Quivira National Wildlife Refuge

Water Resource Study

Additional Investigations

Prepared for

U.S.
FISH & WILDLIFE
SERVICE
DEPARTMENT OF THE INTERIOR

1999

97-806-4-002

Burns
&
McDonnell

Burns & McDonnell 100 1898 · 1998

June 16, 1999

Ms. Diane Hall
U.S. Fish and Wildlife Service - Region 6
Contracting Officer
134 Union Boulevard
Lakewood, CO 80228

USFWS
Quivira National Wildlife Refuge
Water Resource Study Additional Investigations
Project 97-806-4-002

Dear Ms. Hall:

Presented herewith is the report titled *Quivira National Wildlife Refuge: Water Resources Study Additional Investigations* in accordance with the amendment to our Contract No. 1448-60181-97-C126 for professional services dated February 25, 1999.

This report includes the four additional tasks or investigations included in the amendment for implementing the efficient and effective use of currently available or future water resources.

The assistance provided by the staff of the U.S. Fish and Wildlife Service during the course of this study is greatly appreciated. Our project team remains ready to discuss the details of this report at your convenience.

Sincerely,

Frank L. Shorney

Frank L. Shorney, P.E.
Project Manager

Enclosure

ENGINEERS • ARCHITECTS • CONSULTANTS
9400 Ward Parkway
Kansas City, Missouri 64114-3319
Tel: 816 333-9400
Fax: 816 333-3690
http://www.burnsmcd.com

U.S. FISH & WILDLIFE SERVICE
QUIVIRA NATIONAL WILDLIFE REFUGE
WATER RESOURCE STUDY
97-806-4-002

INDEX AND CERTIFICATION PAGE

REPORT INDEX

Recognition is given to the following people who assisted in completing this report:

Fred Pinkney, Environmental Manager
Gene Foster, Hydrologist
Steve Thornhill, Biologist
Dave Stous, Chief Hydrogeologist
Cynthia Maroney, Hydrogeologist
Donna Mosley, Water Resources Engineer

CERTIFICATION(S)

FRANK LAVERN SHORNEY
LICENSED
6011
Frank L. Shorney
KANSAS
PROFESSIONAL ENGINEER

6/15/99

QUIVIRA NWR WATER RESOURCES STUDY
ADDITIONAL INVESTIGATIONS
TABLE OF CONTENTS

List Of Tables **On or Follows Page No.**

List Of Figures | **On or Follows Page No.**

EXECUTIVE SUMMARY

This summary presents an overview of the Additional Investigations completed for the Water Resources Study for the Quivira National Wildlife Refuge (Refuge). These additional investigations were performed for the U.S. Fish and Wildlife Service (Service) by Burns & McDonnell, Inc. under an amendment to Contract 1448-60181-97-C126. Discussed briefly below are the study background, purpose and scope, and the four specific tasks requested by the Service in its contract scope of work.

A. BACKGROUND

The Refuge is a 32-square mile area of natural and man-made marshes, ponds and uplands that is located in Stafford, Reno and Rice Counties in south-central Kansas. The Refuge is managed by the Service to provide habitat for endangered species, migratory waterfowl and shorebirds, and other wildlife. The water supply for the Refuge is provided by Rattlesnake Creek, which flows through the Refuge before joining the Arkansas River. The water supply available from Rattlesnake Creek has become increasingly unreliable in recent years, making it difficult for the Service to meet the operating goals of the Refuge. As a result, the Service contracted with Burns & McDonnell to conduct a water resource study for the Refuge. This study investigated the feasibility of various on- and off-Refuge alternatives to increase the Refuge's water supply or more efficiently utilize the available supply. The results of the water resource study are documented in the report titled "Quivira National Wildlife Refuge Water Resource Study," dated June 5, 1998 (1998 Report).

B. PURPOSE AND SCOPE

Subsequent to completion of the 1998 Report, several additional alternatives were identified by the Service and other interested parties. The Service amended its contract with Burns & McDonnell to include investigation of these additional alternatives. The results of these additional investigations is documented in this supplement to the 1998 Report.

The investigations completed for this study supplement are organized into four primary work tasks. These four task are listed below.

- Task 1 — Estimate the amount of wetland habitat available at the Refuge prior to the extensive groundwater development in the Rattlesnake Creek basin.
- Task 2 — Evaluate the benefits, in terms of increased wetland habitat, from implementation of the Partnership's proposal to provide a supplemental groundwater supply to the Refuge.
- Task 3 — Evaluate the benefits of a water supply plan for the Refuge that includes a supplemental groundwater supply and on-Refuge Alternatives 8, 3 and 4.
- Task 4 — Investigate the feasibility of constructing low-head dams in the upper part of the Rattlesnake Creek basin to enhance natural groundwater recharge.

C. TASK 1 — PRE-DEVELOPMENT WETLAND HABITAT

The extensive groundwater development in the Rattlesnake Creek basin for crop irrigation is believed to have reduced the streamflow in Rattlesnake Creek that is available for diversion at the Refuge. The purpose of Task 1 is to estimate the amount of wetland habitat that would be available at the Refuge, on average, if this groundwater development had never occurred.

There are nearly 1,500 individual water rights in the Rattlesnake Creek basin with allowable annual diversions totaling nearly 300,000 acre-feet. These include the Refuge's water right to 14,632 acre-feet per year of surface water from Rattlesnake Creek. Approximately 94 percent of these water rights are junior to those for the Refuge.

The pre-development streamflow in Rattlesnake Creek was estimated using the Kansas Division of Water Resources' (DWR) SWATMOD model for the Rattlesnake Creek basin. In order to develop these pre-development streamflow estimates, all water rights in the Rattlesnake Creek basin that are junior to those for the Refuge were disabled. The SWATMOD model was executed with this input assumption and the resulting streamflow estimates were extracted for subsequent analysis. The inflow to the Refuge from Rattlesnake Creek averages about 44,400 acre-feet per year under these pre-development conditions as compared to only 10,500 acre-feet currently.

The RESNET operations model for the Refuge was used to estimate the availability of wetland habitat under pre-development conditions, utilizing both the current and preferred moist soil management plans for the Refuge. The results of this modeling are summarized in Table ES-1.

Table ES-1

COMPARISON OF CURRENT AND PRE-DEVELOPMENT WETLAND HABITAT

Management Plan	Habitat Statistic	Wetland Habitat (acres)		Percent Change Over Current
		Current Development	Pre-groundwater Development	
Existing	Average	2,757	5,500	+99
	80th Percentile	1,416	5,193	+267
Preferred Moist Soil	Average	2,399	4,600	+92
	80th Percentile	1,501	4,364	+191

(1) All wetland habitat values in acres. Statistics include data for primary migration season, September through April only.

Table ES-1 shows that the average amount of wetland habitat is approximately double and the 80th percentile habitat area nearly three times as much under pre-development conditions. These results indicate that the groundwater development that has occurred in the basin since the Refuge was established has had a significant impact on the Refuge.

D. TASK 2 — PARTNERSHIP PROPOSAL FOR SUPPLEMENTAL GROUNDWATER

The Partnership has submitted an alternative proposal to provide the Refuge with a supplemental groundwater supply. This supply will provide up to 500 acre-feet per year of water in 5 of every 25 years. This proposal is similar to alternatives already investigated in the 1998 Report, but has a much lower availability.

Implementation of this proposal will increase the average and 80th percentile amounts of wetland habitat at the Refuge by only 26 and 9 acres, respectively, under existing Refuge management. With the preferred moist soil management plan, the average and 80th percentile amounts of wetland habitat will increase by 21 and 47 acres, respectively.

The implementation cost of the Partnership's proposal is estimated to be $1.4 million, with annual operating costs averaging $13,200 in 1998. The benefit-cost ratio of this proposal is 0.04 with current Refuge management and 0.19 under the preferred moist soil management plan.

E. TASK 3 — ADDITIONAL WATER SUPPLY PLAN 3 ALTERNATIVE

In Task 3, an additional alternative was investigated under Water Supply Plan 3 (WSP3). WSP3 includes a supplemental groundwater supply with various on-Refuge improvements. This new alternative, designated WSP3d, includes the following on-Refuge improvements.

- Alternative 8 — Fill borrow areas
- Alternative 3 — Develop additional management units
- Alternative 4 — Line conveyance canals

The options under WSP3 were investigated using the preferred moist soil management plan only. The new WSP3d alternative has an average and 80th percentile amount of wetland habitat equal to 3,939 and 2,490 acres, respectively.

F. TASK 4 — AQUIFER RECHARGE USING LOW HEAD DAMS

Many areas of the Rattlesnake Creek basin have experienced declining groundwater levels due to the extensive development of groundwater for irrigation. The feasibility of enhancing aquifer recharge by using low head dams was investigated in Task 4. The purpose of these low head dams would be to retain water in the stream channel and allow it to infiltrate.

Due to environmental concerns, it is considered impractical to construct low head dams on the mainstem of Rattlesnake Creek. For this reason, only the larger tributaries of Rattlesnake Creek were considered as possible sites for low head dams. Data on groundwater levels and flow durations were used to identify stream segments where significant groundwater level declines have occurred and with sufficient flow to justify installation of low head dams. These investigations identified two areas that warranted further study, Wild Horse Creek and an unnamed tributary of Rattlesnake Creek (sub-basin 13). These areas were visited during a field reconnaissance in April 1999 to collect more site-specific data on these areas. As a result of this reconnaissance, the unnamed tributary was eliminated from additional consideration since it lacks well defined stream channels.

A general water budget for the aquifer that underlies the Wild Horse Creek basin was developed. This water budget indicates that the natural recharge is approximately 14,000 acre-feet per year (AFY) and the reported pumping in 1995 was 20,500 AFY, leaving a deficit of 6,500 AFY. This deficit has resulted in groundwater mining, the removal of water stored in the aquifer. Since the 1940's, the cumulative deficit for the aquifer is estimated to be more than 150,000 acre-feet.

As a conceptual design, each low head dam is assumed to be about 5 feet high and would inundate about 3,600 feet of stream channel, creating a pond about 4.1 acres in size. A 10 to 12 mile reach of Wild Horse Creek would benefit from this type of recharge. Approximately 17 dams would be required to fully utilize this reach. Although the soils in the area have reported infiltration rates as high as 20 inches per hour, an infiltration rate of 1 to 2 feet per day is considered to be a reasonable long-term average. The flow duration data for Wild Horse Creek indicates that, on average, these low head dams would have water behind them about 73 days per year. As a result, the potential recharge from this system of low head dams ranges between 2,500 and 5,000 AFY.

The potential increased recharge from these low-head dams (up to 5,000 AFY) is less than the estimated 1995 water budget deficit of 6,500 AFY. In dry years, the deficit would be larger. Therefore, while these low head dams may help reduce further groundwater level declines in the basin, it does not appear that they can completely reverse the current trend of declining water levels. However, the water trapped by the low head dams would further deplete the surface water supply available to the Refuge.

While pumping is spread throughout the basin, recharge would be localized near the channel. Rising water levels near the channel could increase baseflow in the lower parts of Wild Horse Creek. Determination of the amount or timing of the increase cannot be estimated with present information.

The cost of full implementation of the 17 dam projects would be approximately $3,400,000. Because of unknown site specific parameters, two prototype dam projects are recommended to evaluate effective recharge with and without clearing and brush removal to investigate the impacts of evapotranspiration on the effective recharge. The two prototype dams would cost approximately $360,000. The feasibility of the full scale project would be reviewed after initial operating data are collected and reviewed.

INTRODUCTION

A. BACKGROUND

The Quivira National Wildlife Refuge (Refuge) is located in south-central Kansas in Stafford, Reno, and Rice Counties. The Refuge consists of a series natural and man-made marshes that are managed to provide habitat for wildlife, including endangered species, migratory waterfowl and shorebirds. The water used to flood these marshes comes from Rattlesnake Creek. The Refuge is located at the lower end of the Rattlesnake Creek Basin as shown in Figure IN-1.

As is common with any unregulated natural stream, the flow in Rattlesnake Creek is highly variable which complicates the management of the Refuge. In addition, the water supply available from Rattlesnake Creek appears to be decreasing. This downward trend is believed to be attributable largely to the extensive groundwater development that has occurred in the Rattlesnake Basin since the Refuge was established.

In recent years, the U.S. Fish & Wildlife Service (Service), which manages the Refuge, has been unable to meet the established operating goals at the Refuge because it lacks a reliable, adequate water supply. As a result, the Service entered into a contract with Burns & McDonnell to conduct a water resource study for the Refuge. This study investigated the feasibility of various on- and off-Refuge alternatives to increase the Refuge's water supply or more efficiently utilize the available supply. The results of this study are documented in the report titled "Quivira National Wildlife Refuge Water Resource Study," dated June 5, 1998 (1998 Report).

B. PURPOSE AND SCOPE

Subsequent to completion of the 1998 Report, the Service and other interested parties identified several additional water supply alternatives that should be investigated. The Service amended its contract with Burns & McDonnell to include investigation of these additional alternatives. The results of these additional investigations are documented in this supplement to the 1998 report.

PART I

TASK 1 - PRE-DEVELOPMENT WETLAND HABITAT

This section of the supplemental report describes the analyses conducted to estimate the amount of wetland habitat available at the Refuge prior to the extensive groundwater development that has occurred in the Rattlesnake Creek basin.

A. GENERAL

The extensive groundwater development in the Rattlesnake Creek basin for crop irrigation is believed to have reduced streamflow in Rattlesnake Creek and its tributaries because of the hydraulic connection between the groundwater and surface water systems. This condition has thereby reduced the amount of water available to the Service for use on the Refuge. The objective of Task 1 is to estimate the amount of wetland acres that would be available at the Refuge, on average, if this groundwater development had never occurred.

B. WATER RIGHTS

There are nearly 1,500 individual water rights, with allowable annual diversions totaling nearly 300,000 acre-feet, for the Rattlesnake Creek basin.[1] These include those for the Refuge which has rights to 14,632 acre-feet per year of surface water from Rattlesnake Creek. The Refuge water right has a file number of 7571 and a priority date of August 15, 1957. This right has three diversion points within the Refuge: Little Salt Marsh, Darrynane Lake and the Rattlesnake Canal. The other water rights in the basin, exclusive of those for the Refuge, are summarized by type in Table I-1.

From review of this table, it can be seen that a large portion of the water rights in the basin, approximately 93 percent, are for groundwater. Also, about 94 percent of the water rights in the basin are junior to those held by the Refuge.

[1]The information on water rights for the Rattlesnake Creek basin was extracted from data provided with the Kansas Division of Water Resources' (DWR's) Decision Support System for the SWATMOD model.

Table I-1

WATER RIGHTS SUMMARY[1]

	Surface Water[2]		Groundwater		Total	
Priority Type	Number	Annual Allocation (acre-feet)	Number	Annual Allocation (acre-feet)	Number	Annual Allocation (acre-feet)
Senior to QNWR	11	3,019	68	12,128	79	15,147
Junior to QNWR	88	15,355	1,323	243,657	1,411	259,012
Total	99	18,374	1,391	255,785	1,490	274,159

(1) These data were extracted from DWR's SWATMOD Decision Support System. The totals listed exclude the Refuge water rights.

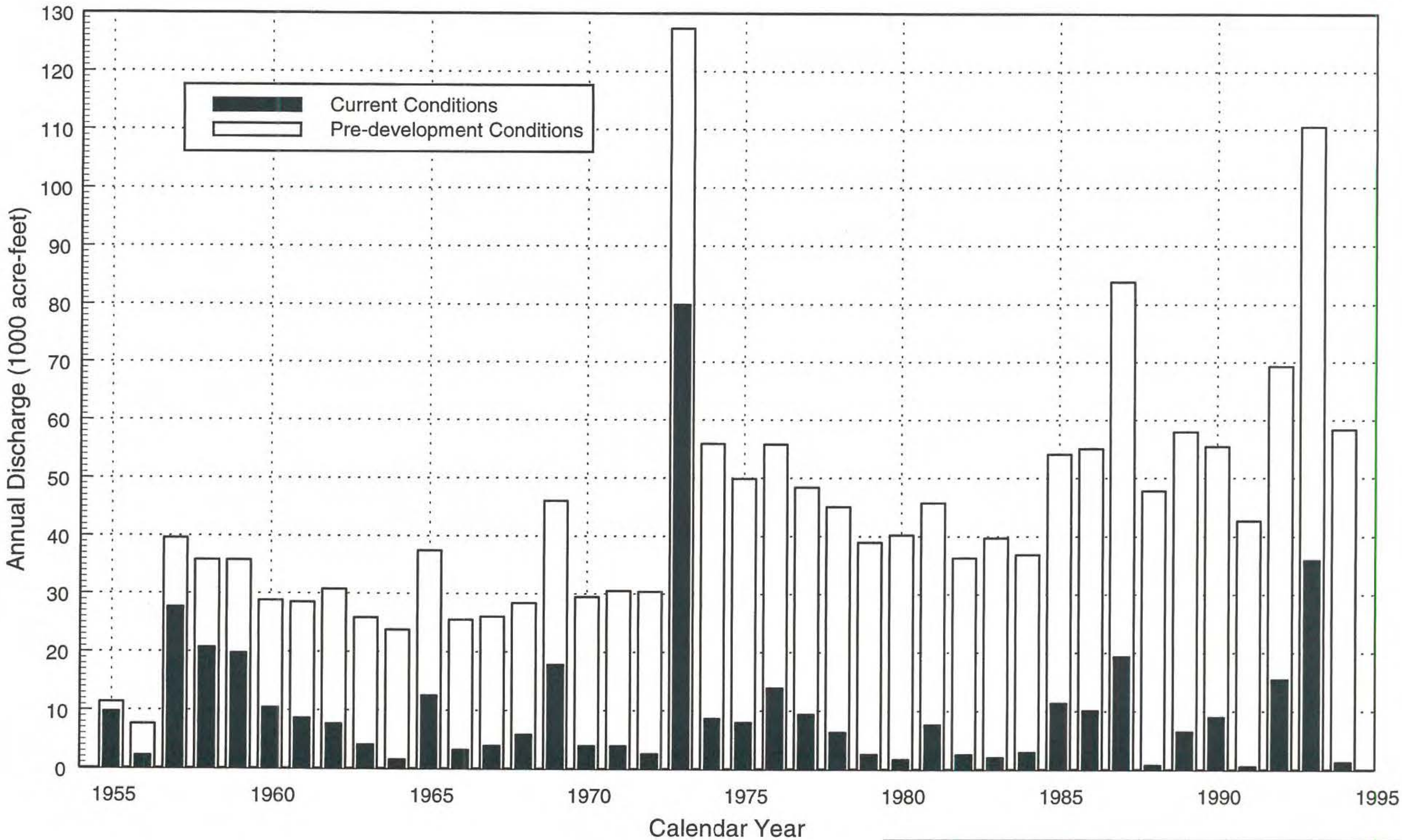
(2) Water rights that have their distance to stream listed as zero are assumed to be surface water rights.

C. PRE-DEVELOPMENT STREAMFLOW

Estimates of pre-development streamflow in the basin were generated using DWR's SWATMOD model for the Rattlesnake Creek basin. The SWATMOD Decision Support System (DSS) was used to create the necessary data files for this SWATMOD model run. For this model run, all water rights in the Rattlesnake Creek basin, which are junior to those for the Refuge, were disabled. The SWATMOD model was then executed and monthly streamflow estimates for each subwatershed outlet were extracted.

As expected, the pre-development streamflow estimates for Rattlesnake Creek are significantly higher than the same estimates under current conditions. Under current conditions, the annual discharge in Rattlesnake Creek near Zenith ranges from about 560 to 79,980 acre-feet per year (AFY), and averages 10,540 AFY. With a return to pre-development conditions, annual discharge in Rattlesnake Creek near Zenith ranges from 7,590 to 127,390 AFY, and averages 44,420 AFY. These data indicate that, without the extensive groundwater development that has occurred in the basin, the average discharge near Zenith would be over four times larger than it is currently. The Zenith gage on Rattlesnake Creek is located just upstream of the Refuge.

Figure I-1 is a graph that shows the annual streamflow in Rattlesnake Creek near Zenith under both current and pre-development conditions. Review of Figure I-1 shows that the differences between



Notes:

1. Based on monthly discharge estimates extracted from SWATMOD model for Rattlesnake Creek basin.
2. Pre-development conditions simulated by disabling all water rights in the basin that are junior to those for Quivira National Wildlife Refuge.

Burns & McDonnell

Figure I-1

ANNUAL DISCHARGE
RATTLESNAKE CREEK
NEAR ZENITH, KS

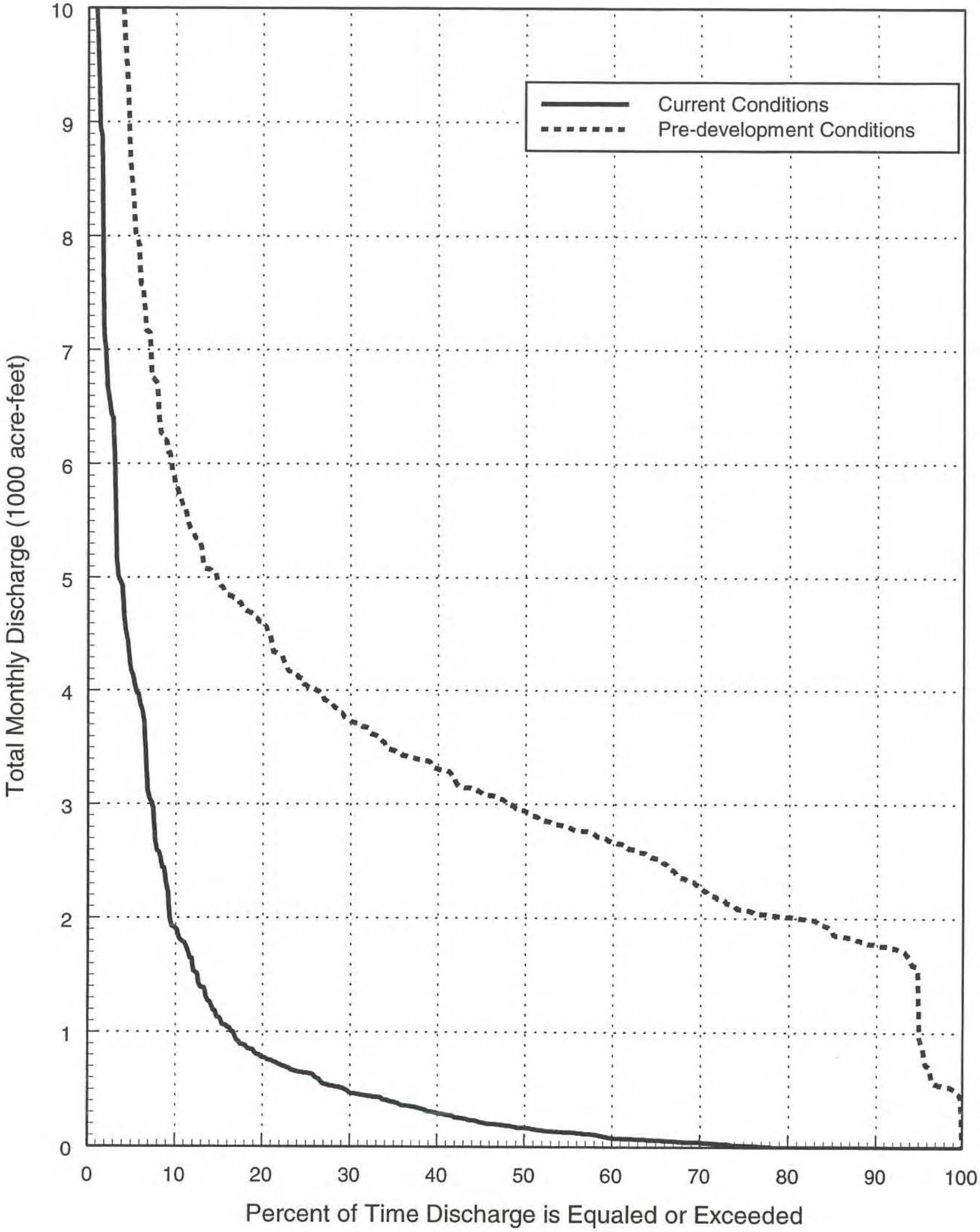
current and pre-development streamflow estimates are fairly modest in the early years of the study period and gradually increase with time. This is an indication that groundwater levels are rising and that the baseflow, or groundwater discharge, to Rattlesnake Creek is increasing. At the start of this pre-development model run, groundwater levels in the basin were assumed to be at current levels. For this reason, the resulting streamflow estimates are considered to be conservative. Under actual pre-development conditions, groundwater levels in the basin would already be near their historic high points at the start of the study period and the baseflow to Rattlesnake Creek would be correspondingly higher also.

Flow duration curves for Rattlesnake Creek, under both current and pre-development conditions, are shown in Figure I-2. These curves also demonstrate the significant differences between these two scenarios. Under current conditions, the monthly discharge in Rattlesnake Creek is zero approximately 21 percent of the time and is less than 165 acre-feet half the time. With pre-development conditions, the monthly discharge in Rattlesnake Creek is never less than 450 acre-feet and it exceeds 2,900 acre-feet half the time.

D. OPERATIONS MODEL

The base RESNET operations model for the Rattlesnake Creek basin was re-executed using the pre-development streamflow estimates that were extracted from the SWATMOD model. The RESNET model requires estimates of the unregulated inflow at each model node. For the individual management units on the Refuge, the unregulated inflow was estimated using the respective drainage area of each unit. This procedure is described in Part III of the 1998 Report. The resulting pre-development incremental monthly inflow at each model node are listed in the Appendix. These same data under current conditions are contained in the Appendix of the 1998 Report.

The base operations model is representative of current conditions in the basin both on and off of the Refuge. Two versions of the base operations model were run, one using current management practices at the Refuge and the other using the preferred moist soil management plan. Execution of the pre-development operations model shows that Refuge diversions will increase significantly over current conditions since there would be much more water available for diversion. Annual Refuge diversions are



Notes:

1. Based on monthly discharge estimates extracted from SWATMOD model for Rattlesnake Creek basin.
2. Pre-development conditions simulated by disabling all water rights in the basin that are junior to those for Quivira National Wildlife Refuge.

Burns & McDonnell

Figure I-2

DISCHARGE DURATIONS RATTLESNAKE CREEK AT ZENITH GAGE summarized in Table I-2. Review of this table shows that average annual diversions will nearly triple under pre-development conditions. It is also worth noting that diversions under pre-development conditions are not significantly less than under ultimate conditions. Ultimate conditions are representative of the amount of water the Refuge would use if there was an unlimited supply available. This analysis shows that, without the extensive groundwater development that has occurred in the Rattlesnake Creek basin, Refuge managers would almost always have enough water to operate the Refuge in a optimal manner.

Table I-2
DIVERSION SUMMARY

Streamflow Scenario	Existing Management			Preferred Moist Soil Management		
	Minimum	Maximum	Average	Minimum	Maximum	Average
Existing	1,159	14,876	6,832	1,173	9,678	5,142
Pre-development	8,797	24,970	18,112	7,405	17,734	13,493
Ultimate	12,323	24,925	19,049	7,285	17,767	13,779

Readers are reminded that the operations model does not limit annual diversions at the Refuge to the amount specified in its water right, 14,632 acre-feet per year. Limiting annual diversion to this amount would only serve to reduce the amount of habitat available in wetter years. Since the primary management goal at the Refuge is to provide consistent amounts of habitat every year, limiting annual diversions would not significantly impact this analysis.

Statistics on the availability of wetland habitat at the Refuge under pre-development conditions are presented in Table I-3. Review of this table shows results similar to those discussed above for diversions since the availability of water for diversion and the resulting amount of wetland habitat are closely related.

Table I-3

AVAILABLE WETLAND HABITAT[1]

Management Plan	Streamflow Scenario	Shorebird (1–4 inches)		Waterfowl (10–18 inches)		Total Wetland	
		Range	Average	Range	Average	Range	Average
Existing	Existing	85-684	358	11-1,055	602	692-6,000	2,757
	Predevelopment	185-726	628	322-1,036	950	1,531-6,101	5,500
	Ultimate	549-719	675	937-1,043	972	5,099-6,088	5,814
Preferred Moist Soil	Existing	67-728	277	16-1,042	470	682-5,055	2,399
	Predevelopment	146	659	371	934	1,686-5,055	4,600
	Ultimate	623-734	693	873-1,065	959	3,715-5,055	4,766

(1) All wetland habitat values in acres. Statistics include data for primary migration season, September through April only.

As discussed in the 1998 Report (page II-4), the 80th percentile wetland habitat area is considered to be a good indicator of the effectiveness of the proposed Refuge improvements. The 80th percentile habitat areas and the change in these values over baseline conditions are shown in Table I-4. The quantities of optimum shorebird, optimum waterfowl and total wetland habitat increased dramatically under this alternative.

E. WATER QUALITY

It is difficult to accurately predict the impact on water quality with a return to pre-development conditions. It is expected that rising groundwater levels would tend to reduce the current upconing of saline waters and thereby reduce the salt load to Rattlesnake Creek. Increasing baseflow (groundwater discharge) to the creek would also have a tendency to reduce chloride and other mineral concentrations by increased dilution. However, after many years of irrigated agricultural production in the basin, the mineral content of surface soils and upper aquifer regions are likely elevated above natural conditions. Rising groundwater levels may redissolved these minerals, resulting in increased mineral concentrations in the aquifer and subsequent baseflow to Rattlesnake Creek. This latter phenomenon is considered to be a short-term concern since these minerals would be flushed from the system with time.

Table I-4

CHANGES IN WETLAND HABITAT—PRE-DEVELOPMENT CONDITIONS

Management Plan	Habitat Type	80th Percentile Wetland Habitat (acres)		
		Existing Conditions	Pre-development Conditions	Change over Existing
Existing	Optimum Shorebird	237	603	366
	Optimum Waterfowl	354	952	598
	Total Wetland	1,416	5,193	3,777
Preferred Moist Soil	Optimum Shorebird	209	668	459
	Optimum Waterfowl	333	947	614
	Total Wetland	1,501	4,364	2,863

F. ENVIRONMENTAL IMPACTS

A return to pre-development conditions in the Rattlesnake Creek basin would dramatically increase the water available for diversion at the Refuge. This in turn would be very beneficial to the shorebirds, waterfowl and other wildlife that utilize the Refuge. However, the virtual elimination of irrigated agriculture in the basin would have a significant impact on land use. Some of these impacts would be beneficial from an environmental perspective, such as reduced soil erosion, increased wildlife habitat and less usage of pesticides and herbicides. These positive environmental impacts would nonetheless be offset by significant socioeconomic impacts to those individuals who directly or indirectly depend on irrigated agriculture for their livelihood.

PART II

TASK 2 - PARTNERSHIP PROPOSAL FOR SUPPLEMENTAL GROUNDWATER

This section of the supplemental report describes the analyses conducted to assess the Partnership's proposal to provide supplemental water to the Refuge from a groundwater source.

A. GENERAL

This alternative evaluates the Partnership's proposal to provide a supplemental water supply to the Refuge. This plan is very similar to one investigated in the original study, Task C–Alternative 10. Under both plans, a series of wells would be installed along Rattlesnake Creek just upstream of the Refuge. The water pumped from these wells would be discharged into Rattlesnake Creek where it would then flow by gravity into Little Salt Marsh.

The Partnership's proposal is to supply up to 500 acre-feet of supplemental groundwater per year, in 5 out of every 25 years. The availability of this supplemental groundwater is substantially less than assumed for Task C–Alternative 10. In this former alternative, the supplemental groundwater wells, with capacities from 500 to 2,500 acre-feet per month, were assumed to be available for operation six months every year.

B. AVAILABILITY OF SUPPLEMENTAL GROUNDWATER

As stated above, the Partnership's proposal allows for pumping up to 500 acre-feet of water annually in 5 out of every 25 years, or 20 percent of the time. Since this supplemental groundwater is not available every year, an analysis was conducted to identify the years with the most critical water shortages at the Refuge. Having this supplemental water available during the most critical dry periods should maximize its benefit. This analysis was based on monthly stream discharge estimates for Rattlesnake Creek near

Zenith that were extracted from DWR's SWATMOD model for the Rattlesnake Creek basin.[1] Since these data have a 40-year period of record, calendar years 1955–1994, the purpose of this analysis was to identify the eight driest years of record (20 percent of 40 years equals 8 years).

Water shortages at the Refuge are generally most critical in the late summer or early fall. This is typically the driest part of the year and the time when it is necessary to reflood the management units in preparation for the fall waterfowl migration. For this reason, the critical water shortage analysis focused on this time of year. Using the monthly SWATMOD flow estimates, the eight driest years were identified using the total discharge for the four following periods:

- September only
- August and September
- August, September and October
- Annual (January through December)

The results of this analysis are summarized in Table II-1.

Upon review of this table, the following eight years were selected as the years in which to provide supplemental groundwater: 1968, 1981, 1982, 1983, 1984, 1988, 1991, and 1994. These years include the following:

- Six of the nine driest Septembers
- The eight years with the driest August and September periods
- The six years with the driest August–October periods
- Five of the eight driest calendar years

[1]The Zenith gage is located just upstream of the Refuge on Rattlesnake Creek so the discharge at this location is equivalent to the inflow to the Refuge.

Table II-1

SUMMARY OF CRITICAL SHORTAGE ANALYSIS

Sept Only[1]		Aug+Sept		Aug+Sept+Oct		Annual	
Year	Discharge (acre-feet)	Year	Discharge (acre-feet)	Year	Discharge (acre-feet)	Year	Discharge (acre-feet)
1968	0.0	1982	0.0	1983	0.0	1991	557.1
1979	0.0	1983	0.0	1988	0.0	1988	754.9
1980	0.0	1984	0.0	1991	0.0	1994	1,252.4
1982	0.0	1988	0.0	1981	119.4	1964	1,507.3
1983	0.0	1991	0.0	1982	132.0	1980	1,652.7
1984	0.0	1981	5.8	1994	134.6	1983	1,974.5
1988	0.0	1968	44.1	1989	180.7	1956	2,173.1
1991	0.0	1994	62.7	1964	180.0	1982	2,466.8
1992	0.0	---	---	---	---	---	---

(1) There are nine years with no flow during September so all nine years are listed.

In these eight dry years, it was assumed that up to 500 acre-feet of water could be pumped from the supplemental well field in September.

It should be noted that this analysis was greatly simplified by assuming that 5 out of every 25 years is equivalent to 20 percent of the time. In fact, this is not always true. Although the eight years selected above are considered to be the driest during the period of record for the SWATMOD model, seven of them fall within last 25 years of the study period. If the 5 out of every 25 years criterion is rigidly enforced, 2 of these 7 years would have to be replaced with relatively wetter years from earlier in the study period. It is likely that this action would diminish the overall benefits of this alternative.

C. OPERATIONS MODEL

The analysis for Task 2 requires two separate operations models, one model for each optional management plan. The schematics for these models are identical, with the only differences being the target storage values in each management unit. Under the preferred moist soil management approach, several of the management units are allowed to dry out during the summer months while water is retained in these units with the existing management plan.

In the operations model, the water available from the supplemental well field is treated as an import to Little Salt Marsh. Due to the presence of confining layers, it is assumed that pumping these supplemental supply wells would not induce additional infiltration from Rattlesnake Creek to an appreciable degree.

Execution of the operations model for this alternative shows that the supplemental well field will increase Refuge diversions slightly. The average annual diversions to the Refuge increase under existing management from a baseline value of 6,832 acre-feet to 6,927 acre-feet, an increase of 95 acre-feet per year. Under the preferred moist soil management approach, average annual diversions increase by 98 acre-feet from 5,142 to 5,240 acre-feet.

Statistics on the availability of wetland habitat at the Refuge for this alternative are presented in Table II-2. Review of this table shows that implementation of this alternative would have only a modest impact on the availability of wetland habitat at the Refuge.

Table II-2

AVAILABLE WETLAND HABITAT [1]

Management Plan	Alternative	Shorebird (1–4 inches)		Waterfowl (10–18 inches)		Total Wetland	
		Range	Average	Range	Average	Range	Average
Existing	Baseline	85-684	358	11-1,055	602	692-6,000	2,757
	Partnership Proposal	106-684	356	11-1,055	605	782-6,000	2,783
Preferred Moist Soil	Baseline	67-728	277	16-1,042	470	682-5,055	2,234
	Partnership Proposal	106-728	276	16-1,042	476	734-5,055	2,255

(1) All wetland habitat values in acres. Statistics include data for primary migration season, September through April only.

The 80th percentile habitat areas and the change in these values over baseline conditions are shown in Table II-3. The quantities of optimum shorebird and waterfowl habitat are virtually unchanged under this alternative. The amount of total wetland habitat does increase slightly.

Table II-3

CHANGES IN AVAILABLE WETLAND HABITAT—PARTNERSHIP PROPOSAL

Management Plan	Habitat Type	80th Percentile Wetland Habitat (acres)		
		Baseline	Partnership Proposal	Change over Baseline
Existing	Optimum Shorebird	237	240	3
	Optimum Waterfowl	354	354	0
	Total Wetland	1,416	1,425	9
Preferred Moist Soil	Optimum Shorebird	209	209	0
	Optimum Waterfowl	333	337	4
	Total Wetland	1,501	1,548	47

Review of Table II-3 shows that implementation of this alternative would be have only a slight impact on available wetland habitat at the Refuge.

D. WATER QUALITY

Water quality data for groundwater in the area of the proposed supplemental well field are very limited. Review of Kansas Geological Survey Open File Report 93-2 shows ambient groundwater has chloride concentrations ranging from 100 to 500 mg/l in the upper unconsolidated aquifer and 1,000 to 10,000 mg/l at the base of the unconsolidated aquifer. Chlorides in the upper aquifer are significantly less than the mean chloride concentration in Little Salt Marsh of 1,925 mg/l. In general, the quality of the groundwater tends to improve as the distance from Rattlesnake Creek is increased. A detailed groundwater investigation will be required to locate these supplemental wells so they will yield water of acceptable quality on a long-term basis.

E. ENVIRONMENTAL AND CULTURAL RESOURCE IMPACTS

For this alternative, groundwater would only be pumped for use on the Refuge when needed. Environmental impacts associated with this alternative would include the conversion of small areas of cropland to the non-agricultural uses associated with operation of the proposed wells and the temporary disturbance associated with pipeline construction. It is expected that project facilities could be located to minimize environmental impacts.

Wells would be located on land currently used for pasture, hayfield, and/or cropland adjacent to Rattlesnake Creek. Most of the cropland in the basin is classified as prime farmland. Wells would be located if possible in areas not classified as prime farmland, and would be distributed to minimize the impact in any one field or landowner. Agricultural activities could continue around these facilities and could result in an inconvenience to current farming activities similar to that posed by existing irrigation wells.

Pipelines collecting water from wells and transporting it to Rattlesnake Creek would be short, extending only a small distance from the well to the creek. Pipelines could be located along roadways or adjacent to important agricultural areas. Some collector lines may need to be placed across agricultural land. Any pipelines required to cross agricultural land would have a temporary impact on farming in the area. Crop yields could be temporarily reduced, depending on the season construction occurs. Pipelines would be routed to avoid wooded areas to the extent possible. Following construction, the pipeline rights-of-way would either be revegetated or returned to agricultural production.

Wells and pipelines would be located to avoid and minimize impacts to wetlands, cultural resources, any important fish and wildlife habitat or habitat for threatened or endangered species. Pipelines could temporarily impact wetlands if such areas are found adjacent to roadways paralleled by pipelines or if they are present at any necessary stream crossing. Likewise, no significant impacts to cultural resources are expected as pipelines could be located to avoid such resources. Location of pipelines adjacent to existing roadways would reduce the potential for pipelines to cross significant, undisturbed cultural resource sites. Prior to construction, more detailed evaluation of environmental resources located in or adjacent to potential well sites and along potential pipeline rights-of-way would be made to identify how to avoid or minimize the impact on such resources.

Some minimal disturbance to rural day-to-day activities such as farming and ranching may occur with construction. Construction equipment on and adjacent to roadways could temporarily cause minor traffic delays . Some impact to agricultural production could occur if construction activities occur during the growing season and require the removal of crops. Most construction impacts would be temporary, occurring during only one growing season, and involving only a small amount of land along the edge of a field.

F. PROJECT COST ESTIMATES

Project costs, operating, maintenance and energy costs, present value and benefit-cost analysis for this alternative are included below. The basis for these cost estimates is documented in the 1998 Report.

1. Project Costs

The estimated project cost for this alternative is $1.4 million as listed in Table II-4. The average life cycle unit cost of water is $2,140 per million gallons (MG) based on project costs.

2. Operation, Maintenance, Replacement and Energy (OMR&E) Costs

OMR&E costs include costs associated with the operation and maintenance of this alternative. Replacement costs for mechanical equipment are not included since pumping wells are only expected to be used about 150 days over a 25-year period. OMR&E costs are $13,200 per year in the first year of operation and are inflated at 4 percent per year as listed in Table II-5. The average pumping rate for this alternative is distributed evenly over the 20-year period. OMR&E costs are used in combination with the project costs to calculate the present value for the alternative.

3. Present Value Analysis

The present value cost for this alternative, in 1998 dollars, is $1.55 million as listed in Table II-6. The average life cycle unit cost of water is $2,355 per MG over 20 years of operation based on present value.

Table II-4
PROJECT COST ESTIMATE
TASK 2 - PARTNERSHIP PROPOSAL FOR SUPPLEMENTAL GROUNDWATER

Item	Option 1 Cost ($)
Testing Plan:	
Test Borings - 1 boring for every 2 wells	4,500
Pump Tests	120,000
Temporary Monitoring Wells - 10 per test	40,000
Water Quality Sampling and Analysis	40,000
Well, Pump and Controls:	
5 Wells with 8.4 cfs (5.4 MGD) capacity	375,000
Pipeline, Valves, Meter, Fence & Discharge	75,000
Test Drilling	10,000
Monitoring Wells	15,000
Electrical Power Supply	100,000
Access Road (10' wide gravel road)	139,000
Land and Right-of-way	15,000
Subtotal	933,500
Contingency at 20%	187,000
Subtotal	1,120,500
Testing Plan Other Costs	70,000
Other Costs at 20%	224,000
Total Project Cost	**1,415,000**
Average Annual Water Volume (MG)	**33**
Average Life Cycle Unit Cost of Water ($/MG)	**2,140**

Table II-5
OPERATION, MAINTENANCE, REPLACEMENT AND ENERGY COST ESTIMATE
TASK 2 - PARTNERSHIP PROPOSAL FOR SUPPLEMENTAL GROUNDWATER

Year	Average Pumping Rate (MGD)(1)	O&M (2)	Replacement (3)	Energy (4)	OMR&E Total
2000	1.09	12,200		1,010	13,200
2001	1.09	12,700		1,050	13,800
2002	1.09	13,200		1,100	14,300
2003	1.09	13,700		1,140	14,800
2004	1.09	14,200		1,190	15,400
2005	1.09	14,800		1,230	16,000
2006	1.09	15,400		1,280	16,700
2007	1.09	16,000		1,330	17,300
2008	1.09	16,600		1,390	18,000
2009	1.09	17,300		1,440	18,700
2010	1.09	18,000		1,500	19,500
2011	1.09	18,700		1,560	20,300
2012	1.09	19,400		1,620	21,000
2013	1.09	20,200		1,690	21,900
2014	1.09	21,000		1,750	22,800
2015	1.09	21,800		1,820	23,600
2016	1.09	22,700		1,900	24,600
2017	1.09	23,600		1,970	25,600
2018	1.09	24,500		2,050	26,600
2019	1.09	25,500		2,130	27,600
Total	21.7	$361,500	0	$30,150	$391,700

(1) Average pumping rate is assumed to be continuous and spread over every year.
(2) O&M includes additional staff and materials, testing and operations.
(3) Replacement of equipment is no included in the studied number of years.
(4) Energy costs are estimated at $.12/KWH.

Table II-6
PRESENT VALUE ESTIMATE
TASK 2 - PARTNERSHIP PROPOSAL FOR
SUPPLEMENTAL GROUNDWATER

Year	Average Pumping Rate (MGD)	Total Project Cost	Total OMR&E	Annual Total	Total Present Value	Summation Present Value
1998	0				0	0
1999	0	1,472,000			1,376,000	1,376,000
2000	1.09		13,200	13,200	12,000	1,388,000
2001	1.09		13,800	13,800	11,000	1,399,000
2002	1.09		14,300	14,300	11,000	1,410,000
2003	1.09		14,800	14,800	11,000	1,421,000
2004	1.09		15,400	15,400	10,000	1,431,000
2005	1.09		16,000	16,000	10,000	1,441,000
2006	1.09		16,700	16,700	10,000	1,451,000
2007	1.09		17,300	17,300	9,000	1,460,000
2008	1.09		18,000	18,000	9,000	1,469,000
2009	1.09		18,700	18,700	9,000	1,478,000
2010	1.09		19,500	19,500	9,000	1,487,000
2011	1.09		20,300	20,300	8,000	1,495,000
2012	1.09		21,000	21,000	8,000	1,503,000
2013	1.09		21,900	21,900	8,000	1,511,000
2014	1.09		22,800	22,800	8,000	1,519,000
2015	1.09		23,600	23,600	7,000	1,526,000
2016	1.09		24,600	24,600	7,000	1,533,000
2017	1.09		25,600	25,600	7,000	1,540,000
2018	1.09		26,600	26,600	7,000	1,547,000
2019	1.09		27,600	27,600	7,000	1,554,000
Average Life Cycle Unit Cost of Water ($/MG) (20 year present value)						**2,355**

4. Benefit-Cost Analysis

An acre of wetland habitat is assumed to generate benefits of $618 per year (see Part II of the 1998 Report). Implementation of the Partnership's proposal will increase the amount of wetland available at the Refuge 80 percent of the time by 9 and 47 acres under the current and preferred moist soil management approaches, respectively. The 20-year percent values of these benefits are respectively $56,400 and $295,000. As a result, the benefit-cost ratios of this alternative are 0.04 and 0.19 for the current and preferred moist soil management approaches, respectively.

