.0	0.0
PUBFx (Unconsolidated bottom, semipermanently flooded, excavated)	26.3	19.3	7.0	0.0
PUBHx (Unconsolidated bottom, permanently flooded, excavated)	0.0	0.0	0.0	0.0
Riverine				
R2UBA (Lower perennial, unconsolidated bottom, temporarily flooded)	0.0	0.0	1.0	0.0
R2UBH (Lower perennial, unconsolidated bottom, permanently flooded)	0.0	0.0	4.0	0.0
R4SBF (Intermittent, streambed, semipermanently flooded)	1.8	1.8	0.0	0.0
Total Wetlands	**188.6**	**68.4**	**79.0**	**24.7**
Total Other Special Aquatic Sites (Vegetated Shallows)	**5.3**	**5.3**	**0.3**	**0.0**
Total Other Waters of the U.S.[5]	**28.2**	**21.2**	**13.0**	**0.0**
Total Water of the U.S.	**222.1**	**94.9**	**92.3**	**24.7**

[1]Cowardin wetland classifications (Cowardin et al. 1979. [2]Special aquatic site equivalent to vegetated shallows at 40 CFR 230.43. [3]Wetland as defined by the U.S. Army Corps of Engineers. [4]DC only = Douglas County portion of well field. [5]Includes unconsolidated bottom and riverine classifications.

(13.3 percent) are wetlands and 0.3 acre are special aquatic sites (aquatic beds).

The Platte South well field contains 24.73 acres of water of the United States of which all are considered to be wetlands (Table 3-7). Most of these wetlands are located in a former channel of the Platte River that separates the main portion of the well field from the treatment plant site (Figure 3-8).

Treatment Plant Sites

According to NWI maps, no wetlands exist on either of the proposed sites for the new water treatment plant (Figures 3-6 and 3-9) or the Platte South treatment plant expansion. In addition, no wetlands are shown on the bank of the Missouri River in the vicinity of the proposed new water intake north of the I-680 bridge.

Pipeline Routes

The pipelines used to connect the proposed water sources, the treatment plants, and distribution points would range from 48 to 72 inches in diameter. The pipelines would be placed primarily adjacent to existing road rights-of-way. To quantify the amount of wetlands along the pipeline routes, the pipeline corridor width was set using a construction easement width of 100 feet. All stream crossings which did not have an NWI wetland shown were assumed, based on spot observations, to have a 10-foot wide, fringe wetland area that would be considered a special aquatic site. Stream NWI maps were assumed to have wetland fringes of 20, 40, or 60 feet in crossings that had linear designations on total width for small, medium, and large sized streams, respectively. These width estimates are conservative because the

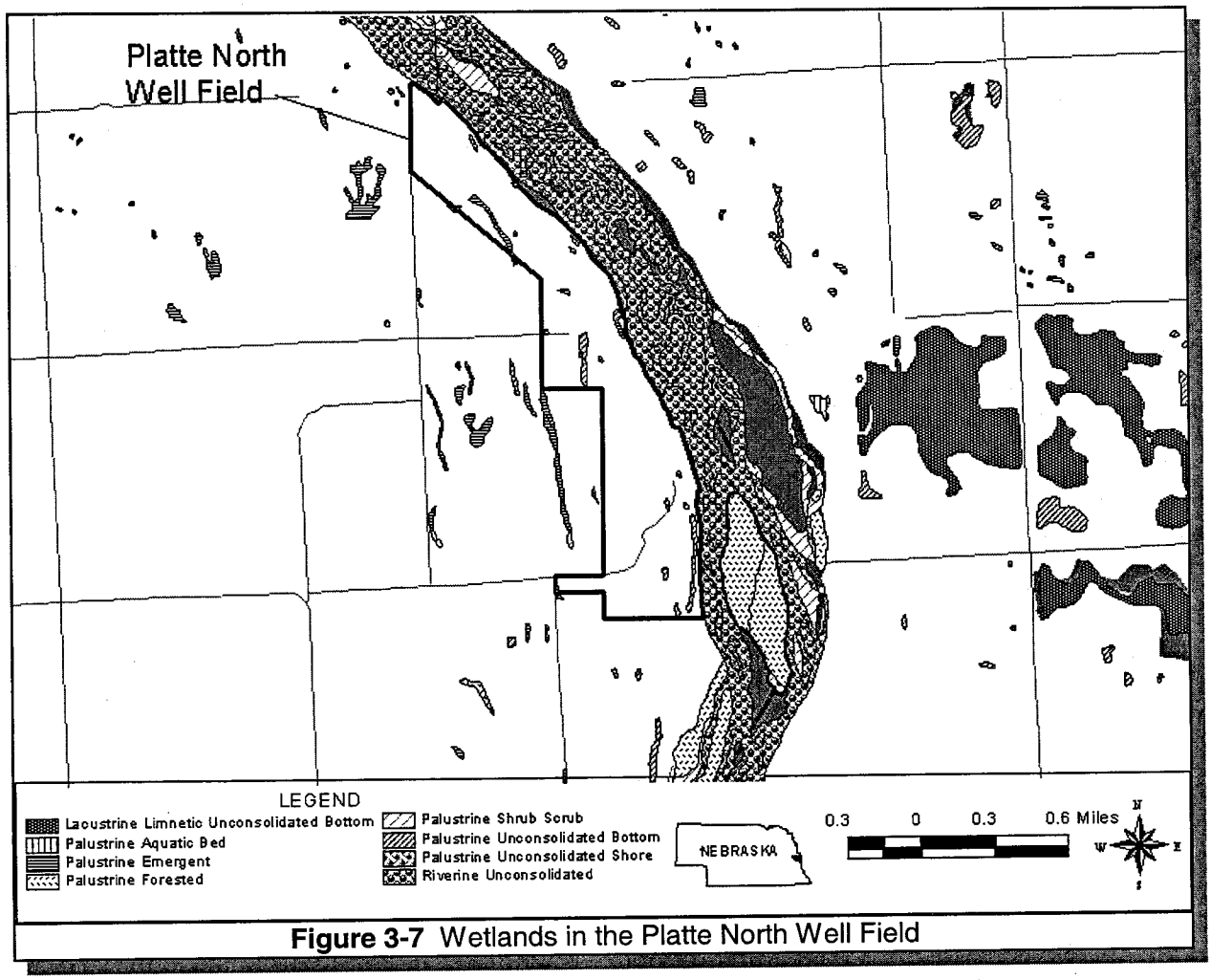


Figure 3-7 Wetlands in the Platte North Well Field

typical incised streams in eastern Nebraska are likely to have a wetland fringe of only 2 to 6 feet wide (1 to 3 feet on each bank) or no fringe at all.

The water transmission pipelines associated with the Platte West alternative would pass through eight areas with NWI designated wetlands. The wastewater pipeline for the new water treatment plant would be routed down a valley from the plant site to the Elkhorn River in a manner that would avoid wetlands except for approximately 0.05 acre of wetland on the bank of the Elkhorn River. The total amount of United States waters crossed by pipelines for this alternative was estimated to be approximately 1.5 acres of which 0.6 acre was wetlands (Table 3-8).

The pipelines for the Platte North alternative would pass through the same wetlands as the Platte West alternative plus three riverine wetlands along the Platte River and four wetlands along streams. The total area of waters of the United States crossed by pipelines for this alternative was estimated to be 6.0 acres of which 2.6 acres were wetlands.

The water transmission pipelines for the Missouri River portion of the Three-Way Combination alternative would pass through a large wetland at the north end of Glenn Cunningham Lake and 25 wetlands associated with streams. The total area of waters of the United States in this corridor was estimated to be 6.1 acres of which 1.7

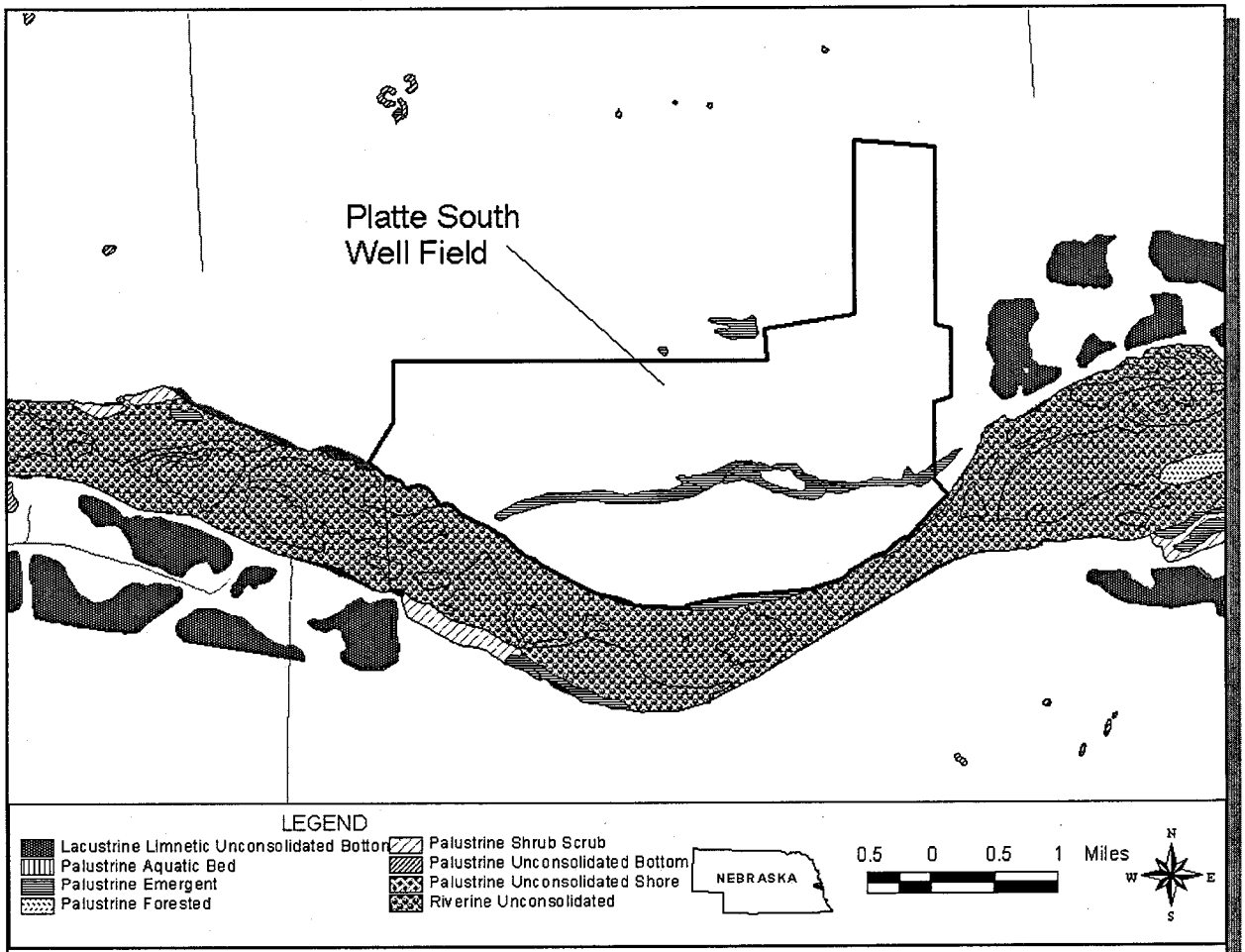


Figure 3-8 Wetlands in the Platte South Well Field

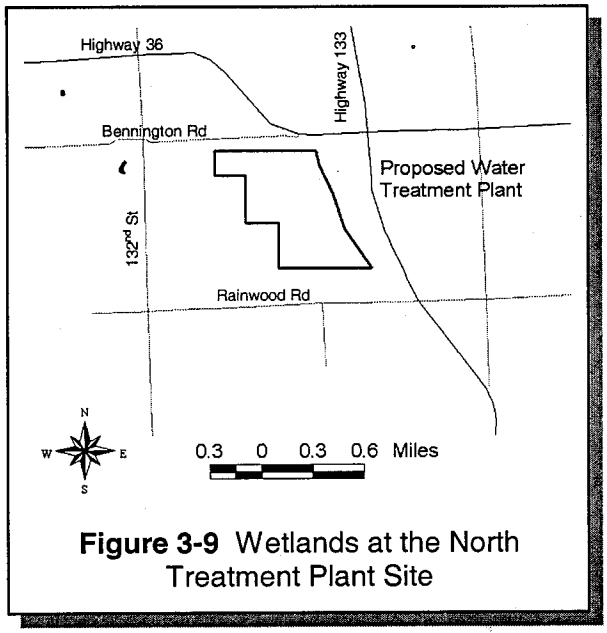


Figure 3-9 Wetlands at the North Treatment Plant Site

acres were wetlands and 3.4 acres were a special aquatic site (Table 3-8).

Pipeline routes for the Platte South plus Platte West alternatives would contain 1.1 acres of wetlands and 1.5 acres of other waters of the United States (Table 3-8).

Wetland Summary

The total amount of waters of the United States in each alternative was estimated to range from 104.4 acres for the Platte South plus Platte West DC alternative to 249.4 acres for the Platte South plus Platte West alternative (Table 3-8). Actual wetland acres would be determined by standard wetland delineation techniques should a Section 404 permit be issued for this project.

Table 3-8 Acres of Wetlands, Special Aquatic Sites, and Other Waters of the United States in the Water Supply Alternatives

Alternative Component Wetland Type	Alternative Platte West	Platte North	Platte South + Platte West	Platte South + Platte West DC	Three-Way Combination
Well Fields					
Wetlands	188.6	148.0	213.3	76.6	76.6
Other Special Aquatic Sites	5.3	0.3	5.3	5.3	5.3
Total Waters of the U.S.	222.1	161.0	246.8	102.1	102.1
Pipelines					
Wetlands	0.6	2.6	1.1	1.1	1.7
Other Special Aquatic Sites	0.0	0.0	0.0	0.0	3.4
Total Waters of the U.S.	1.5	6.0	2.3	2.3	6.1
Total					
Wetlands	189.2	150.6	214.4	77.7	78.3
Other Special Aquatic Sites	5.3	0.3	5.3	5.3	8.7
Total Waters of the U.S.	223.6	167.0	249.1	104.4	108.2

VEGETATION

Pre-settlement vegetation of eastern Nebraska consisted of lowland forests, some upland forests and upland grasslands. Lowland forests existed mostly along stream and river bottoms and consisted primarily of cottonwood (*Populus deltoides*), willow (*Salix* sp.), red and white elm (*Ulmus* sp.), green ash (*Fraxinus pennsylvanica*), box elder (*Acer negundo*), hackberry (*Celtis occidentalis)*, sycamore (Platanus occidentalis) and black walnut (*Juglans nigra)* (Weaver 1965). Today, remnants of lowland forest habitat exist in thin bands along stream banks and as occasional small stands of uncut forest that has not been converted to cropland or pasture.

Historically, upland forests occurred primarily on slopes along streams and rivers and in ravines. Upland forests consisted of several dominant tree species including red oak (*Quercus rubra)*, linden (*Tilia* sp.), black oak (*Quercus velutina*), shellbark hickory (*Carya laciniosa)*, dogwood (*Cornus sp.)*, serviceberry (*Amelanchier arborea)*, burr oak (*Quercus macrocarpa*), and butternut (*Juglans cinerea).* These species usually occurred in particular associations including the red oak/linden community, black oak/shellbark community, and burr oak/butternut community (Weaver 1965). Remnants of these communities can still be found in eastern Nebraska.

Tallgrass prairie historically dominated much of the landscape in eastern Nebraska (Weaver 1965, Brown 1985). The dominant grass species included big bluestem (*Andropogon gerardi*), little bluestem (*Andropogon scoparius* or *Schizachyrium scoparium)*, Indian grass (*Sorghastrum nutans)*, gama grass (*Tripsacum dactyloides)*, switch grass (*Panicum virgatum)*, and prairie cordgrass (*Spartina pectinata).* The wide expanses of prairie were maintained by natural wildfires and grazing by large herbivores such as buffalo.

Today, the vegetation of east-central Nebraska is dominated by row crops and pasture. Row crops are primarily corn and soybean. For pasture, the native warm-season grasses have largely been replaced by cool-season grasses such as brome and fescue.

WILDLIFE

Because of its location in the central United States and on the boundary between the eastern deciduous forest and the Great Plains, the project area contains a wide

variety of wildlife. The following discussion lists the more common species found in aquatic and terrestrial habitats.

Mammals

The variety of native mammals which live in eastern Nebraska would be expected to occur in the project area. Mammals that use stream, river, and wetland habitats include muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*) and mink (*Mustela vison*). Native mammals found in grasslands of eastern Nebraska consist of species such as the badger (*Taxidea taxus*), thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), and deer mouse (*Peromyscus maniculatus*). Species that use both grassland and forest communities to varying degrees (edge species) include the coyote (*Canis latrans*), raccoon (*Procyon lotor),* eastern cottontail rabbit (*Sylvilagus floridanus)*, fox squirrel (*Sciurus niger*), eastern chipmunk (*Tamias striatus*), striped skunk (*Mephitis mephitis*), little brown myotis (*Myotis lucifigus*), big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), red fox (*Vulpes vulpes*), and white-tailed deer *(Odocoileus virginianus*) (Jones 1964, Burt and Grossenheider 1976).

Birds

A variety of birds breed in eastern Nebraska and could occur in the project area. Birds that can be found in stream, river, and wetland habitats include the great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), cattle egret (*Bubulcus ibis*), killdeer (*Charadrius vociferus*), red-winged blackbird (*Agelaius phoeniceus*), snow goose (*Chen caerulescens*), Canada goose (*Branta canadensis*), green-winged teal (*Anas crecca*), mallard (*Anas platyrhynchos*), northern shoveler (*Anas clypeata*), and blue-winged teal (*Anas discors*). Species that are common in grasslands and adjacent wooded edges include the American goldfinch (*Carduelis tristis*), American kestrel (*Falco sparverius*), northern harrier (*Circus cyaneus*), bobwhite quail (*Colinus virginianus*), eastern bluebird (*Sialia sialis*), dickcissel (*Spiza americana*), red-tailed hawk (*Buteo jamaicensis*), morning dove (*Zenaida macroura*), eastern kingbird (*Tyrannus tyrannus*), northern cardinal (*Cardinalis cardinalis*), American robin (*Turdus migratorius*), tree sparrow (*Spizella arborea*), eastern and western meadowlark (*Sturnella magna* and *Sturnella neglecta*), and ringneck pheasant (*Phasianus colchicus*). Birds that are common in forest communities include the red-headed woodpecker (*Melanerpes erythrocephalus*), common flicker (*Colaptes auratus*), downy woodpecker (*Picoides pubescens*), Arcadian flycatcher (*Empidonax virescens*), rose-breasted grosbeak (*Pheucticus ludovicianus*) American redstart (*Setophaga ruticilla*), and red-eyed vireo (*Vireo olivaceus*) (Peterson 1980, Bray et al. 1986).

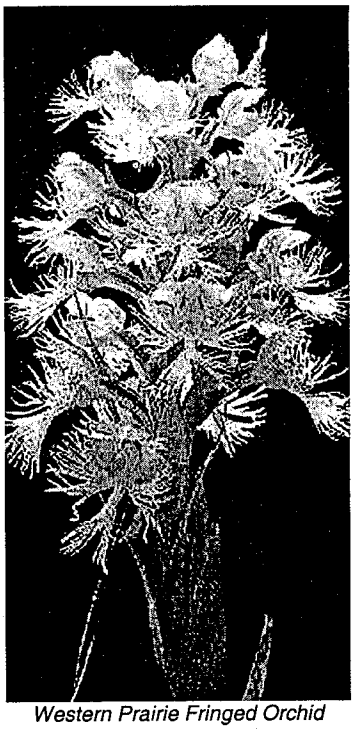
Reptiles and Amphibians

Numerous species of amphibians and reptiles live in eastern Nebraska and could occur on lands within the water supply alternatives. Common native amphibians of eastern Nebraska that use wetland and forested habitat include the tiger salamander (*Ambystoma tigrinum*), Woodhouse's and American toads (*Bufo woodhousei* and *Bufo americanus*), great plains toad (*Bufo cognatus*), northern leopard frog (*Rana pipiens*), plains leopard frog (*Rana blairi*), western chorus frog (*Pseudacris triseriata*), spring peeper (*Pseudacris crucifer*), gray tree frog (*Hyla chrysocelis/versicolor*), Blanchard's cricket frog (*Acris crepitans*), and bullfrog (*Rana catesbeiana*). Common native reptiles of eastern Nebraska found in streams, rivers and wetlands include the northern water snake (*Nerodia sipedon*), snapping turtle (*Chelydra serpentina*), western painted turtle (*Chrysemys picta*), spiny softshell turtle (*Apalone spinifera*), and smooth softshell turtle (*Apalone mutica*). Reptiles that can be found in grasslands and woodlands include the ornate box turtle (*Terrapene ornata*), six-lined racerunner (*Cnemidophorus sexlineatus*), prairie skink (*Eumeces*

septentrionalis), great plains skink (*Eumeces obsoletus*), garter snake (*Thamnophis sirtalis*), plains garter snake (*Thamnophis radix*), brown snake (*Storeria dekayi*), fox snake (*Elaphe vulpina*), prairie kingsnake (*Lampropeltis calligaster*), eastern milksnake (*Lampropeltis triangulum*), bullsnake (*Pituophis melanoleucus*), ringneck snake (*Diadophus punctatus*), and eastern yellowbelly racer (*Coluber constrictor*) (Conant and Collins 1991).

Fish

The principal habitats for fish in the study area are streams in a wide range of sizes from the many branches of Papillion Creek, up to the Missouri River, which is one of the largest rivers in the United States. Species that are characteristic of the larger streams such as the Missouri, Platte, and Elkhorn rivers are gizzard shad (*Dorsoma cepedianum*), river carpsucker (*Carpiodes cyprinus*), shorthead redhorse (*Moxostoma macrolepidotum*), common carp (*Cyprinus carpio*), channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*), longnose gar (*Lepisosteus osseus*), shortnose gar *(Lepisosteus platostomus*), and river shiner (*Notropis blennius*). More typical of smaller streams are brassy minnow (*Hybognathus hankinsoni*), plains minnow (*Hybognathus placitus*), red shiner (*Cyprinella lutrensis*), bluntnose minnow (*Pimephales notatus*), fathead minnow (*Pimephales promelas*), creek chub (*Semotilus atromaculatus*), mosquitofish (*Gambusia affinis*), central stoneroller (*Campostoma anomalum*), redfin shiner (*Lythrurus umbratilis*), plains killifish (*Fundulus kansae*), largemouth bass (*Micropterus salmoides*), green sunfish (*Lepomis cyanellus*), orangespotted sunfish (*Lepomis humilis*), and orangethroat darter *(Etheostoma spectabile*) (Lee et al. 1980, Page and Burr 1991, Cross and Collins 1995).



Western Prairie Fringed Orchid

THREATENED OR ENDANGERED SPECIES

Seven federally-listed threatened, endangered, or candidate species, were identified by FWS in 1996 as potentially being impacted by the project:

- western prairie fringed orchid
- American burying beetle
- American pallid sturgeon
- sturgeon chub
- bald eagle
- peregrine falcon
- interior least tern
- piping plover

Since then, FWS removed the American peregrine falcon from the threatened and endangered species list in 1999 (64 FR 46541-46558) and determined in 2001 that the sturgeon chub did not warrant listing (66 FR 19910-19914). As such, these two species are not discussed in this section of the EIS.

Western Prairie Fringed Orchid

The western prairie fringed orchid (*Platanthera praeclara*) is a federally threatened species (53 FR 39621). Its habitat is primarily the wetter areas of unplowed, calcareous prairies and sedge meadows. Although tallgrass prairie and sedge meadows appear to be the preferred habitat, western prairie fringed orchids have been found in disturbed communities including construction material borrow areas, abandoned fields, and along roadways (U.S. Fish and Wildlife Service 1995).

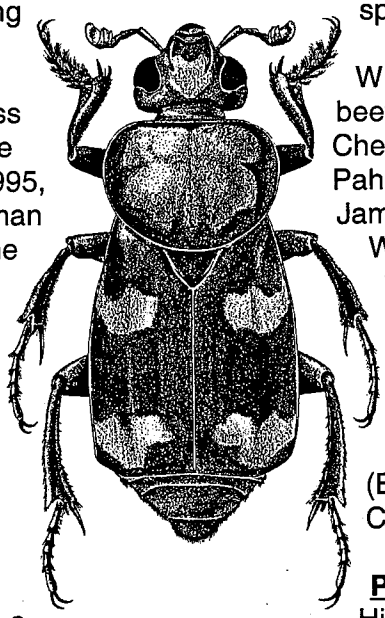
The western prairie fringed orchid historically occurred throughout central North America (Lobeck 1957, Brownell 1984). In the United

States, the orchid is known historically from a total of 81 counties in North Dakota, South Dakota, Minnesota, Iowa, Nebraska, Kansas, Missouri, and Oklahoma. Habitat for the western prairie fringed orchid has been greatly reduced because of the conversion of prairies and meadows to agricultural production and the suppression of natural fires. Currently, the species is believed to be extirpated from South Dakota and Oklahoma, and has been significantly reduced in its area of occurrence in Iowa, Kansas, Missouri, and Nebraska. In eastern Nebraska, the western prairie fringed orchid has been found in a variety of habitats including wet-mesic prairies and sedge meadows along the floodplain of the Platte River, upland loess prairies and hay meadows, mesic draws of tallgrass prairies, and virgin tallgrass prairie (U.S. Fish and Wildlife Service 1995, Bowles and Duxbury 1986, Freeman and Brooks 1989). A survey of the Platte West well field in June 1995 did not find any western prairie fringed orchids (Burns & McDonnell Engineering Company, Inc. 1995b).

American Burying Beetle

The American burying beetle (*Nicrophorus americanus*) is a member of the family Silphidae. This family uses dead animals as a food source. This beetle once ranged throughout the entire eastern United States and portions of extreme southeastern Canada (Anderson and Peck, 1985). Currently, it is known to exist in only Rhode Island, Arkansas, Oklahoma, and Nebraska (Nebraska Game and Park Commission 1995). Because of the dramatic decline of this species and its probable extinction throughout much of its historic range, the American burying beetle has been listed as federally endangered (54 FR 29652).

A variety of habitats have been suggested as suitable for the American burying beetle including riparian woodlands, mixed agricultural land, and grasslands (Ratcliffe and Jameson 1992, Raithel 1991, Jameson and Ratcliffe 1989). Recent studies suggest American burying beetles prefer well developed upland forest with low shrub growth, followed by grasslands (Creighton et al. 1993, Lomolino et al. 1994). Habitat loss (Anderson and Peck 1985, Nebraska Game and Parks Commision 1995), reduction in appropriate sized carrion species (U.S. Fish and Wildlife Service 1991), competition from mammalian scavengers (Lomolino et al. 1994), and insecticides (Kozol et al. 1988) appear to be the most likely reasons for this species' decline.



American Burying Beetle

Within Nebraska, American burying beetles are known to occur in Cherry, Dawson, Lincoln, and Keya Paha counties (Ratcliffe and Jameson 1992, U.S. Fish and Wildlife Service 1991). All of these collection sites are over 150 miles from the project area. A survey of the Platte West well field site conducted from June 26 to July 1, 1995, did not find any American burying beetles (Burns & McDonnell Engineering Company, Inc. 1995c).

Pallid Sturgeon

Historic catch records suggest the pallid sturgeon (*Scaphirhynchus albus*) was probably never very common (U.S. Fish and Wildlife Service 1993). Currently, they are only rarely captured and the species may be close to extinction. As a result, the species was listed as federally endangered (55 FR 36641) in 1990.

Pallid sturgeons occur within the mainstem of the Mississippi River downstream from its confluence with the Missouri River, the mainstem of the Missouri River as far upstream as Fort Benton, Montana, and the lower stretches of several major tributaries to these rivers including the Platte River. Their

adaptations to life in large, swift, turbid rivers include dorsoventral flattening, which allows the fish to stabilize, move, and lie along the bottom in swift waters, and barbels near the mouth which are used to locate food items in waters with little or no visibility (Bramblett 1996).



Pallid Sturgeon

Since 1979, over 30 pallid sturgeons have been collected in Nebraska downstream of Gavins Point Dam. Over 40 percent of these captures have been from the lower Platte River or the Missouri River within 6 miles of the mouth of the Platte River. This high number of pallid sturgeon captured in a relatively small area indicates the area around the mouth of the Platte River is important to the pallid sturgeon. This area has been designated Recovery Area 4 by FWS (U.S. Fish and Wildlife Service 1993).

Five confirmed catches and several probable catches of pallid sturgeon have been recorded from the Platte River between 1979 and 2000 (Nebraska Game and Parks Commission 1997, Nebraska Game and Parks Commission 2000). The farthest upstream catch was approximately 150 yards downstream of the mouth of the Elkhorn River. These records also include a possible catch of a pallid sturgeon from the Elkhorn River approximately 7 miles upstream from the Highway 36 bridge or 23.5 miles upstream from the Platte River. Several individuals have been taken from the Missouri River near the mouth of the Platte. These captures occurred primarily in May, coinciding with high flows. Spawning locations for the pallid sturgeon are unknown. A larval sturgeon was collected from the lower Platte River in 1998 that could be a pallid sturgeon. Positive identification of the species is pending genetic analysis (Broham 1999).

In the spring of 1998, 480 juvenile and 84 adult, hatchery-reared pallid sturgeons were released into the Platte River at the Two Rivers State Recreation Area. Ten of the adults were tagged with radio transmitters and five of these fish also were tagged with sonic transmitters. As of early June 1998, eight of the 10 fish could still be located. The tagged fish had moved downstream but were still in the vicinity of the recreation area. Preliminary measurements of habitat indicated that the tagged sturgeons prefer sandy areas of the river bottom where depressions or drop-offs create eddies (Peters 1998). More adult fish tagged with transmitters were released in 1999. Some of these fish moved into the Missouri River in the fall and returned to the Platte River in the spring.



Bald Eagle

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) occurs throughout North America and once maintained breeding populations in Canada, Alaska, and 45 of the lower 48 states. For a variety of reasons including hunting, habitat loss, pesticides (Grier et al. 1983),

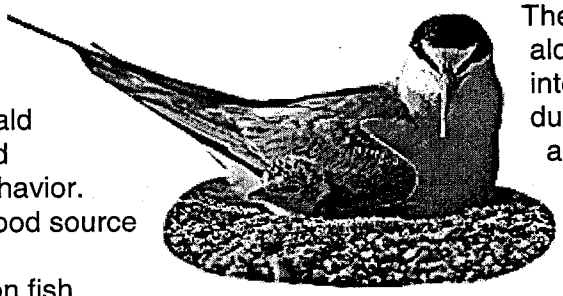
human disturbance (Murphy 1965, Retfalvi 1965, Juenemann 1973, Weekes 1974, Grubb 1976, Stalmaster and Newman 1978, Russell 1980, Skagen 1980, Knight and Knight 1984, Smith 1988, Anthony and Isaacs 1989), and heavy metals (Grier et al. 1983), bald eagle populations declined significantly during the 19th and 20th centuries. This decline prompted the species to be listed as federally endangered in 1978. Through research, conservation, management, and protection, the species population and breeding range is increasing. These improvements led to the species being down-listed to threatened in 1995 (60 FR 36000). Since then the bald eagle has continued to thrive. On 16 July 1999, FWS proposed the bald eagle be removed from the list of threatened and endangered species (64 FR 128). This de-listing, however, has not yet occurred.

Habitat requirements for bald eagles revolve around food preference and nesting behavior. The bald eagle's primary food source is fish (Grier et al. 1983). Because of their reliance on fish, nesting occurs close to large water bodies including lakes, rivers, and oceans where large trees with strong branches or rock cliffs are present. The majority of North American bald eagles migrate to coastal or more southerly climates during the winter. The extent of migration depends partly on the severity of the winter. Bald eagles will move as far south as necessary to find open-water feeding areas. Wintering bald eagles are found throughout the United States but are most abundant in the Midwest and West.

Bald eagles are regular migratory visitors to Nebraska and are known to nest along the Platte River. One active nest occurs approximately four miles upstream of the Platte River well field. However, none are known to nest within the Platte West well field or for over 20 miles downstream of the project area (Burns & McDonnell Engineering Company, Inc. 1995d).

Interior Least Tern

The interior least tern (*Sterna antillarum athalassos*) is federally-listed as endangered (50 FR 21784). This designation applies to populations in Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Missouri, Montana, Nebraska, New Mexico, North Dakota, South Dakota, Oklahoma, and Tennessee; Mississippi River populations in Louisiana and Mississippi; and populations over 80 kilometers (50 miles) from the Gulf Coast in Texas (FWS 1990). Population size of the interior least tern is estimated at approximately 5,400 individuals (Appendix E).

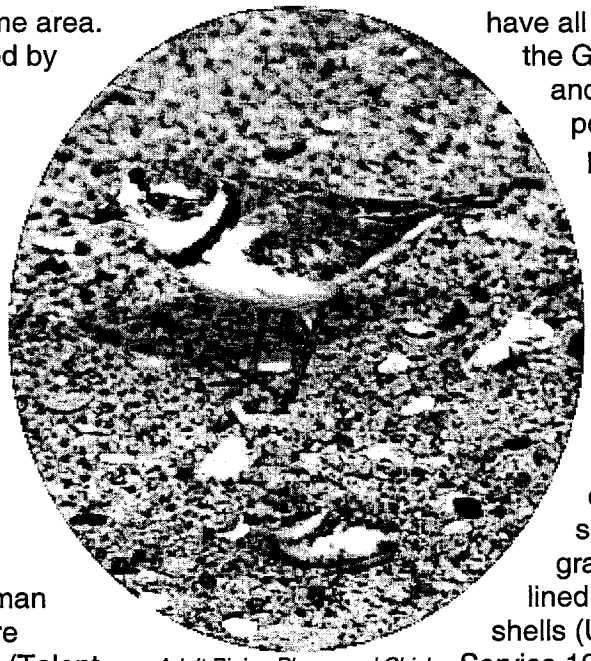


Adult Interior Least Tern and Chick

The interior least tern breeds along large rivers within the interior of the United States during the summer months and retreats to more southerly areas during the winter. Historically, breeding habitat included the Mississippi and Red rivers, the Rio Grande, and their major tributaries. Breeding and nesting range included the area from Texas north to Montana and from eastern Colorado and New Mexico eastward to southern Indiana. Currently, the interior least tern is still known to nest in all these areas where river banks are relatively unaltered by human activities. Nests are constructed on unvegetated or sparsely vegetated sand or gravel bars within wide river channels, along salt flats, or on artificial habitats such as sand pits (Fish and Wildlife Service 1990, Dryer and Dryer 1985, Haddon and Knight 1983, Kirsch 1987,1988,1989, Larkins 1984, Morris 1980). Nests are shallow, inconspicuous depressions in the substrate, scratched out by the adults and located out in the open. Terns are colonial nesters and several nests

may be located in the same area. The sandbar habitats used by least terns for nesting are ephemeral and nests, eggs, and chicks are highly susceptible to loss because of high water.

The interior least tern feeds primarily on small fish which it plucks from the surface of large rivers or other water bodies. Crustaceans, insects, mollusks, and aquatic worms are also occasionally eaten (Whitman 1988). Foraging areas are usually near nesting sites (Talent and Hill 1985).



Adult Piping Plover and Chick

Nebraska supports one of the largest populations of breeding least terns in the United States (U.S. Fish and Wildlife Service 1990). A large percentage of this population utilizes habitat along the entire Platte River. Terns nest along the Platte River from the mouth at the Missouri River upstream to its confluence with the North Platte River (Nebraska Game and Parks Commission 1987) and to a lesser extent along the Elkhorn River. Because of changes in the hydrology and character of the Platte River over the past decades, a large percentage of interior least terns along the Platte River use sand pits as substitutes for sandbars for nesting sites.

Piping Plover

Piping plover (*Charadrius melodus*) populations have declined dramatically since the early 1900s as a result of hunting and habitat loss (U.S. Fish and Wildlife Service 1994). Piping plovers continue to breed throughout the Great Plains region of Canada and the United States, extending as far north as Manitoba and Alberta and as far south as Nebraska. Breeding populations, however, have all but disappeared from the Great Lakes region (Haig and Plissmer 1993). The population of piping plovers breeding on the Great Plains is federally-listed as threatened.

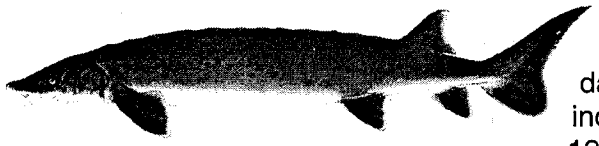
Piping plovers are shorebirds that inhabit sand beaches and sandbars. Nests, constructed on bare sand or gravel, consist of shallow depressions scratched in the sand or gravel and are frequently lined with small pebbles or shells (U.S. Fish and Wildlife Service 1994). Piping plovers feed on a variety of aquatic invertebrates. Foraging generally occurs within a few inches either side of the water's edge and prey include worms, insects, crustaceans, mollusks, beetles, and grasshoppers (Bent 1929, Lingle 1988).

Piping plovers are found in Nebraska during the breeding season (May through August) on approximately 241 miles of the Platte River from Lexington, Nebraska, downstream to the Missouri River. Piping plovers occurring on the Platte River are close nesting associates to least terns (Lingle 1988, Faanes 1983, Lackey 1994). Like the tern, piping plovers along the Platte River have shifted from using sandbar habitat along the river to sand pits because of the highly variable nature of the river.

On 12 June 2001, FWS proposed designating the Platte River from Codaz, Nebraska to the Missouri River as critical habitat for the piping plover (66 FR 31760). See Appendix E for additional information on this species.

SPECIES OF SPECIAL CONCERN

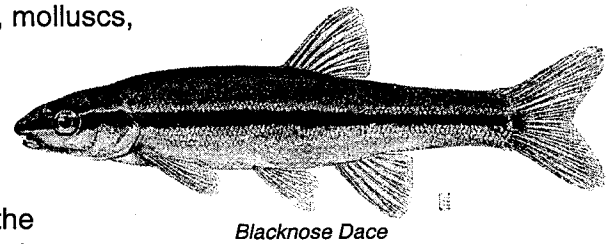
Four species that could occur within the vicinity of the project area are listed by Nebraska Game and Parks Commission as threatened or endangered in Nebraska. The threatened lake sturgeon (*Acipenser fulvescens*) and blacknose dace (*Rhinichthys atratulus*) and the endangered sturgeon chub (*Macrhybopsis gelida*) and river otter (*Lutra canadensis*) are known to occur or could occur in the Platte River or tributaries of the Platte River near the Platte North and Platte West well fields.



Lake Sturgeon

Lake Sturgeon

The lake sturgeon would most likely occur in the main channel of the Platte River because it prefers larger rivers with a depth of 16 to 30 feet. Food for the lake sturgeon includes aquatic insects, molluscs, crayfish, and small fish which it gleans from the river bottom. Spawning occurs in the late spring on gravel-bottomed streams or in the shallows of lakes. Lake sturgeon are exceptionally long-lived fish - 80 years or more - and can grow to over 9 feet in length and weigh over 200 pounds (Cross and Collins 1995). Lake sturgeon are most common in areas around and hydraulically connected to the Great Lakes and Canadian Shield. In Nebraska, the lake sturgeon is at the southwestern edge of its range. Specimens have been collected from the Missouri River and the lower Platte River (Lee et al. 1980).



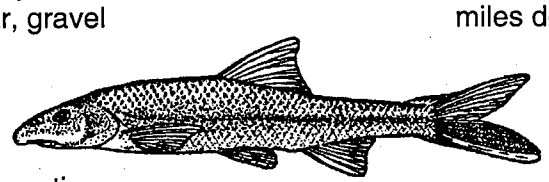
Blacknose Dace

Blacknose Dace

The blacknose dace typically occurs in the cooler waters of small, clear, gravel bottomed tributaries of the Platte River. This dace breeds in May and early June and is an ambush predator of small, drifting, aquatic insects. The adult length of the blacknose dace is approximately 4 inches (Cross and Collins 1995). This fish is distributed throughout the northeast United States west to the Dakotas and in the Appalachian mountains. In Nebraska, the blacknose dace is at the south-western edge of its range. This fish has been collected from headwater tributaries of the Elkhorn River in northeast Nebraska, tributaries of the Missouri River in extreme southeast Nebraska, and Ponca Creek in Douglas County (Lee et al. 1980, Twede 1998).

Sturgeon Chub

Sturgeon chubs inhabit large, turbid rivers that have a combination sand, gravel, and rock substrate (Werdon 1993). They have been found in 14 states throughout the Missouri River drainage and the lower Mississippi River (Werdon 1993). While the species was once wide-ranging, it may never have been abundant throughout its range (Werdon 1993). The sturgeon chub once occurred throughout Nebraska. It was found in the portion of the Missouri River adjacent to the state as well as in the Platte, Republican, Loup, and Elkhorn rivers and Bazile Creek (Bailey and Allum 1962, Evermann and Cox 1896). Presently, the species is known from only four locations, one within the Missouri River, and three in the Platte River. Of the Platte River populations, one is located upstream of the Platte West well field in Dodge County (Peters et al. 1989). The other two populations are located approximately 15 miles downstream of the project area in Sarpy County (University of Nebraska State Museum 1992). Since 1995, NGPC staff



Sturgeon Chub

have collected 25 sturgeon chubs in the Missouri River.

In 1993, FWS declared the sturgeon chub was a candidate for the federal threatened and endangered species list. At about this time, fisheries biologist modified the gear they used to sample minnow populations in large rivers. The use of shoreline seining was augmented with bottom trawling. Collections from bottom trawls indicated the sturgeon chub was much more abundant than previously thought. Based on these new data, FWS concluded in 2001 that the sturgeon chub did not warrant listing under the Endangered Species Act (66 FR 19910-19914). The sturgeon chub in Nebraska waters, however, is still considered rare. Nebraska added the sturgeon chub its endangered species list in May 2000 (Schnieder 2001).

River Otter

River otters prefer streams and rivers with forested banks where they construct burrows under tree roots, rocky ledges, and fallen trees. They also occupy old burrows of beavers and muskrats (Schwartz and Schwartz 1981). The primary food for the river otter is fish and crayfish. Once common throughout most of the United States and Canada, the river otter was extirpated from Nebraska by the late 1910s because of trapping, water pollution, and habitat destruction (Jones 1964). River otters are still common in Alaska, most of Canada, the Pacific Northwest, the Great Lakes states and along the coasts of the Atlantic Ocean and the Gulf of Mexico. Between August 1986 and March 1991, river otters were reintroduced into the central Platte River, tributaries of the Loup River, the upper Elkhorn River, and the Niobrara and North Platte rivers (Nebraska Game and Parks Commission no date). Indications are the reintroduction program has been successful (Nebraska Game and Parks Commission no date).



River Otter

SOCIOECONOMICS

A growing population and an expanding economy are the factors ultimately responsible for the increasing demand for water in the Omaha area and the need to expand water production capacity.

POPULATION

The combined 1997 population of Douglas and Sarpy counties was projected to be approximately 560,000 (Wallace 1997) of which about 79 percent was in Douglas County. By the year 2030, the combined population of the two counties is projected to be approximately 651,000. The annual population growth rate is predicted to decline from approximately 0.6 percent in the late 1990s to approximately 0.4 percent in the late 2020s. The population of Sarpy County is expected to grow more rapidly than Douglas County. Sarpy County's attractiveness as a quiet suburban area for those who work in Omaha and Douglas County is expected to result in higher net immigration, a higher proportion of adults in prime child bearing age, higher birth rates, and relatively low mortality rates (Bureau of Business Research 1995). By 2030, Sarpy County is projected to account for approximately 24 percent of the two-county population (Wallace 1994). In addition to a shift in the geographic distribution of the two-county population to the south, population growth is also expected to be more rapid in the suburbs west of Omaha than in the city. As a result, the District expects to expand its service area to encompass the towns of King Lake, Valley, and Gretna by the year 2030 (Figure 1-2).

PROPERTY VALUES

The Platte West alternative would have a 1,190-acre well field in Saunders County, a 1,040-acre well field in Douglas County, and a 158-acre treatment plant site in Douglas County. These properties and those surrounding them are essentially all agricultural lands.

The State Assessor's Office for Saunders County provided examples of recent sales of rural properties in the vicinity of the Platte West and Platte North well fields (Romshek 2001). The prices of land in the vicinity of the Platte West field ranged from $1,250 to $2,038 per acre and averaged $1,529 per acre. Based on the average per acre price, the current market value for the 1,190-acre Saunders County portion of the Platte West well field would be approximately $1,820,000. Land prices in the vicinity of the Platte North well field ranged from $909 to $4,861 per acre and average $2,988 per acre. The 575-acre Platte North well field, therefore, would have a current market value of approximately $1,730,000.

The Douglas County Assessor's Office indicated the assessed value of the well field property is $2,000 per acre. Based on assessed value being 80 percent of market value, the market value for the 1,040-acre well field in Douglas County would be $2,600,000. The 158-acre treatment plant is closer to the growing edge of the metropolitan area and in an area where land values are increasing because of the potential for development. The assessed value for the treatment plant property is $12,000 per acre. The market value for the site, therefore, would be approximately $2,370,000.

The 170-acre treatment plant site in Douglas County, which would be used in the Three-Way Combination alternative, has a per acre assessed value of $6,000 and a total market valued of $1,275,000. No new land would be purchased for the Platte South portion of the combination alternatives.

All of the alternatives except for Platte West and Platte North would require a 25-million gallon reservoir and pump station at Delivery Point B. This infrastructure would require approximately 15 acres of land. Delivery Point B is in a rapidly growing, suburban residential area. According to the Douglas County Assessor's Office, land was purchased by a developer in early 1999 at the location of Delivery Point B at a cost of $21,700 per acre. Using $25,000 per acre as an estimate of current market value, the 15-acre Delivery Point B site would be valued at approximately $375,000.

A characteristic of agricultural land which can affect it's productivity and value is the presence of subirrigation. Land is considered to be subirrigated when groundwater is naturally present in the root zone of crops and within 10 feet of the surface (Nebraska Administrative Code 46-657(14)). Row crops, such as corn and soybeans, generally benefit from subirrigation when summer depth to groundwater is approximately 6 feet or less. Alfalfa can benefit from groundwater up to 10 feet below the surface. Most prairie grasses have root depths of 1.5 to 6 feet but praire cord grass, switchgrass and many prairie forbs can have roots that can reach as deep as 13 feet (Weaver 1954).

A depth to groundwater map was made for the area around each of the well fields using depth to groundwater data reported to the Nebraska Department of Water Resources for each registered well in the state. This database contained over 118,000 georeferenced depth to groundwater points from wells completed and registered between 1931 and 1998. These data were supplemented with depth to groundwater measurements from monitoring wells operated by the District and the Lower Platte North Natural Resources District (LPNNRD).

Wells with depth-to-groundwater greater than 10 feet that were surrounded by wells with depth-to-groundwater less than 10 feet were deleted from the data set as outliers. Wells in upland areas with depth-to-groundwater values of zero feet were also deleted from the data set. In addition, the banks of the Elkhorn and Platte rivers were considered to have a depth to groundwater of zero feet. The number of depth to groundwater data points in the project areas did not appear sufficient to allow the data to be selected by season or years and still produce meaningful maps. For consistency, therefore, the multiple readings for each of the District's and LPNNRD's monitoring wells were averaged. Because historic and seasonal trends were not considered, the resulting maps are considered to represent average depth to groundwater conditions. From these data, a triangulated irregular network was created in a geographic information system from which depth to groundwater contours were generated.

In the vicinity of the Platte West, Platte North, and Platte South well fields, the alluvial aquifers are close to the surface and substantial areas of land are considered to be subirrigated (Figure 3-10).

To estimate the relative value of subirrigation, subirrigated land was considered equal in value to irrigated land. The special use values for agricultural lands vary with soil class and presence or absence of irrigation. In the vicinity of the Saunders County portion of the Platte West well field, the special use value of irrigated cropland in 2001 was $50 to $300 per acre more than dry cropland (Table

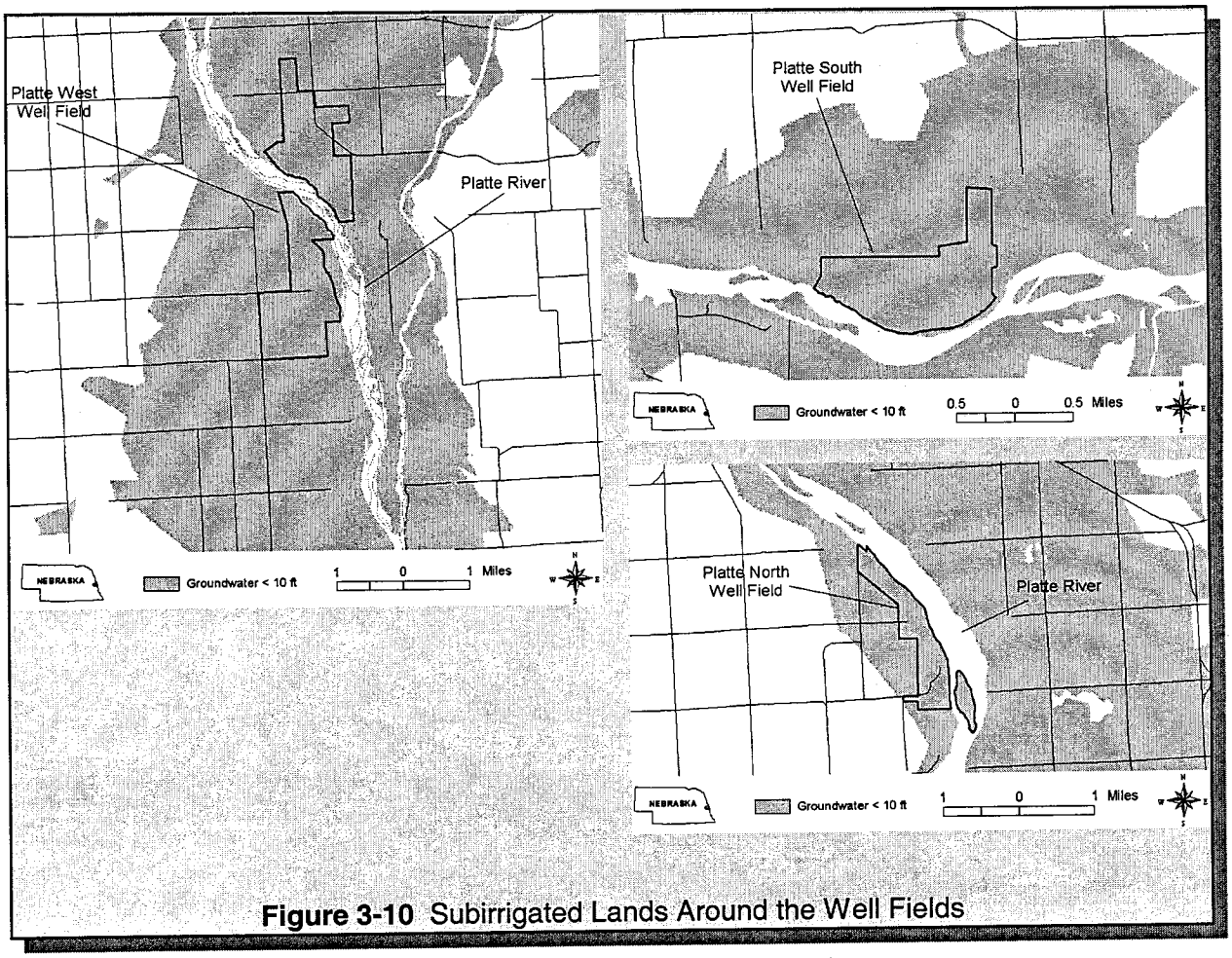


Figure 3-10 Subirrigated Lands Around the Well Fields

3-9). In Douglas County, the special use value of irrigated land was $50 to $680 more per acre in 2001 (Table 3-9). Assessed values are suppose to represent 80 percent of market value. The market values of subirrigation in Saunders and Douglas counties are estimated to be up to $375 and $850 per acre, respectively, more than dry land (Table 3-9).

COUNTY PROPERTY TAX REVENUES

Because the District is exempt from paying local property taxes, land transactions involving the District would affect property tax receipts. The six alternatives represent possible changes in the ownership of land in Douglas and Saunders counties by the purchase or sale of land by the District. Although the Platte South portion of the combination alternatives is in Sarpy County, no lands would be purchased or sold in Sarpy County as a result of implementing any of the alternatives.

For the Platte West facilities, the District would have to purchase more land only for the new treatment plant in Douglas County. The District has owned the well field properties in Douglas and Saunders counties for approximately 10 years. All of the land for the Platte North alternative would have to be purchased by the District.

Property taxes are based on assessed value, which for land in Douglas and Saunders counties is typically 80 percent of market value. Tax rates (levies) are expressed as dollars per $100 of assessed valuation. The total tax levy on a piece of property is composed of several separate levies for political divisions within the county (e.g., school, fire, and sanitary districts), county-wide concerns (e.g., libraries and community colleges) and multiple county political subdivision (i.e., natural resources districts). The largest portion of 2000 total property tax levies was for school districts. For the potentially affected properties in Douglas County, 73.9 to 76.0 percent of the levies were for the local school district. In Saunders County, the proportion was 59.0 to 73.8 percent.

Total tax levies in 2000 among the potentially affected school districts only varied from about 1.07 to 1.27 dollars per $100 assessed valuation (Table 3-10). Total 2000 property tax collections, however, ranged widely among the various political subdivisions. For example, Douglas County collected over 20 times more property taxes in 2000 than Saunders County (Table 3-10). Within Douglas County school districts potentially affected by this project, the Millard School District collected about 65 times more property tax revenue than the Bennington School District (Table 3-10). The differences are a function of land use. Commercial

Table 3-9 2001 Special Use Values for Cropland in Saunders and Douglas Counties

Irrigated		Dry		Difference	
Soil Class	**$/acre[1]**	**Soil Class**	**$/acre[1]**	**Assessed**	**Market[2]**
Saunders County					
1A1	1,440	1D1	1,345	95	119
1A	1,420	1D	1,230	190	238
2A1	1,280	2D1	1,230	50	63
2A	1,240	2D	1,015	225	281
3A1	1,080	3D1	840	240	300
3A	960	3D	660	300	375
4A	720	4D	550	170	213
Douglas County					
1A1	1,800	1D1	1,200	600	750
1A	1,800	1D	1,120	680	850
2A1	1,610	2D1	1,050	560	700
2A	1,420	2D	995	425	531
3A1	1,270	3D1	925	345	431
3A	1,120	3D	875	245	206
4A1	970	4D1	820	150	188
4A	820	4D	750	70	88

[1]Value for agriculture only as adjusted by the Agricultural and Horticultural Land Valuation Board

[2]Assumes assessed value is 80 percent of market value

Table 3-10 Property Tax Levies and Collections in Affected, Major Taxing Subdivisions

County School District	Alternative Components	Property Tax Levy[1]		2000[2] Collections
		District	Total	
Douglas				$465,021,809
Bennington	Treatment plant for the Three-Way Combination alternative	1.12649	1.50085	$1,566,264
Elkhorn	Treatment plant for all alternatives	1.25228	1.64761	$12,344,235
Millard	Delivery Point B	1.26599	1.71705	$69,756,779
Valley	Well field for all alternatives	1.17780	1.53919	$2,755,371
Saunders				$20,658,187
Ashland	Well field for Platte West and Platte South plus Platte West alternatives	1.22217	1.65685	$1,388,157
Yutan	Well field for Platte West, Platte North, and Platte South plus Platte West alternatives	1.06919	1.81221	$1,100,569

[1]Dollars per $100 assessed valuation in 2000.
[2]Budgeted property tax revenues for fiscal year 2000.

and residential properties are considered to have a much higher market value than agricultural land. All other factors being equal, therefore, school districts that are primarily urban and suburban generate more property taxes than districts that are predominantly rural.

CULTURAL RESOURCES[7]

From a cultural and paleontological perspective, the project is located in the lower Platte River basin which covers an area from approximately Fremont, Nebraska to the mouth of the Platte River. This area has produced a rich record of human occupation spanning the past 10,000 years. Native Americans of all major traditions associated with the Central Plains, from paleoindians to historic-era Pawnee and Omaha, have occupied this area.

The Paleoindian period is considered to have lasted from 12,000 through 8,000 years before the present (BP). The paleoindians probably had a nomadic lifestyle in small mobile bands and subsisted primarily on large game. Habitation of east-central Nebraska by paleoindians is documented by surface and mixed content finds consisting primarily of projectile points. Paleoindians likely used this area of Nebraska as frequently as other areas but the evidence is buried under loess and alluvial deposits.

The Archaic tradition occurred from 8,000 to 2,000 years BP. These people were nomadic, wide-spectrum hunter/gatherers. The Early Archaic phase, 8,000 to 6,000 years BP, is chiefly documented in eastern Nebraska by the Logan Creek site and in western Iowa by the Cherokee Sewer site. Finds from the Middle Archaic, 6,000 to 5,000 years BP, are not prominent in eastern Nebraska. The Late Archaic tradition, 5,000 to 2,000 years BP, appeared to flourish along the Missouri River and its tributaries. Eight Late Archaic sites have been found in or near the project area.

The periods of Native American culture after the Archaic traditions cover a shift from a nomadic to a more sedentary lifestyle. The Woodland Tradition, 2,000 to 1,000 years BP, was characterized by limited population aggregates with small villages and camps. Hunting and gathering was still a major way

[7]This section is a summary of a detailed report on cultural resources prepared by Bozell (1996).

of life but some horticulture may have been practiced. This period saw the introduction of the bow and arrow and ceramic pots. Woodland tradition sites are common in east-central Nebraska and nine distinct Woodland phases have been identified in the lower Platte River valley. The Central Plains Tradition, 1,000 to 600 years BP, was characterized by small villages, isolated farmsteads, substantial rectangular houses, and horticulture to supplement large mammal resources. In the project area, the Central Plains Tradition is represented by the Nebraska Phase. Numerous Nebraska phase sites have been recorded and excavated in the project area.

The project area was occupied by the Oto and Missouria tribes from the mid-1600s to the early 1800s. The Omaha tribe entered northeast Nebraska in the early 1700s. They resided in the immediate project area until 1854 when they were moved to a reservation. The final Native American inhabitants in the project area were the Pawnee. They occupied two villages along the Platte River in Saunders County from 1850 to 1859.

The Euroamerican presence in east-central Nebraska began in the early 1700s with trade expeditions. The first permanent settlements were established in the early 1800s for traders and missionaries. Euroamerican activity and settlement in the area accelerated in the 1840s with the opening of the Oregon Trail and statehood for Missouri and Iowa.

The area within five miles of the Platte and Elkhorn rivers from Fremont to the Missouri River has 218 previously identified archaeological components. The *National Register of Historic Places* (NRHP) contained 121 sites in Cass, Dodge, Douglas, Sarpy, and Saunders counties. Only 13 of these sites are archaeological, the remainder are primarily architectural and 60 percent of those are in the City of Omaha. Of the archaeological sites, five are prehistoric, six are historic Native American, one is an early Euroamerican trading post, and one is a mix of prehistoric and Euroamerican components.

Archaeology surveys were conducted for the facilities associated with the Platte West alternative (Bozell 1996, 1998). Ten previously unknown archaeological sites, two isolated finds, and a historic trail were identified. Two previously known archaeological sites were also found and evaluated. Of the newly identified sites and finds, four were of Native American origin and nine were Euroamerican. One site potentially eligible for the NRHP was located on the southwest corner of the treatment plant site. This site consisted of an extensive, dense scatter of Euroamerican debris in a plowed field. Historical records indicated this site was the homestead of John Crist which was originally claimed in 1865. Subsequent study, including excavation, of the site suggested the site dated to the 1880s or 1890s. Because the site had been severely eroded and was not associated with a person or event of particular historical significance, the site was considered ineligible for inclusion on NRHP (Bozell and Carlson 1998).

The Mt. Auburn Cemetery is located on the south side of Q Street two miles east of the proposed Platte West treatment plant site. The dates on head stones indicated the use of the cemetery began in the 1880s, although one difficult to read stone appears to date to 1868 (Bozell 1998). This site was not considered to be eligible for the NRHP.

For the other water supply alternatives, significant cultural resources are likely to occur along the transmission pipeline route from the new Missouri River intake for several miles west; in areas north of Skyline Reservoir on the eastern bluffs of the Elkhorn River floodplain; and where the routes cross streams (Bozell 2000). The site of the proposed new treatment plant north of Omaha could contain significant cultural

resources because of the site's proximity to Thomas Creek (Bozell 2000).

VISUAL RESOURCES

The various components of the water supply alternatives are located in places with greatly differing visual characteristics. The Platte West, Platte North, and Platte South well fields are located on the Platte River floodplain. This flat to gently rolling area is in a rural setting consisting of row crops, pasture, and lowland forests. Adjacent to each well field is the Platte River with its braided channel, sand bars, and forested islands. The two locations for the proposed new water treatment plant are in upland rural areas. These areas have visual aspects consisting of rolling hills and long vistas overlooking patchworks of agricultural and forested lands. The two delivery points west of Omaha are located in areas of gently rolling hills next to suburban neighborhoods. The area around Delivery Point B is actively being developed for housing.

The new intake for the Three-Way Combination alternative would be located in the shadow of a highway bridge spanning the Missouri River next to an urban residential and light industrial area. Mature trees are present in both of these areas. Unlike the Platte River, the Missouri River is deep and swift flowing with a steep bluff defining the edge of its flood plain.

RECREATIONAL RESOURCES

Several recreation facilities are located near proposed water production facilities. The Two Rivers State Recreation Area is located immediately west of the Douglas County portion of the Platte West well field. This 964-acre area has a variety of facilities and recreational opportunities including playgrounds, a beach, six lakes, fishing, camping, and a park office. The proposed water pipeline from the Missouri River would pass through the northern half of Papio Dam Site 11 Park, which surrounds Lake Cunningham, and through the western end of the Edward Zorinsky Recreation Area around Zorinsky Lake. These lakes have a capacity of 3,262 and 3,470 acre-feet, respectively.

No recreational facilities or public access lands are located on the sites for the proposed new water treatment plants.

HAZARDOUS MATERIALS

The databases of the EPA were searched for hazardous materials sites and Superfund cleanup sites in Douglas and Sarpy counties. A total of 21 Large Quantity Generators and 276 Small Quantity Generators of hazardous waste were found within the two counties. Fifteen potential Superfund sites were found in Douglas County and two were found in Sarpy County. None of the Superfund sites are currently on the National Priority List. Sixteen of the sites are located within the greater metropolitan area of Omaha and Bellevue and are at least two miles from any of the proposed water production facilities. The one exception is the Elkhorn Communication Facility (EPA Facility ID NE3571990040) located on Rainwood Road just east of 216th Street in northwest Douglas County (Figure 3-1). The proposed alignment for the pipeline connecting the Missouri River portion of the Three-Way Combination alternative to Skyline Reservoir follows 216th Street and crosses Rainwood Road adjacent to the Elkhorn Communication Facility.

An active Superfund site is located approximately three miles west of the Saunders County portion of the Platte West well field. Over 10 square miles of contaminated groundwater exists around the former Mead Ammunition Plant (Figure 3-1). The contaminants are trichloro-ethylene (a solvent) and RDX (an explosive). This plume has been moving southeast down the Todd Valley aquifer. The leading edge of the plume has reached the Platte River aquifer and has begun to move south. The Corps has remediated all of the surface

contamination and is currently installing a groundwater remediation system which will consist of 13 extraction wells and a treatment plant. The extraction wells will be located along the leading edge of the plume. When completed, the system will be operated at 5.76 MGD for the next 100 years. The extracted water will be treated to exceed Safe Drinking Water Act standards and will be discharged into Clear Creek or used to supplement rural water district supplies in Saunders County (Gilbertson 1996, Graff 1998).

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES AND MITIGATION

The purpose of Chapter 4 is to explain the scientific and analytical basis for the comparison of the water supply alternatives, including the no federal action alternative, and to disclose the impacts of each alternative and describe how the unavoidable adverse impacts to the resources described in Chapter 3 are proposed to be mitigated. The natural resources evaluated are:

- land features (general setting, geology, soils, land use, flood plains and floodways)
- water quantity (groundwater drawdown, flow depletions, ice jams)
- water quality
- noise
- wetlands
- vegetation
- wildlife
- threatened or endangered species
- species of special concern

The human resources examined are:

- population
- property values
- farm income and cost of water
- property tax revenues
- cultural resources
- visual resources
- recreational resources
- hazardous materials

Impacts related to subirrigation are discussed in the wetlands, property values, farm income, and property tax sections.

For each resource, the method for determining impacts, the criteria for evaluating the significance of the impacts, the predicted impacts for action and no federal action alternatives, and mitigation measures are described. Mitigation consists of three general types: avoidance of impacts, minimization of impacts, and compensation (replacement). A discussion of all three types, as applicable, is provided for each resource area. Mitigation measures are presented as brief summaries. A more detailed conceptual mitigation plan for the applicant's preferred alternative is included as Appendix D.

The purpose of Chapter 4 is to disclose the impacts of the water supply alternatives and describe how the unavoidable adverse impacts would be mitigated.

The water supply alternatives evaluated consist of five alternatives requiring federal action (action alternatives), specifically a Section 404 permit from the U.S. Army Corps of Engineers (Corps):

- Platte West
- Platte North
- Platte South plus Platte West
- Platte South plus Platte West DC
- Three-Way Combination

and the no federal action alternative. For most resource categories, the impacts of each alternative are discussed separately. If similar impacts are predicted within a particular resource area for each of the action alternatives, then the action alternatives are discussed as a single group.

In summary, significant impacts are expected on the following resources:

- groundwater
- wetlands
- threatened or endangered species
- property values
- farm income

(see Table 2-9 at the end of Chapter 2 for a concise, quantitative summary).

LAND FEATURES

GENERAL SETTING

An area's general setting is a function of its geographic location, topography, climate, and land cover. Location cannot be changed by human activity, although the selection of alternatives in different locations could result in different types and levels of impact to the general setting. Climate can only be changed by human activity on a massive scale. Topography and physiography can be altered or modified by extensive human activities conducted on a local scale.

Site visits and best professional judgement were used to gauge the effects the water supply alternatives would have on location, topography, climate, and land cover. Impacts to the general setting of the project area would be significant if a dramatic change in the overall character of the area resulted.

Action Alternatives

Construction and operation of any of the action alternatives would alter a specific portion of the existing project area through the construction of a well field, treatment plant, and delivery system. Changes to the general setting of the local area would be limited to the lands temporarily disturbed or permanently modified by construction. No changes in climatic conditions would result.

Construction of any of the alternatives would not create new stream channels, alter watershed boundaries, or change the direction of flow in existing streams. No significant changes in area topography would result.

No major changes in land cover are expected as a result of constructing a new well field. Some changes in land cover would occur from constructing service roads in the new well field and other changes in land use. Construction of a new treatment plant would convert about 160 acres of agricultural land to buildings, treatment ponds, and lawns. The great majority of the wells fields, 575 to 2,600 acres depending on alternative, would not be disturbed (see the section on Vegetation, page 4-45 for more details on impacts to land cover).

No significant changes in local area climate, topography, or land cover would occur as a result of construction of any of the water supply alternatives. Therefore, the overall impacts on the general setting would not be significant.

No Federal Action

The no federal action options a through f would not change the climate, topography, or land cover of the local area; therefore, this alternative would not significantly impact the general setting of the area. The no federal action option g is very similar to the Platte West alternative in terms of major components and layout. The impact of option g on the general setting would likewise be insignificant.

Mitigation

No mitigation is proposed for the minor impacts to the general setting of the project area resulting from the five action or no federal action alternatives.

GEOLOGY

Rock formations, soil materials (overburden), and their physical properties combine to form the geology of an area. Excavation of overburden and rock could temporarily alter the local geology in the areas of pipeline construction, road construction, and well placement. Localized, minor permanent changes in the geology of the area could result from the construction of the treatment plant foundations and basins.

Site visits and best professional judgement were used to gauge the effects the water supply projects would have on the geology of the area. Impacts to the geology of the project area would be significant if natural geologic processes were altered.

Action Alternatives

Minor changes in surface geology would occur at new or upgraded treatment facilities because of excavation for foundations and treatment basins. Some additional areas of surface geology would be disturbed for road and pipeline construction. These impacts would be relatively superficial and would not affect natural geologic processes or local area geology. Overall, no significant impacts to geology would result from any of the water supply alternatives.

No Federal Action

One of the No federal action options would pump water out of the Dakota Sandstone aquifer during high-demand periods and pump treated water into the aquifer for storage during low demand periods. Repeated removal and replenishing of water could dissolve some of the limestone matrix in the aquifer. This weakening of the limestone and removal of water could result in voids that could collapse and form sinkholes.

Because of its similarity to the Platte West alternative, no significant impacts on geological resources are expected from No federal action option g.

Mitigation

No mitigation is proposed for impacts to geology that may result from the development of one of the water supply alternatives.

SOILS

The potential impacts to soils resulting from the construction of a well field, water treatment plant, and associated pipelines include the disturbance and mixing of soil profiles, erosion, and removal from agricultural use. Soil mixing would most likely occur during pipeline construction because soils would be removed then replaced. Erosion could occur in areas where vegetative cover has been temporarily removed for construction or were water is discharged during well tests. Traffic from construction vehicles could further erode and compact soils. Impacts to prime farmland, which are considered important agricultural lands, could also occur.

Published soil surveys and prime farmland listings for Douglas, Sarpy, and Saunders counties were consulted for soils information (Soil Conservation Service [now Natural Resources Conservation Service] 1965, 1975). Impacts on soils would be significant if county-wide important soil resources are eliminated.

Platte West

Construction of the Platte West well field would temporarily disturb 73 acres of soils during construction of the wells and collector pipelines. The service roads and well heads would, for the duration of their existence, cover 30 acres. Approximately 53 percent of the soils impacted on the Platte West well field would be prime farmlands (Table 4-1). At the Platte West treatment plant site, 158 acres, including 112 acres of prime farmland, would be removed from production for the life of the project. Construction of the transmission pipeline for this alternative would temporarily disturb 133 acres of which 34 acres would be prime farmland. A total of 201 acres of prime farmland soils would be affected by the Platte West alternative. If improperly discharged, water from well testing could cause locally severe erosion. Such erosion is unlikely, however, because the Metropolitan Utilities District (District) would have to obtain and comply with a National pollutant Discharge Elimination System (NPDES) permit (see the Mitigation section on page 4-5).

Platte North

The Platte North well field would temporarily disturb 39 acres during construction of the wells and collector pipelines. The service roads and well heads would cover 18 acres for the duration of the project. Approximately 6.6 percent of the soils impacted on the

Table 4-1 Acres of Soils Impacted by Construction of the Action Alternatives

	Well Field		Treatment Plant		Pipeline		Total	
	Prime Farmland	Total	Prime Farmland	Total	Prime Farmland	Total	Prime Farmland	Total
Platte West								
Disturbed	39	73	0	0	34	133	73	206
Lost[1]	16	30	112	158	0	0	128	188
Total impacted	55	103	112	158	34	154	201	417
Platte North								
Disturbed	3	39	0	0	86	206	89	245
Lost	1	18	112	158	0	0	113	176
Total impacted	4	57	112	158	86	229	202	444
Platte South + Platte West[2]								
Disturbed	59	93	0	0	156	388	215	481
Lost	17	32	126	178	0	0	143	210
Total impacted	76	125	126	178	156	388	358	691
Platte South + Platte West DC[2]								
Disturbed	40	68	0	0	156	388	196	456
Lost	11	19	126	178	0	0	137	197
Total impacted	51	87	126	178	156	388	333	653
Three-Way Combination								
Disturbed	40	68	0	0	314	703	354	771
Lost	11	19	180	338	0	0	191	357
Total impacted	51	87	180	338	314	703	545	1,128
No Federal Action Option G								
Disturbed	39	73	0	0	34	133	73	206
Lost	16	30	112	158	0	0	128	188
Total impacted	55	103	112	158	34	154	202	417

[1]"Lost" means unavailable for agricultural use for the life of the project. [2]Does not include soils impacted by the existing Platte South facilities.

Platte North well field would be prime farmlands (Table 4-1). At the treatment plant site, 158 acres, including 112 acres of prime farmland, would be removed from production for the life of the project. Construction of the transmission pipeline for this alternative would temporarily disturb 206 acres of which 86 acres would be prime farmland. A total of 202 acres of prime farmland soils would be affected by the Platte North alternative. Erosion from well testing is also a possibility.

Platte South plus Platte West

The Platte South plus Platte West alternative would combine the impacts to soils of the Platte West alternative with the impacts from the transmission pipeline from the Platte South water treatment plant to Delivery Point B, modifications to the Platte South well field, and expansion of the Platte South water treatment plant. An estimated 481 acres of soils would be temporarily disturbed of which 215 acres would be prime farmland (Table 4-1). Approximately 210 acres of soils would be permanently converted to project use including 143 acres of prime farmland (Table 4-1).

Platte South plus Platte West DC

The impacts to soils from the Platte South plus Platte West DC alternative are slightly less than the Platte South plus Platte West alternative because only the Douglas County portion of the Platte West well field would be used in the former alternative (Table 4-1).

Three-Way Combination

The Three-Way Combination alternative would impact soils at three treatment plant sites, two well fields, and over 60 miles of pipeline right-of-way. Approximately 1,128 acres or soils would be temporarily or permanently affected, including 545 acres classified as prime farmland (Table 4-1).

Douglas County, where most of the impacts to prime farmland soils would occur, contains approximately 96,400 acres of soils classified as prime farmland (Soil Conservation Service 1975). Compared to this amount, the acres of prime farmland disturbed or lost by any of the proposed water supply alternatives are insignificant. The total impacts on soils from any of the water supply alternatives would also be insignificant compared to the total land area in the county.

No Federal Action

Adoption of the no federal action alternative options a through f would not immediately impact soils. The lack of a new water supply would require the District to stop expanding its service area. This action could reduce the current rate of the conversion of prime farmland soils from agricultural to residential and business uses. The no federal action option g would have the same impacts on soils as the Platte West alternative (Table 4-1).

Mitigation

Because the construction activities for any of the water supply alternatives would disturb more than five acres, a National Pollution Discharge Elimination System (NPDES) permit would be required for construction to avoid erosional impacts. This permit would contain a specific plan to prevent and control erosion from stormwater runoff and subsequent downstream water quality degradation. This plan would describe the use of best management practices, such as silt fences, silt traps, sedimentation basins, reshaping, and reseeding where appropriate to control soil erosion during construction. When testing wells, water from the tests would be piped to the nearest waterway to prevent erosion.

LAND USE

The primary land uses in the vicinity of the alternatives are cropland, pasture, residential, business, and green space. Cropland is the most dominant land use. Sand and gravel pits are common in the Platte River floodplain.

Impacts to land use were evaluated by quantifying the changes in land use that would occur on each of the alternative sites. Impacts would be considered significant if the amount of land devoted to a unique or unusual use is greatly diminished or eliminated or if the new land use is inconsistent with accepted or adopted land use plans.

Platte West

The well fields and treatment plant for this alternative would occupy portions of 2,388 acres of land. Approximately 90 percent of this land is in agricultural production as row crop or pasture. Only 30 acres of the two well fields would be converted to non-farm uses by the installation of service roads and well heads. An additional 73 acres of land in the well fields would be temporarily disturbed for construction of wells and collector pipelines. Construction of each well is expected to take approximately two weeks and disturbance for installation of any given point of the collector pipeline system would be approximately one day. The remainder of the 2,230 acres could remain in their original use. The establishment of facilities such as feed lots and the use of fertilizers, insecticides, and most herbicides in the well field, however, would be prohibited by the District to protect the quality of the groundwater (Tobin 1998). These restrictions would likely cause existing cultivated lands in the well field to be converted into hayfields or pasture or revert back to natural vegetation. If the existing farmland is not specifically

managed to maintain grasslands (*e.g.*, by grazing or prescribed burning), the land would eventually become bottomland forest. Such a transformation has occurred on portions of the District's Platte South well field.

Approximately 133 acres of land would be disturbed by construction of the transmission pipeline that would deliver water from the well field to the treatment plant and from the treatment plant to the two delivery points. This land would revert back to its previous uses following construction; however, half (approximately 67 acres) would have permanent easement restrictions. These restrictions would prevent the construction of structures over the pipeline that could not be feasibly removed and replaced if access to the pipeline for repair or other forms of maintenance became necessary. For example, roads and fences would be permitted over the pipelines but structures such as houses or outbuildings would not be allowed.

A more substantial change in land use would be on the 158 acres used for the water treatment plant. At this site, the entire acreage, which is currently used for row crops, would be taken out of agriculture use and converted to industrial use.

In Douglas and Saunders counties, approximately 90,000 and 436,000 acres are lands in farms, respectively (U.S. Department of Agriculture 1997). The loss of 188 acres and restrictions on the use of about 2,200 acres of agricultural land caused by the project would be insignificant.

In general, the proposed Platte West alternative is consistent with the Omaha Master Plan. While the additional water from the project would facilitate the continued expansion of Omaha, the availability of water would not dictate whether this expansion is contiguous and compact or scattered and low-density. By meeting peak-day demands, the new water supply would help maintain the efficient and equitable provision of drinking water.

Douglas and Saunders counties have zoned the land for the well field AF1 (agriculture) and AG (agriculture), respectively. A well field would be an allowable use under these zoning classifications. As such, the Platte West well field would not conflict with local land use plans.

The Platte West treatment plant site is located within Omaha's zoning jurisdiction and is covered by the Omaha Master Plan. The land is zoned AG. To accommodate the treatment plant, the land would have to be rezoned to DR (Development Reserve) with a Major Utility special use permit. The site is also outside the Master Plan's Current Development Zone. Construction of the treatment plant would require an amendment to the Master Plan. As such, the treatment plant portion of the Platte West alternative would conflict with Omaha's current zoning and plans for development.

As described in detail later in the Environmental Impact Statement (EIS), the Platte West well field would decrease groundwater levels under areas beyond the boundaries of the well field in Douglas and Saunders counties. This decline in water level would affect those surface waters, such as ponds, streams, and wetlands, that depend on a direct connection to groundwater for their hydrology; eliminate subirrigation of some lands; and degrade the performance of some water wells. Such impacts could directly conflict with Saunders County Ordinance 25-1999 if the District did not mitigate the impacts through in-kind replacement in Saunders County.

The compatibility of the Platte West alternative with local land use policies is summarized in Table 4-2. Because of the potential conflict of the Platte West well field with Saunders County Ordinance 25-1999

Table 4-2 Compatibility of Water Supply Alternatives with Local Zoning and Land Use Plans.

Alternative Component	Saunders County zoning	Douglas County zoning	Sarpy County zoning	Omaha zoning	Omaha Master Plan
Platte West					
Well field	potentially conflicts with Ord 25-1999	compatible	n/a[1]	n/a	n/a
Treatment plant	n/a	n/a	n/a	rezoning and SUP[2] required	amendment required
Platte North					
Well field	potentially conflicts with Ord 25-1999	n/a	n/a	n/a	n/a
Treatment plant	n/a	n/a	n/a	rezoning and SUP required	amendment required
Platte South + Platte West					
Well fields	potentially conflicts with Ord 25-1999	compatible	compatible	n/a	n/a
Treatment plants	n/a	n/a	compatible	rezoning and SUP required	amendment required
Platte South + Platte West DC					
Well fields	n/a	compatible	compatible	n/a	n/a
Treatment plants	n/a	n/a	compatible	rezoning and SUP required	amendment required
Three-Way Combination					
Well fields	n/a	compatible	compatible		
Platte West treatment plant	n/a	n/a	n/a	rezoning and SUP required	amendment required
Platte South treatment plant	n/a	compatible	compatible	n/a	n/a
Missouri River treatment plant	n/a	n/a	n/a	rezoning and SUP required	compatible
Intake	n/a	n/a	n/a	SUP required	compatible
No Federal Action					
Well field	Option g potentially conflicts with Ord 25-1999	compatible	n/a	n/a	n/a
Treatment plant	n/a	n/a	n/a	rezoning and SUP required for option g	amendment required for option g

[1]n/a = not applicable because site is outside jurisdiction. [2]SUP = Special Use Permit.

and the rezoning and amendment of the Omaha area Master Plan required for the treatment plant, the impact of the Platte West alternative on land use is considered significant.

Platte North

This alternative would require 733 acres of land for the well field and treatment plant. Only 18 acres of the 575-acre well field would be permanently converted to non-agricultural uses by the installation of service roads and

well heads. An additional 39 acres of land in the well field would be temporarily disturbed for construction of wells and collector pipelines. After construction, much of the well field could revert back to its original use. The establishment of feed lots and the use of fertilizers, insecticides, and most herbicides in the well field, however, would be prohibited by the District to protect the quality of the groundwater (Tobin 1998). These restrictions could lead to the cessation of grazing. If the former pastures are not specifically managed to maintain grasslands (*e.g.*, by grazing or prescribed burning), the land would eventually become bottomland forest.

A more substantial change in land use would be on the 158 acres used for the water treatment plant. At this site, the entire acreage, which is currently used for row crops, would be taken out of agriculture and converted to industrial use.

Approximately 206 acres of land would be disturbed by construction of the transmission pipeline. This land would revert back to its previous uses following construction with the same restrictions described for the Platte West alternative.

In Douglas and Saunders counties, approximately 90,000 and 436,000 acres are lands in farms, respectively (U.S. Department of Agriculture 1997). The loss of 176 acres of agricultural land caused by the project would be an insignificant change in land use.

The Platte North alternative would have the same consistencies and conflicts with the current Douglas and Saunders county zoning and the Omaha Master Plan as the Platte West alternative. The compatibility of the Platte North alternative with local land use policies is summarized in Table 4-2.

Platte South plus Platte West

At the Platte South well field, approximately two acres of land would be converted from fallow fields and bottomland forest to well heads and access roads. The expansion of the water treatment plant is estimated to replace 20 acres of fallow land. Approximately 116 acres of land in Sarpy County would be converted to permanent right-of-way for the pipeline from the Platte South treatment plant to Delivery Point B.

Approximately 25 acres of land on the Platte West well field would be permanently converted from agricultural use to well field infrastructure. Impacts on land use from the water transmission pipelines from the Platte West well field and from the new water treatment plant would be the same as for the Platte West alternative. Because no unique or unusual land uses would be eliminated or greatly reduced, the changes in land use caused by this alternative would not be significant.

The Platte South plus Platte West alternative would have the same consistencies and conflicts with the current Douglas and Saunders county zoning and the Omaha Master Plan as the Platte West alternative. Because no new land would be acquired in Sarpy County for development of a well field or treatment plant, no conflicts would exist with Sarpy County land use plans or zoning. The compatibility of the Platte South plus Platte West alternative with local land use policies is summarized in Table 4-2.

Platte South plus Platte West DC

The impacts on land use from the Platte South plus Platte West DC alternative would be the same as for the preceding Platte South plus Platte West alternative except no impacts on land use would occur in Saunders County. The farmland converted to well heads and access roads, approximately 20 acres, the restrictions on the use of crop protection products on the well field, and the loss of subirrigation would be limited to the Douglas County portion of the Platte West well field.

Like the Platte West alternative, the new treatment plant in Douglas County would conflict with Omaha's current zoning and Master Plan. No conflicts would exist with Saunders or Sarpy counties zoning or land use plans. The compatibility of the Platte South plus Platte West DC alternative with local land use policies is summarized in Table 4-2.

Three-Way Combination

The primary impact on land use from the Three-Way Combination alternative would be the conversion of 318 acres of land currently used for agriculture to industrial use at the water treatment plant sites. Impacts on land use at the well fields would be as described for the Platte South plus Platte West DC alternative. The use of land would be restricted on approximately 350 acres of permanent rights-of-way for the transmission pipelines. Because no unique or unusual land uses would be eliminated or greatly reduced, the changes in land use caused by this alternative would not be significant.

The well fields and expansion of the Platte South treatment plant would not conflict with Douglas or Sarpy counties zoning and land use plans. The Platte West treatment plant would conflict with Omaha's current zoning and Master Plan. The new Missouri River treatment plant north of Omaha would be on land currently zoned AG and would require rezoning with a special use permit. This site, however, is within the Omaha Master Plan's Current Zone of Development and is slated for future industrial development. The new Missouri River treatment plant, therefore, would conflict with current zoning but is consistent with the Master Plan. The area where the new intake on the Missouri River would be located is zoned General Industrial. A special use permit would be required if the intake structure is considered to be a Major Utility Facility. The compatibility of the Three-Way combination alternative with local land use policies is summarized in Table 4-2.

No Federal Action

With the no federal action options a through f, the District would have to stop expanding its service area. This action could slow the current rate of conversion of agricultural lands into residential developments in areas currently outside the existing service area. New developments would have to provide their own water supplies. New development outside the existing service area can be expected to be more scattered and of lower density than development inside the service area. Scattered, low-density development is not consistent with the goal of the contiguous and compact growth pattern specified in the Omaha Master Plan.

The no federal action option g would have the same land requirements and the same consistencies and conflicts with the current Douglas and Saunders counties zoning and the Omaha Master Plan as the Platte West alternative. The compatibility of the no federal action options with local land use policies is summarized in Table 4-2.

Mitigation

No mitigation to compensate for land use changes is proposed. Ultimately, however, conflicts with current and future land use plans, would have to be resolved. Past practice of the District has been to comply with local zoning ordinances when practical and apply for rezoning and special use permits in accordance with county or municipal procedures. For any of the above water supply alternatives, the District has indicated it would apply for rezoning and special use permits once a sufficiently detailed level of facility design has been achieved (Tobin 2001).

Some conflicts with the Saunders County Ordinance 25-1999 may not be resolvable because mitigation by in-kind replacement in Saunders County with an equal or greater amount of wetlands or subirrigated land may not be possible. For example, lost wetlands could not be replaced in Saunders County if a

high-quality wetland creation site can not be identified. The loss of subirrigation could be replaced by in-ground tape irrigation. Not all affected property owners, however, may desire the same type of mitigation. Finally, the District contends their power of eminent domain can be used to supercede most local land use regulations if necessary for the District to meet their obligation to supply water to their customers. How the conflicts between the permitted water supply alternative and local land use plans and policies would ultimately be resolved is unknown at this time.

FLOODPLAINS AND FLOODWAYS

The District would be required to comply with local land use plans and regulations that were enacted to meet minimum federal standards of the Federal Emergency Management Agency for counties to qualify for National Federal Flood Insurance.