PART III

TASK 3 - ADDITIONAL WATER SUPPLY PLAN 3 ALTERNATIVE

This section of the supplemental report describes the analyses conducted to assess an additional alternative under Water Supply Plan 3.

A. GENERAL

Water Supply Plan 3 (WSP3) was included in the 1998 Report (see page IX-37). This supply plan includes development of an off-Refuge supplemental groundwater supply along with various on-Refuge alternatives. Under the current task, an additional combination of on-Refuge alternatives was included along with the supplemental groundwater supply. Specifically, this new plan includes a supplemental groundwater supply along with on-Refuge alternatives 8, 3 and 4. The on-Refuge alternatives include the following:

- Alternative 8 — Fill borrow areas
- Alternative 3 — Develop additional water storage units
- Alternative 4 — Line conveyance canals

For details on the components of these alternatives, readers are referred to Part VII of the 1998 Report. This new combination of alternatives is naturally similar to the others analyzed under WSP3. It can be looked at as WSP3a plus canal lining (Alternative 4) or WSP3c minus Alternative 1. Alternative 1 calls for increasing the storage capacity of Little Salt Marsh. For convenient reference, this new alternative combination is referred to as WSP3d.

Under WSP3, the supplemental groundwater supply is assumed to provide up to 1,500 acre-feet per month of water to the Refuge, and is available six months (February, March, April, August, September, October) of every year. This is a substantially larger supplemental supply than the Partnership's proposal that is discussed in Part II of this report.

B. OPERATIONS MODEL

The analysis for Task 3 requires a single new operations model. WSP3d was analyzed using only the preferred moist soil management approach. In the operations model, the water available from the supplemental well field is treated as an import to Little Salt Marsh. Due to the presence of confining layers, it is assumed that pumping these supplemental supply wells would not induce additional infiltration from Rattlesnake Creek to an appreciable degree.

Execution of the operations model for WSP3d shows that average annual Refuge diversions will increase dramatically over baseline values. Table III-1 summarizes these data for this new plan and the others previously studied under WSP3.

Table III-1
REFUGE DIVERSION SUMMARY

Plan	Average Annual Diversions (acre-feet)	Change Over Baseline (acre-feet)
Baseline	5,140	---
WSP3a	12,160	7,020
WSP3b	13,220	8,080
WSP3c	12,600	7,460
WSP3d	11,410	6,270

Average annual Refuge diversions are slightly lower for WSP3d than WSP3a. This is expected since lining the canals should conserve water. The addition of Alternative 1 (WSP3c), which increases the storage capacity of Little Salt Marsh, has the effect of raising average diversions significantly. This results primarily due to increased evaporation from Little Salt Marsh.

Statistics on the availability of wetland habitat at the Refuge for this plan are presented in Table III-2. Review of this table shows that implementation of this plan has a dramatic effect on the amount of wetland habitat at the Refuge. However, the differences between this plan (WSP3d) and the other WSP3 plans are modest.

Table III-2

AVAILABLE WETLAND HABITAT[1]

Plan	Shorebird (1–4 inches)		Waterfowl (10–18 inches)		Total Wetland	
	Range	Average	Range	Average	Range	Average
Baseline	67-728	277	16-1,042	470	682-5,055	2,234
WSP3a	113-744	478	299-1,066	735	1,622-5,312	3,869
WSP3b	106-790	524	248-1,002	709	1,761-5,748	4,183
WSP3c	105-800	537	247-996	712	1,761-5,748	4,183
WSP3d	113-729	490	301-1,065	740	1,672-5,312	3,939

(1) All wetland habitat values in acres. Statistics include data for primary migration season, September through April only.

The 80th percentile habitat areas for WSP3d and the change in these values over baseline conditions are shown in Table III-3. The quantities of optimum shorebird, optimum waterfowl, and total wetland habitat also increase significantly under WSP3d.

Table III-3

CHANGES IN AVAILABLE WETLAND HABITAT—WSP3d

Habitat Type	80th Percentile Wetland Habitat (acres)		
	Baseline	WSP3d	Change over Baseline
Optimum Shorebird	209	516	307
Optimum Waterfowl	333	875	542
Total Wetland	1,501	3,991	2,490

C. WATER QUALITY

Water quality data for groundwater in the area of the proposed supplemental well field are very limited. Review of Kansas Geological Survey Open File Report 93-2 shows ambient groundwater has chloride concentrations ranging from 100 to 500 mg/l in the upper unconsolidated aquifer and 1,000 to 10,000 mg/l at the base of the unconsolidated aquifer. Chlorides in the upper aquifer are significantly less than the mean chloride concentration in Little Salt Marsh of 1,925 mg/l. In general, the quality of the groundwater tends to improve as the distance from Rattlesnake Creek is increased. A detailed groundwater investigation will be required to locate these supplemental wells so they will yield water of acceptable quality on a long-term basis.

D. ENVIRONMENTAL AND CULTURAL RESOURCE IMPACTS

The environmental and cultural resource impacts associated with the implementation of Task 3 (WSP3d) would be similar to those described for WSP3c in Part IX of the 1998 Report. However, implementation of this alternative would not include the impacts associated with raising the dikes around Little Salt Marsh (Alternative 1). Impacts would include primarily the disturbance to wildlife during construction (although significantly reduced by the deletion of construction around Little Salt Marsh), semi-permanent to permanent changes in the amount and type of habitat available on the Refuge, and the conversion of agricultural lands to well facilities. This alternative would provide an increased dependability of water, allowing greater management flexibility for Refuge management units, allowing Refuge personnel to provide more, higher-quality wetland habitat on a regular basis than is currently possible.

PART IV

TASK 4 - AQUIFER RECHARGE USING LOW HEAD DAMS

This report section evaluates the feasibility for aquifer recharge by using low head dams located in areas of the Rattlesnake Creek basin where the greatest percent change of saturated thickness from pre-development to 1996 has occurred.

A. GENERAL

The long term hydrologic balance in the Rattlesnake Creek basin appears to have been modified by extensive groundwater pumping for irrigation as evidenced by reduced baseflow in the stream and its tributaries. This change has been documented in previous studies and reports. Groundwater pumping in the past has exceeded natural recharge and has removed water from aquifer storage, causing groundwater levels in several areas of the basin to decline.

The purpose of this evaluation is to determine the feasibility of enhancing recharge by retaining storm runoff and allowing it to percolate into the subsurface. It has been assumed that structures will not be allowed on the main channel because of environmental concerns. Therefore, installation of low head dams on tributaries to Rattlesnake Creek has been proposed to increase retention time, allowing for greater volumes of recharge. A map showing the tributaries and sub-basins within the Rattlesnake Creek watershed is shown in Figure IV-1.

B. DATA COLLECTION AND REVIEW

Existing information used for this evaluation includes the following sources.

- Natural Resources Conservation Service (formerly the Soil Conservation Service) Soil Surveys of Stafford, Pawnee, and Edwards Counties
- Existing literature
- Groundwater Management District No. 5 (GMD#5)
- The SWATMOD model constructed by the Kansas Geological Survey (KGS)

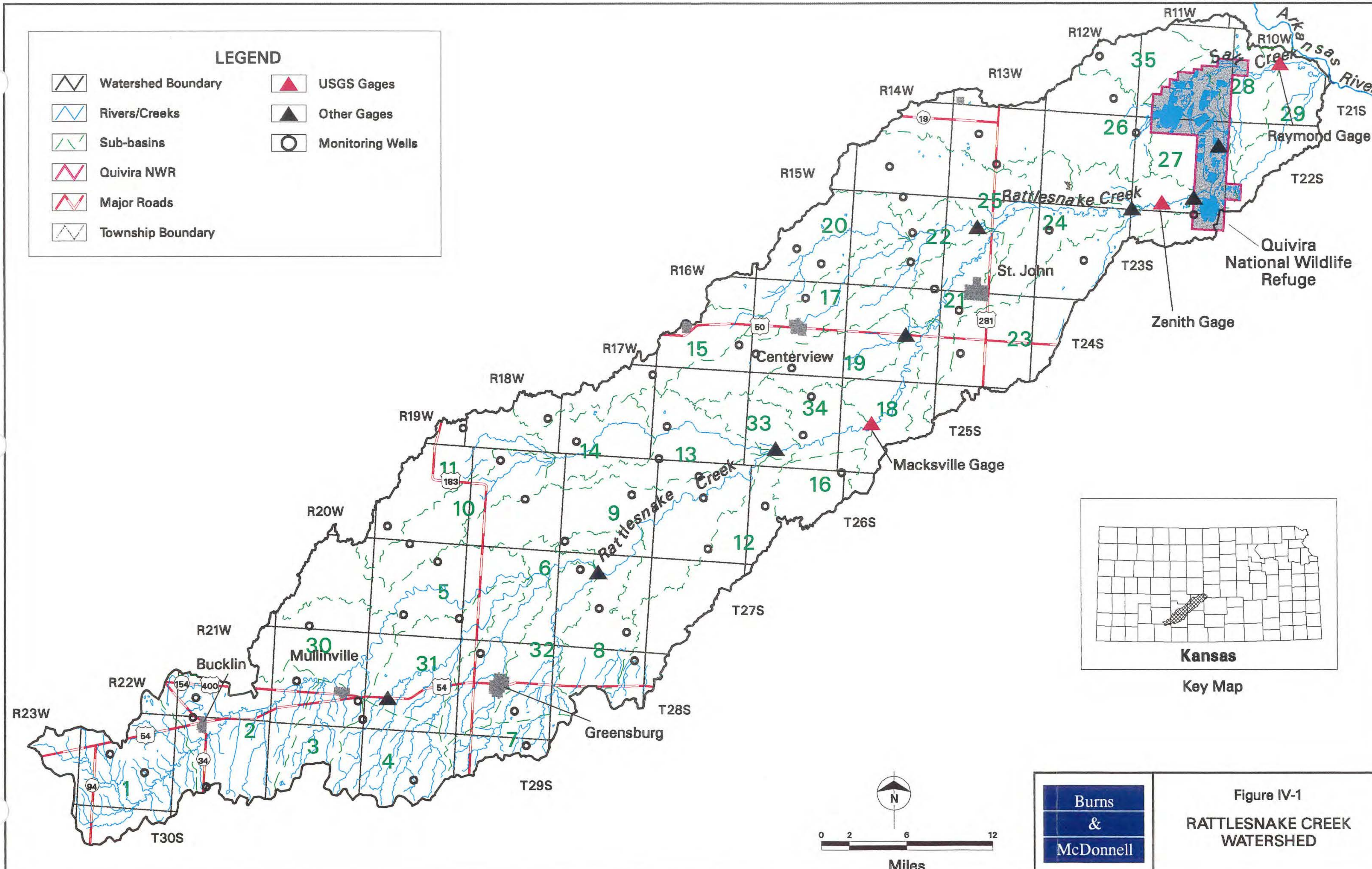


Figure IV-1

RATTLESNAKE CREEK WATERSHED

- The Quivira National Wildlife Refuge Water Resources Study of 1998

Many GIS maps were developed or expanded upon in the 1998 Report. Some of these previously developed GIS maps of Rattlesnake creek showing surface hydrologic features, change in saturated thickness from pre-development to 1996, gaining and losing reaches of Rattlesnake Creek, and depth to water table were reviewed along with other information to identify potential sites for low head dams.

C. INITIAL SITE SELECTION

The tributaries of Rattlesnake Creek were evaluated on the amount of surface water available for recharge and the location of areas with lowered water tables where additional recharge could raise groundwater levels.

Because there are no gaging stations in tributaries of Rattlesnake Creek, the amount of surface water available from each sub-basin was estimated from SWATMOD model runs in the form of flow duration estimates shown in Table IV-1. The table is divided into mainstem sub-basins and tributaries and shows the amount of water in acre-feet per month expected for varying percentages of time. The 0 percent value represents the single largest estimated monthly flow. While several sub-basins have single event flow estimates greater than 1,000 acre-feet, only a few had expected flow in excess of 100 acre-feet per month over 10 percent of the time.

Potential sites evaluated for aquifer recharge using low head dams are restricted to the tributaries of Rattlesnake Creek. There are eighteen sub-basins that do not include the main stem of Rattlesnake Creek. Review of the flow duration data showed that four major tributaries enter Rattlesnake Creek. The sub-basins with potential surface runoff were then compared with areas of reduced groundwater elevations shown in Figure IV-2. Areas matching these criteria were selected for field inspection. The selected tributaries and their flows entering Rattlesnake Creek are listed in Table IV-2.

During subsequent discussions with Big Bend Groundwater Management District No. 5 (GMD#5), it was determined that South Branch and East Fork are located in a region where the groundwater flows

Table IV-1
SWATMOD STREAMFLOW DATA

Name	Sub-basin Flow Durations, Acre-Feet/Month										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
MAINSTEM OF RATTLESNAKE CREEK											
Subbasin 1	2,618	10	0	0	0	0	0	0	0	0	0
Subbasin 2	6,330	35	0	0	0	0	0	0	0	0	0
Subbasin 5	10,090	107	0	0	0	0	0	0	0	0	0
Subbasin 6	20,813	355	125	58	16	0	0	0	0	0	0
Subbasin 8	25,813	347	0	0	0	0	0	0	0	0	0
Subbasin 9	25,682	37	0	0	0	0	0	0	0	0	0
Subbasin 18	35,448	424	79	0	0	0	0	0	0	0	0
Subbasin 21	39,256	461	116	10	0	0	0	0	0	0	0
Subbasin 23	52,273	1,497	689	437	279	192	133	90	47	6	0
Subbasin 24	48,113	1,066	435	235	146	89	57	33	6	0	0
Subbasin 25	47,142	1,007	312	151	68	30	6	0	0	0	0
Subbasin 27	58,609	1,804	691	389	218	94	11	0	0	0	0
Subbasin 28	61,639	2,874	1,494	1,127	866	674	573	513	471	439	350
Subbasin 29	69,284	3,716	1,952	1,421	1,127	902	767	702	639	601	483
Subbasin 30	9,222	308	81	3	0	0	0	0	0	0	0
Subbasin 33	33,134	363	6	0	0	0	0	0	0	0	0
Subbasin 34	34,525	412	62	15	0	0	0	0	0	0	0
Zenith Gage	58,974	1,908	778	471	296	167	81	44	0	0	0
TRIBUTARIES											
Subbasin 3	1,922	0	0	0	0	0	0	0	0	0	0
Subbasin 4	3,999	92	12	0	0	0	0	0	0	0	0
Subbasin 7	1,864	42	7	0	0	0	0	0	0	0	0
Subbasin 10	733	0	0	0	0	0	0	0	0	0	0
Subbasin 11	777	0	0	0	0	0	0	0	0	0	0
Subbasin 12	0	0	0	0	0	0	0	0	0	0	0
Subbasin 13	6,705	44	0	0	0	0	0	0	0	0	0
Subbasin 14	4,378	68	0	0	0	0	0	0	0	0	0
Subbasin 15	511	15	0	0	0	0	0	0	0	0	0
Subbasin 16	0	0	0	0	0	0	0	0	0	0	0
Subbasin 17	2,676	142	16	0	0	0	0	0	0	0	0
Subbasin 19	2,654	64	4	0	0	0	0	0	0	0	0
Subbasin 20	2,678	144	17	0	0	0	0	0	0	0	0
Subbasin 22	7,266	327	98	24	5	0	0	0	0	0	0
Subbasin 26	0	0	0	0	0	0	0	0	0	0	0
Subbasin 31	6,062	14	0	0	0	0	0	0	0	0	0
Subbasin 32	5,299	172	3	0	0	0	0	0	0	0	0
Subbasin 35	0	0	0	0	0	0	0	0	0	0	0

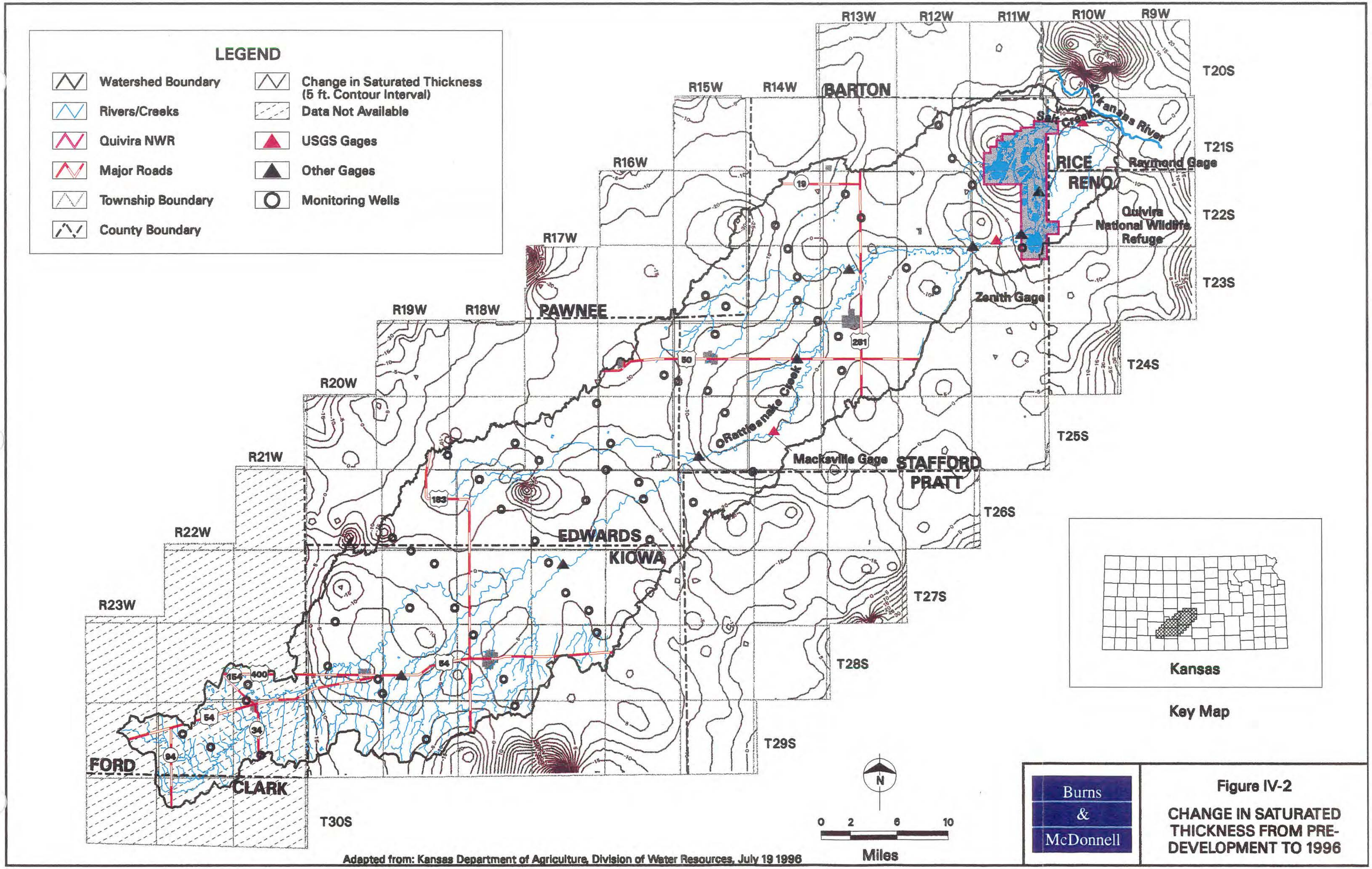


Figure IV-2

CHANGE IN SATURATED THICKNESS FROM PRE-DEVELOPMENT TO 1996 southeast out of the Rattlesnake Creek Basin. These sub-basins were eliminated from further consideration.

Table IV-2

SUB-BASINS FOR FURTHER ANALYSIS

		Flow-Duration Data From SWATMOD, AF/month					
Tributary Name	**Sub-basin**	**0%**	**10%**	**20%**	**30%**	**40%**	**50%**
Wild Horse Creek	22	7266	327	98	24	5	0
Unnamed Tributary	13	6705	44	0	0	0	0
South Branch	31	6062	14	0	0	0	0
East Fork	32	5299	172	3	0	0	0

Wild Horse Creek and it's major tributaries and the unnamed tributary (sub-basin 13) were evaluated for potential enhanced recharge using low head dams.

D. FIELD RECONNAISSANCE

The field reconnaissance of the potential sites for low head dams on the tributaries of Rattlesnake Creek was undertaken on April 14 and 15, 1999. The field trip took place during and after a rainfall event. On April 13 through 15, 1999, 0.63 inches of rain fell in the region as measured at the Macksville weather station. During the field trip, Burns & McDonnell personnel meet with the GMD#5 to review the potential sites for low head dams for aquifer recharge.

A trip kickoff meeting was held in the GMD#5 office. Based on discussions at this meeting, the sites with the most potential for low head dams are along Wild Horse Creek. There is an abundance of trees in the channel which may cause excessive evapotranspiration. Sites with large surface areas should be avoided to minimize evaporation. The desired weir height is three to five feet for overtopping and maintaining water levels within the natural banks. This is similar to the situation that occurred during the 1960's when beaver dams were present along the lower reaches of Wild Horse Creek.

The area of potential sites visited during the field reconnaissance are shown in Figure IV-3. The sites along the unnamed tributary were found to not be suitable for establishing low head dams for aquifer recharge. The banks along this tributary are very low or nonexistent. Construction of a low head dam in this region would create a shallow water body with a large surface area causing flooding in adjacent fields. Large volumes of the retained water would be lost to evapotranspiration (Photographs No. 1 through 4).

E. WATER INFILTRATION AND WATER DEFICIT

After the field reconnaissance, Wild Horse Creek was the only sub-basin believed to be suitable for enhanced recharge using low head dams. Further evaluation was made of Wild Horse Creek and it's tributaries.

1. Topography and Geology

Wild Horse Creek and its tributaries are located in the Great Bend Prairie physiographic province and lie within Stafford, Pawnee, and Edwards Counties. The Wild Horse Creek basin contains approximately 97,000 acres in area and ranges from approximately 1 to 5 miles in width. Relief ranges from approximately 1860 to 2100 feet above sea level.

The area is underlain by the Great Bend Prairie aquifer. Groundwater levels are estimated to have declined from 10 to 40 feet since the 1940's prior to development of irrigation pumping as shown in Figure IV-4. The average gradient of Wild Horse Creek and its tributaries ranges from 0.17 to 0.82 feet per mile. The creek is currently intermittent throughout most of its length with only a small baseflow component in the lower reach immediately above its confluence with Rattlesnake Creek.

Vegetation in the form of small to medium size trees currently cover the main channel of Wild Horse Creek where not disturbed by cattle or farming practices (Photographs No. 5 through 8).

2. Soils

Wild Horse Creek lies within two major soils associations, the Pratt-Carwile association and the Naron-Farnum association. The soil types occurring along Wild Horse Creek are the Attica, Naron, Pratt,

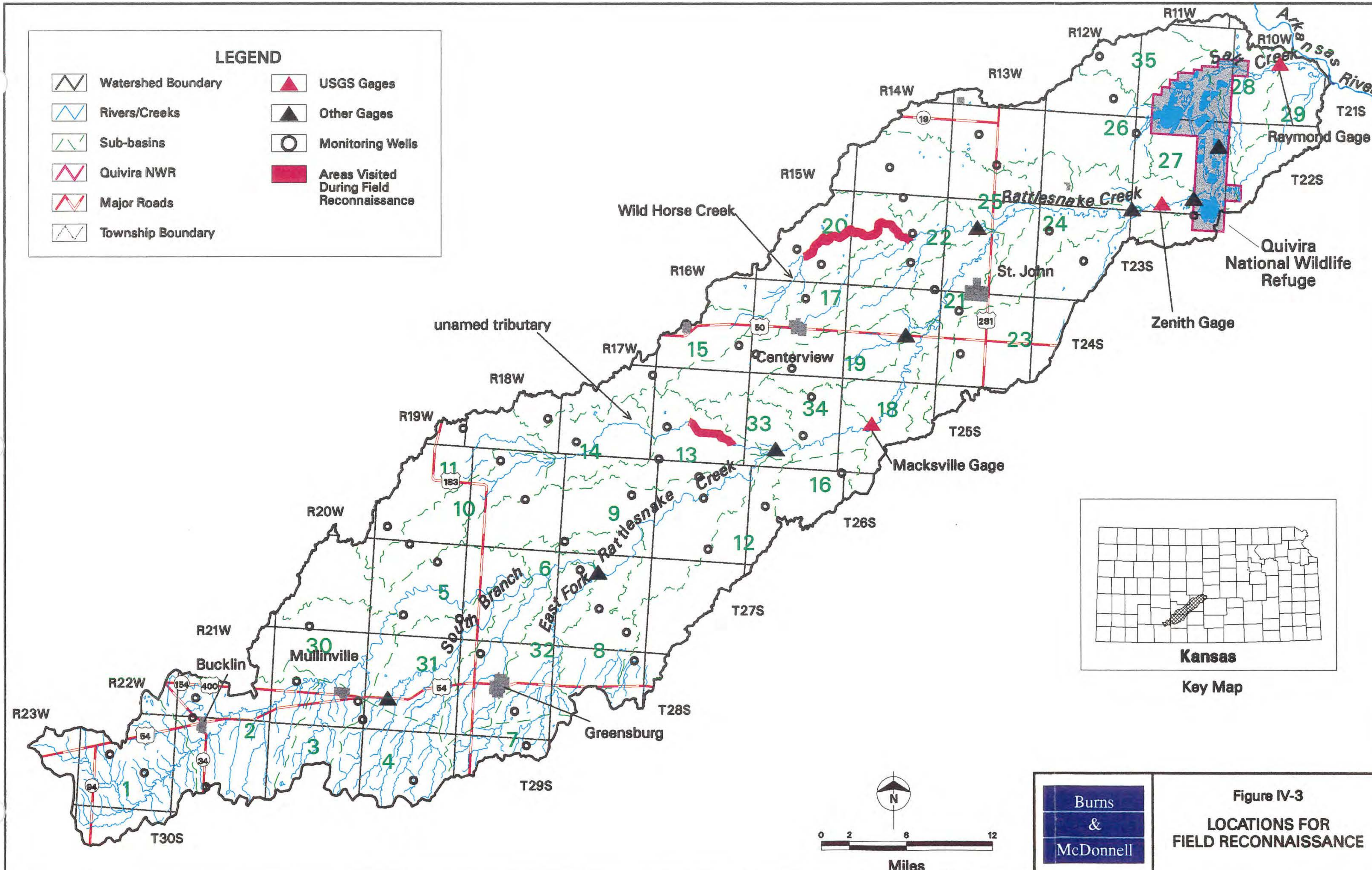


Figure IV-3

LOCATIONS FOR FIELD RECONNAISSANCE

Photo 1. Unnamed Tributary at Stafford/Edward County Line showing lack of stream banks.

Photo 2. Unnamed Tributary.

Photo 3. Unnamed Tributary showing trees and vegitation in channel.

Photo 4. Confluence of Rattlesnake Creek and Unnamed Tributary.

Photo 5. Wild Horse Creek showing narrow, shallow channel.

Photo 6. Wild Horse Creek showing channel running through pasture. Channel is relatively wide and deep.

Photo 7. Wild Horse Creek showing channel width, depth, and vegetation.

Photo 8. Wild Horse Creek showing wide overgrown channel.

Plevna, and Waldeck soils (USDA 1978). The soils range in texture from clay loam to sand and exhibit moderate to high permeabilities (ranging from 0.6 to 20 inches per hour) as shown in Table IV-3. Most of the soils in the area of the channel have permeabilities listed in the range of 6-20 inches per hour.

Table IV-3

PERMEABILITIES FOR SOIL TYPES ALONG WILD HORSE CREEK

Soil Type	Permeability, inches per hour
Attica	2-6
Naron	0.6-6
Plevna	2-6
Pratt	6-20
Waldeck	2-20

3. Refined Study Area

The lowest reach of Wild Horse Creek is not considered for recharge sites as the percent change in saturated thickness from pre-development to 1996 is small and contributes a small amount of base flow to Rattlesnake Creek. The uppermost reach was not considered as the channel becomes poorly defined. Bear Creek and Little Wild Horse Creek were also not considered because their confluence with Wild Horse Creek are in areas of relatively high water table.

4. Precipitation and Natural Recharge

The average annual precipitation is 25.71 inches for these sub-basins as recorded at the Hudson, Kansas weather station. May and June have the highest average precipitation and the lowest averages occur in December, January, and February. Based on work by the Kansas Geological Survey, and information from SWATMOD, the net annual natural recharge is approximately 2.3 inches per year for sub-basin 15, 2.4 inches per year for sub-basin 20, and 1.8 inches per year for sub-basin 17.

Resulting natural recharge for the Wild Horse sub-basin averages approximately 14,000 acre-feet per year.

5. Pumping

Installation of wells and development of groundwater for municipal and agriculture use has exceeded natural recharge resulting in water being removed from storage, causing lowered groundwater levels. Currently the area is "over developed" and closed to new applications for groundwater use. The permitted groundwater use for the Wild Horse Creek sub-basin is approximately 34,000 acre-feet per year. Reported use in 1995 was about 20,500 acre-feet.

6. Water Balance

Neglecting underflow of groundwater from outside the basin, the 1995 pumping caused a 6,500 acre foot deficit in the annual water balance. If the full authorized amount were pumped, there would be an annual deficit of about 20,000 acre-feet. The volume of water removed from storage since 1940 is estimated to be greater than 150,000 acre-feet.

F. EVALUATION OF ENHANCED RECHARGE POTENTIAL

The amount of enhanced recharge that can be added to storage depends on permeability of the soils and subsurface materials, the surface area available for infiltration, the head or depth of water which provides pressure to "force" through the material, and the length of time that free water is available for recharge. Other factors that effect the total recharge include evaporation, plant transpiration, and retainage of water as soil moisture.

Soil permeability is one of the most important properties in consideration of enhanced recharge. The Natural Resources Conservation Service (NRCS) classifications of soils in the Wild Horse Creek sub-basin range from 0.6 to 20 inches per hour for the top 5 feet of the soil profile. This is an extremely high permeability and is probably much greater than can be expected as an effective permeability. In other work, the Kansas Geological Survey simulated natural recharge to the sub-basin in SWATMOD as a lake with an infiltration rate of 1 inch per day. This difference in permeabilities will give greatly varying estimates of potential recharge. Additionally, even if the upper soils are very permeable, any clayey or compact zone in the subsurface will slow percolation, reducing the net amount of recharge. Similar projects in Kansas in the 1970's included experiments on Wet Walnut Creek and near Lakin, in western Kansas. Effective recharge rates were in the order of 1 to 2 feet per day and varied with time.

The area available for recharge is the stream channel that would be flooded by the low head dam. For preliminary estimates, the infiltration area is the channel width, assumed to be 50 feet, and the length of channel flooded by a 5-foot-high dam, approximately 3,600 feet. The resulting infiltration area is about 4.1 acres per dam.

For preliminary estimates, the low head dams are assumed to be 5 feet high. Actual height will depend on detailed siting of the facility including height of the natural bank, avoiding low drainages that may cause back water in cultivated fields, or other easement restrictions.

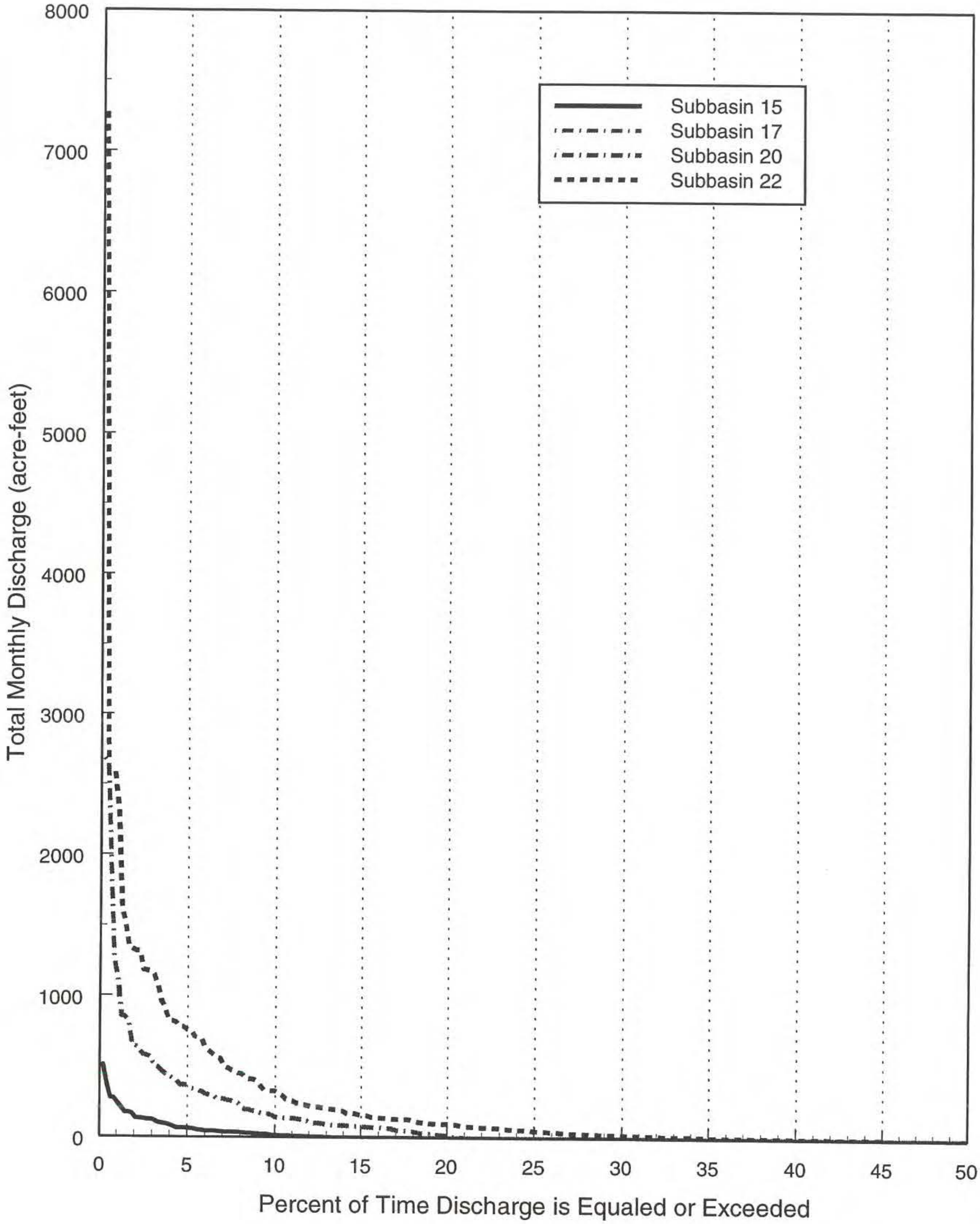
The length of time that water would be available is estimated from flow duration information generated from SWATMOD. Information presented in Tables IV-1 and IV-2 are summarized in Figure IV-4, a graph of the percent of time, that different flows are expected. If all potential sites in the selected area were developed, approximately 180 acre-feet of water would be retained behind the dams. From the flow duration graph, it appears that this flow would be available about 10 percent of the time on a monthly basis. Table VI-4 shows that this flow is exceeded about 20 percent of the time on an annual basis or an average of about 73 days per year. This number is used for the estimates of potential recharge.

Table IV-4

ANNUAL FLOW DURATION FOR PORTIONS OF WILD HORSE CREEK

Tributary	Sub-basin	Flow-Duration Data From SWATMOD, AF/year		
		0%	10%	20%
Wild Horse	15	6,132	177	
Little Wild Horse	17	32,115	1,707	191
Wild Horse	20	32,140	1,725	208
Wild Horse	20+17	64,255	3,437	399

Evaporation rates were extracted from the SWATMOD model for these sub-basins. The minimum, maximum and average net evaporation is 24.21, 52.93, 40.56 inches per year respectively. The average evaporation is about 0.11 inch per day (0.009 feet/day) and would total about 0.8 feet for a 73-day recharge period. Transpiration from plants will vary with the density and type of vegetation in and near



Notes:

1. Based on monthly discharge estimates extracted from SWATMOD model for Rattlesnake Creek basin.
2. The duration curves for Subbasins 17 and 20 are so similar that they are indistiguishable from one another.

Burns & McDonnell

Figure IV-4

DISCHARGE DURATIONS
WILD HORSE CREEK

the recharge area. Many areas of the Wild Horse Creek channel are overgrown with brush and small to medium-size trees. Net evapotranspiration is expected to be highest in these areas.

Estimates of enhanced recharge are based on Darcy's equation of flow in a porous media. The equation is

$$Q = KA\frac{\Delta h}{\Delta l}$$

Where Q = the recharge rate in cubic feet per day

K = the vertical hydraulic conductivity (permeability) of soil, feet per day

A = effective recharge area, square feet

Δh = the effective depth of water

Δl = the effective thickness of the channel bottom (or lowest permeability soil)

The total volume of water that can be recharged is estimated by multiplying Q by the number days that surface water is available for recharge.

Because the water depth varies from 5 to 0 feet, and the surface area would vary with the amount of water behind the dam, an average depth and surface area were used for the estimates.

For estimates using the NRCS permeability value of 6 inches per hour, recharge volumes could be as high as 60 acre-feet per day per dam. This is probably unrealistically high. Lower permeability materials in the subsurface, accumulation of fines behind the dams, and evapotranspiration will give effective rates much less than estimated from the NRCS rates.

The effective recharge rate used in SWATMOD of 1 inch per day would yield a volume of recharge of less than 1 acre foot per day per dam. This value is probably unrealistically low considering the more permeable stream channel and higher depth of water that would be developed behind the dam. Other enhanced recharge projects have experienced effective recharge rates of 1 to 2 feet per day. This rate would yield about 2 to 4 acre-feet per day per dam. The overall estimate would be about 2,500 to 5,000 acre-feet per year for the entire development. The NRCS permeability rates indicate that rates could possibly be higher.

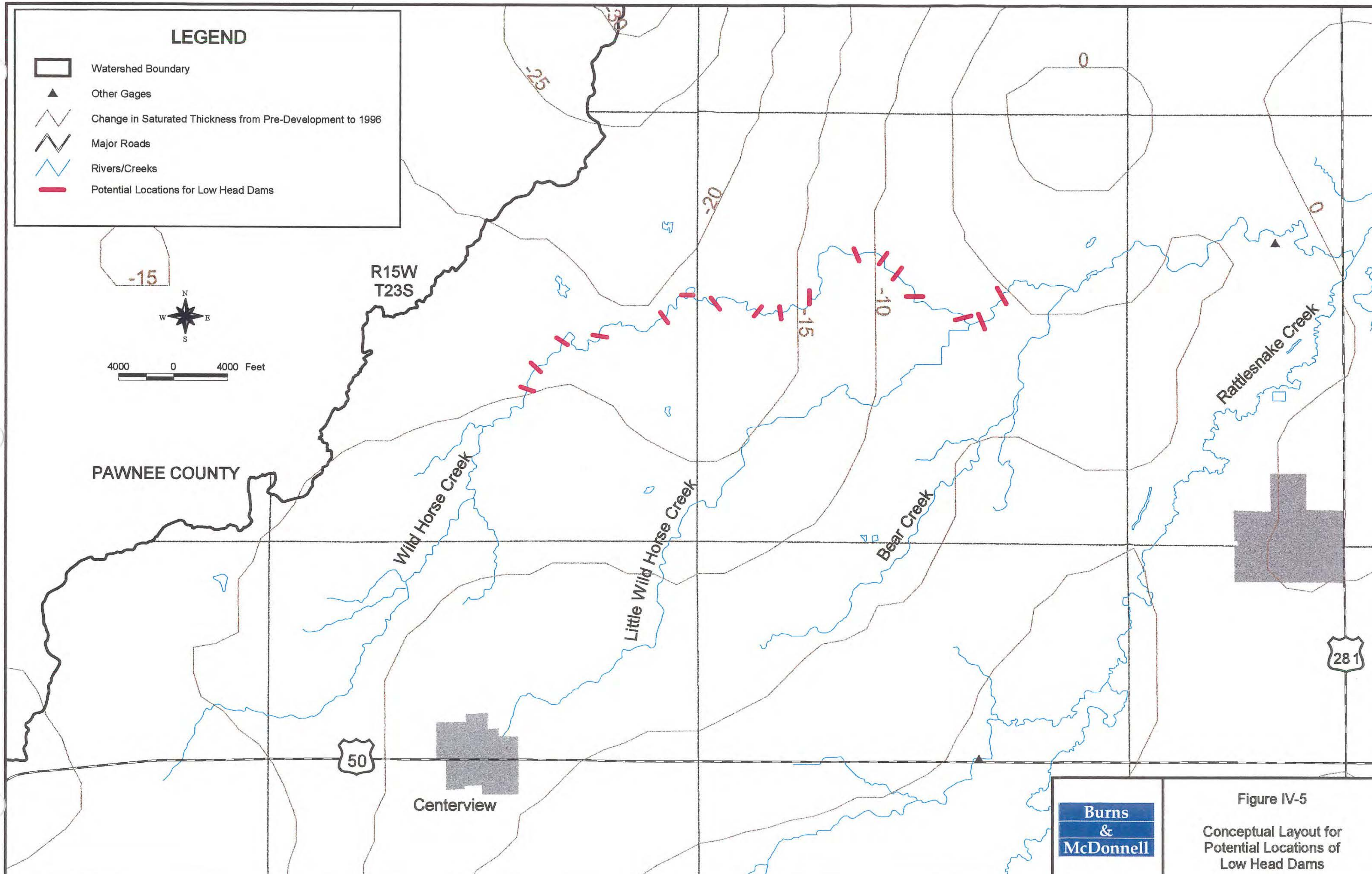
These recharge rates would make a significant impact on the annual water balance deficit in the sub-basin; however site specific conditions may have a large impact on estimates. Because the site specific conditions of stream bed and subsurface permeability, channel depth, and evapotranspiration rates greatly effect the actual recharge rates, a demonstration project is recommended to develop more refined estimates for the Wild Horse Creek sub-basin.

A conceptual layout for a typical low head dam for recharge was developed with the information obtained during the data collection process and field reconnaissance. A typical channel width of 50 feet was assumed, and a height of 5 feet for the dam was established. An average tail water length of 3,600 feet was calculated. This results in a typical pond volume of 10.2 acre-feet. Within the selected portion of Wild Horse Creek, there are 17 potential locations for low head dams. Figure IV-5 shows the conceptual layout for this series of 17 low head dams located along Wild Horse Creek.

G. ENVIRONMENTAL AND CULTURAL RESOURCE IMPACTS

The construction of low head dams for several miles along one or more of the intermittent tributaries to Rattlesnake Creek would result in conversion of the affected area to more of a wetland environment. Currently, the drainages targeted for this alternative range from having incised banks with heavily overgrown stream channels to slightly sloping sides that are either overgrown with vegetation or farmed completely across the stream. The areas suitable for construction of low head dams are those having steeper banks and a more defined channel. These areas were observed in April of 1999 to be heavily overgrown with trees and shrubs including cottonwood, elm, willow, dogwood, boxelder, and hackberry. A variety of grasses and forbs were also present in many of the stream channels.

The species and condition of the existing vegetation seem to indicate that water is seldom present in the stream channel, either flowing or ponded. Some periods of soil saturation may infrequently occur. Some portion of the stream channel would likely classify as a wetland. However, the slopes of the banks and areas above the banks do not likely receive sufficient moisture and maintain soil saturation necessary to



Burns & McDonnell

Figure IV-5

Conceptual Layout for Potential Locations of Low Head Dams support wetland species. Following construction of this alternative, the retention of water behind the dams would increase soil saturation both in the stream channel and several feet up the banks, increasing the amount of area suitable for establishment of wetlands. This would likely eliminate most of the existing vegetation and in areas where trees and shrubs are not cleared to reduce evapotranspiration, most would die within a few years. However, if not prevented from establishing and growing, more water tolerant species such as willow would likely move in. Cottonwood, elm, and other less water tolerant tree species would re-establish on the perimeter of the pools not disturbed by farming or kept clear of vegetation. The stream channels themselves would develop as emergent wetland, becoming dominated by sedges, smartweed, dock, barnyard grass, and a variety of other wetland grasses and annuals. Species such as cattail and bulrush may become established in small areas where water infiltrates more slowly, resulting in prolonged ponding in the upper soil surface. Overall, the construction of retention dams would increase the amount of wetlands within the drainages.

While additional emergent wetlands would be created, most of the wooded vegetation currently present in the stream channels would be eliminated. During clearing and construction activities, wildlife present would likely be displaced to other areas due to disturbance from construction noise and the presence of construction workers. Some less mobile species such as reptiles, amphibians, and small mammals may be lost as a result of construction activities. Clearing of trees may destroy nests of birds and squirrels and result in the loss of some individuals of the affected species. Trees in uncleared areas would die-out, continuing to provide habitat for cavity nesters until they fell. Habitat for a variety of songbirds and mammals in the form of nesting, foraging, and cover areas would be reduced until reestablishment along the pool edges occurred. Because many of these woodlots are restricted by adjacent agriculture to the narrow stream channel, they are essentially edge habitats. Such areas are abundant in the project area and would be expected to re-establish adjacent to the retention pools, although to a lesser degree than currently exists. No significant impacts to wildlife would be expected.

The project area contains few permanent streams or other water bodies. Retention of water behind small dams would provide temporary ponds for wildlife use. These areas would be intermittent and unable to provide any type of fishery. However, certain invertebrates and amphibians would likely use these areas. The presence of invertebrates and breeding amphibians would attract other species that prey upon them such as wading birds, furbearers, and reptiles. As the pools silt in and retain water for longer periods of time, they could provide habitat for mated pairs or small groups of migratory waterfowl, particularly during the spring when pairs seek out smaller, more secluded water bodies to loaf and feed. Ponds would also provide temporary drinking areas for all area wildlife; mammals, birds, reptiles, amphibians.

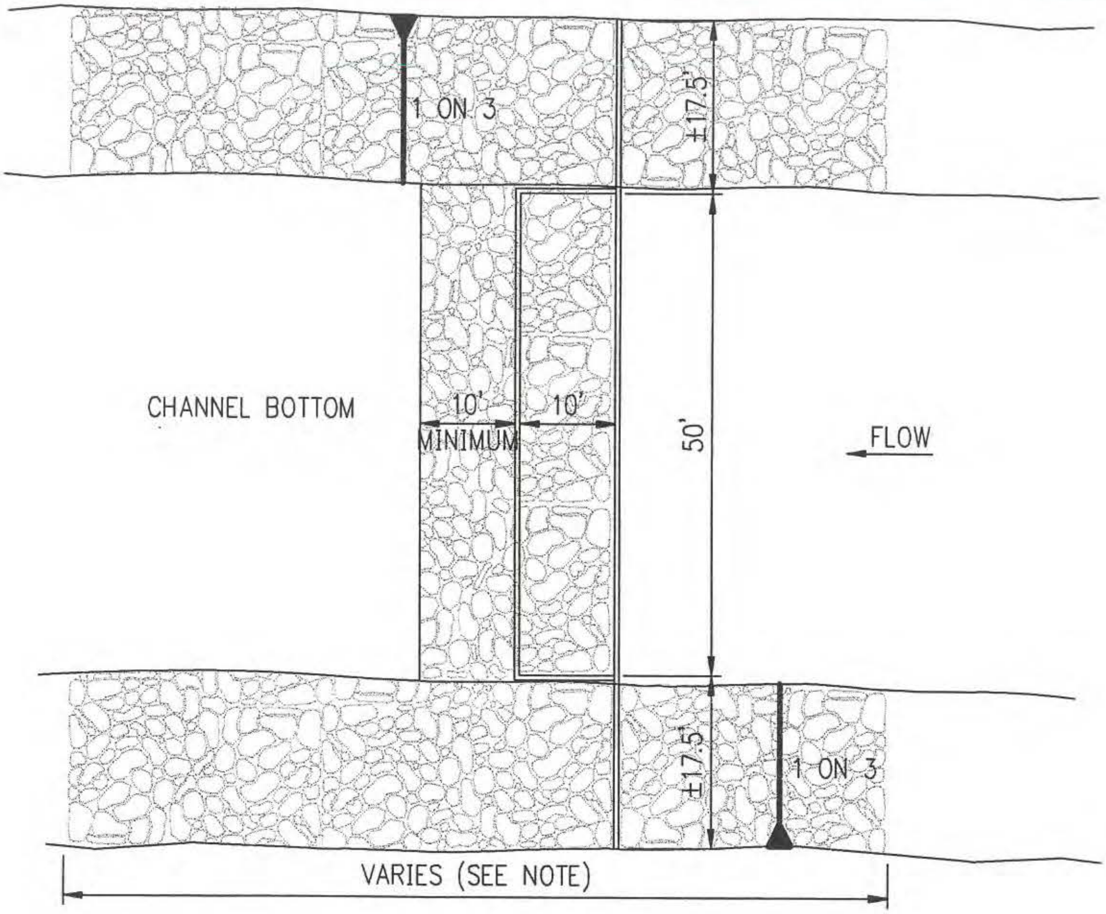
Construction of this alternative is not anticipated to have much if any affect on aquifer levels or baseflow in Rattlesnake Creek for several years. Because little if any additional water would be provided to Rattlesnake Creek, this alternative would not have any affect on the fish or wildlife habitat found in Rattlesnake Creek. No appreciable additional water would be available for diversion on the Refuge for management of wetlands. Other than the impacts anticipated within the retention areas themselves, no other measurable impacts are anticipated.

The potential for archaeological resources within the areas identified for retention dams and ponds is low to moderate. Kill and processing sites may occur anywhere within the area, with base camps and campsites potentially being present on the elevated areas adjacent to the stream. All of these types of sites are generally small and contain a low density of artifacts. However, areas disturbed for construction including the dam and any borrow sites should be evaluated further for the potential presence of archaeological resources.

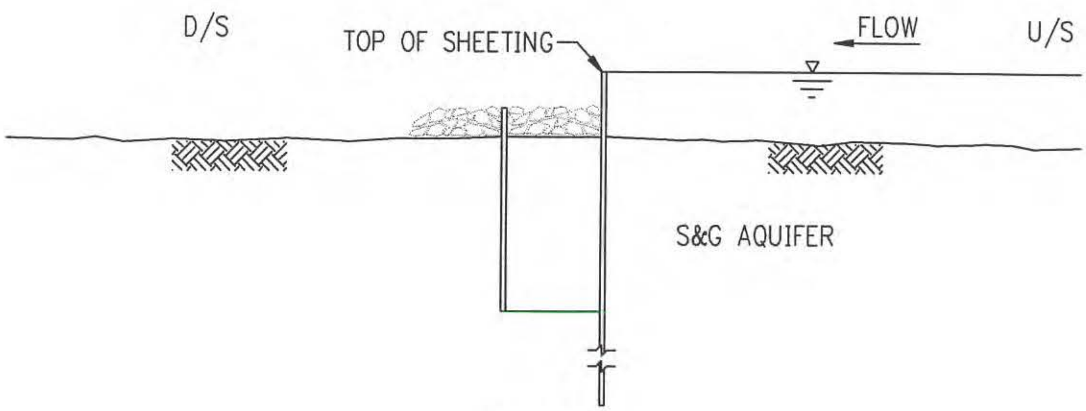
The feasibility for aquifer recharge by using low head dams is discussed in this section; however, detailed site specific investigations are required to confirm feasibility, receive state and federal approval and permits, and prepare detailed design of possible projects.

H. PROJECT COST ESTIMATE

Project cost estimates for the 17 low head dams are considered preliminary and will require additional site specific information that is unavailable during this study. Preliminary design on the low head dams (Figure IV-6) assumed 25-year design flood discharge of 1524 cfs for Wild Horse Creek and a 50-foot channel bottom width. Channel side slopes are estimated to be 1 on 3. A detailed design for each dam site is necessary to refine costs estimates.



PLAN
NOT TO SCALE



PROFILE
NOT TO SCALE

NOTE:
RIP RAP REQUIREMENT
IS SITE SPECIFIC.

Burns & McDonnell

Figure IV – 6

LOW HEAD DAM FOR
GROUNDWATER RECHARGE

Due to its structural integrity and relatively low cost, cold-rolled sheet piling was considered for the construction of low head dams. These types of dams perform well in poor soil conditions and are capable of withstanding time.

1. Project Cost Estimate

The estimated construction cost of each low head dam is $157,000 without site clearing of the inundated area and $203,000 with site clearing for the inundated area. Fee for the mobilization and demobilization is considered a one time fee and should be deducted for each additional dam site location. Table IV-5 gives a breakdown of these cost estimates.

2. Operation and Maintenance (O&M) Costs

O&M costs presented here are those associated with the operation and maintenance of low head dams. Operation of low head dams are negligible; however, cost for dam maintenance are considered necessary. Maintenance of dams will require the removal of fine sediments and shrub growth in the dam site area and the inundated area. This is expected to occur every three to fours years and is estimated about $1000 per acre.

I. SUMMARY

The Wild Horse Creek sub-basin is shown to have surface flow that could be used to offset the pumping deficit in the area. Estimates show that as much as 2,500 to 5,000 acre-feet per year could be recharged using estimates of effective recharge determined in nearby basins. Use of NRCS estimates of permeability would show larger potential for recharge. These numbers would make a significant impact on the 6,500 to 20,000 acre-feet per year deficit currently being pumped.

As water levels rise, baseflow will increase; however the response time will be dependent on the annual volume of water recharged and the amount of increase in groundwater levels. Because site specific parameters are not known, detailed estimates of recharge and resulting increases in baseflow are not possible to determine. The project will reduce surface runoff, but later provide increases in baseflow.

Table IV-5
PROJECT COST ESTIMATE
TASK 4 - LOW HEAD DAM FOR GROUNDWATER RECHARGE

Item	Cost ($)
Cold Rolled Steel Sheeting:	
Grade PZ-35	66,300
Grade PZ-27.5	21,000
Rip Rap (15" gradation)	12,000
Mobilization/Demobilization	10,000
Subtotal	109,300
Contingency at 20%	22,000
Subtotal	131,300
Other Costs at 20%	26,000
Total Project Cost w/o Site Clearing	**157,000**

Clear and Grub inundated area	32,000
Subtotal	141,300
Contingency at 20%	28,000
Subtotal	169,300
Other Costs at 20%	34,000
Total Project Cost w/ Site Clearing	**203,000**

To develop site specific information, a prototype project is recommended. The prototype project would include detailed monitoring of inflow, outflow and changes in groundwater levels to determine site specific effective recharge rates. After operational data are obtained, the project should be re-evaluated to develop more detailed estimates of recharge, increases in baseflow, and feasibility and cost benefit of a larger project with more structures.

The cost of full implementation of the 17-dam project would be approximately $3,400,000. Because of the unknown site specific parameters, two prototype dam projects are recommended to evaluate effective recharge with and without clearing and brush removal to investigate the impacts of evapotranspiration on the effective recharge. The two prototype dams would cost approximately $360,000.

PART V

CONCLUSIONS AND RECOMMENDATIONS

This section of the supplemental report documents the conclusions and recommendations from this study.

A. TASK 1

- The extensive groundwater development that has occurred in the Rattlesnake Creek basin since the Refuge was established has significantly reduced the water supply to the Refuge. The average annual inflow to the Refuge from Rattlesnake Creek has decreased from about 44,400 acre-feet per year to 10,500 acre-feet per year. In terms of the Refuge's water right of 14,632 acre-feet per year, the annual average water supply to the Refuge has decreased from 300 percent to only 70 percent of its water right.

- With the existing Refuge management plan, the median (50th percentile) and 80th percentile amounts of wetland habitat at the Refuge under pre-development conditions are 5,389 and 5,193 acres, respectively. These same values under current conditions are 2,757 and 1,416 acres, respectively. The pre-development values are respectively 196 and 367 percent of the corresponding values under current conditions.

- The median and 80th percentile amounts of wetland habitat at the Refuge, under pre-development conditions and with the Service's preferred moist soil management plan, are 4,752 and 3,919 acres, respectively. These same values under current conditions are 2,234 and 1,501 acres, respectively. The pre-development values are respectively 227 and 261 percent of the corresponding values under current conditions.

B. TASK 2

- The Partnership's proposal to provide a supplemental groundwater supply to the Refuge will increase the water supply to the Refuge by an average of only 100 acre-feet per year as compared to the average annual inflow to the Refuge from Rattlesnake Creek of 10,500 acre-feet per year. However, this additional supply would be available at times when it is urgently needed.

- This supplemental groundwater supply will increase the 80th percentile amount of wetland habitat at the Refuge, under the existing and preferred moist soil management plans, by only 9 and 47 acres, respectively.

- The benefit-cost ratios for the Partnership's supplemental groundwater supply alternative are 0.04 and 0.19 for the existing and preferred moist soil management plans, respectively.

- Since the Partnership has proposed to provide supplemental groundwater in only five out of every 25 years, this alternative would be difficult to administer for the Refuge. In order to make the best use of this supplemental supply, Refuge managers would have to be able to predict hydrologic conditions 25 years into the future.

C. TASK 3

- Water Supply Plan 3d — a combination of a supplemental groundwater supply (Alternative 10-3), and on-Refuge Alternatives 8, 3 and 4 — would increase the 80th percentile amount of wetland habitat by 2,490 acres over baseline conditions.

D. TASK 4

- The best location to construct low head dams to enhance natural recharge appears to be in the Wild Horse Creek basin. Based on a conceptual design of these dams, it appears that 17 low head dams could be built along Wild Horse Creek.

- Natural recharge to the aquifer that underlies the Wild Horse Creek basin is estimated to average 14,000 acre-feet per year. In 1995, reported groundwater withdrawals from this basin were 20,500 acre-feet, leaving an annual water-budget deficit of 6,500 acre-feet.

- NRCS soil surveys report infiltration rates as high as 20 inches per hour in the area of the proposed low head dams. However, infiltration rates of one to two feet per day are considered to be more representative of long-term average rates.

- With the development of all 17 potential low head dams, enhanced aquifer recharge is estimated to range from 2,500 to 5,000 acre-feet per year, which is less than the estimated water-budget deficit of 6,500 acre-feet per year..

- Enhanced recharge would eventually help increase baseflow to Rattlesnake Creek. However, due to the uncertainty in key parameters such as effective permeability and evapotranpiration losses, the long-term impact of these low head dams is difficult to predict with current informaton. Any water retained by these low head dams would reduce the current supply of surface water to the Refuge.

- The unit cost of each low head dam, assuming sheet pile construction, is estimated to be $157,000 plus an additional $47,000 for clearing the inundation area. The construction cost of all 17 low head dams is estimated to be approximately $3.4 million.

In order to further evaluate site specific conditions and refine estimates of net recharge, a demonstration project is recommended.

- A prototype project should be installed and the water balance monitored to establish the effective recharge rate. Additionally, operation and maintenance parameters would be identified.

- Because of the overgrowth in the channel, two dam installations are recommended to evaluate the impact of vegetation on evapotranspiration rates in the overgrown areas. One facility should be cleared and grubbed, while the second is left in its natural state.

- Each site will need detailed monitoring of inflow, outflow, and groundwater levels. Site selection should include geotechnical borings and physical laboratory testing to determine the subsurface characteristics to refine infiltration rate estimates.

- The estimated cost for the prototype project is approximately $360,000 excluding right-of-way, monitoring equipment, and operation.

- After initial operation, the evaluation of enhanced recharge should be reviewed to evaluate the feasibility of a larger project and it's impact on groundwater levels and potential increase in baseflow available for the Refuge.

- The estimated cost of full implementation of the 17-dam project would be approximately $3,400,000.

References

REFERENCES

Burns & McDonnell, 1998, Quivira National Wildlife Refuge Water Resources Study, Prepared for U.S. Fish and Wildlife Service.

Gillespie, J.B., Lindskov, K.L., and Slagle, S.E., 1969, Artificial ground-water recharge, Wet Walnut Creek - - Progress report no. 1: Kansas Water Resources Board, 22 p.

Gillespie, J.B., Green, D.W., and Slagle, S.E., 1970, Artificial ground-water recharge, Wet Walnut Creek - - Progress report no. 2: Kansas Water Resources Board, 28 p.

Gillespie, J.B. and Slagle, S.E., 1972, Natural and Artificial ground-water recharge, Wet Walnut Creek, Central Kansas; Bulletin No. 17: Kansas Water Resources Board, 94 p.

Gillespie, J.B., Hargadine, G.D., and Stough, M.J., 1977, Artificial-recharge Experiments near Lakin, Western Kansas; Bulletin No. 20: Kansas Water Resources Board, 91 p.

U.S. Department of Agriculture. 1978. Soil Survey of Pawnee County, Kansas. Natural Resources Conservation Service in cooperation with the Kansas Agricultural Experiment Station.

U.S. Department of Agriculture. 1978. Soil Survey of Stafford County, Kansas. Natural Resources Conservation Service in cooperation with the Kansas Agricultural Experiment Station.

Flow Data

Pre-development Incremental Flow Data (acre-feet)
Node 10--Rattlesnake Creek above Mullinville, KS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.9	0.0	0.0	0.0	34.9
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1958	0.0	0.0	0.0	0.0	277.7	246.4	452.8	0.0	113.2	0.0	0.0	0.0	1,090.1
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0	0.0	0.0	21.0
1960	0.0	0.0	0.0	0.0	0.0	32.9	0.0	0.0	0.0	0.0	0.0	0.0	32.9
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1962	0.0	0.0	0.0	0.0	0.0	0.0	191.3	0.0	1,827.8	0.0	0.0	0.0	2,019.1
1963	0.0	0.0	0.0	0.0	559.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	559.1
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,801.7	0.0	0.0	3,801.7
1969	0.0	0.0	154.5	27.4	997.0	267.4	0.0	603.0	803.0	0.0	0.0	0.0	2,852.3
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	50.2	0.0	0.0	0.0	55.0
1971	0.0	98.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	128.4	0.0	227.0
1972	0.0	0.0	0.0	0.0	31.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.2
1973	0.0	0.0	2,430.3	368.9	0.0	0.0	770.0	219.9	6,468.3	496.9	0.0	0.0	10,754.3
1974	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	4.4
1975	0.0	0.0	0.0	0.0	150.2	3,460.1	0.0	0.0	0.0	0.0	0.0	0.0	3,610.2
1976	0.0	0.0	0.0	2,185.3	1,869.5	0.0	0.0	0.0	719.0	0.0	0.0	0.0	4,773.8
1977	0.0	0.0	0.0	0.0	172.1	0.0	301.0	229.7	824.4	0.0	0.0	0.0	1,527.1
1978	0.0	194.6	0.0	0.0	2,123.6	67.0	0.0	0.0	0.0	0.0	0.0	0.0	2,385.2

Pre-development Incremental Flow Data (acre-feet)
Node 10--Rattlesnake Creek above Mullinville, KS

Year	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Annual*
1979	0.0	0.0	0.0	0.0	0.0	0.0	621.5	0.0	0.0	417.0	0.0	0.0	1,038.5
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	488.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	488.7
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	292.3	0.0	0.0	0.0	0.0	0.0	0.0	292.3
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,133.7	0.0	0.0	1,133.7
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	203.8	0.0	0.0	0.0	0.0	203.8
1987	0.0	0.0	23.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	46.4	0.0	0.0	1,646.8	23.1	0.0	0.0	0.0	1,716.4
1990	0.0	0.0	0.0	0.0	529.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	529.8
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	182.7	0.0	0.0	0.0	0.0	0.0	182.7
1993	0.0	250.8	0.0	0.0	0.0	168.0	43.7	0.0	0.0	0.0	0.0	0.0	462.4
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Pre-development Incremental Flow Data (acre-feet)
Node 20--Rattlesnake Creek above S. Branch

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.0	0.0	0.0	0.0	41.5	486.3	0.0	0.0	-34.9	0.0	0.0	0.0	492.9
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	0.0	0.0	0.0	0.0	227.8	0.0	0.0	13.7	0.0	0.0	0.0	241.6
1958	0.0	0.0	0.0	0.0	-92.6	-127.8	-229.9	0.0	-113.2	0.0	0.0	0.0	-563.4
1959	0.0	0.0	0.0	0.0	246.4	0.0	0.0	0.0	0.0	-21.0	0.0	0.0	225.4
1960	0.0	0.0	0.0	0.0	0.0	-32.9	0.0	0.0	0.0	0.0	0.0	0.0	-32.9
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1962	0.0	0.0	0.0	0.0	0.0	296.3	-101.7	0.0	-430.4	0.0	0.0	0.0	-235.8
1963	0.0	0.0	0.0	0.0	-519.5	0.0	0.0	0.0	36.0	0.0	0.0	0.0	-483.5
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	95.2	0.0	0.0	0.0	0.0	0.0	0.0	95.2
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	634.1	0.0	0.0	634.1
1969	0.0	0.0	-154.5	-27.4	-556.4	-267.4	0.0	2,377.4	1,897.4	0.0	0.0	0.0	3,269.2
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-4.8	-50.2	0.0	0.0	0.0	-55.0
1971	0.0	-98.5	0.0	0.0	0.0	0.0	88.3	0.0	0.0	0.0	-108.3	0.0	-118.5
1972	0.0	0.0	0.0	0.0	-31.2	0.0	276.2	163.2	513.2	0.0	0.0	0.0	921.4
1973	0.0	0.0	2,320.7	-103.3	0.0	0.0	-536.5	-219.9	4,151.5	292.4	157.9	219.8	6,282.5
1974	162.5	137.6	210.4	109.5	112.7	124.4	70.8	164.5	64.3	57.5	54.3	34.5	1,303.0
1975	25.0	15.5	26.5	21.7	183.4	1,892.6	94.2	68.8	50.1	38.7	60.0	24.8	2,501.4
1976	16.1	8.1	3.1	1,438.0	43.4	81.7	62.3	47.8	-497.0	35.3	25.0	17.6	1,281.6
1977	10.5	3.9	0.0	12.7	1,412.8	756.9	43.5	-94.5	-76.4	80.3	64.6	55.2	2,269.4
1978	45.4	-104.7	36.2	27.9	862.5	453.2	177.9	145.0	157.6	110.7	96.7	83.7	2,092.2
1979	72.8	58.6	99.6	56.4	98.6	76.9	115.8	68.8	54.2	-86.2	61.7	53.3	730.5

Pre-development Incremental Flow Data (acre-feet)
Node 20--Rattlesnake Creek above S. Branch

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	45.7	82.8	229.2	79.6	175.0	485.8	124.0	142.5	88.6	79.6	68.2	62.4	1,663.5
1981	54.9	43.8	42.9	36.1	673.4	95.9	588.1	210.7	116.9	134.0	163.2	81.8	2,241.8
1982	71.9	60.0	64.4	51.3	144.7	80.8	81.8	53.2	69.3	44.3	37.2	32.8	791.5
1983	27.8	21.5	73.0	360.3	716.6	1,024.5	123.8	103.0	84.0	120.6	71.1	65.3	2,791.5
1984	57.7	46.4	64.1	161.2	97.1	114.9	56.3	52.3	42.1	93.7	37.9	176.7	1,000.4
1985	46.5	69.6	40.7	82.2	39.3	620.8	438.2	162.8	129.3	208.5	182.2	159.7	2,179.9
1986	138.0	114.0	108.1	107.6	91.6	391.1	116.1	330.6	129.2	121.1	100.6	91.3	1,839.2
1987	117.8	74.2	396.5	131.4	396.9	379.2	213.6	257.1	192.6	154.8	135.0	128.3	2,577.3
1988	123.1	97.0	98.8	123.0	91.4	90.3	188.7	97.9	93.5	79.3	70.7	67.3	1,221.0
1989	62.2	52.0	56.0	49.1	537.3	584.6	165.7	290.4	335.3	209.3	180.2	167.6	2,689.7
1990	152.2	153.8	135.7	173.3	-221.4	132.3	160.2	119.3	126.0	106.7	96.9	91.9	1,226.9
1991	85.5	72.5	82.3	80.4	72.9	89.3	86.5	96.3	61.4	58.6	68.2	74.6	928.6
1992	73.7	47.3	49.7	43.3	71.5	1,091.6	415.9	269.9	147.7	134.4	120.5	144.5	2,610.0
1993	177.8	-77.8	182.5	140.6	258.5	321.2	1,717.0	488.6	320.0	337.5	276.6	260.4	4,402.9
1994	239.8	213.3	209.0	220.3	190.4	176.2	260.1	207.6	203.6	217.3	159.5	153.5	2,450.6

Pre-development Incremental Flow Data (acre-feet)
Node 30--S. Branch of Rattlesnake Creek

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.0	0.0	0.0	0.0	123.1	1,865.0	0.0	0.0	0.0	0.0	0.0	0.0	1,988.1
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	0.0	0.0	0.0	11.8	321.8	0.0	0.0	4.8	0.0	0.0	0.0	338.4
1958	0.0	0.0	0.0	0.0	0.0	0.0	124.5	0.0	0.0	0.0	0.0	0.0	124.5
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	14.3	49.7	0.0	0.0	0.0	0.0	0.0	0.0	64.0
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1962	0.0	0.0	0.0	0.0	0.0	472.7	0.0	0.0	0.0	0.0	0.0	0.0	472.7
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	268.2	0.0	0.0	0.0	0.0	0.0	0.0	268.2
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	751.5	1,017.2	0.0	0.0	0.0	1,768.7
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1971	0.0	17.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.7
1972	0.0	0.0	0.0	0.0	0.0	0.0	262.3	0.0	1,273.4	8.2	4.9	1.4	1,550.1
1973	0.0	0.0	2,764.1	307.2	64.6	50.1	61.4	50.1	6,381.5	923.7	153.9	157.1	10,913.8
1974	152.2	134.5	137.9	123.3	120.2	114.7	112.1	534.5	111.2	109.1	102.6	101.7	1,854.0
1975	98.1	86.0	93.4	89.0	112.6	549.0	128.7	119.4	109.6	108.6	105.2	104.5	1,704.2
1976	101.1	88.8	96.4	854.0	155.6	129.5	125.0	118.9	113.7	113.3	106.1	106.4	2,108.8
1977	103.5	91.3	98.6	94.4	501.1	2,303.0	152.8	145.7	330.5	139.6	127.8	126.0	4,214.2
1978	121.2	113.8	117.4	110.1	1,148.6	494.3	186.4	168.9	154.5	150.9	140.3	139.5	3,046.0
1979	134.9	118.6	132.6	124.5	127.8	123.2	222.0	131.4	122.4	167.5	125.9	125.3	1,656.1

Pre-development Incremental Flow Data (acre-feet)
Node 30--S. Branch of Rattlesnake Creek

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	121.9	115.1	165.7	133.3	141.3	637.5	154.9	150.5	138.4	137.6	129.1	129.9	2,155.2
1981	126.8	112.2	121.9	115.7	405.6	139.9	139.8	141.0	134.1	138.6	140.0	138.1	1,853.6
1982	133.4	121.6	128.6	121.5	134.6	127.5	130.2	126.6	122.4	123.1	116.5	118.1	1,504.2
1983	116.0	103.3	115.4	341.3	284.7	310.4	156.8	147.9	137.5	141.4	132.4	133.0	2,119.9
1984	129.8	114.8	125.5	126.9	135.4	129.8	129.6	126.4	119.6	123.3	116.9	134.2	1,512.4
1985	126.3	115.9	124.1	121.4	122.8	1,087.5	517.6	180.1	161.4	601.8	177.0	170.4	3,506.2
1986	161.6	145.5	150.2	141.9	143.0	146.7	147.9	322.7	149.9	150.7	141.6	142.3	1,943.9
1987	142.7	125.9	519.4	161.2	357.7	228.2	176.6	172.3	161.8	160.4	150.3	151.4	2,507.8
1988	148.5	131.2	142.5	139.7	141.1	135.3	141.3	139.1	132.9	134.9	128.6	131.0	1,645.9
1989	129.4	115.5	126.9	121.3	243.2	517.3	167.5	564.6	582.4	180.7	164.7	162.8	3,076.3
1990	157.1	146.1	152.0	149.3	157.6	148.0	149.7	146.0	139.7	141.8	135.2	137.4	1,760.0
1991	135.4	120.8	132.6	127.3	130.2	126.0	129.7	129.0	123.1	125.8	121.5	125.0	1,526.3
1992	125.0	111.5	122.3	117.1	122.1	2,266.5	168.0	191.2	155.8	152.9	143.5	149.0	3,824.9
1993	151.2	141.0	157.4	148.3	181.0	394.1	4,084.2	268.0	208.6	204.3	186.7	183.5	6,308.5
1994	176.3	160.4	166.5	159.4	161.0	152.4	158.3	156.1	151.3	155.9	147.5	149.5	1,894.7

Pre-development Incremental Flow Data (acre-feet)
Node 40--Rattlesnake Creek above E. Fork

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.0	0.0	0.0	0.0	440.8	1,499.2	106.3	6.4	207.8	0.0	0.0	0.0	2,260.6
1956	0.0	0.0	0.0	0.0	3.3	0.0	41.7	0.0	0.0	0.0	0.0	0.0	45.0
1957	0.0	0.0	141.6	76.7	310.3	567.5	62.3	0.0	363.6	130.0	5.1	0.0	1,657.1
1958	0.0	0.0	81.2	0.0	29.4	83.5	234.2	0.0	113.3	0.0	0.0	0.0	541.6
1959	0.0	0.0	0.0	0.0	110.0	2.9	105.3	6.4	89.6	303.7	0.0	0.0	617.9
1960	8.7	79.8	68.7	33.9	329.5	370.0	0.0	0.0	16.2	72.9	0.0	0.0	979.7
1961	0.0	0.0	10.9	0.0	112.3	94.2	39.8	183.8	0.0	40.3	55.0	0.0	536.2
1962	0.0	0.0	0.0	0.0	95.1	846.6	46.5	37.1	-243.1	0.0	0.0	0.0	782.1
1963	0.0	0.0	0.0	0.0	-39.6	212.5	0.0	0.0	208.4	0.0	0.0	0.0	381.3
1964	0.0	0.0	0.0	0.0	11.3	0.0	0.0	0.0	6.4	0.0	192.3	11.8	221.8
1965	0.0	0.0	0.0	79.9	168.7	306.7	12.7	7.8	0.0	161.3	0.0	66.4	803.4
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	377.8	0.0	0.0	0.0	0.0	377.8
1967	0.0	0.0	0.0	24.8	0.0	580.2	0.0	43.5	0.0	120.2	0.0	0.0	768.7
1968	0.0	0.0	0.0	0.0	75.2	15.3	298.5	114.6	0.0	-202.1	0.0	0.0	301.6
1969	0.0	36.7	41.6	153.0	-202.4	45.8	31.6	710.2	958.7	19.4	0.0	0.0	1,794.6
1970	0.0	0.0	6.4	148.3	0.0	0.0	0.0	0.0	0.0	24.8	0.0	0.0	179.5
1971	0.0	330.0	0.0	0.0	116.9	111.4	67.8	0.0	0.0	130.0	205.5	0.0	961.7
1972	0.0	0.0	0.0	0.0	41.2	43.5	538.2	116.3	984.7	-8.2	66.2	-1.4	1,780.6
1973	12.7	20.0	982.1	126.2	-64.6	-50.1	3.5	-38.7	4,734.2	590.0	-239.9	-126.8	5,948.4
1974	-244.4	-228.0	-49.0	-199.1	-167.7	-81.7	-182.9	7.7	-174.7	-166.6	-152.7	-136.2	-1,775.3
1975	-123.2	-101.5	-95.5	-104.7	20.7	278.9	-195.3	-176.6	-159.8	-147.3	-96.5	-129.3	-1,030.2
1976	-117.3	-96.9	-99.5	728.7	-80.9	-181.3	-175.0	-166.7	-152.5	-148.6	-131.1	-124.0	-745.2
1977	-114.0	-95.2	-98.6	-80.4	627.6	1,464.9	-127.9	-42.9	-54.3	-164.7	-154.8	-167.8	991.8
1978	-166.6	-3.1	-153.6	-138.1	1,343.6	546.1	-140.4	-143.0	-74.2	-154.8	-124.9	-156.3	634.9
1979	-158.3	-128.9	-24.0	-122.8	-63.6	-69.3	96.1	-128.5	-149.6	124.6	-145.5	-152.8	-922.6

Pre-development Incremental Flow Data (acre-feet)
Node 40--Rattlesnake Creek above E. Fork

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	-139.9	-55.5	164.1	-114.3	90.9	738.3	-83.1	-24.1	-134.0	-129.5	-135.5	-134.7	42.6
1981	-140.9	-128.0	-122.9	-131.5	321.0	-80.0	-12.7	73.6	-51.7	2.1	57.5	-130.8	-344.4
1982	-123.8	-119.2	-94.2	-125.4	129.7	-57.0	-73.4	-119.5	-64.9	-127.3	-124.1	-131.7	-1,030.9
1983	-129.3	-108.3	7.3	507.1	410.6	423.1	-107.4	-89.3	-103.3	17.4	-104.8	-115.2	608.0
1984	-121.6	-110.6	-64.6	123.1	-16.9	3.4	-112.6	-94.7	-109.6	-15.2	-114.8	155.9	-478.2
1985	-117.0	-21.5	-119.5	7.9	-111.6	1,247.0	667.5	-33.8	-55.1	682.1	-82.5	-93.2	1,970.3
1986	-97.6	-87.9	-99.0	-52.4	-84.9	138.6	-17.7	344.2	-38.5	-48.7	-69.6	-85.4	-198.9
1987	-19.2	-80.2	557.1	-53.7	423.2	250.8	0.2	76.6	3.7	-58.1	-59.8	-45.3	995.3
1988	-38.6	-64.7	-63.0	50.9	-53.4	-29.6	123.2	-42.7	-27.2	-67.9	-75.6	-78.8	-367.4
1989	-77.9	-73.8	-58.3	-78.4	398.5	729.4	-31.3	191.9	262.3	-24.3	-33.5	-36.4	1,168.3
1990	-39.4	26.3	-27.2	77.1	129.9	-34.0	30.6	-45.1	-1.3	-42.9	-34.4	-61.6	-22.1
1991	-65.9	-63.1	-37.9	-16.5	-44.8	6.7	-23.8	-7.0	-67.4	-68.6	-26.0	-16.1	-430.4
1992	-14.9	-68.9	-56.6	-72.4	5.3	1,939.4	-61.6	196.8	-31.9	-39.9	-22.0	30.9	1,804.2
1993	103.1	148.4	78.5	14.5	234.8	646.3	3,086.5	362.2	51.0	112.3	44.8	25.5	4,907.9
1994	25.3	50.1	12.8	110.3	21.9	30.0	167.7	74.2	78.9	89.9	7.2	-0.2	668.1

Pre-development Incremental Flow Data (acre-feet)
Node 50--E. Fork of Rattlesnake Creek

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.0	0.0	0.0	0.0	332.4	1,500.7	0.0	0.0	52.9	0.0	0.0	0.0	1,886.0
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	0.0	13.1	0.0	201.4	751.4	0.0	0.0	246.2	10.2	0.0	0.0	1,222.3
1958	0.0	0.0	0.0	0.0	32.0	94.3	318.6	0.0	12.5	0.0	0.0	0.0	457.5
1959	0.0	0.0	0.0	0.0	193.9	0.0	0.0	0.0	0.0	123.5	0.0	0.0	317.4
1960	0.0	0.0	0.0	0.0	218.1	262.2	0.0	0.0	0.0	0.0	0.0	0.0	480.3
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	84.4	0.0	0.0	0.0	0.0	84.4
1962	0.0	0.0	0.0	0.0	0.0	858.8	0.0	0.0	0.0	0.0	0.0	0.0	858.8
1963	0.0	0.0	0.0	0.0	0.0	115.9	0.0	0.0	151.9	0.0	0.0	0.0	267.8
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.9	0.0	76.9
1965	0.0	0.0	0.0	0.0	24.9	139.8	0.0	0.0	0.0	5.6	0.0	0.0	170.2
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	222.3	0.0	0.0	0.0	0.0	222.3
1967	0.0	0.0	0.0	0.0	0.0	510.5	0.0	0.0	0.0	38.1	0.0	0.0	548.7
1968	0.0	0.0	0.0	0.0	0.0	0.0	110.0	0.0	0.0	127.9	0.0	0.0	237.9
1969	0.0	0.0	0.0	42.7	0.0	0.0	0.0	1,049.7	1,103.3	0.0	0.0	0.0	2,195.7
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1971	0.0	257.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	76.9	0.0	338.5
1972	0.0	0.0	0.0	0.0	0.0	0.0	770.0	143.8	1,178.4	0.0	0.0	0.0	2,092.2
1973	0.0	0.0	1,745.0	109.8	0.0	0.0	59.5	0.0	5,347.1	565.3	0.0	0.0	7,826.8
1974	0.0	0.0	9.4	0.0	0.0	0.0	0.0	57.1	0.0	0.0	0.0	0.0	66.5
1975	0.0	0.0	0.0	0.0	111.2	751.4	0.0	0.0	0.0	0.0	0.0	0.0	862.5
1976	0.0	0.0	0.0	745.2	54.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	799.6
1977	0.0	0.0	0.0	0.0	703.5	1,584.0	0.0	0.0	31.2	0.0	0.0	0.0	2,318.8
1978	0.0	0.0	0.0	0.0	1,204.1	515.1	0.0	0.0	0.0	0.0	0.0	0.0	1,719.2
1979	0.0	0.0	0.0	0.0	0.0	0.0	211.7	0.0	0.0	193.1	0.0	0.0	404.8

Pre-development Incremental Flow Data (acre-feet)
Node 50--E. Fork of Rattlesnake Creek

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.0	0.0	177.3	0.0	49.3	577.5	0.0	0.0	0.0	0.0	0.0	0.0	804.1
1981	0.0	0.0	0.0	0.0	410.0	0.0	80.9	113.1	0.0	0.0	19.3	0.0	623.3
1982	0.0	0.0	0.0	0.0	43.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.2
1983	0.0	0.0	0.0	499.2	347.4	324.8	0.0	0.0	0.0	0.0	0.0	0.0	1,171.3
1984	0.0	0.0	0.0	105.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	139.4	244.9
1985	0.0	0.0	0.0	0.0	0.0	893.3	489.7	0.0	0.0	650.0	0.0	0.0	2,033.0
1986	0.0	0.0	0.0	0.0	0.0	92.4	0.0	216.4	0.0	0.0	0.0	0.0	308.8
1987	0.0	0.0	479.4	0.0	302.3	273.1	0.0	19.4	0.0	0.0	0.0	0.0	1,074.2
1988	0.0	0.0	0.0	0.0	0.0	0.0	76.3	0.0	0.0	0.0	0.0	0.0	76.3
1989	0.0	0.0	0.0	0.0	347.6	556.1	0.0	170.9	108.2	0.0	0.0	0.0	1,182.8
1990	0.0	0.0	0.0	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	1,916.0	0.0	55.8	0.0	0.0	0.0	0.0	1,971.7
1993	0.0	15.1	0.0	0.0	72.2	459.6	3,339.8	136.6	0.0	0.0	0.0	0.0	4,023.5
1994	0.0	0.0	0.0	0.0	0.0	0.0	36.0	0.0	0.0	0.0	0.0	0.0	36.0

Pre-development Incremental Flow Data (acre-feet)
Node 60--Rattlesnake Creek near Hopewell, KS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.0	0.0	0.0	0.0	-807.3	-1,713.5	-106.3	-6.4	-260.6	0.0	0.0	0.0	-2,894.1
1956	0.0	0.0	0.0	0.0	-3.3	0.0	-41.7	0.0	0.0	0.0	0.0	0.0	-45.0
1957	0.0	0.0	-154.7	-76.7	-468.0	-340.2	-62.3	0.0	-517.1	-140.2	-5.1	0.0	-1,764.2
1958	0.0	0.0	-81.2	0.0	-246.5	-296.2	-488.5	19.0	-102.7	22.6	20.6	20.0	-1,132.8
1959	19.0	16.5	17.6	16.4	-376.9	23.1	-78.2	19.3	-65.6	-395.4	28.6	27.8	-747.8
1960	18.0	-55.9	-43.1	-9.5	-532.9	-606.7	32.6	32.1	15.1	-37.2	32.9	32.7	-1,121.8
1961	31.4	27.8	20.6	30.0	-78.1	-60.3	-4.7	-224.4	40.9	2.1	-11.5	43.2	-183.1
1962	42.0	38.2	40.0	37.9	-53.3	-799.6	-39.6	60.1	-650.6	99.6	90.6	88.8	-1,045.8
1963	85.0	74.2	79.4	74.5	75.4	-233.3	87.2	84.8	-312.6	84.5	79.3	79.7	258.0
1964	77.7	68.7	74.5	70.6	61.8	70.2	71.0	81.3	71.6	78.6	-180.5	80.8	626.4
1965	90.0	80.5	87.1	4.8	-95.6	-307.9	101.0	104.0	105.0	-56.0	103.9	40.0	256.7
1966	103.8	94.9	99.2	94.1	95.3	90.6	92.8	-508.6	87.4	88.7	84.6	86.0	508.8
1967	84.7	75.5	82.3	55.0	81.3	-779.3	87.7	42.9	81.3	-75.6	78.4	79.6	-106.1
1968	78.3	69.6	75.9	72.5	1.0	57.5	-333.3	-40.0	70.9	-1,110.7	96.8	91.7	-869.9
1969	87.0	41.5	46.6	-111.5	-146.4	40.7	56.1	-1,145.1	-836.1	142.1	139.6	134.1	-1,551.3
1970	127.2	114.4	113.8	-25.7	122.1	115.0	116.1	113.8	108.1	88.6	107.1	108.5	1,208.9
1971	107.0	-383.9	113.0	114.5	2.5	5.1	-31.0	122.9	116.3	-13.2	-176.7	126.9	103.4
1972	123.8	109.5	118.9	113.4	75.9	69.5	-755.8	-249.8	-1,163.2	139.8	60.0	130.2	-1,227.9
1973	114.2	94.8	-1,389.2	-162.2	239.4	209.0	-140.5	192.7	486.2	-47.3	430.6	303.5	331.3
1974	427.4	400.1	168.8	443.7	366.0	250.1	402.7	-65.0	369.2	367.2	338.7	342.0	3,810.7
1975	331.0	291.0	289.2	292.3	-109.7	-1,086.8	319.2	792.5	346.4	340.6	252.5	319.7	2,377.9
1976	309.6	272.1	295.2	-298.9	-245.9	350.8	359.0	351.8	143.5	327.4	307.0	308.1	2,479.8
1977	300.2	265.0	287.0	246.4	-691.5	-1,046.8	33.9	70.3	-236.5	244.2	242.1	266.3	-19.3
1978	272.3	67.0	267.9	253.6	-857.6	-191.4	124.3	152.9	125.8	198.3	173.5	219.1	805.9
1979	229.7	198.9	112.3	207.9	118.4	138.5	-138.4	221.3	246.0	-1.9	248.4	262.0	1,843.1

Pre-development Incremental Flow Data (acre-feet)
Node 60--Rattlesnake Creek near Hopewell, KS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	251.1	104.5	119.2	213.9	46.2	-307.5	199.2	277.5	235.3	237.3	241.9	247.7	1,866.3
1981	256.0	234.0	242.6	250.3	-320.3	144.1	190.2	-15.7	115.9	109.7	114.7	232.8	1,554.2
1982	229.4	223.0	198.8	234.1	44.8	139.8	155.8	227.0	146.1	240.5	236.5	250.8	2,326.5
1983	251.2	222.3	67.5	-293.3	-102.6	-147.1	176.3	166.4	185.9	115.9	196.2	213.3	1,052.0
1984	222.5	204.2	235.9	104.7	92.7	91.1	220.1	202.2	218.8	116.3	229.2	24.3	1,962.0
1985	230.4	118.1	234.6	167.8	237.1	-491.7	-331.0	155.6	129.6	41.0	189.8	176.5	857.8
1986	164.0	146.3	163.5	233.7	171.5	238.1	223.4	435.5	276.1	334.7	248.8	250.1	2,885.8
1987	194.1	206.1	186.0	312.2	607.2	761.4	846.5	1,203.2	613.6	579.9	525.9	501.5	6,537.6
1988	474.9	415.4	442.8	433.7	424.3	380.5	264.7	365.9	356.3	356.5	337.6	335.5	4,588.1
1989	327.3	287.6	323.9	294.3	117.1	707.0	483.0	-47.8	269.2	432.1	390.4	382.2	3,966.4
1990	366.9	337.7	353.4	274.4	376.4	348.1	311.6	329.2	335.3	318.6	312.7	305.3	3,969.7
1991	296.4	260.2	280.7	291.9	346.7	344.8	379.2	368.0	322.1	296.6	272.7	274.3	3,733.6
1992	284.1	247.3	262.2	253.1	302.2	190.1	435.1	1,802.7	636.8	618.0	534.9	550.9	6,117.5
1993	548.5	428.8	503.9	478.4	545.8	1,125.1	-315.3	1,071.8	794.3	724.3	670.2	657.9	7,233.7
1994	624.6	560.2	576.0	545.1	544.0	514.7	456.0	505.1	440.2	501.3	452.3	453.7	6,173.1

Pre-development Incremental Flow Data (acre-feet)
Node 70--Unnamed Tributary of Rattlesnake Creek

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	0.0	0.0	0.0	158.3	1,093.0	34.7	0.0	78.6	0.0	0.0	0.0	1,364.5
1958	0.0	0.0	0.0	0.0	350.0	185.3	291.9	0.0	126.4	0.0	0.0	0.0	953.6
1959	0.0	0.0	0.0	0.0	216.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	216.5
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.1	0.0	0.0	0.0	0.0	83.1
1962	0.0	0.0	0.0	0.0	0.0	103.9	200.5	126.5	0.0	0.0	0.0	0.0	430.9
1963	0.0	0.0	0.0	0.0	0.0	99.4	0.0	0.0	0.0	0.0	0.0	0.0	99.4
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.5	0.0	0.0	57.4	0.0	157.9
1965	0.0	10.2	0.0	0.0	84.3	17.5	1.4	0.4	0.0	0.0	0.0	0.0	113.7
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	103.8	0.0	0.0	103.8
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	455.4	613.8	8.4	5.9	4.0	1,087.5
1970	2.2	0.7	0.0	1.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8
1971	0.0	63.4	0.0	25.8	1.4	1.7	3.0	2.2	1.2	1.8	38.2	4.8	143.6
1972	3.4	2.0	1.1	0.2	0.1	0.0	0.4	59.5	4.1	3.2	3.8	3.0	80.9
1973	2.0	2.4	959.3	54.2	21.9	18.8	62.6	18.4	7,238.3	550.7	181.9	228.8	9,339.4
1974	144.0	130.8	176.6	297.1	129.1	197.2	109.7	144.0	95.5	99.3	82.9	70.6	1,676.9
1975	62.6	63.0	56.6	62.6	106.1	142.6	55.2	1,189.2	75.3	66.8	83.2	56.4	2,019.5
1976	48.8	40.3	51.1	1,407.0	166.0	89.4	130.2	77.4	74.8	80.8	55.4	52.2	2,273.3
1977	50.2	37.8	43.8	48.4	87.3	54.6	68.1	63.6	67.0	70.3	35.7	30.1	656.9
1978	23.8	118.5	37.9	21.2	581.1	280.6	65.4	60.8	120.5	47.5	46.2	39.1	1,442.6
1979	35.0	43.1	156.7	41.4	122.9	71.1	854.0	72.0	48.5	323.2	72.7	57.5	1,898.3

Pre-development Incremental Flow Data (acre-feet)
Node 70--Unnamed Tributary of Rattlesnake Creek