Action Alternatives

For most of the action alternatives, the only aboveground structures that would be in floodplains or floodways would be well heads. A permit for constructing well field infrastructure in a floodplain would be required from each applicable county and "no-rise" certifications would be required for construction in the floodway. The pump motors for the wells would either be designed to be submersible or elevated at least one foot above the 100-year flood elevation. The well field structures would probably not be large enough to cause the water elevation in the floodplain or floodway to be increased during a flood event.

Structures associated with two of the action alternatives could have sufficient impact on the floodway to require mitigation as part of a no-rise certificate. The Platte North alternative would have a bridge connecting the mainland to an island in the Platte River. Appropriate design of the bridge could reduce but probably not eliminate the potential for debris or ice accumulating around the piers and increasing upstream water elevation during a flood or ice jam event. The new intake for the Three-Way Combination would be a substantial structure on the bank of the Missouri River, which by taking up space, could increase flood elevations.

No Federal Action

The no federal action options a through f would not involve the placement of facilities in floodplains or floodways; therefore, these options would not impact theses resources. The no federal action option g would have the same impacts on floodplains and floodways as the Platte West alternative.

Mitigation

Mitigation for increasing flood elevation would involve the enlargement of the floodway at a nearby location to offset the predicted increase in flood elevation caused by the structures.

WATER RESOURCES

The proposed new water supply would draw water from the Platte River aquifer or directly from the Missouri River. Water taken from the Platte River aquifer would be replenished primarily from the Platte River. Waters used to backwash filters during the water treatment process would be discharged into the Elkhorn River from the Platte West treatment plant or Thomas Creek from the New Missouri River treatment plant.

WATER QUANTITY

Each of the water supply alternatives would be designed to operate with an annual average production of up to 50 million gallons per day (MGD). Based on historical data, monthly average pumping rates in the year 2030 are projected to range from 39.34 MGD in November to 74.82 MGD in July during an average water-use year (Figure 2-2) Daily maximum production rates could be as high as 100 million gallons.

All of the alternatives would withdraw groundwater from the Platte River alluvial

aquifer and create a cone of depression in the water table. The size and depth of the cone of depression stabilizes when the amount of water withdrawn from the well field is balanced by the amount of water recharging the aquifer. Because the alluvial aquifer is directly connected to the Platte River, most of the water that recharges the aquifer comes from the river. The flow of water out of a river into an alluvial aquifer caused by a drawdown in the water table is called induced infiltration. Induced infiltration would reduce the flow in the Platte River. The Three-Way Combination alternative would take some water directly from the Missouri River and also reduce its flow.

The U.S. Geological Survey's (USGS) finite-element, groundwater simulation model, MODFLOW, was used to predict the effects of the Platte West and Platte North well fields on groundwater level and flow in the Platte River (Burns & McDonnell Engineering Company, Inc. 1997a). The specific purposes of this modeling were to:

- determine the amount of water that would be removed from the Platte River annually and during February through July, the critical period for the federally endangered pallid sturgeon (U.S. Fish and Wildlife Service 1996)
- predict the size and shape of the cone of depression created by the well field
- investigate potential impacts to groundwater at the nearby Two Rivers State Recreation Area
- examine the effects of various operating scenarios at the Platte West well field.

The model was operated in the "transient mode". This means the model estimates impacts on the groundwater systems at specific time intervals (e.g., day, 12 hours) while considering corresponding changes in aquifer storage and pumping rates. The transient mode provides a more realistic representation of how the well field actually operates than the "steady state" model which assumes a constant pumping rate. Because the simulation in the transient mode is more realistic, the results should be better estimates of drawdown and flow depletion from the Platte River.

The transient model considered the following effects of removing water from the Platte River aquifer:

- increased infiltration into the alluvial aquifer from the Platte River
- reduced evapotranspiration because the groundwater table would be lowered below the root zone of many plants
- increased inflow of groundwater from outside the study area
- reduced flow of water out of the alluvial aquifer into the Platte River.

The reduction in flow in the Platte River is equal to the quantity of water removed through induced infiltration from the river into the alluvial aquifer plus the decreased flow out of the aquifer into the river.

For the Platte West alternative, the condition modeled was the 50-MGD average annual water demand projected to occur in the year 2030. The well field was modeled with 46 wells each with a capacity of 2.94 MGD (approximately 2,000 gallons per minute). This number of wells was based on a preliminary design estimate of 40 wells with six alternate well locations (HDR 1993). The actual number of wells that would be installed is now estimated to be 42. Actual output from each well will not be known until the wells are installed and tested. At 2.94 MGD each, only 34 wells would be required to produce the maximum well field output of 104 MGD. Irrigation, which currently occurs on the Platte West well field, was incorporated into the starting conditions of the groundwater model and was estimated to deplete the flow in the Platte River by 1,080 acre-feet (AF) per year. Once the well field begins operating, this irrigation would be stopped. Annual and critical period flow depletions in the Platte River initially calculated by the model were

corrected for the cessation in irrigation by reducing depletions by 1,080 AF.

On average, only 27 of the 42 Platte West wells would be needed to meet the peak monthly demand in July (72.82 MGD). The additional wells would provide operating redundancy (e.g., backup well in the event of a pump failure) and allow well field operations to change in response to changing environmental conditions. For example, under high flow conditions in the Platte River, wells closest to the river could be operated preferentially to minimize groundwater drawdown and maximize induced infiltration when impacts on flow reduction would be minimal. When flow in the river is low, wells farther from the river could be used to minimize flow depletions because wells further away from the river would draw less water from the river and more water from aquifer storage.

A variety of well field operating scenarios that could meet the water supply needs of the District were modeled to determine how groundwater drawdown and river flow depletions could be minimized. Wells were grouped according to their distance from the Platte River. Wells in Zone A were closest to the river while wells in Zone C were the farthest (Figure 4-1). Well field operating scenarios ranged from pumping wells located mostly in zones A and B to pumping wells located mostly in zones B and C (Table 4-3) (Burns & McDonnell Engineering Company, Inc. 1997a, included as Appendix B).

The relative impact on the Two Rivers State Recreation Area was estimated by predicting the water table drawdown at a target point near the east side of the area that was 750 feet west of the Douglas County well field and 6,500 feet north of the Platte River. Quantitative groundwater modeling was not conducted for the Platte South well field because impacts of well field operations on groundwater level and flow in the Platte River relative to the existing Platte South well field could reasonably be made using best professional judgement based on the configuration and production rate of the proposed well field.

Because a specific well field design was not devised for the Platte West plus Platte South alternative, the Platte West well field portion was modeled just like the Platte West alternative except the pumping rate from each well was reduced by 40 percent. The same type of adjustment was made to model the Platte West well field portion of the Platte South plus Platte West DC and Three-Way Combination alternatives. This method of

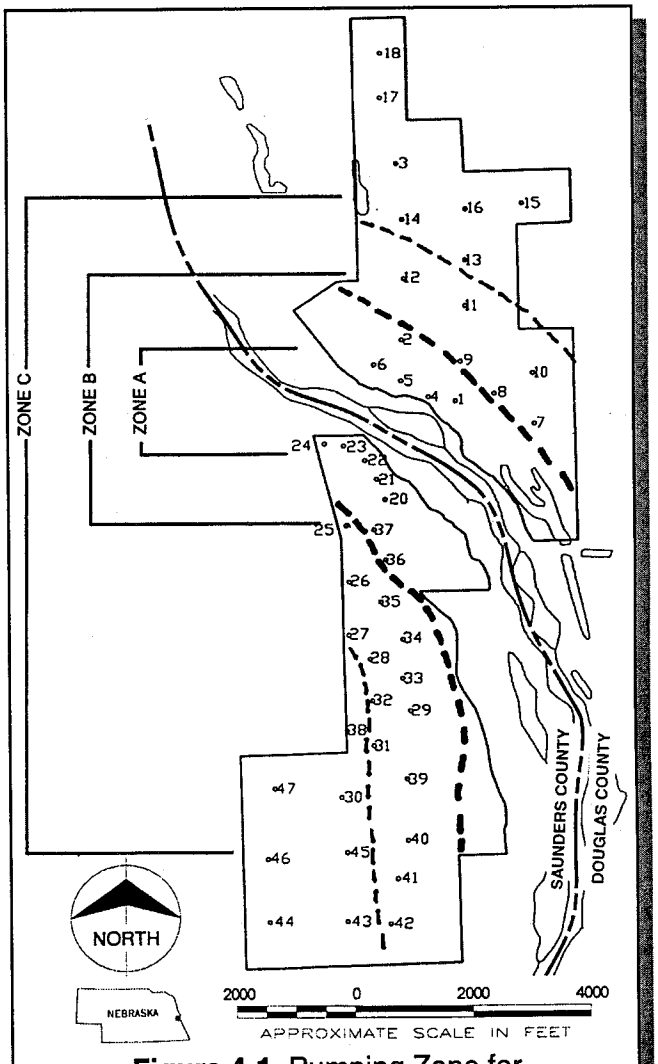


Figure 4-1 Pumping Zone for the Platte West Well Field

Table 4-3 Well Field Operating Scenarios

Pumping Scenario	Number of Operating Wells in July		
	Zone A	Zone B	Zone C
Storage A	0	16	11
Storage B	6	11	10
Storage B2	6	11	10
Storage B3	6	11	10
Storage B4	6	11	10
Alt. Wells	7	11	9
A-Zone 1	8	11	8
A-Zone 2	10	11	6
A-Zone 3	10	11	6
Ave. 50 MGD[1]	12	12	3

[1]Steady-state model

adjustment was chosen so that the optimal pumping scenario determined for the Platte West alternative could be applied to the other alternatives that contained elements of the Platte West well field.

Decreases in flow would reduce the depth and surface area of the portion of the Platte River from the well field downstream to the Missouri River. Changes in surface water elevation were determined by subtracting the estimated depletion from the historical discharge and comparing the predicted discharge to a stage-discharge curve. Stage-discharge curves were available from USGS for the Platte River at Leshara and near Ashland. The Leshara gage is approximately 11 and seven miles upstream from the proposed Platte West and Platte North well fields, respectively. The Ashland gage is approximately 12 and 16 miles downstream of the Platte West and Platte North well fields, respectively, and approximately 4.7 miles below the confluence of the Elkhorn River. The Leshara gage was intended to represent the Platte River at the Platte West and Platte North well fields and the Ashland gage was intended to represent the Platte River downstream of the Elkhorn River. The Leshara and Ashland gages have been operating since June 1994 and July 1988, respectively. These periods of record are less than the minimum of 20 years generally considered adequate to provide historic flow information. Historical flow conditions at Leshara and Ashland, therefore, were estimated using data from the gaging station at North Bend, which is approximately 24 miles upstream of the Leshara gage and has been operating since 1949. The extrapolations of flows from North Bend to Leshara and Ashland were made based on the correlation of the existing Leshara and Ashland flow data with concurrent flow data from North Bend. Because stream flow gages are not always located at the point of interest, flow data are commonly extrapolated or interpolated for distant gages using accepted hydrologic procedures and are considered reasonably accurate.

The amount of water removed from the Platte River each month was determined by the transient groundwater model for the preferred well field scenario under average pumping conditions. The maximum average monthly pumping rate, 74.82 MGD in July, was approximately 72 percent of the proposed Platte West and Platte North well fields' maximum pumping capacity of 104 MGD. The frequency with which this rate would be exceeded was estimated from how often the District's total pumping rate exceeded 72 percent of its maximum capacity for the 20 year period 1977 through 1997. This period includes the two highest demand years (1988 and 1995) and one of the lowest demand years (1993) in the District's history.

Significant impacts on water quantity would occur if the performance of private domestic, stock watering, or irrigation wells, were diminished or eliminated. A drawdown of five feet was chosen, based on best professional judgement of a registered professional civil engineer at the District, as the maximum amount of drawdown that would not appreciably affect existing wells. The significance of the impacts of changes in water quantity on wetlands, wildlife, and other

ecological factors is discussed in the Biological Resources section of this chapter.

Platte West

The amount of water annually removed from the Platte River was estimated to range from 39,368 AF for the "Storage A" scenario to 52,095 AF for the "Ave. 50 MGD" scenario (Table 4-4). The Ave. 50 MGD scenario was also run in the steady-state mode to show the effects of the two different modeling techniques. The range of depletions was directly related to the number of operating wells in Zone A (Burns & McDonnell Engineering Company, Inc. 1997a). Scenarios that removed less water from the river generally removed more water from groundwater storage and created larger drawdown areas and deeper drawdowns in the area of the Two Rivers State Recreation Area. At the extremes, the maximum groundwater reduction at the target point in Two Rivers State Recreation Area was 7.2 feet for the Storage A scenario and less than one foot for the Ave. 50 MGD scenario (Table 4-4). In all of the pumping scenarios, the predicted drawdown levels are deeper in the Saunders County well field (Table 4-4) because more wells would be pumped there. This distribution of wells was designed to minimize drawdown in Two Rivers State Recreation Area.

A compromise between Platte River flow depletions and groundwater drawdown in Two Rivers State Recreation Area was achieved with scenario "Storage B4." This scenario had the fifth lowest water reduction in Two Rivers State Recreation Area, 4.5 feet, and the second lowest depletion of flow in the Platte River: 40,521 AF annually and 18,406 AF during February through July (Table 4-4). The flow depletion during February through July is slightly lower than the depletion which was the original basis for determining the level of mitigation with the U.S. Fish and Wildlife Service (FWS).

The annual withdrawal from the Platte West well field was modeled based on an average of 50 MGD for a total of 56,000 AF. This withdrawal rate was based on the production rate of drinking water and did not consider the additional four percent of water that would be treatment residual. The withdrawal rate modeled, therefore, is slightly less than the District's permitted annual withdrawal of 58,308 AF (1.9 billion gallons, 52 MGD). The calculated induced infiltration amounts, therefore, are approximately four percent low. The calculation of flow depletion from the Platte River, however, did not include the return to the Platte River of the treatment residual discharged into the Elkhorn River. Because not all of the water removed from the well field is replaced by induced infiltration (see below), the omission of the return flow in calculating flow depletions more than offsets the underestimate of withdrawal. In addition, the depletion estimates did not consider the cities such as Elkhorn, Waterloo, Valley, and Gretna that have recently been added or are expected to be added to the District's service area. These municipalities discharge

Table 4-4 River Depletions and Groundwater Drawdown for Various Operating Scenarios at the Platte West Well Field

Pumping Scenario	River Depletions (acre-feet)[1]		Maximum Drawdown (feet)		
	Annual	Feb-Jul	Douglas Co.	Saunders Co.	Two Rivers[2]
Storage A	39,368	17,662	11.8	31.8	7.2
Storage B	41,005	18,655	11.1	28.8	4.9
Storage B2	41,145	18,770	10.9	28.8	4.8
Storage B3	40,675	18,561	10.5	29.8	4.6
Storage B4	40,521	18,406	10.2	29.8	4.5
Alt. Wells	42,190	19,414	9.9	22.1	5.2
A-Zone 1	44,646	20,314	8.9	21.8	4.3
A-Zone 2	44,648	20,314	9.2	21.2	3.9
A-Zone 3	45,364	20,553	9.3	23.0	3.9
Ave. 50 MGD[3]	52,095	21,770	3.0	13.0	<1

[1]Corrected for cessation of irrigation. [2]At the target point in Two Rivers State Recreation Area. [3]Steady-state model.

treated municipal wastewater into the Platte River watershed. Some of the water they would receive from the District that originated from the Platte River would be returned to the river and would offset some of the depletions. The modeled depletions, therefore, can be considered slight overestimates.

For the Storage B4 scenario, induced infiltration from the Platte River is estimated to replace 72 percent of the water withdrawn from the aquifer. The remaining recharge to the aquifer would come from groundwater flow out of the Todd Valley aquifer and existing groundwater flow from areas of the Platte River alluvial aquifer north of the well field. The groundwater recharge from these two areas originates from precipitation that infiltrates into the aquifers.

Under average conditions, flow in the Platte River below the Platte West well field would be reduced by as little as 0.57 percent in March to as much as 2.68 percent in August (Table 4-5). These depletions would cause a decline in the river's surface elevation between 0.09 and 0.24 inches, respectively. At the lowest historical average monthly flow, depletions would range from 1.17 percent in March to 16.39 percent in July. These depletions would correspond to declines in

Table 4-5 Impacts on Platte River Flow and Surface Water Elevation from the Platte West Alternative, Storage B4 Scenario

Month	Storage B4 Depletions (cfs)[2]	Leshara, NE[1]					
		Average flow			Historic low flow[5]		
		flow[3] (cfs)	percent depletion	Δ el.[4] (inches)	flow (cfs)	percent depletion	Δ el. (inches)
January	50.40	3,728	1.35	-0.14	1,329	3.79	-0.24
February	46.78	5,887	0.79	-0.10	2,963	1.58	-0.15
March	47.34	8,322	0.57	-0.09	4,061	1.17	-0.13
April	47.99	6,617	0.73	-0.10	3,175	1.51	-0.15
May	53.17	6,563	0.81	-0.11	2,151	2.47	-0.20
June	60.84	7,288	0.83	-0.12	2,129	2.86	-0.23
July	68.81	4,112	1.67	-0.18	420	16.39	-0.60
August	73.48	2,739	2.68	-0.24	487	15.08	-0.59
September	70.06	3,390	2.07	-0.21	1,032	6.79	-0.38
October	62.72	4,132	1.52	-0.17	1,790	3.50	-0.26
November	54.82	4,471	1.23	-0.14	2,136	2.57	-0.20
December	52.23	3,885	1.34	-0.14	1,557	3.35	-0.23
		Ashland, NE[1]					
January	50.40	4,776	1.06	-0.17	1,702	2.96	-0.29
February	46.78	7,541	0.62	-0.13	3,796	1.23	-0.18
March	47.34	10,660	0.44	-0.06	5,202	0.91	-0.15
April	47.99	8,476	0.57	-0.12	4,067	1.18	-0.18
May	53.17	8,407	0.63	-0.14	2,756	1.93	-0.24
June	60.84	9,335	0.65	-0.15	2,727	2.23	-0.27
July	68.81	5,267	1.31	-0.22	538	12.79	-1.34
August	73.48	3,508	2.09	-0.29	624	11.78	-1.32
September	70.06	4,342	1.61	-0.25	1,321	5.30	-0.46
October	62.72	5,292	1.19	-0.20	2,293	2.74	-0.31
November	54.82	5,727	0.96	-0.17	2,736	2.00	-0.25
December	52.23	4,976	1.05	-0.17	1,995	2.62	-0.27

[1]Data based on extrapolation from the USGS gaging station on the Platte River at North Bend; period of record 1949-1997. [2]Depletions not corrected for cessation of irrigation; cfs = cubic feet per second. [3]Each value is the monthly average. [4]Change in water surface elevation. [5]The lowest monthly average flows recorded during the period of record.

river elevation of 0.13 and 0.60 inches, respectively (Table 4-5).

To relate these impacts to a more common occurrence, impacts to river flow and elevation were calculated using the 10 percent low flow (i.e., the flow which is exceeded 90 percent of the time, 18,361 AF per day) and maximum average pumping. Under these conditions, river flow would be depleted 0.81 percent and surface water elevation would be reduced by 0.13 inches. The one-day historical low flow, 79 AF per day, is estimated to be 68 AF less than the average maximum depletion. A theoretical possibility exists, therefore, that the Platte West well field could reduce flow in the Platte River to zero under extremely low flow conditions. In practice, however, this extreme depletion would not occur. The District has obtained a 1,000 cubic feet per second (cfs) water right for the Platte West well field to support induced infiltration. This water right has junior priority to Lincoln's pending water right for the Ashland well field and the District's 500-cfs water right for the Platte South well field. Lincoln's application requests an instream flow of 200 cfs for September 15 through May 14 and 700 cfs for May 15 through September 14 with an option for an additional 200 cfs in the summer. Lincoln has indicated rights for the additional 200 cfs will be pursued if their current application is approved (Huggenberger 2001). The additional 200 cfs water right would likely have the same priority date as the pending 700 and 200 cfs rights and would be senior to the District's right for the Platte West well field.

An estimated flow in the Platte River above the Platte West well field of 1061 cfs would be sufficient to meet Lincoln's potential senior water right of 900 cfs assuming the maximum possible induced infiltration rate by the District's well field of 161 cfs (104 MGD), no losses of river water between the District's well field and the Ashland well field, and no inflow from the Elkhorn River. Flow in the Platte River at Leshara is estimated to be less than 1061 cfs 0.97 percent of the time (Figure 4-2) or, on average, less than 4 days per year. In the past 50 years, the greatest number of consecutive days when flow in the Platte River at Leshara has been estimated to be less than 1061 cfs has been 25.

The maximum monthly average depletion rate estimated for the B4 pumping scenario is 73.5 cfs. At this depletion rate, a flow in the Platte River at Leshara of 974 cfs would meet Lincoln's potential 900 cfs water right. Flow in the Platte River at Leshara is estimated to be less than 974 cfs 0.63 percent of the time (Figure 4-2) or, on average, about 2 days per year. In the past 50 years, the greatest number of consecutive days of flow when the Platte River at Leshara has been estimated to be less than 974 cfs has been 21.

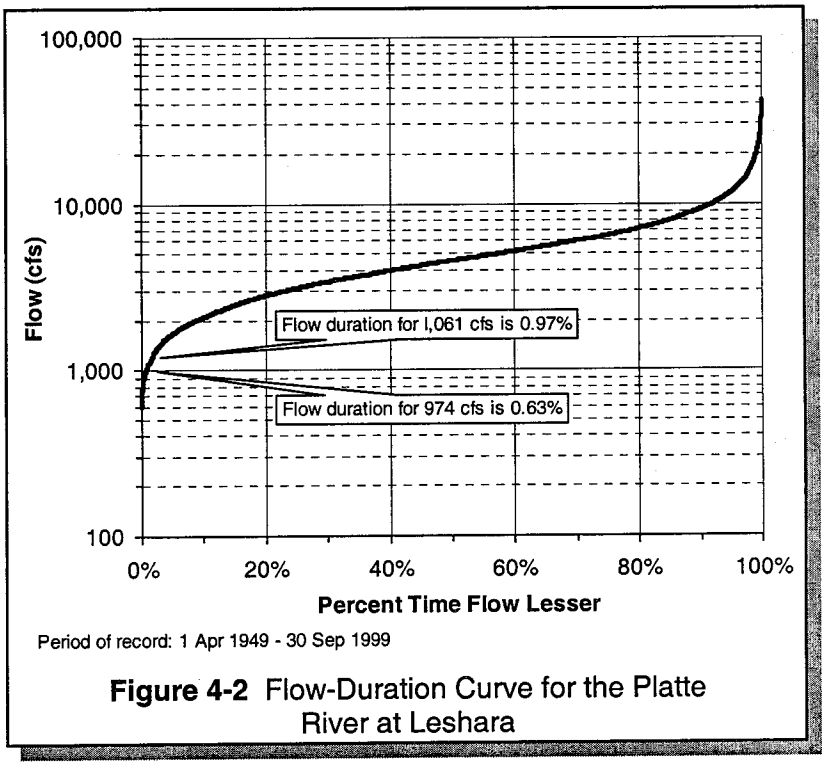


Figure 4-2 Flow-Duration Curve for the Platte River at Leshara

Under very low flow conditions, operation of the Platte West well field could be curtailed to meet the demands of senior water right holders. Because approximately 50 percent of the water provided by the District is for domestic use, the District could possibly compel the sale of water from upstream senior water right holders based on the preference granted to domestic use over agricultural and industrial uses (Nebraska Constitution Article XV, Section 6). The assertion of this preference, however, is seen as unlikely because the low flow event would probably be over before the condemnation process was concluded. In an extremely low flow situation in the Platte River, the District would likely reduce use of the Platte West well field, institute their Water Conservation Emergency Operation Plan, and rely on their water supply from the Missouri River.

Water from other tributaries, such as the Elkhorn River and Salt Creek, join the Platte River below the Platte West and Platte North well fields. As a result, the impact from the Platte West well field on river flow would decline with increasing distance downstream. At Ashland, under average flow conditions, for example, flow depletions would range from 0.44 percent in March (-0.06 inches) to 2.00 percent (-0.29 inches) in August (Table 4-5). Under the historic low average monthly flow, flow depletions would range from 0.91 percent (-0.15 inches) to 12.8 percent (-1.34 inches) (Table 4-5). At the 10 percent low flow rate (23,520 AF per day), the maximum average monthly pumping would reduce flow in the Platte River by 0.63 percent (-0.10 inches). The lowest one-day flow in the Platte River at Ashland, 101 AF per day, is less than the predicted maximum depletion. As explained above, however, the existence of senior downstream water rights would prevent the Platte West well field from completely depleting flow in the Platte River.

Substantially decreased winter flows in the Platte River could increase the occurrence of ice jams and resultant flooding. The winter reductions in water depth, however, are predicted to be less than one-third of an inch even under historical low flow conditions (Table 4-5). An increase in the frequency of ice jam formation is not expected because of flow depletions caused by the well field. If an ice jam were to form in the river over the pipeline crossing, dynamite could still be used to dislodge the jam without risk to the pipeline because the pipeline would be buried below the river bottom under many feet of sand.

For the Storage B4 operating scenario, the predicted maximum extent of the 1-foot drawdown level would occur in September and would extend as much as 2.25 miles south and west beyond the boundaries of the Saunders County well field (Figure 4-3). Maximum drawdown outside of the well field would be about 26 feet along the western boundary of the Saunders County well field. Maximum drawdown would occur in July. For the Douglas County well field, the 1-foot drawdown contour would be located as much as 1.5 miles east and north and one mile west of the well field boundaries (Figure 4-3). The maximum drawdown outside of the Douglas County well field would be nearly 9 feet along the north-eastern edge of the well field property.

Increasing the modeled pumping rates by four percent to include treatment plant residuals would increase the volume of the cone of depression by at most four percent. This increase would be apportioned among all of the depth contour interval and would not noticeably change the 1-foot drawdown contour or affect the interpretation of the results.

Within each month, the transient groundwater model assumed the daily pumping rate was constant at the monthly average. In reality, well field pumping rates on some days would be greater than average and on other days would be less. Of particular concern are the peak pumping periods, that would generate

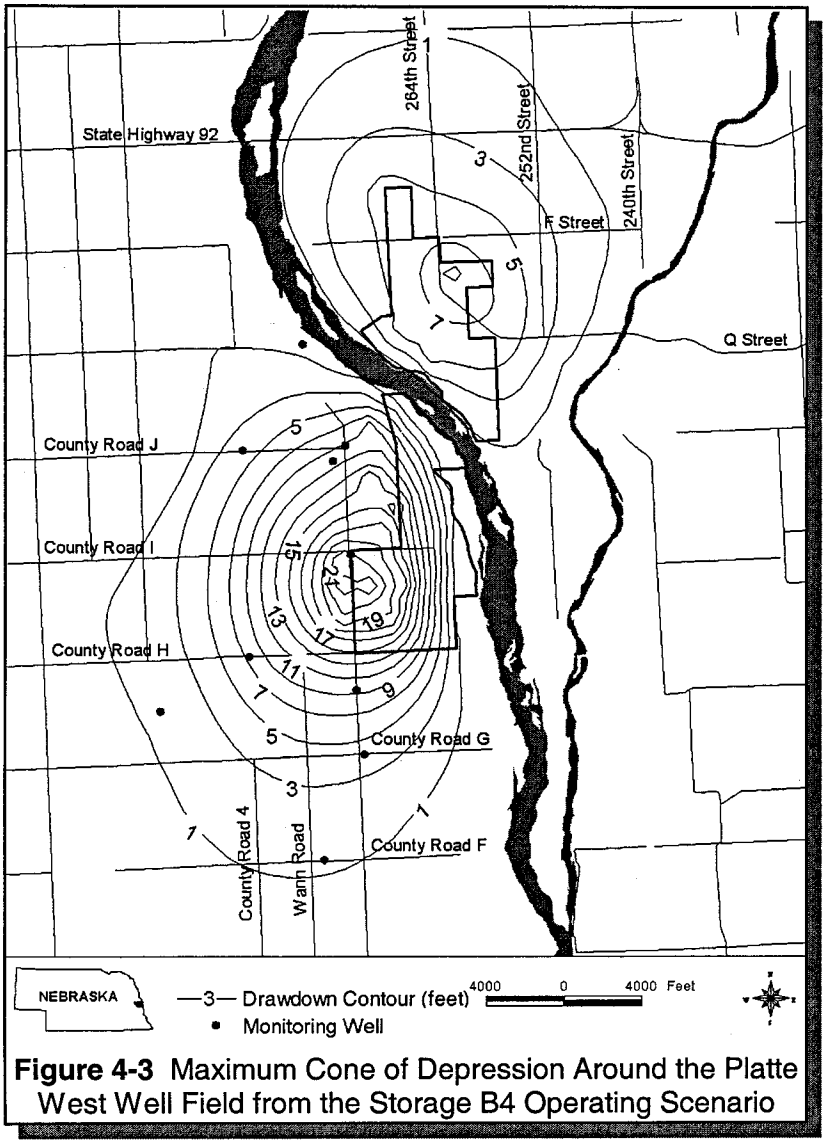


Figure 4-3 Maximum Cone of Depression Around the Platte West Well Field from the Storage B4 Operating Scenario

the greatest drawdowns and river flow depletions. The maximum modeled pumping rate was approximately 72 percent of the well field capacity. An analysis of District-wide annual peak use periods indicated pumping rates exceeded 72 percent of system capacity 74 days during the past 20 years (Figure 4-4). The average duration of pumping above 72 percent of capacity during annual peaks was 3.7 days (Table 4-6). The longest peak duration was 12 days in 1988 (Figure 4-4). In two of the past 20 years, daily pumping did not exceed 72 percent of system capacity.

Daily pumping exceeded 85 percent of capacity 23 days (1.2 days per year) and 95 percent for three days (0.15 days or 3.6 hours per year) (Table 4-6). The longest duration of pumping over 95 percent was exceeded two days (Figure 4-4). Subtracting the average number of days above 72 percent capacity (approximately four days) from the maximum observed number of days above 72 percent capacity (12 days) indicated that pumping in excess of the modeled conditions (72 percent of capacity) would occur for an additional eight days per year under worst-case conditions.

The effects of peaks in pumping on the modeled impacts of the well field on groundwater and Platte River depletions would be minor. A water velocity of five feet per day in an alluvial aquifer is considered very rapid. Therefore, spikes in pumping would first impact the groundwater by deepening the cone of depression in the area immediately around each well. This deepening would slowly ripple out through the aquifer and decline in magnitude as the distance from the center of the cone of depression increased. Impacts on groundwater level near the edge of the cone of depression would not occur until after the peak in pumping was past.

The slow response of the alluvial aquifer to changes in pumping is illustrated by the results of the groundwater modeling. Maximum pumping occurred in July but maximum river flow depletions did not occur until August and the maximum extent of the cone of depression did not occur until September. In the 20-year historical water use period, annual peak pumping by the District occurred four times in June, 12 times

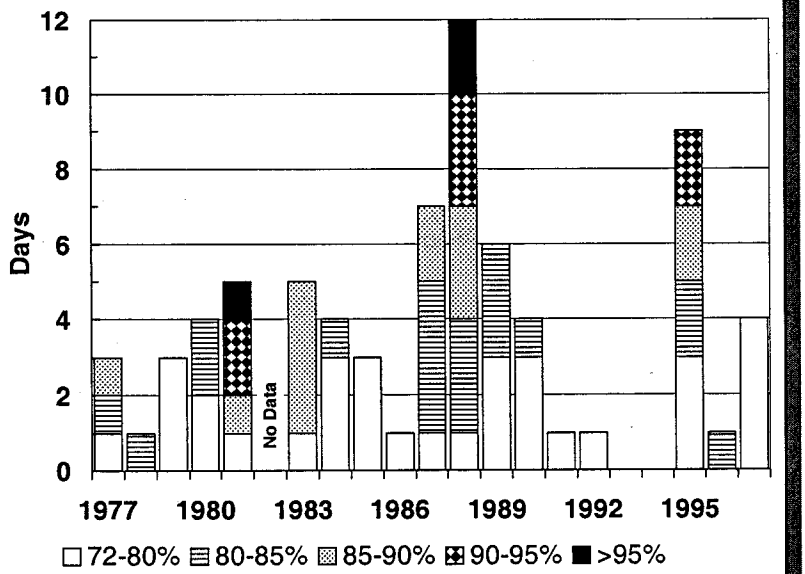


Figure 4-4 Days at Various Percent Capacities During Annual Peak Use Periods

in July, and four times in August. In 80 percent of years, therefore, maximum groundwater drawdown and flow depletion in the Platte River would occur in August or September.

The yields from private wells located within the cone of depression (Figure 4-3) could be reduced significantly as a result of the lowered water table. A well would become inoperable if the water table was lowered below the depth of the intake screens. Based on a count of residences from aerial photography, approximately 13 domestic wells, a similar number of stock watering wells, and one irrigation well are within the 5-foot drawdown contour of the Storage B4 pumping scenario. These wells, which are all located in Saunders County, would likely be impacted. The effects on these wells would be a significant impact.

In the Platte River valley, lakes and ponds commonly exist where their water levels are maintained by groundwater. Approximately 20 ponds are located in the predicted cone of depression, mostly to the west and north of the Douglas County well field. (Ponds are identified as "palustrine unconsolidated bottom" wetlands on Figures 4-9 and 4-10). Most of the ponds are predicted to have water level reductions of three feet or less; however, the level in one pond could be lowered up to 7 feet.

Many unnamed intermittent streams exist on and around the well field. A channelized portion of Clear Creek is located approximately one mile west of the Saunders County well field. These streams generally drain north to south, roughly parallel to the Platte and Elkhorn rivers. Streams of this size would not be expected to have permanent flow unless they have a groundwater source. The intermittent nature of the streams in the well field area suggests a lack of a strong groundwater connection. Depressions along these stream channels can contain water at a depth that apears to be controlled by the groundwater table. Lowering the groundwater could dewater these pools.

The Saunders County portion of the Platte West well field is located in the Wann Basin subarea of the Lower Platte North Natural Resources District (LPNNRD) Groundwater

Table 4-6 Pumping, as a Percent of System Capacity, During Annual Peak Demand Periods from 1977 through 1997

	Percent of System Capacity				
	>72	>80	>85	>90	>95
Days above percent capacity[1]	74	42	23	10	3
Average days per year	3.70	2.10	1.15	0.50	0.15
Maximum days per year[2]	12	11	8	5	2
Percent of years with no days	10	40	70	85	90

[1]Out of a total of 21,900 days. [2]All occurred in 1988.

Management Area (GMA). The GMA rules pertaining to water quantity in unconfined aquifers (Lower Platte North Natural Resources District 1996) would be relevant to the Platte West alternative. Regulations designed to encourage water conservation would be triggered if half or more of the LPNNRD's monitoring wells in the subarea indicated a decline in saturated thickness of 10 percent (*e.g.*, approximately 10 feet) or more for three consecutive springtime readings. The LPNNRD currently records groundwater levels from 11 monitoring wells in the Wann Basin subarea. Six of the these wells actually belong to the District. These wells are located in the northern two-thirds of the subarea. Plans exist to establish additional monitoring sites in the southern third of the basin (Angle 2001). The GMA rules recognize the unavoidable impact of municipal well fields on groundwater levels and exclude municipal well field properties as locations for monitoring wells.

Although the Platte West well field would cause the saturated thickness of a portion of the Platte River alluvial aquifer to be reduced more than 10 percent, the impact would be localized to the vicinity of the well field (Figure 4-3). The extent of the 10-foot drawdown contour is expected to encompass three or four monitoring wells. The drawdown caused by the Platte West well field, therefore, would not be sufficiently wide-spread to reduce groundwater levels by 10 percent or more in half or more of the monitoring wells. The Platte West well field, therefore, should not trigger the GMA rules for groundwater quantity in an unconfined aquifer.

Concern has been expressed that the proposed cone of depression from the Platte West well field would overlap with the cone of depression caused by the future increase in pumping from Lincoln's Ashland well field. This overlap of cones of depression is called interference drawdown. To determine the amount of potential interference drawdown between the two well fields, groundwater modeling was conducted that included both well fields (Supplement No. 1 in Appendix B). A steady state model was used with both well fields operating at average summer pumping rates. These rates were 70 MGD for the Platte West well field and 71.5 MGD for the Ashland well field. An interference drawdown of less than 1 foot was considered to indicate the Platte West well field would have minimal impact on the Ashland well field.

Even under the unrealistically high pumping rates modeled, the 1-foot drawdown contours of the two well fields did not overlap (Figure 4-5). As a result, the maximum drawdown at the intersection of the two cones of depression was less than 1 foot. The Platte West well field, therefore, would not impact the Ashland well field.

Platte North

For the Platte North alternative, an average of up to 50 MGD would be pumped annually. This water would be pumped from an area approximately one-fourth the size of the Platte West well field and includes a 77.4-acre island in the Platte River. The storage capacity of the aquifer at the Platte River well field is less than the Platte West well field because the alluvial aquifer is only 48 to 68 feet thick (HDR Engineering, Inc. 1993) and the edge of the alluvial floodplain is only about 1.5 miles west of the well field. In comparison, the aquifer at the Platte West well field is 90 to 100 feet thick and the distance from the well field to the edge of the floodplain is up to 2 miles. Achieving the required yield at Platte North would necessitate the use of horizontal collector wells near the banks of the Platte River. In addition, the vertical wells would be located closer to the Platte River than in the Platte West alternative. Water taken from the horizontal wells would represent almost direct withdrawal from the Platte River.

In the groundwater model of the Platte North well field, the vertical wells were operated

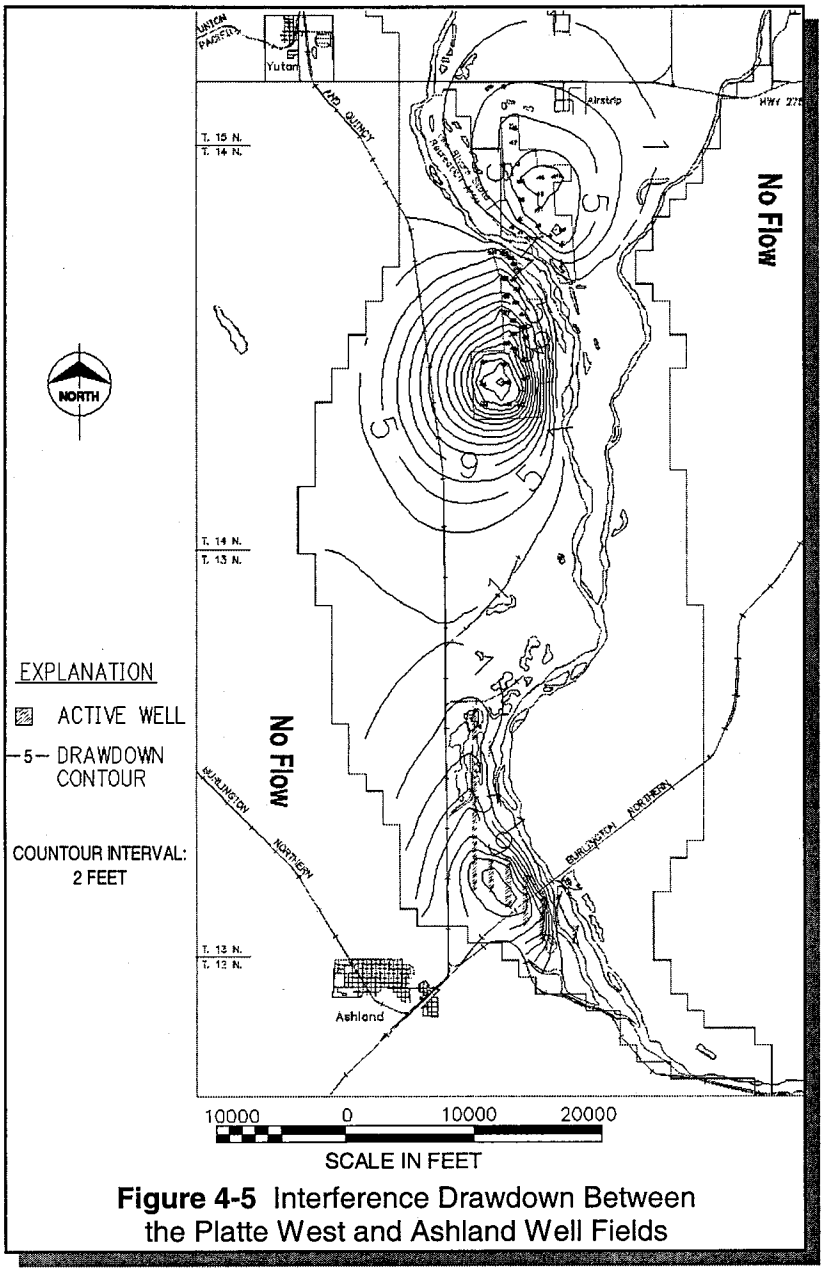


Figure 4-5 Interference Drawdown Between the Platte West and Ashland Well Fields

preferentially because they tend to produce water with lower levels of chemical and microbial contaminants. The horizontal wells were only operated when vertical wells alone could not meet demand. Based on 10, 2.7-MGD vertical wells, use of the horizontal wells would occur when demand from the well field exceeded 27 MGD. Based on a predicted average demand year (Figure 2-4), the horizontal collector wells would be pumped during May through October. Over a year, 22.6 percent of the water produced by the well field would be from the horizontal wells.

At the average annual withdrawal rate of 50 MGD, the 56,000 AF of water removed from the Platte River alluvial aquifer would be replaced by approximately 49,840 AF from the Platte River. The flow depletion during February through July would be approximately 25,400 AF. This depletion is 37 percent greater than the depletion predicted for Platte West alternative.

The 1-foot groundwater drawdown contour would extend approximately one mile from the well field (Figure 4-6). Maximum drawdown would be approximately 20 feet and would occur in July. Maximum drawdown depth outside the well field would be almost 7 feet.

Based on a count of residences using aerial photography, an estimated five stock watering wells would be impacted. These wells are all located in Saunders County. The effects on these wells would be a significant impact.

As with the Platte West alternative, ponds and pools in the Platte River valley in the vicinity of the Platte North well field could be affected by groundwater drawdown. The intermittent streams around the Platte River well field, including Otoe Creek, would less likely be affected.

The flow reduction in the Platte River caused by the Platte North alternative is predicted to reduce the water level elevations at Leshara up to 0.33 inches during the winter and early spring. This reduction is not expected to be

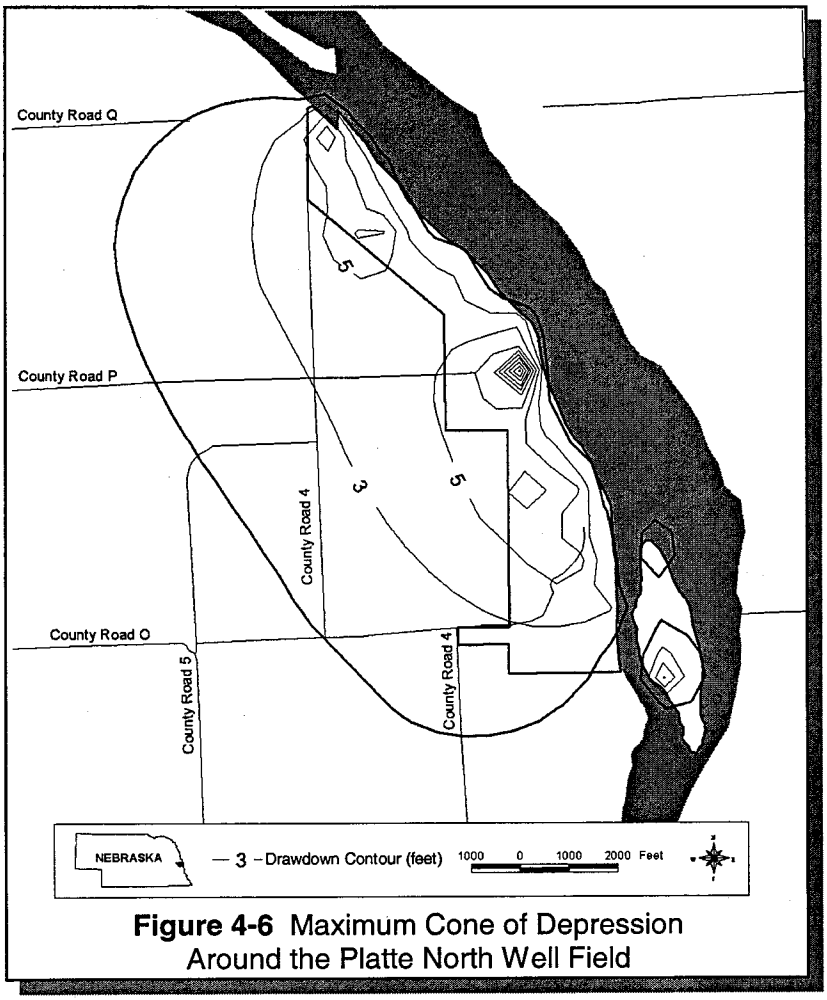


Figure 4-6 Maximum Cone of Depression Around the Platte North Well Field

enough to increase the occurrence of ice jams. Like any other structure in the river, the pillars supporting the bridge that would connect the main portion of the well field to the wells on the island could create an impediment to ice flow that could result in an ice jam.

Platte South plus Platte West

Previous groundwater modeling of the existing Platte South well field indicated 99 percent of the water removed from the Platte River aquifer is replaced by induced infiltration from the Platte River (Layne GeoSciences, Inc. 1994). Expanding the well field capacity 40 MGD by installing horizontal collector wells would not change the percentage of aquifer recharge resulting from induced infiltration nor is the cone of depression expected to expand.

The 60-MGD Platte West portion of this alternative would be similar to the 100-MGD Platte West alternative except withdrawals and depletions would be 40 percent less. Assuming the two well systems included in this alternative provide water in proportion to their share of the total production capacity (40 percent from Platte South and 60 percent from Platte West), the total depletion from the Platte River from this alternative would be 47,278 AF when operating at the maximum average annual rate of 50 MGD. For the critical period of February through July, depletions would be 22,005 acre-feet. The depletion during the critical period for the Platte South plus Platte West alternative would be 19 percent greater than for the Platte West alternative.

The extent of the 1-foot drawdown contour around the 60-MGD Platte West portion of the Platte South plus Platte West alternative would be substantially smaller than the 100-MGD Platte West alternative (Figure 4-7). At its maximum, the cone of depression would extend approximately 0.75 and 1.25 miles beyond the well field boundaries in Douglas and Saunders counties, respectively. The maximum depth of the cone of depression would be about 13 feet in Saunders County.

The flow reduction in the Platte River caused by the Platte South plus Platte West alternative is predicted to reduce the water level elevation in the river at Ashland by 0.31 inches. This reduction is not expected to increase the occurrence of ice jams.

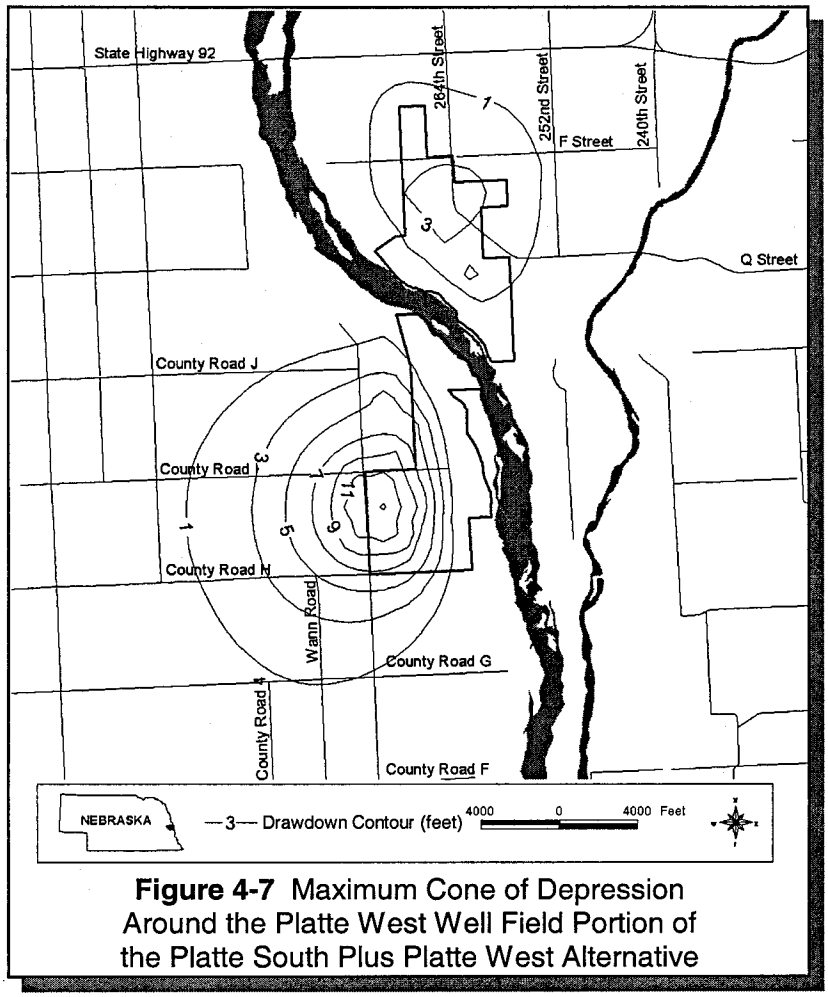


Figure 4-7 Maximum Cone of Depression Around the Platte West Well Field Portion of the Platte South Plus Platte West Alternative

Platte South plus Platte West DC

The amount of flow depletion in the Platte River caused by the Platte South plus Platte West DC alternative is expected to be similar to the Platte South plus Platte West alternative except irrigation would continue in Saunders County. Average annual depletion of flow in the Platte River is estimated to be 47,278 AF and depletion during the critical period is estimated to be 23,085 AF. The depletion during the critical period for the Platte South plus Platte West DC alternative would be 24 percent higher than for the Platte West alternative.

Concentrating all of the wells in Douglas County would substantially increase the size and depth for the cone of depression of this portion of the Platte West well field (Figure 4-8). At the maximum in August, the 1-foot drawdown contour would cover most of Two Rivers State Recreation Area. The eastern portion of the area would experience maximum drawdowns of up to 11 feet in July. The maximum drawdown in Douglas County would be almost 17 feet.

The flow reduction in the Platte River caused by the Platte South plus Platte West DC alternative would be similar to the Platte South plus Platte West alternative and is not expected to reduce water levels enough to increase the occurrence of ice jams.

Three-Way Combination

The impacts of groundwater withdrawal caused by the Three-Way Combination alternative are based on the assumption that total withdrawal would be divided equally among the three water sources. The two Platte River well fields would deplete flow in the Platte River by an average of 32,440 AF per year when operating at design capacity. Depletion during the February through July critical period is estimated to be 15,695 AF, which is 14 percent less than for the Platte West alternative.

The flow reduction in the Platte River caused by the Three-Way Combination alternative is predicted to reduce water level elevation in the Platte River at Ashland up to 0.21 inches in the winter and late spring. This reduction is not expected to reduce water levels enough to increase the occurrence of ice jams.

The Missouri River portion of this alternative would divert water directly from the Missouri River. At design diversion rates, 12.07 to 24.94 MGD, flow in the Missouri River would

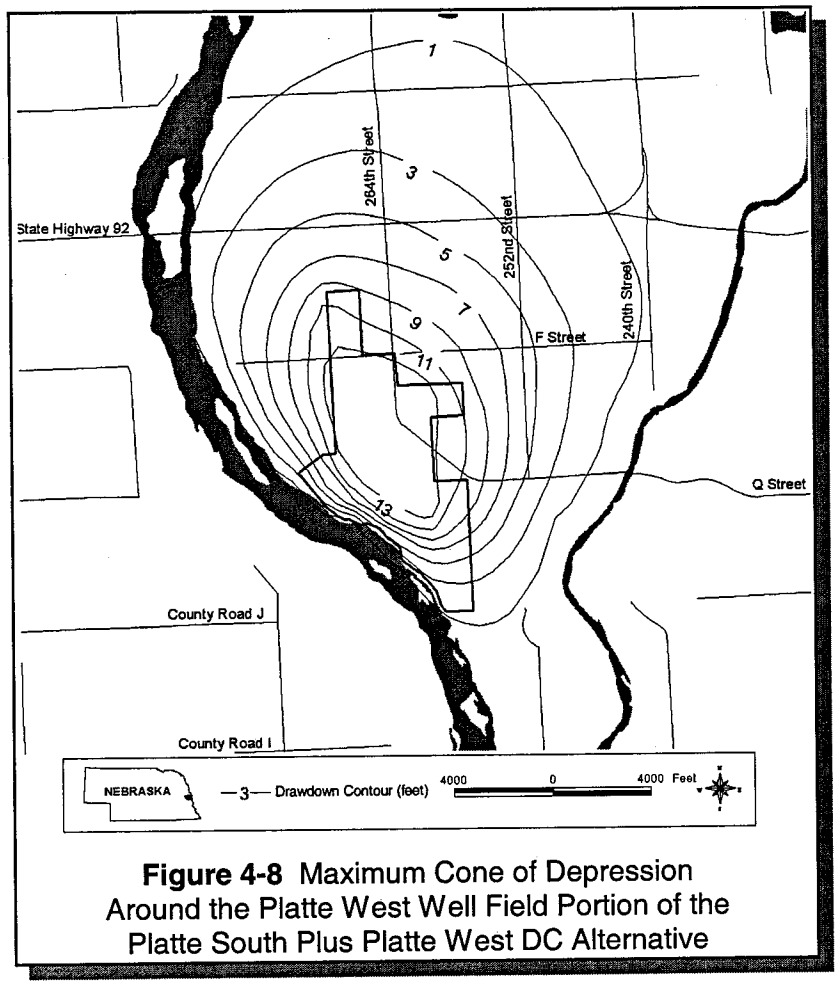


Figure 4-8 Maximum Cone of Depression Around the Platte West Well Field Portion of the Platte South Plus Platte West DC Alternative

be annually reduced by 18,711 AF. Under average conditions, this diversion would reduce flow by at most 0.12 percent. Under the worst-case scenario of historical minimum flow, 2,440 cfs, and maximum withdrawal, 33.3 MGD, flow in the Missouri River would be reduced by 2.11 percent. The Three-Way Combination alternative would not significantly affect flow in the Missouri River.

The Platte West portion of the Three-Way Combination alternative would have a maximum capacity of 33.3 MGD and an average annual production rate of 16.7 MGD. The maximum extent of the 1-foot drawdown contour in Douglas County for this alternative, which would occur in August, is slightly smaller than the Douglas County portion of the Platte West alternative, which would occur in September (Figures 4-3 and 4-9).

As with the Platte South plus Platte West alternatives, expanding the Platte South well field portion of the Three-Way Combination alternative is not expected to change the extent of the cone of depression at the existing Platte South well field.

The Missouri River water would be treated at a new water treatment plant north of Omaha. Effluent from this plant would likely be released into Thomas Creek, thereby increasing the flow in this stream. The amount of effluent is expected to be approximately 10 percent of the water processed and would range from 1.2 MGD in February to 2.5 MGD in July. No long-term, historical flow data have been collected for Thomas Creek. Such data, however, are available from nearby Big Papillion Creek at Tranquility Park. The gage location on Big Papillion Creek at a similar location relative the watershed as location of the treatment plant is to Thomas Creek. The data from the gage on Big Papillion Creek should provide a reasonable approximation on the flow in Thomas Creek near Nebraska Highway 36. The base flow in Thomas Creek, therefore, is approximately 3 cfs or 1.9 MGD. The discharge from the water treatment plant, therefore, has the potential to almost double the baseflow in Thomas Creek.

No Federal Action

In recent years, water demand has twice exceeded the District's firm capacity. Under the no federal action options a through f, pumping from the Platte River through the Platte South well field and from the Missouri River through the Florence Plant would increase over the years. Eventually, the

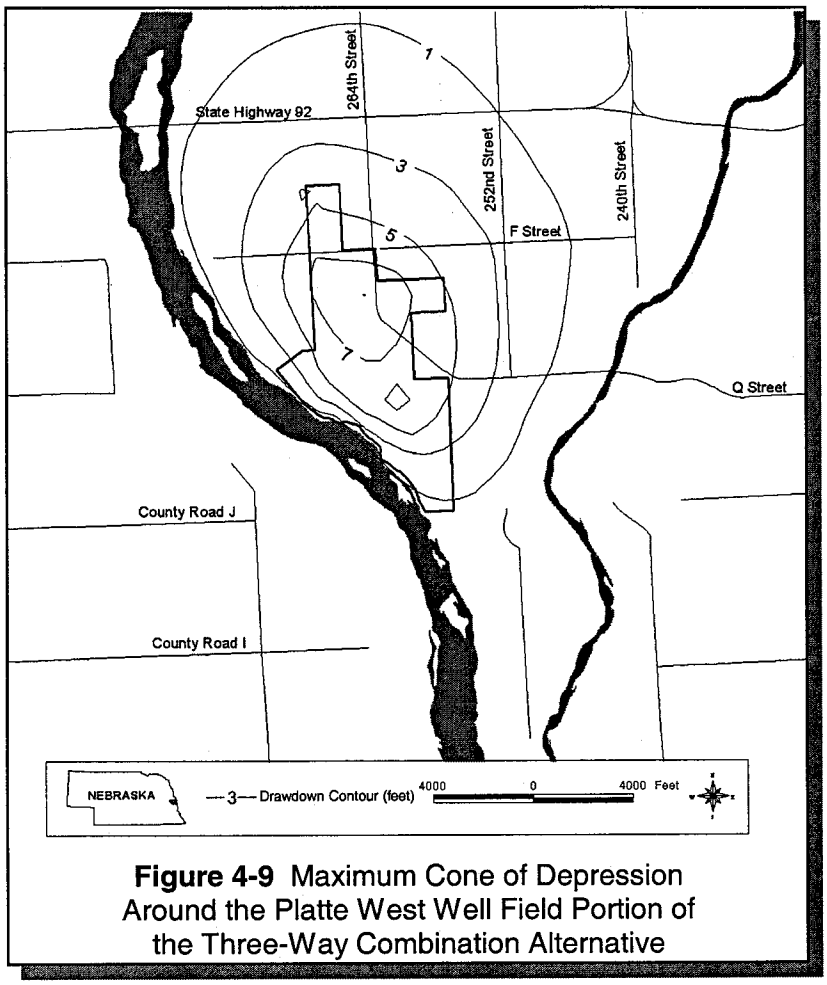


Figure 4-9 Maximum Cone of Depression Around the Platte West Well Field Portion of the Three-Way Combination Alternative

Platte South and Florence water treatment plants would routinely be operating at near maximum capacity during the summer. Maximum capacities for the Platte South and Florence treatment plants are 60 and 158 MGD, respectively. In 1997, a typical water demand year, the maximum pumping rates at the Platte South and Florence plants were 55 and 118 MGD, respectively, in July (District 1998). If these plants had been operating at full capacity, an additional 5 and 40 MGD would have been taken from the Platte and Missouri rivers, respectively. Based on the historical monthly average low river flow for July, the additional pumping would reduce the flow in each river by 0.2 percent.

With the no federal action alternative options a, b, and c, the District might develop numerous wells in the Dakota Sandstone aquifer and augment natural recharge with aquifer storage. This practice would result in wide-spread local, annual fluctuations of the water table in the Dakota Sandstone aquifer.

For the no federal action option g, some of the wells would be moved, relative to the Platte West alignment, to avoid impacting wetlands on the well field. The most significant moves would be in the northern part of the Saunders County portion of the well field. Four wells would be moved closer to the Platte River, which would tend to increase induced infiltration and reduce drawdown relative to the Platte West alignment. Also, three wells would be moved farther from the river, which would tend to decrease induced infiltration and increase drawdown. The expected net effect of the new well locations is that the flow depletion and drawdown for the no federal action option g would be approximately the same as for the Platte West alternative.

Mitigation

Some of the flow depletion of the Platte River will be offset by future return flows from wastewater treatment plants. Currently, much of the water produced by the District returns to the Missouri River through Omaha's sanitary and stormwater sewer systems. As the District's service area expands westward, water will be provided to communities that discharge their wastewater into the Platte River watershed. For example, the District has agreed to begin supplying up to 1,613 AF per year of water to the city of Waterloo and surrounding developments starting in 2001. Other municipalities within the western portion of the District's anticipated 2030 service area

include Valley, Riverside Lakes, and Gretna (Figure 1-2). As development increases, the amount of wastewater generated from these areas will also increase. The District estimates that by 2030 increased wastewater discharge into the Platte River watershed from the western portion of the District's service area could offset 10 to 15 percent of the 40,521 AF per year predicted to be removed from the Platte River by the Platte West alternative when operating at its design capacity of 50 MGD.

Ideally, the flow depletions in the Platte River would be mitigated by replacing the withdrawn water. Conceivably, the District could transfer water within the Platte River basin (NRRS 46-290) by purchasing water rights from upstream users, e.g., agricultural users, then allowing the water to pass downstream. Nebraska statutes, however, require that transferred appropriated water be used for the same preference category for which the water is currently used (NRRS 46-294(1)(d)). The District, therefore, could not transfer water currently used for agriculture and use the water for a non-agricultural purpose such as instream flow in support of induced infiltration.

The preservation of flow in the Platte River below Leshara is partially protected by several water rights for instream flow that greatly exceed the amount of water that would be consumed. The District and the City of Lincoln have applied for, or intend to apply for, water rights to protect induced infiltration (NRRS 46-235) that total up to 2,400 cfs when the most they could withdraw is about 400 cfs. The city of Lincoln also returns much of the water withdrawn from the Platte River through the discharge of treated municipal effluent into Salt Creek. The Nebraska Game and Parks Commission (NGPC) has an instream flow appropriation to protect aquatic habitat of up to 3,700 cfs. Although these water rights limits would not prevent upstream senior water rights holders from depleting flow in the lower Platte River, the amount of water remaining in the lower Platte River that could be appropriated, and which could be used for consumptive use, has been reduced.

The size and shape of the cone of depression and the amount of flow depletion in the Platte River caused by the well fields are based on several assumptions including the annual pattern of water demand from the well field and homogenous distribution of the materials that make up the aquifer. The actual pumping rates in 2030 are, of course, unknown and discontinuities within the aquifer material, i.e., clay lenses, are known to exist but have not been quantified. The actual cone of depression in 2030, therefore, could vary from those determined by modeling. To overcome this uncertainty, the District would collect additional baseline information before operation of the well field and would continue to monitor conditions to assure that actual impacts are mitigated.

The District would conduct a survey of land owners within the predicted well field cone of depression to accurately determine the number of wells potentially affected. This survey would be conducted at least one year prior to operation of one of the new well fields. Yields from any affected wells, not just those within the 5-foot drawdown contour, would be improved by deepening, installing more powerful pumps, or drilling new, larger wells if necessary. These improvements would overcome decreased water levels and would be made at the District's expense.

The District would expand its water level monitoring network in the potentially affected areas to measure changes in groundwater and pond levels. The District would then work to compensate landowners whose ponds become verifiably degraded because of groundwater drawdown. Mitigation would be determined on a case-by-case basis as impacts become apparent. Possible mitigation measures would include deepening or enlarging ponds at the District's expense,

or monetary compensation of affected owners by the District. Mitigation for special aquatic sites that may be associated with affected ponds is discussed in the Wetlands sections of this EIS and in Appendix D.

Rough estimates of the cost of mitigating impacts to private wells and ponds, including additional groundwater monitoring wells and monitoring over the first 30 years of well field operation range from $150,000 for the Three-Way Combination alternative to $345,000 for the Platte West plus Platte South Alternative (Table 4-7). These costs are approximately related to the relative sizes of the well field cones of depression.

Mitigation for the impacts to biological resources from reductions in groundwater level and river flows is discussed in the Biological Resources section.

WATER QUALITY

During construction, surface water quality could be affected by sediment-laden runoff from construction sites, from activities occurring in rivers and streams, such as installing pipelines, and from discharges from well testing. Surface water quality could also be affected by water treatment plant effluents discharged into the Elkhorn River or Thomas Creek.

Potential impacts were based on the chemical character of the discharge. Impacts on water quality would be significant if Nebraska Water Quality Standards (Title 117, Chapter 4) were exceeded.

Raw water is treated with a variety of chemicals to make it suitable for drinking. Some chemicals are powders that adsorb impurities such as suspended solids, iron, magnesium, and pesticides. Water from the Platte River alluvial aquifer is currently treated at the Platte South plant with alum (aluminum sulfate) and lime (District 1998). These additives and the attached impurities are then removed in settling basins and with filters. Water used to backwash filters is discharged into the Platte River. This effluent is lower in suspended solids, iron, magnesium, and phosphates and higher in hardness than water currently found in the Platte River. The residuals from the Platte South settling basins are transported to the Missouri River for disposal.

Table 4-7 Mitigation Costs for Private Ponds and Wells

	Platte West	Platte North	Platte South + Platte West	Platte South + Platte West DC	Three-Way Combination	No Federal Action Option B
Ponds	$100,000	$50,000	$100,000	$100,000	$50,000	$100,000
Wells						
Number	15	2	15	10	5	15
Cost per well	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000
Cost	$45,000	$6,000	$45,000	$30,000	$15,000	$45,000
Observation wells						
Number	10	10	10	7	5	10
Cost per well	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Cost	$50,000	$50,000	$50,000	$35,000	$25,000	$50,000
Groundwater Monitoring						
Year	30	30	30	30	30	30
Cost per year	$5,000	$3,000	$5,000	$4,000	$2,000	$5,000
Cost	$150,000	$90,000	$150,000	$120,000	$60,000	$150,000
Total	$345,000	$196,000	$345,000	$285,000	$150,000	$345,000

Water from the Missouri River is treated at the Florence plant with alum, lime, polymer, soda ash, and powdered activated carbon (District 1998). After settling, the added chemicals are discharged directly into the Missouri River. The greater variety of treatment chemicals used at the Florence Plant reflects the poorer water quality in the Missouri River compared to the Platte River alluvial aquifer.

Platte West

The Platte West alternative includes the construction of 42 water production wells. Once installed, each well would be tested by pumping to determine individual well yield. Water discharged during the pump tests would be piped to the nearest waterway to prevent soil erosion. Groundwater discharged into the waterways would have lower concentrations of suspended solids but otherwise would be of similar quality to the nearby river water. Pump testing of the wells would not degrade existing surface water quality.

Transporting water from the wells to the treatment plant would require installing large diameter pipelines across the Platte and Elkhorn rivers and a small, permanently flowing tributary of the Elkhorn River west of the river. These pipelines would be buried under the existing stream beds. Installation of these pipelines would temporarily increase turbidity in these rivers. The Platte and Elkhorn rivers carry a substantial load of suspended solids (Figure 3-5). The temporary impacts on water quality caused by pipeline installations, therefore, would not likely degrade water quality sufficiently to adversely affect a receiving water's existing uses and thereby violate the Antidegradation Clause of Nebraska's water quality regulations (Title 117, Chapter 3, ¶001 and ¶003).

Construction of the new water treatment plant would expose soils and temporarily increase the potential for erosion. Sediment in runoff from this site could flow into a local intermittent stream and then into the Elkhorn River. Several ponds along this stream would intercept the runoff and trap some of the sediment. These ponds, however, would be degraded in the process and are privately owned. Construction of the treatment plant could take two to three years. Uncontrolled sediment runoff from this site over this period could result in significant water quality degradation.

About four percent of the water removed from the Platte West well field would be discharged into the Elkhorn River as effluent. In terms of iron, magnesium, phosphorus, and suspended sediments, the effluent water, following treatment and removal of the softening residuals, would be of higher quality than the receiving water. No adverse impacts to water quality in the Elkhorn River are expected from effluents generated by this alternative.

Comments received on the original Draft EIS expressed concern that the depletion of flows in the Platte River caused by induced infiltration would concentrate existing pollutants (e.g., pesticides and fecal bacteria) in the Platte River. The contaminants in the water flowing into the aquifer are also transported into the aquifer. Contaminants in the river water upstream of the well field, therefore, would not be concentrated as the river flows past the well field.

The flow depletion caused by induced infiltration would reduce the degree to which contaminants entering the river downstream of the well field are diluted. The reduction in dilution, however, would be small because the flow in the Platte River is many times greater than any of the streams entering the Platte River downstream of the well field. For example, the largest stream entering the Platte River downstream of the well field is the Elkhorn River. Flow in the Platte River is approximately 10 times greater than flow in the Elkhorn River (Figure 3-4). Under

extremely low flow conditions, the well field could reduce flow in the Platte River by 10 percent. Under those conditions, flow in the Platte River would still be about nine times greater than in the Elkhorn River. The Platte River's ability to dilute pollutants, therefore, would not be substantially affected by the well field.

Of the five action alternatives examined in detail, the water withdrawn by the Platte West alternative would have the highest overall initial quality because all of the water would be considered groundwater. All of the other alternatives would likely use some groundwater under the influence of surface water or would directly withdraw water from the Missouri River. Alternatives that directly withdraw water from the Missouri River or use groundwater under the influence of surface water would likely have higher levels of particulate, chemical, and microbial contamination and would require more treatment compared to water from the Platte West alternative.

Platte North

The basic construction requirements and the quality of raw water and water treatment plant effluent for the Platte North alternative would be the same as the Platte West alternative. Impacts on water quality, therefore, would be potentially significant for construction site runoff and insignificant for well testing, pipeline installation, and treatment plant effluent.

The water withdrawn from the Platte North well field would come in large part from horizontal collector wells. Water from these types of wells is generally classified as groundwater under the influence of surface water. Because groundwater under the influence of surface water can have concentrations of contaminants such as pesticides and microbial pathogens similar to surface water, water from the Platte North well field would have to be treated as surface water.

Platte South Plus Platte West

This combination alternative has all of the potential to impact water quality of the Platte West alternative plus the construction of an additional water treatment plant and about 50 additional miles of large diameter pipeline.

Water from the Platte West portion of this alternative would be high quality groundwater and would be treated as such. Expansion of the Platte South alternative would require the use of horizontal collector wells. Currently, water from the Platte South well field is classified as groundwater. Expansion of the well field would likely degrade the classification of the water source to groundwater under the influence of surface water. The existing treatment plant would have to be modified to treat surface water.

Platte South Plus Platte West DC

Because only the Douglas County side of the Platte West well field would be used by this alternative, potential impacts on water quality in the Platte River from construction of a connecting pipeline would be avoided. Otherwise, the potential impacts on water quality of the Platte South plus Platte West DC alternative would be the same as the Platte South plus Platte West alternative.

Three-Way Combination

Construction and potential impacts to water quality from a portion of the Three-Way Combination alternative would be similar to the Platte South plus Platte West DC alternative. The addition of another treatment plant site and 33 miles of large diameter pipeline, however, would make the overall potential to impact water quality greater for the Three-Way Combination alternative.

No Federal Action

Under options a through f of the no federal action alternative, use of the existing water treatment plants and the discharge of effluents from these plants would increase. These increases would be within the current discharge permit conditions for these plants

and, as such, would not have a significant adverse impact on water quality.

Construction efforts associated with dispersed wells in the Dakota Sandstone aquifer and connecting pipelines would be isolated and relatively small. The no federal action alternative would probably not adversely affect existing surface water quality.

The injection and storage of treated surface water into the Dakota Sandstone aquifer would change but not degrade the quality of the water in the aquifer.

The impacts on water quality from option g would be similar to the Platte West alternative except the temporary impacts on the Platte and Elkhorn rivers from pipeline installation would be avoided by the use of directional drilling.

Mitigation

Erosion and sediment runoff caused by construction of the transmission pipelines and a new or expanded water treatment plant or aquifer storage and recovery facilities would be mitigated by the use of accepted sediment control techniques and best management practices. These control measures include silt fences, silt traps, sedimentation basins, reshaping, and reseeding (Appendix D). The specific mitigation measures would be specified in a "Stormwater Pollution Prevention Plan" which would be incorporated into the project's NPDES general permit for stormwater discharges from construction sites. Impacts on the Platte and Elkhorn rivers from the installation of the pipelines across the rivers would be minimized by the use of sheet steel pilings instead of earthen fill for the coffer dams.

Operation of a new or expanded water treatment plant would also require an NPDES permit. This permit would place limits on the effluent from the plant that would prevent Nebraska water quality standards from being exceeded in the receiving stream. The plant would be designed and operated to comply with its discharge permit.

NOISE

Construction and operation activities associated with the water supply alternatives could increase noise levels in the immediate surrounding area. Noise sources during construction would include heavy construction equipment, blasting, and increased vehicular traffic to and from the construction site. Following project construction, most noise would come from operation and maintenance activities. Sensitive noise receptors include residences, businesses, recreationists, livestock, and wildlife.

Increases in noise levels by an increment of 3 dBA would be noticed by most individuals. For the purposes of this analysis, the impact would be considered significant if sensitive noise receptors were to experience an increase of 3 dBA or more above ambient noise levels. Construction equipment could cause this level to be exceeded within 600 feet of pipeline or treatment plant construction.

Human activity and the noise associated with construction of the treatment plants and associated pipelines have the potential to adversely impact area wildlife. Should increases in ambient noise result in significant redistribution or disturbance to wildlife, noise impacts would be considered significant but temporary.

WATER SUPPLY ALTERNATIVES

Sensitive noise receptors occur within 600 feet of all construction areas (Table 4-8); therefore, temporary impacts from changes in ambient noise levels would occur. Pipeline construction would typically involve clearing, digging a trench, laying the pipe, filling the trench, regrading, and reseeding. Noise from this activity is not expected to affect any one location for more than a few days. Most of

Table 4-8 Potentially Affected Sensitive Noise Receptors

Alternative	Receptors
Platte West	59
Platte North	79
Platte South plus Platte West	124
Platte South plus Platte West DC	124
Three-Way Combination	465

the area within the well fields would be relatively undisturbed by construction. With few exceptions, the areas that would be impacted by construction activities for the proposed water supply alternatives have already been disturbed by agricultural, suburban, or urban development. The use of these areas by wildlife is relatively low. Although the noise generated by construction activities may cause some wildlife to abandon these areas, the overall impact on wildlife would be temporary and insignificant.

After construction, increased noise levels in the vicinity of the well fields would be caused by increased traffic attributable to operation and maintenance. These noise levels, however, would be intermittent and comparable with noise generated by current agricultural activities at the sites. Noise from water treatment plant operation and maintenance would be low level, and localized. The design of a new water treatment facility would result in minimal noise increases at the perimeter of the facility (HDR Engineering, Inc. 1993). Impacts on wildlife from noise are not expected to be significant.

NO FEDERAL ACTION

For options a through f of the no federal action alternative, construction of wells in the Dakota Sandstone aquifer and their connecting pipelines would have temporary and local impacts on noise levels. These impacts are not expected to be significant. Noise impacts for the no federal action alternative option g are expected to be the same as for the Platte West alternative.

MITIGATION

Construction work near residences would be restricted to times which would not disturb nearby residences, such as 7:00 a.m. to dusk with possible later starting times for weekend work. All equipment powered by internal combustion engines would be required to have functioning mufflers.

BIOLOGICAL RESOURCES

The proposed water supply alternatives could impact biological resources through the construction of water treatment plants, pipelines, access roads, and wells and by changes in groundwater levels and river flows.

WETLANDS AND OTHER SPECIAL AQUATIC SITES

Two types of special aquatic sites, wetlands and aquatic beds, exist in the project area. Wetlands are communities intermediate between aquatic and terrestrial systems and are identified by the presence of appropriate soils, plants, and hydrology. Changes to one or more of these criteria has the potential to impact the character of a wetland. In the project area, wetlands are found primarily in lowland areas in the Platte River floodplain and along the edges of lakes and streams.

Aquatic beds consist of submerged or floating aquatic vegetation growing in the shallow areas of lakes, ponds, and streams. Wetlands and aquatic beds could be adversely impacted by construction activities and alteration of hydrology caused by lowering groundwater levels. Wetlands and aquatic beds could also be beneficially impacted because the special aquatic sites on the well field would be protected from future activities such as sand and gravel mining, residential development, and intensive agricultural practices.

To assess the potential impact of the proposed project, special aquatic sites potentially impacted by each water supply alternative were mapped. For some of these wetlands, the underlying soils and their surface water hydrology were also analyzed.

The FWS's NWI maps and field surveys conducted in 1994 and 1995 (HDR Engineering, Inc. 1995, Burns & McDonnell Engineering Company, Inc. 1995a) were used to determine the extent and type of wetlands that could be impacted. Although this technique of mapping wetlands is not as accurate as formal delineation, NWI maps were considered accurate enough to provide meaningful comparisons of wetland and aquatic resources among the various alternatives. The approximation of wetland distributions determined from the above studies was considered sufficient to evaluate the relative impacts of the water supply alternatives. A formal wetland delineation would be required as part of the mitigation plan if one of the alternatives is permitted by the Corps.

Additional hydrogeological and soil analyses of wetlands were conducted in 2000 (Appendix C). At each well field, five to 10 wetlands were selected. Core samples were taken through the surface soil and into the underlying alluvial material to a depth of at least 12 feet. At most wetlands where standing water was not present, the depth to groundwater was measured. Samples of the surface soil were collected and analyzed for permeability. Additional core samples, taken to a depth of two feet with a hand auger, were examined for the presence of soil conditions (redoximorphic features[6]) that would provide some indication of whether or not groundwater contributed to the maintenance of that wetlands' hydrology.

[6]Redoximorphic features are colorations in the soils that indicate a lack of oxygen as a result of saturation by water.

The data from the above analyses were combined with the best professional judgement of a registered Professional Wetland Scientist to produce groundwater drawdown impact criteria. Criteria were developed for the Platte West and Platte North well fields. No impacts to wetlands were expected at the Platte South well field because no significant lowering of the water table was expected at this site. The details of the wetland analyses and development of the impact criteria are presented in Appendix C.

Predicting the impact on wetlands from groundwater drawdown is more complicated than predicting impacts from construction projects. For construction projects, wetlands are typically either replaced by project components or unaffected and the impacts take place within well defined boundaries. The impacts from the well field cones of depression are much less certain. The hydrology of the system is complex; therefore, knowledge of basic conditions is incomplete and interactions are difficult to predict with a high degree of certainty. For example, the NWI maps are old, wide variations in soil types exist across the affected area, and locations of the drawdown contours produced by the groundwater model can not be considered precise. As is explained in the following pages, the principal criterion that emerged from the analysis was that a drawdown of 1 foot or more would alter most wetlands. Variations in soil types, the large existing annual groundwater fluctuations, year-to-year variations in weather conditions, and the uncertainty regarding the dependency of wetlands on groundwater versus surface water suggest predictions based on this criterion represent a worst-case scenario.

The redoximorphic features of the wetland soils suggested groundwater was the primary source of water for the maintenance of wetland hydrology at the Platte West and Platte North well fields. All of the wetlands, however, were underlain with soils that had

moderate to very low permeability and were one inch to two feet thick. Water supply calculations indicated, in most cases, the low permeability of the soils combined with rainfall and surface water runoff would sustain some wetland hydrology in the absence of groundwater. In these cases, the removal of groundwater could alter wetlands and other special aquatic sites to a drier type of wetland but would not cause their loss. This analysis could not rule out, however, that surface runoff could be sufficient to sustain the original wetland type.

The wetlands in the Platte River floodplain have developed under a particular set of environmental conditions. These conditions include a groundwater table that typically fluctuates 2 to 4 feet per year. The amount of time the water table is in the root zone of the wetland vegetation is probably a major factor determining the type of wetlands that have developed. Because saturation of the upper one foot of soil is generally considered vital for maintaining a wetland, a groundwater drawdown of one foot or more was considered to have an adverse impact because the amount of time groundwater would be near the surface would be reduced.

Exceptions to this general impact criterion exist. The large wet meadow on the Saunders County portion of the Platte West well field (classified as PEMY, see Chapter 3) is underlain by a 10- to 15-foot thick layer of clay (HDR Engineering, Inc. 1995). This clay lens isolates the wet meadow from the underlaying aquifer. Drawdown of groundwater under this wetland, therefore, is not expected to impact this wetland. Likewise, wetlands with direct surface water connections to the Platte or Elkhorn rivers were not expected to be altered by groundwater drawdown.

In Saunders County, some of the wetlands have watersheds that contain highly permeable surface soils. If the watersheds for these wetlands are not large enough, then the amounts of runoff that would reach the wetland would be inadequate to maintain wetland hydrology in the absence of groundwater. Wetlands were predicted to be lost by a drop in the water table of one foot or more.

Many assumptions were used to estimate the impacts on wetlands from groundwater drawdown. The first assumption is the implication that the drawdown of the water table will rapidly reach the depth and extent used to evaluate impacts to wetlands. In fact, the well field cone of depression will develop slowly over approximately a 30-year period as demand for water from the new facility increases.

The size of the potentially impacted areas and limited access to these areas made precise delineation of all of the potentially affected wetlands and other special aquatic sites infeasible. Consequently, data on the wetlands and other special aquatic sites were determined largely from NWI maps. These maps were made from the interpretation of aerial photographs taken in the early 1980s. Because photo interpretation has an inherent subjective component and wetlands and other special aquatic sites can change over time in response to climate cycles and changes in land use, the baseline data for locations, sizes, and types of wetlands and special aquatic sites are only an approximation.

Determining the relative contribution of groundwater and surface water to the hydrology of the wetlands and special aquatic sites was made with only observations of soil characteristics, anecdotal observations, and the best professional judgement of a registered Professional Wetland Scientist. Long-term monitoring of groundwater elevations at wetland sites and detailed maps of floodplain topography would have provided for a more precise determination of the seasonal and annual fluctuations in groundwater and the influence of surface

water on the wetlands and other special aquatic sites. In light of the limited amount of data, a conservative, worst-case estimate was made that groundwater was the primary source of water to wetlands and special aquatic sites. The possibility also exists that surface water could be the primary source of wetland hydrology for some of the wetlands in the floodplain. For this reason, the current assessment is considered worst-case and the actual impacts to aquatic resources may in fact be much less than currently estimated. Given the uncertainties in the impact analysis, the true impacts on wetlands cannot be known until the well field has been operating for many years. For this reason, a detailed, annual wetland monitoring and reporting plan will be essential to assess actual impacts to aquatic resources if a well field is permitted and pumping actually commences.

Determining drawdown contours through modeling also has some unavoidable imprecision. The ease at which water can move through the aquifer was considered constant for large parts of the study area. In reality, the Platte River aquifer is known to have clay lenses and pockets of gravel that have flow-through rates for water that are slower and faster, respectively, than the typical sand substrate. Such variations can affect the location of any given drawdown contour. The larger the area encompassed by a drawdown contour, the greater the number of substrate discontinuities are likely to exist. The location of the shallowest drawdown contour, therefore, has the most uncertainty. In the groundwater modeling conducted to assess wetland impacts, the shallowest drawdown calculated was the 1-foot contour, which was also the criterion for separating impacted from non-impacted wetlands and other special aquatic sites.

Construction of project facilities would have more predictable impacts on wetlands and special aquatic sites. Wetlands crossed by pipelines would be temporarily disturbed or lost for the life of the project. For transmission pipelines, wetlands and other special aquatic sites were counted as lost within the 50-foot wide permanent easement. This impact assessment is another worst-case scenario because not all portions of the permanent easement would need to be permanently maintained to allow access. Wetlands and other special aquatic sites within an additional 50-foot wide construction easement were considered to be temporarily disturbed. Each well placed in a wetland was assumed to temporarily disturb 0.02 acre and cause the loss of 0.01 acre. Wetlands by well field service roads would be lost; the width of permanent impact from the service roads was conservatively set at 20 feet even though preliminary designs indicate the permanent road surface would be only 12 feet wide. Well field pipelines were assumed to be located under the service roads (HDR Engineering, Inc. 1993) and would not contribute to wetland impacts. Based on spot observations, wetlands were assumed to exist along the banks of all streams that would be crossed by pipelines, even if no wetlands were shown on the NWI maps.

Wetlands and aquatic beds are afforded an extra measure of protection under the Clean Water Act. Any unmitigated loss or alteration of these special aquatic sites could be a significant impact.