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	52.6	49.7	726.6	121.5	168.2	264.9	168.8	382.0	118.3	115.2	94.6	110.0	2,372.3
1981	81.3	66.5	91.9	66.1	313.7	107.6	1,004.2	140.3	128.0	159.6	208.8	120.1	2,488.0
1982	109.2	158.2	103.6	86.4	182.3	125.7	136.8	93.3	92.5	111.7	73.6	68.5	1,341.8
1983	62.0	140.1	80.4	170.4	405.4	411.5	141.1	125.7	115.3	152.4	105.2	100.4	2,009.8
1984	88.7	73.7	234.6	339.1	122.0	134.4	102.5	101.1	86.4	131.5	79.7	273.1	1,766.8
1985	95.3	140.2	96.9	203.1	111.1	319.8	158.9	180.5	144.4	1,036.9	190.2	175.2	2,852.6
1986	158.6	139.1	139.1	235.4	145.5	567.1	227.9	1,440.4	270.2	326.1	230.0	227.9	4,107.4
1987	205.8	186.0	1,211.2	280.0	1,184.9	2,266.5	1,196.3	2,471.6	564.8	503.5	448.9	431.5	10,951.0
1988	410.1	344.9	367.4	390.1	351.6	323.9	442.2	311.7	309.4	290.2	270.7	267.9	4,080.2
1989	260.9	227.7	271.0	231.2	711.7	1,731.4	403.2	409.3	423.6	354.3	324.2	322.2	5,670.9
1990	312.3	320.8	306.4	278.8	587.4	298.6	294.9	279.9	294.2	268.9	267.2	253.6	3,763.1
1991	245.2	214.7	247.2	277.0	323.0	352.8	399.7	377.7	284.5	257.1	257.0	260.3	3,496.1
1992	266.9	210.1	231.1	215.6	312.7	1,739.7	434.5	3,022.4	514.7	500.9	441.9	502.1	8,392.5
1993	586.5	478.4	511.3	427.1	643.1	1,877.4	1,150.0	1,239.7	601.6	581.8	527.5	517.8	9,142.3
1994	494.7	448.5	455.9	458.3	433.0	418.7	452.2	432.0	379.6	442.4	366.8	370.0	5,152.2

Pre-development Incremental Flow Data (acre-feet)
Node 80--Rattlesnake Creek near Macksville, KS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	62.5	60.1	65.6	73.1	126.8	-212.8	153.6	146.8	274.0	161.1	124.2	122.2	1,157.2
1956	119.1	107.6	115.4	118.4	249.1	148.8	154.1	122.7	113.8	123.3	113.3	116.6	1,602.3
1957	117.4	108.6	220.5	328.9	686.4	1,121.9	713.3	471.2	699.2	619.9	494.8	436.9	6,018.9
1958	416.4	374.0	515.8	388.2	459.2	847.6	1,020.7	601.6	902.7	572.0	520.5	507.2	7,125.8
1959	487.7	428.7	481.2	436.2	861.9	578.4	531.9	481.3	453.5	619.5	449.7	452.3	6,262.2
1960	450.2	427.0	453.9	436.2	551.6	546.3	456.8	468.7	449.7	508.3	420.6	428.7	5,598.1
1961	415.7	377.2	465.0	407.4	535.7	450.9	509.7	802.0	464.4	502.9	509.2	453.5	5,893.7
1962	445.2	408.6	430.9	422.7	541.1	761.8	981.9	1,010.3	711.2	646.9	589.3	577.1	7,526.9
1963	554.4	485.4	523.8	492.1	513.8	877.1	583.4	549.5	591.9	558.4	493.4	501.9	6,725.2
1964	487.6	433.5	474.4	453.7	539.9	455.1	453.0	841.6	524.5	489.7	879.4	631.9	6,664.2
1965	547.8	486.8	513.1	541.4	867.4	773.6	625.8	616.6	549.5	680.5	528.7	630.9	7,362.1
1966	532.8	494.1	512.0	490.0	494.1	478.6	499.9	487.2	455.8	457.0	436.6	447.1	5,785.3
1967	446.2	397.2	438.0	477.6	448.6	438.8	480.4	496.9	436.5	454.3	417.3	426.5	5,358.4
1968	420.7	376.6	413.9	400.6	456.9	414.7	433.3	424.1	389.9	555.2	516.2	463.4	5,265.6
1969	449.1	462.9	522.1	454.6	661.8	479.1	486.3	666.2	1,134.8	747.4	638.9	618.4	7,321.7
1970	588.7	531.2	589.0	674.2	572.3	550.1	554.5	528.7	506.3	630.3	490.8	504.6	6,720.7
1971	499.8	562.2	521.3	733.6	627.8	597.4	700.2	552.6	528.6	642.6	743.1	584.2	7,293.3
1972	549.7	484.6	528.6	515.3	575.4	563.8	539.8	771.1	367.1	582.1	635.8	557.3	6,670.8
1973	550.3	539.0	898.1	1,006.4	816.1	732.2	914.9	727.0	4,056.5	1,614.9	1,326.0	1,415.4	14,596.7
1974	1,280.5	1,161.9	1,246.6	1,335.0	1,103.6	1,146.6	1,024.0	1,036.7	941.6	954.6	895.8	887.6	13,014.7
1975	863.2	770.9	837.6	819.5	892.4	646.0	871.1	1,651.1	888.9	870.7	859.5	824.5	10,795.3
1976	800.9	710.3	786.0	1,377.4	1,028.9	937.7	985.8	876.7	825.0	842.9	769.2	779.1	10,719.9
1977	765.5	676.2	746.6	731.0	646.4	477.1	818.8	792.5	706.4	783.2	701.2	703.7	8,548.5
1978	683.9	651.1	699.0	644.6	860.0	1,003.8	858.9	808.7	858.7	754.6	721.9	716.9	9,262.1
1979	727.8	630.8	874.9	696.0	843.4	731.9	954.3	777.9	706.8	963.4	751.8	737.9	9,396.9

Pre-development Incremental Flow Data (acre-feet)
Node 80--Rattlesnake Creek near Macksville, KS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	722.6	650.9	985.7	803.6	889.2	826.0	883.0	1,009.4	766.9	771.0	715.3	759.0	9,782.4
1981	711.4	630.6	722.4	667.5	901.8	764.7	1,098.1	796.0	765.6	815.3	861.2	757.1	9,491.8
1982	736.3	744.8	725.3	679.7	833.8	740.2	767.3	702.5	676.0	724.3	651.4	657.8	8,639.5
1983	648.1	630.3	680.4	699.4	946.8	969.4	809.7	761.1	713.6	778.1	686.6	704.2	9,027.8
1984	677.4	600.9	842.8	930.7	742.6	731.7	697.1	685.1	641.4	733.2	632.6	880.4	8,795.9
1985	679.6	696.8	684.2	802.5	697.9	777.3	705.0	826.5	740.4	1,333.7	846.1	819.1	9,609.1
1986	782.0	712.0	740.7	853.1	745.3	1,052.0	853.1	1,389.2	912.9	1,013.4	841.0	839.8	10,734.6
1987	801.3	720.9	1,286.7	916.1	1,682.4	1,667.4	1,611.9	1,900.1	1,234.8	1,168.2	1,078.7	1,062.3	15,130.7
1988	1,030.6	898.5	971.3	983.2	947.2	887.5	882.9	871.1	854.1	843.1	803.7	813.6	10,787.0
1989	805.4	718.3	824.1	755.0	976.4	1,712.1	1,044.3	904.4	995.8	943.7	874.8	879.0	11,433.4
1990	861.3	843.4	857.4	793.0	1,013.1	839.8	836.4	811.8	820.2	792.4	778.8	771.5	10,019.3
1991	760.1	676.0	762.5	780.5	852.9	889.0	975.1	965.4	816.9	786.0	768.8	785.0	9,818.1
1992	792.4	671.4	740.7	705.0	835.1	1,614.3	1,047.2	2,517.1	1,151.3	1,142.4	1,026.4	1,106.2	13,349.6
1993	1,001.2	933.8	1,028.1	954.4	1,225.7	1,885.7	1,234.0	1,616.2	1,206.3	1,167.5	1,077.8	1,072.0	14,402.7
1994	1,038.2	944.2	983.1	968.7	956.8	916.7	959.0	940.8	855.9	958.8	848.8	866.2	11,237.2

Pre-development Incremental Flow Data (acre-feet)
Node 90--Rattlesnake Creek near St. John, KS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	182.2	178.8	194.1	203.0	250.6	-18.6	276.0	258.6	390.8	299.8	265.6	276.3	2,757.2
1956	280.3	259.1	289.6	298.1	389.4	311.0	320.7	304.5	294.2	329.4	304.1	319.2	3,699.5
1957	324.2	298.8	434.7	505.8	1,523.0	2,293.4	1,271.0	836.1	1,365.0	1,109.4	868.9	829.2	11,659.4
1958	803.4	737.8	896.8	761.3	876.8	1,212.1	1,694.5	1,079.6	1,759.6	1,217.3	1,033.3	1,029.8	13,102.4
1959	1,001.3	886.0	1,018.5	917.3	1,945.0	1,020.9	1,222.9	1,003.8	946.8	1,123.7	941.8	959.6	12,987.7
1960	955.7	904.0	1,105.3	970.6	1,124.4	1,230.4	1,069.1	1,056.3	1,003.1	1,048.7	962.5	987.6	12,417.7
1961	966.9	867.1	975.9	926.3	1,046.3	949.1	987.4	1,213.4	931.3	978.4	983.1	942.2	11,767.5
1962	934.7	865.3	917.5	891.3	1,017.6	1,198.3	1,174.2	1,160.7	997.9	999.9	946.9	959.5	12,064.1
1963	946.2	844.9	929.1	887.9	920.9	1,203.2	1,023.2	942.0	940.8	937.7	879.8	903.6	11,359.2
1964	893.6	802.7	883.7	851.1	911.4	841.7	846.0	1,103.8	870.6	867.1	1,168.7	954.3	10,994.7
1965	908.0	919.6	895.7	900.1	1,367.1	1,445.6	1,010.6	989.2	954.3	994.9	914.3	1,014.8	12,314.2
1966	941.8	967.5	937.3	955.9	944.2	905.4	979.3	927.2	874.9	891.9	859.0	884.5	11,068.8
1967	883.2	794.9	878.1	908.8	888.4	924.2	912.8	904.8	1,038.7	941.0	863.8	887.3	10,826.1
1968	881.6	793.1	875.2	845.2	899.5	847.8	887.8	860.5	812.5	1,152.2	928.4	911.6	10,695.3
1969	897.9	849.8	933.9	892.4	1,023.4	899.4	921.2	1,712.3	2,116.4	1,192.0	1,066.1	1,065.4	13,570.1
1970	1,039.0	955.5	1,029.3	1,055.8	1,045.9	996.8	990.3	966.6	991.7	1,175.0	949.7	977.5	12,172.9
1971	971.0	1,051.0	984.7	1,070.9	1,054.0	993.8	1,058.2	974.1	933.2	1,016.3	1,067.5	988.5	12,163.1
1972	969.9	868.2	954.7	926.2	991.3	975.4	948.6	1,237.6	770.0	982.1	990.4	967.6	11,581.9
1973	959.1	896.7	1,145.8	1,170.8	1,115.2	1,057.2	1,222.6	1,062.5	7,699.7	3,218.8	2,038.6	2,164.2	23,751.2
1974	1,868.8	1,688.3	1,816.2	2,195.6	1,892.3	1,780.3	1,648.9	1,610.5	1,511.0	1,537.9	1,445.6	1,466.0	20,461.5
1975	1,442.5	1,290.1	1,414.1	1,360.9	1,443.3	1,169.4	1,423.3	2,527.8	1,385.7	1,387.7	1,344.4	1,345.0	17,534.2
1976	1,324.4	1,183.4	1,323.7	1,687.3	1,466.7	1,397.4	1,409.1	1,340.1	1,427.7	1,388.5	1,271.3	1,298.8	16,518.3
1977	1,288.1	1,151.2	1,276.0	1,234.2	1,193.5	1,015.8	1,308.7	1,300.9	1,338.8	1,297.4	1,210.1	1,233.3	14,848.0
1978	1,219.1	1,186.4	1,217.7	1,164.6	1,316.6	1,389.8	1,344.3	1,293.1	1,386.4	1,244.7	1,192.8	1,209.8	15,165.2
1979	1,206.3	1,073.5	1,286.0	1,161.2	1,261.1	1,170.8	1,271.0	1,214.1	1,126.7	1,381.3	1,171.5	1,179.2	14,502.6

Pre-development Incremental Flow Data (acre-feet)
Node 90--Rattlesnake Creek near St. John, KS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	1,168.5	1,049.7	1,387.0	1,192.8	1,300.9	1,183.2	1,218.4	1,249.7	1,128.1	1,154.3	1,099.2	1,136.5	14,268.4
1981	1,118.7	1,004.0	1,129.4	1,072.3	1,249.7	1,170.8	1,618.3	1,189.9	1,141.9	1,200.6	1,271.3	1,175.0	14,341.9
1982	1,159.3	1,122.5	1,149.3	1,097.8	1,232.6	1,145.3	1,229.8	1,134.4	1,099.2	1,237.6	1,095.0	1,119.4	13,822.2
1983	1,110.9	1,051.0	1,125.1	1,129.5	1,302.3	1,299.6	1,205.6	1,157.9	1,101.2	1,133.0	1,077.8	1,104.5	13,798.4
1984	1,091.7	980.3	1,286.0	1,243.1	1,151.5	1,121.9	1,107.3	1,086.7	1,028.2	1,115.9	1,024.8	1,229.0	13,466.4
1985	1,081.0	1,016.3	1,082.4	1,258.3	1,108.1	1,137.7	1,263.9	1,345.0	1,215.6	2,311.5	1,361.6	1,352.2	15,533.5
1986	1,312.3	1,203.7	1,260.4	1,330.6	1,254.7	1,579.2	1,322.3	1,745.7	1,289.9	1,494.5	1,265.2	1,288.1	16,346.4
1987	1,266.0	1,149.3	2,372.0	1,568.9	2,646.0	3,071.6	2,510.7	3,215.3	1,829.2	1,764.2	1,648.1	1,650.3	24,691.6
1988	1,626.1	1,423.1	1,545.7	1,519.3	1,508.7	1,438.7	1,444.7	1,414.1	1,357.4	1,378.5	1,320.2	1,350.7	17,327.4
1989	1,340.8	1,201.4	1,332.2	1,268.6	1,488.8	2,009.0	1,475.3	1,312.3	1,326.4	1,364.3	1,297.5	1,324.4	16,740.9
1990	1,313.7	1,237.0	1,314.4	1,380.2	2,231.1	1,458.0	1,436.8	1,430.4	1,397.4	1,377.1	1,325.1	1,345.8	17,246.9
1991	1,333.7	1,194.3	1,324.4	1,294.8	1,348.6	1,323.0	1,377.8	1,372.8	1,270.7	1,280.3	1,238.3	1,283.8	15,642.4
1992	1,286.0	1,130.7	1,248.3	1,197.0	1,347.9	2,376.0	1,452.5	2,768.4	1,480.0	1,471.7	1,385.0	1,518.0	18,661.4
1993	1,611.2	1,383.3	1,610.5	1,480.7	2,320.0	4,079.9	2,974.7	2,716.4	1,983.5	1,951.4	1,827.8	1,836.8	25,776.2
1994	1,794.1	1,643.7	1,726.5	1,666.0	1,683.1	1,597.8	1,652.5	1,605.5	1,513.8	1,613.3	1,502.1	1,537.2	19,535.5

Pre-development Incremental Flow Data (acre-feet)
Node 100--Wild Horse Creek

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.0	0.0	0.0	0.0	0.0	27.2	0.0	0.0	154.3	30.2	0.0	0.0	211.7
1956	0.0	0.4	0.9	5.7	9.9	2.3	2.7	2.5	2.5	31.7	3.2	3.7	65.4
1957	4.0	3.9	132.9	110.7	1,512.3	548.8	129.8	18.1	1,079.2	256.4	47.0	25.5	3,868.6
1958	24.6	23.6	235.6	36.4	272.6	348.3	785.0	44.5	304.5	207.2	37.9	38.1	2,358.2
1959	37.4	33.3	123.6	35.8	779.3	39.8	570.8	64.1	60.8	293.4	42.5	43.0	2,123.7
1960	42.5	80.8	184.9	45.3	129.5	418.5	51.1	55.2	75.6	81.5	47.4	48.3	1,260.5
1961	47.8	42.8	58.2	48.0	439.8	316.4	118.2	561.2	59.3	71.4	103.8	58.2	1,925.0
1962	57.5	53.2	56.3	54.1	55.5	156.5	529.0	165.4	77.7	59.5	56.8	57.9	1,379.5
1963	57.3	51.3	56.4	54.1	62.0	135.1	188.2	56.1	86.3	55.7	53.2	54.5	910.1
1964	54.1	48.6	53.6	51.6	81.7	53.7	51.7	76.6	56.4	50.2	119.6	77.4	775.2
1965	51.0	63.6	50.9	78.0	186.7	1,181.1	60.3	870.4	1,361.6	163.5	68.2	170.4	4,305.6
1966	69.7	185.1	68.3	107.4	67.5	65.0	188.8	73.3	61.9	62.7	59.8	61.1	1,070.8
1967	60.6	54.3	59.8	153.5	60.1	433.3	77.1	62.5	262.7	88.5	60.4	61.7	1,434.6
1968	61.2	54.8	60.3	58.0	83.1	58.5	108.7	64.1	56.5	931.6	85.1	62.2	1,684.0
1969	61.5	94.0	71.6	94.6	136.7	70.3	91.0	906.7	1,428.4	151.9	70.0	70.8	3,247.6
1970	69.6	64.2	81.8	149.8	175.4	397.5	71.3	69.9	165.3	195.1	68.0	69.5	1,577.4
1971	68.8	79.8	69.3	86.6	105.8	69.4	456.9	147.7	69.4	138.6	891.2	77.1	2,260.5
1972	75.7	67.5	73.9	71.5	152.2	229.1	77.5	190.0	80.5	75.6	110.4	75.6	1,279.4
1973	74.8	80.5	1,404.8	170.5	93.9	107.2	146.7	83.4	7,555.1	1,515.8	114.3	188.1	11,535.4
1974	117.1	107.4	131.9	512.1	467.4	122.8	110.7	134.6	102.7	116.1	99.7	101.7	2,124.1
1975	100.5	90.0	102.3	99.3	142.3	146.8	96.6	336.3	93.5	93.7	116.9	92.3	1,510.5
1976	91.6	82.1	135.4	1,223.1	263.3	117.8	106.7	95.3	703.2	143.5	93.5	95.4	3,150.8
1977	94.5	84.7	101.1	112.9	256.5	175.4	94.6	268.1	400.8	150.4	90.4	92.5	1,921.9
1978	91.7	85.7	91.2	87.7	249.7	118.7	92.5	90.7	197.6	88.4	84.8	86.8	1,365.5
1979	86.3	77.6	136.9	83.6	158.3	92.1	223.8	130.5	81.3	344.4	82.6	84.5	1,581.8

Pre-development Incremental Flow Data (acre-feet)
Node 100--Wild Horse Creek

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	84.0	75.9	278.1	98.1	111.1	82.6	84.0	187.4	80.0	81.6	78.2	80.4	1,321.6
1981	80.0	71.9	102.1	76.9	265.2	2,544.8	571.1	95.3	101.0	122.5	175.6	94.3	4,300.6
1982	93.0	91.1	91.4	87.7	391.2	191.0	210.1	92.4	93.7	164.0	86.4	88.5	1,680.5
1983	87.7	95.6	89.7	138.7	183.1	295.8	90.0	88.0	83.7	87.8	82.2	84.3	1,406.7
1984	83.8	75.2	195.4	246.8	85.0	86.2	83.0	101.5	78.7	135.6	78.6	353.6	1,603.4
1985	83.6	111.5	82.8	470.4	90.7	681.7	252.6	181.1	116.0	1,004.2	92.1	93.9	3,260.7
1986	92.7	85.9	91.0	153.7	119.4	114.5	2,584.8	1,495.2	129.8	301.0	101.4	103.2	5,372.5
1987	101.8	100.3	1,576.3	268.7	738.7	585.7	265.9	568.5	116.0	117.4	111.6	113.5	4,664.6
1988	112.2	100.2	109.8	182.6	108.7	119.2	125.5	104.0	99.1	101.1	97.0	99.4	1,358.9
1989	98.8	88.7	97.8	94.1	342.6	641.9	136.1	115.5	134.3	99.8	95.6	97.9	2,043.0
1990	97.5	114.4	127.0	255.2	1,364.3	133.9	159.6	347.2	365.1	104.0	111.0	101.2	3,280.4
1991	100.2	89.7	99.1	108.2	106.6	142.8	165.0	96.9	92.4	94.3	97.8	114.3	1,307.2
1992	109.1	84.7	93.6	90.2	152.1	826.4	115.2	1,390.6	99.4	124.9	118.0	295.3	3,499.6
1993	240.2	158.9	809.2	141.8	1,007.0	2,610.2	2,505.8	163.9	141.3	142.4	134.9	136.9	8,192.4
1994	134.7	124.3	131.1	147.6	129.5	122.7	167.1	123.4	117.7	123.3	115.5	118.4	1,555.2

Pre-development Incremental Flow Data (acre-feet)
Node 110--Rattlesnake Creek below Zenith Gage

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	312.4	291.6	281.2	308.2	299.0	255.2	324.1	259.5	597.5	378.6	245.9	244.7	3,797.8
1956	239.7	231.3	225.8	298.2	299.6	217.4	281.0	214.5	191.0	329.9	188.0	186.6	2,902.9
1957	179.9	164.4	601.8	538.7	2,771.9	852.7	655.9	503.6	1,497.2	964.1	599.0	529.6	9,858.7
1958	509.8	490.4	949.4	536.6	1,152.1	990.6	1,339.3	640.8	967.6	790.6	577.8	574.6	9,519.6
1959	559.7	497.0	648.5	511.7	1,796.2	591.1	2,067.3	712.3	686.5	1,097.9	624.9	622.4	10,415.6
1960	625.8	629.5	943.1	604.1	783.6	1,197.2	654.8	657.2	723.3	725.5	567.0	596.4	8,707.5
1961	552.2	492.7	587.3	551.2	1,031.9	815.8	736.5	1,092.7	577.8	631.0	675.8	546.0	8,290.9
1962	553.1	489.3	512.3	499.6	502.4	829.1	826.0	595.4	601.4	521.2	489.4	477.2	6,896.4
1963	467.9	410.2	463.1	426.6	477.5	619.1	904.9	468.4	629.3	458.8	415.1	420.9	6,161.9
1964	408.5	366.0	402.6	409.1	493.3	399.5	392.4	381.0	393.3	354.0	525.0	432.2	4,956.9
1965	351.8	392.8	342.6	469.6	892.2	2,478.0	590.1	795.6	1,124.0	766.7	538.5	769.0	9,510.9
1966	533.1	786.2	512.4	629.5	510.4	538.3	884.4	543.7	468.4	458.9	431.9	435.6	6,732.7
1967	432.6	377.0	413.5	685.3	436.6	1,063.2	503.6	484.8	852.3	506.4	424.5	429.3	6,609.1
1968	410.7	363.0	394.5	386.9	485.5	425.0	598.7	420.5	360.9	1,443.3	494.1	422.4	6,205.5
1969	409.6	478.7	467.1	508.7	671.0	449.0	475.5	1,399.1	1,725.9	723.4	516.7	512.8	8,337.5
1970	492.6	445.8	557.2	795.8	887.8	768.5	506.6	537.2	704.5	791.9	474.7	487.0	7,449.7
1971	477.0	508.4	463.1	589.7	643.6	478.1	862.5	566.1	465.7	670.5	946.3	500.1	7,171.1
1972	468.7	410.1	441.4	465.7	660.6	751.6	430.6	706.7	405.0	447.5	579.0	431.1	6,198.0
1973	418.4	414.4	1,634.0	787.5	588.5	575.3	700.8	565.6	6,398.1	2,327.1	920.8	1,147.0	16,477.5
1974	959.7	864.6	956.9	1,496.2	1,496.1	949.5	894.2	1,000.5	833.3	898.0	792.1	781.5	11,922.6
1975	762.0	696.8	755.3	728.5	831.2	693.4	701.2	714.8	690.2	651.5	717.1	642.1	8,584.2
1976	619.4	560.0	727.9	2,013.8	1,083.9	749.3	792.2	698.2	1,121.2	805.8	651.0	659.0	10,481.6
1977	655.6	564.6	670.3	684.6	1,186.1	852.8	697.5	914.0	1,353.3	838.8	665.8	649.7	9,733.1
1978	625.0	641.9	612.7	581.7	746.6	680.2	629.8	595.3	852.7	568.5	576.4	546.6	7,657.3
1979	544.9	479.7	697.2	522.5	733.4	534.6	618.1	595.4	485.5	857.6	506.3	494.1	7,069.3

Pre-development Incremental Flow Data (acre-feet)
Node 110--Rattlesnake Creek below Zenith Gage

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	503.9	458.2	797.9	544.5	616.9	415.3	490.3	700.8	464.7	497.7	447.2	476.8	6,414.2
1981	444.5	395.4	518.5	432.1	841.4	1,670.1	1,077.8	577.2	576.0	627.6	714.3	519.9	8,394.7
1982	504.1	478.1	499.2	457.7	1,095.5	747.7	708.0	532.5	507.5	640.9	474.9	484.4	7,130.5
1983	465.9	450.8	491.8	537.6	727.8	619.5	477.9	467.8	451.4	478.7	432.9	427.4	6,029.5
1984	415.8	373.5	693.4	817.3	438.0	443.4	415.9	521.9	399.2	611.6	390.4	1,059.1	6,579.6
1985	427.4	480.6	426.7	1,357.4	499.9	965.0	701.8	663.6	564.4	1,742.9	562.1	557.9	8,949.7
1986	531.4	494.0	518.9	773.3	583.7	552.9	1,737.2	1,875.9	707.6	1,066.1	628.0	632.0	10,100.9
1987	613.4	568.8	2,366.3	1,055.6	1,467.4	957.0	992.3	961.5	751.7	743.0	699.0	709.2	11,885.4
1988	709.7	603.6	658.8	845.0	680.5	698.3	692.9	614.1	601.3	596.3	561.4	566.7	7,828.6
1989	563.1	494.9	556.2	515.4	1,178.9	893.9	796.2	596.2	683.2	577.7	539.4	549.0	7,944.2
1990	575.7	571.3	601.0	852.9	2,742.0	733.9	753.4	977.9	991.0	695.2	705.8	642.5	10,842.7
1991	626.4	551.1	653.9	635.6	627.8	770.4	651.3	612.0	537.8	546.9	570.9	630.8	7,415.0
1992	594.7	471.4	546.9	493.9	718.3	1,122.6	693.9	701.7	565.8	662.2	627.1	1,050.4	8,249.0
1993	1,159.7	784.1	1,395.6	783.8	2,122.9	3,236.9	3,180.4	1,166.9	1,090.1	1,056.7	982.2	979.0	17,938.3
1994	951.3	860.3	893.0	950.9	892.5	824.3	985.8	818.8	778.3	803.3	749.5	759.1	10,267.2

Pre-development Incremental Flow Data (acre-feet)
Node 200--Unit 5--Little Salt Marsh

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	42.5	49.5	37.8	48.9	43.5	70.1	89.5	39.9	148.6	64.7	36.6	35.8	707.3
1956	34.9	47.4	32.3	52.8	52.0	29.9	51.3	30.7	26.6	59.6	26.3	25.7	469.6
1957	24.7	22.6	225.6	125.6	502.6	253.9	94.5	64.9	255.1	144.7	70.6	55.0	1,839.8
1958	51.0	48.9	198.9	59.1	214.5	131.6	244.6	79.7	188.1	82.4	54.3	51.7	1,404.6
1959	47.9	43.6	66.6	41.1	306.7	68.2	292.7	65.8	60.1	119.7	44.6	43.0	1,199.9
1960	63.4	51.5	130.9	56.3	74.1	114.5	49.5	55.5	58.9	57.5	35.0	41.0	788.1
1961	31.1	28.1	43.2	40.3	163.0	67.0	63.9	92.7	35.0	47.0	62.0	30.6	703.9
1962	34.6	26.9	29.6	27.7	30.0	161.2	142.6	95.9	52.2	35.8	33.1	28.6	698.1
1963	27.6	23.0	30.4	23.9	44.9	56.0	116.7	28.6	43.2	29.0	20.8	21.2	465.3
1964	19.8	18.0	20.0	26.1	46.3	49.0	25.2	27.3	27.8	17.7	59.0	52.4	388.6
1965	30.8	54.0	18.8	42.6	154.1	552.1	75.3	48.5	82.3	55.4	33.2	72.7	1,219.8
1966	31.0	108.2	30.5	50.9	30.2	72.4	124.3	75.0	32.0	27.5	24.6	24.3	630.8
1967	24.1	19.8	21.6	81.2	44.1	177.6	107.8	30.8	73.5	34.8	25.8	25.1	666.1
1968	22.4	19.4	20.6	24.8	43.0	27.8	95.1	28.1	20.1	253.0	39.3	22.8	616.5
1969	25.3	46.5	29.8	45.6	137.6	40.6	52.2	448.5	343.6	81.6	41.3	39.4	1,332.0
1970	35.0	30.1	55.1	114.3	93.1	181.8	37.3	38.3	70.5	88.0	28.9	42.3	814.8
1971	54.7	92.7	48.1	54.3	111.9	78.8	74.5	35.0	34.2	79.8	122.1	38.2	824.3
1972	29.9	25.0	26.3	40.5	115.8	80.2	29.5	75.7	59.2	33.4	55.6	26.4	597.5
1973	24.8	34.5	418.1	112.9	65.1	59.2	94.7	58.3	1,042.0	351.9	83.3	122.6	2,467.4
1974	72.3	58.8	73.3	220.2	185.6	79.4	61.9	88.2	53.0	81.8	48.9	42.6	1,066.0
1975	40.2	47.7	43.6	50.0	75.1	55.0	37.9	43.6	42.3	28.8	46.9	28.5	539.6
1976	25.1	24.3	52.4	347.3	127.8	54.6	60.0	35.5	69.2	55.6	28.0	28.0	907.9
1977	30.7	21.9	38.0	43.5	195.8	148.4	42.7	125.1	147.0	65.1	43.9	32.6	934.8
1978	28.8	31.5	28.1	27.7	63.1	64.8	30.0	37.1	122.5	26.6	32.7	23.3	516.2
1979	23.6	22.6	63.2	23.7	65.5	28.9	123.3	35.1	20.6	104.7	24.2	19.8	555.2

Pre-development Incremental Flow Data (acre-feet)
Node 200--Unit 5--Little Salt Marsh

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	22.6	20.3	103.8	37.9	42.8	12.4	22.6	76.3	19.7	23.6	16.4	24.7	423.0
1981	15.4	13.4	35.5	25.6	198.6	324.6	119.0	36.2	48.1	49.5	80.2	27.0	973.2
1982	24.8	40.5	26.4	21.1	195.3	65.8	60.9	32.3	29.8	53.8	21.2	21.6	593.4
1983	18.7	34.3	27.3	40.6	89.3	42.7	20.7	21.1	26.8	58.9	25.5	18.0	423.9
1984	17.0	15.5	123.0	184.7	33.3	39.1	27.0	27.0	24.1	62.0	20.0	193.6	766.3
1985	23.5	39.7	23.7	348.7	39.2	190.6	104.5	63.8	53.0	270.9	37.8	34.9	1,230.2
1986	30.0	27.6	30.8	93.7	40.1	60.9	103.6	197.0	45.2	85.9	26.5	24.3	765.5
1987	23.5	27.4	341.0	115.7	192.3	80.6	95.8	82.5	38.2	35.0	30.5	30.1	1,092.7
1988	31.4	21.9	24.0	64.7	25.9	37.8	42.9	28.8	21.5	19.2	16.8	16.3	351.3
1989	17.0	13.5	17.0	13.7	201.9	185.4	110.2	36.4	52.3	26.7	22.5	22.4	719.0
1990	22.1	31.7	37.7	84.5	446.9	59.4	51.3	163.8	84.7	37.7	43.1	28.6	1,091.4
1991	26.7	22.0	37.1	35.1	36.7	54.3	21.0	23.0	18.0	17.9	29.4	35.6	356.7
1992	27.9	13.9	19.9	14.4	72.9	261.5	65.7	69.3	29.3	45.5	38.8	96.9	756.0
1993	109.1	85.7	134.7	52.4	296.6	428.7	1,215.3	130.0	107.9	101.1	91.0	88.7	2,841.1
1994	79.6	67.9	64.5	89.4	62.1	54.3	81.1	47.0	41.7	52.0	37.5	36.9	714.0

Pre-development Incremental Flow Data (acre-feet)
Node 210--Unit 7

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	1.7	2.0	1.5	2.0	1.8	2.8	3.6	1.6	6.0	2.6	1.5	1.4	28.5
1956	1.4	1.9	1.3	2.1	2.1	1.2	2.1	1.2	1.1	2.4	1.1	1.0	18.9
1957	1.0	0.9	9.1	5.1	20.2	10.2	3.8	2.6	10.3	5.8	2.8	2.2	74.0
1958	2.0	2.0	8.0	2.4	8.6	5.3	9.8	3.2	7.6	3.3	2.2	2.1	56.5
1959	1.9	1.8	2.7	1.6	12.3	2.7	11.8	2.7	2.4	4.8	1.8	1.7	48.3
1960	2.5	2.1	5.3	2.3	3.0	4.6	2.0	2.2	2.4	2.3	1.4	1.6	31.7
1961	1.3	1.1	1.7	1.6	6.6	2.7	2.6	3.7	1.4	1.9	2.5	1.2	28.3
1962	1.4	1.1	1.2	1.1	1.2	6.5	5.7	3.9	2.1	1.4	1.3	1.1	28.1
1963	1.1	0.9	1.2	1.0	1.8	2.3	4.7	1.1	1.7	1.2	0.8	0.9	18.7
1964	0.8	0.7	0.8	1.0	1.9	2.0	1.0	1.1	1.1	0.7	2.4	2.1	15.6
1965	1.2	2.2	0.8	1.7	6.2	22.2	3.0	2.0	3.3	2.2	1.3	2.9	49.1
1966	1.3	4.3	1.2	2.0	1.2	2.9	5.0	3.0	1.3	1.1	1.0	1.0	25.4
1967	1.0	0.8	0.9	3.3	1.8	7.1	4.3	1.2	3.0	1.4	1.0	1.0	26.8
1968	0.9	0.8	0.8	1.0	1.7	1.1	3.8	1.1	0.8	10.2	1.6	0.9	24.8
1969	1.0	1.9	1.2	1.8	5.5	1.6	2.1	18.0	13.8	3.3	1.7	1.6	53.6
1970	1.4	1.2	2.2	4.6	3.8	7.3	1.5	1.5	2.8	3.5	1.2	1.7	32.8
1971	2.2	3.7	1.9	2.2	4.5	3.2	3.0	1.4	1.4	3.2	4.9	1.5	33.2
1972	1.2	1.0	1.1	1.6	4.7	3.2	1.2	3.0	2.4	1.3	2.2	1.1	24.0
1973	1.0	1.4	16.8	4.5	2.6	2.4	3.8	2.3	41.9	14.1	3.3	4.9	99.2
1974	2.9	2.4	3.0	8.9	7.5	3.2	2.5	3.5	2.1	3.3	2.0	1.7	42.9
1975	1.6	1.9	1.8	2.0	3.0	2.2	1.5	1.8	1.7	1.2	1.9	1.1	21.7
1976	1.0	1.0	2.1	14.0	5.1	2.2	2.4	1.4	2.8	2.2	1.1	1.1	36.5
1977	1.2	0.9	1.5	1.8	7.9	6.0	1.7	5.0	5.9	2.6	1.8	1.3	37.6
1978	1.2	1.3	1.1	1.1	2.5	2.6	1.2	1.5	4.9	1.1	1.3	0.9	20.8
1979	0.9	0.9	2.5	0.9	2.6	1.2	5.0	1.4	0.8	4.2	1.0	0.8	22.3

Pre-development Incremental Flow Data (acre-feet)
Node 210--Unit 7

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.9	0.8	4.2	1.5	1.7	0.5	0.9	3.1	0.8	0.9	0.7	1.0	17.0
1981	0.6	0.5	1.4	1.0	8.0	13.1	4.8	1.5	1.9	2.0	3.2	1.1	39.1
1982	1.0	1.6	1.1	0.9	7.8	2.7	2.5	1.3	1.2	2.2	0.9	0.9	23.9
1983	0.8	1.4	1.1	1.6	3.6	1.7	0.8	0.9	1.1	2.4	1.0	0.7	17.0
1984	0.7	0.6	4.9	7.4	1.3	1.6	1.1	1.1	1.0	2.5	0.8	7.8	30.8
1985	0.9	1.6	0.9	14.0	1.6	7.7	4.2	2.6	2.1	10.9	1.5	1.4	49.5
1986	1.2	1.1	1.2	3.8	1.6	2.5	4.2	7.9	1.8	3.5	1.1	1.0	30.8
1987	0.9	1.1	13.7	4.7	7.7	3.2	3.8	3.3	1.5	1.4	1.2	1.2	44.0
1988	1.3	0.9	1.0	2.6	1.0	1.5	1.7	1.2	0.9	0.8	0.7	0.6	14.1
1989	0.7	0.5	0.7	0.6	8.1	7.4	4.4	1.5	2.1	1.1	0.9	0.9	28.9
1990	0.9	1.3	1.5	3.4	18.0	2.4	2.1	6.6	3.4	1.5	1.7	1.1	43.9
1991	1.1	0.9	1.5	1.4	1.5	2.2	0.9	0.9	0.7	0.7	1.2	1.4	14.3
1992	1.1	0.6	0.8	0.6	2.9	10.5	2.6	2.8	1.2	1.8	1.6	3.9	30.4
1993	4.4	3.4	5.4	2.1	11.9	17.2	48.9	5.2	4.3	4.1	3.7	3.6	114.3
1994	3.2	2.7	2.6	3.6	2.5	2.2	3.3	1.9	1.7	2.1	1.5	1.5	28.7

Pre-development Incremental Flow Data (acre-feet)
Node 220--Units 10a & 10b

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	1.3	1.5	1.1	1.5	1.3	2.1	2.7	1.2	4.5	2.0	1.1	1.1	21.3
1956	1.0	1.4	1.0	1.6	1.6	0.9	1.5	0.9	0.8	1.8	0.8	0.8	14.2
1957	0.7	0.7	6.8	3.8	15.2	7.7	2.8	2.0	7.7	4.4	2.1	1.7	55.5
1958	1.5	1.5	6.0	1.8	6.5	4.0	7.4	2.4	5.7	2.5	1.6	1.6	42.4
1959	1.4	1.3	2.0	1.2	9.3	2.1	8.8	2.0	1.8	3.6	1.4	1.3	36.2
1960	1.9	1.5	4.0	1.7	2.2	3.5	1.5	1.7	1.8	1.7	1.0	1.2	23.8
1961	0.9	0.9	1.3	1.2	4.9	2.0	1.9	2.8	1.0	1.4	1.9	0.9	21.2
1962	1.0	0.8	0.9	0.8	0.9	4.9	4.3	2.9	1.6	1.1	1.0	0.9	21.1
1963	0.8	0.7	0.9	0.7	1.4	1.7	3.5	0.9	1.3	0.9	0.6	0.6	14.0
1964	0.6	0.5	0.6	0.8	1.4	1.5	0.8	0.8	0.8	0.5	1.8	1.6	11.7
1965	0.9	1.6	0.6	1.3	4.7	16.6	2.3	1.5	2.5	1.7	1.0	2.2	36.8
1966	0.9	3.3	0.9	1.5	0.9	2.2	3.8	2.3	1.0	0.8	0.7	0.7	19.0
1967	0.7	0.6	0.6	2.5	1.3	5.4	3.3	0.9	2.2	1.0	0.8	0.8	20.1
1968	0.7	0.6	0.6	0.8	1.3	0.8	2.9	0.9	0.6	7.6	1.2	0.7	18.6
1969	0.8	1.4	0.9	1.4	4.2	1.2	1.6	13.5	10.4	2.5	1.3	1.2	40.2
1970	1.0	0.9	1.7	3.5	2.8	5.5	1.1	1.2	2.1	2.7	0.9	1.3	24.6
1971	1.6	2.8	1.5	1.6	3.4	2.4	2.3	1.0	1.0	2.4	3.7	1.1	24.9
1972	0.9	0.8	0.8	1.2	3.5	2.4	0.9	2.3	1.8	1.0	1.7	0.8	18.0
1973	0.8	1.0	12.6	3.4	2.0	1.8	2.9	1.8	31.4	10.6	2.5	3.7	74.4
1974	2.2	1.8	2.2	6.6	5.6	2.4	1.9	2.7	1.6	2.5	1.5	1.3	32.2
1975	1.2	1.4	1.3	1.5	2.3	1.7	1.1	1.3	1.3	0.9	1.4	0.9	16.3
1976	0.8	0.7	1.6	10.5	3.8	1.6	1.8	1.1	2.1	1.7	0.9	0.8	27.4
1977	0.9	0.7	1.1	1.3	5.9	4.5	1.3	3.8	4.4	2.0	1.3	1.0	28.2
1978	0.9	0.9	0.9	0.8	1.9	2.0	0.9	1.1	3.7	0.8	1.0	0.7	15.6
1979	0.7	0.7	1.9	0.7	2.0	0.9	3.7	1.1	0.6	3.2	0.7	0.6	16.8

Pre-development Incremental Flow Data (acre-feet)
Node 220--Units 10a & 10b

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.7	0.6	3.1	1.1	1.3	0.4	0.7	2.3	0.6	0.7	0.5	0.7	12.7
1981	0.5	0.4	1.1	0.8	6.0	9.8	3.6	1.1	1.5	1.5	2.4	0.8	29.3
1982	0.8	1.2	0.8	0.6	5.9	2.0	1.8	1.0	0.9	1.6	0.6	0.6	17.9
1983	0.6	1.0	0.8	1.2	2.7	1.3	0.6	0.6	0.8	1.8	0.8	0.5	12.8
1984	0.5	0.5	3.7	5.6	1.0	1.2	0.8	0.8	0.7	1.9	0.6	5.8	23.1
1985	0.7	1.2	0.7	10.5	1.2	5.8	3.2	1.9	1.6	8.2	1.1	1.0	37.1
1986	0.9	0.8	0.9	2.8	1.2	1.8	3.1	5.9	1.4	2.6	0.8	0.7	23.1
1987	0.7	0.8	10.3	3.5	5.8	2.4	2.9	2.5	1.1	1.0	0.9	0.9	33.0
1988	0.9	0.7	0.7	2.0	0.8	1.1	1.3	0.9	0.6	0.6	0.5	0.5	10.6
1989	0.5	0.4	0.5	0.4	6.1	5.6	3.3	1.1	1.6	0.8	0.7	0.7	21.7
1990	0.7	1.0	1.1	2.5	13.5	1.8	1.5	4.9	2.5	1.1	1.3	0.9	32.9
1991	0.8	0.7	1.1	1.1	1.1	1.6	0.6	0.7	0.5	0.5	0.9	1.1	10.8
1992	0.8	0.4	0.6	0.4	2.2	7.9	2.0	2.1	0.9	1.4	1.2	2.9	22.8
1993	3.3	2.6	4.1	1.6	8.9	12.9	36.7	3.9	3.3	3.0	2.8	2.7	85.7
1994	2.4	2.0	1.9	2.7	1.9	1.6	2.5	1.4	1.3	1.6	1.1	1.1	21.5

Pre-development Incremental Flow Data (acre-feet)
Node 230--Units 10c & 11

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	5.2	6.1	4.6	6.0	5.3	8.6	11.0	4.9	18.2	7.9	4.5	4.4	86.6
1956	4.3	5.8	4.0	6.5	6.4	3.7	6.3	3.8	3.3	7.3	3.2	3.2	57.5
1957	3.0	2.8	27.6	15.4	61.6	31.1	11.6	7.9	31.3	17.7	8.6	6.7	225.3
1958	6.3	6.0	24.4	7.2	26.3	16.1	30.0	9.8	23.0	10.1	6.6	6.3	172.1
1959	5.9	5.3	8.1	5.0	37.6	8.4	35.9	8.1	7.4	14.7	5.5	5.3	147.0
1960	7.8	6.3	16.0	6.9	9.1	14.0	6.1	6.8	7.2	7.1	4.3	5.0	96.6
1961	3.8	3.4	5.3	4.9	20.0	8.2	7.8	11.4	4.3	5.8	7.6	3.8	86.2
1962	4.2	3.3	3.6	3.4	3.7	19.7	17.5	11.8	6.4	4.4	4.1	3.5	85.5
1963	3.4	2.8	3.7	2.9	5.5	6.9	14.3	3.5	5.3	3.6	2.5	2.6	57.0
1964	2.4	2.2	2.5	3.2	5.7	6.0	3.1	3.3	3.4	2.2	7.2	6.4	47.6
1965	3.8	6.6	2.3	5.2	18.9	67.6	9.2	5.9	10.1	6.8	4.1	8.9	149.4
1966	3.8	13.3	3.7	6.2	3.7	8.9	15.2	9.2	3.9	3.4	3.0	3.0	77.3
1967	3.0	2.4	2.6	9.9	5.4	21.8	13.2	3.8	9.0	4.3	3.2	3.1	81.6
1968	2.8	2.4	2.5	3.0	5.3	3.4	11.6	3.4	2.5	31.0	4.8	2.8	75.5
1969	3.1	5.7	3.7	5.6	16.9	5.0	6.4	54.9	42.1	10.0	5.1	4.8	163.1
1970	4.3	3.7	6.8	14.0	11.4	22.3	4.6	4.7	8.6	10.8	3.5	5.2	99.8
1971	6.7	11.4	5.9	6.7	13.7	9.6	9.1	4.3	4.2	9.8	15.0	4.7	100.9
1972	3.7	3.1	3.2	5.0	14.2	9.8	3.6	9.3	7.2	4.1	6.8	3.2	73.2
1973	3.0	4.2	51.2	13.8	8.0	7.3	11.6	7.1	127.6	43.1	10.2	15.0	302.2
1974	8.9	7.2	9.0	27.0	22.7	9.7	7.6	10.8	6.5	10.0	6.0	5.2	130.6
1975	4.9	5.8	5.3	6.1	9.2	6.7	4.6	5.3	5.2	3.5	5.8	3.5	66.1
1976	3.1	3.0	6.4	42.5	15.6	6.7	7.3	4.3	8.5	6.8	3.4	3.4	111.2
1977	3.8	2.7	4.7	5.3	24.0	18.2	5.2	15.3	18.0	8.0	5.4	4.0	114.5
1978	3.5	3.9	3.4	3.4	7.7	7.9	3.7	4.5	15.0	3.3	4.0	2.8	63.2
1979	2.9	2.8	7.7	2.9	8.0	3.5	15.1	4.3	2.5	12.8	3.0	2.4	68.0