Platte West

At its maximum extent, the cone of depression for the Platte West well field alternative (Figure 4-10) would encompass 323.1 acres of wetlands and other special aquatic sites (Table 4-9). Of these, 141.6 acres were predicted to be altered to a drier wetland type and 13.9 acres would be converted to uplands and lost by groundwater drawdown (Table 4-9). The wet meadow, which occupies 150.4 acres within the cone of depression, would not be impacted because of the 15-foot thick, underlaying clay lens. The wetlands considered to be altered by groundwater drawdown are also underlain

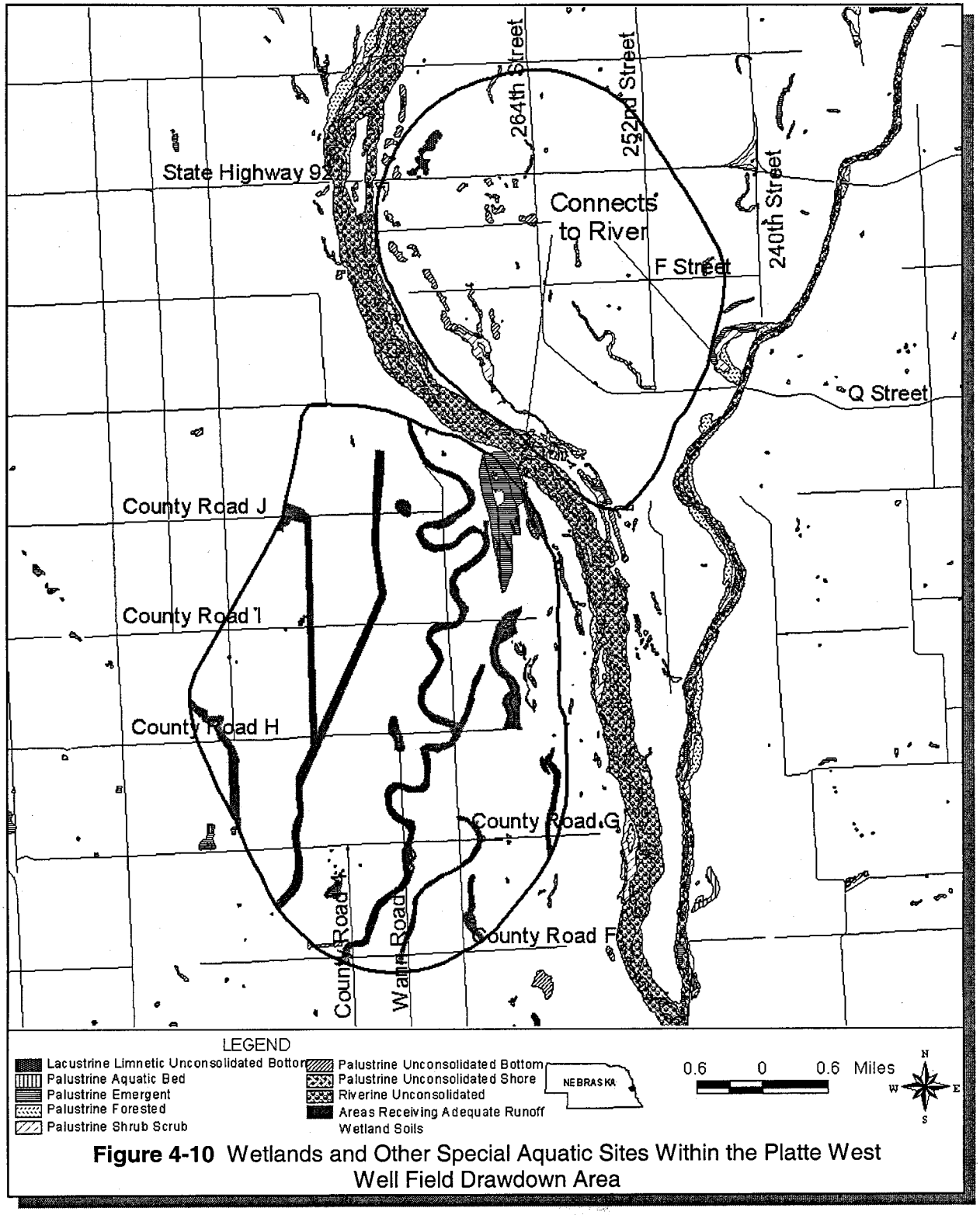


Figure 4-10 Wetlands and Other Special Aquatic Sites Within the Platte West Well Field Drawdown Area

Table 4-9 Acres of Wetlands and Other Special Aquatic Sites Impacted by Drawdown from the Platte West Alternative

Special Aquatic Site Type[1]	Impact Classification								
	Saunders County			Douglas County			Total		
	None	Altered	Lost	None	Altered	Lost	None	Altered	Lost
PAB	--	--	--	5.8	15.0	--	5.8	15.0	--
PEM	150.4	31.6	13.8	0.6	32.5	0.1	151.0	64.1	13.9
PFO	--	--	--	8.2	9.1	--	8.2	9.1	--
PSS	--	--	--	2.6	53.4	--	2.6	53.4	--
Total	**150.4**	**31.6**	**13.8**	**17.2**	**110.0**	**--**	**167.6**	**141.6**	**13.9**
Wetlands	150.4	31.6	13.8	11.4	95.0	--	161.8	126.6	13.9
Aquatic beds	--	--	--	5.8	15.0	--	5.8	15.0	--

[1]P = palustrine; AB = aquatic bed; EM = emergent; FO = forested; SS = scrub-shrub.

by relatively impermeable soils; however, these soils are less than 2 feet thick. Because of the substantial difference in thickness, the conservative impact - alteration - was assessed for wetlands and other special aquatic sites other than the wet meadow. Another 17.2 acres of wetlands and other special aquatic sites would not be impacted because the water level in these areas is controlled by a direct surface water connection to the Platte or Elkhorn rivers.

Construction of the well field and transmission pipelines would temporarily disturb 0.3 acre of wetlands and cause the loss of 0.8 acre (Table 4-10). No wetlands would be affected at the proposed water treatment plant site. The total amount of wetlands and other special aquatic sites predicted to be altered and lost by the Platte West alternative would be 141.6 and 14.7 acres, respectively (Table 4-10).

The two Platte West well fields would contain 188.6 acres of wetlands and 5.3 acres of other special aquatic sites (Chapter 3). These special aquatic sites, if not impacted by drawdown or construction, could be protected from future loss to development if the District chooses to allow the well field to revert to natural vegetation.

Platte North

The cone of depression for the Platte North alternative would encompass 76.7 acres of wetlands and other special aquatic sites (Figure 4-11). Of these, 66.1 acres are predicted to be altered and 10.4 acres would be lost (Table 4-11). Construction of the well field and transmission pipelines would

Table 4-10 Summary of Acres of Special Aquatic Sites Predicted to be Impacted by Construction and Operation

Alternative Component	Platte West			Platte North			Platte South + Platte West			Platte South + Platte West DC			Three-Way Combination		
	Dist.[1]	Altered	Lost	Dist.	Altered	Lost	Dist.	Altered	Lost	Dist.	Altered	Lost	Dist.	Altered	Lost
Well Field[2]															
Drawdown	--	141.6	13.9	--	66.1	10.4	--	62.1	11.0	--	117.9	--	--	97.3	--
Construction	--	--	0.5	--	--	0.3	--	--	0.5	--	--	0.1	--	--	0.1
Pipelines[3]	0.3	--	0.3	1.3	--	1.3	0.6	--	0.5	0.6	--	0.5	2.6	--	2.5
Total	0.3	141.6	14.7	1.3	66.1	12.0	0.6	62.1	12.0	0.6	117.9	0.6	2.6	97.3	2.6

[1]Temporarily disturbed. [2]Includes wells, collector pipelines, and well field roads. [3]Includes transmission and effluent pipelines.

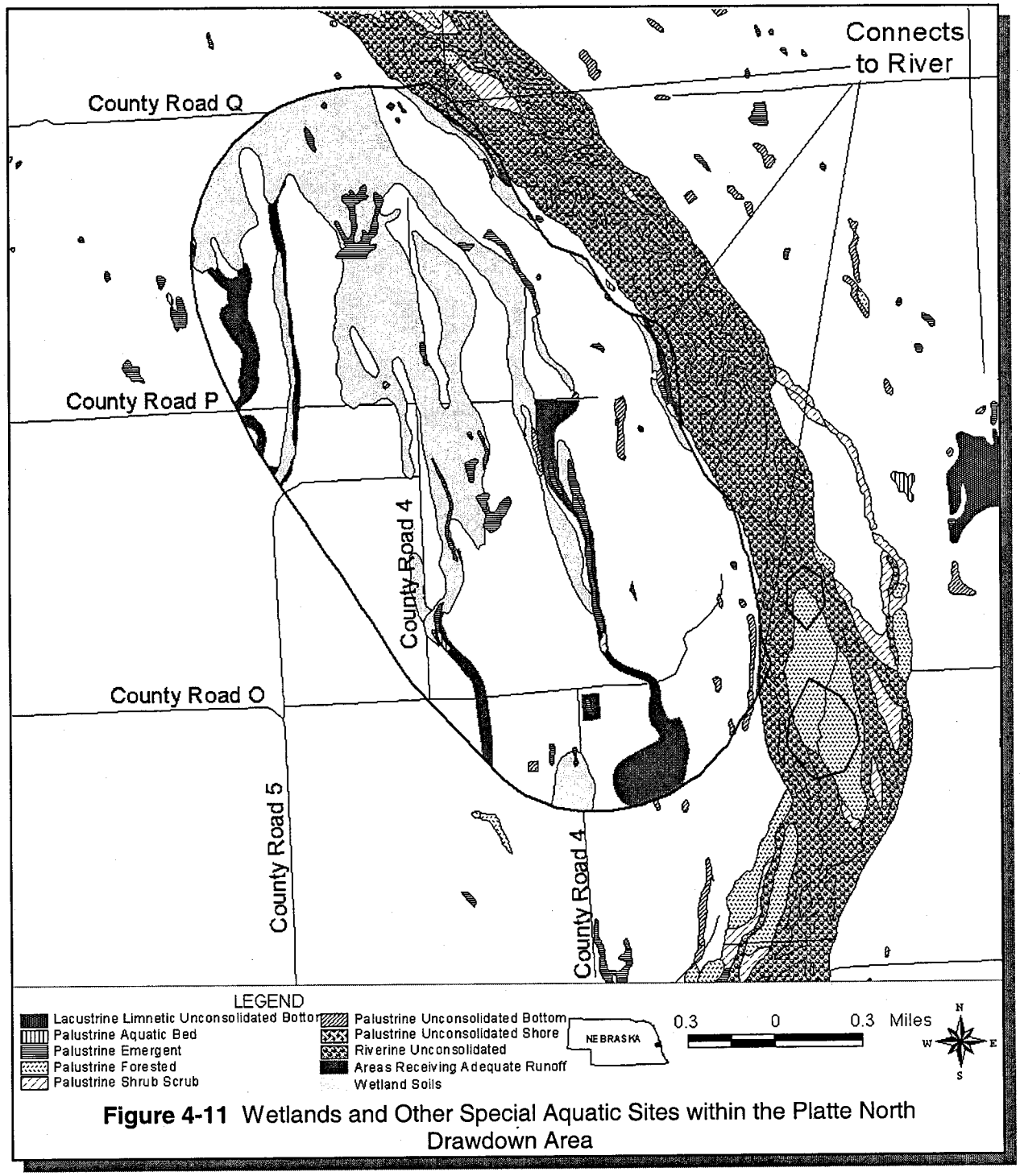


Figure 4-11 Wetlands and Other Special Aquatic Sites within the Platte North Drawdown Area

temporarily disturb 1.3 acres and cause the loss of 1.6 acres. The total impacts to special aquatic sites are estimated to be 12.0 acres lost and 66.1 acres altered (Table 4-10). Potentially offsetting the impacts to wetlands by the Platte North alternative would be the preservation of about 89 acres of wetlands and other special aquatic sites that exist on the well field. Ownership and management of the well field by the District could prevent

Table 4-11 Acres of Wetlands and Other Special Aquatic Sites Predicted to be Impacted by Drawdown from the Platte North Alternative

Special Aquatic Site Type[1]	Impact Classification		
	None	Altered	Lost
PAB	--	0.7	--
PEM	--	29.6	10.2
PFO	0.2	35.0	0.2
PSS	--	0.8	--
Total	**0.2**	**66.1**	**10.4**
Wetlands	0.2	65.4	10.4
Aquatic beds	--	0.7	--

[1]P = palustrine; AB = aquatic bed; EM = emergent; FO = forested; SS = scrub-shrub

development and land use practices that would adversely impact these special aquatic sites.

Platte South Plus Platte West

In this combination alternative, the expansion of the Platte South well field with horizontal collector wells is not expected to enlarge the existing cone of depression. No adverse impacts to wetlands from groundwater drawdown, therefore, are expected at this well field.

The Platte West well field portion of this alternative would produce 40 percent less water than the previously described Platte West alternative. The extent of the cone of depression of the former well field would be correspondingly smaller (Figures 4-10 and 4-12). The impacts to wetlands and other special aquatic sites from groundwater drawdown, therefore, would also be smaller. Drawdown is predicted to alter 62.1 acres of wetlands and aquatic beds (Table 4-12). Eleven acres of wetlands would be lost. Construction of the well field and transmission pipelines would temporarily disturb 0.6 acres of wetlands and cause the loss of 1.0 acre. Total permanent impacts to wetlands and other special aquatic sites from the Platte South plus Platte West alternative are predicted to be 62.1 acres altered and 12.0 acres lost (Table 4-10).

The Platte West well field would contain 188.6 acres of wetlands and 5.3 acres of other special aquatic sites (Chapter 3). These special aquatic sites, if not impacted by drawdown or construction, could be protected from future loss to development if the District chooses to allow the well field to revert to natural vegetation.

Platte South Plus Platte West DC

In this alternative, the impacts to wetlands and aquatic beds from groundwater drawdown would be confined to the Douglas County portion of the Platte West well field (Figure 4-13). A total of 149.2 acres of wetlands and other special aquatic sites would be within the cone of depression. Of these, 117.9 acres were predicted to be altered (Table 4-13). Because of their direct connection to the Platte or Elkhorn rivers,

Table 4-12 Acres of Wetlands and Other Special Aquatic Sites Predicted to be Impacted by Drawdown from the Platte South Plus Platte West Alternative

Special Aquatic Site Type[1]	Impact Classification								
	Saunders County			Douglas County			Total		
	None	Altered	Lost	None	Altered	Lost	None	Altered	Lost
PAB	--	--	--	--	10.4	--	--	10.4	--
PEM	68.5	18.7	11.0	--	8.5	--	68.5	27.2	--
PFO	--	--	--	--	--	--	--	--	--
PSS	--	--	--	--	24.5	--	--	24.5	--
Total	**68.5**	**18.7**	**11.0**	**--**	**43.4**	**--**	**68.5**	**62.1**	**11.0**
Wetlands	68.5	18.7	11.0	--	33.0	--	--	51.7	11.0
Aquatic beds	--	--	--	--	10.4	--	--	10.4	--

[1]P = palustrine; AB = aquatic bed; EM = emergent; FO = forested; SS = scrub-shrub.

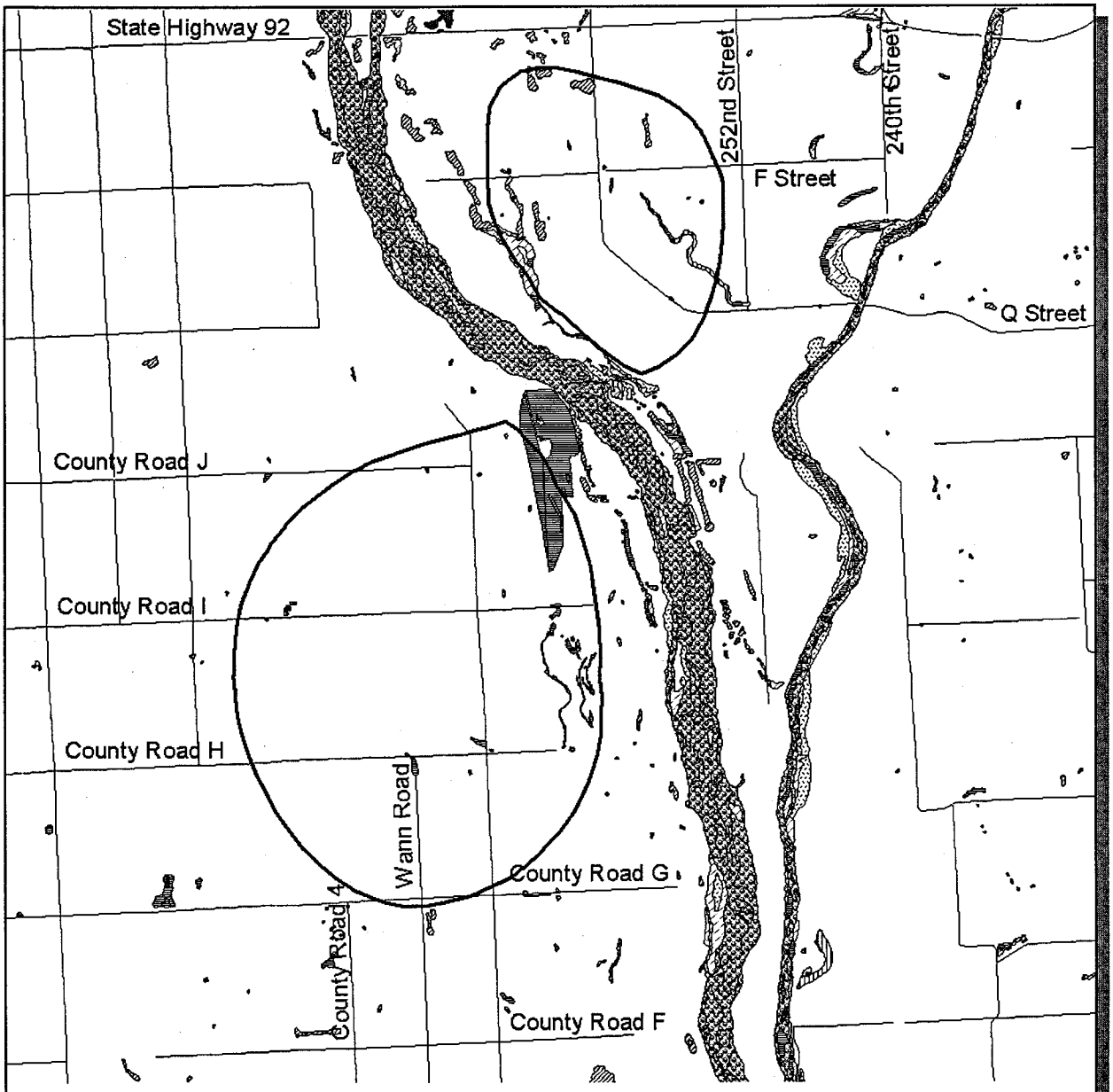


Figure 4-12 Wetlands and Other Special Aquatic Sites within the Platte South plus Platte West Drawdown Area

31.3 acres of special aquatic sites are not expected to be impacted by the anticipated groundwater drawdown. An additional 0.6 acre would be lost to the construction of the well field and transmission pipelines (Table 4-10).

The Douglas County portion of the Platte West well field contains 51.9 and 5.3 acres of

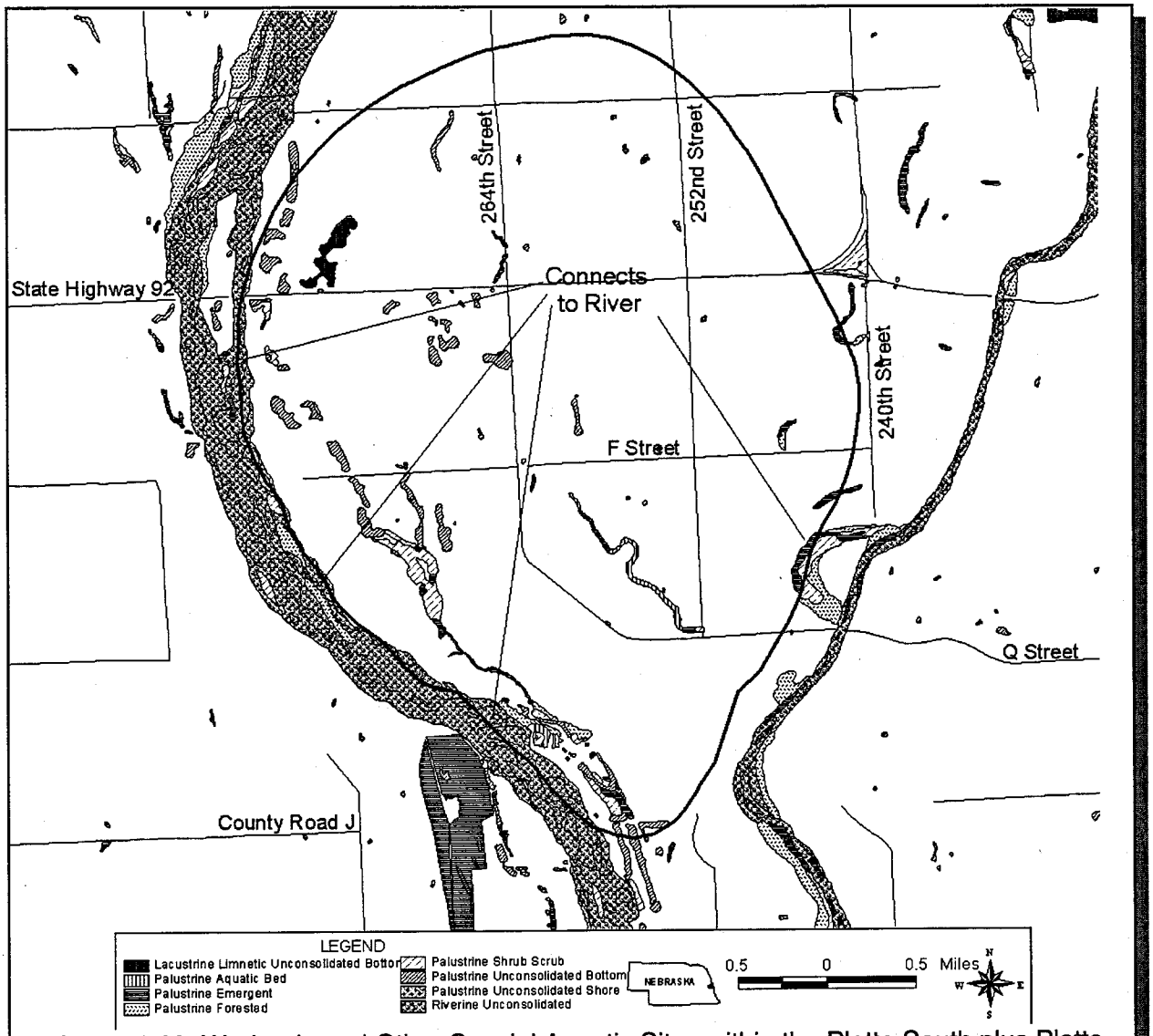


Figure 4-13 Wetlands and Other Special Aquatic Sites within the Platte South plus Platte West DC Drawdown Area

wetlands and aquatic beds, respectively. If not impacted by groundwater drawdown, these special aquatic sites could benefit from protection from future development and intensive agricultural practices depending on how the District chooses to manage the land in the well field.

Three-Way Combination

Impacts to wetlands and other special aquatic sites from groundwater drawdown by the Three-Way Combination alternative would be limited to the Douglas County portion of the Platte West well field (Figure 4-14). A total of 114.3 acres of wetlands and aquatic beds would be within the cone of depression. Of these, 97.3 acres were predicted to be altered to a drier type (Table 4-13). Seventeen acres are not expected to be significantly impacted because of their direct connection to the Platte River (Table 4-13). The transmission pipeline and construction on the well field would cause the loss of an additional 2.6 acres of wetlands (Table 4-9).

Table 4-13 Acres of Wetlands and Other Special Aquatic Sites Predicted to be Impacted by Drawdown from the Platte South Plus Platte West DC and Three-Way Combination Alternatives

Special Aquatic Site Type[1]	Impact Classification					
	Platte South + Platte West DC			Three-Way Combination		
	None	Altered	Lost	None	Altered	Lost
PAB	5.8	15.0	--	5.8	15.0	--
PEM	9.4	39.9	--	0.4	27.3	--
PFO	8.2	9.1	--	8.2	7.3	--
PSS	7.9	53.9	--	2.6	47.7	--
Total	**31.3**	**117.9**	**--**	**17.0**	**97.3**	**--**
Wetlands	25.5	102.9	--	11.2	82.3	--
Aquatic beds	5.8	15.0	--	5.8	15.0	--

[1]P = palustrine; AB = aquatic bed; EM = emergent; FO = forested; SS = scrub-shrub.

The Douglas County portion of the Platte West well field contains 51.9 and 5.3 acres of wetlands and aquatic beds, respectively. If not impacted by groundwater drawdown, these special aquatic sites could benefit from protection from future development and intensive agricultural practices depending on how the District chooses to manage the land in the well field.

No Federal Action

With the no federal action options a through f, construction would be limited to scattered wells developed in the Dakota Sandstone aquifer. These wells would not generate a cone of depression at the surface and would not affect the hydrology of wetlands. No significant adverse impacts to wetlands are expected from these options.

Impacts on wetlands and other special aquatic sites from option g would be limited to secondary impacts from groundwater drawdown. All construction related impacts would be avoided by directional drilling or by locating wells, service roads, and pipelines away from these sensitive habitats. Impacts from drawdown are expected to be same the Platte West alternative: 14.7 acres are predicted to be lost and 141.6 acres are predicted to be altered.

Mitigation

Construction of the Platte West alternative would require a Section 404 Permit from the Corps to place dredge or fill material (*i.e.*, disturb) in waters of the United States. Within this regulatory framework, the Corps can examine the secondary, non-construction related, potential impacts of the project on aquatic environments, such as the impact of groundwater drawdown. The permit for the project, therefore, can be conditioned on mitigating both direct and indirect impacts. The estimated impacts to wetlands and special aquatic sites from groundwater drawdown represent the maximum impacts considered likely to occur. Lesser impacts are possible. In particular, wetlands and special aquatic sites classified as altered may not be impacted if the contribution of surface water to maintaining hydrology has been underestimated. Given the uncertainties in the impact analysis, the true impacts cannot be known until the well field has been operating for many years.

The relative certainty of impacts is greater for wetlands and other aquatic sites predicted to be lost than for those predicted to be altered. Lost wetlands and other special aquatic sites would be mitigated by the creation of replacements on a type-for-type basis at a ratio of 1.5 to 1 (created to lost) (Burns & McDonnell Engineering Company, Inc. 2000, included in Appendix D). Based on the

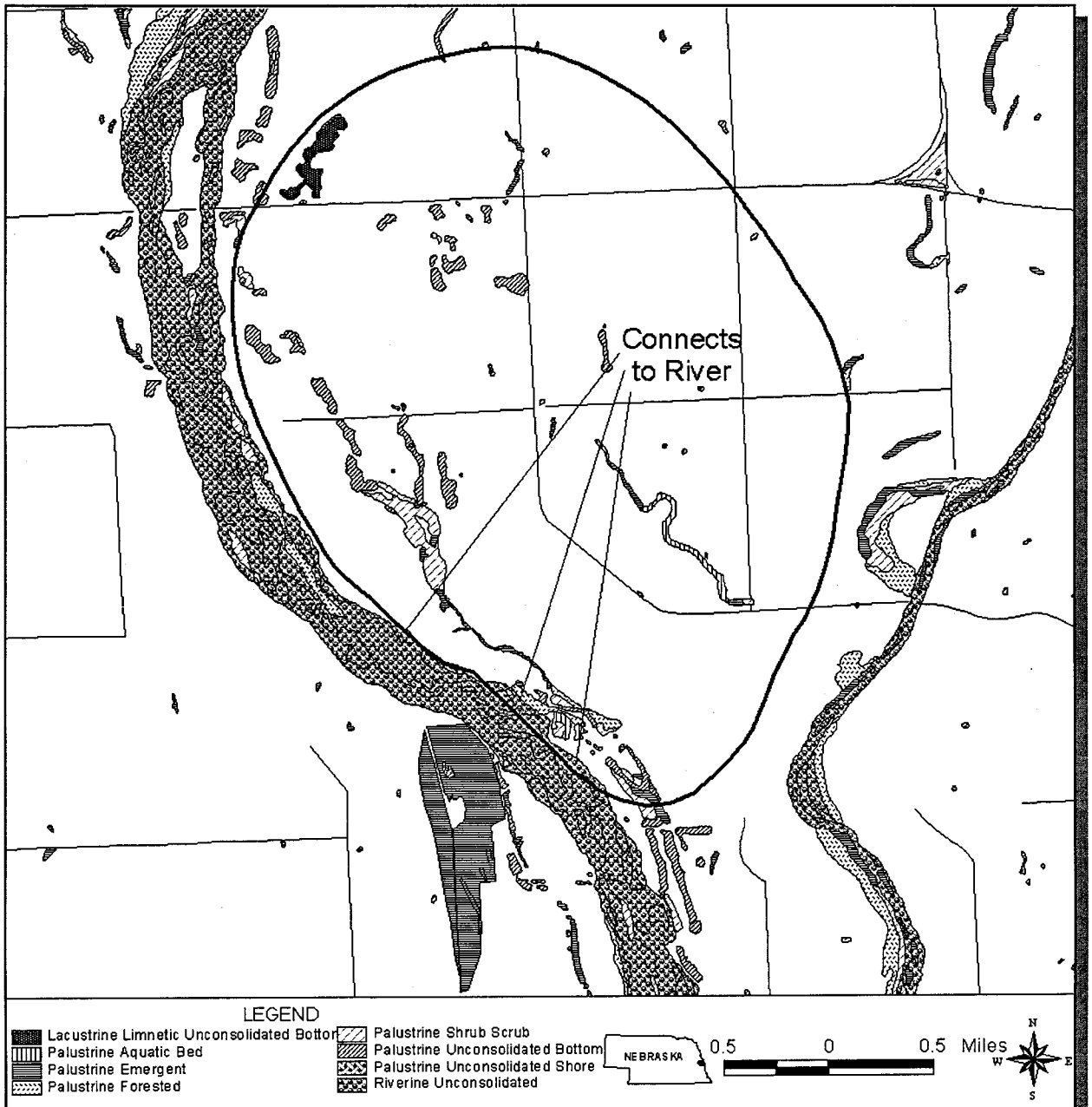


Figure 4-14 Wetlands and Other Special Aquatic Sites within the Three-Way Combination Drawdown Area

preceding impact analysis, the amount of new wetlands and aquatic beds that might need to be created would vary from 0.9 acre for the Platte South plus Platte West DC alternative, assuming no wetlands predicted to be altered are actually impacted, to 163.5 acres for the Platte West alternative if all wetlands are impacted as predicted (Table 4-14).

Prior to construction of the project, all wetlands and other special aquatic sites in the predicted groundwater drawdown area (as defined by the one-foot drawdown

Table 4-14 Mitigation for Impacts to Special Aquatic Sites

	Acres			
	Impacted		Mitigation	
Alternative	**Lost**	**Altered**	**Min**	**Max**
Platte West	14.7	141.6	22.1	163.5
Platte North	12.0	66.1	18.0	117.2
Platte South + Platte West	12.0	62.2	18.0	80.2
Platte South + Platte West DC[1]	0.6	117.2	0.9	118.5
Three-Way Combination	2.6	97.3	3.9	102.2

[1]Douglas County only

contour) would be delineated to provide a more exact determination of the types and amounts of special aquatic sites that could be altered or lost. Mitigation for wetlands predicted to be lost would be implemented during construction of the project and is expected to be completed prior to the start of operation.

The applicants' preferred mitigation site is 1.1 miles east of La Platte, Nebraska, in the floodplain of the Platte and Missouri rivers. This site was one of four sites evaluated for the creation of new wetlands (Burns & McDonnell Engineering Company, Inc. 2000, Appendix D). Two other sites were in Saunders County and one was in Douglas County. The list of potential mitigation sites was limited to land owned by the District because the Corps does not typically require applicants to acquire new land for wetland mitigation if the applicant already owns suitable property. If a Section 404 permit is issued, however, the Corps' consideration of mitigation requirements would not necessarily be limited to sites owned by the District. Although the La Platte site was the farthest from the Platte West well field, this site was judged the superior mitigation site because of size; location in the floodplain; presence of hydric soils and some existing wetland vegetation; availability of groundwater and surface water; and anticipated ease of construction. The combination of these factors suggested the La Platte site would have the greatest likelihood for successful wetland creation (Burns & McDonnell Engineering Company, Inc. 2000, Appendix D).

Excavation, grading, and berming of the site and improved drainage into the site would create the proper hydrology. Areas within the wetland site would be constructed with different elevations to produce the required variety of wetland types. Existing wetland soils and imported wetland soils would provide a seed source for the colonization of the new wetlands (Burns & McDonnell Engineering Company, Inc. 2000, Appendix D).

Preliminary plans exist for a new road and bridge across the Missouri River for U.S. Highway 34 to connect Interstate 29 in Iowa to U.S. Highway 75 in Nebraska. At this time, the preferred alignment of the road, one of the many proposed alignments, would cross through the middle of the La Platte wetland mitigation site. The appropriate agencies involved in the bridge project are aware of the District's intent to use the La Platte site for wetland mitigation. The construction of this road and bridge through the wetland mitigation site is only speculative at this time and would not be built until at least 2010, if at all (Jacobson 2001). Development of the mitigation site would occur well before construction of the connector highway. Once the wetland mitigation site became established, the site would become a part of the existing environment. Any impacts to the site by the new road would need to be mitigated by the road proponents.

If the new highway connector route was to go through the mitigation site, impacts on the value of the site for wetland mitigation would be minimal. The footprint of the highway through the site would be 2,850 feet long and at most 300 feet wide (Tondl 2001) for a total of 19.7 acres. Adequate area exists within the 210-acre site to construct the needed

wetlands and accommodate the new roadway. Although the presence of the highway could degrade the value of the new wetlands for migratory avian wildlife, the wetlands on and around the well fields that would be replaced were judged to have a low value for that type of wildlife (Burns & McDonnell Engineering Company, Inc. 1995a). The new wetlands, therefore, would not necessarily be constructed with high values for migratory wildlife.

A fertilizer plant exists one mile west of the La Platte mitigation site. This plant has a 20-MGD well field along the north bank of the Platte River. When operating at capacity, this well field would produce a groundwater drawdown at the La Platte site of one to 1.5 feet (see comment by Haney on page 5-131). This plant and its well field are not currently operating; however, future use of this well field can not be disregarded. The drawdown caused by this well field could impact wetlands created at the La Platte site. The design of the mitigation site and the mitigation site monitoring plan would account for the possible reactivation of this well field. Details of the mitigation site design would be specified in the Final Mitigation Plan for the project. Acceptance by the Corps of the Final Mitigation Plan would be a condition of the Section 404 permit for the project, if such a permit were to be issued.

A court could find Saunders County resolution No. 25-1999, which prohibits land uses (except those related to agriculture) that reduce levels of subirrigation or de-water wetlands without mitigation by in-kind replacement in Saunders County, applicable to the District. A wetland mitigation site would then have to be found in Saunders County.

Because of the level of uncertainty in the analysis of impacts to wetlands and special aquatic sites, the mitigation plan includes long-term monitoring of wetlands that are predicted to be altered. If a Section 404 permit is issued, a detailed wetland delineation would be started and completed immediately by the applicant. The wetlands and aquatic sites delineated would be monitored in accordance with a detailed monitoring and reporting plan acceptable to the Corps for a minimum of three to five years prior to the start of operations of the project. All wetlands and aquatic beds within the predicted maximum well field cone of depression shall be delineated and verified by field visits with the Corps. From this group of wetlands and aquatic beds, representative examples would be selected for long-term monitoring. The selected wetlands and aquatic beds would represent the variety of types of special aquatic sites potentially impacted. For each wetland and aquatic bed type within the cone of depression, a similar counterpart outside the cone of depression would be identified.

For the three to five years prior to the start of well field operations, the selected special aquatic sites would be monitored annually in June and August to establish pre-project conditions. Monitoring would consist of a standard wetland delineation (Environmental Laboratory 1987), botanical assessment, and measurement of depth to groundwater where applicable. In the first year of monitoring, soils in these wetlands would be analyzed for particle size distribution (for soil composition determination) and permeability.

After the start of project operations, monitoring in May and September would continue annually for wetlands and aquatic beds. Once on-the-ground techniques have established a reliable baseline, remote sensing techniques such as infrared aerial photography or high spatial resolution, multispectral band satellite imagery could be used to streamline future wetland monitoring, if acceptable to the Corps. Monitoring reports would be filed with the Corps by the end of each year. The specific contents of this report would be specified in the final mitigation plan in accordance with Section

404 permit conditions, if a permit is issued for this project.

Monitoring would continue for at least 30 years after the start of operation, by which time the full impacts of the well field should have developed. Monitoring wetlands outside of the cone of depression would provide a benchmark to account for changes caused by natural environmental variations. The determination of when or if impacts to wetlands are sufficient to warrant additional mitigation by replacement would be made by the Corps based on the monitoring data. Wetlands that are determined to be altered would be mitigated by replacement at a ratio of 1:1 (created to altered). Additional wetlands that are lost would be mitigated at a ratio of 1.5 to 1. Wetlands found to be altered would continue to be monitored for the life of the project until the Corps determines the wetlands have been lost. If these altered wetlands are subsequently lost, an additional 0.5 acre of wetlands would be constructed for each acre lost. The implementation of wetland replacement would be in the growing season following the determination of impact. More detailed information on wetland mitigation and monitoring is presented in Section 5 of the Conceptual Mitigation Plan (Appendix D). This plan is intended by the District to serve as the basis for Section 404 permit conditions should a permit be issued for the new water supply.

The no federal action option g would not require a Section 404 permit from the Corps because no dredge or fill material would be placed in waters of the United States. Without a permit, the Corps would not have the regulatory authority or framework to compel the District to mitigate for any wetlands or other aquatic sites lost or altered by groundwater drawdown caused by subsequent well field operations. Therefore, no wetland monitoring or replacement is anticipated for this alternative.

The cost to construct replacement wetlands is approximately $23,000 per acre and monitoring the new wetlands would cost approximately $11,000 per year (Table 4-15). Well field monitoring would cost approximately $15,000 to $25,000 per year, depending on the anticipated size of the cone of depression, for the three to five years prior to operation and the first 30 years of project operation. Total wetland mitigation costs were estimated to range from $3,163,000 for the Platte South plus Platte West alternative to $5,463,000 for the Platte West alternative (2003 dollars) assuming all wetlands are impacted as predicted (Table 4-15).

VEGETATION

Permanent and temporary impacts to vegetation would result from implementation of any of the water supply alternatives. Existing vegetation would be permanently lost or altered at the sites of new or expanded water treatment plants, or new wells and access roads. Construction of pipelines would temporarily and permanently disturb additional areas of existing vegetation.

Vegetation communities within each water supply alternative location were assessed using topographic maps, aerial photography, and field surveys. For the transmission effluent pipelines, half of the acres disturbed inside the 100-foot wide construction easement in forested areas were assumed to be permanently altered for maintenance of the right-of-way. Each well was estimated to cause the loss of 0.01 acre of vegetation and the temporary disturbance of another 0.02 acre. The significance of the impacts of the proposed water supply alternatives on vegetation communities was determined by evaluating the overall quality of the habitat, regional abundance, importance to wildlife, and permanence of the impact. Significant impacts would occur if the vegetation loss was permanent, of high value to wildlife, and relatively scarce in the surrounding area.

Table 4-15 Mitigation Costs for Special Aquatic Sites

	Platte West	Platte North	Platte South + Platte West	Platte South + Platte West DC	Three-Way Combination	No Federal Action Option G
Wetland Replacement						
Acres	164	118	81	119	103	0[1]
Cost per acre	$23,000	$23,000	$23,000	$23,000	$23,000	$0
Cost	$3,772,000	$2,1714,000	$1,863,000	$2,737,000	$2,737,000	$0
Replacement Monitoring						
Years	30	30	30	30	30	0
Cost per year	$11,000	$11,000	$11,000	$11,000	$11,000	$0
Cost	$330,000	$330,000	$330,000	$330,000	$330,000	$0
Well Field Monitoring						
Years	33	33	33	33	33	0
Cost per year	$25,000	$25,000	$20,000	$20,000	$15,000	$0
Coat	$825,000	$825,000	$660,000	$660,000	$752,000	$0
Total						
2000 dollars	$4,927,000	$3,869,000	$2,853,000	$3,727,000	$3,194,000	$0
2003 dollars	$5,463,000	$4,290,000	$3,163,000	$4,132,000	$3,541,000	$0

[1] Because no discharge of dredge or fill materials into waters of the United States would be associated with no federal action alternative option g, this option would be beyond the authority of the Corps to regulate under the Clean Water Act. Although impacts from option g on wetlands would be similar to the Platte West alternative, no mitigation for wetlands impacted by option g could be required by the Corps.

Most of the areas that would be disturbed by the project contain vegetation communities that have already been greatly altered by human activity for agriculture or urban and suburban development.

Platte West

The treatment plant site for this alternative covers 158 acres of land which is currently used for row-crop agriculture (Table 4-16). This type of vegetation community, with its extremely low plant species diversity, has relatively little value to wildlife and is one of the dominant land covers in western Douglas County. The vegetation at this treatment plant site would be converted to buildings, settling ponds, and landscaping consisting of lawn, ornamental plantings, and restored native vegetation. The loss of 158 acres of row crops would not significantly impact area vegetation.

The transmission pipelines from the treatment plant to the delivery points would temporarily disturb approximately 124 acres of vegetation including six acres of upland forest (Table 4-16). The remainder of the disturbed land would be cultivated fields and hayfields. A total of 6 acres of upland forest would be lost for maintenance of the pipeline rights-of-way. The recovery of the disturbed woodlands could take 20 to 30 years. Overall, the impacts to area vegetation caused by the transmission pipelines would not be significant because no rare, unique, or protected vegetation communities would be lost.

Construction of the Platte West well field would temporarily disturb and permanently alter four and 26 acres of vegetation, respectively (Table 4-16). All of the vegetation disturbed would be pasture and hayfield except three acres of row crops. Service roads in the well fields would

Table 4-16 Summary of Acres of Vegetation Impacted

	Platte West[3]		Platte North		Platte South + Platte West		Platte South + Platte West DC		Three-Way Combination	
	Temp-orary	Perm-anent	Temp-orary	Perm-anent	Temp-orary	Perm-anent	Temp-orary	Perm-anent	Temp-orary	Perm-anent
Well Fields[1]										
Agricultural[2]	4	26	1	30	2	16	2	16	2	8
Riparian forest	0	0	0	2	<1	<1	<1	<1	<1	<1
Treatment Plants										
Agricultural	10	158	10	158	10	178	10	178	10	338
Upland forest	3	3	3	3	3	3	3	3	3	3
Pipelines										
Agricultural	118	0	194	0	403	0	403	0	735	0
Upland forest	3	3	3	3	3	3	3	3	4	4
Alternative Total										
Agricultural	132	184	205	188	415	194	415	194	747	346
Riparian forest	0	0	0	2	<1	<1	<1	<1	<1	<1
Upland forest	6	6	6	6	6	6	6	6	7	7
Total	138	190	211	196	421	200	421	200	754	353

[1]Includes wells, collector pipelines, and well field roads. [2]Includes row crop, hay field, and pasture. [3]Impacts from the no federal action option g alternative are expected to be the same as for the Platte West alternative.

permanently cover 25 acres of vegetation based on 10.3 miles of road 20 feet wide. Of these acres, one acre would be row crops and the rest would be hayfield and pasture. Construction of the 42 wells would cause the loss and temporary disturbance of 0.4 and 0.8 acre, respectively. Three of the wells would be located on row cropland, the remainder would be on hayfields or pasture. Row crops, hayfield, and pasture are common in the area and not particularly valuable to wildlife. The alteration and loss of these vegetation communities from well construction, therefore, would not be a significant impact. A potentially significant but less certain change would happen if agricultural activities ceased on the well field. In this case, approximately 2,000 acres of crop and pasture land would eventually revert to bottomland forest. This change could be viewed as a benefit to wildlife or an adverse impact to the agricultural community.

Platte North

The Platte North well field would supply water to the same treatment plant proposed for the Platte West well field. Therefore, the impacts to vegetation from the treatment plant would be the same as for the Platte West alternative.

Approximately 17 miles of transmission pipeline would connect the Platte North well field, the treatment plant and the distribution points. Construction of this pipeline would temporarily disturb approximately 200 acres of existing vegetation including six acres of upland forest (Table 4-16). The remaining disturbed vegetation would be row crops, hayfield, and pasture. Six acres of upland forest would be lost for maintenance of the pipeline right-of-way (Table 4-16). The recovery of the disturbed woodlands could take 20 to 30 years. Overall, the impacts to area vegetation caused by construction of the treatment plant and transmission pipeline for Platte North alternative would not be significant.

The Platte North well field would have an area about one-fourth that of the Platte West well field and would have approximately 18 wells. Installation of pipelines in the well field, about 6.5 miles in length, would temporarily disturb about one acre of riparian forest and about 38 acres of agricultural

vegetation. The riparian forest is on an island in the Platte River and would take 20 to 30 years to recover. About 5.8 miles of well field service roads would permanently replace about 30 acres of cropland, pasture, and hayfield vegetation and two acres of riparian forest on the island (Table 4-16). The 18 wells would permanently disturb 0.02 acre of riparian forest and 0.2 acre of cropland, hayfield, and pasture vegetation. The area of riparian forest and agricultural lands temporarily disturbed by well construction would be 0.04 and 0.3 acre, respectively.

Most of the impacts to vegetation from this alternative are temporary. The permanent impacts occur mostly to agricultural vegetation. The permanent impacts to existing natural vegetation are relatively small.

If this alternative were to be developed, the District has indicated land use and land cover on the well field property would probably remain the same to the extent possible given well head protection practices for the maintenance of water quality, such as the prohibition of the use of pesticides. An exception would be the termination of any sand and gravel mining operations on the property. The possibility also exists that the land could be allowed to revert to a natural community, in which case approximately 450 acres of land would change from pasture-type vegetation to bottomland forest. This conversion would occur gradually over 20 to 30 years.

Platte South Plus Platte West

The new treatment plant for the Platte West portion of this alternative would permanently change 181 acres of cropland and hayfield into buildings, settling ponds, and landscaping. The expansion of the treatment plant at the Platte South facility would permanently alter an estimated 20 acres of grassland or pasture (Table 4-16). The 61.5 miles of transmission pipeline would disturb about 409 acres of vegetation, which is primarily agricultural. Three acres of upland forest would be lost to maintain pipeline rights-of-way (Table 4-16).

The Platte West well field portion of this alternative would have only 60 percent of the production capacity and, therefore, only about 60 percent of the infrastructure of the 100-MGD Platte West alternative well field. Impacts to vegetation on the 60-MGD Platte West well field are expected to be similarly reduced (Table 4-16). Expansion of the Platte South well field would consist of adding seven horizontal collector wells in place of seven existing vertical wells. This construction would temporarily and permanently disturb approximately 0.1 and 0.07 acre, respectively, of riparian forest.

Like the Platte West alternative, approximately 2,000 acres of land used for agricultural purposes on the Platte West well field could revert to bottomland forest.

These alterations and disturbances would not represent a significant impact to vegetation resources because the communities most impacted are common in the project area and of relatively low value to wildlife.

Platte South Plus Platte West DC

Impacts to vegetation resources by the Platte South plus Platte West DC alternative are estimated to be essentially the same as for the Platte South plus Platte West alternative (Table 4-16). The primary difference is all of the impacts from the Platte West well field portion of the alternative would occur in Douglas County.

Three-Way Combination

The three treatment plant sites for this alternative would permanently impact approximately 338 acres of agricultural vegetation and three acres of upland forest (Table 4-16).

The Three-Way Combination alternative would have all of the transmission pipeline

right-of-way of the Platte South plus Platte West alternative plus an additional 334 acres necessary to get water to the delivery points from the Missouri River. The vegetation in this additional right-of-way would be all agricultural except for eight acres of upland forest (Table 4-16).

Impacts to vegetation in the well fields would be from the same sources as the Platte South plus Platte West alternative. The Platte West well field for the Three-Way Combination alternative, however, would have a capacity of 34 MGD. With approximately half the capacity, the amount of infrastructure and resulting impacts on vegetation are also expected to be approximately half of the Platte South plus Platte West DC alternative (Table 4-16).

No Federal Action

If a new major water supply is not built, as would be the case for the no federal action alternative options a through f, the availability of water for the maintenance of landscaping would decrease. This decrease could spur a decrease in the amount of traditional grass yards and landscaping. Water provided by the District is not used for the irrigation of croplands or the maintenance of natural vegetation; therefore, no federal action options a through f would have no impact on agricultural or natural vegetation resources.

The no federal action alternative option g would have the same insignificant impacts to vegetation as the Platte West alternative.

Mitigation

Changes in land management practices would result from development of the Platte West or Platte North well fields. Just eliminating cattle grazing in riparian areas along the Platte River could improve the condition of riparian forests on the well field. At the District's Platte South well field, agricultural activity was stopped and the area has since reverted to bottomland forest. This area now supports thriving populations of deer and wild turkey. Similar conditions would likely develop at the Platte West or Platte North well field if agricultural activity were discontinued. The changes in land management at the new well fields would result in changes in vegetation that would offset the loss of forests caused by the maintenance of water transmission pipeline rights-of-way.

WILDLIFE

In this discussion, wildlife is considered to be the more common species of mammals, birds, reptiles, amphibians, and fish that occur in the project area. The principal impacts of any alternative on wildlife would be the temporary disturbance during construction and permanent loss of habitat to project facilities. Impacts to endangered, threatened, or rare species are discussed in the following sections.

Impacts on terrestrial wildlife were evaluated based on the quantity, quality, and scarcity of the habitats disturbed by or lost to construction. Impacts would be significant if high quality, relatively rare wildlife habitat is lost. In the project area, this type of habitat would consist of wetlands and mature forests.

Action Alternatives

If the drawdown in the groundwater levels caused by well field operations de-waters some wetlands and ponds, mammals such as beaver and muskrat; birds such as egrets, herons, killdeer, redwing blackbird, teal, and mallards; and amphibians including the tiger salamander and numerous species of frogs and toads could be displaced. Wetlands are a relatively rare and valuable habitat for wildlife and the unavoidable loss or alteration of wetlands would constitute a significant impact.

The withdrawal of water from well fields by pumping would reduce flow in the Platte River. The relative reduction in flow under most circumstances, however, is less than three percent. Under average conditions,

water level in the Platte River would be reduced less than 0.5 inch. These impacts would not affect most fish and other aquatic species living in or by the Platte River.

Diversion of water from the Missouri River would not significantly reduce river flow. No impacts to wildlife associated with the Missouri River are expected from the Missouri River portion of the Three-Way Combination Alternative.

Construction of water treatment facilities for these alternatives would remove 158 to 338 acres of cropland for use by wildlife. Cropland provides cover and food for some wildlife species such as mice, quail, pheasant, and migrating geese. However, cropland is the most common type of land cover in the vicinity of the proposed treatment plants and the general project area. The loss of this habitat, therefore, would not significantly impact wildlife.

The disturbances to wildlife caused by construction of the transmission pipelines would be primarily temporary. Some woodland habitat would be lost for the maintenance of pipeline rights-of-way. These corridors would fragment some existing tracts of woodlands. However, these corridors are probably not wide enough to create barriers to movement for most species of forest dwelling wildlife. The original forests in the project area have already been highly fragmented and reduced primarily to locations that are too steep for agricultural purposes. These patches are generally of low value to true forest dwelling wildlife because they have a high edge to area ratio. Overall, a pipeline corridor through this type of woodland would not significantly impact terrestrial or aquatic wildlife.

If the Platte West or Platte North well fields are managed to allow the regrowth of native vegetation, 450 to 2,000 acres of bottomland forest could develop over 20 to 30 years. This process would be a significant benefit to wildlife and has occurred at the Platte South well field.

No Federal Action

The modest amount of construction of wells in the Dakota Sandstone Aquifer and connecting pipelines under no federal action alternative options a through f alternative would not significantly affect existing wildlife habitats. The impacts on wildlife from the no federal action alternative option g would be the same as the Platte West alternative.

Mitigation

The development of a new well field would change the management of existing agricultural lands in a way that would promote the development of more natural or native communities. This change would be a net benefit to terrestrial wildlife.

The District anticipates the water treatment plant sites would be large enough to incorporate a buffer between buildings, roads, and surrounding developments. A portion of this buffer would be planted with native grasses that would reduce maintenance and increase habitat for grassland dwelling wildlife.

Under most conditions, the well fields would reduce flow in the Platte River. The typical flow reduction is not expected to significantly affect the aquatic wildlife in and around the Platte River. Aquatic wildlife in and around the Platte River would be stressed the greatest under conditions of extreme drought.

The only impact to wildlife considered significant is to aquatic species through the potential alteration and loss of wetlands. This impact would be mitigated by creation of new wetlands.

THREATENED OR ENDANGERED SPECIES

Six, currently listed endangered or threatened species were identified by FWS as potentially being impacted by the project:

- western prairie fringed orchid
- pallid sturgeon
- American burying beetle
- interior least tern
- piping plover and critical habitat
- bald eagle

The impact an alternative would have on each of these species depends on the occurrence of the species at the proposed site or in downstream aquatic environments, the presence of appropriate habitat at the site, and the relative amount of impacted habitat compared to the surrounding area. Information on the potential occurrence of these species and suitable habitat was obtained from the NGPC, FWS, literature review, and field investigations. If the development of an alternative would directly result in a loss of individuals or if the loss of habitat impacted the presence of the species in the project area, the impact to that species would be considered significant.

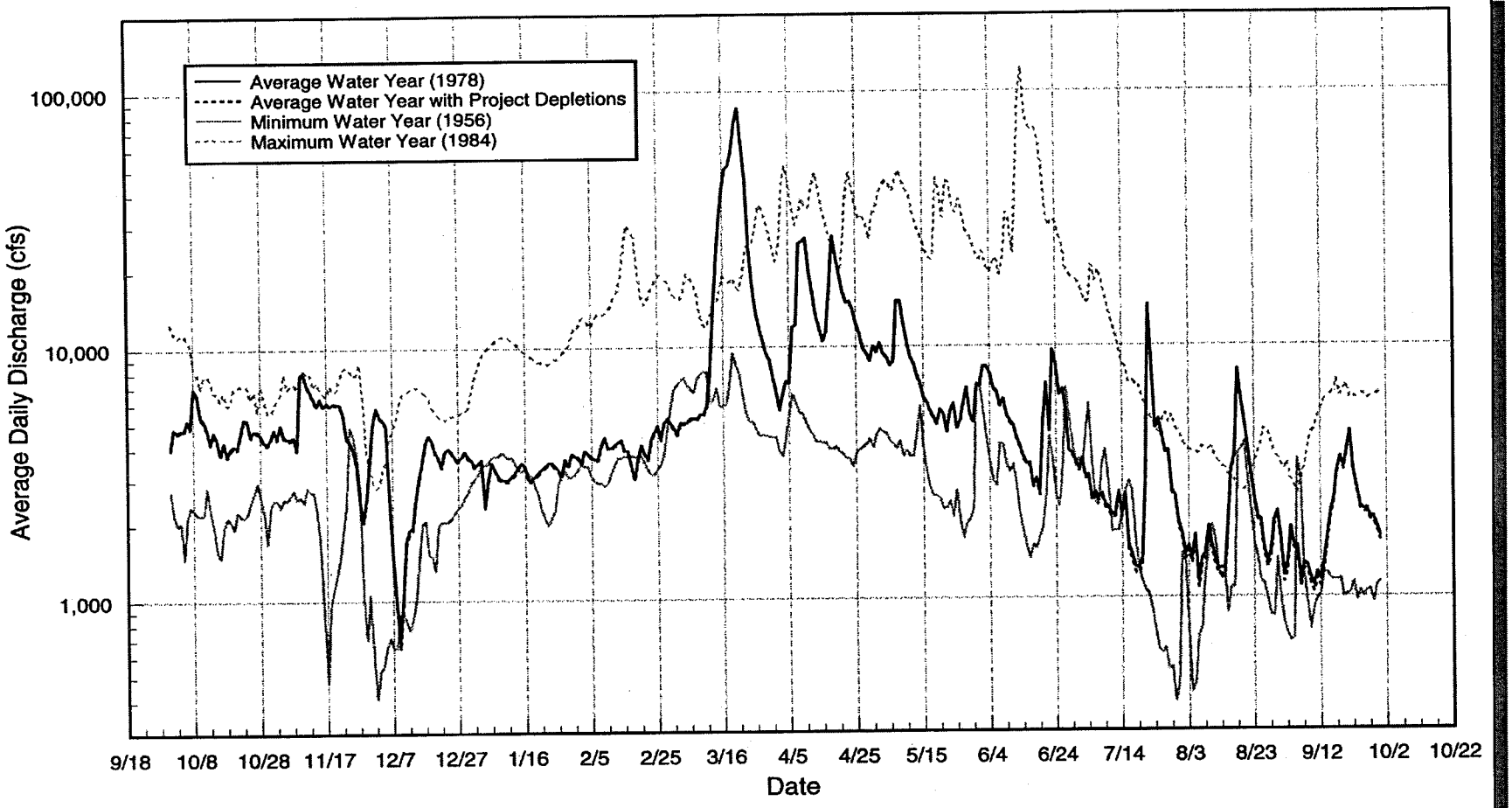
Platte West

The **western prairie fringed orchid** is not known to occur in the general project area. This orchid was not found in the suitable habitat that exists at the Platte West well field site (Burns & McDonnell Engineering Company, Inc. 1995b). The closest known occurrence is in southern Sarpy County. Suitable habitat does not occur along the transmission pipeline routes or on the sites identified for the water treatment plant. The opinion of FWS is that the Platte West alternative is not likely to adversely affect the western prairie fringed orchid (Appendix E). Avoidance and mitigation of altered and lost wetlands would preserve existing potential habitat and could create additional potential habitat for the western prairie fringed orchid.

The **American burying beetle** is not known to occur in Douglas or Saunders counties. None were found in a survey of the Platte West well field project area (Burns and McDonnell 1995c). The opinion of FWS is that the Platte West alternative is not likely to adversely affect this endangered insect (Appendix E).

The **pallid sturgeon** is documented to occur in the lower Platte River in the vicinity of the proposed and existing well fields. The operation of these well fields would cause a depletion of flow in the Platte River that could adversely affect the availability of suitable habitat for these species. Hydrologic modeling indicated that under most conditions, the depletion of flow in the Platte River would be less than three percent and the reduction in water surface elevation would be less than 0.5 inches. These changes would be indistinguishable from the normal annual, seasonal, and daily variations in flow that have historically occurred in the Platte River (Figure 4-15). Water quality in the Platte River, particularly turbidity, which is important to the pallid sturgeon, would not be affected by the predicted slight reductions in flow.

Although the reductions in flow caused by the project would not likely have a discernable impact on pallid sturgeon habitat, these depletions represent one more change in the historical hydrology of the Platte River. Since the settlement of the Platte River watershed by Euroamericans, the flow in the Platte River has been extensively modified by damming and water withdrawals, primarily for irrigation. Although many of these changes have been individually insignificant, the cumulative impacts have raised concerns for fish and wildlife which depend on the river for their existence. The opinion of FWS is that any further depletions of flow in the Platte River during February through July is likely to jeopardize the continued existence of the pallid sturgeon (U.S. Fish and Wildlife Service 1996). The Platte West alternative is estimated to reduce flows in the Platte River during this six-month period by an average of 18,406 acre-feet (Table 4-3). A jeopardy opinion from FWS for the Platte West alternative is avoided by the proposed



Notes:
1. Discharge data obtained from USGS stream gage on Platte River near Louisville (No. 060805500). Period of record at this gage is 6/52-9/94.
2. Minimum, average and maximum water years were determined based on comparisons of total annual runoff for each complete water year.
3. Average monthly project depletions from Platte River estimated from results of groundwater modeling.

Figure 4-15 Daily Discharge Comparison for the Platte River for Extreme Years

construction of a backwater habitat along the Missouri River to mitigate for the lost habitat (Appendix E). With this mitigation, FWS has concluded the Platte West alternative is still likely to adversely affect, but not jeopardize its continued existence of, the pallid sturgeon (Appendix E).

Bald eagles are currently winter residents of the project area and use lands adjacent to the Platte River for drawdown from the operations of the well field alternatives. Wetlands in this area which attract waterfowl used as a food source for bald eagles would be unaffected and would continue to provide foraging areas for eagles.

The only potential impact to wintering bald eagles would be from human activity associated with project construction, operation, or maintenance. Construction of the project would be scheduled to avoid areas used by wintering eagles during the months eagles are likely to be present. No trees would be cleared except those essential for well field facilities. Because no facilities are planned for areas of documented eagle use, wintering bald eagles would be unaffected by project construction.

Human activity for operation and maintenance of any of the alternatives has the potential to disturb eagles and could cause them to abandon wintering areas. Although activities on a well field would be minimal in the winter, any activity which would cause the eagles to abandon the area would be a significant impact. No bald eagles are currently known to nest in the project area probably because of intense human activity associated with agriculture in the spring, human development and activity on the Platte River, and the limited number of suitably sized trees for nest construction.

Eagle populations, however, are increasing nation-wide and they have resumed nesting in Nebraska. Because an active nest exists several miles upstream of the project area (Burns & McDonnell Engineering Company, Inc. 1995d), the possibility exists that bald eagles may attempt to nest in the project area in the future. The well field properties would provide large areas that would be free from future residential development and on which human activity would be somewhat restricted. After 10 to 20 years, the current trees would become large enough to support bald eagle nesting. At that time, nesting areas could occur in wooded areas along the Platte River. These areas would be several hundred feet from well sites and relatively unaffected by the project. Additionally, eagles would be expected to nest on the riverward side of the trees and the unused trees would buffer the nest sites from disturbance. Because of the potential for the improvement of nesting habitat, the long-term impact of the well field alternatives on bald eagles could be positive. The opinion of FWS is that the Platte West alternative is not likely to adversely affect the bald eagle (Appendix E).

Interior least terns and piping plovers use sandbar habitats on the lower Platte River. This habitat changes from year to year as erosion and deposition by the river breakdown and reform sandbars, or vegetation encroaches. Additionally, during some years, no sandbars are exposed because of high flows. Some terns and plovers have adapted to these changing conditions by nesting at sand pits along the river. While sand pits do not necessarily provide optimal nesting habitat, they do provide the opportunity for some individuals to successfully reproduce when river sandbars are unavailable.

For sandbars to be successful nesting sites, they must be free of vegetation and surrounded by sufficient water to limit access by predators. An optimal flow regimen exists that is sufficiently high to create new sandbars in spring, low enough during the breeding season to expose the sandbars, but not so low that the sandbars become joined

to adjacent terrestrial habitats. The magnitude of the optimal flow regimen differs from year to year, depending on the location, shape, and height of the previously created sandbars.

The proposed project would result in a minor reduction in the flow of the Platte River downstream of a well field. The area potentially impacted is designated critical habitat for the piping plover (66 FR 31760-31815). During an average year under average pumpage conditions, however, this reduction in flow would represent less than one percent of the total flow during the period when high flows (March through June) would be most important for sandbar formation (Table 4-4). During the nesting and brooding season (May though August), flow would be reduced less than three percent in an average year. Additionally, the proposed project would reduce the surface water elevation no more than 0.5 inches at any month in an average year (Table 4-4). Given the small magnitude of these changes, the operation of any one of the well fields is not expected to cause noticeable changes in the amount of sandbar exposed or the amount of sandbar joined to adjacent, exposed bank areas.

The diets of the least tern and piping plover consist of a wide array of common aquatic and some terrestrial organisms. The minimal reductions in flow would not be expected to affect the food supply of least terns and piping plovers. The FWS has concluded that the proposed project is likely to adversely affect the least tern and piping plover but not jeopardize their continued existence (Appendix E).

Other Action Alternatives

The other action alternatives would have the same types of impacts on threatened and endangered species as the Platte West alternative but to greater or lesser degrees. At the Platte North well field, the new Missouri River treatment plant site and along the pipeline routes from the Plate North well field, Platte South well field and the Missouri River intake, western prairie-fringed orchids and American burying beetles are not expected to occur. The other action alternatives are not expected to adversely effect these two species.

Construction of the Platte South plus Platte West, Platte South plus Platte West DC, and Three-Way Combination alternatives are expected to impact potential bald eagle habitat to an equal or lesser degree than the Platte West alternative. These alternatives, therefore, are not expected to adversely affect the bald eagle. For the Platte North alternative, the construction of well heads, service roads, and well field pipelines, particularly on the forested island in the Platte River, suggests this alternative would have a greater potential than the other alternatives to remove large trees that could serve as future bald eagle nesting and roosting sites. Changes in land use on the mainland portion of the Platte North well field, however, could easily be implemented to encourage the growth of bottomland forest and offset the loss of trees on the island. As such, the Platte North alternative is not expected to adversely impact the bald eagle.

Induced infiltration into well fields would deplete flow from the Platte River during the periods critical to the pallid sturgeon, least tern and piping plover for all of the other action alternatives. As such, the classification of impacts on these species for these alternatives would be the same as for the Platte West alternative. Mitigation like that proposed for Platte West would be required to avoid a "no-jeopardy" opinion from FWS for the pallid sturgeon.

No Federal Action

Because no new water supply would be constructed, no habitat for federally threatened or endangered species would be affected by no federal action alternative options a through f. These alternatives,

therefore, would not impact threatened or endangered species. The no federal action alternative option g would have the same impacts on threatened and endangered species as the Platte West alternative.

Mitigation

The FWS has determined that any flow depletions in the Platte River that result from a federal action, such as the issuance of a Section 404 permit from the Corps, constitutes a jeopardy to the continued existence of various federally listed threatened or endangered species found in or around the Platte River (Fish and Wildlife Service 1996). An action that results in a depletion, however, can avoid a jeopardy opinion from FWS by proposing conservation measures. The FWS has made no determinations regarding the effects of flow depletions in the Missouri River on threatened or endangered species (Jobman 1998); therefore, no mitigation is proposed for potential depletions of flow in the Missouri River that would be caused by the Three-Way Combination alternative.

The flow reductions caused by the well field alternatives and resulting possible loss of habitat in the Platte River for pallid sturgeon and sturgeon chub would be mitigated by the District's participation in a Cooperative Agreement with NGPC to restore backwater habitat along a portion of the Missouri River approximately three miles downstream of the mouth of the Platte River (Appendix D). The goal of this restoration project is to reestablish the functions and values of a once common habitat along the Missouri River. The expectation is biological resources from the backwater, such as aquatic macroinvertebrates and juvenile fish would be exported into the main channel of the Missouri River. This export would benefit pallid sturgeons and sturgeon chubs by providing additional food resources.

The proposed backwater habitat creation project would be funded by the District. The FWS determined that a sufficient amount of backwater habitat to offset the flow depletion during the February through July period critical to pallid sturgeon could be constructed for approximately $1,000,000. When the facility is operating at design capacity of an annual average pumping rate of 50 MGD, the flow depletion during February through July caused by the Storage B4 pumping scenario is estimated to be 18,406 acre-feet. The cost of mitigation, therefore, is approximately $54 per acre-foot of depletion.

The disturbance to wintering bald eagles at the well field sites would be held to a minimum by scheduling maintenance and operational activities toward the end of the period when eagles are present.

The lack of the requirement for a Section 404 permit for the no federal action alternative option g would not relieve the District from complying with the Endangered Species Act. Mitigation for impacts to threatened and endangered species caused by the no federal action alternative option g would be the same as for the Platte West alternative.

SPECIES OF SPECIAL CONCERN

Four species of special concern, the lake sturgeon, blacknose dace, sturgeon chub, and river otter were identified as potentially affected by the water supply alternatives.

Information from NGPC and FWS was used to determine the occurrence and habitat of species of special concern within the affected areas. If the project could result in the loss of individuals of a species of special concern or reduce the quantity or quality of suitable habitat, the impact to that species would be significant.

Action Alternatives

The lake sturgeon, sturgeon chub, and river otter occur in the Missouri River and the lower Platte River. The flow reductions in these rivers caused by the proposed water supply alternatives are not expected to be

large enough to significantly impact the habitat of these species. The blacknose dace inhabit small, clear, gravel bottomed tributaries of the Platte River. The closest collection of this species has been from Ponca Creek about three miles north of the I-680 bridge over the Missouri River (Twede 1998). This stream would not be affected by any of the proposed water supply alternatives. Overall, the lake sturgeon, blacknose dace, sturgeon chub and river otter would not be impacted any of the water supplies alternatives under consideration.

No Federal Action

Because no major new water supply would be constructed, no habitat for species of special concern would be affected by no federal action alternative options a through f. These options, therefore, would not impact species of special concern. Like the Platte West alternative, no impacts to species of special concern are expected from no federal action alternative option g.

Mitigation

No mitigation is proposed for species of special concern because these species would not be significantly impacted by the project. The mitigation proposed for the pallid sturgeon, the construction of a backwater habitat along the Missouri River, could also benefit the lake sturgeon and the sturgeon chub.

SOCIOECONOMICS

The construction and operation of a new treatment plant, well field, and associated pipelines would have both positive and negative impacts from a social and economic perspective. The construction phase would take two to three years and would create some short-term employment in the area. New long-term employment would consist of adding staff to operate the new water treatment facility.

The construction of a new water treatment plant and well field would take land out of agricultural production. Land would also be taken out of production in the well fields. The loss of subirrigation on existing farmland could reduce crop yields and lower farm income and property values of the affected land. Land purchased by the District would typically not be subject to local property taxes, which would reduce local tax revenues.

Existing social and economic conditions and trends within the project region were documented and impacts caused by the project were evaluated. Based on existing conditions and trends, project impacts would be significant if changes in the social and economic environment of the area would exceed the ability of the area to absorb the change and result in hardships for a segment of the population, the economy, or public services.

POPULATION

Action Alternatives

Minor short-term impacts on population could result from the immigration of construction workers to build the project. Construction is expected to take two to three years for any of the alternatives. The work force at a treatment plant construction site would vary depending on the phase of construction and would be composed mostly of local personnel. Any non-local workers that moved into the areas would likely settle throughout the Omaha area. No major changes in population, therefore, would occur as a result of construction of the project.

A new or expanded treatment plant would require a full-time operating staff of about 20 to 25 persons, most of which would be hired locally. Operation of the new facility, therefore, would not affect the local population.

The primary long-term effect of a new water supply would be to continue the current trend in area population growth, which would not be a significant impact.

No Federal Action

Under the no federal action alternative options a through f, a new major water supply would not be constructed. The District would no longer supply water to new areas; however, water use would continue to grow because the District would still have to supply new customers within its existing service area. Eventually, peak-day water shortages would become common and water prices would likely be increased to discourage use and new development. The current rate of population growth would likely slow as the declining quality of life in the Omaha area began to discourage in-migration and encourage out-migration of families and businesses. Such a change in the quality of life would be a significant adverse impact.

Impacts to population from the no federal action alternative option g would be the same as the Platte West alternative.

PROPERTY VALUES

The Platte West and Platte North well fields are located in alluvial aquifers where the depth to groundwater is shallow enough to be within the root zone of crops. Although the root systems of common crops such as corn and soybeans can extend down six feet, the roots of alfalfa can extend to a depth of ten feet. Nebraska statutes define subirrigation or subirrigated land as "the natural occurrence of a water table within the root zone of agricultural vegetation, not exceeding ten feet below the surface of the ground" (NRRS 46-657.07(14)). The cone of depression created by the well fields would extend beyond property acquired by the District for the project and would cause the existing water table under some farmland to drop below 10 feet from the surface. Subirrigation provides a tangible benefit to agricultural production and farmlands with this attribute having higher value than lands that lack subirrigation.

The impacts of well fields on subirrigated land were calculated using the drawdown contours generated by transient groundwater modeling presented in the Water Resources section of this chapter (see also Appendix B). The depth to groundwater without the well field was compared to the predicted depth to groundwater with the well field. Lands were considered impacted if the depth to groundwater was less than 10 feet without the well field and more than 10 feet with the well field and if the land was outside the well field boundaries. The criterion of 10 feet below the surface was chosen to encompass all common crop types in the area and because this depth is defined in Nebraska statutes. This impact criterion represents worst-case conditions because most of the crops grown in the area around the well fields can only derive benefits from subirrigation less than six feet below ground level. The loss of subirrigation in the well field, which would be owned by the District, was not considered an impact.

Crops do not always benefit from subirrigation. In some cases, subirrigation can be too close to the surface and make the land difficult to cultivate during periods of wet weather. This potential benefit of decreasing or losing subirrigation was not considered in determining impacts and constitutes a worst-case condition.

The following impacts on property values and property tax receipts were based on the estimates presented in CHAPTER 3. For purposes of estimation, loss of subirrigation was considered to reduce property value by the largest difference between comparable dry and irrigated land classes. For Douglas and Saunders counties, the reductions in market values were set at $850 and $375 per acre, respectively (Table 3-10) and constitutes another worst-case condition. The impact on the value of any specific property today or at the time impacts are predicted to occur will undoubtedly be different. The results presented below, however, are considered sufficiently accurate

to evaluate the relative impacts of the alternatives.

Platte West

The Platte West well field would remove subirrigation from 1,843 and 3,226 acres of land outside of the well fields in Douglas and Saunders counties, respectively (Figure 4-16). In Douglas County, assessed valuation and market value would be reduced by $922,000 and $1,153,000, respectively. In Saunders County, the devaluations would be $938,000 for assessed valuation and $1,172,000 for market value.

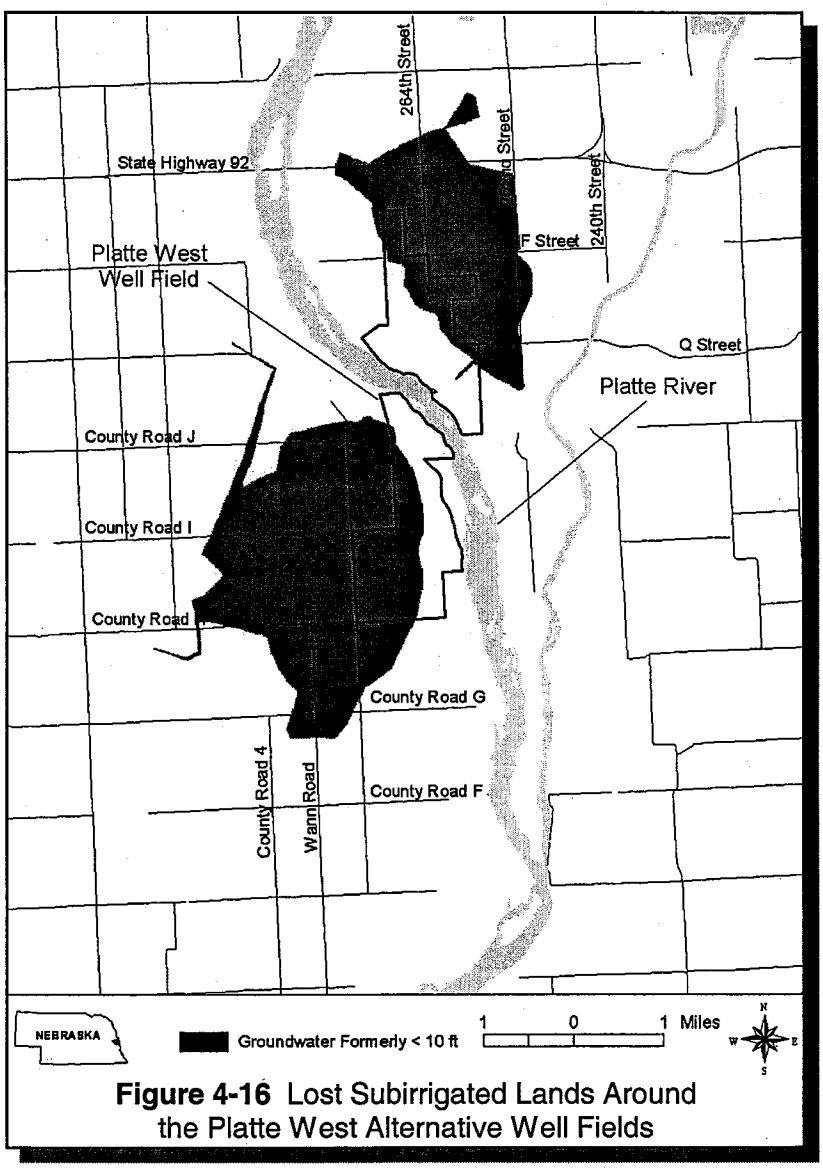


Figure 4-16 Lost Subirrigated Lands Around the Platte West Alternative Well Fields

Platte North

The cone of depression caused by operation of the Platte North well field would remove subirrigation from an estimated 56 acres in Saunders County (Figure 4-17A). The reductions in assessed valuation and market value would be $17,000 and $21,000, respectively.

Platte South Plus Platte West

Approximately 387 and 1,128 acres of land would lose subirrigation in Douglas and Saunders counties, respectively, because of groundwater drawdown from the Platte West well field (Figure 4-17B). The resulting loss of assessed valuation in the Douglas and Saunders counties would be $263,000 and $338,000, respectively. Market value would be reduced by $329,000 in Douglas County and $423,000 in Saunders County.

Platte South Plus Platte West DC

For this alternative, subirrigation would be lost for 2,585 acres in Douglas County (Figure 4-17C). The loss of assessed valuation and market value would be $1,284,000 and $1,605,000, respectively.

Three-Way Combination

This alternative would have the smallest well field at the Platte West location and would cause the loss of subirrigation on 1,579 acres of land in Douglas County (Figure 4-17D). The reductions in assessed valuations and market values would be $790,000 and $988,000, respectively.

No Federal Action

Under the no federal action alternative options a through f, no new well fields would be

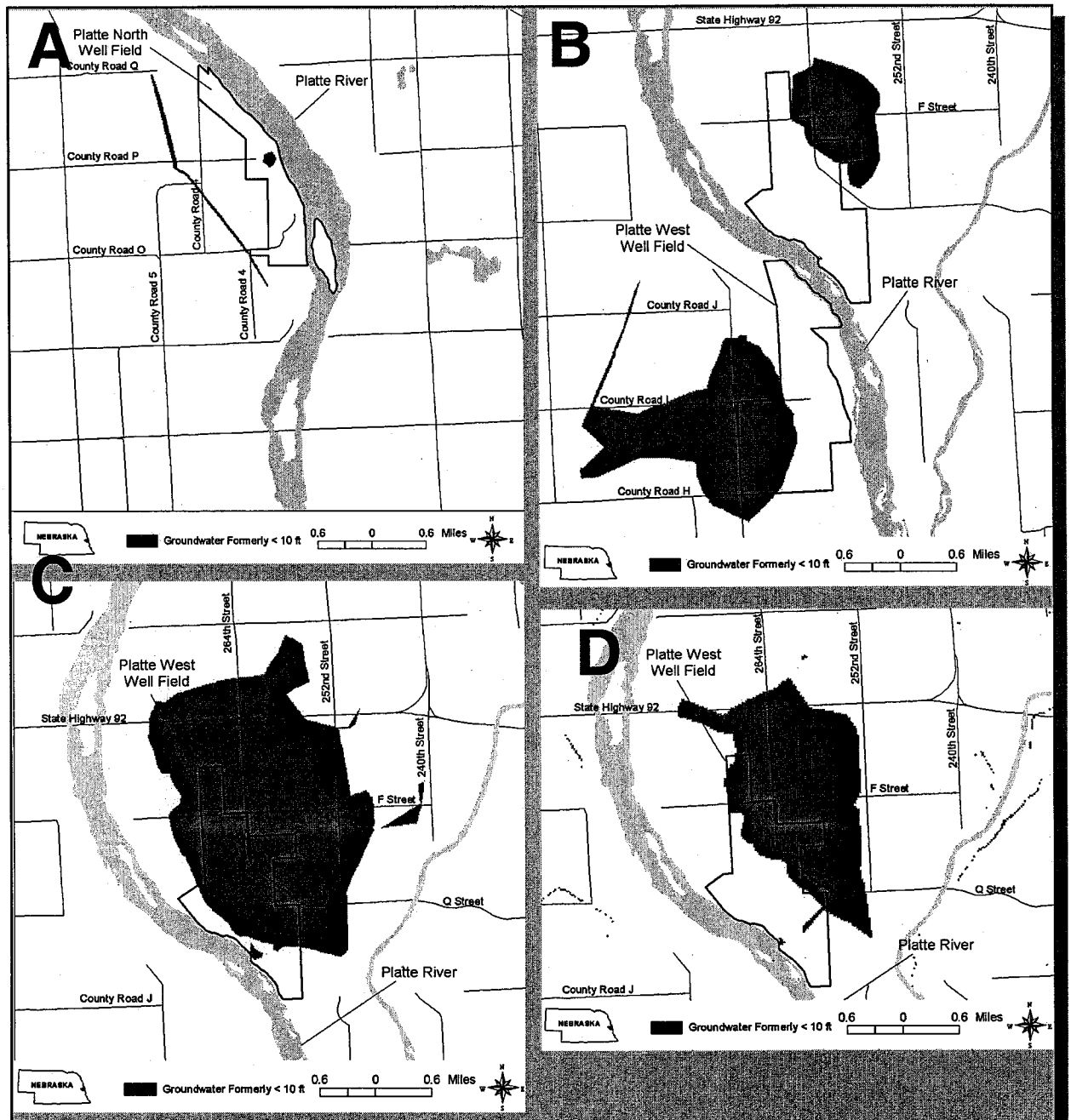


Figure 4-17 Lost Subirrigated Lands Around the Well Fields of the (A) Platte North, (B) Platte South plus Platte West, (C) Platte South plus Platte West DC, and (D) Three-Way Combination Alternatives

constructed in areas where subirrigation currently exists. No properties, therefore, would be devalued because of loss of subirrigation. Because the cone of depression would be approximately the same, the impacts on property values from no federal action alternative option g would be the same as the Platte West alternative.

Mitigation

Decreases in property value caused by the loss of subirrigation would be the result of

reduced agricultural productivity and decreased farm income. Decreased property values also affect property tax revenues. Because of these connections, mitigation for the loss of subirrigation and farm income are discussed together in the Property Tax Revenues section of this EIS.

FARM INCOME AND COST OF WATER

Any of the water supply alternatives would directly impact the local economy. Farm income would be adversely impacted by the removal of subirrigation from farmlands around the proposed well fields. Subirrigation can reduce or eliminate the costs of purchasing, operating, and maintaining equipment and field conditions necessary for surface irrigation. Without replacement, the loss of subirrigation could reduce crop yields and farm income. The reduction in farm income would reduce farm spending, the effects of which would ripple through the local economy.

The estimated cost of producing water varies among the alternatives. These costs would be reflected in the prices for water paid by the consumers. Costs in excess of that provided by the least expensive alternative can be considered an unnecessary expense imposed upon District customers. Additional spending for water could be expected to reduce spending in other sectors of the economy.

The analysis of impacts to farm income from the loss of subirrigation was based on the following assumptions:

- crop yields on subirrigated land are equivalent to those on surface irrigated lands
- crop yield is proportional to farm income

The analysis of crop yields was based on annual average county yields for 1988 through 2000. These data were obtained from the Nebraska Natural Resources Commission and the National Agricultural Statistics Service.

In Douglas County, the average yields of dryland corn, soybeans, and alfalfa were 18.6, 20.3, and 19.6 percent lower, respectively, than yields from irrigated lands (Table 4-17). In Saunders County, the average yields of dryland corn, soybeans, and alfalfa were 28.6, 21.4, and 23.6 percent lower, respectively, than yields from irrigated lands (Table 4-17). The differences in yields between irrigated and dryland yields were generally greater in dry years and less in wet years.

Table 4-17 Yields of Corn, Soybeans and Alfalfa in Douglas and Saunders Counties on Irrigated and Dry Lands

	Corn[1] (bushels/acre)				Soybeans[1] (bushels/acre)				Alfalfa[1] (tons/acres)			
	Irrig.	Dry	Diff.[2]	% diff.	Irrig.	Dry	Diff.[2]	% diff.	Irrig.	Dry	Diff.[2]	% diff.
Saunders County												
Mean	148	106	42	28.6	45	36	9	21.4	4.7	3.5	1.2	23.6
Min.[3]	107	68	15	14.0	38	24	5	12.8	3.3	3.1	-0.2	-6.1
Max.[3]	170	134	61	47.3	55	46	14	36.8	6.2	3.9	2.8	45.2
Douglas County												
Mean	139	112	27	18.6	46	37	9	20.3	4.6	3.6	1.0	19.6
Min.[3]	80	82	-9	-11.3	37	27	0	0.0	3.5	3.2	-0.2	-5.7
Max.[3]	158	136	61	41.2	55	46	19	40.0	6.0	4.2	2.1	37.5

[1]For 1988 through 2000. [2]Based on differences in yield within each year. [3]Minimum or maximum yields for irrigated and dryland conditions did not necessarily occur in the same year.

Subirrigated farmland is not as consistently productive as irrigated land because surface irrigation is generally available whenever needed. Subirrigation may not be present in very dry times and can over-water crops in very wet times. In addition, typical row crops, such as corn and soybeans, do not benefit from subirrigation that is below six feet. Strictly equating the loss of subirrigation to shifting from irrigated to dry land farming, therefore, could overestimate the actual impacts. An indication of the lack of dependability of subirrigation is the presence of surface irrigation systems in subirrigated areas on and around the Platte West well field.

Counteracting the possibility of overestimating impacts is the presence of certain soil conditions in Saunders County that could make crops particularly sensitive to the loss of subirrigation. Approximately 30 percent of the soils in the drawdown area around the Saunders County portion of the Platte West well field have significant sand components and moderately rapid to very rapid permeability (Table 4-18). These soils likely depend heavily on subirrigation to provide sufficient moisture to row crops. For these soils, strictly equating the loss of subirrigation to shifting from irrigated to dry land farming could underestimate the actual impacts.

The proportion of land planted to particular crops changes every year and the prices received for crops, including government payments, can fluctuate even more rapidly. As a result, only hypothetical impacts to annual farm income are provided. Impacts to farm income were based on the following assumptions:

- Half of the cropland was corn and the other half was soybeans.
- Pasture and other grasslands were equated to alfalfa.
- The amounts received (sales and subsidies) for corn and soybeans were $2.50 and $5.50 per bushel, respectively, and alfalfa was $120 per ton.

Land use within the cones of depression around the Platte West and Platte North well fields was determined from data obtained from the Center for Advanced Land Management and Information Technology, University of Nebraska, Lincoln. In the Douglas County, the cone of depression contains 66.5 percent cropland and 7.1 percent pasture (Table 4-19). In Saunders County, the Platte West cone of depression contains 84.2 percent cropland and 12.6 percent pasture. The Platte North cone of depression contains approximately 51.1 and 39.2 percent cropland and pasture, respectively (Table 4-19).

Table 4-18 Soils in the Saunders County Portion of the Platte West Cone of Depression

Soil Type	Acres	
Alda fine sandy loam, occasionally flooded	366	*
Barney silty clay loam, wet, frequently flooded	406	
Boel loamy fine sand, occasionally flooded	324	*
Filbert silt loam, 0 to 1% slopes	31	
Fluvaquents, silty, frequently flooded	43	
Gibbon silt loam, occasionally flooded	1520	
Gibbon-Saltine loams, occasionally flooded	405	
Inglewood loamy fine sand, rarely flooded	483	*
Kenridge silty clay loam, occasionally flooded	161	
Lamo silty clay loam, occasionally flooded	1342	
Lex loam, occasionally flooded	12	
Muscotah silty clay loam, occasionally flooded	482	
Nodaway silt loam, channeled	12	
Nodaway silt loam, occasionally flooded	17	
Obert silty clay loam, occasionally flooded	375	
Obert silty clay loam, wet, frequently flooded	402	
Olmitz loam, 2 to 5% slopes	112	
Pits, sand and gravel	5	
Platte fine sandy loam, occasionally flooded	241	*
Platte-Barney complex, channeled	22	
Pohocco-Pahuk complex, 11 to 17% slopes, eroded	72	
Pohocco-Pahuk complex, 5 to 11% slopes, eroded	148	
Tomek silt loam, 0 to 2% slopes	150	
Wann fine sandy loam, occasionally flooded	1037	*
Water	13	
Yutan silty clay loam, terrace, 2 to 5% slopes	158	
Total	**8339**	
Total Sandy Soils	**2451**	
Percent Sandy Soils	**29.4%**	

*Sandy soils

Table 4-19 Land Use within the Well Field Cones of Depression[1]

Alternative / Land class	Douglas County		Saunders County	
	acres	percent	acres	percent
Platte West				
Cropland	3,653	66.5%	7,027	84.2%
Pasture	643	7.1%	1,054	12.6%
All Others	1,198	26.4%	261	3.1%
Total	5,494	100.0%	8,342	100.0%
Platte North				
Cropland	–	–	93	51.1%
Pasture	–	–	72	39.2%
All Others	–	–	17	9.7%
Total	–	–	182	100%
Platte South plus Platte West				
Cropland	1,258	75.8%	3,614	85.5%
Pasture	107	6.4%	552	13.0%
All Others	296	17.8%	74	1.7%
Total	1,661	100.0%	4,240	100.0%
Platte South plus Platte West DC				
Cropland	4,613	66.9%	–	–
Pasture	425	6.2%	–	–
All Other	1,857	26.9%	–	–
Total	6,895	100.0%	–	–
Three-Way Combination				
Cropland	290	66.0%	–	–
Pasture	33	7.6%	–	–
All Other	117	26.4%	–	–
Total	440	100.0%	–	–

[1]Excludes the well field.

The cost of producing water was the sum of operation and maintenance, energy, and debt service. Water production was assumed to start in 2005 at an average annual rate of 25 MGD and increase at one MGD per year until 2030 when production would reach the design capacity of 50 MGD. For long-term estimates of farm income and cost of water, dollar values were inflated by 3.5 percent per year.

Platte West

The Platte West alternative would cause the largest loss of subirrigated land and the largest annual loss of farm income from crops, $355,700 (Table 4-20). Saunders County farmers would absorb $270,200 of this income reduction. The total farm income reduction from 2005 through 2030 is estimated to be $16,021,000 (Table 4-20). Over this same time, the cost of producing water is estimated to be $746,860,000 (Table 4-21). Among the alternatives, this 25-year cost is the lowest and is considered the minimum cost necessary to provide the required service. As such, the Platte West alternative would not have an unnecessary adverse impact on District customers.

Platte North

The Platte North alternative would cause the loss of the least amount of subirrigation and would have the least impact on farm income from reduced crop production. Annual lost crop production is estimated to be worth $5,700 (in 2000 dollars) and $257,000 dollars over 2005 through 2030. All of this loss would occur to farmers in Saunders County. The cost of producing water over this period is estimated to be $885,370,000 or $138,510,000 more than the Platte West alternative. To put this cost differential in perspective, the greater metropolitan area of Omaha produces roughly $600 million per month in taxable sales (Greater Omaha Chamber of Commerce 2001) (Table 4-21).

Platte South plus Platte West

The impact of the Platte South plus Platte West alternative on farm income from the loss of subirrigated land is predicted to be $121,700 annually (2000 dollars) and $5,481,000 over 2005 through 2030 (Table 4-20). Most of this loss would occur in Saunders County (Table 4-20). The cost of producing water over 2005 through 2030 is

Table 4-20 Estimated Reductions in Annual Farm Income Because of Lost Subirrigation

Alternative County	Corn[1]	Soybeans[1]	Alfalfa[1]	Annual Total[1]	2005-2030 Total[2]
Platte West					
Douglas Co.	$39,700	$31,700	$14,100	$85,500	$3,851,000
Saunders Co.	$143,800	$72,300	$54,100	$270,200	$12,170,000
Total	$183,500	$104,000	$68,200	$355,700	$16,021,000
Platte North					
Saunders Co	$1,700	$800	$3,200	$5,700	$257,000
Platte South+ Platte West					
Douglas Co.	$11,600	$9,200	$3,300	$24,100	$1,085,000
Saunders Co.	$51,800	$26,000	$19,800	$97,600	$4,396,000
Total	$63,400	$35,200	$23,100	$121,700	$5,481,000
Platte South+ Platte West DC					
Douglas Co	$56,000	$44,800	$17,200	$188,000	$5,315,000
Three-Way Combination					
Douglas Co.	$33,700	$27,000	$12,900	$73,600	$3,315,000
No Federal Action Option G					
Douglas Co.	$39,700	$31,700	$14,100	$85,500	$3,851,000
Saunders Co.	$143,800	$72,300	$54,100	$270,200	$12,170,000
Total	$183,500	$104,000	$68,200	$355,700	$16,021,000

[1]2000 dollars. [2]Inflated at 3.5 percent per year.

$936,780,000, which is $189,920,000 more than the Platte West alternative (Table 4-21).

Platte South plus Platte West DC

The estimated farm income losses for the Platte South plus Platte West DC alternative are $188,000 annually (2000 dollars) and $5,315,000 over 2005 through 2030 (Table 4-20). All of these impacts would occur in Douglas County. The 25-year cost of water production would be approximately

$932,530,000, which is $185,670,000 more than the Platte West alternative (Table 4-21).

Three-Way Combination

The Three-Way Combination alterative is estimated to decrease crop revenue by $73,600 annually (2000 dollars) and by $3,315,000 over 2005 through 2030 (Table 4-20). This alternative has the highest estimated cost of producing water of $1,138,520,000 over 2005 through 2030 (Table 4-21). This cost is $391,660,000 more than the Platte West alternative.

No Federal Action

The subirrigated land and farm income would not be affected by no federal action alternative options a through f. The no federal action alternative option g would have

Table 4-21 Cost of Producing Water 2005 through 2030

Alternative	2005 - 2030[1]	Difference
Platte West	$746,860,000	$0
Platte North	$885,370,000	$138,510,000
Platte South plus Platte West	$936,780,000	$189,920,000
Platte South plus Platte West DC	$932,530,000	$185,670,000
Three-Way Combination	$1,138,520,000	$391,660,000

[1]Cost inflated at 3.5 percent per year

the same impacts on subirrigation and farm income as the Platte West alternative.

Mitigation
Techniques to mitigate the impacts of lost subirrigation are discussed at the end of the following section on property tax revenues.

PROPERTY TAX REVENUES
The well field, treatment plant, and reservoir properties for the selected alternative would be owned by the District. Because the District has a status equivalent to a state agency, property purchased by the District for a water supply alternative would not be subject to county or other local property taxes. Property tax revenues would also be reduced for areas near a well field because land that would lose subirrigation would decline in value.

Platte West
The amount of property tax estimated to be lost as a result of constructing the Platte West alternative is $77,517 for Douglas County and $40,275 for Saunders County (Table 4-22). For all of the affected taxing entities examined, the percent of total revenue that would be lost was less than 2 percent. The largest relative decline in tax revenues would be experienced by the Ashland School District in Saunders County with a reduction of 1.76 percent (Table 4-22).

Platte North
Property tax revenues lost because of the Platte North alternative were estimated to be $31,305 and $25,209 for Douglas and Saunders counties, respectively (Table 4-22). The Yutan School District would experience the largest relative loss with a decline in revenue of $14,873 or 1.35 percent of annual tax receipts (Table 4-22).

Platte South Plus Platte West
Property tax collections are estimated to be reduced by $72,515 and $30,158 in Douglas and Saunders counties, respectively, because of the Platte South plus Platte West alternative (Table 4-22). The Valley School District in Douglas County and the Ashland School District in Saunders County would experience revenue declines of $27,599 (1.00 percent) and $18,548 (1.34 percent), respectively (Table 4-22).

Platte South Plus Platte West DC
This alternative would reduce property tax revenues in Douglas County by an estimated $88,229. The Valley School District, where the well field is located, would have property tax revenue reduced by an estimated $39,624 or 1.44 percent (Table 4-22).

Three-Way Combination
The estimated decline in property tax revenues caused by the Three-Way Combination alternative in Douglas County is $95,959. The Valley School District could experience a $33,804 or 1.23 percent decline in revenues because of the presence of the Platte West well field (Table 4-22).

No Federal Action
The District would only purchase isolated, small parcels of land to develop a dispersed system of wells in the Dakota Sandstone aquifer. Property tax receipts are not expected to be significantly impacted by the no federal action alternative options a through f. The loss of property tax revenue caused by the no federal action alternative option g would be the same in Douglas County as the Platte West alternative. The loss in Saunders County would be greater because the well field would be 370 acres larger. Saunders County would experience a loss of property tax revenue of $48,179 (0.233 percent of 2000 revenues) while the Yutan and Ashland school districts would lose $7,014 (0.637 percent) and $26,769 (1.928 percent), respectively (Table 4-22).

MITIGATION
The loss of county property tax receipts caused by the District ownership can not be directly mitigated. Pursuant to NRRS 77-202(11) and 77-202(12) (Cum. Supp. 2000),

Table 4-22 Annual Lost Property Tax Revenues

Alternative County School District	District Ownership Well Fields	 Treatment Plant	 Delivery Point B	Lost Sub-irrigation	Total	Taxing Entity Revenue (2000)	Percent of Revenue
Platte West					**$117,792**		
Douglas	$32,015	$31,305		$14,198	$77,517	$465,021,809	0.017%
Valley	$24,498			$10,864	$35,362	$2,755,371	1.283%
Elkhorn		$23,793			$23,793	$12,344,235	0.193%
Saunders	$24,509			$15,766	$40,275	$20,658,187	0.195%
Yutan	$2,650			$1,598	$4,248	$1,100,569	0.386%
Ashland	$14,765			$9,631	$24,397	$1,388,157	1.758%
Platte North					**$56,514**		
Douglas		$31,305			$31,305	$465,021,809	0.007%
Elkhorn		$23,793			$23,793	$12,344,235	0.193%
Saunders	$24,907			$302	$25,209	$20,658,187	0.122%
Yutan	$14,695			$178	$14,873	$1,100,569	1.351%
Platte South + Platte West					**$102,673**		
Douglas	$32,015	$31,305	$5,142	$4,053	$72,515	$465,021,809	0.016%
Valley	$24,498			$3,101	$27,599	$2,755,371	1.002%
Elkhorn		$23,793			$23,793	$12,344,235	0.093%
Millard			$3,798		$3,798	$69,756,779	0.005%
Saunders	$24,509			$5,649	$30,158	$20,568,187	0.146%
Yutan	$2,650			$307	$2,957	$1,100,569	0.269%
Ashland	$14,765			$3,783	$18,548	$1,388,157	1.336%
Platte South + Platte West DC					**$88,229**		
Douglas	$32,015	$31,305	$5,142	$19,767	$88,229	$465,021,809	0.019%
Valley	$24,498			$15,126	$39,624	$2,755,371	1.438%
Elkhorn		$23,793			$23,793	$12,344,235	0.193%
Millard			$3,798		$3,798	$69,756,779	0.005%
Three-Way Combination					**$95,959**		
Douglas	$32,015	$46,641	$5,142	$12,161	$95,959	$465,021,809	0.020%
Valley	$24,498			$9,306	$33,804	$2,755,371	1.227%
Elkhorn		$23,793			$23,793	$12,344,235	0.193%
Bennington		$11,510			$11,510	$1,566,264	0.735%
Millard			$3,798		$3,798	$69,756,779	0.005%
No Federal Action Option G					**$125,696**		
Douglas	$32,015	$31,305		$14,198	$77,517	$465,021,809	0.017%
Valley	$24,498			$10,864	$35,362	$2,755,371	1.283%
Elkhorn		$23,793			$23,793	$12,344,235	0.193%
Saunders	$32,413			$15,766	$48,179	$20,658,187	0.233%
Yutan	$5,416			$1,598	$7,014	$1,100,569	0.637%
Ashland	$17,138			$9,631	$26,769	$1,388,157	1.928%

District property is not ordinarily subject to property taxes unless such property is not being used for a public purposes. The District presently pays property taxes on parcels that have been purchased for the Platte West alternative but are presently being leased for agricultural and recreational purposes. For the tax year 2001, property taxes paid to Douglas and Saunders counties, were $11,562 and $16,460, respectively. These properties, however, will

provide tax revenue only until the District puts them to a public use.

The District has contributed funds to the Clear Creek Drainage District for the maintenance and strengthening of the Clear Creek levee in Saunders County. These contributions could be viewed as offsetting property tax revenue losses because without the contributions, a likely source of money to make up for the shortfall would probably be property taxes, increased property assessments, or both.

The District would expand its groundwater level monitoring network to provide data on the extent of existing subirrigated lands and help determine where drawdown impacts subirrigation. As the impacts of the well field on subirrigation become clear, the District would work to compensate landowners and farmers who experience decreased property values or agricultural production caused by the loss of subirrigation. Mitigation options include, but are not limited to, the installation of irrigation systems or compensatory payments by the District. Specific mitigation would be determined on a case-by-case basis.

The District has indicated recognition of its duty to respond to proven damages to landowners arising from the operation of a new well field to the extent provided under Nebraska law (Wurtz 1999). Upon a written claim by a landowner asserting damage, the District would accept and perform a good faith review of the claim and all submitted supporting evidence. The District would also share any monitoring information in its possession with a claimant. If the District concludes that the claim and the amount of claimed damages are valid, the District would pay the claim as it does other legitimate claims. If the parties cannot agree on the validity of the claim or the amount of damages, the remedy may be found under condemnation or inverse condemnation procedures (Nebraska Constitution Article 1, Section 21 and NRRS 76-701 et seq.), or the Political Subdivisions Tort Claims Act (NRRS 13-901 et seq.). The condemnation process in Nebraska is an administrative procedure involving the naming of three landowners of the county in which the land is located to a Board of Appraisers. The Board, named by a county judge, then determines the amount of damage that may be caused to a landowner. Rough estimates of the possible cost of mitigation using compensatory payments were made based on the number of acres of lost subirrigation and the assumption the District would compensate affected owners on a dollar for dollar basis for the lost market value of their property. This loss in value would be $850 per acre in Douglas County and $375 per acre in Saunders County. The cost of mitigating for lost subirrigation would range from approximately $21,000 for the Platte North alternative to $2,325,000 for the Platte West alternative (Table 4-23).

If the Saunders County resolution requiring in-kind mitigation for loss of subirrigation is determined by legal authorities to be applicable to the District, then the District could install subsurface tape irrigation where needed. This type of irrigation costs approximately $1,000 per acre, an increase of $625 per acre over the $375 per acre value of subirrigation. Assuming all of the acres in Saunders County outside of the well field boundaries predicted to lose subirrigation would require subsurface tape irrigation, the additional cost of mitigating lost subirrigation by replacement would range from $35,000 for the Platte North alternative to $1,953,000 for the Platte West alternative (Table 4-23).

CULTURAL RESOURCES

The water supply alternatives could destroy culturally significant or historically important sites through the construction of new treatment plants and pipelines. The well fields and other portions of the alternatives constructed in the floodplain of the Platte and Elkhorn rivers were considered unlikely to

Table 4-23 Mitigation Costs for Subirrigation

	Platte West	Platte North	Platte South + Platte West	Platte South + Platte West DC	Three-Way Combination	No Federal Action Option G
Value Compensation						
Acres[1]	4,481	56	1,515	1,889	1,162	4,481
Cost per acre	$519[2]	$375	$496[1]	$850	$850	$519[2]
Total cost	$2,325,000	$21,000	$752,000	$1,605,000	$988,000	$2,325,000
Subirrigation Replacement[3]				No impacted acres in Saunders County	No impacted acres in Saunders County	
Acres[1]	3,125	56	1,128			3,125
Cost per Acre[3]	$625	$625	$625			$625
Total cost	$1,953,000	$35,000	$705,000			$1,953,000

[1]Does not include loss of subirrigation within the well fields boundaries. [2]Weighted average of Douglas and Saunders counties for the value to agriculture of lost subirrigation. [3]Costs in addition to value compensation; total cost of installing subsurface tape irrigation is estimated at $1,000 per acre; applicable only to impacted lands in Saunders County.

contain significant cultural resources because past river action was assumed to have disturbed the integrity of any potential sites.

Existing information was reviewed to determine if any known cultural resources were present within portions of the Platte West alternative. Surveys were conducted in accordance with the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-44742), and the Nebraska State Historic Preservation Office (SHPO). All of the sites were evaluated for their potential for listing on the National Register of Historic Places (NRHP). The criteria used to determine the inclusion of a site on the NRHP is in accordance with the Department of the Interior's regulations 36 CFR 60.4. Impacts to cultural resources would be considered significant if the project would damage or destroy any sites eligible for the NRHP.

Archaeology surveys were conducted for the facilities associated with the Platte West Alternative. A Class I cultural resource inventory was performed on the transmission pipeline rights-of-way in the upland area east of the Elkhorn River floodplain and the grounds of the proposed Platte West water treatment plant.

The Nebraska State Historical Society (J.R. Bozell) was contacted regarding the possibility that significant cultural resources could be affected by the Missouri River portion of the Three-Way Combination alternative. Detailed archaeological Phase I surveys, however, have not been conducted for any portions of the combination alternatives that do not involve the Platte West well field, treatment plant, and pipelines.

ACTION ALTERNATIVES

One potentially eligible site was located on the southwest corner of the Platte West water treatment plant site. This site consisted of an extensive, dense scatter of Euroamerican debris in a plowed field (Bozell 1996, included in Appendix H). Subsequent study of the site, including excavation, suggested the site dated to the 1880s or 1890s. Because the site had been severely eroded and was not associated with a person or event of particular historic significance, the site was considered ineligible for inclusion on NRHP (Bozell and Carlson 1998a, included in Appendix H).

Another potentially eligible site is the Mt. Auburn Cemetery along the pipeline route from the water treatment plant site to Delivery Point B. This active cemetery is located on

the south side of Q Street two miles east of the proposed Platte West water treatment plant site. The dates on head stones indicated the use of the cemetery began in the 1880s, although one difficult to read stone appears to date to 1868 (Bozell 1998, included in Appendix H). This site was not considered to be eligible for the NRHP.

Detailed archaeological investigations have not been conducted for the pipeline route or new water treatment plant site for the Missouri River portion of the Three-Way Combination alternative or the pipeline route connecting the expanded Platte South water treatment plant to Distribution Points A and B. Significant cultural resources, however, may occur along the transmission pipeline route from the Missouri River to several miles west; in areas north of Skyline Reservoir on the eastern bluffs of the Elkhorn River floodplain; and where the routes cross existing streams (Bozell 2000, included in Appendix H). The site of the proposed new treatment plant could contain significant cultural resources because of the site's proximity to Thomas Creek (Bozell 2000). The full extent of impacts are unknown at this time.

NO FEDERAL ACTION

Under the no federal action options a through f, agricultural practices would remain the same and little disturbance from construction would occur; therefore, significant impacts to cultural resources are not expected from these options. The impacts to cultural resources from the no federal action alternative option g would be the same as for the Platte West alternative.

MITIGATION

Impacts to the Mt. Auburn Cemetery would be avoided by placing the pipeline from the Platte West water treatment plant to Delivery Point B along the north side of Q Street. Should a Corps Section 404 permit be issued for this project, an official Area of Potential Effect would be defined based on more definitive designs than are currently available. Further, before any ground disturbing activities take place, a plan acceptable to the Corps and SHPO would be prepared that details how any cultural resources discovered during construction would be mitigated. This plan would include instruction to contractors to immediately stop work in the event cultural resources are unearthed and immediately contact SHPO and the Corps by telephone and in writing within 24 hours. The discovery of skeletal remains would also necessitate immediately contacting the county coroner, local police, and other agencies as required by Nebraska law. Should one of the combination alternatives be selected, Phase I investigations of the treatment plant sites and pipeline routes would be necessary.

VISUAL RESOURCES

The main elements of visual character are landform, land cover, land use, visual variety, and uniqueness. These elements combine to create a variety of landscapes. Impact to visual character is a function of how the project changes these aspects of the landscape.

Landscape management deals with the visual harmony or disharmony of the components of the landscape, including the topography, vegetation, land use, and any human intrusions. The basic concepts considered are landscape character, visual variety, and deviations from the landscape character (U.S. Forest Service 1973). Impacts on the landscape generally result when human alterations to the topography, vegetation, or land use contrast with the natural character of an area. In general, strong contrast with these components results in visual disharmony, while changes that conform to the existing visual components are less noticeable.

Significant visual impacts would result if any of the alternatives would create visual disharmony. Such disharmony would result from either dramatic changes in the visual character of the viewshed, a noticeable

reduction in visual variety, or sharply contrasting deviation. Visual impacts would be significant if the visual disharmony created would be viewed by large numbers of people, alter current points of recognized scenic value, or alter state or federally designated scenic areas.

ACTION ALTERNATIVES

The construction of a new well field, water treatment plant, pipelines, or new river intake would impact, at least temporarily, all components of landscape character. Some removal of vegetation and loss of cropland would alter the viewshed of some areas. Although well fields, treatment plants, and intake structures for the water supply alternatives would create some visual contrast in the landscape, the proposed new treatment plants (as opposed to the Platte South Treatment Plant expansion) would present the greatest contrast. Such buildings would add large rectangular and other geometric elements to a rolling hills landscape. Little of the land in the well field would be converted to wells. The well structures, 17- by 22-foot platforms, would rise eight to nine feet above the existing grade elevation (HDR Engineering, Inc. 1993) and would add vertical element contrast to the landscape. The proposed new intake for the Three-Way alternative could contrast with the riparian landscape, but would be located in an area already dominated by industrial structures such as the existing I-680 bridge. The lighting on new treatment plants could create a visual contrast at night were none currently exists. The well field, however, would not contribute to light pollution because the wells would not be routinely lighted.

No areas designated as scenic by state or federal agencies are located in the project area; therefore, none would be impacted by this project. Given the distance and the intervention of trees, the Platte West and Platte North well fields would not be visible from the Two Rivers State Recreation Area.

Overall, the only significant impact to the visual character of the area would be the addition of an industrial component to an agricultural landscape. Overall, significant adverse impacts to the visual character of the area would be local.

NO FEDERAL ACTION

The no federal action alternatives a through f options would not change the landscape or visual character or create large deviations from surrounding landscape character. The no federal action alternative option g would have the same visual impacts as the Platte West alternative.

MITIGATION

Visual impacts caused by the new treatment plants would be mitigated by adding berms and vegetation around the buildings and treatment ponds to screen the structures from view, break up the strong rectangular and geometric visual elements, and return a natural aspect to the landscape. The visual impact of the well structures would be mitigated by painting the structures earthtone colors. Lighting on the outside of the treatment plants would be kept to the minimum necessary to provide adequate safety and security. "Dark Sky" lighting, which incorporates shades to direct light towards the ground, would be used to minimize light pollution.

RECREATIONAL RESOURCES

The proposed project could impact recreation within the project area in several ways. First, a loss of recreational opportunities could occur from construction. Second, impacts to aquatic habitats at recreation areas could occur from changes in groundwater levels. Third, a reduction in the amount of water in the Platte River could limit recreational activities.

The public recreational facilities on the Nebraska side of the Omaha Metropolitan Area were quantified. Project impacts would be considered significant if recreational

opportunities in the area were reduced or eliminated.

PLATTE WEST
A major public recreational resource affected by this alternative would be NPGC's Two Rivers State Recreation Area. Depression of the groundwater levels as a result of the Platte West alternative is predicted to be 2 to 3 feet in the part of the recreation area containing five small lakes (Figure 4-2). The water level in these lakes is established by the elevation of the groundwater which is currently linked to the surface water elevation in the Platte River. A lowering of the groundwater or the Platte River would also lower the water level in these lakes. The drawdown of the water level in the ponds could be sufficient to adversely affect swimming, boating, and fishing. Some wetlands on Two Rivers State Recreation Area are predicted to be altered by groundwater drawdown. The current hunting and nature viewing opportunities provided by these wetlands could subsequently be altered.

Another public recreational resource affected by the Platte West well field alternative would be the Platte River. This resource is used for boating and fishing. Large flow reductions in the river could reduce boating opportunities and adversely impact sport fish populations and sport fishing. As indicated previously, however, the flow and river depth reductions caused by the Platte West well field would usually be undetectable. No significant impacts to recreation on the Platte River are anticipated. This assessment of no impact would also apply to Mahoney State Park, Schramm Park State Recreation Area, Platte River State Park, and Louisville State Recreation Area, which are downstream of the Platte West well field.

Groundwater drawdown could lower the water level in some private ponds and reduce their capacity for swimming, boating, and fishing.

PLATTE NORTH
No public recreational facilities would be impacted by construction activities or groundwater level drawdowns associated with this alternative. Groundwater drawdown could lower the water level in some private ponds and reduce their capacity for swimming, boating, and fishing.

COMBINATION ALTERNATIVES
The impacts to recreational resources from these alternatives would generally be proportional to the size of the cone of depression, particularly in Douglas County where Two Rivers State Recreation Area and most of the private ponds are located. For the Platte South plus Platte West alternative, drawdown at the ponds on Two Rivers State Recreation Area are expected to be less than 1 foot. For the Platte South plus Platte West DC, drawdowns at the Two Rivers State Recreation Area ponds are predicted to be 3 to 7 feet. Drawdown from the Three-Way Combination alternative at the Two Rivers State Recreation Area ponds would be about 3 feet.

NO FEDERAL ACTION
No existing recreational opportunities would be affected in the short-term as a result of the no federal action alternative options a through f. In the long-term, without the project, watering of recreation facilities might have to be curtailed at times, which could lower the quality of recreation areas. During droughts, filling private pools could also be curtailed or banned to conserve water. The long-term impacts on recreational resources of the no federal action alternative options a through f are not considered significant. Impacts to recreational resources from the no federal action alternative option g would be the same as for the Platte West alternative.

MITIGATION
The loss of recreational opportunities at Two Rivers State Recreation Area caused by the Platte West alternative or the no federal action alternative option g would be mitigated

in several ways. The District would pay NGPC $125,000 for anticipated costs required to offset damages to ponds by lowering water levels (Appendix D). To replace recreational opportunities lost by the alteration of the wetlands, the District would allow public access to the wetland mitigation site at La Platte once the new wetlands had become established. The District has also pledged to consider opening the Douglas County portion of the Platte West well field for limited recreational use (Tobin 2001). If the Douglas County portion of the Platte West well field were managed like the Platte South well field, excellent wildlife viewing could develop over the life of the project.

If the Platte South plus Platte West DC alternative were to be built, the lowering of ponds in Two Rivers State Recreation Area would be greater than predicted for the Platte West alternative. In that case, NGPC would likely want to negotiate a higher cost for offsetting damages to ponds by lowering water levels. Impacts to the ponds at Two Rivers State Recreation Area from the Platte South and Platte West and the Three-Way Combination alternatives are expected to be less than for the Platte West alternative. In those cases, the District would likely want to negotiate a lower cost for offsetting damages to ponds.

Impacts to private recreational resources, such as ponds, would be mitigated by the District on a case-by-case basis in cooperation with the owners. Upon a written claim by a landowner asserting damage, the District would accept and perform a good faith review of the claim and all submitted supporting evidence. The District would also share any monitoring information in its possession with a claimant. If the District concludes that the claim and the amount of claimed damages are valid, the District would pay the claim. If the parties cannot agree on the validity of the claim or the amount of damages, the remedy may be found under condemnation or inverse condemnation procedures (Nebraska Constitution Article 1, Section 21 and NRRS 76-701 et seq.), or the Political Subdivisions Tort Claims Act (NRRS 13-901 et seq.). The condemnation process in Nebraska is an administrative procedure involving the naming of three landowners of the county in which the land is located to a Board of Appraisers. The Board, named by a county judge, then determines the amount of damage that may be caused to a landowner.

HAZARDOUS MATERIALS

Hazardous materials brought on-site during project construction would include fuels, lubricants, coolants, and miscellaneous materials necessary for the heavy machinery and transportation vehicle operation. Other materials that would potentially be used onsite include solvents, paints, herbicides, and explosives.

Potentially hazardous chemicals routinely used for water treatment at the District's facilities include alum, chlorine, hydrofluosilicic acid, and potassium permanganate (District 1998). Alum (aluminum sulfate) is used in water treatment for coagulation and would be stored in the form of a ground solid. Chlorine is used for disinfection and would be stored as liquefied, compressed chlorine gas. Hydrofluosilicic acid is added to the water for preventing dental cavities and would be stored in the form of a 20 to 30 percent solution (HDR Engineering, Inc. 1993). The District has initiated plans to use a combined chlorine-ammonia disinfection process in the distribution system. In the future, ammonia, as liquefied compressed gas or liquid solution, would be stored on the treatment plant sites.

In addition to the potentially hazardous materials associated with the treatment plants, the project could encounter existing hazardous waste sites during construction. The groundwater cone of depression created by the Saunders County portion of the Platte West well field could also interact with a

nearby plume of contaminated water emanating from the former Mead Army Ammunition Plant, which is west of the Platte West well field (Figure 3-1).

The amount of chemicals used in the Florence and Platte South treatment plants in 1997 was used as a basis for predicted usage in the proposed new treatment plants. Accidental spills of chemicals on the construction sites or in the treatment plants would be considered a significant impact if the safety of workers or nearby residents were threatened.

The locations of existing hazardous waste sites were determined by searching the U.S. Environmental Protection Agency's (EPA) superfund database. Disturbing an unremediated Superfund site could be a significant impact.

The potential impact on the Mead plume was evaluated by modeling the groundwater movement of the leading edge of the plume nearest the Platte West well field using a particle tracking technique. During this modeling, a steady-state (constant pumping), 50-MGD well field operating scenario was used. This scenario has previously been shown to over-estimate the impacts of groundwater drawdown (Burns & McDonnell Engineering Company, Inc. 1997a, Appendix B).

ACTION ALTERNATIVES

Impacts from hazardous materials brought on site are expected to be minimal assuming:

- proper use and handling guidelines are followed
- personnel are trained correctly in the use of hazardous materials
- state and federal guidelines regarding hazardous materials are followed

Only one hazardous waste site was found in the vicinity of any of the proposed water supply facilities. This site, the Elkhorn Communication Facility Superfund site, is located near Rainwood and 216th streets approximately four miles north of Elkhorn, Nebraska. The closest component of any of the water supply alternatives would be the 48-inch diameter distribution pipeline for the Three-Way Combination alternative. This pipeline would be two miles east of this facility and would have no effect on the hazardous wastes at the superfund site.

The water treated by the proposed well field alternatives and the Platte South plant comes from the Platte River alluvial aquifer and would have similar water quality characteristics and treatment requirements. In 1997, the Platte South treatment plant used 94.7 tons of alum, 140.1 tons of chlorine, and 178.0 tons of hydrofluosilicic acid to treat an average of 39.8 MGD of water (Metropolitan Utilities District 1998).

At its designed average pumping rate of 50 MGD, the Platte West water treatment plant is projected to use 118.9 tons of alum, 176.0 tons of chlorine, and 223.6 tons of fluoride in one year. Recommended onsite storage is a 30-day supply of these materials (HDR Engineering, Inc. 1993). This 30-day supply would include approximately 10 tons of alum, 15 tons of chlorine, and 19 tons of fluoride. The smaller Platte West water treatment plant used in the combination alternatives would use and store proportionally smaller amounts of the above chemicals. The amount of ammonia stored on site has not yet been determined.

Water from the Platte North and expanded Platte South well fields would probably be classified as groundwater under the influence of surface water. As such, water from these sources would have to be treated like surface water because of the greater likelihood of contamination by microbial pathogens and pesticides. Additional disinfection products and powdered activated carbon would probably be required for alternatives using these well fields.

The water treated by the Three-Way Combination alternative's new Missouri River treatment plant would have the same treatment requirements as water treated at the existing Florence treatment plant. In 1997, the Florence treatment plant used 678.0 tons of alum, 340.6 tons of chlorine, and 185.7 tons of fluoride to treat an average of 48.7 MGD of water (Metropolitan Utilities District 1998). Based on these rates, the proposed new Missouri River treatment plant, at its designed average pumping rate of 16.7 MGD, would use 232.0 tons of alum, 116.5 tons of chlorine, and 63.6 tons of fluoride in one year. Storage on site of a 30-day supply of these materials is recommended (HDR Engineering, Inc. 1993). This supply would include approximately 19 tons of alum, ten tons of chlorine, and five tons of fluoride.

Large spills of alum, chlorine, or fluoride could have serious health impacts on plant workers, and in the case of chlorine, the surrounding environment. The likelihood of a serious release of hazardous materials, however, is small. In the past 15 years, the District has experienced two incidents involving the release of small amounts of hazardous chemicals. Two workers have been hospitalized, one for exposure to chlorine and one for exposure to hydrogen fluoride (Tobin 2000).

Like surface water, groundwater flows downhill. Operation of the Platte West well field would create a cone of depression in the groundwater level (Figure 4-2). The cone, however, would be superimposed on an existing groundwater gradient which dips from north to south (see Figure 4 in Appendix B). Groundwater movement was modeled for the Platte West well field and the Mead Army Ammunition Plant contamination plume and remediation wells. The simulated particles placed along the leading edge of the plume were found to track at first southeast and then south towards the City of Lincoln's Ashland well field (Figure 4-18). The particles did not enter the cone of depression created by the Platte West well field alternative even with pumping at an unrealistically high rate. The Platte West well field alternative, therefore, would not likely be contaminated with pollutants from the Mead groundwater plume or interfere with the on-going remediation efforts.

NO FEDERAL ACTION

Under the no federal action alternative options a through f, no construction or operation of a new treatment plant would occur. The only new risks of hazardous material spills would be from the chlorine and fluoride used at the new wells in the Dakota Sandstone aquifer. A small potential exists that hazardous waste sites could be encountered along the connecting pipeline routes. The risks of handling hazardous materials at the District's existing treatment facilities would remain the same. The no federal action alternative a through f options would not likely cause significant impacts related to hazardous materials. The no federal action alternative option g would have the same impacts related to hazardous materials as the Platte West alternative.

MITIGATION

Mitigation would be adherence to the following measures for proper use and storage of hazardous materials:

- Detailed records of the types and quantities of hazardous materials used, stored, transported, or disposed in conjunction with the operation of the project would be maintained.
- Contingency plans for releases, spills, fires, or explosions would be developed.
- Material Safety Data Sheets would be readily available on-site.
- Manufacturers' methods of storage, handling, and disposal of hazardous materials would be strictly followed.
- Fueling and lubricating of construction and transportation equipment would take place only in designated areas.
- Employees using hazardous materials during project construction and operation

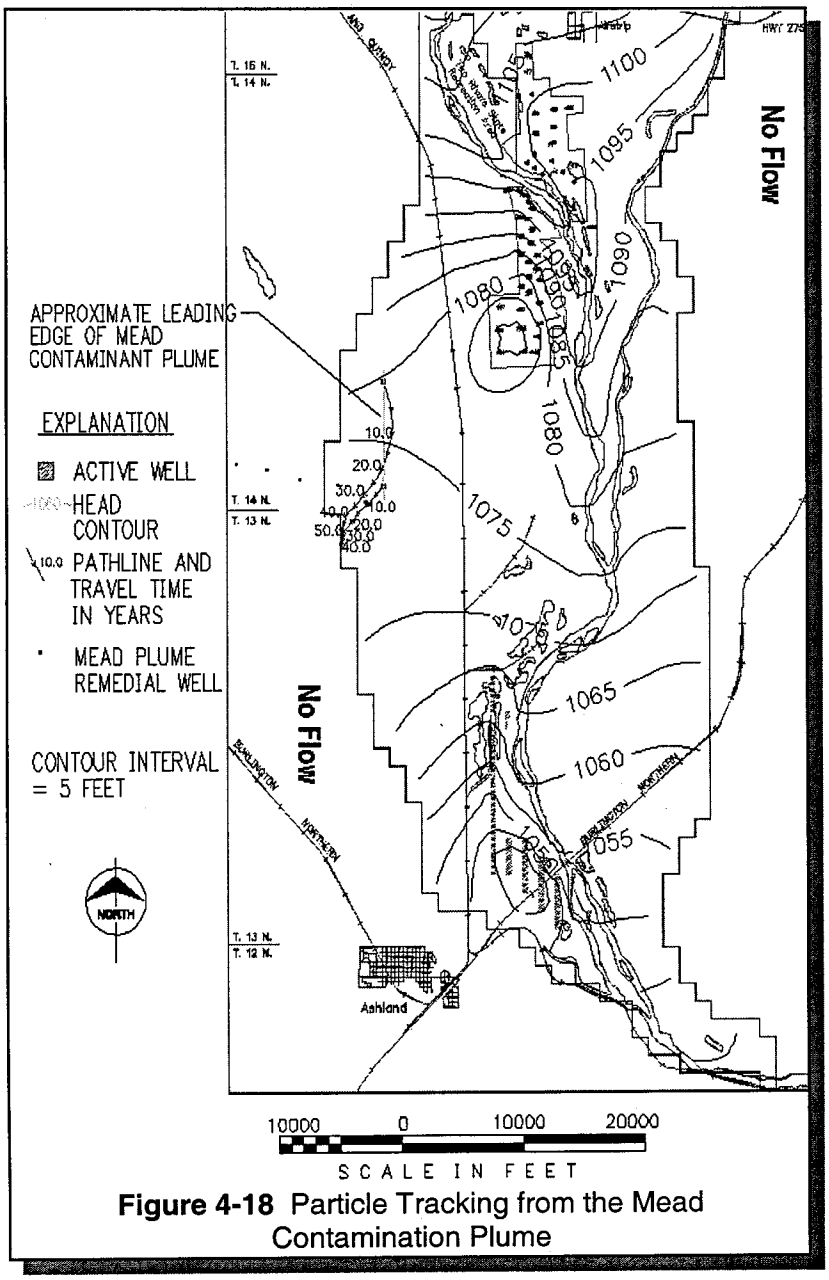


Figure 4-18 Particle Tracking from the Mead Contamination Plume

would be properly trained and educated.

- All applicable safety regulations, such as the EPA's Risk Management Program (40 CFR 68), and the Occupational Safety and Health Administration's Process Safety Management regulations (29 CFR 1910.199) would be followed.

Because of the uncertainty associated with groundwater modeling, impacts on the Mead contamination plume can not be completely ruled out. If the Platte West alternative is built, the Kansas City District of the Corps would install additional monitoring wells east of the leading edge of the plume. If results from these wells indicate the Platte West cone of depression could cause the east side to the plume to miss the eastern-most containment well, the District would fund the establishment of an additional capture well or other remediation facility upgrades.

UNAVOIDABLE ADVERSE IMPACTS

The construction and operation and maintenance of one or more well fields, associated water treatment plants, and large diameter transmission pipelines would have unavoidable adverse impacts that could not be completely mitigated.

PLATTE WEST

- For the life of the project, the District would restrict farming practices on their well field property that could contaminate groundwater (e.g. feed lots and the use of fertilizers, insecticides, and most herbicides). About 2,230 acres, including 1,215 acres of prime farmland, would be affected by these restrictions.
- The agricultural use of 184 acres, including 128 acres of prime farmland, would be lost for the life of the project. This amount of land could increase by 2,230 acres if the District decides to manage the well field for reversion to natural vegetation.
- Sedimentation and turbidity in the Platte and Elkhorn rivers would temporarily increase during construction of a pipeline under these rivers.

- Air quality would temporarily decrease and noise and soil erosion would temporarily increase in construction areas.
- Six acres of upland forest would be lost for the life of the project.
- Wildlife would be displaced at the water treatment plant site for the life of the project.
- When the facility is operating at designed average capacity, average flows in the Platte River would be reduced by 18,406 acre-feet during February through July.
- Vehicular access to up to 50 residences and businesses would be temporarily disrupted during pipeline construction.
- Industrial visual elements would be added to a rural landscape for the life of the project.
- Over the life of the project, water level declines of up to about 5 feet could occur in some small lakes on Two Rivers State Recreation Area as a result of lowering the groundwater level by the well field.
- Douglas and Saunders counties would annually lose $77,517 and $40,275 of property tax revenues, respectively.

PLATTE NORTH

- For the life of the project, the District would restrict farming practices on their well field property that could contaminate groundwater (e.g. feed lots and the use of fertilizers, insecticides, and most herbicides) on about 575 acres, including 38 acres of prime farmland, would be affected by these restrictions.
- The agricultural use of 188 acres, including 113 acres of prime farmland, would be lost for the life of the project. This amount of land could increase by approximately 485 acres if the District decides to manage the well field for reversion to natural vegetation.
- Sedimentation and turbidity in the Platte and Elkhorn rivers would temporarily increase during construction of a pipeline under these rivers.
- Air quality would temporarily decrease and noise and soil erosion would temporarily increase in construction areas.
- Six acres of upland forest and two acres of riparian forest would be lost for the life of the project.
- Wildlife would be displaced at the water treatment plant site for the life of the project.
- When the facility is operating at designed average capacity, average flows in the Platte River would be reduced by at least 25,400 acre-feet during February through July.
- Vehicular access to up to 70 residences and businesses would be temporarily disrupted during pipeline construction.
- Industrial visual elements would be added to a rural landscape for the life of the project.
- Douglas and Saunders counties would annually lose $31,305 and $25,209 of property tax revenues, respectively.

PLATTE SOUTH PLUS PLATTE WEST

- For the life of the project, the District would restrict farming practices on their well field property that could contaminate groundwater (e.g. feed lots and the use of fertilizers, insecticides, and most herbicides) on about 2,913 acres, including 1,646 acres of prime farmland, would be affected by these restrictions.
- Expansion of the Platte South well field would degrade the quality of the water source from groundwater to groundwater under the influence of surface water.
- The agricultural use of 194 acres, including 143 acres of prime farmland, would be lost for the life of the project. This amount of land could increase by 1,040 if the District decides to manage the Platte West well field for the return of native vegetation.
- Sedimentation and turbidity in the Platte and Elkhorn rivers would temporarily increase during construction of a pipeline under these rivers.
- Air quality would temporarily decrease

and noise and soil erosion would temporarily increase in construction areas.
- Six acres of upland forest and less than one acre of riparian forest would be lost for the life of the project.
- Wildlife would be displaced at the water treatment plant site for the life of the project.
- When the facility is operating at designed average capacity, average flows in the Platte River would be reduced by at least 22,005 acre-feet during February through July.
- Vehicular access to up to 120 residences and businesses would be temporarily disrupted during pipeline construction.
- Industrial visual elements would be added to a rural landscape for the life of the project.
- Douglas and Saunders counties would annually lose $72,515 and $30,158 of property tax revenues, respectively.

PLATTE SOUTH PLUS PLATTE WEST DC
- For the life of the project, the District would restrict farming practices on their well field property that could contaminate groundwater (e.g. feed lots and the use of fertilizers, insecticides, and most herbicides) on about 1,672 acres, including 577 acres of prime farmland, would be affected by these restrictions.
- Expansion of the Platte South well field would degrade the quality of the water source from groundwater to groundwater under the influence of surface water.
- The agricultural use of 194 acres, including 137 acres of prime farmland, would be lost for the life of the project. This amount of land could increase by 1,040 if the District decides to manage the Platte West well field for the return of native vegetation.
- Air quality would temporarily decrease and noise and soil erosion would temporarily increase in construction areas.
- Six acres of upland forest and less than one acre of riparian forest would be lost for the life of the project.
- Wildlife would be displaced at the water treatment plant site for the life of the project.
- When the facility is operating at designed average capacity, average flows in the Platte River would be reduced by at least 22,005 acre-feet during February through July.
- Vehicular access to up to 120 residences and businesses would be temporarily disrupted during pipeline construction.
- Industrial visual elements would be added to a rural landscape for the life of the project.
- Douglas County would annually lose $88,229 of property tax revenues.

THREE-WAY COMBINATION
- For the life of the project, the District would restrict farming practices on their well field property that could contaminate groundwater (e.g. feed lots and the use of fertilizers, insecticides, and most herbicides) on about 1,672 acres, including 577 acres of prime farmland, would be affected by these restrictions.
- Expansion of the Platte South well field would degrade the quality of the water source from groundwater to groundwater under the influence of surface water.
- The agricultural use of 346 acres, including 191 acres of prime farmland, would be lost for the life of the project. This amount of land could increase by 1,040 if the District decides to manage the Platte West well field for the return of native vegetation.
- Air quality would temporarily decrease and noise and soil erosion would temporarily increase in construction areas.
- Seven acres of upland forest and less than one acre of riparian forest would be lost for the life of the project.
- Wildlife would be displaced at the water treatment plant site for the life of the project.

- When the facility is operating at designed average capacity, average flows in the Platte River would be reduced by at least 15,695 acre-feet during February through July.
- Vehicular access to approximately 460 residences and businesses would be temporarily disrupted during pipeline construction.
- Industrial visual elements would be added to a rural landscape for the life of the project.
- Douglas County would annually lose $90,816 of property tax revenues.

NO FEDERAL ACTION OPTION G

- For the life of the project, the District would restrict farming practices on their well field property that could contaminate groundwater (e.g. feed lots and the use of fertilizers, insecticides, and most herbicides). About 2,230 acres, including 1,215 acres of prime farmland, would be affected by these restrictions.
- The agricultural use of 184 acres, including 128 acres of prime farmland, would be lost for the life of the project. This amount of land could increase by 2,230 acres if the District decides to manage the well field for reversion to natural vegetation.
- Air quality would temporarily decrease and noise and soil erosion would temporarily increase in construction areas.
- Up to 13.9 and 141.6 acres of wetlands could be lost and altered, respectively, because of groundwater drawdown.
- Six acres of upland forest would be lost for the life of the project.
- Wildlife would be displaced at the water treatment plant site for the life of the project.
- When the facility is operating at designed average capacity, average flows in the Platte River would be reduced by 18,406 acre-feet during February through July.
- Vehicular access to up to 50 residences and businesses would be temporarily disrupted during pipeline construction.
- Industrial visual elements would be added to a rural landscape for the life of the project.
- Over the life of the project, water level declines of up to about 5 feet could occur in some small lakes on Two Rivers State Recreation Area as a result of lowering the groundwater level by the well field.
- Douglas and Saunders counties would annually lose $77,517 and $40,275 of property tax revenues, respectively.

RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The short-term is defined as the period of project construction through the time when the success of the mitigation measures can be ascertained. The short-term is estimated to be 5 to 35 years. The long-term would be the remainder of the life of the project.

Short-term resource commitments would include the manpower, energy, and equipment required for construction. Some soil, vegetation, wetland, and stream resources would be temporarily disturbed for the construction of wells and pipelines. The alternatives would cause short-term reductions in biological productivity in wetlands at their respective well fields and possibly in the Platte River from declines in water surface level.

In the long-term, agricultural production would be reduced on the Platte West or Platte North well fields and eliminated at the water treatment plant sites. The biological productivity of up to seven acres of woodlands, depending on the alternative, would be lost for the life of the project where pipeline rights-of-way pass through forests. The short-term impacts on wetlands and Platte River productivity would be offset in the long-term by mitigation measures. The dependable, long-term water supply for customers of the District provided by the

proposed water supply alternatives would allow for long-term gains in productivity in the form of continued growth in the area population, economy, and residential, commercial, and infrastructure development.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Up to 58,250 AF per year of water would be removed from the Platte River and alluvial aquifer for municipal uses during the life of the project. Construction and operation and maintenance activities would result in the permanent commitment to the project of building materials and supplies, such as borrow material, steel, and concrete. Energy expended on the project would not be available for other uses. Petroleum-based products, including gasoline, diesel fuel, and lubricants would be consumed during construction. Operation and maintenance of the project facilities would also require the long-term commitment of energy resources for moving water and for chemical resources for treating water. The project would result in a commitment of manpower. Considerable efforts and funds have already been expended on planning and preliminary design of the project.

CUMULATIVE IMPACTS

Regulations implementing NEPA define cumulative effects as "...those resulting from the incremental impacts of the action when added to past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertaking such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.7). According to the Council on Environmental Quality (CEQ), "...cumulative impacts refer to two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The cumulative impact of several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, or reasonably foreseeable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time." (Council on Environmental Quality 1997).

The analysis of cumulative impacts that could result from a federal action is a requirement for this EIS under CEQ guidelines and NEPA regulations (40 CFR 1508.25). This analysis must reflect the severity of the impacts and their likelihood of occurrence. The analysis, however, need not be as detailed as that for the project's direct impacts. The analysis of cumulative impacts should ultimately be guided by standards of practicability and reasonableness (40 CFR 230.11(g)(2)).

The permit requested for the Platte West project is a Section 404 permit for the discharge of dredge or fill material into waters of the United States. For this project, this permit would allow the cut-and-fill installation of pipelines across the Platte and Elkhorn rivers, streams, and wetlands. The permit is also sought to permanently fill some wetlands on the well field for the construction of wellheads and access roads. The cumulative impact analysis must consider both the direct and indirect impacts of these activities. Direct impacts are those caused by the discharge or placement of dredge or fill material themselves. Generic examples of direct impacts are degradation of water quality, changes in hydrology and channel morphology, loss of habitat for aquatic organisms, and degradation of the ability of an aquatic ecosystem to provide beneficial functions such as food production, nutrient assimilation, or flood water retention. Indirect or secondary impacts are those that result from the operation of the project for which the permit was required.

For a project to have a cumulative impact, the resource effected must have been impacted in the past or have a reasonable likelihood of being impacted in the foreseeable future. Historic trends of impacts on the natural and human environment in the project area that are considered to have some relevance to the proposed water supply are:

- depletion and alteration of flow and increasing bank stabilization in the Platte River
- sand and gravel mining and housing development adjacent to the Platte River
- loss of wetlands and other native vegetation in the project area
- loss of farmland to growth of the Omaha and Lincoln metropolitan areas

Construction activities for the proposed project could have impacts on water quality, air quality, and noise. These impacts, however, are temporary and, as such, cannot contribute to the historic changes that have occurred in these resources.

The geographic scope of the cumulative impact analysis for the proposed water supply project is limited. For impacts to riverine environments, the area of interest is the Platte and Elkhorn rivers in Douglas, Saunders, Sarpy, and Cass counties. Discussion involving cumulative impacts to wetlands, native vegetation, and changes in land use are focused on Douglas, Sarpy, and Saunders counties.

IMPACTS FROM PAST AND PRESENT ACTIONS

Impacts on the Platte River

Since settlement of Platte River watershed by Euroamericans, flow in the Platte River has been reduced substantially. Flow in the central Platte River, from North Platte to Columbus, Nebraska, has been reduced approximately 70 percent. In the lower Platte River, flow reduction is estimated at approximately 40 percent (Fish and Wildlife Service 1996). These reductions are caused by diversion of water for irrigation, increased evaporation from water stored in reservoirs and ponds and from sand and gravel mining, and induced infiltration from the removal of water from the alluvial aquifer for irrigation and potable water supplies. Although the water withdrawn by any one project has been insignificant, the combined impact of these depletions has raised concerns for the fish and wildlife that depend on the river for their existence. For example, FWS has determined that any further depletion of flow in the lower Platte River during February through July that is implemented without mitigation constitutes a jeopardy to the continued existence of the pallid sturgeon (Fish and Wildlife Service 1996).

Past water projects, particularly dams, have also altered the seasonal pattern of flow in the Platte River. In particular, high spring flows caused by snowmelt in the Rocky Mountains and spring storms over the central Great Plains have been reduced. These high flows are used by some fish species to synchronize spawning and are essential for maintaining the physical riverine habitat to which organisms that use the Platte River are adapted. This habitat typically consists of shallow, multiple (braided), sand-bottomed channels with extensive sand and gravel bars. These conditions are not stable and are maintained by the erosion and redeposition of river bank and bottom material that result from periodic high flows. Similar habitat occurs in the Elkhorn River. The reduction in channel modifying flows allows sandbars to stabilize and become colonized by vegetation. The extent of shallow water is reduced as the channel that carries most of the water continues to scour deeper and drains water from the other channels. The end result is that habitat for organisms that rely on sandbars and shallow water is reduced. Particularly affected by these changes in habitat in the lower Platte River have been the piping plover and the least tern (FWS 1996).

The continually changing courses of the Platte and Elkhorn rivers mean that

properties along the river are at risk of becoming part of the rivers. To protect these properties, numerous bank stabilization projects have been completed to stop the rivers natural bank erosion. These projects have almost universally involved the placement of erosion resistant fill material on the river bank or in the channel to armor the bank or create jetties that force the flow of water away from the bank. Preventing the natural meandering process of the Platte and Elkhorn rivers can reduce the creation of new sandbars and shallow water areas. Bank stabilization projects require Section 404 permits from the Corps. For the Platte and Elkhorn rivers and their tributaries in Douglas, Saunders, Sarpy, and Cass counties, the Corps has issued 234 Section 404 permits for 305 projects since September 1977, of which 139 (46 percent) of the projects have been for bank stabilization. Of the remaining 166 projects, 93 have been for temporary disturbances such as bridge and levee repairs and pipeline and cable crossings.

The historical increasing depletion of flow in the Platte River has been accompanied by increased development and value of property in the Platte River floodplain. The lower Platte River has had significant flood events in 11 of the past 60 years. To protect buildings and farmlands in the floodplain, levees have been constructed in Sarpy and Saunders counties. The Western Sarpy Levee was built circa 1919 by the Western Sarpy Drainage District (later absorbed by the Papio Missouri Natural Resources District). This levee is approximately 7.5 miles long and stretches from high ground 2 miles south of the Douglas/Sarpy county line to the Burlington Northern Santa Fe railroad bridge adjacent to U.S. Highway 6. Most of the alignment of this levee is in close proximity to the Elkhorn and Platte rivers. This levee currently provides flood protection for up to a 10-year flood event.

Across the Platte River in Saunders County is the Clear Creek levee. This levee was constructed by a local drainage district in the early 1900's. The levee is approximately 8.5 miles long and stretches from the Clear Creek Diversion Channel to the Thomas Lakes community. Downstream of the Clear Creek Levee is a ring levee around the Nebraska Army National Guard's Camp Ashland. This levee was constructed in the 1960's by the Guard with assistance from the Corps and provides flood protection up to the 50-year flood event.

In the process of providing flood protection, levees constrict the flow of water into the river to a smaller area, thereby increasing the water's velocity and erosive power. Conversely, levees prevent flood waters from spreading out over the floodplain. Soils in the floodplain are thereby deprived of enriching deposits of silt and the receding flood waters transport less organic matter back to the river. Organic matter is an important source of nutrients for riverine food chains.

Development Adjacent to the Platte River

The alluvial material underlaying the Platte River floodplain consists mainly of sand and gravel. These materials are used for a variety of construction purposes and have been extracted probably since the area was settled by Euroamericans. Because of the shallow groundwater table adjacent to the Platte River, the sand and gravel is easily extracted by dredging without having to actually put a dredge in the river. All that is required is to dig below the groundwater table and create a groundwater filled lake from which sand and gravel can be hydraulically extracted. When the sand gravel extraction is finished, the land around remaining "sandpit lake" becomes instant beachfront property for the development of recreational cabins and homes. The result is usually the development of an unincorporated community.

This sequence of development has been continuing since approximately 1880. Today, approximately 55 such communities exist

along Platte River in Saunders, Douglas, Sarpy, and Cass counties (Burns & McDonnell Engineering Company, Inc. 1999). These communities are generally distant from existing municipal water and sewer systems so they typically have individual household or community systems. Many of the individual systems consist of shallow wells that are easily contaminated by nearby septic tank and lateral field systems. Because of the close hydraulic connectivity between the groundwater and surface water in the Platte River valley, contamination of the groundwater by some of these communities can easily spread to the sandpit lakes and the Platte River. The proximity of the sandpit lakes to the Platte River makes the surrounding communities vulnerable to flooding.

Wetlands and Native Vegetation

Prior to settlement of the area by Euroamericans, the native vegetation communities present were tallgrass prairie, wetlands, and the western edge of the Eastern Deciduous Forest. These communities were maintained by the interaction among soil moisture, topography, and disturbance by fire and large herbivores (i.e., buffalo). Today, only remnants of these communities remain. Most of the native vegetation has been replaced by row crops, cool-season pasture grasses, and residential and commercial development with its associated infrastructure. A great majority of the area's original wetlands have been drained, filled, or plowed under to make way for buildings or agriculture. The loss of these communities has contributed directly to the listing of the western prairie fringed orchid and the American burying beetle as threatened and endangered, respectively.

Countering the long-term loss of wetlands and other native vegetation communities have been the Conservation Reserve and Wetland Reserve programs administered by the U.S. Department of Agriculture. Between 1987 and 1997, the acres of land in Douglas and Sarpy counties enrolled in these programs increased by 2,393, 1,450, and 6,777 acres, respectively (Figure 4-19).

Loss of Farmland

Douglas, Sarpy, and Saunders counties have not escaped the national trend of a declining number of farms and acres in farms. Farms are being pressured on two fronts. Abundant crop production has resulted in low prices and thin to nonexistent profit margins. Poor returns have prompted farmers to leave the business or increase the size of their operations to realize greater economies of scale. The result has been fewer but larger farms. The second pressure is the conversion of farmland to other uses, primarily residential and commercial development at the suburban margins of metropolitan areas. As a result, the total amount of farmland has been decreasing over time.

Changes in the number and size of farms in Douglas, Sarpy, and Saunders counties exemplify the national trend. In all three counties, the number of farms declined between 1987 and 1997 (Figure 4-20). The largest number of farms lost, 241 (an average

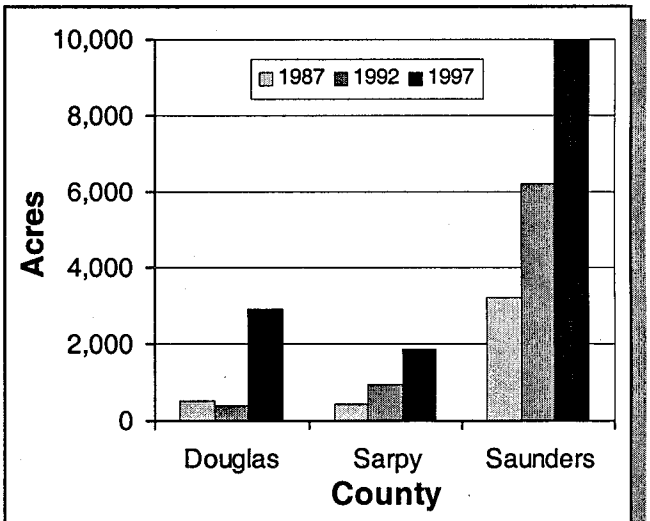


Figure 4-19 Changes in Acres in Conservation and Wetland Reserve from 1987 through 1997

of 24 per year), was in Saunders County but the largest percentage decline, 22.5 percent, was in Douglas County. Over this same time period, the acres in farms declined 2.1 percent in Saunders. In Douglas and Sarpy counties, which contain the Omaha metropolitan area, acres in farms declined 6.5 and 7.6 percent, respectively. On average, farmland in the three-county area disappeared at a rate of 2,571 acres per year.

Urban sprawl is the primary consumer of farmland. In Douglas and Sarpy counties, the primary area of urban expansion is around the edges of the Omaha metropolitan area. In Saunders County, urban growth is occurring in the vicinity of Ashland because of this city's location midway between Omaha and Lincoln. Very low density residential development is on the increase in western Sarpy County in general (Gusman 2001). A measure of urban sprawl is a city's population density and how that density has changed over time. Lower density, or a greater decline in density over time are indicators of greater sprawl. Between 1982 and 1997, the average change in population density in 281 United States metropolitan areas was a decline of 20.5 percent (Fulton et al 2001). This change indicates cities grew faster in area than they did in population. For Midwestern cities, the average change in density was -19.0 percent. Omaha and Lincoln, with relative density changes of -9.7 and -7.2 percent, respectively, exhibited relatively compact growth (Fulton et al. 2001).

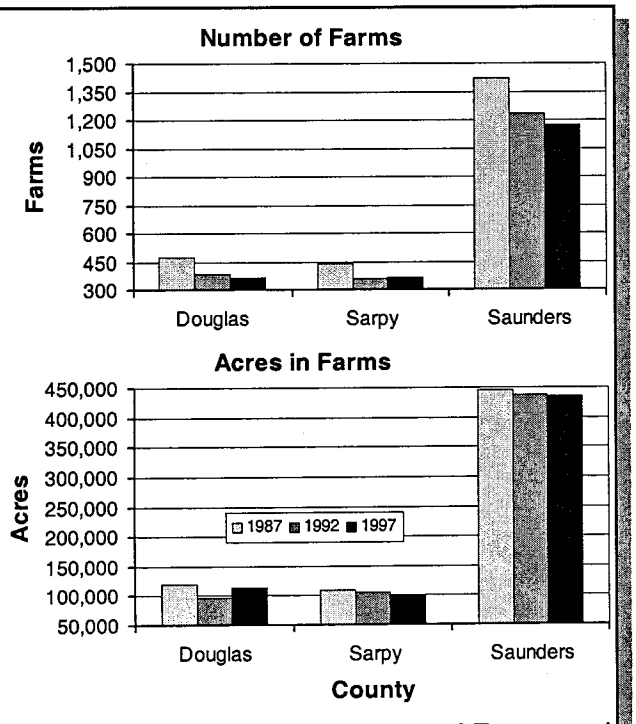


Figure 4-20 Changes in Number of Farms and Acres in Farms from 1987 through 1997

IMPACTS FROM OTHER FUTURE ACTIONS

Impacts on the Platte River

Further depletion of flow in the lower Platte River is likely to occur in the future because unappropriated surface water rights still exist for this reach. In addition, groundwater withdrawal from the alluvial aquifer in this portion of the river valley is not restricted. The installation of new wells for irrigation, domestic, or municipal uses would increase flow depletion through increases in induced infiltration. In the central Platte River, FWS assesses depletion fees for new consumptive uses of water from the river. This fee is used to improve habitat for threatened and endangered species such as the whooping crane, least tern, and piping plover and has deterred some proposed new water consuming projects.

No new major dams on the Platte River that would further alter seasonal flow patterns are anticipated in the reasonably foreseeable future. A potential dam location was identified close to the Interstate 80 crossing near Ashland. Such a dam and reservoir was considered technically feasible; however, the construction costs would be extremely high and the environmental impacts would be very great. Considerable public opposition could also be expected. The probability of a dam being constructed on the lower Platte River is considered very low (U.S. Army Corps of Engineers 2001). The construction of new ponds and small lakes in the watershed for

stock watering or erosion control is a near certainty. The Corps had proposed construction of a 960-acre lake/wetland complex (Lake Wanahoo) on Sand Creek, a tributary of the Platte River, near Wahoo, Nebraska in Saunders County (Olsson Associates 2000). The continued proliferation of these smaller watershed impoundments will further change the pattern of water flow in the Platte River.

The Corps is planning improvements to the Western Sarpy and Clear Creek levees. These improvements will consist of raising the height of the levees to provide consistent 50-year flood protection and lengthening the Clear Creek levee to the Burlington Northern Santa Fe railroad crossing (U.S. Army Corps of Engineers 2000). These improvements will further affect the flood flow regimen of the Platte River and increase the isolation of the river from its floodplain.

Development Adjacent to the Platte River

The extraction of sand and gravel from the floodplain adjacent to the Platte River is expected to continue for the foreseeable future. As these sandpit lakes are mined out and abandoned, the existing pattern of development of housing around these lakes is expected to continue. For example, Thomas Lakes (north of Ashland in Saunders County) will add approximately 160 lots (Ringenberg 2001). Some of the area sandpit lake communities are also planning improvements to protect water quality. Arrow Lakes will be sending its sanitary wastewater to Waterloo and Timber Lodge Lake will be connecting to Valley. Thomas Lakes may install a sewage collection and centralized treatment system to replace individual septic tanks (Ringenberg 2001).

Wetlands and Native Vegetation

Residential and commercial development is expected to continue in the project area and will continue to put pressure on remaining wetlands and native vegetation. To protect these resources and stop the historic trend of their decline, the Omaha Master Plan established minimum amounts of existing resources to be preserved and set replacement ratios if development destroyed more of a resource than allowed (Omaha Planning Department 1995). According to the Master Plan, 100 percent of existing wetlands are to be protected. Any wetlands destroyed by new development are to be replaced at a 3 to 1 ratio. All remaining native prairies are to be protected from development or replaced at a 2 to 1 ratio. Seventy-five percent of nature woodlands existing as of 1995 should be protected. Woodland loses caused by a project that exceed 25 percent of the existing stand should be replaced at a 2 to 1 ratio. Federal protection of wetlands and other waters of the United States is provide by the Corps pursuant to Section 404 of the Clean Water Act. Impacts to wetlands that result from a federal action must be avoided, minimized, then mitigated. For impacts outside of the Omaha Master Plan area, mitigation, in the form of the creation of new wetlands, is typically done in Nebraska at a 1.5 to 1 ratio.

The Corps has two possible projects that could impact wetlands in the foreseeable future. One project is the previously described Western Sarpy and Clear Creek levees improvement. This project would fill approximately 5 acres of wetlands and directly cause the loss of 42 acres of riparian woodlands. Additional riparian woodlands could be degraded by a levee extension that would isolate the woodlands from the riverine process that are essential for their maintenance (U.S. Army Corps of Engineers 2000). These losses would be offset by the creation of approximately 40 acres of wetlands at a large borrow site and 215 acres of wetlands and other aquatic habitats on Vencil's island because of modification's made to increase the connectivity between the Platte and Elkhorn rivers. The Corps second project, the Lake Wanahoo project in Saunders County is expected to eventually

provide an additional 1,170 acres of wetlands (Olson Associates 2000).

Wetland creation and native habitat restoration is also planned by agencies other than the Corps. The creation of 78 acres of wetlands is planned by the Papio-Missouri Natural Resources District at a sandpit lake in western Sarpy County (U.S. Army Corps of Engineers 2000). The restoration of a slough connecting the Platte and Missouri rivers by the NGPC is expected to create an undetermined amount of new wetlands. The FWS is sponsoring the restoration of a drained wetland along Otoe Creek in Saunders County. The wetlands created by the above projects, however, could not be used to offset wetland losses that could be caused by the Platte West project.

Between the protections now afforded wetlands and the planned and proposed wetland restoration projects, the future trend for wetlands may be one of increasing abundance.

Loss of Farmland

As long as the Omaha metropolitan area continues to maintain a high quality of life, it's future expansion is a certainty. The growth of the Omaha metropolitan area will also likely stimulate the development of other surrounding communities outside the metropolitan area such as Ashland, Louisville, South Bend, Springfield, and Yutan. Planning by the former three communities has already begun in anticipation of future growth (Lower Platte River Corridor Alliance 1998). To facilitate future growth, the City of Gretna is in the process of connecting their sanitary sewer system to the City of Omaha's system (Ringinberg 2001).

The expansion of residential and commercial development will come at the expense of farmland because almost all of the undeveloped land in the project area is in farms. By 2030, the boundaries of the metropolitan area could resemble the District's projected service area (Figure 2-1). If this area were to become completely converted to non-farm use, the loss of farmland would be roughly 130,000 acres. At this time, no projects or initiatives are apparent that would reverse the long-term trends of decreasing numbers of farms and farm acres in Douglas, Sarpy, and Saunders counties.

SUMMARY OF INCREMENTAL IMPACTS FROM THE PROPOSED PROJECT

The primary incremental impacts of the proposed project would be further reduction of flow in the Platte River, the likely loss of wetlands to construction, and the possible loss or alteration of wetlands because of groundwater drawdown. Based on average conditions in the year 2030, the Platte West well field alternative would further reduce flow in the Platte River by an average of 40,521 AF per year. The Platte West alternative is expected to eliminate 0.8 acre of wetlands through the placement of project infrastructure. Another 13.9 acres could be lost and 141.6 acres could be altered by a drawdown of the water table. These impacts would add to the historic trends of reduction in flow the Platte River and loss of wetlands.

SIGNIFICANCE OF CUMULATIVE IMPACTS

The natural riverine processes in the Platte River have been incrementally impacted by withdrawals, bank stabilization, and water control structures such as dams and levees. The District's proposed water supply would add to the impacts caused by water withdrawal through increased induced infiltration into the alluvial aquifer. The location of the project components in the floodplain are far enough from the river that additional bank stabilization should not be necessary to protect these structures. These structures are also already located behind levees or will be flood-proofed such that additional levees will not be required. The proposed project, therefore, will not

contribute to the cumulative impacts on river flow caused by bank stabilization and water control structures.

The proposed water supply project would place over 2,000 acres of land near the river in the ownership of the District for as long as the Omaha metropolitan area continues to exist. This land would be protected from sand and gravel mining and residential or commercial development. The proposed project, therefore, would not contribute to the continuing trend of increasing development adjacent to the river. The habitat loss caused by this flow reduction would be offset by the construction of new habit designed to benefit the endangered pallid sturgeon. With this mitigation, ultimate net impacts of the flow reduction on aquatic biota should be insignificant.

The possible loss and alteration of wetlands caused by the project, either directly by replacement with project components or indirectly through groundwater drawdown, would contribute to the historical decline in wetland abundance in the area. If impacted as predicted, the 14.7 acres lost and the 141.6 acres altered would be replaced by 163.5 acres of new wetlands. Because the altered wetlands would still be wetlands, mitigation would result in the net gain for the area of 148.9 acres of wetlands. With mitigation, therefore, the impact of the proposed water supply on the historical cumulative loss of wetlands should be insignificant.

The population and need for housing and business space in and around the Omaha metropolitan area will continue to grow with or without the District's proposed new water supply. Without the new water supply, the District would likely stop expanding its service area. Some of the new growth, therefore, could be more compact because new connections for water from the District could only be made within the service area. Growth outside the service area would likely be of low density with water being supplied from many individual wells or rural water districts. With the new water supply, the current urban growth pattern consisting of moderate density development will likely continue. The overall conversion of farmland to residential or other uses in either scenario, however, is likely to be similar. The proposed project, therefore, is not expected to significantly change the current trend in loss of farmland.

ISSUES TO BE RESOLVED

Most of the issues that still need to be resolved are related to the mitigation of impacts to wetlands, federally protected fish species, and recreation. Although conceptual plans for the mitigation of wetlands and pallid sturgeon habitat have been approved, final mitigation plans still need to be formulated. The District and NGPC have signed agreements for funding and construction of the backwater area along the Missouri River, the public use of the La Platte wetland mitigation site, and funding for pond deepening or other mitigation measures at the Two Rivers State Recreation Area.

Saunders County has raised several objections to the Platte West alternative. The County contends a condition in the Construction Permit issued to the District for construction of seven test wells on the Platte West well field requires the District to provide water at-cost to any desiring governmental sub-unit of Saunders County from those wells should they be converted from test wells into production wells. Saunders County further contends the demand for water from these wells should have been included in the calculation of need presented in this EIS. The District contends they are not bound by conditions in a permit they were not legally required to obtain. None-the-less, the District has expressed a willingness to discuss supplying water to customers in Saunders County. Based on the District's current wholesale customer demand, the amount of water that would be potentially used by

Saunders County governmental subunits is not expected to exceed 5 percent of the output of Platte West Well field.

Saunders County recently enacted a new land use regulation requiring the loss of subirrigation or de-watering of wetlands caused by the withdrawal of groundwater for purposes other than agricultural to be mitigated by in-kind replacement in Saunders County. The District contends their power of eminent domain relieves them from complying with local land use regulations. Saunders County has also lodged a complaint with the Nebraska Department of Natural Resources contending the induced infiltration and water transfer permits issued to the District are not valid. The District disagrees with this claim. The Corps' position is that resolution of these conflicts is beyond the scope of the EIS and the Section 404 permitting process. The Corps' decision to issue Section 404 permit for the Platte West project will be based on factors relating to public interest factors and impacts on the aquatic environment.

Finally to be resolved is whether the Corps will issue a Conditional Section 404 permit to the Metropolitan Utilities District, issue a Section 404 permit with conditions, or deny the permit.

CHAPTER 5
COORDINATION AND PUBLIC INVOLVEMENT

The National Environmental Policy Act (NEPA) requires federal agencies to follow a process of environmental analysis, consultation, disclosure, and public involvement when taking actions such as constructing, funding, or permitting of projects. The process is intended to identify the significant impacts to the natural and human environment and provide an opportunity for interested individuals, organizations, and governmental agencies to participate in the process and to be informed of the proposed action and its effects.

For actions with a high probability of significant adverse environmental impact, the centerpiece of NEPA analysis is the environmental impact statement (EIS). Although the Platte West Water Production Facilities Project (Platte West) would be constructed without federal funding, federal action would be required for issuance of a permit pursuant to Section 404 of the Clean Water Act. This permit regulates the placement of dredge or fill materials in waters of the United States. In this case, the Platte, Elkhorn, and Missouri rivers, numerous smaller streams, and wetlands could be disturbed by construction or impacted by operation. The U.S. Army Corps of Engineers (Corps) is the federal agency responsible for the administration of Section 404 and serves as the agency responsible for conducting the NEPA process for the Project. On May 19, 1995, the Corps published a Notice of Intent in the Federal Register to prepare an EIS for the Platte West Water Production Facilities.

PUBLIC INVOLVEMENT

The initial mechanism for public participation in NEPA is the scoping process. The purpose of scoping is to identify significant environmental issues that require study, sort out insignificant issues, and thereby focus the scope of the environmental document. High priority was given to public involvement from the early stages of this project. An in-depth program was prepared to provide information and to receive input from residents in the communities where the proposed action would be carried out. The public involvement plan included public meetings, informational handouts, publication of public meeting notices, and media releases and briefings. In addition, public comment was solicited on the Draft EIS and the Section 404 permit application.

PUBLIC MEETING NOTICES

Notices for the public scoping meeting were published in the following newspapers:

- Ashland Gazette — May 18, 1995
- The Wahoo Newspaper — May 18, 1995
- Douglas County Post-Gazette — May 18, 1995
- The Omaha World-Herald — May 14, 1995
- The Lincoln Star — May 17, 1995

PUBLIC SCOPING MEETING

A public meeting was held on June 1, 1995 at Russell Middle School in Omaha to solicit input on the scope of the EIS. Approximately 30 private individuals attended the meeting. Attendees received information about the proposed project and alternatives. Both agency personnel and individuals provided comments at the meeting. Attendees were requested to provide written scoping comments by June 21, 1995.

DISTRIBUTION OF THE ORIGINAL DRAFT EIS

Copies of the original draft EIS (DEIS) and requests to submit written comments were sent to the cooperating agencies and other interested parties beginning on January 22, 1999. To provide availability to the general public, copies of the original DEIS were also

placed in the following public libraries:
- W. Dale Clark Library
- Millard Public Library
- Bennington Public Library
- Plattsmouth Public Library
- Wehrspann Field Office Library

ORIGINAL DRAFT EIS AND SECTION 404 PUBLIC NOTICE

A Notice of Availability of the original DEIS and the public meeting was published in the *Federal Register* on January 26, 1999 and sent to an extensive list of interested parties (see the mailing lists at the end of this chapter). These notices informed the public the original DEIS was available for review, where it could be viewed, when and where the public meeting would be held, and invited the public to submit written comments on the original DEIS. This notice also informed the public of a public hearing on the Metropolitan Utilities District's (District) application for a Section 404 permit and included a statement that the application was available for public inspection, locations where the public could view the application, where and when the hearing would be held, and an invitation to the public to submit written comments.

COMBINED PUBLIC MEETING AND SECTION 404 HEARING

Thirty-nine days after the original DEIS was made available for review, a combined public meeting for the original DEIS and public hearing for the Section 404 permit was held on March 2, 1999 from 6:30 to 9:00 pm at the Russell Middle School in Omaha, Nebraska. The purpose of the meeting was to answer questions the public had about the project. The public hearing provided an opportunity for the public to comment on the project in a non-adversarial atmosphere. Eighty-nine individuals or families registered their attendance at the public meeting. Sixteen attendees made public comments at the hearing. Comments made during the hearing were recorded by a court reporter. Comments received on the original DEIS and responses were included in Chapter 5 of the revised DEIS.

REVISED DEIS

Comments on the original DEIS resulted in the inclusion of additional alternatives not previously reviewed by the public. These additions dictated that a revised DEIS was necessary. A Notice of Availability was published and the revised DEIS distributed on February 22, and 23, 2001. Copies of the revised DEIS were placed in the following public libraries:
- W. Dale Clark Library
- Millard Public Library
- Bennington Public Library
- Plattsmouth Public Library
- Wahoo Public Library
- Yutan Public Library
- Ashland Public Library
- Wehrspann Field Office Library

A public meeting was held at the Russell Middle School on March 21, 2001 at which 58 individuals registered their attendance. The deadline for receiving comments on the revised DEIS was April 13, 2001.

AGENCY COORDINATION

SCOPING MEETINGS

A group of 12 concerned federal, state, and local governmental agencies agreed to provide information and direction for the development of the EIS (Table 5-1). A scoping meeting for these cooperating agencies was held on June 1, 1995, at the Corps' Missouri River Natural Resources District offices at Wehrspan Lake. Representatives of the District, the Corps, and Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell, the third-party contractor) discussed the alternatives, development of the EIS, and the schedule of meetings with representatives of the U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (FWS), Nebraska Department of Environmental Quality, Nebraska Game and Parks Commission

Table 5-1 Cooperating Public Agencies

Federal
U.S. Environmental Protection Agency, Region 7
U.S. Fish and Wildlife Service, Nebraska office
Natural Resources Conservation Service
State of Nebraska
Department of Environmental Quality
Game and Parks Commission
Department of Natural Resources
Local
Metropolitan Area Planning Agency
Papio-Missouri River Natural Resources District
Lower Platte North Natural Resources District
Saunders County
Douglas County
Sarpy County

(NGPC), Nebraska Department of Natural Resources Commission, Papio-Missouri River Natural Resources District, Lower Platte North Natural Resources District, Metropolitan Area Planning Agency, Douglas County, Sarpy County, and Saunders County.

The project kick-off meeting for the EIS was held at the offices of the Omaha District of the Corps in Omaha, Nebraska on February 14, 1996. Attendees included representatives from the Corps, the District, and Burns & McDonnell. The scope of the project was discussed and technical guidance for preparation of the EIS was provided by the Corps.

On May 3, 1996, representatives from the District, the Corps, and Burns & McDonnell met with NGPC and FWS to discuss impacts to and mitigation for threatened, endangered, or species of special concern and wetlands. Species that needed to be addressed were western prairie fringed orchid, American burying beetle, pallid sturgeon, sturgeon chub, bald eagle, peregrine falcon, least tern, piping plover, and river otter. The peregrine falcon was later removed from the threatened and endangered species list and the candidate species - the sturgeon chub - has since been found to not warrant listing. These two species, therefore, were not addressed in the revised DEIS.

PROJECT MEETINGS AND OTHER COMMUNICATIONS

Meetings among the Corps, the District, Burns & McDonnell, and cooperating agencies were held on:

- July 12, 1996
- October 4, 1996
- January 22, 1997
- April 9, 1997
- June 6, 1997
- August 28, 1997
- December 2, 1997
- June 2, 1998
- July 22, 1998
- September 18, 1998
- October 30, 1998
- April 14, 1999
- May, 4 1999
- June 18, 1999
- October 14, 1999
- December 14, 1999
- February 22, 2000

These meetings were held to discuss and resolve questions concerning preparation of the EIS and related studies and procedures. Meetings, as a form of inter-agency coordination, were supplemented with frequent telephone (person-to-person and conference) and facsimile communications.

FORMAL CONSULTATIONS

During the course of preparing the EIS, state and federal agencies provided necessary data for assessing impacts to sensitive habitats, wildlife, fisheries, cultural resources and for planning mitigation. As required by Section 7(a)(2) of the Endangered Species Act, the Corps consulted with the FWS concerning the effects of the proposed action on federally-listed threatened and endangered species. The State Historic Preservation Officer (SHPO) in Nebraska was consulted, pursuant to Section 106 of the National Historic Preservation Act of 1966, for

concurrence regarding the identification and status of cultural resources at the sites and potential mitigation. Concurrence with the findings and recommendation in cultural resources studies conducted for the new water supply was received from the SHPO on 12 September 2001.

REVIEW OF EIS CHAPTERS AND DOCUMENTS

Early drafts of the EIS chapters and supporting documents were reviewed by the project sponsor, the lead agency, and certain cooperating agencies for technical content, scientific rigor, accuracy, completeness, consistency, and editorial style.

EIS Chapters

Each principal chapter of the EIS was subjected to a sequential review and revision process before being incorporated into the EIS. The first review was by the Corps and the District. After their comments were addressed, each chapter was submitted to key cooperating agencies for review and comment. Final revisions were made with guidance from the Corps.

Supporting Documents

A number of studies in support of the EIS were performed by the third-party contractor and other organizations (Table 5-2). These studies included groundwater modeling, wetland identification and impact analysis, surveys for threatened or endangered species, and cultural resources studies.

ISSUES IDENTIFIED THROUGH THE SCOPING PROCESS

Based on public and agency comments received as a result of the initial scoping meetings, 61 issues were identified. Of these, 59 issues were considered significant and appropriate to include in the EIS. Two issues unrelated to environmental impacts or the NEPA process were considered beyond the scope of the EIS. Major issues raised that were considered within the scope of the EIS included:

- discussion of the role of conservation in meeting future water needs
- analysis of the use of water from the Missouri River as an alternative
- consideration of the contaminated groundwater from the Mead Ordnance Plant
- analysis of impacts of pumping from the well field on groundwater level and effects on local well owners.
- consideration of construction of pipelines through highly erodible soils
- analysis of impacts to wetlands caused by groundwater level drawdown at the well field
- consideration of the impacts to threatened and endangered species such as the river otter, pallid sturgeon, least tern, piping plover, bald eagle, peregrine falcon, western prairie fringed orchid, and American burying beetle
- assessment of impacts to the Two Rivers State Recreation Area
- an evaluation of the impacts on property taxes

The public and agency scoping process and the specific issues identified are detailed in the Scoping Summary (Appendix F). Another major issue identified after the initial scoping process was the impact of groundwater drawdown in the well field on subirrigated farm land and secondary impacts on crop production, farm income, property value, and property tax receipts.

EIS PREPARATION TEAM

An interdisciplinary team of qualified federal and state government personnel and consultants was responsible for the preparation of the Platte West EIS.

FEDERAL LEAD AGENCY

The U.S. Army Corps of Engineers, Omaha District was the lead federal agency for this project. The Corps was chosen as the lead agency because the project would require issuance by this agency, pursuant to Section

Table 5-2 EIS Supporting Documents

Title	Author(s)	Organization	Year
Wetlands Survey and Functional Values Analysis, Platte West Water Production Facilities, Douglas and Saunders Counties, Nebraska	T. Meinke	Burns & McDonnell	1995
Western Prairie Fringed Orchid Survey, Platte West Water Production Facilities, Douglas and Saunders Counties, Nebraska	S. Thornhill	Burns & McDonnell	1995
American Burying Beetle Survey, Platte West Water Production Facilities, Douglas and Saunders Counties, Nebraska	S. Thornhill	Burns & McDonnell	1995
Bald Eagle Nest Survey, Platte West Water Production Facilities, Douglas and Saunders Counties, Nebraska	S. Thornhill	Burns & McDonnell	1995
Platte West Wellfield Wetland Inventory	G. Dostal and W. Sigler	HDR Engineering	1995
Wintering Bald Eagle Survey for the Metropolitan Utilities District's Platte West Water Production Facilities, Douglas and Saunders Counties, Nebraska	A. Zlotsky and M. Clausen	HDR Engineering	1995
A Cultural Resources Survey of the Platte West Water Supply Project, Douglas County, Nebraska	J. Bozell	Individual consultant	1996
Platte West Well Field Design and Modeling Report	M. Silks	Layne GeoSciences	1996
Draft Wetland Impact Analysis for the Platte West Water Production Facility Proposed by the Metropolitan Utilities District	F. Norman	Burns & McDonnell	1997, 2000
Transient Groundwater Model Development and Operation Study for the Platte West Well Field In Douglas and Saunders Counties, Nebraska and supplements	D. Stous and P. Higgins	Burns & McDonnell	1997, 2000
National Register of Historical Places Evaluation for Site 25DO61, Platte West Water Production Facilities Project, Douglas County, Nebraska	J. Bozell and G. Carlson	Nebraska State Historical Society	1998
An Archeological Survey of a Proposed Transmission Main, Platte West Water Production Facilities, Douglas County, Nebraska	J. Bozell	Individual consultant	1998
Draft Conceptual Wetland Mitigation Plan for the Platte West Water Production Facility Proposed by the Metropolitan Utilities District	F. Norman	Burns & McDonnell	1998, 2000
Phase I Cultural Resources Assessment of Five Alternatives for a New Water Supply System in the Omaha, Nebraska Area	J. Bozell	Individual consultant	2000

404 of the Clean Water Act, of a permit to place fill material in waters of the United States. The lead agency operated out of the Omaha District office, Omaha, Nebraska, because the project was located within Omaha District jurisdiction. The Corps staff members who contributed to the EIS are listed in Table 5-3.

APPLICANT

The District is the sponsor of the Platte West Project.

Table 5-3 EIS Preparers at the U.S. Army Corps of Engineers, Omaha District

Name	Education and Discipline	Years of Experience and Expertise	EIS Role
Candace Gorton	BS Biology, graduate work in Environmental Studies	12, NEPA environmental studies and biology	EIS study director
Gerard Mick	BS Botany	27, NEPA environmental studies	EIS study manager
Mike Neuzil	BS Forestry, MS Natural Resources	28, Natural resources and environmental studies	EIS study manager
Rebecca Latka	BA Biology, MS Biology	10, NEPA environmental studies and fisheries	EIS study manager
Rose Hargrave	BA Biology, MS Biology	27, NEPA regulations	404 regulatory manager
Ed Brodnicki	MA Anthropology	25, Archaeology	Review of cultural resources studies
Jerry Folkers	BS Biology	18, Wetlands	404 project manager
Rodney Schwartz	BS Mechanical Engineering, MS Public Administration	6, EIS studies and 30, engineering studies	404 project manager
Karen Lawrence	BS Environmental Sciences MS Biology	7, Wetlands	Review of 404 issues
Nicholas Geibel	BS Geological Engineering MS Geological Engineering	10, Groundwater hydrology	Review of groundwater model
Michael Reilly	BA Political Science JD	27, Law	Review of legal issues

The preparation of the EIS was triggered by their application for a dredge and fill permit. The staff members at the District who contributed to the EIS are listed in Table 5-4.

THIRD-PARTY CONTRACTOR

Burns and McDonnell, Inc., Kansas City , Missouri, was the third-party consultant which had primary responsibility for preparation of the EIS. The contributors and their roles and expertise are listed in Table 5-5.