Pre-development Incremental Flow Data (acre-feet)
Node 230--Units 10c & 11

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	2.8	2.5	12.7	4.6	5.2	1.5	2.8	9.4	2.4	2.9	2.0	3.0	51.8
1981	1.9	1.6	4.3	3.1	24.3	39.8	14.6	4.4	5.9	6.1	9.8	3.3	119.2
1982	3.0	5.0	3.2	2.6	23.9	8.1	7.5	4.0	3.7	6.6	2.6	2.6	72.7
1983	2.3	4.2	3.3	5.0	10.9	5.2	2.5	2.6	3.3	7.2	3.1	2.2	51.9
1984	2.1	1.9	15.1	22.6	4.1	4.8	3.3	3.3	3.0	7.6	2.5	23.7	93.9
1985	2.9	4.9	2.9	42.7	4.8	23.4	12.8	7.8	6.5	33.2	4.6	4.3	150.7
1986	3.7	3.4	3.8	11.5	4.9	7.5	12.7	24.1	5.5	10.5	3.3	3.0	93.8
1987	2.9	3.4	41.8	14.2	23.5	9.9	11.7	10.1	4.7	4.3	3.7	3.7	133.8
1988	3.8	2.7	2.9	7.9	3.2	4.6	5.3	3.5	2.6	2.4	2.1	2.0	43.0
1989	2.1	1.6	2.1	1.7	24.7	22.7	13.5	4.5	6.4	3.3	2.8	2.8	88.1
1990	2.7	3.9	4.6	10.4	54.7	7.3	6.3	20.1	10.4	4.6	5.3	3.5	133.7
1991	3.3	2.7	4.5	4.3	4.5	6.7	2.6	2.8	2.2	2.2	3.6	4.4	43.7
1992	3.4	1.7	2.4	1.8	8.9	32.0	8.1	8.5	3.6	5.6	4.8	11.9	92.6
1993	13.4	10.5	16.5	6.4	36.3	52.5	148.9	15.9	13.2	12.4	11.1	10.9	348.0
1994	9.8	8.3	7.9	10.9	7.6	6.7	9.9	5.8	5.1	6.4	4.6	4.5	87.5

Pre-development Incremental Flow Data (acre-feet)
Node 250--Unit 14a

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	1.3	1.5	1.1	1.5	1.3	2.1	2.7	1.2	4.5	2.0	1.1	1.1	21.3
1956	1.0	1.4	1.0	1.6	1.6	0.9	1.5	0.9	0.8	1.8	0.8	0.8	14.2
1957	0.7	0.7	6.8	3.8	15.2	7.7	2.8	2.0	7.7	4.4	2.1	1.7	55.5
1958	1.5	1.5	6.0	1.8	6.5	4.0	7.4	2.4	5.7	2.5	1.6	1.6	42.4
1959	1.4	1.3	2.0	1.2	9.3	2.1	8.8	2.0	1.8	3.6	1.4	1.3	36.2
1960	1.9	1.5	4.0	1.7	2.2	3.5	1.5	1.7	1.8	1.7	1.0	1.2	23.8
1961	0.9	0.9	1.3	1.2	4.9	2.0	1.9	2.8	1.0	1.4	1.9	0.9	21.2
1962	1.0	0.8	0.9	0.8	0.9	4.9	4.3	2.9	1.6	1.1	1.0	0.9	21.1
1963	0.8	0.7	0.9	0.7	1.4	1.7	3.5	0.9	1.3	0.9	0.6	0.6	14.0
1964	0.6	0.5	0.6	0.8	1.4	1.5	0.8	0.8	0.8	0.5	1.8	1.6	11.7
1965	0.9	1.6	0.6	1.3	4.7	16.6	2.3	1.5	2.5	1.7	1.0	2.2	36.8
1966	0.9	3.3	0.9	1.5	0.9	2.2	3.8	2.3	1.0	0.8	0.7	0.7	19.0
1967	0.7	0.6	0.6	2.5	1.3	5.4	3.3	0.9	2.2	1.0	0.8	0.8	20.1
1968	0.7	0.6	0.6	0.8	1.3	0.8	2.9	0.9	0.6	7.6	1.2	0.7	18.6
1969	0.8	1.4	0.9	1.4	4.2	1.2	1.6	13.5	10.4	2.5	1.3	1.2	40.2
1970	1.0	0.9	1.7	3.5	2.8	5.5	1.1	1.2	2.1	2.7	0.9	1.3	24.6
1971	1.6	2.8	1.5	1.6	3.4	2.4	2.3	1.0	1.0	2.4	3.7	1.1	24.9
1972	0.9	0.8	0.8	1.2	3.5	2.4	0.9	2.3	1.8	1.0	1.7	0.8	18.0
1973	0.8	1.0	12.6	3.4	2.0	1.8	2.9	1.8	31.4	10.6	2.5	3.7	74.4
1974	2.2	1.8	2.2	6.6	5.6	2.4	1.9	2.7	1.6	2.5	1.5	1.3	32.2
1975	1.2	1.4	1.3	1.5	2.3	1.7	1.1	1.3	1.3	0.9	1.4	0.9	16.3
1976	0.8	0.7	1.6	10.5	3.8	1.6	1.8	1.1	2.1	1.7	0.9	0.8	27.4
1977	0.9	0.7	1.1	1.3	5.9	4.5	1.3	3.8	4.4	2.0	1.3	1.0	28.2
1978	0.9	0.9	0.9	0.8	1.9	2.0	0.9	1.1	3.7	0.8	1.0	0.7	15.6
1979	0.7	0.7	1.9	0.7	2.0	0.9	3.7	1.1	0.6	3.2	0.7	0.6	16.8

Pre-development Incremental Flow Data (acre-feet)
Node 250--Unit 14a

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.7	0.6	3.1	1.1	1.3	0.4	0.7	2.3	0.6	0.7	0.5	0.7	12.7
1981	0.5	0.4	1.1	0.8	6.0	9.8	3.6	1.1	1.5	1.5	2.4	0.8	29.3
1982	0.8	1.2	0.8	0.6	5.9	2.0	1.8	1.0	0.9	1.6	0.6	0.6	17.9
1983	0.6	1.0	0.8	1.2	2.7	1.3	0.6	0.6	0.8	1.8	0.8	0.5	12.8
1984	0.5	0.5	3.7	5.6	1.0	1.2	0.8	0.8	0.7	1.9	0.6	5.8	23.1
1985	0.7	1.2	0.7	10.5	1.2	5.8	3.2	1.9	1.6	8.2	1.1	1.0	37.1
1986	0.9	0.8	0.9	2.8	1.2	1.8	3.1	5.9	1.4	2.6	0.8	0.7	23.1
1987	0.7	0.8	10.3	3.5	5.8	2.4	2.9	2.5	1.1	1.0	0.9	0.9	33.0
1988	0.9	0.7	0.7	2.0	0.8	1.1	1.3	0.9	0.6	0.6	0.5	0.5	10.6
1989	0.5	0.4	0.5	0.4	6.1	5.6	3.3	1.1	1.6	0.8	0.7	0.7	21.7
1990	0.7	1.0	1.1	2.5	13.5	1.8	1.5	4.9	2.5	1.1	1.3	0.9	32.9
1991	0.8	0.7	1.1	1.1	1.1	1.6	0.6	0.7	0.5	0.5	0.9	1.1	10.8
1992	0.8	0.4	0.6	0.4	2.2	7.9	2.0	2.1	0.9	1.4	1.2	2.9	22.8
1993	3.3	2.6	4.1	1.6	8.9	12.9	36.7	3.9	3.3	3.0	2.8	2.7	85.7
1994	2.4	2.0	1.9	2.7	1.9	1.6	2.5	1.4	1.3	1.6	1.1	1.1	21.5

Pre-development Incremental Flow Data (acre-feet)
Node 260--Unit 14b

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.8	0.9	0.7	0.9	0.8	1.4	1.7	0.8	2.8	1.2	0.7	0.7	13.6
1956	0.7	0.9	0.6	1.0	1.0	0.6	1.0	0.6	0.5	1.1	0.5	0.5	9.0
1957	0.5	0.4	4.3	2.4	9.6	4.9	1.8	1.3	4.9	2.8	1.4	1.1	35.3
1958	1.0	0.9	3.8	1.1	4.1	2.5	4.7	1.5	3.6	1.6	1.0	1.0	27.0
1959	0.9	0.8	1.3	0.8	5.9	1.3	5.6	1.3	1.1	2.3	0.9	0.8	23.0
1960	1.2	1.0	2.5	1.1	1.4	2.2	0.9	1.1	1.1	1.1	0.7	0.8	15.1
1961	0.6	0.5	0.8	0.8	3.1	1.3	1.2	1.8	0.7	0.9	1.2	0.6	13.5
1962	0.7	0.5	0.6	0.5	0.6	3.1	2.7	1.8	1.0	0.7	0.6	0.6	13.4
1963	0.5	0.4	0.6	0.5	0.9	1.1	2.2	0.6	0.8	0.6	0.4	0.4	8.9
1964	0.4	0.3	0.4	0.5	0.9	0.9	0.5	0.5	0.5	0.3	1.1	1.0	7.4
1965	0.6	1.0	0.4	0.8	3.0	10.6	1.5	0.9	1.6	1.1	0.6	1.4	23.4
1966	0.6	2.1	0.6	1.0	0.6	1.4	2.4	1.4	0.6	0.5	0.5	0.5	12.1
1967	0.5	0.4	0.4	1.6	0.9	3.4	2.1	0.6	1.4	0.7	0.5	0.5	12.8
1968	0.4	0.4	0.4	0.5	0.8	0.5	1.8	0.5	0.4	4.9	0.8	0.4	11.8
1969	0.5	0.9	0.6	0.9	2.6	0.8	1.0	8.6	6.6	1.6	0.8	0.8	25.6
1970	0.7	0.6	1.1	2.2	1.8	3.5	0.7	0.7	1.4	1.7	0.6	0.8	15.7
1971	1.0	1.8	0.9	1.0	2.2	1.5	1.4	0.7	0.7	1.5	2.3	0.7	15.8
1972	0.6	0.5	0.5	0.8	2.2	1.5	0.6	1.5	1.1	0.6	1.1	0.5	11.5
1973	0.5	0.7	8.0	2.2	1.3	1.1	1.8	1.1	20.0	6.8	1.6	2.3	47.4
1974	1.4	1.1	1.4	4.2	3.6	1.5	1.2	1.7	1.0	1.6	0.9	0.8	20.5
1975	0.8	0.9	0.8	1.0	1.4	1.1	0.7	0.8	0.8	0.6	0.9	0.6	10.4
1976	0.5	0.5	1.0	6.7	2.5	1.0	1.1	0.7	1.3	1.1	0.5	0.5	17.4
1977	0.6	0.4	0.7	0.8	3.8	2.8	0.8	2.4	2.8	1.3	0.8	0.6	17.9
1978	0.6	0.6	0.5	0.5	1.2	1.2	0.6	0.7	2.3	0.5	0.6	0.4	9.9
1979	0.4	0.4	1.2	0.4	1.3	0.6	2.4	0.7	0.4	2.0	0.5	0.4	10.6

Pre-development Incremental Flow Data (acre-feet)
Node 260--Unit 14b

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.4	0.4	2.0	0.7	0.8	0.2	0.4	1.5	0.4	0.4	0.3	0.5	8.1
1981	0.3	0.3	0.7	0.5	3.8	6.2	2.3	0.7	0.9	0.9	1.5	0.5	18.7
1982	0.5	0.8	0.5	0.4	3.8	1.3	1.2	0.6	0.6	1.0	0.4	0.4	11.4
1983	0.4	0.7	0.5	0.8	1.7	0.8	0.4	0.4	0.5	1.1	0.5	0.3	8.1
1984	0.3	0.3	2.4	3.5	0.6	0.8	0.5	0.5	0.5	1.2	0.4	3.7	14.7
1985	0.4	0.8	0.4	6.7	0.8	3.7	2.0	1.2	1.0	5.2	0.7	0.7	23.6
1986	0.6	0.5	0.6	1.8	0.8	1.2	2.0	3.8	0.9	1.6	0.5	0.5	14.7
1987	0.4	0.5	6.6	2.2	3.7	1.5	1.8	1.6	0.7	0.7	0.6	0.6	21.0
1988	0.6	0.4	0.5	1.2	0.5	0.7	0.8	0.6	0.4	0.4	0.3	0.3	6.7
1989	0.3	0.3	0.3	0.3	3.9	3.6	2.1	0.7	1.0	0.5	0.4	0.4	13.8
1990	0.4	0.6	0.7	1.6	8.6	1.1	1.0	3.1	1.6	0.7	0.8	0.6	20.9
1991	0.5	0.4	0.7	0.7	0.7	1.0	0.4	0.4	0.3	0.3	0.6	0.7	6.8
1992	0.5	0.3	0.4	0.3	1.4	5.0	1.3	1.3	0.6	0.9	0.7	1.9	14.5
1993	2.1	1.6	2.6	1.0	5.7	8.2	23.3	2.5	2.1	1.9	1.8	1.7	54.5
1994	1.5	1.3	1.2	1.7	1.2	1.0	1.6	0.9	0.8	1.0	0.7	0.7	13.7

Pre-development Incremental Flow Data (acre-feet)
Node 270--Unit 14c

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.7	0.8	0.6	0.8	0.7	1.1	1.4	0.6	2.3	1.0	0.6	0.6	11.0
1956	0.5	0.7	0.5	0.8	0.8	0.5	0.8	0.5	0.4	0.9	0.4	0.4	7.3
1957	0.4	0.3	3.5	2.0	7.8	4.0	1.5	1.0	4.0	2.3	1.1	0.9	28.6
1958	0.8	0.8	3.1	0.9	3.3	2.0	3.8	1.2	2.9	1.3	0.8	0.8	21.8
1959	0.7	0.7	1.0	0.6	4.8	1.1	4.6	1.0	0.9	1.9	0.7	0.7	18.6
1960	1.0	0.8	2.0	0.9	1.1	1.8	0.8	0.9	0.9	0.9	0.5	0.6	12.2
1961	0.5	0.4	0.7	0.6	2.5	1.0	1.0	1.4	0.5	0.7	1.0	0.5	10.9
1962	0.5	0.4	0.5	0.4	0.5	2.5	2.2	1.5	0.8	0.6	0.5	0.4	10.9
1963	0.4	0.4	0.5	0.4	0.7	0.9	1.8	0.4	0.7	0.4	0.3	0.3	7.2
1964	0.3	0.3	0.3	0.4	0.7	0.8	0.4	0.4	0.4	0.3	0.9	0.8	6.0
1965	0.5	0.8	0.3	0.7	2.4	8.6	1.2	0.8	1.3	0.9	0.5	1.1	18.9
1966	0.5	1.7	0.5	0.8	0.5	1.1	1.9	1.2	0.5	0.4	0.4	0.4	9.8
1967	0.4	0.3	0.3	1.3	0.7	2.8	1.7	0.5	1.1	0.5	0.4	0.4	10.3
1968	0.3	0.3	0.3	0.4	0.7	0.4	1.5	0.4	0.3	3.9	0.6	0.3	9.6
1969	0.4	0.7	0.5	0.7	2.1	0.6	0.8	7.0	5.3	1.3	0.6	0.6	20.7
1970	0.5	0.5	0.9	1.8	1.5	2.8	0.6	0.6	1.1	1.4	0.4	0.7	12.7
1971	0.9	1.4	0.8	0.8	1.7	1.2	1.2	0.5	0.5	1.2	1.9	0.6	12.8
1972	0.5	0.4	0.4	0.6	1.8	1.3	0.5	1.2	0.9	0.5	0.9	0.4	9.3
1973	0.4	0.5	6.5	1.8	1.0	0.9	1.5	0.9	16.2	5.5	1.3	1.9	38.3
1974	1.1	0.9	1.1	3.4	2.9	1.2	1.0	1.4	0.8	1.3	0.8	0.7	16.5
1975	0.6	0.7	0.7	0.8	1.2	0.9	0.6	0.7	0.7	0.4	0.7	0.4	8.4
1976	0.4	0.4	0.8	5.4	2.0	0.9	0.9	0.6	1.1	0.9	0.4	0.4	14.1
1977	0.5	0.3	0.6	0.7	3.0	2.3	0.7	1.9	2.3	1.0	0.7	0.5	14.5
1978	0.4	0.5	0.4	0.4	1.0	1.0	0.5	0.6	1.9	0.4	0.5	0.4	8.0
1979	0.4	0.3	1.0	0.4	1.0	0.4	1.9	0.6	0.3	1.6	0.4	0.3	8.6

Pre-development Incremental Flow Data (acre-feet)
Node 270--Unit 14c

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.3	0.3	1.6	0.6	0.7	0.2	0.3	1.2	0.3	0.4	0.3	0.4	6.6
1981	0.2	0.2	0.6	0.4	3.1	5.0	1.9	0.6	0.8	0.8	1.3	0.4	15.1
1982	0.4	0.6	0.4	0.3	3.0	1.0	0.9	0.5	0.5	0.8	0.3	0.3	9.2
1983	0.3	0.5	0.4	0.6	1.4	0.7	0.3	0.3	0.4	0.9	0.4	0.3	6.6
1984	0.3	0.2	1.9	2.9	0.5	0.6	0.4	0.4	0.4	1.0	0.3	3.0	11.9
1985	0.4	0.6	0.4	5.4	0.6	3.0	1.6	1.0	0.8	4.2	0.6	0.5	19.1
1986	0.5	0.4	0.5	1.5	0.6	0.9	1.6	3.1	0.7	1.3	0.4	0.4	11.9
1987	0.4	0.4	5.3	1.8	3.0	1.3	1.5	1.3	0.6	0.5	0.5	0.5	17.0
1988	0.5	0.3	0.4	1.0	0.4	0.6	0.7	0.4	0.3	0.3	0.3	0.3	5.5
1989	0.3	0.2	0.3	0.2	3.1	2.9	1.7	0.6	0.8	0.4	0.3	0.3	11.2
1990	0.3	0.5	0.6	1.3	6.9	0.9	0.8	2.5	1.3	0.6	0.7	0.4	17.0
1991	0.4	0.3	0.6	0.6	0.6	0.8	0.3	0.4	0.3	0.3	0.5	0.6	5.6
1992	0.4	0.2	0.3	0.2	1.1	4.1	1.0	1.1	0.5	0.7	0.6	1.5	11.7
1993	1.7	1.3	2.1	0.8	4.6	6.7	18.9	2.0	1.7	1.6	1.4	1.4	44.1
1994	1.2	1.0	1.0	1.4	1.0	0.8	1.3	0.7	0.6	0.8	0.6	0.6	11.1

Pre-development Incremental Flow Data (acre-feet)
Node 280--Unit 20a&b

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	3.0	3.4	2.6	3.4	3.0	4.9	6.2	2.8	10.3	4.5	2.5	2.5	49.1
1956	2.4	3.3	2.3	3.7	3.6	2.1	3.6	2.1	1.9	4.1	1.8	1.8	32.6
1957	1.7	1.6	15.7	8.7	34.9	17.6	6.6	4.5	17.7	10.1	4.9	3.8	127.8
1958	3.5	3.4	13.8	4.1	14.9	9.1	17.0	5.5	13.1	5.7	3.8	3.6	97.6
1959	3.3	3.0	4.6	2.9	21.3	4.7	20.3	4.6	4.2	8.3	3.1	3.0	83.4
1960	4.4	3.6	9.1	3.9	5.2	8.0	3.4	3.9	4.1	4.0	2.4	2.8	54.8
1961	2.2	2.0	3.0	2.8	11.3	4.7	4.4	6.4	2.4	3.3	4.3	2.1	48.9
1962	2.4	1.9	2.1	1.9	2.1	11.2	9.9	6.7	3.6	2.5	2.3	2.0	48.5
1963	1.9	1.6	2.1	1.7	3.1	3.9	8.1	2.0	3.0	2.0	1.4	1.5	32.3
1964	1.4	1.3	1.4	1.8	3.2	3.4	1.8	1.9	1.9	1.2	4.1	3.6	27.0
1965	2.1	3.8	1.3	3.0	10.7	38.4	5.2	3.4	5.7	3.8	2.3	5.1	84.7
1966	2.2	7.5	2.1	3.5	2.1	5.0	8.6	5.2	2.2	1.9	1.7	1.7	43.8
1967	1.7	1.4	1.5	5.6	3.1	12.3	7.5	2.1	5.1	2.4	1.8	1.7	46.3
1968	1.6	1.4	1.4	1.7	3.0	1.9	6.6	2.0	1.4	17.6	2.7	1.6	42.8
1969	1.8	3.2	2.1	3.2	9.6	2.8	3.6	31.1	23.9	5.7	2.9	2.7	92.5
1970	2.4	2.1	3.8	7.9	6.5	12.6	2.6	2.7	4.9	6.1	2.0	2.9	56.6
1971	3.8	6.4	3.3	3.8	7.8	5.5	5.2	2.4	2.4	5.5	8.5	2.7	57.2
1972	2.1	1.7	1.8	2.8	8.1	5.6	2.0	5.3	4.1	2.3	3.9	1.8	41.5
1973	1.7	2.4	29.0	7.8	4.5	4.1	6.6	4.1	72.4	24.5	5.8	8.5	171.4
1974	5.0	4.1	5.1	15.3	12.9	5.5	4.3	6.1	3.7	5.7	3.4	3.0	74.1
1975	2.8	3.3	3.0	3.5	5.2	3.8	2.6	3.0	2.9	2.0	3.3	2.0	37.5
1976	1.8	1.7	3.6	24.1	8.9	3.8	4.2	2.5	4.8	3.9	2.0	1.9	63.1
1977	2.1	1.5	2.6	3.0	13.6	10.3	3.0	8.7	10.2	4.5	3.0	2.3	64.9
1978	2.0	2.2	2.0	1.9	4.4	4.5	2.1	2.6	8.5	1.9	2.3	1.6	35.9
1979	1.6	1.6	4.4	1.6	4.6	2.0	8.6	2.4	1.4	7.3	1.7	1.4	38.5

Pre-development Incremental Flow Data (acre-feet)
Node 280--Unit 20a&b

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	1.6	1.4	7.2	2.6	3.0	0.9	1.6	5.3	1.4	1.6	1.1	1.7	29.4
1981	1.1	0.9	2.5	1.8	13.8	22.5	8.3	2.5	3.3	3.4	5.6	1.9	67.6
1982	1.7	2.8	1.8	1.5	13.6	4.6	4.2	2.2	2.1	3.7	1.5	1.5	41.2
1983	1.3	2.4	1.9	2.8	6.2	3.0	1.4	1.5	1.9	4.1	1.8	1.3	29.5
1984	1.2	1.1	8.6	12.8	2.3	2.7	1.9	1.9	1.7	4.3	1.4	13.4	53.2
1985	1.6	2.8	1.6	24.2	2.7	13.2	7.3	4.4	3.7	18.8	2.6	2.4	85.4
1986	2.1	1.9	2.1	6.5	2.8	4.2	7.2	13.7	3.1	6.0	1.8	1.7	53.2
1987	1.6	1.9	23.7	8.0	13.4	5.6	6.7	5.7	2.7	2.4	2.1	2.1	75.9
1988	2.2	1.5	1.7	4.5	1.8	2.6	3.0	2.0	1.5	1.3	1.2	1.1	24.4
1989	1.2	0.9	1.2	0.9	14.0	12.9	7.7	2.5	3.6	1.9	1.6	1.6	50.0
1990	1.5	2.2	2.6	5.9	31.0	4.1	3.6	11.4	5.9	2.6	3.0	2.0	75.8
1991	1.9	1.5	2.6	2.4	2.5	3.8	1.5	1.6	1.3	1.2	2.0	2.5	24.8
1992	1.9	1.0	1.4	1.0	5.1	18.2	4.6	4.8	2.0	3.2	2.7	6.7	52.5
1993	7.6	5.9	9.4	3.6	20.6	29.8	84.4	9.0	7.5	7.0	6.3	6.2	197.4
1994	5.5	4.7	4.5	6.2	4.3	3.8	5.6	3.3	2.9	3.6	2.6	2.6	49.6

Pre-development Incremental Flow Data (acre-feet)
Node 300--Unit 24--Darrynane Lake

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	1.4	1.7	1.3	1.6	1.5	2.4	3.0	1.4	5.0	2.2	1.2	1.2	23.9
1956	1.2	1.6	1.1	1.8	1.8	1.0	1.7	1.0	0.9	2.0	0.9	0.9	15.9
1957	0.8	0.8	7.6	4.3	17.0	8.6	3.2	2.2	8.6	4.9	2.4	1.9	62.2
1958	1.7	1.6	6.7	2.0	7.3	4.4	8.3	2.7	6.4	2.8	1.8	1.8	47.5
1959	1.6	1.5	2.3	1.4	10.4	2.3	9.9	2.2	2.0	4.1	1.5	1.5	40.6
1960	2.1	1.7	4.4	1.9	2.5	3.9	1.7	1.9	2.0	2.0	1.2	1.4	26.6
1961	1.0	0.9	1.5	1.4	5.5	2.3	2.2	3.1	1.2	1.6	2.1	1.0	23.8
1962	1.2	0.9	1.0	0.9	1.0	5.4	4.8	3.2	1.8	1.2	1.1	1.0	23.6
1963	0.9	0.8	1.0	0.8	1.5	1.9	4.0	1.0	1.5	1.0	0.7	0.7	15.7
1964	0.7	0.6	0.7	0.9	1.6	1.7	0.9	0.9	0.9	0.6	2.0	1.8	13.2
1965	1.0	1.8	0.6	1.4	5.2	18.7	2.5	1.6	2.8	1.9	1.1	2.5	41.3
1966	1.0	3.7	1.0	1.7	1.0	2.5	4.2	2.5	1.1	0.9	0.8	0.8	21.3
1967	0.8	0.7	0.7	2.8	1.5	6.0	3.6	1.0	2.5	1.2	0.9	0.9	22.5
1968	0.8	0.7	0.7	0.8	1.5	0.9	3.2	0.9	0.7	8.6	1.3	0.8	20.9
1969	0.9	1.6	1.0	1.5	4.7	1.4	1.8	15.2	11.6	2.8	1.4	1.3	45.0
1970	1.2	1.0	1.9	3.9	3.2	6.2	1.3	1.3	2.4	3.0	1.0	1.4	27.6
1971	1.9	3.1	1.6	1.8	3.8	2.7	2.5	1.2	1.2	2.7	4.1	1.3	27.9
1972	1.0	0.9	0.9	1.4	3.9	2.7	1.0	2.6	2.0	1.1	1.9	0.9	20.2
1973	0.8	1.2	14.1	3.8	2.2	2.0	3.2	2.0	35.2	11.9	2.8	4.2	83.5
1974	2.4	2.0	2.5	7.4	6.3	2.7	2.1	3.0	1.8	2.8	1.6	1.4	36.0
1975	1.4	1.6	1.5	1.7	2.5	1.9	1.3	1.5	1.4	1.0	1.6	1.0	18.2
1976	0.9	0.8	1.8	11.8	4.3	1.9	2.0	1.2	2.3	1.9	0.9	0.9	30.7
1977	1.0	0.7	1.3	1.5	6.6	5.0	1.5	4.2	5.0	2.2	1.5	1.1	31.6
1978	1.0	1.1	0.9	0.9	2.1	2.2	1.0	1.3	4.1	0.9	1.1	0.8	17.5
1979	0.8	0.8	2.1	0.8	2.2	1.0	4.2	1.2	0.7	3.5	0.8	0.7	18.8

Pre-development Incremental Flow Data (acre-feet)
Node 300--Unit 24--Darrynane Lake

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.8	0.7	3.5	1.3	1.5	0.4	0.8	2.6	0.7	0.8	0.6	0.8	14.3
1981	0.5	0.4	1.2	0.9	6.7	11.0	4.0	1.2	1.6	1.7	2.7	0.9	32.9
1982	0.8	1.4	0.9	0.7	6.6	2.2	2.1	1.1	1.0	1.8	0.7	0.7	20.1
1983	0.6	1.2	0.9	1.4	3.0	1.4	0.7	0.7	0.9	2.0	0.9	0.6	14.3
1984	0.6	0.5	4.2	6.3	1.1	1.3	0.9	0.9	0.8	2.1	0.7	6.6	25.9
1985	0.8	1.3	0.8	11.8	1.3	6.4	3.5	2.2	1.8	9.2	1.3	1.2	41.6
1986	1.0	0.9	1.0	3.2	1.4	2.1	3.5	6.7	1.5	2.9	0.9	0.8	25.9
1987	0.8	0.9	11.5	3.9	6.5	2.7	3.2	2.8	1.3	1.2	1.0	1.0	36.9
1988	1.1	0.7	0.8	2.2	0.9	1.3	1.5	1.0	0.7	0.6	0.6	0.6	11.9
1989	0.6	0.5	0.6	0.5	6.8	6.3	3.7	1.2	1.8	0.9	0.8	0.8	24.3
1990	0.8	1.1	1.3	2.9	15.1	2.0	1.7	5.5	2.9	1.3	1.5	1.0	36.9
1991	0.9	0.7	1.3	1.2	1.2	1.8	0.7	0.8	0.6	0.6	1.0	1.2	12.1
1992	0.9	0.5	0.7	0.5	2.5	8.8	2.2	2.3	1.0	1.5	1.3	3.3	25.6
1993	3.7	2.9	4.6	1.8	10.0	14.5	41.1	4.4	3.7	3.4	3.1	3.0	96.1
1994	2.7	2.3	2.2	3.0	2.1	1.8	2.7	1.6	1.4	1.8	1.3	1.3	24.1

Pre-development Incremental Flow Data (acre-feet)
Node 320--Unit 21

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.4	0.4	0.3	0.4	0.4	0.6	0.8	0.4	1.4	0.6	0.3	0.3	6.5
1956	0.3	0.4	0.3	0.5	0.5	0.3	0.5	0.3	0.2	0.5	0.2	0.2	4.3
1957	0.2	0.2	2.1	1.1	4.6	2.3	0.9	0.6	2.3	1.3	0.6	0.5	16.8
1958	0.5	0.4	1.8	0.5	2.0	1.2	2.2	0.7	1.7	0.8	0.5	0.5	12.9
1959	0.4	0.4	0.6	0.4	2.8	0.6	2.7	0.6	0.6	1.1	0.4	0.4	11.0
1960	0.6	0.5	1.2	0.5	0.7	1.0	0.4	0.5	0.5	0.5	0.3	0.4	7.2
1961	0.3	0.3	0.4	0.4	1.5	0.6	0.6	0.9	0.3	0.4	0.6	0.3	6.4
1962	0.3	0.3	0.3	0.3	0.3	1.5	1.3	0.9	0.5	0.3	0.3	0.3	6.4
1963	0.3	0.2	0.3	0.2	0.4	0.5	1.1	0.3	0.4	0.3	0.2	0.2	4.3
1964	0.2	0.2	0.2	0.2	0.4	0.4	0.2	0.3	0.3	0.2	0.5	0.5	3.5
1965	0.3	0.5	0.2	0.4	1.4	5.1	0.7	0.4	0.8	0.5	0.3	0.7	11.1
1966	0.3	1.0	0.3	0.5	0.3	0.7	1.1	0.7	0.3	0.3	0.2	0.2	5.8
1967	0.2	0.2	0.2	0.7	0.4	1.6	1.0	0.3	0.7	0.3	0.2	0.2	6.1
1968	0.2	0.2	0.2	0.2	0.4	0.3	0.9	0.3	0.2	2.3	0.4	0.2	5.6
1969	0.2	0.4	0.3	0.4	1.3	0.4	0.5	4.1	3.1	0.8	0.4	0.4	12.2
1970	0.3	0.3	0.5	1.0	0.9	1.7	0.3	0.3	0.6	0.8	0.3	0.4	7.4
1971	0.5	0.9	0.4	0.5	1.0	0.7	0.7	0.3	0.3	0.7	1.1	0.3	7.5
1972	0.3	0.2	0.2	0.4	1.1	0.7	0.3	0.7	0.5	0.3	0.5	0.2	5.5
1973	0.2	0.3	3.8	1.0	0.6	0.5	0.9	0.5	9.5	3.2	0.8	1.1	22.6
1974	0.7	0.5	0.7	2.0	1.7	0.7	0.6	0.8	0.5	0.8	0.4	0.4	9.8
1975	0.4	0.4	0.4	0.5	0.7	0.5	0.3	0.4	0.4	0.3	0.4	0.3	4.9
1976	0.2	0.2	0.5	3.2	1.2	0.5	0.6	0.3	0.6	0.5	0.3	0.3	8.3
1977	0.3	0.2	0.3	0.4	1.8	1.4	0.4	1.1	1.3	0.6	0.4	0.3	8.5
1978	0.3	0.3	0.3	0.3	0.6	0.6	0.3	0.3	1.1	0.2	0.3	0.2	4.7
1979	0.2	0.2	0.6	0.2	0.6	0.3	1.1	0.3	0.2	1.0	0.2	0.2	5.1

Pre-development Incremental Flow Data (acre-feet)
Node 320--Unit 21

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.2	0.2	0.9	0.3	0.4	0.1	0.2	0.7	0.2	0.2	0.2	0.2	3.9
1981	0.1	0.1	0.3	0.2	1.8	3.0	1.1	0.3	0.4	0.4	0.7	0.3	8.9
1982	0.2	0.4	0.2	0.2	1.8	0.6	0.6	0.3	0.3	0.5	0.2	0.2	5.4
1983	0.2	0.3	0.3	0.4	0.8	0.4	0.2	0.2	0.3	0.5	0.2	0.2	3.9
1984	0.2	0.1	1.1	1.7	0.3	0.4	0.3	0.3	0.2	0.6	0.2	1.8	7.0
1985	0.2	0.4	0.2	3.2	0.4	1.7	1.0	0.6	0.5	2.5	0.3	0.3	11.3
1986	0.3	0.3	0.3	0.9	0.4	0.6	0.9	1.8	0.4	0.8	0.2	0.2	7.0
1987	0.2	0.3	3.1	1.1	1.8	0.7	0.9	0.8	0.3	0.3	0.3	0.3	10.0
1988	0.3	0.2	0.2	0.6	0.2	0.3	0.4	0.3	0.2	0.2	0.2	0.2	3.2
1989	0.2	0.1	0.2	0.1	1.9	1.7	1.0	0.3	0.5	0.2	0.2	0.2	6.6
1990	0.2	0.3	0.3	0.8	4.1	0.5	0.5	1.5	0.8	0.3	0.4	0.3	9.9
1991	0.2	0.2	0.3	0.3	0.3	0.5	0.2	0.2	0.2	0.2	0.3	0.3	3.3
1992	0.3	0.1	0.2	0.1	0.7	2.4	0.6	0.6	0.3	0.4	0.3	0.9	6.9
1993	1.0	0.8	1.2	0.5	2.7	3.9	11.1	1.2	1.0	0.9	0.8	0.8	26.0
1994	0.7	0.6	0.6	0.8	0.6	0.5	0.7	0.4	0.4	0.5	0.3	0.3	6.5

Pre-development Incremental Flow Data (acre-feet)
Node 330--Unit 25

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	2.4	2.8	2.1	2.7	2.4	3.9	5.0	2.2	8.3	3.6	2.0	2.0	39.4
1956	1.9	2.6	1.8	2.9	2.9	1.7	2.9	1.7	1.5	3.3	1.5	1.4	26.2
1957	1.4	1.3	12.6	7.0	28.0	14.2	5.3	3.6	14.2	8.1	3.9	3.1	102.6
1958	2.8	2.7	11.1	3.3	12.0	7.3	13.6	4.4	10.5	4.6	3.0	2.9	78.3
1959	2.7	2.4	3.7	2.3	17.1	3.8	16.3	3.7	3.3	6.7	2.5	2.4	66.9
1960	3.5	2.9	7.3	3.1	4.1	6.4	2.8	3.1	3.3	3.2	2.0	2.3	44.0
1961	1.7	1.6	2.4	2.3	9.1	3.7	3.6	5.2	2.0	2.6	3.5	1.7	39.3
1962	1.9	1.5	1.6	1.5	1.7	9.0	7.9	5.3	2.9	2.0	1.8	1.6	38.9
1963	1.5	1.3	1.7	1.3	2.5	3.1	6.5	1.6	2.4	1.6	1.2	1.2	25.9
1964	1.1	1.0	1.1	1.5	2.6	2.7	1.4	1.5	1.5	1.0	3.3	2.9	21.7
1965	1.7	3.0	1.0	2.4	8.6	30.8	4.2	2.7	4.6	3.1	1.9	4.1	68.0
1966	1.7	6.0	1.7	2.8	1.7	4.0	6.9	4.2	1.8	1.5	1.4	1.4	35.2
1967	1.3	1.1	1.2	4.5	2.5	9.9	6.0	1.7	4.1	1.9	1.4	1.4	37.2
1968	1.3	1.1	1.1	1.4	2.4	1.5	5.3	1.6	1.1	14.1	2.2	1.3	34.4
1969	1.4	2.6	1.7	2.5	7.7	2.3	2.9	25.0	19.2	4.6	2.3	2.2	74.3
1970	2.0	1.7	3.1	6.4	5.2	10.1	2.1	2.1	3.9	4.9	1.6	2.4	45.4
1971	3.0	5.2	2.7	3.0	6.2	4.4	4.2	2.0	1.9	4.4	6.8	2.1	46.0
1972	1.7	1.4	1.5	2.3	6.5	4.5	1.6	4.2	3.3	1.9	3.1	1.5	33.3
1973	1.4	1.9	23.3	6.3	3.6	3.3	5.3	3.3	58.1	19.6	4.7	6.8	137.6
1974	4.0	3.3	4.1	12.3	10.4	4.4	3.5	4.9	3.0	4.6	2.7	2.4	59.5
1975	2.2	2.7	2.4	2.8	4.2	3.1	2.1	2.4	2.4	1.6	2.6	1.6	30.1
1976	1.4	1.4	2.9	19.4	7.1	3.0	3.3	2.0	3.9	3.1	1.6	1.6	50.6
1977	1.7	1.2	2.1	2.4	10.9	8.3	2.4	7.0	8.2	3.6	2.5	1.8	52.1
1978	1.6	1.8	1.6	1.5	3.5	3.6	1.7	2.1	6.8	1.5	1.8	1.3	28.8
1979	1.3	1.3	3.5	1.3	3.7	1.6	6.9	2.0	1.1	5.8	1.4	1.1	31.0

Pre-development Incremental Flow Data (acre-feet)
Node 330--Unit 25

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	1.3	1.1	5.8	2.1	2.4	0.7	1.3	4.3	1.1	1.3	0.9	1.4	23.6
1981	0.9	0.8	2.0	1.4	11.1	18.1	6.6	2.0	2.7	2.8	4.5	1.5	54.3
1982	1.4	2.3	1.5	1.2	10.9	3.7	3.4	1.8	1.7	3.0	1.2	1.2	33.1
1983	1.0	1.9	1.5	2.3	5.0	2.4	1.1	1.2	1.5	3.3	1.4	1.0	23.6
1984	0.9	0.9	6.9	10.3	1.9	2.2	1.5	1.5	1.3	3.5	1.1	10.8	42.7
1985	1.3	2.2	1.3	19.4	2.2	10.6	5.8	3.6	3.0	15.1	2.1	1.9	68.6
1986	1.7	1.5	1.7	5.2	2.2	3.4	5.8	11.0	2.5	4.8	1.5	1.4	42.7
1987	1.3	1.5	19.0	6.4	10.7	4.5	5.3	4.6	2.1	2.0	1.7	1.7	60.9
1988	1.8	1.2	1.3	3.6	1.5	2.1	2.4	1.6	1.2	1.1	0.9	0.9	19.6
1989	0.9	0.8	0.9	0.8	11.3	10.3	6.2	2.0	2.9	1.5	1.3	1.3	40.1
1990	1.2	1.8	2.1	4.7	24.9	3.3	2.9	9.1	4.7	2.1	2.4	1.6	60.8
1991	1.5	1.2	2.1	2.0	2.0	3.0	1.2	1.3	1.0	1.0	1.6	2.0	19.9
1992	1.5	0.8	1.1	0.8	4.1	14.6	3.7	3.9	1.6	2.5	2.2	5.4	42.1
1993	6.1	4.8	7.5	2.9	16.5	23.9	67.8	7.3	6.0	5.6	5.1	4.9	158.4
1994	4.4	3.8	3.6	5.0	3.5	3.0	4.5	2.6	2.3	2.9	2.1	2.1	39.8

Pre-development Incremental Flow Data (acre-feet)
Node 340--Unit 16

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	1.0	1.2	0.9	1.2	1.0	1.7	2.1	0.9	3.5	1.5	0.9	0.9	16.8
1956	0.8	1.1	0.8	1.3	1.2	0.7	1.2	0.7	0.6	1.4	0.6	0.6	11.2
1957	0.6	0.5	5.4	3.0	11.9	6.0	2.3	1.5	6.1	3.4	1.7	1.3	43.7
1958	1.2	1.2	4.7	1.4	5.1	3.1	5.8	1.9	4.5	2.0	1.3	1.2	33.4
1959	1.1	1.0	1.6	1.0	7.3	1.6	7.0	1.6	1.4	2.8	1.1	1.0	28.5
1960	1.5	1.2	3.1	1.3	1.8	2.7	1.2	1.3	1.4	1.4	0.8	1.0	18.7
1961	0.7	0.7	1.0	1.0	3.9	1.6	1.5	2.2	0.8	1.1	1.5	0.7	16.7
1962	0.8	0.6	0.7	0.7	0.7	3.8	3.4	2.3	1.2	0.9	0.8	0.7	16.6
1963	0.7	0.6	0.7	0.6	1.1	1.3	2.8	0.7	1.0	0.7	0.5	0.5	11.1
1964	0.5	0.4	0.5	0.6	1.1	1.2	0.6	0.6	0.7	0.4	1.4	1.3	9.2
1965	0.7	1.3	0.4	1.0	3.7	13.1	1.8	1.1	2.0	1.3	0.8	1.7	29.0
1966	0.7	2.6	0.7	1.2	0.7	1.7	3.0	1.8	0.8	0.6	0.6	0.6	15.0
1967	0.6	0.5	0.5	1.9	1.0	4.2	2.6	0.7	1.8	0.8	0.6	0.6	15.8
1968	0.5	0.5	0.5	0.6	1.0	0.7	2.3	0.7	0.5	6.0	0.9	0.5	14.6
1969	0.6	1.1	0.7	1.1	3.3	1.0	1.2	10.7	8.2	1.9	1.0	0.9	31.7
1970	0.8	0.7	1.3	2.7	2.2	4.3	0.9	0.9	1.7	2.1	0.7	1.0	19.4
1971	1.3	2.2	1.1	1.3	2.7	1.9	1.8	0.8	0.8	1.9	2.9	0.9	19.6
1972	0.7	0.6	0.6	1.0	2.8	1.9	0.7	1.8	1.4	0.8	1.3	0.6	14.2
1973	0.6	0.8	9.9	2.7	1.5	1.4	2.3	1.4	24.8	8.4	2.0	2.9	58.6
1974	1.7	1.4	1.7	5.2	4.4	1.9	1.5	2.1	1.3	1.9	1.2	1.0	25.3
1975	0.9	1.1	1.0	1.2	1.8	1.3	0.9	1.0	1.0	0.7	1.1	0.7	12.8
1976	0.6	0.6	1.3	8.3	3.0	1.3	1.4	0.8	1.6	1.3	0.7	0.7	21.6
1977	0.7	0.5	0.9	1.0	4.7	3.5	1.0	3.0	3.5	1.5	1.0	0.8	22.2
1978	0.7	0.8	0.7	0.7	1.5	1.5	0.7	0.9	2.9	0.6	0.8	0.6	12.3
1979	0.6	0.5	1.5	0.6	1.6	0.7	2.9	0.8	0.5	2.5	0.6	0.5	13.2

Pre-development Incremental Flow Data (acre-feet)
Node 340--Unit 16

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.5	0.5	2.5	0.9	1.0	0.3	0.5	1.8	0.5	0.6	0.4	0.6	10.1
1981	0.4	0.3	0.8	0.6	4.7	7.7	2.8	0.9	1.1	1.2	1.9	0.6	23.1
1982	0.6	1.0	0.6	0.5	4.6	1.6	1.5	0.8	0.7	1.3	0.5	0.5	14.1
1983	0.4	0.8	0.6	1.0	2.1	1.0	0.5	0.5	0.6	1.4	0.6	0.4	10.1
1984	0.4	0.4	2.9	4.4	0.8	0.9	0.6	0.6	0.6	1.5	0.5	4.6	18.2
1985	0.6	0.9	0.6	8.3	0.9	4.5	2.5	1.5	1.3	6.4	0.9	0.8	29.2
1986	0.7	0.7	0.7	2.2	0.9	1.5	2.5	4.7	1.1	2.0	0.6	0.6	18.2
1987	0.6	0.6	8.1	2.8	4.6	1.9	2.3	2.0	0.9	0.8	0.7	0.7	26.0
1988	0.8	0.5	0.6	1.5	0.6	0.9	1.0	0.7	0.5	0.5	0.4	0.4	8.4
1989	0.4	0.3	0.4	0.3	4.8	4.4	2.6	0.9	1.2	0.6	0.5	0.5	17.1
1990	0.5	0.8	0.9	2.0	10.6	1.4	1.2	3.9	2.0	0.9	1.0	0.7	25.9
1991	0.6	0.5	0.9	0.8	0.9	1.3	0.5	0.6	0.4	0.4	0.7	0.9	8.5
1992	0.7	0.3	0.5	0.3	1.7	6.2	1.6	1.6	0.7	1.1	0.9	2.3	18.0
1993	2.6	2.0	3.2	1.2	7.1	10.2	28.9	3.1	2.6	2.4	2.2	2.1	67.5
1994	1.9	1.6	1.5	2.1	1.5	1.3	1.9	1.1	1.0	1.2	0.9	0.9	17.0