Table 5-4 EIS Contributors at the Metropolitan Utilities District

Name	Education and Discipline	Years of Experience and Expertise	EIS Role
John Conley	BS Industrial Engineering	38, Water supply engineering and planning	Managing engineer
Joel Christensen	BS Civil Engineering	23, Water supply project engineering and administration	Project manager
Kevin Tobin	BS Civil Engineering, MS Environmental Engineering	13, Water supply project engineering and administration	Project manager
Ron Bucher	BS Business Administration, JD	15, Law	Project advisor

Table 5-5 EIS Preparers at Burns & McDonnell Engineering Company, Inc.

Name	Education and Discipline	Years of Experience and Expertise	EIS Role
Robert Sholl	MS Botany, BS Botany	30, environmental impact analysis	Third party EIS oversight, quality assurance, scoping
Fred Pinkney	PhD Plant Ecology and Statistics, MS Range Ecology, BS Range Science	30, environmental impact analysis and water resources studies, NEPA compliance	Third party EIS manager, agency liaison, quality assurance
Gregory Howick	PhD Biology, MS Zoology, BA Biology	20, limnology and aquatic ecology	Assistant EIS manager, aquatic ecology, limnology
Steve Thornhill	MS Biology, BS Biology	10, wildlife ecology, environmental assessment	Wildlife, threatened or endangered species
Frank Norman	MA Botany, BS Systematics and Ecology	10, wetland ecology	Wetland impact analysis and mitigation
Troy Meinke	MS Animal Range Science, BA Biology	4, wetland and plant ecology	Wetland evaluation
Gene Foster	MS Water Resources Engineering, BS Civil Engineering	20, hydrologic analysis, facilities siting, permitting	Hydrologic evaluation and impact analysis
Cyril Welter	Graduate studies in Landscape Architecture, MS Urban and Regional Planning, BA Economics	22, socioeconomic impact analysis, environmental assessment	Socioeconomics, quality assurance
David Stous	BS Geology, MS Water Resources Science	31, groundwater hydrology and quality	Groundwater modeling project manager
Pat Higgins	BS Geology, graduate work in Geology	17, groundwater modeling and geologic applications	Groundwater modeling

ADDITIONAL CONSULTANTS

Additional expertise was brought to bear on the project in the areas of archaeology, geohydrology, wetlands, and wildlife. These consultants prepared many of the supporting documents. Their credentials are listed in Table 5-6.

OTHER CONTRIBUTORS

Many other individuals contributed information to the EIS as personal communications through telephone or written contact:

- French, J., Hydrogroup, Inc.
- Graff, T., U.S. Army Corps of Engineers, Kansas City District, Kansas City, Missouri
- Jobman, W., U.S. Fish and Wildlife Service, Grand Island, Nebraska
- Twede, C., Nebraska Game and Parks Commission, Lincoln, Nebraska
- Wallace, S., Metropolitan Area Planning Agency, Omaha, Nebraska

Table 5-6 Additional Consultants Who Prepared the EIS Supporting Documents

Organization Name	Education and Discipline	Years of Experience and Expertise	EIS Role
Layne GeoSciences, Inc.			
Martha Silks	BS Geology	11, well field design	Project manager
Carl Nuzman	MS Civil Engineering, BS Civil Engineering	41, groundwater hydrology	Project advisor
Tiraz Birdie	MS Civil Engineering, BS Civil Engineering	9, groundwater modeling	Modeling
HDR Engineering, Inc.			
Glenn Dostal	BS Civil Engineering	25, water supply, distribution, and treatment	Project manager
William Sigler	BS Natural Resources/ Environmental Science	21, wetland delineation and mitigation, environmental assessments	Senior environmental scientist
EA Engineering, Science, and Technology, Inc.			
Amy Zlotsky	AB Botany, MS Botany	17, wetland delineation and mitigation, T or E species surveys	Project manager
Mary Clausen	BS Biology, MS Biology	15, T or E species impact reviews, animal surveying	Environmental scientist
Nebraska State Historical Society			
John Bozell	BA Anthropology, MA Anthropology	17, Great Plains and Midwest archaeology	Project manager for cultural resources studies
Gayle Carlson	BA Anthropology, MA Anthropology	30, Midwest archaeology specializing in historic sites	Cultural resources

MAILING LIST

Final EIS

In addition to organizations involved directly in the preparation of the Final EIS, copies were sent to the following individuals:

Senator Ben Nelson
Senator Chuck Hagel
Congressman Lee Terry
Governor Mike Johanns
Mayor Howard Parrott, Plattsmouth, NE
Nebraska Department of Roads
Mr. Robert D. Kuzelka
Mr. Jim Barr
Ms. Nan McKinney
Mr. Joe Gerlt
Ms. Denise Meyer
Meak Farm Partnership
Ms. Darlene Backhaus
Larry & Gloria Bartels
Mr. Dan Bishop
Mr. Jim Barzda
Mr. David Ohm
Mr. Alan Rohwer
Mr. Jerry Rohwer
John & Patricia Tuecke
Ms. Susan Brandt
Ms. Nancy Cerone
Mr. James Wickinson
Mr. Mark Doyle
Mr. Tom Doyle
Steve & Barbara Wright
Mr. Brian Wahl
Mr. Mike Thomas
Mr. Todd Taylor
Mr. John Morton
Mr. Larry Meyer
Mr. Richard Liebentritt
Mr. Gregory Kratz
Ms. Cindy Veys
Mr. Johnny Butcher
Mr. Keith Jurgensen
Ms. Charlene Lopez
Ms. Janet Bonet
Mr. Kent Merryweather
Mr. Charles Karloff
Mr. Tom Siems
Mr. Carl Roberts
Mr. Steve Hoffman
Ms. Judy Smith
Ms. Melissa Konecky
Mr. Mark Brasee
Ms. Dorothy Lamphir

Mr. Joe Gasnick
Mr. Rich Cope
Mr. Russell Snell
Mr. Scott Pugh
Ms. Sue Pickering
Ms. Ione Werthan
Mr. John Conley
Mr. John Shadle
Mr. Jim Keyser
Mr. Stephen Farrell
Ms. Viola Buckley
Mr. Al Dinzole
Ms. Frances Hurt
Mr. David Aikens
Ms. Katie Vanek
Mr. David Buelt
Mr. Dwight Haney
Mr. Tom Graff
Mr. George Cunningham
Jannell and Ty Buss
Mr. Harold Landon
Mr. Timothy McGill
Ms. Lisa Anderson
Mr. Jim Orctensin
Mr. Harlan Riecken
Mr. Pat Piecken
Mr. Jay Warren
Mr. Victor Humlecik
David and Sharon Deerson
Mr. Jim Siebken
Mr. Kent Holm
Ms. Sandra Sempek
Mr. Mike Rabbe
Mr. Mike Thomas
Mr. John Wageman
Mr. Joel Bard
P.J. and Dwayne Donahoo
Mr. Mike Warren
Mr. Greg McCloud
Mr. Russ Holmon
Ms. Aimee Demulling
Mr. Larry Angle
Mr. Paul Elofson
Mr. Mike Muner
Ms. Melissa Fell
Mr. Donald Veerkerna
Ms. Linda Lelleyoil
Mr. Kelly Dahl
Mr. Tiernam Siems
W. Dale Clark Library
Millard Public Library
Bennington Public Library
Plattsmouth Public Library
Wehrspann Field Office Library
Wahoo Public Library
Yutan Public Library
Ashland Public Library
Colorado State Univ. Libraries

PUBLIC NOTICES

Public notices announcing the availability of the Draft EIS, the District's Section 404 Permit Application, and the combined public meeting and hearing were sent to:

Edith Inman, Et al.
Stender Limited Partnership
Kuehl Farms Ltd.
Kenneth J. Zach, et al.
Duane D. Turpen, et al.
Martin J. Willmer, et al.
James A. Dickinson, et al.
William A. Nelson, et al.
Virgil and Patricia Wamsat
Barbara A. Schacht
Merritt Wiese
Ralph L. Serratore
Jennifer A. Pospichal, et al.
Frank A. Skrupa, et al.
Eldon L. Butler and Helen M. Butler, Co-Trustees
Carl F. Heine
Skrupa Investment Co.
Dwayne A. Donahoo, et al.
Gary E. Nielsen, Tr., and Gary L. Nielsen, Rev Tr.
Lloyd W. Donahoo, et al.
Phyllis F. McAvoy
Frances Hert
Ronald J. Cizek
Dave Janke Plumbing, Inc.
Marlene E. Thomas, et al.
Larry J. Dyer, et al.
Brian F. Vencil, et al.
Anthony F. Vencil, et al.
Richard J. Feldhaus, et al.
Wanda Synhorst
Venice Farm Co.
Judy Harris
Jack Q. Smith, et al.
Jackqueline M. Brown, et al.
J. Thomas Siems
Daniel J. Bishop, et al.
Gregory P. Cavalieri
Larry L. Dahlgren, et al.
Lyman-Richey Sand & Gravel Construction
Edna Mohr, et al.
Jane M. Juedes, et al.
Brigitte Prescher
Frankie S. Hauptman
Ethel M. Fickler
Anthony Vencil, et al.
Arthur D. and Lois M. Snide
Ronald A. Vencil
Edward J. and Valera Pesek
Marlene E. Thomas
Larry J. and Leslie E. Dyer
Joseph W. Ferris II, et al.
Lynda C. Alvarez
Kent and Peggy Merryweather
Union Loan, Inc.
Bob Madsen and Janet K. Rushlau-Madsen
Farm Credit Service of the Midlands
Norwest Bank Nebraska, NA
Helen and Robert F. Vanicek
Allbery Farms, Inc.
Eric and Sandra Elgert
Robert T. and Kathryn E. Mayo
Kathryn E. Robertson
American National Bank
Roger O. and Charlene M. Dye
Tyrone Buss
Jack K. Harvey
Pauline S. Abrahams
William F. and Carol A. Miller
WE & NW Inc.
Travelers Acceptance Co.
Bank of Elkhorn
Oscar Schulz
Philip M. Wade
Mary Lavonne Parkhurst
James R. Frederick, Trustee
Larry D. and Julene M. Karloff
Cynthia M. Lastovicka, et al.
Theodore G. and Diane L. Schulz
Charles K. and Doris M. Karloff
Kolb Farms Inc.
Gladys and Edgar Kolb

Marvin W. Mumm, Co-Trustee, et al.
Berniece E. Grewcock, Trustee
Darlene Odorisio and Keith Jurgensen, Co-Trustees
Elmer J. & Wava Wageman
Laura Riecken, Trustee
Rose Vybiral Storm
Union Bank and Trust Company
Heldt Farms Inc.
Larry and Norma Heldt
Stephen E. and Ferne M. Epler, Trustees
David K. and Edward Deerson
Jacob E. Rosencrantz and Theodore W. Frye
Abel Investment Company
Judith K. Turner and Rose Veskerna, Trustees
Donald F. and Alice M. Veskerna
Mildred Mumm, et al.
Laverne L. and Lois M. Lamprecht
Wayne S. Rapp
First National Bank of Omaha
First Bank
Concrete Industries Inc.
Omaha Public Power District
Karloff Family Partnership Ltd.
Dorene Karloff
Glen L. and Ruth I. Newsham
Robert L. Newsham, et al.
James P. Morgan, et al.
Rodney and Mary J. Eggeling
Willard L. Van Buren, Sr.
Irene Heldt, et al., Co-Trustees
Lamprecht Farms, Ltd.
Veskerna Family Partnership
Gladys Wells
Joann M. Frost, et al.
Allen P. Dinzole, et al.
Donald E. Buxter
Florian Paskevic, et al.
Joseph R. Gasnick, et al.
Landon Farms, Inc.
Nellie Sanderson
Victor Humlicek, et al.
Beryl L. and Helen Keetle, Trustees
Mark A. Goslee, et al.
Rose S. Mumm
Mildred Mumm, et al.
Newsham Living Trust
M. Doreen Karloff Trust
Jay Warren, et al.
Mike Warren, et al.
Clear Creek Drainage District
Rodney D. Rhoden
Plattsmouth Boat Club
Investment, Inc.
Sharps, Inc.
Gene L. Hoffman, et al.
Marilyn Roueche
John Adkins
City of Plattsmouth
Harry Rahn, et al.
Wesley J. Taylor
PCS Nitrogen Fertilizer LP
Gail Iske and Sally Iske
Esther Eby
Aquabarrier
Arthur Enterprise
B and B, Inc
Mr Jim Barr
Big Riv Const Co
Black & Veatch
Blair Enterprise
Central Platte NRD
Central States Underwater
Charles MarineProd
Mr Joel G Christensen
Comm Corp
Mr Paul Currietz
Mr Jerry Divis
Dock Hardware Marine
Dredge America Inc
Ms Sharelyn Drummond
Durocher Dock & Dredge
Dutra Construction Co
EA Engr Science & Tech Inc
Echo Bridge
Eco-centrics
Ercon Dev Co
Ero
Les Thompson
Denise Larson
Federal Hwy Admn
FEMA
Flotation Docking Inc Foundation
Supply Co
Friends of Wilderness Park
G 3 Enterprises
Mr Jim Gallagher
Galva Foam Marine Inc
Honorable Greg Ganske
Garner's DragliNeServ
Eugene Glock
Governor's Policy Research Office
Hampton Enterprises
Harcro
Mrs Nancy Ann Hartmanleigh
Henry and Hunton Williams
Hi-line Enterprise
Hooker Bros Inc
Mr Duane Hovorka
HWS Consult Group Inc
IA Dept Nat Res
Jason Jurgens
Thomas Gengerke
IA Dept Natural Res, Geological Survey Bureau
IA Dept Natural Res, SW Dist Wildlife Supv
IA Dept Natural Res, Water Res Sect
IA Dept Natural Res, Cold Spgs State Park
IA State Hist Soc
IA Wildlife Federation
International Dock Product
Island Landhandlers
Jacobson Helgoth Cnslt
John Wilham & Assoc
Kingsley Lumber
Koerwitz Construction
Mr Dennis Laska
Honorable Tom Latham
Honorable Jim Leach
Lewis and Clark NRD
US Sons Inc
Liberty Interprizes
Lincoln Lancaster County
List Clark Const
Little Blue NRD
LJ Webb Contractor Inc
Lower Big Blue NRD
Lower Elkhorn NRD
Lower Loup NRD
Lower Niobrara NRD
Lower Platte North NRD
Lower Republican NRD
Lower South Platte NRD
Luhr Bros Inc
Luther Maddox Inc
Lyle Pospisil Sons
MargUS Company
Lyle Pospisil
Bill Wall
Marina Power Tech Inc
MariNeServices-comm Diving
Martin Marietta Agg

McDougal Construction
Middle Niobrara NRD
Middle Republican NRD
MO Dept of Nat Res
MO State Hist Soc
Mobil Chemical
Mt Audubon Council
Ms Cheryl Muellerne
NE Dept of Roads
NE EQ
NE Farm Bureau Fed
NE Farmers Union
NE Game & Parks Comm
NE Nat Res Comm
NE Public Power Dist
NE State Hist Soc
NE State Hist Soc
NE State Home Builders
NE Wildlife Federation
Honorable Ben Nelson
Nemaha NRD
Nicolon Corp
Norman Ketchman & Assoc
North Platte NRD
Honorable Jim Nussle
Olsson Environ Sciences
Omaha Public Power Dist
Omaha Tribal Council
Omaha World Herald
Omaha World Herald
Papio MO Riv NRD
Parsons Behle & Latimer
Patton Tully Trans Co
Paulsen Inc
Paxton Williams
Pentzien Inc
Phoenix Towing Co
Ponca Tribe of Ne
Mr Don Purdy
Resource Designs Inc
Mr Bruce Rieker
Mr Robert Rife
Rushing MariNeCorp
Sandhills Research Inst
Santee Sioux Tribal Council
Scotts Bluff
Scotts Bluff Natl Monument
SD Dept Game Fish & Parks
Sea Technology Ltd
Mr John Shadle
Shoremaster Inc
Sierra Club
Simpco
Sioux City Chamber of Comm
South Platte NRD
Spalding Enterprise
Stapleton Enterprise
State NRCS
Mr Anthony H. Stecmr
Eugene Stock
Mr Raymond Stock
Sullivan Flotation Syst
Superior Express
Syro Inc
T I Energy Serv Inc
Technidock Inc
Congressma Lee R. Terry
The Dutra Group
Tri-basin NRD
Twin Platte NRD
Union Pacific RR
Upper Big Blue NRD
Upper Elkhorn NRD
Upper Loup NRD
Upper Niobrara White NRD
Upper Republican NRD
SUS Bureau of Land Mgmt
US Bureau of Reclamation
US CG
N Plt Riv Proj
Rick Harrison
US Dept of Interior
National Park Serv
Oic MariNeInspection
James Grasso
Water Structures Unltd
Richard Nelsonken Strickland
Mr Ronald Willer
Winnebago Tribal Council
Wymore Arbor State
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Albrecht Sand & Gravel
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Amman Sand & Gravel
Anderson Sand & Gravel
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Arnold Redi-mix
Arps Red-e-mix
Ash Gravel & Cement Co

Atkinson Sand & Gravel
Backus Sand & Gravel
Batenhorst Gravel Co
Beatrice Concrete
Beltline Sand & Gravel
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Beshaler Gravel
Bladen Sand & Gravel
Blf Gravel Co
Mr James Borg
Brad Sand & Gravel
Mr Vern Broadfoot
Bruner's Sand & Gravel
Carl Whitney Sand & Gravel
Central Sand & Gravel
City Wide Rock Exc
Citywide Sand & Gravel
Cole Sand & Gravel
Consolidated Sand & Gravel
Courtney Rock & Gravel
Crete Ready Mixed Conc
Crosley Sand & Gravel
Cyza Bros Sand & Gravel
Davidson Sand & Gravel
Dolezal Sand & Gravel
Dudden Redi-mix Inc
Elba Sand & Gravel
Endicott Clay Prod
Frick Sand & Gravel
Gaston Construction
Gayman Sand & Gravel
Gerhold Concrete
F H Gillen Sand & Gravel
Greenhorn Lime Product
Gregg Sand & Gravel
Hartford Sand & Gravel
Hartington Concrete
Henthorn Sand & Gravel
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IS Gravel Co
Jarman Sand & Gravel
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Joe Sempek Sand & Gravel
Johnson Sand and Gravel
Kearney Concrete
Kembel Sand & Gravel
Kerford Limeston Co
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Kirkpatrick & Sons Sand & Gravel
Kneifl Sand & Gravel
Knight Asphalt Inc
Kroeger Sand & Gravel
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Olson Gravel Co
Omaha Brick Works
Overland Sand & Gravel
Plainview Sand & Gravel
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Quality Sand & Gravel
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Schwark Quarries
Seitz Quarry
Southfork Sand & Gravel
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Stalp Gravel Co
Sterling Ready Mix
T F Sand & Gravel
Tri County Sand & Gravel
Ulrich Gravel Co
Vakoc Construction
Vrbas Sand & Gravel
Wagner Sand & Gravel
L J Webb Contractor Inc
Western Sand & Gravel
Weverka Sand & Gravel
Will Sand & Gravel
Wolf Sand & Gravel
Wynot Sand & Gravel

COMMENTS RECEIVED ON THE DEIS AND RESPONSES

The comment period for the original DEIS was open from January 25 through March 26, 1999. The EPA requested and received an extension to submit their comments by May 10, 1999. The Corps received 34 written comments from federal, state, and local agencies; special interest groups; and individuals or families. These letters, the transcript of the public hearing, and the Corps' responses to these comments were included in the revised DEIS.

The comment period for the revised DEIS was open from February 26 through April 13, 2001. The Corps received 44 written comments on the revised DEIS. These comments and the Corps' responses follow. Comments incorporated by reference in comments from Saunders County and responses are in Appendix I of this FEIS.

ADDITIONAL COMMENTS RECEIVED AND RESPONSES

On September 5, 2001, the Corps sent to the cooperating agencies a request for information that could be used in the cumulative impact analysis for this EIS. The Corps requested the agencies identify projects within the project area that have been completed or were reasonably foreseeable within the next five years. Responses were received from FWS, NGPD, the Nebraska Department of Natural Resources (NDNR), the Papio-Missouri River Natural Resources District, and Saunders County. These responses are included

following the comments and responses on the revised DEIS.

On November 16, 2001, copies of the Preliminary Final EIS (PFEIS) were sent to the cooperating agencies for review and comment. Comments were received from EPA, FWS, NGPC, NDNR, Nebraska Department of Property Assessment and Taxation (for Saunders County), and Saunders County. These comments and the Corps' responses follow the letters received on cumulative impacts.

COMMENTS AND RESPONSES ON THE REVISED DEIS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

APR 17 2001

Ms. Rebecca Latka
CENWO-PM-AE
U.S. Army Corps of Engineers, Omaha District
215 North 17th Street
Omaha, Nebraska 68102-4978

Dear Ms. Latka:

RE: Review of Draft Environmental Impact Statement (DEIS) 2001, Metropolitan Utilities District's Platte West Water Production Facilities in Douglas and Saunders Counties, Nebraska

In accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency (EPA) has reviewed the above referenced DEIS. Based upon our review, EPA has rated the DEIS as "EC-2" (Environmental Concerns - Insufficient Information). A copy of EPA's rating system is provided for your reference. This rating has been assigned to the DEIS on the basis of the disclosure within the DEIS and the Applicant's Showing Document of the uncertainties associated with the completed modeling. Based upon this degree of uncertainty, EPA urges the U.S. Army Corps of Engineers to present (in the Final Environmental Impact Statement [FEIS]) a suite of appropriate mitigation measures or operational constraints that are driven by monitoring results and/or actual well field performance observations.

EPA offers the enclosed comments to assist in completion of the FEIS. Questions regarding these comments should be directed to Mr. Stephen K. Smith at (913) 551-7656.

Sincerely,

Leo J. Alderman, Director
Environmental Services Division

Enclosure

cc: Steven Anschutz, U.S. Fish and Wildlife Service

RECYCLE

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Specific Comments

1. PDEIS, Appendix C, page 1-5, paragraph 3 – The relationship between the 2-mile buffer zone, the cone of depression and the well fields remains unclear. Currently it could be interpreted that the buffer zone is comprised of the well fields and cone of depression. We recommend that a figure be added to the document that illustrates the relationship between the various areas. 1

2. PDEIS, Appendix C, page 1-6, Table 1-1 – The Wetland Impact Analysis is unclear about the acreages of wetlands potentially affected by the Platte West project. The table indicates that total wetlands and other special aquatic sites within the well field (193.9 acres) plus outside the well field (705.9 acres) would be 899.8 acres. This total conflicts with the total (i.e., 328.8 acres) identified in Section 4.1.1, page 4-1, and in Table 4-1, page 4-1 (i.e., 323.1). Our review of the impacts analysis preceding Section 4 did not provide any clues to explain the significant acreage differences. We recommend that Section 4 address this difference and reference back to Table 1-1 as appropriate. 2

3. PDEIS, Appendix C, Section 2.2.2, page 2-4 – The wetland impact analysis assumes that "forested (FO type)" wetlands are less susceptible to drawdowns than shallower-rooted "herbaceous wetlands (AB and EM types) ...." We disagree with this assumption. Cowardin et al. (1979) describes forested wetlands as normally possessing "an overstory of trees, ..., and a herbaceous layer." Agreeably, trees in temporarily flooded wetland conditions will likely have deeper roots that can be supported by groundwater. However, the drawdowns expected for the Platte well field sites would be expected to create dry enough conditions to dewater the upper soil profile and cause adverse impacts to the herbaceous plant layer. We would expect that under such conditions, that the hydrophytic plant layer would be shifted to one dominated by nonhydrophytic species. We believe that such a change would significantly affect community functions (e.g., wildlife habitat and species make-up, and water quality improvement capability), and would constitute a change in meeting the vegetation parameter under the Corps' 1987 Wetlands Delineation Manual ('87 Manual). Rather than viewing such drawdowns as causing an alteration under the project proponent's impact scheme, we believe they should be viewed as causing a loss. Based on this information, we recommend that the wetland impact analysis be adjusted for forested wetlands to ensure that adverse impacts will not be underestimated and that appropriate and complete mitigation is afforded this wetland type. 3

4. PDEIS, Appendix D, page 9, paragraph 2 – The document provides an approximate cost for environmental mitigation with and without an accounting for subsurface irrigation. However, in paragraph 4, page 8, there is no cost projected for any additional mitigation that might be required for altered or lost wetlands that are determined from monitoring in the cone of depression following initiation of the operation. Potential maximum costs could be significant (i.e., 141.6 acres at $23,000 per acre = $3.3 million plus cost of inflation). We recommend that all potential mitigation costs be provided for each of the alternatives. 4

1. A figure and text have been added to Section 1.3.1 of the Wetland Impact Study to clarify the distinction between the 2-mile buffer around the well field and the cone of depression. Also, the 2-mile buffer has been added to Figure 3-1.

2. Table 1-1 of the Wetland Impact Study is the acres of *existing* wetlands on the Platte West alternative well field and within the 2-mile buffer around the well field. Table 4-1 is the acres of wetlands that would be *lost or altered* by groundwater drawdown. These data do not agree because not all wetlands within the 2-mile buffer would be within the cone of depression. The changes pursuant to comment 1 should clarify the differences.

3. The discussion in Section 2.2.2 of the Wetland Impact Study was inaccurate because it did not reflect the impact criteria that were ultimately used. Ultimately, all wetland types were classified as lost if the groundwater table under them was reduced by more than one foot unless the wetland was directly connected to a permanent body of water (i.e., the Platte or Elkhorn rivers) or soil conditions and watershed size indicated runoff would be sufficient to maintain wetland hydrology (see Table 3-1).

4. The costs of replacing all wetlands potentially lost and altered has been included in the Conceptual Mitigation Plan and in the FEIS.

5. PDEIS, Appendix D, Attachment A, page 2-17, section 2.2.2 and DEIS, page 4-44, paragraph 1 – Monitoring is proposed eventually to occur once every five years for changes to wetlands boundaries. This conflicts with information located in the PDEIS, Appendix D, page 3-3, paragraph 2 that indicates the applicant will monitor wetlands every 2-3 years after the start of project operations. 5

6. DEIS, page 2-25, paragraph 1 – It is unclear whether the construction costs for the Platte West alternative include expenditures already committed for site purchase and well construction to date. We recommend that such costs, that are reasonably considered part of development of the alternative, be included as part of total cost. 6

7. DEIS, page 4-41, paragraph 4 – Burns & McDonnell 1998 is cited here but was not found listed in Appendix D, page 4-1 (References) or in the DEIS, page 6-3. 7

8. DEIS, page 4-75, bullet 8 – As a result of the Platte West alternative, water level declines at Two Rivers SRA up to 3 feet are suggested here. This conflicts with the information (i.e., "up to 5 feet") provided in Table 2-7, page 2-36, at "groundwater." 8

9. DEIS, page 4-80, paragraph 2 – As identified in our earlier comments (EPA letter dated April 28, 1999, enclosure page 10, comment 4), the DEIS continues to be absent any discussion about why the proposed project and associated mitigation would not meet the Omaha Master Plan minimum recommendations for mitigating for wetland and woodland losses. We recommend that this issue be addressed in the final EIS. 9

Section 404

The following comments and recommendations are provided as a basis for conditions for the Clean Water Act Section 404 permit associated with the proposed preferred alternative for the Metropolitan Utility District's new water production facilities. Such conditions are intended to ensure avoidance or further minimization of adverse impacts on waters of the United States, including wetlands.

Impacts

10. PDEIS, Appendix C, Section 2.2.1, page 2-2 – EPA continues to be very concerned about the anticipated effects of drawdown on wetlands caused by the proposed well field locations (see EPA letter dated April 28, 1999, enclosure page 5, comment 4 and page 10, comment 3). The literature cited in this section of the PDEIS highlights our very concerns regarding anticipated impacts to wildlife, plant species composition, and overall wetland functions. The literature also further provides support for permit conditions that ensure that monitoring of the well fields and their cone of depression is sufficiently detailed and long-term. 10

5. The frequency of wetland monitoring has been changed to twice per year, every year.

6. The costs of the alternatives in the DEIS were calculated assuming no expenditures had already been committed for site purchase and well construction to prevent the cost of the Platte West alternative from being artificially low. In Chapter 2 of the FEIS, the capital costs for each structural alternative described in detail have been further broken down into fee simple land acquisition, transmission pipelines (including easements), well field equipment, and treatment plant.

7. The citation on page 4-41 of the DEIS was incorrect. The correct citation is Burns & McDonnell Engineering Company, Inc. 2000. This work is the Conceptual Wetland Mitigation Plan and was Attachment A in Appendix D. The FEIS has been corrected.

8. The bullet on page 4-75 of the DEIS was incorrect. The correct predicted drawdown is 5 feet. The FEIS has been corrected.

9. Omaha Master Plan guidelines for mitigating wetland and woodland losses were not specified because:
   - the impacts would primarily occur outside of the Master Plan area
   - woodland losses would probably not meet threshold requirements for mitigation under the Master Plan
   - wetland mitigation would be governed by the Corps under agreements worked out with the State of Nebraska

10. Your concern is noted and will be addressed through permit conditions if a permit is issued.

Mitigation

11. We recommend that mitigation for any future adverse impacts to wetlands resulting from the project should be implemented by the next growing season following the results of monitoring to minimize lag time in achieving fully functioning wetlands. 11

12. We are concerned that the proposed mitigation ratios for forested wetlands are too low. In the " Memorandum of Agreement between EPA and the Department of the Army Concerning the Determination of Mitigation (III, B)," "mitigation should provide, at a minimum, one for one functional replacement." Because there currently is no functional assessment model for forested wetlands in Nebraska, a minimum 1 to 1 acreage replacement provides an allowable surrogate. However, there would be considerable lag time between initiation of forested wetland mitigation and maturity of such systems. Therefore, it would be reasonable and appropriate to increase the ratio for their replacement. This would be in keeping with the national goal of no net loss of wetlands. We recommend that forested wetland losses, including those involving the loss of the hydrophytic herbaceous layer, be mitigated at a ratio of 3 acres replaced for every 1 acre lost. We also recommend that where such wetlands are determined to be altered, they should be mitigated at a ratio of 1.5 acres replaced for every 1 acre altered. 12

13. PDEIS, Appendix D, page 3, paragraph 2 and 3 – The applicant is proposing a two-tiered mitigation ratio. We presume that the applicant is proposing the lower 1:1 ratio for sites that are determined to be altered under the assumption that such altered wetland sites would continue to provide wetland functions, though at a diminished level. We believe that once a decision is made that dewatering has caused impacts to a wetland that is considered altered, monitoring of the site should continue for the life of the permit. This will provide accountability for measuring any further degradation that might warrant a future determination of wetland loss. We recommend that any subsequent determination of wetland loss at a site earlier determined to be altered, should result in an additional mitigation that represents the difference in mitigation ratios between alteration and loss (e.g., 0.5:1). 13

14. PDEIS, Appendix D, page 4, paragraph 1 – As indicated earlier (EPA comments, page 11, item 6, dated April 28, 1999), we are concerned about the potential for the loss of La Platte mitigation wetlands resulting from construction of an Interstate-29 and U.S. 75 bridge. We recognize the applicant's plans for replacing any such lost wetlands. However, our concern is centered around the lag time in achieving functional wetlands to replace wetlands lost to well field impacts. We recommend that any Section 404 permit that is authorized for this project should include a contingency condition for the La Platte mitigation site that would require replacement mitigation for any wetland losses or interruptions resulting from construction of an Interstate-29 and U.S. 75 bridge. Such replacement mitigation should reflect an increase in the original mitigation to reflect the delay in obtaining wetland functions. 14

15. PDEIS, Appendix D, Attachment A, Section 1.3, pages 1-2 to 1-6 – We appreciate that the District considered four sites for potential wetland mitigation. The District identified the La Platte Site as their preferred site based on review of numerous factors. However, we remain concerned about the issue of watershed integrity and sustainability of natural resources on a watershed basis relative to the proposed project mitigation (See EPA comments, page 11, item 5, 15

11. This recommendation has been added to the Conceptual Wetland Mitigation Plan.

12. For Section 401 Water Quality Certifcation, the Nebraska Department of Environmental Quality standard mitigation ratios are 1.5 to 1 for replacing lost wetlands and 1 to 1 for replacing altered wetlands. At this time, the Corps has adopted these mitigation ratios for Section 404 permitting issues. These ratios can be changed on a case by case basis if appropriate justification is presented. Because of the uncertainties of the impacts, justification does not exist at this time that would warrant revision of the ratios. The mitigation ratios will be reviewed and considered in the preparation of Section 404 permit conditions should a permit be issued for the Platte West Water Production Facilities Project.

13. The FEIS and Conceptual Mitigation Plan have been revised to indicate wetlands that are determined to be altered should continue to be monitored. If these same wetlands are subsequently lost, then additional mitigation would be performed at a ratio of 0.5 to 1.

14. The Corps is aware that the La Platte wetland mitigation site is on a proposed alignment of a new road and bridge over the Missouri River that would connect Interstate 29 in Iowa with U.S. Highway 75 in Nebraska. Conversations with staff at the Nebraska Department of Roads indicated, however, that construction of the new road is probably 10 years in the future pending additional study of a possible second bridge and allocation of federal funds. Wetlands at the mitigation site would be established before construction of the road would begin. The new road would require a Section 404 permit from this office of the Corps. As a permit condition for the road project, wetlands lost because of the new road, including wetlands created as mitigation for the project, would have to be replaced at a ratio of at least 1.5 to 1.

15. The Corps does not force applicants to purchase additional property for wetland mitigation when suitable sites are located on property the applicant already owns. The search for wetland mitigation sites for the Platte West Water Production Facilities Project, therefore, started with property owned by the District. The exceptional quality of the La Platte mitigation site is proposed to offsets the distance of the site from the point of impact. The Corps is open to the specification of a different mitigation site if a better site is presented. At this time, the Corps is not aware of a superior site. Final selection of the mitigation site would be made with the approval of the final mitigation plan. If a permit is issued for the Platte West project, approval of the final mitigation plan would be a Section 404 permit condition and prerequisite for construction or operation activities that would impact wetlands or other aquatic resources.

dated April 28, 1999.) The Platte West Well Field lies within the Lower Platte Watershed (i.e., HUC = 10200202) and within the Nebraska/Kansas Loess-Drift Hills Major Land Resource Area (MLRA). In contrast, the La Platte site lies within the Big Papillion-Mosquito Watershed (i.e., HUC = 10230006) and within the Deep Loess Hills. We believe that the currently proposed project will result in a significant net loss of wetlands and their functions within the Lower Platte watershed.

As specified in the "Memorandum of Agreement between EPA and the Department of the Army Concerning the Determination of Mitigation (part II, C, 3)," compensatory mitigation "should be undertaken in the same geographic area if practicable (i.e., in close physical proximity and, to the extent possible, the same watershed)." To this end, Tom Taylor in our office contacted Mr. Brad Soncksen, Natural Resources Conservation Service District Conservationist for Saunders County (pers. comm., 3/26/01). Mr. Soncksen indicated that considerable potential exists for wetlands restoration located within the Lower Platte Watershed and Loess-Drift Hills MLRA within Saunders County. Further, in a conversation between Mr. Taylor and Mr. Marlin Petermann, Papio-Missouri River Natural Resources District (pers. comm., 3/26/01), the latter indicated the potential for mitigation sites in Sarpy County along the Platte River north of Interstate-80.

We believe that the applicant should be required to make a more complete demonstration for determining appropriate and practicable mitigation for wetlands adversely impacted (i.e., loss and alteration) by the preferred alternative. Specifically, they should be required to demonstrate why they are unable to mitigate at one or more sites any future alterations and losses, that result from drawdown, within the Lower Platte Watershed and within the Nebraska/Kansas Loess-Drift Hills MLRA. If the demonstration is unsuccessful, we recommend that all wetland alteration and loss, that results from future drawdown, be mitigated in-kind by wetland type based on the Cowardin et al. (1979) classification methodology and located, when practicable, within the same watershed and MLRA.

16. PDEIS, Appendix D, Attachment A, Section 2.1.2 -- Although the project proponents assume that plant species composition in the mitigation wetlands will be diverse, there is no success criterion to ensure such diversity or to prevent the development of monocultural communities (e.g., cattails). We recommend that the 404 permit be conditioned to require diversity equivalent to that of a reference wetland near the La Platte site. This condition also should apply, in principle, to any additional wetland mitigation sites that are established.

16

17. PDEIS, Appendix D, Attachment A, Section 3.1.1. -- This section identifies criteria for measuring the success of the La Platte mitigation site. Table 4-1 (Appendix C, page 4-1) indicates that forested wetlands would be impacted as an immediate effect of the project. Further, trees are expected to be part of future site conditions (Appendix D, Section 2.1.3., page 2-14, paragraph 1), though no success criterion yet has been proposed for forested mitigation areas. We recommend that the 404 permit be conditioned as follows: In-kind mitigation for impacts to forested wetlands shall be mitigated to achieve woody species survival of at least 75% after three growing seasons.

17

16. The Corps has not made a decision to issue a permit for the Platte West Water Production Facilities Project. Details of the monitoring methodology and mitigation performance criteria would be conditions of the permit should a permit be issued. Suggestions for permit conditions submitted during the Section 404 regulatory process would be considered.

17. Please see the response to comment 16.

Monitoring

18. PDEIS, Appendix D, Attachment A, Section 2.2.2, page 2-17 -- Monitoring of wetlands should be frequent enough to allow adequate time to evaluate monitoring results, develop a course of action (e.g., decrease pumpage), and implement any necessary mitigation without incurring any significant delay from the time that impacts are determined. We recommend that complete monitoring at the Platte West well field, including the area within the cone of depression, be conducted once every two years, not every 5 years, for wetlands. Further, within this schedule we believe that monitoring should be adequate enough to consider any seasonal effects of drawdown. Otherwise it remains unclear how monitoring conducted only once either in late spring or early summer (Appendix D, Section 3.3.2, paragraph 2) will be useful for distinguishing between changes in wetland types (e.g., seasonally flooded converted to temporarily flooded) that influence decisions regarding mitigation. Therefore, we recommend that monitoring be conducted both early and late in the growing season during sample years.

19. PDEIS, Appendix D, Attachment A, Section 3.2.2, paragraph 1 -- The applicant is proposing wetland monitoring that involves botanical assessment and a functional analysis. No further details are provided on these monitoring components. It is assumed that these tools, along with groundwater measurements and soils testing, will be used in some manner to determine whether a wetland meets the criteria for "minimal" impact, "altered," or "lost" (Appendix C, page 3-1). The applicant also proposes that the Corps will make the final decision whether and "if impacts are sufficient to warrant further mitigation" (Appendix D, Section 3.1.2, paragraph 3).

The lack of monitoring design details in the DEIS and PDEIS makes assessment of the proposed methodology difficult, inhibits our ability to provide sound recommendations for permit conditions, and leaves decision-making by the Corps regarding potentially large numbers of wetland impacts subject to considerable subjectivity. For example, after the initial monitoring, "soil parameters" would be excluded from the procedure (Appendix D, section 3.2.2, page 3-3, paragraph 2). Because the '87 Manual, which includes consideration of soils, would be used for monitoring wetland boundaries of the wetlands, the PDEIS is unclear why soils will not be monitored in the long-term.

The monitoring methodology must be designed to sufficiently measure changes in wetland conditions so that impacts can be assessed and mitigated if necessary. Monitoring must provide adequate information to distinguish between the different impact categories (i.e., minimal, altered, and lost). Tools for functional analysis, such as the Wetland Evaluation Technique, are not sensitive enough for measuring change resulting from the proposed project (R. Daniel Smith, USACE, Vicksburg, pers. comm., March 29, 2001) or, in the case of the Hydrogeomorphic (HGM) approach, have not been developed yet for this local application.

We also remain unconfident that monitoring focused only on plants and groundwater levels will provide information that can help distinguish between minimally impacted and altered sites. The PDEIS (Appendix C, section 2.2.1, page 2-2, paragraph 2) cites Rochow's (1994) assessment of drawdown on wildlife species supports our earlier concerns (EPA letter dated April 28, 1999, enclosure page 5, comment 4). Bioassessment methods to directly measure

18. The purpose of monitoring equivalent wetlands outside the cone of depression would be to control of seasonal and annual climatic variations that could confound the impacts of groundwater drawdown. Monitoring once in a year, therefore, should be sufficient. None-the-less, the frequency of wetland monitoring has been changed to twice a year every two years. The Conceptua Mitigation Plan and the FEIS have been revised accordingly.

19. Please see the response to comment 16.

biological integrity of wetlands and quickly screen wetlands for signs of impairment may be available (e.g., Minnesota Pollution and Control Agency Wetland Index of Biological Integrity is based on wetland macroinvertebrates; also see http://www.owow/wetlands/wqual.html#monitoring). Also, the U.S. Department of Interior Habitat Evaluation Procedures or HEP may provide a methodology for assessing changes in wildlife usage of the wetlands.

Based on the above, we recommend that the applicant be required to develop detailed monitoring procedures, and clear and measurable thresholds for changes in wetland type based at least on vegetation and hydrology, and potentially on other information (e.g., significant change in wildlife species diversity, usage, etc.). We further recommend that the impact classification "lost" should be based on the elimination of any one of the three wetland parameters (i.e., soils, hydrology, plants) as provided in the '87 Manual.

20. PDEIS, Appendix D, Attachment A, Section 3.2.2, paragraph 2 – Monitoring is proposed to be established at representative sites within the project area defined as the cone of depression. We are concerned that special aquatic sites, particularly temporarily and seasonally flooded wetlands that are not part of the sample set, could be subject to secondary impacts following drawdown. For example, because such sites could become drier from pumping, they could be further modified due to urban or agricultural development. The project proponent's mitigation plan indicates that they "may include reviewing ... aerial photography" for any special aquatic sites on private property that may be inaccessible during surveys. We recommend that all wetlands be monitored for such land-use changes on an annual basis either using photography or direct field observations.

21. DEIS, page 4-44, paragraph 2 and PDEIS, Appendix D, page 3-3 paragraph 3 – The applicant proposes to monitor wetlands and aquatic beds until adverse changes attributable to the well field are detected "or until it becomes clear the well field is not having an effect." The DEIS (page 4-31, paragraph 4) and PDEIS (Appendix C, page 3-1, paragraph 4) indicate that the "well field cone of depression will develop slowly over approximately a 30-year period as demand from the new facility increases." Based on this information, we believe that the potential for adverse effects to the wetlands would remain and may increase throughout the 30-year project period. Therefore, we recommend that the 404 permit be conditioned to require monitoring of the wetlands and aquatic beds for the entire 30-year period to ensure that they are either being maintained in spite of the pumping activities or adequately replaced by mitigation.

Conclusion

The comments above were provided to assist in preparing revisions to the NEPA documents and to assist the Corps of Engineers in their preparation of any Clean Water Act, Section 404 dredge and fill permit. Due to the extensive permit conditioning for the 404 permit as presented in our comments above, we recommend that the Corps not issue a permit until our comments have been addressed. We look forward to working with the Corps to improve the mitigation and monitoring portions of the project.

20. Please see the response to comment 16.

21. A monitoring duration of 30 years has been added to the Conceptual Mitigation Plan and the FEIS.

22. Your request is noted..

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Denver Federal Center, Building 56, Room 1003
P.O. Box 25007 (D-108)
Denver, Colorado 80225-0007

April 9, 2001

ER 01/139

Ms. Rebecca Latka
Omaha District
U.S. Army Corps of Engineers
215 North 17th Street
Omaha, Nebraska 68102

Dear Ms. Latka:

The Department of the Interior has reviewed the Draft Environmental Impact Statement for the Platte West Water Production Facilities, Douglas and Saunders Counties, Nebraska (ER 01/139) and has the following comments.

Endangered Species Act Comments

The preferred alternative in the subject DEIS has changed slightly since the initial DEIS for the proposed project was issued in March 1999. The preferred alternative in the 1999 DEIS was the Platte West, Storage B3 Scenario, and the preferred alternative in the subject DEIS is the Platte West, Storage B4 Scenario. The average annual flow depletion to the Platte River changed from 40,675 acre-feet (i.e., 18,561 acre-feet during the months of February through July) under the B3 Scenario to 40,521 acre-feet (i.e., 18,406 acre-feet during the months of February through July) under the B4 Scenario.

Formal consultation under section 7 of the Endangered Species Act of 1973, as amended, considering the Platte West Storage B3 Scenario as the preferred alternative, was completed on February 22, 1999. The Fish and Wildlife Service's biological opinion concluded that the proposed project was not likely to jeopardize the continued existence of the federally listed least tern, piping plover, and pallid sturgeon, and the sturgeon chub, a candidate species. The no jeopardy determination for the pallid sturgeon and sturgeon chub was contingent upon the implementation of conservation measures by the District and the Nebraska Game and Parks Commission.

Since the Service's February 22, 1999, biological opinion was based on the Storage B3 Scenario, the biological opinion has been amended to reflect the Storage B4 Scenario flow depletions. In a January 18, 2001, letter the U.S. Army Corps of Engineers requested reinitiation of formal section 7 consultation with the Service for impacts to federally listed threatened and endangered species in Nebraska from the subject project. In response to the Corp's request, the Service issued an amendment to the February 22, 1999, biological opinion on February 2, 2001. The Service's conclusion in the amendment did not change under the new preferred alternative. As

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stated in the Conclusion section of the 1999 biological opinion, "The proposed action may adversely affect, but is not likely to jeopardize the continued existence of the least tern, piping plover, and pallid sturgeon. The no jeopardy determination for the pallid sturgeon is contingent upon the implementation of conservation measures by the District and Commission to offset the likelihood of jeopardy." A copy of the Service's February 2, 2001, amendment should be included in Appendix E (i.e., U.S. Fish and Wildlife Service's Biological Opinion) of the final EIS.

Specific Comments

Mitigation section, page 4-55: The first paragraph states "The policy of FWS is that any flow depletions in the Platte River that result from federal action, such as a Section 404 permit from the Corps, shall be mitigated to protect the habitat of various federally listed threatened and endangered species found in the river (FWS 1996)." This statement is misleading and is not Service policy. Rather, in numerous consultations on federally funded or authorized water projects causing depletions in the Platte River watershed pursuant to section 7(a)(2) of the Act, the Service has concluded that such depletions, when added to the environmental baseline in the watershed, are likely to jeopardize the continued existence of certain listed species. However, if a project proponent desires to avoid such a determination, it can propose conservation measures as part of its project, as the District has done with respect to its proposed Platte West well field. If the project proponent proposes conservation measures as part of its project, the Service can consider whether the beneficial effects of such conservation measures will offset the adverse effects of the proposed depletion such that the combined proposed action (depletion and conservation measures) is not likely to jeopardize the listed species in the Platte River watershed. However, it is the project proponent's desire to avoid a "jeopardy" determination pursuant to section 7(a)(2) of the Act, not "the policy of the Service," that prompts the proponent to include conservation measures in its project.

1

The third paragraph states "The amount of funding would be based on the assessment of a one-time depletion fee established by FWS of $54 per acre foot depletion during the critical period of February through July." The amount of mitigation in this circumstance is not determined by calculating a per-acre-foot charge. Rather, the mitigation proposed by the District (i.e., a certain amount of backwater habitat creation pursuant to the District's cooperative agreement with the Commission) was determined to provide sufficient biological benefits to the species in question to adequately offset the adverse habitat effects of the proposed depletion. Although a per-acre-foot amount of money was initially used to calculate a reasonable amount of habitat restoration by the District, it is the biological benefit to be yielded by this habitat restoration, not the amount of money to be spent by the District, that determines the sufficiency of the mitigation.

2

Formal Consultations section, page 5-5: The second sentence of this section states "The FWS was consulted, as required by Section 7 of the Endangered Species Act, for their concurrence on the likely impacts to federally listed threatened or endangered species and their requirements for mitigation." As previously discussed, the term "requirements for mitigation" is inappropriate. We recommend that the sentence be revised to read "As required by Section 7(a)(2) of the Endangered Species Act, the Corps consulted with the FWS concerning the affects of the

3

1. The wording originally on page 4-55, paragraph 1 of the DEIS has been changed in the FEIS as requested to accurately reflect FWS policy.

2. The wording originally on page 4-55, paragraph 3 of the DEIS has been changed in the FEIS as requested to accurately reflect the derivation of the depletion fee.

3. The wording originally on page 5-5 of the DEIS has been changed in the FEIS as requested.

proposed action on federally listed threatened and endangered species."

1

Clean Water Act Comments

Regarding wetlands, 77.5 acres and 14.6 acres, respectively, under the B3 and B4 scenarios would be lost. Therefore, it appears that under the B4 Scenario the amount of wetland acres lost would be less than under the B3 Scenario.

4

The report states (Page S-13, Summary, Issues To Be Resolved) that final mitigation plans for habitat of the federally listed endangered or threatened pallid sturgeon (*Scaphirhynchus albus*) and sturgeon chub (*Macrhybopsis gelida*) still need to be formulated. The project acknowledges (Page 4-52, Chapter 4, Environmental Consequences and Mitigation, Threatened or Endangered Species, Water Supply Alternatives) that while the proposed project will barely deplete flow of the Platte River, this project is "one more change in the historic hydrology of the Platte River . . . (sic) since the settlement of the river watershed by Euroamericans."

5

The USGS offers research information that might be useful in developing habitat mitigation plans for the pallid sturgeon and the sturgeon chub. Although much of the research suggested was carried out on the lower Missouri River, results can be expected to apply to the confluent lower Platte River. Descriptions of the research projects can be accessed at the Web Site http://biology.usgs.gov/ under Current Projects or the BRD Center or Coop Unit doing the work. Projects identified here are listed hierarchically from general to specific descriptions:

1. River corridor habitat dynamics, lower Missouri River. Columbia Environmental Research Center.

2. Analysis of data on population structure and habitat use of benthic fishes along the Missouri River. Idaho Cooperative Fish and Wildlife Research Unit.

3. Pallid Sturgeon life history and habitat quality studies. Columbia Environmental Research Center.

4. Larval and juvenile fish use of scour holes connected to the lower Missouri River. Missouri Cooperative Fish and Wildlife Research Unit.

5. Spatially explicit aquatic habitat assessment methods: development, application, and transfer. Midcontinent Ecological Science Center.

Sincerely,

Robert F. Stewart

Robert F. Stewart
Regional Environmental Officer

4. The substantial change in wetland loses between the Storage B3 in the first DEIS and B4 operating scenarios in the revised DEIS cited in this comment resulted primarily from a re-analysis of how wetlands were predicted to be impacted by groundwater drawdown. The difference in drawdown between by the two scenarios was slight.

5. Thank you for the information. This information will be considered in development of the Final Mitigation Plan should a permit be issued for the project.

Federal Emergency Management Agency

Region VII
2323 Grand Blvd., Suite 900
Kansas City, MO 64108-2670

April 11, 2001

Ms. Rebecca J. Latka
U.S. Army Corps of Engineers
Planning Division
215 North 17th Street
Omaha, NE 68102

RE: Platte West Water Production Facilities
Draft Environmental Impact Statement

Dear Ms. Latka:

It has come to our attention the Metropolitan Utilities District has proposed new drinking water production facilities within the jurisdictions of Douglas County and Saunders County, Nebraska. The draft Environmental Impact Statement abstract indicates the actual proposed treatment plants and well fields are located in the Platte River floodway and floodplain. We have been asked to provide additional information concerning the jurisdictional requirements for administration of the National Flood Insurance Program (NFIP) requirements for the affected participating communities.

Prudent floodplain construction practices are essential in reducing the threat to property, potential loss of life in future flood events, and the expenditure of taxpayer-funded disaster assistance. The responsibility for monitoring and permitting all building in the floodplain is a local issue and must be administered at the community level. Both Saunders County and Douglas County are participating communities in the NFIP and as such would be held responsible for issuing the appropriate floodplain development permits for this proposed project. These documents would be required of the counties during an official floodplain management program review conducted by FEMA. The failure of the underlying jurisdiction to issue the appropriate floodplain development permit would constitute a violation of their floodplain management ordinance and make them noncompliant with the NFIP participation requirements. Communities can be suspended from the program for failure to enforce the regulations they adopt as a condition of participation in the NFIP. NFIP flood insurance is not available in suspended communities.

Under the NFIP, communities agree to administer minimum floodplain management requirement in return for several benefits, one being the availability of flood insurance. A NFIP participating community must adopt and enforce the minimum floodplain management regulations required for participation. The floodplain management regulations are designed to prevent new development from increasing the flood threat and to protect new and existing

1. The Abstract for the DEIS could have been better worded to avoid the confusion about what part of the project would be constructed in a floodplain or floodway. Only the well fields would be located in floodplains. The surface structures of the well fields would consist of wellheads and light-duty access roads. Only the well heads are expected to project above the existing ground level. All of the proposed treatment plant locations would be outside of the floodplain. The Corps is aware the District would need to obtain a floodplain permit for construction in a floodplain and a 'no-rise' certification for construction in the floodway. Given the nature of the well field structures, meeting floodplain regulations should not be difficult.

buildings from anticipated flood events. In addition, the State of Nebraska requires an additional one foot freeboard above the base flood elevation. These regulations require the lowest floor (including basement/crawl space) of any nonresidential structure built in the floodplain to be elevated or floodproofed to one foot above the base flood elevation (BFE) as a minimum for participating NFIP communities.

The NFIP and Nebraska minimum requirements prohibit any encroachment (new construction, substantial improvements, or other development) within a designated floodway that causes any increase in the BFE, unless the conditions of the NFIP regulations concerning no-rise are met. A community must prohibit development, including fill, within the regulatory floodway that would cause any additional rise in the base flood elevation. The regulatory floodway includes the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water-surface elevations by more than one foot. Higher flood elevations would increase potential flood damages to upstream property owners.

Please accept this letter as our initial comments on the Environmental Impact Statement and ensure the NFIP floodplain permitting process is accurately reflected in your document. If we can be of any further assistance, please either Pam Soper, Senior Mitigation Specialist, at 816.283.7008 or me at 816.283.7076.

Sincerely,

Phil Kirk, Acting Director
Mitigation Division

cc: Jerry Folkers, USACE, Operations Division
Grant Porter, Saunders County Deputy Attorney
Barb Frohlich, Douglas County Floodplain Administrator
Brian Dunnigan, Nebraska NFIP Coordinator

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 55TH WING (ACC)
OFFUTT AIR FORCE BASE NEBRASKA

12 APR 2001

MEMORANDUM FOR U S Army Engineer District
Attn: CENWO-PM-AE (Ms. Rebecca Latka)
215 North 17th Street
Omaha, NE 68102

FROM: 55 CES/CD
106 Peacekeeper Drive, Suite 2N3
Offutt AFB, NE 68113-4019

SUBJECT: Platte West Water Production Facilities Draft Environmental Impact Statement (EIS)

1. We have obtained a copy of the subject draft EIS document from the Metropolitan Utilities District (MUD), because Offutt Air Force Base (AFB) is a major customer, and a continuing supply of safe potable water is vital to our existence.

2. During our review of the document, we became concerned about a potential conflict between our flying operations and the proposed site of the wetlands constructed to mitigate the loss of wetlands in the selected alternative. We asked our Airfield Operations and Safety Offices to review the proposed location. Both offices expressed strong opposition to reconstructing the impacted wetlands at the location east of La Platte, because of the impact on Offutt AFB's flying mission. 1

3. While we support MUD's initiative to ensure the availability of water to its customers, we cannot support the option being recommended. The proposed location for reconstructing the wetlands at the junction of Harlan Lewis Road and La Platte Road is approximately two miles from Offutt's runway. The Federal Aviation Administration Advisory Circular 150/5200-33, *Hazardous Wildlife Attractants on or Near Airports*, dated 1 May 97, advises that wetlands not be included within 5 statute miles of airport approach and departure airspace. This location would be directly under Offutt's radar and visual flight pattern turn point, where aircraft are flying at about 2,000 feet Above Ground Level. There are already ponds and wetland areas adjacent to Offutt that cause a significant problem. Offutt has sustained over 500 bird strikes and more than $4 million in aircraft damage since 1985. Construction of additional wetlands, particularly under our standard flight pattern, would increase the risk to aircraft and the aircrews operating the aircraft.

4. Please keep us informed of developments on this issue. My point of contact is Ed Lueninghoener of the 55th Civil Engineer Squadron's Environmental Flight (55 CES/CEV). You can reach him by phone at 294-4087. 2

JAMES E. KEYSER, P.E.
Deputy Civil Engineer

cc: Metropolitan Utilities District
Attn: Gina Langel, P.E., CEM
1723 Harney Street
Omaha, NE 68102-1960

Global Power for America

1. The wetland impact analysis conducted for this EIS indicated very little aquatic habitat of the type particularly attractive to waterfowl (i.e., aquatic beds in ponds) would need to be constructed at the La Platte mitigation site. Given the existence nearby of the Missouri River, Platte River, and Schilling Wildlife Area slough restoration project, the La Platte mitigation site should not increase problems with bird strikes.

2. Ed Lueninghoener has been added to the mailing list for the FEIS.

STATE OF NEBRASKA

DEPARTMENT OF PROPERTY ASSESSMENT & TAXATION
Catherine D. Lang
Property Tax Administrator

Mike Johanns
Governor

April 13, 2001

Rebecca Latka, CENWO-PM-AE
U.S. Army Corps of Engineers
215 North 17th Street
Omaha NE 68102

Jerry Folkers, CENWO-OD-RS
U.S. Army Corps of Engineers
215 N 17th Street
Omaha, NE 68102

RE: February 2001 Preliminary Draft DEIS for the Proposed M.U.D. Platte West Water Production Facilities

Dear Ms. Latka and Mr. Folkers,

I have read a copy of the "Property Values" materials in your most recent Preliminary Draft Environmental Impact Statement. I had written to you on January 12th stating my concern on the valuation figures being used. On page 3-33 the information provided is using the 1998 values and on page 4-58 the values are for the 1999 tax year. The valuation figures in the EIS are out of date. We have more current values available in our office.

This year Saunders County has created a new market area along the river corridor because of strong sales of land along the river as well as on the eastern side of the county. Because of this, I feel that the values that are being used for the Impact Statement do not represent the true values of property in the area concerned. The new river corridor market area has been established because there are sales in the area that do not represent an ag market, but rather a development market.

I would strongly urge you to use current values when figuring values of the area, rather than figures that are two and three years old.

Please feel free to contact this office if you wish to obtain more current valuation of the area.

FOR THE PROPERTY TAX ADMINISTRATOR

Sincerely,

Cathy Gusman
State Assessor for Saunders County
(402) 443-5703

State Assessment Office for Saunders County • 433 N. Chestnut • Wahoo, Nebraska 68066 • Phone (402) 443-5700 • Fax (402) 443-5708
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1. Thank you for your offer to provide us with the most current data. These data have been included in the FEIS.

Nebraska Game and Parks Commission

2200 N. 33rd St. / P.O. Box 30370 / Lincoln, NE 68503-0370
Phone: 402-471-0641 / Fax: 402-471-5528 / http://www.ngpc.state.ne.us/

April 11, 2001

Rebecca Latka
Corps of Engineers
215 North 17th Street
Omaha, NE 68102-4978

Dear Ms. Latka:

Nebraska Game and Parks Commission (NGPC) staff have reviewed the Draft Environmental Impact Statement (DEIS) for the proposed Platte West Water Production Facilities. Staff have worked with the U.S. Fish and Wildlife Service (USFWS), US Army Corps of Engineers, and the Municipal Utilities District (MUD) on this project proposal from early planning stages to the present. Our earlier correspondence is included in the DEIS.

Concerns for the project proposal include impacts to Platte River flows, wetland loss, and lost recreational activities at our Two Rivers State Recreation Area. The mitigation measures outlined in the DEIS will, however, address the majority of these concerns. The preferred alternative (Platte West) includes the use of the B4 Scenario, where annual flow depletions to the Platte River and the wetland acres lost would be less than under the earlier selected Scenario.

There are two agreements between the NGPC and MUD included in the DEIS which address our main concerns. To help offset possible impacts to pallid sturgeon and sturgeon chub from the depletions to the Platte River, one agreement would restore backwater habitat along a portion of the Missouri River approximately three miles downstream of the mouth of the Platte River (located adjacent to the Schilling Wildlife Management Area). The expectation is biological resources from the backwater, such as aquatic macroinvertabrates and juvenile fish would have ready access into the main channel of the Missouri River. This would benefit pallid sturgeons and sturgeon chubs by providing additional food resources. Because of the decrease in annual flow depletions under the B4 scenario previously mentioned, the monetary amount identified in the agreement should be adjusted accordingly and this should be reflected in the Final EIS. The slightly reduced amount will still be adequate to complete all the restoration components. These restoration activities will provide key habitat conditions which have been largely lost.

The other agreement regards the concerns for lost recreational activities at our Two Rivers State Recreation Area. Recreational opportunities lost because of ground water drawdown-induced habitat changes and pond water level reductions will need to be replaced or offset. The agreement will provide financial compensation and will allow public access to the LaPlatte

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1. Although a depletion fee equivalent to $54 per acre-foot for 18,406 acre-feet amounts to $993,924, the characterization of the fee as approximately $1 million is sufficiently accurate for the EIS. The District and the Nebraska Game and Parks Commission are free to update their agreement.

wetland mitigation site in order to offset the loss of recreational potential.

The other concern regards the wetland mitigation site and the bridge which is planned to cross the Missouri River at the LaPlatte mitigation site. The most current proposed north alignment for the bridge appears to bisect the area designated for wetland mitigation. Although disturbance from the traffic associated with the bridge could negatively affect the mitigation site, wildlife, including avian species, could still benefit at this site. Increasing the mitigation ratio and locating it as far away as possible from the bridge on the tracts identified in the DEIS could help offset disturbance factors. The Missouri River corridor has been greatly modified in the past and any additional purchases of land in this area beyond that required for mitigation could lead to much needed aquatic and riparian habitat being restored and help protect this area from development as well. The public's use of this site will be greatly influenced by the presence of a bridge on or near the mitigation site. 2

As alluded to earlier, much of the lost recreational activities from the Two Rivers State Recreation Area will be hunting opportunities and enjoyment of the outdoors provided by the wetlands currently existing. The LaPlatte wetland mitigation site will not fully restore these benefits as a result of the proposed bridge. However, to help offset this recreation loss, we strongly encourage MUD to open the Douglas County portion of the Platte West well field to public access. Allowing public access to this site would help offset the lost opportunities at Two Rivers State Recreation Area. 3

Thank you for the opportunity to review this DEIS. We look forward to working with the Corps, USFWS, and MUD in future consultation activities. If you have any questions, please call me at 402-471-5539.

Sincerely,

K L Nelson

Kirk Nelson
Assistant Director

cc Frank Albrecht, NGPC
Mark Brohman, NGPC
Steve Anschutz, USFWS

2. In anticipation of the possibility of the La Platte mitigation site might be bisected by a road, the District has purchased additional property adjacent to the original site.

3. The District has indicated they are willing to consider opening the Douglas County portion of the Platte West alternative well field to public access.

LOWER PLATTE NORTH
NATURAL RESOURCES DISTRICT

511 Commercial Park Road PO Box 126 Wahoo, NE 68066
PHONE: (402) 443-4675 FAX: (402) 443-5339
E-MAIL: lpnnrd@nrcdec.nrc.state.ne.us

March 21, 2001

Ms Rebecca Latka
U.S. Army Corps of Engineers
CENWO-PM-AE
215 North 17th Street
Omaha, NE 68102

RE: Platte West EIS

Dear Ms Latka,

Listed below are comments for the Platte West EIS from Lower Platte North Natural Resources District. My general comment is a major concern concerning loss of sub-irrigation. The soils in this area are light and loss of this benefit will result in total crop loss in years of normal and below normal rainfall.

1. Page 1-10 "Water Conservation Measures" has no mention of the potential impact to the well field from Lower Platte North NRD's Ground Water Management Area designation despite our previous correspondence. 1
2. Figure 1-14 Redundancy ratio – I appreciate the additional paragraph added to explain the redundancy ratio for Lincoln, NE however, I continue to question how Lincoln with the Platte river as it's sole source water supply can have a better redundancy ratio than Omaha. This puts question into this entire discussion. 2
3. As has been brought up previously, a reason has never been given as to why the area north of the Platte West field in Douglas County was not considered. This area would pump from the same paleovalley as is currently being proposed and would not cause the disruption outside of MUD's home County. 3
4. Page 4-31, second column, last paragraph – While use of NWI maps is a good start, and there are disclaimers in the text, alternative sources for wetland maps should be mentioned and considered. As I have previously stated, use of NRCS maps are an excellent source as well as 1993 aerial photography. 1993 was a year of high moisture and wetlands show up well on our February digital ortho quarter quads (DOQQs). These digital images are available from Nebraska Department of Natural Resources or from my office projected as DOQQs or COGs. 4
5. Page 4-42, first column, last paragraph – Once again I must speak in protest of a mitigation site (LaPlatte) so far removed from the impact site. While your additional justification is appreciated and helps explain your reasoning, the mitigation remains over 30 miles away, 5
6. Page 4-58, first column, second paragraph – Irrigated land values are different than the more realistic values given on page 3-33. 6
7. Page 4-61, Second column, first full paragraph – Crop yields are compared using county averages between irrigated and dry land production. While these county averages are true, a larger gap is seen in the wann basin soils. These soils are thin and light with very light sub-soils. Without sub-irrigation years of average and below rainfalls may not produce a crop. 7

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1. Although pumping by the Saunders County portion of the Platte West alternative well field would cause a cone of depression up to 30 feet deep, the drawdown would be centered on the District's property. Drawdown off the well field would typically be much lower. The Platte West alternative well field is not expected to reduced the overall saturated thickness of the alluvial aquifer in the Wann Basin, as determined by the average of LPNNRD's monitoring wells, sufficiently to trigger creation of a Ground Water Management Area. A discussion of LPNNRD's Ground Water Management Plan relative to the Platte West alternative has been included in the FEIS.

2. The redundancy of the City of Lincoln's municipal water sources have been reevaluated and Lincoln's vertical well field and horizontal collector wells near Ashland are no longer considered to be redundant sources. Because these two well systems are in close proximity to each other and derive most or all of their water from induced infiltration from the Platte River, a single contamination event could cause the simultaneous shut down of both well systems. The FEIS and Appendix A have been revised accordingly.

3. As was indicated on page 2-1 and 2-4 of the DEIS, the selection of the proposed configuration of the Platte West alternative well field was based on a groundwater modeling study of many possible alternatives including well fields located exclusively between the Platte and Elkhorn rivers. The alternatives were evaluated for avoidance of excessive drawdown; ability to induced infiltration during normal and high river flows; ability to use stored groundwater during low river flow, avoidance of known groundwater pollution sources; avoidance of impacts to residential lakes, irrigation wells, and the Two Rivers State Recreation Area; and avoidance of impacts to the City of Lincoln's Ashland well field. When all of these factors were considered, the optimal well field was found to consist of an area east of Two Rivers State Recreation Area and north of the Platte River plus an area immediately south of the Platte River.

4. The Corps appreciates LPNNRD's offer of data for use in wetland mapping. At this time, however, the existing wetland mapping is considered adequate for the current purpose of comparing alternatives. Should a Section 404 permit for the Platte West alternative be issued, a detailed delineation of all wetlands within the predicted cone of depression would be a condition of the permit. Such a delineation was specified on pages 4-43 and 4-44 of the DEIS.

5. The Corps does not force applicants to purchase additional property for wetland mitigation when suitable sites are located on property the applicant already owns. The search for wetland mitigation sites for the Platte West Water Production Facilities Project, therefore, started with property owned by the District. The exceptional quality of the La Platte mitigation site offsets the distance of the site from the point of impact. The Corps is open to the specification of a different mitigation site if a better site is presented. At this time, the Corps is not aware of a superior site. Final selection of the mitigation site would be made with the approval of the final mitigation plan. If a Section 404 permit is issued for the Platte West Water Production Facilities Project, approval of the final mitigation plan would be a permit condition and prerequisite for construction or operation activities that would impact wetlands or other aquatic resources.

6. All land values have been updated for the FEIS.

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7. The second and third paragraphs of the second column on page 4-61 of the DEIS explain why the average difference in yield between irrigated and surface irrigated land is considered an appropriate estimate for calculating the impacts on yield from the loss of subirrigation. Strictly equating irrigated land with subirrigated land would tend to overestimate the impact of losing subirrigation because irrigation is more dependable than subirrigation. On the other hand, approximately 30 percent of the surface soils in the Saunders County cone of depression are highly permeable and existing crops rely heavily on subirrigation. In this case, the loss of subirrigation could have greater impacts on crop production than estimate by equating subirrigation to surface irrigation. The underestimate is considered to balance out the overestimate. A table of soil types in the Saunders County cone of depression has been added to the FEIS.

8. Page 5-6 – The major issues facing the project are listed. Once again I must insist that the major issue from LPNNRD is loss of sub-irrigation by area agriculture producers. I strongly feel this issue should be included in this major issue short list. 18

My congratulations on an excellent EIS. I hope the above listed comments will be addressed.

Sincerely,

John R. Miyoshi
General Manager

8. The major issues in the bulleted list on page 5-4 of the DEIS were those identified in the **original** scoping process. The issue of subirrigation was brought up later and was acknowledged in the second column on page 5-4.

LOWER PLATTE NORTH
NATURAL RESOURCES DISTRICT
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April 13, 2001

Rebecca Latka
U.S. Army Corps of Engineers
CENWO-PM-AE
215 North 17th Street
Omaha, NE 68102

Dear Ms. Latka,

The following are comments on the Environmental Impact Statement for the Platte West Water Production Facilities for the Metropolitan Utilities District.

1. **Extent of Sub-irrigated acres:** Figure 3-10 estimates the area of sub-irrigated land around the Platte West Well Field and shows the darkened area as ground water less than 10ft. The extent of this area is larger than illustrated. The Lower Platte North NRD has been monitoring irrigation wells in this area since 1987 and the area approximately one mile south of the Saunders County Platte West Well Field has averaged approximately seven feet to water, not greater than the 10 feet illustrated. MUD has a monitoring well (94-3) a half mile further south of the NRD monitoring well and this also shows a depth to water of approximately seven feet. West of this location the EIS shows another clear area implying depth to ground water is greater than 10 ft. The Lower Platte North NRD has another irrigation well in this area that we monitor and depth to water here is generally less than two feet. This is due in part to the confluence of Johnson and Clear Creeks in this area.

Figure 4-14 estimates the sub-irrigated area lost (1,119 acres) in Saunders County caused by the cone of depression from the Platte West Well Field. If this information is based on the sub-irrigation acres displayed in Figure 3-10 then this data also needs to be updated.

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1. Figures 3-10 and 4-14 have been revised to include the new data you provided.

2. Endangered Species, Pallid Sturgeon and Sturgeon Chub: The EIS estimates depleted flows in the Platte River for several different alternatives. The least environmental impact related to these fish species and the Piping Plover and Least Tern would be to expand the existing Missouri River Treatment Plant. Due to the reported high cost for pipeline construction this alternative was not considered further. The Biological Opinion of the Fish and Wildlife Service states that all of the discussed alternatives would, without mitigation, jeopardize the continued existence of the Pallid Sturgeon and Sturgeon Chub. This Natural Resources District along with other agencies and the Game and Parks Commission are cooperating with the University of Nebraska on doing a study of these two species to determine they current use of the Platte and Elkhorn Rivers. Will mitigation efforts located near the mouth of Platte and Missouri Rivers offset the potential loss of habitat and reproductive sites? Has mitigation of these species been done successfully in other parts of the United States? Since the University study is still on-going, these questions may not be answered for the next few years. With these kind of questions still unanswered, the least environmental impact of the listed alternatives would be with the Three-Way Combination. This likely would also have the least impact on the lose of wetlands and preserve the biological diversity in the Platte River valley. 2

Thank you for allowing me to comment on the Environmental Impact Study for the Metropolitan Utilities District. We all understand the need for good quality drinking water and in this case the Three-Way alternative may provide the least environmental impact.

Sincerely,

Larry Angle

Larry Angle
Water Resources Manager
angle@linux3.nrc.state.ne.us

2. Expanding the Missouri River (Florence) treatment plant was not selected for detailed analysis in the EIS because this alternative could not meet the need for water system redundancy (i.e., 62.8 MGD from a source other than the Missouri River) not because of high cost. The impact on water surface elevation in the Platte River from the Platte West alternative was given on page 4-14 of the DEIS. The conclusion of these analysis is that the flow depletion caused by the Platte West alternative would generally decrease water surface elevation by less than 0.5 inch. In their Biological Opinion (Appendix E of the DEIS), the U.S. Fish and Wildlife Service concluded the Platte West alternative might adversely impact the least tern and piping plover but would not jeopardize their continued existence. The Three-Way Combination would deplete flow in the Platte River 14 percent less than the Platte West alternative (page 4-21 of the DEIS). Assuming direct correlations between deceased flow, decrease water surface elevation, and degradation of habitat for the least tern and piping plover, then technically the Three-Way Combination would have less impact on these two species than Platte West. The EIS concluded the small changes in water surface elevation caused by the Platte West alternative would not likely be noticeable. Likewise, the even smaller difference between the Platte West alternative and the Three-Way Combination alternative would not likely be significant and would probably not be sufficient for FWS to issue a Biological Opinion for the Three-Way Combination alternative that was different from Platte West alternative.

   Last year, for the first time in decades, a young-of-the-year pallid sturgeon was found in the lower Missouri River. This capture was associated with a habitat modification and suggests habitat restoration, such as that proposed as mitigation for Platte River depletion, can benefit the pallid sturgeon.

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April 11, 2001

Mr. Kevin Tobin
Metropolitan Utilities District
3100 South 61st Avenue
Omaha, Nebraska 68106

Re: Revised DEIS for MUD's Platte West Water Production Facilities

Dear Mr. Tobin:

The Papio-Missouri River Natural Resources District (P-MRNMRD) supports the creation and operation of the Platte West Water Production Facilities by the Metropolitan Utilities District (MUD). It is our understanding that in order to meet the future demands of the system through 2030, MUD must identify sources for an additional 104 million gallons per day (MGD), of which 62.8 MGD must come from a source other than the Missouri River to provide for an acceptable level of reliability. The Draft Environmental Impact Statement (DEIS) dated February, 2001 presents numerous alternatives to achieve this goal.

The P-MRNRD concurs with the selected alternative to meet MUD's future needs, while at the same time limit environmental consequences. Water from the Platte River Aquifer is considered to be of high quality that will help to reduce treatment costs. It also contains the necessary capacity to meet the quantity and reliability requirements presented in the DEIS.

The DEIS outlines the measures necessary to mitigate the adverse environmental impacts resulting from the project. The P-MRNRD has no objection to the mitigation measures as proposed, except for those contained in our March 20, 2001 letter (attached). However, we foresee no difficulties in meeting floodplain regulations.

Furthermore, the project, both in terms of quality and quantity, is consistent with the P-MRNRD's Groundwater Management Plan.

In summary, the P-MRNRD strongly encourages approval of the Revised DEIS for MUD's Platte West Water Production Facilities as it helps provide for a cost-effective, reliable water supply for the Omaha Metropolitan Region.

If we can provide any other assistance, please contact me.

Optimistically,

Steven G. Oltmans
General Manager

Enclosure
cc: Rebecca J. Latka, USACE
SO GB/jb 32201 File. 184

Papio-Missouri River Natural Resources District Board of Directors

Fred Conley • John Conley • Melissa Gardner • Tim Heller
Richard Jansen • Tim Kraucek • Joseph Neary • Barbara Nichols • Peter Rubin • Rich Tesar
Steven G. Oltmans, General Manager

1. Your opinion is noted.

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March 20, 2001

Rebecca J. Latka
US Army Corps of Engineers
CENWO-PM-AE
215 North 17th Street
Omaha, Nebraska 68102

Re: Revised DEIS for Platte West Water Production Facilities

Dear Ms. Latka:

The Papio-Missouri River Natural Resources District (PMRNRD) recently received the draft EIS for the Platte West Water Production Facilities. Our only comment on the EIS is that the Floodplains and Floodways section of Chapter Four - Environmental Consequences and Mitigation (page 4-8) should be modified.

The section states that "These structures are not large enough to cause the water elevation in the floodplain or floodway during a flood event to be increased." This is not necessarily the case.

- A floodplain permit should be applied for from the appropriate authorities (e.g. Douglas and Sarpy County) for the project.
- For structures in the floodway a 'no-rise' certification needs to be provided.
- A map should be included in the EIS that shows where the structures are in relation to the floodway and floodplain boundaries.
- It should be stated that all structures will be constructed to meet the appropriate local floodplain regulations (i.e. minimum floor at least one feet above base flood).

Please contact me at the above letterhead address or phone number with any questions or concerns.

Sincerely,

Ben Higgins, CFM, PE
Water Resources Engineer

Cc: Marlin Petermann, Gerry Bowen (PMRNRD)

BH:jb:27201
Reach 10-2

Papio-Missouri River Natural Resources District Board of Directors

Fred Conley • John Conley • Melissa Gardner • Tim Heller
Richard Jansen • Tim Krajicek • Joseph Neary • Barbara Nichols • Peter Rubin • Rich Tesar
Steven G. Oltmans, General Manager

1. These suggestions have been incorporated into the FEIS.

METROPOLITAN AREA PLANNING AGENCY
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Papillion / La Vista Public Schools
Papio - Missouri River Natural Resources District
Pony Creek Drainage District
Ralston Public Schools
Valley Fire Protection District #5

March 29, 2001

Rebecca J. Latka
U.S. Army Corps of Engineers
CENWO-PM-AE
215 North 17th Street
Omaha, NE 68102

RE: MAPA CASE #2001-023 - MUD
Platte West Water Production Facilities-DEIS

Dear Ms. Latka:

Enclosed is a copy of the MAPA Board action concerning the project listed above.

MAPA recognizes the need for this project. However the review committee forwards the following comments:
Minimize disruption to the ecosystem,
Mitigate source point pollution and,
Reduce adverse impact to wetlands.

Thank you for the opportunity to review this project.

Sincerely,

Alene A. Ramsey
Administrative Services Director

AAR/drv

Enclosures

1. Your opinions are noted.

OMAHA-COUNCIL BLUFFS METROPOLITAN AREA PLANNING AGENCY

RESOLUTION NUMBER 2001 - 030

WHEREAS, the members of the Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA) Board of Directors have been formally designated by their respective legislative bodies to act as the official representative in planning matters of mutual concern; and

WHEREAS, the following application has been submitted to MAPA in accordance with Executive Order 12372 for intergovernmental review and coordination; and

WHEREAS, MAPA has given due consideration to said project; therefore be it

RESOLVED, that MAPA finds the project to be consistent with area-wide planning and forwards favorable comment to the applicant.

MAPA CASE #2001-023 MUD
Platte West Water Production Facilities-DEIS

PASSED this 29th day of March, 2001

Clare Duda, Chairman
MAPA Board of Directors

2. Your resolution is noted.

SAUNDERS COUNTY ATTORNEY
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433 NORTH CHESTNUT
WAHOO, NEBRASKA 68066
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FAX (402) 443 - 4527

THOMAS S. JAUDZEMIS
County Attorney

GRANT A. PORTER
Deputy County Attorney

ANDREW LANGE
Deputy County Attorney

April 12, 2001

Ms. Rebecca J. Latka
U.S. Army Corps of Engineers
Planning Division
215 North 17th Street
Omaha, NE 68102
FAX: (402)221-4886

Mr. Jerry C. Folkers
U.S. Army Corps of Engineers
Operations Division
215 North 17th Street
Omaha, NE 68102
FAX: (402)221-4939

RE: MUD DRAFT EIS

Dear Ms. Latka and Mr. Folkers:

Thank you for the opportunity to review the proposed MUD Platte West Project this morning. The following comments and enclosed maps and data are provided for the Corps and Burns and McDonnell to review for the EIS process. Clearly, a new draft EIS is needed.

The National Environmental Policy Act of 1969, as amended (NEPA) requires that the subject environmental impact statement (EIS) regorously explore and objectively evaluate all reasonable alternatives (i.e. including without limitation those that are practical or feasible from the technical and economic standpoint and using common use rather than simply desirable from the standpoint of the applicant, (See 40 CFR 1502.14(a) and Federal Register, vol. 46, no. 55, March 23, 1981). The subject EIS completely fails to satisfy this fundamental requirement. 1

MUD's proposed Platte West and/or Platte North alternatives 2

1. The evaluation of alternatives began with 32 structural alternatives plus conservation and no federal action. This list was compiled from previous water supplies considered by the District, plus new alternatives proposed by the Corps, the Corp's third-party contractor, and cooperating agencies including Saunders County. This list meets the requirements of 40 CFR 1502.14(a) for consideration of all reasonable alternatives. No suggestions received since this list was formulated were considered reasonable.

2. All of the alternatives carried through the EIS could be constructed in such a way as to be in compliance with the National Pollutant Discharge Elimination System (NPDES) permit requirements, the Endangered Species Act, and the Migratory Bird Act. Wastewater from the proposed treatment plant discharged into water of the State of Nebraska would have to comply with Nebraska Water Quality regulations to obtain the NPDES permit required to operate the plant. The impacts on receiving streams of treatment plant discharge were given due consideration in keeping with 40 CFR 1502.15 and 40 CFR 6.602. Consultation with FWS resulted in a Biological Opinion in compliance with the Endangered Species Act. The FWS issued a "no-jeopardy opinion" provided implementation of appropriate mitigation (Appendix E). Mitigation for impacts to wetlands would prevent infringement of the Migratory Bird Act.

The NEPA process is designed to provide the disclosure of environmental impacts for the public and decision makers. The current DEIS complies with NEPA regulations and guidelines.

are not the least environmentally damaging practicable alternative(s), i.e., they violate NPDES permit requirements, the Endangered Species Act and the Migratory Bird Treaty Act, they will cause a significant degradation of the Elk Horn and Platte Rivers and they fail to include appropriate and practicable steps to minimize potential adverse impacts of the discharge on the aquatic ecosystem. There has not been any serious effort to do an environmental analysis and/or hydrologic balance for a NPDES Permit into the Elk Horn and/or Platte River for the Platte North or Platte West project. The current DEIS completely fails to comply with NEPA.

3

The DEIS fails to study alternatives with acreages that are similar to the Platte West alternative. In fact, the Figure 2-1 fails to depict the acreage studied for alternatives 11 and 7 as it previously did in the May 2000 draft Figure 2-1. The current Figure 2-1 also fails to depict the use of dual pipelines for alternatives 5, 6, 7 and 11. This use of duel pipelines is not needed and increases their costs for the DEIS and makes them less economic from the standpoint of MUD.

4

Saunders County requires by law that the mitigation of lost or harmed wetlands and subirrigated lands in Saunders County be replaced in Saunders County on an acre for acre basis. This must be done within the area to be damaged by the MUD proposed cone of depression within Saunders County. Mitigation in Sarpy county for damaged, harmed and lost wetlands and subirrigated lands in Saunders County is not helpful or acceptable to Saunders County. Mitigation in Sarpy County will not make up for wetlands, subirrigated land, endangered species and migratory waterfowl harmed or destroyed in Saunders County.

The estimated cost and water needs for installation use and ongoing maintenance of tape irrigation in Saunders County for the life of the Platte West well field is too low and unacceptable.

5

The "Abstract" in the DEIS and the "Order" from the State of Nebraska for MUD reference a maximum pumping capacity for MUD at the Platte West well field of 104 mgd; however, the text, analysis, hydrology, showing document and U.S. Fish and Wildlife analysis study a mere 100 mgd maximum and 50 mgd average.

6

By utilizing acreage comparable to that used in the Platte West proposed alternatives , 6, 7 and/or 11 can supply the requisite 104 mgd maximum from vertical wells. No one can dispute this obvious fact just as no one can dispute that the

3. The DEIS did consider alternatives with well fields of similar acreage to the Platte West alternative well field. These were the Fort Calhoun and California Bend alternatives with 2,250 and 3,620 acres. The area of the well field for the Platte South 2 alternative (number 7) has been restored in the FEIS. The alternative shown as number 11 on Figure 2-1 is the Missouri River South intake alternative and does not have sufficient acreage for a well field. Separate pipelines from the treatment plant to each of the distribution points is standard water system design practice to:
   - protect the quality of the treated water by allowing one line to be shut down during times of low demand (prevents stagnation in the pipe)
   - provide flexible and redundant operation
   - provide for phased construction

   Less concern is shown for the raw water pipeline because the water has not yet been treated. Although dual treated water transmission pipelines would cost more than a single larger transmission line (i.e., $360 per foot for single 72-inch pipe versus $480 per foot for dual 54-inch pipes), cost was not a factor in selecting alternatives for detailed consideration in the EIS.

4. Only a rough estimate for the cost of mitigating subirrigation with subsurface tape irrigation was given because:
   - as discussed in the Summary of the DEIS, the applicability of the Saunders County resolution requiring in-kind, in-county mitigation for harmed wetlands and lost subirrigation caused by the removal of groundwater by non-agricultural interests to the District is an unresolved issue
   - the capital cost of subsurface tape irrigation substantially exceeds the cost of surface irrigation
   - the capital cost of subsurface tape irrigation substantially exceeds the difference in the market value of between irrigated and non-irrigated land

   For these reasons, the eventual installation of subsurface tape irrigation as mitigation for lost subirrigation is unlikely. In addition:
   - mitigation costs are a small part of overall project cost
   - project costs were not a factor in selecting alternatives for evaluation in the EIS

5. The annual withdrawal from the Platte West alternative well field was modeled based on an average of 50 MGD for an annual total of 56,000 AF. This withdrawal rate was based on the production rate of drinking water and did not consider the additional four percent of water that would become treatment residual. The withdrawal rate modeled, therefore, is slightly less than the District's permitted annual withdrawal of 58,308 AF (1.9 billion gallons, 52 MGD). The calculation of flow depletion from the Platte River, however, did not include the return to the Platte River of the treatment residual discharged into the Platte or Elkhorn River. Because not all of the water removed from the well field is replaced by induced infiltration, the omission of the return flow in calculating flow depletions was a greater error than the underestimate of withdrawal. The modeled depletions, therefore, are slight overestimates.

   Increasing the withdrawal rate by four percent would increase the *volume* of the cone of depression by four percent. Such an increase would not have a noticeable affect on the *area* of land potentially affected by drawdown. In addition, mitigation for impacts caused by drawdown would be based on actual impacts measured in the field. Modifying the

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analysis to correct the discrepancy, therefore, would not significantly affect the predicted impacts or the comparisons among the alternatives.

6. The acreage of a potential well field in an alluvial aquifer is only one factor that determines yield. Other factors include the saturated thickness of the aquifer, how easily water moves through the aquifer, the rate of recharge from precipitation, and how easily water can infiltrate from the river into the aquifer. Previous studies indicated the capacity of the existing Platte South well field cannot be expanded using only vertical wells. Using horizontal wells could only increase the yield of the Platte South well field by 40 MGD, not the 100 MGD necessary to meet the need for the project. The Platte South 2 site was investigated in the early 1970's (called Springfield site at that time). The site extended from the Platte South well field for a distance of approximately five miles. Only two sections of the entire site were deemed suitable for well field development in the 1972 study because sand and gravel operations degraded the aquifer for water production by "leaving vast deposits of 'washed out fines'" that plug up the spaces between the sand and gravel particles in the aquifer and inhibit the movement of water through the aquifer. The combined yield of these two areas using vertical wells was estimated to be 61 MGD. Since 1972, sand and gravel operations on this site have expanded and further degraded the aquifer. The production from this site of 100 MGD, therefore, would require the use of horizontal collector wells.

   The site shown of Figure 2-1 as number 11 is for a proposed surface water intake on the Missouri River. A well field could conceivably be developed at this location; however, such a well field would not be superior to the Dodge Park or California Bend alternatives already included in the EIS. In the *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, the answer to question 2 states: "When there are potentially a very large number of alternatives, only a reasonable number of examples, covering the *full spectrum* of alternatives, must be analyzed and compared in the EIS." (46 FR 18027). The 34 alternatives evaluated in this EIS represent a reasonable number of alternatives and cover the full spectrum of reasonable alternatives.

water could also be obtained from horizontal wells from alternatives 5, 6, 7 and/or 11. There is no excuse for these failures.

Likewise, it is indefensible and a misrepresentation to the public, the Corps and the cooperating agencies to pad the cost of the 3-Way Combination with new plants and dual pipelines for the Missouri River and Platte South portions of the 3-Way Combination. 7

The Platte West and Platte North alternatives are not only totally unpracticable they are also the most expensive alternatives. These alternatives can be forced to stop pumping and supplying water to the existing and projected 2030 MUD service area (Figure 1-2) in times of drought by junior and senior domestic and agricultural water users pursuant to Nebraska Constitution Article XV Section 6 and Neb. Rev. Stat. §§46-204, 46-613 and 46-648 because over 50% of MUD's requested 19 billion gallons of water per year is for commercial, industrial and agricultural use. With regard to the portion of the 19 billion gallons of water that MUD would supply for domestic use in times of drought, MUD must pay for this preference pursuant to Nebraska Constitution Article XV Section 6. This has not been costed in the DEIS! 8

The DEIS recognizes the value of Lincoln having verticle and horizontal wells on contiguous property along the Platte River (see page 1-21) but refuses to recognize this benefit and further study alternatives 5 through 18. 9

The requirements of NEPA are violated by Burns and McDonnell studying Platte North as a viable alternative "groundwater under the influence of surface water" but refusing to study other alternatives that may be influenced by "surface water" including, but not limited to alternatives 5, 7, 11 and 12 through 18. The DEIS is also defective for failing to study the use of reservoirs in conjunction with alternatives 8 through 18. The DEIS recognizes the value of utilizing reservoirs for Kansas City (see 1-21) to "diversify sources" but fails to recognize this value for MUD along the Missouri River. Another draft EIS which complies with NEPA is needed. 10

The County of Saunders, the Lower Platte North NRD and cities such as Yutan have all expressed an interest in utilizing the option to purchase water at cost from the seven permanent production wells which are the subject of the Construction Permit 11

7. Please see the response to comment 3.

8. The DEIS incorrectly stated that the 1,000-cfs water right had priority over upstream agricultural and industrial users. Under low flow conditions, the Platte West or Platte North alternatives could have to curtail pumping if flow at Lincoln's Ashland well field drops below 700 cfs (assuming Lincoln's pending water right is approved). Flows in the Platte River in the vicinity of the Platte West and Ashland well fields less than 1,000 cfs occur infrequently (i.e., less than 1 percent of the time) and usually last only a few days at a time (see Chapter 4 of FEIS). Because the low flow event would probably be over before the condemnation proceedings could be completed to compel the sale of water from agricultural and industrial users with senior water rights, the District would be unlikely to purchase water from upstream users under these conditions. No costs for such purchases, therefore, are included in the cost of the alternatives. In the event pumping from the Platte West alternative well field would need to be curtailed, the District's likely course of action would be to implement the Water Conservation Emergency Operation Plan and rely on Platte South and the Missouri River. The Platte River may not a 100 percent reliable source of water; however, no single water supply can meet that standard. The reliability criterion for evaluating the alternatives in Chapter 2 applies to the resulting combination of water supplies, not to the alternatives individually.

9. The redundancy for the City of Lincoln's municipal water sources have been reevaluated and the vertical well field and horizontal collector wells are no longer considered to be redundant sources because a single contamination event could cause the shut down of both well systems. This change does not affect the reasons for deleting alternatives 5 through 18 from further consideration in the EIS as indicated in Chapter 2. The FEIS and Appendix A have been revised accordingly.

10. Alternative 5 (expansion of Platte South with horizontal collector wells) could not supply the need for a maximum yield of 100 MGD and was eliminated from detailed consideration in the EIS. Alternative 7 (a new Platte South well field) could only meet the need for a maximum yield of 100 MGD through the use of horizontal collector wells. The Platte North alternative was selected over the New Platte South alternative as the representative from the Platte River alluvial aquifer group because the Platte North well field would contain some vertical wells and, therefore, would produce water of superior quality. For Kansas City, Missouri, the reservoir under consideration is a large Corps of Engineers' lake that would be a source independent of the Missouri River. This use of a reservoir is not analogous to using a reservoir to store water from the Missouri River. For the particular alternative suggested in this comment, the storage reservoir would need to contain a 14-day supply of 62.8 MGD per day or 2,700 acre-feet of water to provide a reasonable level of back-up. With an average depth of 6 feet, such a reservoir would cover 500 acres. The Corps notes that in the original DEIS the Missouri River-based alternatives were substantially more expensive than the Platte River aquifer-based alternatives. The addition of a 500-acre lake would add many tens of millions of dollars to the capital cost, operation cost would be further increased because of the additional pumping needed to replace seepage and evaporative losses, and the environmental impacts of inundating 500+ acres of land would offset the otherwise minimal impacts of the Missouri River alternatives. The Corp considers a Missouri River intake with a large storage reservoir alternative to be unreasonable in the sense that the alternative is not "practical or feasible from the technical or economic standpoint" (46 FR 55 p18927). The Corps is unaware of

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a suitable site in the vicinity of Omaha for a reservoir with a yield of approximately 50 MGD that could serve as an independent water supply. The Corps is satisfied that the number and scope of alternatives considered in the DEIS complies with the letter and spirit of NEPA and will not consider additional alternatives or another DEIS at this time.

11. The Service area depicted on Figure 2-1 is only an estimate of what the service area could look like in 30 years. If the service area grows faster than anticipated (e.g., extends into Saunders County) or additional wholesale customers are added (e.g., Lower Platte North Natural Resources District), this only means that the demand from the District will reach capacity sooner than anticipated. The District's current wholesale customers include Fort Calhoun, Carter Lake, Iowa, and the Papio-Missouri River Natural Resources District and account for 2 percent of the water supplied by the District or approximately 2 MGD. Assuming the amount of water supplied to Saunders County would be similar to the total of the current wholesale customers, then the projected water demand would be over estimated by 2 percent. A 2 percent error is not significant relative to a 30-year projection. Further, 7/42^{nds} of 18.25 billion gallons per year is 3.04 billion gallons per year or an average of 8.33 MGD. The Corps is unaware of any data to support a level of demand by Saunders County governmental sub-units that is over 4 times the demand of the District's current wholesale customers.

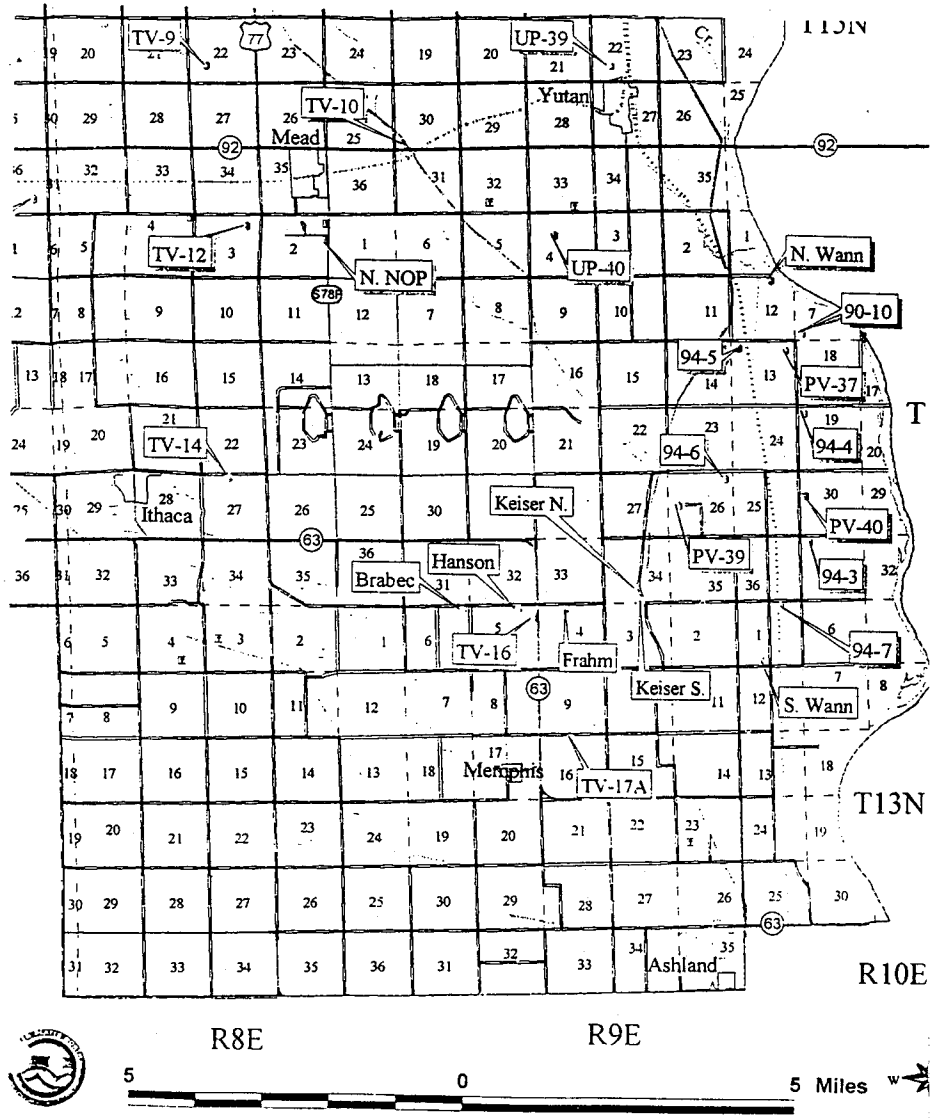
    The 5 March 1995 Construction Permit from Saunders County to "Construct seven permanent water production wells, monitoring wells and necessary access roadways..." reads "9. M.U.D. will agree to supply gas and water to governmental sub-divisions of Saunders County, on cost basis, as permitted by law." The proposition that this condition reserves a particular amount of water from the Platte West alternative well field for Saunders County governmental subunits is an unresolved issue beyond the scope of the EIS. The issues raised in this comment, therefore, are not sufficient to disqualify the Platte West alternative from further study.

MUD applied for and obtained from Saunders County dated March 15, 1995. MUD is aware of Saunders County's and the Lower Platte North NRD's desire to maintain their option to purchase 7/42's of the 19 billion gallons of water per year per the sworn testimony of their representatives before the Department of Natural Resources in which MUD participated on October 25 and 26, 2000. The statements and premise that MUD can deliver 104 mgd maximum, 52 mgd average and 19 billion gallons of water per year from the proposed Platte West alternative to the MUD service area depicted on Figure 1-2 of the DEIS is false. The Platte West alternative must therefore be rejected from further study.

Sincerely,

Grant A. Porter

Ground Water Level Network Southeast LPNNRD



WELL #	LEGAL	REG. NO.	COUNTY	AQUIFER	UTM_EAST	UTM_NORTH	Fall_1985	Spring_1986	Fall_1986	Spring_1987	Fall_1987	Spring_1988	Fall_1988	Spring_1989	Fall_1989	Spring_1990	Fall_1990	Spring_1991	Fall_1991	Spring_1992	Fall_1992
							F85	S86	F86	S87	F87	S88	F88	S89	F89	S90	F90	S91	F91	S92	F92
PV- 1	17N-2E-16BABB	G-031883	Colfax	Platte V.	649578	4590558	17.0	17.8	17.0	16.5	16.9	17.5	19.8	19.6	20.4	20.3	20.3	20.4	20.9	20.6	18.8
PV- 2	17N-2E-23CC	G-073176	Colfax	Platte V.	652482	4587432															
PV- 5	17N-3E-09CCBB	G-035869	Colfax	Platte V.	658866	4591166		10.5	8.4	4.3	10.0	10.1	12.4	11.1	11.6	11.5	11.3	10.6	12.5	10.8	9.8
PV- 5A	17N-3E-09CCAA	G-035868	Colfax	Platte V.	659253	4591170															9.4
PV- 6	17N-3E-12AAAA	G-073388	Colfax	Platte V.	665231	4592473															
PV- 7	17N-3E-24CCCC	G-033758	Colfax	Platte V.	663762	4587711	5.2	3.7	6.0	3.6	6.5	5.8	6.9	6.2	6.5	5.7	5.7	5.0	6.8	5.6	5.8
PV- 8	17N-4E-04AA	G-072044	Colfax	Platte V.	669755	4593907															
PV- 9	17N-5E-05CCCC	G-010075	Dodge	Platte V.	676516	4592833	4.5	2.7	4.6	1.7	4.9	4.1	6.3	5.3	6.2	5.3	6.3	5.0	7.3	4.5	5.2
PV-10	18N-5E-22DCCB	G-002868	Dodge	Platte V.	680386	4597975	6.6	5.7	6.0	5.1	6.4	6.2	7.0	6.5	6.9	6.4	7.7	6.6	8.9	6.6	6.4
PV-11	18N-5E-25AO	G-076757	Dodge	Platte V.	684036	4597332															
PV-13	18N-6E-26CCDD	G-015705	Dodge	Platte V.	691240	4596323		13.6	12.4	5.0	11.8	13.1	16.6	15.7	16.9	16.3	16.6	16.0	16.7	15.3	11.8
PV-14	17N-6E-10BCBB	G-001279	Dodge	Platte V.	689417	4592588	5.8	3.3	5.2	3.1	6.1	5.4	6.9	6.0	6.6	5.6	6.9	4.5	7.3	4.7	5.1
PV-15	17N-7E-06BC	G-071659	Dodge	Platte V.	694229	4594039															
PV-17	17N-8E-08CCCC	G-033623	Dodge	Platte V.	703931	4591818	8.0	7.9	7.2	6.0	6.7	7.1	9.1	8.7	8.5	8.4	9.1	8.4	8.1	6.4	6.5
PV-18	18N-8E-36CBBB	G-001994	Dodge	Platte V.	710149	4595767	5.9	4.1	4.7	4.8	6.0	6.8	7.5	7.9	7.4	7.5	8.0	6.2	7.6	6.3	5.4
PV-19	17N-8E-14CCAB	A-010411J	Dodge	Platte V.	708929	4590712	17.3	17.4	16.2	14.6	23.6	26.0	22.8	21.6	22.1	21.5	22.3	19.9	19.6	18.2	18.0
PV-20	17N-9E-07CCBB	NR	Dodge	Platte V.	711985	4592365	5.9	4.8	3.8	4.4	6.8	7.9	9.9	10.7	10.4	10.1	9.6	9.5	8.4	5.1	5.7
PV-21	17N-9E-19DDDD	A-010411S	Dodge	Platte V.	713464	4588976	6.1	4.8	5.1	8.4	6.0	7.4	9.9	10.2	10.1	8.7	10.1	9.3	8.3	6.5	6.2
PV-22	17N-9E-28ABCD	NR	Dodge	Platte V.	716106	4588517		5.5	6.0	6.1	6.5	6.7	8.0	7.7	7.8	7.1	8.4	6.7	7.9	6.5	6.0
PV-23	17N-9E-33BB	G-052198	Dodge	Platte V.	715229	4586997															
PV-24	16N-1E-17CBCC	G-001759	Butler	Platte V.	638016	4579406	4.9	4.6	3.5	4.3	3.0	4.4	7.1	6.6	8.6	7.6	8.2	7.2	7.9	5.6	3.8
PV-24A	16N-1E-17CBDD	G-068733	Butler	Platte V.	638411	4579471															3.3
PV-25	16N-1E-32AAAD	A-007726	Butler	Platte V.	639692	4575483	36.5	36.5	35.6	34.0	35.0	34.5	41.2	39.0	44.6	42.1	44.7	41.8	43.1	41.0	37.8
PV-26	16N-1E-21DD	G-062637	Butler	Platte V.	640862	4577949															
PV-27	16N-2E-19CCAD	G-002739	Butler	Platte V.	646460	4577902	12.7	12.3	10.5	11.2	9.3	11.7	15.3	15.5	18.1	18.2	19.4	19.3	18.8	18.5	16.4
PV-29	16N-2E-14CC	G-047402	Butler	Platte V.	652764	4579719															
PV-31	16N-3E-17AADC	G-015788	Butler	Platte V.	658719	4580635	3.5	2.2	3.1	3.2	3.2	2.8	6.9	5.7	7.9	6.6	8.2	7.0	7.9	5.4	5.0
PV-32	16N-5E-11AA	G-071878	Butler	Platte V.	663705	4582332															
PV-34	17N-5E-19CCCB	G-057820	Saunders	Platte V.	674999	4588037	12.2	14.1	11.5	12.1	10.1	10.7	12.2	11.7	12.0	11.8	13.0	12.4	12.8	11.6	11.4
PV-35	17N-5E-21AB	G-070048 X	Saunders	Platte V.																	
PV-35B	17N-5E-21AB	G-070048 II	Saunders	Platte V.	678997	4589174															
PV-36	17N-6E-21CABB	G-057179	Saunders	Platte V.	688247	4588912	5.5	5.5	4.9	6.0	6.1	5.2	5.8	5.6	5.8	5.4	6.3	4.8	4.3	5.3	4.9
PV-37	14N-9E-13AACA	G-066531	Saunders	Platte V.	722153	4563034		5.3	4.5	6.0	4.6	4.7	6.4	5.6	5.9	4.8	6.3	4.7	6.0	5.1	4.8
PV-39	14N-9E-26CBAB	G-053630	Saunders	Platte V.	719423	4559139		0.1	0.0	0.0	0.0	0.0	1.3	0.6	1.1	0.4	1.4	0.3	1.1	0.5	0.3
PV-40	14N-10E-30BCCB	G-051424	Saunders	Platte V.	722460	4559437														4.2	4.1
N.Wann	T14N-R9E-12AB	G-098487	Saunders	Platte V.	721687	4564857															
S.Wann	T13N-R9E-01CD	G-098492	Saunders	Platte V.	721661	4555189															
90-10	T14N-R10E-07CC	G-102612	Saunders	Platte V.	722338	4563270															
94-3	T14N-R10E-31BB	G-100702	Saunders	Platte V.	722577	4558430															
94-4	T14N-R10E-19BB	G-100703	Saunders	Platte V.	722404	4561569															
94-5	T14N-R9E-13BB	G-100704	Saunders	Platte V.	720745	4563211															
94-6	T14N-R9E-26AA	G-100705	Saunders	Platte V.	720808	4559986															
94-7	T13N-R9E-01AB	G-100706	Saunders	Platte V.	721939	4556795															

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WELL #	Spring_1991	Fall_1991	Spring_1992	Fall_1992	Spring_1993	Fall_1993	Spring_1994	Fall_1994	Spring_1995	Fall_1995	Spring_1996	Fall_1996	Spring_1997	Fall_1997	Spring_1998	Fall_1998	Spring_1999	Fall_1999	Spring_2000	Fall_2000
	S93	F93	S94	F94	S95	F95	S96	F96	S97	F97	S98	F98	S99	F99	S00	F00				
PV- 1	18.7	16.6	16.2	17.1	16.9	17.4	17.9	16.0	16.6	17.4	17.0	16.9	16.9	16.0	16.7	18.8				
PV- 2	2.6	3.5	4.0	5.2	3.0	6.2	6.1	4.8	4.5	5.5	2.8	5.2	3.8	5.7	5.9	7.2				
PV- 5	8.4	8.8	10.2	11.1	9.9	11.7	12.4	9.8	9.9	11.8	9.2	11.7	10.1	10.2	10.9	12.4				
PV- 5A	8.2	8.0	9.9	10.5	9.2	11.2	11.7	9.2	9.4	11.2	8.9	11.0	9.3	9.6	10.2	11.8				
PV- 6			13.1	14.0	13.5	14.5	14.6	13.0	13.8	14.9	14.2	14.1	14.0	13.6	14.5	16.3				
PV- 7	3.4	5.3	5.2	6.1	3.7	6.2	5.6	6.2	5.5	5.8	4.0	5.5	4.3	6.5	6.0	6.5				
PV- 8	10.1	9.8	9.9	10.6	7.7	11.9	12.0	9.7	10.6	11.4	7.1	10.8	7.4	10.7	11.4	13.7				
PV- 9	2.3	4.2	4.0	4.7	1.9	6.2	5.2	4.5	2.7	4.7	2.3	4.5	1.9	5.6	4.9	6.1				
PV-10	4.9	5.9	5.6	7.1	4.6	7.3	6.3	5.9	4.8	5.5	4.3	5.3	4.1	6.2	5.9	6.3				
PV-11			7.3	9.3	7.0	10.5	9.6	7.5	7.9	7.8	4.8	7.5	5.6	9.0	9.0	9.7				
PV-13	8.8	9.0	12.3	13.3	11.4	14.8	14.4	12.2	12.9	11.7	5.6	11.6	6.6	13.2	14.0	14.1				
PV-14	3.2	5.2	5.4	6.1	4.5	6.7	5.7	6.0	4.3	4.8	3.6	5.1	3.1	6.7	6.0	6.6				
PV-15	3.7	6.3	6.9	7.3	4.5	8.3	7.5	6.9	5.6	5.2	2.6	6.1	2.9	7.7	7.4	7.7				
PV-17	5.7	5.6	6.5	7.5	6.6	7.6	7.7	7.5	7.3	6.8	5.1	5.5	5.2	7.2	7.7	8.5				
PV-18	5.3	6.9	7.4	7.6	6.0	8.1	7.9	8.0	7.1	7.1	4.9	7.2	4.6	8.0	8.2	8.6				
PV-19	17.0	15.4	15.0	18.4	19.5	18.7	20.1	20.3	20.6	22.6	18.0	16.0	15.6	17.6	18.2	19.1				
PV-20	4.1	5.0	7.4	10.2	7.0	8.2	8.4	8.9	9.9	8.7	6.0	6.4	3.9	7.6	8.7	10.2				
PV-21	7.8	5.6	8.5	12.5	7.5	11.2	8.5	10.2	9.9	9.2	9.0	8.7	6.0	8.9	12.8	11.7				
PV-22	5.4	6.6	7.3	7.8	5.8	8.6	7.4	8.0	7.2	22.5	18.6	7.1	5.1	7.8	8.3	8.1				
PV-23			7.4	8.8	5.9	10.1	8.1	9.0	7.5	8.5	7.3	7.7	4.7	9.0	9.4	9.5				
PV-24	2.5	3.6	4.1	4.9	3.4	5.3	5.3	5.1	4.7	6.1	3.7	5.0	3.6	5.6	5.2	7.3				
PV-24A	2.0	3.2	3.9	4.6	3.4	5.1	5.4	4.7	4.6	6.1	3.8	5.1	3.9	5.2	5.2	7.4				
PV-25	36.5	35.1	33.6	36.0	34.7	38.7	37.0	37.1	36.7	39.8	38.0	38.6	37.0	38.7	35.2	40.8				
PV-26			16.7	17.5	16.9	18.1	18.9	17.3	17.8	19.7	18.3	18.9	18.5	17.7	17.3	20.9				
PV-27	15.2	12.6	12.1	13.5	11.7	13.5	13.8	11.8	12.0	14.4	12.4	13.7	13.1	12.2	12.5	15.6				
PV-29	5.5	5.9	6.1	6.9	3.4	7.6	7.1	6.4	5.5	6.9	4.1	6.4	4.6	7.7	7.3	9.7				
PV-31	3.7	3.2	3.1	3.6	1.2	4.5	3.9	3.9	3.1	4.7	2.2	3.5	2.2	4.5	3.8	6.8				
PV-32			4.0	5.1	1.6	6.1	5.6	4.9	4.1	4.7	2.7	4.5	2.7	6.4	4.8	7.3				
PV-34	9.8	10.0	10.4	10.9	10.1	11.4	11.1	10.3	10.6	10.8	9.1	10.2	9.9	10.7	10.9	11.9				
PV-35			9.5	10.8	8.1	11.7	5.9	12.6	9.4	10.2	9.5									
PV-35B											8.1	11.3	10.5	12.5	12.0	12.6				
PV-36	3.8	5.3	5.4	5.5	4.5	5.5	5.3	5.8	4.5	5.3	4.1	4.8	3.9	5.6	5.3	5.3				
PV-37	4.1	5.2	5.3	5.7	4.5	6.5	5.9	6.4	5.2	5.3	5.1	5.2	4.2	6.3	5.6	5.0				
PV-39	0.0	0.0	0.0	0.3	0.0	1.7	0.9	1.3	0.4	0.6	0.4	0.1	0.1	0.9	0.5	0.6				
PV-40	2.7	3.9	4.4	5.7	3.3	6.9	5.7	6.5	4.2	4.2	3.9	4.4	2.9	6.6	5.2	5.6				
N.Wann												2.7	2.2	5.3	3.0	2.8				
S.Wann												4.9	3.5	6.7	5.9	6.8				
90-10						4.8	4.3	4.8	3.6	3.8	3.6	3.7	2.8	4.1	4.1	3.5				
94-3						6.6	5.6	6.3	4.2	4.2	3.5	4.3	2.5	6.4	5.0	5.7				
94-4						5.2	4.1	5.0	3.1	3.3	3.2	3.2	2.4	5.1	3.8	3.2				
94-5						4.3	4.4	4.7	3.9	3.8	3.7	3.5	2.8	4.0	3.9	3.6				
94-6						3.0	2.0	2.7	1.0	1.1	1.1	1.0	0.3	2.6	1.5	1.4				
94-7						8.6	8.1	8.4	6.7	6.7	5.1	6.4	4.3	8.3	7.2	8.1				

LOWER LOUP BASIN

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April 13, 2001

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Dear Ms. Latka and Mr. Folkers:

This letter sets forth some of Saunders County's comments regarding the Metropolitan Utilities District of Omaha's ("MUD") proposed Platte West well field ("PW") which would be located on 2,230 acres of land, straddling the Platte River, in Saunders and Douglas Counties. Saunders County incorporates all of its previous written and oral comments, memorandums, letters and exhibits on prior drafts of the EIS concerning the MUD PW project to the Corps concerning the January 1999 Draft EIS through the present and the Lower Platte North NRD's March 21, 2001 comments by this reference as if fully set forth hereinafter in their entirety. Saunders County reserves the right to amend and/or supplement these comments. 1

The EIS incorrectly states (4-13) that Nebraska statutes give highest preference to domestic and municipal uses. This is a blatant misrepresentation in that no preference is given to municipal use. Neb. Rev. Stat. §46-204 and §46-613 as well as the Nebraska Constitution Article XV Sec. 6 provide that domestic purposes shall have preference over those claiming it for any 2

1. Comments received from Saunders County from March 1999 through June 2001 and responses are included in Appendix I.

2. The DEIS incorrectly stated that the 1,000-cfs water right had priority over upstream agricultural and industrial users. Under low flow conditions, the Platte West or Platte North alternatives could have to curtail pumping if flow at Lincoln's Ashland well field drops below 700 cfs (assuming Lincoln's pending water right is approved). Flows in the Platte River in the vicinity of the Platte West and Ashland well fields less than 1,000 cfs occur infrequently (i.e., less than 1 percent of the time) and usually last only a few days at a time (see Chapter 4 of FEIS). Because the low flow event would probably be over before the condemnation proceedings could be completed to compel the sale of water from agricultural and industrial users with senior water rights, the District would be unlikely to purchase water from upstream users under these conditions. No costs for such purchases, therefore, are included in the cost of the alternatives. In the event pumping from the Platte West alternative well field would need to be curtailed, the District's likely course of action would be to implement the Water Conservation Emergency Operation Plan (see Chapter 1) and rely on Platte South and the Missouri River. The Platte River may not a 100 percent reliable source of water, however, no single water supply can meet that standard. The reliability criterion for evaluating the alternatives in Chapter 2 applies to the resulting combination of water supplies, not to the alternatives individually.

other purpose, and those using the water for agricultural purposes shall have the preference over those using the same for manufacturing purposes. There is absolutely no preference given at all for "municipal uses". Neb. Rev. Stat. §46-648 provides that the use of water pursuant to the Nebraska Municipal and Rural Domestic Ground Water Transfers Permit Act shall be subject to and governed by Neb. Rev. Stat. §46-613. MUD seeks to withdraw and transfer water pursuant to the Municipal Permit Act. Neb. Rev. Stat. §46-613 provides that preference in the use of water shall be given for domestic purposes over any other purpose and use of water for agricultural purposes shall have preference over manufacturing or industrial purposes. Neb. Rev. Stat. §46-677(2) defines industrial purposes to include manufacturing, commercial, power generation and maintenance of the turf of a golf course. Neb. Rev. Stat. §46-204 provides that water for domestic purposes shall have preference over any other purpose and water for agricultural purposes shall have preference over manufacturing purposes. Over 50% of the water MUD will use is for commercial, industrial and manufacturing uses (Figure 1-1). The Nebraska Constitution Article XV Sec. 6 requires that "no inferior right to the use of the waters of this state shall be acquired by a superior right without just compensation therefore to the inferior user". The EIS fails to provide cost figures for said just compensation.

The EIS is incorrect in stating that "Because the District is a municipal water supplier, upstream agricultural and industrial water users could be required to stop using Platte River water so that 1000 cfs would be maintained in the Platte River at the Platte West well field". (4-13, 4-14). Article XV Section 6 of the Nebraska Constitution, Neb. Rev. Stat. §§46-204, 46-613 and 46-648 prohibit MUD from asserting any preference right for water for commercial, industrial and manufacturing uses against upstream agricultural users and senior industrial users. MUD Platte North and Platte West alternatives must be eliminated from consideration as stand alone alternatives because they cannot be depended on for a reliable supply of water at 104 mgd maximum or 52 mgd average.

The February 2001 DEIS at 4-13 is defective due to a deletion of language. It presently states "A theoretical possibility exists, therefore, that the Platte West well field could reduce flow in the Platte River to zero under extremely low flow conditions. In practice, however, this extreme depletion would not occur". The following language contained in the January 1999 DEIS at 4-14 needs to be reinserted "In practice,

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however, this extreme depletion would not occur because the District's water right for the Platte West well field would be junior to other municipal water rights downstream". This language is necessary under NEPA for the EPA, the Corps, the public, MUD and the reviewing Courts to appreciate that neither the Platte West nor the Platte North can reduce the flow of the Platte to zero because senior holders of water rights such as MUD's Platte South well field have a senior right to 500 cfs of Platte River water every day of the year. The EIS needs to further explain that MUD's Platte South facility (or Lincoln's Ashland water facility when it obtains a surface water right) may require any junior surface water right holder (such as the proposed MUD Platte North or MUD Platte West) to stop pumping water if the surface water appropriated by MUD South (or Lincoln when it gets its surface water right) for domestic uses falls below 500 cfs. This is yet another reason why the Platte North and Platte West alternatives must be disregarded from the EIS. The Platte North and Platte West alternatives cannot be counted on to provide a reliable stand alone source of 104 mgd maximum or 52 mgd average supply of water to MUD.

The February 2001 DEIS is defective at 4-14 where it states "Given the District's water right of 1,000 cfs, the minimum flow downstream of the Platte West well field would be 838 cfs. This flow would satisfy the city of Lincoln's 700-cfs water right for their Ashland well field". Lincoln does not have a 700 cfs water right at this time. Even when Lincoln does obtain its surface water right, Lincoln's surface water right and MUD's Platte South water right will be senior to MUD Platte West's water right. A junior water right never satisfies a senior water right. Again, during a drought a senior water right holder such as MUD's Platte South or Lincoln (when it gets it water right) can force Platte West or Platte North from appropriating or pumping water if the amount of water reaching Platte South or Lincoln's Ashland well field falls below its senior appropriation(s).

The DEIS continues to be defective on 4-15 where it states "The lowest one-day flow in the Platte River at Ashland, 101 AF per day, is less than the predicted maximum depletion. As explained above, however, the District's 1,000-cfs water right would prevent complete depletion of flow in the Platte River". This is patently false. It is MUD's 500 cfs per day senior appropriation for its Platte South well field that prevents complete depletion of flow in the Platte River.

For the foregoing reasons, including MUD's obligation to

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3. According to the District, Nebraska Revised Statutes, Sections 46-638 et seq., Municipal and Rural Domestic Ground Water Transfer Permit Act, involves interbasin transfers, but is not a mandatory permit. A permit under 46-638 et seq. grants certain protections to "An applicant which desires to avail itself of the Municipal and Rural Domestic Ground Water Transfer Permit Act..." (NRS 46-639). Nebraska Revised Statutes Section 46-289 specifies that the impacts of interbasin transfers be considered when evaluating a water rights application, but does not specify the need for a separate interbasin permit. The Corps disagrees with any suggestion that any reasonable alternative, including the applicant's preferred alternative, can be "contrary to NEPA".

sell water from its existing seven wells in Saunders County to political subdivisions in Saunders County at cost and avoiding the need for an interbasin transfer permit under Neb. Rev. Stat. §46-289 that MUD's proposed Platte River well field must be located at or below its Platte South well field. It is contrary to NEPA, a waste of money and a water planner's nightmare to locate MUD's proposed well field upstream from Lincoln's senior well field.

If MUD utilizes a well field at or near the mouth of the Platte River (i.e. Alternative 11) it will avoid interbasin transfer permit problems as well as payments to upstream agricultural, domestic and industrial users. It will also avoid the danger of being forced to stop appropriating water from the Platte River. MUD can also avoid damage to wetlands and wildlife. It could also utilize Missouri River water at this site for further protection against drought, shortages and pollution. Lastly, MUD already owns the real property at Alternative 11 and it could sell its property in Douglas and Saunders County at the Platte West site to pay for any additional costs. 4

The EIS underestimates the acreage of the subirrigated lands and wet lands in Saunders County that would be affected by MUD's proposed well fields in Saunders County. 5

The EIS underestimates the breadth and depth of the cone of depression of the proposed MUD well fields in Saunders County (i.e. the acreage and depth of the drawdown of the aquifer to be affected by MUD's pumping beneath and adjoining the proposed MUD well fields in Saunders County. 6

The EIS underestimates the taxable valuation of the real estate in Saunders County the proposed MUD well fields would take off the tax rolls, destroy, harm and/or affect. 7

The EIS fails to recognize that MUD is required to comply with the requirements of MUD's existing March 15, 1995 Construction Permit that MUD applied for, negotiated the terms for and obtained from Saunders County. MUD is required to supply water from the seven production wells it constructed pursuant to the 1995 Construction Permit to governmental sub-divisions of Saunders County on a cost basis. This amounts to 7/42 of its requested 58,308 acre feet per year or 7/42 of the 19 billion gallons of water per year it proposes to pump. 8

4. An alternative near the mouth of the Platte River could avoid a call for water by senior downstream Platte River water rights holders because all current water rights holders for Platte River water would be upstream. A suitable site that would meet the purpose and need of the project, however, was not found in that area.

5. The map of subirrigated land around the Platte West alternative well field in Saunders County has been revised with additional data from the Lower Platte North Natural Resources District and the acres of affected subirrigated land have been recalculated in the FEIS.

6. The groundwater modeling done for the EIS used modern modeling techniques with realistic values for variables and realistic pumping scenarios and represent the best available estimates of groundwater drawdown and river flow depletion. Previous groundwater modeling, upon which this comment may be based, used an oversimplified (i.e., steady-state) model with unrealistically high pumping rates. These earlier modeling efforts were intended to estimate the capacity of the aquifer to produce water and are not appropriate for estimating environmental impacts.

7. Real estate values are constantly changing. The impacts to property values and property tax receipts in the FEIS has been updated with data that were provided by the Saunders and Douglas county assessors offices and were current as of April 2001. The real estate taxable values presented in the FEIS are sufficiently accurate for the purposes of the EIS.

8. The service area depicted on Figure 2-1 is only an estimate of what the service area could look like in 30 years. If the service area grows faster than anticipated (e.g., extends into Saunders County) or additional wholesale customers are added (e.g., Lower Platte North Natural Resources District) this only means that the demand from the District will reach capacity sooner than anticipated. The District's current wholesale customers include Fort Calhoun, Carter Lake, Iowa, and the Papio-Missouri River Natural Resources District and account for 2 percent of the water supplied by the District (see Figure 1-1) or approximately 2 MGD. Assuming the amount of water supplied to Saunders County would be similar to the total of the current wholesale customers, then the projected water demand would be under estimated by 2 percent. A 2 percent error is not significant relative to a 30-year projection. Further, 7/42^{nds} of 18.25 billion gallons per year is 3.04 billion gallons per year or an average of 8.33 MGD. The Corps is unaware of any data to support a level of demand by Saunders County governmental sub-units that is over 4 times the demand of the District's current wholesale customers.

   The 5 March 1995 Construction Permit from Saunders County to "Construct seven permanent water production wells, monitoring wells and necessary access roadways..." reads "9. M.U.D. will agree to supply gas and water to governmental sub-divisions of Saunders County, on cost basis, as permitted by law." The proposition that this condition reserves a particular amount of water from the Platte West alternative well field for Saunders County governmental subunits is an unresolved issue beyond the scope of the EIS.

The EIS fails to recognize that MUD must obtain further permits from Saunders County for MUD's proposed construction in Saunders County under federal and Nebraska law. Saunders County, State of Nebraska and their citizens stand to lose their Federal Emergency Management Agency insurance and funding for flooding if MUD does not comply with Saunders County's permitting procedures and requirements. 9

The MUD DEIS is fatally defective in its premise on page S-1 that up to 46 wells may be pumped in the PW. In fact, the void Order of Approval (**"Void Order"**) from the State of Nebraska dated December 10, 1998 (copy enclosed) restricts MUD to a **maximum of 42 wells.** The Void Order is void in part but without limitation because (1) it does not contain the statutorily required findings for an interbasin transfer under NRS 46-289 from the Platte River Basin to the Missouri River Basin, (2) MUD has failed to obtain a permit under NRS 46-677 to pump water for golf courses, commercial and industrial purposes, (3) MUD has failed to obtain a permit under NRS 46-801 to lower the water supply of natural or perennial lakes. 10

The DEIS is fatally defective due to its premise and misinformation to the public under NEPA that MUD will only utilize an average of 50 mgd with a maximum of 100 mgd. In fact, the Void Order authorizes MUD to pump an average of 52 mgd with a maximum of 104 mgd for an annual maximum of 19 billion gallons or 58,308 acre fact of water per year. By overestimating the number of wells to be used by MUD in its PW and underestimating the amount of water to be pumped by MUD in its PW, Burns and McDonnell fails to comply with NEPA requirements. 11

MUD's EIS Platte West alternative is wrongfully based on a premise of a maximum of 46 wells pumping up to a maximum of 100 mgd and an average of 50 mgd with a maximum of 18,291,260,000 gallons per year to be pumped with a Platte River depletion of 40,521 acre feet of water per year. In fact, MUD's "Order of Approval" from the Nebraska Department of Water Resources was based on MUD's application and MUD's consultant's calculations that a maximum of 42 wells pumping up to a maximum of 104 mgd and an average of 52 mgd with a maximum of 19,000,000,000 gallons per year to be pumped with a **Platte River depletion of 56,557 acre feet of water per year.** MUD and its consultant represented to the State of Nebraska that with average Platte River flow, **97% of the water to be pumped would come from the Platte River. MUD's new consultant, Burns & McDonnell, now represents in the EIS that only 72% of MUD's water will come from the Platte River.** (40,521

9. The EIS is a disclosure document of environmental impacts required for this project by NEPA as a result of the District's application for a Section 404 permit. The EIS is not the Corps' Record of Decision. Construction of the project would require many other permits from the state and counties including but not limited to an NPDES permit for stormwater runoff during construction, and NPDES permit for discharge of effluent into a surface water, and permits to construct in a floodplain and a floodway. Whether or not these permits are mentioned in the EIS would not relieve the District of their responsibility to obtain these permits.

10. Potential problems with the District's water appropriations permit is an issue for the Nebraska Department of Natural Resources. Please see the response to preceding comment.

11. The original steady-state groundwater modeling submitted to the Nebraska Department of Natural Resources (NDNR) assumed the use of a total of 42 wells within the Platte West alternative well field. Through the EIS process, the groundwater modeling was developed into a transient-model which concluded that 40 wells would be required to meet the maximum production capacity. The model identified 6 alternative sites if any of the 40 wells failed to produce their expected capacity, thus the EIS states the Platte West alternative well field would have 40 to 46 wells. At this time the District does not expect to exceed the number of wells stated in the NDNR Permit. The amount of recharge from the Platte River that is incorrect was the original estimate of 97 percent. This estimate was based on unrealistic operating scenario. The later modeling that showed 72 percent of aquifer recharge coming from the Platte River was based on a more realistic model and is considered a better estimate.

acre feet of 56,000 acre feet). These representations to the public, the U.S. Fish and Wildlife Service, the Nebraska Game and Parks Commission, the Corps and all other cooperating agencies contained in the EIS are based on false premises and are patently false.

The December 10, 1998 "Order of Approval" from the Nebraska Department of Water Resources to MUD for the PW well field allows MUD to pump a maximum of 104 million gallons per day, a maximum of 19 billion gallons of water per year (approximately 58,308 acre feet) from a maximum of 42 wells. MUD's application to the State of Nebraska for this permit and MUD's consultant Layne GeoSciences, Inc. ("LGI") state that "during average flow conditions [of the Platte River], induced recharge [Platte River surface water for the 42 wells] accounted for approximately ninety-seven percent of the water withdrawn." MUD's permit application and its consultant LGI further state that:

> "In order to sustain in a satisfactory manner the operation of the well field facilities within that stream reach where induced recharge is intended, the minimum river flow necessary would need to have a depth of approximately one foot. When observing that the average width of the river in the vicinity of the Platte West well field is approximately one thousand feet and the velocity of this river based on the experience of LGI is approximately one cubic foot per second, this depth would translate to a flow of 1000 cubic feet per second. **It should be noted that this minimum flow does not take into consideration the Ashland or the Platte South well fields which are downstream. In reality, the necessary flow at the Platte West well field may need to be higher in order to provide adequate flow for these two downstream users".**

12

Sincerely,

Grant A. Porter

Grant A. Porter

12. As the DEIS pointed out, the absolute maximum depletion rate from the Platte River by the Platte West alternative well field would be 104 MGD which is equivalent to 161 cfs. If flow in the Platte River at the upstream side of the Platte West alternative well field was 1,000 cfs, then the lowest possible flow downstream of the well field would be 839 cfs. This amount of flow is 139 cfs more than the City of Lincoln's requested summer water right for their Ashland well field of 700 cfs. Assuming no additional loss of water between the Platte West and Ashland well fields, and no flow in the Elkhorn River, flow in the Platte River could be as low as 861 cfs before the Platte West alternative well field could possibly interfere with Lincoln's water right.

STATE OF NEBRASKA

DEPARTMENT OF WATER RESOURCES

PLAINTIFF'S EXHIBIT 8

In the Matter of Application A 17318, and)
Application for Induced Ground Water)
Recharge and Application A 17356, and)
Application for a Municipal and Rural)
Domestic Ground Water Transfer Permit,)
Water Division 2 B)

ORDER OF APPROVAL

These matters came on for consideration before the Director of the Department of Water Resources (Department) The Director FINDS:

1. On October 6, 1993, Metropolitan Utilities District of Omaha (MUD) filed application A-17318 for a permit to appropriate natural flow for induced ground water recharge under the provisions of § 46-233, R.R.S. 1943, as amended. The application was returned for correction and refiled several times.

Application A 17318 requests an appropriation of 1,000 cubic feet per second (cfs) of Platte River water for induced ground water recharge of 42 public water supply ground water wells to be located in Section 31, Township 15 North, Range 10 East; and Sections 5, 6, 7, 8, 18, 19, and 20, Township 14 North, Range 10 East of the 6th P.M. The well field boundary is shown on figure II-1 of "Permit Application for the Appropriation of Natural Flow for Induced Ground Water Recharge at the Platte West Well Field." Three of the wells were completed in 1992. Thirty nine additional wells are proposed. When all wells are pumping at full capacity, the maximum amount that is expected to be directly withdrawn from the Platte River is approximately 300 cfs (194 million gallons per day (mgd)). The stream reach identified begins in the northwest corner of Section 7 and continues downstream to the southern boundary of Section 20, all in Township 14 North, Range 10 East of the 6th P.M. The application states the well field could continue to produce 70 mgd for 75 days when there is no flow in the river.

On July 14, 1994, the Department issued Notice of application A-17318 as required by § 46 233(5). Central Platte Natural Resources District (CPNRD) and Central Nebraska Public Power and Irrigation District (CNPP&ID) filed to be a party to the proceedings. Alliance Irrigation District (Alliance), Western Sugar Company (Western), Trinidad Bean and Elevator Company (Trinidad) and Farmers Irrigation District (Farmers) filed as objectors.

On September 15, 1994, Trinidad withdrew from the proceedings. Alliance, Western, and Farmers were later dismissed as parties following procedural inquiries as to their intent to remain as parties. On November 16, CPNRD withdrew. On November 21, CNPP&ID withdrew.

2. On March 1, 1994, MUD filed an application for a permit under the provisions of the Municipal and Rural Domestic Ground Water Transfers Permit Act. Application A-17356 requests a permit to withdraw, and transfer for municipal use in the district, up to 104,000,000 gallons per day. The water will be withdrawn from the three existing and 39 proposed wells described above under application A-17318. (See Figure 4 11 2 of the "Preliminary Engineering Study and Pre Design Report for Platte West Water Production Facilities.")

On June 6, 1994, the application was returned for corrections and additions. On June 17, 1994, such corrections were submitted.

Notice of the application was published as required by § 46-649. No objections or requests for hearing were filed.

3. The Department consulted with the Nebraska Game and Parks Commission (G&P) regarding the effects of these applications on threatened and endangered species and their habitat as required by § 37-435. On August 7, 1998, G&P determined approval of A-17318 and A-17356 would not harm threatened or endangered species or their habitat based on modifications implemented according to a mitigation agreement developed by MUD, the U.S. Fish and Wildlife Service, and G&P.

It is CONCLUDED that,

1. Both applications, A-17318 and A 17356, concern MUD's proposed Platte West Well Field. For purposes of consideration herein, the matters should be joined.

2. As to A-17318

Applications for permits to appropriate natural flow for induced ground water recharge of municipal well fields are authorized by §§ 46-233 and 46-235. Application A-17318 meets the requirements for approval described in § 46-235(2)(a) and (3). Specifically,

a. There is unappropriated water available sufficient for this appropriation as shown by the Department's "1998 Platte River Flow Analysis." This document was created by the State Hydrologist as a tool to analyze unappropriated water and may be reviewed by the public.

b. The appropriation is necessary to maintain the wells for the requested use as shown in Sections G and H of the application.

c. The rate and timing of the flow is the amount reasonably necessary to maintain the wells for the uses requested.

d. The application is in the public interest and is not detrimental to the public welfare because it supports a need for supply of public drinking water, water for sanitation, and water for fire protection.

e. The wells will be located and constructed to take reasonable advantage of aquifer conditions in the area to minimize the frequency and amount of demand for flows for induced ground water recharge (Section E of the application).

Three wells were constructed in 1992. However, the well field is not in service. Under § 46-233(4), wells must be constructed and placed in service within the specified time period to obtain a date of priority prior to the application filing date. Therefore, the priority date for all 42 wells should be October 6, 1993.

3. As to A-17356:

In determining whether application A-17356 should be approved, the Department must consider the provisions of § 46-642. Application A-17356 meets the conditions of approval as follows:

a. The proposed ground water withdrawal is intended to provide water for municipal use with in the District. Such municipal use is designed to meet the essential daily demands of the community and is intended to augment MUD's existing system and address expected westward growth. This proposed withdrawal and transfer of ground water is considered reasonable.

b. The amount of ground water requested per capita is not excessive. The municipal supply requested by MUD is meant to serve residents with water for human consumption, fire protection, sanitation, and other uses that are irrefutably beneficial. Thus, approval of A 17356 would not be contrary to the conservation and beneficial use of ground water.

c. No objections to the application were filed with the Department and no evidence was offered in the application to show that the proposed withdrawal would be detrimental to the public welfare. On the contrary, the withdrawal and transfer is designed to allow MUD to improve the quality and supply of drinking water for the residents of the District.

4. The conditions of § 37-345 are met.

Application A-17318 and A-17356 should be approved.

It is therefore ORDERED:

1. Application A-17318 is hereby APPROVED subject to the following limitations, conditions and notice.

a. The source of water is the Platte River.

Page 4 of this attachment was not included in the comment.

f. Failure to meet any conditions of this Approval may cause modification or revocation of the permit.

DEPARTMENT OF WATER RESOURCES

December 10, 1998

J. Michael Jess, Director

A copy of this Order was mailed on December 10, 1998, to:

Metropolitan Utilities District
% Thomas Wurtz, General Counsel
1723 Harney Street
Omaha, Nebraska 68102-1960

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1. Your opinion is noted.

Sarpy County EDC
Sarpy County Economic Development Corporation

March 28, 2001

Ms. Rebecca Latka (CENWO-PM-AE)
U.S. Army Corps of Engineers, Omaha District
215 North 17th Street
Omaha, NE 68102

Dear Ms. Latka:

I am writing to you in support of M.U.D.'s efforts to obtain a Section 404 Permit for the Platte West Water Production Facility. M.U.D. supplies water throughout much of Sarpy County. We realize the need for an additional facility to meet the increased demands for the growing metro area: especially along the western boundaries of the region. We appreciate M.U.D. delivering a high quality water supply to our residents. and support their efforts to utilize the highest quality source available to them. We count on the developmental and economic growth of Sarpy County and we understand the importance of a reliable water supply. We recognize and appreciate M.U.D.'s efforts to avoid becoming overly dependent on a single water supply source.

For these reasons, the Sarpy County Economic Development Corporation supports the M.U.D.'s preferred alternative in the Draft EIS and encourages the Corps of Engineers to approve the Section 404 Permit to allow M.U.D. the right to construct the Platte West Water Production Facility.

Sincerely,

Toby S. Churchill, Executive Director
Sarpy County EDC

1301 Harney Street
Omaha, NE 68102
http://www.scedc.org

402-346-5015
(Fax) 402-346-7050
(Toll Free) 800-852-2622

City of Yutan

April 11, 2001

U.S. Army Corps of Engineers
Attn.: Rebecca Latka and Jerry Folkers
Omaha District - Regulatory Branch
215 N. 17th Street
Omaha, NE 68102
402-221-4886 fax and 402-221-4939 fax

Re: MUD Draft EIS for Platte West Well Fields

Dear Ms. Latka and Mr. Folkers:

The City of Yutan incorporates the Lower Platte North NRD comments and the Saunders County comments concerning the subject February 2001 draft EIS by this reference as if set forth in their entirety hereinbelow.

Regarding Metropolitan Utilities District application #199910085 the City of Yutan, its Mayor and City Council unanimously agree this would negatively impact the City and surrounding area. The following are some but not all of Yutan's objections to MUD's proposed project; Yutan reserves the right to amend or submit these concerns.

1. The recreational damage the Yutan area would sustain due to unacceptable water level depletion of the Platte river and its tributaries. 1
2. Area lakes drawn down to damaging levels or completely destroyed. 2
3. Losses of Wetlands which we believe MUD has seriously underestimated. 3
4. Unacceptable Platte River water level for agriculture relative to irrigation not only from the Platte River but its tributaries, area lakes, underground water table and aquifers. 4
5. Loss of grazing areas, grasslands, crop lands, sub irrigated lands, wetlands and natural food source for domestic animals and wildlife due to the decline in water table during critical nesting and reproduction times and summer heat or dry conditions. This is a paramount concern for the immediate future as well as for our children for many years to come. 5
6. MUD has alternative sites and should use them and abandon this site. MUD should either pump water from the Missouri River and/or pump from the Platte River at or below its existing Platte South Well Field. 6
7. The City of Yutan reserves the right to purchase at cost from MUD any and all water it may need perpetually, pursuant to the March 15, 1995-construction permit from Saunders County it MUD. 7

1. The Corps notes that City of Yutan is at least 2 miles away from the edge of the predicted cone of depression created by the Saunders County portion of the proposed Platte West alternative well field. Water level drawdown in the Platte River caused by the Platte West alternative well field is predicted to be less than 0.5 inches under average conditions and less than 1.5 inches under extremely dry conditions.

2. The District recognizes its duty to respond to proven damages to landowners arising from the operation of its Platte West alternative well field to the extent provided under Nebraska law. Upon a written claim by a landowner asserting damage, the District would accept and perform a good faith review of the claim and all evidence submitted in support of it. The District would also share any monitoring information in its possession with a claimant. If the District concludes that the claim and the amount of claimed damages are valid, the District would pay the claim as it does other legitimate claims. If the parties cannot agree on the validity of the claim or the amount of damages, the final resort may be a remedy under the Tort Claim Act, or a condemnation or inverse condemnation procedure. The condemnation process in Nebraska is an administrative procedure involving the naming of three landowners of the county in which the land is located to a Board of Appraisers. This Board, named by a county judge, then determines the amount of damage that may be caused to a landowner.

   The District would consider mitigation of established damages, for example, the improvement of a well which has reduced capacity caused by drawdown. The District may also consider offers by landowners to acquire subsurface water rights to their land.

3. The estimates of impacts to wetlands are the best available at this time and wetland delineation for the project would be done if a permit is issued for the project.

4. The Corps is unaware of any surface water diversions from the Platte River for irrigation in the immediate vicinity of the proposed Platte West alternative well field. The impacts to irrigation by the Platte West alternative well field would be from the loss of subirrigation and increased pumping effort for existing groundwater irrigation systems.

5. Loss of grazing area and cropland would be minor and limited to the well field where certain land use restrictions would apply. Property owners injured by loss of subirrigation would be compensated (see response to comment 2 above). Wildlife could benefit from the changes in land use practices on the well field.

6. Your opinion is noted.

7. The Corps notes the City of Yutan wants the District to use the Missouri River or the Platte River at or below the Platte South well field but at the same time would like to purchase water from the Platte West alternative well field. The relevant portion of the 5 March 1995 Construction Permit from Saunders County to "Construct seven permanent water production wells, monitoring wells and necessary access roadways..." reads "9. M.U.D. will agree to supply gas and water to governmental sub-divisions of Saunders County, on cost basis, as permitted by law." Whether or not this condition reserves a particular amount of water from the Platte West alternative well field for Saunders County governmental subunits is an unresolved issue outside the scope of this EIS.

8. The EIS has underestimated the lands (aquifers, sub irrigated lands, crop lands, wetlands, grasslands and grazing areas) it will harm or destroy. The EIS underestimates the loss of tax base for Saunders County and the Yutan School system. 8

9. The EIS is incorrect in its premise that its proposed uses of water for industry, commercial, manufacturing, and golf courses have a preference to upstream agricultural uses. Senior downstream municipalities' well fields may prevent MUD from pumping water at its proposed Platte North or Platte West Well Fields if they do not obtain adequate surface water to satisfy their senior appropriations. MUD's proposed well fields in the Platte River must be located downstream from Ashland. Ideally they should be located near Plattsmouth and below Platte South at LaPlatte. The EIS is also default for failing to set forth the cost involved with MUD as a junior domestic appropriator, in exercising its preference rights against upstream agricultural and industrial water users. 9

Sincerely

Joseph Kocnig
Mayor City of Yutan, Nebraska

8. The estimates of impacts to subirrigated land and the resulting consequences on property values, tax receipts, and farm production have been revised in the FEIS based on additional data received from cooperating agencies and commenters on the DEIS.

9. The DEIS incorrectly stated that the 1,000-cfs water right had priority over upstream agricultural and industrial users. Under low flow conditions, the Platte West or Platte North alternatives could have to curtail pumping if flow at Lincoln's Ashland well field drops below 700 cfs (assuming Lincoln's pending water right is approved). Flows in the Platte River in the vicinity of the Platte West and Ashland well fields less than 1,000 cfs occur infrequently (i.e., less than 1 percent of the time) and usually last only a few days at a time (see Chapter 4 of FEIS). Because the low flow event would probably be over before the condemnation proceedings could be completed to compel the sale of water from agricultural and industrial users with senior water rights, the District would be unlikely to purchase water from upstream users under these conditions. No costs for such purchases, therefore, are included in the cost of the alternatives. In the event pumping from the Platte West alternative well field would need to be curtailed, the District's likely course of action would be to implement the Water Conservation Emergency Operation Plan (see Chapter 1) and rely on Platte South and the Missouri River. The Platte River may not a 100 percent reliable source of water, however, no single water supply can meet that standard. The reliability criterion for evaluating the alternatives in Chapter 2 applies to the resulting combination of water supplies, not to the alternatives individually.

City Of Fort Calhoun

110 So. 14th St.
Fort Calhoun, Nebraska 68023

March 20, 2001

U.S. Army Corps of Engineers, Omaha District
Attention: Ms. Rebecca Latka (CENWO-PM-AE)
215 North 17th Street
Omaha, NE 68102

RE: Public Comment on Draft EIS for the Platte West Water Production Facilities Project

Dear Ms. Latka:

I am writing to you in support of M.U.D.'s efforts to obtain a Section 404 Permit for the Platte West Water Production Facility. M.U.D. is the wholesale water supplier for the City of Fort Calhoun, through the Papio Natural Resources District. We realize the need for an additional facility to meet the increased demands for the growing metro area. We appreciate M.U.D. delivering a high quality water supply to our residents, and support their efforts to utilize the highest quality source water available to them. As a growing community we understand the importance of a reliable water supply, and M.U.D.'s efforts to avoid becoming overly dependent on a single water supply source.

For these reasons, the City of Fort Calhoun supports the M.U.D.'s preferred alternative in the Draft EIS and encourages the Corps of Engineers to approve the Section 404 Permit to allow M.U.D. the right to construct the Platte West Water Production Facility.

On behalf of the Mayor and City Council of Fort Calhoun
Sincerely,

Linda Welsher
City Clerk/Treasurer

1. Your opinion is noted.

CITY OF BENNINGTON
15514 WAREHOUSE ST., P.O. BOX 221
BENNINGTON, NEBRASKA 68007
(402) 238-2375
FAX (402) 238-2470

March 15, 2001

U.S. Army Corps of Engineers, Omaha District
Attention: Ms. Rebecca Latka (CENWO-PM-AE)
215 North 17th Street
Omaha, NE 68102

RE: Public Comment on Draft EIS for the Platte West Water Production Facilities Project

Dear Ms. Latka:

I am writing to you in support of M.U.D.'s efforts to obtain a Section 404 Permit for the Platte West Water Production Facility. M.U.D. is soon to be the water supplier for the City of Bennington. We realize the need for an additional facility to meet the increased demands for the growing metro area; especially along the western boundaries of the region. The City of Bennington and surrounding area will be seeing a great deal of growth very soon. We appreciate M.U.D. delivering a high quality water supply to our residents, and support their efforts to utilize the highest quality source water available to them. As a growing community we understand the importance of a reliable water supply, and M.U.D.'s efforts to avoid becoming overly dependent on a single water supply source.

For these reasons, the City of Bennington supports the M.U.D.'s preferred alternative in the Draft EIS and encourages the Corps of Engineers to approve the Section 404 Permit to allow M.U.D. the right to construct the Platte West Water Production Facility.

Sincerely,

David L. Clark, Mayor
City of Bennington

1. Your opinion is noted.

1. Your opinion is noted.

City of La Vista

La Vista: The View Of Tomorrow...Today

March 20, 2001

U.S. Army Corps of Engineers, Omaha District
Attention: Ms. Rebecca Latka (CENWO-PM-AE)
215 North 17th Street
Omaha, NE 68102

Re: Platte West Water Production Facilities Project —
Support of Section 404 Permit

Dear Ms. Latka:

Please accept my support of the Metropolitan Utilities District (MUD) application for a Section 404 Permit for the Platte West Water Production Facility.

The City of La Vista, along with its residents and businesses, receives a quality and reliable water supply from MUD. The recently released Year 2000 Census data established that La Vista has grown by 18.9 percent in the last ten years. As such, we have become a part of the growing metropolitan population, which has created an increasing water demand. Additionally, our growth has highlighted to us the importance of MUD's efforts to reduce dependence on a single water supply source.

For these reasons, I offer the city's support of MUD's preferred alternative in the draft EIS and respectfully request approval of the MUD Section 404 Permit.

If you have questions or need additional information, please feel free to contact Cara Pavlicek, City Administrator at 402-331-4343

Sincerely,

Harold "Andy" Anderson
Mayor

8116 Park View Blvd. • La Vista, NE 68128-2198 • (402) 331-4343 • Voice / TDD

1. Your opinion is noted.

RALSTON
NEBRASKA
INDEPENDENCE CITY

MAYOR
Donald A. Groesser

CITY COUNCIL
Maureen Konwinski
Mike Gillespie
Vytas Retkis
Jerry Krause
Terry Wieczorek
Steve Roarty

CITY CLERK/
TREASURER
Alice J. Morrison

April 11, 2001

U S. Army Corps. Of Engineers, Omaha District
Attention: Ms. Rebecca Latka (CENWO-PM-AE)
215 North 17th Street
Omaha, NE 68102

RE: Public Comment on Draft EIS for the Platte West Water Production Facilities Project

Dear Ms. Latka:

I am writing to you in support of M.U.D.'s efforts to obtain a Section 404 Permit for the Platte West Water Production Facility. M.U.D. is the water supplier for the City of Ralston. We agree there is a need for an additional facility to meet the increased demands for the growing metro area. We appreciate M.U.D. delivering a high quality water supply to our residents, and support their efforts to utilize the highest quality source water available to them. We also realize that M.U.D. delivers a superior product at a reasonable price. This is very important for our citizens. We understand the importance of a reliable water supply, and M.U.D.'s efforts to avoid becoming overly dependent on a single water supply source.

For these reasons, the City of Ralston supports the M.U.D.'s preferred alternative in the Draft EIS and encourages the Corps of Engineers to approve the Section 404 Permit to allow M.U.D. the right to construct the Platte West Water Production Facility.

Sincerely,

Donald A. Groesser
Mayor

The Spirit of Independence

5500 South 77th Street
Ralston, NE 68127-3896
(402) 331-6677
Fax (402) 331-4553
E-mail. city hall@cityofralston.com

1. Your opinion is noted.

City of Elkhorn
A Small Town That's "Growing" Places

April 10, 2001

U.S. Army Corps of Engineers, Omaha District
Attention: Ms. Rebecca Latka (CENWO-PM-AE)
215 North 17th Street
Omaha, NE 68102

RE: Public Comment on Draft EIS for the Platte West Water Production Facilities Project

Dear Ms. Latka:

I am writing to you in support of M.U.D.'s efforts to obtain a Section 404 Permit for the Platte West Water Production Facility. M.U.D. is the water supplier for the City of Elkhorn. M.U.D. began supplying the City of Elkhorn with water a few years ago. This change took place because we were concerned about having a reliable supply with improved quality, as demanded by increasingly stringent federal regulations. We realize the need for an additional facility to meet the increased demands for the growing metro area; especially along the western boundaries of the region. Elkhorn continues to grow and we need to know there will be enough water to support this future growth. We appreciate M.U.D. delivering a high quality water supply to our residents, and support their efforts to utilize the highest quality source water available to them. As a growing community we understand the importance of a reliable water supply, and M.U.D.'s efforts to avoid becoming overly dependent on a single water supply source.

For these reasons, the City of Elkhorn supports the M.U.D.'s preferred alternative in the Draft EIS and encourages the Corps of Engineers to approve the Section 404 Permit to allow M.U.D. the right to construct the Platte West Water Production Facility.

Sincerely,

Phillip E. Klein
Mayor

P.O. Box 386 • 401 Glenn St. • Elkhorn, NE 68022 • Phone (402) 289-2678 • Fax (402) 289-4900

City of Omaha
Hal Daub, Mayor

Office of the Mayor
1819 Farnam Street, Suite 300
Omaha, Nebraska 68183-0300
(402) 444-5000
FAX: (402) 444-6059

April 3, 2001

Ms. Rebecca Latka
U.S. Army Corp. of Engineers
215 North 17th Street
Omaha, NE 68102

Dear Ms. Latka:

The Metropolitan Utilities District provides water service to approximately 170,000 customers, with an estimated population of 520,000 people. The majority of these people are located in Douglas and Sarpy Counties. The District also wholesales water to customers in Washington County and Cater Lake, Iowa. Due to the continued strong growth within the District's water service area and the subsequent increased need for potable water, the district has proposed construction of a new water production facility. This proposed project has commonly become known as the "Platte West Project".

Due to its higher source of water quality and its location relative to the growth of the Greater Omaha Metropolitan Area, the Platt West Project is also the most economically viable alternative. This project is projected to be between $4 million to $7 million less than any of the other alternatives.

It is my opinion that this is the best option to continue to meet the needs of our growing community. If you would like to discuss this matter further, I can be reached at 402-444-5005.

Sincerely,

Hal Daub, Mayor
City of Omaha

Cc: Tom Wurtz, General Counsel – M.U.D.

1. Your opinion is noted.

Michael and Tychia Thomas

From: "Michael and Tychia Thomas" <tychiat@alltel.net>
To: "Rebecca" <Rebecca.J.Latka@usace.army.mil.>
Sent: Thursday, April 12, 2001 8:42 AM
Subject: Comments on Platte West EIS

Name Michael Thomas

Representing Marble Township Saunders County

Street Address 1352 Yutan Road

City, State, Zip Yutan, NE 68073

COMMENTS: PURPOSE: A RELIABLE SUPPLY OF WATER

As stated on S-1, the purpose of the proposed project is to provide a reliable supply of potable water to the customers of the District through the year 2030, which requires delivering water to a growing service area surrounding Omaha, Nebraska. 1

MUD's choice of the Platte West Project does not meet their purpose of a reliable supply of water. During the summer of 2000, the flow in the Platte River was reduced to nearly zero as a result of spring and summer drought, low reservoirs and upstream pumping demands. Given the City of Lincoln's 700-cfs water right for their Ashland well field and the historic low flows of 538 cfs in July and 624 cfs in August recorded without the use of the 162 cfs required for the MUD Platte West well field this would create a possible low flow of 376 cfs in July and 462 cfs in August. These flows are well below the 700 cfs City of Lincoln's water rights.

Even with NRRS 46-204 requiring upstream water users to stop using the Platte River water to maintain MUD's 1000 cfs water right, the historic low flows at Leshara, NE of 420 cfs in July and 487 cfs in August are well below the amounts needed for the Platte West well field to operate. There will be times when the Platte will simply not have enough water flow to meet the 1000 cfs water right needed for MUD because of natural conditions. Under these low flow conditions, which will occur again, it will be impossible for MUD's well field to operate to supply its customers during their peak demand months of July and August. These times of low flow will cause the Platte West Alternative to be of no use to MUD in meeting their purpose of a reliable water source. The data shows there will be times when the cfs water flow in the Platte will simply not be enough to meet the districts 1000 cfs water right causing their proposed Platte West well field to be completely useless and unreliable. Therefore, the Platte West Alternative should be eliminated from further consideration.

4-57-58 PROPERTY VALUES DUE TO CROP PRODUCTION CAPABILITIES 2

Regarding your statement that most of the crops grown in the area around the well fields can only derive benefits from subirrigation less than six feet below ground level and a total of 3,370 acres of land outside of the well field in Douglas and Saunders Counties would lose value from subirrigation.

Your assumption that these are going to be the only acres affected from the drawdown of the well field do not take into account one of the greatest benefits of crop production on the river bottom grounds. Every spring when the water table is high, the subsoil will draw the water up into its soil particals and replenish its water holding capacity to nearly 100%. These moisture reserves will later be drawn upon by the crop as needed. With the continuous drawdown of the water table, the subsoil will not be able to replenish its water holding capacity and will become completely dependent on surface water and topsoil moisture.

Without the benefit of the subsoil moisture reserves, crop production will be reduced on all of the areas which a drawdown will occur. This will cause a much greater decrease in annual farm income than the $112,270 estimated for the Platte West alternative. These losses should be reconsidered.

4/12/01

1. Based on 50 years of USGS daily flow data for the Platte River at North Bend and 5 years of data at Leshara, flow in the Platte River above the Platte North and Platte West alternative well fields would be less than 1,000 cfs approximately 0.7 percent of days or, on average, less than 3 days per year. We estimate a flow above the Platte North or Platte West alternative well fields of 861 cfs would be sufficient to meet Lincoln's pending senior water right of 700 cfs assuming the maximum possible induced infiltration rate by the District's well field of 161 cfs (104 MGD), no losses of river water between the District's well field and the Ashland well field, and no inflow from the Elkhorn River. Flow in the Platte River at Leshara is estimated to be less than 861 cfs 0.3 percent of the time or, on average, less than 1 day per year. The maximum monthly average depletion rate estimated for the B4 pumping scenario was 73.5 cfs. At this depletion rate, a flow in the Platte River of 774 cfs would meet Lincoln's water right. Flow in the Platte River at Leshara is estimated to be less than 774 cfs 0.1 percent of the time or, on average, about 12 hours per year. Low flows in the Platte River, therefore, could occasionally curtail use of the Platte West or Platte North well fields. Although the Platte West or Platte North well fields would not be a 100 percent reliable supply of water, no single water supply can meet that standard. The need for reliability applies to the District's water supply system as a whole. By diversifying water sources, the District reduces the risks to public health and safety in the event any one source is disrupted.

2. Subirrigation can undoubtedly contribute to springtime saturation of surface soils with water and that this reserve of water benefits crops after the water table drops. In some years of exceptionally low winter and spring rainfall, subirrigation may still provide sufficient water for surface soils to reach 100 percent of their water holding capacity. When winter and spring precipitation are low, however, the flow in the Platte River and the water table in the aquifer are also low, which would reduce the effectiveness of subirrigation to saturate surface soils. Although the analysis of impacts from reduced subirrigation did not include the above factor, the disadvantage of subirrigation that would be relieved by a reduction in water table - too much water that can delay planting or drown crops - was also not included. Not including the two preceding factors tend to balance out in the overall impact analysis and that the reduction in groundwater level to less than 10 feet below the surface is still considered the best criterion for assessing impacts.

RECREATIONAL RESOURCES 4-69-70

To mitigate lost recreation, the district has pledged to consider opening the Douglas County portion of the Platte West well field for limited recreational use. Would this include public access for deer hunting as the current no public hunting has caused a very large increase in the deer population which has caused significant crop loss damages. 3

Please confirm receipt. tychiat@alltel.net Thank you.

4/12/01

3. The District has indicated they will work with the appropriate resource agencies to control deer populations on the well field, if necessary. Controlled hunting on the Douglas County portion of the Platte West alternative well field is a possibility.

Dear Sir ,

March21,2001,

I am Chairman of the Environmental Committee for the WillowPoint Home Owners Association. We are located on the west bank of the Platte River between Highway 6 and Mahoney Park. We are concerned that the MUD Wells will reduce the water volume in the Platte Valley and adversely affect wells, lake levels and endangered species which occasionally nest near us. Some of the home owners have sand point wells and are especially vulnerable to reduced water levels. Property value range from $100,000.00 to $300,000.00 per home. We have 54 homes. We are very concerned about protecting our lake, wells, and property value.

Thank you for your consideration,

Sue Pickering
51 WillowPoint Drive
Ashland, Ne. 68003

1. The Willow Point community is well outside the groundwater cone of depression that would be created by the Platte West alternative well field (see Figure 4-2 in the DEIS or FEIS). None of the wells in your community, therefore, are expected to be impacted by this alternative. As stated in the DEIS, the change in water level in the Platte River caused by the Platte West alternative well field would be less than 0.5 inch. This change is not expected to be perceptible. No adverse impacts to your lake, wells, or property values are anticipated from the Platte West or Platte North alternatives. Should impacts unexpectedly occur, MUD as pledged to work with affected owners to mitigate impacts to ponds and lakes.

INVESTORS REALTY INC.

Commercial Real Estate Services

April 4, 2001

Mr. G.A. Radek
General Manager
Metropolitan Utilities District
1723 Harney Street
Omaha, Nebraska 68102

Dear Mr. Radek:

I am writing this letter regarding the M.U.D. Platte West Water Production Facilities.

First, let me introduce myself and the people I represent. I am the President of the Venice Woods Homeowners Association. Venice Woods is a residential development located north of Highway 92 and east of Campanile Road. There are 17 lots in Venice Woods with nine homes less than five years old, three more to be built in the next twelve months and several more in the future. The lots are acreage lots surrounding a 28 acre sandpit lake, which has been here for over 50 years.

Our lake has been surveyed on several occasions by Natural Habitats Unlimited and found to have a very healthy population of game fish. In addition, the lake and adjoining Wetland areas provide habitat to many species of water fowl.

The lake was the sole reason most residents have built homes in Venice Woods, and the lake is a very significant factor in the value and marketability of these homes. Domestic water for all of the homes is provided by individual wells.

We have reviewed the Draft Environmental Impact Statement dated February 2001 prepared by the Army Corp of Engineers. To our surprise and dismay, it appears that Venice Woods is identified to be an area at risk to be impacted by the MUD Well Project. To our surprise, because on previous occasions we were informed by MUD that this project would have no impact. To our dismay because it appears likely there will be an impact to the ground water level which supports our lake, the surrounding wetland areas, and perhaps our domestic water supply.

CCIM

11301 Davenport Street • Omaha, Nebraska 68154-2605
Phone: 402-330-8000 • Fax 402-330-1818
www.investorsomaha.com

1. In the first DEIS, the Venice Woods lake was outside of the 1-foot drawdown contour. The original modeling, however, contained an error, which when corrected, expanded the cone of depression. In the corrected modeling presented in the revised DEIS, a 1- to 2-foot drawdown is predicted for Venice Woods. This amount of drawdown should not significantly impact properly constructed domestic wells. The District recognizes its duty to respond to proven damages to landowners arising from the operation of its Platte West alternative well field to the extent provided under Nebraska law. Upon a written claim by a landowner asserting damage, the District would accept and perform a good faith review of the claim and all evidence submitted in support of it. The District would also share any monitoring information in its possession with a claimant. If the District concludes that the claim and the amount of claimed damages are valid, the District would pay the claim as it does other legitimate claims. If the parties cannot agree on the validity of the claim or the amount of damages, the final resort may be a remedy under the Tort Claim Act, or a condemnation or inverse condemnation procedure. The condemnation process in Nebraska is an administrative procedure involving the naming of three landowners of the county in which the land is located to a Board of Appraisers. This Board, named by a county judge, then determines the amount of damage that may be caused to a landowner.

Please understand that we respect MUD's need to provide water service to the rapidly developing West Omaha Area, but ask MUD the same respect for our concerns about our lake and our homes. If MUD moves forward with this project, we will expect and demand that MUD take whatever steps are required to insure the stability of our water table level and habitat, and quantity and quality of our domestic wells. 2

Sincerely,

Venice Woods Association

BY: _____
Stephen M. Farrell, President

cc: Rebecca J. Latka, U.S. Army Corp of Engineers
Venice Woods Property Owners

2. Please see the response to comment 1.

Metro Omaha
Builders
Association

11421 Davenport Street
Omaha, Nebraska 68154-2526
(402) 333-2000
FAX (402) 333-2002
www.moba.com

2001 OFFICERS
Rod Jeck
President
Barbara J. Wickman
First Vice President
Scott Byrd
Second Vice President
David Hartman
Associate Vice President
Dennis D. Blackman
Treasurer
Debra J. Benak
Secretary
Barbara J. Wickman
Executive Vice President
J ogers
Pas. resident

March 16, 2001

U. S. Army Corps of Engineers, Omaha District
Attention: Ms. Rebecca Latka (CENWO-PM-AE)
215 North 17th Street
Omaha, NE 68102

Re: Public Comment on Draft EIS for the Platte West Water Production Facilities Project

Dear Ms. Latka:

I am writing to you in support of M.U.D.'s efforts to obtain a Section 404 Permit for the Platte West Water Production Facility. The Metropolitan Omaha Builders Association (M.O.B.A.) works in conjunction with M.U.D. quite often. For the majority of our members, M.U.D. is their water supplier. We realize the need for an additional facility to meet the increased demands for the growing metro area; especially along the western boundaries of the region. We appreciate M.U.D. delivering a high quality water supply to our residents, and support their efforts to utilize the highest quality source water available to them. As a growing community we understand the importance of a reliable water supply, and M.U.D.'s efforts to avoid becoming overly dependent on a single water supply source.

For these reasons, M.O.B.A. supports the M.U.D.'s preferred alternative in the Draft EIS and encourages the Corps of Engineers to approve the Section 404 Permit to allow M.U.D. the right to construct the Platte West Water Production Facility.

Sincerely,

Barbara J. Wickman
M.O.B.A. Executive Vice President

1. Your opinion is noted.

GREATER OMAHA CHAMBER OF COMMERCE

April 3, 2001

Ms. Rebecca Latka
US Army Corps of Engineers–Omaha District
215 North 17th Street
Omaha, Nebraska 68102

RE: Metropolitan Utilities District Platte River West Water Production Facilities Project

The Greater Omaha Chamber of Commerce supports the Metropolitan Utilities District's application for a Clean Water Act section 404 permit related to its plan to establish well-fields in Douglas and Saunders Counties, Nebraska. The permit would allow MUD to construct a pipeline across the Platte River as part of a well-field and water treatment facility to provide water supplies for the greater Omaha area. We understand that this project would have environmental impact. We are confident, though, that the mitigation plans developed by MUD are adequate.

The Metropolitan Utilities District—a political subdivision of the state—serves residents of the City of Omaha and also those in the Nebraska cities of Bellevue, Bennington, Fort Calhoun, LaVista, Ralston, and Waterloo, and the city of Carter Lake, Iowa. It is also serving the new and growing communities that surround these cities. The Greater Omaha area has been experiencing significant economic and population growth, and it falls to the Metropolitan Utilities District to meet the demand for additional supplies of water. In the past, MUD has consistently met this demand with reliable, low cost, high quality service.

As the Chamber has worked to foster economic development, we have been able to rely on MUD to provide adequate and dependable water service. That has played a key role in successes such as the Caterpillar/Claas plant now under construction in Sarpy County. We have always been able to count on MUD's diligent planning for growth in population and industry.

We believe that MUD's new water facility is important to Nebraska and urge the Corps to approve the section 404 permit application.

Thank you for your consideration in this matter.

Most sincerely,

C. R. "Bob" BELL
President

1301 HARNEY ST.
OMAHA NE 68102-8104
402-346-5000
FAX:402-346-7050

1. Your opinion is noted.

Latka, Rebecca J NWO

From: Bnjopicker@aol.com
Sent: Monday, April 02, 2001 8:18 PM
To: Latka, Rebecca J
Cc: Bnjopicker@aol.com
Subject: Comment Form

My name is Russell Hobson. I live at 4420 S. 228 Plaza.Elkhorn Ne. 68022. I understand the need for Omaha to expand their water system, but I do not understand the need for them to return the water outlet drain through MY property. You see, I have Ten acres here. Of that ten acres about 6 1/2 are pasture for my horses. 1 1/2 is where my dwelling sits. The remainder is what I use for hunting, sitting and reflecting, and my daughter sits and reads her books. According to the Draft Environmental Impact Statement, It says that a 100 ft pathway through this area would have no effect. This pathway would cross right through my creek bed, which winds through my property and my neighbors. A 100 ft. construction path would wipe out entirly, most of the trees that I own on my land. What better could you ask for than to have pasture, hills, trees, and a creek running through ones property. This return line would destroy MY dreams. My creek is considerd a Palustrine Forrested Wetstream. Water runs through here all the time. My fear is by allowing MUD to return the line here, would devalue my property extreamly. I would not be allowed to build any type of bridgeway to get to my property on the otherside of the creek. I am strongly against them bringing the pipeline through my property. I will be inconvenienced with them (MUD) when they would come through with the Main Waterline. It will cross my lane that I use to get to my property. Why not use the same route for both lines instead of inconveniencing more property owners? One thing is I have a personal well within about 150 feet from the 100 ft. construction path. What impact will that have on my drinking water? MUD wants to disturb my ground when I won't even be using their water!!!!!! I urge you NOT to allow Permits be given to MUD for the pipeline to follow this creekbed.

Russell,

Carol and Tiffany Hobson

1

1. The District has decided to route the wastewater discharge line from the proposed Platte West treatment plant to the Elkhorn River in the same easement as the raw water pipeline from the well field. The FEIS has been revised to reflect this new alignment.

Dwight Haney
15222 Wycliffe Dr. #13
Omaha, Nebraska 68154
dhaney1969@aol.com

March 23, 2001

Rebecca J. Latka
Environmental Resources Specialist
USACE - Omaha District
CEMRO-PD-M
215 N. 17th Street
Omaha, Nebraska 68102-4978

RE: Comments on the draft EIS for Platte West Water Production Facilities

Ms Latka:

After having reviewed the Draft Environmental Impact Statement for the Platte West Water Production Facilities, I have the following comments/questions: 1

Location of the proposed wetlands mitigation site (Append D, Fig 1-2). The site selected is in close proximity to the old Allied Chemical/ PSC Nitrogen Fertilizer Company well field (as can be seen in the Figure I-2). It is my understanding that the PCS plant does not currently operate these wells, but that the wells are still listed as active on the Nebraska well registration database. When the PCS well field operated at 20 MGD, it caused 1 to 1.5 feet of drawdown across the proposed mitigation site. (Layne 1973).

Last year, a meat packing plant was looking at possibly locating in the Omaha area. They were looking at the PCS plant as a potential site. If so, they would probably want to use the existing well field. How would building the wetlands at Options A through C affect PCS (or vice versa)? Would that lower the value of the PCS property if these wells could not be operated because they would dewater the new wetlands?

Elimination of Platte South 2 Alternative. On page 2-20, the Platte South 2 alternative seems to be eliminated due to the possibility of the produced water being classified as "groundwater under surface influence" and then requiring more costly treatment, yet horizontal wells at the existing Platte South (designated as Platte South 1 in this comment letter) well field as considered as part of several combination alternatives. 2

A report by HDR (1963) shows a cross-section of the alluvial aquifer in the Cedar Creek area where the Springfield Creek enters the Platte River. Saturated aquifer thickness is about 100 feet (as opposed to the Platte South 1 saturated aquifer thickness of 50 feet). Horizontal well laterals could be set as low as low as 90 feet below ground water surface. A vertical separation of between the riverbed and the laterals would be 70 feet or so. Consider that the top of the screen

1. The Corps thanks you for this information. Should a Section 404 permit be issued for the project, a condition would be included in the design of the final mitigation plan to accommodate this potential drawdown, if needed.

2. The possibility exists that water produced by horizontal collector wells in the Platte River alluvial aquifer can be considered "groundwater". Moving a collector well away from the source of recharge to ensure that it would not be classified as being "under the direct influence of surface water", however, can have serious impacts on the collector well yield. Several aquifer and design parameters have a direct relationship on well yield. These include aquifer transmissivity and the gradient of the groundwater toward the well as the well is pumped. Moving the well away from the source of recharge will reduce the gradient thus reduce the well's yield. To obtain the necessary yield from the collector wells at the Platte South 2 location, the distance from the well screens to the river bottom could well be much less than 70 feet, which would increase the likelihood the water from these wells would be under the influence of surface water.

   The state has established a number of criteria to determine whether a collector well would be classified as under the direct influence of surface water. If doubt exists about any of the six initial screening criteria, a second level of analyses is required including evaluation of several water quality parameters. A variation of 15 percent between the high and low results of monthly sampling could result in a classification of "under the direct influence." One of the water quality parameters to be measured is temperature. Our experience with other collector wells shows that temperature variations could easily exceed this variation. The third level of investigation is particulate analyses of samples from the well. The second and third levels of investigation require water samples from the well. This means the well is constructed and in operation. For a utility to proceed with design and construction of wells and treatment facilities under the assumption that its source is "groundwater" would not be prudent when is a potential exists for the state to require additional treatment because of a determination of influence of surface water. For purposes of alternative evaluation, therefore, water produced from horizontal collector wells was assumed to be groundwater under the influence of surface water.

   The third step in the alternative selection process was to pick the best alternative from within each group of similar alternatives for detailed analysis in the EIS. Based on standard industry guidelines, the alternatives selected were those which would produce the relatively highest quality water. Groundwater was considered to be of higher quality than groundwater under the influence of surface water. Within the Platte River aquifer group of alternatives, the alternative with the highest water quality would be Platte West. This alternative, however, is the Applicant's preferred alternative and, as such, would be included in the EIS regardless of water quality. The next best alternative within the Platte River aquifer group in terms of water quality was Platte North because this alternative would have a mix of vertical (*e.g.*, groundwater) and horizontal collector (*e.g.*, groundwater under the influence of surface water) wells. The Platte South 2 well field would consist of all horizontal collector wells and was considered to have poorer water quality than Platte North. The Platte South 2 alternative, therefore, was not selected for detailed analysis in the EIS (see pages 2-19 through 2-22).

in some of the vertical wells located at Platte South 1 is 30 feet below ground water surface. Based on USGS topographic maps, some of the Platte South wells appear to be set back less than 100 feet from the Platte River. From Neuman delayed yield analysis of the Platte South 1 pumping tests, vertical hydraulic conductivity is only 1/6 of horizontal hydraulic conductivity. The Platte South 1 wells are not considered to produce groundwater under surface influence.

Horizontal wells placed at the Platte South 2 site would not have to have laterals running underneath the Platte River to induce the necessary recharge. The design of the horizontal wells allows for a more uniform drawdown (and greater available drawdown) than vertical wells. Keeping the riverward laterals shorter to allow a certain distance between the riverbed and screen is an option.