Pre-development Incremental Flow Data (acre-feet)
Node 350--Unit 28

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	7.2	8.4	6.4	8.3	7.4	11.9	15.2	6.8	25.3	11.0	6.2	6.1	120.3
1956	5.9	8.1	5.5	9.0	8.8	5.1	8.7	5.2	4.5	10.1	4.5	4.4	79.8
1957	4.2	3.8	38.3	21.4	85.4	43.2	16.1	11.0	43.4	24.6	12.0	9.4	312.8
1958	8.7	8.3	33.8	10.0	36.5	22.4	41.6	13.6	32.0	14.0	9.2	8.8	238.8
1959	8.1	7.4	11.3	7.0	52.1	11.6	49.8	11.2	10.2	20.4	7.6	7.3	204.0
1960	10.8	8.8	22.3	9.6	12.6	19.5	8.4	9.4	10.0	9.8	5.9	7.0	134.0
1961	5.3	4.8	7.3	6.8	27.7	11.4	10.9	15.8	5.9	8.0	10.5	5.2	119.7
1962	5.9	4.6	5.0	4.7	5.1	27.4	24.3	16.3	8.9	6.1	5.6	4.9	118.7
1963	4.7	3.9	5.2	4.1	7.6	9.5	19.8	4.9	7.3	4.9	3.5	3.6	79.1
1964	3.4	3.1	3.4	4.4	7.9	8.3	4.3	4.6	4.7	3.0	10.0	8.9	66.1
1965	5.2	9.2	3.2	7.2	26.2	93.9	12.8	8.3	14.0	9.4	5.6	12.4	207.4
1966	5.3	18.4	5.2	8.6	5.1	12.3	21.1	12.8	5.4	4.7	4.2	4.1	107.3
1967	4.1	3.4	3.7	13.8	7.5	30.2	18.3	5.2	12.5	5.9	4.4	4.3	113.3
1968	3.8	3.3	3.5	4.2	7.3	4.7	16.2	4.8	3.4	43.0	6.7	3.9	104.8
1969	4.3	7.9	5.1	7.8	23.4	6.9	8.9	76.2	58.4	13.9	7.0	6.7	226.4
1970	5.9	5.1	9.4	19.4	15.8	30.9	6.3	6.5	12.0	15.0	4.9	7.2	138.5
1971	9.3	15.8	8.2	9.2	19.0	13.4	12.7	5.9	5.8	13.6	20.8	6.5	140.2
1972	5.1	4.3	4.5	6.9	19.7	13.6	5.0	12.9	10.1	5.7	9.4	4.5	101.6
1973	4.2	5.9	71.1	19.2	11.1	10.1	16.1	9.9	177.2	59.8	14.2	20.9	419.5
1974	12.3	10.0	12.5	37.4	31.6	13.5	10.5	15.0	9.0	13.9	8.3	7.2	181.2
1975	6.8	8.1	7.4	8.5	12.8	9.4	6.4	7.4	7.2	4.9	8.0	4.8	91.7
1976	4.3	4.1	8.9	59.0	21.7	9.3	10.2	6.0	11.8	9.4	4.8	4.8	154.4
1977	5.2	3.7	6.5	7.4	33.3	25.2	7.3	21.3	25.0	11.1	7.5	5.6	159.0
1978	4.9	5.4	4.8	4.7	10.7	11.0	5.1	6.3	20.8	4.5	5.6	4.0	87.8
1979	4.0	3.8	10.8	4.0	11.1	4.9	21.0	6.0	3.5	17.8	4.1	3.4	94.4

Pre-development Incremental Flow Data (acre-feet)
Node 350--Unit 28

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	3.8	3.5	17.6	6.4	7.3	2.1	3.8	13.0	3.4	4.0	2.8	4.2	71.9
1981	2.6	2.3	6.0	4.4	33.8	55.2	20.2	6.2	8.2	8.4	13.6	4.6	165.5
1982	4.2	6.9	4.5	3.6	33.2	11.2	10.4	5.5	5.1	9.1	3.6	3.7	100.9
1983	3.2	5.8	4.7	6.9	15.2	7.3	3.5	3.6	4.6	10.0	4.3	3.1	72.1
1984	2.9	2.6	20.9	31.4	5.7	6.7	4.6	4.6	4.1	10.5	3.4	32.9	130.3
1985	4.0	6.8	4.0	59.3	6.7	32.4	17.8	10.8	9.0	46.1	6.4	5.9	209.2
1986	5.1	4.7	5.2	15.9	6.8	10.4	17.6	33.5	7.7	14.6	4.5	4.1	130.2
1987	4.0	4.7	58.0	19.7	32.7	13.7	16.3	14.0	6.5	5.9	5.2	5.1	185.8
1988	5.3	3.7	4.1	11.0	4.4	6.4	7.3	4.9	3.7	3.3	2.9	2.8	59.7
1989	2.9	2.3	2.9	2.3	34.3	31.5	18.7	6.2	8.9	4.5	3.8	3.8	122.2
1990	3.8	5.4	6.4	14.4	76.0	10.1	8.7	27.9	14.4	6.4	7.3	4.9	185.6
1991	4.5	3.7	6.3	6.0	6.2	9.2	3.6	3.9	3.1	3.0	5.0	6.1	60.6
1992	4.7	2.4	3.4	2.5	12.4	44.5	11.2	11.8	5.0	7.7	6.6	16.5	128.5
1993	18.5	14.6	22.9	8.9	50.4	72.9	206.6	22.1	18.3	17.2	15.5	15.1	483.0
1994	13.5	11.5	11.0	15.2	10.6	9.2	13.8	8.0	7.1	8.8	6.4	6.3	121.4

Pre-development Incremental Flow Data (acre-feet)
Node 360--Unit 29

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	1.4	1.7	1.3	1.6	1.5	2.4	3.0	1.4	5.0	2.2	1.2	1.2	23.9
1956	1.2	1.6	1.1	1.8	1.8	1.0	1.7	1.0	0.9	2.0	0.9	0.9	15.9
1957	0.8	0.8	7.6	4.3	17.0	8.6	3.2	2.2	8.6	4.9	2.4	1.9	62.2
1958	1.7	1.6	6.7	2.0	7.3	4.4	8.3	2.7	6.4	2.8	1.8	1.8	47.5
1959	1.6	1.5	2.3	1.4	10.4	2.3	9.9	2.2	2.0	4.1	1.5	1.5	40.6
1960	2.1	1.7	4.4	1.9	2.5	3.9	1.7	1.9	2.0	2.0	1.2	1.4	26.6
1961	1.0	0.9	1.5	1.4	5.5	2.3	2.2	3.1	1.2	1.6	2.1	1.0	23.8
1962	1.2	0.9	1.0	0.9	1.0	5.4	4.8	3.2	1.8	1.2	1.1	1.0	23.6
1963	0.9	0.8	1.0	0.8	1.5	1.9	4.0	1.0	1.5	1.0	0.7	0.7	15.7
1964	0.7	0.6	0.7	0.9	1.6	1.7	0.9	0.9	0.9	0.6	2.0	1.8	13.2
1965	1.0	1.8	0.6	1.4	5.2	18.7	2.5	1.6	2.8	1.9	1.1	2.5	41.3
1966	1.0	3.7	1.0	1.7	1.0	2.5	4.2	2.5	1.1	0.9	0.8	0.8	21.3
1967	0.8	0.7	0.7	2.8	1.5	6.0	3.6	1.0	2.5	1.2	0.9	0.9	22.5
1968	0.8	0.7	0.7	0.8	1.5	0.9	3.2	0.9	0.7	8.6	1.3	0.8	20.9
1969	0.9	1.6	1.0	1.5	4.7	1.4	1.8	15.2	11.6	2.8	1.4	1.3	45.0
1970	1.2	1.0	1.9	3.9	3.2	6.2	1.3	1.3	2.4	3.0	1.0	1.4	27.6
1971	1.9	3.1	1.6	1.8	3.8	2.7	2.5	1.2	1.2	2.7	4.1	1.3	27.9
1972	1.0	0.9	0.9	1.4	3.9	2.7	1.0	2.6	2.0	1.1	1.9	0.9	20.2
1973	0.8	1.2	14.1	3.8	2.2	2.0	3.2	2.0	35.2	11.9	2.8	4.2	83.5
1974	2.4	2.0	2.5	7.4	6.3	2.7	2.1	3.0	1.8	2.8	1.6	1.4	36.0
1975	1.4	1.6	1.5	1.7	2.5	1.9	1.3	1.5	1.4	1.0	1.6	1.0	18.2
1976	0.9	0.8	1.8	11.8	4.3	1.9	2.0	1.2	2.3	1.9	0.9	0.9	30.7
1977	1.0	0.7	1.3	1.5	6.6	5.0	1.5	4.2	5.0	2.2	1.5	1.1	31.6
1978	1.0	1.1	0.9	0.9	2.1	2.2	1.0	1.3	4.1	0.9	1.1	0.8	17.5
1979	0.8	0.8	2.1	0.8	2.2	1.0	4.2	1.2	0.7	3.5	0.8	0.7	18.8

Pre-development Incremental Flow Data (acre-feet)
Node 360--Unit 29

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.8	0.7	3.5	1.3	1.5	0.4	0.8	2.6	0.7	0.8	0.6	0.8	14.3
1981	0.5	0.4	1.2	0.9	6.7	11.0	4.0	1.2	1.6	1.7	2.7	0.9	32.9
1982	0.8	1.4	0.9	0.7	6.6	2.2	2.1	1.1	1.0	1.8	0.7	0.7	20.1
1983	0.6	1.2	0.9	1.4	3.0	1.4	0.7	0.7	0.9	2.0	0.9	0.6	14.3
1984	0.6	0.5	4.2	6.3	1.1	1.3	0.9	0.9	0.8	2.1	0.7	6.6	25.9
1985	0.8	1.3	0.8	11.8	1.3	6.4	3.5	2.2	1.8	9.2	1.3	1.2	41.6
1986	1.0	0.9	1.0	3.2	1.4	2.1	3.5	6.7	1.5	2.9	0.9	0.8	25.9
1987	0.8	0.9	11.5	3.9	6.5	2.7	3.2	2.8	1.3	1.2	1.0	1.0	36.9
1988	1.1	0.7	0.8	2.2	0.9	1.3	1.5	1.0	0.7	0.6	0.6	0.6	11.9
1989	0.6	0.5	0.6	0.5	6.8	6.3	3.7	1.2	1.8	0.9	0.8	0.8	24.3
1990	0.8	1.1	1.3	2.9	15.1	2.0	1.7	5.5	2.9	1.3	1.5	1.0	36.9
1991	0.9	0.7	1.3	1.2	1.2	1.8	0.7	0.8	0.6	0.6	1.0	1.2	12.1
1992	0.9	0.5	0.7	0.5	2.5	8.8	2.2	2.3	1.0	1.5	1.3	3.3	25.6
1993	3.7	2.9	4.6	1.8	10.0	14.5	41.1	4.4	3.7	3.4	3.1	3.0	96.1
1994	2.7	2.3	2.2	3.0	2.1	1.8	2.7	1.6	1.4	1.8	1.3	1.3	24.1

Pre-development Incremental Flow Data (acre-feet)
Node 370--Unit 30

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.5	0.6	0.5	0.6	0.6	0.9	1.1	0.5	1.9	0.8	0.5	0.5	9.0
1956	0.4	0.6	0.4	0.7	0.7	0.4	0.7	0.4	0.3	0.8	0.3	0.3	6.0
1957	0.3	0.3	2.9	1.6	6.4	3.3	1.2	0.8	3.3	1.9	0.9	0.7	23.5
1958	0.6	0.6	2.5	0.8	2.7	1.7	3.1	1.0	2.4	1.1	0.7	0.7	18.0
1959	0.6	0.6	0.9	0.5	3.9	0.9	3.8	0.8	0.8	1.5	0.6	0.6	15.4
1960	0.8	0.7	1.7	0.7	0.9	1.5	0.6	0.7	0.8	0.7	0.4	0.5	10.1
1961	0.4	0.4	0.6	0.5	2.1	0.9	0.8	1.2	0.4	0.6	0.8	0.4	9.0
1962	0.4	0.3	0.4	0.3	0.4	2.1	1.8	1.2	0.7	0.5	0.4	0.4	8.9
1963	0.3	0.3	0.4	0.3	0.6	0.7	1.5	0.4	0.6	0.4	0.3	0.3	6.0
1964	0.3	0.2	0.3	0.3	0.6	0.6	0.3	0.3	0.4	0.2	0.8	0.7	5.0
1965	0.4	0.7	0.2	0.5	2.0	7.1	1.0	0.6	1.0	0.7	0.4	0.9	15.6
1966	0.4	1.4	0.4	0.6	0.4	0.9	1.6	1.0	0.4	0.3	0.3	0.3	8.1
1967	0.3	0.3	0.3	1.0	0.6	2.3	1.4	0.4	0.9	0.4	0.3	0.3	8.5
1968	0.3	0.3	0.3	0.3	0.6	0.4	1.2	0.4	0.3	3.2	0.5	0.3	7.9
1969	0.3	0.6	0.4	0.6	1.8	0.5	0.7	5.7	4.4	1.0	0.5	0.5	17.0
1970	0.4	0.4	0.7	1.5	1.2	2.3	0.5	0.5	0.9	1.1	0.4	0.5	10.4
1971	0.7	1.2	0.6	0.7	1.4	1.0	0.9	0.4	0.4	1.0	1.6	0.5	10.6
1972	0.4	0.3	0.3	0.5	1.5	1.0	0.4	1.0	0.8	0.4	0.7	0.3	7.7
1973	0.3	0.4	5.3	1.4	0.8	0.8	1.2	0.8	13.3	4.5	1.1	1.6	31.6
1974	0.9	0.8	0.9	2.8	2.4	1.0	0.8	1.1	0.7	1.0	0.6	0.5	13.7
1975	0.5	0.6	0.6	0.6	1.0	0.7	0.5	0.6	0.5	0.4	0.6	0.4	6.9
1976	0.3	0.3	0.7	4.4	1.6	0.7	0.8	0.4	0.9	0.7	0.4	0.4	11.6
1977	0.4	0.3	0.5	0.6	2.5	1.9	0.6	1.6	1.9	0.8	0.6	0.4	12.0
1978	0.4	0.4	0.4	0.3	0.8	0.8	0.4	0.5	1.6	0.3	0.4	0.3	6.6
1979	0.3	0.3	0.8	0.3	0.8	0.4	1.6	0.4	0.3	1.3	0.3	0.3	7.1

Pre-development Incremental Flow Data (acre-feet)
Node 370--Unit 30

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.3	0.3	1.3	0.5	0.6	0.2	0.3	1.0	0.3	0.3	0.2	0.3	5.4
1981	0.2	0.2	0.4	0.3	2.5	4.2	1.5	0.5	0.6	0.6	1.0	0.3	12.5
1982	0.3	0.5	0.3	0.3	2.5	0.8	0.8	0.4	0.4	0.7	0.3	0.3	7.6
1983	0.2	0.4	0.3	0.5	1.1	0.6	0.3	0.3	0.3	0.8	0.3	0.2	5.4
1984	0.2	0.2	1.6	2.4	0.4	0.5	0.3	0.3	0.3	0.8	0.3	2.5	9.8
1985	0.3	0.5	0.3	4.5	0.5	2.4	1.3	0.8	0.7	3.5	0.5	0.4	15.8
1986	0.4	0.3	0.4	1.2	0.5	0.8	1.3	2.5	0.6	1.1	0.3	0.3	9.8
1987	0.3	0.3	4.4	1.5	2.5	1.0	1.2	1.1	0.5	0.4	0.4	0.4	14.0
1988	0.4	0.3	0.3	0.8	0.3	0.5	0.6	0.4	0.3	0.3	0.2	0.2	4.5
1989	0.2	0.2	0.2	0.2	2.6	2.4	1.4	0.5	0.7	0.3	0.3	0.3	9.2
1990	0.3	0.4	0.5	1.1	5.7	0.8	0.7	2.1	1.1	0.5	0.6	0.4	14.0
1991	0.3	0.3	0.5	0.4	0.5	0.7	0.3	0.3	0.2	0.2	0.4	0.5	4.6
1992	0.4	0.2	0.3	0.2	0.9	3.3	0.8	0.9	0.4	0.6	0.5	1.2	9.7
1993	1.4	1.1	1.7	0.7	3.8	5.5	15.6	1.7	1.4	1.3	1.2	1.1	36.3
1994	1.0	0.9	0.8	1.1	0.8	0.7	1.0	0.6	0.5	0.7	0.5	0.5	9.1

Pre-development Incremental Flow Data (acre-feet)
Node 390--Unit 22

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.7	0.8	0.6	0.8	0.7	1.1	1.5	0.7	2.4	1.1	0.6	0.6	11.6
1956	0.6	0.8	0.5	0.9	0.9	0.5	0.8	0.5	0.4	1.0	0.4	0.4	7.7
1957	0.4	0.4	3.7	2.1	8.3	4.2	1.6	1.1	4.2	2.4	1.2	0.9	30.3
1958	0.8	0.8	3.3	1.0	3.5	2.2	4.0	1.3	3.1	1.4	0.9	0.9	23.1
1959	0.8	0.7	1.1	0.7	5.1	1.1	4.8	1.1	1.0	2.0	0.7	0.7	19.8
1960	1.0	0.9	2.2	0.9	1.2	1.9	0.8	0.9	1.0	0.9	0.6	0.7	13.0
1961	0.5	0.5	0.7	0.7	2.7	1.1	1.0	1.5	0.6	0.8	1.0	0.5	11.6
1962	0.6	0.4	0.5	0.5	0.5	2.7	2.3	1.6	0.9	0.6	0.5	0.5	11.5
1963	0.4	0.4	0.5	0.4	0.7	0.9	1.9	0.5	0.7	0.5	0.3	0.3	7.6
1964	0.3	0.3	0.3	0.4	0.8	0.8	0.4	0.4	0.5	0.3	1.0	0.9	6.4
1965	0.5	0.9	0.3	0.7	2.5	9.1	1.2	0.8	1.4	0.9	0.6	1.2	20.1
1966	0.5	1.8	0.5	0.8	0.5	1.2	2.0	1.2	0.5	0.4	0.4	0.4	10.4
1967	0.4	0.3	0.3	1.3	0.7	2.9	1.8	0.5	1.2	0.6	0.4	0.4	11.0
1968	0.4	0.3	0.3	0.4	0.7	0.5	1.6	0.5	0.3	4.2	0.6	0.4	10.2
1969	0.4	0.8	0.5	0.8	2.3	0.7	0.9	7.4	5.7	1.3	0.7	0.6	21.9
1970	0.6	0.5	0.9	1.9	1.5	3.0	0.6	0.6	1.2	1.5	0.5	0.7	13.4
1971	0.9	1.5	0.8	0.9	1.8	1.3	1.2	0.6	0.6	1.3	2.0	0.6	13.6
1972	0.5	0.4	0.4	0.7	1.9	1.3	0.5	1.3	1.0	0.6	0.9	0.4	9.8
1973	0.4	0.6	6.9	1.9	1.1	1.0	1.6	1.0	17.1	5.8	1.4	2.0	40.6
1974	1.2	1.0	1.2	3.6	3.0	1.3	1.0	1.5	0.9	1.4	0.8	0.7	17.5
1975	0.7	0.8	0.7	0.8	1.2	0.9	0.6	0.7	0.7	0.5	0.8	0.5	8.9
1976	0.4	0.4	0.9	5.7	2.1	0.9	1.0	0.6	1.1	0.9	0.5	0.5	14.9
1977	0.5	0.4	0.6	0.7	3.2	2.4	0.7	2.1	2.4	1.1	0.7	0.5	15.4
1978	0.5	0.5	0.5	0.5	1.0	1.1	0.5	0.6	2.0	0.4	0.5	0.4	8.5
1979	0.4	0.4	1.0	0.4	1.1	0.5	2.0	0.6	0.3	1.7	0.4	0.3	9.1

Pre-development Incremental Flow Data (acre-feet)
Node 390--Unit 22

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.4	0.3	1.7	0.6	0.7	0.2	0.4	1.3	0.3	0.4	0.3	0.4	7.0
1981	0.3	0.2	0.6	0.4	3.3	5.3	2.0	0.6	0.8	0.8	1.3	0.4	16.0
1982	0.4	0.7	0.4	0.3	3.2	1.1	1.0	0.5	0.5	0.9	0.3	0.3	9.8
1983	0.3	0.6	0.4	0.7	1.5	0.7	0.3	0.3	0.4	1.0	0.4	0.3	7.0
1984	0.3	0.3	2.0	3.0	0.6	0.6	0.4	0.4	0.4	1.0	0.3	3.2	12.6
1985	0.4	0.6	0.4	5.7	0.6	3.1	1.7	1.0	0.9	4.5	0.6	0.6	20.2
1986	0.5	0.4	0.5	1.5	0.7	1.0	1.7	3.2	0.7	1.4	0.4	0.4	12.6
1987	0.4	0.4	5.6	1.9	3.2	1.3	1.6	1.4	0.6	0.6	0.5	0.5	18.0
1988	0.5	0.4	0.4	1.1	0.4	0.6	0.7	0.5	0.3	0.3	0.3	0.3	5.8
1989	0.3	0.2	0.3	0.2	3.3	3.0	1.8	0.6	0.9	0.4	0.4	0.4	11.8
1990	0.4	0.5	0.6	1.4	7.3	1.0	0.8	2.7	1.4	0.6	0.7	0.5	17.9
1991	0.4	0.4	0.6	0.6	0.6	0.9	0.3	0.4	0.3	0.3	0.5	0.6	5.9
1992	0.5	0.2	0.3	0.2	1.2	4.3	1.1	1.1	0.5	0.8	0.6	1.6	12.4
1993	1.8	1.4	2.2	0.9	4.9	7.1	20.0	2.1	1.8	1.7	1.5	1.5	46.8
1994	1.3	1.1	1.1	1.5	1.0	0.9	1.3	0.8	0.7	0.9	0.6	0.6	11.7

Pre-development Incremental Flow Data (acre-feet)
Node 400--Unit 23--Park Smith Lake

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.7	0.8	0.6	0.8	0.7	1.1	1.4	0.6	2.3	1.0	0.6	0.6	11.0
1956	0.5	0.7	0.5	0.8	0.8	0.5	0.8	0.5	0.4	0.9	0.4	0.4	7.3
1957	0.4	0.3	3.5	2.0	7.8	4.0	1.5	1.0	4.0	2.3	1.1	0.9	28.6
1958	0.8	0.8	3.1	0.9	3.3	2.0	3.8	1.2	2.9	1.3	0.8	0.8	21.8
1959	0.7	0.7	1.0	0.6	4.8	1.1	4.6	1.0	0.9	1.9	0.7	0.7	18.6
1960	1.0	0.8	2.0	0.9	1.1	1.8	0.8	0.9	0.9	0.9	0.5	0.6	12.2
1961	0.5	0.4	0.7	0.6	2.5	1.0	1.0	1.4	0.5	0.7	1.0	0.5	10.9
1962	0.5	0.4	0.5	0.4	0.5	2.5	2.2	1.5	0.8	0.6	0.5	0.4	10.9
1963	0.4	0.4	0.5	0.4	0.7	0.9	1.8	0.4	0.7	0.4	0.3	0.3	7.2
1964	0.3	0.3	0.3	0.4	0.7	0.8	0.4	0.4	0.4	0.3	0.9	0.8	6.0
1965	0.5	0.8	0.3	0.7	2.4	8.6	1.2	0.8	1.3	0.9	0.5	1.1	18.9
1966	0.5	1.7	0.5	0.8	0.5	1.1	1.9	1.2	0.5	0.4	0.4	0.4	9.8
1967	0.4	0.3	0.3	1.3	0.7	2.8	1.7	0.5	1.1	0.5	0.4	0.4	10.3
1968	0.3	0.3	0.3	0.4	0.7	0.4	1.5	0.4	0.3	3.9	0.6	0.3	9.6
1969	0.4	0.7	0.5	0.7	2.1	0.6	0.8	7.0	5.3	1.3	0.6	0.6	20.7
1970	0.5	0.5	0.9	1.8	1.5	2.8	0.6	0.6	1.1	1.4	0.4	0.7	12.7
1971	0.9	1.4	0.8	0.8	1.7	1.2	1.2	0.5	0.5	1.2	1.9	0.6	12.8
1972	0.5	0.4	0.4	0.6	1.8	1.3	0.5	1.2	0.9	0.5	0.9	0.4	9.3
1973	0.4	0.5	6.5	1.8	1.0	0.9	1.5	0.9	16.2	5.5	1.3	1.9	38.3
1974	1.1	0.9	1.1	3.4	2.9	1.2	1.0	1.4	0.8	1.3	0.8	0.7	16.5
1975	0.6	0.7	0.7	0.8	1.2	0.9	0.6	0.7	0.7	0.4	0.7	0.4	8.4
1976	0.4	0.4	0.8	5.4	2.0	0.9	0.9	0.6	1.1	0.9	0.4	0.4	14.1
1977	0.5	0.3	0.6	0.7	3.0	2.3	0.7	1.9	2.3	1.0	0.7	0.5	14.5
1978	0.4	0.5	0.4	0.4	1.0	1.0	0.5	0.6	1.9	0.4	0.5	0.4	8.0
1979	0.4	0.3	1.0	0.4	1.0	0.4	1.9	0.6	0.3	1.6	0.4	0.3	8.6

Pre-development Incremental Flow Data (acre-feet)
Node 400--Unit 23--Park Smith Lake

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.3	0.3	1.6	0.6	0.7	0.2	0.3	1.2	0.3	0.4	0.3	0.4	6.6
1981	0.2	0.2	0.6	0.4	3.1	5.0	1.9	0.6	0.8	0.8	1.3	0.4	15.1
1982	0.4	0.6	0.4	0.3	3.0	1.0	0.9	0.5	0.5	0.8	0.3	0.3	9.2
1983	0.3	0.5	0.4	0.6	1.4	0.7	0.3	0.3	0.4	0.9	0.4	0.3	6.6
1984	0.3	0.2	1.9	2.9	0.5	0.6	0.4	0.4	0.4	1.0	0.3	3.0	11.9
1985	0.4	0.6	0.4	5.4	0.6	3.0	1.6	1.0	0.8	4.2	0.6	0.5	19.1
1986	0.5	0.4	0.5	1.5	0.6	0.9	1.6	3.1	0.7	1.3	0.4	0.4	11.9
1987	0.4	0.4	5.3	1.8	3.0	1.3	1.5	1.3	0.6	0.5	0.5	0.5	17.0
1988	0.5	0.3	0.4	1.0	0.4	0.6	0.7	0.4	0.3	0.3	0.3	0.3	5.5
1989	0.3	0.2	0.3	0.2	3.1	2.9	1.7	0.6	0.8	0.4	0.3	0.3	11.2
1990	0.3	0.5	0.6	1.3	6.9	0.9	0.8	2.5	1.3	0.6	0.7	0.4	17.0
1991	0.4	0.3	0.6	0.6	0.6	0.8	0.3	0.4	0.3	0.3	0.5	0.6	5.6
1992	0.4	0.2	0.3	0.2	1.1	4.1	1.0	1.1	0.5	0.7	0.6	1.5	11.7
1993	1.7	1.3	2.1	0.8	4.6	6.7	18.9	2.0	1.7	1.6	1.4	1.4	44.1
1994	1.2	1.0	1.0	1.4	1.0	0.8	1.3	0.7	0.6	0.8	0.6	0.6	11.1

Pre-development Incremental Flow Data (acre-feet)
Node 410--Unit 26

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	1.9	2.3	1.7	2.2	2.0	3.2	4.1	1.8	6.8	3.0	1.7	1.6	32.3
1956	1.6	2.2	1.5	2.4	2.4	1.4	2.3	1.4	1.2	2.7	1.2	1.2	21.5
1957	1.1	1.0	10.3	5.7	23.0	11.6	4.3	3.0	11.7	6.6	3.2	2.5	84.1
1958	2.3	2.2	9.1	2.7	9.8	6.0	11.2	3.6	8.6	3.8	2.5	2.4	64.2
1959	2.2	2.0	3.0	1.9	14.0	3.1	13.4	3.0	2.8	5.5	2.0	2.0	54.9
1960	2.9	2.3	6.0	2.6	3.4	5.2	2.3	2.5	2.7	2.6	1.6	1.9	36.0
1961	1.4	1.3	2.0	1.8	7.4	3.1	2.9	4.2	1.6	2.2	2.8	1.4	32.1
1962	1.6	1.2	1.4	1.3	1.4	7.4	6.5	4.4	2.4	1.6	1.5	1.3	31.9
1963	1.3	1.0	1.4	1.1	2.0	2.6	5.3	1.3	2.0	1.3	0.9	1.0	21.3
1964	0.9	0.8	0.9	1.2	2.1	2.2	1.1	1.3	1.3	0.8	2.7	2.4	17.8
1965	1.4	2.5	0.9	2.0	7.0	25.2	3.4	2.2	3.8	2.5	1.5	3.3	55.7
1966	1.4	4.9	1.4	2.3	1.4	3.3	5.7	3.4	1.5	1.3	1.1	1.1	28.8
1967	1.1	0.9	1.0	3.7	2.0	8.1	4.9	1.4	3.4	1.6	1.2	1.1	30.5
1968	1.0	0.9	0.9	1.1	2.0	1.3	4.3	1.3	0.9	11.6	1.8	1.0	28.2
1969	1.2	2.1	1.4	2.1	6.3	1.9	2.4	20.5	15.7	3.7	1.9	1.8	60.9
1970	1.6	1.4	2.5	5.2	4.3	8.3	1.7	1.8	3.2	4.0	1.3	1.9	37.2
1971	2.5	4.2	2.2	2.5	5.1	3.6	3.4	1.6	1.6	3.7	5.6	1.7	37.7
1972	1.4	1.1	1.2	1.9	5.3	3.7	1.4	3.5	2.7	1.5	2.5	1.2	27.3
1973	1.1	1.6	19.1	5.2	3.0	2.7	4.3	2.7	47.6	16.1	3.8	5.6	112.8
1974	3.3	2.7	3.3	10.1	8.5	3.6	2.8	4.0	2.4	3.7	2.2	2.0	48.7
1975	1.8	2.2	2.0	2.3	3.4	2.5	1.7	2.0	1.9	1.3	2.2	1.3	24.7
1976	1.1	1.1	2.4	15.9	5.8	2.5	2.7	1.6	3.2	2.5	1.3	1.3	41.5
1977	1.4	1.0	1.7	2.0	8.9	6.8	2.0	5.7	6.7	3.0	2.0	1.5	42.7
1978	1.3	1.4	1.3	1.3	2.9	3.0	1.4	1.7	5.6	1.2	1.5	1.1	23.6
1979	1.1	1.0	2.9	1.1	3.0	1.3	5.6	1.6	0.9	4.8	1.1	0.9	25.4

Pre-development Incremental Flow Data (acre-feet)
Node 410--Unit 26

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	1.0	0.9	4.7	1.7	2.0	0.6	1.0	3.5	0.9	1.1	0.8	1.1	19.3
1981	0.7	0.6	1.6	1.2	9.1	14.8	5.4	1.6	2.2	2.3	3.7	1.2	44.4
1982	1.1	1.9	1.2	1.0	8.9	3.0	2.8	1.5	1.4	2.5	1.0	1.0	27.1
1983	0.9	1.6	1.3	1.9	4.1	2.0	0.9	1.0	1.2	2.7	1.2	0.8	19.4
1984	0.8	0.7	5.6	8.4	1.5	1.8	1.2	1.2	1.1	2.8	0.9	8.9	35.0
1985	1.1	1.8	1.1	15.9	1.8	8.7	4.8	2.9	2.4	12.4	1.7	1.6	56.2
1986	1.4	1.3	1.4	4.3	1.8	2.8	4.7	9.0	2.1	3.9	1.2	1.1	35.0
1987	1.1	1.3	15.6	5.3	8.8	3.7	4.4	3.8	1.8	1.6	1.4	1.4	49.9
1988	1.4	1.0	1.1	3.0	1.2	1.7	2.0	1.3	1.0	0.9	0.8	0.7	16.1
1989	0.8	0.6	0.8	0.6	9.2	8.5	5.0	1.7	2.4	1.2	1.0	1.0	32.9
1990	1.0	1.5	1.7	3.9	20.4	2.7	2.3	7.5	3.9	1.7	2.0	1.3	49.9
1991	1.2	1.0	1.7	1.6	1.7	2.5	1.0	1.0	0.8	0.8	1.3	1.6	16.3
1992	1.3	0.6	0.9	0.7	3.3	11.9	3.0	3.2	1.3	2.1	1.8	4.4	34.5
1993	5.0	3.9	6.2	2.4	13.6	19.6	55.5	5.9	4.9	4.6	4.2	4.1	129.8
1994	3.6	3.1	3.0	4.1	2.8	2.5	3.7	2.2	1.9	2.4	1.7	1.7	32.6

Pre-development Incremental Flow Data (acre-feet)
Node 420--Unit 48

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	2.2	2.6	2.0	2.5	2.3	3.7	4.7	2.1	7.7	3.4	1.9	1.9	36.9
1956	1.8	2.5	1.7	2.8	2.7	1.6	2.7	1.6	1.4	3.1	1.4	1.3	24.5
1957	1.3	1.2	11.8	6.5	26.2	13.2	4.9	3.4	13.3	7.5	3.7	2.9	95.8
1958	2.7	2.5	10.4	3.1	11.2	6.8	12.7	4.2	9.8	4.3	2.8	2.7	73.2
1959	2.5	2.3	3.5	2.1	16.0	3.5	15.3	3.4	3.1	6.2	2.3	2.2	62.5
1960	3.3	2.7	6.8	2.9	3.9	6.0	2.6	2.9	3.1	3.0	1.8	2.1	41.1
1961	1.6	1.5	2.3	2.1	8.5	3.5	3.3	4.8	1.8	2.5	3.2	1.6	36.7
1962	1.8	1.4	1.5	1.4	1.6	8.4	7.4	5.0	2.7	1.9	1.7	1.5	36.4
1963	1.4	1.2	1.6	1.2	2.3	2.9	6.1	1.5	2.3	1.5	1.1	1.1	24.2
1964	1.0	0.9	1.0	1.4	2.4	2.6	1.3	1.4	1.5	0.9	3.1	2.7	20.2
1965	1.6	2.8	1.0	2.2	8.0	28.8	3.9	2.5	4.3	2.9	1.7	3.8	63.6
1966	1.6	5.6	1.6	2.7	1.6	3.8	6.5	3.9	1.7	1.4	1.3	1.3	32.8
1967	1.3	1.0	1.1	4.2	2.3	9.3	5.6	1.6	3.8	1.8	1.3	1.3	34.7
1968	1.2	1.0	1.1	1.3	2.2	1.5	5.0	1.5	1.0	13.2	2.0	1.2	32.1
1969	1.3	2.4	1.5	2.4	7.2	2.1	2.7	23.4	17.9	4.3	2.2	2.0	69.4
1970	1.8	1.6	2.9	6.0	4.8	9.5	1.9	2.0	3.7	4.6	1.5	2.2	42.4
1971	2.8	4.8	2.5	2.8	5.8	4.1	3.9	1.8	1.8	4.2	6.4	2.0	42.9
1972	1.6	1.3	1.4	2.1	6.0	4.2	1.5	3.9	3.1	1.7	2.9	1.4	31.1
1973	1.3	1.8	21.8	5.9	3.4	3.1	4.9	3.0	54.3	18.3	4.3	6.4	128.6
1974	3.8	3.1	3.8	11.5	9.7	4.1	3.2	4.6	2.8	4.3	2.5	2.2	55.5
1975	2.1	2.5	2.3	2.6	3.9	2.9	2.0	2.3	2.2	1.5	2.5	1.5	28.1
1976	1.3	1.3	2.7	18.1	6.7	2.8	3.1	1.9	3.6	2.9	1.5	1.5	47.3
1977	1.6	1.1	2.0	2.3	10.2	7.7	2.2	6.5	7.7	3.4	2.3	1.7	48.7
1978	1.5	1.6	1.5	1.4	3.3	3.4	1.6	1.9	6.4	1.4	1.7	1.2	26.9
1979	1.2	1.2	3.3	1.2	3.4	1.5	6.4	1.8	1.1	5.5	1.3	1.0	28.9

Pre-development Incremental Flow Data (acre-feet)
Node 420--Unit 48

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	1.2	1.1	5.4	2.0	2.2	0.6	1.2	4.0	1.0	1.2	0.9	1.3	22.0
1981	0.8	0.7	1.9	1.3	10.4	16.9	6.2	1.9	2.5	2.6	4.2	1.4	50.7
1982	1.3	2.1	1.4	1.1	10.2	3.4	3.2	1.7	1.5	2.8	1.1	1.1	30.9
1983	1.0	1.8	1.4	2.1	4.7	2.2	1.1	1.1	1.4	3.1	1.3	0.9	22.1
1984	0.9	0.8	6.4	9.6	1.7	2.0	1.4	1.4	1.3	3.2	1.0	10.1	39.9
1985	1.2	2.1	1.2	18.2	2.0	9.9	5.4	3.3	2.8	14.1	2.0	1.8	64.1
1986	1.6	1.4	1.6	4.9	2.1	3.2	5.4	10.3	2.4	4.5	1.4	1.3	39.9
1987	1.2	1.4	17.8	6.0	10.0	4.2	5.0	4.3	2.0	1.8	1.6	1.6	56.9
1988	1.6	1.1	1.3	3.4	1.4	2.0	2.2	1.5	1.1	1.0	0.9	0.9	18.3
1989	0.9	0.7	0.9	0.7	10.5	9.7	5.7	1.9	2.7	1.4	1.2	1.2	37.4
1990	1.1	1.6	2.0	4.4	23.3	3.1	2.7	8.5	4.4	2.0	2.3	1.5	56.8
1991	1.4	1.1	1.9	1.8	1.9	2.8	1.1	1.2	0.9	0.9	1.5	1.9	18.6
1992	1.5	0.7	1.0	0.8	3.8	13.6	3.4	3.6	1.5	2.4	2.0	5.1	39.4
1993	5.7	4.5	7.0	2.7	15.5	22.3	63.3	6.8	5.6	5.3	4.7	4.6	148.0
1994	4.2	3.5	3.4	4.7	3.2	2.8	4.2	2.5	2.2	2.7	2.0	1.9	37.2

Pre-development Incremental Flow Data (acre-feet)
Node 430--Unit 49

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	2.6	3.0	2.3	3.0	2.7	4.3	5.5	2.4	9.1	4.0	2.2	2.2	43.3
1956	2.1	2.9	2.0	3.2	3.2	1.8	3.1	1.9	1.6	3.7	1.6	1.6	28.8
1957	1.5	1.4	13.8	7.7	30.8	15.6	5.8	4.0	15.6	8.9	4.3	3.4	112.7
1958	3.1	3.0	12.2	3.6	13.1	8.1	15.0	4.9	11.5	5.1	3.3	3.2	86.0
1959	2.9	2.7	4.1	2.5	18.8	4.2	17.9	4.0	3.7	7.3	2.7	2.6	73.5
1960	3.9	3.2	8.0	3.5	4.5	7.0	3.0	3.4	3.6	3.5	2.1	2.5	48.3
1961	1.9	1.7	2.7	2.5	10.0	4.1	3.9	5.7	2.1	2.9	3.8	1.9	43.1
1962	2.1	1.6	1.8	1.7	1.8	9.9	8.7	5.9	3.2	2.2	2.0	1.8	42.8
1963	1.7	1.4	1.9	1.5	2.8	3.4	7.2	1.8	2.6	1.8	1.3	1.3	28.5
1964	1.2	1.1	1.2	1.6	2.8	3.0	1.5	1.7	1.7	1.1	3.6	3.2	23.8
1965	1.9	3.3	1.1	2.6	9.4	33.8	4.6	3.0	5.0	3.4	2.0	4.4	74.7
1966	1.9	6.6	1.9	3.1	1.9	4.4	7.6	4.6	2.0	1.7	1.5	1.5	38.6
1967	1.5	1.2	1.3	5.0	2.7	10.9	6.6	1.9	4.5	2.1	1.6	1.5	40.8
1968	1.4	1.2	1.3	1.5	2.6	1.7	5.8	1.7	1.2	15.5	2.4	1.4	37.8
1969	1.5	2.8	1.8	2.8	8.4	2.5	3.2	27.5	21.0	5.0	2.5	2.4	81.6
1970	2.1	1.9	3.4	7.0	5.7	11.1	2.3	2.3	4.3	5.4	1.8	2.6	49.9
1971	3.3	5.7	3.0	3.3	6.8	4.8	4.6	2.1	2.1	4.9	7.5	2.3	50.5
1972	1.8	1.5	1.6	2.5	7.1	4.9	1.8	4.6	3.6	2.0	3.4	1.6	36.6
1973	1.5	2.1	25.6	6.9	4.0	3.6	5.8	3.6	63.8	21.5	5.1	7.5	151.1
1974	4.4	3.6	4.5	13.5	11.4	4.9	3.8	5.4	3.3	5.0	3.0	2.6	65.3
1975	2.5	2.9	2.7	3.1	4.6	3.4	2.3	2.7	2.6	1.8	2.9	1.8	33.0
1976	1.5	1.5	3.2	21.3	7.8	3.3	3.7	2.2	4.2	3.4	1.7	1.7	55.6
1977	1.9	1.3	2.3	2.7	12.0	9.1	2.6	7.7	9.0	4.0	2.7	2.0	57.2
1978	1.8	1.9	1.7	1.7	3.9	4.0	1.8	2.3	7.5	1.6	2.0	1.4	31.6
1979	1.4	1.4	3.9	1.5	4.0	1.8	7.6	2.2	1.3	6.4	1.5	1.2	34.0

Pre-development Incremental Flow Data (acre-feet)
Node 430--Unit 49

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	1.4	1.2	6.4	2.3	2.6	0.8	1.4	4.7	1.2	1.4	1.0	1.5	25.9
1981	0.9	0.8	2.2	1.6	12.2	19.9	7.3	2.2	2.9	3.0	4.9	1.6	59.6
1982	1.5	2.5	1.6	1.3	12.0	4.0	3.7	2.0	1.8	3.3	1.3	1.3	36.4
1983	1.1	2.1	1.7	2.5	5.5	2.6	1.3	1.3	1.6	3.6	1.6	1.1	26.0
1984	1.0	0.9	7.5	11.3	2.0	2.4	1.6	1.6	1.5	3.8	1.2	11.9	46.9
1985	1.4	2.4	1.5	21.4	2.4	11.7	6.4	3.9	3.3	16.6	2.3	2.1	75.4
1986	1.8	1.7	1.9	5.7	2.5	3.7	6.3	12.1	2.8	5.3	1.6	1.5	46.9
1987	1.4	1.7	20.9	7.1	11.8	4.9	5.9	5.1	2.3	2.1	1.9	1.9	66.9
1988	1.9	1.3	1.5	4.0	1.6	2.3	2.6	1.8	1.3	1.2	1.0	1.0	21.5
1989	1.0	0.8	1.0	0.8	12.4	11.4	6.8	2.2	3.2	1.6	1.4	1.4	44.0
1990	1.4	1.9	2.3	5.2	27.4	3.6	3.1	10.0	5.2	2.3	2.6	1.8	66.8
1991	1.6	1.4	2.3	2.2	2.3	3.3	1.3	1.4	1.1	1.1	1.8	2.2	21.9
1992	1.7	0.9	1.2	0.9	4.5	16.0	4.0	4.2	1.8	2.8	2.4	5.9	46.3
1993	6.7	5.3	8.3	3.2	18.2	26.3	74.4	8.0	6.6	6.2	5.6	5.4	174.0
1994	4.9	4.2	4.0	5.5	3.8	3.3	5.0	2.9	2.5	3.2	2.3	2.3	43.7

Pre-development Incremental Flow Data (acre-feet)
Node 440--Unit 51--Rattlesnake Canal Berm

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	5.2	6.0	4.6	5.9	5.3	8.5	10.9	4.8	18.1	7.9	4.4	4.4	86.0
1956	4.2	5.8	3.9	6.4	6.3	3.6	6.2	3.7	3.2	7.2	3.2	3.1	57.1
1957	3.0	2.8	27.4	15.3	61.1	30.9	11.5	7.9	31.0	17.6	8.6	6.7	223.7
1958	6.2	5.9	24.2	7.2	26.1	16.0	29.7	9.7	22.9	10.0	6.6	6.3	170.8
1959	5.8	5.3	8.1	5.0	37.3	8.3	35.6	8.0	7.3	14.6	5.4	5.2	145.9
1960	7.7	6.3	15.9	6.8	9.0	13.9	6.0	6.8	7.2	7.0	4.3	5.0	95.8
1961	3.8	3.4	5.3	4.9	19.8	8.1	7.8	11.3	4.3	5.7	7.5	3.7	85.6
1962	4.2	3.3	3.6	3.4	3.6	19.6	17.3	11.7	6.3	4.3	4.0	3.5	84.9
1963	3.4	2.8	3.7	2.9	5.5	6.8	14.2	3.5	5.3	3.5	2.5	2.6	56.6
1964	2.4	2.2	2.4	3.2	5.6	6.0	3.1	3.3	3.4	2.2	7.2	6.4	47.2
1965	3.7	6.6	2.3	5.2	18.7	67.1	9.1	5.9	10.0	6.7	4.0	8.8	148.3
1966	3.8	13.2	3.7	6.2	3.7	8.8	15.1	9.1	3.9	3.3	3.0	3.0	76.7
1967	2.9	2.4	2.6	9.9	5.4	21.6	13.1	3.8	8.9	4.2	3.1	3.0	81.0
1968	2.7	2.4	2.5	3.0	5.2	3.4	11.6	3.4	2.5	30.8	4.8	2.8	74.9
1969	3.1	5.7	3.6	5.5	16.7	4.9	6.3	54.5	41.8	9.9	5.0	4.8	161.9
1970	4.3	3.7	6.7	13.9	11.3	22.1	4.5	4.7	8.6	10.7	3.5	5.1	99.1
1971	6.7	11.3	5.8	6.6	13.6	9.6	9.1	4.3	4.2	9.7	14.9	4.6	100.2
1972	3.6	3.0	3.2	4.9	14.1	9.8	3.6	9.2	7.2	4.1	6.8	3.2	72.6
1973	3.0	4.2	50.8	13.7	7.9	7.2	11.5	7.1	126.7	42.8	10.1	14.9	300.0
1974	8.8	7.2	8.9	26.8	22.6	9.6	7.5	10.7	6.4	9.9	5.9	5.2	129.6
1975	4.9	5.8	5.3	6.1	9.1	6.7	4.6	5.3	5.2	3.5	5.7	3.5	65.6
1976	3.1	3.0	6.4	42.2	15.5	6.6	7.3	4.3	8.4	6.8	3.4	3.4	110.4
1977	3.7	2.7	4.6	5.3	23.8	18.0	5.2	15.2	17.9	7.9	5.3	4.0	113.7
1978	3.5	3.8	3.4	3.4	7.7	7.9	3.6	4.5	14.9	3.2	4.0	2.8	62.8
1979	2.9	2.8	7.7	2.9	8.0	3.5	15.0	4.3	2.5	12.7	2.9	2.4	67.5