Expansion of the Platte South 1 well field alternatives. I think one would be hard pressed to get an additional 40 MGD by placing horizontal wells at Platte South 1. The saturated aquifer thickness at the riverfront wells range from 38 to 85 feet. The deeper aquifer is located in a channel around Well #7. Mostly the aquifer thickness is 48 feet. Not much additional available drawdown can be obtained over the current configuration when you account for the need to have 4 to 8 feet of aquifer below the laterals. The advantage will be in the distribution of drawdown being more uniform.

There would be construction obstacles associated with placing a deeper horizontal at the Well 7 location. Well logs show boulders at depths greater than 50 feet below ground surface. Boulders can be pulled out with the caisson method used to construct the existing vertical wells. How does MUD propose to push lateral screen around boulders? In addition, a higher percentage of fine sand is associated with depths greater than 50 feet at the Platte South 1 location. This would be another problem for building horizontal wells of the desired yield.

Effects of pumping an additional 40 MGD at the existing Platte South 1 well field. Throughout Chapter 4 there are comments to the effect that an additional 40 MGD withdrawal at the Platte South 1 well field will have no effect on expansion of the cone of drawdown. The report sites as support a ground water modeling study performed by Layne GeoSciences to determine the amount of in stream flow needed to supply the well field page 4-19). The model used by Layne was a simple model called QUICKFLOW that superimposes analytical well equations on a uniform flow field. It assumes that the Platte River is as deep as the aquifer and that there is no layer of lower hydraulic conductivity riverbed separating the river from the aquifer. Given those assumptions, one might not expect the well field drawdown cone to expand. In reality the river is shallow in comparison to the aquifer thickness and the silty riverbed will hinder recharge to the aquifer.

Also ignored in the Layne modeling was contribution from fractured bedrock flow. The LaPlatte Fault funs directly through the Platte South 1 well field (Burchett et al. 1967). It appears that the deep bedrock channel located around Well #7 is a result from scouring along the fractured zone. An increase of 40 MGD may substantially lower the cone of depression at the northern boundary with the limestone bluffs. What effects might this additional drawdown have in increasing flow from secondary porosity in the bedrock due to the fault? Could water quality be compromised? Could water quality affect maintenance costs? When there was an increase in well field

3. The comment is correct that collector wells provide more available drawdown because the laterals are generally installed close to bedrock. However, Hydrogroup (now Layne Christensen) found finer or lower permeability material in lower depths during the testing and design for the Lincoln collector wells. This emphasizes the need to perform zone testing to determine the appropriate level for lateral placement to maximize yield.

   Recently, a collector well in the Northwest United States was constructed in a boulder zone using Japanese technology to drill (not push) laterals through boulders. If testing showed this zone to be most appropriate for collector construction, this technology could be used for well completion in the Midwest.

4. Although the lower hydraulic conductivity of the river bed materials would diminish overall areal recharge, the large riverbed area adjacent to the well field would contribute sufficient volumes of recharge that would flow to the wells without significantly changing the cone of depression under terrestrial and semi-aquatic habitats.

   The La Platte fault occurs in eastern Nebraska and post-dates deposition of the underlying bedrock. One publication, *Twelve Maps Summarizing the Geologic Framework of Southeastern Nebraska* by Burchett and Carlson (1966) indicates a fault in the immediate vicinity of the Platte South well field. This fault is probably the La Platte cited by Mr. Haney. Because the fault post-dates the bedrock, a fracture is probable present and may be contributing some groundwater, which probably has higher total dissolved solids than that residing in the overlying, alluvial aquifer. The relative magnitude of flow contributed by the bedrock along the fracture zone, however, would be very small compared to recharge by precipitation and induced infiltration from the Platte River, even with increased drawdown that would probably occur as a result of the larger withdrawals from the Platte South well field. This fault, therefore, would not compromise the quality of water produced by the well field nor would maintenance costs be significantly increased.

production between 1984 and 1988, the Well #11 and 50 series wells (wells intercepting water from north of the wells) started having problems with decreased well efficiency.

Other EIS Contributors. Several consultants are listed in Table 5-6 as having a role in and contributing to the EIS. The inclusion of these people (listing their experience) gives the impression that they have approved of the content of this EIS. I have noticed that several are not on the mailing list and I know of several who were not aware this draft report was available.

5

I also want to reiterate that my interest in providing comments on this EIS is academic. I have no interest in any party supporting or challenging the construction of the Platte West facilities other than being a MUD customer.

Respectfully submitted,

Dwight Haney

References:

Burchett, R.R. and E.C. Reed. 1967. *Centennial Guidebook to the Geology of Southeastern Nebraska*. Lincoln, NE: Conservation and Survey Division of University of Nebraska-Lincoln.

Henningson, Durham, and Richardson. 1963. Development of new water supply. Unpublished report submitted to Metropolitan Utilities District. Omaha, NE: Henningson, Durham, and Richardson.

Layne GeoSciences, Inc. 1995. Metropolitan Utilities District Platte South well field LB 301 application. Unpublished report prepared by Carl E. Nuzman. Mission Woods, Kansas: Layne GeoSciences, Inc.

Layne-Western Company, Inc. 1973. Hydrology investigation, Allied Chemical Company Plant Site, LaPlatte, Nebraska - July 19, 1973. Unpublished report prepared by Carl E. Nuzman. Omaha, Nebraska: Layne-Western Company, Inc.

5. The personnel listed on Table 5-6 were involved in the preparation of the supporting documents listed on Table 5-2.

COMMENT FORM

PLATTE WEST WATER PRODUCTION FACILITIES DRAFT ENVIRONMENTAL IMPACT STATEMENT

The U.S. Army Corps of Engineers solicits your comments on the information contained in the Platte West Water Production Facilities Draft Environmental Impact Statement. Please print your name, address on comments in the space provided below. If the space below is insufficient for your comments please feel free to use additional forms or other paper. When you have completed the form, you may put the form in the box provided at the workshop or mail the form to the address on the back. The use of this form is NOT required for submitting comments to the Corps. Comments can also be submitted via e-mail to **Rebecca.J.Latka@usace.army.mil.** Comments on will be accepted through 13 April 2001.

Name James Siebken

Representing Self

Street Address 64 Ginger Ale Rd

City, State, Zip Valley NE 68064

Comments: I attended the public information meeting on March 21st and support the approval of the Draft Environmental Impact Statement and issuance of a 404 permit without conditions. 1

I do suggest that the Executive Sommary and the chart "Summary of Major Economic Impacts" comparing the 5 alternatives show the relative economic impact to the water user which is very significant. That is - the construction cost, mitigation cost, O&M costs, cost per 1000 gallon and cost to average user. I realize that this info is contained in the main document but strongly feel that it should be highlighted in the Executive Summary & Economics Chart as it is equally if not more significant than the economic impact of property values, farm income or county taxes. It puts the proper economics for selecting the Platte West alternative more clearly. 2

1. Your opinion is noted.

2. The Socioeconomics section of the FEIS has been expanded to include the relative cost to the consumers of the alternatives. This information has also been added to the Summary.

COMMENT FORM

PLATTE WEST WATER PRODUCTION FACILITIES DRAFT ENVIRONMENTAL IMPACT STATEMENT

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Name _____

Representing _____

Street Address _____

City, State, Zip _____

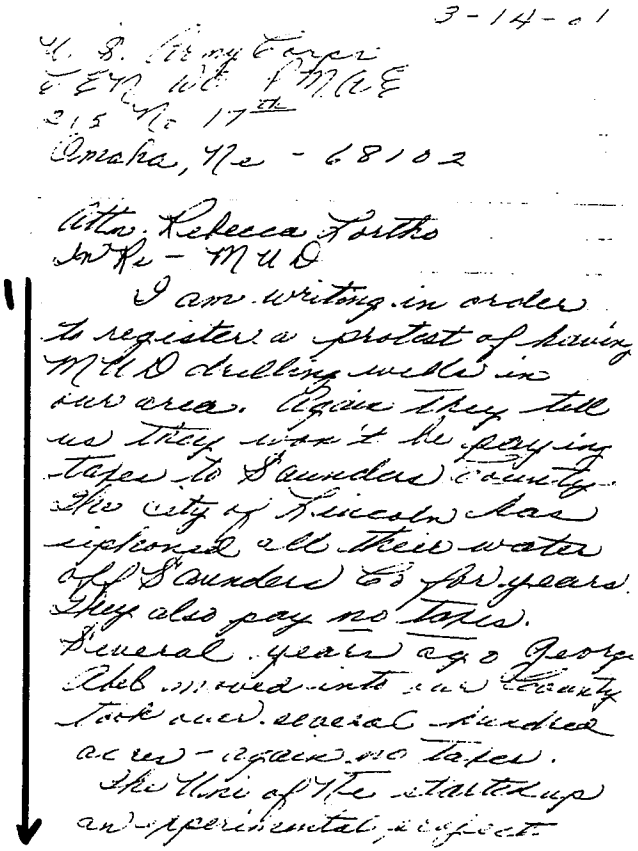
Comments: Why didn't you have any maps showing where our property/homes are located and exactly where the piping will be located? 1

Will you be having another meeting to provide this information? 2

1. Not all property owners in the vicinity of the water supply alternatives would like their name shown in this document. The maps provided in the EIS contain enough landmarks so that interested parties can locate their property. The exact location of the pipelines was not specified in the DEIS because they were not known at the time.

2. According to NEPA and Clean Water Act regulations, another public meeting for the EIS is not required. The public has the opportunity to submit written comments on the FEIS.

1. Granting a Section 404 permit for the Platte West alternative would not trigger an immediate removal of the well field property from the Saunders County tax roles because the District purchased the property over 10 years ago. For most of that time, the District did not pay property tax on that land. With the implementation of LB 968, some of the well field land that the District is leasing is now generating property tax revenues. The District has indicated they expect to continue leasing some of the land after the well field is completed.

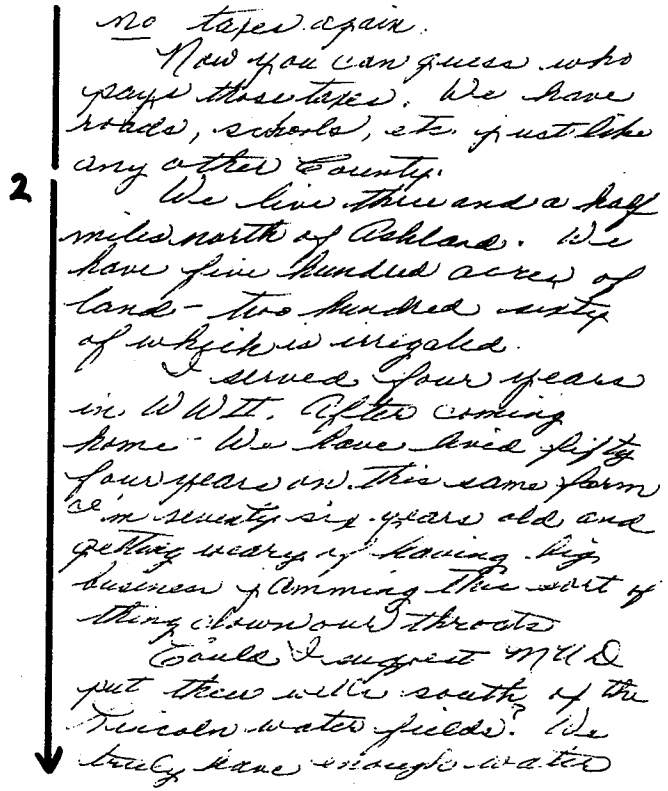


3-14-01

U. S. Army Corps
CEN WO / MCE
215 No 17th
Omaha, Ne - 68102

Attn: Rebecca Fortho
Re - MUD

I am writing in order to register a protest of having MUD drilling wells in our area. Again they tell us they won't be paying taxes to Saunders County. The city of Lincoln has optioned all their water off Saunders for 50 years. They also pay no taxes. Several years ago People Ltd moved into our County took over several hundred acres - again no taxes. The Use of the wetlands are experimental, I object



no taxes again.

Now you can guess who pays those taxes. We have roads, schools, etc. just like any other County.

2 We live three and a half miles north of Ashland. We have five hundred acres of land - two hundred sixty of which is irrigated.

I served four years in WWII. After coming home - We have lived fifty four years on this same farm & I'm ninety six years old and getting weary of having big business & dumping this sort of thing down our throats.

Could I suggest you put these wells south of the Lincoln water fields? We have enough water

2. Your opinion is noted.

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Sucked out from under us
Thank you for your
consideration

Sincerely—
Howard D Schojeldt

April 10, 2001

Ms. Rebecca J. Latka
U.S. Army Corps of Engineers, Omaha District
CENWO-PM-AE
215 North 17th Street
Omaha, Nebraska 68102

Dear Ms. Latka:

Thank you for sending me the Draft Environmental Impact Statement (DEIS) on the Platte West Water Production Facilities, dated February 2001. I found it quite interesting. It is obvious that changes have been made since the last publication, which I believe, is a result of previous public comments.

However, I do not believe those who prepared the DEIS listened to the bulk of the public comments and continue to slant and bias the DEIS to agree with their preselected conclusion. In this light, the DEIS does not "rigorously explore and objectively evaluate all *reasonable* alternatives" as required by the National Environmental Policy Act of 1969, as amended. The Missouri River options were all purposely excluded based upon the "source other than the Missouri" criteria. Yet, in the overall, the Missouri can provide more water than all the other options combined, and can provide significant future expansion if necessary without further stress on wetlands, the Platte and Elkhorn Rivers, and individuals who are trying to make a living by farming. The Platte West is the best selection only if the intent is to destroy the livelihood of a portion of the farming community. I have provided an attachment to this letter which deliniates my thoughts and several areas where I believe further information and studies are required.

Areas in the attachment contain more detailed thoughts on why I believe the DEIS evaluation is inadequate. Summarizing, they are:

- Industrial and Municipal use does not have priority over Agricultural use
- Cost of lost farm production is significantly low
- Cost of lost farm land is significantly low
- District's "assistance" to farmers screams of arbitration and litigation
- Criteria biased to allow only the Platte West and excludes the much better options using either the Missouri River or existing infrastructure options
- All wetlands have not been included to address Section 404 Permit concerns
- No cost detail is available for public scrutiny

With the information provided in the both the January 1999 DEIS and the February 2001 DEIS, it clearly leads me to believe that the priorities for the Omaha Metropolitan Utilities District (MUD) should be as follows:

- PRIORITY 1: NO FEDERAL ACTION
  This is the least expensive with very little impact on existing homeowners and farmers.

- PRIORITY 2: UTILIZATION OF EXISTING INFRASTRUCTURE FOR EXPANSION.
  The Florence intake, and the Platte South wellfield are in existence, so it makes sense to expand infrastructure that is already in place. These options, although more expensive,

Page 2

do not place a heavy burden on the individual farmers, nor do they create a much of a problem with wildlife, wetlands, or a shortage of Missouri River water. The additional cost is insignificant when distributed among thousands of District customers over many years.

1. Response to comments on this cover letter are made in the context of responding to the attachment.

- PRIORITY 3: MISSOURI RIVER OPTIONS
  With the quantity of water in the Missouri River, it would appear that there would never be a shortage. The DEIS states that Alluvial Aquifer Group has a potential yield in excess of 350 MGD – which is more than 3 times what the District states that it needs. Here is a huge reserve supply for the future with no need to disturb individuals, wildlife, or wetlands in the event more water is needed.

- NOT AN OPTION: EITHER OF THE PLATTE WEST/NORTH WELLFIELDS OR ANY OPTION THAT INCLUDES THEM.
  These options place an unrealistic, unnecessary, and significant burden on individual farmers. These options could easily cost some farmers their livelihoods. Additionally, wildlife and protected species will be affected.

In closing, it is obvious that:

- The DEIS does not include all reasonable alternatives and therefore is inadequate.

- The U.S. Army Corps of Engineers, Omaha District **IS OBLIGATED TO DENY AND NOT ISSUE A SECTION 404 PERMIT FOR THE PLATTE WELLFIELDS as not all affected wetlands have been addressed. Also the Missouri River options would create the least loss and disruptions to wetlands.**

TIMING OF THE DEIS – The timing of the release of the DEIS does not allow adequate review time for the people it affects the most. It is in mid-March when farming begins in earnest. Could you please make future releases for comment in early January? This will allow farmers to give the releases a good review.

Pursuant to Title 40 of the Code of Federal Regulations, Section 1506.6, paragraphs b (1) and b (3viii), I would appreciate being kept up to date with the latest information as it develops. Please use the address listed below.

Sincerely Yours,

John L Butcher Jr

John L. Butcher, Jr.
2800 Van Giesen
Richland, WA 99352
Phone 509-943-2800

Attachment

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ATTACHMENT TO LETTER
FROM J. L. BUTCHER
TO
Ms. REBECCA J. LATKA
U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
DATED APRIL 10, 2001

COMMENTS TO
DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
FEBRUARY 2001

INADEQUACY OF THE DEIS

Unfortunately, time has limited my ability to research all the issues within this subject of interest to me. I believe that, given more time to conduct a more thorough investigation, I would be able to find other inadequacies of the DEIS and stronger evidence to support my position on the options. I have listed below some inadequacies within the DEIS. To facilitate your review of my comments, I have tried to designate the sections and/or page numbers to which I am referring.

Although several things have received further research for this issue than was presented in the January 1999 DEIS, I believe the 1999 DEIS was superior to this issue. The 1999 DEIS did a much better job of presenting options than does this issue.

EVALUATION OF ALTERNATIVES – Pages 2-11 through 2-21

This section was blatantly designed to point to the Platte West well field, as opposed to being realistic about possible alternatives. If the mindset is toward a particular pre-selected objective – which it is – one can design the criteria to only select what you want. Additional criteria should have been added – least impact to individuals – which would have eliminated all the Platte well fields. In a sensible criterion, the Missouri River alternatives would never have been eliminated. In fact, they are the best alternatives for water of all the alternatives. To rule out the use of the Missouri River due to the pre-selected, and biased, criteria that the water source must be from something other than the Missouri does not meet common sense. Page 2-12 states that the Missouri River could "supply the required 90 MGD of firm production capacity without resorting to extraordinary or untested engineering solutions" -- AND THIS IS ELIMINATED FROM THE OPTIONS???? The DEIS also states that "the average annual discharge of the Missouri River is approximately five times greater than the Platte River near Ashland (Page 3-9) – another reason to ask about purposely dispensing with all the more sensible Missouri River options. 2

The Missouri River alluvial group with "potential yields in excess of 350 MGD" provides more than 3 times the quantity the MUD needs. Therefore, not only does it provide more than sufficient water for the next 30 years, but also provides for considerable expanded capacity beyond 30 years. Further, once the system has been installed, there is a much greater possibility that individuals, wetlands, wildlife, etc. will never be disturbed again. 3

2. The EIS specifies the new water supply for the District must meet two needs. The first need is for an additional 100 MGD of maximum production capacity to meet the peak daily needs of the District's customers through approximately the year 2030. The second need is for at least an additional 62.8 MGD of production from a source other than the Missouri River. The District's need for additional redundancy in their sources of water is reasonable and justified as standard industry practice and prudent planning to minimize risk to public health and safety. The rational for this purpose and development of the specific need were given Chapter 1 of the DEIS. The elimination of Missouri River-based alternatives follows directly from the need for redundancy.

3. The Missouri River is a potential source of water for the District beyond 30 years from now. At this time, however, the District's need for additional redundancy in their sources of water is reasonable and justified as standard industry practice and prudent planning to minimize risk to public health and safety.

The DEIS stated that diversion of the surface waters of the Missouri River would not significantly reduce the river flow, however under normal pumping the Platte River be reduced less than a half inch (Page 4-50). In other parts of the DEIS, it is stated that the well field has the capability of pumping the Platte dry under low flow conditions (Page 4-13). But of course the MUD would not pump it below 838 CFS as that would not allow Lincoln its water. Does the MUD guarantee it will never make a mistake on its minimum allowable pumping with all the associated problems to Lincoln, wildlife and fish? Also, why would one want to choose a well field in a floodplain? Will the well field be able to continue pumping in the midst of a flood like June 12, 1944 when the whole area was covered with water? To choose the Platte with these kinds of potential problems makes absolutely no sense to me when none of these problems exist by using the Missouri. 4

Page 2-25 states the cost per 1000 gallons of water from the Platte West well field will cost $2.00. On Page 2-19 of the January 1999 DEIS, it states the cost of 1000 gallons of water from the Expanded Florence alternative will cost $1.99. To eliminate a cheaper alternative doesn't seem to make sense. Another reason to include the Missouri alternatives. 5

The other point that does not make sense is to purposely move away from existing infrastructure such as an expanded Florence and Platte South. I realize that would require modifications, but I believe it is far less disturbing to the wetlands, endangered species (which I believe should include some human beings like farmers), wildlife, human habitat, etc. Use of an expanded Florence and Platte South would also meet your criteria of not having the Missouri River as a single source. To me this is not a bad alternative, but second to the Missouri River Group. Isn't it interesting that the Expanded Missouri and Florence Treatment Plant would only remove 19 acres of lawn (Page 4-34, January 1999 DEIS) and is not even considered? 6

And finally I notice on Page 6, Table 1of Appendix A that many of the cities listed used reservoirs and for some it was 100% of their supply. Why were reservoirs in conjunction with a Missouri River alternative not presented? It would appear that this also could be an excellent alternative. 7

INDUSTRIAL AND MUNICIPAL USE-Page 4-13

It is obvious this version of the DEIS plays down the use of water for industrial purposes. The January 1999 did a much better job presenting what percent was being used for domestic and what percent was being used for industrial purposes. Since I do not have it with me as I am writing this, I seem to recall that over 50% of the MUD's "need" was for industrial use. It has been some time since I have read the Nebraska Constitution regarding water rights, but my notes used for the January 1999 DEIS indicates that Article XV, Section 6 prioritizes water rights in the following order: Domestic, Agricultural, and Industrial. Please note there is no "Municipal" use indicated, as implied by the statement on Page 4-13 regarding Statute 46-204. My interpretation of this is that domestic use (individual domiciles) does have priority over agriculture (farms), however any industrial use (factories, golf courses, landscaping, etc. or anything that does not have to do with basic maintenance of the household) does not. Also high quality water is not necessary for industrial uses. It appears that the present DEIS, in downplaying the use of industrial water, is specifically trying to mislead the public. 8

4. Operation of the Platte West alternative well field would be subject to Nebraska water rights statues and the District would have to work with the Nebraska Department of Natural Resources in the event low flow in the Platte River caused a call for water by senior downstream users.

   Well fields are frequently constructed in floodplains because that is where high-yielding alluvial aquifers exist. Constructing wells to withstand flooding is routine.

5. The cost of water per 1,000 gallons in the 2001 and 1999 DEISs are not comparable because the 2001 costs were updated. If the costs for the Expanded Florence Plant had been updated, the relative cost comparison seen in the 1999 DEIS would have remained in the 2001 DEIS. The Corps also notes that cost was not a factor in selecting alternatives for detailed evaluation in the DEIS.

6. Although evidence exists that the Missouri River alternatives would have less impact to certain aspects of the environmental than Platte River alternatives (see original DEIS from 1999), the Missouri River alternatives were dropped from consideration because they could not meet the District's need for source redundancy.

7. Reservoirs, in two forms, have been considered as possible alternatives. The standard form is a large reservoir on a river or stream that would have a yield of at least 62.8 MGD. A reservoir of this size would likely need to be approximately the same size as the large reservoirs in central Nebraska. The Corps, which has extensive experience constructing large reservoirs, is unaware of suitable locations for a major reservoir in the general vicinity of Omaha. In addition, the adverse environmental impacts from reservoirs are generally much greater than from well fields. Secondly, a reservoir could also be used to store water pumped out of the Missouri River, which would be used if the Missouri River were to become unavailable because of a contamination event. The storage reservoir would need to contain a 14-day supply of 62.8 MGD per day or 2,700 acre-feet of water to provide a reasonable level of back-up. With an average depth of 6 feet, such a reservoir would cover 500 acres. The Corps notes that in the original DEIS the Missouri River-based alternatives were substantially more expensive than the Platte River aquifer-based alternatives because the addition of a 500-acre lake would add many tens of millions of dollars to the capital cost and operation cost would be further increased because of the additional pumping needed to replace seepage and evaporative losses to maintain water level in the reservoir. Further, the environmental impacts of inundating 500+ acres of land would offset the otherwise minimal impacts of the Missouri River alternatives. Alternatives of a reservoir alone or in conjunction with a Missouri River intake were considered unreasonable in the sense that the alternatives are not "practical or feasible from the technical or economic standpoint" (46 FR 55 p18927).

8. The DEIS incorrectly stated that the District's 1,000-cfs water right had priority over upstream agricultural and industrial users. Under low flow conditions, the Platte West or Platte North alternatives could have to curtail pumping if flow at Lincoln's Ashland well field drops below 700 cfs. Based on 50 years of USGS daily flow data for the Platte River at North Bend and 5 years of data at Leshara, flow in the Platte River above the Platte North and Platte West alternatives well fields would be less than 1,000 cfs approximately 0.7 percent of days or, on average, less than 3 days per year. We estimate a flow above the Platte North or Platte West alternative well fields of 861 cfs would be sufficient to meet

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Lincoln's pending senior water right of 700 cfs assuming the maximum possible induced infiltration rate by the District's well field of 161 cfs (104 MGD), no losses of river water between the District's well field and the Ashland well field, and no inflow from the Elkhorn River. Flow in the Platte River at Leshara is estimated to be less than 861 cfs 0.3 percent of the time or, on average, less than 1 day per year. The maximum monthly average depletion rate estimated for the B4 pumping scenario was 73.5 cfs. At this depletion rate, a flow in the Platte River of 774 cfs would meet Lincoln's water right. Flow in the Platte River at Leshara is estimated to be less than 774 cfs 0.1 percent of the time or, on average, about 12 hours per year. Low flows in the Platte River, therefore, could occasionally curtail use of the Platte West or Platte North alternatives well fields. Although the Platte West or Platte North alternatives well fields would not be a 100 percent reliable supply of water, no single water supply can meet that standard. The need for reliability applies to the District's water supply system as a whole. By diversifying water sources, the District reduces the risks to public health and safety in the event any one source is disrupted.

SOCIOECONOMICS – Page 4-56 to 4-66

The DEIS admits the loss of subirrigation will lower both the value of the property and the crop yields of the affected farmland. However, the loss will be greater than the stated values. Using County Assessors' assessed value is a way to project a loss; however, I believe appraised values (market values) should be used. There can be, and usually is, a significant difference between assessed and appraised values. I believe that using appraised values would show a much greater difference. By simply dividing the assessed values by 0.8 (Douglas) and 0.75 (Saunders) will not yield market value – at least not on the farm I am familiar with which was recently appraised by 2 different, and non-associated, certified farm appraisers. Both appraisers used the same definition of "market value" which is a definition agreed upon by the federal financial institutions of the United States. Page 4-57 makes no mention of this commonly used definition, and favors a method to make the actual value appear lower than real market value. Therefore, the loss as stated in the DEIS is low. 9

Figure 4-14 does not include all the prime subirrigated farmland within the cone of depression. I can see at least 240 acres that is not included. Perhaps there are local farmers who could identify more. This in turn means that the stated acreage loss in the DEIS is low. Thus, the assessed loss and "market value" loss based on acreage are both low. 10

I very much agree with the opening sentence under FARM INCOME on Page 4-61 with the exception the word "would" should be changed to "will." And as stated in the DEIS, I concur that some hypothesis is required and it is difficult to provide exact numbers. However, the assumptions used on Page 4-62 are not correct. In the farmland that I have knowledge of, and I suspect on most of the farm property adjacent to the proposed well field, nearly all of the property is planted in row crops. Therefore, when including the wetlands which cannot be planted and a small amount of pasture, the statement that only half of the land is planted is incorrect. I suspect that three-fourths to seven-eights is closer to reality with many farms approaching 100 %. Using this will show that both the cost to the farmer and the cost to the Platte West well field is much greater than indicated by the DEIS. 11

In the discussion regarding Table 4-16, the use of the term "average dryland yields of corn,....." was used. The Table provided a mean corn yield of 136 bushels per acre in Douglas Co with the maximum at 158 bushels per acre. Based on actual corn production adjacent to the proposed well field, I believe these numbers are noticeably low. For example, two years ago, one 80 acre subirrigated parcel produced 178 bushels per acre. In 2000, another 160-acre parcel produced 158 bushels per acre that is in line with the "Maximum" stated, not the mean. The point being made here is that the "Mean" of 136 bushels per acre is too low for the subirrigated lands adjacent to the proposed well field. This again implies the DEIS estimate of lost income is low in crop loss to the farmers. 12

In the January 1999 DEIS, the $297 million (1999 dollars) for the New Missouri River Intake and Treatment Plant translates to $337 million in 2003 dollars using 3% inflation for the years 2000 and 2001, then 3.4% per year for Fiscal Years 2002 and 2003 as specified by the U.S. Office of Management and Budget. The Expanded Florence Intake and Treatment Plant at $320 million (1999 dollars) translates to $363 million in 2003 dollars. Each of the above alternatives shows an annual OM&E cost of $10.1M in 1999 dollars that translates to $11.46 M in 2003 dollars. Using the New Missouri River cost in 2003 dollars the construction cost amortized over 30 years is $11.2M per year. Adding the OM&E cost of $11.46M per year, the total is approximately $22.7M per year. Through the use of linear mathematics, the cost to the consumer would be $465 per year that compares to $355 per year as specified on P2-25 on the current DEIS. 13

9. The impacts of loss of subirrigation have been revised in the FEIS using the latest data available from the Douglas County and Saunders County Assessor's offices. And though market values can change rapidly, the impacts estimated are sufficiently accurate to judge the differences among the alternatives. Compensation by the District for lost subirrigation, if based on land devaluation, would likely occur many years from when this FEIS is published and would be based on land values at that time.

10. Additional groundwater level data have been obtained from the Lower Platte North Natural Resources District and the calculation of subirrigated lands has been revised in the FEIS.

11. A more detailed study of land use has been conducted of the drawdown areas and the impacts from loss of subirrigation have been recalculated for the FEIS.

12. Crop yield data for Douglas and Saunders counties have been updated. Summary yield data for sub-county areas were not available. The data on crop yields is appreciated, but one or two examples is not sufficient to base an analysis covering several thousand acres in two counties. The impacts to crop yields from lost subirrigation have been recalculated for the FEIS.

13. Based on your figures, the loss per acre over 30 years, assuming no mitigative measures are implemented by the District, would be $3,825 per acre. Based on a liberal estimate of impacts to 4,000 acres, the total loss would be $15.3 million. On the other hand, the District has about 200,000 customers. An extra $110 per year per customer over 30 years translates into $660 million dollars of additional expenditures.

Now let us evaluate the cost to a single producer of crops on 160 acres using actual corn production numbers of 158 bushels per acre adjacent to the well field. Based on the mean production of dry land provided in Table 4-16 of 107 bushels per acre, the farmer who has lost subirrigation loses 51 bushels per acre over the entire 160 acres, or 8,160 bushels. Using the value of corn provided on Page 4-62 of $2.50 per bushel, this farmer has lost $20,400 in a single year. It should be noted that the cost to prepare the land, seed and fertilize it remains the same whether it is 107 or 158 bushels per acre. This could be the difference between a profit and a loss to the individual. To sum up this analysis, the MUD wants an individual producer to kick-in $20,400 so they can have the Platte West well field, as opposed to asking a consumer for an additional $110 per year to put in the New Missouri River alternative. On the life of the project, the delta cost to the farmer is $612,000 in lost crop production so the MUD can save the individual consumer a delta cost of $3,300. And this analysis is based on only one 160 acre parcel, not all the acres and individuals that will be affected. I am sorry, but I just can't understand how one group of human beings can even propose to do such a thing to another group of human beings.

MITIGATION TO LANDOWNERS – Page 4-65

14

The second paragraph is written to make one believe that the MUD will compensate farmers for decreased property values and crop production. However, this is caveated by "as the impacts become clear" and mitigation will "be determined on a case-by-case basis." I read this as "The farmer will probably get nothing." How many years does it take to make the impacts clear? Does the farmer have to shoulder the financial impact while the MUD is making a determination? Once the impacts are "clear," will the MUD compensate retroactively, with interest? Will the "compensation" be base on the 30 year life to the Project? Why does the MUD only propose "tape irrigation" to only one half of the acreage lost when in actuality it is 100% of the acreage that is lost?

The implication is the MUD will determine if there will be any mitigation at all. Who is the arbitrator in these cases? Must a farmer go to court and spend thousands of dollars on an attorney to get fair treatment? Will there be an arbitration board set up with the majority being farmers to arbitrate disputes? The whole DEIS states that it will be the MUD who makes any determinations with regard to MUD/farmer relations. This screams for the need of arbitration. A five-person panel should be set up for arbitrations. The panel should be made up of 3 farmers, 1 person from the MUD, and 1 person from the Corps of Engineers.

GROSS COST OF ALTERNATIVES

15

The cost of alternatives are given in three large numbers, construction, annual OM&E, and mitigation which reminds one of a Line Item to Congress. There is no data provided to the reviewer to justify these cost, or to evaluate the costs. For example, what is the value on the land for the Treatment Plant? Is it "market value" as specified for Property values on Page 4-57, or is it based on real market values? I am not intimately familiar with the location of the Treatment Plant, but it appears to me that it is in the shadow of the westerly growth of Omaha. This could easily mean that the real market value of this property is $20,000 plus per acre. If "market value" as defined on Page 4-57 is used, it is easy to translate the delta between real market value and that used in the DEIS to be as much, or more than $3 million. Thus, if my analysis is correct, the stated amount to construct the Platte West well field is low.

16

The DEIS is inadequate to assist the reviewer in reviewing costs. What is the cost of each of the two pipelines in the Platte South plus Platte West alternative? If the cost of the Platte West pipe were to be allocated to an expansion of the Platte South well field and existing infrastructure,

14. The District recognizes its duty to respond to proven damages to landowners arising from the operation of the Platte West alternative well field to the extent provided under Nebraska law. Upon a written claim by a landowner asserting damage, the District would accept and perform a good faith review of the claim and all evidence submitted in support of it. The District would also share any monitoring information in its possession with a claimant. If the District concludes that the claim and the amount of claimed damages are valid, the District would pay the claim as it does other legitimate claims. If the parties cannot agree on the validity of the claim or the amount of damages, the final resort may be a remedy under the Tort Claim Act, or a condemnation or inverse condemnation procedure. The condemnation process in Nebraska is an administrative procedure involving the naming of three landowners of the county in which the land is located to a Board of Appraisers. This Board, named by a county judge, then determines the amount of damage that may be caused to a landowner.

    The District would consider mitigation of established damages, for example, the improvement of a well which has reduced capacity caused by drawdown. The District may also consider offers by landowners to acquire subsurface water rights to their land.

15. Given that prices for land can change quickly and the time required to prepare an EIS is long, costs for the alternatives are not necessarily current. That said, the cost of land is a small portion of the total cost of the alternatives and the factors that would inflate costs are applicable to all of the alternatives. The costs presented are sufficiently accurate for their intended use, which is for comparison among the alternatives. The Corps also notes that the cost of alternatives was not used in the alternative evaluation process. None-the-less, land values have been updated for the FEIS.

16. The cost of each alternative was figured separately based on the infrastructure specifically required for that alternative. The cost of the Platte South plus Platte West alternative is not the cost of the Platte West alternative plus an independent 40-MGD expansion of the Platte South facility. The pipelines required for the Platte South plus Platte West alternatives were not double-costed. The cost breakdowns for the alternatives evaluated in detail have been expanded in Chapter 2 of the FEIS.

what would be the cost then? This appears to create a cost doubling effect to enhance the reason not to choose that alternative. If no cost detail is provided for public scrutiny, the MUD cannot justify any of the costs for any of the options.

WETLANDS AND WILDLIFE

THE CUTOFF – I mentioned the Cutoff in my previous comments to the January 1999 DEIS. The answer provided in the February 2001 DEIS was that it was addressed in Section 4, Wetland and Special Aquatic Sites. I guess I couldn't recognize where it was addressed. But I did note that the Cutoff is in the area of about 4 to 5 feet drawdown for a distance of about 2 and ½ miles, and an additional several miles in the 1 to 3 foot drawdown area. The Cutoff is a surface water connection to the Elkhorn River. On Page 4-31, the DEIS states that direct surface water connections to the Elkhorn River are not expected to be altered. With an up to 5-foot drawdown over a distance of several miles, there will be **a significant impact** to that wetland and it will reach all the way to the Elkhorn River. Figure 4-8 does not show that the Cutoff "connects to the river." Did anyone go out and look at it? Or was it reviewed from Kansas City? This is an example of inadequacy of the DEIS. There is also a small creek that joins the Cutoff at Q Street. This creek is in the 1-foot drawdown area and runs about 1 mile north of Q Street. I believe this was inadequately addressed, if at all. In all your figures, I found only one in the Appendix that depicted these streams

17

The Cutoff teems with some species of fish and supports an abundance of wildlife, including beaver, muskrat, squirrels, rabbits, skunks, mink, wood ducks, mallards, pintails, teal, and owls. Many trees line both sides of the banks. The Cutoff is shallow, generally is fed by springs, and rises and falls with the ground water. With a 5-foot or more drop in the ground water, the Cutoff will be eliminated as an excellent wildlife habitat.

I would have thought that the U.S. Fish and Wildlife Service would have been quite interested in these two wetlands, but they didn't address it in Appendix E.

In calculating wetlands lost as a result of drawdown on these two small streams, I calculated nearly 182 acres. I used 5 miles and 100 yards wide. To a great degree, the bulk of this will be lost all the way to the Elkhorn River. In Table 2-7, it states that only 13.8 acres will be lost and 141.6 potentially altered. From these two small creeks alone, the acreage lost is significantly greater than what is presented in the DEIS. I have no idea how many other acres were "missed."

If the Platte well field is chosen, I can think of two rivers and two creeks that must be disturbed. I would think each of these would require a Section 404 Permit. As best I can tell, the Missouri River options that don't put in pipelines across the river wouldn't require such a complex Section 404 Permit, if any.

OTHER RESTRICTIONS

On Page 4-74, it states there will be restrictions on farming practices in the well field. What about adjacent to the well field? And upstream of the well field? Will they be restricted from their present use of fertilizers, herbicides, pesticides, etc.?

18

And what about farmers that have used ground water for a hundred years and now find themselves with a dryland farm? Farmers who have subirrigated land farms haven't needed special water rights as the crops used the groundwater. It is doubtful that the Nebraska Department of Water Resources (NDWR) would consider "first in time first in right" if one has not gone through

19

17. The Corps, as mandated by Section 404 of the Clean Water Act, has jurisdiction over activities that place dredge or fill materials in waters of the United States, which include wetlands. The wetland impact analysis concluded that all wetlands potentially affected in Douglas County would be altered by groundwater drawdown but not lost because some form of wetland hydrology would be maintained by surface water runoff or direct inflow from the Platte or Elkhorn rivers and the presence of relatively impermeable soils under the wetlands. The DEIS acknowledged the uncertainties in this analysis related to mapping accuracy and impacts from groundwater drawdown. These uncertainties shaped the design of the wetland mitigation plan, which includes a complete delineation of all wetlands in the predicted cone of depression of the permitted alternative and long-term wetland monitoring inside and outside the cone of depression to assess actual impacts and mitigate appropriately. Under the Clean Water Act, the Corps has jurisdiction over wetlands. U.S. Fish and Wildlife Service's interests in wetlands extends from Executive Order 11990 but is usually intertwined with the protection of federally-listed threatened or endangered species.

18. The Corps' belief is that the District can only restrict farming practices on its own property.

19. The Nebraska Department of Natural Resources does not issue water rights for groundwater.

the permit process. It is expected this would be true irrespective of the lack of previous need, or the amount of time the ground water has been used by these farmers.

20

If farmers must drill wells in order to continue producing, or to produce at today's level, they will need special water rights. This of course assumes that NDWR will issue permits to them. Issuance of a permit appears questionable. Page 4-79 states that almost all of the water in the Platte River has been appropriated. This implies that there may not be enough for a dry land farmer to gain water rights.

Also the "hierarchy of rights to the water" (Page 3-15) essentially states that any agricultural use is trumped by the priority for domestic uses, i.e. water for the MUD. Further, if the question is based on a priority date, the farmer applying for a new water right will always be subservient to the MUD.

All of the above is irrespective of the fact that these farms have been using the groundwater for well over 100 years. The farmers' water rights should be senior to the MUD rights, although it is my understanding that Nebraska law does not make a provision for this. It would appear the Nebraska lawmakers should revisit and revise the law to correct this glaring oversight.

SUMMARY

21

All of the above indicates one of two things. No Federal Action is the best option as, in the worst scenario, it only creates an occasional small water shortage to existing homes. If there is to be any option other than that, it should be obvious from the above that either of the Missouri River options is the proper choice, or the use of existing infrastructure options. The Missouri River options essentially have very little impact on existing homes, farmers, and wildlife. The Platte well fields are not an option as they discriminate far too heavily and place a significant burden on a few land owners in personal cost, disruption of life styles, and their ability to make a living.

In closing I will use the title of an article that was written by Ms. Sonya Moore, student of the City University, Seattle WA. If the Platte West or any combination of Platte well fields is eventually chosen, her title will be quite accurate **"The Platte Goes To MUD" ---- literally!**

4-13 and 4-14 bottom right corner

no preference to municipal use
over 50% used in industrial use
domestic top preference
Article

Site 11

Platte South 2 – Why eliminated?? Horizontal wells

No right to condemn Ag water for industrial
Nebr constitution Article XV, Section 6 Go to Mo, or end of platte Go to Alt 11

Attachment
Letter JL Butcher
04/10/01
Page 6 of 6

20. One option to replace lost subirrigation caused by the District's well field would be the installation of an irrigation system. Although almost all of the surface water rights for the Platte River may have been appropriated, a farmer would not be prohibited from installing an irrigation well because Nebraska does not assign water rights for groundwater. As for the "hierarchy of water rights", the DEIS incorrectly stated that municipal users would have priority over upstream agricultural and industrial users. The District's use of water for domestic purposes would have preference over upstream agricultural and industrial users, which means that the District could force the sale of water by these users. The Nebraska Department of Natural Resources, however, has not determined how the District's multiple uses would be apportioned to determine how much is domestic which would be the basis for how much water the District could buy. In the event flow in the Platte River was low enough to force the Platte West alternative well field to defer operations to senior downstream water rights holders, the District would not likely exercise its preference because 1) the District could implement its Water Conservation Emergency Operation Plan and rely on water from the Florence Plant (Missouri River) and Platte South, and 2) by the time the procedure for implementing their preference was complete, the low flow event would probably be over.

21. You opinion is noted.

Comments on the **PLATTE WEST WATER PRODUCTION FACILITIES DRAFT ENVIRONMENTAL IMPACT STATEMENT**

April 13, 2001

After reading the Draft Environmental Impact Statement for the Platte West Water Production Facilities, it is my opinion that its negative net effect on wetlands and the sub-irrigation benefit to crop production in the area has not been sufficiently researched and documented. 1

Further, has there been comprehensive federal research intervention with time study project duration analysis offered to determine the effect on species that are federally protected? 2

Of all location combinations and possibilities that are currently being explored, which has the least "new" detrimental effect on the surrounding environment and economy? 3

I suggest that interested parties need to compare the adverse effects of such a facility on a time-series basis. First, establish a baseline for current status of the sub-irrigation and wetlands benefits with no production facilities in place. Next compare net change effects on sub-irrigation and wetlands sequentially year by year for projected variances in rainfall v. MUD pull of resources from the area. These projections can be modeled for other economic and environmental criteria as well. 4

This will give a better year-by-year picture of how such a project will affect business and the environment now and in the future.

Once the facility is in place it will be difficult for individuals to find recourse and mitigation will be minimal.

This should be done for all sites.

There are too many important factors to choose a site merely on the basis of the least expensive alternative. 5

MUDs preferred alternative Platte west cannot pass the first criteria in the EIS. It can't provide a max. of 104 mgd or 52 mgd average for a total of 19 billion gallons per year. 6

Article XV section 6 of NE constitution and NRS 46-204, 46-613 and 46-648 prohibit MUD from asserting any preference right for water against upstream Ag users and local sub-irrigators, ground water well irrigators and senior industrial users. Over ½ of water MUD seeks to utilize as set forth in figure 1-1 in the EIS is to be used for manufacturing

1. You opinion is noted.

2. The U.S. Fish and Wildlife Service has studied the Platte West alternative and determined the effects on federally protected species. The results of their analysis were presented in their Biological Opinion that was included in the DEIS as Appendix E.

3. All of the alternatives examined in detail in the DEIS would have the same types of impacts but in varying degrees. Alternatives with reduced impacts in one area tend to have higher impacts in another. For example, alternatives that would create large cones of depression in the water table would tend to have greater impacts on wetlands and subirrigation but lower impacts on flow in the Platte River and would produce higher quality water.

4. Your suggestion is noted. For this EIS, however, describing the existing conditions (Chapter 3) and the condition when the well field is at full operation (Chapter 4) is sufficient to evaluate the environmental impacts.

5. Your opinion is noted. Cost was not a consideration in selection of alternatives for detailed analysis in the EIS,

6. The DEIS incorrectly stated that the District's 1,000-cfs water right had priority over upstream agricultural and industrial users. Based on 50 years of USGS daily flow data for the Platte River at North Bend and 5 years of data at Leshara, flow in the Platte River above the Platte North and Platte West alternative well fields would be less than 1,000 cfs approximately 0.7 percent of days or, on average, less than 3 days per year. A flow upstream of the Platte North or Platte West alternatives well fields of 861 cfs would be sufficient to meet Lincoln's senior water right of 700 cfs assuming the maximum possible induced infiltration rate by the District's well field of 161 cfs (104 MGD), no losses of river water between the District's well field and the Ashland well field, and no inflow from the Elkhorn River. Flow in the Platte River at Leshara is estimated to be less than 861 cfs 0.3 percent of the time or, on average, less than 1 day per year. The maximum monthly average depletion rate estimated for the B4 pumping scenario was 73.5 cfs. At this depletion rate, a flow in the Platte River of 774 cfs would meet Lincoln's water right. Flow in the Platte River at Leshara is estimated to be less than 774 cfs 0.1 percent of the time or, on average, about 12 hours per year. Low flows in the Platte River, therefore, could occasionally curtail use of the Platte West or Platte North well fields. For the vast majority of the time, however, the Platte West alternative well field could meet the stated need for additional production capacity.

industrial commercial and golf course maintance. In the event of a drought, MUD can't force the said farmers from utilizing water for Ag purposes, i.e. Ag uses have preference over commercial and industrial purposes. MUDs proposed well field must be located downstream of Lincoln's existing Ashland well field. In NE, first in time is first in right. MUDs proposed Platte well field should ideally be located at the mouth of the Platte River. The EIS has failed to provide the cost of exercising any preference of domestic use of water over existing Ag and industrial uses. If MUD will simply utilize a Platte well field downstream or adjacent to its existing Platte south it will save the citizens of Omaha millions of dollars in the future and provide a reliable source of 19 billion gallons of water per year. MUD has not obtained an inter-basin transfer permit under NRS 46-289, has not obtained an industrial ground water permit and has not obtained a permit to lower lake levels.

Sincerely,

John K. Wageman
1248 County Road 5
Ashland NE 68003

This page intentionally blank.

E.John Wageman
1248 County Road #5
Ashland, NE 68003

April 13, 2001

Mr. Jerry C. Folkers
US Army Corps of Engineers,
Regulatory Branch,
215 North 17th Street
Omaha, NE 68102

Dear Mr. Folkers:

I am writing to you to voice my concern over MUD's proposal to access the Platte Valley West water rights.

Our farm has been in the family for nearly 100 years. At least four generations have successfully tilled this land due in large part to the sub-irrigation found in the Platte Valley. As a whole, agricultural production in the Platte Valley is contingent upon sub-irrigation, related in some extent to the water level in the river. It is for this reason that we can expect reasonable crops even in dry seasons.

The proposed Platte West well field in Saunders County will affect the possible potential future use of the area. It is my expectation, especially in several consecutive dry years that the water level will drop in both our domestic and livestock wells. It goes without saying that such situation would have devastating effects of our ability to successfully farm our land. It would also diminish the relative value of the land 10-20-40 years from now. It is my understanding that Saunders Co. will not receive any tax revenue or any compensatory damages for the probable degradation of future adjacent land use or value. Is it fair that my family as well as the families in the surrounding area sacrifice probable returns when there is an alternative source to satisfy the presumed necessary water needs of an expanding metropolitan customer base? 1

Below I have listed some points of contention as well as practical alternatives, which I believe warrant serious consideration for all involved: 2

Points of Contention

1. Total acres of wetlands and sub-irrigation were underestimated
2. There will be a definite negative impact of the aquatic eco-system
3. Mitigate wetlands in Saunders Co

Possible Alternatives

1. The placement of wells below the Lincoln well field location would serve southern Douglas Co. and Sarpy Co.
2. Second source able or below the Florence station with reservoirs (Reservoirs could benefit public recreation and enhance aesthetic value).

Although there may be an element of truth to MUD's conclusion that Platte West (including West Saunders Co) is the only practical alternative from a cost perspective, it is naïve for MUD to contend that it is the best solution. The fact that MUD publically stresses water quality, yet on occasion has dumped millions of gallons of raw sewage into the Missouri River troubles me. Actions such as this provide a historic base upon which to be concerned. Which is why, at the very least, we should expect to have our water rights be grand fathered. 3

1. The impact to farmland from the Platte West alternative would be from the loss of subirrigation. The District has pledged to mitigate this impact in a manner acceptable to the individual property owners and the District. According to state law, the District cannot pay property taxes to the counties in which the District owns property unless that property is leased to another party that uses the land to generate income. Should a Section 404 permit be issued for the Platte West Water Production Facilities Project, the District has indicated they plan to continue leasing portions of the Platte West alternative well field after construction.

2. Points of Contention:
   - The methods used to analyze impacts to wetlands and subirrigation were appropriate. The Corps was made aware of additional depth to groundwater data after publication of the DEIS and revision were made and presented in the FEIS.
   - The impacts on the Platte River ecosystem would be minimal. Unavoidable impacts to wetlands would be mitigated.
   - The Corps approves of the La Platte site because, of the available mitigation sites, this site offered the best potential for creating new wetlands.

   Possible Alternatives:
   - Southern Douglas County and Sarpy County are already served by the District's Platte South facility. New water supply is needed in western Douglas and Sarpy counties.
   - Reservoirs, in two forms, have been considered as possible alternatives in the Platte West Water Production Facilities EIS. The standard form is a large reservoir on a river or stream that would have a yield of at least 62.8 MGD. A reservoir of this size would likely need to be approximately the same size as the large reservoirs in central Nebraska. The Corps, which as extensive experience constructing large reservoirs, is unaware of suitable locations for a major reservoir in the general vicinity of Omaha. In addition, the adverse environmental impacts from reservoirs are generally much greater than from well fields. Secondly, a reservoir could also be used to store water pumped out of the Missouri River, which would be used if the Missouri River were to become unavailable because of a contamination event. The storage reservoir would need to contain a 14-day supply of 62.8 MGD per day or 2,700 acre-feet of water to provide a reasonable level of back-up. With an average depth of 6 feet, such a reservoir would cover 500 acres. The Corps notes that in the original DEIS the Missouri River-based alternatives were substantially more expensive than the Platte River aquifer-based alternatives. The addition of a 500-acre lake would add many tens of millions of dollars to the capital cost and operation cost would be further increased because of the additional pumping needed to replace seepage and evaporative losses Further, the environmental impacts of inundating 500+ acres of land would offset the otherwise minimal impacts of the Missouri River alternatives. Alternatives of a reservoir alone or in conjunction with a Missouri River intake were considered unreasonable in the sense that the alternatives are not "practical or feasible from the technical or economic standpoint" (46 FR 55 p18927).

3. The Metropolitan Utilities District does NOT operate sewage treatment systems. The District only supplies water and natural gas.

Politics and monetary aspects may prevail in this matter but allow me to be the element of consciousness in the decision-making. Does Saunders Co. truly need to be a part of MUD's solution? 14

Respectfully,

E. John Wageman

4. The District feels Platte West is the alternative that best meets their needs.

COMMENT FORM

Platte West Water Production Facilities Draft Environmental Impact Statement

Date: April 13, 2001

Name: Mark L. Brasee, Esq.
Aimee Demulling, Esq.
Fraser, Stryker, Meusey, Olson, Boyer & Bloch, P.C.

Street Address: 500 Energy Plaza, 409 South 17th Street
Omaha, Nebraska 68102

Representing: Barbara G. Wright, 22655 Homestead Road, Elkhorn, NE
Daniel A. Koch, 4700 Skyline Drive, Elkhorn, NE

COMMENTS:

On behalf of Ms. Wright and Mr. Koch ("Landowners"), we submit these comments and objections to the Platte West Water Production Facilities Draft Environmental Impact Statement, dated February, 2001 ("DEIS"). Located upon these 280 acres of property owned by Ms. Wright and the 158 acres owned by Mr. Koch are abundant wildlife, native grasses and upland forests, and a protected palustrine forested wetland on the National Wetland Inventory Map. If Metropolitan Utilities District ("MUD") is granted the use of its preferred water supply expansion location of Platte West, the adverse impact upon the Landowners' property, as well as the many surrounding landowners, will be significant. The proposed, poorly defined use of the Landowners' property for the Platte West water supply expansion project will dramatically decrease the valuation of such property and have a significant adverse environmental impact on its natural beauty, trees, wildlife, and wetlands. 1

MUD's bias toward the Platte West alternative is apparent throughout the DEIS, where descriptions of impact are minimized for this alternative, while other alternatives are summarily thrown out. MUD has proposed five alternative locations to the Platte West location for the water treatment site, which should be given further consideration because these alternatives have less environmental and economic impact on the surrounding areas. 2

It is also apparent that Platte West is MUD's preferred location simply for economic reasons. MUD promotes Platte West as the least expensive alternative, while not adding up all the costs. If MUD is obtaining this base of operations to sell further west and south, the public will have lost environmentally whatever MUD gains financially, and there will be no real benefit to the public in lower bills. Also, the cost of not selling Platte West's well field should be added to the cost of other alternatives because in order to purchase another location, MUD would have to sell the Platte West well field and offset such purchase price 3

1. Your opinion is noted.

2. The Platte West alternative is the District's preferred alternative. The Corps is neither a proponent nor opponent of the Platte West alternative.

3. To provide an equivalent basis for comparison, the cost of the Platte West alternative was calculated assuming the District did not own any of the property for the well field. The cost of pipeline easements was included in the cost calculations for all alternatives at $0.11 per square foot. The cost descriptions of the alternatives described in detail in Chapter 2 have been expanded in the FEIS to include addition cost categories.

with profits of the Platte West location. Additionally, the costs for the acquisition of all the pipeline easements should be included in the cost analysis. These changes alone may well demonstrate that the Platte West alternative is not only more damaging to the environment, but more costly as well.

Another alternative, not clearly presented by MUD, is to expand by taking more water from the Missouri River. Burns and McDonnell recently engineered and managed construction of 'Super Wells' for their city's Board of Public Utilities in Kansas City, Missouri. Sufficient redundancy was accomplished through groundwater super wells along the Missouri, conjoint with direct intakes such as Omaha has now. The plans accepted by the U.S. Army Corps of Engineers regarding Kansas City's use of the aquifer and Missouri River should not be disregarded in this instance. There is only one U.S. Army Corps of Engineers, the same in Omaha for this decision as Kansas City had for that one. A Missouri River groundwater alternative that uses the best of this firm's latest engineering is conspicuously missing.

If, however, the Platte West location is selected for MUD's expansion, the utility has variously described three options for dealing with the waste. None are clearly identified or presented to the public.

One option is to construct a drainage pipeline from the treatment plant across private properties to the Elkhorn River in whatever configuration to make it gravity flow. However, MUD has not made it clear to the public as to whether the pipelines will be buried or above ground. This route will dramatically ruin the Landowners' property because of the impact on the vegetation, wildlife and abundant wetlands. The permanent easement needed to build such a pipeline will also reduce the Landowners' use and enjoyment of their land because the easement would not allow for the construction or building on such easement. Furthermore, the pipeline will undoubtedly have to be placed on supports in the floodway on their property, which will affect the aesthetic look of their land and significantly reduce its valuation.

Moreover, additional costs for clearing forested easements and disposal of trees have not been considered in this option. Significant erosion will occur if fragile soils in the proposed easement are disturbed by clearing and excavating. Ms. Wright does not run livestock on this land because cattle trails would give erosion a place to start. The cost of ameliorating erosion from disturbing this fragile area needs to be included in MUD's assessment of the true costs of this alternative. The Landowners' property is located in the proposed easement, and should also be an environmental and/or cost consideration. Further, the undisturbed beauty of this land remains because its erodible nature did not lend itself to farming. No amount of planting, cultivating, and careful watering by man can rebuild this natural environment, once it's destroyed.

4. The use of horizontal collector wells (like the "Superwell") was specified for many of the alternatives. Vertical wells in alluvial aquifer, however, generally have greater separation from the source of recharge (the river) and produce raw water with superior quality that is less likely to contain microbial pathogens and is easier to treat. One industry standard for developing potable water supplies is to get raw water from the source with the highest quality (see Appendix A of the FEIS). The Corps also notes the Superwell cited in the comment was constructed by the Board of Public Utilities of Kansas City, **Kansas**, and was **not** designed by Burns & McDonnell.

5. The District has decided to route the wastewater discharge line from the proposed Platte West treatment plant to the Elkhorn River in the same easement as the raw water pipeline from the well field. The FEIS has been revised to reflect this new alignment.

The second option for the effluent is through a pipeline along the same alignment on 'Q' Street as the raw water line from the wellfield. Since MUD will already have an easement to construct the pipeline along 'Q' Street, this route economically and environmentally is the best alternative, as it will not require easements across or permanently affect surrounding landowner's property.

MUD's third alternative is to discharge the water directly into the natural drainage channel west of the treatment site. Because of topography, the waste would drain through privately-owned properties and into a palustrine forested wetland on the National Wetlands Inventory Map. There is no information in the Impact Statement as to the environmental impact this would have.

The entire DEIS focuses on the environmental impact on the proposed site locations, but the study does not sufficiently address the environmental impact of the return flow pipelines or the treatment of the waste. Moreover, the information disclosed to the public is incomplete. For example, the DEIS is incomplete as to the status of this return flow drainage pipeline option. Chapter 2 was not modified to include possible design changes relative to the drainage pipeline. Table 2-3 is unchanged from 1999 in the appropriate section, and the new map, Figure 2-2, does not show the drainage pipeline at all. Kevin Tobin told Ms. Wright that the ERRATA would include an updated map. The map on E-2 of that document is the size of a large postage stamp, with no roads, section lines, property lines, or other landmarks. At the public meeting, there was no map displayed.

Overall, MUD's proposed plans for the Platte West treatment site have not fully been made available to the public. There are many pieces of information missing from the DEIS regarding the environmental effects on the surrounding properties of the Platte West location, as well as the destruction of the surrounding lands if MUD builds a discharge pipeline along the stream channel. Before the Platte West site is recommended by the U.S. Army Corps of Engineers, the routes for the return flow of water to the Elkhorn River must be further reviewed. Building a discharge pipeline along Q street on the easement granted for the pipeline of raw water to the treatment site is the best alternative both economically, in the long run, and environmentally. Until all information regarding the proposed site has been made readily available to the public and properly reviewed, the environmental consequences severely outweigh any economic benefits MUD may receive by using the Platte West location or by constructing the discharge pipeline along the stream through the Landowners' property.

6

Please feel free to contact us at 402.341.6000, if you have any questions.

0259352.02

6. Please see the response to comment 5.

LAW OFFICES
ELLICK, JONES, BUELT, BLAZEK & LONGO
8805 INDIAN HILLS DRIVE, SUITE 280
OMAHA, NEBRASKA 68114-4070

ALFRED G. ELLICK (1917-1998)
MICHAEL D. JONES
DAVID C. BUELT
GEORGE T. BLAZEK
AMY L. LONGO
LAWRENCE K. SHEEHAN
DANIEL L. ROCK

TELEPHONE 402 390-0390
TELECOPIER 402 390-0127

April 12, 2001

Mr. Jerry C. Folkers
US Army Corps of Engineers
Regulatory Branch
215 N. 17th Street.
Omaha, Nebraska 68102

Dear Mr. Folkers:

Re: Platte West Water Production Facilities
Draft Environmental Impact Statement

Objection to the Proposed Project

I write on behalf of the Frances T. Hert Trust, which owns about 320 acres of Douglas County land which lies North of "Q" Street and East of the Elkhorn River. The Hert Trust opposes the issuance of the permit to MUD.

I do not attempt in this letter to deal with all, or even most, of the many issues raised by the draft environmental impact statement. As your guidelines for review of the permit application indicate, there are a variety of factors which you are considering. I will focus only on three aspects of matters.

(1) MUD's preferred alternative shows an unwarranted aversion to continued primary reliance upon the Missouri River for Metropolitan Omaha's water needs.

(2) The permit process is flawed in that MUD attempts to have the project approved conceptually. Only then, armed with the momentum created by such approval, does MUD intend to disclose location information concerning location of certain facilities and water lines.

COPY

1. Summary comments are responded to in the detailed comments.

(3) The economic assumptions underpinning the proposed project, at least with regard to land acquisition costs, are wrong.

Missouri River

Although I represent a client with a point of view, I am writing also as a Nebraskan. The relationship between the rest of the Cornhusker State and Omaha can be described as an uneasy one. Big City versus Small Town, urban industry versus farming and ranching, and other such turns of phrase can be used to describe the tension between Omaha and the rest of the state.

In my judgement, Omaha should always look to ways in which its continued growth and development can occur with the least possible harm to the fabric of the rest of the state. The current project fails that test and will create disharmony within the state. I well remember that when I attended the public meeting at the Russell Middle School, I talked with a deputy county attorney from Saunders County. He described this project as a "water grab" by Omaha.

The DEIS makes the indisputable point that Omaha has an interest in assuring a sufficient, sustainable, high quality water supply and dwells at length on what it views as the perils of an over-reliance upon the Missouri River. The emphasis is on creating a redundant supply. That emphasis, though, must be balanced against the needs of the state as a whole. While there are negatives to further expansion of the use of the Missouri for Omaha's water needs, I believe that MUD's plan does not indicate a sufficient sensitivity to the way Omaha ought try to mesh its growth and needs to the welfare of the entire state.

Common sense indicates that the proposed reliance upon underground water connected to the Platte system will further stress that valuable resource. As soon as one is west of the Missouri, water becomes a critical issue, not just for urban living but for our agricultural base. I own a map from the middle 1800's in which the area which was to become Nebraska is indicated as the beginning of the "Great American Desert". While that 19th Century view was overstated, our water options and challenges as a state are different from those of Minnesota, Iowa, Missouri and the like. As a Nebraskan, I believe Omaha should make the fullest use of the resource with which it is peculiarly blessed, the Missouri River, before extending its reach to water resources needed by the rest of the state.

2. Your opinion is noted.

3. Your opinion is noted.

And so, I urge the Corps to not accept the premise of the proposed project which wrongly rejects the Missouri River as the best source for additional water needs for the Omaha metro area. MUD should not sell itself short. It has access to the technology necessary to assure that water from the river will be safe and available under any reasonable view of the future.

The Process is Flawed

When I attended the public meeting at the Russell School, I was struck by the lack of public support for the proposed project. Admittedly, the people attending were the people most affected by the project. Their lands and ways of living are threatened. Nevertheless, I think that the lack of support was based on more than "not in my backyard" thinking. In part, I think that the reaction resulted from the divide and conquer approach being taken by MUD to this matter. By that I mean the current permit application seeks conceptual approval of the plan without disclosing MUD's actual plan with regard to location of facilities and lines.

When speaking to MUD representatives, they stressed that no final decisions had been made with regard to a variety of location questions. That is wrong. This is one project and it should be viewed and decided upon in its entirety. The currently used two stage approach to matters guarantees that at this stage you will be hearing from environmentalists and the like - at least I hope you are. However, many of the people whose land will ultimately be most affected are disconnected from this portion of the process and are unsure how to voice their objections.

I would be more comfortable with the process if MUD's entire plan were on the table at once. The permit should not be granted until MUD places all its cards on the table.

Economic Underpinnings

I can only speak with authority regarding one aspect of this end of matters, that being land acquisition costs. I reviewed pages 3-33 and 3-34 to the DEIS. These pages deal in part with acquisition costs. Such costs are estimated for Douglas County ground based upon assessor's values for agricultural purposes. In my opinion, not one affected Douglas County landowner that attended the Russell School meeting would agree to sell Douglas County land at a price based upon agricultural values.

4. The District has decided to route the wastewater discharge line from the proposed Platte West treatment plant to the Elkhorn River in the same easement as the raw water pipeline from the well field. The FEIS has been revised to reflect this new alignment.

5. Property values around the Omaha Metropolitan Area are changing rapidly, which makes reporting such statistics in a document with a long preparation time difficult. The property value data in the FEIS has been updated based on the most recent data from the Saunders County and Douglas County Assessors offices.

The reason MUD is considering the project is because of the dynamic growth of the Omaha metroplex. That very growth has created a development component which affects the fair market value of all land in Douglas County, sometimes dramatically. I will simply note here that the true fair market value of much agricultural land in Douglas County is a multiple of assessed value - whether or not within the Greenbelt system.

Moreover, there is no mention of the cost of acquiring the land or easements necessary for the piping concerning this project. This is another outgrowth of the two step approach to approval mentioned earlier.

The point is that the lack of realistic costing for land acquisition weakens the credibility of the proposed project with regard to whether the preferred alternative really is what is best for the State of Nebraska.

Conclusion

The Hert Trust objects to the grant of permit for the reasons stated herein. Thank you. 6

Very truly yours,

David L. Buelt

cc Trustees of the Frances T. Hert Trust
Mr. Kevin Tobin, MUD
Ms. Rebecca Latka

6. Your opinion is noted.

COMMENT FORM

PLATTE WEST WATER PRODUCTION FACILITIES DRAFT ENVIRONMENTAL IMPACT STATEMENT

The U.S. Army Corps of Engineers solicits your comments on the information contained in the Platte est Water Production Facilities Draft Environmental Impact Statement. Please print your name, address on comments in the space provided below. If the space below is insufficient for your comments please feel free to use additional forms or other paper. When you have completed the form, you may put the form in the box provided at the workshop or mail the form to the address on the back. The use of this form is NOT required for submitting comments to the Corps. Comments can also be submitted via e-mail to **Rebecca.J.Latka@usace.army.mil.** Comments on will be accepted through 13 April 2001.

Name TIMOTHY P. McGill

Representing

Street Address 27350 W Center Rd.

City, State, Zip Waterloo, NE 68069

Comments:

We live in a very nice community called Venice Woods, our home is 3 years old & we have invested approximately $50,000 in this property. I would like that we all pledge for our community.

The reason that we bought here is the lake. It is approximately 40 acres, with depths to 40' max. If this lake is subjected to 7' drawdowns because of M.U.D. it will greatly reduce the values of my property & the property of my neighbors.

For this reason I am adamantly against this project. I don't see the need, approve the added spend on M.U.D's accounts, and definitely don't want the quality of our well water & lake level changed.

3/21/01 Timothy P. McGill

1. Based on the location of Venice Woods, the drawdown of groundwater caused by the Platte West alternative would be between 1 and 2 feet when operation of the well field reaches design capacity. This change would be unlikely to significantly affect the operation of or water quality from any properly constructed wells in this community. A similar drawdown in the level of the lake at Venice Woods is also expected. The District has pledged to work with affected property owners to mitigate reduced water levels.

COMMENT FORM

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Name Lisa Andrews

Representing

Street Address 4324 So. 178th St.

City, State, Zip Omaha, NE 68135

Comments: The workshop was very informative, and well organized. Participants were most knowledgable and answered questions in a timely manner.

1. Your opinion is noted.

March 26, 2001

Rebecca J. Latka
U.S. Army Corps of Engineers
CENWO – PM – AE
215 North 17th Street
Omaha, Nebraska 68102

Re: DEIS/MUD

Attn: Rebecca J. Latka

I am opposed to the MUD proposed well field in Saunders County.

I am writing both as an individual that owns property in close proximity of the proposed well field and as a member of the Saunders County Board of Supervisors who represents the citizens in this area.

Agriculture products are an important commodity in Nebraska, and especially so in Saunders County. What will happen in the proposed MUD plan affects the economy in the County and the livelihood of individuals. Not only is the land purchased by MUD taken off the tax rolls, but the increase tax load is a burden to the citizens. We see our taxes increase and our subsoil moisture for crop production depleted. 1

One only has to travel across the Platte River today on Highway 92 to see the sandbars already emerging from the water. Look further along the Platte and see all the uses it provides already. One more drain could be just the final straw. Without adequate flow, we also see damages in severe winters with ice jams and not enough water to keep it moving. 2

Following are areas of concern: 3

- Affect on farmland that relies on subsoil irrigation
- Adverse affect on livelihood
- Affect on private wells
- Prime farmland taken off the tax roles
- Wetland destroyed – mitigation proposed elsewhere
- Recreation on river affected
- Adverse affect on wildlife, fish and other habitat

1. The District has pledged to work with property owners whose land and livelihoods are affected by lost subirrigation to mitigate the impacts. In terms of mitigating for lost property tax revenues, the District's options are limited by state laws. The District has indicated they plan to continue managing the Platte West alternative well field lands in ways consistent with existing uses and operation of a well field.

2. The amount of water removed from the Platte River by the Platte West alternative well field would reduce the water level in the river by less than 0.5 inches under almost all conditions, particularly in winter. This small decline is not expected to noticeably affect the formation of ice jams.

3. The Platte West alternative would reduce subirrigation; affect private wells, ponds, and lakes; and dewater some wetlands. Mitigation measures were specified in the DEIS that would mitigate the subsequent potential impacts to livelihoods and aquatic ecosystems.

I am not opposed to the consumer having quality water to ingest, but with the Missouri River at the disposal of MUD, and already a source of their drinking water, it is much preferred that MUD continue using that source. 4

Sincerely,

Doris M. Karloff

Doris M. Karloff
1354 County Road 5
Yutan, Nebraska 68073

4. Your opinion is noted.

COMMENT FORM

PLATTE WEST WATER PRODUCTION FACILITIES DRAFT ENVIRONMENTAL IMPACT STATEMENT

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Name HaroldLandon

Representing Landon Farms, Inc.

Street Address 14430 Castlewood

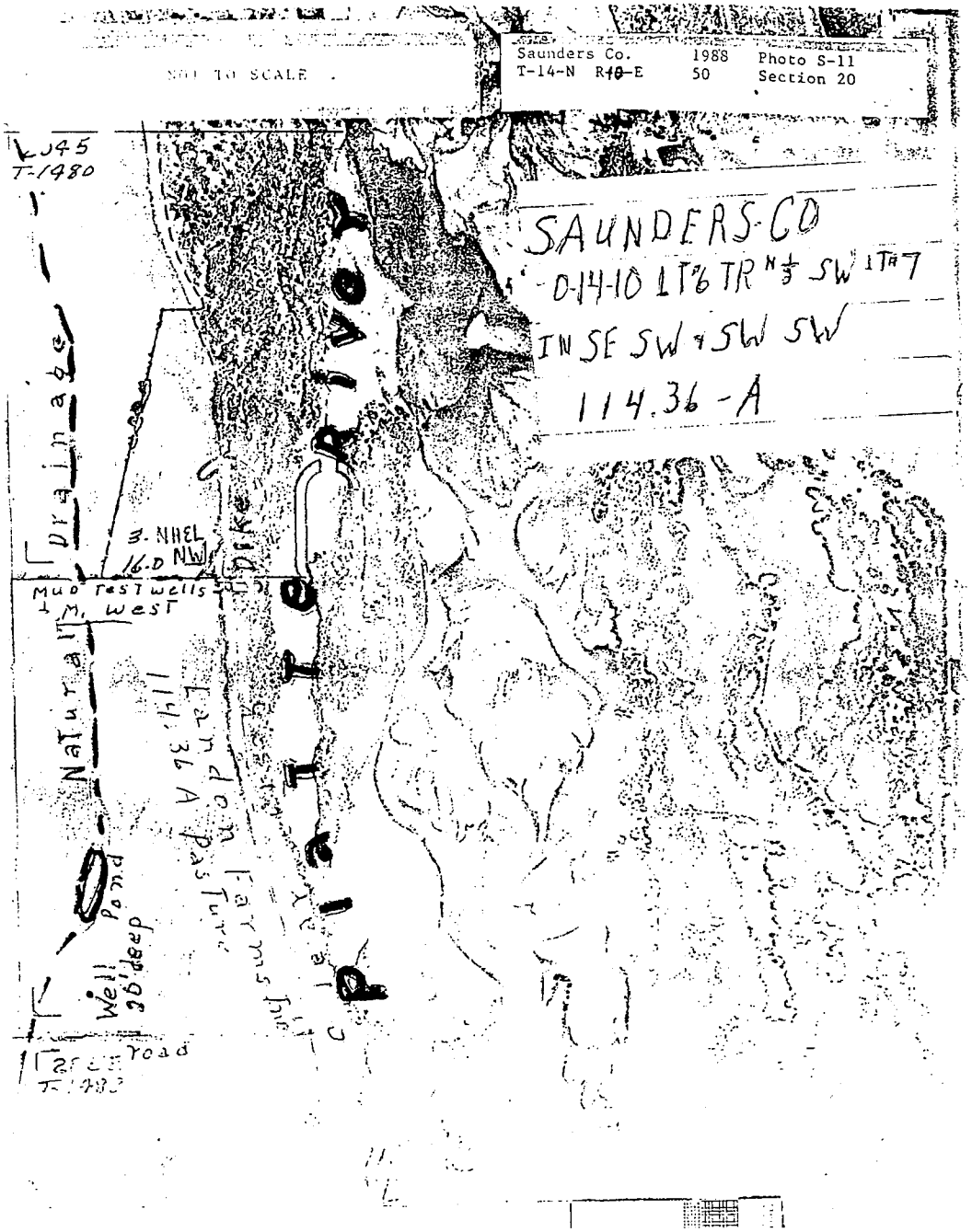
City, State, Zip Waverly, Nebr., 68462

Comments: I feel that water is our most important resource. When God created the earth, He made only so much water. Man has not been able to reproduce more. There is water in the atmosphere, in rivers and streams,etc., and jn the aquifer under the surface. Landon Farms Inc., owns the tract of land shown in the accompanying aerial photo. I have had control of the property since 1956- 45 years. ~~If you pump 100,000,+ gallons of water per day out of the aquifer, the sub-irrigation for the 114 acres of pasture will be lost and I will have to rely on the atmosphere for~~ moisture for the grass. There is a pond on the pasture which ~~goes up and down with the Platte River flow. There is a well on~~ the property which is 20 feet deep. If you pump a lot of water ~~out of the aquifer the well will have to be as MUD wells in order~~ to provide waterfor the livestock. In 1956 I resided in northwest Cass County. It was a very dry year with very little grass or hay for the cattle. As I was looking for a place to pasture. ~~I found~~ I found this sub-irrigated pasture and did not have to sell my ~~cow~~ herd. I greatly fear if MUD pumps that much water out of sec. 19-14-10 per day there will be no subirrigated grass during July, Aug., and Sept. MUD talks about mitigation for replacement of wetlands but shows no plan for replacing subirrigated ground, tax revenue loss or the plover. As you can readily tell, it is of grave concern that the value and usefulness of this pasture will be seriously undermined by the establishment of these wells. I sincerely hope that thoughtful consideration will be given to ~~the results of this action.~~

Enclosed find map of the aforementioned pasture.

Harold Landon

1. The District has pledged to work with affected owners to provide mitigation for impacts caused by groundwater drawdown. Specific mitigation measures would be worked out with individual owners. The Corps notes, however, that your pasture is almost completely outside the 1-foot drawdown contour.



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Dear Rebecca Latka,

I am writing you concerning the Platte West Water Production Well fields. My wife, Sharon and I own 39 aces of native hay meadow directly west of the Platte West Well field. The legal description of our land is SW1/4SW1/4 24-14-9 acres, Saunders County, Nebraska. We own the meadow to supply hay for our cows. One of the reasons we purchased the meadow was to have a dependable supply of hay for our cows. We could depend upon a hay crop even in very dry years because of the sub irrigation. 1

Our concern is that 50 MGD would draw the aquifer down 7 to 11 feet under our hay meadow. We could lose much of our hay crop in a dry year because your permit could allow MUD to pump 100 MGD if they needed the water in the summer months. If my 7 to 11 feet draw down is lost on 50 MGD then I could have a much more severe draw down than 7-11 feet.

When I visited with the MUD official at the Omaha school he didn't seem very friendly to fact that he may be changing the purpose and value of our hay meadow. He said it might not change our hay crop.

We realize that Omaha needs the water and that's okay. MUD will be getting cheap clean water that is easier to make safe for drinking purposes than from the Missouri River. What we object to is the fact that all of those homeowners, businesses and general public will benefit at the cost to us of changing our property value and income from the property we own. 2

We are farmers involved in agricultural production. MUD is changing the water table. We feel we should be compensated with no hassles. I hope that the U.S. Corps of Eng. Would write in the permit provisions that state that MUD will compensate agricultural producers without a long lengthy process.

The burden of proof should not rest on agricultural producers. It should rest on MUD. We should have a clear process stated in the permit. I don't want to spend the rest of my lifetime feeling cheated and having to spend time and money to get compensated. They are the ones who are changing the aquifer and benefiting from cheap clean water. It concerns us that without this provision in the permit the MUD being much bigger, they hope we would get lost in the passing of time and paper shuffle and they would not have to do anything for the landowners being affected by the wells. I felt after talking with MUD official that is exactly what would happen to all of the ag producers.

How do we know exactly what they are pumping on which days? How do we know exactly how that affects our crops and hay production? It is not an exact thing to prove being there are many other variables involved in ag production. I'm attaching with this letter information on root depth so it will give testimony to how the draw down of water will affect our hay meadow. I sincerely hope these concerns can be rectified. We are looking forward to your response. 3

Sincerely,
David K. Deerson

1. The pumping rates used in the groundwater model to produce the drawdown contours presented in the DEIS varied seasonally from about 35 MGD in February to about 75 MGD in July. As was discussed in the DEIS (pages 4-16 and 4-17), pumping rates greater than 75 MGD are expected to be infrequent and not noticeably affect all but the inner most part of the cone of depression. The District has pledged to work with affected owners to provide mitigation for impacts caused by groundwater drawdown. Specific mitigation measures would be worked out with individual owners.

2. The District recognizes its duty to respond to proven damages to landowners arising from the operation of its Platte West alternative well field to the extent provided under Nebraska law. Upon a written claim by a landowner asserting damage, the District would accept and perform a good faith review of the claim and all evidence submitted in support of it. The District would also share any monitoring information in its possession with a claimant. If the District concludes that the claim and the amount of claimed damages are valid, the District would pay the claim as it does other legitimate claims. If the parties cannot agree on the validity of the claim or the amount of damages, the final resort may be a remedy under the Tort Claim Act, or a condemnation or inverse condemnation procedure. The condemnation process in Nebraska is an administrative procedure involving the naming of three landowners of the county in which the land is located to a Board of Appraisers. This Board, named by a county judge, then determines the amount of damage that may be caused to a landowner.

   The District would consider mitigation of established damages, for example, the improvement of a well which has reduced capacity caused by drawdown. The District may also consider offers by landowners to acquire subsurface water rights to their land.

3. The Corps appreciates the additional information about root depths of grasses and has incorporated these data into the impact analysis.

From: kglewen@unlnotes.unl.edu Save Address - Block Sender
To: Dave Deerson<sharondeer@hotmail.com> Save Address
Subject: roots
Date: Wed, 11 Apr 2001 16:34:58 -0500
Reply Reply All Forward Delete Previous Next Close

Dave,

This should help answer your question about rooting depth of grasses.....keith
---------- Forwarded by Keith L Glewen/ARDC/IANR/UNEBR on 04/11/2001 04:38 PM ----------

Bruce E Anderson
04/11/2001 09:21 AM

To: Keith L Glewen/ARDC/IANR/UNEBR@University of Nebraska
cc:

Subject: roots

Keith,

I reviewed the chapters on roots in J.E. Weaver's book, North American Prairie, to get rather specific answers for your client. The following are the depths that he found in his research:

	feet
prairie cordgrass	8 - 13
switchgrass	8 - 11
big bluestem	5 - 7
indiangrass	5 - 5.5
canada wildrye	2
little bluestem	4.5 - 5.5
needlegrass	4 - 5
sideoats grama	4
prairie dropseed	4+
junegrass	1.5
kentucky bluegrass	2 - 3
western wheatgrass	6+
blue grama and buffalograss	3 - 6
many forbs	10+

Attach with letter from David K Deerson 940 Co Rd L Mead, NE 68041

This page intentionally blank.

Daniel J. Bishop
26969 West Center Road
Elkhorn, NE 68069

April 12, 2001

Ms. Rebecca Latka, CENWO-PM-AE
U.S Army Corps of Engineers, Omaha District
215 N. 17th St.
Omaha, NE 68102

Dear Ms. Latka:

For the average layman to read and digest the documents produced for MUD and the Corp of Engineers is a Herculean task at best. If one becomes a critic to the document one can find error, contradictions and illogical conclusions. It is obvious that a great deal of work and cost has gone into the document. Given that, my comments will address four points.

1. Our family and myself stand opposed to this Platte River project. It has not been made clear by MUD nor Burns and McDonnell that a Missouri River project is still not the most feasible. Other than MUD's desire to have an alternate source of water, the Missouri still remains the largest and best source available to people in Eastern Nebraska. Many cities throughout the country pump water on an affordable basis distances much further than the distance from the Missouri River to the western edges of Omaha. Most cities around the Great Lakes are an example. The cost of this project per the last meeting is exceeding $294,000,000. No update cost was given for the Missouri River project. 1

2. A glaring omission from the last update study is an impact analysis based on the figure in the summary on page S-1. It states that the average annual capacity would be 50 million gallons per day and a maximum of 100 million gallons per day. In order to achieve an average of 50 million gallons per day during demand days, especially in the summer time that capacity must exceed 50 and even to the 100 that they state. I could not find any reference to the impact it would have at 75 mgd or higher. The drawn down chart shows that it would have an impact of lower water tables from three to five feet on the northern most area of the MUD property in Douglas County. This updated study is the first time since this project has started that Burns and McDonnell have recognized our property (which is immediately adjacent to MUD's northern border) and others within the new impact study. A study based on 75 mgd or higher would cause this cone of depression and water loss to be even greater. 2

   This increase would effect Two Rivers to a greater degree than shown on the modeled draw down map.

1. The analysis in Chapter 1 of the DEIS indicated the District has a legitimate need to reduce its dependency for water supply on the Missouri River. This conclusion was based on industry standards for water supply planning and the observed practices of many other municipalities.

2. The pumping rates used in the groundwater model to produce the drawdown contours presented in the DEIS varied seasonally from about 35 MGD in February to about 75 MGD in July and averaged 50 MGD. The drawdown contours presented in the DEIS were for the greatest annual drawdown. These contours differ from those in the first DEIS because an error in the original analysis was discovered and corrected.

3. MUD has offered mitigation on a case by case basis. However, it was unclear whether there was any budget set up for possible mitigation. To the parties that I inquired to, it appeared that there was no budget set up except for the amount set up for Two Rivers. Since this is a long term project and likely that another generation would be involved at the time that the full impact of this project would be felt, it is important to establish criteria for mitigation so that it survives these hearings and provides guide lines both for MUD and other parties to live by. We as landowners wish to remain whole. We wish that our property be kept the same. Should this program be endorsed and should the demand increase to 100 mgd or higher as it is brought out in a number of places in the summary then MUD has offered well improvement, replacement of ponds, deepening of ponds and enlargement of ponds. For their benefit it would be wise to have a cost study done to determine what it takes to keep a pond at the same water acres with the proposed drawn down of 3, 5, 10 or 15 feet. One MUD representative at the evening meeting suggested that they never intend to let this happen. While all intentions are honorable so is the belief in the "tooth fairy". If the cost of that replacement of ponds including Two Rivers and the lakes on our property were factored into this overall project it might give MUD pause to reflect on the Missouri River project again. The $125,000 offered to Two Rivers would barely dent such a project. If such a study would show that additional wells on each persons property to maintain existing water levels as well as water acreage and such wells were guaranteed in the future, with the cost to both install, maintain and pay for were born by MUD, then such a statement in writing, would go along way for the land owners and their heirs. Mitigation should be monitored by a third party. Other assurances should be looked into as well to complete a mitigation proposal package. 3

4. It appears that a major flowing creek which runs for a half a mile through my property and several miles north and a number of miles south to the Elkhorn River has been overlooked. This creek is the lifeline to much water fowl as well as other animals and fish including Northern Pike. This creek would dry up immediately at the minimum levels of this project. The loss of this waterway would cause great harm not only to the wild life, but also to the landowners for whom this body of water passes through. I believe the Corp would be interested in maintaining the continuance of this flowing creek. 4

The Corp of Engineer 's responsibility to the public is a most difficult task at best. On one hand it must be responsive to the needs of a growing city, demands for services and a quasi government entity with very deep pockets. It also has the responsibility of our natural resources, the wildlife environment and maintaining certain lands from becoming parking lots. It also has the responsibility of dealing with those small landowners who maintain their lively hood or life style different from its neighbors in the city. We do hope for your Solomon judgement. 5

Sincerely,

The Bishop Family

3. The District recognizes its duty to respond to proven damages to landowners arising from the operation of its Platte West alternative well field to the extent provided under Nebraska law. Upon a written claim by a landowner asserting damage, the District would accept and perform a good faith review of the claim and all evidence submitted in support of it. The District would also share any monitoring information in its possession with a claimant. If the District concludes that the claim and the amount of claimed damages are valid, the District would pay the claim as it does other legitimate claims. If the parties cannot agree on the validity of the claim or the amount of damages, the final resort may be a remedy under the Tort Claim Act, or a condemnation or inverse condemnation procedure. The condemnation process in Nebraska is an administrative procedure involving the naming of three landowners of the county in which the land is located to a Board of Appraisers. This Board, named by a county judge, then determines the amount of damage that may be caused to a landowner.

   The District would consider mitigation of established damages, for example, the improvement of a well which has reduced capacity caused by drawdown. The District may also consider offers by landowners to acquire subsurface water rights to their land.

4. The limitations of the analysis of impacts to wetlands were presented in the DEIS. The apparent overlooking of a wetland or other special aquatic site is proposed to be compensated for by a thorough delineation of all wetlands within the cone of depression of the alternative that is ultimately permitted.

5. Your opinion is noted.

4-11-01

HAVING LOST MOST OF THE FAMILY FARM TO THE SAUNDERS COUNTY PORTION OF THE PROPOSED PLATTE WEST WELLFIELD I FELT IT WAS TIME TO OFFER SOME COMMENTS.

VERY LITTLE INFORMATION IS OFFERED IN THIS DEIS ABOUT HOW THE TYPICAL RESIDENTIAL RATEPAYER ACTUALLY USES THE WATER THAT M.U.D. SUPPLIES TO THEM. A MORE COMPLETE DEIS WOULD INCLUDE HOW RESIDENTIAL AND GENERAL COMMERCIAL CONSUMERS, (47% AND 23% RESPECTIVELY - ACCORDING TO 1998 CHART) THE TWO LARGEST CONSUMERS OF WATER, UTILIZE THE PRECIOUS RESOURCE THAT IS SUPPLIED TO THEM AT A VERY LOW COST.

USEFUL RESIDENTIAL INFORMATION WOULD INCLUDE NORMAL HOUSEHOLD WATER USEAGE: BATHING, LANDERING OF CLOTHES, FOOD PREPARATION, DRINKING ETC. RESIDENTIAL LAWN IRRIGATION MUST BE INCLUDED AS THIS IS A SIZEABLE USER OF WATER. GENERAL COMMERCIAL WOULD ALSO BE BROKEN DOWN INTO ITS LARGEST WATER USE CATEGORIES. THIS INFORMATION COULD BE PLACED IN CHARTS AND COULD BE SHOWN ON A MONTH BY MONTH WATER USE BASIS.

HOW PEOPLE USE OR WASTE WATER IS AT THE VERY HEART OF THIS ISSUE. IF A MORE CONSERVATIVE APPROACH TO WATER CONSUMPTION COULD BE ESTABLISHED THEN ONE OF THE MULTIPLE SOURCE ALTERNATIVES SUCH AS THE EXPANDED PLATTE SOUTH AND MISSOURI RIVER COMBINATION GROUPS WOULD OFFER A SUFFICIENT WATER SUPPLY.

1. The District does not have information on how water within the residential customer category is used. Mitigation measures were proposed to offset the harmful effects the proposed Platte West alternative well field would have on the lower Platte River ecosystem.

THESE ARE TWO PRE-EXISTING FACILITIES THAT WOULD I BELIEVE HAVE A LESSER IMPACT ON THE ECOLOGY IN THEIR AREAS THAN THE PLATTE WEST WELL FIELD.
THE PROPOSED PLATTE WEST WELL FIELD WOULD HAVE A VERY HARMFUL EFFECT ON THE LOWER PLATTE RIVER ECO-SYSTEM FOR THE LIFE OF THE WELL FIELD.

ALSO OF CONCERN TO ME IS THE ACCESS ROAD BUILT BY M.U.D. WEST OF MY PROPERTY. IF AND WHEN THE PLATTE RIVER WERE TO BREACH THE CLEAR CREEK DRAINAGE DISTRICT DIKE AS IT DID IN 1960 THE COMBINATION OF THE M.U.D. ACCESS ROAD AND THE MARBLE PRECINCT ROAD (BUILT HIGHER IN 1970) SOUTH OF MY PROPERTY WOULD PREVENT THE FLOODWATERS FROM EXPANDING OVER A WIDE AREA AS IT DID PREVIOUSLY. THIS IN MY MIND WOULD CAUSE GREATER DAMAGE TO THE STRUCTURES, ROADWAYS, ETC. THAN HAPPENED IN THE 1960 FLOOD. 2

2. Your concern is noted. To comply with flood insurance regulations, the well field structures would have to be designed to obtain a "no-rise certification".

Tom Siems
26901 West Center Road
Waterloo, NE 68069

April 9, 2001

Ms. Rebecca Latka, CENWO-PM-AE
U.S. Army Corps of Engineers, Omaha District
215 N. 17th St.
Omaha, NE 68102

Dear Ms. Latka:

After careful study of the Draft Environmental Impact Statement prepared by Burns and McDonnell dated February 2001, we conclude that the MUD "Platte West" choice is not viable because of its unnecessary destruction to the environment. According to earlier Burns and McDonnell studies this project would cause great damage to over 800 acres of wetlands and to the Platte River itself. It would also destroy the valuable recreation afforded by the Platte River and the many lakes within the cone of depression. There would also be a very negative impact on property values within the Platte Valley. 1

Given the destructive nature of the project and its still escalating cost, it is very difficult to imagine how the Corps of Engineers can justify its approval. However, if approval is granted, we would expect to see conditions placed on the permit. These should include, but not be limited to, the conditions, projections, and assumptions contained in the EIS. We also believe approval, if granted, should be on an incremental basis. For example, wells could be allowed on line 10 at a time, after which actual damage could be assessed to determine whether more wells should be allowed. 2

The final EIS should contain a more thorough discussion of monitoring and mitigation for projected draw down of private lakes and creeks. To avoid the obvious conflict of interest the monitoring should be supervised by a neutral party to be hired by MUD and to report to the Corp of Engineers. This mitigation should be established prior to project approval and prior to damage, as is the case of wetland mitigation and "Two Rivers" mitigation. Once a lake draw down is allowed the resulting fish kill would be very difficult to compensate for.

In addition some method should be specified to verify the actual volume of water taken by MUD during any given time.

Your careful consideration of our concerns would be greatly appreciated.

Tom Siems

1. The estimates of wetland impacts from the Platte West alternative presented in 2001 DEIS were the best available at that time. Impacts to the recreational value of ponds and lakes are possible from the Platte West alternative but the change in river elevation would likely be unnoticeable. The loss of subirrigation could adversely impact property values. Mitigation measures were proposed to offset these impacts.

2. If a permit is issued for a new water production facility, numerous conditions would undoubtedly be attached. These conditions would include specific mitigation measures and performance standards. The specific suggestions made in this comment would be considered as conditions should a permit be issued for this project.

COMMENT FORM

PLATTE WEST WATER PRODUCTION FACILITIES DRAFT ENVIRONMENTAL IMPACT STATEMENT

The U.S. Army Corps of Engineers solicits your comments on the information contained in the Platte West Water Production Facilities Draft Environmental Impact Statement. Please print your name, address on comments in the space provided below. If the space below is insufficient for your comments please feel free to use additional forms or other paper. When you have completed the form, you may put the form in the box provided at the workshop or mail the form to the address on the back. The use of this form is NOT required for submitting comments to the Corps. Comments can also be submitted via e-mail to **Rebecca.J.Latka@usace.army.mil.** Comments on will be accepted through 13 April 2001.

Name Nancy Cerone (pg 1)

Representing Nancy Cerone

Street Address 5905 So 222nd St

City, State, Zip Elkhorn, Ne 68022

Comments (1) You sent out the report in advance of the meeting but certainly not in time for the average individual to review this sizable report. We need more time 1

(2) We need a meeting where we as a group would have an opportunity to ask questions about our individual concerns and be able to hear answers to all questions asked. 2

(3) My understanding is that the Corp did agree to do this study under the assumption that their was a need for a new water source — we have never received information proving the need fore these facilities. And considering the fact that MUD is busy trying to sell "their" water to neighboring small towns — I would assume that they are not really concerned about suppling their own customer need. 3

(4) I would like to request the the Corp go over — At a public meeting — the 6 options 4

1. The NEPA regulations specify a minimum 45-day comment period for the DEIS. The comment period provided complied with this regulation.

2. The workshop provided one-on-one contact and is a much better format to discuss individual concerns. The answers to questions asked by others can be seem in this section of the FEIS.

3. The need for a new water supply was amply described in Chapter 1 of the DEIS. The District does not market water to surrounding small towns. These small towns have approached the District for service rather than construct independent new water supply facilities to meet their growing demands as the metropolitan area has grown.

4. The Corps has met the NEPA requirements for public participation for this EIS. The six alternatives discussed in the DEIS were described in Chapter 2, the impacts were described in Chapter 4, and impacts were summarized on Table 2-7.

COMMENT FORM Pg 2

PLATTE WEST WATER PRODUCTION FACILITIES DRAFT ENVIRONMENTAL IMPACT STATEMENT.

The U.S. Army Corps of Engineers solicits your comments on the information contained in the Platte West Water Production Facilities Draft Environmental Impact Statement. Please print your name, address on comments in the space provided below. If the space below is insufficient for your comments please feel free to use additional forms or other paper. When you have completed the form, you may put the form in the box provided at the workshop or mail the form to the address on the back. The use of this form is NOT required for submitting comments to the Corps. Comments can also be submitted via e-mail to **Rebecca.J.Latka@usace.army.mil.** Comments on will be accepted through 13 April 2001.

Name Nancy (Devone) (Pg 2)

Representing

Street Address 5905 So 222nd St

City, State, Zip Elkhorn, Ne 68022

Comments:

(4) to obtain more water & the positives & negatives for these options

(5) Pg 3-33 on
Land for the treatment plant site are) Valued at $1600 per acre
this land valuation done by the Corp representatives, is Completed inaccurate. Latest land sales in the immediate area have been $25,000 per acre – land to both the East & the West. Total estimated cost of treatment land by the Corp was $253,000 Wrong
More accurate figure would be 25,000 x 158 = $3,950,000
(Quite a difference)
And Cause for Concern in regard to accuracy of entire report

5

Platte West Water Production Facilities Project

Final Environmental Impact Statement

5. Land values in the areas on the outskirts of the Omaha Metropolitan Area, where most of the proposed new water supply facilities would be located, have been changing rapidly. Given the time required to gather, analyze, and report the large amount of data in the DEIS, land values could have changes substantially between the time the information was originally gathered and the DEIS published. This information has been updated for the FEIS; however, the property value information given in the DEIS was sufficient for comparing the alternatives.

COMMENT FORM

PLATTE WEST WATER PRODUCTION FACILITIES DRAFT ENVIRONMENTAL IMPACT STATEMENT

e U.S. Army Corps of Engineers solicits your comments on the information contained in the Platte West Water Production Facilities Draft Environmental Impact Statement. Please print your name, address on comments in the space provided below. If the space below is insufficient for your comments please feel free to use additional forms or other paper. When you have completed the form, you may put the form in the box provided at the workshop or mail the form to the address on the back. The use of this form is NOT required for submitting comments to the Corps. Comments can also be submitted via e-mail to **Rebecca.J.Latka@usace.army.mil.** Comments on will be accepted through 13 April 2001.

Name Nancy (Verne) (Pg 3)

Representing

Street Address 5905 So 222nd St

City, State, Zip Elkhorn, Ne 68022

Comments:

We need a Chance to ask Questions of the Corp regarding Water Source Options need for Water if need proven is treatment plant locations (why not place plant on land already taken over by MUD — the well site location) placement of pipelines

We should have the right to study this longer — and be able to ask the Corp Questions so that we can hear the things you have in regard to all Concerns

6

6. Please see the responses to comments 1, 2, and 3.

Deryl F. Hamann
Jerrold L. Strasheim*
Gerald P. Laughlin
John S. Zeilinger*
Gary W. Radil
Kent O. Littlejohn
Michael G. Lessmann
Alex M. Clarke*
Charles J. Addy*
Paul Scott Dye
Richard J. Pedersen
Thomas E. Johnson
Michael L. Sullivan
David M. Pedersen*
William G. Dittrick*

Kirk S. Blecha*
Ronald C. Jensen*
John R. Holdenried*
John P. Heil
Steven C. Turner
Sharon R. Kresha
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Maya C. Samms

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Heidi A. Guttau-Fox*
Theresa A. Schneider
Maren C. Craft

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D. Nick Caporale

Retired
Kenneth B. Holm
Edmund D. McEachen

**Also Admitted in Iowa*

Writer's Direct Dial No:
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402.231:8554

E-Mail Address:
kdahl@bairdholm.com

April 13, 2001

BY HAND DELIVERY

Ms. Rebecca Latka, CENWO-PM-AE
U.S. Army Corps of Engineers
Omaha District
215 North 17th Street
Omaha, Nebraska 68102

Re: Platte West Water Production Facilities Draft Environmental Impact Statement

Dear Ms. Latka:

Enclosed you will find the Comments of Tyrone Buss with regard to the draft environmental impact statement referenced above.

Very truly yours,

Keliy R. Dahl
FOR THE FIRM

KRD/eam
DOCS/454845.1
Enclosure

cc: Tyrone Buss (w/enc.)

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BEFORE THE UNITED STATES ARMY CORPS OF ENGINEERS
AND THE NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

In Re Draft Environmental Impact Statement for the Platte West Water Production Facilities.	))))	Application No. 199910085 **COMMENTS OF TYRONE BUSS**

In February, 2001, the Army Corps of Engineers ("Corps") issued a draft environmental impact statement ("DEIS") relative to the Platte West Water Production Facilities Project proposed by the Metropolitan Utilities District ("MUD"). Tyrone Buss is a property owner whose residence and property will be affected by the project as set forth in the DEIS. Mr. Buss respectfully submits the following comments on the DEIS for review and consideration by the Corps.

Mr. Buss lives in a residence near the Platte River and within the draw down zone for the proposed project. His property is the location of a wetland that attracts a significant amount of wildlife. Also, there is a spring fed creek that runs through his property. According to the DEIS, this unique natural habitat will be impacted significantly, if not destroyed, by the proposed project. Mr. Buss will lose this unique habitat, which provides recreational and commercial hunting opportunities. Yet, there is incomplete evaluation of the potential impact, and a complete analysis of mitigation efforts has not been completed at this point.

The Regulations governing the preparation of the DEIS provides that the Corps' analysis must:

> Identify appropriate and practical changes to the project plan to minimize the environmental impact of the discharge, based on the specialized methods of minimization of impacts in Subpart H.

40 C.F.R. § 230.5(j) (2000). With regard to minimization under Subpart H, the Regulations state that:

1. For alternatives involving the Platte West alternative well field, the potential impacts to aquatic habitats are primarily to wetlands that could be dewatered by groundwater drawdown and to the Platte River by depletion of flow. For well fields in alluvial aquifers, efforts to reduce drawdown will generally increase depletions. Extensive groundwater modeling of numerous well field operating scenarios was conducted to determine how the well field could be operated so that both of these impacts would be minimized.

   The DEIS did not state that monetary compensation was the only mitigation available to private property owners affected by groundwater drawdown. Other possible remedies include the enlarging of ponds, deepening of wells, and installation of irrigation systems at the District's expense. The DEIS and Conceptual Mitigation Plan specified negotiation between landowners and the District because the Corps and the District do not presume at this time to know which mitigation option each land owner would prefer.

> Minimization of adverse effects on populations of plants and animals can be achieved by: . . . (a) Avoiding sites having unique habitat or other value, including habitat of threatened or endangered species. . . .

40 C.F.R. § 230.75(c) (2000). Further:

> Minimization of adverse effects on human use potential may be achieved by: (a) selecting discharge sites and following discharge procedures to prevent or minimize any potential damage to the esthetically pleasing features of the aquatic site (e.g. viewscapes), particularly with respect to water quality . . . (d) following discharge procedures which void or minimize the disturbance of esthetic features of an aquatic site or eco system. . . .

40 C.F.R. § 230.76(2)-(d) (2000).

The discussion of mitigation in the DEIS describes the "negotiation of compensation" with private property owners. This suggestion is not specific enough to comply with the regulations governing the preparation of the DEIS There is no discussion in the DEIS analyzing mitigation efforts for private owner or the loss of privately owned habitat beyond the potential payment of monetary compensation

The Regulations require an analysis that compares the impact to the preferred location to others in terms of loss of habitat, impact on aesthetics and impact on threatened and endangered species. 40 C.F.R. part 230 (2000). The DEIS does not adequately discuss mitigation of such impacts in terms of siting the project and in terms of mitigating damage to unique privately owned habitat.

The payment of compensation alone does not address the loss of unique wetlands habitat or the destruction of a running stream to a private property owner such as Mr. Buss. In-kind mitigation on site or relocation of the project may be the only appropriate mitigation. Under Nebraska law, a public entity cannot take property by eminent domain for a future use. *Krauter v. Lower Big Blue National Resources Dist.*, 199 Neb. 431, 259 N.W.2d 472 (1977). Therefore, monetary compensation alone is not adequate mitigation

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in this case. Certainly other mitigation issues regarding the siting of the well field must be discussed before a final decision is made on the permit. 1

The DEIS also indicates that a number of threatened or endangered species would be impacted by the project. Yet, there is no suitable mitigation described in the report with respect to the effect the project may have on such endangered species as the Pallid Sturgeon. 2

Finally, the report suggests that it is unclear, at this point, whether Saunders County's land use regulations will be complied with with regard to mitigation efforts. As set forth in the report, Saunders County has an in-kind mitigation requirement that may impact this project. While MUD argues that it does not have to comply with such zoning requirements because of the power of eminent domain, such is not the case. It is clear under Nebraska law that there is no power of eminent domain to condemn a property for a future use. *See Krauter, supra. See also Engelhaupt v. Village of Butte,* 248 Neb. 827, 539 N.W.2d 430 (1995). Therefore, it is questionable whether MUD possesses the power of eminent domain with regard to a project that is designed to meet a need arising in the year 2030. Thus, MUD may not be excused from complying with local zoning requirements such as the in-kind mitigation requirement set forth in the Saunders County zoning regulations. 3

In short, the mitigation section of the report is inadequate. The report needs to study further mitigation efforts for the impact on unique wildlife habitat, wildlife, and private property owners such as Mr. Buss, including but not limited to siting issues and the possibility of in-kind mitigation for private property owners. 4

2. Mitigation plans for impacts to the pallid sturgeon and sturgeon chub were briefly described on page 4-55 and described in more detail in Appendix D of the DEIS. The FWS concluded in their biological opinion (Appendix E in the DEIS) that, with the proposed mitigation, the Platte West alternative would not jeopardize the continued existence of any federally-listed threatened or endangered species.

3. The DEIS acknowledged that the District's compliance with Saunders County zoning ordinances is an unresolved issue that is beyond the scope of the EIS. The District has provided the following alternative interpretation of the cases cited in this comment: "The comment cited Nebraska law to support the statement that a public entity cannot take property by eminent domain for a future use. *Krauter v. Lower Big Blue Natural Resources District* 199 Neb. 431, 259 NW2d 472 (1997), *Englehaupt v. Village of Butte* 248 Neb. 827, 539 NW2d 430 (1995). That general principle is not disputed but does not apply to the project. The commenter owns a residence near the Platte River apparently within the drawdown zone."

   "The well field property has already been acquired, mostly by purchase. Only one parcel was acquired by eminent domain. All issues related to eminent domain were addressable by the parties in those matters. Once decided, they cannot be raised now by a non-party."

   "In any event, the cases cited in the comment related to situations where the court specifically found that the government entities were obtaining excessive amounts of land. In *Krauter*, the entity attempted to obtain 320 acres when it needed only 140 acres. The governmental entity only attempted to define a public purpose for the excess land when it realized it was subject to challenge. In *Englehaupt*, a village condemned 11.9 acres for expansion of its water system, including 'expansion for additional wells, come the time that they are needed'."

   "The District has acquired enough land to place 42 wells, all of which will be installed and used for a present purpose. The treatment plant property and transmission piping will be constructed and used immediately. The system may increase pumpage as needed, but using only the total amount of land already in use. The law regarding future use does not limit reasonable governmental planning for the future. The principle asserted by the commenter does not apply to the present project."

4. Your opinion is noted.

Dated this 13th day of April, 2001.

Respectfully submitted,

TYRONE BUSS, Commenter

By _____
Kelly R. Dahl (#19273)
of BAIRD, HOLM, McEACHEN
PEDERSEN, HAMANN & STRASHEIM
1500 Woodmen Tower
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Its Attorneys

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PATRICIA A. SOLKO, R.N., PARALEGAL

MARK R. SCHERER
OF COUNSEL
* ALSO ADMITTED IN IOWA

April 17, 2001

Ms. Rebecca J. Latka
U.S. Army Corps of Engineers
215 North 17th Street
Omaha, NE 68102
Fax: (402) 221-4886

Mr. Jerry C. Folkers
U.S. Army Corps of Engineers
215 North 17th Street
Omaha, NE 68102
Fax: (402) 221-4939

RE: Draft Environmental Impact Statement
Platte West Water Production Facilities
Douglas and Saunders Counties, Nebrasak

Dear Ms. Latka and Mr. Folkers,

I am writing on behalf of my clients, Tom Siems and Dan Bishop, in response to the latest draft of the Environmental Impact Statement pertaining to the proposed Platte West Water Production Facilities. Specifically, I would like to address one area that is especially troubling to landowners near the proposed well field: M.U.D.'s attempt to subordinate pre-existing senior water interests for "municipal uses".

I would first point out that assuming the 1998 data may be used to predict the makeup of future customers by usage, it is apparent from Figure 1-1 on page 1-2 of the DEIS that less than half of the water supply expected to be created from the Platte West project would be provided to residential customers. Still, M.U.D. contemplates divesting pre-existing senior rights to this water to accommodate "municipal uses" whenever demand exceeds supply. This is evident in the DEIS on 4-13 where the "theoretical possibility" of reducing the Platte River flow to zero prompts the claim by Burns & McDonnell that "[w]hen water demand exceeds water supply, highest preference is given to domestic *and municipal uses*." (emphasis added). Thus, Burns & McDonnell asserts at 4-13 to 4-14, "[b]ecause the District is a municipal water supplier, upstream agricultural and industrial water users could be required to stop using Platte River water so that 1,000 cfs would be

1. The DEIS incorrectly stated that the District's 1,000-cfs water right had priority over upstream agricultural and industrial users. Based on 50 years of USGS daily flow data for the Platte River at North Bend and 5 years of data at Leshara, flow in the Platte River above the Platte North and Platte West alternatives well fields would be less than 1,000 cfs approximately 0.7 percent of days or, on average, less than 3 days per year. A flow above the Platte North or Platte West alternative well fields of 861 cfs would be sufficient to meet Lincoln's senior water right of 700 cfs assuming the maximum possible induced infiltration rate by the District's well field of 161 cfs (104 MGD), no losses of river water between the District's well field and the Ashland well field, and no inflow from the Elkhorn River. Flow in the Platte River at Leshara is estimated to be less than 861 cfs 0.3 percent of the time or, on average, less than 1 day per year. The maximum monthly average depletion rate estimated for the B4 pumping scenario was 73.5 cfs. At this depletion rate, a flow in the Platte River of 774 cfs would meet Lincoln's water right. Flow in the Platte River at Leshara is estimated to be less than 774 cfs 0.1 percent of the time or, on average, about 12 hours per year. Low flows in the Platte River, therefore, could occasionally curtail use of the Platte West or Platte North well fields. For the vast majority of the time, however, the Platte West alternative well field could meet the stated need for additional production capacity.

   The District would have preference over senior upstream agricultural and industrial users. The amount of preference would probably be related to the amount of water the District supplies for domestic uses. The Nebraska Department of Natural Resources has not determined what this volume would be. Preference means the District could force the sale of water from senior upstream agricultural and industrial users. In the event flow in the Platte River was low enough to force the the District to defer Platte West alternative well field operations to senior downstream water rights holders, the District would not likely exercise its preference because 1) the District could implement its Water Conservation Emergency Operation Plan and rely on water from the Florence Plant (Missouri River) and Platte South, and 2) by the time the procedure for implementing their preference was complete, the low flow event would probably be over.

maintained in the Platte River at the Platte West well field." Besides omitting any reference to pre-existing domestic uses, this position is misleading and untenable under Nebraska law.

Contrary to Burns & McDonnell's assertion that "municipal uses" have priority over the pre-existing rights, Nebraska Revised Statute § 46-204 actually gives priority to domestic then agricultural uses over industrial uses. This section is devoid of any reference to "municipal uses" whatsoever. One can only infer that the reference to "municipal uses" in the DEIS is meant to include the 53% of users which is made up primarily of commercial and industrial applications as demonstrated by Figure 1-1. Nebraska Revised Statute § 46-613, however, subordinates manufacturing and industrial applications to domestic and agricultural uses just as does § 46-604. Accordingly, the pre-existing domestic and agricultural users near the Platte River have senior rights to the water over any subsequent "municipal use" and M.U.D. has no legal basis to subvert those pre-existing rights.

Not only do Nebraska statutes support the position that M.U.D. lacks any legal authority to subordinate the pre-existing senior rights, so too does the Nebraska State Constitution at Article XV, Section 6 which states that ". . . no inferior right to use of the waters of this state shall be acquired by a superior right without just compensation therefore to the inferior user." Of interest, this section makes no mention of the acquisition of a senior right by an inferior right. Only the opposite scenario is envisioned. The natural conclusion, therefor, is that an inferior right cannot acquire a senior right and M.U.D. cannot legally force upstream domestic and agricultural users to stop using Platte River water. Obviously, any attempt to infringe the rights of those landowners with pre-existing senior rights would be met with litigation.

Even assuming that M.U.D. were able to legally subordinate the pre-existing senior water rights as contemplated within the DEIS, "just compensation" for the dimunition in land value, loss of crops, loss of access to water and other damages are mandated by the Nebraska State Constitution at Article XV, Section 6. The costs attendant with litigation and the costs involved in compensating those individuals and entities having pre-existing senior water rights to those that might be created in favor of M.U.D. are not taken into account in calculating the overall costs associated with the Platte West plan anywhere within the DEIS. Accordingly, the DEIS does not and cannot adequately address the Platte West plan compared to other reasonable and practicable alternatives from an economic standpoint as required under the National Environmental Policy Act of 1969. Accordingly, I believe that the Platte West alternative described in the DEIS should be withdrawn from consideration. 2

I would welcome your response to the forgoing concerns at your convenience. Thank you in advance for your attention in this matter.

Sincerely,

Tiernan T. Siems

TTS:smn
cc: Tom Siems
Dan Bishop

2. Your opinion is noted.

Comment : MUD Platte West Project

In no way should M.U.D. be able to go beyond its county's borders of river water into another county which is already being tapped by one municipality a few miles upstream - By Lincoln Water System wells. 1

Saunders County is home to not only endangered river species but lowland farmers whose fragile eco-system on which they depend is being threatened by the project. They still graze cattle in green pastures neighboring their farmground, productive from a naturally high water table that their forefathers have depended upon for generations. 2

One to two million dollars planned by MUD in compensation is a far-cry from the far reaching damages which would unfold as a consequence of these proposed wells. 3

That amount of monies would not nearly satisfy the losses of all the farmers and rural landowners that depend on the water-table now in existence naturally.

We, being 3 miles away from the proposed drilling depend upon our sand-point well for our water supply. We already have very low water pressure (ie. takes all day to water the garden) which we have learned to live with 4

1. Your opinion is noted; however, county boundaries are not a factor in the Corps' decision process for issuing a Section 404 permit.

2. The existence of subirrigation in the Platte River valley in Saunders County is recognized.

3. The analysis of socioeconomic impacts caused by the loss of subirrigation has been updated in the FEIS.

4. If your well is three miles away from the Platte West alternative well field, then drawdown at your location caused by the Platte West alternative well field would be less than one foot.

Why should we have to prove that NWD was affecting our water pressure when: (a) we are situated in their "cone of depression;" (b) Saunders County will no longer issue permits for sand-point wells, & (c) we were told by a COE water engineer not to drill a well deeper into the aquifer because of contamination from the former Mead Nebraska Ordnance plant - RDX & TCE moving through the ground water.

On one hand we have the Corps of Engineers proposing a water clean-up project that will take 70+ years (pump & treat) with millions of gallons of treated water they can't decide what to do with, while the other hand of the COE seems to be in the pocket of NWD or they would force this treated water to be used by NWD even if it "doesn't reach their standards." This same water is being offered to County communities as a water supply source yet some entity (NWD) from outside the county trying to tap its precious water supply finds this treated water "unacceptable."

So here we have millions of gallons already being pumped out of the Platte by LWS three miles upstream of the proposed NWD well field and millions more

5

6

5. Early in the process to decide on the ultimate use of the Mead Groundwater Demineralization project, the District choose not to participate because local resource agencies expressed considerable interest in utilizing the treated water for a benefit in Saunders County, including a rural water district. No analysis has been made as to the suitability of the treated Mead plume water for use by the District.

6. The analyses conducted indicated some impact to the Platte River ecosystem including the floodplain. The Corps characterizes some of these impacts as significant and as such requires mitigation. Mitigation measures have been proposed to offset the impacts to the Platte River ecosystem.

being pumped w/i 3 miles of the proposed Platte River West project for the pump & treat water contamination Corps project.

You can't convince me, nor the neighboring taxpayers, that all this pumping near the river will not have a devastating effect on the river eco-system.

Without the time or resources available to a tax-funded entity such as the Corps or corporate-rich, lawyer-heavy municipal monopoly such as MUD, it is impossible to respond in depth to your voluminous report at least a year in the making. 7

I also would strongly refute the effect noted & attention given to such operation during dry/drought years. Also the defined parameters of the pump & treat operation of the former NCP water contamination, with the goal of stopping the spread of the toxic plume, would be adversely affected by MUD wells on the west side of the Platte. 8

How ironic & disgusting that our deceased Steward of the river as he fought MUD's plans revealed years ago - one George Chun should now have his property & descendant, a Vietnam-vet, actually ~~have their property~~ as host to said wells. 9

7. Your opinion is noted; however, the Corps in neither a proponent nor an opponent of the project and the impacts of the project require highly technical analysis. The DEIS was over five years in the making.

8. The groundwater modeling conducted to assess the impact of the Platte West alternative well field on the Mead plume clean-up effort was sufficiently conservative to adequately demonstrate that the Platte West alternative well field would not affect the Mead plume clean-up.

9. Your opinion is noted.

Having attended the 1995 meeting at Ustan with NWD officials, lawyers, NRD officials, county board representatives, concerned neighboring landowners, I can attest the project was misrepresented to all present. The drawdown estimates, sized "cone of depression," liability, and the part of property owners whose water table level has would be lowered, disruption of the environment - were all misrepresented to the attending public at the public hearing. 10

Of course, eagles habitate this area known to local residents & cited/sighted in the local newspaper, if not by your scientists and lawyers. The fragile eco-habitat of countless species (humans & plants included) should never be disturbed by further (municipal) pumping in this area. And the idea of mitigating the loss of wetlands into another county and river (Missouri) is ill-founded & contrary to nature & justice. 11

Why didn't the Corps publicize their "informational" & public hearing meetings to the local papers with a press release, not even the Omaha newspaper carried an advance article. 12

The Platte River West project by NWD should not be approved, and is greatly opposed. 13

Denise J. Meyer

←

10. Considerable additional study on the effects of the Platte West alternative well field has been done since 1995. The fact that some estimations of impacts have changed since then is almost unavoidable.

11. The Corps and FWS have concluded that the Platte West alternative well field would not impact the bald eagle. On the contrary, District ownership of well field property adjacent to the river would protect that property from future development and allow habitat for eagles to redevelop. The Corps notes that the Platte River ecosystem has already been drastically disturbed by agricultural activities. The quality of the identified wetland mitigation site for successful creation of new wetlands offsets the site's distant from the point of impact.

12. Press releases were sent to numerous area papers. An article about the meeting appeared on March 1, 2001 in the Omaha World-Herald.

13. Your opinion is noted.

You are the entity funded by us, the taxpayers of the county, that we depend on to intervene and protect us (all: river, species, environment, eco-system) from such an intrusion.

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RESPONSES TO REQUEST FOR INFORMATION ON CUMULATIVE IMPACTS

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Nebraska Field Office
203 West Second Street
Grand Island, Nebraska 68801

September 17, 2001

Ms. Candace M. Gorton
Chief, Environmental, Economics, and
Cultural Resources Section
Planning Branch
Corps of Engineers, Omaha District
106 South 15th Street
Omaha, NE 68102-1618

Dear Ms. Gorton:

This responds to your September 5, 2001, letter regarding the Revised Draft Environmental Impact Statement (RDEIS) for the Metropolitan Utilities District of Omaha proposed Platte West Water Production Facilities Project (Project). The U.S. Army Corps of Engineers (Corps) requested that the U.S. Fish and Wildlife Service (Service) identify projects within the Project area that have been completed, or are reasonably foreseeable within the next five years, for use in the cumulative impact analysis for the RDEIS. The Project area is described as the Platte River from near Valley, Nebraska to the mouth, the Elkhorn River from Highway 92 to the mouth, and within 1-mile of the banks of these rivers.

The Service has identified the following projects which are currently underway or are reasonably forseeable within the Project area: a) an Interlocal Cooperative Agreement on the lower Platte River; b) the Plattsmouth Chute project; and c) the Western Sarpy/Clear Creek levee project. All three of these activities are described in a September 11, 2001, letter to the Corps from the Nebraska Game and Parks Commission.

In addition to the aforementioned projects, the Service completed a Wildlife Extension Agreement (Agreement), dated September 30, 1992, for the restoration of a drained wetland along Otoe Creek (i.e., N 1/2 of Section 25, T-15-N, R-9-E) in Saunders County, Nebraska. The Agreement will expire on September 30, 2002. It appears that the wetland site is located within 1-mile of the Platte River.

If members of your staff have any questions regarding this matter, please contact Mr. Wally Jobman within our office at (308)382-6468, extension 16.

Sincerely,

Steve Anschutz
Nebraska Field Supervisor

Attachment

cc: NGPC; Lincoln, NE (Attn: Frank Albrecht)

(c)mudRDEIS.ltr

Nebraska Game and Parks Commission

2200 N. 33rd St. / P.O. Box 30370 / Lincoln, NE 68503-0370
Phone: 402-471-0641 / Fax: 402-471-5528 / http://www.ngpc.state.ne.us/

September 11, 2001

Candace Gorton
Corps of Engineers
106 South 15th Street
Omaha, NE 68102-1618

Dear Ms. Gorton:

Nebraska Game and Parks Commission (NGPC) staff members have reviewed your request for information regarding the Platte West Water Supply project which is being proposed by Metropolitan Utilities District (MUD). This information will be used to help address the cumulative impact analysis within the revised Draft Environmental Impact Statement.

Background: NGPC staff has worked with the U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (Corps), and MUD on this project proposal from early planning stages to the present. Our earlier correspondence is included in the Draft Environmental Impact Statement (DEIS).

NGPC concerns for the project proposal include impacts to Platte River flows, wetland loss, and lost recreational activities at our Two Rivers State Recreation Area. There are two agreements between the NGPC and MUD included in the DEIS which address our main concerns. To help offset possible impacts to pallid sturgeon and sturgeon chub from the depletions to the Platte River, one agreement would restore backwater habitat along a portion of the Missouri River approximately three miles downstream of the mouth of the Platte River (located on the Rhoden Wildlife Management Area adjacent to the Schilling Wildlife Management Area). The expectation is biological resources from the backwater, such as aquatic macroinvertabrates and juvenile fish would have ready access into the main channel of the Missouri River. This restoration activity would benefit pallid sturgeons and sturgeon chubs by providing additional food resources and habitat conditions which have been largely lost.

The other agreement regards the concerns for lost recreational activities at our Two Rivers State Recreation Area. Recreational opportunities lost because of ground water drawdown-induced habitat changes and pond water level reductions will need to be replaced or offset. The agreement will provide financial compensation and will allow public access to the proposed LaPlatte wetland mitigation site in order to offset the loss of recreational potential.

The geographic scope of your request is the Platte River from near Valley, Nebraska to the mouth, the Elkhorn River from Highway 92 to the mouth, and within a mile of the banks of these rivers. Each category is identified below. Your letter states the need for identification of projects that are reasonably foreseeable within the next five years that could affect the categories listed below. Three significant projects, which will affect the study area, are described below.

Interlocal Cooperative Agreement on the Lower Platte

This agreement is also referred to as the pallid sturgeon and sturgeon chub study. A cooperative agreement was formed in 1999 to address potential impacts to the pallid sturgeon and sturgeon chub from surface water developments and related depletions. The fifteen signatories of the agreement include eight NRD's, the NARD, two Public Power and Irrigation Districts, one Reclamation District, two Public Power Districts, and Nebraska Game and Parks Commission.

Part of the agreement includes the funding for a 5-year study of the pallid sturgeon and sturgeon chub on the lower Platte River. The principal investigator of the study will be Dr. Ed Peters (University of Nebraska-Lincoln). We hope to answer a number of questions on the habitat requirements of the pallid sturgeon and sturgeon chub which will help determine how much water development could take place without adverse impacts to these species.

Plattsmouth Chute Project

The "Plattsmouth Chute Project" is a Section 1135 project (of the Water Resources Development Act). The proposed project would divert a portion of the Platte River's flow from near its mouth, down a historic channel through the existing Randall Schilling Wildlife Management Area and exit through the Missouri River's right bank about 2 miles downstream from the Platte-Missouri confluence. This would restore a branch of the Platte River to approximately the same alignment as existed around 1890, according to the survey of that date. The project would restore important aquatic habitat that has been lost due to past modifications.

The potential project would be conducted by Corps with the Nebraska Game and Parks Commission (NGPC) as the non-Federal sponsor. The Lower Platte South NRD has also expressed an interest in the project and may yet choose to co-sponsor the project.

The Corps is beginning a combined feasibility study and environmental assessment of the project. The Corps and the NGPC hosted an agency information meeting and site tour on February 1, 2001. The Corps and the NGPC also conducted a public meeting that same evening at the Plattsmouth Senior Citizens Center. At these meetings, the Corps introduced the basic concept of the project, explained the study process, and recorded comments from the public and agencies.

Western Sarpy/Clear Creek Levee project

Project sponsors (Papio-Missouri River NRD and Lower Platte North NRD) are currently proposing improvements to existing, partially functioning levees. These improvements include levee realignment and rehabilitation, and construction of such levees on both sides of the lower Platte River to contain a 50-year discharge level of 151,000 cfs. The proposed project site is located in western Sarpy and eastern Saunders counties, Nebraska.

The U.S. Army Corps of Engineers prepared a Feasibility Report/Environmental Impact

Statement for the Western Sarpy/Clear Creek Levee Project. The lead federal agency (Corps) entered into formal Section 7 Consultation (under the federal Endangered Species Act) with the USFWS on October 18, 2000.

The EIS identified the environmental consequences of several levee improvement plans, including the preferred alternative (plan 5, with levees reconfigured to contain the 50-year, 151,000 cfs event). Four conservation measures were recommended in a Biological Opinion (BO) prepared by the USFWS to offset adverse effects to federally listed species, including the endangered pallid sturgeon and interior least tern, and threatened piping plover.

This project is currently in informal consultation through the Nebraska Nongame and Endangered Species Conservation Act. During state consultation, a need has been identified for a more detailed hydraulic modeling of project conditions, including additional conservation measures not previously considered in federal consultation (Section 7 of the Endangered Species Act, USFWS with the Corps). This study will help determine if adequate protection is being given to the state-listed species which use the area identified in the project area.

A. **Wetlands** – Direct impacts to wetlands from the proposed MUD project will need to be offset. As noted earlier, the proposed mitigation site is located near LaPlatte. The proposed Western Sarpy\Clear Creek levee will impact wetlands (please reference the EIS and BO for details)

B. **The Platte River (Depletions)** – The proposed offsetting measures for Platte River depletions are outlined in one of the agreements between the NGPC and MUD identified above. Also reference the EIS and BO on the proposed Western Sarpy\Clear Creek levee project.

C. **The pallid sturgeon** – Please reference the Western Sarpy \Clear Creek levee section above. Also reference the EIS and BO on the levee project.

D. **The least tern** – Please reference the Western Sarpy \Clear Creek levee section above. Also reference the EIS and BO on the levee project.

E. **The piping plover** – Please reference the Western Sarpy \Clear Creek levee section above. Also reference the EIS and BO on the levee project.

F. **Sub-irrigated farmland (Saunders and Douglas counties)** – Contact the NRD and county NRCS offices.

G. **Saunders County tax revenues-** Contact County Assessor's office.

H. **Water Quality** – Contact Department of Environmental Quality and the NRD offices.

I. **Riparian Vegetation**— Please reference the Western Sarpy \Clear Creek levee section above. Also reference the EIS and BO on the levee project.

We look forward to working with the Corps, USFWS, and MUD in future consultation activities. If you have any questions or need any additional information, please call me at 402-471-5422.

Sincerely,

Frank J. Albrecht

Frank Albrecht
Assistant Division Administrator
Realty and Environmental Services

cc Kirk Nelson, NGPC
Mark Brohman, NGPC
Gene Zuerlein, NGPC
Scott Luedtke, NGPC
Steve Anschutz, USFWS
Wally Jobman, USFWS

STATE OF NEBRASKA

DEPARTMENT OF NATURAL RESOURCES
Roger K. Patterson
Director

Mike Johanns
Governor

September 18, 2001

IN REPLY REFER TO:

Candace Gorton
Chief, Environmental, Economic and Cultural Resources Section
Planning Branch
Planning, Programs and Project Management
Corps of Engineers Omaha District
106 S 15th Street
Omaha, NE 68102-1618

Dear Ms. Gorton:

Thank you for your September 5 letter requesting assistance on identification of reasonably foreseeable projects along identified reaches of the Lower Platte and Lower Elkhorn Rivers. The request was in regard to the Platte West Water Supply Draft Environmental Impact Statement proposed by the Metropolitan Utilities District. Our Department has issued water rights to the District and Saunders County has lodged a complaint regarding those permits. There are currently legal proceedings underway regarding Saunders County's challenges to those water right permits. Given our current responsibilities in that regard, we do not believe it would be appropriate for us to provide further comment at this time.

Sincerely,

Steve Gaul
Head, Planning and Assistance Division

sg

dirshare/planning
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PAPIO-MISSOURI RIVER
NATURAL
RESOURCES
DISTRICT

8901 S. 154th St.
Omaha, NE 68138-3621
(402) 444-6222
FAX (402) 895-6543
http://papionrd.nrc.state.ne.us/papionrd

September 14, 2001

Candace Gorton, Chief
Environmental, Economic and
Cultural Resources Section
U.S. Army Corps of Engineers, Omaha District
106 South 15th Street
Omaha, Nebraska 68102-1618

RE: Proposed Platte West Water Supply Project

Dear Ms. Gorton:

This is in response to your letter of September 5, 2001 concerning the cumulative impact analysis for the Environmental Impact Statement for the referenced project.

The projects in the specified reaches of the Platte and Elkhorn Rivers within the next five years that we are aware of are:

- Western Sarpy/Clear Creek Flood Reduction Project in the area from Highway 6 to near Highway 92. This federal project was authorized in WRDA 2000.
- Sand/gravel mining operation just north of "Q" Street on the west side of the Elkhorn River. We understand that an application for a special use permit has recently been made to Douglas County for this operation.

I trust this information will be helpful to you. If you have any further questions please call.

Sincerely,

Marlin J. Petermann

Marlin J. Petermann, P.E.
Asst. General Manager

Cc: Kevin Tobin, Metropolitan Utilities District

MP,jb 66901 File: 548

Papio-Missouri River Natural Resources District Board of Directors

[illegible] • [illegible] • [illegible] • [illegible]
[illegible] • [illegible] • [illegible] • [illegible] • [illegible] • [illegible]
[illegible]

SAUNDERS COUNTY ATTORNEY

COURT HOUSE
433 NORTH CHESTNUT
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FAX (402) 443 - 4527

THOMAS S. JAUDZEMIS
County Attorney

GRANT A. PORTER
Deputy County Attorney

ANDREW LANGE
Deputy County Attorney

September 17, 2001

Candace Gorton
Corps of Engineers
106 S. 15th Street
Omaha, NE 68102-1618
VIA FAX: (402)221-4886

RE: MUD DEIS

Dear Ms. Gorton:

Thank you for your letter to the County of Saunders dated September 5, 2001 regarding the MUD DEIS.

As you may know, Saunders County has addressed all of the subject items many, many times, met with the Corps several times, provided the Corps with aerial photos and computer data, provided the Corps with data on MUD's proposed harm to wetlands, waters, depletion of the Platte River, pallid sturgeon, least tern, piping plover, subirrigated farmland, Saunders County tax revenues, water quality and riparian vegetation if MUD is allowed to bully its way in violation of NEPA, the Endangered Species Act, the Clean Water Act, Nebraska water law and its Saunders County permits.

The County of Saunders has provided the Corps with hundreds of pages of comments (with backup data) on **all** of these items. **The County of Saunders incorporates all of its comments to the Corps regarding the MUD proposal by this reference as if set forth in their entirety by this reference.**

Not only is the MUD proposal poorly thought out and costly to MUD's customers as well as upstream Nebraska farmers it will destroy valuable habitat for endangered species and violate

Federal and Nebraska law for all of the reasons set forth in Saunders County's referenced written comments incorporated herein by this reference.

In addition to the foregoing and all of Saunders County's previous comments, it appears that the MUD proposed MUD project would result in poisoning MUD's customers with TCE (see the enclosed article). Lastly, it is shameful at best to learn that MUD is trying to "strong arm" the Corps and attempt an "end run" around the nation's environmental laws.

Sincerely,

Grant Porter

Grant Porter

cc: Saunders County Board of Supervisors
Environmental Protection Agency

Thursday, September 6, 2001

Wahoo News

Wahoo, Nebraska

52 Pages • 5 Sections • Plus Inserts

Corps looks at possible retoo

traction well unveils surprise contaminant levels

y Troy Fedderson
f Reporter

MEAD – Four months from having ntainment in place, the U.S. Army p of Engineers may have to retool r groundwater restoration plan at ie former Nebraska Ordnance Plant.

During the Restoration Advisory meeting on Thursday, Aug. 30, Pro- anager Thomas Graff revealed at extraction well No. 11 issued the orp a surprise two weeks ago.

We found TCE (trichloroethene, a sol- used at the NOP) in 3,000 parts per illion here," Graff said during a tour op at extraction well No. 8. "That is off charts for what we expected to find." he wellhead is located about a mile southeast of former NOP Load Line No. 1. According to Graff, the area is an "anomaly."

"The highest TCE we've measured on this side of the load line was 240 (parts per billion)," Graff said. "A half mile to the north, the levels are in the teens. Wells to the south have all registered non-detects."

Furthermore, Graff explained that Extraction Well No. 8 (located an eighth of a mile due west of No. 11) has also recorded non-detect levels.

"This really baffles me," Graff admitted. "We're going to resample it next week. We'll have to do a more direct push and see just where this extends to."

The high levels of TCE are especially troubling as EW11 is one of 11 containment wells. These 11 wells border the southern edge of the contaminated portion of the aquifer. When they all come on line, their job will be to halt the spread of TCE and RDX (an explosive compound used in NOP bombs) further south into the aquifer.

Depending on additional sampling, the Corp may have to reconsider the placement of the well.

"The upside of this is, we'll have one well extracting real, contaminated water," Graff said. "To acquire real containment, we may have to put in another extraction well south of here.

"But, our first goal is to determine the extent of this anomaly."

Currently, the groundwater restoration project is in a 30-day period open to public comment on the "Explanation of Significant Differences."

The ESD is available to the public at the Mead Library. It is basically on overview of changes from the original plan.

Area residents are encouraged to go over the ESD and voice their opinions on the groundwater restoration project.

Originally, the project was to involve extraction wells only. These wells would draw water to a treatment plant, then release the treated water into Clear and Wahoo creeks.

But, due to public concern over the impact to the groundwater supply, the Army Corp of Engineers moved to instill water conservation measures.

To maintain the current groundwater level, 14 groundwater circulation wells (GCW) will be used in place of extraction wells.

Those 14 wells will come in two types, removing TCE and RDX with air and light, respectively.

These GCW's draw water from the upper levels of the aquifer. Pump it through

See **Clean-up** on Page 2A

for clean-up sit

"We found TCE in 3,000 parts per billion here. That is off the charts for what we expected to find."

- Tom Graff, Corps Project Manager

Clean-up

Continued from Page 1A

a special purification chamber, then back to the aquifer.

For pumps used to remove TCE, the water flows through special air trays that removed the cleaning solvent. While, water drawn into the RDX removal pumps, will flow through a tube flooded with ultraviolet light from a simple fluorescent bulb.

"Like other explosives, RDX is photo sensitive," Curt Elmore, an engineer who helped design the system, said. "The energy from the light simply destroys the RDX.

"Likewise on the TCE units, TCE is extremely volatile, but it is attracted to the air."

And these basic cleansing methods are effective. The air stripping units remove 96 to 99 percent of the TCE; while the UV units remove 100 percent of the RDX.

The overall plan is to continue diluting TCE and RDX until below acceptable levels. According to Graff, it will take hundreds upon hundreds of years to cleanse the 23 billion gallons in the aquifer.

Two GCW wells are currently in use. Twelve additional units are under construction and will be operational by the summer of 2002.

While the 14 GCW cleanse from within, 11 extraction wells will line the southern border to stave off spreading of the contaminated area. One of the wells includes EW11.

As explained in the original clean-up plan, these wells draw water directly out of the aquifer and to a treatment facility, located on the southwest corner of the NOP site.

Currently, treated water from two wells is being released into Clear Creek. And, the line of containment will be complete before the end of the calendar year. When all 11 extraction wells are on line, water will also be released into Wahoo Creek.

Farmers have the option of using this treated water for irrigation. According to Graff, there is no contamination danger with the treated water.

He explained that any remaining contaminants are driven out once pumped above ground, where they are throttled with airflow and UV light from the sun.

Farmer Steve Frahm and the University of Nebraska Agricultural Research and Development Center are currently using the treated water for irrigation. And, at least one additional center pivot could be hooked up to the line.

The treated water may also be used to fight rural fires in the area. Four fire plugs have been added along the drainage lines to the two creeks.

"In nine months, we've removed 24 gallons of TCE from 13 million gallons of water," Graff said. "Before the end of the calendar year, we will have the treatment plant fully operational and have containment in place.

"And, in the next 30 days, we invite anyone to comment on this project."

Comments should be addressed to Vicki Murt (CENWK-EC-EC), 700 Federal Building, 601 East 12th Street, Kansas City, MO 64106-2896.



Staff Photos/Troy Fedderson

COMING ONLINE - By the end of the calendar year these newly installed tanks will be treating groundwater pumped by extraction wells at the Ordnance Plant site. Once online, these tanks (coupled with two inside the treatment facility) will release treated water in both Clear and Wahoo creeks. The treated water can also be used for irrigation and fire fighting.

OMAHA WORLD-HERALD

MUD tries to speed up approval of expansion

By Nancy Gaarder
WORLD-HERALD STAFF WRITER

Citing this summer's water problems, the Metropolitan Utilities District board of directors called on the federal government to expedite its review of MUD's plan to expand its operations in the Platte River basin.

A proposed plant west of Omaha would tap up to 104 million gallons a day from the Platte River basin.

MUD wants to build a $293 million water-purification plant west of Omaha. The new plant would draw up to 104 million gallons of water a day from the aquifer near the Platte River along the Douglas-Saunders County line.

A request to build the plant has been before the U.S. Army Corps of Engineers since 1994. An environmental review is under way.

The corps hopes to decide on the permit by September 2002, and perhaps earlier, said Becky Latka, technical manager of the environmental-impact statement for the corps.

MUD had hoped for a decision by February 2002.

"That's an additional eight months," said John S. McCollister, chairman of the board. "If that delays the construction of the plant by one more water season, then it's a critical issue."

Latka said that because the project is so large and has drawn so much interest, it is taking more time for the corps to address concerns. Forty-four governmental bodies, public-interest groups and individuals have made official comments on the project.

The corps wants to make a solid decision, she said, one that will withstand any possible lawsuits.

MUD officials are concerned because a prolonged hot, dry spell this summer prompted the utility to ask customers to voluntarily restrict water use. Low levels in reservoirs also caused some water-pressure problems.

"It's safe to assume the water-supply situation will be more critical as time goes on," McCollister said, adding that each year, demand grows by 1 million to 2 million gallons.

Water use by MUD's 170,000 customers peaked at 200 million gallons a day this summer. The utility's capacity is 234 million gallons.

Officials were especially concerned because the dry spell lasted for about six weeks, which meant demand intensified over time, instead of spiking and then dropping.

MUD currently draws most of its water from the Missouri River, but it gets about 60 million gallons from wells along the Platte River near La Platte, Neb.

The expansion, expected to be done in 2007, would tap up to another 104 million gallons from the Platte River basin. That, the utility estimates, would guarantee growth for the next 30 years.

MUD has done everything it has been asked to do to meet the requirements of the permit, said Jerry Radek, general manager. It has agreed to replace lost wetlands and develop pallid-sturgeon habitat.

MUD's expansion is being challenged by Saunders County officials who worry that the pumping will draw down the underground water reserves, reducing the amount of water available to farmers and communities there.

The issue is being fought in the courts and before regulatory agencies, including the Corps of Engineers.

COMMENTS AND RESPONSES ON THE PFEIS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

DEC 14 2001

Ms. Rebecca Latka
U.S. Army Corps of Engineers
CENWO-PM-AE
Environmental Analysis Branch
106 South 16th Street
Omaha, Nebraska 68102-4978

Dear Ms. Latka:

RE: Review of Preliminary Final Environmental Impact Statement (PFEIS) 2001 Metropolitan Utilities District's Platte West Water Production Facilities in Douglas and Saunders Counties, Nebraska

Thank you for the opportunity to comment on the PFEIS for this project. Most of our comments have already been communicated to you in our comment letter to the Draft Environmental Impact Statement, in a letter dated April 17, 2001. After reviewing this Preliminary Final EIS, our most significant concern continues to be with the uncertainties of the modeling of environmental impacts. For any known or potential impacts, EPA recommends that the Corps of Engineers (COE) provide an equal discussion of potential impact, specifics of the monitoring plan that will be utilized to assess actual impacts, and a clear explanation of mitigation or compensation pathways if that particular impact is realized. We would expect that such a discussion would include wetlands, sub-irrigation and MEAD contaminant plume migration. Conversations with Mr. Thomas Graff, (COE project manager of the MEAD site), indicates that there is a possibility of impacts to plume containment from the proposed Platte West Water Production Facilities.

Questions should be directed to Mr. Stephen K. Smith at (913) 551-7656.

Sincerely,

Joseph E. Cothern

Joseph Cothern
NEPA Team Leader
USEPA Region VII

RECYCLE

1. The uncertainty associated with the groundwater modeling and subsequent impacts on wetlands, subirrigation, and the Mead contaminant plume has been acknowledged in Chapter 4 of the FEIS. The monitoring plans for wetlands, groundwater level, and groundwater quality were established because of the uncertainty associated with the modeling. The mitigation plans specified in Chapter 4 and Appendix D indicate how the results from monitoring plans will affect on-the-ground mitigation.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Nebraska Field Office
203 West Second Street
Grand Island, Nebraska 68801

December 10, 2001

Ms. Rebecca Latka
U.S. Army Corps of Engineers
CENWO-PM-AE
106 South 16th Street
Omaha, NE 68102

Dear Ms. Latka:

This responds to a November 15, 2001, letter from Mr. Gregory Howick, Technical Project Manager for Burns & McDonnell, requesting comments from the U.S. Fish and Wildlife Service (Service) on the Preliminary Final Environmental Impact Statement (PFEIS) for the proposed Metropolitan Utilities District's (District) Platte West Water Production Facilities (Project No.:96-068-4) located in Douglas and Saunders counties, Nebraska.

After reviewing the PFEIS, we recommend that the Service's amended biological opinion, dated February 2, 2001, be added to Volume 2, Appendix E. Also, the proposed piping plover critical habitat should be added to the species list on page 4-50 and included in the discussion on page 4-53. We have no further comments to offer at the present time.

If you have questions regarding these comments, please contact Mr. Wally Jobman within our office at (308)382-6468, extension 16.

Sincerely,

John Cochnar
Acting Nebraska Field Supervisor

(c) MUDnew2.itr

1. The amended biological opinion has been added to the original biological oppinion in Appendix E. The proposed critical habitat for the piping plover was added to the species lists in Chapters 3 and 4 and discussion of the impact on the critical habitat was added to Chapter 4.

Nebraska Game and Parks Commission

2200 N. 33rd St. / P.O. Box 30370 / Lincoln, NE 68503-0370
Phone: 402-471-0641 / Fax: 402-471-5528 / http://www.ngpc.state.ne.us/

December 11, 2001

Rebecca Latka
Corps of Engineers
215 North 17th Street
Omaha, NE 68102-4978

Dear Ms. Latka:

Nebraska Game and Parks Commission (NGPC) staff members have reviewed the Preliminary Final Environmental Impact Statement (PFEIS) for the proposed Platte West Water Production Facilities. Staff have worked with the U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (Corps), and the Municipal Utilities District (MUD) on this project proposal from early planning stages to the present. Some of our earlier correspondence is included in the PFEIS. Also, please reference the attached letter from the NGPC to the Corps (letter dated April 11, 2001; Kirk Nelson to Rebecca Latka).

There are two signed agreements between the NGPC and MUD included in the PFEIS which address our main concerns. To help offset possible impacts to pallid sturgeon and sturgeon chub from the depletions to the Platte River, one agreement would restore backwater habitat along a portion of the Missouri River approximately three miles downstream of the mouth of the Platte River (located adjacent to the Randall W. Schilling Wildlife Management Area). The expectation is biological resources from the backwater, such as aquatic macroinvertabrates and juvenile fish would have ready access into the main channel of the Missouri River. This would benefit pallid sturgeons and sturgeon chubs by providing additional food resources.

The other agreement regards the concerns for lost recreational activities at our Two Rivers State Recreation Area. Recreational opportunities lost because of ground water drawdown-induced habitat changes and pond water level reductions will need to be replaced or offset. The agreement will provide financial compensation and will allow public access to the LaPlatte wetland mitigation site in order to offset the loss of recreational potential.

As alluded to earlier, much of the lost recreational activities from the Two Rivers State Recreation Area will be hunting opportunities and enjoyment of the outdoors provided by the wetlands currently existing. The LaPlatte wetland mitigation site will not fully restore these benefits as a result of the proposed Highway 34 bridge which may bisect the property. However, to help offset this recreation loss at the Two Rivers State Recreation Area, we still strongly encourage MUD to open the Douglas County portion of the Platte West well field to public access.

Thank you for the opportunity to review this PFEIS. We look forward to working with the Corps, USFWS, and MUD in future consultation activities. If you have any questions, please call me at 402-471-5539.

Sincerely,

Kirk Nelson
Assistant Director

cc Frank Albrecht, NGPC
Mark Brohman, NGPC
Jim Swenson, NGPC
Steve Anschutz, USFWS

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1. Your continued encouragement of the District to open the Douglas County portion of the Platte West alternative well field to public access is noted.

Nebraska Game and Parks Commission

2200 N. 33rd St. / P.O. Box 30370 / Lincoln, NE 68503-0370
Phone: 402-471-0641 / Fax: 402-471-5528 / http://www.ngpc.state.ne.us/

April 11, 2001

Rebecca Latka
Corps of Engineers
215 North 17th Street
Omaha, NE 68102-4978

Dear Ms. Latka:

Nebraska Game and Parks Commission (NGPC) staff have reviewed the Draft Environmental Impact Statement (DEIS) for the proposed Platte West Water Production Facilities. Staff have worked with the U.S. Fish and Wildlife Service (USFWS), US Army Corps of Engineers, and the Municipal Utilities District (MUD) on this project proposal from early planning stages to the present. Our earlier correspondence is included in the DEIS.

Concerns for the project proposal include impacts to Platte River flows, wetland loss, and lost recreational activities at our Two Rivers State Recreation Area. The mitigation measures outlined in the DEIS will, however, address the majority of these concerns. The preferred alternative (Platte West) includes the use of the B4 Scenario, where annual flow depletions to the Platte River and the wetland acres lost would be less than under the earlier selected Scenario.

There are two agreements between the NGPC and MUD included in the DEIS which address our main concerns. To help offset possible impacts to pallid sturgeon and sturgeon chub from the depletions to the Platte River, one agreement would restore backwater habitat along a portion of the Missouri River approximately three miles downstream of the mouth of the Platte River (located adjacent to the Schilling Wildlife Management Area). The expectation is biological resources from the backwater, such as aquatic macroinvertabrates and juvenile fish would have ready access into the main channel of the Missouri River. This would benefit pallid sturgeons and sturgeon chubs by providing additional food resources. Because of the decrease in annual flow depletions under the B4 scenario previously mentioned, the monetary amount identified in the agreement should be adjusted accordingly and this should be reflected in the Final EIS. The slightly reduced amount will still be adequate to complete all the restoration components. These restoration activities will provide key habitat conditions which have been largely lost.

The other agreement regards the concerns for lost recreational activities at our Two Rivers State Recreation Area. Recreational opportunities lost because of ground water drawdown-induced habitat changes and pond water level reductions will need to be replaced or offset. The agreement will provide financial compensation and will allow public access to the LaPlatte wetland mitigation site in order to offset the loss of recreational potential.

The other concern regards the wetland mitigation site and the bridge which is planned to cross the Missouri River at the LaPlatte mitigation site. The most current proposed north alignment for the bridge appears to bisect the area designated for wetland mitigation. Although disturbance from the traffic associated with the bridge could negatively affect the mitigation site, wildlife, including avian species, could still benefit at this site. Increasing the mitigation ratio and locating it as far away as possible from the bridge on the tracts identified in the DEIS could help offset disturbance factors. The Missouri River corridor has been greatly modified in the past and any additional purchases of land in this area beyond that required for mitigation could lead to much needed aquatic and riparian habitat being restored and help protect this area from development as well. The public's use of this site will be greatly influenced by the presence of a bridge on or near the mitigation site.

As alluded to earlier, much of the lost recreational activities from the Two Rivers State Recreation Area will be hunting opportunities and enjoyment of the outdoors provided by the wetlands currently existing. The LaPlatte wetland mitigation site will not fully restore these benefits as a result of the proposed bridge. However, to help offset this recreation loss, we strongly encourage MUD to open the Douglas County portion of the Platte West well field to public access. Allowing public access to this site would help offset the lost opportunities at Two Rivers State Recreation Area.

Thank you for the opportunity to review this DEIS. We look forward to working with the Corps, USFWS, and MUD in future consultation activities. If you have any questions, please call me at 402-471-5539.

Sincerely,

K L Nelson

Kirk Nelson
Assistant Director

cc Frank Albrecht, NGPC
Mark Brohman, NGPC
Steve Anschutz, USFWS

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STATE OF NEBRASKA

Mike Johanns
Governor

DEPARTMENT OF NATURAL RESOURCES
Roger K. Patterson
Director

December 10, 2001

IN REPLY REFER TO:

Rebecca Latka
U.S. Army Corps of Engineers
CENWO-PM-AE
106 South 16th Street
Omaha, NE 68102

Dear Ms. Latka:

Thank you for the November 15, 2001 letter, from Gregory Howick requesting our review and comment on the Preliminary Final Environmental Impact Statement PFEIS for the Metropolitan Utilities District's proposed Platte West Water Production Facilities. As I have noted in previous correspondence, our Department has already issued water rights to the District and Saunders County has lodged a complaint regarding those permits. The Department has proceedings pending in response to challenges to those water rights. Given our current responsibilities in that regard, we do not believe it would be appropriate for us to provide further comments at this time.

Sincerely,

Steve Gaul
Head, Planning and Assistance Division

sg

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STATE OF NEBRASKA

DEPARTMENT OF PROPERTY ASSESSMENT & TAXATION
herine D. Lang
. .operty Tax Administrator

Mike Johanns
Governor

December 14, 2001

Rebecca Latka, CENWO-PM-AE
U.S. Army Corp. of Engineers - Omaha Division
106th S 15th
Omaha, NE 68102

Dear Ms. Latka,

I have reviewed the preliminary final Environmental Impact Statement for the proposed Metropolitan Utility District Platte West water production facilities with regard to property assessment in Saunders County, Nebraska.

I have reviewed the subject draft and it appears that my previous comments to you have not been incorporated. In fact, it appears that the valuation in Saunders County with regard to the present valuation, and with regard to the future 30 years and for that matter, the next 100 years is either not being taken into account or is being ignored. I am not sure how the figures being used were arrived.

I request that the consultant review these matters with me and that the EIS be redrafted with a factual basis.

FOR THE PROPERTY TAX ADMINISTRATOR

Sincerely,

Cathy Gusman
State Assessor for Saunders County
(402) 443-5703

State Assessment Office for Saunders County • 433 N. Chestnut • Wahoo, Nebraska 68066 • Phone (402) 443-5700 • Fax (402) 443-5705
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1. For the PFEIS, the analysis of impacts on property values and property tax receipts was completely revised based on the most current data provided by the tax assessors offices of Douglas and Saunders counties. The basis for the impact analysis, approximations of current property values and taxes is provided in Chapter 3. These data were obtained in late spring of 2001 and are as current as can be reasonably expected given the long period of time required to produce an EIS. Impacts on property values and property taxes receipts caused by loss of subirrigation and land acquisition by the District are presented in Chapter 4. Although specific assessment were not conducted for each parcel of real property potentially impacted, the results are considered sufficiently accurate in aggregate for comparison among the alternatives.

SAUNDERS COUNTY ATTORNEY
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THOMAS S. TAUDZEMIS
County Attorney

GRANT A. PORTER
Deputy County Attorney

ANDREW LANGE
Deputy County Attorney

December 17, 2001

Rebecca Latka, CENWO-PM-AE
U.S. Army Corps of Engineers, Omaha District
106 South 15th Street
Omaha, NE 68102
VIA FAX: 402)221-4886

RE: Platte West Water Production Facilities
Preliminary Final Environmental Impact Statement

Dear Ms. Latka:

On behalf of the County of Saunders, State of Nebraska, Cooperating agency hereto, this letter is a request for a 30 day extension of time to respond to the recent MUD Platte West Water Production Facilities' "Preliminary Final Environmental Impact Statement" dated November, 2001.

A brief review of the document discloses that the jurisdictional wetlands area set forth in the Corp's 1999 DEIS has been grossly reduced from "83 acres of the 104-acre total occurring in Saunders County" to a mere loss of 13.8 acres (see Attached Exhibit 2 attached hereto and made a part hereof by this reference as if set forth in its entirety). The "new" "PFEIS" contends that the "323.1 acres of wetlands and other special aquatic sites" including "150.4 acres of jurisdictional wetlands" within the zone of depression would not be impacted because of [illegible] thick, underlaying clay lens.

The PFEIS contains the sworn testimony of MUD's Kevin Tobin that the water table level is four to six feet below the surface [illegible] the monitoring for the 150.3 acres of the jurisdictional [illegible] was for determining the characteristics of the soil [illegible] the upper reaches of the wetland, **just the first two**

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or three feet. [MUD's Tobin stated that] I think they actually bored down to get past any clay layer, if they could, and so they **may** have went to **10 feet** or so on **some of them**."

Page 2-20 of the "Detailed Descriptions of Selected and Required Alternatives Platte West" states in part that "This alternative would include the development of a new well field containing 42 wells" (Table 2-3). **In fact, Table 2-3 depicts 46 wells not 42 wells.** The hydrology of this DEIS has been **manipulated** by MUD and Burns and McDonald from the beginning, however, it continues to degenerate to obtain MUD's desired result. All of the hydrology in the DEIS is flawed, **"garbage in-garbage out".** 1

The proposed Platte West Well Field in Saunders County is hydrologically connected to the Platte River. John Miyoshi, General Manager of the Nebraska Lower Platte North Natural Resources District (LPNNRD) recently testified to this hydrologic connection on November 30, 2001 under oath at a hearing before the LPNNRD concerning Saunders County vs. MUD.

MUD, through its consultant, Burns & McDonnell seeks to convince the Corps, the cooperating agencies and the public that there is "No Federal Action" even if it buys 370 more acres of land in Saunders County, bores two 54 inch pipelines 4,000 feet under the Platte River, drills three or four wells east to the river-side of the levee in Saunders County and consequently into the floodway and drills three to four wells in the northern most part of the Saunders County portion of the well field to land outside the boundary of the well field delineated for the Platte West well filed. Approximately 370 acres of additional land would have to be purchased, bringing the total well field size to 2,560 acres of which 1,560 acres would be in Saunders County. 2

MUD's proposed "end run" on NEPA and the Corp's 404 Permit requirements is flawed and patently deceitful. "The majority or 81.9 acres of the 86 acres will be either altered (8.5 acres) or lost (73.4 acres) because of groundwater drawdown." While this is a gross underestimate it sets forth a basis for the Corps to perform its lawful duty to prevent the harm and destruction of jurisdictional wetlands. 3

There are many, many other Federal actions requiring an EIS by the Federal government including but not limited to the Underground Injection Control Act, the Federal Emergency Management Act, the Hazardous Waste Disposal Act, the Safe 4

1. Table 2-3 on page 2-22 of the PFEIS states 42 vertical wells. The hydrologic analyses presented in the EIS used advanced groundwater modeling techniques and are considered as accurate as feasibly possible.

2. The only federal action required for construction of the Platte West alternative as described in the EIS is a issuance of a Section 404 permit by the Corps. If the Platte West alternative could be constructed without disturbing waters of the United States, a Section 404 permit would not be required; therefore, no federal action.

3. The Corps responsibility to protect waters of the United States is carried out though conditions placed in Section 404 Dredge and Fill permits. If a project does not dredge or fill any waters of the United States, then no Section 404 permit is required and the Corps would not have jurisdiction. The Corps' responsibility to protect waters of the United States does not apply to impacts to wetlands caused by groundwater drawdown unless the project also impacts wetlands by dredging or filling.

4. Federal actions are those by agencies of the United States government. If such an action is likely to result in significant environmental impacts, the acting agency is required to prepare an EIS. In the case of the proposed Platte West Water Production Facilities, the federal action is the issuance of a Section 404 permit by the Corps. The Corps is the lead agency and the District is the applicant. Issuance of a Section 404 permit does not relieve the District of the responsibility of complying with other federal laws. No other federal action would be required if the Platte West alternative facilities could be built without a Section 404 permit.

Drinking Water Act, the Clean Water Act, the Endangered Species Act, the Migratory Bird Treaty Act, and the Superfund Act.

The Corps has determined that according to its model it will lose containment on the southeast edge of its project regarding contaminants TCE (a solvent) and RDX (an explosive). The Corps' simulation only used a worst case scenario of 12 wells pumping on the southern (Saunders County) MUD site. In reality, MUD wants to drill over 28 wells in Saunders County. There is no factual or legal basis to believe that only 12 wells would be pumped in Saunders County at any point in time. In fact, it is obvious that MUD would sequentially pump all of its wells for a total of 28 wells in Saunders County. 5

MUD's plans are at best false and misleading. 6

In Saunders County view, the Corps has worked very hard on MUD's proposals, however, MUD and Burns & McDonnell have provided the Corps with misleading information.

Saunders County incorporates all of its previous comments into this request for a 30 day extension.

Thank you for your time and consideration.

Sincerely,

Grant A. Porter
Saunders Deputy County Attorney

5. The groundwater modeling conducted by the Kansas City District of the Corps on the potential interference of the Platte West alternative well field with the Mead contamination plume and remediation resulted in a conclusion similar to that reported in the FEIS. The trajectory of the plume would be altered slightly but would probably not break containment. Because the possibility of breaking containment can not be completely ruled out, the Kansas City District of the Corps will install additional monitoring wells near the eastern edge of the plume. The Metropolitan Utilities District will fund an additional capture well and other necessary infrastructure if results from the monitoring wells indicate containment is broken. Under the B4 operating scenario, the number of wells operating in Saunders County would vary from 11 in October through May up to 19 in July. The use of 12 wells in a steady-state model is a conservative approximation of the transient operating conditions used to model the B4 scenario.

6. Your opinion is noted.

Thursday, November 22, 2001 5

Wahoo Newspaper

Wahoo, Nebraska 102 Pages • 6 Sections • Plus Inserts Volume Number 119 - Numb r 22

MUD pledges compensation

By Troy Fedderson
Staff Reporter

MEAD - The Metropolitan Utilities District (MUD) has agreed to provide restitution if their new well-field results in a loss of containment on the former Mead Ordnance Plant site.

"According to our simulation, we may loose containment," Thomas Graff, project manager for the U.S. Army Corp of Engineers, said during last Thursday's Remediation Advisory Board meeting. "We had a conference call with MUD, and they agreed to provide restitution if that happens."

The southern edge of the proposed MUD well field is about two miles east of the former Ordnance Plant site. Initially area residents were concerned that the MUD pumps would draw contaminated aquifer water under the former bomb building plant toward the new well field.

In response, the Corps - which is responsible for the site clean-up - combined data from the Ordnance Plant site and the MUD to create a simulation on contaminant drift.

The simulation used a worst-case scenario of 12 wells pumping on the southern MUD site. Overall, the south portion is projected to have 28 wells drilled, not all of which would operate at the same time.

"This shows what will happen in lecades to centuries," Graff warned. "But, ccording to our model, we project to lose ontainment on the southeast edge of the roject."

The Ordnance Plant currently has 11 ontainment wells along the southern bor- er of the site. They pump directly to a reatment facility and all are projected to e on-line by the first of the year.

These wells protect against the spread of ontaminated water below the Ordnance lant site. Contaminants primarily in the ater are TCE (a solvent) and RDX (an explosive).

The MUD well-field project has yet to be approved by the Omaha Corps of Engineers. If final approval is given, the Corps plans on drilling sentry wells between the two sites to ensure that contamination is not spreading east.

If contamination is lost on the southeast edge as projected, a new extraction well will have to be drilled. MUD pledged to pay the cost for the new well.

"We're confident that the contamination is not going to make a bee-line to the MUD site," Graff said. "But, we need to make sure that we protect the interests of our project. And, I think this agreement does that."

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SAUNDERS COUNTY ATTORNEY

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THOMAS S. JAUDZEMIS
County Attorney

GRANT A. PORTER
Deputy County Attorney

ANDREW LANGE
Deputy County Attorney

Colonel Kurt Obbelohde
U.S. Army Corps of Engineers, Omaha District
106 South 15th Street
Omaha, NE 68102
VIA FAX: (402)221-4886

RE: Platte West Water Production Facilities
Preliminary Final Environmental Impact Statement

Dear Colonel Obbelohde:

The following sets forth some of Saunders County's concerns, comments and objections to Burns & McDonnell's November 2001 Preliminary Final Environmental Impact Statement for the Metropolitan Utilities District of Omaha's proposed 58,308 acre feet per year Platte West Water Production Facilities interbasin (Platte River Basin to Missouri River Basin)/interstate (Nebraska to Carter Lake, Iowa) water transfer for industrial, commercial, domestic and agricultural uses within the MUD District (Washington County, Sarpy County, Douglas County and Carter Lake, Iowa).

I am writing to you directly with copies to staff and other agencies because of the importance of preventing MUD's ill advised Platte West preference which will destroy priceless wetlands, endangered species and migratory bird species habitat, valuable commercial subirrigated farm and pasture land and the priceless Platte River flow to the detriment of Saunders County, the citizens of Nebraska, the City of Lincoln and the Metropolitan Utilities District of Omaha.

Because there are so many reasons MUD's proposal should be rejected Saunders County incorporates its previous objections to

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the Corps by this reference. The following are a few major objections for your serious consideration.

MUD's new strategy to manipulate the regulatory process includes the deletion of reasonable and better suited alternatives along the Missouri River and downstream of Ashland, NE along the Platte River, falsely minimizing the depletion and destruction of the wetlands, subirrigated farmlands, surface waterways, (the Platte, endangered species and migratory birds. 1

MUD's newest twist to violate the regulatory scheme is to pretend its actions will not be federal actions requiring a §404 permit. 2

MUD and Burns & McDonnell presently seek to "snooker" or "hoodwink" the Corps and the federal government with an incorrect interpretation of the recent U.S. Supreme Court case Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers et al, No. 99-1178 (2001) (hereinafter the "SWANCC" or "Garbage Dump" case). 3

In the SWANCC case a consortium of 23 suburban Chicago cities and villages united to fill permanent and seasonal ponds that were not near or hydrologically connected to a river with solid waste or "garbage" that were "used as habitat by other migratory birds" (not "used as habitat by birds protected by Migratory Bird Treaties", not "used as habitat for endangered species" and not "used to irrigate crops sold in interstate commerce").

MUD's Platte West proposal can never legally qualify for a §404 permit. MUD's latest proposal to expand its well field through the **purchase of 370 more acres of land in Saunders County for a total of 1560 acres of land in Saunders County and to drill 3 to 4 of its 42 to 46 wells on the river side of the levee into the floodway is patently outrageous**. MUD and Burns & McDonnell realize that MUD's "Platte West" proposal can never be lawfully approved by the Corps (let alone be sanctioned by the courts) so they are now attempting to convince the Corps that it is lawful to make an ugly proposal acceptable by directionally drilling under the Platte River and **destroying more jurisdictional wetlands**. MUD and Burns & McDonnell acknowledge that after over a half dozen years they do not know where they would drill their proposed wells, or how many would be drilled or even where the wetlands or service roads would be located. "The location of wells and service roads on the well field depicted in Figure 2-8 are **tentative**. Final placement would depend on the precise location of wetlands as determined by a formal wetland delineation." November 2001 PFEIS at 2-32. 4

1. The purposes and need of the proposed Platte West Water Production Facilities are adequately justified in Chapter 1 of the EIS. The alternatives not included for detailed analysis in the EIS were eliminated because they could not meet the numeric criteria for total production or production from a source other than the Missouri River, or they produced raw water of quality inferior to other similar alternatives still under consideration.

2. If the Platte West Water Production Facilities can be constructed without dredging or fill waters of the United States (e.g., rivers, streams, wetlands), then a Section 404 permit from the Corp would not be required.

3. Because the Platte River is involved in interstate commerce and most of the wetlands potentially impacted by the Platte West Water Production Facilities are in the Platte River floodplain, the "SWANCC" case is not considered relevant to the Platte West Water Production Facilities Project. No attempt was made in the EIS to use "SWANCC" as a justification to avoid Corps jurisdiction over waters of the United States potentially impacted by the Platte West Water Production Facilities.

4. Wells can be constructed in a floodway provided they do not cause a rise in the flood elevation. Such construction is technically feasible. Direction drilling is used to **avoid** direct impacts to wetlands and other sensitive habitats from dredging and filling. Without a Section 404 permit, the Corps would have no regulatory vehicle to require mitigation for the loss of wetlands that could result from impacts other than dredging or filling.

MUD cannot hide behind or utilize the "SWANCC" or "Garbage Dump" case to justify its latest "No Federal Action" proposal. The 1190 acre area of wetlands and subirrigated crop lands in Saunders County that MUD would attempt to own and destroy and the surrounding 12 to 15 sections containing wetlands and subirrigated crop lands in Saunders County are not exempted from protection under federal law and NEPA. 5

The "SWANCC" or "Garbage Dump" case is not applicable because of the fact that MUD's proposals involving Saunders County would destroy habitat used by birds protected by the Migratory Bird Treaties, endangered species and irrigated crops sold in interstate commerce.

If MUD really wants Platte River water so badly then Burns & McDonnell **must study and include as legitimate, reasonable and feasible alternative(s) 7, 6, and/or 5 set forth in the attached enclosure in the Final EIS.** 6

In closing I wish to compliment the Corps and its staff for diligently working on this project. It is in the best interests of MUD's customers and the citizens of Nebraska if MUD utilizes water **downstream from Lincoln's Platte River wellfields and/or from the Missouri River** for its future needs. Alternatives 7, 6 and/or 5 will provide the most economical and nondestructive water supply (other than use of Missouri River water) for MUD. The Platte West proposal would also draw a plume of poisonous contaminants into Omaha's and/or Lincoln's water supply. 7

Lastly, please be advised that MUD must mitigate in Saunders County all subirrigated lands and wetlands MUD would alter or destroy in Saunders County including without limitation the acreage MUD owns or proposes to own in Saunders County pursuant to Saunders County's zoning resolutions. 8

Thank you for your time and attention in preventing unnecessary litigation by enforcing NEPA, the §404 process and other federal requirements as the lead agency.

Yours Very Truly,

Grant A. Porter
Saunders Deputy County Attorney

cc: Colonel Donald R. Curtis, Jr.-Corps
Candace Gorton-Corps
Rebecca Latka-Corps
Joe Cothern-EPA

5. Because the Platte River is involved in interstate commerce and most the wetlands potentially impacted by the Platte West Water Production Facilities are in the Platte River floodplain, the "SWANCC" case is not considered relevant to the project. No attempt was made in the EIS to use "SWANCC" as a justification to avoid Corps jurisdiction over water of the United States potentially impacted by the Platte West Water Production Facilities. If the Platte West Water Production Facilities can be constructed without dredging or fill waters of the United States (e.g., rivers, streams, wetlands), then a Section 404 permit from the Corp would not be required. Without a Section 404 permit, the Corps would have no regulatory vehicle to require mitigation for the loss of wetlands that could result from impacts other than dredging or filling.

6. As indicated in the EIS, hydrologic limitations prevent alternatives 5 and 6 from provided the required additional 100 MGD of maximum capacity. Alternative 7 is essentially similar other Platte River alternatives but would produce raw water with quality lower than the alternatives included for detailed analysis in the EIS.

7. Your opinion is noted.

8. The applicability of Saunders County zoning regulations to the District is an unresolved issue that will not be resolved in the context of the NEPA process and is beyond the scope of the EIS.

Table 2-1 List of Alternatives

SINGLE SOURCE ALTERNATIVES

Platte River Alluvial Aquifer Group

1. Platte West well field and treatment plant, vertical wells (Platte West)
2. Platte West well field and treatment plant, horizontal wells (Platte West 2)
3. Platte West 2, Douglas County only (Platte West 2DC)
4. Platte North well field and treatment plant (Platte North)
5. Expanded Platte South well field and treatment plant, horizontal wells (Platte South H)
6. Expanded Platte South well field and treatment plant, vertical wells (Platte South V)
7. New Platte South well field and treatment plant (Platte South 2)

Missouri River Group

8. Expanded Florence intake and treatment plant (Expanded Florence)
9. New Missouri River intake and treatment plant (New Missouri River)
10. Missouri River North intake and treatment plant (Missouri River North)
11. Missouri River South intake and treatment plant (Missouri River South)

Missouri River Alluvial Aquifer Group

12. Dodge Park well field and treatment plant (Dodge Park)
13. Eppley Airfield well field and expanded Florence Treatment Plant (Eppley Airfield)
14. Fontenelle Forest well field and treatment plant (Fontenelle Forest)
15. Well field on the Iowa side of the Missouri River and treatment plant (Iowa well field)

Dakota Aquifer Group

16. Expanded Millard well field (Millard well field)
17. Expanded Elkhorn well field (Elkhorn well field)
18. Distributed wells in the Dakota aquifer (Distributed wells)

MULTIPLE SOURCE ALTERNATIVES

Expanded Platte South and Missouri River Combination Group

19. Expanded Platte South well field and treatment plant plus expanded Florence intake and treatment plant (Platte South plus expanded Florence)
20. Expanded Platte South well field and treatment plant plus new Missouri River intake and treatment plant (Platte South plus new Missouri River)

Expanded Platte South and Platte West Combination Group

21. Expanded Platte South well field and treatment plant plus Platte West well field and treatment plant, vertical wells at Platte West (Platte South plus Platte West)
22. Expanded Platte South well field and treatment plant plus Platte West well field and treatment plant, vertical wells at Platte West, Douglas County side only (Platte South plus Platte West DC)
23. Expanded Platte South well field and treatment plant plus Platte West well field and treatment plant, horizontal wells at Platte West (Platte South plus Platte West 2)
24. Expanded Platte South well field and treatment plant plus Platte West well field and treatment plant, horizontal wells at Platte West, Douglas County side only (Platte South plus Platte West 2DC)

Three-Way Combination

25. Expanded Platte South well field and treatment plant plus Douglas County portion of Platte West well field and treatment plant plus new Missouri River intake and treatment plant (Three-way combination)

OTHER ALTERNATIVES

26. Purchase water from Council Bluffs, Iowa
27. Discontinue water wholesaling
28. Local flood control reservoirs
29. Aquifer storage and recovery
30. Conservation
31. No federal action

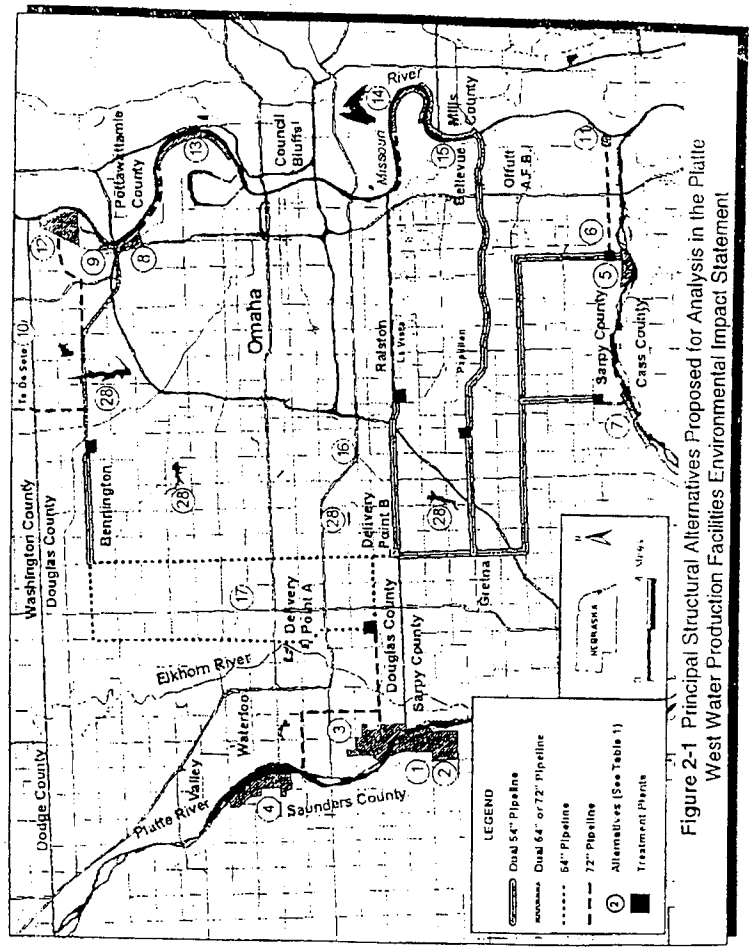


Figure 2-1 Principal Structural Alternatives Proposed for Analysis in the Platte West Water Production Facilities Environmental Impact Statement

CHAPTER 6
REFERENCES

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