Pre-development Incremental Flow Data (acre-feet)
Node 440--Unit 51--Rattlesnake Canal Berm

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	2.7	2.5	12.6	4.6	5.2	1.5	2.7	9.3	2.4	2.9	2.0	3.0	51.4
1981	1.9	1.6	4.3	3.1	24.1	39.5	14.5	4.4	5.8	6.0	9.8	3.3	118.3
1982	3.0	4.9	3.2	2.6	23.7	8.0	7.4	3.9	3.6	6.5	2.6	2.6	72.1
1983	2.3	4.2	3.3	4.9	10.9	5.2	2.5	2.6	3.3	7.2	3.1	2.2	51.5
1984	2.1	1.9	14.9	22.5	4.1	4.8	3.3	3.3	2.9	7.5	2.4	23.5	93.1
1985	2.9	4.8	2.9	42.4	4.8	23.2	12.7	7.8	6.4	32.9	4.6	4.2	149.6
1986	3.6	3.4	3.7	11.4	4.9	7.4	12.6	24.0	5.5	10.4	3.2	3.0	93.1
1987	2.9	3.3	41.5	14.1	23.4	9.8	11.6	10.0	4.6	4.3	3.7	3.7	132.8
1988	3.8	2.7	2.9	7.9	3.2	4.6	5.2	3.5	2.6	2.3	2.0	2.0	42.7
1989	2.1	1.6	2.1	1.7	24.5	22.5	13.4	4.4	6.4	3.3	2.7	2.7	87.4
1990	2.7	3.8	4.6	10.3	54.3	7.2	6.2	19.9	10.3	4.6	5.2	3.5	132.7
1991	3.3	2.7	4.5	4.3	4.5	6.6	2.6	2.8	2.2	2.2	3.6	4.3	43.4
1992	3.4	1.7	2.4	1.8	8.9	31.8	8.0	8.4	3.6	5.5	4.7	11.8	91.9
1993	13.3	10.4	16.4	6.4	36.1	52.1	147.8	15.8	13.1	12.3	11.1	10.8	345.4
1994	9.7	8.3	7.8	10.9	7.6	6.6	9.9	5.7	5.1	6.3	4.6	4.5	86.8

Pre-development Incremental Flow Data (acre-feet)
Node 455--Unit 34

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.7	0.8	0.6	0.8	0.7	1.1	1.4	0.6	2.3	1.0	0.6	0.6	11.0
1956	0.5	0.7	0.5	0.8	0.8	0.5	0.8	0.5	0.4	0.9	0.4	0.4	7.3
1957	0.4	0.3	3.5	2.0	7.8	4.0	1.5	1.0	4.0	2.3	1.1	0.9	28.6
1958	0.8	0.8	3.1	0.9	3.3	2.0	3.8	1.2	2.9	1.3	0.8	0.8	21.8
1959	0.7	0.7	1.0	0.6	4.8	1.1	4.6	1.0	0.9	1.9	0.7	0.7	18.6
1960	1.0	0.8	2.0	0.9	1.1	1.8	0.8	0.9	0.9	0.9	0.5	0.6	12.2
1961	0.5	0.4	0.7	0.6	2.5	1.0	1.0	1.4	0.5	0.7	1.0	0.5	10.9
1962	0.5	0.4	0.5	0.4	0.5	2.5	2.2	1.5	0.8	0.6	0.5	0.4	10.9
1963	0.4	0.4	0.5	0.4	0.7	0.9	1.8	0.4	0.7	0.4	0.3	0.3	7.2
1964	0.3	0.3	0.3	0.4	0.7	0.8	0.4	0.4	0.4	0.3	0.9	0.8	6.0
1965	0.5	0.8	0.3	0.7	2.4	8.6	1.2	0.8	1.3	0.9	0.5	1.1	18.9
1966	0.5	1.7	0.5	0.8	0.5	1.1	1.9	1.2	0.5	0.4	0.4	0.4	9.8
1967	0.4	0.3	0.3	1.3	0.7	2.8	1.7	0.5	1.1	0.5	0.4	0.4	10.3
1968	0.3	0.3	0.3	0.4	0.7	0.4	1.5	0.4	0.3	3.9	0.6	0.3	9.6
1969	0.4	0.7	0.5	0.7	2.1	0.6	0.8	7.0	5.3	1.3	0.6	0.6	20.7
1970	0.5	0.5	0.9	1.8	1.5	2.8	0.6	0.6	1.1	1.4	0.4	0.7	12.7
1971	0.9	1.4	0.8	0.8	1.7	1.2	1.2	0.5	0.5	1.2	1.9	0.6	12.8
1972	0.5	0.4	0.4	0.6	1.8	1.3	0.5	1.2	0.9	0.5	0.9	0.4	9.3
1973	0.4	0.5	6.5	1.8	1.0	0.9	1.5	0.9	16.2	5.5	1.3	1.9	38.3
1974	1.1	0.9	1.1	3.4	2.9	1.2	1.0	1.4	0.8	1.3	0.8	0.7	16.5
1975	0.6	0.7	0.7	0.8	1.2	0.9	0.6	0.7	0.7	0.4	0.7	0.4	8.4
1976	0.4	0.4	0.8	5.4	2.0	0.9	0.9	0.6	1.1	0.9	0.4	0.4	14.1
1977	0.5	0.3	0.6	0.7	3.0	2.3	0.7	1.9	2.3	1.0	0.7	0.5	14.5
1978	0.4	0.5	0.4	0.4	1.0	1.0	0.5	0.6	1.9	0.4	0.5	0.4	8.0
1979	0.4	0.3	1.0	0.4	1.0	0.4	1.9	0.6	0.3	1.6	0.4	0.3	8.6

Pre-development Incremental Flow Data (acre-feet)
Node 455--Unit 34

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.3	0.3	1.6	0.6	0.7	0.2	0.3	1.2	0.3	0.4	0.3	0.4	6.6
1981	0.2	0.2	0.6	0.4	3.1	5.0	1.9	0.6	0.8	0.8	1.3	0.4	15.1
1982	0.4	0.6	0.4	0.3	3.0	1.0	0.9	0.5	0.5	0.8	0.3	0.3	9.2
1983	0.3	0.5	0.4	0.6	1.4	0.7	0.3	0.3	0.4	0.9	0.4	0.3	6.6
1984	0.3	0.2	1.9	2.9	0.5	0.6	0.4	0.4	0.4	1.0	0.3	3.0	11.9
1985	0.4	0.6	0.4	5.4	0.6	3.0	1.6	1.0	0.8	4.2	0.6	0.5	19.1
1986	0.5	0.4	0.5	1.5	0.6	0.9	1.6	3.1	0.7	1.3	0.4	0.4	11.9
1987	0.4	0.4	5.3	1.8	3.0	1.3	1.5	1.3	0.6	0.5	0.5	0.5	17.0
1988	0.5	0.3	0.4	1.0	0.4	0.6	0.7	0.4	0.3	0.3	0.3	0.3	5.5
1989	0.3	0.2	0.3	0.2	3.1	2.9	1.7	0.6	0.8	0.4	0.3	0.3	11.2
1990	0.3	0.5	0.6	1.3	6.9	0.9	0.8	2.5	1.3	0.6	0.7	0.4	17.0
1991	0.4	0.3	0.6	0.6	0.6	0.8	0.3	0.4	0.3	0.3	0.5	0.6	5.6
1992	0.4	0.2	0.3	0.2	1.1	4.1	1.0	1.1	0.5	0.7	0.6	1.5	11.7
1993	1.7	1.3	2.1	0.8	4.6	6.7	18.9	2.0	1.7	1.6	1.4	1.4	44.1
1994	1.2	1.0	1.0	1.4	1.0	0.8	1.3	0.7	0.6	0.8	0.6	0.6	11.1

Pre-development Incremental Flow Data (acre-feet)
Node 460--Unit 37--Dead Horse Slough

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	7.5	8.7	6.6	8.6	7.6	12.3	15.7	7.0	26.1	11.4	6.4	6.3	124.2
1956	6.1	8.3	5.7	9.3	9.1	5.3	9.0	5.4	4.7	10.4	4.6	4.5	82.4
1957	4.3	4.0	39.6	22.0	88.2	44.6	16.6	11.4	44.8	25.4	12.4	9.6	322.9
1958	8.9	8.6	34.9	10.4	37.6	23.1	42.9	14.0	33.0	14.5	9.5	9.1	246.5
1959	8.4	7.7	11.7	7.2	53.8	12.0	51.4	11.6	10.6	21.0	7.8	7.5	210.6
1960	11.1	9.0	23.0	9.9	13.0	20.1	8.7	9.7	10.3	10.1	6.1	7.2	138.3
1961	5.5	4.9	7.6	7.1	28.6	11.8	11.2	16.3	6.1	8.3	10.9	5.4	123.5
1962	6.1	4.7	5.2	4.9	5.3	28.3	25.0	16.8	9.2	6.3	5.8	5.0	122.5
1963	4.8	4.0	5.3	4.2	7.9	9.8	20.5	5.0	7.6	5.1	3.7	3.7	81.7
1964	3.5	3.2	3.5	4.6	8.1	8.6	4.4	4.8	4.9	3.1	10.4	9.2	68.2
1965	5.4	9.5	3.3	7.5	27.0	96.9	13.2	8.5	14.4	9.7	5.8	12.8	214.1
1966	5.4	19.0	5.4	8.9	5.3	12.7	21.8	13.2	5.6	4.8	4.3	4.3	110.7
1967	4.2	3.5	3.8	14.3	7.8	31.2	18.9	5.4	12.9	6.1	4.5	4.4	116.9
1968	3.9	3.4	3.6	4.3	7.5	4.9	16.7	4.9	3.5	44.4	6.9	4.0	108.2
1969	4.4	8.2	5.2	8.0	24.2	7.1	9.1	78.7	60.3	14.3	7.3	6.9	233.8
1970	6.1	5.3	9.7	20.1	16.3	31.9	6.6	6.7	12.4	15.4	5.1	7.4	143.0
1971	9.6	16.3	8.4	9.5	19.6	13.8	13.1	6.1	6.0	14.0	21.4	6.7	144.7
1972	5.3	4.4	4.6	7.1	20.3	14.1	5.2	13.3	10.4	5.9	9.8	4.6	104.9
1973	4.3	6.1	73.4	19.8	11.4	10.4	16.6	10.2	182.9	61.8	14.6	21.5	433.0
1974	12.7	10.3	12.9	38.7	32.6	13.9	10.9	15.5	9.3	14.4	8.6	7.5	187.1
1975	7.1	8.4	7.7	8.8	13.2	9.6	6.7	7.7	7.4	5.1	8.2	5.0	94.7
1976	4.4	4.3	9.2	61.0	22.4	9.6	10.5	6.2	12.1	9.8	4.9	4.9	159.3
1977	5.4	3.8	6.7	7.6	34.4	26.0	7.5	22.0	25.8	11.4	7.7	5.7	164.1
1978	5.1	5.5	4.9	4.9	11.1	11.4	5.3	6.5	21.5	4.7	5.7	4.1	90.6
1979	4.1	4.0	11.1	4.2	11.5	5.1	21.6	6.2	3.6	18.4	4.2	3.5	97.4

Pre-development Incremental Flow Data (acre-feet)
Node 460--Unit 37--Dead Horse Slough

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	4.0	3.6	18.2	6.7	7.5	2.2	4.0	13.4	3.5	4.1	2.9	4.3	74.2
1981	2.7	2.4	6.2	4.5	34.9	57.0	20.9	6.3	8.4	8.7	14.1	4.7	170.8
1982	4.3	7.1	4.6	3.7	34.3	11.5	10.7	5.7	5.2	9.4	3.7	3.8	104.1
1983	3.3	6.0	4.8	7.1	15.7	7.5	3.6	3.7	4.7	10.3	4.5	3.2	74.4
1984	3.0	2.7	21.6	32.4	5.8	6.9	4.7	4.7	4.2	10.9	3.5	34.0	134.5
1985	4.1	7.0	4.2	61.2	6.9	33.5	18.3	11.2	9.3	47.5	6.6	6.1	215.9
1986	5.3	4.8	5.4	16.5	7.0	10.7	18.2	34.6	7.9	15.1	4.7	4.3	134.3
1987	4.1	4.8	59.8	20.3	33.8	14.1	16.8	14.5	6.7	6.1	5.4	5.3	191.8
1988	5.5	3.8	4.2	11.4	4.6	6.6	7.5	5.1	3.8	3.4	3.0	2.9	61.7
1989	3.0	2.4	3.0	2.4	35.4	32.5	19.4	6.4	9.2	4.7	4.0	3.9	126.2
1990	3.9	5.6	6.6	14.8	78.4	10.4	9.0	28.8	14.9	6.6	7.6	5.0	191.5
1991	4.7	3.9	6.5	6.2	6.4	9.5	3.7	4.0	3.2	3.1	5.2	6.2	62.6
1992	4.9	2.4	3.5	2.5	12.8	45.9	11.5	12.2	5.1	8.0	6.8	17.0	132.7
1993	19.1	15.0	23.6	9.2	52.1	75.2	213.3	22.8	18.9	17.7	16.0	15.6	498.6
1994	14.0	11.9	11.3	15.7	10.9	9.5	14.2	8.3	7.3	9.1	6.6	6.5	125.3

Pre-development Incremental Flow Data (acre-feet)
Node 470--Unit 39--Dead Horse Slough

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	7.5	8.7	6.6	8.6	7.6	12.3	15.7	7.0	26.1	11.4	6.4	6.3	124.2
1956	6.1	8.3	5.7	9.3	9.1	5.3	9.0	5.4	4.7	10.4	4.6	4.5	82.4
1957	4.3	4.0	39.6	22.0	88.2	44.6	16.6	11.4	44.8	25.4	12.4	9.6	322.9
1958	8.9	8.6	34.9	10.4	37.6	23.1	42.9	14.0	33.0	14.5	9.5	9.1	246.5
1959	8.4	7.7	11.7	7.2	53.8	12.0	51.4	11.6	10.6	21.0	7.8	7.5	210.6
1960	11.1	9.0	23.0	9.9	13.0	20.1	8.7	9.7	10.3	10.1	6.1	7.2	138.3
1961	5.5	4.9	7.6	7.1	28.6	11.8	11.2	16.3	6.1	8.3	10.9	5.4	123.5
1962	6.1	4.7	5.2	4.9	5.3	28.3	25.0	16.8	9.2	6.3	5.8	5.0	122.5
1963	4.8	4.0	5.3	4.2	7.9	9.8	20.5	5.0	7.6	5.1	3.7	3.7	81.7
1964	3.5	3.2	3.5	4.6	8.1	8.6	4.4	4.8	4.9	3.1	10.4	9.2	68.2
1965	5.4	9.5	3.3	7.5	27.0	96.9	13.2	8.5	14.4	9.7	5.8	12.8	214.1
1966	5.4	19.0	5.4	8.9	5.3	12.7	21.8	13.2	5.6	4.8	4.3	4.3	110.7
1967	4.2	3.5	3.8	14.3	7.8	31.2	18.9	5.4	12.9	6.1	4.5	4.4	116.9
1968	3.9	3.4	3.6	4.3	7.5	4.9	16.7	4.9	3.5	44.4	6.9	4.0	108.2
1969	4.4	8.2	5.2	8.0	24.2	7.1	9.1	78.7	60.3	14.3	7.3	6.9	233.8
1970	6.1	5.3	9.7	20.1	16.3	31.9	6.6	6.7	12.4	15.4	5.1	7.4	143.0
1971	9.6	16.3	8.4	9.5	19.6	13.8	13.1	6.1	6.0	14.0	21.4	6.7	144.7
1972	5.3	4.4	4.6	7.1	20.3	14.1	5.2	13.3	10.4	5.9	9.8	4.6	104.9
1973	4.3	6.1	73.4	19.8	11.4	10.4	16.6	10.2	182.9	61.8	14.6	21.5	433.0
1974	12.7	10.3	12.9	38.7	32.6	13.9	10.9	15.5	9.3	14.4	8.6	7.5	187.1
1975	7.1	8.4	7.7	8.8	13.2	9.6	6.7	7.7	7.4	5.1	8.2	5.0	94.7
1976	4.4	4.3	9.2	61.0	22.4	9.6	10.5	6.2	12.1	9.8	4.9	4.9	159.3
1977	5.4	3.8	6.7	7.6	34.4	26.0	7.5	22.0	25.8	11.4	7.7	5.7	164.1
1978	5.1	5.5	4.9	4.9	11.1	11.4	5.3	6.5	21.5	4.7	5.7	4.1	90.6
1979	4.1	4.0	11.1	4.2	11.5	5.1	21.6	6.2	3.6	18.4	4.2	3.5	97.4

Pre-development Incremental Flow Data (acre-feet)
Node 470--Unit 39--Dead Horse Slough

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	4.0	3.6	18.2	6.7	7.5	2.2	4.0	13.4	3.5	4.1	2.9	4.3	74.2
1981	2.7	2.4	6.2	4.5	34.9	57.0	20.9	6.3	8.4	8.7	14.1	4.7	170.8
1982	4.3	7.1	4.6	3.7	34.3	11.5	10.7	5.7	5.2	9.4	3.7	3.8	104.1
1983	3.3	6.0	4.8	7.1	15.7	7.5	3.6	3.7	4.7	10.3	4.5	3.2	74.4
1984	3.0	2.7	21.6	32.4	5.8	6.9	4.7	4.7	4.2	10.9	3.5	34.0	134.5
1985	4.1	7.0	4.2	61.2	6.9	33.5	18.3	11.2	9.3	47.5	6.6	6.1	215.9
1986	5.3	4.8	5.4	16.5	7.0	10.7	18.2	34.6	7.9	15.1	4.7	4.3	134.3
1987	4.1	4.8	59.8	20.3	33.8	14.1	16.8	14.5	6.7	6.1	5.4	5.3	191.8
1988	5.5	3.8	4.2	11.4	4.6	6.6	7.5	5.1	3.8	3.4	3.0	2.9	61.7
1989	3.0	2.4	3.0	2.4	35.4	32.5	19.4	6.4	9.2	4.7	4.0	3.9	126.2
1990	3.9	5.6	6.6	14.8	78.4	10.4	9.0	28.8	14.9	6.6	7.6	5.0	191.5
1991	4.7	3.9	6.5	6.2	6.4	9.5	3.7	4.0	3.2	3.1	5.2	6.2	62.6
1992	4.9	2.4	3.5	2.5	12.8	45.9	11.5	12.2	5.1	8.0	6.8	17.0	132.7
1993	19.1	15.0	23.6	9.2	52.1	75.2	213.3	22.8	18.9	17.7	16.0	15.6	498.6
1994	14.0	11.9	11.3	15.7	10.9	9.5	14.2	8.3	7.3	9.1	6.6	6.5	125.3

Pre-development Incremental Flow Data (acre-feet)
Node 510--Unit 61

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	2.5	2.8	2.2	2.8	2.5	4.0	5.2	2.3	8.6	3.7	2.1	2.1	40.7
1956	2.0	2.7	1.9	3.0	3.0	1.7	3.0	1.8	1.5	3.4	1.5	1.5	27.0
1957	1.4	1.3	13.0	7.2	28.9	14.6	5.4	3.7	14.7	8.3	4.1	3.2	105.9
1958	2.9	2.8	11.5	3.4	12.4	7.6	14.1	4.6	10.8	4.8	3.1	3.0	80.9
1959	2.8	2.5	3.8	2.4	17.7	3.9	16.9	3.8	3.5	6.9	2.6	2.5	69.1
1960	3.7	3.0	7.5	3.2	4.3	6.6	2.8	3.2	3.4	3.3	2.0	2.4	45.4
1961	1.8	1.6	2.5	2.3	9.4	3.9	3.7	5.3	2.0	2.7	3.6	1.8	40.5
1962	2.0	1.5	1.7	1.6	1.7	9.3	8.2	5.5	3.0	2.1	1.9	1.6	40.2
1963	1.6	1.3	1.8	1.4	2.6	3.2	6.7	1.6	2.5	1.7	1.2	1.2	26.8
1964	1.1	1.0	1.1	1.5	2.7	2.8	1.5	1.6	1.6	1.0	3.4	3.0	22.4
1965	1.8	3.1	1.1	2.5	8.9	31.8	4.3	2.8	4.7	3.2	1.9	4.2	70.2
1966	1.8	6.2	1.8	2.9	1.7	4.2	7.2	4.3	1.8	1.6	1.4	1.4	36.3
1967	1.4	1.1	1.2	4.7	2.5	10.2	6.2	1.8	4.2	2.0	1.5	1.4	38.4
1968	1.3	1.1	1.2	1.4	2.5	1.6	5.5	1.6	1.2	14.6	2.3	1.3	35.5
1969	1.5	2.7	1.7	2.6	7.9	2.3	3.0	25.8	19.8	4.7	2.4	2.3	76.7
1970	2.0	1.7	3.2	6.6	5.4	10.5	2.2	2.2	4.1	5.1	1.7	2.4	46.9
1971	3.2	5.3	2.8	3.1	6.4	4.5	4.3	2.0	2.0	4.6	7.0	2.2	47.5
1972	1.7	1.4	1.5	2.3	6.7	4.6	1.7	4.4	3.4	1.9	3.2	1.5	34.4
1973	1.4	2.0	24.1	6.5	3.8	3.4	5.4	3.4	60.0	20.3	4.8	7.1	142.1
1974	4.2	3.4	4.2	12.7	10.7	4.6	3.6	5.1	3.0	4.7	2.8	2.5	61.4
1975	2.3	2.8	2.5	2.9	4.3	3.2	2.2	2.5	2.4	1.7	2.7	1.6	31.1
1976	1.5	1.4	3.0	20.0	7.4	3.2	3.5	2.0	4.0	3.2	1.6	1.6	52.3
1977	1.8	1.3	2.2	2.5	11.3	8.6	2.5	7.2	8.5	3.8	2.5	1.9	53.8
1978	1.7	1.8	1.6	1.6	3.6	3.7	1.7	2.1	7.1	1.5	1.9	1.3	29.7
1979	1.4	1.3	3.6	1.4	3.8	1.7	7.1	2.0	1.2	6.0	1.4	1.1	32.0

Pre-development Incremental Flow Data (acre-feet)
Node 510--Unit 61

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	1.3	1.2	6.0	2.2	2.5	0.7	1.3	4.4	1.1	1.4	0.9	1.4	24.4
1981	0.9	0.8	2.0	1.5	11.4	18.7	6.9	2.1	2.8	2.8	4.6	1.6	56.0
1982	1.4	2.3	1.5	1.2	11.2	3.8	3.5	1.9	1.7	3.1	1.2	1.2	34.2
1983	1.1	2.0	1.6	2.3	5.1	2.5	1.2	1.2	1.5	3.4	1.5	1.0	24.4
1984	1.0	0.9	7.1	10.6	1.9	2.3	1.6	1.6	1.4	3.6	1.1	11.1	44.1
1985	1.4	2.3	1.4	20.1	2.3	11.0	6.0	3.7	3.0	15.6	2.2	2.0	70.8
1986	1.7	1.6	1.8	5.4	2.3	3.5	6.0	11.3	2.6	4.9	1.5	1.4	44.1
1987	1.4	1.6	19.6	6.7	11.1	4.6	5.5	4.8	2.2	2.0	1.8	1.7	62.9
1988	1.8	1.3	1.4	3.7	1.5	2.2	2.5	1.7	1.2	1.1	1.0	0.9	20.2
1989	1.0	0.8	1.0	0.8	11.6	10.7	6.3	2.1	3.0	1.5	1.3	1.3	41.4
1990	1.3	1.8	2.2	4.9	25.7	3.4	3.0	9.4	4.9	2.2	2.5	1.6	62.8
1991	1.5	1.3	2.1	2.0	2.1	3.1	1.2	1.3	1.0	1.0	1.7	2.0	20.5
1992	1.6	0.8	1.1	0.8	4.2	15.1	3.8	4.0	1.7	2.6	2.2	5.6	43.5
1993	6.3	4.9	7.8	3.0	17.1	24.7	70.0	7.5	6.2	5.8	5.2	5.1	163.6
1994	4.6	3.9	3.7	5.2	3.6	3.1	4.7	2.7	2.4	3.0	2.2	2.1	41.1

Pre-development Incremental Flow Data (acre-feet)
Node 520--Unit 63

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	1.7	2.0	1.5	2.0	1.8	2.8	3.6	1.6	6.0	2.6	1.5	1.4	28.5
1956	1.4	1.9	1.3	2.1	2.1	1.2	2.1	1.2	1.1	2.4	1.1	1.0	18.9
1957	1.0	0.9	9.1	5.1	20.2	10.2	3.8	2.6	10.3	5.8	2.8	2.2	74.0
1958	2.0	2.0	8.0	2.4	8.6	5.3	9.8	3.2	7.6	3.3	2.2	2.1	56.5
1959	1.9	1.8	2.7	1.6	12.3	2.7	11.8	2.7	2.4	4.8	1.8	1.7	48.3
1960	2.5	2.1	5.3	2.3	3.0	4.6	2.0	2.2	2.4	2.3	1.4	1.6	31.7
1961	1.3	1.1	1.7	1.6	6.6	2.7	2.6	3.7	1.4	1.9	2.5	1.2	28.3
1962	1.4	1.1	1.2	1.1	1.2	6.5	5.7	3.9	2.1	1.4	1.3	1.1	28.1
1963	1.1	0.9	1.2	1.0	1.8	2.3	4.7	1.1	1.7	1.2	0.8	0.9	18.7
1964	0.8	0.7	0.8	1.0	1.9	2.0	1.0	1.1	1.1	0.7	2.4	2.1	15.6
1965	1.2	2.2	0.8	1.7	6.2	22.2	3.0	2.0	3.3	2.2	1.3	2.9	49.1
1966	1.3	4.3	1.2	2.0	1.2	2.9	5.0	3.0	1.3	1.1	1.0	1.0	25.4
1967	1.0	0.8	0.9	3.3	1.8	7.1	4.3	1.2	3.0	1.4	1.0	1.0	26.8
1968	0.9	0.8	0.8	1.0	1.7	1.1	3.8	1.1	0.8	10.2	1.6	0.9	24.8
1969	1.0	1.9	1.2	1.8	5.5	1.6	2.1	18.0	13.8	3.3	1.7	1.6	53.6
1970	1.4	1.2	2.2	4.6	3.8	7.3	1.5	1.5	2.8	3.5	1.2	1.7	32.8
1971	2.2	3.7	1.9	2.2	4.5	3.2	3.0	1.4	1.4	3.2	4.9	1.5	33.2
1972	1.2	1.0	1.1	1.6	4.7	3.2	1.2	3.0	2.4	1.3	2.2	1.1	24.0
1973	1.0	1.4	16.8	4.5	2.6	2.4	3.8	2.3	41.9	14.1	3.3	4.9	99.2
1974	2.9	2.4	3.0	8.9	7.5	3.2	2.5	3.5	2.1	3.3	2.0	1.7	42.9
1975	1.6	1.9	1.8	2.0	3.0	2.2	1.5	1.8	1.7	1.2	1.9	1.1	21.7
1976	1.0	1.0	2.1	14.0	5.1	2.2	2.4	1.4	2.8	2.2	1.1	1.1	36.5
1977	1.2	0.9	1.5	1.8	7.9	6.0	1.7	5.0	5.9	2.6	1.8	1.3	37.6
1978	1.2	1.3	1.1	1.1	2.5	2.6	1.2	1.5	4.9	1.1	1.3	0.9	20.8
1979	0.9	0.9	2.5	0.9	2.6	1.2	5.0	1.4	0.8	4.2	1.0	0.8	22.3

Pre-development Incremental Flow Data (acre-feet)
Node 520--Unit 63

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.9	0.8	4.2	1.5	1.7	0.5	0.9	3.1	0.8	0.9	0.7	1.0	17.0
1981	0.6	0.5	1.4	1.0	8.0	13.1	4.8	1.5	1.9	2.0	3.2	1.1	39.1
1982	1.0	1.6	1.1	0.9	7.8	2.7	2.5	1.3	1.2	2.2	0.9	0.9	23.9
1983	0.8	1.4	1.1	1.6	3.6	1.7	0.8	0.9	1.1	2.4	1.0	0.7	17.0
1984	0.7	0.6	4.9	7.4	1.3	1.6	1.1	1.1	1.0	2.5	0.8	7.8	30.8
1985	0.9	1.6	0.9	14.0	1.6	7.7	4.2	2.6	2.1	10.9	1.5	1.4	49.5
1986	1.2	1.1	1.2	3.8	1.6	2.5	4.2	7.9	1.8	3.5	1.1	1.0	30.8
1987	0.9	1.1	13.7	4.7	7.7	3.2	3.8	3.3	1.5	1.4	1.2	1.2	44.0
1988	1.3	0.9	1.0	2.6	1.0	1.5	1.7	1.2	0.9	0.8	0.7	0.6	14.1
1989	0.7	0.5	0.7	0.6	8.1	7.4	4.4	1.5	2.1	1.1	0.9	0.9	28.9
1990	0.9	1.3	1.5	3.4	18.0	2.4	2.1	6.6	3.4	1.5	1.7	1.1	43.9
1991	1.1	0.9	1.5	1.4	1.5	2.2	0.9	0.9	0.7	0.7	1.2	1.4	14.3
1992	1.1	0.6	0.8	0.6	2.9	10.5	2.6	2.8	1.2	1.8	1.6	3.9	30.4
1993	4.4	3.4	5.4	2.1	11.9	17.2	48.9	5.2	4.3	4.1	3.7	3.6	114.3
1994	3.2	2.7	2.6	3.6	2.5	2.2	3.3	1.9	1.7	2.1	1.5	1.5	28.7

Pre-development Incremental Flow Data (acre-feet)
Node 530--Unit 57--East Lake

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	3.7	4.3	3.3	4.2	3.8	6.1	7.8	3.5	12.9	5.6	3.2	3.1	61.4
1956	3.0	4.1	2.8	4.6	4.5	2.6	4.5	2.7	2.3	5.2	2.3	2.2	40.8
1957	2.1	2.0	19.6	10.9	43.6	22.0	8.2	5.6	22.1	12.6	6.1	4.8	159.8
1958	4.4	4.2	17.3	5.1	18.6	11.4	21.2	6.9	16.3	7.2	4.7	4.5	122.0
1959	4.2	3.8	5.8	3.6	26.6	5.9	25.4	5.7	5.2	10.4	3.9	3.7	104.2
1960	5.5	4.5	11.4	4.9	6.4	9.9	4.3	4.8	5.1	5.0	3.0	3.6	68.4
1961	2.7	2.4	3.8	3.5	14.2	5.8	5.6	8.1	3.0	4.1	5.4	2.7	61.1
1962	3.0	2.3	2.6	2.4	2.6	14.0	12.4	8.3	4.5	3.1	2.9	2.5	60.6
1963	2.4	2.0	2.6	2.1	3.9	4.9	10.1	2.5	3.8	2.5	1.8	1.8	40.4
1964	1.7	1.6	1.7	2.3	4.0	4.3	2.2	2.4	2.4	1.5	5.1	4.6	33.7
1965	2.7	4.7	1.6	3.7	13.4	47.9	6.5	4.2	7.2	4.8	2.9	6.3	105.9
1966	2.7	9.4	2.7	4.4	2.6	6.3	10.8	6.5	2.8	2.4	2.1	2.1	54.8
1967	2.1	1.7	1.9	7.1	3.8	15.4	9.4	2.7	6.4	3.0	2.2	2.2	57.8
1968	2.0	1.7	1.8	2.2	3.7	2.4	8.3	2.4	1.8	22.0	3.4	2.0	53.5
1969	2.2	4.0	2.6	4.0	11.9	3.5	4.5	38.9	29.8	7.1	3.6	3.4	115.7
1970	3.0	2.6	4.8	9.9	8.1	15.8	3.2	3.3	6.1	7.6	2.5	3.7	70.8
1971	4.8	8.1	4.2	4.7	9.7	6.8	6.5	3.0	3.0	6.9	10.6	3.3	71.6
1972	2.6	2.2	2.3	3.5	10.1	7.0	2.6	6.6	5.1	2.9	4.8	2.3	51.9
1973	2.2	3.0	36.3	9.8	5.7	5.1	8.2	5.1	90.5	30.6	7.2	10.6	214.3
1974	6.3	5.1	6.4	19.1	16.1	6.9	5.4	7.7	4.6	7.1	4.3	3.7	92.6
1975	3.5	4.1	3.8	4.3	6.5	4.8	3.3	3.8	3.7	2.5	4.1	2.5	46.9
1976	2.2	2.1	4.6	30.2	11.1	4.7	5.2	3.1	6.0	4.8	2.4	2.4	78.8
1977	2.7	1.9	3.3	3.8	17.0	12.9	3.7	10.9	12.8	5.7	3.8	2.8	81.2
1978	2.5	2.7	2.4	2.4	5.5	5.6	2.6	3.2	10.6	2.3	2.8	2.0	44.8
1979	2.0	2.0	5.5	2.0	5.7	2.5	10.7	3.0	1.8	9.1	2.1	1.7	48.2

Pre-development Incremental Flow Data (acre-feet)
Node 530--Unit 57--East Lake

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	2.0	1.8	9.0	3.3	3.7	1.1	2.0	6.6	1.7	2.0	1.4	2.1	36.7
1981	1.3	1.2	3.1	2.2	17.3	28.2	10.3	3.1	4.2	4.3	7.0	2.3	84.5
1982	2.2	3.5	2.3	1.8	17.0	5.7	5.3	2.8	2.6	4.7	1.8	1.9	51.5
1983	1.6	3.0	2.4	3.5	7.8	3.7	1.8	1.8	2.3	5.1	2.2	1.6	36.8
1984	1.5	1.3	10.7	16.0	2.9	3.4	2.3	2.3	2.1	5.4	1.7	16.8	66.5
1985	2.0	3.5	2.1	30.3	3.4	16.5	9.1	5.5	4.6	23.5	3.3	3.0	106.8
1986	2.6	2.4	2.7	8.1	3.5	5.3	9.0	17.1	3.9	7.5	2.3	2.1	66.5
1987	2.0	2.4	29.6	10.1	16.7	7.0	8.3	7.2	3.3	3.0	2.7	2.6	94.9
1988	2.7	1.9	2.1	5.6	2.3	3.3	3.7	2.5	1.9	1.7	1.5	1.4	30.5
1989	1.5	1.2	1.5	1.2	17.5	16.1	9.6	3.2	4.5	2.3	2.0	2.0	62.4
1990	1.9	2.8	3.3	7.3	38.8	5.2	4.5	14.2	7.3	3.3	3.7	2.5	94.8
1991	2.3	1.9	3.2	3.0	3.2	4.7	1.8	2.0	1.6	1.5	2.5	3.1	31.0
1992	2.4	1.2	1.7	1.3	6.3	22.7	5.7	6.0	2.5	4.0	3.4	8.4	65.7
1993	9.5	7.4	11.7	4.6	25.8	37.2	105.5	11.3	9.4	8.8	7.9	7.7	246.7
1994	6.9	5.9	5.6	7.8	5.4	4.7	7.0	4.1	3.6	4.5	3.3	3.2	62.0

Pre-development Incremental Flow Data (acre-feet)
Node 540--Unit 75--Big Salt Marsh

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	70.2	81.7	62.3	80.7	71.8	115.7	147.7	65.9	245.3	106.8	60.5	59.2	1,167.7
1956	57.6	78.3	53.4	87.2	85.9	49.4	84.7	50.7	43.9	98.3	43.5	42.5	775.2
1957	40.7	37.3	372.3	207.3	829.6	419.2	156.0	107.2	421.1	238.9	116.5	90.7	3,037.1
1958	84.2	80.7	328.4	97.5	354.1	217.2	403.7	131.6	310.5	136.1	89.6	85.3	2,318.8
1959	79.0	72.0	109.9	67.9	506.3	112.6	483.3	108.6	99.3	197.5	73.6	70.9	1,980.9
1960	104.6	85.0	216.1	92.9	122.4	189.1	81.7	91.6	97.3	95.0	57.7	67.7	1,301.1
1961	51.4	46.3	71.3	66.5	269.1	110.6	105.5	152.9	57.7	77.6	102.4	50.5	1,162.0
1962	57.1	44.4	48.8	45.8	49.5	266.0	235.5	158.3	86.2	59.1	54.6	47.2	1,152.5
1963	45.6	38.0	50.3	39.4	74.2	92.4	192.7	47.2	71.3	47.9	34.3	35.0	768.2
1964	32.7	29.7	33.0	43.2	76.5	81.0	41.6	45.0	45.9	29.2	97.4	86.5	641.6
1965	50.8	89.2	31.1	70.3	254.4	911.5	124.3	80.1	135.9	91.5	54.7	120.0	2,013.7
1966	51.2	178.7	50.4	84.0	49.9	119.5	205.1	123.8	52.7	45.4	40.7	40.1	1,041.3
1967	39.7	32.7	35.6	134.1	72.9	293.2	177.9	50.9	121.3	57.5	42.5	41.4	1,099.6
1968	37.0	32.0	34.1	40.9	70.9	45.9	157.1	46.4	33.2	417.7	64.8	37.7	1,017.7
1969	41.8	76.8	49.2	75.3	227.2	67.0	86.1	740.3	567.2	134.7	68.2	65.0	2,198.8
1970	57.7	49.8	91.0	188.7	153.7	300.1	61.6	63.2	116.4	145.2	47.8	69.8	1,345.0
1971	90.3	153.0	79.4	89.7	184.7	130.1	123.0	57.7	56.5	131.7	201.6	63.0	1,360.8
1972	49.3	41.3	43.4	66.8	191.3	132.5	48.7	124.9	97.6	55.1	91.8	43.6	986.4
1973	40.9	57.0	690.2	186.3	107.4	97.8	156.3	96.3	1,720.2	580.9	137.6	202.4	4,073.3
1974	119.3	97.2	120.9	363.6	306.4	131.1	102.2	145.6	87.6	134.9	80.7	70.3	1,759.8
1975	66.3	78.7	72.0	82.5	123.9	90.8	62.6	72.0	69.9	47.5	77.5	47.0	890.7
1976	41.5	40.2	86.5	573.4	210.9	90.2	99.1	58.6	114.3	91.8	46.3	46.1	1,498.9
1977	50.6	36.2	62.7	71.8	323.2	245.0	70.6	206.5	242.7	107.4	72.5	53.8	1,543.2
1978	47.5	52.1	46.4	45.8	104.1	107.0	49.5	61.2	202.2	44.0	54.0	38.4	852.1
1979	38.9	37.4	104.4	39.1	108.1	47.6	203.6	58.0	34.1	172.9	39.9	32.7	916.6

Pre-development Incremental Flow Data (acre-feet)
Node 540--Unit 75--Big Salt Marsh

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	37.3	33.5	171.3	62.6	70.7	20.4	37.3	126.0	32.6	38.9	27.0	40.7	698.3
1981	25.5	22.2	58.6	42.3	327.9	535.8	196.5	59.8	79.3	81.7	132.3	44.6	1,606.5
1982	40.9	66.8	43.6	34.8	322.3	108.6	100.5	53.3	49.3	88.8	35.0	35.6	979.5
1983	30.9	56.5	45.1	67.0	147.4	70.5	34.2	34.8	44.3	97.3	42.0	29.7	699.8
1984	28.1	25.5	203.1	304.9	55.0	64.6	44.6	44.6	39.8	102.3	33.0	319.6	1,265.1
1985	38.8	65.6	39.1	575.6	64.7	314.7	172.5	105.3	87.6	447.3	62.3	57.6	2,030.9
1986	49.5	45.6	50.8	154.7	66.2	100.5	170.9	325.2	74.6	141.8	43.8	40.1	1,263.6
1987	38.8	45.3	562.9	191.1	317.5	133.1	158.1	136.2	63.1	57.7	50.4	49.7	1,803.8
1988	51.8	36.2	39.6	106.8	42.8	62.4	70.8	47.5	35.6	31.8	27.7	26.9	580.0
1989	28.0	22.3	28.0	22.6	333.3	306.0	182.0	60.2	86.3	44.1	37.2	37.0	1,187.0
1990	36.5	52.3	62.2	139.4	737.7	98.0	84.7	270.4	139.8	62.2	71.2	47.3	1,801.8
1991	44.1	36.3	61.2	58.0	60.5	89.7	34.7	37.9	29.7	29.6	48.5	58.7	588.9
1992	46.0	22.9	32.9	23.8	120.3	431.6	108.5	114.4	48.4	75.2	64.1	160.0	1,248.0
1993	180.1	141.4	222.4	86.4	489.7	707.7	2,006.3	214.6	178.1	166.8	150.3	146.4	4,690.2
1994	131.4	112.1	106.4	147.5	102.6	89.7	133.9	77.6	68.8	85.9	61.9	60.9	1,178.6

Pre-development Incremental Flow Data (acre-feet)
Node 550--Unit 58

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	1.1	1.3	1.0	1.3	1.1	1.9	2.4	1.1	3.9	1.7	1.0	0.9	18.8
1956	0.9	1.3	0.9	1.4	1.4	0.8	1.4	0.8	0.7	1.6	0.7	0.7	12.4
1957	0.6	0.6	6.0	3.3	13.3	6.7	2.5	1.7	6.8	3.8	1.9	1.5	48.8
1958	1.4	1.3	5.3	1.6	5.7	3.5	6.5	2.1	5.0	2.2	1.4	1.4	37.2
1959	1.3	1.2	1.8	1.1	8.1	1.8	7.8	1.7	1.6	3.2	1.2	1.1	31.8
1960	1.7	1.4	3.5	1.5	2.0	3.0	1.3	1.5	1.6	1.5	0.9	1.1	20.9
1961	0.8	0.7	1.1	1.1	4.3	1.8	1.7	2.5	0.9	1.3	1.6	0.8	18.7
1962	0.9	0.7	0.8	0.7	0.8	4.3	3.8	2.5	1.4	0.9	0.9	0.8	18.5
1963	0.7	0.6	0.8	0.6	1.2	1.5	3.1	0.8	1.1	0.8	0.6	0.6	12.3
1964	0.5	0.5	0.5	0.7	1.2	1.3	0.7	0.7	0.7	0.5	1.6	1.4	10.3
1965	0.8	1.4	0.5	1.1	4.1	14.6	2.0	1.3	2.2	1.5	0.9	1.9	32.4
1966	0.8	2.9	0.8	1.4	0.8	1.9	3.3	2.0	0.9	0.7	0.6	0.6	16.7
1967	0.6	0.5	0.6	2.2	1.2	4.7	2.9	0.8	2.0	0.9	0.7	0.7	17.7
1968	0.6	0.5	0.6	0.7	1.1	0.7	2.5	0.8	0.5	6.7	1.0	0.6	16.3
1969	0.7	1.2	0.8	1.2	3.7	1.1	1.4	11.9	9.1	2.2	1.1	1.0	35.3
1970	0.9	0.8	1.5	3.0	2.5	4.8	1.0	1.0	1.9	2.3	0.8	1.1	21.6
1971	1.5	2.5	1.3	1.4	3.0	2.1	2.0	0.9	0.9	2.1	3.2	1.0	21.9
1972	0.8	0.7	0.7	1.1	3.1	2.1	0.8	2.0	1.6	0.9	1.5	0.7	15.8
1973	0.7	0.9	11.1	3.0	1.7	1.6	2.5	1.5	27.6	9.3	2.2	3.3	65.4
1974	1.9	1.6	1.9	5.8	4.9	2.1	1.6	2.3	1.4	2.2	1.3	1.1	28.3
1975	1.1	1.3	1.2	1.3	2.0	1.5	1.0	1.2	1.1	0.8	1.2	0.8	14.3
1976	0.7	0.6	1.4	9.2	3.4	1.5	1.6	0.9	1.8	1.5	0.7	0.7	24.1
1977	0.8	0.6	1.0	1.1	5.2	3.9	1.1	3.3	3.9	1.7	1.2	0.9	24.8
1978	0.8	0.8	0.8	0.7	1.7	1.7	0.8	1.0	3.3	0.7	0.9	0.6	13.7
1979	0.6	0.6	1.7	0.6	1.7	0.8	3.3	0.9	0.6	2.8	0.6	0.5	14.7

Pre-development Incremental Flow Data (acre-feet)
Node 550--Unit 58

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.6	0.5	2.8	1.0	1.1	0.3	0.6	2.0	0.5	0.6	0.4	0.6	11.2
1981	0.4	0.4	0.9	0.7	5.3	8.6	3.2	1.0	1.3	1.3	2.1	0.7	25.8
1982	0.7	1.1	0.7	0.6	5.2	1.7	1.6	0.9	0.8	1.4	0.6	0.6	15.7
1983	0.5	0.9	0.7	1.1	2.4	1.1	0.6	0.6	0.7	1.6	0.7	0.5	11.2
1984	0.4	0.4	3.3	4.9	0.9	1.0	0.7	0.7	0.6	1.6	0.5	5.1	20.3
1985	0.6	1.0	0.6	9.2	1.0	5.1	2.8	1.7	1.4	7.2	1.0	0.9	32.6
1986	0.8	0.7	0.8	2.5	1.1	1.6	2.7	5.2	1.2	2.3	0.7	0.6	20.3
1987	0.6	0.7	9.0	3.1	5.1	2.1	2.5	2.2	1.0	0.9	0.8	0.8	29.0
1988	0.8	0.6	0.6	1.7	0.7	1.0	1.1	0.8	0.6	0.5	0.4	0.4	9.3
1989	0.4	0.4	0.4	0.4	5.3	4.9	2.9	1.0	1.4	0.7	0.6	0.6	19.1
1990	0.6	0.8	1.0	2.2	11.9	1.6	1.4	4.3	2.2	1.0	1.1	0.8	28.9
1991	0.7	0.6	1.0	0.9	1.0	1.4	0.6	0.6	0.5	0.5	0.8	0.9	9.5
1992	0.7	0.4	0.5	0.4	1.9	6.9	1.7	1.8	0.8	1.2	1.0	2.6	20.0
1993	2.9	2.3	3.6	1.4	7.9	11.4	32.2	3.5	2.9	2.7	2.4	2.3	75.3
1994	2.1	1.8	1.7	2.4	1.6	1.4	2.2	1.3	1.1	1.4	1.0	1.0	18.9

Pre-development Incremental Flow Data (acre-feet)
Node 560--Unit 78--Interior of Wildlife Drive

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	6.4	7.5	5.7	7.4	6.6	10.6	13.5	6.0	22.4	9.8	5.5	5.4	106.7
1956	5.3	7.2	4.9	8.0	7.8	4.5	7.7	4.6	4.0	9.0	4.0	3.9	70.8
1957	3.7	3.4	34.0	18.9	75.8	38.3	14.3	9.8	38.5	21.8	10.6	8.3	277.5
1958	7.7	7.4	30.0	8.9	32.3	19.8	36.9	12.0	28.4	12.4	8.2	7.8	211.8
1959	7.2	6.6	10.0	6.2	46.3	10.3	44.2	9.9	9.1	18.0	6.7	6.5	181.0
1960	9.6	7.8	19.7	8.5	11.2	17.3	7.5	8.4	8.9	8.7	5.3	6.2	118.9
1961	4.7	4.2	6.5	6.1	24.6	10.1	9.6	14.0	5.3	7.1	9.4	4.6	106.2
1962	5.2	4.1	4.5	4.2	4.5	24.3	21.5	14.5	7.9	5.4	5.0	4.3	105.3
1963	4.2	3.5	4.6	3.6	6.8	8.4	17.6	4.3	6.5	4.4	3.1	3.2	70.2
1964	3.0	2.7	3.0	3.9	7.0	7.4	3.8	4.1	4.2	2.7	8.9	7.9	58.6
1965	4.6	8.1	2.8	6.4	23.2	83.3	11.4	7.3	12.4	8.4	5.0	11.0	184.0
1966	4.7	16.3	4.6	7.7	4.6	10.9	18.7	11.3	4.8	4.2	3.7	3.7	95.1
1967	3.6	3.0	3.3	12.3	6.7	26.8	16.3	4.7	11.1	5.3	3.9	3.8	100.5
1968	3.4	2.9	3.1	3.7	6.5	4.2	14.4	4.2	3.0	38.2	5.9	3.4	93.0
1969	3.8	7.0	4.5	6.9	20.8	6.1	7.9	67.6	51.8	12.3	6.2	5.9	200.9
1970	5.3	4.6	8.3	17.2	14.0	27.4	5.6	5.8	10.6	13.3	4.4	6.4	122.9
1971	8.3	14.0	7.3	8.2	16.9	11.9	11.2	5.3	5.2	12.0	18.4	5.8	124.3
1972	4.5	3.8	4.0	6.1	17.5	12.1	4.4	11.4	8.9	5.0	8.4	4.0	90.1
1973	3.7	5.2	63.1	17.0	9.8	8.9	14.3	8.8	157.2	53.1	12.6	18.5	372.2
1974	10.9	8.9	11.1	33.2	28.0	12.0	9.3	13.3	8.0	12.3	7.4	6.4	160.8
1975	6.1	7.2	6.6	7.5	11.3	8.3	5.7	6.6	6.4	4.3	7.1	4.3	81.4
1976	3.8	3.7	7.9	52.4	19.3	8.2	9.1	5.3	10.4	8.4	4.2	4.2	136.9
1977	4.6	3.3	5.7	6.6	29.5	22.4	6.4	18.9	22.2	9.8	6.6	4.9	141.0
1978	4.3	4.8	4.2	4.2	9.5	9.8	4.5	5.6	18.5	4.0	4.9	3.5	77.9
1979	3.6	3.4	9.5	3.6	9.9	4.3	18.6	5.3	3.1	15.8	3.7	3.0	83.7

Pre-development Incremental Flow Data (acre-feet)
Node 560--Unit 78--Interior of Wildlife Drive

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	3.4	3.1	15.6	5.7	6.5	1.9	3.4	11.5	3.0	3.6	2.5	3.7	63.8
1981	2.3	2.0	5.3	3.9	30.0	49.0	18.0	5.5	7.3	7.5	12.1	4.1	146.8
1982	3.7	6.1	4.0	3.2	29.5	9.9	9.2	4.9	4.5	8.1	3.2	3.3	89.5
1983	2.8	5.2	4.1	6.1	13.5	6.4	3.1	3.2	4.1	8.9	3.8	2.7	63.9
1984	2.6	2.3	18.5	27.9	5.0	5.9	4.1	4.1	3.6	9.4	3.0	29.2	115.6
1985	3.5	6.0	3.6	52.6	5.9	28.8	15.8	9.6	8.0	40.9	5.7	5.3	185.6
1986	4.5	4.2	4.6	14.1	6.1	9.2	15.6	29.7	6.8	12.9	4.0	3.7	115.4
1987	3.5	4.1	51.4	17.5	29.0	12.2	14.4	12.4	5.8	5.3	4.6	4.5	164.8
1988	4.7	3.3	3.6	9.8	3.9	5.7	6.5	4.3	3.3	2.9	2.5	2.5	53.0
1989	2.6	2.0	2.6	2.1	30.5	28.0	16.6	5.5	7.9	4.0	3.4	3.4	108.5
1990	3.3	4.8	5.7	12.7	67.4	8.9	7.7	24.7	12.8	5.7	6.5	4.3	164.6
1991	4.0	3.3	5.6	5.3	5.5	8.2	3.2	3.5	2.7	2.7	4.4	5.4	53.8
1992	4.2	2.1	3.0	2.2	11.0	39.4	9.9	10.4	4.4	6.9	5.8	14.6	114.0
1993	16.5	12.9	20.3	7.9	44.7	64.7	183.3	19.6	16.3	15.2	13.7	13.4	428.5
1994	12.0	10.2	9.7	13.5	9.4	8.2	12.2	7.1	6.3	7.8	5.7	5.6	107.7

Pre-development Incremental Flow Data (acre-feet)
Node 570--Unit 81--West Salt Flats

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	5.3	6.2	4.7	6.1	5.4	8.7	11.1	5.0	18.5	8.0	4.6	4.4	87.9
1956	4.3	5.9	4.0	6.6	6.5	3.7	6.4	3.8	3.3	7.4	3.3	3.2	58.4
1957	3.1	2.8	28.0	15.6	62.5	31.6	11.8	8.1	31.7	18.0	8.8	6.8	228.7
1958	6.3	6.1	24.7	7.3	26.7	16.4	30.4	9.9	23.4	10.3	6.7	6.4	174.6
1959	5.9	5.4	8.3	5.1	38.1	8.5	36.4	8.2	7.5	14.9	5.5	5.3	149.2
1960	7.9	6.4	16.3	7.0	9.2	14.2	6.2	6.9	7.3	7.2	4.3	5.1	98.0
1961	3.9	3.5	5.4	5.0	20.3	8.3	7.9	11.5	4.3	5.8	7.7	3.8	87.5
1962	4.3	3.3	3.7	3.5	3.7	20.0	17.7	11.9	6.5	4.4	4.1	3.5	86.8
1963	3.4	2.9	3.8	3.0	5.6	7.0	14.5	3.5	5.4	3.6	2.6	2.6	57.8
1964	2.5	2.2	2.5	3.3	5.8	6.1	3.1	3.4	3.5	2.2	7.3	6.5	48.3
1965	3.8	6.7	2.3	5.3	19.1	68.6	9.4	6.0	10.2	6.9	4.1	9.0	151.6
1966	3.8	13.4	3.8	6.3	3.8	9.0	15.4	9.3	4.0	3.4	3.1	3.0	78.4
1967	3.0	2.5	2.7	10.1	5.5	22.1	13.4	3.8	9.1	4.3	3.2	3.1	82.8
1968	2.8	2.4	2.6	3.1	5.3	3.5	11.8	3.5	2.5	31.5	4.9	2.8	76.6
1969	3.2	5.8	3.7	5.7	17.1	5.1	6.5	55.8	42.7	10.1	5.1	4.9	165.6
1970	4.3	3.8	6.8	14.2	11.6	22.6	4.6	4.8	8.8	10.9	3.6	5.3	101.3
1971	6.8	11.5	6.0	6.8	13.9	9.8	9.3	4.3	4.3	9.9	15.2	4.7	102.5
1972	3.7	3.1	3.3	5.0	14.4	10.0	3.7	9.4	7.3	4.2	6.9	3.3	74.3
1973	3.1	4.3	52.0	14.0	8.1	7.4	11.8	7.3	129.5	43.8	10.4	15.2	306.7
1974	9.0	7.3	9.1	27.4	23.1	9.9	7.7	11.0	6.6	10.2	6.1	5.3	132.5
1975	5.0	5.9	5.4	6.2	9.3	6.8	4.7	5.4	5.3	3.6	5.8	3.5	67.1
1976	3.1	3.0	6.5	43.2	15.9	6.8	7.5	4.4	8.6	6.9	3.5	3.5	112.9
1977	3.8	2.7	4.7	5.4	24.3	18.5	5.3	15.6	18.3	8.1	5.5	4.1	116.2
1978	3.6	3.9	3.5	3.5	7.8	8.1	3.7	4.6	15.2	3.3	4.1	2.9	64.2
1979	2.9	2.8	7.9	2.9	8.1	3.6	15.3	4.4	2.6	13.0	3.0	2.5	69.0

Pre-development Incremental Flow Data (acre-feet)
Node 570--Unit 81--West Salt Flats

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	2.8	2.5	12.9	4.7	5.3	1.5	2.8	9.5	2.5	2.9	2.0	3.1	52.6
1981	1.9	1.7	4.4	3.2	24.7	40.3	14.8	4.5	6.0	6.2	10.0	3.4	121.0
1982	3.1	5.0	3.3	2.6	24.3	8.2	7.6	4.0	3.7	6.7	2.6	2.7	73.8
1983	2.3	4.3	3.4	5.1	11.1	5.3	2.6	2.6	3.3	7.3	3.2	2.2	52.7
1984	2.1	1.9	15.3	23.0	4.1	4.9	3.4	3.4	3.0	7.7	2.5	24.1	95.3
1985	2.9	4.9	2.9	43.3	4.9	23.7	13.0	7.9	6.6	33.7	4.7	4.3	152.9
1986	3.7	3.4	3.8	11.6	5.0	7.6	12.9	24.5	5.6	10.7	3.3	3.0	95.2
1987	2.9	3.4	42.4	14.4	23.9	10.0	11.9	10.3	4.8	4.3	3.8	3.8	135.8
1988	3.9	2.7	3.0	8.1	3.2	4.7	5.3	3.6	2.7	2.4	2.1	2.0	43.7
1989	2.1	1.7	2.1	1.7	25.1	23.0	13.7	4.5	6.5	3.3	2.8	2.8	89.4
1990	2.8	3.9	4.7	10.5	55.6	7.4	6.4	20.4	10.5	4.7	5.4	3.6	135.7
1991	3.3	2.7	4.6	4.4	4.6	6.8	2.6	2.9	2.2	2.2	3.7	4.4	44.4
1992	3.5	1.7	2.5	1.8	9.1	32.5	8.2	8.6	3.6	5.7	4.8	12.1	94.0
1993	13.6	10.6	16.7	6.5	36.9	53.3	151.1	16.2	13.4	12.6	11.3	11.0	353.2
1994	9.9	8.4	8.0	11.1	7.7	6.8	10.1	5.8	5.2	6.5	4.7	4.6	88.8

Pre-development Incremental Flow Data (acre-feet)
Node 580--Unit 80--Middle Salt Flats

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	5.3	6.2	4.7	6.1	5.4	8.7	11.1	5.0	18.5	8.0	4.6	4.4	87.9
1956	4.3	5.9	4.0	6.6	6.5	3.7	6.4	3.8	3.3	7.4	3.3	3.2	58.4
1957	3.1	2.8	28.0	15.6	62.5	31.6	11.8	8.1	31.7	18.0	8.8	6.8	228.7
1958	6.3	6.1	24.7	7.3	26.7	16.4	30.4	9.9	23.4	10.3	6.7	6.4	174.6
1959	5.9	5.4	8.3	5.1	38.1	8.5	36.4	8.2	7.5	14.9	5.5	5.3	149.2
1960	7.9	6.4	16.3	7.0	9.2	14.2	6.2	6.9	7.3	7.2	4.3	5.1	98.0
1961	3.9	3.5	5.4	5.0	20.3	8.3	7.9	11.5	4.3	5.8	7.7	3.8	87.5
1962	4.3	3.3	3.7	3.5	3.7	20.0	17.7	11.9	6.5	4.4	4.1	3.5	86.8
1963	3.4	2.9	3.8	3.0	5.6	7.0	14.5	3.5	5.4	3.6	2.6	2.6	57.8
1964	2.5	2.2	2.5	3.3	5.8	6.1	3.1	3.4	3.5	2.2	7.3	6.5	48.3
1965	3.8	6.7	2.3	5.3	19.1	68.6	9.4	6.0	10.2	6.9	4.1	9.0	151.6
1966	3.8	13.4	3.8	6.3	3.8	9.0	15.4	9.3	4.0	3.4	3.1	3.0	78.4
1967	3.0	2.5	2.7	10.1	5.5	22.1	13.4	3.8	9.1	4.3	3.2	3.1	82.8
1968	2.8	2.4	2.6	3.1	5.3	3.5	11.8	3.5	2.5	31.5	4.9	2.8	76.6
1969	3.2	5.8	3.7	5.7	17.1	5.1	6.5	55.8	42.7	10.1	5.1	4.9	165.6
1970	4.3	3.8	6.8	14.2	11.6	22.6	4.6	4.8	8.8	10.9	3.6	5.3	101.3
1971	6.8	11.5	6.0	6.8	13.9	9.8	9.3	4.3	4.3	9.9	15.2	4.7	102.5
1972	3.7	3.1	3.3	5.0	14.4	10.0	3.7	9.4	7.3	4.2	6.9	3.3	74.3
1973	3.1	4.3	52.0	14.0	8.1	7.4	11.8	7.3	129.5	43.8	10.4	15.2	306.7
1974	9.0	7.3	9.1	27.4	23.1	9.9	7.7	11.0	6.6	10.2	6.1	5.3	132.5
1975	5.0	5.9	5.4	6.2	9.3	6.8	4.7	5.4	5.3	3.6	5.8	3.5	67.1
1976	3.1	3.0	6.5	43.2	15.9	6.8	7.5	4.4	8.6	6.9	3.5	3.5	112.9
1977	3.8	2.7	4.7	5.4	24.3	18.5	5.3	15.6	18.3	8.1	5.5	4.1	116.2
1978	3.6	3.9	3.5	3.5	7.8	8.1	3.7	4.6	15.2	3.3	4.1	2.9	64.2
1979	2.9	2.8	7.9	2.9	8.1	3.6	15.3	4.4	2.6	13.0	3.0	2.5	69.0

Pre-development Incremental Flow Data (acre-feet)
Node 580--Unit 80--Middle Salt Flats

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	2.8	2.5	12.9	4.7	5.3	1.5	2.8	9.5	2.5	2.9	2.0	3.1	52.6
1981	1.9	1.7	4.4	3.2	24.7	40.3	14.8	4.5	6.0	6.2	10.0	3.4	121.0
1982	3.1	5.0	3.3	2.6	24.3	8.2	7.6	4.0	3.7	6.7	2.6	2.7	73.8
1983	2.3	4.3	3.4	5.1	11.1	5.3	2.6	2.6	3.3	7.3	3.2	2.2	52.7
1984	2.1	1.9	15.3	23.0	4.1	4.9	3.4	3.4	3.0	7.7	2.5	24.1	95.3
1985	2.9	4.9	2.9	43.3	4.9	23.7	13.0	7.9	6.6	33.7	4.7	4.3	152.9
1986	3.7	3.4	3.8	11.6	5.0	7.6	12.9	24.5	5.6	10.7	3.3	3.0	95.2
1987	2.9	3.4	42.4	14.4	23.9	10.0	11.9	10.3	4.8	4.3	3.8	3.8	135.8
1988	3.9	2.7	3.0	8.1	3.2	4.7	5.3	3.6	2.7	2.4	2.1	2.0	43.7
1989	2.1	1.7	2.1	1.7	25.1	23.0	13.7	4.5	6.5	3.3	2.8	2.8	89.4
1990	2.8	3.9	4.7	10.5	55.6	7.4	6.4	20.4	10.5	4.7	5.4	3.6	135.7
1991	3.3	2.7	4.6	4.4	4.6	6.8	2.6	2.9	2.2	2.2	3.7	4.4	44.4
1992	3.5	1.7	2.5	1.8	9.1	32.5	8.2	8.6	3.6	5.7	4.8	12.1	94.0
1993	13.6	10.6	16.7	6.5	36.9	53.3	151.1	16.2	13.4	12.6	11.3	11.0	353.2
1994	9.9	8.4	8.0	11.1	7.7	6.8	10.1	5.8	5.2	6.5	4.7	4.6	88.8

Pre-development Incremental Flow Data (acre-feet)
Node 590--Unit 83--North Lake

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	7.1	8.3	6.3	8.2	7.3	11.7	15.0	6.7	24.9	10.8	6.1	6.0	118.3
1956	5.8	7.9	5.4	8.8	8.7	5.0	8.6	5.1	4.4	10.0	4.4	4.3	78.5
1957	4.1	3.8	37.7	21.0	84.1	42.5	15.8	10.9	42.7	24.2	11.8	9.2	307.7
1958	8.5	8.2	33.3	9.9	35.9	22.0	40.9	13.3	31.5	13.8	9.1	8.6	235.0
1959	8.0	7.3	11.1	6.9	51.3	11.4	49.0	11.0	10.1	20.0	7.5	7.2	200.7
1960	10.6	8.6	21.9	9.4	12.4	19.2	8.3	9.3	9.9	9.6	5.8	6.9	131.8
1961	5.2	4.7	7.2	6.7	27.3	11.2	10.7	15.5	5.8	7.9	10.4	5.1	117.7
1962	5.8	4.5	4.9	4.6	5.0	27.0	23.9	16.0	8.7	6.0	5.5	4.8	116.8
1963	4.6	3.8	5.1	4.0	7.5	9.4	19.5	4.8	7.2	4.9	3.5	3.5	77.8
1964	3.3	3.0	3.3	4.4	7.8	8.2	4.2	4.6	4.7	3.0	9.9	8.8	65.0
1965	5.1	9.0	3.2	7.1	25.8	92.4	12.6	8.1	13.8	9.3	5.6	12.2	204.0
1966	5.2	18.1	5.1	8.5	5.1	12.1	20.8	12.5	5.3	4.6	4.1	4.1	105.5
1967	4.0	3.3	3.6	13.6	7.4	29.7	18.0	5.2	12.3	5.8	4.3	4.2	111.4
1968	3.8	3.3	3.5	4.2	7.2	4.7	15.9	4.7	3.4	42.3	6.6	3.8	103.1
1969	4.2	7.8	5.0	7.6	23.0	6.8	8.7	75.0	57.5	13.6	6.9	6.6	222.8
1970	5.8	5.0	9.2	19.1	15.6	30.4	6.2	6.4	11.8	14.7	4.8	7.1	136.3
1971	9.2	15.5	8.1	9.1	18.7	13.2	12.5	5.8	5.7	13.4	20.4	6.4	137.9
1972	5.0	4.2	4.4	6.8	19.4	13.4	4.9	12.7	9.9	5.6	9.3	4.4	99.9
1973	4.1	5.8	69.9	18.9	10.9	9.9	15.8	9.8	174.3	58.9	13.9	20.5	412.8
1974	12.1	9.8	12.3	36.8	31.0	13.3	10.4	14.8	8.9	13.7	8.2	7.1	178.3
1975	6.7	8.0	7.3	8.4	12.6	9.2	6.3	7.3	7.1	4.8	7.8	4.8	90.2
1976	4.2	4.1	8.8	58.1	21.4	9.1	10.0	5.9	11.6	9.3	4.7	4.7	151.9
1977	5.1	3.7	6.4	7.3	32.8	24.8	7.2	20.9	24.6	10.9	7.3	5.5	156.4
1978	4.8	5.3	4.7	4.6	10.6	10.8	5.0	6.2	20.5	4.4	5.5	3.9	86.3
1979	4.0	3.8	10.6	4.0	10.9	4.8	20.6	5.9	3.5	17.5	4.1	3.3	92.9

Pre-development Incremental Flow Data (acre-feet)
Node 590--Unit 83--North Lake

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	3.8	3.4	17.4	6.3	7.2	2.1	3.8	12.8	3.3	4.0	2.7	4.1	70.8
1981	2.6	2.3	5.9	4.3	33.2	54.3	19.9	6.1	8.0	8.3	13.4	4.5	162.8
1982	4.1	6.8	4.4	3.5	32.7	11.0	10.2	5.4	5.0	9.0	3.5	3.6	99.2
1983	3.1	5.7	4.6	6.8	14.9	7.2	3.5	3.5	4.5	9.9	4.3	3.0	70.9
1984	2.8	2.6	20.6	30.9	5.6	6.5	4.5	4.5	4.0	10.4	3.3	32.4	128.2
1985	3.9	6.7	4.0	58.3	6.6	31.9	17.5	10.7	8.9	45.3	6.3	5.8	205.8
1986	5.0	4.6	5.1	15.7	6.7	10.2	17.3	33.0	7.6	14.4	4.4	4.1	128.0
1987	3.9	4.6	57.0	19.4	32.2	13.5	16.0	13.8	6.4	5.8	5.1	5.0	182.8
1988	5.3	3.7	4.0	10.8	4.3	6.3	7.2	4.8	3.6	3.2	2.8	2.7	58.8
1989	2.8	2.3	2.8	2.3	33.8	31.0	18.4	6.1	8.8	4.5	3.8	3.8	120.3
1990	3.7	5.3	6.3	14.1	74.8	9.9	8.6	27.4	14.2	6.3	7.2	4.8	182.6
1991	4.5	3.7	6.2	5.9	6.1	9.1	3.5	3.8	3.0	3.0	4.9	5.9	59.7
1992	4.7	2.3	3.3	2.4	12.2	43.7	11.0	11.6	4.9	7.6	6.5	16.2	126.4
1993	18.3	14.3	22.5	8.8	49.6	71.7	203.3	21.8	18.0	16.9	15.2	14.8	475.3
1994	13.3	11.4	10.8	14.9	10.4	9.1	13.6	7.9	7.0	8.7	6.3	6.2	119.4

Pre-development Incremental Flow Data (acre-feet)
Node 600--Unit 40

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0.7	0.9	0.7	0.9	0.8	1.2	1.5	0.7	2.6	1.1	0.6	0.6	12.3
1956	0.6	0.8	0.6	0.9	0.9	0.5	0.9	0.5	0.5	1.0	0.5	0.4	8.1
1957	0.4	0.4	3.9	2.2	8.7	4.4	1.6	1.1	4.4	2.5	1.2	0.9	31.9
1958	0.9	0.9	3.5	1.0	3.7	2.3	4.3	1.4	3.3	1.4	0.9	0.9	24.4
1959	0.8	0.8	1.2	0.7	5.3	1.2	5.1	1.1	1.0	2.1	0.8	0.8	20.8
1960	1.1	0.9	2.3	1.0	1.3	2.0	0.9	1.0	1.0	1.0	0.6	0.7	13.7
1961	0.5	0.5	0.8	0.7	2.8	1.2	1.1	1.6	0.6	0.8	1.1	0.5	12.2
1962	0.6	0.5	0.5	0.5	0.5	2.8	2.5	1.7	0.9	0.6	0.6	0.5	12.1
1963	0.5	0.4	0.5	0.4	0.8	1.0	2.0	0.5	0.8	0.5	0.4	0.4	8.1
1964	0.3	0.3	0.3	0.4	0.8	0.9	0.4	0.5	0.5	0.3	1.0	0.9	6.7
1965	0.5	0.9	0.3	0.7	2.7	9.6	1.3	0.8	1.4	1.0	0.6	1.3	21.2
1966	0.5	1.9	0.5	0.9	0.5	1.3	2.2	1.3	0.6	0.5	0.4	0.4	10.9
1967	0.4	0.3	0.4	1.4	0.8	3.1	1.9	0.5	1.3	0.6	0.4	0.4	11.6
1968	0.4	0.3	0.4	0.4	0.8	0.5	1.6	0.5	0.3	4.4	0.7	0.4	10.7
1969	0.4	0.8	0.5	0.8	2.4	0.7	0.9	7.8	6.0	1.4	0.7	0.7	23.1
1970	0.6	0.5	1.0	2.0	1.6	3.2	0.6	0.7	1.2	1.5	0.5	0.7	14.2
1971	0.9	1.6	0.8	0.9	1.9	1.4	1.3	0.6	0.6	1.4	2.1	0.7	14.3
1972	0.5	0.4	0.5	0.7	2.0	1.4	0.5	1.3	1.0	0.6	1.0	0.5	10.4
1973	0.4	0.6	7.3	2.0	1.1	1.0	1.6	1.0	18.1	6.1	1.5	2.1	42.9
1974	1.3	1.0	1.3	3.8	3.2	1.4	1.1	1.5	0.9	1.4	0.9	0.7	18.5
1975	0.7	0.8	0.8	0.9	1.3	1.0	0.7	0.8	0.7	0.5	0.8	0.5	9.4
1976	0.4	0.4	0.9	6.0	2.2	0.9	1.0	0.6	1.2	1.0	0.5	0.5	15.8
1977	0.5	0.4	0.7	0.8	3.4	2.6	0.7	2.2	2.5	1.1	0.8	0.6	16.2
1978	0.5	0.6	0.5	0.5	1.1	1.1	0.5	0.6	2.1	0.5	0.6	0.4	9.0
1979	0.4	0.4	1.1	0.4	1.1	0.5	2.1	0.6	0.4	1.8	0.4	0.3	9.6

Pre-development Incremental Flow Data (acre-feet)
Node 600--Unit 40

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.4	0.3	1.8	0.7	0.7	0.2	0.4	1.3	0.3	0.4	0.3	0.4	7.3
1981	0.3	0.2	0.6	0.4	3.5	5.6	2.1	0.6	0.8	0.9	1.4	0.5	16.9
1982	0.4	0.7	0.5	0.4	3.4	1.1	1.1	0.6	0.5	0.9	0.4	0.4	10.3
1983	0.3	0.6	0.5	0.7	1.5	0.7	0.4	0.4	0.5	1.0	0.4	0.3	7.3
1984	0.3	0.3	2.1	3.2	0.6	0.7	0.5	0.5	0.4	1.1	0.3	3.4	13.3
1985	0.4	0.7	0.4	6.1	0.7	3.3	1.8	1.1	0.9	4.7	0.7	0.6	21.4
1986	0.5	0.5	0.5	1.6	0.7	1.1	1.8	3.4	0.8	1.5	0.5	0.4	13.3
1987	0.4	0.5	5.9	2.0	3.3	1.4	1.7	1.4	0.7	0.6	0.5	0.5	19.0
1988	0.5	0.4	0.4	1.1	0.4	0.7	0.8	0.5	0.4	0.3	0.3	0.3	6.1
1989	0.3	0.2	0.3	0.2	3.5	3.2	1.9	0.6	0.9	0.5	0.4	0.4	12.5
1990	0.4	0.6	0.6	1.5	7.8	1.0	0.9	2.8	1.5	0.6	0.8	0.5	18.9
1991	0.5	0.4	0.6	0.6	0.6	0.9	0.4	0.4	0.3	0.3	0.5	0.6	6.2
1992	0.5	0.2	0.3	0.3	1.3	4.5	1.1	1.2	0.5	0.8	0.7	1.7	13.1
1993	1.9	1.5	2.3	0.9	5.2	7.4	21.1	2.3	1.9	1.8	1.6	1.5	49.4
1994	1.4	1.2	1.1	1.5	1.1	0.9	1.4	0.8	0.7	0.9	0.6	0.6	12.4

Pre-development Incremental Flow Data (acre-feet)
Node 610--Unit 62

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	1.7	2.0	1.5	2.0	1.8	2.8	3.6	1.6	6.0	2.6	1.5	1.4	28.5
1956	1.4	1.9	1.3	2.1	2.1	1.2	2.1	1.2	1.1	2.4	1.1	1.0	18.9
1957	1.0	0.9	9.1	5.1	20.2	10.2	3.8	2.6	10.3	5.8	2.8	2.2	74.0
1958	2.0	2.0	8.0	2.4	8.6	5.3	9.8	3.2	7.6	3.3	2.2	2.1	56.5
1959	1.9	1.8	2.7	1.6	12.3	2.7	11.8	2.7	2.4	4.8	1.8	1.7	48.3
1960	2.5	2.1	5.3	2.3	3.0	4.6	2.0	2.2	2.4	2.3	1.4	1.6	31.7
1961	1.3	1.1	1.7	1.6	6.6	2.7	2.6	3.7	1.4	1.9	2.5	1.2	28.3
1962	1.4	1.1	1.2	1.1	1.2	6.5	5.7	3.9	2.1	1.4	1.3	1.1	28.1
1963	1.1	0.9	1.2	1.0	1.8	2.3	4.7	1.1	1.7	1.2	0.8	0.9	18.7
1964	0.8	0.7	0.8	1.0	1.9	2.0	1.0	1.1	1.1	0.7	2.4	2.1	15.6
1965	1.2	2.2	0.8	1.7	6.2	22.2	3.0	2.0	3.3	2.2	1.3	2.9	49.1
1966	1.3	4.3	1.2	2.0	1.2	2.9	5.0	3.0	1.3	1.1	1.0	1.0	25.4
1967	1.0	0.8	0.9	3.3	1.8	7.1	4.3	1.2	3.0	1.4	1.0	1.0	26.8
1968	0.9	0.8	0.8	1.0	1.7	1.1	3.8	1.1	0.8	10.2	1.6	0.9	24.8
1969	1.0	1.9	1.2	1.8	5.5	1.6	2.1	18.0	13.8	3.3	1.7	1.6	53.6
1970	1.4	1.2	2.2	4.6	3.8	7.3	1.5	1.5	2.8	3.5	1.2	1.7	32.8
1971	2.2	3.7	1.9	2.2	4.5	3.2	3.0	1.4	1.4	3.2	4.9	1.5	33.2
1972	1.2	1.0	1.1	1.6	4.7	3.2	1.2	3.0	2.4	1.3	2.2	1.1	24.0
1973	1.0	1.4	16.8	4.5	2.6	2.4	3.8	2.3	41.9	14.1	3.3	4.9	99.2
1974	2.9	2.4	3.0	8.9	7.5	3.2	2.5	3.5	2.1	3.3	2.0	1.7	42.9
1975	1.6	1.9	1.8	2.0	3.0	2.2	1.5	1.8	1.7	1.2	1.9	1.1	21.7
1976	1.0	1.0	2.1	14.0	5.1	2.2	2.4	1.4	2.8	2.2	1.1	1.1	36.5
1977	1.2	0.9	1.5	1.8	7.9	6.0	1.7	5.0	5.9	2.6	1.8	1.3	37.6
1978	1.2	1.3	1.1	1.1	2.5	2.6	1.2	1.5	4.9	1.1	1.3	0.9	20.8
1979	0.9	0.9	2.5	0.9	2.6	1.2	5.0	1.4	0.8	4.2	1.0	0.8	22.3

Pre-development Incremental Flow Data (acre-feet)
Node 610--Unit 62

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	0.9	0.8	4.2	1.5	1.7	0.5	0.9	3.1	0.8	0.9	0.7	1.0	17.0
1981	0.6	0.5	1.4	1.0	8.0	13.1	4.8	1.5	1.9	2.0	3.2	1.1	39.1
1982	1.0	1.6	1.1	0.9	7.8	2.7	2.5	1.3	1.2	2.2	0.9	0.9	23.9
1983	0.8	1.4	1.1	1.6	3.6	1.7	0.8	0.9	1.1	2.4	1.0	0.7	17.0
1984	0.7	0.6	4.9	7.4	1.3	1.6	1.1	1.1	1.0	2.5	0.8	7.8	30.8
1985	0.9	1.6	0.9	14.0	1.6	7.7	4.2	2.6	2.1	10.9	1.5	1.4	49.5
1986	1.2	1.1	1.2	3.8	1.6	2.5	4.2	7.9	1.8	3.5	1.1	1.0	30.8
1987	0.9	1.1	13.7	4.7	7.7	3.2	3.8	3.3	1.5	1.4	1.2	1.2	44.0
1988	1.3	0.9	1.0	2.6	1.0	1.5	1.7	1.2	0.9	0.8	0.7	0.6	14.1
1989	0.7	0.5	0.7	0.6	8.1	7.4	4.4	1.5	2.1	1.1	0.9	0.9	28.9
1990	0.9	1.3	1.5	3.4	18.0	2.4	2.1	6.6	3.4	1.5	1.7	1.1	43.9
1991	1.1	0.9	1.5	1.4	1.5	2.2	0.9	0.9	0.7	0.7	1.2	1.4	14.3
1992	1.1	0.6	0.8	0.6	2.9	10.5	2.6	2.8	1.2	1.8	1.6	3.9	30.4
1993	4.4	3.4	5.4	2.1	11.9	17.2	48.9	5.2	4.3	4.1	3.7	3.6	114.3
1994	3.2	2.7	2.6	3.6	2.5	2.2	3.3	1.9	1.7	2.1	1.5	1.5	28.7

Pre-development Incremental Flow Data (acre-feet)
Node 620--Unit 44--East Salt Flats

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	2.6	3.0	2.3	3.0	2.7	4.3	5.5	2.4	9.1	4.0	2.2	2.2	43.3
1956	2.1	2.9	2.0	3.2	3.2	1.8	3.1	1.9	1.6	3.7	1.6	1.6	28.8
1957	1.5	1.4	13.8	7.7	30.8	15.6	5.8	4.0	15.6	8.9	4.3	3.4	112.7
1958	3.1	3.0	12.2	3.6	13.1	8.1	15.0	4.9	11.5	5.1	3.3	3.2	86.0
1959	2.9	2.7	4.1	2.5	18.8	4.2	17.9	4.0	3.7	7.3	2.7	2.6	73.5
1960	3.9	3.2	8.0	3.5	4.5	7.0	3.0	3.4	3.6	3.5	2.1	2.5	48.3
1961	1.9	1.7	2.7	2.5	10.0	4.1	3.9	5.7	2.1	2.9	3.8	1.9	43.1
1962	2.1	1.6	1.8	1.7	1.8	9.9	8.7	5.9	3.2	2.2	2.0	1.8	42.8
1963	1.7	1.4	1.9	1.5	2.8	3.4	7.2	1.8	2.6	1.8	1.3	1.3	28.5
1964	1.2	1.1	1.2	1.6	2.8	3.0	1.5	1.7	1.7	1.1	3.6	3.2	23.8
1965	1.9	3.3	1.1	2.6	9.4	33.8	4.6	3.0	5.0	3.4	2.0	4.4	74.7
1966	1.9	6.6	1.9	3.1	1.9	4.4	7.6	4.6	2.0	1.7	1.5	1.5	38.6
1967	1.5	1.2	1.3	5.0	2.7	10.9	6.6	1.9	4.5	2.1	1.6	1.5	40.8
1968	1.4	1.2	1.3	1.5	2.6	1.7	5.8	1.7	1.2	15.5	2.4	1.4	37.8
1969	1.5	2.8	1.8	2.8	8.4	2.5	3.2	27.5	21.0	5.0	2.5	2.4	81.6
1970	2.1	1.9	3.4	7.0	5.7	11.1	2.3	2.3	4.3	5.4	1.8	2.6	49.9
1971	3.3	5.7	3.0	3.3	6.8	4.8	4.6	2.1	2.1	4.9	7.5	2.3	50.5
1972	1.8	1.5	1.6	2.5	7.1	4.9	1.8	4.6	3.6	2.0	3.4	1.6	36.6
1973	1.5	2.1	25.6	6.9	4.0	3.6	5.8	3.6	63.8	21.5	5.1	7.5	151.1
1974	4.4	3.6	4.5	13.5	11.4	4.9	3.8	5.4	3.3	5.0	3.0	2.6	65.3
1975	2.5	2.9	2.7	3.1	4.6	3.4	2.3	2.7	2.6	1.8	2.9	1.8	33.0
1976	1.5	1.5	3.2	21.3	7.8	3.3	3.7	2.2	4.2	3.4	1.7	1.7	55.6
1977	1.9	1.3	2.3	2.7	12.0	9.1	2.6	7.7	9.0	4.0	2.7	2.0	57.2
1978	1.8	1.9	1.7	1.7	3.9	4.0	1.8	2.3	7.5	1.6	2.0	1.4	31.6
1979	1.4	1.4	3.9	1.5	4.0	1.8	7.6	2.2	1.3	6.4	1.5	1.2	34.0

Pre-development Incremental Flow Data (acre-feet)
Node 620--Unit 44--East Salt Flats

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	1.4	1.2	6.4	2.3	2.6	0.8	1.4	4.7	1.2	1.4	1.0	1.5	25.9
1981	0.9	0.8	2.2	1.6	12.2	19.9	7.3	2.2	2.9	3.0	4.9	1.6	59.6
1982	1.5	2.5	1.6	1.3	12.0	4.0	3.7	2.0	1.8	3.3	1.3	1.3	36.4
1983	1.1	2.1	1.7	2.5	5.5	2.6	1.3	1.3	1.6	3.6	1.6	1.1	26.0
1984	1.0	0.9	7.5	11.3	2.0	2.4	1.6	1.6	1.5	3.8	1.2	11.9	46.9
1985	1.4	2.4	1.5	21.4	2.4	11.7	6.4	3.9	3.3	16.6	2.3	2.1	75.4
1986	1.8	1.7	1.9	5.7	2.5	3.7	6.3	12.1	2.8	5.3	1.6	1.5	46.9
1987	1.4	1.7	20.9	7.1	11.8	4.9	5.9	5.1	2.3	2.1	1.9	1.9	66.9
1988	1.9	1.3	1.5	4.0	1.6	2.3	2.6	1.8	1.3	1.2	1.0	1.0	21.5
1989	1.0	0.8	1.0	0.8	12.4	11.4	6.8	2.2	3.2	1.6	1.4	1.4	44.0
1990	1.4	1.9	2.3	5.2	27.4	3.6	3.1	10.0	5.2	2.3	2.6	1.8	66.8
1991	1.6	1.4	2.3	2.2	2.3	3.3	1.3	1.4	1.1	1.1	1.8	2.2	21.9
1992	1.7	0.9	1.2	0.9	4.5	16.0	4.0	4.2	1.8	2.8	2.4	5.9	46.3
1993	6.7	5.3	8.3	3.2	18.2	26.3	74.4	8.0	6.6	6.2	5.6	5.4	174.0
1994	4.9	4.2	4.0	5.5	3.8	3.3	5.0	2.9	2.5	3.2	2.3	2.3	43.7

Pre-development Incremental Flow Data (acre-feet)
Node 630--Rattlesnake Creek near Raymond, KS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	388.7	452.3	345.1	446.7	397.8	640.5	817.7	364.9	1,358.1	591.4	334.8	327.5	6,465.5
1956	318.8	433.3	295.6	482.8	475.4	273.7	469.0	281.0	242.8	544.4	240.6	235.1	4,292.5
1957	225.6	206.7	2,061.7	1,148.1	4,593.8	2,320.9	864.0	593.5	2,332.0	1,323.0	645.3	502.4	16,817.0
1958	466.1	446.7	1,818.3	539.9	1,960.6	1,202.5	2,235.3	728.7	1,719.0	753.6	495.9	472.5	12,839.3
1959	437.7	398.5	608.5	376.0	2,803.2	623.3	2,675.8	601.4	549.6	1,093.8	407.7	392.8	10,968.4
1960	579.3	470.5	1,196.3	514.5	677.5	1,046.8	452.6	507.4	538.6	525.9	319.6	375.0	7,204.0
1961	284.7	256.5	395.0	368.5	1,490.2	612.3	584.3	846.9	319.6	429.8	566.8	279.7	6,434.1
1962	316.0	245.7	270.4	253.4	274.0	1,473.1	1,303.8	876.8	477.3	327.4	302.3	261.2	6,381.3
1963	252.6	210.2	278.3	218.3	410.6	511.7	1,066.8	261.2	394.6	265.4	190.1	193.6	4,253.4
1964	180.8	164.6	182.9	239.0	423.4	448.3	230.6	249.1	254.1	161.5	539.3	478.9	3,552.5
1965	281.1	493.7	172.2	389.1	1,408.4	5,046.8	688.2	443.4	752.8	506.7	303.0	664.7	11,150.0
1966	283.2	989.3	279.0	464.9	276.1	661.8	1,135.8	685.3	292.0	251.2	225.2	222.0	5,766.0
1967	219.9	181.3	197.1	742.4	403.5	1,623.3	984.9	281.8	671.5	318.1	235.5	229.2	6,088.6
1968	205.0	177.4	188.6	226.6	392.8	254.1	869.7	256.9	183.9	2,312.9	358.8	208.5	5,635.2
1969	231.3	425.5	272.6	416.7	1,258.2	371.2	476.8	4,099.2	3,140.5	745.8	377.4	360.1	12,175.3
1970	319.5	275.6	503.9	1,044.8	851.1	1,661.8	340.9	350.1	644.6	804.2	264.5	386.4	7,447.5
1971	500.3	847.2	439.8	496.6	1,022.7	720.4	681.1	319.5	312.7	729.5	1,116.4	348.7	7,534.7
1972	273.3	228.8	240.5	369.8	1,059.0	733.5	269.7	691.7	540.6	305.3	508.3	241.3	5,461.8
1973	226.3	315.6	3,821.6	1,031.7	594.9	541.3	865.4	533.0	9,524.8	3,216.7	761.7	1,120.9	22,554.0
1974	660.4	537.9	669.7	2,013.1	1,696.6	725.9	565.8	806.3	484.8	747.2	447.0	389.3	9,744.0
1975	367.2	435.8	398.5	456.6	686.0	502.8	346.6	398.5	387.1	263.3	429.1	260.5	4,932.0
1976	229.9	222.4	478.9	3,174.9	1,167.8	499.3	548.7	324.5	632.9	508.1	256.2	255.5	8,299.2
1977	280.4	200.6	347.3	397.4	1,789.8	1,356.7	390.7	1,143.6	1,343.7	594.9	401.5	298.2	8,544.9
1978	263.3	288.3	256.9	253.4	576.4	592.3	274.0	338.8	1,119.8	243.4	298.9	212.8	4,718.3
1979	215.6	207.0	577.9	216.3	598.5	263.8	1,127.3	321.0	188.7	957.2	221.1	180.8	5,075.0

Pre-development Incremental Flow Data (acre-feet)
Node 630--Rattlesnake Creek near Raymond, KS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1980	206.4	185.8	948.6	346.4	391.4	112.9	206.4	697.4	180.4	215.6	149.4	225.6	3,866.5
1981	140.9	122.8	324.5	234.2	1,815.4	2,966.9	1,088.1	330.9	439.4	452.6	732.8	246.9	8,895.5
1982	226.3	370.2	241.3	192.8	1,784.8	601.2	556.5	295.3	272.7	491.8	193.5	197.1	5,423.6
1983	170.8	313.0	249.8	371.2	816.3	390.5	189.3	192.9	245.2	538.7	232.8	164.4	3,874.9
1984	155.9	141.4	1,124.4	1,688.0	304.6	357.4	246.9	246.9	220.4	566.5	182.5	1,769.9	7,004.9
1985	214.9	363.2	216.3	3,187.3	358.0	1,742.4	955.1	582.9	484.8	2,476.6	345.0	318.8	11,245.4
1986	274.0	252.3	281.1	856.7	366.5	556.5	946.5	1,800.5	413.2	785.0	242.4	222.0	6,996.8
1987	214.9	250.7	3,117.1	1,057.9	1,757.8	736.9	875.3	754.4	349.2	319.5	278.9	275.4	9,988.0
1988	286.8	200.6	219.2	591.6	237.0	345.7	392.1	263.3	197.0	175.8	153.6	148.7	3,211.4
1989	155.1	123.4	155.1	125.3	1,845.3	1,694.2	1,007.7	333.1	478.0	244.1	205.9	205.0	6,572.3
1990	202.1	289.6	344.4	772.0	4,084.9	542.7	469.0	1,497.3	774.1	344.4	393.9	261.9	9,976.5
1991	244.1	201.2	338.8	320.9	335.2	496.6	192.1	209.9	164.6	163.7	268.6	325.2	3,260.9
1992	254.8	126.6	182.2	131.5	666.1	2,389.8	600.6	633.4	267.9	416.3	354.7	886.0	6,910.0
1993	997.0	782.9	1,231.2	478.7	2,711.4	3,918.7	11,109.0	1,188.5	986.2	923.7	832.0	810.6	25,970.0
1994	727.3	620.5	589.3	816.8	567.9	496.6	741.6	429.8	380.9	475.4	343.0	337.3	6,526.3

Pre-development Incremental Flow Data (acre-feet)
Node 630--Rattlesnake Creek near Raymond, KS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual

Notes:

1. Pre-development flows were estimated using the SWATMOD model with all water rights in the Rattlesnake Creek basin, junior to those at the Refuge, disabled.
2. Incremental flows are the unregulated runoff that occurs between the current node and any upstream nodes.